

Appendix A:

Initial Graduation Brief

IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

! USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT

Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME

Save this form according to the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy". Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1 !



family name Martinez
initials L given name Lenny
student number _____
street & no. _____
zipcode & city _____
country _____
phone _____
email _____

Your master programme (only select the options that apply to you):

IDE master(s): ☐ IPD ☒ Dfl ☐ SPD

2nd non-IDE master: _____

individual programme: - - (give date of approval)

honours programme: ☐ Honours Programme Master

specialisation / annotation: ☐ Medisign

☐ Tech. in Sustainable Design

☐ Entrepreneurship

SUPERVISORY TEAM **

Fill in the required data for the supervisory team members. Please check the instructions on the right !

** chair Nazli Cila dept. / section: HICD
** mentor Marco C. Rozendaal dept. / section: HICD
2nd mentor Ekin Kerimoğlu
organisation: Muzus
city: Delft country: The Netherlands

comments (optional)
Despite having department, each member of the team has their approach and expertise in regards to the topic and project. The project will also be supported by Muzus and experts from SUSAG.

Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v..



Second mentor only applies in case the assignment is hosted by an external organisation.



Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

APPROVAL PROJECT BRIEF

To be filled in by the chair of the supervisory team.

chair Nazli Cila date - - signature _____**CHECK STUDY PROGRESS**

To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair. The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: _____ EC

Of which, taking the conditional requirements into account, can be part of the exam programme _____ EC

List of electives obtained before the third semester without approval of the BoE _____

☒ **YES** all 1st year master courses passed

☐ **NO** missing 1st year master courses are:

name _____ date - - signature _____**FORMAL APPROVAL GRADUATION PROJECT**

To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **. Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks ?
- Does the composition of the supervisory team comply with the regulations and fit the assignment ?

Content: ☒ **APPROVED** ☐ **NOT APPROVED**Procedure: ☒ **APPROVED** ☐ **NOT APPROVED**

comments

name _____ date - - signature _____

Exploring Painter-Agent collaboration for promoting wellbeing

project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date 27 - 02 - 202330 - 08 - 2023 end date

INTRODUCTION **

Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

The Stichting Uitvoeringsregelingen voor het Schilders-, Afwerkings-, Vastgoedonderhouden Glaszetbedrijf (USAVG Foundation) focuses on ensuring that employees in trades characterized by repetitive and physically demanding work like Painting, Finishing and Glazing can be sustainably employed. For the USAVG Foundation, a sustainably employed individual “works productively, motivated and healthy within an organization, both now and in the future. He or she performs the work with energy (is vital), can handle the work well physically and mentally (is healthy) and is able to keep the work now and in the future (is employable).”[1] To support this mission, the USAVG foundation provides services like periodic health checkups, career and lifestyle coaching, as well as annual performance reviews to these tradespeople.

The USAVG foundation has approached the IDE Faculty looking to understand how developments in sensor technology, robotics and related fields can contribute to improving the sustainable employability of their members. Within the trades the USAVG foundation serves, painters are especially useful to focus on, since the public understanding of what they do makes it easier to explore how newer technologies like agents could contribute to improving sustainable employability. Professional painters have the ability to work at different scales, from residential spaces to commercial and industrial sites, as well as with different paint types and surfaces. Their work tools vary wildly depending on the site and complexity and may involve items like ladders, cleaning materials and drop cloths, in addition to paint sprayers, pressure washers, chemicals, and aerial lifts at larger scales.[2]

In general, painters are most impacted by injuries sustained during falls, or when coming into contact with chemicals they work with over long periods of time. Additionally, the repetitive motions involved in moving heavy materials and reaching certain areas can lead to neck and shoulder stress and injuries over time.[3] Considering both the variety in working conditions and commonly experienced injuries of painters, agents are a promising avenue to contribute to towards improving sustainable employability. An agent is any product or service that has been empowered through a combination of integrated computational power and networked connectivity to sense and act autonomously on some level.[4] Some commercial examples include the FitBit, a wearable tracker that collects heart rate and step information and displays it for the user, and the self-adjusting Nest thermostat that learns from user input. Digitally, Siri and Alexa are popular conversational agents that can respond to user input, make recommendations, and act on their own. More specialized examples of agents include robots and exoskeletons that can support humans beyond the body's physical limitations. The concept of sustainable employability seems to encompass physical and mental wellbeing, as well as job satisfaction. Agents in the form of tools, robots, or exoskeletons could promote physical wellbeing. Digital agents like chatbots could assist in the dimensions of mental wellbeing and job satisfaction. By working with painters, we can best explore the possibilities of promoting sustainable employment.

[1] <https://www.susag.nl/vragen/>

[2] <https://omegainc.com/what-is-the-difference-between-commercial-and-industrial-painting/>

[3] <https://www.wrshlaw.com/blog/work-injury/dangerous-reality-being-painter/>

[4] <https://doi.org/10.1145/3025453.3025797>

space available for images / figures on next page

Personal Project Brief - IDE Master Graduation

introduction (continued): space for images

image / figure 1: _____

image / figure 2: _____

PROBLEM DEFINITION **

Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

The main goal of this project is to explore how agents can be used in the context of professional painters to contribute to “sustainable employment”. As mentioned previously, sustainable employment encompasses both physical and mental wellbeing, as well as job satisfaction. Within the period of a graduation project, it is impossible to cover each area. Initial research tasks will focus on understanding the context of professional painters working, as well as understanding the current state of agents. Insights from this research will be used to create grounded speculative interventions in collaboration with the painters to explore how they might collaborate with agents.

Speculative methods are meaningful to this project because they can help us consider and understand the ecologies created by painters, their tools and their working environments. With the focus being on exploring collaborations with agents, having a good understanding and ability to work within these ecologies will be very useful. Additionally, speculative methods can help us evaluate and consider interactions beyond the limits of what we can currently develop or build.

Creating iterative speculative interventions is an extensive task to undertake. Emphasis will be placed on matching fidelity of the speculative materials to iterations to maximize what can be learned from an intervention. I will embrace Research-through-Design (RtD) and speculative methodologies like Material Speculation, Speculative Enactments and Design Fiction to focus on and evaluate the collaborative interventions.

This project will not focus on building a functional agent. I aim to explore the context of professional painters collaborating with agents to understand what kind of agents contribute towards the idea of

ASSIGNMENT **

State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in “problem definition”. Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

I will create grounded speculative interventions in collaboration with the painters to explore how they might collaborate with agentive technology. To this end, I will embrace Research-through-Design (RtD) and speculative methodologies like Material Speculation, Speculative Enactments and Design Fiction to allow me to focus on the collaborative interactions and evaluating the interventions.

For this project, I will study the context of professional painters working presently present in the Netherlands. To understand this context, I will map out work practices and experiences to identify opportunities for physical assistive support through embodied intelligent agents. Furthermore, I will map out the current state-of-the-art as it relates to systems, products and devices that can provide assistive support and human augmentation capabilities. A third focus of research will be in understanding the current literature related to human-agent collaboration and speculative methodologies to inform the creation of speculative scenarios.

Based on the research, several speculative concepts or scenarios will be developed and tested in collaboration with the painters and other relevant stakeholders. Through iterative evaluations, one concept will be chosen and refined through further exploration. Throughout this process I'll be working with professional painters provided by the USAVG Foundation

PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date 27 - 2 - 2023

30 - 8 - 2023 end date

During the first phase of research, I will focus on a literature review about human-agent collaboration, speculative methodology as well as benchmarking current technology related to systems, products and devices that can provide assistive support and human augmentation capabilities. I will also observe and interview painters in their working context to understand to map out their practices and experiences and identify opportunities for support. Additionally, I will review reports from the USAVG foundation to understand their current focus and services related to supporting painters.

During the second phase, I will develop and iteratively prototype different scenarios and concepts to be tested in collaboration with the painters and other relevant stakeholders. Through this process, one concept will be chosen to be tested and refined as a larger scale intervention in phase 3.

In phase 3, the chosen concept from the second phase will be explore more fully as a speculative enactment with the painters.

MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, Stick to no more than five ambitions.

I came to Delft with a clear goal: become a professor at a design faculty. Prior to my studies in Design for Interaction, I had studied mechanical engineering and visual storytelling. I was teaching and working in the spaces of data journalism, visualization, and web development. I chose to study at TU Delft because I wanted to pivot into teaching and working on projects beyond the screen.

During my first-semester courses, I became interested in Human-Robot Interaction (HRI) because it seemed to nicely compliment my background while still proposing new ideas for exploration. I am attracted to the technical puzzle involved in prototyping and designing a robot or agent, as well as the constant need to evaluate the interaction and find ways for the thing and the humans to meet each other where they are in their mental models.

In this project, I hope to develop myself with the following goals:

1. Develop my skills as a design researcher, working with Research-through-Design (RtD) and speculative methodologies. I've found these areas compliment my generalist background, and I want to develop them as a foundation for my career as an educator and researcher.
2. Develop my prototyping practices. As someone who has switched between different fields, I've picked up a lot of different skills and tools related to engineering, media and storytelling. With this project, I look to figure out how to use them within a design research context, with a special focus on figuring out how to work confidently at different levels of fidelity and on continuously prototyping and reflecting.
3. Develop an understanding of Human-Robot Interaction (HRI) research and literature. I want to gain in-depth knowledge about HRI research and specifically the sub-areas of human-agent interaction and collaboration.
4. Contribute to Human-Agent Interaction (HAI) research and literature. By taking a speculative and participatory approach, I want to contribute to the HAI literature about how we could collaborate with agents in a practical setting.
5. Create something that can be used within the research and non-research communities. I think it's important to consider how the results of the project are communicated, and I want to create something that benefit academic researchers, practicing designers, and most importantly the people who may be affected by agents in the future—painters in this case.

FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.

Appendix B1:
Interview Template created by
Muzus for Painter Interviews

Interviewopzet project “Slimme Ondersteuning voor Duurzame Inzetbaarheid”

Meenemen

- Toestemmingsformulieren
- Materialen voor visualisatie – overalls, post-its, pennen/markers, foto's met voorbeelden van bestaande oplossingen?

Algemene werkwijze

1. Per sectie door het boekje lopen (ongeacht of het gevuld is of niet) - uitvragen wat er geschreven is
2. Als het tijdens het doornemen van het boekje niet opkomt laatste vragen van sectie afmaken (waar toepasselijk)

Introductie (5 min)

- Stel je zelf even voor (naam, functie, dienstverband bij woningbouwcorporatie, verleden, specialisme)
- Doel project & specifiek doel interview
- Toestemmingsformulier, beginnen met opnemen
- Hoe is het invullen van de opdracht gegaan? (Als het niet gelukt is, kunnen we het samen invullen)
- Eventuele vragen

Als mogelijk, Meelopen (15 min)

- ☐ Welke materialen gebruik je, en wat voor klussen doe je? Wat voor bescherming wordt gebruikt (bv. Handschoenen, mondkapjes, kniekussens...)? Gebruik jij zelf/anderen die in de praktijk? Waarom/waarom niet?
- ☐ Wat voor bewegingen komen vaakst voor, welke lichaamsdelen worden meest belast?

Bijhorend pagina's – Oefening 1 (pg. 3-4)

Naam – Leeftijd - Hoe lang ben je al schilder? - Favoriete gereedschap –

Waar ben je meest trots op/wat vind je minst leuk? - Ideale klus - Collega's & Dreamteam

1. Even Voorstellen (20 min)

- ☐ Hoe ben je begonnen met schilderen? Wat was de aanleiding? Hoe vind je het werk?
- ☐ Wat is je favoriete gereedschap? Waarom? (Welke belang spreekt het aan?)
- ☐ Wat vind je belangrijkst in je werk? (Hoe helpt [gereedschap] jou om dat te bereiken?)
- ☐ Hoe ziet een gemiddelde dag voor jou uit?
- ☐ 70% voorbereiding, 30% echte schilderwerk... klopt dat? Waarom/waarom niet?
- ☐ Trots zijn/niet willen doen, waar past dat, bij voorbereiding of echte klus?

- 
- ☐ Heb jij (fysieke) klachten gekregen door jouw werk? Wat voor acties heb je genomen om deze

Bijhorend pagina's – Oefening 2 (pg. 5-6)

Voorbeelden slimme ondersteuning – Dit zou ik heel graag willen hebben...

klachten te verminderen?

2. Slimme Ondersteuning voor Schilders (20 min)

- ☐ Wat is je eerste gedachte als je over “slimme ondersteuning” hoort?
- ☐ Kan je meer vertellen over de voorbeelden dat je hebt benoemd?
- ☐ Hoe zou dit jou helpen in je dagelijkse leven?
- ☐ Wat zou je graag willen hebben? Waarom?
- ☐ Waar zie je dit soort hulpmiddelen passen in jouw dagelijkse werk? In welke vorm?
- ☐ Zijn er al (slimme) gereedschappen/ondersteuning die je al gebruik van maakt?
- ☐ Zou je eerder steun willen hebben of delegeren?
- ☐ Preventief/oplossend werken, is er aandacht voor het gezond opleiden van jongeren? Zijn zij zelf

Bijhorend pagina's – Oefening 3 (pg. 7-8)

Categoriseren voorbeelden

bewust van de klachten die

3. Beter, Sneller, Gezonder... (20 min)

- ☐ Wat betekend “snel, beter en gezonder” voor jou? Als je ze op volgorde zou moeten zetten, welke zou als eerst komen?
- ☐ [Terug naar meest trots/minst leuk refereren] zou jij dit willen delegeren aan slimme ondersteuning? Hoe zou je het makkelijker, gezonder kunnen doen?
- ☐ Vormgeven ondersteuning – Wat als het...
 - Wearable – Exoskelet, robot arm, kleding, handschoen...
 - App – combineren apparaten, metingen...

Bijhorend pagina's – Oefening 4 (pg. 9)

Tips/Laatste punten

- Gereedschap – sensors op kwast, schuurmachine, stofzuiger...
- Robot collega – menselijk, karretje met afstandsbediening...
- ☐ Wat zou het moeten hebben zodat jij het zou kunnen vertrouwen?

Afsluitend (10 min)



- ☐ Wat is het belangrijkste dat we in gedachten moeten houden in deze project?
- ☐ Zijn er nog dingen die je graag kwijt wilt?

Appendix B2:
Initial Clusters from Painter
Interviews Analysis

young 30 years old,
the travelling time
for 1 month, the
value is 100 year
constant

Try
like to working
from 1881 to
1885

Soraida
(47?)

WILLEMS-2

Singer just said hog. What does this mean? What is the singer's attitude?	What is the singer's attitude? What is the singer's attitude? What is the singer's attitude?	What is the singer's attitude? What is the singer's attitude? What is the singer's attitude?
What is the singer's attitude? What is the singer's attitude? What is the singer's attitude?	What is the singer's attitude? What is the singer's attitude? What is the singer's attitude?	What is the singer's attitude? What is the singer's attitude? What is the singer's attitude?
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The diagram illustrates the factors influencing the 'Health of the Nation'. At the top, a large yellow box labeled 'Health of the Nation' is connected by arrows to six smaller yellow boxes arranged in two rows. The top row includes 'Healthcare', 'Healthcare financing', 'Healthcare delivery', and 'Healthcare financing'. The bottom row includes 'Healthcare financing', 'Healthcare delivery', and 'Healthcare financing'. Arrows from these boxes point to a large orange box at the bottom labeled 'Health of the Nation'. The orange box contains the text: 'Health of the Nation is the result of the interaction of all these factors. The health of the nation is the result of the interaction of all these factors. The health of the nation is the result of the interaction of all these factors.'

Vileger;
you don't
have to
climb

Jory wants to
be "super
man" again
last year said
how ginger.

Just because you don't have a degree doesn't mean you're not qualified for the job.	The company didn't want to hire a woman. I showed my resume and they changed their mind.	There was nothing wrong with me. I was just different.
There was nothing wrong with me. I was just different.	There was nothing wrong with me. I was just different.	It's not "I'm a woman." It's "I'm a woman." It's "I'm a woman."
There was nothing wrong with me. I was just different.	There was nothing wrong with me. I was just different.	It's not "I'm a woman." It's "I'm a woman." It's "I'm a woman."

The image displays a 3x3 grid of yellow sticky notes, each with a small hole in the top-left corner, set against a dark, textured background. The notes contain handwritten text in various colors and styles, representing common frustrations. The text on the notes is as follows:

- Top-left:** If you have to wait 20 mins in a day, then you lost it in your waste.
- Top-middle:** When someone makes the problem worse than the original. When it's not your own responsibility for making. The heart is small.
- Top-right:** Frustration is 10% knowing. 90% being. When you know the problem, you can solve it. When the problem is not known, you cannot solve it.
- Middle-left:** Top problem: When you have to make the best of a bad situation.
- Middle-middle:** Masks are frustrating (Joey)
- Middle-right:** Our work is a lot with shoulders.
- Bottom-left:** The thing you think is the best is carrying two parent boxes up the stairs.
- Bottom-middle:** When you have to do something that you don't want to do. When you have to do something that you don't want to do. When you have to do something that you don't want to do.
- Bottom-right:** Top problem: When you have to do something that you don't want to do. When you have to do something that you don't want to do. When you have to do something that you don't want to do.



**Schuler
machines
better result
and faster.**

**Increased change
overhead time**
Schuler machines
allow for quick
changeovers. The
changeover time
is reduced by
up to 50%.

They Work too
flexible and
adaptable.
Schuler machines
can be used for
many different
tasks. Machine
life span is
long.

Nazili's note: Agents might not be applicable in this context, because the work is repetitive for the body, but not in the work itself. Versatility is needed.

WILLEMS-S-1

[illegible][illegible]

from new breeds to keep you healthy and strong even up and down the stairs and provide mobility.	Disc-o-lic to help with carrying things	Superpower: Control weather to prevent rain
A brush that keeps straight motions	Superpower: Control weather to prevent rain	to avoid, terrific strong on knees, hammers, providing comfort
Superpower: teleport to other parts of the site		

What? A group of people who work together to achieve a common purpose. Why? To achieve a common purpose and to provide a framework for the group's activities. How? By working together and sharing resources. What? A group of people who work together to achieve a common purpose. Why? To achieve a common purpose and to provide a framework for the group's activities. How? By working together and sharing resources.	What? A group of people who work together to achieve a common purpose. Why? To achieve a common purpose and to provide a framework for the group's activities. How? By working together and sharing resources. What? A group of people who work together to achieve a common purpose. Why? To achieve a common purpose and to provide a framework for the group's activities. How? By working together and sharing resources.	What? A group of people who work together to achieve a common purpose. Why? To achieve a common purpose and to provide a framework for the group's activities. How? By working together and sharing resources. What? A group of people who work together to achieve a common purpose. Why? To achieve a common purpose and to provide a framework for the group's activities. How? By working together and sharing resources.	What? A group of people who work together to achieve a common purpose. Why? To achieve a common purpose and to provide a framework for the group's activities. How? By working together and sharing resources. What? A group of people who work together to achieve a common purpose. Why? To achieve a common purpose and to provide a framework for the group's activities. How? By working together and sharing resources.
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an ethical compass, a moral compass, that is necessary, comprehensive and fundamental "code of conduct."

Take the long term perspective. Facing moral choices.

Problems with inner faith, inner, and obstacles from carrying.

Research and practice

Research addresses the need to approach problems holistically (and the community)

Research addresses the need to approach problems holistically (and the community)

Research addresses the need to approach problems holistically (and the community)

Research addresses the need to approach problems holistically (and the community)

ELK

ELK, 20 years of experience	ELK, 20 years of experience
ELK, 20 years of experience	ELK, 20 years of experience
ELK, 20 years of experience	ELK, 20 years of experience

[illegible]

THEORY
CONTEMPORARY
PRACTICES
AND RESEARCH

EDITED BY
JENNIFER
MORRIS

ISBN 0-8058-3040-0
HARDCOVER \$39.95
PAPER \$24.95

Think said before you will be like a robot if you wear an evaluator.	Associate smart solutions with speed
They tell the robot and that can clean and control the room their job	Exoskeletons and robots will always be in the way
Exoskeletons were used (theoretical capacity), but did not work when they would want	Carrying a robot up and down is a burden.

Remember to make a list of what is being asked.	Don't use any word unless you are asked to do so.	Reading is important, but don't read anything that isn't asked.
Mark has back difficulties.	Swimming is difficult or boring.	Corners are more irritative.
Feeling out of control leads to panic or anxiety.	Carrying the paint buckets.	Don't forget to check the instructions carefully.
Stealing out and downing the crafting.	Waiting and standing around for a while for others.	

[illegible]

Work Process

New generation

Agent ideas

Agent Aspects

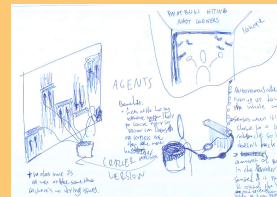
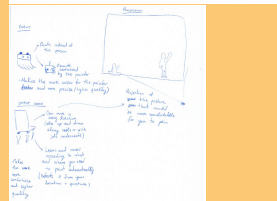
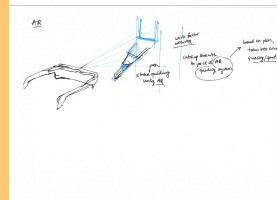
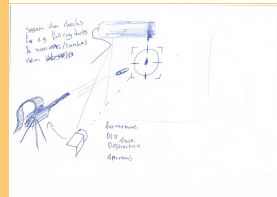
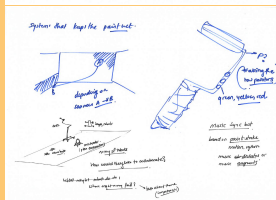
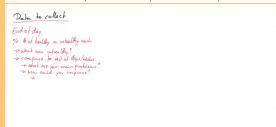
Work-related issues

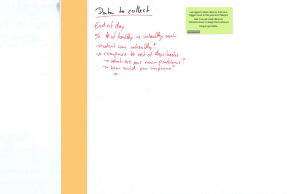
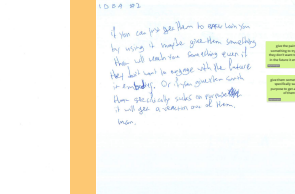
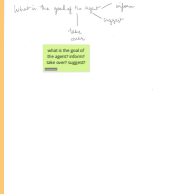
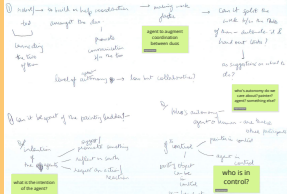
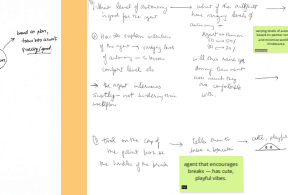
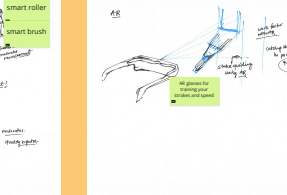
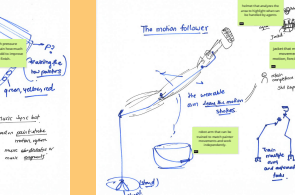
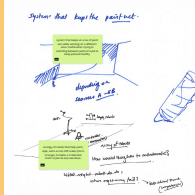
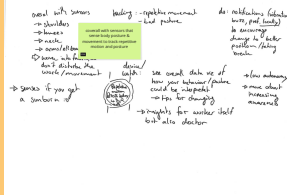
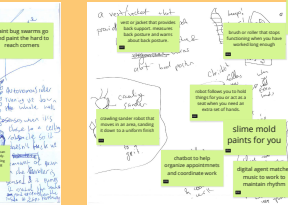
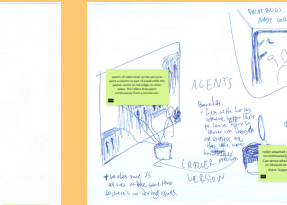
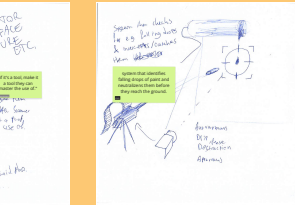
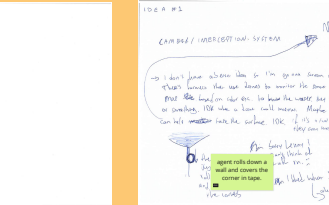
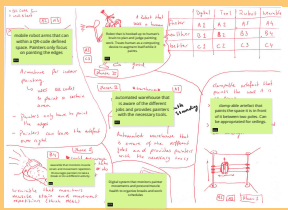
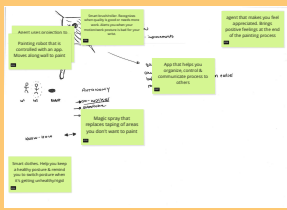
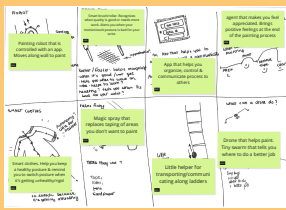
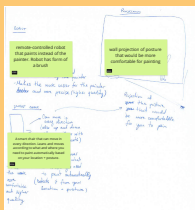
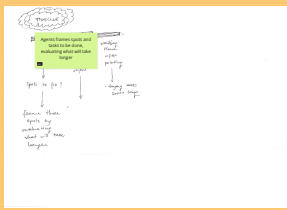
Before +
Now

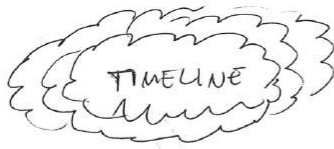
Systemic considerations

Appendix B3: Refined Clusters from Painter Interviews Analysis

Appendix C1: Brainstorming Results







Agents frames spots and
tasks to be done,
evaluating what will take
longer

ID01

waiting
time
after
painting

- drying takes
80000 hours

Spots to fix?

object

frame those
spots by
evaluating
what will take
longer

ROBOT

remote-controlled robot
that paints instead of the
painter. Robot has form of
a brush

ID02

Makes the work easier for the painter
faster and more precise (higher quality)

SMART CHAIR



Can move in
every direction
(also up and down)

A smart chair that can move in
every direction. Leans and moves
according to what and where you
need to paint automatically based
on your location + posture.

ID04

the work
more
comfortable
and higher
quality

to paint automatically
(detects it from your
location + posture)

Projection

wall projection of posture
that would be more
comfortable for painting

ID03

Projection of
~~your~~ the posture
that would
be more comfortable
for you to paint

ROBOT



Control

Painting robot that is controlled with an app. Moves along wall to paint

ID05

Smart brush/roller. Recognizes when quality is good or needs more work. Alerts you when your motion/work posture is bad for your wrist.

ID06



better / faster: helps recognize when it's good / not yet
tells you when to move on
helps to learn?
healthy? tells you when it's bad for your wrist?



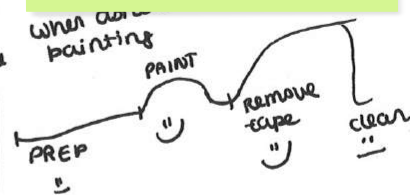
An App that helps you to communicate

App that helps you organize, control & communicate process to others

ID07

agent that makes you feel appreciated. Brings positive feelings at the end of the painting process

ID08



helps fixing

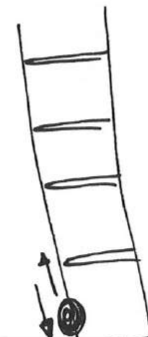
Magic spray that replaces taping of areas you don't want to paint

ID10

Tools they use?

Tape,
latter,
pens
Sand paper

Little



Little helper for transporting/communicating along ladders

ID11

what can a drone do?



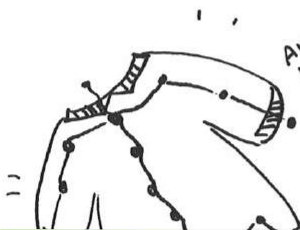
Drone that helps paint. Tiny swarm that tells you where to do a better job

ID12

Tiny bugs tell you where to do a better job

SMART CLOTHES

Autonomy? Little for painter



Smart clothes. Help you keep a healthy posture & remind you to switch posture when it's getting unhealthy/rigid

ID09

to switch because it's getting unhealthy

Agent uses projection to

Painting robot that is controlled with an app. Moves along wall to paint

Smart brush/roller. Recognizes when quality is good or needs more work. Alerts you when your motion/work posture is bad for your wrist.

agent that makes you feel appreciated. Brings positive feelings at the end of the painting process

App that helps you organize, control & communicate process to others

Magic spray that replaces taping of areas you don't want to paint

Smart clothes. Help you keep a healthy posture & remind you to switch posture when it's getting unhealthy/rigid

w1 w2 ROBOT

AUTONOMY

→ co-workers
→ substitute

KNOW-HOW

improvements

on earlier

> QR Code Gun
> wall sheet

A2 A3

mobile robot arms that can within a QR-code defined space. Painters only focus on painting the edges

ID14

Armature for indoor painting.

↳ uses QR codes to paint a certain area

- Painters only have to paint the edges
- Painters can leave the artefact over night.

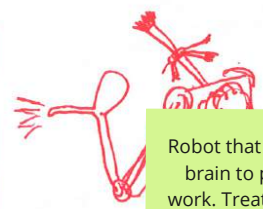


B4

wearable that monitors muscle strain and movement repetition. Encourages painters to take a break or do a different activity.

ID16

wearable that monitors muscle strain and movement repetition (think MOKL)



A3

C3

A Robot that uses a human

Robot that is hooked up to human's brain to plan and judge painting work. Treats human as a computing device to augment itself while it paints.

ID15

Phase II

Phase II

warehouse

automated warehouse that is aware of the different jobs and provides painters with the necessary tools.

ID17

with standing

Automated warehouse that is aware of the different jobs and provides painters with the necessary tools

Digital system that monitors painter movements and posture/muscle health to organize breaks and work schedules

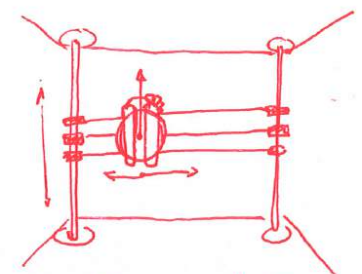
ID18

	Digital	Tool	Robot	Wearable
Faster	A1	A2	A3	A4
healthier	B1	B2	B3	B4
better	C1	C2	C3	C4

clampable artefact that paints the wall it is in front of

clamp-able artefact that paints the space it is in front of it between two poles. Can be appropriated for ceilings.

ID19

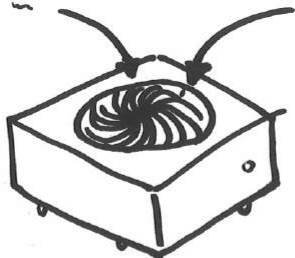


A2

A3

Phase 1

A



agent that
purifies air

ID20

A2

a paint
gun that
limits the
edges of the
paint spray

paint gun that can
limit the edge of the
paint spray

ID21

the paint spray

CAMERA / INTERCEPTION. SYSTEM

MONITOR
SURFACE
MOISTURE
ETC.

→ I don't have a better idea so I'm gonna stream of cons
there's harness that use zones to monitor the state of their
map ~~the~~ based on color etc. to know the water. they should give them
or something. IDK what a zone could measure. Maybe a LIDAR Scanner
can help ~~measure~~ face the surface. IDK. if it's a tool make it a tool
they can master the use of.

"if it's a tool, make it
a tool they can
master the use of."

thoughts



the
roll
and
the corners

agent rolls down a
wall and covers the
corner in tape.

ID22

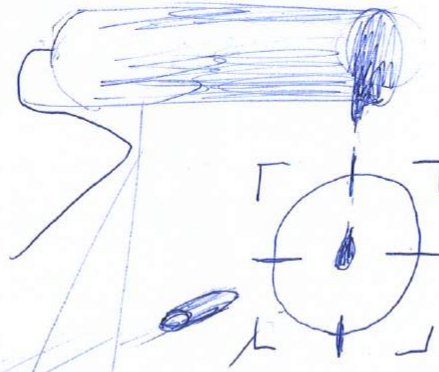
thin Gory Leant I
only think of
with rn. :)

I liked when Shanti said the.
(other side....)

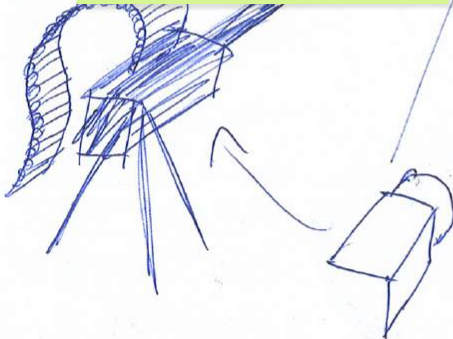
System then checks
for e.g. falling drops
& intercepts/catches
them ~~before they~~

system that identifies
falling drops of paint and
neutralizes them before
they reach the ground.

ID23



Autonomous
Drop ^{sense}
Destruction
Apparatus



swarm of rollers that can be set up to paint a column or part of a wall while the painter works on the edges or other areas. The rollers draw paint continuously from a central can.

ID24

PAINT BUGS HITTING
NASTY CORNERS

paint bug swarms go
and paint the hard to
reach corners

ID26

AGENTS

Benefits:

+ Less as the ^{long} repetitive motion likely
to cause injury so
painter can focus
on corners etc.
that take more
effort
knowledge of
precision

CRAWLER
VERSION

+ makes sure it's
all wet at the same time
so there's no drying issues.

roller attached directly to paint can
to continuously get paint to apply.
Can sense when it's close to ceiling
or obstacle to prevent touching
them. Supported by painter

ID25

Autonomous roller
running up & down
the whole wall.

Senses when it's
close to a ceiling
/ obstacle so it
doesn't back up.

mount of paint
in the roller is
sensed & it pumps
it out the ^{small}
and spreads when the
inside so it can ^{permanently}

a vest/jacket that
provid

vest or jacket that provides
back support. measures
back posture and warns
about back posture.

ID27

~~organizes~~ warns
abt- bad posture

keep!

brush or roller that stops
functioning when you have
worked long enough

ID28

robot that lays tape
in perimeter of
room

ID29

tape
room

robot scans your
workspace to organize
tasks and planning needs.

ID30

for you

crawling
sander

crawling sander robot that
moves in an area, sanding
it down to a uniform finish

ID32

to
grit.

robot follows you to hold
things for you or act as a
seat when you need an
extra set of hands.

ID31

when
you
need
extra
hands

slime mold
paints for you

ID34

chatbot to help
organize appointments
and coordinate work

ID33

& coord
work

digital agent matches
music to work to
maintain rhythm

ID35

What do we add
to mastery?

insightsthoughts

agents for
learners?

insightsthoughts

prevent more work
for better quality

insightsthoughts

prevent
more
work

overall with sensors

- shoulders
- knees
- neck
- arms/elbow

coverall with sensors that sense body posture & movement to track repetitive motion and posture

→ woven into fabric, don't disturb the work/movement

→ senses if you get a sunburn :D

tracking : -repetitive movement
-bad posture

do: notifications (vibration buzz, pref. locally)
to encourage change to better position / taking break

device/
watch:



see overall data viz of how your behaviour/posture could be interpreted
→ tips for changing

→ insights for worker itself but also doctor

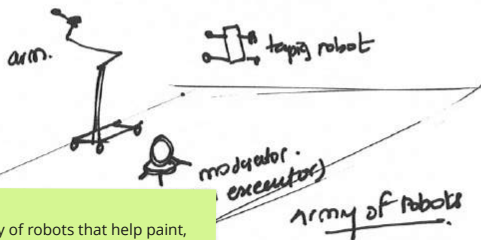
→ low autonomy
→ more about increasing awareness

System that keeps the paint wet.

system that keeps an area of paint wet while working on a different area. Useful when trying to switching between parts of a job to keep posture healthy

ID42

depending on
sensors A → B.



ecology of robots that help paint, tape, work across diff scales (micro to large). Includes a moderator brain to plan & execute ideas.

ID43

How would they like to collaborate?

What might robots do to

where might army fail?

→ talk about time
(competences)

roller with pressure sensors to train how much pressure to add to improve paint finish.

ID44

(training the new painters)

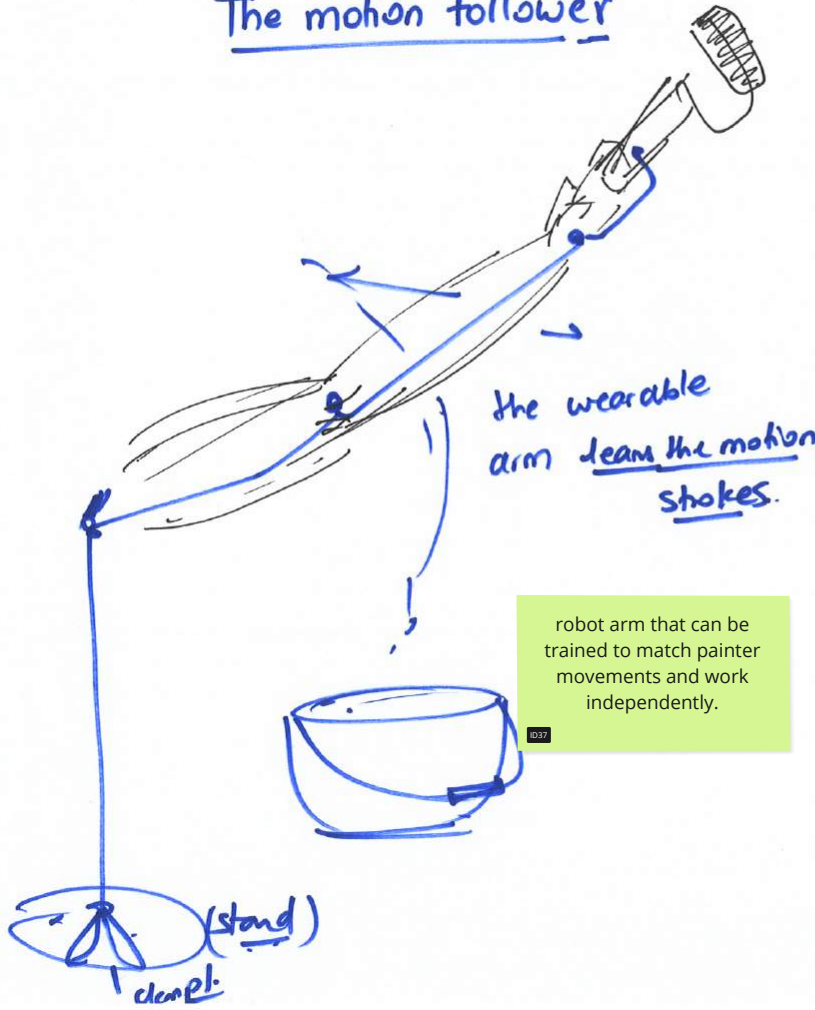
green, yellow, red

Music Sync bot

based on paint stroke
motion, rhythm

music dictates or
music augments.

The motion follower



robot arm that can be trained to match painter movements and work independently.

ID37

helmet that analyzes the area to highlight what can be handled by agents

ID38

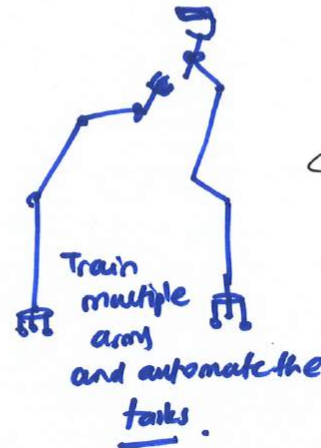
agent

Jacket

jacket that moderates movement and motion, forcing breaks

ID39

retain competence of working & skill keep muscle intact!



moderator.
quality inspector.

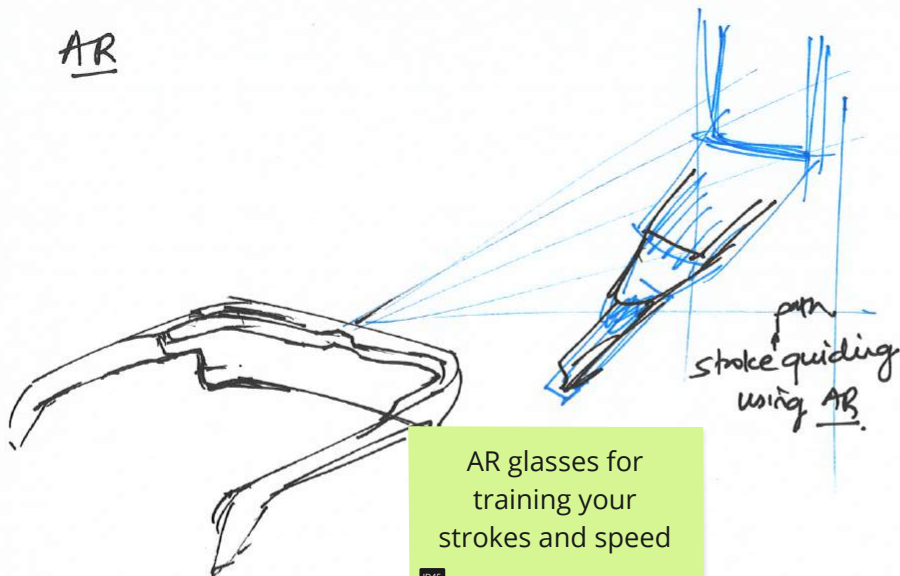
smart roller

smart brush

ID41

moderates movement

AR



AR glasses for
training your
strokes and speed

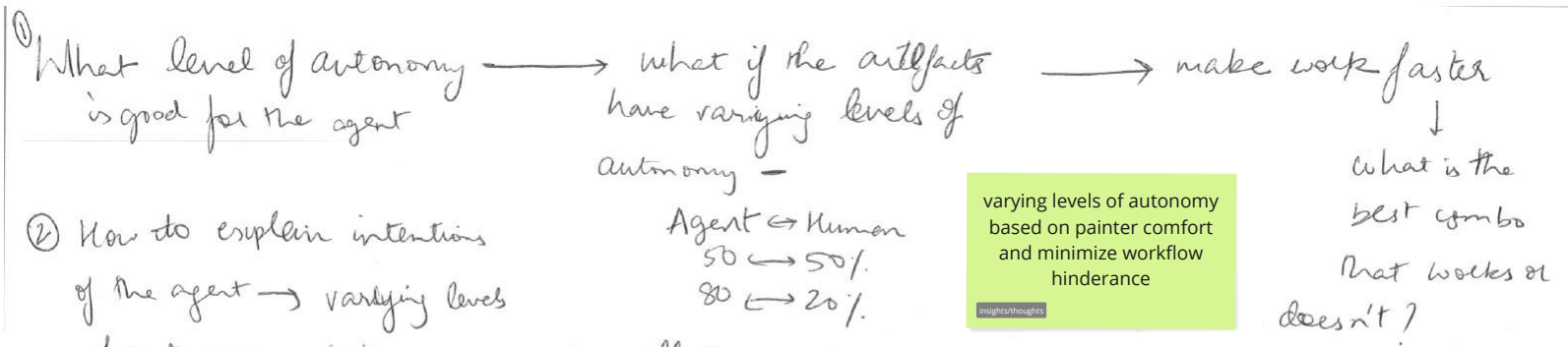
0045

work faster
with AR.

catch up the with
the pace of AR

guiding system.

based on plan,
takes into account
quality/speed.

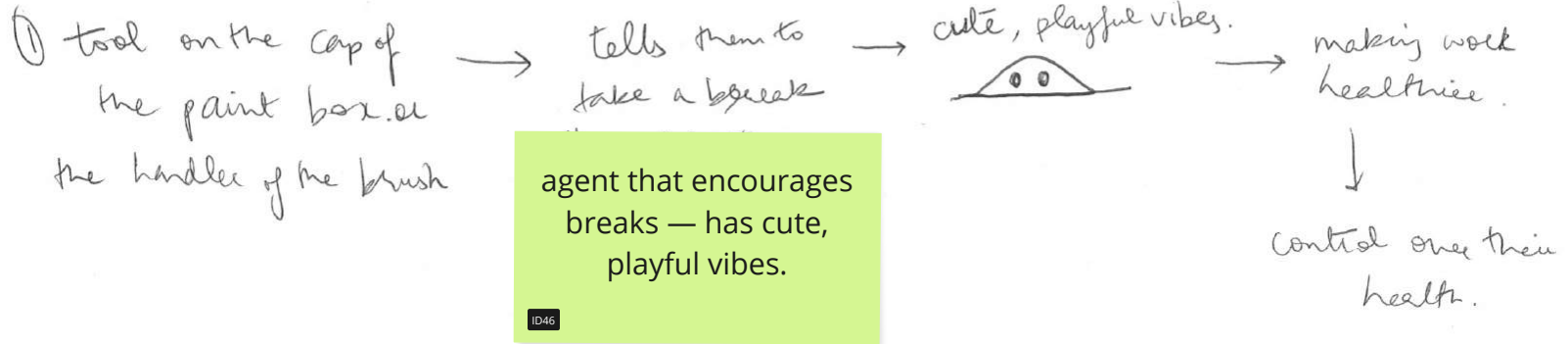


② How do explain intentions of the agent → varying levels of autonomy — to know comfort level etc.

→ the agent intervenes subtly — not hindering their workflow

will this raise q's among them about how much they are comfortable with.

→ a wearable — glove
↓
haptic or automated.



① robot/ → to build or help coordination
too amongst the duo.

Connecting
the two
of them

promote
communication
b/w the two

→ making work
faster

agent to augment
coordination
between duos

→ Can it split the
work b/w the roles
of them - automate it &
hand out tasks?

↓
as suggestions on what to
do?

level of ^{agent} autonomy → low but collaborative?

who's autonomy do we
care about? painter?
agent? something else?

② Can it be part of the painting ladder? -

intention
of
the agents
— suggest / promote something
— reflect or smth
— request an action / reaction

what is the intention
of the agent?

Q Who's autonomy -
agent & human - are there
other participants?

if ^{the} control
— painter in control
— agent in control
existing object
can be
in
control
ie - brush etc.

who is in
control?

What is the goal of the agent — inform
|
take over
suggest

what is the goal of
the agent? inform?
take over? suggest?

insightsthoughts

if you can just get them to ~~enter~~ learn you
 by using it maybe give them something
 that will teach you something even if
 they don't want to engage with the future
 it embodies. Or if you give them smth
 that specifically sucks on purpose ~~that~~
 it will get a reaction out of them.
 man,

give the painters
 something to try even if
 they don't want to engage
 in the future it embodies.

insights/thoughts

give them something that
 specifically sucks on
 purpose to get a reaction
 of them.

insights/thoughts

Data to collect

End of day

% of healthy vs. unhealthy work

→ what was unhealthy?

→ compare to rest of days/weeks

→ what are your main problems?

→ how could you improve?

→

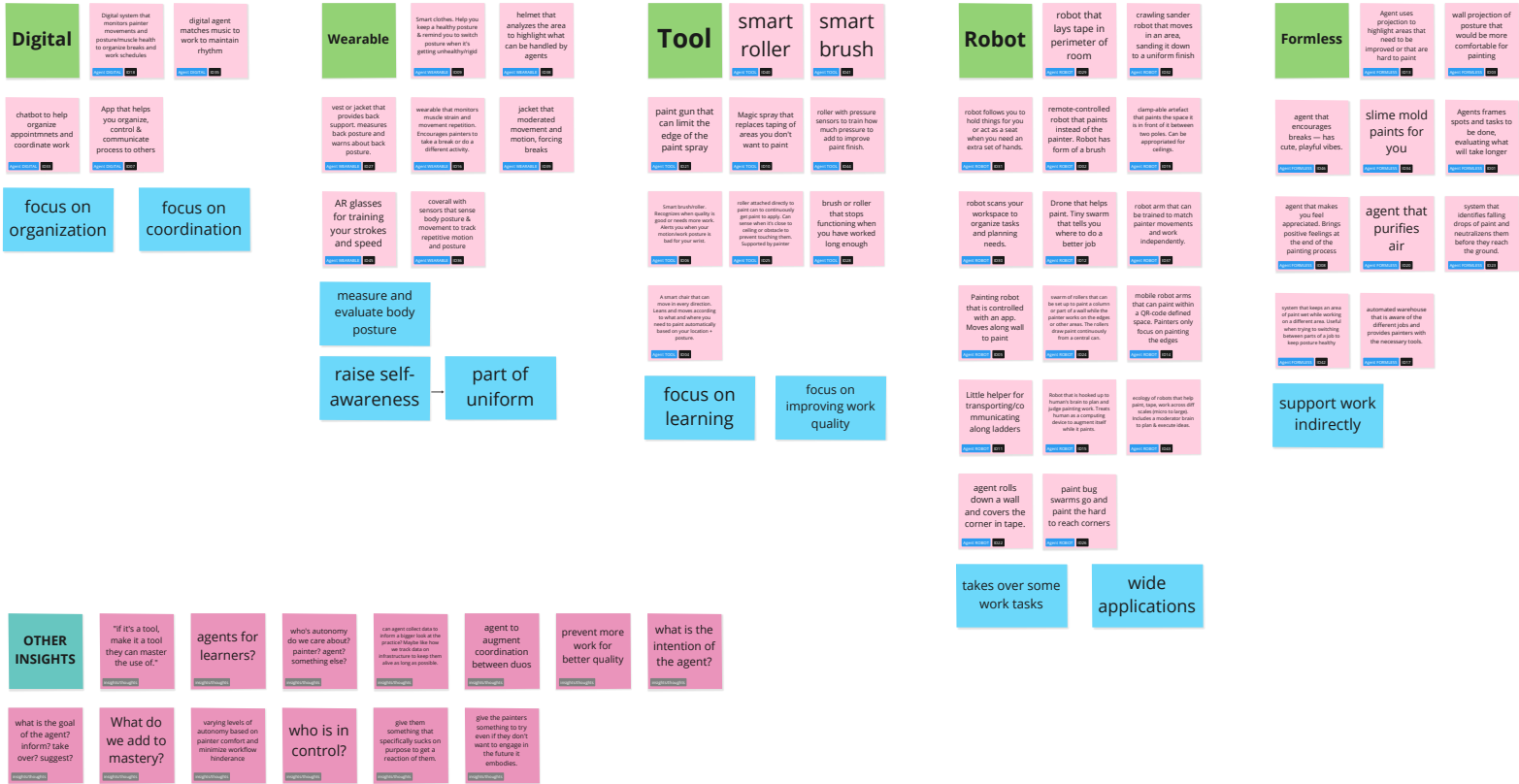
can agent collect data to inform a bigger look at the practice? Maybe like how we track data on infrastructure to keep them alive as long as possible.

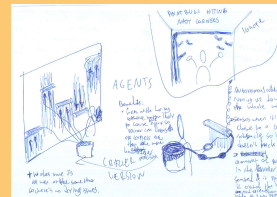
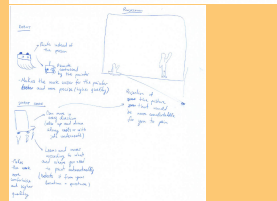
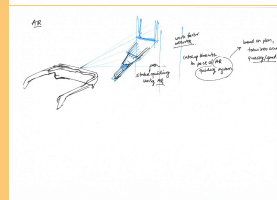
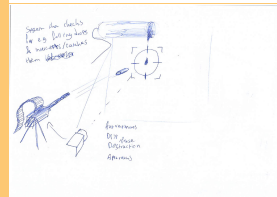
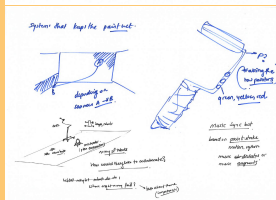
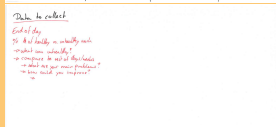
insights/thoughts

Appendix C2:

Brainstorming ideas clustered by agent morphology

Ideas sorted into Landscape of Agents





Appendix D1:
Clusters from Annotation Activity
to identify Design Concerns
related Human-Agent Collaboration

TASK COMPLEXITY

what's the added complexity?

added complexity with an app

would simplify the complexity of training an AI to detect wall borders precisely

added complexity to painting

added complexity to painting

what's the added complexity?

added complexity to the process

how does it add complexity?

agent must reduce workload

added complexity

how exactly does it make work easier for the painter?

TASK COMPLEXITY: how does the agent increase/decrease the complexity of painter tasks and activities?

EXPLANATION

What new steps does the agent add?

TASK_COMPLEXITY

What level of complexity is acceptable for the painter?

TASK_COMPLEXITY

How does the agent make the work easier for the painter?

TASK_COMPLEXITY

What new steps does the agent add?

TASK_COMPLEXITY

INTERACTION MODALITIES

Drone can generate air to speed the drying process

How can they be more than painters? space be more expressive (analog to assembly line workers knowing the product better)

How could painters use CUIs?

How can they donate their knowledge to improve the space overall, maybe with architects

temporal agent

3D print houses are in vogue. Big area, limited time, max utilization of area--lots of houses now lack the color. What if painting doesn't exist in the future?

their skills might have a second life -- and agents would be part of it too.

assist in the competence (control) human movement, preparation, use for detail, planning + execution of the painter's not in the act of painting? These are the skills that they can help the agents.

agents would augment these skills? Or use these skills for something else? COMPLEMENT THESE SKILLS

Very speculative

new patterns of painters that are not possible with humans

Genetically modified slime mold to paint a whole wall could be interesting

using the human as a battery -- bad

NEW INTERACTION MODALITIES: What are the ways a painter can interact with agents?

EXPLANATION

How should a painter control or interact with the agent?

INTERACTION_MODALITIES

BEYOND MASTERY ++ TRAINING

does the agent do something at the end of the waiting?

when does the agent become irrelevant? When the task is done, what's the role of the agent?

what if they're never sitting?

does the agent do something during this stage?

agent completely unrelated to painting job

what do painters do while paint dries?

agent comes into work in certain phases

what could be the secondary use of agents?

Good for learning how to paint in specific techniques

might be good for inexperienced painters

What should an agent do when it's not being used?

PLANNING+DELEGATION

BEYOND_MASTERY

How much training is needed to use the agent?

TRAINING

How can the agent grow with the painter?

BEYOND_MASTERY

TRAINING

PAINTER WELLBEING

push self-awareness

increase self-awareness

how does it reduce back problems?

Microemotions in the timeline of painting itself

how does it reduce back problems?

considering mental wellbeing

are these wearables natural for painters?

how does it make the work easier for the painter?

what hereditary problems do painters have?

self awareness

build personal knowledge

push self-awareness

safely restraining painters?

what health concerns do we care about?

Wellbeing of the painter

how do we get painters to act on it?

less maintenance

The effects of breathing paint and other materials is a healthcare issue that is not talked that much

self-managing

This is something also not talked that much in healthcare for painters, the consequences of being outside painting for long times

Like a fitbit or the health app from the phone?

other idea: motivating painters to work in a fun way, give them challenges?

ease manual work

can the agent help build awareness, get me into the rhythm (mental wellbeing/healthier)

how efficient do the movements have to be for the painters? What's the benchmark for printing quality?

prioritize personal health over quickness

passive health

avoid being noticed -- "I Was trying to hide it" (smoking)

people like bending rules to some scale

Same as idea of the suit but this one would provide support

behavior change

using the human as a battery -- bad

mental wellbeing

personal health

AI checks pressure points?

PAINTER WELLBEING: how does the agent affect the painter's wellbeing?

PAINTER_WELLBEING

EXPLANATION

How can agent passively affect health?

PAINTER_WELLBEING

How does a painter build self-awareness?

PAINTER_WELLBEING

How does a painter build awareness of his work?

PAINTER_WELLBEING

What level of detail is needed to understand painter health?

PAINTER_WELLBEING

How can an agent increase self-awareness about health in the painter?

PAINTER_WELLBEING

How can agents actively affect health?

PAINTER_WELLBEING

How can an agent motivate a painter?

PAINTER_WELLBEING

QUALITY CONSIDERATIONS

inherent metric for quality?

track how much work done

does the agent check the work?

how does an agent judge good work?

review work?

judgement building -- getting better at understanding how paint might dry for example

How do we ensure quality?

how does it make the work easier for the painter?

how does it make the work more precise?

tool for learning quality

what sensors can it use to measure?

quality inspector by scanning the area, camera needed

how does it know what a comfortable posture is?

does it know that it is painting something different?

how does it evaluate what takes longer?

Drone can see in different light frequencies if the wall was well painted

how do you evaluate what takes longer

what does quality mean in these jobs?

how do painters value work?

QUALITY CONSIDERATIONS

EXPLANATION

How to explain if extra work is needed?

QUALITY_CONSIDERATIONS

AGENT_COMMUNICATIN

How does the agent evaluate quality?

QUALITY_CONSIDERATIONS

PRACTICAL + IMPLEMENTATION CONSIDERATIONS

inherent metric for quality?

quality judgmentspractical/implementation c...

Walking up and down stairs is difficult with tools on hand because you want to grab the ladder with your hands for support

practical/implementation c...

AI would need previous training to know what is a good posture

practical/implementation c...

non-destructive way to understand thickness of layer

practical/implementation c...

If its something by AI it should already know the settings of the surface to paint without the user having to input them

practical/implementation c...

based on thickness there might be a nice prediction of time to settle

practical/implementation c...

Finishing depends a lot on the surface, tool would need to be adaptable to different surfaces

practical/implementation c...

how to integrate sensors comfortably.

practical/implementation c...

what is the best posture for a position?

practical/implementation c...

How do we ensure quality?

quality judgmentspractical/implementation c...

other parameters to understand paint

practical/implementation c...

how is the chair controlled?

practical/implementation c...

how does it make the work more precise?

quality judgmentspractical/implementation c...

I Dont see the relevance of AI here since it can be done by simple coding

practical/implementation c...

what sensors can it use to measure?

quality judgmentspractical/implementation c...

There would still need to be some scanning before to know the area of painting

practical/implementation c...

how is it maintained?

practical/implementation c...

It does more comfortable but doe sit reach the correct position for the painter to reach the spot

practical/implementation c...

Surface recognition step missing

practical/implementation c...

how to switch between training and using

practical/implementation c...

how to maintain?

practical/implementation c...

Like a fitbit or the health app from the phone?

practical/implementation c...painter wellbeing

How does it sense?

practical/implementation c...

painter's job should not be changed

practical/implementation c...new practices/variety

AI detection of spots to cover?

practical/implementation c...

how do we get them in place?

practical/implementation c...agentic systems/swarms

needs to scan

practical/implementation c...

what external knowledge does the agent need to identify spots?

practical/implementation c...

does it know that it is painting something different?

quality judgmentspractical/implementation c...

does it have different settings for different paints

practical/implementation c...

Drone can see in different light frequencies if the wall was well painted

quality judgmentspractical/implementation c...

added complexity cannot drastically change the job

practical/implementation c...new practices/variety

It would need some kind of strap in front to reach ergonomic position

practical/implementation c...

how does it sense to act?

practical/implementation c...

what is it painting?

practical/implementation c...

how is it cleaned?

practical/implementation c...

tape sticking snail kind-of robot?

practical/implementation c...new practices/variety

better from the perspective of painters

practical/implementation c...new practices/variety

as a tool sharing service?

practical/implementation c...planning

measurement and sensor based assistance

practical/implementation c...

It is far more feasible than a robot that magically attaches to walls

practical/implementation c...

Why not use an adjustable arm that distributes paint equally

practical/implementation c...

Not needed to have the shape of a human arm, it might be more efficient to just have a straight pole

practical/implementation c..._form

AI could be used to supply the roller with equal paint on all sides

practical/implementation c...

How does it scan the area that it is going to paint?

practical/implementation c...

how portable would this be?

practical/implementation c...

Pre scan of the area is not necessary but intermediate and final scans are

practical/implementation c...

Paint is heavy so the arms would have to support the paint roller

practical/implementation c...

how adjustable is it?

practical/implementation c...

Platforms that connect painters with places that need to be painted already exist

practical/implementation c...planning

how is this cleaned by the painter?

practical/implementation c...

Really nice, really useful for those painters in ladders that constantly have to put their tools up and down

practical/implementation c...

effective & efficient

practical/implementation c...

AI checks pressure points?

practical/implementation c...painter wellbeing

you can create neural networks with cells but programming would be easier

practical/implementation c...

automated planning

practical/implementation c...planning

How is the agent built?

IMPLEMENTATION_CONCE...

What sensors does the agent need?

IMPLEMENTATION_CONCE...

What technologies does the agent require to work?

IMPLEMENTATION_CONCE...

How is the agent mantained?

IMPLEMENTATION_CONCE...

How is the agent repaired?

IMPLEMENTATION_CONCE...

How can the agent be stopped?

IMPLEMENTATION_CONCE...

How ergonomic should the agent be?

IMPLEMENTATION_CONCE...

How portable is the agent?

IMPLEMENTATION_CONCE...

What new technologies are involved in making the agent?

IMPLEMENTATION_CONCE...

Goes well with what the people at the material driven lab here in IDE are doing

_material + tech innovations

new chemical processes

_material + tech innovations

how does it know what a comfortable posture is?

quality judgments_material + tech innovations

Genetically modified slime mold to paint a whole wall could be interesting

new practices/varietypainter wellbeingnew modalities for intera..._material + tech innovations

using the human as a battery -- bad

new practices/varietypainter wellbeingnew modalities for intera..._material + tech innovations

how to connect to a human brain?

_material + tech innovations

PLANNING AND TASK DELEGATION AND PAINTER AGENCY

helps future planning; sensitizing task delegation planning	AR review of next job task delegation planning	Gamification of planning tasks task delegation planning	Already in the market, any scheduling app that has feature to share it. It is specifically for painters does it really add that much value? Why create an app when you can just create a template of an already existing schedule. task delegation planning	Preparation work could be automated task delegation planning	focus on work and less on communication? task delegation planning	What are the phases that painters want to automate? task delegation planning	helps future planning; sensitizing task delegation planning	AR review of next job task delegation planning	prioritizing work tasks task delegation planning	help prioritize work task delegation planning	+1 planning task delegation planning	planning the process task delegation planning	used by foremen task delegation planning
how to plan with it? task delegation planning	point of interest assistance augmentation → based on phase of work, what's the most important place where the agent could assist task delegation planning	Preparation work could be automated task delegation planning	drone to prep with? task delegation planning	assist in prep process task delegation planning	as a tool sharing service? task delegation planning	Gamification of planning tasks task delegation planning	agents can help with hassle of prep work. Moving furniture, localized sanding, cleaning, prep work task delegation planning	assist in prep work task delegation planning	Platforms that connect painters with places that need to be painted already exist task delegation planning	automated planning task delegation planning	AI for inspiration or controlling the painters result? task delegation planning	This is interesting. AI scans the room and elaborates the most efficient plan to paint and dry (taking into account amount of windows, ventilation systems, etc.) task delegation planning	AR review of next job task delegation planning
Gamification of planning tasks task delegation planning	planning the process task delegation planning	automated planning task delegation planning											

delegation of control? task delegation	AR review of next job task delegation planning	Gamification of planning tasks task delegation planning	Already in the market, any scheduling app that has feature to share it. It is specifically for painters does it really add that much value? Why create an app when you can just create a template of an already existing schedule. task delegation planning	Preparation work could be automated task delegation planning	focus on work and less on communication? task delegation planning	What are the phases that painters want to automate? task delegation planning	helps future planning; sensitizing task delegation planning	prioritizing work tasks task delegation planning	how to build a shared mental model? task delegation planning	help prioritize work task delegation planning	+1 planning task delegation planning	planning the process task delegation planning	reminds me of US drone pilots task delegation planning
used by foremen task delegation planning	what moderation tasks do painters do right now? task delegation planning	most important or detailed part task delegation painter agency	how to plan with it? task delegation planning	point of interest assistance augmentation → based on phase of work, what's the most important place where the agent could assist task delegation planning	Preparation work could be automated task delegation planning	drone to prep with? task delegation planning	removing extra work task delegation painter agency	how does it add complexity? task delegation	prevent more work (cleaning after) task delegation painter agency	agents can help with hassle of prep work. Moving furniture, localized sanding, cleaning, prep work task delegation planning	delegation of control task delegation	assist in prep work task delegation planning	can an agent be a painter be it else? task delegation
AI for inspiration or controlling the painters result? task delegation planning	This is interesting. AI scans the room and elaborates the most efficient plan to paint and dry (taking into account amount of windows, ventilation systems, etc.) task delegation planning	AR review of next job task delegation planning	Gamification of planning tasks task delegation planning	planning the process task delegation planning									
tensions painter agency	How much effort does the user still need to put before finishing plays a big role on motivation painter agency painter effort	takes away the human artistic element? painter agency	track how much work done task delegation painter agency	a new degree of separation from the work painter agency remote working	Why do they like their job as painters? painter agency	painters have control over the conclusion painter agency	what would be the best pattern to follow (determined by algorithm + painter) → compare together to show competence painter agency agent feeling + painter	most important or detailed part task delegation painter agency	good in the sense that the finishing is left to the humans. They have the right to the final call painter agency	Still does the manual work painter agency	looking for forms of self-expression painter agency		

TASK PLANNING + DELEGATION: Agents helping plan tasks and processes PLANNING+DELEGATION EXPLANATION	How does an agent plan for work tasks? PLANNING+DELEGATION	What does the agent prioritize when planning actions? PLANNING+DELEGATION
What level of control over planning does the painter want to keep? PLANNING+DELEGATION	PAINTER AGENCY: how does the agent affect the painter's agency? PLANNING+DELEGATION PAINTER_AGENCY EXPLANATION	Can the painter work on their favorite tasks? PLANNING+DELEGATION PAINTER_AGENCY
When does the painter have to follow the agent or system? PLANNING+DELEGATION PAINTER_AGENCY	Is the painter still connected to the tasks and work? PLANNING+DELEGATION PAINTER_AGENCY	Does the painter still have control of the end result? PLANNING+DELEGATION PAINTER_AGENCY
When can an agent be overridden? PLANNING+DELEGATION		

EMERGING PRACTICES + JOB VARIETY

support repetitive carrying tasks new practices/routine	Fun for motivation new practices/routine	How could painters use CUIs? new practices/routine	what does it mean to collaborate with the agent? new practices/routine	specialist tool like a hammer or a driver bit new practices/routine	beyond assisting to contestational; pose diff views than painters new practices/routine	painter's job should not be changed practical implementation + new practices/routine	more debate on decision making; diff beast new practices/routine	gun blasts rhythmic paint splats to the wall → diff paint jobs new practices/routine	new specializations on patterns new practices/routine	can this be a fun part of the process? new practices/routine	agents create new patterns new practices/routine	added complexity cannot drastically change the job practical implementation + new practices/routine	co creation of painting with AI? why paint using actual paint when there are already AI services that create works of art in seconds? new practices/routine
Fun for motivation new practices/routine	solve a real problem rather than augmenting simple decisions new practices/routine	tape sticking snail kind-of robot? practical implementation + new practices/routine	better from the perspective of painters practical implementation + new practices/routine	other idea: motivating painters to work in a fun way, give them challenges? new practices/routine painter wellbeing	can the agent help build awareness, get me into the rhythm (mental wellbeing/healthier) new practices/routine painter wellbeing	agent must reduce workload task complexity new practices/routine	specialist tool? new practices/routine	can mastering a tool help them see the process differently? new practices/routine	fitting into the workflow is maybe hard new practices/routine	organizational support new practices/routine	3D print houses are in vogue. Big area, limited time, new validation of area → lots of houses now look the same. What if painting doesn't need in the future? new practices/routine new modalities for ideas	their skills might have a second life -- and agents would be part of it too. new practices/routine new modalities for ideas	assist in the competence (control/human movement, preparation, eye for detail, planning) → essential of the painter's role in the act of painting? There are the skills that they can help the agents. new practices/routine new modalities for ideas
agents would augment these skills? Or use these skills for something else? COMPLEMENT THESE SKILLS new practices/routine new modalities for ideas	Very speculative new practices/routine new modalities for ideas	AI for inspiration or controlling the painters result? new practices/routine task delegation	what does it add beyond mastery? new practices/routine	new patterns of painters that are not possible with humans new practices/routine new modalities for ideas	Genetically modified slime mold to paint a whole wall could be interesting new practices/routine painter wellbeing	full automation new practices/routine	high levels of planning and execution, minimized physical (human) limits new practices/routine	using the human as a battery -- bad new practices/routine painter wellbeing					

How does an agent change the practice? PRACTICES+ROUTINE	How can an agent change the routine of the painter? PRACTICES+ROUTINE	What opportunities for variety does the agent provide? PRACTICES+ROUTINE	What new patterns/techniques can the agent create? PRACTICES+ROUTINE	How does the agent motivate painters? PRACTICES+ROUTINE
--	---	--	--	---

REMOTE WORKING

extending presence

REMOTE_WORKING

Range of where the painter can be, so it could not be done completely remotely

REMOTE_WORKING

a new degree of separation from the work

REMOTE_WORKING

reminds me of US drone pilots

REMOTE_WORKING

Working from home?

REMOTE_WORKING

How present does the painter need to be to agent?

REMOTE_WORKING

How in touch to the materials do the painters remain?

REMOTE_WORKING

FORM CONSIDERATIONS

temporal agent

time of influence agent at
user modulation for error
...form

existing stand/sit chair.

...form

Not needed to have the shape of a human arm, it might be more efficient to just have a straight pole

functional implementation
...form

What archetype should the agent be?

MULTI-PAINTER INTERACTIONS WITH AGENTS

clothes show the quality (good bad) of the collaboration

MULTI-PAINTER_INTERACTIONS

Two people could switch depending on what the AI tells them is a good painting spot for the posture they need to adapt

MULTI-PAINTER_INTERACTIONS

can influence behavior

MULTI-PAINTER_INTERACTIONS

allowed for shared space within painters

MULTI-PAINTER_INTERACTIONS

possible two-people interactions? A check-in point: between two people moving things

MULTI-PAINTER_INTERACTIONS

How can an agent bring together the painters?

PAINTER+PAINTER_INTERACTIONS

AGENT FAILURES + CORRECTIONS

how can we override the agent?

AGENT_FAILING + CORRECTION

what would be the best pattern to follow (determined by algorithm + painter) -> compete together to show competence

AGENT_FAILING + CORRECTION

how is conflict resolved here?

AGENT_FAILING + CORRECTION

how do we correct these agents?

AGENT_FAILING + CORRECTION

how do we deal with the fuck ups?

AGENT_FAILING + CORRECTION

how do we know it's failing?

AGENT_FAILING + CORRECTION

What can be done when the agent fails?

AGENT_ERRORS

How can an agent be trained?

AGENT_ERRORS

How forgiving are the agents to error?

AGENT_ERRORS

How can an agent be corrected?

AGENT_ERRORS

where will agent fail?

AGENT_FAILING + CORRECTION

how to make up for failing agents? Can we correct?

AGENT_FAILING + CORRECTION

how does the painter stop this if it goes wrong?

AGENT_FAILING + CORRECTION

how to regain control?

AGENT_FAILING + CORRECTION

finetune control

AGENT_FAILING + CORRECTION

how do we recommend alternative actions?

AGENT_FAILING + CORRECTION

what happens when they go rogue?

AGENT_FAILING + CORRECTION

AGENTIC SYSTEMS (SWARMS?)

multiple tools could work together to make this happen (glasses + brush)

AGENTIC_SYSTEMS/SWARMS

communication between robots

AGENTIC_SYSTEMS/SWARMS

how do we correct this?

AGENTIC_SYSTEMS/SWARMS

How many bugs are we talking about?
More bugs ends up leading to more complexity for their painter

AGENTIC_SYSTEMS/SWARMS

How can an agent be part of a swarm?

AGENT_SYSTEM

How independent should an agent be from other agents?

AGENT_SYSTEM

multi-robot systems don't hit the gut

AGENTIC_SYSTEMS/SWARMS

how do we get them in place?

AGENTIC_SYSTEMS/SWARMS

swarm behavior

AGENTIC_SYSTEMS/SWARMS

resource management concerns -- electronics & tech

AGENTIC_SYSTEMS/SWARMS

How to manage resources with multiple agents?

AGENT_SYSTEM

How do agents in a system communicate with each other?

AGENT_SYSTEM

swarm - like behavior

AGENTIC_SYSTEMS/SWARMS

One agent that controls the other agents

AGENTIC_SYSTEMS/SWARMS

does it have to be communicated to the humans?

AGENTIC_SYSTEMS/SWARMS

an ecology of agents

AGENTIC_SYSTEMS/SWARMS

How is conflict managed between agents?

AGENT_SYSTEM

swarm behavior

AGENTIC_SYSTEMS/SWARMS

distributed action

AGENTIC_SYSTEMS/SWARMS

what happens when they go rogue?

AGENTIC_SYSTEMS/SWARMS

UNUSED

what kind of peripheral activities do painters engage in while painting (music, chat, smoke?)

business model

How much effort does the user still need to put before finishing plays a big role on motivation

business model business value

What happens after training?

business model

improve craft skills

business model

how to build a shared mental model?

business model user engagement

tool for learning

business model

painters can add their own filters on what they share

business model

why do we want to keep the paint wet?

business model

feasibility

business model

Sends a message to your phone

agent communication

SOCIETAL AND BUSINESS CONSIDERATIONS

How could agents change buiseness model?

business model

How could agents help get more money?

business model

financial incentives

business model

what if they don't want to be sustainable; or they don't care

business model

If agents act as an army group, will people choose people or agents?

social perception business model

agents can help painters get more jobs by being fast!

social perception business model

agents can help with hassle of prep work. Moving furniture, localized sanding, cleaning, prep work

task delegation business model

if agent is convenient enough, we can have walls changing so often

social perception business model

use some credit system to force constraints

business model

sustainability as a main focus in this area

business model

how does societal perception of the practice change with agents?

social perception

If agents act as an army group, will people choose people or agents?

social perception business model

agents can help painters get more jobs by being fast!

social perception business model

agents can help with hassle of prep work. Moving furniture, localized sanding, cleaning, prep work

task delegation business model

if agent is convenient enough, we can have walls changing so often

social perception business model

How to adjust the business model of painting?

DATA + PRIVACY CONCERNS

how might it be abused by foremen or company?

data + privacy concerns

How can they donate their knowledge to improve the space overall; maybe, with architects

data + privacy concerns data considerations for users

focus on recommendation

data + privacy concerns

what is the consent system for the painters

data + privacy concerns

how to keep data ethically?

data + privacy concerns

localized data intervention (breaks, posture change)

data + privacy concerns

how do we show them relevant information

data + privacy concerns

but also mental stress of being monitored

data + privacy concerns

who has access to wearable data?

data + privacy concerns

privacy questions for the data

data + privacy concerns

more questions of privacy and data ethics

data + privacy concerns

who benefits from the data (ideally the painters and their organization)

data + privacy concerns

resource management concerns -- electronics & tech

data + privacy concerns agent communication

what data do we collect, when do we collect it

data + privacy concerns

tracking movement to understand what they're doing -- privacy and invasiveness

data + privacy concerns

hurtful when data is analyzed and it speaks -- raw data is not too bad, but when analyzed and used for some end it becomes more likely to be hurtful

data + privacy concerns

how detailed is it? Can it be used against the painters?

data + privacy concerns

still concerns of data privacy

data + privacy concerns

privacy: data management & data storage

data + privacy concerns

SITUATED OR LOCALIZED DATA MANAGEMENT
car: front, familiar, back, local data center
DOES IT SOLVE THE PRIVACY PROBLEM?

data + privacy concerns

risks of privacy and invasiveness

data + privacy concerns

What data does the agent need to function?

How is the data collected by an agent managed?

Who can access the data used by agents?

ZONE OF INFLUENCE/ AGENT EFFECTIVENESS

agent completely unrelated to painting job

zone of influence/ agent of: beyond usability if second

prevent errors

zone of influence/ agent of:

temporal agent

zone of influence/ agent of: new modalities for reuse home

What conditions does the agent need to be effective?

What conditions does the agent need to be effective?

removing extra work

zone of influence/ agent of: task delegation

prevent more work (cleaning after)

zone of influence/ agent of: task delegation

does this work outside?

zone of influence/ agent of:

Appendix E1:
Initial storyboard for design
fiction

In a future w/
less painters,
we have to find
new ways to work...

by looping gif of
SW space.

Painters now work
w/ the help of several
robots & smart products
to stay healthy, effective
and productive

continue SW space.

Let's see what
that looks like

DARKNESS

(CITY SHOT)

A city in the netlworkds

looping ambient sound
of city

(street)



Matt is a yang painter. He's
been a painter for 8 years for
company [COMP NAME]

(BASE)



Matt arrives at base
where his friend is

ooo

Banker between the
two focused on
greetings day start

ooo

Foreman breaks down
job. Site cleaned, wood
inspected & glass fixed.

oooo

Job for day is focused
on sanding, painting &
finishing.

oooo

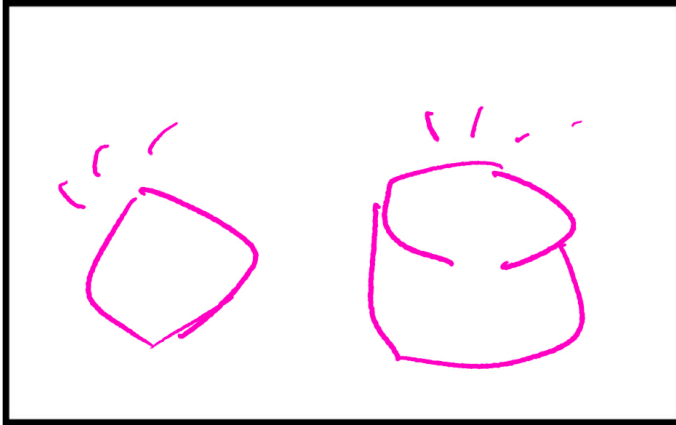
There is another
site in the afternoon.
So let's work fast & good.

oooo

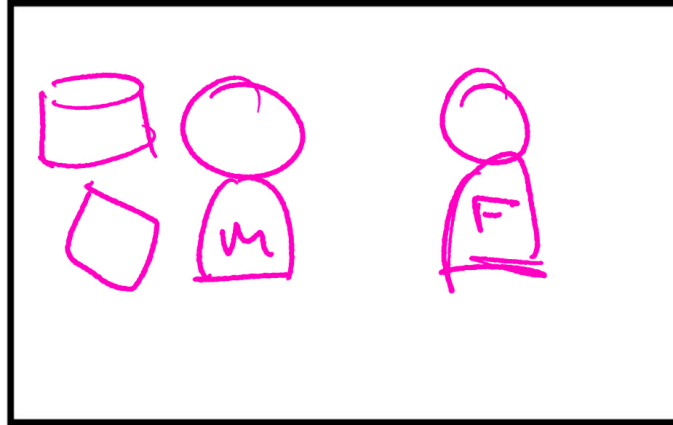
Don't forget your
tools & get to it.



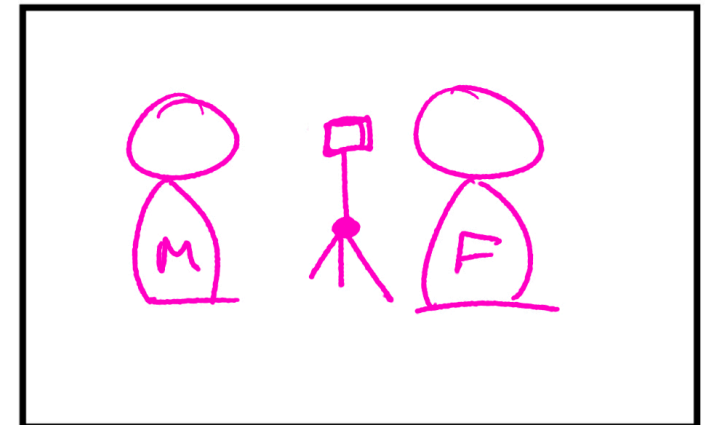
Matt slips on watch.



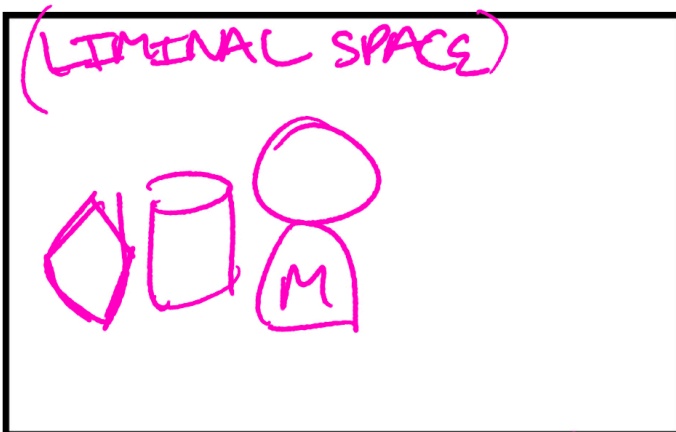
Asteryx + Obelyx
wake up. they start
floating



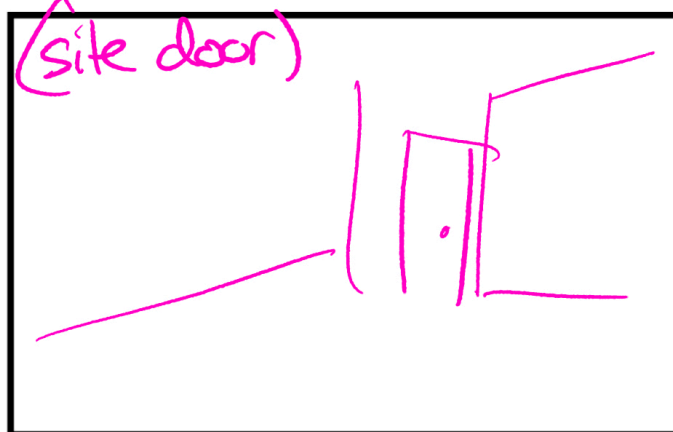
they float by Matt



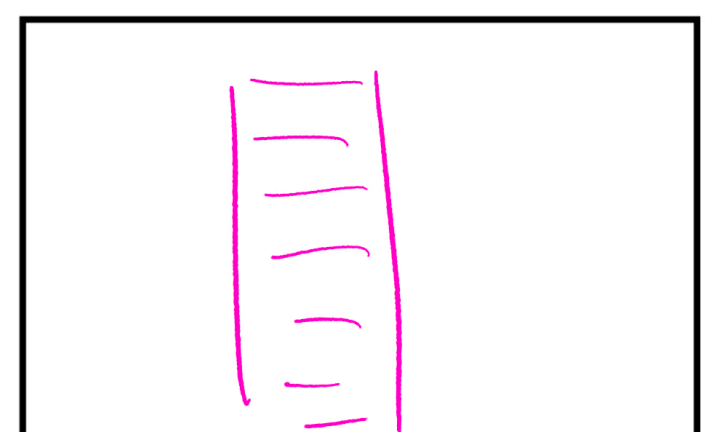
Foreman: And don't
forget the camera. The
boss wants us to keep good progress



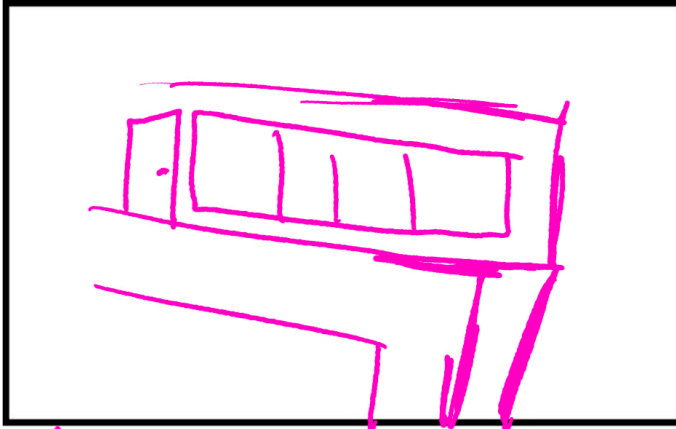
Matt leaves to side
holding camera and tripod
A/O float behind him



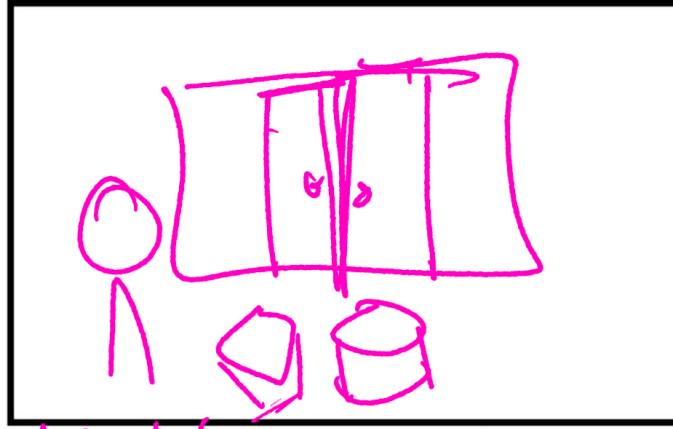
Matt at door, going
in



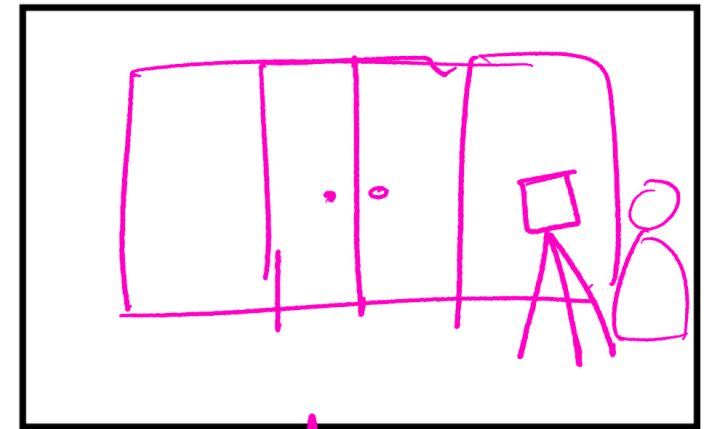
Matt going upstairs



Matt going outside



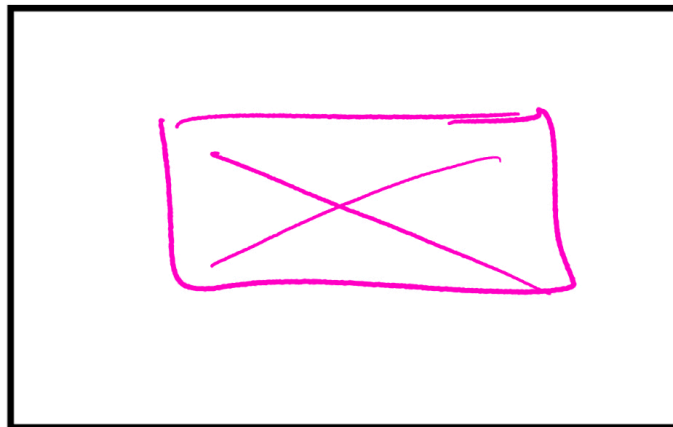
Matt arms
at site



Matt sets up
the camera



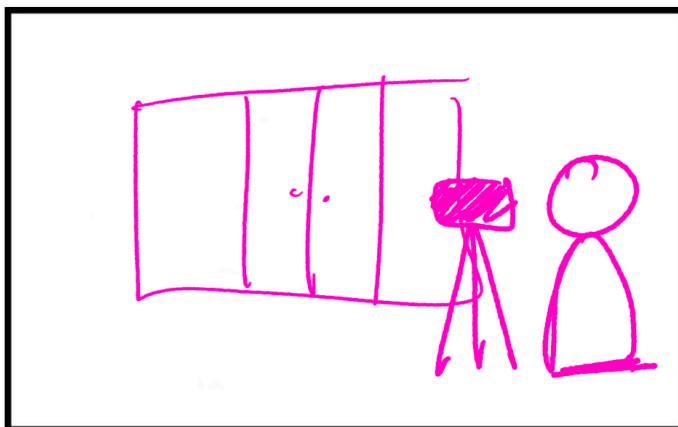
click sound



popup w/ camera
view. Green outline
around paintable surfaces



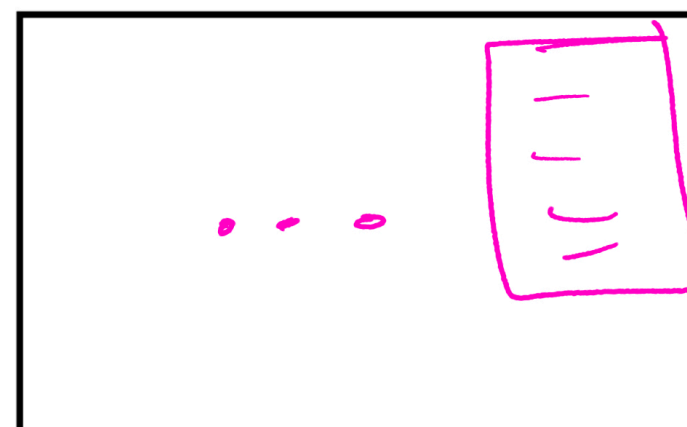
green light laser
scan ground
surfaces



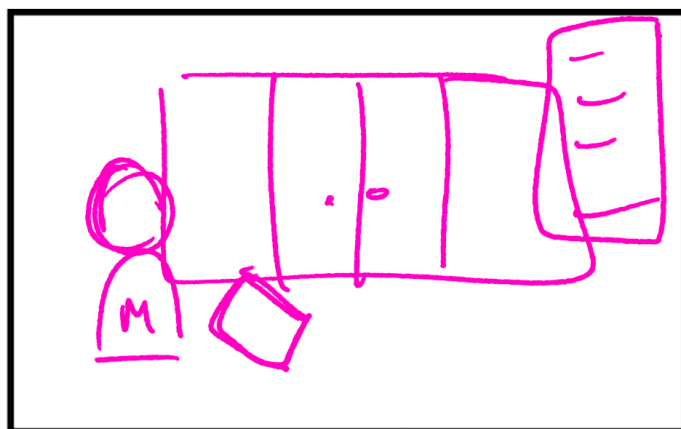
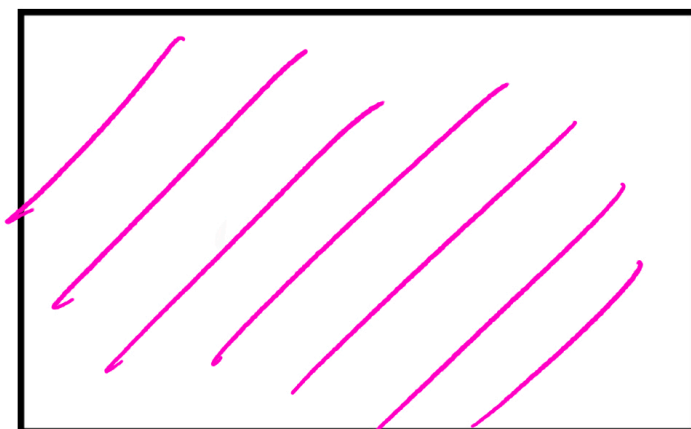
some processor/whirring
noise. back to site.



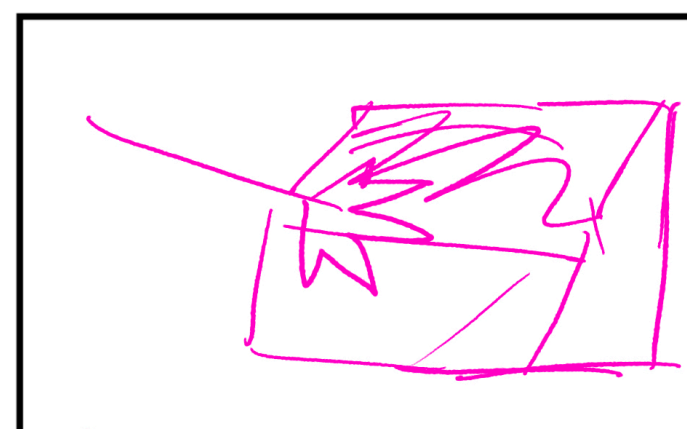
Camera says sth
about tasks. voice
is snarky/kassy (GPT)



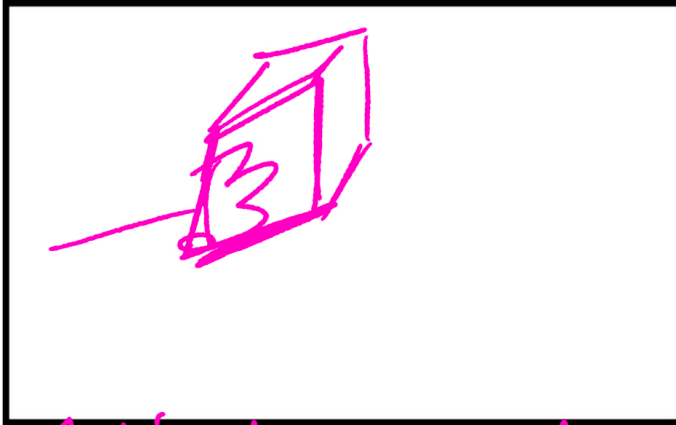
Matt agrees.



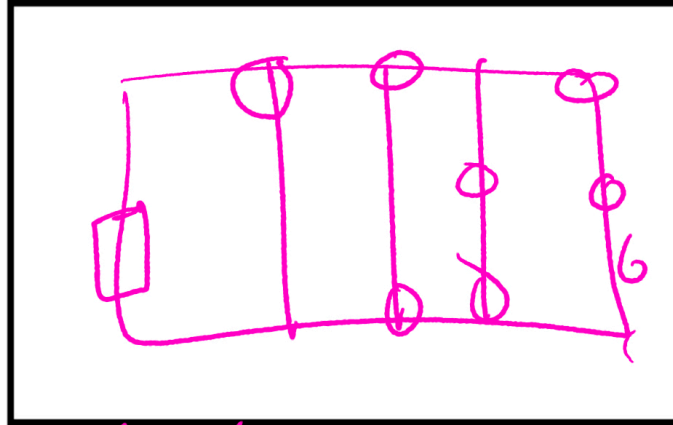
Matt is w/ Ast



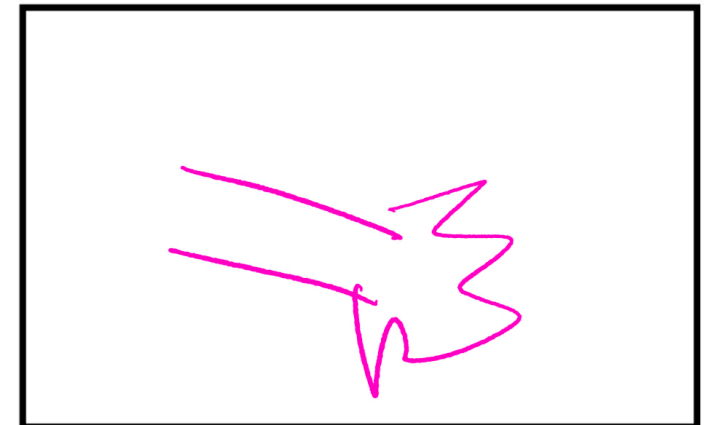
Matt reaches into Astro.



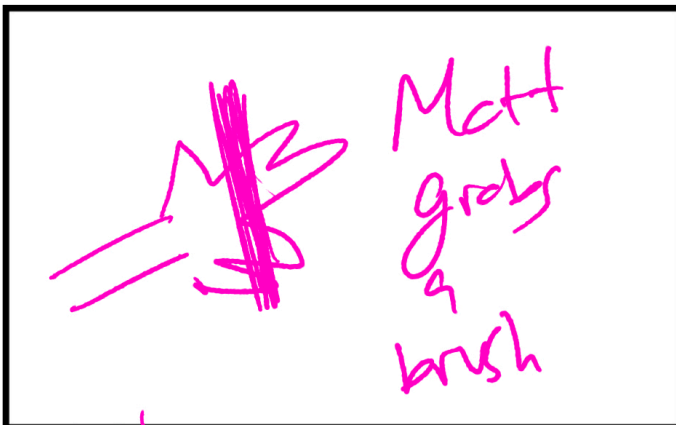
Matt has a sanding tool.



Matt works sanding diff spots (repeat a few shots) w/ brushing clean

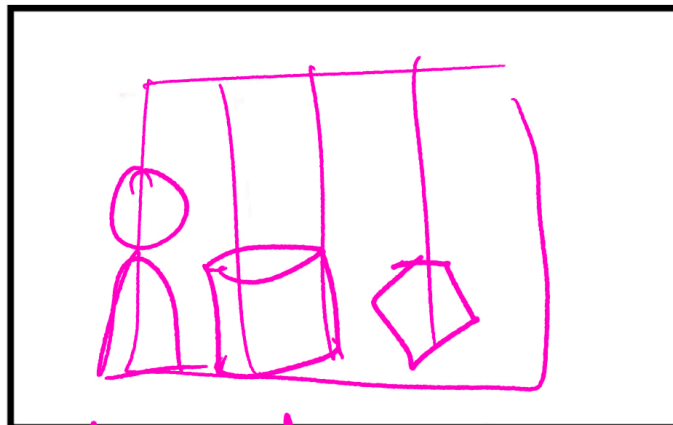


Matt reaches into Asteryx again



Matt grabs a brush

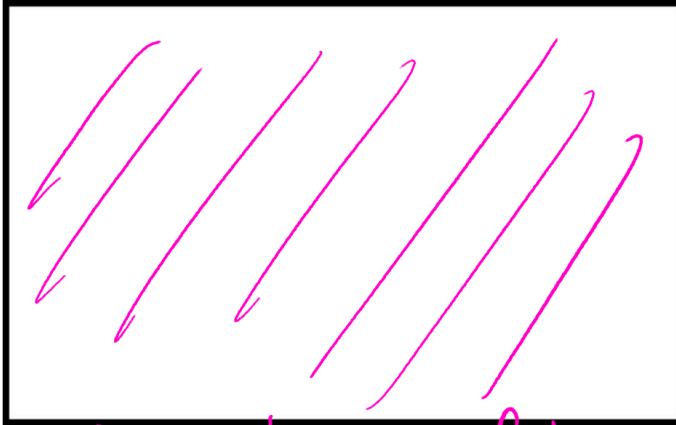
Matt grabs a brush



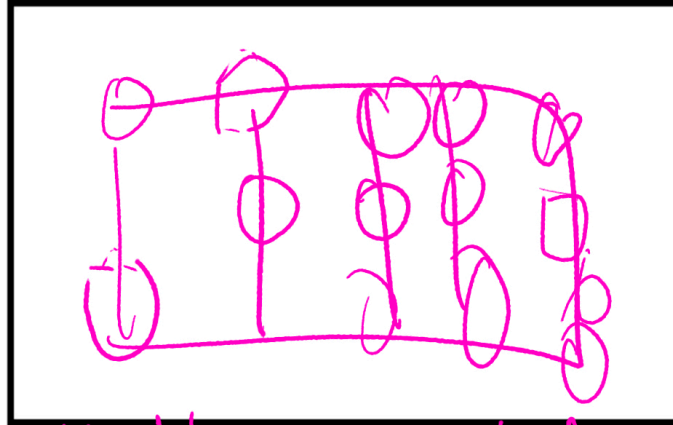
Matt dips into Obelix.



Matt starts painting



Some time later



Matt is painted
diff. pat.



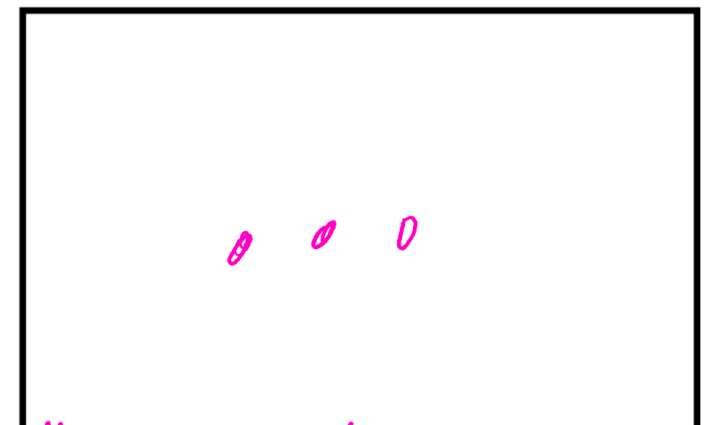
Every time he reaches
overhead his suit
changes color slightly



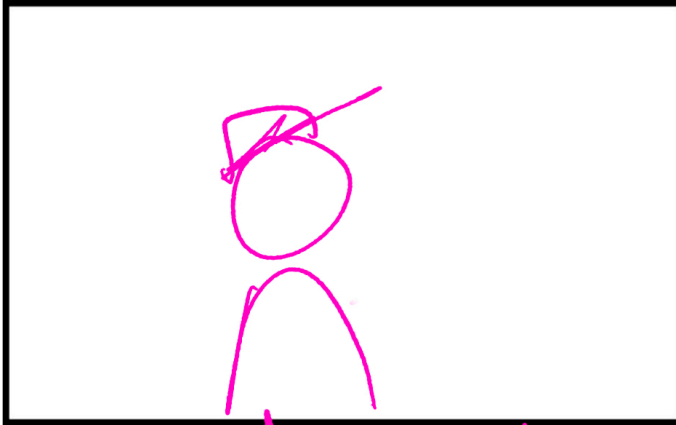
close up as it glows



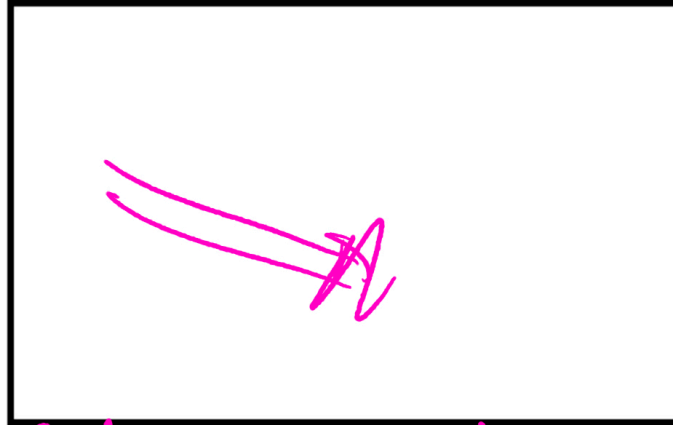
Matt's face scrunches
up.



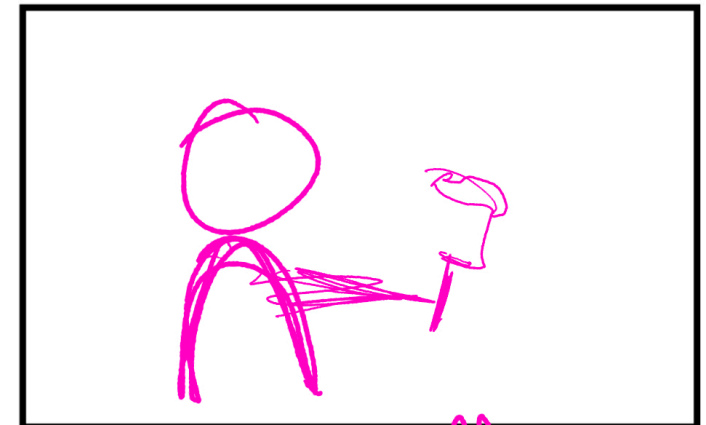
"Got it, Let's change it
up to finish faster"



Matt drops head



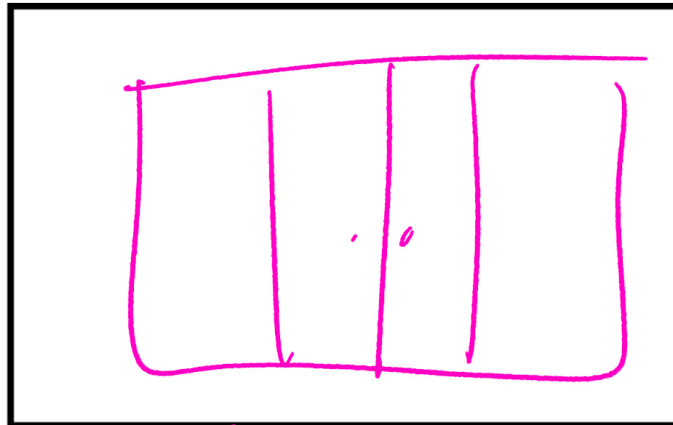
Returns brush to
Asteryx



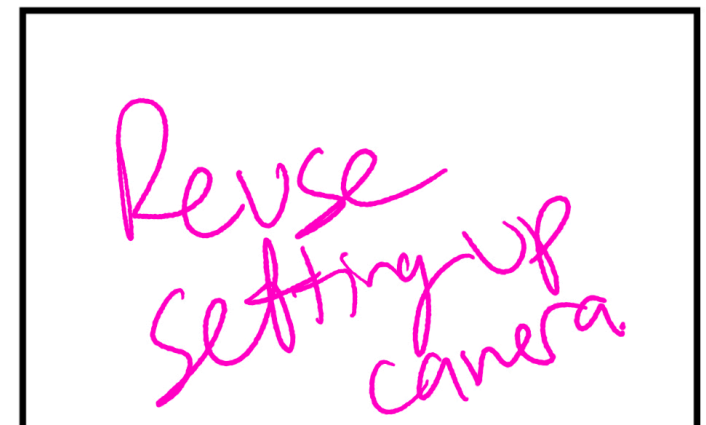
Matt is rolling
a roller from Arctox



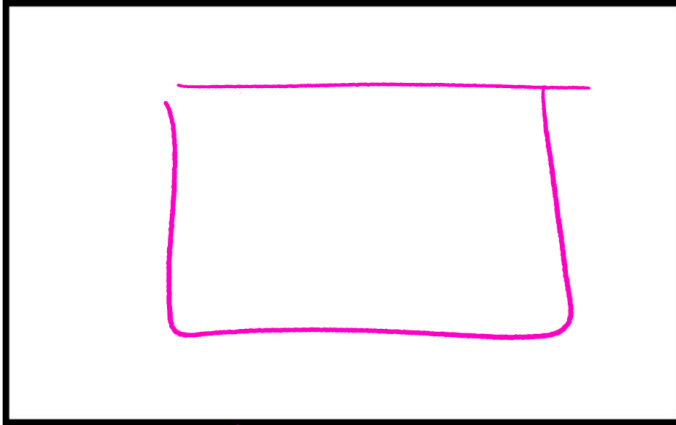
Matt returns to
painting w/ roller.



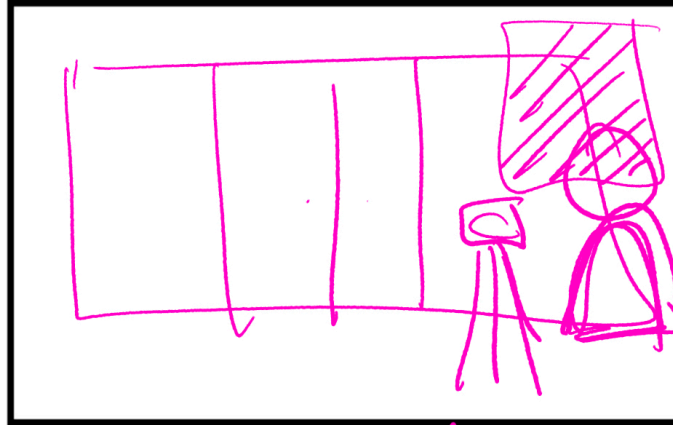
Matt finishes
painting the
rest of the
wall.



Reuse
setting up
camera



Camera does the same scene.



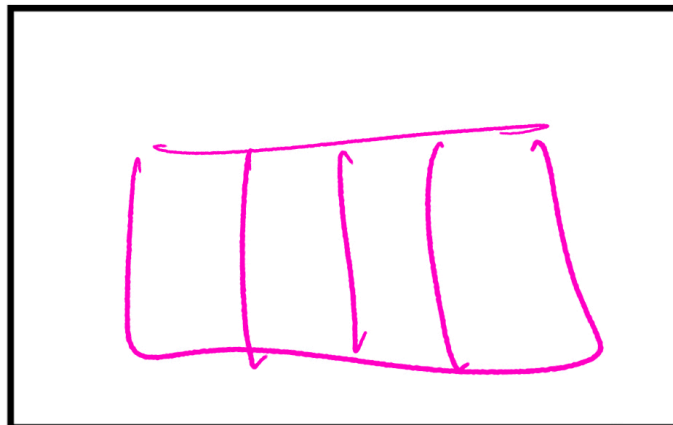
tasks are graded.
Camera comments on the quality
of the job-w/ roller



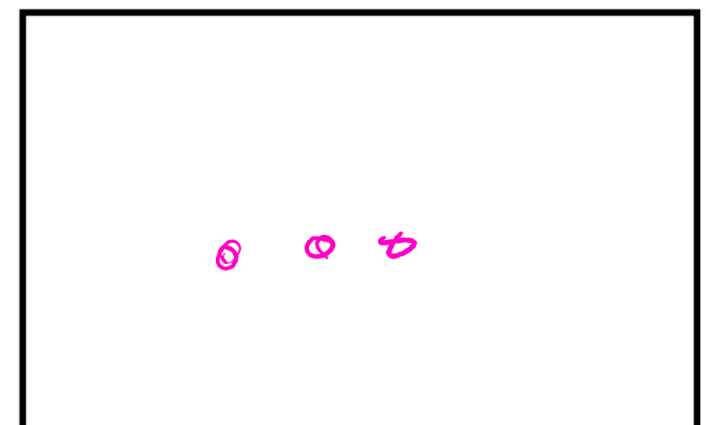
Matt should hurry
up. they need to
visit another part of the site ASAP



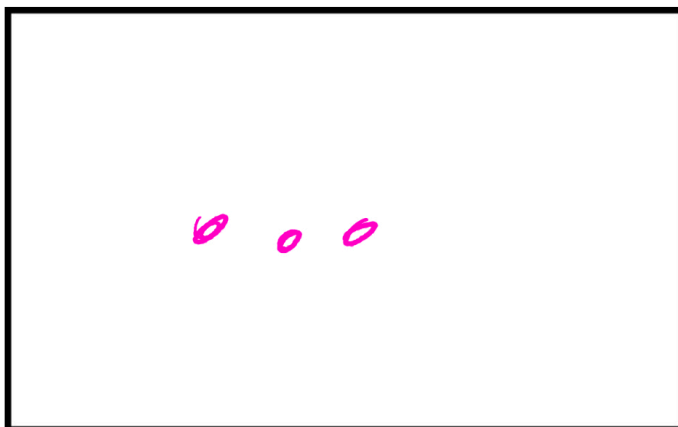
Another intermission
(some time later)



Matt is using brush
to add last layer
of paint/varnish.



he gets into a
bad pose.



As he paints, the
suit lights up.



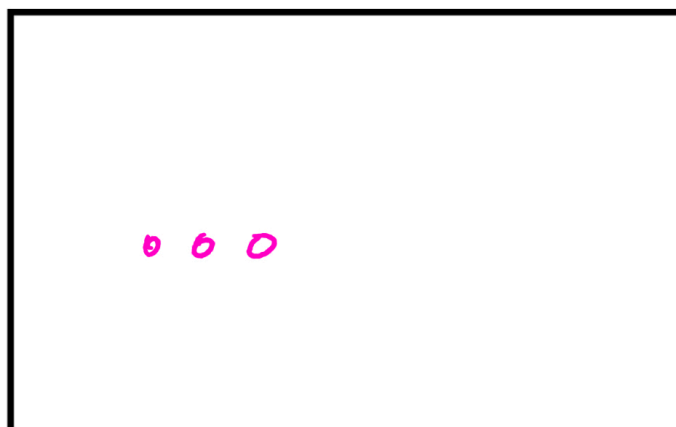
he ignores it. Suit
becomes red.



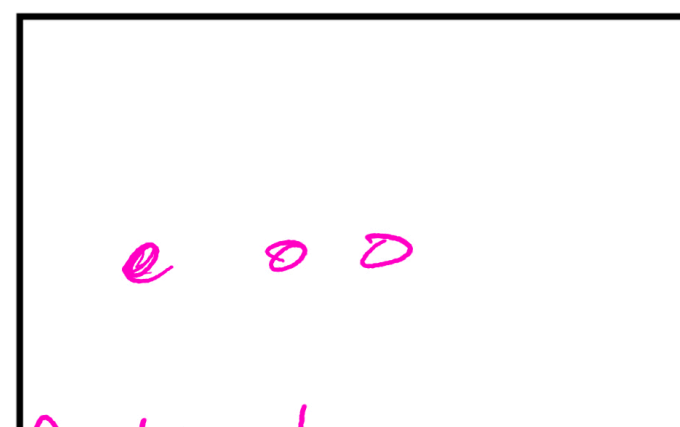
"No, No" I'm almost
done.



Suit tries flashing red



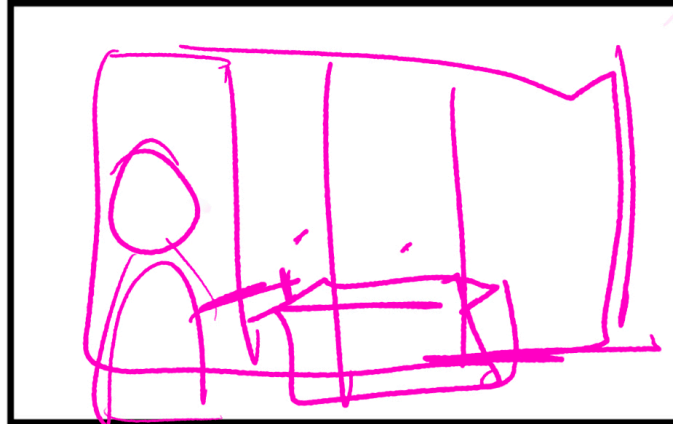
Matt touches suit



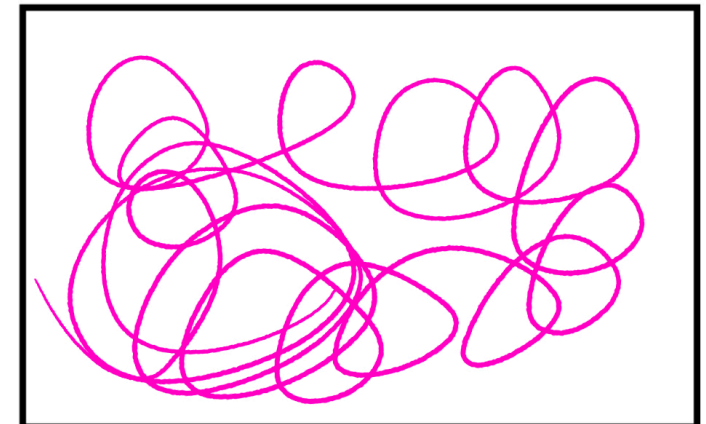
Lights turn off



Matt finishes the painting



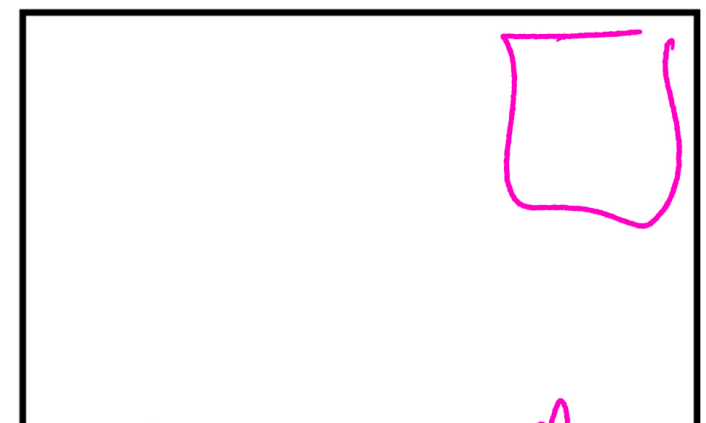
Matt steps back, dropping the brush in Astley's



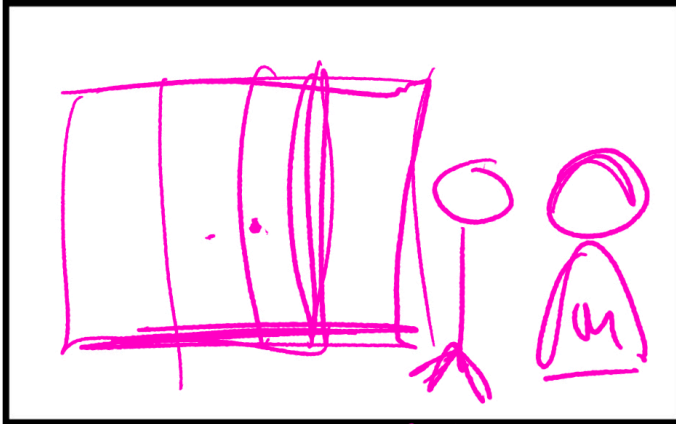
Intermission 3,



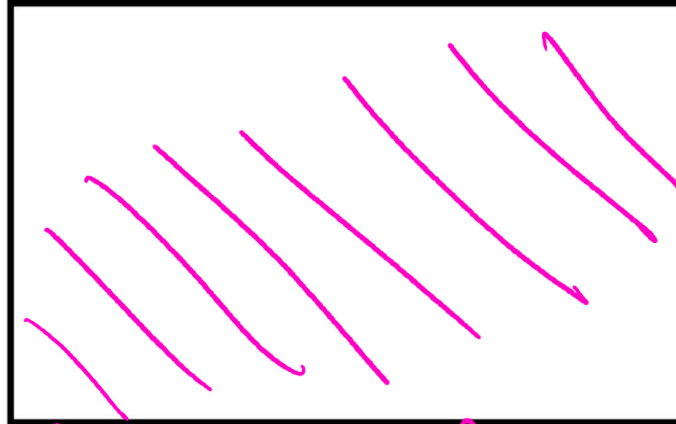
Camera scans
place



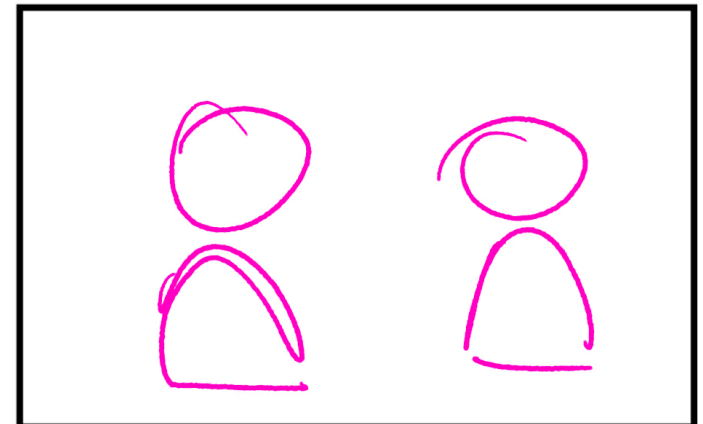
tasks are all
marked done



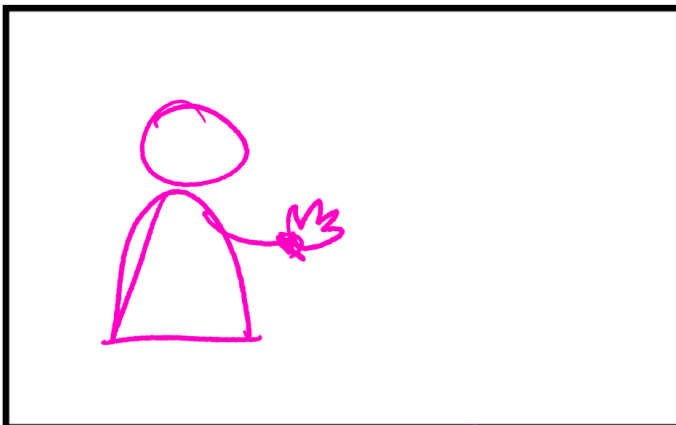
Camera congratulates
the painter & says it
will contact the foreman



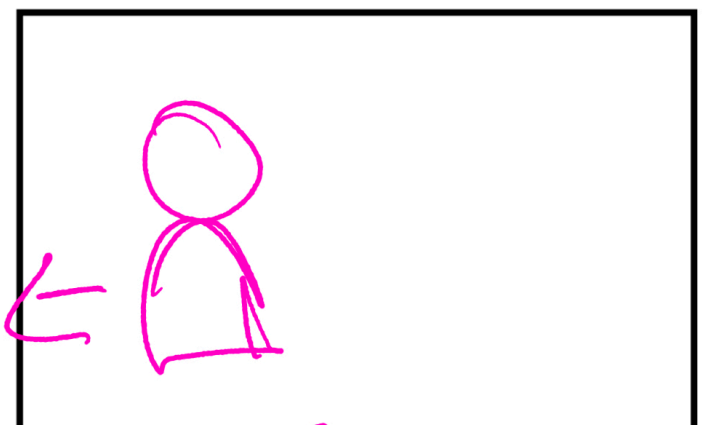
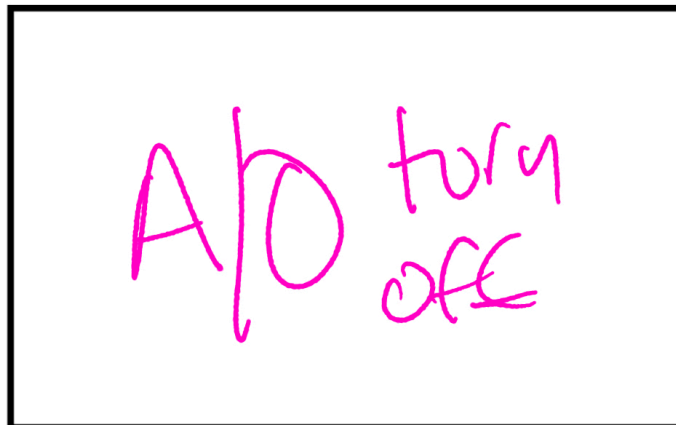
Some time later



Matt & Foreman talk
again about?



Matt takes off his
gloves.



Matt leaves

Appendix E2:

Script for design fiction

INTRODUCTION

Narrator

(Start with a backdrop to a futuristic story. Starry night or warp speed. Something like Star Wars.)

It's 2050, and there are not enough painters working. For every 20 painters that start their training, only one stays around. With fewer painters, tasks that were easy before are more demanding. Something had to be done to support the remaining painters.

(Show the tools of the show: the brush, the robots, the suit, the camera. They are silhouetted for now.)

Thanks to technological advances, painters can now work alongside robots and smart tools to restore, renovate, and improve buildings. They can maintain control of the outcome while being supported by these agents.

(Black screen)

This story focuses on one example.

SCENE 1: PREPARING FOR THE DAY

Narrator

(Show the base camp for a working site of painters.)

This story takes place in a small city in the Netherlands.

(Matt is now in frame)

And this is Matt. He is a painter with four years of experience working at Hoog+diep. He has just arrived at work, meeting with the foreman, Bas.

(Matt and Bas are both in the frame. Bas is holding his binder for all the projects.)

Bas

Good morning, Matt. All good with you?

Matt

Morning, bas. All good. With you?

Bas

Also good.

(Bas looks at his binder while he talks)

Let's start today, yes? We don't have so many hours left for this project. How are you getting on with work?

Matt

I should be okay. I'm only missing one big area. The weather got bad in the afternoon. I couldn't work. I should be able to finish today.

Bas

Ok. Then, we'll get ready to set up at the following location tomorrow. It's on the other side of town.

Good luck working. Don't forget to keep track of the progress. I need the pictures and data to share with the client later.

(Bas leaves frame)

Matt

All right. Time to go.

(Matt puts on a glove. There is a beeping sound)

Asteryx. Obelyx. Let's go.

(Two robots appear to the right of Matt. They hover slightly.)

Narrator

Asteryx and Obelyx are Matt's assistant robots.

(show a frame of just the robots floating, like a product showcase/sketch)

They carry tools and materials so that Matt can focus on painting. They follow him whenever he's wearing the glove. They will move out of his way but come near him whenever he needs something.

(cut to black)

Let's follow Matt as he works today.

SCENE 2: ARRIVING THE SITE

(Matt walks through a hallway and out a door to arrive at the scene.)

Narrator

Matt arrives at the last part of this project he needs to work on. He approaches the camera to get started with his day.

(Matt presses the camera button.)

(There is a noise of a machine waking up. The noise of a camera click follows it.)

Camera

Starting scan.

(Cut to the Camera's point of view. It's a black-and-white view of the scene. The camera scans the scene, highlighting the surfaces that still need to be worked on.)

(After the scan, we see Matt next to the camera. He is waiting to hear what it says)

Hey there, I need you to prioritize these tasks immediately. No delays. You were slow yesterday, so be faster today.

We're in luck; no wood rot to deal with. Start sanding immediately. After you finish that: primer and paint. Don't forget the varnish – we need a good-quality finish today.

Matt

Yeah, yeah... Yesterday wasn't my fault. It was raining half the day.

Camera

It will not rain today, so there are no excuses.

Matt

Ugh. Good to know. So: sand, prime, paint, varnish. The usual routine – got it.

SCENE 3: SANDING

(Matt is in front of the work. He reaches into Asteryx for his battery-powered sander and a brush.)

(Matt proceeds to sand the site)

Narrator

Matt quickly sands the entire surface using the next generation of power tools.

(Matt drops the tools in Asteryx.)

(Matt uses the camera again.)

(There is a noise of a machine waking up. The noise of a camera click follows it.)

Camera

Starting scan.

(Cut to the Camera's point of view. It's a black-and-white view of the scene. The camera scans the scene, highlighting the surfaces that still need to be worked on.)

(After the scan, we see Matt next to the camera. He is waiting to hear what it says)

Finished the progress scan. Sending data to foreman.

Narrator

(Cut to a frame showing the camera.)

Bas and other foremen at Hoog+diep use this camera to set tasks and observe progress on the different project sites.

Painters like Matt use this camera to scan the work site and detect significant issues, like wood rot, that could delay the work. The camera also creates a list of tasks and time estimates based on the desired quality for the overall project.

Painters make pictures every time they complete a task to check their progress and quality. Painters can only move on to the next task once the camera has approved the quality.

Camera

(Cut back to Matt next to the camera)

Good work so far. Don't slack off now.

Matt

Uh-huh. Whatever you say.

(Black screen)

SCENE 4: PRIME and PAINT

(Matt is now painting)

Narrator

Matt has already finished adding the primer and has been painting.

(Matt dipping his brush into Obelyx.)

As he works, he uses Obelyx to get more paint.

(Matt is painting in different areas.)

(Matt begins to reach higher. As he does so, his suit begins to glow light yellow around the shoulder and back.)

(Matt keeps painting, ignoring the glow, which is now a darker yellow.)

Narrator

(Cutaway to the suit framed)

Matt's suit is specially designed to measure his posture and exertion. The more he exerts a part of his body, the more the suit will glow. Along with the glow, the suit will start pulling back to encourage Matt to have a good posture. As the glowing color changes from yellow to orange to red, the pull of the suit gets stronger.

(Cut back to Matt reaching high. His suit is now glowing orange)

Matt

(Matt pulls back and touches his suit, almost patting it)

Yes, Yes! I'll stop! Let's finish with the roller.

(Cut to Matt having pulled a roller from Asteryx.)

Here we go.

(Matt resumes painting, using the roller this time.)

(Matt uses the camera again after he is done painting.)

(There is a noise of a machine waking up. The noise of a camera click follows it.)

Camera

Starting scan.

(Cut to the Camera's point of view. It's a black-and-white view of the scene. The camera scans the scene, highlighting the surfaces that still need to be worked on.)

(After the scan, we see Matt next to the camera. He is waiting to hear what it says)

Finished the progress scan. Sending data to foreman.

The quality started great and then got a bit worse. The client may not see it later, but I see you switched to a roller. They are fast, but the quality is less than the brush. I would ask you to fix it, but the client did not pay for more quality. It's good for now; move on to the next task.

Matt

Sure.

(black screen)

SCENE 5: VARNISH & SUIT

(Matt is painting again using the brush)

Narrator

(Matt paints in different poses. As he paints, we see him have bad posture again and again)

Later in the day, Matt works on the varnish and the finishing. He's getting closer to the end of the work here.

Matt

(Matt acknowledges the glowing and pulls from his suit but does not listen.)

Give me a bit more. I'm almost done.

(Matt continues to paint; he is crouching and working. The suit moves from yellow to orange to dark orange).

Don't be annoying. It's just two more minutes.

(Matt straightens up a bit and touches a button on the suit. The suit stops glowing and pulling.)

Finally.

Narrator

Painters can override the suit if it becomes too intrusive while working.

(Matt finishes painting slowly).

(Matt uses the camera again after he is done painting.)

(There is a noise of a machine waking up. The noise of a camera click follows it.)

Camera

Starting scan.

(Cut to the Camera's point of view. It's a black-and-white view of the scene. The camera scans the scene, highlighting the surfaces that still need to be worked on.)

(After the scan, we see Matt next to the camera. He is waiting to hear what it says)

Finished the progress scan. Sending data to foreman.

Good job. You finished everything just in time. I'll let the foreman know you were faster today too. As a reward, you can take me back now.

Matt

Why are you always so demanding? Let's go.

(The work site is now empty.)

(black screen)

SCENE 6: Leaving for the day

(Basecamp with Matt and Foreman in frame)

Foreman

Good work today, Matt. Leave the camera with me.

I'll see you at the next project site tomorrow. The address is on your phone.

Matt

Got it, boss.

(Matt takes his glove off. A different beeping noise follows.)

(Asteryx and Obelyx stop hovering and return to the ground.)

(black screen)

(The end)

Appendix E3:

Final script for design fiction

INTRODUCTION

Narrator

(Start with a backdrop to a futuristic story. Starry night or warp speed. Something like Star Wars.)

The year is 2035, and there are not enough painters working. For every 20 painters that start their training, only one sticks around. With fewer painters, tasks that were easy before became more demanding. Something had to be done to support the ones that remained.

(Show the tools of the show: the brush, the robots, the suit, the camera. They are silhouetted for now.)

Technological advances allow painters to work alongside robots and smart tools to restore, renovate, and improve buildings. They can maintain control of the outcome while being supported by these agents.

(Black screen)

This story focuses on one example.

SCENE 1: PREPARING FOR THE DAY

Narrator

(Show the base camp for a working site of painters.)

This story takes place in a small city in the Netherlands.

(Matt is now in frame)

This is Matt. He is a painter with four years of experience working at Hoog+diep. He has just arrived at work, meeting with the foreman, Bas.

(Matt and Bas are both in the frame. Bas is holding his binder for all the projects.)

Bas

Morning, Matt. How are you?

Matt

Good. You?

Bas

All good.

(Bas looks at his binder while he talks)

Let's start today, yes? We don't have many hours left for this project. How are you getting on with work?

Matt

Should be fine. I'm only missing one big area. The weather got bad in the afternoon, forcing me to stop. I should be able to finish today.

Bas

Ok. Then, we'll get ready to set up at the next location tomorrow. It's on the other side of town.

Good luck. Don't forget to keep track of the progress. I will need the pictures and data to share with the client later.

Matt

Sure thing.

(Bas leaves frame)

All right. Time to go.

(Matt puts on a glove. There is a beeping sound)

Asteryx. Obelyx. Let's go.

(Two robots appear to the right of Matt. They hover slightly.)

Narrator

Asteryx and Obelyx are Matt's assistant robots.

(Cut to a product shot of Asteryx and Obelyx)

Asteryx and Obelyx carry tools and materials so that Matt can focus on painting. They follow him whenever he's wearing the glove. They will move out of his way but come near him whenever he needs something.

(Cut to black)

Let's follow Matt as he works today.

SCENE 2: ARRIVING THE SITE

(Matt walks through a hallway and out a door to arrive at the scene.)

Narrator

Matt arrives at the last part of this project he needs to work on. He approaches the camera to get started with his day.

(Matt presses the camera button. There is a noise of a machine whirring on. The shutter click of a camera follows.)

Camera

Scanning...

(Cut to the camera's POV. We see the site in black & white. A neon green light highlights the parts that will be worked on.)

Scan complete. Sending data to Foreman Bas.

(Cut back to the site. Matt is next to the camera, paying attention to what it will say.)

We're in luck today: there is no wood rot present. You can start sanding immediately. After the sanding, prime and paint the surface, and add varnish at the end.

I need you to prioritize these tasks immediately. My data says you were slow yesterday, so be faster today.

Matt

Yeah, yeah... Yesterday wasn't my fault. It was raining half the day.

Camera

There is no rain in today's forecast, so there are no excuses.

Matt

... Good to know. I'll get to it.

SCENE 3: SANDING

(Matt is in front of the wall. He reaches into Asteryx for his battery-powered sander and a brush. Matt then proceeds to sand the site.)

Narrator

Matt quickly sands the entire surface using the next generation of power tools.

(Matt drops the tools in Asteryx.)

(Matt uses the camera again.)

Camera

Scanning...

(Cut to the camera's POV. We see the site in black & white. A neon green light highlights the parts that will be worked on.)

Scan complete. Sending data to Foreman Bas.

(Cut to a product shot of the camera.)

Narrator

This camera serves as the local foreman for Matt. During the first scan, the camera creates a list of tasks and time estimates based on the pre-approved quality expectations. The first scan also looks for any major structural issues, like wood rot, that could delay the project.

Painters like Matt make pictures every time they complete a task to evaluate their work quality. The camera judges the quality and time used against expectations and budget.

Painters can only move to the next task after the camera has approved their work quality.

All data is sent to the foremen like Bas, who manage multiple projects and sites simultaneously.

Camera

(Cut back to Matt next to the camera)

You completed the sanding task to quality expectations. Move on to the next task.

Don't slack off now.

Matt

Uh-huh. Whatever you say.

(Black screen)

SCENE 4: PRIME and PAINT

(Matt is now painting)

Narrator

Matt has already finished adding the primer and has been painting.

(Matt dips his brush into Obelyx.)

As he works, he uses Obelyx to get more paint.

(Matt is painting in different areas. He bends over a bit too much as he paints and then straightens up.)

Matt begins to reach higher. When he reaches higher, his suit starts to glow yellow around the shoulder and back. Matt keeps painting, ignoring the glow, which is now a darker yellow.)

Narrator

(Cutaway to product shot of suit)

Matt's suit is specially designed to measure his posture and exertion. If Matt holds a bad posture for too long, the suit starts to glow from yellow to orange to red.

Along with the glow, the suit will start pulling back to encourage Matt to fix his posture. When part of the suit glows orange or red, the suit pulls harder and harder.

(Cut back to Matt reaching high. His suit is now glowing orange)

Matt

(Matt pulls back and straightens up. Matt pats his suit.)

Yes, Yes! I'll stop! Let's finish with the roller.

(Matt reaches out with brush backward. Asteryx floats to him.)

(Matt takes out the roller from Asteryx)

Here we go.

(Matt resumes painting, using the roller this time.)

(Matt uses the camera again.)

Camera

Scanning...

(Cut to the camera's POV. We see the site in black & white. A neon green light highlights the parts that will be worked on.)

Scan complete.

Sending data to Foreman Bas.

(After the scan, we see Matt next to the camera. He is waiting to hear what it says)

You completed the priming and painting task below quality expectations.

Did you switch to a roller? They are faster, but the quality is less than the brush. Be careful when you do that.

The client did not pay for more quality, so you do not have to repeat the task. Be more consistent next time.

Move on to the next task.

Matt

Sure. You're talking too much today, you know?

(black screen)

SCENE 5: VARNISH & SUIT

(Matt is painting again using the brush)

Narrator

(Matt paints in different poses. As he paints, we see him have bad posture again and again)

Later in the day, Matt works on the varnish and the finishing. He's getting close to being done.

Matt

(Matt acknowledges the glowing and pulls from his suit but does not listen.)

Just a little longer... I'm almost done.

(Matt continues to paint; he is crouching and working. The suit moves from yellow to orange to dark orange).

Don't be annoying. Two more minutes.

(Matt straightens up a bit and touches a button on the suit. The suit stops glowing and pulling.)

Stop!

Finally... some peace.

Marrator

Painters can override the suit if it becomes too intrusive while working.

(Matt finishes painting slowly).

(Matt uses the camera again.)

Camera

Scanning...

(Cut to the camera's POV. We see the site in black & white. A neon green light highlights the parts that will be worked on.)

Scan complete.

Sending data to Foreman Bas.

You completed the varnish task to quality expectations.

You were faster than yesterday.

There are no remaining tasks for this surface. I will notify Foreman Bas that you have finished.

As a reward for finishing, you can take me back now.

Matt

Why are you so demanding? Let's go.

(The work site is now empty.)

(black screen)

SCENE 6: Leaving for the day

(At base camp with Matt and Bas in frame)

Bas

Good work today, Matt. The data looks good.

Leave the camera with me.

Matt

(Matt, the camera, and Bas are all in frame)

Here it is. You know, it was very annoying to use the camera today. Can you check it for me?

Bas

Huh? Let me give it a look.

Narration

...

Bas

Ah – it was on training mode. It will talk more. You can turn that off in the menu. Let me do that now.

Matt

Thanks.

Bas

No problem.

I'll see you at the next site tomorrow. The address is on your phone.

Matt

Got it, boss.

(Matt takes his glove off. A different beeping noise follows.)

(Asteryx and Obelyx stop hovering and return to the ground.)

(black screen)

(The end)

Appendix F1:
Plan and interview questions for
discussion sessions with painters

Introduction

Prep/sensitizing questions

- Think about how you work in pairs. How do you split work? How often do you help each other? How do you ask for help? When do you ask for help?
- Think about your interactions with the foreman. How do you get help or feedback?
- Think about your posture and physical health.

Present the Story

- Remind the readers this is one narrative of the future.
- Read through the story; if you have any questions, ask us. You can also write down ideas and thoughts.

Initial impressions

- open to them saying their first thoughts on the story.
- Is it a scary future? An acceptable future?

Delegation

What part of work do they want to keep themselves or give away to something else?

- How do you feel about a robot removing the physical parts of your job?
- Are there any parts of your job you want complete control of? Why?
- Could you see something like a robot taking over the more boring parts of your work?
- These robots, Asteryx and Obelyx, only do what they're told. What behavior do you desire and why?

Authority

How do painters view machine authority in their work?

- The camera is a new kind of authority figure.
- What kind of supervision is helpful or supportive?
- What control over planning do you have?
- Would you trust a machine with having authority over your work? Why? Why not?

Autonomy

understanding the painter's autonomy in this system

- In which situations should the agent take over?
- How can the agent be overridden? Should it be like an alarm (snooze/stop)
- When can an agent support physical work postures
- Do you think about a general doctor's advice while working?
- The suit is a constant health checkup. In what situations would you listen to it?

Appendix G1:
Transcript of interview with
Willems painters

id	speaker	text	text_en_clean
1	David	We hebben.	We have.
2	David	Ja, We hebben eigenlijk een dus een verhaaltje scenario over een toekomst met ja meer tools die kunnen helpen met die schillen kunnen ondersteunen en dat verhaaltje is eigenlijk een beetje een gespreksstarter om het daarna.	Yes, we actually have a story scenario about a future with yes more tools that can help with those shells and that story is actually a bit of a conversation starter to it afterwards.
3	David	Te hebben over.	To have over.
4	David	Ja stel je wil dat soort dat soort robots en tools gebruiken bij het schilderen wat wat zijn dan, wat zijn dan dingen die je wel wil dat zijn dingen die je niet wil.	Yes, you want to use that kind of robots and tools when painting what are what, what are things that you want are things that you don't want.
5	David	Maar voordat we. Dus we gaan zo dat we hebben een paar slides/filmpje of eigenlijk een verhaaltje. Maar daarvoor hebben we eigenlijk al een paar vragen, of 3 vragen, om even over na te denken om je vast een beetje aan het denken te zetten.	But before we. So we go so that we have a few slides/video or actually a story. But for that we already have a few questions, or 3 questions, to think about it to make you think a bit.
6	David	Ik ga ze gewoon zeggen en dan kun je gewoon opschrijven. De eerste dingen die een beetje in je opkomen.	I'm just going to say them and then you can just write down. The first things that come up a bit in you.
7	David	Als eerste is.	First is.
8	David	Ja, Als in, denk na over hoe je werkt in in duo's in paren hoe verdeel je dan het werk en hoe vaak help je elkaar? Hoe vraag je voor hulp en wanneer vraag je iemand voor hulp?	Yes, if in, think about how you work in in pairs in pairs how do you divide the work and how often do you help each other? How do you ask for help and when do you ask someone for help?
9	David	Dat is een beetje, daar kan je wel een beetje over na gaan denken.	That is a bit, you can start thinking a bit about that.
10	David	Denk over je interactie met de voorman, hoe krijg je daar hulp van of feedback, zeg maar. En hoe communiceer je met elkaar?	Think about your interaction with the foreman, how do you get help or feedback, say. And how do you communicate with each other?
11	David	En denk een beetje na over je je houding en een soort van fysieke gezondheid tijdens het tijdens het werk. Als in weet je.	And think a bit about your attitude and some kind of physical health during work. As in fact.
12	David	Weet je hoe het moet? Heb je daar een soort van advies over gekregen en volg je dat ook op Als je aan het werk bent? Wanneer wel, wanneer niet zijn een beetje.	Do you know how to do it? Have you received some sort of advice about that and do you follow that when you are working? When yes, when not are a bit.
13	David	Dat is al een beetje een intro van waar we het over gaan hebben?	That is a bit of an intro of what we are going to talk about?
14	David	I don't think these are questions you can write down key words.	I don't think thesis are questions you can write down key words.
15	Lenny	Nee, Just things to think about.	No, Just Things to Think About.
16	David	Ja hou het.	Yes keep it.
17	David	Hou het een beetje, hou een beetje dat soort vragen in gedachten en dan denk ik dat het makkelijkst is.	Keep it a bit, keep a little bit of questions in mind and I think it is easiest.
18	David	We hebben hier het het verhaal met tekst tekst in het Engels.	We have the story here with text text in English.
19	David	Maar je kan hem ook wel gewoon in het Nederlands erbij vertellen, terwijl we hem.	But you can also just tell him in Dutch, while we him.
20	David	Terwijl we hem doorlopen.	While we walk on him.
21	David	Brush, camera, and robotsuit	Brush, camera, and robots out
22	Lenny	Is dit goed voor de?	Is this good for the?
23	David	Ja Er is een verhaal over de een hoe de toekomst zou kunnen zijn met robots die helpen bij schilderen. Dus Het is 2035 en Er zijn niet genoeg schilders meer voor iedere 20 schilders die aan de training beginnen, is er maar één die hem ook echt afrond.	Yes there is a story about the one how the future could be with robots that help in painting. So it is 2035 and there are not enough painters for every 20 painters who start the training, there is only one that really completes him.
24	David	En doordat er minder schilders zijn, zijn bepaalde taak die vroeger moeilijk waren, nu een stuk lastiger en iets moeten gedaan worden om te zorgen dat de schilder nog wel over zijn om die te ondersteunen.	And because there are fewer painters, certain task that used to be difficult are now a lot more difficult and something to make sure that the painter are still left to support them.
25	David	Nou, de technologie is zover dat schilders Samen met robots kunnen werken en smart tools en apparaten om te om gebouwen te herstellen, renoveren en verbeteren.	Well, the technology is time that painters can work together with robots and smart tools and devices to restore, renovate and improve buildings.
26	David	Ze kunnen, ja, ze hebben controle over de uitkomst, terwijl ze wel nog ondersteund worden door deze agent, dus de robots en tools die noemen we Agents vanaf nu. Agenten.	They can, yes, they have control over the outcome, while they are still supported by this agent, so we call the robots and tools that we call agents from now on. Agents.
27	David	Dit is een verhaal over één voorbeeld daarvan.	This is a story about one example of that.

id	speaker	text	text_en_clean
28	David	Nou, het verhaal is in een klein stadje in Nederland en Dit is Mat. Hij is de schilder met 4 jaar ervaring.	Well, the story is in a small town in the Netherlands and this is matt. He is the painter with 4 years of experience.
29	David	Bij hoog plus diep, hoog en Diep.	With high plus deep, high and deep.
30	David	Hij is net bij zijn werk gekomen en ontmoet zijn voorman, Bas.	He just came to his work and meets his foreman, Bas.
31	David	Nou goedemorgen Mat hoe gaat het ermee?	Well good morning mat how are you?
32	David	Goed, met jou?	Well with you?
33	David	Ook allemaal goed. Bas: Ja, Laten we van start gaan. We hebben niet heel veel uur over voor dit project. Hoe staat het ervoor?	All good too. Bas: Yes, let's start. We don't have a lot of hours for this project. How are you doing?
34	David	Ja zou zo goed moeten zijn, ik mis nog één gebied. Het weer werd In de middag slecht en ik moest stoppen. Maar ik zou het vandaag af moeten kunnen maken.	Yes should be so good, I miss one more area. The weather became bad in the afternoon and I had to stop, but I should be able to finish it today.
35	David	Oké, Laten we voorbereiden om op de volgende locatie te starten morgen. Het is aan de andere kant van de stad.	Okay, let's prepare to start at the next location tomorrow. It is on the other side of the city.
36	David	En vergeet niet je progressie bij te houden. Ik ga plaatjes en data nodig hebben om met de klant te delen later. Veel succes.	And don't forget to keep track of your progress. I will need pictures and data to share with the customer later. Good luck.
37	David	Yes, sure thing. Alright. Asterix, Obelix lets go!	Yes, sure thing. Alright. Asterix, Obelix Lets Go!
38	David	En nou, Asterix en Obelix zijn Mensen assistent robots, hier zie je ze.	And now, Asterix and Obelix are people assistant robots, here you see them.
39	David	Asterix en obelix die dragen gereedschappen en materialen, zodat Mat kan focussen op het schilderen. Ze volgen hem als hij zijn handschoen draad. met de handschoen aandoen. Ze gaan aan de weg als die In de buurt komt, maar komen naar hem toe als hij iets nodig heeft.	Asterix and Obelix that wear tools and materials, so that matt can focus on painting. They follow him as he threaded his glove. put on the glove. They go on the road when it comes close, but come to him if he needs something.
40	David	En Obelix, die heeft verf en Asterix heeft gereedschappen.	And Obelix, who has paint and Asterix has tools.
41	David	Nou, Laten we even met Mat meelopen vandaag.	Well, let's walk with matt today.
42	David	Hij gaat naar zijn werk en hij komt bij het laatste deel van het project, dat hij nog moet doen.	He goes to work and he comes to the last part of the project that he still has to do.
43	David	Hij loopt eerst naar de camera toe om met de dag te beginnen.	He first walks to the camera to start the day.
44	David	Camera de canon die gaat, die gaat scannen.	Camera the canon that goes, that will scan.
45	Lenny	It looks at the surfaces, takes a picture.	It looks at the surfaces, take a picture.
46	David	Ja hij, analyseert. Hij analyseert het werk.	Yes, he analyzes. He analyzes the work.
47	Delario	Oppervlakte?	Surface?
48	David	Het oppervlak inderdaad, ja.	The surface indeed, yes.
49	David	Nou, de scan is compleet en die stuurt hij naar de voorman.	Well, the scan is complete and he sends it to the foreman.
50	David	Nou de camera zegt tegen Mat:	Well the camera says to Mat:
51	David	We hebben geluk, Er is geen houtrot aanwezig en je kan meteen beginnen met schuren. Naast schuren moet je primer (is dat gewoon primer in het Nederlands) ja primer en schilderen en dan de lak op het einde.	We are lucky, there is no wood rot present and you can immediately start sanding. In addition to sanding, you have to be primer (that is simply primer in Dutch) yes primer and painting and then the paint at the end.
52	David	Vernis?	Varnish?
53	David	Ja de lak ja. Ik vind dat je, of Je moet deze taak meteen prioriseren.	Yes the paint yes. I think you, or you have to prioritize this task immediately.
54	David	Mijn data zegt dat je gisteren te langzaam was, dus moet je vandaag sneller zijn.	My data says you were too slow yesterday, so you have to be faster today.
55	David	Ja ja.	Yes Yes.
56	David	Gisteren was niet mijn fout?	Yesterday wasn't my fault?
57	David	Het was de hele dag aan het regenen. Nou, Er is vandaag geen regen voorspeld, dus geen smoesjes.	It was raining all day. Well, no rain is predicted today, so no excuses.
58	David	Oke, goed om te weten? Ik ga aan het werk.	Okay, good to know? I am going to work.
59	David	Mat zijn eerste taak is om te schuren en schoon te maken. Het oppervlak wat hij vandaag gaat schilderen.	Mat his first task is to sand and clean. The surface he is going to paint today.
60	David	Asterix heeft al zijn gereedschap. Ja, hij pakt er een batterij, een schuurmachine en een borstel uit.	Asterix has all its tools. Yes, he takes out a battery, a sander and a brush.
61	David	Asterix houd al zijn gereedschap erbij. Ja, Hij heeft de borstel en de schuurmachine met zijn gereedschap gaat met aan de aan de slag en doet het snel.	Asterix keeps all his tools. Yes, he has the brush and the sander with his tools with the start and does it quickly.
62	Lenny	Snel en snel en snel.	Fast and fast and fast.

id	speaker	text	text_en_clean
63	David	Ja ja.	Yes Yes.
64	David	Mat gebruikt de camera om zijn voortgang buiten te houden.	Mat uses the camera to keep its progress out.
65	Edsel	van het schuren?	From sanding?
66	David	van het schuren en het en het schoonmaken.	From sanding and the and cleaning.
67	Edsel	Het schoonmaken en schuur.	Cleaning and shed.
68	David	Scannen. Scan compleet. Stuurt de data weer naar de voorman.	Scanning. Scan complete. Send the data back to the foreman.
69	David	De camera die doet eigenlijk dienst als een lokale voorman voor Mat. Tijdens de eerste scan maakt de camera een lijst met taakjes en een voorspelling van hoe lang Het gaat duren, gebaseerd op de kwaliteits verwachtingen van de klant.	The camera that actually serves as a local foreman for Mat. During the first scan, the camera makes a list of tasks and a prediction of how long it will take, based on the quality of the customer's expectations.
70	David	Dus hij, ja, hij scant eerst.	So he, yes, he scans first.
71	David	en hij geeft dan ook alle communicatie door. Of hij geeft alles ook door aan de voorman. De eerste scan zoekt ook.	And he also passes on all communication. Or he also passes everything on to the foreman. The first scan is also looking for.
72	David	Zoekt ook naar grote structurele problemen, zoals houtrot die vertraging op kunnen leveren. Schilders zoals Mat maken de hele tijd plaatjes. Iedere keer dat ze een taak voltooiën om hun werk te Laten evalueren voor kwaliteit.	Also searches for major structural problems, such as wood rot that can cause delay. Painters such as mat make pictures all the time. Every time they complete a task to let their work evaluate for quality.
73	David	De camera beoordeelt de kwaliteit en de tijd die het kostte om te doen.	The camera assesses the quality and the time it took to do.
74	David	Vergelijken met de verwachtingen en het budget voor het project.	Compare with the expectations and the budget for the project.
75	David	De schilder mag pas aan nieuwe taak beginnen nadat de camera de kwaliteit van het werk heeft goedgekeurd.	The painter may only start a new task after the camera has approved the quality of the work.
76	David	Alle data wordt doorgestuurd naar de voormannen, zoals Bas die meerdere projecten managen op meerdere locaties.	All data is forwarded to the foremen, such as Bas who manage multiple projects at multiple locations.
77	David	Yeah, nou, je hebt een schuur taak voltooid naar kwaliteits verwachtingen.	Yeah, well, you have completed a shed task for quality expectations.
78	David	Ga naar de volgende taak, en niet luieren.	Go to the next task, and don't laze.
79	Edsel	Jhee, wat een systeem!	Jhee, what a system!
80	David	Ja! oke, wat jij zegt. Sure. Nou We gaan even wat verder Met is al klaar met de primer en begin met schilderen.	Yes! Okay, what you say. Sure. Well we go a little further with is already finished with the primer and start painting.
81	David	Nou het schilderen.	Well painting.
82	David	Terwijl die werkt, gebruikt die obélix om meer verf te krijgen of om meer verf te pakken.	While it works, the Obélix uses to get more paint or to grab more paint.
83	David	Soms buigt Mat zich iets teveel voorover en komt terug, begint ook te veel uit te rekken en te veel.	Sometimes mat bends a little too much and comes back, also starts to stretch too much and too much.
84	David	En verkeerde houdingen te zijn en terwijl die steeds hoger rijkt met zijn borstel begint het pak dat hij draagt te gloeien.	And to be wrong postures and while it rises higher and higher with his brush, the suit he is wearing starts to glow.
85	David	Mats pak is speciaal ontworpen om zijn houding en uitputting te meten.	Mats Pak is specially designed to measure his posture and exhaustion.
86	David	Als Mat In de slechte houding is voor het te lang gaat het pakken gloeien van eerst In het geel en dan Oranje en dan rood.	If matte is in the bad posture for the too long, grabbing of first in yellow and then orange and then red.
87	David	En, terwijl het gloeit, gaat het ook trekken om Mat aan te moedigen om eigenlijk zijn houding te fixen.	And, while it is glowing, it will also pull to encourage mat to actually fix his posture.
88	David	En als deel van het pak Oranje of rood gloeit, gaat het ook steeds harder trekken eigenlijk.	And if part of the pack of orange or red glows, it is actually going to pull harder and harder.
89	David	Nou, zijn pak is nu Oranje en trekt ze erg hard. Dan zeg hij, ja, ja, ik stop al.	Well, his suit is now orange and she pulls it very hard. Then he says, yes, yes, I already stop.
90	David	Asterix kom hier. Nou, Laten we met de verfroller het afmaken.	Asterix come here. Well, let's finish it with the paint roller.
91	David	Nou Mat die maakt de taak af met de roller.	Well, he finishes the task with the roller.
92	David	Camera scant hem weer.	Camera scans him again.
93	David	Scan is compleet.	Scan is complete.
94	David	Je hebt het prima en schilderen niet goed gedaan, zegt hij. Of je hebt het voltooid, maar niet met goede kwaliteit.	You've done fine and not done painting well, he says. Or you have it completed, but not with good quality.
95	David	Ben jij naar een roller gewisseld? Ze zijn wel sneller, Maar de kwaliteit is minder mooi dan met de borstel. Pas op als je dat doet!	Have you changed to a roller? They are faster, but the quality is less beautiful than with the brush. Beware if you do that!

id	speaker	text	text_en_clean
96	David	De klant heeft niet betaald voor extra kwaliteit, dus je hoeft het niet opnieuw te doen, maar probeer de volgende keer consistentter te zijn voor betere kwaliteit.	The customer has not paid for extra quality, so you don't have to do it again, but try to be more consistent for better quality next time.
97	David	Begin nu aan de volgende taak. Mat geïrriteerd zegt: Nou, je praat wel erg veel vandaag, wist je dat?	Start the next task now. Mat irritated says: well, you talk a lot today, did you know that?
98	David	Later op de dag is Mat met de lak bezig en het afmaken en hij is bijna klaar.	Later in the day Mat is busy with the paint and finishing and it is almost ready.
99	David	Maar het pak begint te gloeien "nog ietsje langer. Ik ben bijna klaar" hij een soort van rekt het een beetje uit.	But the suit starts to glow "a little longer. I am almost ready "he stretches a bit a bit.
100	David	Maar het pak begint weer te gloeien. Dit keer Oranje. hij zegt: "nee, Het is vervelend. Geef nog twee minuten."	But the suit starts to glow again. This time Orange. He says: "No, it's annoying. Give two more minutes. "
101	David	Hij blijft eigenlijk ook harde trekken, Omdat zijn houding slecht.	He actually continues to pull hard, because his posture bad.
102	David	Hij drukt op een knop.	He presses a button.
103	David	Om het pak uit te zetten en eindelijk een beetje rust.	To turn off the suit and finally a little rest.
104	David	De schilders kunnen hun pak uitzetten of overschrijden Als het storend wordt tijdens het werk.	The painters can expand or exceed their suit if it becomes disturbing during work.
105	David	Nou, Mat is klaar met het werk en check met de camera, doet de laatste check.	Well, matt is finished with the work and check with the camera, does the last check.
106	David	Stuurt de data weer door.	Send the data again.
107	David	Nou en je hebt het lakken naar kwaliteits verwachtingen afgerond. Je was sneller dan gister. Er geen taken over gebleven en ik zal voor je Bas inlichten dat je het hebt afgerond.	Well and you have completed the lacquers to quality expectations. You were faster than yesterday. There was no tasks left and I will inform you that you have completed it.
108	David	Als beloning voor afronden, kun je me nu terug meenemen.	As a reward for completion, you can now take me back.
109	David	Mat zecht, Waarom ben je zo? Waarom vraag he zo veel? Kom we gaan.	Mat Zakt, why are you that way? Why question so much? Let's go.
110	David	"Nou goed werk vandaag Mat data ziet er goed uit."	"Well good job today Mat Data looks good."
111	David	"Laat de camera, maar bij mij." "hier is hij. camera was erg irritant om te gebruiken vandaag, kun je hem even voor mijn checken."	"Leave the camera, but with me." "here he is. Camera was very annoying to use today, you can check it in front of me. "
112	David	"Laten we er even naar kijken."	"Let's take a look at it."
113	David	"Ah, Hij stond In trainingsmodus, dan gaat hij meer praten en dat kun je uitzetten In het menu. Laat mij dat voor nu even doen."	"Ah, he was in training mode, then he will talk more and you can turn it off in the menu. Let me do that for now. "
114	David	"Bedankt." "Geen probleem. Ik zie je op de volgende locatie morgen. Het adres staat op je telefoon." "Check."	"Thank you." "No problem. I see you at the next location tomorrow. The address is on your phone. " "Check."
115	David	Hij zegt tot morgen tegen Asterix en Obelix.	He says to Asterix and Obelix until tomorrow.
116	David	En, Dat is het einde van het scenario.	And that is the end of the scenario.
117	David	Nou oké, Dat is het dus.	Well okay, that's it.
118	David	Ja, We hebben hier dus eigenlijk 3 soorten tools, 3 robots.	Yes, we actually have 3 types of tools here, 3 robots.
119	David	Die ooit bij het schilderen gebruikt zouden kunnen worden. Ik denk eerst, lets aks for first impressions.	That could ever be used during painting. I think first, Lets Aks for First Impressions.
120	Lenny	Ja, innital.	Yes, Innital.
121	David	Ja, eerst gewoon wat.	Yes, just what.
122	David	Ja, wat is eigenlijk je eerste reactie, wat sprong hier vooral uit waar je een sterk gevoel over hebt?	Yes, what is your first reaction, what did it stand out here what you have a strong feeling about?
123	Lenny	Of vragen?	Or questions?
124	David	Of vragen.	Or ask.
125	David	Vragen over het scenario.	Questions about the scenario.
126	Edsel	Ja, sowieso die robots die spullen voor jou sjouwen en dan heb je minder in je eigen hand en gezien het feit dat hij waarschijnlijk door de woning of de trap of de stijger op moet om te komen waar hij komt.	Yes, anyway those robots drag those things for you and then you have less in your own hand and given that he probably has to go through the home or the stairs or the riser to get where it goes.
127	Edsel	Dan hoeft je niet elke keer twee of 3 keer naar beneden of naar boven te gaan met je gereedschap je spullen en materiaal in je handen.	Then you don't have to go down or up two or 3 times every time with your tools your things and material in your hands.
128	David	Ja, Dat is eigenlijk gewoon heel fijn, zoiets te hebben.	Yes, that is just very nice to have something like that.

id	speaker	text	text_en_clean
129	Edsel	Dat is heel fijn.	That is very nice.
130	Edsel	Hoe minder jij vast hebt, hoe sneller je op je bestemming komt.	The less you have, the faster you get to your destination.
131	Edsel	Of op je werkplek om je werkzaamheden uit te voeren.	Or at your workplace to perform your work.
132	Edsel	De camera daarentegen heeft wel gewoon wat Ik heb kunnen zien.	The camera, on the other hand, just has what I was able to see.
133	Edsel	Wel wat voordelen. Wat dingen dat Ik denk van, ja, dat kan toch wel.	Some benefits. What things that I think of, yes, that is possible.
134	David	Ja?	Yes?
135	Edsel	Ja wat, wat verbetering ofzo of helemaal weg.	Yes what, some improvement or something or completely gone.
136	David	Nou, Ik wil ze, oké, Ik wil ze allebei wel horen dan. Wat zijn ze, wat?	Well, I want them, okay, I want to hear them both then. What are they, what?
137	Edsel	En die andere? Want je had Asterix, degene die je gereedschap heeft.	And the other? Because you had Asterix, the one who has your tools.
138	David	Ja die had gereedschap, en Obelix.	Yes he had tools, and Obelix.
139	Edsel	Ja, en Obelix had de verf.	Yes, and Obelix had the paint.
140	David	Ja die had de verf.	Yes he had the paint.
141	Edsel	Hoeveel verf gaat er nu in obelix en blijft die verf dan continu naast je staan of beweegt dat gewoon echt met je mee?	How much paint is now in Obelix and does that paint continue to stand next to you or just move that with you?
142	David	Hij beweegt met je mee om je heen. Ja, ja.	He moves around with you. Yes Yes.
143	Edsel	Oké, op zo'n manier.	Okay, in such a way.
144	David	Gewoon, het idee is dat hij niet in de weg staat.	Simply the idea is that he doesn't get in the way.
145	Edsel	Ja, dat zou ook wel eventueel voor en nadelen hebben.	Yes, that would also have advantages and disadvantages.
146	David	Wat voor nadelen zou het hebben?	What kind of disadvantages would it have?
147	Edsel	Omdat hij altijd om je heen blijft zweven, dus stel je voor dat je.	Because he always floats around you, so imagine that you.
148	David	Denkt maar gewoon dat, dat hij fysiek in de weg staat?	Just thinks that he is physically in the way?
149	Edsel	Fysiek ja.	Physically yes.
150	David	dat zou gewoon storend zijn?	That would just be disturbing?
151	Edsel	Ja, dat zal gewoon storend kunnen zijn en Als je laddertje gebruik of zetten aan de kant, maar.	Yes, that can simply be disturbing and if your ladder use or put on the side, but.
152	Edsel	Kan je Misschien tegenaan stoten, of hij vliegt er net langs.	Maybe you can bump into it, or he just flies past it.
153	David	Ja precies.	Yes, exactly.
154	Edsel	Je hebt niet In de hand, een potje, weet je van. Ik heb hem nou hier vast, Ik heb hem in mijn hand vast.	You don't have control, you know about. I have it here, I have it in my hand.
155	Edsel	Als ik klaar ben zet ik hem hier aan de kant.	When I'm done I put it aside here.
156	David	En stel het is wel een systeem dat gewoon oplet, dat het niet in de weg staat?	And suppose it is a system that simply pay attention that it does not stand in the way?
157	Edsel	Ja dat zou.	Yes that would.
158	David	Maar dan is het dus.	But then it is.
159	David	Maar is het nog steeds vervelend om niet die controle te hebben, of?	But is it still annoying not to have that control, or?
160	Edsel	Ja, Ik denk dat de controle bij de meesten ook wel een ding zal zijn inderdaad, want je hebt niet In de hand. Het vliegt, Het is voor mij, denkt ik wel iets handigs.	Yes, I think that the control of most will also be one thing, because you are not in control. It is flying, it's for me, I think something handy.
161	Edsel	Maar Je moet ook niet Alleen vanuit mijn perspectief bekijken, Maar dan zou het voor mij wel ideaal zijn. Op wel velen factoren.	But you also not only have to look at my perspective, but then it would be ideal for me. On many factors.
162	David	Oké, nou, Ik wil daarna van jullie ook nog wel de eerste reactie.	Okay, well, I also want the first reaction from you afterwards.
163	Delario	Nou, ja, wel goed.	Well, yes, well.
164	Delario	Het is handig, het neemt, zoals Edsel ook zegt.	It is handy, it takes, as Edsel says.
165	Delario	Als je de stijger op moet kan je in één keer naar boven, kan je sneller aan je werk beginnen.	If you have to go up the riser you can go up in one go, you can start your work faster.
166	Delario	Hoef je niet naar beneden en daarna nadelen ook wel is dan.	You don't have to go down and then disadvantages is then.
167	Delario	Kunnen ze goed kijken? Bijvoorbeeld, Hier staat een steiger. Dat ze er netjes omheen, kunnen. Kunnen ze dat ze.	Can they look carefully? For example, there is a jetty here. That they can neatly around it. Can they do that.
168	David	Ja precies, wanneer werkt het.	Yes exactly, when does it work.

id	speaker	text	text_en_clean
169	David	Wat was er? Wat waren dingen, Misschien ook waarvan je echt meteen dacht, oh, dat zou echt absoluut niet willen tijdens het werkt.	What was there? What were things, maybe you really thought immediately, oh, that would definitely not want to work.
170	Delario	Dat pak.	That suit.
171	Delario	De camera ook wel.	The camera too.
172	Delario	Het kan goed zijn, want jij ziet natuurlijk niet dat een klein stukje. Als de camera dat kan zien als Je dat niet af hebt.	It can be good, because of course you don't see that a small piece. If the camera can see if you don't finish it.
173	Delario	Dat is wel, ja.	That is, yes.
174	David	Ja, dat hij gewoon dat checkt.	Yes, that he just checks that.
175	Delario	ja dat hij gewoon checkt en alles ook naar de voorman stuurt.	Yes, he just checks and also sends everything to the foreman.
176	David	Ja precies, dat zou fijn vinden dat hij dat meteen doet. Oké.	Yes exactly, that would be nice that he does that right away. Okay.
177	David	We gaan sowieso overal nog veel meer op terugkomen zo meteen. Maar eerst even de eerste. En van u?	We will come back to everything anyway anyway. But first the first. And yours?
178	Soraida	Nou ja, maar eerst mijn indruk was van uhuh.	Well, but first my impression was from Uhuh.
179	Soraida	Ja, Maar dat sloeg ik even aan op dat pak, is eigenlijk dat ik het een negatieve benadering vinden, zal ik maar zeggen, een negatieve prikkel.	Yes, but I just hit that suit, is that I think it is a negative approach, I will say, a negative incentive.
180	David	Ja, dat hij gaat gloeien en trekken?	Yes, that he is going to glow and pull?
181	Soraida	Ja, Dat is gewoon een negatief prikkel om iemand iets anders te laten doen. En dat kan Natuurlijk dat je daarvoor kiest, Maar het was meer van dat ik dacht, oh ja, wat een nare manier weet je wel gewoon om iemand uiteindelijk naar lagere fysieke belasting te krijgen. Wat ik zelf wel Interessanter eigenlijk vooral vond is dat je dus dan in plaats van.	Yes, that is just a negative incentive to let someone do something else. And that is of course possible that you choose that, but it was more that I thought, oh yes, what a nasty way you just know to get someone to a lower physical stress. What I actually found more interesting in particular is that you then instead of.
182	Soraida	Aan de ene kant bijvoorbeeld de de robots zijn heel erg zorgen voor dat je dus dan eigenlijk de fysieke belasting eigenlijk minder hebt, maar eigenlijk voor het schilderen zit het eigenlijk heel erg In het beperken van de persoon zijn zijn bewegingen eigenlijk en.	On the one hand, for example, the robots are very concerned that you actually actually have the physical strain less, but actually for painting it is actually very much in limiting the person's movements actually and.
183	Soraida	Ja ik ik ik Ik denk ook vooral van ja wat.	Yes I I I I also think of yes what.
184	Soraida	Waar ik een beetje door getriggerd door door door getriggerd was, was vooral dat ik dacht, maar zou je niet eigenlijk het proces kunnen versnellen? En daardoor is de fysieke belasting ook lager van het schilderen, dus je kan zeggen.	What I was triggered by triggered by was mainly that I thought, but could you not actually accelerate the process? And that is why the physical load is also lower from painting, so you can say.
185	Soraida	Schilderen is fysiek belastend. Ja, dan kan je dus de focus hebben dat de houding moet goed zijn, maar je kan ook denken, hoe zorg je ervoor dat het sneller kan?	Painting is physically burdensome. Yes, then you can have the focus that the posture must be good, but you can also think, how do you ensure that it can be faster?
186	Soraida	Door de persoon, want hoe korter Het is, hoe minder intensief zal ik maar zeggen, hoe minder belastend Het is voor het lijf.	Because of the person, because the shorter it is, the less intensive I will say, the less stressful it is for the body.
187	David	Ja, het is dat je het op een gegeven moment, zo snel Maakt dat je helemaal niet meer op je houding hoeft te letten.	Yes, it is that at some point you make it so fast that you no longer have to pay attention to your position.
188	Soraida	Ja, dat dat je op die manier dat risico wegneemt dat ik moest gewoon even aan denken Toen ik daar zat te kijken.	Yes, that that way you remove that risk that I just had to think about it when I was watching there.
189	Edsel	En die camera ook, kijk die camera heeft sowieso een goede voordelen, want die zit die scan gelijk of er oneffenheden zijn In het houtwerk wat wij als schilders niet direct kunnen constateren. Tenzij We gaan schoonmaken, schuren en dan gaan prikken.	And that camera too, watch that camera has a good advantages anyway, because that scan is the same as if there are unevenness in the woodwork that we as painters cannot immediately find. Unless we start cleaning, sanding and then piercing.
190	Edsel	Maar dan zet je die camera neer, dan ziet hij all, constateert die wel gelijk wat ik zeg, houtrot andere delen wat Misschien door een andere discipline vervangen moet worden of aangekleed moet worden.	But then you put that camera down, then he sees all, it immediately notes what I say, wood rot other parts which might have to be replaced or dressed by another discipline.
191	Edsel	En, Het is ook niet, ja.	And, it's not either, yes.

id	speaker	text	text_en_clean
192	Edsel	Elke keer weer naar die camera toelopen, om weer een foto te maken van je progressie en dat dat Dat is ook weer een een deel interactie wat je dan met je voorman hebt en een deel vertrouwen wat je dan mist. Want het lijkt dat je dan elke keer elke stap moet bijhouden om dan die vertrouwen, je vooruitgang elke keer te documenteren om te Laten zien van hé, Maar ik heb dit wel gedaan, Ik heb dit wel gedaan.	Turning to that camera every time, to take another picture of your progression and that that is again a part interaction that you then have with your foreman and trust a part what you miss. Because it seems that you have to keep track of every step every time to document that trust, your progress every time to show hey, but I did this, I did this.
193	David	Ja precies dat wel. Je hebt geen vertrouwen van de voorman hebt dat je dat zelf kan.	Yes exactly that. You have no confidence from the foreman that you can do that yourself.
194	Edsel	Ja, Dat is een beetje een bewijsdrang.	Yes, that is a bit of an urge to prove.
195	Soraida	Maar moeten die controles? Want hoeveel controles Als je naar dit filmpje kijkt, dan moest ik, als je naar het script kijkt, ik moest er ook aan denken van wat zijn voor jou naar jou toe de momenten van hoeveel hoeveel momenten heb je per controle, want ik vond het nog best wel hoog aantal.	But do those checks have to be? Because how many checks if you watch this video, then if you look at the script, I also had to think about what are for you the moments of how many moments do you have per check, because I found it Quite high number.
196	Soraida	Een controle met? Ik vroeg me af.	A check with? I wondered.
197	Soraida	Hoe vaak is het ook werkelijk na het schuur of materie dat er altijd een voorman controleert, nee toch?	How often is it really after the shed or matter that a foreman always checks, no, right?
198	Edsel	Ja nee.	Yes No.
199	Soraida	Dus Dit is eigenlijk extra...	So this is actually extra ...
200	Edsel	Ja .	Yes .
201	Soraida	Controles dan want normaal gesproken zou plaatsvinden, hè?	Checks then because normally would take place, right?
202	Edsel	Dit is wel extreme controles inderdaad. ja ja.	This is indeed extreme checks. Yes Yes.
203	Edsel	Maar niet onrealistische controles, daar niet van.	But not unrealistic checks, not of that.
204	Soraida	Want je zei, ik vindt ze wel nuttig.	Because you said, I find them useful.
205	Edsel	Het zijn, het zijn wel nuttige controles.	They are, they are useful checks.
206	David	Dus je denkt, stel, hij maakt wel de scan, Maar het geeft vervolgens alleen de resultaat aan jou, wat zou dan?	So you think, suppose, he makes the scan, but it then only gives you the result, what would?
207	David	Je mening. Het wordt niet naar de voorman gestuurd de hele tijd, wat zou dan. Hoe zou er dan in staan?	Your opinion. It is not sent to the foreman all the time, what would be. How would it be?
208	Edsel	Ik denk ook wel gewoon nog steeds hetzelfde, want ik moet eerst van mezelf. Kijk Als je eenmaal een schilder bent, weet je wel van oké.	I also just think the same, because I first have to make myself. Once you are a painter, you know about okay.
209	David	Oké.	Okay.
210	Edsel	Het helpt wel.	It helps.
211	Edsel	Om te om te weten of je aan de kwaliteitseisen voldoet.	To know if you meet the quality requirements.
212	Edsel	Die de opdrachtgever van ons verwacht Natuurlijk. Daar helpt het wel bij, maar afgezien van Dat is het van ja, wat moet ik alles fotograferen om die vooruitgang te documenteren, zeg maar terwijl Als je.	That the client expects of of course. It helps with that, but apart from that it is yes, what do I have to photograph everything to document that progress, say while you.
213	Edsel	Niet ook weer elke keer naar die camera toe moet om die foto's te maken.	Not to go to that camera every time to take those photos.
214	Edsel	Na het wassen, schuren, afstoffen en dan kan je gelijk weer aan de slag met het gewone. En niet die goedkeuring nodig van die camera nodig om te zeggen van.	After washing, sanding, dusting and then you can immediately get back to work with the ordinary. And not that approval of that camera needed to say.
215	Edsel	Ja, hij is toch niet goed geschuurd of weet je.	Yes, he was not sanded properly or you know.
216	Edsel	Maar, afgezien van dat.	But, apart from that.
217	Edsel	Is het dan ook wel weer goed.	Is it good again.
218	Edsel	Als je dan weer een een foto ervan maakt en hij scant wanneer hij mag nog wel iets grondig geschuurd worden doordat hij Misschien te veel onthechting is of.	If you take a picture of it again and he scans when he can still be sanded something thoroughly because he may be too much detachment or.
219	Edsel	Dat dus.	So that.
220	Edsel	Het is.	It is.
221	Edsel	Het is een lastige!	It's a tricky one!
222	David	Ja, ja, dat snap ik ja, want wat?	Yes, yes, I understand yes, because what?
223	David	Het voelt, zeg maar, het voelt niet goed, lijkt me om de hele tijd naar zo'n camera te moeten lopen voor die goedkeuring, maar denk dat. het kost ook tijd. is dat wat je denkt? er zijn ook pragmatische nadelen en Dat gewoon, het kost tijd of.	It feels, say, it doesn't feel right, it seems to me to have to walk to such a camera for that approval all the time, but think. It also takes time. Is that what you think? There are also pragmatic disadvantages and that just, it takes time or.

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224	Edsel	ja.	Yes.
225	David	Ja oke.	Yes okay.
226	Soraida	Ja, wat Misschien wel, Ik weet niet of u dat weet. Vanaf januari krijgen wij een nieuwe wetgeving in Nederland, waardoor ook voor of aanvullende wetgevingen, waardoor we nu ook voor onze branche de kwaliteit moeten gaan fotograferen.	Yes, what might, I don't know if you know that. From January we will receive a new legislation in the Netherlands, which means that also for or additional legislation, so that we now also have to photograph quality for our industry.
227	David	Ja klopt.	That's right.
228	Soraida	En dan zou het in dit geval voor schilderwerk op het moment zijn Als het schilderwerk af is, maar daarbij de vraag is hoe?	And then in this case it would be for paintwork at the moment if the paintwork is finished, but the question is how?
229	Soraida	Hoe gaat het verder, hoe gaat zich dat ontwikkelen?	How do things go, how will that develop?
230	Edsel	En dan vind ik ja, daar moest ik ook aan denken, want ze geven. Ja, daar moest ik ook al aan te denken want daar zijn ze nu ook al wat zij net zegt. Daar gaan ze.	And then I think yes, I had to think about that, because they give. Yes, I already had to think about that because there they are now what she just says. There they go.
231	Soraida	Maar daar hadden we het net ook over toch? Ja.	But we were just talking about that, right? Yes.
232	Edsel	Daar gaan we ook nu naartoe om die progressie te documenteren.	We are going there now to document that progression.
233	Soraida	Vanaf 1 januari.	From January 1.
234	Soraida	ja de kwaliteit, Het is het heet, wet kwaliteitsborging en daarin moet vanaf dit even voor ons was. Vorig jaar moest het al voor infrastructuur voor wegenbouw en de brug en weet ik veel allemaal.	Yes the quality, it is hot, the quality assurance law and it must be for us from this. Last year it had to be for infrastructure for road construction and the bridge and I know a lot.
235	Soraida	Maar vanaf volgend jaar moet dat dus ook gewoon vorige renovatie en onderhoudswerkzaamheden moet je dus voor de wet kwaliteitsborging gewoon het moment van Als je dus werkelijk een deel van de werkzaamheden hebt uitgevoerd, moet je een foto als bewijs hebben dat je kwalitatief dus ook werkelijk de waarde heeft waar de opdrachtgever voor betaalt.	But from next year that should also just be previous renovation and maintenance work, you should therefore simply the moment for the Quality Assurance Act if you have actually carried out part of the work, you must have a photo as proof that you actually actually have the quality of the has value what the client pays for.
236	David	Een deel van de werkzaamheden is het vergelijkbaar met wat er hier gebeurde?	Part of the work is it similar to what happened here?
237	David	Van het schuren bijvoorbeeld, en.	From sanding for example, and.
238	David	Het, maar het zal niet exact hetzelfde zijn.	It, but it will not be exactly the same.
239	Soraida	Ja nou eigenlijk.	Yes actually.
240	Soraida	Nou ja, kijk de voorbeelden die nu voor ons complex zijn, maar Daarom is het denk ik wel interessant is bijvoorbeeld Als je gaat renoveren moeten we vaak iets aan isolatie gaat even nieuw schil dat even het voorbeeld wat je dan ziet is Als je daarna de werkzaamheden hebt uitgevoerd. Dan zie je het isolatiemateriaal niet meer.	Well, watch the examples that are now complex for us, but that's why I think it's interesting, for example, if you are going to renovate, we often have to have something about insulation just new peel that just the example you see then is if you then the have carried out activities. Then you no longer see the insulation material.
241	Soraida	Dus je hebt twee momenten, dus het moment van isolatie plaatsen. Daar moet een foto van gemaakt worden en Als de gevel weer netjes dichtgemaakt wordt, moet er weer een foto gemaakt worden.	So you have two moments, so place the moment of insulation. A photo must be taken and if the facade is neatly closed again, a photo must be taken again.
242	Edsel	Het is de almachtige before and after fotos.	It is the almighty Before and after photos.
243	Soraida	Ja precies precies precies.	Yes exactly exactly.
244	Soraida	En dat het materiaal er ook werkelijk in zit.	And that the material is actually in it.
245	Soraida	Want dat moeten we eigenlijk maar eigenlijk bij schilderen, verwacht ik ja, Maar dat is even de vraag, waar gaan we naartoe?	Because we actually have to paint that, I expect yes, but that is just the question, where are we going?
246	Soraida	Want als Als je schaarste gaat krijgen, dan wordt het al een heel ander verhaal Natuurlijk. In de toekomst, als materiaal, heel schaars en heel duur gaat worden, dan kan je Misschien wel voorstellen dat zelfs ook het gronde.	Because if you get scarcity, then it will be a completely different story of course. In the future, as a material, will be very scarce and very expensive, then you may be able to imagine that even the land.
247	Soraida	Misschien vastgelegd moet worden en daarna het aflakken uit alle twee die twee zeker In de wet kwaliteitsborging Misschien gaan komen.	Perhaps it should have to be recorded and then the relaxation from both those two certainly will come in the Quality Assurance Act.
248	Edsel	Denk ik ja, precies.	I think yes, exactly.
249	Edsel	Ja, dat zijn de cruciale.	Yes, those are the crucial.
250	David	Ja, hoe staan jullie daar zelf in dat dit?	Yes, how do you stand there that this is?
251	David	Dat dit gebeurt, dat zeg Maar de eigenlijke steeds hogere focus op die controle komt.	That this happens, that the actual increasingly higher focus is on that control.
252	Edsel	Aan de ene kant wel goed.	On the one hand well.
253	Edsel	Ja zo, zo word je ook werkelijk?	Yes, that's how you really become?
254	Edsel	Beoordeelt op de kwaliteit die je levert.	Assesses the quality that you deliver.
255	David	Ja	Yes

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256	Edsel	Is de kwaliteit niet daar behoorlijk, dan zullen er vast wel consequenties aan zijn en dat zullen we bepaalde onderaannemers.	If the quality is not proper there, then there will probably be consequences and we will have certain subcontractors.
257	David	Ja precies.	Yes, exactly.
258	Edsel	Of bepaalde groepen die ondermaats presteren, Maar de toch elke keer mee weggkomen, wel gewoon op de vingers worden getikt van hé, Wij zijn Willems. Wij staan voor dit soort kwaliteit, dienen we en moeten we ook aanleveren.	Or certain groups that perform below par, but the getting away with each time, are simply tapped on the fingers, we are Willems. We face this type of quality, we serve and we must also deliver.
259	Edsel	Zo niet, dan is het slechts voor het bedrijf en slecht voor je eigen beroep.	If not, it is only for the company and bad for your own profession.
260	David	Yes. in die zin is zeg maar die ook controles ook een een kans voor jullie om meer te laten zien waar jullie hoe goed ja, jullie jullie kwaliteit.	YES. In that sense, say those also checks is also a chance for you to show more where you how good yes, you your quality.
261	Soraida	Alleen is het wel zo dat Dat is een beetje het punt nu waar we het nu een beetje knijpt, is dat de opdrachtgever wil betalen voor hoge kwaliteit isolatie, maar niet wil betalen voor hoge kwaliteit. Schilderwerk.	Only it is that that is a bit the point now where we squeeze it a bit now is that the client wants to pay for high quality insulation, but does not want to pay for high quality. Paintwork.
262	Soraida	En daar zitten we nu, dus dan is de vraag in hoeverre, Waarom blijft het nog steeds interessant eigenlijk In de bouw van waar gaan de kwaliteit?	And there we are now, so the question is to what extent, why does it still be interesting in the construction of where do the quality go?
263	Soraida	En, Ik denk waar ze voor willen betalen, want duur is wat Misschien schaars wordt, dan zou dit echt wel van toepassing zijn, denk ik ook begrijpelijk, maar bij schilderwerk? Ja, ik Ik ben.	And, I think what they want to pay for, because what might be scarce is, then this would really apply, I also think understandably, but in painting? Yes, I am.
264	Soraida	Daar merk je gewoon dat.	You just notice that there.
265	Soraida	Ze willen eigenlijk niet veel betalen en niet veel de waarde toegevoegde waarde wordt soms niet echt gezien. Ik denk dat dat wel gaat veranderen, dus Ik denk wel dat dat met de tijd gaat veranderen. Hoe schaarse materiaal wordt, hoe minder snel je maar iets kan.	They don't really want to pay much and not much the value added value is sometimes not really seen. I think that will change, so I think that will change with time. The scarce material, the less quickly you can do something.
266	Soraida	Uit het bouwwerk kan halen en.	Can get from the structure and.
267	Soraida	Maar weer terug kan zetten.	But can put back again.
268	Soraida	Want nu kan alles nog terug, hè? We hebben nu genoeg hout, Maar ik denk.	Because now everything can be back, isn't it? We now have enough wood, but I think.
269	Soraida	Dat dat niet de toekomst gaat zijn, dus dan zou waarschijnlijk.	That that is not going to be the future, so then would probably.
270	Soraida	Dit wel belangrijk worden.	This is important.
271	Edsel	Voor het proces meting voor een voorman is het wel heel belangrijk om. Proces meting houdt de voorman of uitvoerder houdt het elke keer bij de grootte van het project en er staan ook de uren en de handelingen.	For the process measurement for a foreman it is very important to. Process measurement, the foreman or performer keeps it every time with the size of the project and there are also the hours and actions.
272	Edsel	En hoe lang iets, hoe lang je er over iets moet doen.	And how long something, how long you have to do about it.
273	Edsel	En ook of alles wel correct wordt wordt gedaan.	And also whether everything is being done correctly.
274	Edsel	Zeg maar.	Say.
275	Soraida	Maar zijn die processen metingen nu bij alle om alle projecten zo op die manier echt alle uren?	But are those processes measurements now with all all projects really all the hours that way?
276	Edsel	Nee, maar die moeten wel gedaan worden, maar.	No, but they have to be done, but.
277	Soraida	Wat gebeurt ook niet overal, toch?	What doesn't happen everywhere, right?
278	Edsel	nee goed, niet overal nee.	No, not everywhere no.
279	Edsel	Het proces meting moet een keer volgens mij een keer per week moet dat gedaan worden, volgens mij.	I think the process measurement should be once a week, I think that should be done.
280	Soraida	Ja, Ik heb het proces, zover ik nu kan zien, twee keer per één keer In de twee weken, Maar dat wordt niet altijd de uren ingezet.	Yes, I have the process, as far as I can now see, twice every two weeks, but that is not always used the hours.
281	Edsel	Dat kan inderdaat	That is possible
282	Soraida	Maar dat vragen opdrachtgevers wel, ja.	But that is what clients ask, yes.
283	David	Ja, We hebben nu al een redelijk breed onderwerp behandeld.	Yes, we have already dealt with a fairly wide topic.
284	David	Dan gaan we nu even een paar dingen inzoomen.	Then we are going to zoom in a few things.
285	David	Let's have a quick recap of what we talked about. I haven't zoomed in on the three topics specifically but a lot of it has already been touched upon, I think.	Let's have a quick recap of what we talked about. I port zoomed in on the three topics specifically but a lot of it has already leg touched upon, I think.
286	David	Mostly it was about the camera.	Mostly it was about the camera.

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287	Lenny	There is the before and after pictures, there is the.	There is the before and after pictures, there is the.
288	David	Yeah well, with the. It does represent a greater degree of control and of course the authority. It is an extension of the authority of the foreman, but then it doesn't really matter that much if the pictures are going to the foreman or if they are just used to communicate to the painters themselves. Like, is this good right now or not? It does show a clear lack of thrust in the painters capability to asses their own work. To have them keep going back and like take a picture its also just like pragmatically, it takes time. Which can be annoying. But then its. But then the greater degree of control. A little bit was about how that sort of kind of a trend that is increasing anyway. That there is also like a greater desire and need for control from the top down because of.	Yeah Well, with the. It does represent a Greater degree of Control and Course the Authority. It is an extension of the Authority of the foreman, but then Doesn't really Matter that much if the pictures are going to the foreman or if they are just used to communicate to the painters themselves. Like, is this good right now or not? It does show a clear lack of thrust in the painters capability to asses their own work. To have them keep going back and like take a picture its also just like pragmatically, it takes time. Which can be annoying. But then its. But then the Greater Degree of Control. A Little Bit was about how that sort of child or a trend that is increasing anyway. That there is also like a greater desire and need for control from the top down because of.
289	Soraida	Yes, the European legislation.	Yes, the European Legislation.
290	David	Yes.	YES.
291	Lenny	Yeah, more control more wanting to.	Yeah, more control more wanting to.
292	Soraida	Yeah, its one of the European legislation to prove to validate that the work that is executed is correct and with the standards that they requested. So it's also a legislation problem.	Yeah, its one of the European legislation to prove to validate that the work that is executed is correct and with the standards that they requested. So it's also a legislation problem.
293	David	So on one hand that increasing control is kind of like its going to happen anyway, you'll have to deal with it but then also its not necessarily a bad thing. Because it also gives opportunity to prove for people that deliver quality work to show that.	So one hand that increasing control is child or like its going to happen anyway, you'll have to deal with it but then also not necessarily a bad thing. Because it also gives opportunity to proof for people that delivery quality work to show that.
294	David	People that do not do quality work will be called out.	People that do not do quality work will be called out.
295	Lenny	Yeah, they'll know. They'll show up because.	Yeah, they'll know. They'll show up because.
296	David	Yeah, so.	Yeah, so.
297	David	And then we also talked about Asterix and Obelix. How that was generally seen. Assuming that they don't get in the way.	And then we also talked about asterix and obelix. How that was generally sea. Assuming that they don't get in the way.
298	Lenny	That's good because you can be working faster.	That's good because you can be working faster.
299	David	Yeah, and you don't have to keep going up and down	Yeah, and you don't have to keep going up and down
300	David	So, we have like three topics of ja..	So, we have like three topics or yes ..
301	David	Ik doe het wel gewoon in het Nederland. We hebben 3 onderwerpen waar we eigenlijk op in willen zoomen en dat zijn uitbesteding.	I just do it in the Netherlands. We have 3 topics that we actually want to zoom in and that are outsourcing.
302	David	En dan dus uitbesteding van jouw werk als schilder aan robots.	And then outsourcing your work as a painter to robots.
303	David	Autoriteit, dus wanneer een machine Autoriteit krijgt, hoe, wat vinden we daarvan. En autonomie? Zeg maar in, hoe moeten de. Hoeveel autonomie hou je als schilder over wanneer robots of hoe kunnen robots jouw eigen autonomie?	Authority, so when a machine is authority, how, what do we think about it. And autonomy? Say in, how should the. How much autonomy do you have as a painter about when robots or how can robots can your own autonomy?
304	Lenny	The robots, that the exoskeleton imposes some autonomy. Like that you want to move but it prevents you	The Robots, That the Exoskeleton Imposes Some Autonomy. Like That You Want To Move But It Prevents You
305	Soraida	Yeah, it restricts.	Yeah, it Restricts.
306	Lenny	But it can also sort of. You know what, I need to go up there, you do the work. That's an other use.	But it can also sort or. You know what, I need to go up there, you do the work. That's an other use.
307	David	0 yeah we did also talk about the suit.	0 yeah we did also talk about the suit.
308	David	That it is a very negative way of pushing someone towards a better posture. It be nice to just instead of focusing on making them fix their posture and like beating them with a stick when they don't. That it would be nice to just use the technical innovation to make the work faster more easier so you're not going to ever get such injuries anyway.	That it is a very negative way of pushing some Towards a better posture. It be nice to just insead of focusing on making them fix their posture and like beating them with a stick when they don't. That it would be nice to just use the technical innovation to make the work faster more so you're not going to ever get such injuries anyway.
309	David	Oké, dus eerst dat dat uitbesteden, dat willen we eigenlijk hebben. Welk wat voor werk zou je graag uit handen willen geven? En wat wil je houden?	Okay, so first that outsource, we actually want that. What kind of work would you like to hand over? And what do you want to keep?
310	David	Dus Als we dan kijken naar die asterix en obelix.	So if we look at that Asterix and Obelix.
311	David	Hoe voel je je erbij dat ja robots eigenlijk toch wat fysiek werk bij jou van jouw van jouw baan wegneemt.	How do you feel that yes robots actually take away some physical work from you from your job.

id	speaker	text	text_en_clean
312	David	Vind je dat iets?	Do you think that is something?
313	David	Vind je dat helemaal oké?	Do you think that's all okay?
314	Edsel	Als het fysieke belasting wordt afgenomen, is eigenlijk allen maar beter.	If the physical stress is taken, all is actually better.
315	Edsel	Het dragen van gereedschap of materiaal.	Wearing tools or material.
316	Edsel	Dat scheelt al een hele hoop.	That already saves a lot.
317	Edsel	Er zijn bepaalde handelingen die ze dan zouden kunnen overnemen.	There are certain actions that they could then take over.
318	Edsel	Wassen, schuren.	Wash, sand.
319	Edsel	Dat zijn meestal de vervelendste dingen die men overslaat.	Those are usually the most annoying things that people skip.
320	David	Oke, Denk, denk je dat?	Okay, do you think so?
321	David	Maar denk je dat Iedereen het daar over eens is, als het gewoon als een robot dat kan overnemen, dan is dat. Dat is gewoon top.	But do you think everyone agrees, if it can just take over as a robot, then that's. That's just great.
322	Edsel	Ik denk het wel.	I think so.
323	David	Ja oke.	Yes okay.
324	Edsel	Ja, dat zijn de. Dat zijn de twee voornaamste vervelendste taken als als schilder en elke keer voorkomen elke keer weer hetzelfde schuren wassen, schuren wassen, schuren wassen. En als dat door een robot efficiënter sneller en fysiek minder belastend zal zijn.	Yes, that's the. These are the two main most annoying tasks such as as a painter and every time occur the same sanding, washing sanding, washing sanding every time. And if that will be less taxable faster and physically due to a robot.
325	Edsel	Ik denk dat die Misschien wel zelfs dat 70 - 80% zegt.	I think it might even say that 70 - 80% say.
326	Edsel	Van ja hup, doe maar.	From yes hup, do it.
327	David	De 70 80% en Waarom 30 20% niet denk je?	The 70 80% and why 30 20% don't you think?
328	Edsel	Misschien zei dat Mensen die dat zelf nog wel In de hand houden. en Ik denk ja, ik doe het zelf wel, want Ik kan het Misschien wel beter doen, en sneller?	Maybe people said that they still control that themselves. And I think yes, I do it myself, because I might do it better, and faster?
329	David	Die dat soort van Misschien trots hebben.	Who may have that kind of pride.
330	David	Ja ja precies ja.	Yes yes exactly yes.
331	Edsel	We zijn altijd. er is altijd wel een groepje dat net wel blijven vasthouden aan het gene wat ze alleen kennen en niet in een innovatie een beetje een rol willen laten.	We are always. There is always a group that just stick to the one that they know alone and do not want to play a little role in an innovation.
332	David	Ja precies.	Yes, exactly.
333	David	Misschien denken, oh, dan moet ik ook maar weer zo'n machine afstellen en dat.	Maybe think, oh, then I have to adjust such a machine again and that.
334	Edsel	Ja afstellen en dergelijke? Ja.	Yes and the like? Yes.
335	David	Dat is ook moeilijk.	That is also difficult.
336	David	Delario mee eens?	Delario agree?
337	Delario	Daar ben ik het zeker mee eens.	I certainly agree.
338	Delario	Als het.	If it.
339	Delario	Jouw kan helpen met zwaardere spullen dragen en wassen schuur. Wat het zo zegt, dan ben ik het daar wel mee eens.	You can help with wearing heavier items and washing shed. What it says, then I agree.
340	David	Oké zou je dan ook zorgen maken dat ze Misschien oké en als een robot kan wassen en schuren dat ze meer van je werk?	Okay would you also be worried that she might be okay and if a robot were to sand and sand that they are more of your work?
341	David	Over gaan nemen.	Take over.
342	Delario	Ene kant wel aan de andere kant niet.	One side not on the other.
343	David	oké?	Okay?
344	Delario	Want ja, Als je Als je zegt, Als je hem goed kan afstellen dat hij Alleen was en schuren voor jou doet, en dan niet het andere werk.	Because yes, if you say, if you can adjust him well that he was alone and do sand for you, and then not the other work.
345	David	Ja, maar Misschien?	Yes, but maybe?
346	David	Zecht de opdrachtgever dan well he, We kunnen het goedkoper door die robot Laten doen.	The client sought, hey, we can have it done cheaper by that robot.
347	David	Maar dat is Misschien ook niet jouw.	But that may not be yours either.
348	David	Maar, je hebt zelf zelf zou je niet willen dat een robot bijvoorbeeld ook daadwerkelijk gaat verven of de daar daarbij gaat helpen.	But, you yourself would not want a robot to actually paint or will help with that.
349	Delario	Nee	No
350	David	Nee, Waarom niet?	No, why not?
351	Delario	Ja, dat moet Natuurlijk ook nog wel zelf banen overhouden Voor Mensen.	Yes, that must of course also keep jobs for people yourself.

id	speaker	text	text_en_clean
352	David	Ja ja, en Dat is gewoon een deel van het werk dat je het ook gewoon leuk vindt om te doen.	Yes yes, and that is just a part of the work that you just like to do.
353	David	Oké.	Okay.
354	David	Ja, Dat was de volgende vraag. zijn er ook delen van het werk waar je zelf de volledige controle over wil houden, Maar dat is dan dat neem ik aan?.	Yes, that was the next question. Are there also parts of the work that you want to keep full control over, but that is that I assume?.
355	Edsel	Ja, Het schilderen zelf.	Yes, painting itself.
356	Edsel	Gronden, aflakken, kitten en die eventueel plamuren en wat andere reparatie dat zelf.	Grounds, releasing, kitten and those possibly filling and some other repair yourself.
357	David	Eigelijk Alles wat je ziet ook soort van?	Actually everything you see also kind of?
358	Edsel	Ja, het zicht werk gewoon zelf.	Yes, the vision just work yourself.
359	David	Ja oke, ja Waarom?	Yes okay, yes why?
360	Edsel	Ja, het blijft toch gewoon handen werk toch? Wat je met je handen doet.	Yes, it just remains hands, right? What you do with your hands.
361	David	Ja ja ja oke oke ja het is handen werk. Maar wat daar aan?	Yes yes yes okay ok yes it's hands work. But what about that?
362	Edsel	De Controle die je daar zelf over houdt, en.	The control that you keep about that yourself, and.
363	Edsel	En iets waar je zelf uiteindelijk wel trots op kan zijn.	And something that you can ultimately be proud of.
364	David	Ja, toch trots, voldoening.	Yes, still proud, satisfaction.
365	Edsel	Ja voldoening en het eind resultaat dat je zelf dat zelf het gecreëerd. over robots het beperkt ook in een bepaalde kader van dat ze niet alles gaan overnemen, of waar?	Yes satisfaction and the end result that you yourself create it yourself. About robots it also limits it in a certain framework that they are not going to take over everything, or where?
366	David	Ja precies.	Yes, exactly.
367	Edsel	En uiteindelijk staan wij dan daar	And in the end we are there
368	Edsel	Ik ben voor innovatie en.	I am for innovation and.
369	David	Ja ja ja.	Yes Yes Yes.
370	Edsel	En dinges, maar tot de zekere punt.	And dinges, but to the certain point.
371	David	Als Je eigen huis moest Laten schilderen, stel eventjes.	If your own house had to be painted, imagine.
372	David	Nou nee, je bent natuurlijk een schilder.	Well no, of course you are a painter.
373	David	Dus, ik neem aan stel, je zou je huis Laten schilderen, dan zou je dat Misschien zelf doen?	So, I assume, you would have your house painted, would you might do that yourself?
374	David	Maar stel, je moest daar iemand voor inhuren en zo de keuze hebben om dat door schilder robots Laten doen, of door menselijke schilders.	But suppose you had to hire someone for that and thus have the choice to have it done by painter robots, or by human painters.
375	Edsel	Menselijke schilders toch wel	Human painters
376	David	Ja Waarom?	Yes why?
377	Edsel	We heb je toch wel een beetje interactie met die met die met die persoon. Als je het echt niet in me eens bent of het kan net iets anders.	We have a little interaction with that with that with that person. If you really disagree in me or it can be slightly different.
378	David	Ja.	Yes.
379	Edsel	Hij heeft een idee hoe iets er mooier er uit zou kunnen zien dan kan hij dat ook overleggen met de robot.	He has an idea how something could look more beautiful, then he can also consult with the robot.
380	David	Zie je het ook terug denk, zou je het ook terug?	Do you see it again, would you also go back?
381	Edsel	Ik denk empathie en weinig interactie.	I think empathy and little interaction.
382	Soraida	Ja, Maar dat is ook nodig, hè? Want eigenlijk wat je doet is wel belangrijk je Het is soms wordt Er iets gevraagd, maar Als schilder ga je ook nog kijken?	Yes, but that is also necessary, right? Because actually what you do is important you it is sometimes something is asked, but as a painter you will also look?
383	Soraida	En dan beoordelen.	And then assess.
384	Soraida	En dan gaat het soms toch iets op een andere manier dan dat Misschien In de werk In de planvorming, want daar wordt dus bedacht wat er moet gebeuren. Wat gaat het toch anders dus?	And then sometimes it goes something in a different way than perhaps in the work in planning, because there it is thought about what needs to be done. What else is it?
385	Soraida	Een opdrachtgever die die vraagt allemaal offerte, dan gaat ons de afdeling plan ontwikkeling, planvorming gaat dan bedenken hoe het werk gedaan moet worden.	A client who all asks for it, then us the Plan Development department, planning will then consider how the work should be done.
386	Soraida	Maar wat je vaak ziet, dan heb je daarna werkvoorbereiding dat uiteindelijk als ze op een werk zijn, dan gaat het toch soms anders.	But what you often see, then you have work preparation after that when they are on a work, then sometimes things are different.
387	Soraida	Omdat een schilder zegt, dan weet ik veel nou, ik zou dit toch maar anders nog wat dan ook. En Als je daarover nadenkt, dan moet die robot hè, Die zou dan bij die werkvoorbereiding al geprogrammeerd zijn.	Because a painter says, I know a lot well, I would otherwise do anything else. And if you think about that, then that robot must, it would be programmed with that work preparation.

id	speaker	text	text_en_clean
388	Soraida	En, Dat is een beetje wat je bedoelt, Maar dat je eigenlijk dan toch want het heeft, je kan nog aangrijpen die keuzes flexibel.	And, that's a bit what you mean, but that you actually because it has, you can still use those choices flexible.
389	David	Keuzes kunnen maken.	Being able to make choices.
390	Edsel	Interactie en en die ideeën kunnen delen met elkaar, Zonder dat dat geprogrammeerd staat van he.	Interaction and and those ideas can share with each other, without being programmed by hey.
391	Edsel	Ik heb deze opdracht gekregen, dus Ik ga hem ook zo uitvoeren.	I got this assignment, so I'm going to perform it that way.
392	Soraida	Letterlijk ja.	Literally yes.
393	Edsel	Het zou Misschien ook anders zeggen, anders kunnen.	It might also say differently.
394	Edsel	In verband met weet je door middel van overleg en ideeën, delen met elkaar en.	In connection with you know through consultation and ideas, share with each other and.
395	Edsel	Waarschijnlijk ook Leiden tot ook efficiënt Werken?	Probably also lead to efficient work?
396	David	Dit is, Dit is niet per se vragen, maar daar ben ik zelf wel Benieuwd naar, heb je, zeg maar?	This is, this is not necessarily asking, but I am curious about that, do you, say?
397	David	Dan heb je een soort signature nature als schilder. Als je werkt heb je, kun je aan het werk soms terug zien van.	Then you have a kind of signature nature as a painter. If you work you have, you can sometimes see the work of.
398	David	Kun je de mens zeg maar terugzien in het werk?	Can you see people again in the work?
399	Edsel	Ja soms wel soms kan je wel zien of iemand wel gewoon met met een kwast heeft gedaan of met de roller, maar ook de dikte van de verf die iemand gebruikt.	Yes sometimes you can see if someone has just done with a brush or with the roller, but also the thickness of the paint that someone uses.
400	Edsel	Dus op het via soms hele dikke kwast strepen nog na. Sommigen zijn gewoon heel glad, dat weet je van.	So except for sometimes very thick brush stripes. Some are just very slippery, you know that.
401	Edsel	Oké, deze persoon die?	Okay, this person that?
402	David	En Het is, Dat is dat altijd, zeg maar beter of slechter. Of zijn daar ook gewoon verschillende manieren om het te doen is er ook een soort van stijl van schilderen? Ja.	And it is, that is always, say better or worse. Or are there just different ways to do it there is also a kind of style of painting? Yes.
403	Edsel	Ja met de kwast ja toevallig met de kwast is is is het altijd wel mooier en meer verf en meer dikte op je op je ondergrond of je je deur.	Yes with the brush yes happen to be with the brush is it is always more beautiful and more paint and more thickness on your surface or your door.
404	Edsel	Dan met een roll. Maar met een rol een rol heb je veel minder verf dikte en je ziet altijd een beetje van die sinaasappel huid.	Then with a roll. But with a roll a roll you have much less paint thickness and you always see a bit of that orange skin.
405	David	Ja precies.	Yes, exactly.
406	Edsel	En dat kan je altijd wel teruggezien, ja.	And you can always see that, yes.
407	David	Ja oke	Yes okay
408	Edsel	En aan de hand van dat kan je wel zien of iemand.	And on the basis of that you can see if someone.
409	Edsel	Kan echt werkelijk kan schilderen, of.	Can really paint, or.
410	David	Ja precies.	Yes, exactly.
411	Edsel	Of het maar gewoon even doen, Omdat het maar gedaan Moet worden en dat het Gewoon zijn Werk is.	Or just do it for a while, because it has to be done and that it is just its job.
412	David	Ja, Ik denk dat je dat soort dingen ook terug zou zien.	Yes, I think you would see things like that again.
413	david	Wanneer robots dat soort werk zouden Doen lijkt me?	When robots would do that kind of work seems to me?
414	Edsel	ja	Yes
415	David	je ziet ook wel.	You can see too.
416	Edsel	Die gaan waarschijnlijk voor snelheid.	They probably go for speed.
417	David	Ja precies ja.	Yes exactly yes.
418	Edsel	En dan alles met de roller waarschijnlijk.	And then everything with the roller probably.
419	David	OK.	OK.
420	David	So for delegation	So for delegation
421	David	Yeah, if it is just taking over fiscal labor generally it is probably a good thing. Probably not that controversial even something like washing and sanding could be. Because it is just annoying work. Could be nice to have robots help with that. But then there is when it gets to the actual painting that like a very. And even the sanding and washing, not every painter would probably want that. Because people kind of like to stick to the old way of working and would maybe not trust a robot. They would think that it would make things more complicated.	Yeah, if it is just a try about fiscal labor generally it is probable a good thing. Probably not that controversial just something like Washing and Sanding Could Be. Because it is just annoying work. Could be nice to have robots help with that. But then there is when it gets to the actual painting that like a very. And just the sanding and washing, not every cone toe probably because that. Because people child or like to stick to the old way of working and would Maybe not trust a robot. They would think that would make things more complicated.

id	speaker	text	text_en_clean
422	David	But then the actual painting. When I think. We got a lot of like. I think a lot was said about what makes that important. And why it is both important for the painters themselves and also why is it important for humans to do that kind of work. Like what sort of abilitys you must have to sort of like do that work and also like and your like proud of. I asked like, if you got your house painted would you let a human or robot do it? And that also led to some interesting things you would value about a human doing it.	But then the actual painting. When I Think. We get a lot or like. I think a lot was said about what makes that important. And why it is Both Important For The Painters Themselves and also Why Is It Important For Humans To Do That Kind Of Work. Like what sort of abilitys you must have to sort or like do that work and also like and your like proud or. I asked like, if you got your house painted would you let a human or robot do it? And that also led to some interesting things you would value about a human doing it.
423	Edsel	De vraag dan aan jouw. Would you like to let a robot paint your house or a human?	Then the question to you. Would you like to let a robot paint your house or a human?
424	Lenny	0 which one I would pick.	0 which one I would pick.
425	David	Yeah, how would you answer it?	Yeah, how would you answer it?
426	Lenny	I would do it with my dad probably. But its is also I think. From the conversations and speaking with you and than with the painters from Elk. It sort of. The physical brush movement that is, you cannot change that. In making this story I was thinking, Okay if you cant do that, what else can you do? Maybe cary there stuff? Cause you have to carry the buckets with the paint and sort of, and you have to go on the scaffolding like four floors. It's a lot of carieign. But I was curious? If you where to have something like this and you could maybe have it sand for you. We have some robot that sands or cleans. No like Asterix and Obelix don't do anything. They just do what you tell them. They come, go, life. What kind of behaviour would you expect from these machines. Like how smart do they have to be to help you?	I would do it with my dad probably. But it is also i think. From the conversations and speaking with you and than with the painters from Elk. It sort or. The physical brush movement that is, you cannot change that. In making this story I was thinking, okay if you cant do that, what else can you do? Maybe Cary there stuff? Cause you have to carry the buckets with the paint and sort of, and you have to go on the scaffolding like four floors. It's a lot of carieign. But I was Curious? If you where to have something like this and you could Maybe have it sand for you. We have some robot that sands or cleans. No Like Asterix and Obelix Don't Do Anything. They just do what you tell them. They come, go, life. What Kind of Behavior would you Expect From These Machines. Like how smart do they have to be to help you?
427	Edsel	Flexible	Flexible
428	Lenny	How so? Like for example would they. Just to get an understanding of the flexibility is that. Like: "Exoskelet: sand!" and you will trust it that it will do it good or? Or does it have to be more like okay you missed a spot there?	How so? Like for example would they. Just to get an understanding of the flexibility is that. Like: "Exoskeleton: Sand!" And you will trust it that it will do it good or? Or does it have to be more like okay you missed a spot there?
429	Edsel	Nou ja, kijk Als het Als het robots geweest zou moeten zijn, dan moet het vertrouwen er wel zijn dat het gelijk in een keer goed gaat gebeuren. Anders is het geen functie of heeft geen nut om een robot in handen te nemen.	Well, if it should have been robots, see, then there must be trust that it will happen right at once. Otherwise it is not a function or has no use to take over a robot.
430	Edsel	Om het werk dan te verlichten. Er moet wel flexibiliteit zijn, betrouwbaarheid.	To relieve the work. There must be flexibility, reliability.
431	Edsel	En de aansturing moest goed zijn. En het moet niet.	And the control had to be good. And it doesn't have to.
432	Lenny	Not big?	Not big?
433	Edsel	Juist. Het moet niet al te groot zijn.	Correct. It should not be too big.
434	Edsel	Het moet compact kunnen zijn en efficiënt	It must be compact and efficient
435	Edsel	Dat het makkelijk in gebruik is.	That it is easy to use.
436	David	Die flexibiliteit. Het gaat over dat hij niet gewoon blind een programma uit voor, maar als er bijvoorbeeld ergens een spijkertje uitsteekt of iets.	That flexibility. It is about not just blindly out a program, but if, for example, a nail sticks out or something.
437	Soraida	De slim is ja slim.	The smart is yes smart.
438	David	Iets anders is dan verwacht dat hij dan daarmee kan omgaan.	Something other than expected is that he can then deal with it.
439	Edsel	Dat hij dat Hij de situatie wel kan inlezen voordat voordat	That he can read the situation before before before
440	Edsel	Zeg Maar dat ie een paar meter voor een steiger is dat hij al een beetje leest van oké hier zijn steigerplanken, Dit is die weg waar ik naartoe moet en Misschien door middel van een een wat die gast had een handschoen. Daarmee kon hij het bedienen.	Say that he is a few meters before a scaffolding that he is already reading a bit of ok here, his scaffolding planks, this is the way where I have to go and perhaps through a what that guy had a glove. He could serve it with that.
441	Edsel	Dat dat hij dan een bepaalde signaal afgeeft naar die Asterix en Obelix van nee, Hij is weer op te stijgen bezig, Omdat hij weet precies hoe hij zich moet manoeuvreren door de steigerplanken heen of door de gebouwen om te komen waar hij moet komen.	That he then sends a certain signal to that Asterix and Obelix of NO, he is going up again because he knows exactly how to maneuver himself through the scaffolding boards or through the buildings to get where to go.
442	Lenny	Like a roomba (+ sound effects)	Like A Roomba (+ Sound Effects)
443	Others	ja	Yes

id	speaker	text	text_en_clean
444	David	Basically, being able to adapt to specific circumstances and not just like failing when one thing is slightly different then another window or something.	Basically, Being Able to Adapt to Specific Circumstances and not Just Like Failing When One Thing Is Slightly Different then Another Window or Something.
445	David	Ja dan dus Autoriteit we hebben het al over de camera en hebben we het ook wel redelijk Redelijk over gehad.	Yes then authority we are already talking about the camera and we also had a reasonable reason.
446	David	Die camera is dus eigenlijk een soort van nieuw Autoriteit figuur die nog bij.	So that camera is actually a kind of new authority figure that is still there.
447	David	Die erbij komt?	Who is added?
448	David	Ik weet niet Misschien of jullie het ook zo zagen dat die camera eigenlijk een soort van Autoriteit over jou gaat uitoefenen.	I don't know if you also saw it that the camera is actually going to exercise some sort of authority about you.
449	Edsel	Ja	Yes
450	David	Ja wat voor?	Yes what for?
451	David	A nee dit is een betere vraag, wat voor controle?	A No This is a better question, what kind of control?
452	David	Zou jij over de planning willen hebben, want nu gaat die camera. Die gaat dan gewoon alle taken opstellen en zeg maar zeggen van nu moet je dit doen, nu moet je dat doen.	Would you like to talk about the planning, because now that camera is going. He will simply prepare all the tasks and say from now on you have to do this, now you have to do that.
453	David	Is dat oké of.	Is that okay or.
454	Delario	Ja, dat zou wel.	Yes, that would.
455	Delario	Als hij dan bijvoorbeeld die foto maakt en dat hij van jou zegt, wassen, schuren, schrobben.	For example, if he takes that photo and that he says of you, washing, sanding, scrubbing.
456	Delario	En als jij dat zelf niet zo ziet, want dat Je moet krabben Als je dat niet ziet. Maar die camera die dat wel als hij zegt dan dat je het moet doen, dat je het kan doen wat niet Als je het dan overslaat, dat het dat hij tegelijk dat het netjes aangeeft van je hebt iets overgeslagen en dat jij ook In de camera of In de instelling kan aanpassen van het hoeft niet Geschrapt te worden.	And if you don't see it that way, because you have to scratch if you don't see it. But that camera that if he says that you have to do it, that you can do it what if you then skip it, that it at the same time he has neatly indicated something from you and that you also in the camera Or can adjust it in the institution does not have to be deleted.
457	Delario	En dat hij dan niet blijft piepen of aangeven van je hebt overgeslagen.	And that he will not continue to beep or have skipped from you.
458	David	Ja, nee, Dat is, Dat is eigenlijk, je wil niet. Je zou die Autoriteit niet bij zo'n systeem willen leggen, denk ik.	Yes, no, that's, that's actually, you don't want. You would not want to put that authority with such a system, I think.
459	David	Nee die camera die doet zijn, zijn analyse die zegt, Je moet schaffen, maar je zegt, nee, dat hoeft hier niet.	No that camera that does are analysis that says, you have to buy, but you say, no, you don't have to do that here.
460	David	Dan moet je dat gewoon, dan moet die camera niet blijven zeggen van.	Then you just have to, then that camera should not continue to say.
461	Soraida	het moet te overrulen zijn eigenlijk he.	It must be overruled actually huh.
462	David	ja.	Yes.
463	Edsel	Ja, Het is Het is dat autoritaire gedeelte, dat zou gewoon de functie kunnen zijn of moeten zijn die je gewoon uit kan zetten, dat hij elke keer zegt wat je moet doen. Wat gewoon inscannd en en jouw de werkplanning voorschrijft en dat je weet welke handelingen Je moet verrichten om uiteindelijk goede resultaten te krijgen. Prima tot daar.	Yes, it is that authoritarian part, that could simply be the function that you can simply turn off, that he says what to do every time. What just scanned and and you prescribe the work planning and that you know what actions you have to perform to get good results. Great to that.
464	David	Ja dus eigenlijk, dus hij ja?	Yes so actually, so he yes?
465	David	Je ziet het zeg maar als een adviesfunctie is helemaal oké, maar een Autoriteit functie dat Dat is de grens daar, ja.	You see it as an advisory function is completely okay, but an authority function that is the limit there, yes.
466	David	Ja precies en stel je.	Yes exactly and imagine.
467	David	Nou ja, We hebben dus het systeem en opdrachtgevers en zo die hechten daar blijkbaar waarde aan die denken. Nou, zo'n systeem is te vertrouwen.	Well, so we have the system and clients and so they apparently value it. Well, such a system can be trusted.
468	David	Iedere schilder is anders, dat vertrouwt Misschien minder. Stel je die camera die zegt, die moet, Je moet wel schrabben, ik doe het niet, je zet dat uit, wordt er vervolgens wel doorgegeven aan, wordt er wel in een rapport gezet dat je dat je dat geweigerd hebt, zeg Maar dat jij tegen een systeem in bent gegaan.	Every painter is different, that may trust less. Suppose that camera that says, you have to, you have to scrape, I don't do it, you turn it off, then it is passed on to it, it is stated in a report that you have refused that, say that you went against a system.
469	David	En, dat komt dan ook weer dat dat komt dan bij de voorman terecht.	And, that again comes that that ends up with the foreman.
470	David	Wat vind je daarvan?	What do you think of that?
471	Edsel	Kut	Cunt

id	speaker	text	text_en_clean
472	Edsel	Ja vervelend, want dit slaat toch wel een stap over die waarschijnlijk wel cruciaal kan zijn, gewoon voor het eindresultaat.	Yes annoying, because this is a step that can probably be crucial, just before the end result.
473	David	Ja, maar je hebt wel je eigen redenen Waarom je dat niet hebt gedaan.	Yes, but you do have your own reasons why you didn't do that.
474	Edsel	En dat daar ben ik dus niet mee eens, wat wat hij zegt dat dat je het zeg maar een bepaalde functie kan uitzetten om uiteindelijk.	And that I do not agree with that what he says that you can say it a certain function to ultimately.
475	Edsel	De camera maakt een foto en constateert bepaalde dingen.	The camera takes a photo and observes certain things.
476	Edsel	Dat is wat hij constateert, maakt hij door middel van wat hij observeert en constateert, maakt hij een werkbeschrijving hetzelfde als wij een werkt bestek krijgen van planvorming van die houten, want zoveel zoveel, zoveel, zoveel procent, al zoveel procent houtrot is, dan moeten wij op zoek gaan. Waar zitten die en voldoet het aan datgene wat we vanuit kantoor krijgen die wij bijvoorbeeld zou je voorstaat 80% houtrot en het wordt 40% houten wordt, dan komen we eigenlijk niet op het goede eindresultaat neer.	That is what he finds, he makes through what he observes and observes, he makes a work description the same if we get a work of the wooden planning, because so much, so much, so much percent, already so much percent is wood rot, then We have to look. Where do it sit and it meets what we get from the office that we would, for example, advocate 80% wood rot and it will be 40% wooden, then we actually do not come down to the good end result.
477	Soraida	Wacht even, wacht even dit vind ik even interessant dat heel toevallig maar zit nu net voor Peter van der wel, die eigenlijk dus het plan ontwikkeling doe je ook voor jullie groep die moeten inspecties doen en hij zegt, ik mag gewoon een bepaald percentage van een gebouw en maar dan krijg jij dus een informatie. 60% is houtrot, maar dan weet je toch helemaal niet waar?	Wait a minute, wait a minute, I find this very interesting that very coincidental but is just now for Peter van der Wel, so that you actually do the plan development for your group who have to do inspections and he says, I just like a certain percentage of A building and but then you get an information. 60% is wood rot, but then you don't know at all?
478	Edsel	Juist, klopt, inderdaad.	Right, correct, indeed.
479	Soraida	Dat is nu ook nog steeds zo, terwijl hij wel inspectie doet. Maar jullie krijgen die documentatie niet.	That is still the case now, while he does inspection. But you don't get that documentation.
480	Edsel	Het vaak gewoon de meeste en doormiddel van die camera. Dat is dan wel weer goed sinds die camera erop. En dan zie je waar houtrot is geconstateerd.	It often just the most and through that camera. That is good since that camera on it. And then you see where Houtrot has been found.
481	Soraida	Ja, wat hij dus eigenlijk all bij planontwikkeling zou moeten doen.	Yes, what he should do all in plan development.
482	Edsel	Juiste ja en dan krijg je gelijk die werkomschrijving toch.	Correct yes and then you immediately get that work description.
483	Edsel	Van houtrot ga schuren, schrappen, gronde, aflakken.	From wood rot go sand, scrap, land, relax.
484	Edsel	Dat is helemaal prima.	That is completely fine.
485	David	Dat is, Dat is niet controversieel, dat ga je. Er is geen reden om dat aan te vechten?	That is, that is not controversial, you're going. There is no reason to challenge that?
486	Edsel	Nee, Dat is geen ding om het aan te vechten voor. Want uiteindelijk ga je wel dienen wij wel gewoon het eindresultaat van de opdrachtgever neer te zetten.	No, that's not a thing to challenge it. Because in the end you will just have to set the end result of the client.
487	David	En ja ja. Maar die die die.	And yes yes. But that that.
488	Edsel	Is een ja.	Is a yes.
489	David	Camera die heeft En die staat ook die staat ook in voor de opdrachtgever.	Camera that has and that also stands that also stands for the client.
490	Edsel	Ja inderdaad.	Yes indeed.
491	David	En, die heeft het plan, maar toch denk ik wat je eerder zei, weet je, je bent als als schilder ben je flexibel.	And, he has the plan, but I still think what you said before, you know, you are as a painter you are flexible.
492	David	Dat is toch wel wat belangrijk, is dat je Er is een plan gemaakt dat Misschien niet perfect is. En Misschien kun je ook.	That is a bit important, is that you are made a plan that might not be perfect. And maybe you can do too.
493	David	Misschien is die camera ook niet, ook niet feilloos. Er zullen toch wel situaties zijn waarin jij daar Misschien niet eens bent? De schilder met het oordeel van die van die camera.	Maybe that camera is not, not flawless either. Surely there will be situations in which you may not agree there? The painter with the judgment of that of that camera.
494	David	Ja, hoe zou je daar dan? Hoe zou je daar dan mee om? Hoe wat?	Yes, how would you be there? How would you handle that? How what?
495	David	Denk je dat de beste manier is om daarmee om te gaan?	Do you think the best way is to deal with that?
496	Edsel	Als je daar dan niet mee eens bent dan gewoon op eigen initiatief gewoon in je eigen ervaring handelen en dat ook gewoon goed kunnen beargumenteren.	If you do not agree with that, then simply act in your own experience on your own initiative and can simply argue well.
497	Edsel	Uiteindelijk als ernaar wordt gevraagd.	Ultimately when you are asked.

id	speaker	text	text_en_clean
498	Soraida	Ja dus dan blijft het rapport staan van de Van de.	Yes so then the report remains of the van de.
499	David	Dan blijft het rapport staan	Then the report remains
500	Soraida	Van de robot blijft staan.	Of the robot remains.
501	Soraida	Alleen maar, jij geeft aan argumenten Waarom je dat niet hebt gevolgd.	Just, you indicate arguments why you didn't follow that.
502	Soraida	En dan kwam dat beoordeeld worden, Maar dat je mij dan verwijder je niet het oordeel van de robot, dus die wordt niet overschreven.	And then that came to be assessed, but that you do not remove me you do not remove the robot's judgment, so it is not overwritten.
503	Edsel	Ja, dat gebeurt.	Yes, that happens.
504	Soraida	Die blijft staan.	It stays.
505	Edsel	Ja die blijft staan.	Yes it remains.
506	Soraida	Maar jouw menselijke reactie daarop en het gevolg daarop, die wordt dan ge logt	But your human response to that and the result, it will then be logged
507	Soraida	ja ben ik ook snap ik.	Yes I am also I understand.
508	David	Ja, Dat is wel weer een. Het is ook weer een extra stap natuurlijk.	Yes, that is one again. It is also an extra step of course.
509	Edsel	Maar uiteindelijk ben ik wel familie dat ondanks de robots allemaal leuk en aardig kunnen zijn dat ze toch wel een stuk.	But in the end I am family that despite the robots all can be nice and nice that they are a lot.
510	Soraida	Ja, mee eens. Ja.	Yes, agree. Yes.
511	Edsel	Menselijkheid erin moet houden en toch wel voor jezelf kan bepalen van he, robot geeft het wel aan.	Humanity has to keep in it and still be able to determine for yourself, Robot does indicate it.
512	Edsel	Het kan ook wel schrappen Hoeft niet zo intensief te zijn want zit niet zoveel los wat hij aangeeft dit en dat zit los oké, deze delen schrappen we en dan gaan we weer aan het werk.	It can also be deleted does not have to be so intensive because it is not that much loose what he indicates this and that is okay, we will delete these parts and then we go back to work.
513	David	Ja maar daar een ja.	Yes but there a yes.
514	Edsel	En, Als je het kan, kan verwoorden en het kan beargumenteren.	And, if you can, can articulate and it can argue.
515	David	Ja nee precies dat je wel gewoon een bar dat je wel stel je tikt hem door en dan geef je even een omschrijving van waarom.	Yes no exactly that you just have a bar that you do do you tap it and then you give a description of where.
516	David	Dan denk je dat het Misschien in een systeem als dit zou je ook denk dat je verschil is zou krijgen die Misschien zeggen.	Then you think it might be in a system like this would you think you would get a difference that might say.
517	David	Ha ha, moet ik weer heel die verantwoording geven? Ik heb daar geen zin in, word ik straks weer op de vingers getikt. Whatever, ik doe wel gewoon wat hij zegt.	Ha ha, do I have to give that responsibility again? I don't feel like it, I'll be tapped again soon. Whatever, I just do what he says.
518	Edsel	En nu wordt dat eigenlijk?	And now that will be?
519	Edsel	In de realiteit is het ook zo als jij een opdracht hebt van een voorman en je ziet dat het toch wel iets makkelijker flexibeler kan, dan voel je het ook uit. En dan Als de voorman daar verantwoording voor vraagt die ik dat ook kunnen hem af te schaffen.	In reality it is also true if you have an assignment from a foreman and you see that it can be a little easier, then you feel it. And then if the foreman asks for that accountability that I can also abolish it.
520	David	Ja dat zo, zo gaat het wel.	Yes, that's how it goes.
521	David	Eigenlijk, oké.	Actually, okay.
522	Soraida	Dus er zitten eigenlijk best wel wat flexibiliteit.	So there are actually quite a bit of flexibility.
523	Edsel	Ja ja.	Yes Yes.
524	Soraida	In het werk eigenlijk al, hè?	In the work actually, right?
525	Lenny	So uuhh, the cameras' ability is good. The judging, the camera judging, not good?	So uuhh, the cameras 'Ability is good. The Judging, The Camera Judging, Not Good?
526	David	Yeah well the camera judging is good but the camera should have an advise function but is should never have an absolute authority over what has to be done. It should always be be kind of the possibility for the painter to say "no I'm not going to do this" and then provide a reasoning to the foreman why the deviated from the advice but then be able to ignore it. But that is already in a sense the way it works like that. That not very different from current scenario where the a plan is made before hand and you might deviate from on you own judgement while you working. But then you also have to you also have to justify that. So its not that different .	Yeah Well the Camera Judging is good but the camera should have an advise function but is should never have an absolute authority about what has to be done. It should always be child of the Possibility for the Painter to say "No I am not going to do this" and then provide a reasoning to the foreman Why the deviated from the advice but then able to ignore it. But that is already in a sense the way it works like that. That not very different from current scenario where the a plan is made before hand and you might deviate from on you own judgement while you working. But then you also have to you also have to justify that. So its not that different.
527	Edsel	Een ander ding is z'n camera zou wel heel goed en geschikt zijn voor beginnende schilders, dus leerlingen die net van school afkomen.	Another thing is his camera would be very good and suitable for starting painters, so students who have just left school.

id	speaker	text	text_en_clean
528	Edsel	Die dan op project worden geplaatst, zodat een hele goed voorbeeld kunnen zijn op weg naar zelfstandigheid en zelfinzicht.	Which are then placed on a project, so that a very good example can be on the way to independence and self -insight.
529	Edsel	En die manier van werken.	And that way of working.
530	David	Ja is ook een soort coach.	Yes is also a kind of coach.
531	Edsel	Ja, een goede coach zou dat ook kunnen zijn voor beginnende schilders of leerling schilders wel.	Yes, a good coach could also be for starting painters or student painters.
532	David	Wat, wat jij daar van	What, what you of that
533	Soraida	ja, wat vind jij daar dan van?	Yes, what do you think of that?
534	David	Ja want jij bent nog minder nog minder lang bezig?	Yes because you are less busy for even less?
535	Delario	Ja, maandjes zo?	Yes, months like that?
536	Edsel	ja twee	yes two
537	Delario	dat zo goed dat hij jouw coach met bepaalde dingen Laten zien.	That so good that he shows your coach with certain things.
538	Delario	En dat er een niet een ander persoon bij jou staat en dat die camera gewoon laat zien. Zo moet het.	And that there is not another person with you and that that camera simply shows. That's how you do it.
539	Delario	Hier kan je je aanpassen, Je moet je nog wat schilderen. Niet dat iemand continu naast jou staat.	Here you can adjust, you still have to paint. Not that someone is constantly standing next to you.
540	Soraida	Ja dat is dan een fijner gevoel misschien.	Yes, that may be a nicer feeling.
541	Delario	ja, ja, niet op vingers kijken.	Yes, yes, don't look at fingers.
542	Soraida	Ja, ja, ik begrijp wat je bedoelt.	Yes, yes, I understand what you mean.
543	David	Heb je vaak dat je dan zeg maar.	Do you often have that you say then.
544	David	Werk een taak gedaan hebt en dan toch maar denkt van, nou ja, Ik weet niet helemaal zeker of Dit is zoals het moet zijn?	Have done a job and then thinks about, well, I am not entirely sure if this is as it should be?
545	Delario	Ja	Yes
546	David	Ja precies en dan is dus en Dat is een camera een hele mooie balans dus dat je nog wel.	Yes exactly and then and that is a camera a very nice balance so that you are still.
547	Edsel	Die onzekerheid wegneemt.	That uncertainty removes.
548	David	Die, die die onzekerheid wegnemen, Maar dat het niet dat ja, dat er iemand gewoon de hele tijd bij staat, want dan kun je gewoon niet goed werken, denk ik.	Who, who removes that uncertainty, but that it is not that yes, that someone is just there all the time, because then you just can't work well, I think.
549	Delario	Nee niet.	No not.
550	David	Of gebeurt, gebeurt dat dat er je begint dat er iemand bij staat de hele tijd?	Or happens, does that start you that someone is standing all the time?
551	David	of moet jij dat daarbij staan de hele tijd?	Or do you have to stand that all the time?
552	Delario	Zover gelukkig niet.	Fortunately not that.
553	Edsel	Ik ben daar niet een voorstander van.	I am not in favor of that.
554	Soraida	Maar gebeurt dat wel? Gebeurt dat binnen Willems? echt?	But does that happen? Does that happen within Willems? Real?
555	Edsel	Ja ja, dat dat elke keer iemand achter je blijft staan.	Yes yes, that someone stays behind you every time.
556	Edsel	En Kijk, van, ja, gaat het allemaal goed gaat Het allemaal goed.	And look, yes, things are going well all goes well.
557	Soraida	Want zo ben jij ook begonnen Omdat er echt letterlijk iemand altijd achter je staan.	Because that is how you started because there is really someone always standing behind you.
558	Edsel	Ik ben ook zo begonnen als leerlingen en er was altijd iemand die altijd achter je nek in je nek aan het hijgen.	I also started as students and there was always someone who was always panting behind your neck in your neck.
559	Edsel	Was aan het kijken of ze alles aan.	Was watching if they put everything on.
560	David	En, denk je dat die dat het voor die Mensen ook makkelijker is om uit handen te geven als er wel een systeem bij is dat nog wel, die checks doet of zouden Die toch verder eigenlijk?	And, do you think that it is also easier for those people to relinquish if there is a system that is still, they do or would they actually do it any further?
561	Edsel	Maar ik denk dat.	But I think that.
562	Edsel	Het voor sommigen ook wel een soort van Niet de machtpositie is ofzo, maar dan dat ze het wel gewoon door controle behouden op hun manier van en dat ze dan een beetje meer gas bij willen geven, of weet je?	It is also a kind of not the power position for some or something, but then that they just keep it through control in their way and that they want to give a little more gas, or do you know?
563	Edsel	Ja, Dat is het gevoel hebben dat ze persé iets moeten zeggen.	Yes, that is having the feeling that they really have to say something.
564	David	Ja, Het gaat niet Alleen om de, Het is niet Alleen een gebrek aan vertrouwen, Het is.	Yes, it's not just about the, it's not just a lack of trust, it's.
565	David	Ook een beetje.	Also a bit.

id	speaker	text	text_en_clean
566	Soraida	de vorm van leiderschap dat je eigenlijk continu moet controleren en eigenlijk geen vertrouwen In de leerlingen hebben dan.	The form of leadership that you actually have to check continuously and actually have no confidence in the students then.
567	David	Want dan hè, Maar dat kan dan ook gewoon vanuit leiding komen. Misschien dat ik maar zeggen hè? De camera staat Erop, ga jij je hebt ander werk te doen.	Because then hey, but that can also just come from leadership. Maybe I just say? The camera is on it, you are going to do other work.
568	Edsel	Ik ben echt voorstander van. Ik leg hem uit wat de werkzaamheden zijn. Laten we gewoon lekker zijn werk doen en eens In de zoveel tijd kom ik even kijken of het goed gaat. En dan blijf ik even twee minuten staan en dan gaat hij verder.	I am really in favor of. I explain to him what the work is. Let's just do his job and once in a while I come and see if things are going well. And then I just stay for two minutes and then he continues.
569	Soraida	Ja dat geeft wel rust kan me wel voorstellen, ja.	Yes, that gives peace can imagine, yes.
570	Edsel	Heb je rust, heb je ook vertrouwen. Zo geef je ook iemand vertrouwen in dat gene wat hij doet is, als he heel de dag daar blijft staan.	If you have peace, you also have faith. In this way you also give someone confidence in the fact that he does what he does, if hey stays there all day.
571	Soraida	Ja zeker.	Of course.
572	Edsel	En, zo van "he wat ben je nou aan het doen."	And, like "Hey what are you doing."
573	Soraida	Dat is vervelend.	That's annoying.
574	David	ja, ja, ja, hoe hoe? Ik ben niet neem aan dat je er wel eens moeten doen, hoe, hoe, hoe voelt dat werken met iemand over je schouder?	Yes, yes, yes, how? I am not assuming that you should sometimes do it, how, how, how does that feel with someone over your shoulder?
575	Delario	ja dat is vervelend iemand die continu op je vingers kijkt?	Yes that's annoying someone who constantly looks at your fingers?
576	Delario	Dat voelt wel vervelend.	That feels annoying.
577	David	Ga je er ook anders van werken.	Are you going to work differently.
578	David	Ja ja denk het wel.	Yes yes think so.
579	David	Niet per se beter, of?	Not necessarily better, or?
580	Delario	Nou je bent continu uit je ogenhoek aan het kijken van staat hij er nog of doe ik het wel goed?	Well you are constantly looking out of your eyes corner is he still there or am I doing well?
581	David	Ja precies.	Yes, exactly.
582	Delario	En soms ook. Hij komt af en toe dan die 10 minuten kijken en dan kijkt hij twee minuten en dan voelt als hij iets ziet waar ik nog niet overheen ben geweest of te schraal, zegt het ook van zo meer verf en dan na die twee minuten is die gewoon weer weg te kijken en dan denk je waar is die nou is die gewoon weer zijn eigen ding gaan doen.	And sometimes too. He occasionally comes to watch those 10 minutes and then he looks for two minutes and then feels when he sees something that I have not been over or too poor, it also says more paint and then after those two minutes it is just To look away again and then you think where is that now is it just going to do his own thing again.
583	David	Daar kun je ook gewoon zelf weer verder.	You can also continue there yourself.
584	David	Okay, so they are saying the camera is bit of inbetween. Because its not as heavy as someone who is constantly watching over you.	Okay, so they are saying the camera is bit of inbetween. Because it is not as heavy as someone who is constantly watching about you.
585	Lenny	And it's also not alone.	And it's also not alone.
586	David	You could also imagine. Yhea exactly but you do still get cause there is some insecurity, like how has this been done? Like fully well? And the camera can help you judge that and take away that insecurity. But it might be interesting so.	You Could also Imagine. YHEA Exactly But You Do Still Get Cause There Is Some Insecurity, Like How Has This Been Done? Like fully well? And the camera can help you Judge that and take away that insecurity. But it might be interesting so.
587	David	Stel dat de camera dat je hem niet af en toe even checkt, maar dat die gewoon hele de tijd aan staat?	Suppose the camera that you don't check it occasionally, but that it is just on the whole time?
588	David	en dan Misschien ook dat de camera eigenlijk wel over je schouder meekijkt.	And maybe also that the camera actually looks over your shoulder.
589	Soraida	Continue	Continuous
590	David	En dat die gewoon de hele tijd aanstaat, zou het dan?	And that it just like all the time, would it be?
591	David	Even erg zijn als een persoon of erger of minder erg.	Be as bad as a person or worse or less bad.
592	Delario	Ik denk minder erg, want.	I think less, because.
593	Delario	Het ligt eraan als die beelden worden opgeslagen of worden gelive streamed als er dan iets fout gaan dat we toch nog iemand naar jou toe komt, dus het ligt echt aan.	It depends on if those images are stored or are streamed when something goes wrong that we still come to you anyone, so it really is on.
594	David	Ja, ja, stel je Natuurlijk iemand zit met.	Yes, yes, of course, imagine someone.
595	David	Een scherm, mee te kijken?	A screen to watch?
596	Soraida	Big borther watching you.	Big Borther Watching You.
597	David	Te kijken hè, Dat is dat, maar stel je.	To look, that's that, but imagine.
598	Soraida	Dat zou ook naar zijn.	That would be to.
599	David	ja.	Yes.
600	Edsel	Wordt het gewoon gestreamd naar je voorman.	It is just streamed to your foreman.

id	speaker	text	text_en_clean
601	David	Nee dat is misschien nog wel naarder dan.	No, that might be still.
602	Edsel	Ja dan voel je je zo bekeken. En dan heb je het ook niet echt in de hand.	Yes then you feel like this. And then you don't really control it either.
603	Edsel	Hoe veilig is de verbinding dan?	How safe is the connection then?
604	David	Ja, ja, maar stel de camera Het gaat wilde gaan nergens heen, Maar de camera let wel gewoon op is. Dan gaat iets fout, dan geeft ie even een zoom ofzo of een buzz.	Yes, yes, but suppose the camera is going to go nowhere, but the camera is just watching. Then something goes wrong, then he gives a hem or something or a buzz.
605	Delario	Ja Dat is.	Yes that is.
606	Soraida	Ik wil wel control, maar oke.	I want control, but okay.
607	Delario	Dat is wel goed, Dat is nog niet iemand die continu over jou heen kijkt voor Als ik dit schilder en. Ik vergeet hier In het midden iets.	That is good, that is not yet someone who constantly looks over you for when I have this painter and. I forget something here in the middle.
608	Soraida	Ja, dat is nog beter.	Yes, that's even better.
609	Delario	Dat ie dan aangeeft na een tijdje en niet gelijk Als ik hier aan het werken ben, ik vergeet dit en iemand zegt gelijk erop?	That he then indicates after a while and not right when I'm working here, I forget this and someone says it right away?
610	David	Ja dat.	Yes that.
611	Soraida	Even je hand nog niet eens weg bij wijze van.	Just not even your hand as a way of.
612	David	ja?	Yes?
613	Soraida	Van spreken of zeggen?	Speaking or saying?
614	David	hangt dat een beetje af van de persoonlijkheid eigenlijk de de hoe anaal is die camera vergeleken met een een persoon die het Natuurlijk personen die er veel relaxter over zijn en die dat meer gestrest.	That depends a bit on the personality actually the how anal is that camera compared to a person who of course people who are much more relaxed about it and who stressed it more.
615	Soraida	Maar over het algemeen is het denk ik wel bij technische beroepen dat leiders best wel op deze nare manier leidinggeven.	But in general, I think it is with technical professions that leaders lead quite in this nasty way.
616	Soraida	Dat gebeurt wel heel vaak, Daarom ben jij best wel.	That happens very often, that's why you're pretty.
617	Soraida	Uniek, hè	Unique, huh
618	Soraida	Dus de werkelijkheid is en Er zijn ook al heel veel wetenschappelijke onderzoeken van.	So the reality is and there are also many legislative studies.
619	Soraida	Op dat best wel iets is wat heel veel gebeurt dat er eigenlijk op die manier leiding wordt Gegeven dus dan.	On that quite a bit that happens a lot that is actually given that way, so then.
620	Edsel	Heb ik ook gezien.	I have seen too.
621	David	Het is ook een beetje bewijzen dat je het beter weet Misschien. Dat is?	It is also a bit of a prove that you know better. That is?
622	Soraida	Ja ja ja ja ja ja.	Yes yes yes yes yes yes.
623	David	Alright, how much time do we have?	Alright, how much time do we have?
624	Lenny	12 minutes	12 minutes
625	David	Okay final, final topic.	Okay Final, Final Topic.
626	David	Laatste laatste dingetje is de autonomie. Nou, dat gaat ban vooral over die dat pak eigenlijk dat dat aan je trekt en hoeveel ja, hoeveel autonomie zelfstandigheid laat het over voor de schilder.	The last thing is the autonomy. Well, that is mainly about that suit actually that it attracts you and how much yes, how much autonomy independence leaves it for the painter.
627	David	De eerste vraag hier is, in wat voor situaties zou zo'n agent?	The first question here is in what situations would such a cop?
628	David	Het over mogen nemen.	Can take it over.
629	David	Yeah, I think it's kind of a weird	Yeah, I think it's child or a weird
630	Lenny	Yhea it is kind of a weird. Ummm. You where saying that its to forceful of a way of trying to get somebody to change habits	YHEA IT IS KIN or A Weird. Ummm. You Where Saying That Its To Forceful Of A Way Of Trying To Get Somebody to Change Habits
631	Soraida	Yes	Yes
632	Lenny	Wat situations would you want this kind of feedback? I expect that a better way to start this.	What situations would you want this child or feedback? I expect that a better way to start this.
633	Edsel	Dus Misschien met toolboxmeetings dat je dan waarschijnlijk gewoon.	So maybe with toolbox meetings that you probably just.
634	Edsel	Een samenvatting kreeg van bepaalde houdingen die je tijdens het schilderen veel en veel voorkomen.	Got a summary of certain postures that you have a lot and frequently prevent during painting.
635	Edsel	En dat, daarnaast kreeg ik dan daarna.	And that, in addition I got afterwards.
636	Edsel	Kreeg ik dan wel filmpje te zien waar?	Did I see a video where?
637	Edsel	Je wel gewoon de juiste houdingen moet hanteren.	You just have to handle the right postures.
638	Edsel	of kan hanteren en daar Misschien trainingen of cursussen voor worden kunnen gegeven Worden.	Or can handle and perhaps training or courses can be given for that.
639	David	Heb je nu niet zoiets, zeg maar.	Do you not have anything like that, say.
640	Edsel	Ja toolbox.	Yes toolbox.

id	speaker	text	text_en_clean
641	David	Hoeveel krijgen jullie, krijgen jullie mee, hoe je hoe je houding, hoe je het beste.	How much do you get, do you get how you how you attitude, how you best.
642	David	Je houding kunt hebben?	Can have your attitude?
643	Edsel	Nee..	No..
644	Soraida	Nee, terwijl andere Branches dat wel? Ik heb ook een andere branche, waar ik dan word je echt zoals de wettelijke verplichting dat je de fysieke belasting meet van verschillende TYPE functie In de organisatie zijn.	No, while other branches do that? I also have a different industry, where I will really become the legal obligation that you measure the physical load of different types of function in the organization.
645	Soraida	en normaal gesproken heeft een brancheorganisatie al die informatie en dan moet je daar als bedrijf mee aan de slag, maar deze branche is dat niet zo. Dat is niet gemeten. Daarom moeten wij hier nu ook aan dit onderzoek mee.	And normally a branch organization has all that information and then you have to work with it as a company, but this industry is not. That is not measured. That is why we now also have to participate in this study.
646	David	Deze branche als in schilderen, oké?	This industry as in painting, okay?
647	Soraida	Ja schilders ja en onderhoud en ja, normaal gesproken ga je daar naar kijken en dan moet je als bedrijf daar ook gewoon.	Yes painters yes and maintenance and yes, normally you will look at that and then as a company you just have to.
648	Soraida	Resultaten boeken dus ook verbeteren, maar hier is dat helemaal niet zo, dus deze branche heeft dat nog helemaal niet goed onderzocht en normaal gesproken.	So also improve results, but that is not the case here, so this industry has not yet investigated that well and normally.
649	Soraida	Dan krijgen Mensen bijvoorbeeld trainen. Ik zeg, bijvoorbeeld, je bent vrachtwagenchauffeur, dan gaan ze kijken naar de fysieke belasting, dan gaan ze iets aan die stoelen doen, dan wordt dat op brancheniveau moet dat helemaal geregeld worden en de chauffeurs hebben elk jaar bepaalde trainingen over hoe ze moeten gaan zitten en noem maar op. Daar wordt dan allemaal geregeld, Maar dat is hier niet het geval. Voor schilderen?	Then people get training, for example. I say, for example, you are a truck driver, then they will look at the physical burden, then they will do something about those seats, then that will be arranged at the branch level and the drivers have certain training courses every year about how to go Sit down and you name it. All there is arranged, but that is not the case here. For painting?
650	David	Ja ja precies.	Yes yes exactly.
651	David	Gaat het daar wel naartoe?	Are it going there?
652	Soraida	Ja, ik verbaas me gewoon, want Het is gewoon wetgeving die al zo lang bestaat dat dit gewoon nog nooit is gebeurd, is gewoon raar.	Yes, I am just surprised, because it is just legislation that has been around for so long that this has just never happened, is just weird.
653	David	Ja, Ik vind het ook wel verbazend eigenlijk, ja.	Yes, I think it is surprising actually, yes.
654	David	Ja dus, maar dan is de stap van helemaal niks, zeg maar dus zoiets.	Yes, but then the step is nothing at all, so say something like that.
655	David	Zou wel gewoon goed zijn.	Would just be good.
656	David	Ja, want het zijn belangrijk zijn, ja was.	Yes, because they are important, yes.
657	Soraida	Wat hij zegt, zou bijvoorbeeld goed.	For example, what he says would be good.
658	David	Maar dan dan ook een hele stappen zetten gelijk naar een.	But then also taking a whole step right to one.
659	David	Dat live terwijl je aan het werk bent, dat dat ook gemeten wordt.	That live while you are working, that that is also measured.
660	Edsel	En ja Misschien gewoon dat iemand zich vrijwillig laat laat filmen en werk van de camera, zeg maar, en dan.	And yes, maybe just that someone lets himself be filmed voluntarily and work from the camera, say, and then.
661	Soraida	Ja dat gebeurde dan ook.	Yes that happened.
662	Edsel	Dat uiteindelijk als als een.	That ultimately as a.
663	Edsel	Een voetbalwedstrijd wordt daarna gewoon nabesproken en en bepaalde samenvatting gemaakt van de lichaamshouding, en.	A football match is then simply discussed and a certain summary made of the posture, and.
664	David	Ja precies.	Yes, exactly.
665	Edsel	met Iedereen over gesproken en dan in een volgend filmpje wordt vertoond hoe je wel beter in staat kan boeken en hoe je lichaamshouding wel correct kan zijn en dat dan uiteindelijk Laten evolueren naar een fysieke training.	Speaking of everyone about it and then in a next video it will be shown how you can better book and how your posture can be correct and then ultimately let that evolve to a physical training.
666	David	Ja precies.	Yes, exactly.
667	Edsel	Ook gewoon dat Iedereen wel ziet van nee, oké, Als ik hier.	Also just that everyone sees no, okay, if I here.
668	Edsel	Zo een deur.	Such a door.
669	Edsel	Heb is, Dat is Natuurlijk wel zo doe ik niet, ga of?	I am, that is of course that I don't do, go or?
670	Soraida	Ja ja, Maar dat.	Yes yes, but that.
671	Edsel	Dat moet niet teveel strekken moeten zijn.	That should not be too much.
672	David	Is sowieso geen.	Isn't anyway.

id	speaker	text	text_en_clean
673	David	Dat gaat ook naar. Dat komt eigenlijk Misschien ook weer tenminste Ik denk dat we de vraag over gaat en Misschien meer daarover houding en meer over een robot op een systeem dat tijdens tijdens het werk je eigenlijk op de vingers tikt of advies geeft terwijl je bezig bent.	That also goes to. At least that may come again, I think we are about the question and perhaps more about that attitude and more about a robot on a system that you actually tap during work or give advice while you are busy.
674	David	En dan kun je ook denken aan wat over hadden met die camera stel. Die geeft live een soort van een hulp van instructie.	And then you can also think about what had left with that camera couple. It gives a kind of help from instruction live.
675	David	Is dat iets?	Is that something?
676	Edsel	Misschien die Asterix of die obelix met een met een speakersysteem die dan ook gewoon je lichaamshouding analyseert.	Maybe that Asterix or that Obelix with a with a speaker system that simply analyzes your posture.
677	Edsel	En op het moment dat jij teveel door je knieën gaat, of dat die analyseert of leest doormiddel van een scan die staat natuurlijk In de buurt van jou en je hebt een handschoen aan die een en dan dat dat hij dan die lichaamshouding daar naartoe sturen.	And the moment you go down too much, or that it analyzes or reads through a scan that is of course near you and you have a glove on that one and then that he then sends that posture.
678	Edsel	En Als je dan te lang op op je rug ligt of op je knieën bent dat je zegt Van hé, let op je knieën gewoon een aandachtspunt.	And if you are on your back for too long or are on your knees that you say of hey, watch your knees just a point of attention.
679	David	Ja gewoon een piep vertel.	Yes, just tell a beep.
680	Edsel	En Als je weet van lopen, oké, zo en dat je het zo automatisch wilt aanpast Zonder een een druk of zo.	And if you know about walking, okay, so and that you want to adjust it automatically without a pressure or something.
681	David	Ja, Maar het is af en toe een een advies puntje of zoiets. Dat is niet, Dat is.	Yes, but it is occasionally a advice point or something. That's not, that's.
682	Edsel	Ja lijkt mij.	Yes seems to me.
683	Edsel	Dat is mooi meegenomen.	That is a bonus.
684	Lenny	Another way.	Another Way.
685	Soraida	Ja wat ik wat ik wel daarin heb, wat ik zelf belangrijk vind om er meer ook vanuit de andere kant kijken is van eigenlijk is het Natuurlijk heel raar.	Yes what I have in that, which I find important to look more from the other side is of course it is of course very strange.
686	Soraida	Eigenlijk zou je zeggen dat automatisering of digitalisering dus automatisch In het algemeen dat je eigenlijk zou zeggen, ja, Maar ik weet Als ik bijvoorbeeld hier een foto van maak, dan moet een mens deze TYPE bewegingen maken, toch? Dat is net als eigenlijk met gevaarlijke stof.	In fact, you would say that automation or digitization is generally automatically that you would actually say, yes, but if I, for example, take a picture of this, then a person has to take these types of movements, right? That is just like with dangerous substance.
687	Soraida	je meet dan als iemand een gevaarlijke stof werkt, dan weet je, wat is het hoog risico, dus dan kijk je hoe lang iemand het werk mag doen.	You then measure if someone works a dangerous substance, then you know, what is the high risk, so then you see how long someone can do the work.
688	David	Ja	Yes
689	Soraida	En nu is het zo, Mensen gaan gewoon het werk doen. Dat is best wel. Raar is ook een hoog risico, dus zou eigenlijk kunnen zeggen, ik analyseer de werksituatie en weet dat iemand dus tussendoor pauze moet houden, want Het is dat iemand maar door door doorgaat. Nee, de fysieke belasting heeft deze hoogte dus Daarom.	And now it is, people are just going to do the work. That's pretty. Strange is also a high risk, so I could actually say, I analyze the work situation and know that someone has to take a break in between, because it is that someone continues. No, the physical stress therefore has this height.
690	Soraida	Moet hij dus eigenlijk tussendoor pauze houden? Dat is Natuurlijk een hele andere manier, maar nu ligt de hele verantwoordelijkheid heel raar is, vind ik heel raar bij de schilder, terwijl bij chrome-6 bij kwarts waar alle andere arbo risico's worden vooraf gezegd, wat hoe hoog is de blootstelling en op basis daarvan wordt de tijd bepaald van het werk en één of andere reden doen we met dat fysieke belasting doen we dat dan nu niet? Dat zou ik best wel raar, dus eigenlijk zou je dat. Begrijp je wat ik bedoel.	Does he actually have to take a break in between? That is of course a completely different way, but now the whole responsibility is very strange, I find it very strange to the painter, while chrome-6 at Kwarts where all other health and safety risks are said in advance, what the high exposure is and on Basically, the time of work is determined and some reason do we do with that physical stress do we not do that now? I would be pretty weird, so you would actually. Do you understand what I mean.
691	David	Nee, ja, maar stel dat stel de Kamer, die maakt die analyse en die zegt.	No, yes, but suppose the room, it makes that analysis and he says.
692	David	Oké dus het plan met pauzes ingerekend en dan gaan er even een een wekkertje af als de tijd voorbij is of zo.	Okay so the plan with breaks arrested and then an alarm goes off when the time is over or something.
693	Soraida	Dit is het schema dagschema.	This is the day schedule schedule.
694	Edsel	Ja ja. Door middel van die Asterix of die Obelix dan.	Yes Yes. Through that Asterix or that Obelix then.
695	David	Zou je dan naar luisteren als hij zegt, Het is tijd voor pauze, ik.	Would you listen to if he says, it's time for a break, me.

id	speaker	text	text_en_clean
696	Edsel	Ja, Het gaat uiteindelijk om je fysieke belasting en ga je dat forceren, dan weet je dat je Misschien niet nu. Maar Als je dan met pensioen gaat, dat je Misschien een slechte rug hebt of een knie die naar de klote is waar waarvan je niet kan genieten van je pensioen om het zo maar te zeggen. Dus Dat is heel belangrijk. Fysieke belasting is zo.	Yes, it is ultimately about your physical stress and you will force that, then you know that you might not be now. But when you retire, that you might have a bad back or a knee that is to hell that you can't enjoy your pension to say so. So that is very important. Physical stress is like that.
697	Edsel	Een belangrijk punt, vind ik.	An important point, I think.
698	David	Oké, I think we pretty much discussed everything.	Okay, I think we pretty much discussed everything.
699	Lenny	I wanted to ask a follow up to that one and then maybe.	I wanted to ask a follow up to that one and then maybe.
700	David	Well yea perfect and then.	Well yea perfect and then.
701	David	Oké ja hoor.	Okay yes.
702	Lenny	Maybe sort of. Maybe I didn't fully understand everything but is there a situation for example so the exoskeleton that will push you up. It is sort of the device is telling you "O no, go higher" and when you bring it down you have to fight against it. And then you eighter really fight against it and go like "no I want to do my painting," or like "o no I need to go up." When do you decide as you are working, aside from maybe painting, cause we thing we missed out of like its really hard to paint when it's pushing you up. When do you decide to listen to it or do something like that. When would you want to decide like. You know what, the machine is saying I should go up so let me go up. Like if a. Or think of it an other way. If the camera says you need a break now, would you listen to the camera?	Maybe sort or. Maybe I didn't fully Understand Everything but is there a situation for example so the exoskeleton that will push you up. It is sort of the device is counting you "o no, go higher" and when you bring it down you have to fight against it. And then you Eighter Really Fight Against It and Go Like "No I want to do my painting," Or Like "O No I Need To Go Up." When do you decide as you are working, aside from Maybe Painting, caus we think we missed out of like its really hard to paint when it's pushing you up. When do you decide to listen to it or do something like that. When would you want to decide like. You know what, the machine is saying I should go up so let me go up. Like if a. Or think of it an other way. If the camera says you need a break now, would you listen to the camera?
703	Edsel	Ja, wat je kijkt, net als met die skelet bijvoorbeeld het goede voorbeeld, het geeft je de steun naar boven Als je naar twee keer naar boven gaat, merkt van hé, het ondersteunt.	Yes, what you look, just like with that skeleton, for example a good example, it gives you the support when you go up twice, notes Van, hey, it supports.
704	Edsel	Het heeft wel een functie, het doet wat hij wat hij moet doen op dat moment.	It does have a function, it does what he should do at the time.
705	Edsel	En je hebt er baat bij, dus het onderste jouw en het verlicht je werkzaamheden, dan is het prima om naar te luisteren, maar op het moment dat je gaat luisteren naar die robot.	And you benefit from it, so the lower you and it illuminates your work, then it's fine to listen to, but the moment you start listening to that robot.
706	Edsel	En je gaat naar boven, je gaat naar boven, je denk van, ja, Dit is niet prettig, moet wel altijd wel een eigen inzicht, eigen meningen en een goed gevoel bij hebben om het te blijven gebruiken. Niet Alleen Omdat het specifiek daarvoor gemaakt is, moet je het blijven hanteren en blijven doen.	And you go upstairs, you go upstairs, you think so, yes, this is not pleasant, must always have your own insight, own opinions and a good feeling to keep using it. Not only because it is specifically made for this, you have to keep using it and keep doing it.
707	David	Ik heb het misschien wel een soort van eng alternatief scenario. Wat nou al stel? Je hebt het exoskelet, Ik ben aan het werk en die is ook gekoppeld met de camera, die dus de taken het takenpakket heeft bedacht en die planning heeft gemaakt.	I might have a kind of scary alternative scenario. What already a couple? You have the exoskeleton, I am at work and it is also linked to the camera, which has therefore devised the tasks the duties and made that planning.
708	David	En die communiceren met elkaar, dus de camera die zegt het oké, nou, Het is nu tijd om dit stukje te schilderen, dus het Exoskelet support die handeling en Als je eigenlijk zelf denkt van.	And they communicate with each other, so the camera that says it okay, well, it's time now to paint this piece, so the Exoskelete support that action and if you actually think of it.
709	David	Nee ik, Ik wil eerst dit hoekje doen of iets dat lijkt me lijkt me beter. Dan moet je eigenlijk tegen het extra skelet inwerken.	No, I want to do this corner first or something that seems to me better. Then you actually have to work against the extra skeleton.
710	Edsel	Dan is het je eigen initiatief van je eigen Inzetten ook wel belangrijker dan Alleen altijd afhankelijk zijn van De programmering en van de computer.	Then it is your own initiative of your own bets also more important than just depending on the programming and the computer.
711	David	Zou je iets, zou je toch wel zal je voelt het het moeilijker gaat je denk je van oké, nou doet het.	Would you do something, would you feel it will feel it is harder you think you are okay, well it does.
712	David	Systeem heeft dus bedacht dat het beter is. Om eerst dit te doen. Zou je dan Misschien denken van nou, Misschien kan ik het toch beter doen? Zou je gaan denken? Nee, Ik heb bedacht dat dit nu moet Ik ga dit gewoon doen.	Syste has therefore thought that it is better. To do this first. Would you perhaps think of well, maybe I can do it better? Would you start thinking? No, I thought that this must now I will just do this.

id	speaker	text	text_en_clean
713	Edsel	Ja, Als het Als ik ja, Ik heb sowieso wel. Ik ben sowieso iemand die heel erg naar mijn eigen mening van ja en mijn eigen gevoel had mijn gevoel, zegt Van ja Dit is nu handiger om te doen en Ik kan het na afloop ook beargumenteren Als het de samenvattingen gekeken en wordt geanalyseerd en wordt gevraagd, Waarom heb je dat gedaan?	Yes, if I am yes, I will have anyway. In any case, I am someone who very much in my own opinion of yes and my own feeling had my feeling, says yes this is now more convenient to do and I can also argue afterwards if it looked at the summaries and is analyzed and is asked and is asked , Why did you do that?
714	Edsel	En, die kon het gewoon goed beargumenteren en verwoorden en ze wijzen van goed verkopen. Dan zou ik het anders gaan doen.	And, he could simply argue and articulate it and point them out to sell well. Then I would do it differently.
715	David	Dan zou je het altijd doen. Ja ja, snap ik ja.	Then you would always do it. Yes yes, I understand yes.
716	Edsel	Moet wel een stukje van jezelf blijven.	Must remain a piece of yourself.
717	David	Zou je het dan, zou je dat dan überhaupt nog wel een fijn fijn systeem vinden die je eigenlijk in een bepaald pad wil sturen.	If you were then, you would find that at all a nice nice system that you actually want to steer in a certain path.
718	David	Ook al is het Als het soms Misschien niet het pad is Dat jij dat jij wil?	Even if it is sometimes not the path that you want you?
719	Edsel	Als het in een adviserende rol blijft wel, ja.	If it stays in an advisory role, yes.
720	David	Ja, dus stel je, je weigert hem dan, zegt hij ook zo van oké, nou, hij wil blijkbaar dit doen en dan gaat hij die andere handelings. Dat is, Dat is prima.	Yes, so imagine, you refuse him, he also says so okay, well, he apparently wants to do this and then he goes that other action. That's fine.
721	Edsel	Ja dat ie niet, maar ja, dat ie niet gewoon volledig controle heeft over de werkzaamheden die ik moet uitvoeren.	Yes that he is not, but yes, that he does not just have complete control over the work I have to perform.
722	Soraida	Ja net.	Yes just.
723	Edsel	Dus Dat is wel gewoon een hulpmiddel blijft	So that is just a tool
724	David	Ja, Natuurlijk niet te autoritair.	Yes, of course not too authoritarian.
725	Edsel	Ja juist niet een autoritair middel.	Yes not an authoritarian tool.
726	Soraida	Maar ik vind dat zelf wel. Ik heb zelf ook in een productie omgeving veel gewerkt, wat mij gewoon heel erg opvalt dat eigenlijk gewoon zal dit ook verteld. Dat is ook de kracht van een goede schilder.	But I think that's that myself. I have also worked a lot in a production environment, which I just strikes very much that will actually be told this too. That is also the power of a good painter.
727	Soraida	Omdat en Als je in een productieomgeving stel, je staat aan een lopende band. Ik bedoel toen Nedcar alle maal nog, Ik ben daar ook geweest.	Because and if you put in a production environment, you are on a conveyor belt. I mean then Nedcar all the times, I have been there too.
728	Soraida	Al die robots staan en die Mensen zijn eigenlijk staan in dienst van de robotten eigenlijk een beetje en dan of ze worden vervangen door een robot, Maar dat is eigenlijk wat het bij Nedcar Ik weet niet waar ze zijn geweest, Maar dat is hoe het eruit ziet en dan gaat er een fluitje, wat een robot afgeeft. En dan moet die persoon een bepaalde beweging gaan maken.	All those robots are and those people are actually in the service of the robots actually a bit and then whether they are being replaced by a robot, but that is actually what it is with Nedcar I don't know where they were, but that's how it gets out See and then there is a whistle, which gives a robot. And then that person must make a certain movement.
729	Soraida	Dat is eigenlijk wat je in een productielijn gewoon ook echt kan doen, maar wat je ziet In de bouw en het maakt niet uit of het bij schilderwerk of ander constructief werk is, is dat de voor.	That is actually what you can actually do in a production line, but what you see in construction and it doesn't matter if it is with painting or other constructive work, that is the for.
730	Soraida	Dat komt eigenlijk aan In de in productieleiding is de engineering heel krachtig en hebben ze ook heel goed nagedacht hoe iets moet op de millimeter.	That is actually in the production management, the engineering is very powerful and they have also thought very carefully how something should be on the millimeter.
731	Soraida	Daarom kan je ook echt een robot inzetten, maar op in constructieve werkzaamheden zoals schilderen.	That is why you can really use a robot, but in constructive activities such as painting.
732	Soraida	Zie je eigenlijk	You actually see
733	Soraida	Dat er altijd veel te weinig tijd wordt besteed aan. Hoe moet het nou precies plaatsvinden en.	That there is always too little time spent on. How exactly should it take place and.
734	Soraida	Sinds ik werk en ik werk nu.	Since I work and I work now.
735	Soraida	23 jaar, zie ik daar nog steeds geen verbetering in. Ik zie geen verbetering In de bouw dat werkelijk de goed over nagedacht voor het vooraf hoe het het beste gedaan kan worden, waardoor je dus eigenlijk die eigenwijsheid altijd nodig hebt.	23 years old, I still see no improvement in that. I see no improvement in the construction that the good thought about before in advance how it can be done best, so you actually always need that stubbornness.
736	David	Maar zie je dat als een gebrek van planning of over van waar is dat? Maar is dat Misschien ook niet?	But do you see that as a lack of planning or about where is that? But is that perhaps not?
737	Soraida	Ik vind het een gebrek van Ontwikkeling In de bouw.	I find it a lack of development in construction.
738	David	Gewoon een goede stand van zaken, dat dat die schilders dat gaan moeten blijven, dat die dat moeten.	Just a good state of affairs, that those painters will have to stay that way, that they have to.
739	Soraida	Ja simpel.	Yes simple.

id	speaker	text	text_en_clean
740	Soraida	Ja blijkbaar, Het is blijkbaar, is dat wat Het is? Ik ben ik verbaal Als ik het nu zo uitspreek, vind ik.	Yes apparently, it is apparently, is that what it is? I am verbal if I pronounce it so now, I think.
741	David	Goed, Ik vind het ook wel.	Well, I think it's too.
742	Soraida	Het absurd eigenlijk, Als ik het nu vertel.	The absurd actually, if I tell it now.
743	David	Ik heb zelf Als je vertelt over een productielijn waarin Iedereen in dienst staat van een robot met een fluitje. Dat vind ik eigenlijk ook wel een heel naar beeld.	When you talk about a production line in which everyone is employed by a robot with a piece of cake, I have myself. I actually think that is a very display.
744	Soraida	Ja, Dat is echt zo.	Yes, that's really true.
745	David	Ja nee ik wel eventjes. Is het niet, eigenlijk is het niet eigenlijk.	Yes no I do for a moment. Is it not, actually it is not actually.
746	Soraida	Je moet een keer een filmpje kijken van Nedcar.	You have to watch a movie from Nedcar once.
747	David	Is het niet eigenlijk mooi dat er dan in een branche als dit daar doordat dat niet zo goed is gepland wordt nog wel heel veel ruimte is.	Is it not actually nice that in an industry like this there because that is not so well planned, there is still a lot of space.
748	David	Voor de mens.	For humans.
749	Soraida	Ja, ja vind ik ook.	Yes, I think so too.
750	David	Om ja.	To yes.
751	Soraida	Maar het is het punt wat ik eigenlijk wil maken. Dat vind ik hoe dan ook, hè?	But it is the point I actually want to make. I think so, isn't it?
752	Soraida	Want ik bedoel dan?	Because then I mean?
753	Soraida	Gaat er ook een en iedere lijn in bij net waar Je moet echt in je film kijken.	Also goes one and every line in just where you have to really watch in your movie.
754	Soraida	Die heeft ook een deuntje.	He also has a tune.
755	Soraida	Dus als een deuntje stopt, dan weet hij, operator, Oh, mijn lijn staat stil. Dat is echt verschrikkelijk. Gewoon ja ik.	So when a tune stops, he knows, operator, oh, my line stands still. That's really terrible. Just yes me.
756	Soraida	Geval? Ik vond het heel naar om daar te staan.	Case? I thought it was very much to stand there.
757	David	Stel je plant het helemaal perfect uit en met die camera.	Imagine planting it perfectly and with that camera.
758	David	Dat wordt het schilderen niet, Misschien niet ook.	That will not be painting, maybe not either.
759	David	Meer, een soort van productielijn.	More, a kind of production line.
760	Soraida	Maar ja, Maar dat is de punten zal maar zeggen dat in deze branche is eigenlijk in die nou ik Misschien chargeer ik een beetje een beetje soort witte zo maar in die 20 jaar heb ik daar helemaal geen ontwikkeling in gezien, want eigenlijk best wel raar is.	But yes, but that is the points just say that in this industry is actually in that well I may be charging a bit of a white so in those 20 years I have not seen any development at all, because actually quite weird is.
761	David	Ja maar.	Yes but.
762	David	Het is ook heel want Het is kijk een productie aan stuur.	It is also very because it is look at a production on the steering wheel.
763	David	Is heel gecontroleerd.	Is very controlled.
764	Soraida	Staties, heel ja, je heel continu.	Stations, very yes, you are very continuously.
765	David	Gecontroleerde omgeving en een en een schilder op weet het niet. Het is altijd. Je bent altijd een andere plek, anderen omstandigheden, dat kun je niet. Heb je geen controle over.	Controlled environment and one and a painter on does not know. Its always. You are always a different place, other circumstances, you can't. You have no control over.
766	Soraida	waarschijnlijk niet.	probably not.
767	David	Is, Dat is, en Dat is Waarom.	Is that, and that's why.
768	David	Maar tegelijk kun je willen daar wel naartoe, denk ik dat alsnog wel te kunnen automatiseren, maar dan met inderdaad flexibele systemen.	But at the same time you can go there, I think I can still automate that, but with indeed flexible systems.
769	Soraida	Maar ja.	But yeah.
770	David	Ja in plaats van terwijl productie en heeft een kan een on flexibel systeem gebruikt. Ja, maar ja dit gaat. Deze gaat niet naar een vraagt of zo maar.	Yes instead of while production and has used a jug of a flexible system. Yes, but yes this goes. This does not go to one asks or just.
771	Soraida	Ja, Ik wil het wel even zo van, maar Waarom het zo belangrijk is, denk ik om die om dus gewoon de mens in dit stuk dus zo Omdat eigenlijk die dat voor stuk is zit eigenlijk gaat veel te snel, waardoor je uiteindelijk altijd gewoon daar de invloed van het schilder nodig hebt.	Yes, I want it that way, but why it is so important, I think about it so just people in this piece so because that is actually that one is actually way too fast, so you always just just just just just be just Since the influence of the painter needs.
772	Soraida	Nu de vraag is, wat wil je, wil je die voor de mensheid qua normen en waarden dat het behouden?	Now that the question is, what do you want, do you want to retain it for humanity in terms of norms and values?
773	Soraida	Wat jij net zecht.	What you just sucked.
774	Soraida	Of zou eigenlijk die ontwikkeling moeten zijn dat nog verder uitontwikkeld wordt.	Or should it be that development that is further developed.

id	speaker	text	text_en_clean
775	Soraida	Ja, Ik denk heel eerlijk gezegd, Als ik al de gebouwen ziet die zijn zo complex maakt het gewoon heel lastig en maar ja.	Yes, I honestly think, when I see all the buildings that are so complex it just makes it very difficult and yes.
776	Soraida	In ieder geval dat.	At least that.
777	Soraida	Maar dat wil ik even aan jullie meegeven van.	But I want to give that to you.
778	Edsel	Ja de flexibiliteit kan daar gewoon een rol In spelen, Maar dat niet de robot de fluit In de hand heeft, Maar dat.	Yes the flexibility can simply play a role in that, but that the robot does not have the flute in hand, but that.
779	Soraida	Ja ja.	Yes Yes.
780	Edsel	De mens de controle wel komt en alle tijde blijft behouden en niet te veel afhankelijk gaat zijn van een robot, want dan gaan we echt het ambachtelijke verliezen In de tempo waar we dan nu in werken.	Man comes the control and all the time is retained and will not be too dependent on a robot, because then we will really go to the traditional losses in the pace that we now work in.
781	David	Ja, Ik vind het bij, dat vind ik ook precies ja mooi dat je het nu ook het woord het ambachtelijke gebruikt.	Yes, I think it is, I think that is exactly nice that you now also use the word the traditional one.
782	David	Dat was ik een Beetje aan het zoeken toen dat over van zie en handtekening van de schilder zeg maar terug In het werk is, Dat is het, zie het echt als een een ambacht waar?	I was looking a bit when that over from see and the signature of the painter is back in the work, that is it, see it really as a craft true?
783	Edsel	ja.	Yes.
784	David	Kun je, Ik weet niet of dat We zijn al over tijd trouwens denk ik.	Can you, I don't know if we are already in time, I think.
785	Soraida	Nee maar prima maar ik moet zo meteen weg maar.	No, but fine but I have to leave right away.
786	David	Puur voor mezelf, want Ik ben ook met een project bezig.	Purely for myself, because I am also working on a project.
787	David	Maar Heb je dan een schilder die je echt bewondert? Je denkt van, Dat is echt een een vakman en dat je het iemands werk ziet en denkt van, "Zo, is kon ik maar zo schilderen", of zo iets kan wel.	But do you have a painter who really admires you? You think so, that is really a professional and that you see and think of someone's work, "so, I could only paint that way," or something is possible.
788	David	Nou, hij is hij is wel toevalig controleur geworden Maar We hadden een schilder toen der tijd hij doet nu het controleren van de werkzaamheden Rinus Otter.	Well, he has become a coincidence but we had a painter when he does time now checking the work Rinus Otter.
789	Soraida	Oh ja.	Oh yeah.
790	Edsel	En, Dat is toch wel en Frank Treuren dat zij toch wel meester-schilders. Ze hebben ook gewoon de benaming meester schilders.	And, that is and Frank mourns that they are still master painters. They also just have the name Meester Schilders.
791	Soraida	Glad he.	Slippery huh.
792	David	Ja oke, dus ook stel je?	Yes okay, so you also put?
793	David	Stel je, je loopt maar voor huizen en je zou hun werk eruit kunnen pikken, zeg maar bij wijze van Als je het Als je het Als je het van dichtbij bekijkt.	Imagine, you just walk for houses and you could pick out their work, say if you look it up when you look at it up close.
794	Edsel	Nou ik, Ik denk dat dat Ik denk dat het wel mogelijk zou kunnen zijn dat je wel als.	Well I, I think I think it could be possible that you like.
795	Edsel	Je een project bent geweest. Ja, ja.	You have been a project. Yes Yes.
796	Soraida	Bijvoorbeeld 10 deuren, zou je echt wel kunnen zien he?	For example, 10 doors, could you really see, right?
797	Edsel	Ja 10 dueren weet je wel. Als je weet van Rinus en zijn ploeg, hebben daar een tijdje geleden gelopen.	You know yes 10 dueren. If you know about Rinus and his team, there were walking there a while ago.
798	Edsel	Of het project afgerond, dan zou je wel gewoon zo kunnen zien welke deuren en welke kozijn hij heeft gelakt.	Whether the project was completed, you could just see in this way which doors and which frame he has painted.
799	David	Ja, dat find ik wel echt heel tof.	Yes, I find that really cool.
800	Edsel	Ja super glad is dat.	Yes, that is super slippery.
801	David	Oké cool.	Okay cool.
802	Edsel	Ja, Het is wel een berg ervaring ook dat Dat is. Dat is ook echt mooi. Als je een praatje maakt met hem.	Yes, it is a mountain of experience that it is. That is really beautiful. If you have a chat with him.
803	Edsel	Dat hij vertelt welke projecten allemaal dat Hij heeft gedaan.	That he tells which projects that he did.
804	Edsel	End de Ervaring en als die af en toe langskomt met met controleren voor op projecten, dan vraag je ook gewoon naar zijn zijn mening en dergelijke.	End the experience and if it occasionally comes by with checking for projects, then you also just ask for his opinion and the like.
805	David	Ja precies.	Yes, exactly.
806	Edsel	Maar Hij is ook gewoon bereid om het ook te delen en het op een normale manier en over te brengen, maar niet op een arrogante manier van ja, Ik kan het allemaal wel weten.	But he is also just willing to share it and transfer it in a normal way and, but not in an arrogant way of yes, I can know it all.

id	speaker	text	text_en_clean
807	Edsel	Dus is het dan nee, Maar dat Dat is wel zo Een type voor dat je denkt van.	So it is no, but that is such a type that you think of.
808	Edsel	Wel, die kan die wel echt.	Well, he can really do it.
809	David	Ja echt,	Yes really,
810	Soraida	Ja, die denkt echt na over de kwast over het type verf. Dus hij geeft er ook heel veel input op, want in al ziet, hè we hebben ander verf.	Yes, he really thinks about the brush about the type of paint. So he also gives a lot of input, because in all sees, hey we have different paint.
811	Soraida	Van bijvoorbeeld nu nu Natuurlijk andere verf, doordat we minder gevaarlijke verven mogen gebruiken. Ja, Dat is, geeft hij terug.	From, for example, now of course other paint, because we can use less dangerous paints. Yes, that is, he gives back.
812	Soraida	Ja, Dat is geen goede verf, want we zien nu.	Yes, that's not a good paint, because we're seeing now.
813	Edsel	Ja is ja.	Yes is yes.
814	Soraida	Of de kwast. Is niet goed, dus Ik wil.	Or the brush. Is not good, so I want.
815	Edsel	De TYPE kwasten de dikte van de kwasten. En ja, denkt over alles na.	The type of brushes the thickness of the brushes. And yes, thinks about everything.
816	Edsel	en bij hem was het echt een hele lange tijd. Toen gingen rollers gebruiken.	And with him it was really a very long time. Then rollers started to use.
817	David	Als je begint moet je alles met de kwast doen.	When you start you have to do everything with the brush.
818	Soraida	Mooi glad resultaat inderdaad.	Nice smooth result indeed.
819	Edsel	Mooi glad resultaat inderdaad en het beste, maar ja.	Nice smooth result indeed and the best, but yes.
820	Edsel	Dan ga je wel weer naar het.	Then you go back to it.
821	Edsel	Dat dat zakelijk geduld is gewoon wat sneller binnen kwaliteit, dus er worden veel meer deuren gerold.	That that business patience is just a little faster within quality, so many more doors are rolled.
822	Edsel	Waar je roller kan gebruiken, gebruik die punt en door dus productie was. Het werd dan iets belangrijker dan kwaliteit.	Where you can use Roller, use that point and so by production. It then became slightly more important than quality.
823	Soraida	De opdrachtgever vindt een 7 ook goed, dat heeft die wil geen 9 daar zit, die wil niet betalen voor die 9.	The client also likes a 7 good, that does not want that there is no 9 there, who does not want to pay for the 9.
824	David	Well we finished all the topics. I was just asking them about master painters.	Well we finished all the topics. I was just asking them about Master Painters.
825	David	Did you have anything else? I asked all the stuff that was on the list.	Did you have anything else? I asked all the stuff that was on the list.
826	Lenny	Thank you I just have to listen and translate it now.	Thank you I just have to listen and translate it now.
827	Lenny	What would you like to see in the future as. Like you've tried these you've seen some ideas that are a bit to extreme. What kind of stuff, at the end what you want for support?	What would you like to see in the future as. Like you've tried these you've so one ideas that are a bit to extreme. What kind of stuff, at the end what you want for support?
828	Edsel	Je bent nu al In het goed beginnende wat zij willen zien voor ondersteuning voor In de toekomst.	You are already in the good starting what they want to see for support for the future.
829	Edsel	We hebben dit nu gehad.	We have had this now.
830	Soraida	Geen goed idee. a no go.	Not a good idea. A No Go.
831	Edsel	Wat voor ideeën denk je nog meer? Dat nog meer zou helpen?	What more ideas do you think? That would help even more?
832	Edsel	Denk je dat dat nog meer zou helpen in in de evolutie evolutie van een schilder.	Do you think that would help even more in the evolution evolution of a painter.
833	Delario	Je hebt toch wel meer aandacht aan die houdingen.	You do pay more attention to those postures.
834	Delario	Ja aan de houding meer aandacht daar ook aan, dat ze Misschien beter dan beter kunnen maken.	Yes, more attention to the attitude that they might make better than better.
835	Edsel	qua Apparaten en tools?	In terms of devices and tools?
836	Soraida	Hoe dus het Apparaat beter kunnen maken op basis van de houding?	How can the device make better based on posture?
837	Delario	Ja ja.	Yes Yes.
838	Edsel	Geen andere, bijvoorbeeld in plaats van zoiets ook andere gereedschappen of andere Super tools die het makkelijker maken.	No other, for example, instead of something like that, other tools or other super tools that make it easier.
839	Delario	Dat zou ook wel kunnen, ja?	That could be, yes?
840	Delario	Gewoon wat beter voor jou gemaakt, zoals dingen sjouwen enzo, dat zou het nog wel handig kunnen zijn.	Just made a little better for you, such as lugging things and so on, that could still be handy.
841	Delario	Beter ook.	Better too.
842	Delario	Dat is tot een dat het voor jou ook tot een bepaalde kilo voor jouw teelt, bijvoorbeeld als jij zegt, Ik kan 12 kg zelf tillen, maar dan 25 niet. Dat hij jou daarmee kan helpen zo.	That is up to one that it also for you to grow a certain kilo for you, for example if you say, I can lift 12 kg myself, but then 25 not. That he can help you with that.

id	speaker	text	text_en_clean
843	Delario	Dat dus ja.	That so yes.
844	Soraida	Oké ja.	Okay yes.
845	David	Ja, logisch.	Yes, logical.

Appendix G2:
Transcript of interview with Elk
painters

So first reactions.

Yeah, well, these are [serious and al]

Wat moet ik me voorstellen, een soort meelopende robot?
What should I imagine, a kind of walking robot?

Yeah. So two robots that carry your tools for you. So the idea is to, for this to be a story about a potential future of working with these smart tools. And this future we have maybe potentially some robots that just carry your paint, your tools, your things. You can only focus on the painting

But other way around it can not? I will bring the stuff with the robot and the robot paint for me.

That one is also possible. What do you think about Asterix and Obelix?

Ja, hoeveel gereedschappen/materialen dragen wij eigenlijk op de werkvloer? Dat is maar een kleine hoeveelheid. Het is niet zo dat je 25 of 30 KG in de handen hebt dat is niet zo. Als we 5 of 10 KG dragen dan is dat al veel, maar ik denk niet dat we daar een robot voor nodig zouden moeten hebben.

Yes, how many tools/materials do we actually carry on the work floor? That's just a small amount. It's not like you have 25 or 30 KG in your hands, that's not the case. If we carry 5 or 10 KG that is already a lot, but I don't think we should need a robot for that.

He said the weight painters have to carry, is not that much. So we doubt the usefulness of a robot like this.

Yeah, Yeah, totally.

Just when they carry the [inaudible], to 10 KG it is a lot.

But usually it's not that much?

No

Uh, on that idea, is there any part of your job where you would be okay saying a robot can do this? I focus on something else.

Schuren?
To sand?

Ja dat moeten dan grote oppervlaktes zijn dan....
Yes, that must be large surfaces then....

Ja ligt er ook aan wat je schuurt, hoe je schuurt. En ja robot... schuren... Soms schuur je al teveel.
Yes, it also depends on what you sand, how you sand. And well robot... sanding... Sometimes you sand too much.

Ja ik zie er niet zo... Ja het is wel leuk, weet je, maar ik denk niet dat een robot daarbij helpt. Dat is mijn idee.
Yeah I don't look like that... Yeah it's nice, you know, but I don't think a robot would help with that. That's my opinion.

Mag ik wat zeggen? Wat misschien makkelijker is, op deze steiger is het niet echt nodig maar als je een gebouw hebt van vijf verdiepingen, dan is het misschien wel makkelijk als er iets is, en dat hebben we eigenlijk al in de vorm van een lift, dat de spullen wel omhoog gebracht kunnen worden. Want door de luikjes heen gaan met je spullen de hele tijd, is ook onhandig. Maar in principe heb je daar dus een lift voor.

Can I say something? Which might be easier, on this particular scaffold it's not really necessary but if you have a five storey building then it might be easier if there's something, and we actually already have that, namely an elevator, that the stuff can be raised. Because going through the hatches with your stuff all the time is also inconvenient. But in principle you have an elevator for that.

Ja een bouwlift.

Yes a construction lift.

something about a bouw....?

Elevator

Elevator for the scaffold.

So moving up or moving up and down or moving materials?

Materials, Yeah.

Are there any parts of your job....

Wat je wel kan doen is eventueel kijken of.... Kitten weet je wel, dat als iemand wel iets met robots wilt doen.

What you can do is possibly see if.... Sealing you know, that if someone wants to do something with robots.

Borders?

These things.

If it can paint it or?

Hoe zeg je kitten? How do you say Seals?

Sealers

Ah the corner.

Yeah. Yeah.

Are there parts, specific tasks from between, you know, schuren and lak that you want complete control of?

Of er onderdelen van het proces zijn, dus het schuren en lakken, waar je volledige controle over wilt hebben.

Whether there are parts of the process, i.e. sanding and painting, that you want to have full control over.

Ja schuren en lakken. Ja sowieso je moet schuren en lakken toch zelf onder controle hebben. Uh ja, het ligt eraan... Ik weet niet... Sommige vragen 1,5 beurt andere vragen 3,5 beurt noem maar op (amount of revisions/coats), dus dat moet je toch in je handen hebben. Enigste waar ik een optie zie is het kitten, dat je automatisch kan kitten.

Yes sanding and painting. Yes anyway you have to have sanding and painting under control yourself. Uh yes, it depends... I don't know... Some questions 1.5 turns other questions 3.5 turns you name it (amount of revisions/coats), so you have to have that in your own control. The only option I see is the sealers, which can automatically seal.

You have to [inaudible] the complete process, and every customer has his own demands about the quality he wants.

On that idea of quality, could the camera that is meant to be these local foremen and just it helps you keep track of progress to make sure that quality is there.

What were your impressions of that?

Ja wat kan die camera? Kan die camera ook houtrot detecteren?

Yes, what can that camera do? Can that camera also detect wood rot?

Can it detect rotted wood?

Yeah, it's a smart camera that can detect rotted wood, that can track how how well you paint how well you sand, see if there's any parts that need to be done better.

Sort of like a coach foreman

If you got something like that will be good, i think.

Why?

Ja dan hoeven wij in ieder geval niet naar houtrot te gaan steken, te zoeken. Dan gaat die camera snel, dat is hier en hier, dan weten wij precies waar het is en kunnen we dat gelijk even aanpakken. Dus dat scheelt wel tijd.

Yes, then at least we don't have to look for wood rot. Then the camera moves quickly, that is here and here, then we know exactly where it is and we can tackle it right away. So that saves time.

Now they have to examine the wood, if it's rotten. If you have a camera that could do this...

Yeah it would make it more 'precies', faster, higher kwaliteit. And what if it also, so in the story the camera also gives feedback and tells you this is niet goed this is fine. How open are you...

I don't think the camera will survive.

Waarom? Is it possible for a....

Could be possible.

Why would it not survive?

De camera, ja als je digitaal kijkt die kijkt natuurlijk 100% dat het goed moet zijn. En daar gaat die camera vanuit. En ja, je weet net zo goed als wij dat als we ergens naartoe gaan dan is het: smeren.. dit dat...

The camera, yes if you look digitally it looks for that something must be 100% good. And that's what the camera expects. And yes, you know how it goes, that if we're going to work somewhere it goes like: smear.. this that... (not that precise?)

I don't think it's appreciated if there's a machine that tells you constantly, uh uh that's not good.

I see so the but if it tells you that something is not good then it is helpful to...

Helpful to look at [inaudible]

I know last time we talked about your planning. Yeah. And sort of your day to day thing. How much control do you have over your day planning?

When it rains then you can do nothing. And after that. Yeah. Yeah. We've got lot of [inaudible] so harder.

Yeah, because they have less time and meer kwaliteit, less tijd.

As you're working and as you're seeing this planning sort of when it is good control, what kind of supervision or feedback do you find helpful?

Wat moet ik daarop zeggen?

What should I say to that?

This is difficult. Yeah. Yeah.

Maybe you can think about interacting with your foreman. Remember him from the last time

Ja we lopen sowieso onze kwaliteit na, dus ja.

Yes, we check our quality anyway, so yes.

Ja wat moet ik daarop zeggen, ik weet het niet

Yeah what can I say to that, I don't know

It can be helpful. But I think they must not got a feeling that they're a machine in front. I compare it with a BMW [inaudible]: you have exactly 10 seconds to do this, exactly 5 seconds to do that.

Flexibility is very important to you.

Yeah and all the human touch goes away. **Dat is mijn gevoel. That's how I feel.**

You agree?

Yes I agree. Of course.

This is good you know. Yeah. Flexibility is definitely important.

So the robot can be very, the camera can be very useful for when the resident and going and when it controls [inaudible]

You know the story was meant in this case the camera's showing one example, very extreme idea of a camera that's too controlling, but it is also possible with smarter technologies to make them just useful enough.

Yeah. Yeah. Which is really important so the flexibility of that...

It must help, but not control.

Gewoon de stekker eruit halen, haha.

Just unplug it haha.

Of vergeten de accu op te laden, vandaag laden we hem niet op, haha.

Or forget to charge the battery, today we will not charge it, haha.

Some other questions: In the story there's three tools:
the camera, that's too controlling
the robot, such as carry things for you
and the suit, that tries to make sure you have good posture.

As you're working. Do you think a lot about your posture and your how you're trying to paint between steiger or so or...

You want to be flexible. **Steigers zijn nooit gelijk met je werk, dus je moet ook weer op je knieën, je moet opzij. Dus stevige kleding dragen dat heeft geen zin, je moet zelf ook flexibel kunnen zijn.**

Scaffolds are never level with your work, so you have to get back on your knees, you have to move aside. So wearing sturdy clothing makes no sense, you have to be flexible yourself.

Let jij constant op je houding?

Do you constantly watch your posture?

Uhm, ja dat is wel belangrijk, hoe je ervoor staat, als je goed ervoor staat doe je je werk ook beter. Dus dat is sowieso belangrijk, maar soms heb ik dat gewoon niet.

Uhm, yes that is important, how you are standing in front of the wall, if your stance/posture is good you will also do your job better. So that's important in any case, but sometimes I just don't have that.

Maar zo'n pak, zou dat wel kunnen helpen?

But such a suit, could that help?

Met die robotarm?

With that robotic arm?

Ja met die geel, oranje, rood.

Yes with that yellow, orange, red.

A suit that if you're going like this too much, this starts pulling back.

Oh no. no.

Zou het iets kunnen zijn voor leerlingen? Zodat ze wel wennen om in de juiste houding te schilderen.

Could it be for students? So that they get used to painting with the right posture.

uh kijk, iedereen heeft een houding. Veel mensen staan, ik weet niet, een beetje op een halve been, staan ze er beter voor. Anderen staan met rechts er beter voor. En ik weet niet als ik pak de steigers weer, dan ben je die flexibiliteit ook kwijt als je naar boven wilt en hij trekt je weer terug, ja in no time gooi je dat ding [inaudible]

uh look, everyone has an different posture. A lot of people are, I don't know, leaning a bit on one leg, so then they're in a better position. Others are better off with their right leg forward. And I don't know if I touch upon the scaffolding again, then you've lost that flexibility if you want to go up and it pulls you back, in which case you throw that thing [inaudible] in no time

Is it a stiff suit?

No it is flexible, its always aware of how you are moving.

And then once it notices that, oh, I keep you know, if the steiger is down here, you can it tries to like, oh, maybe, you know, you should stand up straight again, pulls you back, but you can always turn it off

Ja het kan ook gevaarlijk zijn weetje. Als je op een gegeven moment op een trap staat, je gaat omhoog en dan zegt je pak van: je kan niet meer. Ja...

Yes, it can also be dangerous, you know. If at some point you are standing on a staircase, you go up and then your suit says: you can't anymore. Well...

You understand?

Sort of like it's moving and ladder and things.

And then the suit says: no way.

And then you fall, yeah. Yeah those are practical. It has to be useful. But if you, I think you asked the question like learning. Yeah. Practice. Do you think....

Uh ja ik weet niet helemaal, dat is toch voor mij een keuze van wat de schilder zelf wil. Maar ja ik denk niet dat het in de praktijk iets is. Dat is mijn mening. Je wilt toch vrijer zijn, dat als je dit wilt doen moet je ook kunnen doen. Het is voor je eigen veiligheid dat niets jou belemmert tijdens het klimmen of dergelijke. Als iets jou zo belemmert tijdens het klimmen of als je ergens vanaf wilt stappen dan ja....

Uh yes, I don't quite know, for me that is a choice of what the painter wants. But I don't think it is going to work in practice. That's my opinion. You want to be more flexible, that if you want to do this you should be able to do it. It is for your own safety that nothing hinders you while climbing or something like that. If something hinders you while climbing or if you want to get down from something (like a ledge) then... well...

Op zich is het signaal wel goed.
But having a signal on itself is good.

Signaal is zeker goed.
Signal is definitely good.

Maar er moet geen actie uit volgen.
But no action should follow.

The signal the suit gives you is very good, but the action...

When it acts on you.

Yeah, that's....

Wat je kan doen is in je papierwerk van je staat zo vaak schuin, dan kan je jezelf het een beetje aanleren. Maar dat het pak aan je gaat trekken en doen, dat lijkt me niks.

What you can do is that your paperwork shows: you're standing slanted this often. But if the suit starts to pull and push you, I would like that.

Maar dat hij ook geluid maakt of iets? Of vind je dat te ver gaan?
But that he also makes noise or something? Or do you think that is going too far?

It makes a sound, a beep or something.

It's letting you know, but it's not pushing. Yeah. Then action. I don't know. Have you guys seen the Festool? it's a exoskeleton. Did you try it?

Dat is eigenlijk een soort robot-arm die... waarmee je zo 30 40KG kan oppakken en met gemak wegzetten.

That is actually a kind of robot arm that... with which you can pick up 30 40 kg and put it away with ease.

Ik heb een foto.
I have a photo.

it takes two people to get it done. So these are this is a project we're exploring with another company. And so the idea is that this when you're here it's fine and then this is really easy to do, but then coming back down, it's really hard. So when you're painting, it actually becomes really difficult to go like you can basically just do this

Oh ja uh stukadoors dat zijn meer voor stukadoors die mensen die meer echt een zwaar iets hebben.

Oh yes uh plasterers those are more useful for plasterers those people deal with more heavy stuff.

So this part is harder. But then like going up is really simple. Okay, So, so this is what exists now. But yeah, so sort of the....

Dit is al oud hoor deze techniek dat hebben ze volgens mij in Amerika laten uitvoeren in magazijnen om zware ladingen/pakjes op te zetten. Dus dat is oude techniek, voor schilders zie ik dit niet voor me

This is old, I think they had this technique carried out in America in warehouses to set up heavy loads / packages. So that's old technique, I don't see this working for painters.

Because you have to be flexible.

Yeah.

Sowieso heb je nooit zo'n gewicht als je met ons samen gaan werken, je hebt je kwast en je potje en je [inaudible]. Meer is het niet.

In any case, you never have that amount of weight when you work among us, you have your brush and your jar and your [inaudible]. That's all it is.

To understand, so the idea of something that's very important to know maybe what is happening, but not to, to give you the complete control over whether like it shouldn't do stuff to you.

No

That's good to know

Je kan iets verzinnen bijvoorbeeld wat je dat aandoen en bijvoorbeeld dat je geen ladder nodig heb een trapje ofzo dat die je automatisch een stukje hoger gaat.

You can come up with something, for example, what to do to you and, for example, that you don't need a ladder, a ladder or something that automatically raises you a bit.

When you're like you painting, but it's like a little bit too to high for you. And normally you'd need to go pick a ladder. But now...

This is like a leg version. So pushes you up. Something that sort of helps you but doesn't... you can turn it on when you need it doesn't....

Yeah

zie je ook stukadoors dat ze op die stelten lopen.

Do you also see plasterers walking on those stilts.

Ja bijvoorbeeld. Ja die gebruiken dat ook en timmermannen die gebruiken het ook heel veel
Yes for example. Yes, they use that too and carpenters use it a lot

So you hope, hopes that you will still and all. But eventually the only thing that they want more than before.

Well that's good to know.

So something more, very little, very low action, very good information. Sort of like a Fitbit. It tells you everything you know, and you decide how you want to move.

That's good to know. Just to sort of understand a bit. Also, when working in duos: how do you split work? How do you help each other? Do you ask for help? How does that...

Ja als de ene gaat schuren, voorschuren, de ander komt daar achteraan met de kit plamuur en als hij weer klaar is dan pakt hij de grondverf komt hij weer achter mij aan, afgronden. Dus zo weten we van elkaar hoe we hoe we dat aanpakken en dat is....

Yes, if one starts sanding, pre-sanding, the other comes after that with the putty and when he then is ready, he takes the primer, he comes after me again. So that's how we know from each other how we approach it and that is....

I understood the test but not how you go through them.

All the steps in the process. They do it together. One goes, schuren and the other one does the cleaning, the other one is a [inaudible].

Okay, which one do you like to do more?

Everything.

Yeah. That's a good quality to have. Okay. But then do are there instances when you ask for help if you're trying to for example, if it rains

Yeah when it rains we're doing nothing.

But after the rain if you have less time is there are there ways that you ask...

I ask my colleagues to help me or if they ask me to help them.

I see

Als een robot bijvoorbeeld ook weet dat het gaat regenen of vochtigheid. For example, if a robot also knows that it is going to rain or humidity.

Die zou kunnen waarschuwen, lijkt mij. That could warn, I think.

Ja dat zijn ook goeie bijvoorbeeld, over een half uurtje gaat het regenen, dan weten we ook hoe ver we zijn. We zitten niet altijd op de telefoon.

Yes, those are also good ones, for example, in half an hour it will rain, then we also know how far we are. We are not always on our smartphones.

It would be helpful if the robot or the camera also tells you: watch out rain's coming. Within an hour or half an hour they don't they don't always show up on the radar...

Yeah when drops are bound...

so it would be helpful if they get a signal.

Soms kijken we wel op buienradar, stel dat het dan droog is, maar 10 minuten later is er toch regen.

Sometimes we do check the rain radar, suppose it is dry then, but 10 minutes later it still ends up raining.

[inaudible] Dat je dat met een slimme camera doet. Hij is toch afhankelijk van de informatie wat ze krijgen.

[inaudible] That you do that with a smart camera. It depends on the information they get.

Ja maar zo help je hem toch weer met ideetjes.
Yes, but that's how you help him with ideas again.

Ja.

Misschien als die robots zelf als een soort van een uh.... Hoe noem je dat? Je weet toch, je hebt toch van die karren van de schilders waar ze allemaal bakjes inzetten. Dat misschien dat buiten staat en wanneer het regent dat dat allemaal daar in gezet kan worden in de robot.

Maybe if those robots themselves were kind of like a uh... What do you call that? You know, you have those carts from the painters where they put small container is (use trays). That maybe already is outside and when it rains that all that can be put in there, inside the robot.

Ja, ze hebben alleen zo'n kruiwagen, dan weet je waar we wat in kunnen zetten. Maar dan moet je echt heel veel van je [inaudible] lopen weet je wel.

Yes, they only have a wheelbarrow, so you know what we can put in. But then you really have to walk a lot of your [inaudible] you know.

Ja daarom, nu kan je het in de robot plaatsen.
Yes, that's why, now you can place it in the robot.

Ja ja, alles is in de buurt.
Yes I see, everything is nearby.

Smart is being aware of everything. When I was sort of thinking of the story, thinking of future things, I was thinking of maybe a robot that is on the steiger is on the side that just sort of covers up if you need if it's going to start raining and then it goes away once it's good out.

You have to have a really big robot then.

Yeah, but it is possible if you have things that fold like bat-wings or there's a lot of things from nature you can use, but it's that the kind of support that helps you not think about other things and just focus on work. If that's the kind of support you're looking for, you're you would appreciate having?

Voor een timmerman is dat beter.
That's better for a carpenter.

Wij hebben meer zware spullen en met spullen van 30 40 kilo moet ik twee drie keer moet ik heen en weer. En als je dat allemaal in dat robot kan zetten en dat de robot met een sensor en een sleuteltje in je zak, dat de robot je achtervolgt naar je werk. Dat is perfect. En als dat ding ook nog een beetje kan liften dat het je nog makkelijker wordt gemaakt, voor je spullen. Dat je spullen bij je blijven.

We have more heavy stuff and with stuff of 30-40 kilos I have to go back and forth two or three times. And if you can put all that in that robot and that robot with a sensor and a key in your pocket, that the robot follows you to work. That is perfect. And if that thing can also lift a bit, it will be made even easier for you, for your stuff. That your stuff stays with you.

Als ik bijvoorbeeld met de trap omhoog ga en de hele tijd naar beneden moet lopen om iets te pakken. Als een robot zelf om een beetje naar boven komt en dat ik niet van het trap hoeft, aan het eind van de dag ben je wel kapot als je de hele tijd moet stijgen, op en neer. Maar als hij de eerste verdieping al omhoog kan, dan hoeft je niet helemaal naar beneden bijvoorbeeld.

For example, if I go up the stairs and have to walk down all the time to get something. If a robot comes up on its own for a bit and I don't have to go down the stairs, at the end of the

day you're broken if you have to go up and down all the time. But if he can already go up the first floor, then you don't have to go all the way down, for example.

Yes. So the idea of the robot. Yeah. Uh hum. To have your stuff and moving it up and down, and follows...

Bijvoorbeeld hier bij het kitten dan dumpen we alles erin en dan loop je weg maar dan achtervolgt hij jou gewoon. Nu hoef je in principe niks in je handen te houden.

For example here with the putty then we dump everything in it and then you walk away but in this case he'd just chase you. Now you basically don't have to hold anything in your hands.

Smart car

Ja is misschien voor hem een idee.

Yes, it might be an idea for him.

Yeah, yeah, yeah. It's a good idea.

It's an interesting idea. It's opens sort of help just in some ways. [inaudible] If you were going to say something, I think something that started with I'm so old and I wanted and it got caught up.... I can understand what what did you want to say about sort of experience and...

Ja hoe moet ik dat zeggen? Uh kijk, we zijn oude generaties schilders en ja wat nu is een robot, ik zie het eigenlijk niet in de praktijk iets doen want het is meer belemmerend in je beweging, meer materiaal wat je ook nog eens meedraagt en dergelijke.

Yes how do I say that? Uh look, we are old generations of painters and yes what is a robot, I don't actually see it doing anything in practice because it is more restrictive in your movement, more material that you also carry with you and the like.

Maar ik kan me wel voorstellen als je echt grote oppervlaktes moet schilderen, dat het wel kan helpen.

But I can imagine if you have to paint really large surfaces, it can help.

Als het echt grote, ja....

If it's really big, yes....

Hier bij de keet bijvoorbeeld, de buitenwanden.

Here at the shack, for example, the outer walls.

Ja of juist binnen ja kijken buiten, ik weet niet.

Yes or just inside yes looking outside, I don't know.

Ja binnen kan.

Yes inside is possible.

Als een grote klus binnen hebben, weet je wel dat af en toe ja dat zoiets met jouw materiaal naar jou toekomt. Dan moet die ook ook de spullen kunnen pakken om daarin te kunnen zitten.

If you have a big job, you know that sometimes something like this comes to you with your material. Then he must also be able to grab the stuff to be able to sit in it.

Ja maar dat kan wel, Yes, but they can

the robots are quite intelligent nowadays.

they're getting better. Not great. But better

En als die nou bij de containers zet en ik zeg: 'ik heb 9001 nodig, twee blikken van die, twee van die' dat hij dat zelf kan scannen en het zelf kan pakken en meenemen. Ja kijk, dat is wel iets. Maar het is niet zo de bedoeling dat wij in een bak spullen zetten en ja dat die achter ons aan rijdt, ja daar heb je nog niks aan want...

And if he puts it next to the containers and I say: 'I need 9001, two cans of that, two of that', he can scan that himself and grab it himself and take it with him. Yes, see, that's something. But it is not the intention that we put stuff in a box and yes that it drives after us, yes that is of no use to you yet because ...

Het echte sjouwwerk. Dus inclusief het uit de rekken pakken...

The real work. So including unpacking...

Ja dan heb je dat ook zelf gedaan, en dat is natuurlijk veel .. [inaudible mumble]

Yes, then you did that yourself, and that is of course a lot .. [inaudible mumble]

Did you follow?

Sort of yeah

It's the robot should be possible to take the things they need. Yeah. For example a 9001 8500. It's also paints.

Oh okay so it can pick them. Yeah.

And then put them in a cart and brings it to them.

That makes sense. I think that was my idea for Obelix. The sort of, you know, it does the sport for you. Just focus on painting.

As from the planning and those of today, we don't need these three three here and then this other person is going to need sort a bucket for a robot for you or robot for you.

And everybody works incredibly one meter today.

It's definitely an interesting way and sort of the goal of my sort of is the goal of my project is really to understand what kind of support would be most helpful to painters because when we're talking last time we were talking about how hard it is to keep young painters around and then someone maybe they might want a different kind of support, then the sort of support that you're looking for and sort of... But through the work, I've noticed also that it's very difficult to think only, Oh yeah, let's provide things for the for the painters that are 18 right now than in ten years they might be helpful, but it's also really important to consider, I think you and Hank, who had more experience, I think from the people that we talked to, the most experienced painters, what is helpful, what is useful...

for the young generation

...through what you have experienced, Yeah. What kind of things do you wish you had when you were starting out?

Yeah.

Ik denk dat het schildersvak niet echt zo veel veranderd is.

I don't think the painting profession has really changed that much.

Uh nee. Nee. En het gaat ook niet veranderen zolang we het kunnen doen.

Uh no. No. And it's not going to change as long as we can do it.

De bouwplaats: de timmerman, de metselaar die hebben wel veel verandering ondergaan.

The construction site: the carpenter, the bricklayer, they have undergone a lot of change.

Ja eigenlijk is dat daar meer.

Yes, actually for those a lot has changed indeed.

Iets veel meer ergonomisch, uh...

Something much more ergonomic, uh...

Uh ja, voor ons als schilders. Ja, dat zeg ik: Je staat met drie vier man, pak je een tien kilo emmer, dat is het zwaarste wat je af en toe in de handen hebt.

Uh yes, for us as painters. Yes, that's what I'm saying: You're standing with three and four men, you grab a ten-kilo bucket, that's the heaviest thing you have in your hands every now and then.

Ja ik denk dat je ergonomische houding, dat dat nog....

yes I think your ergonomic posture, that that still....

Ja je houding. Ja, kijk op je werk als je staat dan moet je toch, hoe je het went of keert, moet je toch weer een keer bukken, linksom kijken, rechtsom. Daar ontkom je gewoon niet aan die beweging, dat moet. Want je kan niet als een stijfe hark ergens staan en dat proberen dat... dat kan niet.

Yes your posture. Yes, look while working when you are standing, then you have to, in any case, you have to bend down again, look to the left, to the right. You just can't avoid that movement there, you have to. Because you can't stand somewhere like a "stiff plank" and try that way... you can't.

Ja en je hebt vaak blikken in je handen en dan moet je door je knieën, en dan moet je overeind staan. En als je dan iets hebt dat het blik op iets staat en jou volgt? zeg maar. Dat je niet iedere keer met....

Yes, and you often have cans in your hands and then you have to bend your knees, and then you have to stand up. And if you have something that the can is on something and follows you around? That you don't every time with....

Ja, nee, ik snap wat je bedoelt.

Yes, no, I get what you mean.

Ja ik roep ook maar wat.

Yes, I'm only rambling/spitting ideas

Nee ik zie daar eigenlijk niets in. [inaudible] Heb je zelf zo gedaan.

No, I don't really see any use for that. [inaudible] You can easily do it yourself.

Nee, maar kijk op de steiger heb je daar sowieso niks aan omdat die overal over oneffenheden gaat.

No, but look at the scaffolding, it would not work because it has a very uneven surface.

Dan ben je weer bezig met dat ding te besturen, om dat ding achter je aan te krijgen dan dat je je werk kunt doen.

Then you're working on driving that thing, to get that thing chasing you then rather than doing your job.

Maar die volgt automatisch met zo'n sensor in je zak.

But it follows automatically with such a sensor in your pocket.

Ja, maar hij zweeft toch niet?

Yes, but it doesn't float, does it?

Je moet alleen even opletten als je naar de wc gaat, dat hij je niet volgt.

You just have to watch out when you go to the bathroom that he doesn't follow you.

Nee haha, maar die apparaat gaat toch niet zweven die staat toch op wieltjes weetje. Dus als je daar zit apparaat nou mij gaat volgen en als ik oneffenheden heb, dan zit hij op een gegeven moment vast natuurlijk. Vooral als hij op de steiger jou moet volgen. Dus ik weet niet, je kan het op de grond gebruiken. Ik zie dat niet, ja misschien ben ik.... Maar ik zie dat nut gewoon niet

No haha, but that device is not going to float, it is on wheels, you know. So if you're sitting there, the device will follow me and if I have irregularities in the floor surface, it will be stuck at some point, of course. Especially if he has to follow you on the scaffolding. So I don't know, you can use it on the ground. But I don't see that.... yes maybe I am.... But I just don't see the point

En bijvoorbeeld dat hij kan sauzen?

And, for example, that he paint the ceiling

Ja het plafond.

Yes the ceiling.

Ja het plafond spuiten, dat je alleen maar die muren hoeft te doen.

Yes spraying the ceiling, that you only have to do those walls.

Dat heb je tegenwoordig die grote robot zalen.

That's what you have these big robot rooms these days.

Dat zou wel handig zijn.

That would be handy.

Maar dat is alleen voor binnenwerk.

But that's only for the interior.

Sauzen is helemaal slecht voor je rug namelijk. Je nek, je rug, je schouders. Een paar jaren later, ik ben nu 31 en ik voel alles al. Dat zou bijvoorbeeld wel handig kunnen zijn.

Working on ceilings is really bad for your back. Your neck, your back, your shoulders. Only a few years in, I am now 31 and I already feel everything. So that could be useful, for example.

A robot that can paint walls and ceilings because that's very bad for your body. [mumbles]

En met sauzen als je plafonds gaat doen, als je dan iets kan uitvinden dat die je nek steunt, je schouder, want dan heb je minder last. Dat die mooi meebeweegt, dat je altijd een steun hebt.

And when you're going to do ceilings, if you can invent something that supports your neck, your shoulder, because then you have less pain/struggle. That it moves nicely with your movements, so you always are supported.

That makes sense that I think that's what the Exoskeleton from Festool is supposed to be for. Like, it's good if you have to be like this a lot because in your arms just fall into the robot.

But head also.

But then, yeah, your neck is like, okay, so it is a little bit. So that's a difficult thing. Are there any big differences between working... Because we've talked the last time and sort of we've seen you guys work outside, working outside versus working inside

Een wereld van verschil.

A world of difference.

The inside is it's easy for the robot to work also. Outside it's difficult, the inside the robot and maybe scan the house the, the space with only two spins and then he scanned everything and knows what to paint. We do only the **de raamwerken, ik weet niet hoe je dat zegt? the frameworks, I don't know how you say that?**

So we can only cover the windows so the robot can only do his work, then it's easy job for us, because you can ask the money for the robot ('s work)

When you work inside this so far. Yeah. We only ever really talked about outside work and also thinking about inside said you do do you do paint sort of you know all of these walls the space in between. Okay in the same process 'schuren' and cleaning...

Je komt op plekken, je moet ook opzetten, glasvlies plakken bijvoorbeeld, behangen.

You have to get places, you also have to set up, stick glass fleece for example, wallpaper.

Ah wallpaper, yeah I know the one.

Maar voor een robot zou dat ook kunnen want ik heb ook heel veel filmpjes gezien van wat robots kunnen met die A.I. en al die dingen. Een robot kan het ook bijvoorbeeld uh met dat soort dingen zeg maar die ja die uh ja of die beginnen dan die vanaf onder naar boven zetten, dat die met die arm zo'n vlak, dan spuit hij weer een lijn en dan doet hij daarnaast weer eentje.

But that would also be possible for a robot because I have also seen a lot of videos of what robots can do with that A.I. and all those things. A robot can also do it, for example, uh with things like that, say those yes those uh yes or they start then put those from the bottom up, that one with that arm such a plane, then he sprays another line and then he does next to it another one.

Good to know. But yeah, there are a lot of robots that have been designed to paint and I think, when looking at those, there's a worry that if they start painting, will they also paint everywhere else? No, they're getting better. But there's still not so smart as before. So it's but it's good thing to think about of what parts.

Yeah. They can just be the inside for you that you focus like the difficult part of the work is good to think about it.

Laat hem alles wit maken, en de rest doe je gewoon met de hand.

Let him whiten everything, and do the rest by hand.

Dat zou wel handig zijn als je de robot in een kamer kamer kan laten en ik ben zelf nog ergens anders bezig. En hij doet het sauzen enzo. Dat is perfect, is maar een ideetje.

That would be useful if you could leave the robot in a room and I'm still busy somewhere else. And he paints the ceilings and stuff. That's perfect, just an idea.

Ja dank je wel.

Yes thank you.

Spuiten

Spray

Spuiten ja, is ook makkelijk te automatiseren.

Yes, spraying is also easy to automate.

I think I have no more questions. Is there anything else you would like to add or say? I cannot think of something yet. Okay. Thank you so much for your time again.

Appendix G3: Transcript of interview with SUSAG

id	speaker	text	
2	LENNY	Two do you?	
3	LENNY	See.	
5	SUSAG	Hi, Lenny.	
7	LENNY	Hi, how are you?	
9	SUSAG	Good and you?	
11	LENNY	Survive it.	
13	LENNY	Enjoying the the better weather, yes.	
15	SUSAG	So surviving well, yeah, that's a Dutch brother.	
17	LENNY	It's been really cold this with summer.	
19	LENNY	It feels like winter again.	
21	SUSAG	Yeah, this.	
23	SUSAG	Yeah, I'm.	
25	SUSAG	I'm. I've got.	
27	SUSAG	I've got nothing on but this, but it is cold.	
29	SUSAG	Yeah, me too.	
31	SUSAG	Me too.	
33	LENNY	I've I've say I feel you, but it's going good.	
35	LENNY	We got into what we can.	
37	SUSAG	Yeah.	
39	SUSAG	Well, you're somehow will we get used to it.	
41	LENNY	Yeah, I love the rain. I.	
43	SUSAG	The rain and and so and perhaps later, later this month, it will be better.	
45	LENNY	Yes, I'm going to.	
47	LENNY	I have to go to Spain on Thursday.	
49	SUSAG	Well, then you OK?	
51	SUSAG	Yeah, probably yes.	
53	LENNY	Nice and hot there and they'll be missing the rain at the uh.	
55	LENNY	So thank you so much for for joining on this session.	
57	LENNY	I want.	
59	SUSAG	OK, but yeah, because I I don't know exactly what the meaning is.	
61	SUSAG	So I I I couldn't prepare a thing, no.	
63	LENNY	No preparation.	
65	LENNY	It's a.	
67	LENNY	Sort of, uh.	
69	LENNY	So basically based on my project is looking at how should we design these sort of Smart Tools and robots.	
71	SUSAG	Umm.	

id	speaker	text	
73	SUSAG	Yeah.	
75	SUSAG	Yeah.	
77	LENNY	My thesis project for the context of painters at sort of attached to the Susak project overall and looking for design guidelines and So what I did is try to understand the painterly context better, so we I was part of the interviews back in May, so I met folks from villains and elk and I actually finished last week.	
79	LENNY	I met with some more painters from Williams and yesterday with some more painters from Elk.	
81	LENNY	Uh.	
83	SUSAG	OK. Yeah.	
85	LENNY	And so so yeah.	
87	LENNY	So in order to sort of have a.	
89	SUSAG	Yeah.	
91	LENNY	To better understanding of the practices, I made a story and so I wanted to for this session.	
93	SUSAG	Hmm.	
95	SUSAG	Right.	
97	LENNY	I wanted to show you the story and then use that story as a tool for having a discussion about different topics related to painter practice and designing things for them.	
99	SUSAG	Yeah, yeah.	
101	LENNY	So so I will share my screen.	
103	SUSAG	Yeah.	
105	LENNY	Ah, let me see.	
107	SUSAG	Yes, yeah, yeah.	
109	LENNY	What I can do this properly so this makes whole screen yes most and you can see this Gray slide is it are the picture size OK I I I you had mentioned your phone before so I want to make sure it's.	
111	SUSAG	No, no, it's it's OK.	
113	LENNY	OK, then let me put.	
115	SUSAG	It's it's a, it's it's it's visible enough, yeah.	
117	LENNY	OK, then I just lost.	
119	SUSAG	Wait a minute.	
121	SUSAG	I have to.	
123	SUSAG	Uh, that's that's on my screen.	
125	LENNY	There's there.	
127	SUSAG	Yeah, alright, now I've got your agenda.	
129	SUSAG	OK, alright. OK.	
131	LENNY	We they're clear about that.	

id	speaker	text	
133	LENNY	So yeah, so so I created this story and the idea was if we were in person, I would give it to you on an iPad to sort of click through.	
135	SUSAG	Mm-hmm.	
137	SUSAG	Yeah. OK.	
139	LENNY	Uh, but for the online purposes, I'll just be reading through the story I and just sort of walking through it a little bit faster.	
141	LENNY	So this story is meant to be one kind of narrative of what the future could look like.	
143	SUSAG	Yeah.	
145	LENNY	Uh, and it is something that is very.	
147	LENNY	Speculative.	
149	LENNY	So it's very free of constraints.	
151	SUSAG	Yeah.	
153	LENNY	I'm it's grounded in the practice and the knowledge from the interviews, but it's not, you know, there will be questions of how does exactly does this thing work, those sort of how will it actually work are not as important as could this thing possibly exist in our reality?	
155	LENNY	And if it did, what would we?	
157	LENNY	How would we react to it?	
159	SUSAG	OK.	
161	SUSAG	Yeah, yeah.	
163	LENNY	Sort of a, yeah, so.	
165	LENNY	Yes.	
167	LENNY	Umm.	
169	SUSAG	That I think you have already noticed that the paint is community is a very conservative community which which doesn't change a lot through the years and to have them to change, you have to to, to.	
171	SUSAG	Very persuaded.	
173	LENNY	Yes.	
175	SUSAG	Persuading to to change the normal habits.	
177	LENNY	Yeah.	
179	SUSAG	So I hope this story will.	
181	SUSAG	Will enlighten that more than.	
183	SUSAG	That helps them to change.	
185	LENNY	I think, yeah, I think that's a very fair point.	
187	LENNY	And that was also when I was thinking about the story.	

id	speaker	text	
189	LENNY	And actually I think yesterday there was an interesting moment that maybe after we go through the story, I can explain a bit better with with when I was working with villains painters, they were much younger.	
191	SUSAG	Yeah.	
193	LENNY	I think the most was one guy had seven years of experience and the other one had two months.	
195	SUSAG	OK.	
197	LENNY	When I showed the story and with elk, it was one painter who has about 35 years of experience and they both have very different perspectives.	
199	SUSAG	Yes. Yeah.	
201	LENNY	So yeah, it was a very interesting it's the, the, the, the conservative and sort of persistent idea of a painter is very, very interesting. Uh.	
203	LENNY	Mm-hmm.	
205	SUSAG	Yeah, it's very strict and and we have always done this and it will always be this like this.	
207	SUSAG	Yeah, yeah, yeah.	
209	LENNY	Yeah, it became a very, very fun.	
211	LENNY	It was a very it looks fun, I would say having that kind of a conversation.	
213	SUSAG	Yeah.	
215	SUSAG	Yeah.	
217	SUSAG	Well, it's it's it.	
219	SUSAG	It it is your.	
221	SUSAG	Uh and yeah, how?	
223	SUSAG	How should I say this is your persistence that should.	
225	LENNY	True.	
227	SUSAG	Change them and if you are doing this OK and and and you're doing it with a a valuable arguments they are willing to change and that's that is that is what you have to to get, yeah.	
229	LENNY	Yeah, very true.	
231	LENNY	So let me walk you through the story.	
233	SUSAG	OK, Alison. Yeah.	
235	LENNY	Yes.	
237	SUSAG	Yeah.	
239	SUSAG	Yeah.	

id	speaker	text	
241	LENNY	So think of the years 2035 and there are not enough painters working for every 20 parameters that start their training, only one sticks around with fewer painters, tasks that were easy before have become more demanding.	
243	LENNY	Something has to be done to support the ones that have remained.	
245	SUSAG	Umm.	
247	LENNY	Uh technological advances allow painters to work alongside robots and Smart Tools to restore, renovate and improve buildings.	
249	SUSAG	Is this?	
251	LENNY	They can maintain control, yeah.	
253	SUSAG	Is this a break in some, some sometimes and that the the year 2035 there are less and less painters?	
255	SUSAG	Is it based on on figures?	
257	SUSAG	You you find out.	
259	LENNY	It's based well, the less and less painters is based on what we got from the interviews.	
261	SUSAG	OK.	
263	LENNY	The 2035 was meant to be.	
265	LENNY	It's a year in the future.	
267	SUSAG	Yeah, that's a year.	
269	SUSAG	And the future.	
271	SUSAG	Yeah, yeah.	
273	LENNY	Originally I thought something like something more 2050 was too far.	
275	SUSAG	Yeah, more this more for.	
277	SUSAG	Yeah.	
279	SUSAG	Yeah, yeah, yeah.	
281	LENNY	2035 became a more I thinkable something better to think with.	
283	SUSAG	OK, yeah.	
285	LENNY	Umm so this this new advances in technology painters can maintain control of the outcome while being supported by these kinds of agents, smart products, tools and robots.	
287	SUSAG	Hmm.	
289	LENNY	This story focuses on one example, and it takes place in a small city in the Netherlands.	
291	SUSAG	OK.	
293	LENNY	Uh, here we have Matt.	
295	LENNY	He's a painter with four years of experience working at Hogan Deep.	

id	speaker	text	
297	LENNY	He just arrived at work meeting with the foreman boss.	
299	SUSAG	Yeah.	
301	LENNY	Here's bus.	
303	LENNY	Morning, Matt.	
305	LENNY	How are you?	
307	SUSAG	Yeah.	
309	LENNY	Good you.	
311	SUSAG	Good you. Yeah.	
313	LENNY	OHS food.	
315	SUSAG	Yeah.	
317	LENNY	Let's start today.	
319	LENNY	Yes, we don't have many hours left for this project.	
321	LENNY	How are you getting on with work?	
323	LENNY	Uh months.	
325	LENNY	You should be should be fine.	
327	LENNY	I'm only missing one big area.	
329	LENNY	The weather got bad in the afternoon, forcing me to stop.	
331	LENNY	I should be able to finish today.	
333	LENNY	Umm, OK.	
335	SUSAG	Yeah, OK. Yeah.	
337	LENNY	Then we'll get ready and it's on the other side of town, so let's get to it.	
339	SUSAG	Yeah.	
341	LENNY	Don't forget to keep track of your progress.	
343	LENNY	I will need to pictures and data to share with the client later.	
345	LENNY	Good luck.	
347	SUSAG	OK. Yeah.	
349	LENNY	So that the grease shore thing and he says, alright, he puts on his glove and says Asterisk and Obelix.	
351	LENNY	Let's go.	
353	LENNY	Uh, and these were asterisk anomalies and they were maths.	
355	SUSAG	OK.	
357	LENNY	Assistant robots Asterix and Obelix.	
359	LENNY	Carrick tools and materials so that Max can focus on painting.	

id	speaker	text	
361	LENNY	They follow him whenever whenever he's wearing his glove, they will move out of his way, but come near him whenever he needs anything.	
363	SUSAG	OK.	
365	LENNY	There are two robots.	
367	LENNY	They float.	
369	SUSAG	Umm.	
371	LENNY	They're a bit more futuristic, so let's follow Matt as he works today.	
373	LENNY	He heads to the painting site for the work day.	
375	LENNY	The Asterix and Oblix followed behind him.	
377	LENNY	Uh.	
379	LENNY	He approaches the last part of the painting, which is this outdoor area.	
381	SUSAG	Umm.	
383	LENNY	He approaches the camera that he's gonna be using to get started with the day he clicks the camera shutter and scanning message comes out.	
385	LENNY	Umm.	
387	LENNY	The camera's checking the area that will be scanned.	
389	LENNY	That will be painted and worked on to scan complete, sending the data to foreign boss and the camera talks.	
391	LENNY	So we're in luck today.	
393	LENNY	There is no wood rot present.	
395	SUSAG	Don't you?	
397	SUSAG	Yeah OK yeah.	
399	LENNY	You can start sending immediately after the sanding primer.	
401	LENNY	Paint the surface and add varnish at the end.	
403	SUSAG	Yes.	
405	LENNY	So a typical process, I need you to prioritize these tasks immediately.	
407	LENNY	My datasets you were slow yesterday, so you need to be faster today.	
409	SUSAG	OK. Yeah.	
411	LENNY	I'm gonna come out.	
413	LENNY	Of course is. Yeah.	
415	LENNY	Yeah, yesterday wasn't my fault.	
417	LENNY	It was raining.	
419	SUSAG	It's not raining, blah blah, yeah.	
421	LENNY	They and the cameras.	

id	speaker	text	
423	LENNY	There's no rain today, so there are no excuses.	
425	LENNY	Uh, good to know.	
427	SUSAG	Ohh, he got the answers from the camera.	
429	SUSAG	Yeah.	
431	LENNY	Yes, the camera speaks to them, so it goes.	
433	SUSAG	Yeah, OK. Yeah.	
435	LENNY	Good to know how to get to it then. No.	
437	LENNY	So messed up first task is to sand and clean the wood surfaces.	
439	LENNY	He will paint today.	
441	LENNY	Actress carries all his tools.	
443	LENNY	Map beaches into it and grabs the battery.	
445	LENNY	Pounded Sander and a brush.	
447	LENNY	Umm, as he reaches in with his tools in hand, Matt gets to working.	
449	SUSAG	Yeah.	
451	LENNY	Uh, I'm sending the surfaces very quickly.	
453	LENNY	Uh, and finishing.	
455	SUSAG	And he's sending with the with the gloves.	
457	SUSAG	One one of the groups.	
459	LENNY	Good catch.	
461	SUSAG	It could be it could.	
463	SUSAG	It could, yeah.	
465	LENNY	So that is the globe that I use, but he's he could be so.	
467	SUSAG	Yeah.	
469	LENNY	But I meant I just gave him a generic tool.	
471	SUSAG	OK.	
473	SUSAG	Yeah.	
475	LENNY	But yeah, actually the glove that I use for the for the work was the one from the sending project protecting the work and all that.	
477	SUSAG	Perfect. OK.	
479	LENNY	So he sends and he uses his camera to record the progress it scans one more time, takes a nice picture again, evaluates everything, scan complete, sending data to form. And boss.	
481	LENNY	Umm, this is a camera.	
483	LENNY	It serves as a local format format.	
485	SUSAG	Mm-hmm.	
487	LENNY	During the first scan, the camera creates a list of tasks and time estimates based on the pre approved quality expectations.	

id	speaker	text	
489	SUSAG	Yeah.	
491	SUSAG	Yeah.	
493	LENNY	So these are the conversation between the client and the painting company without the painters on the 1st can also looks for many any major structural issues like wood rot or deformities in the in the surface that could delay the project.	
495	LENNY	This is important to keep track of things on time.	
497	SUSAG	Mm-hmm.	
499	LENNY	Umm, painters like Matt make pictures every time they complete a task to evaluate their work quality.	
501	LENNY	The camera judges the quality and time used against the expectations and budget.	
503	SUSAG	Yeah.	
505	LENNY	Painters can only move to the next task after the camera has approved their work quality.	
507	SUSAG	Alright.	
509	LENNY	All data is sent to the foreman like Boss who manages multiple projects and sites simultaneously.	
511	SUSAG	Umm.	
513	LENNY	Some of the camera is back.	
515	LENNY	It scans OK you completed the sending test to quality expectations.	
517	LENNY	Move on to the next task.	
519	SUSAG	Alright.	
521	LENNY	They'll cycle off now.	
523	LENNY	Uh-huh.	
525	LENNY	Whatever you say.	
527	SUSAG	OK. Yeah.	
529	LENNY	So it's just a little bit ahead.	
531	LENNY	Matt has already added the primer, so he's painting.	
533	LENNY	He's moving up.	
535	LENNY	He's moving down as he works.	
537	LENNY	He uses Obelix to get more paint.	
539	LENNY	It comes nearby whenever he needs paint.	
541	LENNY	Uh.	
543	LENNY	He just keeps painting and painting and painting and he comes back up, so sometimes he's bending, sometimes he's moving over time.	
545	LENNY	He begins to extend himself too much.	
547	LENNY	He started reaching too high.	
549	SUSAG	OK. Yeah.	

id	speaker	text	
551	LENNY	I'm as he's reaching higher and higher with just the brush, the suit begins to glow.	
553	SUSAG	All right.	
555	LENNY	Matt suit is specially designed to measure his posture and exertion.	
557	LENNY	If Matt Folds a bad posture for too long, the suit starts to glow from yellow to orange to red.	
559	SUSAG	And the camera sees that.	
561	LENNY	The camera doesn't see this part.	
563	SUSAG	Alright, OK.	
565	LENNY	The camera is only used when he's actually taking a picture, but along with the glow of the suit, the suit will start pulling back.	
567	LENNY	So it's made with smart materials so that it can start to try to get me to fix this posture the the closer to red the color is, the stronger the pool.	
569	SUSAG	Yeah.	
571	LENNY	So now his suit is orange and pulling really strongly matters.	
573	LENNY	Yes.	
575	SUSAG	Yes.	
577	SUSAG	Yes, I'll stop.	
579	LENNY	Yes, I'll stop, but I'll.	
581	LENNY	I'll come down. Asterisk.	
583	LENNY	Come here, please.	
585	LENNY	So asterisks come by and he grabs a roller.	
587	LENNY	So let's finish with the roller.	
589	SUSAG	Yeah. OK.	
591	LENNY	It'll be faster.	
593	LENNY	I don't have to extend myself as much, and so Matt finishes painting the rest of the surface with his roller.	
595	LENNY	Uh.	
597	LENNY	And he goes back to scanning one more time.	
599	LENNY	The camera does the same thing every time it scans.	
601	LENNY	It takes a picture, it checks what's been done.	
603	LENNY	I'm scan complete sending the data to the form and bus and he goes he completed the priming and painting test poorly.	
605	LENNY	It wasn't good.	
607	LENNY	Did you switch to a roller?	
609	LENNY	They are faster, but the quality is less than the brush.	
611	SUSAG	Nissan Brush, yeah.	

id	speaker	text	
613	LENNY	Be careful when you do that.	
615	LENNY	It's not so great.	
617	SUSAG	Yeah.	
619	LENNY	Umm, the client did not pay for more quality, so you do not have to repeat the task but be more consistent next time for better quality talks a bit uh, move on to the next task.	
621	LENNY	Matt goes OK You're talking too much today.	
623	LENNY	You know, it's a it's a little bit much and later in the day he's, you know, finished painting.	
625	SUSAG	Yeah.	
627	LENNY	Now he's applying the varnish he wants to be done.	
629	LENNY	He's really getting close to that.	
631	LENNY	Umm, but as he's working his suits starts to glow again.	
633	LENNY	He's painting really low.	
635	LENNY	He could be on his knees.	
637	LENNY	He could be doing something different, but he wants to be painting in this specific way.	
639	LENNY	So Matt, every time he sees the glow, he's like just a little longer.	
641	LENNY	I'm almost done and the suit starts glowing darker because he's not changing.	
643	SUSAG	Yeah.	
645	LENNY	Like, don't be annoying.	
647	LENNY	Just two more minutes and it gets darker.	
649	SUSAG	Stop.	
651	LENNY	I said you and he's so annoyed.	
653	LENNY	So he just pushes the button on his suit, says stop, and the suit turns off.	
655	LENNY	Finally, some peace.	
657	SUSAG	Yeah.	
659	LENNY	Uh, and at any point, painters can override suit.	
661	SUSAG	Yeah.	
663	LENNY	It becomes too intrusive while they're working, so with the button they can turn off all the glowing, all the pulling and they can just get to finishing the last part they need.	
665	LENNY	And once he's done with his work, he checks in with the camera one last time.	
667	LENNY	It scans one last time.	
669	LENNY	It says scan completes and you did it to the form and boss and he goes the camera goes, he completed the varnish test to quality expectations.	

id	speaker	text	
671	SUSAG	OK.	
673	LENNY	You were faster than yesterday.	
675	LENNY	There are no remaining tasks for this surface.	
677	LENNY	I will notify foreign bus that you have finished as a reward for finishing.	
679	LENNY	You can take me back now.	
681	LENNY	Carry the camera.	
683	SUSAG	Yeah, yeah.	
685	SUSAG	Yeah.	
687	SUSAG	Yeah.	
689	LENNY	That's why so demanding that let's just let's just go and we're back at the the the working site, the project organization and but Mountain boss are there.	
691	LENNY	So good work today, Matt.	
693	LENNY	The data looks good.	
695	LENNY	Leave the camera with me.	
697	LENNY	Matt goes here.	
699	LENNY	It is the camera was very annoying to you today.	
701	LENNY	Can you check can you check it for me?	
703	LENNY	Boscov's, let me give it a look.	
705	LENNY	Little while later.	
707	LENNY	Ah, it was in training mode.	
709	LENNY	It will talk more in that case.	
711	LENNY	You can turn that off in the main in the menu.	
713	LENNY	Let me do that for let me do that now.	
715	SUSAG	OK. Yeah.	
717	LENNY	Matt says thanks.	
719	LENNY	No problem.	
721	SUSAG	No problem.	
723	LENNY	I'll see you at the next slide tomorrow.	
725	LENNY	The address is on your phone.	
727	LENNY	Got it, boss. Thought.	
729	LENNY	Morgan, as there's an Obelix and he takes off his glove and that's how the story ends.	
731	SUSAG	OK. Yeah.	XX
733	LENNY	So that was the the overarching story.	
735	SUSAG	Yeah, beautiful.	
737	LENNY	What would be, I guess no.	
739	SUSAG	It's, it is, but is this.	
741	SUSAG	Is this a a situation that could happen with the abstraction oblix?	

id	speaker	text	
743	LENNY	It could, I think so, yeah.	
745	LENNY	Umm.	
747	LENNY	Umm.	
749	SUSAG	Yeah, with the technological because then you can also introduce a a smart brush or a smart the the what you know I'm I'm very fond of the the idea of the respiratory system the the the the group made and which which can you can be uh added to this uh to this story because he's also working with the not only for the posture but also with the uh yeah toxic toxic paint.	
751	LENNY	Mm-hmm.	
753	LENNY	Like it can.	
755	SUSAG	But this is a story.	
757	SUSAG	This is a story.	
759	SUSAG	Which it can be heaven and a probably so, and the comment for the normal painter is.	
761	SUSAG	Yeah, it cost a lot of time checking with the camera.	
763	LENNY	That was a comment, yes, but that wasn't that, wasn't it?	
765	SUSAG	No.	
767	SUSAG	OK.	
769	LENNY	As big of an issue, actually no.	
771	SUSAG	What was the issue then?	
773	SUSAG	For according to the painters.	
775	LENNY	With the camera was the feedback was the judging of the quality.	
777	SUSAG	Yeah.	
779	LENNY	If it's too critical, if it tells you, I think with with a painter yesterday, I shook from Elk, he was saying that camera would not survive if it keeps telling you that you're doing things wrong.	
781	SUSAG	Yeah, yeah.	
783	LENNY	Especially if you're on the taken, it just might fall over.	
785	SUSAG	Yeah, yeah, yeah.	
787	LENNY	Umm but yeah, the IT is a good point that yeah, this is this story is a potential future.	
789	SUSAG	Umm.	
791	SUSAG	The respiratory system.	
793	SUSAG	Yeah.	

id	speaker	text	
795	LENNY	Right now there is the initial technology, sort of with the prototype you saw in Marco's class with the gloves the the, the respiratory system, the the knee pads and the roller stick.	
797	LENNY	There could definitely.	
799	SUSAG	Yeah.	
801	LENNY	There's technology now that if it keeps developing a specific way, can lead to robots like asterisk.	
803	SUSAG	Yeah.	
805	SUSAG	Yeah. Perfect.	
807	LENNY	Anomalies can lead to a camera can lead to a suit. Uh.	
809	SUSAG	Yeah, your idea of of glowing.	
811	SUSAG	Uh, the the, the the cloth is is is a is a very good idea because it's also visible for other people when it is glowing, when it when it changes its color then also his fellow painters can say hey change your change your posture and that's that's a very good idea I think.	
813	LENNY	Umm, it's definitely yeah.	
815	LENNY	A good signal and.	
817	SUSAG	Yeah.	
819	SUSAG	Yeah.	
821	SUSAG	Yeah.	
823	LENNY	I think one thing we understood from mission, maybe I don't know if you have, maybe this is a good way to start talking about the topics of this story, the the three main topics of the story are delegation authority and the painter's autonomy, the the painter's ability to act on their own and have control of their own actions and thinking of specifically the suit.	
825	SUSAG	Hey.	
827	SUSAG	Yeah.	
829	LENNY	I was curious in your experience with working with painters with seeing painters sort of, do you you mentioned the situation now you know if one painter suit is glowing, other painters will tell them, hey, you need to change because this is kind of bothering us. Umm.	
831	LENNY	Are there?	
833	LENNY	Any situations that you maybe would think that it would be beneficial for a suit like this to to say something, to intervene on behalf of the painter?	
835	SUSAG	Uh, yeah, there are.	
837	SUSAG	There are many situations.	

id	speaker	text	
839	SUSAG	That can be on behalf of the the painters, especially when they are young.	
841	LENNY	Umm.	
843	SUSAG	To prevent that the that they get a a bad back or a, uh bad shoulders.	
845	SUSAG	And I think the the, the, the young, the young painters are more likely to, uh, want each other.	
847	SUSAG	Uh, then the old the old painters.	
849	SUSAG	Yeah.	
851	LENNY	Umm, I could see that the older are more that like they wanna be confident.	
853	SUSAG	Where they want to be, they wanna be tough and don't we all.	
855	SUSAG	We've always done that and it's always going perfect.	
857	SUSAG	And what does that for?	
859	SUSAG	Yeah, a new fashion, but I think the youngest, the young people and I noticed that also in my surroundings are much more the for not to work hard not to work long, get some rest and working in the younger generation is has another meaning then for the other uh for the older generations.	
861	LENNY	Umm.	
863	SUSAG	So this technology technological help will help them to get a good quality of work and stay healthy.	
865	LENNY	Yeah, for sure it it.	
867	SUSAG	Yeah.	
869	LENNY	It's definitely a has that potential and I think exploring that kind of technology is even further could be its own projects of of fabrics and things in the in conversations with the painters, specifically about the suit.	
871	LENNY	I think the the thing we got most the the feedback I got the most was the suit is useful if it will tell me that my posture is bad.	
873	LENNY	But the moment it starts polling, I don't want the suit anymore because it seems painters really value and this is something we hadn't really talked about in our first round of interviews.	
875	LENNY	They valued flexibility.	
877	SUSAG	Yeah.	
879	LENNY	They want to be able to, at the end of the day, make their own decisions.	
881	LENNY	Give it information.	

id	speaker	text	
883	LENNY	So if the suit lights up if the suit maybe makes sound, that's great to let the painter know that something wrong is happening.	
885	SUSAG	Yeah.	
887	LENNY	But at the end of the day, they want to be the ones that decide.	
889	SUSAG	Yeah, well.	
891	LENNY	OK, I will change my posture, not the suit. Uh.	
893	SUSAG	I I I think you're right.	
895	LENNY	Umm.	
897	LENNY	Umm.	
899	SUSAG	The people have to decide for themselves, but if the suit can transfer data to bus, his foreman and thus sees that every time, just just like over speeding in a car, and you can you can manage that when someone is overspeeding a a lot of time.	
901	SUSAG	Uh, you can burn him.	
903	LENNY	Umm.	
905	SUSAG	First warning, second warning and then and there will be a a sort of punishment.	
907	LENNY	You can.	
909	SUSAG	So fun.	
911	SUSAG	Uh, you, you, you are.	
913	SUSAG	You can't work today and I don't pay you because you have a a bad posture several times more than, let's say 88 to 10 times.	
915	SUSAG	So the the the has to be some stick behind the wall.	
917	LENNY	Yeah.	
919	SUSAG	Uh, so they can make their own choices.	
921	SUSAG	But if they constantly make the wrong choice, the foreman has to know that they're making wrong choices.	
923	LENNY	Right.	
925	LENNY	That makes sense.	
927	SUSAG	So you have to make a suit which can transfer data.	
929	SUSAG	To the foreman.	
931	LENNY	To the format I mean, yeah.	
933	LENNY	And and you had.	
935	SUSAG	Yeah.	
937	LENNY	I remember you had mentioned the camera seeing the the the the suit growing up.	

id	speaker	text	
939	SUSAG	And the camera and the and the camera can see the glowing up of the of the day and and he can send the data to the format.	
941	LENNY	Umm.	
943	SUSAG	So when this guy is is not working healthy, he doesn't use the stairs, he doesn't use the roller, he doesn't use gloves, he doesn't use respiratory systems and so on.	
945	SUSAG	Yeah.	
947	SUSAG	But it's perfect.	
949	SUSAG	Yeah.	
951	SUSAG	Yeah.	
953	LENNY	He doesn't work in a specific uh, you know, even if he wants to use the brush, he could use a ladder or something to stand on to not be for sure.	
955	SUSAG	And the camera can see that and when when this guy constantly make a bad decisions?	
957	LENNY	Umm.	
959	SUSAG	Yeah, the foreman will have a function functional conversation with the with the guy.	
961	SUSAG	So when you have to improve your your attitude toward towards work, otherwise you will get sick and we have to pay your sickness.	
963	SUSAG	But I and we don't want to pay your sickness because we don't want to to make to have you sick.	
965	LENNY	If you because all about making sure the painters are healthy, the goal in this case the the tools can enable that.	
967	SUSAG	Yeah, yeah.	
969	SUSAG	Yeah.	
971	LENNY	But the painters have to if they want the decision, they really have to also be prepared to deal with the consequences of them choosing to not work in a healthy man.	
973	SUSAG	Yes, yes, yes, yes.	
975	LENNY	That's definitely an interesting way of framing the conversation.	
977	LENNY	Umm.	
979	SUSAG	And that's not a technical solution, but that's more a social solution.	
981	SUSAG	They have to convince themselves to work healthy.	
983	LENNY	Yeah, that makes sense.	
985	LENNY	It's a good it's I.	
987	LENNY	I like that perspective.	
989	LENNY	Umm.	

id	speaker	text	
991	LENNY	And it compliments, I think a lot of the things I heard from the painters because, for example.	
993	SUSAG	Yeah.	
995	LENNY	With regards to the camera, you know the the youngest painter interviewed had two months of experience when I was showing the story.	
997	SUSAG	Yeah.	
999	LENNY	So he had just started and he was actually the camera would be really nice to see my poster to be able to like it doesn't even have to be sent to the foreman if I can just use that to check how I painted something.	
1001	LENNY	Uh, you know, I they don't get a lot of because there are so few of them.	
1003	LENNY	They need.	
1005	SUSAG	Yeah.	
1007	LENNY	They don't get as much training time or or so they because they're they're mentor Coach has to also be working.	
1009	LENNY	So if there if there's something in between them, they could, you know, take their pictures, organize themselves and say, OK, I painted this part not so good.	
1011	LENNY	Maybe.	
1013	SUSAG	Yeah.	
1015	LENNY	Let me quickly go and make it better and then talk to my coach about how I can my teacher do that better.	
1017	SUSAG	Yeah.	
1019	LENNY	It does provide more social I think. Yeah.	
1021	LENNY	Personally, yeah.	
1023	SUSAG	And what and what and what?	
1025	SUSAG	But I also noticed uh one in one of your pictures.	
1027	SUSAG	Uh, the camera says uh, you didn't paint it perfectly, but the client don't pay for more.	
1029	LENNY	Umm.	
1031	SUSAG	So in my company there were a few painters and who were making the work always too good.	
1033	LENNY	Umm.	
1035	SUSAG	So when the pain when the client vice a a work for let's say A6 or A7, he is always making it to 9 or A10 which cost me money.	
1037	LENNY	Right.	

id	speaker	text	
1039	SUSAG	So the camera can also see that you are doing it too good and really in relation to the price the the the company becomes from it.	
1041	SUSAG	So it works both ways, not only of bad quality, but also to to good quality.	
1043	SUSAG	This the cameras shows us a certain range of quality between the the the client has has has bought a quality for a 7.	
1045	SUSAG	So within this range, uh, the camera sees OK mode.	
1047	SUSAG	You don't have to do more than that.	
1049	SUSAG	That's that's for me.	
1051	LENNY	Mm-hmm.	
1053	LENNY	Of tools.	
1055	SUSAG	Also, an argument for the company to invite to invest in in such sort of cameras of this tools.	
1057	LENNY	Yeah, two to be able to control their.	
1059	SUSAG	Yeah, that they are.	
1061	SUSAG	That the painter staying within the uh range, where the quality has to has to be.	
1063	LENNY	Umm is there do in the instances of your company of painters doing this?	
1065	LENNY	Did they ever give a reason why they would always go for this nine or ten quality?	
1067	SUSAG	Uh, yeah, it's not beautiful.	
1069	SUSAG	No, but it if if if you are, if you have money for a Volkswagen, you don't receive a Mercedes.	
1071	LENNY	Yes, very true.	
1073	SUSAG	And they they understand that, but still it it is not beautiful.	
1075	SUSAG	No, it's not beautiful.	
1077	SUSAG	No, I know, but the client doesn't pay anymore.	
1079	LENNY	Umm.	
1081	SUSAG	And when I'm leaving, they think for you, I'm doing it for a 9 or 10.	
1083	SUSAG	I want the customer to be satisfied.	
1085	SUSAG	Yeah, of course.	
1087	LENNY	They want very good.	
1089	SUSAG	Yeah.	
1091	LENNY	Umm.	
1093	SUSAG	And that is I know you understand that that they want to to to give the best the best performance, but it's not the best performance for the company.	

id	speaker	text	
1095	LENNY	Umm are there any other instances where like there could be kinds of supervision that would be helpful.	
1097	SUSAG	Yeah.	
1099	LENNY	So you mentioned when workers bad posture when workers are doing too much quality or too little below the quality, are there any other instances in a working process maybe for outside?	
1101	SUSAG	It's a yeah.	
1103	LENNY	Because I think a lot of our interviews and a lot of our sort of design, the story is based on painters working outside and and I understand now that if you're painting internally, it's a very different process with wallpaper, with with different requirements.	
1105	SUSAG	Yeah.	
1107	LENNY	Are there any other points during the process of painting a site that require different kinds of supervision?	
1109	LENNY	Umm.	
1111	SUSAG	Uh by glazing, for instance glazing.	
1113	LENNY	If you.	
1115	SUSAG	You have to do at the to get some guarantee for glazing you have to uh and uh, have a process which is, uh very detailed, is very detailed process and and you can't see them anymore when you the you when you are finished the glazing because they are behind the how do you say that in English class slot and the the.	
1117	SUSAG	Yeah.	
1119	SUSAG	Yeah. Yeah, yeah.	
1121	SUSAG	Yeah.	
1123	LENNY	The the glass that the the glass corner, the coke, the the kid, the the thing that goes around it, yeah.	
1125	SUSAG	So you can't.	
1127	LENNY	Umm.	
1129	SUSAG	You can't see if the the the glazing is according the details placed and the camera can show that and can show the the the customer that the glazing is properly probably manufactured.	
1131	LENNY	Umm umm, that's.	
1133	SUSAG	That's that's another example.	
1135	SUSAG	And it's also not only posture, but perhaps the camera can also.	
1137	SUSAG	I measure uh.	

id	speaker	text	
1139	SUSAG	If there is too many fine dust in the surroundings or measure toxic toxic air, and when he measures that the camera can.	
1141	SUSAG	Uh, yeah.	
1143	SUSAG	Can can.	
1145	SUSAG	Yeah.	
1147	LENNY	I could connect to the, it could connect to the system where it could require them that they work with it.	
1149	SUSAG	Gonna connect to this to the yeah, because the the ladies of the respiratory system said that there was census right here and and but it's so small that I can and it's it's but perhaps better to to have the the camera measure it.	
1151	LENNY	Umm.	
1153	LENNY	Still, it's definitely an interesting point to to create a more networked idea.	
1155	SUSAG	Yeah.	
1157	LENNY	When I was coming with the story I had, I was considering both versions of a future where things everything is connected and sharing data locally or something that is more separated so everything could act on its own.	
1159	SUSAG	Yeah.	
1161	LENNY	For example, if one day the painters suit gets damaged, they can use a regular suit, or you know if the format comes with the camera, takes a picture and leaves then that could also happen.	
1163	LENNY	Maybe they give the feedback instead of the camera, or if Asterisk and Obelix, maybe they could only have one that day, so they bring asterisks with their tools or they need more, like they don't need a lot of tools.	
1165	SUSAG	Yeah.	
1167	SUSAG	Yes.	
1169	SUSAG	Yeah, yeah.	
1171	LENNY	So maybe they just bring, oh, but looks and and sort of there could be a mix match, but definitely connecting them and adding to a larger ecosystem is an interesting we have connected the tools, umm.	
1173	LENNY	Mm-hmm.	
1175	SUSAG	And and I heard the camera also measures the the the moist in the in the wood can also uh for the wood rot.	
1177	LENNY	Yes.	
1179	SUSAG	And what can what?	

id	speaker	text	
1181	SUSAG	What the camera can do then is.	
1183	LENNY	Umm.	
1185	SUSAG	To make a calculation how much it costs to repair it, there's mostly and.	
1187	SUSAG	Mostly uh.	
1189	SUSAG	In the calculation of the company, uh it's it's there is no wood rot included.	
1191	LENNY	Umm.	
1193	SUSAG	That's all always extra work and the customers wants to know how much he has to pay for the reparation of the wood rot.	
1195	SUSAG	And to communicate fast with the customer, it's uh, good that the camera or the foreman or whatever.	
1197	LENNY	Umm.	
1199	SUSAG	Uh can give an A give the cost to the to the the to the client so that the client can approve it and then the painter can move on.	
1201	SUSAG	Yeah.	
1203	LENNY	That definitely makes sense, and if it's something that's done at the very beginning of the project, you already know before you start the painting that OK, we're gonna have to repair this.	
1205	LENNY	So let's go paint the other areas, change our budget, update our timelines.	
1207	SUSAG	Yeah.	
1209	SUSAG	It's it.	
1211	LENNY	So the camera could become the way I think you're describing it.	
1213	LENNY	The heart of the of planning.	
1215	SUSAG	The heart of the of the painting. Yes.	
1217	SUSAG	Yeah.	
1219	LENNY	That's.	
1221	SUSAG	So it is.	
1223	SUSAG	It should be a very sophisticated camera and.	
1225	LENNY	That's the idea.	
1227	LENNY	It's futuristic camera.	
1229	SUSAG	Yeah.	
1231	SUSAG	Yeah, yeah, yeah. That.	
1233	SUSAG	Yeah.	
1235	SUSAG	And what I now?	
1237	SUSAG	I see the you have an example of of that you can place the camera just in front of the of the of the work.	
1239	SUSAG	But what if they have to work at third floor or so?	

id	speaker	text	
1241	LENNY	Easy.	
1243	SUSAG	Where do you place the camera then?	
1245	LENNY	Yeah you could.	
1247	SUSAG	Then you have to think about that is that is that the same sort with the with the drone or so or or or.	
1249	LENNY	It could be.	
1251	SUSAG	Uh yeah.	
1253	LENNY	It's an interesting thing.	
1255	LENNY	Yeah, I think yeah, the the camera.	
1257	LENNY	Yeah, we put it on the tripod for the for the story, for being easy to like.	
1259	LENNY	This exist in in the space, but it could also be handheld.	
1261	LENNY	I mean the camera still, you know, box that can take a picture.	
1263	LENNY	It could be handheld.	
1265	LENNY	It could also be that there's a bunch of collapse the same way you can clamp sort of cables and things.	
1267	SUSAG	Yeah, yeah.	
1269	LENNY	You could also attach a camera to a clamp and sort of have it on this taken.	
1271	SUSAG	Yeah, yeah, yeah.	
1273	LENNY	Or so yeah, there's definitely uh, considerations and and opportunities.	
1275	SUSAG	Now. Now.	
1277	SUSAG	Yeah.	
1279	SUSAG	Now it's.	
1281	SUSAG	It's a tripod and and you have to.	
1283	SUSAG	You have to, uh.	
1285	LENNY	Umm.	
1287	LENNY	Umm.	
1289	SUSAG	And perhaps the camera can be placed about good 20 meters from from the building so that you can oversee the the whole building so that you can run.	
1291	SUSAG	There are two or three painters they can.	
1293	SUSAG	Yeah, watch do the the the yellow painter, the Red Painter and the blue painter.	
1295	LENNY	Yeah, like there's all open room for being able to really understand what is going on and.	
1297	SUSAG	Yeah.	
1299	SUSAG	Yeah.	

id	speaker	text	
1301	SUSAG	And you can communicate with all the three the painters by year, for instance.	
1303	LENNY	Yeah, I agree.	
1305	LENNY	Even be playing a little radio when they're not talking.	
1307	SUSAG	Why not?	
1309	SUSAG	Yeah, why not?	
1311	LENNY	And so the painters all have their that the music, the can it need so yeah.	
1313	SUSAG	Yeah, because I have.	
1315	LENNY	Umm.	
1317	SUSAG	I have some hearing aids myself, and when I'm talking to the phone I I'll I'll get everything within my hearing aid.	
1319	SUSAG	So the painters can also have music on the hearing aids, and only the camera has to say something to to them.	
1321	SUSAG	Yeah, they they stopped the music and say the the message the camera wants to give and then music and play on further.	
1323	LENNY	Yeah, it's a very.	
1325	LENNY	It's a good mechanism.	
1327	LENNY	It's something that's used always in airplanes.	
1329	SUSAG	Yeah, it's, it's.	
1331	SUSAG	Yeah.	
1333	LENNY	If you're watching a movie on a long flight, they stop them.	
1335	SUSAG	And you get and you get and you get a message from the from the.	
1337	SUSAG	Uh.	
1339	LENNY	The the pilots.	
1341	SUSAG	From the pilot and the you, your music stops so that.	
1343	SUSAG	That's very yeah, it's already exists, but now you have to.	
1345	SUSAG	Yeah.	
1347	LENNY	Get it to painters.	
1349	SUSAG	To put it in in one small and one small camera which has the.	
1351	LENNY	But that's that's has to travel and fit and be light.	
1353	SUSAG	Yeah.	
1355	SUSAG	And I think your idea of of some sort of.	

id	speaker	text	
1357	SUSAG	Main center of the painters work the camera and communicating with the painters, but also communicating with the respiratory system with the glove, with the suit, with the customer, with the foreman.	
1359	LENNY	Umm.	
1361	SUSAG	Then it is some sort of scanning and communication center.	
1363	LENNY	Yeah, for sure.	
1365	LENNY	I think that prevents an interesting opportunity to and also some challenges I think for the painters who you know, you would have to now have this new authority figure, which is this camera.	
1367	SUSAG	That's the problem.	
1369	SUSAG	That's the problem.	
1371	SUSAG	And if they overwritten that but but the other is, they can also have a robot.	
1373	SUSAG	Uh for painting, then the the the man is is out.	
1375	LENNY	Umm.	
1377	SUSAG	No, they can show their craftsmanship.	
1379	SUSAG	Still, they are only controlled by the camera.	
1381	LENNY	True that that definitely a different alternative.	
1383	SUSAG	But if they are good, if they are good craftsman's.	
1385	SUSAG	Yeah, the camera will will give them a thump.	
1387	LENNY	Like you did. Great.	
1389	LENNY	You you did it.	
1391	SUSAG	Yeah, you did great.	
1393	LENNY	That's that's interesting.	
1395	SUSAG	Move to your next project, so yeah.	
1397	LENNY	Umm.	
1399	LENNY	And asking painters, and this is something we did during the first round of interviews and also during my discussions yesterday and last week.	
1401	LENNY	What would you let a robot do for you?	
1403	LENNY	Umm, the painters from villains were we really don't like sending the robot can't do that.	
1405	LENNY	Like, I don't really care.	
1407	LENNY	They could do it fine.	
1409	SUSAG	Yeah, yeah.	
1411	LENNY	It would work perfect and the cleaning and then from elk.	

id	speaker	text	
1413	LENNY	Actually it's like well, you know, you could put all the system indoors and have a robot like you just cover up the the windows and the parts that can be painted and just let the robot paint inside because they're it's less dangerous.	
1415	LENNY	You get less hurt because usually you have more pain in the neck of the shoulders when you're painting like walls and ceilings.	
1417	SUSAG	Ceilings, yeah.	
1419	SUSAG	Yeah.	
1421	SUSAG	Yeah, yeah.	
1423	LENNY	So let that let the robots take care of that, and we focus on this like other stuff that we liked and it's like, OK, there's there is some desire for less work from the painters and and I guess the the the thing that really has to be balanced in a future system like this would be combining like how much authority do we give the machines over the painters in order to get them to do their part well or to keep helping them do their part.	
1425	LENNY	Well, and how much do we take off their plate so that the robots can do it so they can focus on the other thing, like how do we manage their attention?	
1427	SUSAG	Yeah.	
1429	LENNY	Because I do see painters as being really focused like they want, they're so conservative because they want everything in the process to go well.	
1431	SUSAG	Yeah.	
1433	LENNY	They wanna have good quality at the end, but they know that's because everything from the beginning to the end is good.	
1435	SUSAG	Yeah.	
1437	LENNY	So it's a balancing act.	
1439	SUSAG	Yeah, really is no.	
1441	SUSAG	And and there is a big difference between, uh, a painting outside and painting inside and painting inside.	
1443	SUSAG	There are a lot of sorts of paintings on the ceilings.	
1445	SUSAG	Walls. Uhm.	
1447	SUSAG	The frames the doors.	
1449	SUSAG	Uh.	
1451	SUSAG	The radiators are in the pipes.	
1453	SUSAG	Uh, there's all sorts of things and you can do that.	
1455	SUSAG	Let them do that all by robot.	

id	speaker	text	
1457	SUSAG	And I think if there will be a robot only to paint the ceilings, that would be an enormous improvement.	
1459	SUSAG	And uh, I think when when the the automotive industry can write can make an A car which can write within the traffic by itself.	
1461	SUSAG	Yeah.	
1463	SUSAG	Then there is also a possibility to create a robot that paint ceilings by itself.	
1465	LENNY	That's an interesting.	
1467	LENNY	Yeah, that would be an interesting opportunity.	
1469	SUSAG	Yeah.	
1471	LENNY	It's, it seems almost actually easier to get a robot to paint a ceiling than it is to get a car to drive in traffic.	
1473	SUSAG	No, probably it is, but yeah.	
1475	LENNY	The level of flexibility.	
1477	SUSAG	There in in, in, in Japan there are robots who gives cups of coffee to elderly people and there is a there are and electric cars who can drive within the traffic by itself.	
1479	SUSAG	Combine these two things and you have a robot that can paint ceilings or walls.	
1481	LENNY	Umm, that's true.	
1483	SUSAG	Problems that there are some logistic problems.	
1485	SUSAG	How to get to the paint and how do you paint without uh messing up the furniture which is in the room?	
1487	LENNY	That's really important.	
1489	SUSAG	That's really important, of course.	
1491	SUSAG	And I think to cover all the furniture and and and all that thoughts sort of things.	
1493	SUSAG	Yeah.	
1495	LENNY	You.	
1497	SUSAG	I I I think you have to let it do that to to the painter and then the robot will paint the ceiling and and perhaps the walls.	
1499	SUSAG	But the woods and the doors and the frames and all that will be done by humans.	
1501	SUSAG	Until.	
1503	SUSAG	And no.	
1505	LENNY	Until they're done until it's smart.	
1507	SUSAG	Well yeah.	
1509	SUSAG	The 1st 2025 years I think and after that, yeah, we'll see.	

id	speaker	text	
1511	SUSAG	What?	
1513	SUSAG	What?	
1515	SUSAG	Perhaps absolutely printer uh.	
1517	SUSAG	Yeah, new new frames or or we we we we cover it up by uh uh but plastic or so just we don't print anymore but we we yeah.	
1519	LENNY	Nuts.	
1521	LENNY	It's a good to think about.	
1523	LENNY	Umm it it it creates room for possibilities and I think that is really the point of the story is to start the conversation and I really appreciate how you've come at it from this idea.	
1525	LENNY	Well, they're connected actually.	
1527	LENNY	And and sort of we have this opportunity.	
1529	SUSAG	Yeah.	
1531	SUSAG	Yeah.	
1533	SUSAG	Yeah.	
1535	LENNY	Oh, the foreman can work with these is and as an owner, as someone who has to manage everything, I can use these tools to help the ones that are doing great do better, but also make sure that we still have a business that can survive because you were mentioning the scenario of painters that do too much work for lower quality payment or don't paint well enough.	
1537	LENNY	What's very easy to get rid of or fire the painters.	
1539	SUSAG	Yeah, but.	
1541	LENNY	We're not doing their job properly, but when a painter's doing too much then it becomes difficult because quality is nice.	
1543	LENNY	But also this is my budget, I need to be able to, you know if you overwork.	
1545	SUSAG	Yeah.	
1547	LENNY	I can't keep paying you because we won't be making money.	
1549	SUSAG	Yeah, that's the.	
1551	SUSAG	That's that's the problem.	
1553	LENNY	Umm.	
1555	SUSAG	The the the the companies has to earn money, otherwise they can't survive.	
1557	SUSAG	Wait a minute.	
1559	SUSAG	My love is coming.	
1561	SUSAG	And.	
1563	SUSAG	Begin to Mama don't cry.	

id	speaker	text	
1565	SUSAG	Serve Estala who want overall and yeah.	
1567	SUSAG	Alright, you're gardeners.	
1569	SUSAG	Uh is arrived.	
1571	SUSAG	Yeah.	
1573	LENNY	Ah, nice, very nice.	
1575	LENNY	But yeah, actually I is there anything else you would like to add?	
1577	SUSAG	No, for now.	
1579	LENNY	Ohh of your impressions of things I think.	
1581	LENNY	OK.	
1583	LENNY	You can.	
1585	SUSAG	For now I have got a very good impression and this is a a project where you can start little and at every time new possibilities to the camera and that's that was my idea of of making the innovations in the in the in the painters companies is to start little and add every time things to it.	
1587	SUSAG	And so that painters can grow.	
1589	SUSAG	Uh.	
1591	SUSAG	Slowly and easily into the new world.	
1593	LENNY	For sure, that makes sense.	
1595	SUSAG	And this this is I think the camera as as a source for of of center of the possibilities and then with the gloves with the suit, with the respiratory system.	
1597	SUSAG	Uh umm?	
1599	LENNY	Umm.	
1601	SUSAG	The scanning the communication, you can add everything to it every time again and slowly people get used to.	
1603	SUSAG	Uh, yeah, the the new technology.	
1605	LENNY	That makes sense.	
1607	LENNY	Yeah, that would be really interesting.	
1609	SUSAG	Yeah.	
1611	SUSAG	Yeah.	
1613	LENNY	I think in the fall with the course, it's gonna be a very interesting project for you all with to see sort of how the students work and what they will be visiting.	
1615	SUSAG	Yeah.	
1617	LENNY	Umm.	
1619	SUSAG	Yeah.	
1621	SUSAG	Oh, yeah, yeah, yeah.	
1623	SUSAG	You have.	

id	speaker	text	
1625	SUSAG	You have seen it, yeah, yeah.	
1627	LENNY	When I went to villains, they had one and I tried it and I tried actually wore it and it was interesting because I think this maybe underlies one of the main issues that I noticed with the painters.	
1629	SUSAG	Yeah.	
1631	SUSAG	To to to put them down, yeah.	
1633	LENNY	One of their main sort of design requirements that they would like is the 1st 2 is really good at getting your hands up and keeping them high, but if you're painting for example, you wanna paint lower than the chest, you really have to put pressure to you have to put more pressure than necessary to put them down and that's what they found.	
1635	SUSAG	Yeah.	
1637	LENNY	Probably one of the more difficult things, but it was an interesting experience to try to like, augment yourself and wear this.	
1639	SUSAG	Yeah.	
1641	LENNY	This sort of suit, as like a I can, you know, move and.	
1643	LENNY	It was a heavy.	
1645	SUSAG	And it wasn't heavy because you you, you you're carrying it on your hips.	
1647	LENNY	On your hips, your back, you sort of still feel it around the neck a bit.	
1649	SUSAG	Yeah.	
1651	LENNY	The pain, like the the shoulder.	
1653	LENNY	Like the back of the neck?	
1655	LENNY	Well, it is heavy and it takes two people to put it on.	
1657	SUSAG	OK.	
1659	SUSAG	Yeah, it's, it's.	
1661	LENNY	That's one of the difficulties, because one person is holding it while the other person is getting in.	
1663	SUSAG	Yeah, I'd have percent.	
1665	SUSAG	Can.	
1667	SUSAG	Yeah.	
1669	SUSAG	Yeah.	
1671	SUSAG	So it's still 6K.	
1673	SUSAG	Still pretty.	
1675	SUSAG	Yeah.	
1677	LENNY	Yeah, it's still pretty big, but it was interesting to see was the cool start.	

id	speaker	text	
1679	LENNY	Yeah, that's sort of small start.	
1681	SUSAG	Yeah, yeah, yeah.	
1683	SUSAG	That's one one of the projects we have we had last year.	
1685	LENNY	Be very didn't see that inside.	
1687	SUSAG	Yeah, and yeah, but this project is more promising.	
1689	SUSAG	I think it it it it is.	
1691	LENNY	Mm-hmm.	
1693	LENNY	You.	
1695	SUSAG	The exoskeleton is a solution for one problem and what I see now in your story is a start of a solution for many problems.	
1697	SUSAG	And that's what we need.	
1699	LENNY	Thank you. Umm.	
1701	SUSAG	That's what we need.	
1703	LENNY	Thank you so very much.	
1705	SUSAG	Yeah.	
1707	LENNY	That's very kind words. Uh.	
1709	SUSAG	No, but I I really mean it it it it it is, it is an idea.	
1711	SUSAG	I I didn't think of to to make a a sort of center.	
1713	SUSAG	A sense of brains.	
1715	SUSAG	I am the painter brain.	
1717	SUSAG	Yeah.	
1719	LENNY	What the foreman breed.	
1721	SUSAG	And make.	
1723	SUSAG	Yeah.	
1725	SUSAG	Make sure that's water tight.	
1727	LENNY	You in talking with the painters.	
1729	SUSAG	Yeah.	
1731	SUSAG	Yeah.	
1733	LENNY	This sort of work was interesting because, at least with villains, they're like, that's not too crazy, because there's a lot of E regulation that's moving to standardize how painting is done and sort of the materials used.	
1735	LENNY	But there could also be room for.	
1737	SUSAG	Yeah.	
1739	LENNY	Flexibility and and sort of.	
1741	LENNY	If all the data is kept on the camera, the painters can check on how they're doing themselves and get a bit of like you know, if they wanted to check their posture or if they wanted to do something.	

id	speaker	text	
1743	SUSAG	Yeah.	
1745	LENNY	But it is very interesting.	
1747	LENNY	And that, yeah, I I I think it's been an interesting.	
1749	SUSAG	Yeah.	
1751	LENNY	It's been a fun and challenging process to design this story to come up with what should be in it.	
1753	SUSAG	Yeah.	
1755	SUSAG	Yeah.	
1757	SUSAG	Yeah, yeah.	
1759	SUSAG	Perfect.	
1761	LENNY	What should not be in it and how to have use it for discussions, but I think I've I've learned a bit a lot from this conversation with you now on this perspective of the other side of the owner, of the sort of the person who has to be in charge of the painting, the foreman of keeping the project going, of keeping the business going and sort of aligning the goals and the insights between painters and owners creates a profitable business, healthier business.	
1763	SUSAG	Yeah, that's that.	
1765	SUSAG	That is what it has to do with.	
1767	LENNY	Umm.	
1769	LENNY	Umm.	
1771	SUSAG	It has to be profitable and my, my, my perspective for the owner of this company is, is that the painters are staying within the range they they can make profit by by uh, uh, they they uh keeping the quality within the range and also they they can check the time.	
1773	LENNY	Umm.	
1775	SUSAG	Uh, yeah, because, yeah, all the calculations we are making is our based on time 80 percent, 80% is of our work is time is Regis and only 2015 to 20%.	
1777	LENNY	Yeah.	
1779	LENNY	Yeah.	
1781	SUSAG	Our materials are paint or that sort, so we are we are in our factory, we only make we only make ours and the hours they the the client is paying.	
1783	LENNY	For sure.	
1785	SUSAG	Yeah.	
1787	LENNY	But yeah, I've reached the end of my questions.	
1789	SUSAG	OK.	

id	speaker	text	
1791	LENNY	Uh, thank you so very much for your input on this project. Umm.	
1793	SUSAG	And and we are going to see this and somewhere in Aug in, in September or in November.	
1795	LENNY	That's a good question.	
1797	LENNY	Potentially I have to check it with Marco.	
1799	SUSAG	Yeah.	
1801	SUSAG	OK.	
1803	SUSAG	Yeah.	
1805	SUSAG	Yeah.	
1807	LENNY	I'm finish my thesis at the end of this month of August and everything will be available online, but depending on I guess I'd have to check in with Marco and Osley to see what they were thinking, but definitely there could be an opportunity to show it to the students or to share it with the students as a some ideas in the same way that the form giving which had other ideas.	
1809	SUSAG	To connect the yeah to connect the ideas of the students with your project with your thesis.	
1811	LENNY	They're. Mm-hmm.	
1813	SUSAG	That is, and I think, uh, I I want to show this particular film also to to our board.	
1815	LENNY	I could send it to you by email.	
1817	LENNY	It's available online.	
1819	SUSAG	Yeah.	
1821	SUSAG	OK, I love.	
1823	SUSAG	I love too.	
1825	SUSAG	Yeah, yeah.	
1827	LENNY	Umm I will be updating it probably in September a bit more after the thesis to have a bit of audio, a bit of more of a interactive component.	
1829	SUSAG	Yeah.	
1831	SUSAG	OK to to make it more.	
1833	LENNY	Nice.	
1835	SUSAG	Yeah. More, more.	
1837	SUSAG	Nice.	
1839	SUSAG	Yeah, OK.	
1841	LENNY	Yeah, but I can definitely do that.	
1843	SUSAG	Yeah. OK.	
1845	LENNY	So I will work on that and then I will send it to you.	
1847	SUSAG	Yeah. Perfect.	
1849	SUSAG	Yeah.	

id	speaker	text	
1851	SUSAG	Perfect.	
1853	LENNY	Ah prima then.	
1855	SUSAG	And after and after that you're going on holiday in Spain.	
1857	LENNY	Uh, no.	
1859	LENNY	I'm going on holidays pain this week.	
1861	SUSAG	OK.	
1863	LENNY	Well, that sort of.	
1865	LENNY	I'm just gonna pick up my mom and then after that, we will probably spend some time in Spain, but I'm moving to France at the end of the year for a PhD.	
1867	SUSAG	Yeah. OK.	
1869	LENNY	Uh, so I'll be in the Netherlands until until I have a start date basically.	
1871	SUSAG	OK.	
1873	SUSAG	Yeah.	
1875	SUSAG	Yeah.	
1877	SUSAG	And then back to states.	
1879	LENNY	No, I'm living in France for the next three to five years.	
1881	SUSAG	Alright.	
1883	LENNY	My goal is to live in Europe so.	
1885	SUSAG	Uh, sorry.	
1887	SUSAG	So you're you're getting European.	
1889	LENNY	Yes, like that.	
1891	SUSAG	You're becoming becoming a European.	
1893	LENNY	Much better quality of life.	
1895	SUSAG	Yeah.	
1897	LENNY	Much more relaxing and balance.	
1899	SUSAG	Really. Yeah.	
1901	LENNY	Yeah, I love it here.	
1903	LENNY	Less stress.	
1905	SUSAG	Yeah, OK. Yeah.	
1907	LENNY	Don't have to think about really weird politics like the Americans.	
1909	SUSAG	Yeah, well, I read it all the time.	
1911	SUSAG	Gifts give me sometimes a laugh, but.	
1913	LENNY	Yeah.	
1915	LENNY	It's it's a crazy world and I'm happy to be.	
1917	SUSAG	Yeah, it's a crazy world, yeah.	
1919	LENNY	I'm happy to stay in Europe a little longer.	
1921	LENNY	Hopefully it's.	

id	speaker	text	
1923	SUSAG	OK, hopefully the storm white is is is gone.	
1925	SUSAG	When you are coming back.	
1927	LENNY	Hopefully it is, but thank you so much for your time.	
1929	SUSAG	OK.	
1931	SUSAG	Thank you very much for presenting me this. Yeah.	
1933	SUSAG	Perfect.	
1935	SUSAG	Yeah.	
1937	SUSAG	Yeah.	
1939	LENNY	Umm, I'll send you the link and I'll send you the I'll send you the link a little closer to the end of the month along with like the thesis in case you want to read the whole or skim through the document and we can figure out a way to connect in the fall.	
1941	SUSAG	OK, perfect.	
1943	SUSAG	Thank you very much and wish you very lots of success for finishing this this project and I hope it will be satisfied to Marco.	
1945	LENNY	Thank you very much.	
1947	LENNY	Thank you, Val.	
1949	SUSAG	OK.	
1951	LENNY	Don't see.	
1953	SUSAG	OK, so since bye. Bye.	

Appendix G4:
Cluster of notes from thematic
analysis of discussion sessions
with painters

Preliminary notes from interview transcripts

Tagged by theme.

Robots that can carry materials make it faster to get to work and keep working robotics education photo-journalism science	The camera has benefits and improvements. robotics photo-journalism science	Robots floating around could disturb you when working on a ladder or moving around. You might bump into it, or it goes past where you need it robotics photo-journalism science	When carrying the paint, you have complete control of where you place it. robotics photo-journalism photo-journalism science	Paulo chimed in here: on higher sites, something that lifts the materials for you more conveniently than an elevator could be useful. Elevator exists, but it's not the most convenient sometimes robotics science	Sanding could be work that could be done by robots, depending on what needs to be sanded, how much, and when. Sometimes machines (power tools) sand too much. robotics science	Ashok thought the robots were probably not useful because the most painters carry is 5 to 10kg as they work and they don't need assistance for that. robotics science
The suit is a negative incentive for getting better posture. It focuses on limiting the performer's movements. Could the suit not help ensure faster work? The less time worked, the less intense the work could be. (LINES: 181-186) robotics photo-journalism science	Sanding and painting part of the process have to be controlled. They affect the quality directly and clients have different quality demands. robotics science	Functionally, the camera is useful because it could save time identifying wood rot and improve working efficiency. robotics science	Applying sealant could be another task that could be done with robots, and not the painter. robotics science	"That I think you have already noticed that the paint is community is a very conservative community which doesn't change a lot through the years and to have them to change, you have to to, to." (Geert-Jan) robotics science	"It can be helpful. But I think they must not get a feeling that they're a machine in front. I compare it with a BMW (roadster): you have exactly 10 seconds to do this, exactly 5 seconds to do that." (Frank) Painters need to have a sense of self-control. robotics science	"I don't think the camera will survive." (Ashok) Ashok does not appreciate a camera that constantly judges performance. The camera may be looking for something that is 100% good everywhere, but the painter's work may not be organized like that. robotics science
"That I think you have already noticed that the paint is community is a very conservative community which doesn't change a lot through the years and to have them to change, you have to to, to." (Geert-Jan) robotics science	The suit also offers an opportunity for authority, if the data is collected and streamed to bass like with the camera progress. robotics photo-journalism science	Painters should be able to make their own choices on how they work, but the foreman should also be aware that the painters are making choices that may be harmful or hurtful and can slow down the project. robotics photo-journalism science	as a painter, you have to be flexible working. "Sturdy clothing makes no sense" (Ashok) robotics science	extending the camera's role as an authority figure, it could be an always-on monitor for the site robotics photo-journalism science	The suit's ability to glow can serve a social function that alerts other painters who can enforce good posture robotics photo-journalism science	painters constantly watch their posture so they can work better, but it's hard to have perfect posture all the time. robotics science
"And uh, I think when the the automotive industry can write can make an A car which can write within the traffic by itself.Yeah.Then there is also a possibility to create a robot that paint ceilings by itself." robotics science	It's important to balance the painter's desire to make good work with the client and owner's expectations. robotics photo-journalism science	agents can focus on painting the larger surface that require less technique robotics science	The camera's benefit is that it can help identify issues on the surface that would only be seen after the painter starts sanding, cleaning, and inspecting the wood (piercing). robotics photo-journalism science	The camera's ability to keep track of time and tasks is useful to the foreman's process measurement. Measuring quality and progress together with the budget. robotics photo-journalism photo-journalism science	European legislation plays a role in the push for more control and validation of work quality. robotics photo-journalism science	There is a desire for more solutions and options for different small problems in the painting industry robotics science
Increasing control has potential benefits, like identifying quality work and calling out subpar work. robotics photo-journalism science	The analogy of Asterix and Obelix is used to emphasize the advantages of efficient work without unnecessary interruptions. robotics photo-journalism science	The use of pictures represents increased control and authority, possibly an extension of the foreman's authority. robotics science	Other modalities for alerting the painter about their posture are preferred – pushing/pulling is too intrusive, but sound and light are useful enough. Also useful is receiving paperwork summary of their posture (maybe a i Filab) robotics science	Agents support the painter by providing awareness of environmental factors like rain. robotics science	There's a concern about the lack of trust in painters' ability to assess their own work if they need pictures to verify. robotics photo-journalism science	Pictures could be used for communication within the painting team, assessing quality, and validating work standards. robotics photo-journalism science
Agents could support painters by preparing them for the day, by getting the materials together they will need every day. robotics science	Agents could support painters by doing the repetitive tasks like bringing and carrying equipment. While Ashok didn't see Asterix and Obelix as useful, by the end of the conversation he was describing the functions of these agents. robotics science	Machines or robots could replace repetitive actions like sanding and cleaning that people skip often. Robots could be faster for this. robotics photo-journalism science	Still does the sanding/cleaning himself because he has pride in his ability to do it well and fast. robotics photo-journalism science	While camera judgment is valuable, it shouldn't have absolute authority; painters should have the ability to ignore or deviate from its advice with reasoning. robotics photo-journalism science	Even if a robot can assist in certain tasks, the painting, the work that you end up seeing, should be done by humans. robotics photo-journalism science	Both painters were interested in a robot that could be tuned and left to do a single task. They would use this if the robot worked independently and didn't need a lot of adjustment. robotics photo-journalism science
The current process already involves deviations from plans based on individual judgment, with justification required. robotics photo-journalism science	Humans do Visual Work because it requires a human touch and is something you can be proud of. — Yes. The painting itself. Priming, varnishing, sealant and that possibly putty and some other repair that itself" (Edsel) robotics photo-journalism science	The conversation touches on themes related to work control, validation, efficiency, and the balance between oversight and individual judgment. robotics photo-journalism photo-journalism science	It is very important for painters to be satisfied and proud of the result they create themselves. Beauty is something robots are not seen to provide. robotics photo-journalism science	On the camera making judgments not 100% correct: "If you then disagree with that then just act on your own initiative just in your own experience and just be able to argue that well." (Edsel) robotics photo-journalism science	Would hire a human painter over a robot painter because they can empathize with the space and debate and align with how something "could look more beautiful". robotics photo-journalism science	"But in the end, I am familiar that the robots can be all fun and nice... they do have a piece." (Edsel) robotics photo-journalism science
the camera's ability to inspect and paint is seen as very useful. Wood rot itself is seen as a big problem and it fits taht context. robotics photo-journalism science	REFLECTION: The robots could provide technical execution, but they are not perceived as being able to provide beauty in their work. This might be because the painters, as trade workers, see the restoration process as creating beauty. robotics photo-journalism science	when working with camera, feedback and noise send to the robot and can be negative. Robots may be useful about what's needed on and what team are present, but there is a boundary if the robot reports you are not doing something properly On one side, it's important to have your feedback and get a painter you should be able to argue why you want a certain way. On the other side, it seems to be like watching on your own robotics photo-journalism science	Being flexible and adaptable is a core requirement of the painter's work. Painters must adapt to different working conditions through the restoration process; what is in the plan is not necessarily what can be done on the site. robotics photo-journalism science	Consulting ideas and processes for working can lead to more efficiency and developments. This is difficult with machines that are programmed to perform a task in a specific way. robotics photo-journalism science	"Another thing is his camera would be very good and suitable for starting painters, so students who have just left school. Which are then placed on a project, so that a very good example can be on the way to independence and self - insight." (Edsel) robotics photo-journalism science	Deviating from plan of the camera is not seen as bad, because it happens in painter-foreman relationships. It's important as a painter to articulate what you deviate. robotics photo-journalism science
The camera could also be a stand-in coach for beginner painters to develop their own self-insight and independence. robotics photo-journalism science	Timing of feedback is also important. Micromanaging is too much, being forced to take pictures often might be too complex too, but if the painter has control it is a better room for collaboration. robotics photo-journalism science	there are existing leadership and power dynamics that focus on being demeaning and leading by always having to bring others down that are not appreciated. robotics photo-journalism science	painters receive some training into certain postures that are used a lot, and some which to avoid, but nothing is validated robotics photo-journalism science	there is no standardized organization that focuses on painter ergonomics. robotics photo-journalism science	Both painters agree that it's uncomfortable when an authority figure micromanages their work, from behind them. Unsure of when they're around or commenting on their own work. robotics photo-journalism science	Camera can serve it's role as a tool, by documenting your work to show the coach/mentor, but also as an agent by providing feedback to the painter. robotics photo-journalism science
having knowledge on painter ergonomics makes it possible to train painters on postures/movements while working. Soraida mentions truck drivers robotics photo-journalism science	There is an inverse relationship between the amount of oversight and the trust in the painters robotics photo-journalism science	External notification and feedback is preferred, with a focus on raising awareness. Sometimes painters will volunteer to be recorded and then their posture analyzed like a football documentary by others, but being pushed and pulled to a better posture is less strong On one side, it's important to have your feedback and get a painter you should be able to argue why you want a certain way. On the other side, it seems to be like watching on your own robotics photo-journalism science	"Maybe that Asterix on that starts with a speaker system and at the moment that you bend your torso too much, or that it's too much or work through your hands over your stomach and you have a glow on that one and then that it then sends that only painter there. And then it puts on your back looking on you on your knees and your sitting, watch your knees your position of attention." (Edsel) robotics photo-journalism science	The suit's ability to glow can serve a social function that alerts other painters who can enforce good posture robotics science	"You don't have in the hand, a jar, you know of. I'm holding it here now, I'm holding it in my hand. When I'm done I'll set it aside here." (Edsel) robotics photo-journalism science	Geert-Jan sees HAC as a combination of my ideas with the course material from Marco's formvinging class robotics science
On when to agree with a robot's directive and acting on your behalf: "You always have to have your own understand, your own opinions and a good feeling about it to keep using." (Edsel) robotics photo-journalism science	Can the robots look carefully and move around the scaffolding? robotics photo-journalism photo-journalism science	letting an agent act on your behalf should be up to painterly intuition moment to moment. Edsel is someone who follows his intuition as he works based on his experience. If an agent and Edsel align on what they are trying to do, it's a good collaboration. robotics photo-journalism science	The camera can be good to see if you finish the small pieces that aren't so obvious robotics photo-journalism science	The camera creates a lack of trust between the foreman and the painter if you have to document progress and take pictures constantly. robotics photo-journalism science	It helps to know if you meet the quality requirements as a painter. Both for the project and for your development as a painter. robotics photo-journalism science	When considering different intents (agent wants to do A, Edsel wants to do B), Edsel will follow the agent if it can articulate itself properly. If the agent sells its plan well, Edsel will follow along. robotics photo-journalism science
Different painters have different postures that work for them. It can be dangerous to force the same kind of poses for all, especially if working on scaffolding. robotics science	the suit can be dangerous if it pulls hard when you are in a precarious part of the scaffold robotics science	painters need complete control and flexibility when climbing up or coming down and working. The suit should support that, and not force it. robotics science	Upcoming legislation requires proof that you are delivering the value you agree to. The camera is extreme in documenting, but not unrealistic and potentially useful with this legislation. robotics photo-journalism science	"It must help, but not control." Frank robotics science	Taking pictures takes time and can be inconvenient, highlighting a pragmatic concern. robotics photo-journalism science	The suit's ability to signal is good because it can alert you about how you're working. When it gets to acting on it, it becomes dangerous robotics science
"Just unplug it haha. Or forget to charge the battery, today we will not charge it, haha". The painters had ideas for dealing with the authoritative nature of the camera. robotics science	The suit is a negative way of pushing towards a better posture. Instead of focusing on making them fix their posture and bearing with a stick when they don't have good posture, it would be nicer to use technical innovation to make work faster so they don't get injured. robotics photo-journalism science	The external environment may not be useful for automation, but indoor painting is more controlled and opening for innovation. robotics science	Robots could be like Roombas that adapt to their environment as they explore it. robotics photo-journalism science	The authoritarian component, what the camera says to do every time, should be overridable. robotics photo-journalism science	"Uh no. No. And it's not going to change as long as we can do it." Unlike carpenters and bricklayers, painters have a lot less technical innovation in their work practices. robotics education science	Human painters can communicate with clients, understand their preferences, and collaborate to achieve desired outcomes. robotics photo-journalism science
As a planner, the camera has value for the process of the painters robotics photo-journalism science	"The last person. Yes, last week working when you are standing, they push you to, in any case, you have to bend down that will be the last right. Because you can stand, movement there, you have to. Because you can stand, sometimes they 'half-pose' and they're there, you're not." Being flexible is an important part of being a painter. Postures could be supported, but this must be done dynamically to stay safe. robotics education science	if camera knows the budget and quality expectations, it becomes a stand-in for the client robotics photo-journalism science	Taking physical stress, like heavy carrying, is always welcome. robotics photo-journalism science	the camera can act as a way to remove insecurity about work quality for the painters robotics photo-journalism science	Soraida makes a comparison to industrial factory work. In that setting, humans are treated like machines and HAC is more possible because both sides have very defined tasks in a standardized environment. In painting and construction work, there is not such a standardization. A lot of the work is about adaptation. robotics photo-journalism science	"If you have peace, you also have confidence. So you also give someone confidence in what he is doing if he stands there all day long." (Edsel) robotics photo-journalism science
Humans do come to control and keep all the time and do not start depending too much on a robot, because then we will really lose the craft At the pace we are then working in now. (Edsel) robotics photo-journalism science	Throughout this discussion it becomes clearer that the painter wants to retain control of their work and that a professional agent is welcome for the insights and productivity it generates, but not for how it controls the painter's action. This line of autonomy, which is paramount for the painter. robotics photo-journalism science	what happens to the data from the camera impacts how it makes the painter feel. If the data is streamed and shared with the foreman it may be too authoritative, but if it's kept locally with the painter, it could be used as a reflection, and self-growth tool. robotics photo-journalism science	what happens to the data from the camera impacts how it makes the painter feel. If the data is streamed and shared with the foreman it may be too authoritative, but if it's kept locally with the painter, it could be used as a reflection, and self-growth tool. robotics photo-journalism science			

Insights related to Delegation

agents can focus on painting the larger surface that require less technique

DELEGATION sinag

Robots that can carry materials make it faster to get to work and keep working

phase_reactions willms

AUTONOMY DELEGATION

Agents support the painter by providing awareness of environmental factors like rain.

DELEGATION elk

Paulo chimed in here: on higher sites, something that lifts the materials for you more conveniently than an elevator could be useful. Elevator exists, but it's not the most convenient sometimes

DELEGATION elk

When carrying the paint, you have complete control of where you place it.

phase_reactions willms

AUTONOMY DELEGATION

Functionally, the camera is useful because it could save time identifying wood rot and improve working efficiency.

DELEGATION elk

Sanding and painting part of the process have to be controlled. They affect the quality directly and clients have different quality demands.

DELEGATION elk

The use of pictures represents increased control and authority, possibly an extension of the foreman's authority.

phase_reactions willms

AUTHORITY DELEGATION

Edsel still does the sanding/cleaning himself because he has pride in his ability to do it well and fast.

willms

DELEGATION phase_delegation

"Uh no. No. And it's not going to change as long as we can do it."

Unlike carpenters and bricklayers, painters have a lot less technical innovation in their work practices.

AUTONOMY DELEGATION elk

Humans do Visual Work because it requires a human touch and is something you can be proud of. ——"Yes, The painting itself. Priming, varnishing, sealant and that possibly pretty and some other repair that itself." (Edsel)

willms

DELEGATION phase_delegation

Being flexible and adaptable is a core requirement of the painter's work. Painters must adapt to different working conditions through the restoration process; what is in the plan is not necessarily what can be done on the site.

willms

DELEGATION phase_delegation

Both painters were interested in a robot that could be tuned and left to do a single task. They would use this if the robot worked independently and didn't need a lot of adjustment.

willms

DELEGATION phase_delegation

"And uh, I think when the the automotive industry can write can make an A car which can write within the traffic by itself Yeah. Then there is also a possibility to create a robot that paint ceilings by itself."

DELEGATION itusag

Ashok thought the robots were probably not useful because the most painters carry is 5 to 10kg as they work and they don't need assistance for that.

DELEGATION elk

Can the robots look carefully and move around the scaffolding?

phase_reactions willms

AUTONOMY DELEGATION

Taking physical stress, like heavy carrying, is always welcome.

willms

DELEGATION phase_delegation

Agents could support painters by preparing them for the day, by getting the materials together they will need every day.

DELEGATION elk

Sanding could be work that could be done by robots, depending on what needs to be sanded, how much, and when. Sometimes machines (power tools?) sand too much.

DELEGATION elk

Applying sealant could be another task that could be done with robots, and not the painter.

DELEGATION elk

It is very important for painters to be satisfied and proud of the result they create themselves. Beauty is something robots are not seen to provide.

willms

DELEGATION phase_delegation

Even if a robot can assist in certain tasks, the painting, the work that you end up seeing, should be done by humans.

willms

DELEGATION phase_delegation

Would hire a human painter over a robot painter because they can empathize with the space and debate and align with how something "could look more beautiful".

willms

DELEGATION phase_delegation

Consulting ideas and processes for working can lead to more efficiency and developments. This is difficult with machines that are programmed to perform a task in a specific way.

willms

DELEGATION phase_delegation

Human painters can communicate with clients, understand their preferences, and collaborate to achieve desired outcomes.

willms

DELEGATION phase_delegation

Robots could be like Roombas that adapt to their environment as they explore it.

willms

DELEGATION phase_delegation

Agents could support painters by doing the repetitive tasks like bringing and carrying equipment. While Ashok didn't see Asterix and Obelix as useful, by the end of the conversation he was describing the functions of these agents.

DELEGATION elk

Machines or robots could replace repetitive actions like sanding and cleaning that people skip often. Robots could be faster for this.

willms

DELEGATION phase_delegation

The camera's ability to keep track of time and tasks is useful to the foreman's process measurement. Measuring quality and progress together with the budget.

phase_reactions willms

AUTHORITY DELEGATION

Pride in the end result is a key motivator for painters. As a result, they want to maintain a strong control of the process, even when delegating tasks.

DELEGATION insight

REFLECTION: The robots could provide technical execution, but they are not perceived as being able to provide beauty in their work. This might be because the painters, as trade workers, see the restoration process as creating beauty.

DELEGATION insight

There is a necessary human touch to painting practice. Humans can best collaborate and communicate with clients and themselves to understand and achieve a good outcome.

DELEGATION insight

Most painters were not against delegating tasks to robot, and could see other instances where robots could provide suport by helping them prepare work materials, and assisting them in carrying and moving materials, either partially or fully.

DELEGATION insight

Painters directly identified tasks involving repetitive actions, like sanding, cleaning and caulking (applying sealant) as tasks robots could take over.

DELEGATION insight

this should be a guideline. "Agents should be designed to tackle tasks that are repetitive or support the painter's main work: painting"

Insights related to Authority

Timing of feedback is also important. Micromanaging is too much, being forced to take pictures often might be too complex too, but if the painter has control it is a better room for collaboration.

phase_authority

willems

AUTHORITY

AUTONOMY

Both painters agree that it's uncomfortable when an authority figure micromanages their work, from behind them. Unsure of when they're around or commenting on their own work.

willems

AUTHORITY

phase_authority

there are existing leadership and power dynamics that focus on being demeaning and leading by always having to bring others down that are not appreciated.

willems

AUTHORITY

phase_authority

"If you have peace, you also have confidence. So you also give someone confidence in what he is doing if he stands there all day long." (Edsel)

willems

AUTHORITY

phase_authority

Authority figures that focus on micromanagement or demeaning the painters are not appreciated. "If you have peace, you also have confidence. So you also give someone confidence in what he is doing if he stands there all day long." (Edsel)

AUTHORITY

insight

The current process already involves deviations from plans based on individual judgment, with justification required.

willems

AUTHORITY

phase_reactions

"It can be helpful. But I think they must not get a feeling that they're a machine in front. I compare it with a BMW (inaudible) you have exactly 15 seconds to do this, exactly 5 seconds to do that." (Frank)

Painters need to have a sense of self-control.

AUTHORITY

elo

While camera judgment is valuable, it shouldn't have absolute authority; painters should have the ability to ignore or deviate from its advice with reasoning.

willems

AUTHORITY

phase_reactions

Deviating from plan of the camera is not seen as bad, because it happens in painter-foreman relationships. It's important as a painter to articulate why you deviate.

willems

AUTHORITY

phase_authority

if camera knows the budget and quality expectations, it becomes a stand-in for the client

willems

AUTHORITY

phase_authority

The camera creates a lack of trust between the foreman and the painter if you have to document progress and take pictures constantly.

willems

AUTHORITY

phase_reactions

The use of pictures represents increased control and authority, possibly an extension of the foreman's authority.

phase_reactions

willems

AUTHORITY

DELEGATION

The camera's ability to keep track of time and tasks is useful to the foreman's process measurement. Measuring quality and progress together with the budget.

phase_reactions

willems

AUTHORITY

DELEGATION

extending the camera's role as an authority figure, it could be an always-on monitor for the site

susag

AUTHORITY

AUTONOMY

The suit's ability to glow can serve a social function that alerts other painters who can enforce good posture

susag

AUTHORITY

AUTONOMY

The suit also offers an opportunity for authority, if the data is collected and streamed to bas like with the camera progress.

susag

AUTHORITY

AUTONOMY

We discussed a connected version of the future that verged on dystopic and as a central concept had a highly authoritative agent camera that was connect to the other agents and could enforce good working practices through collecting and streaming the data and evaluations.

AUTHORITY

insight

Improvising and flexibility are important components of the painter's practice. It's a skill that they develop and an agent in the role of authority has to cope with the painter's shaping of plans and tasks in-the-moment.

AUTHORITY

insight

European legislation plays a role in the push for more control and validation of work quality.

willems

AUTHORITY

phase_reactions

Upcoming legislation requires proof that you are delivering the value you agree to. The camera is extreme in documenting, but not unrealistic and potentially useful with this legislation.

willems

AUTHORITY

phase_reactions

Taking pictures takes time and can be inconvenient, highlighting a pragmatic concern.

willems

AUTHORITY

phase_reactions

While having to make extra pictures for an authoritative agent seems inconvenient, the idea of an agent that oversees quality is not unrealistic and aligns with the push in European legislation to control and verify work quality.

AUTHORITY

insight

The camera's benefit is that it can help identify issues on the surface that would only be seen after the painter starts sanding, cleaning, and inspecting the wood (percorg).

willems

AUTHORITY

phase_reactions

The camera has benefits and improvements.

willems

AUTHORITY

phase_reactions

Pictures could be used for communication within the painting team, assessing quality, and validating work standards.

willems

AUTHORITY

phase_reactions

Increasing control has potential benefits, like identifying quality work and calling out subpar work.

willems

AUTHORITY

phase_reactions

after working with camera, feedback and issues with the foreman are seen as negative. Notes may be useful about what worked or what didn't work and progress, but there is a boundary if the robot reports you are not doing something properly.

On one side, it's important to know what's happening and as a partner you should be able to argue why you are a partnership. On the other side, it seems to be the switching on the painter.

willems

AUTHORITY

phase_authority

what happens to the data from the camera impacts how it makes the painter feel. If the data is streamed and shared with the foreman it may be too authoritative, but if it's kept locally with the painter, it could be used as a reflection, and self-growth tool.

willems

AUTHORITY

phase_authority

There's a concern about the lack of trust in painters' ability to assess their own work if they need pictures to verify.

willems

AUTHORITY

phase_reactions

"But in the end, I am familiar that the robots can be all fun and nice... they do have a piece." (Edsel)

willems

AUTHORITY

phase_authority

It's important to balance the painter's desire to make good work with the client and owner's expectations.

susag

AUTHORITY

AUTONOMY

It helps to know if you meet the quality requirements as a painter. Both for the project and for your development as a painter.

willems

AUTHORITY

phase_reactions

There is an inverse relationship between the amount of oversight and the trust in the painters

willems

AUTHORITY

phase_authority

The camera could also be a stand-in coach for beginner painters to develop their own self-insight and independence.

willems

AUTHORITY

phase_authority

"Another thing is his camera would be very good and suitable for starting painters, so students who have just left school. Which are then placed on a project, so that a very good example can be on the way to independence and self-insight." (Edsel)

willems

AUTHORITY

phase_authority

the camera can act as a way to remove insecurity about work quality for the painters

willems

AUTHORITY

phase_authority

The camera agent could be a stand-in for a coach or mentor, or even an assistant to a coach or mentor. This authoritative role is perceived as more favorable and could use the function of the camera the painters appreciated, quality judgment on demand, as a way to build confidence and train painters in consistency and intuition.

AUTHORITY

insight

REFLECTION: Throughout this discussion it becomes clearer that the painter wants to retain control of their work. A product/tool agent is welcome for the insights and opportunities it generates, but not for how it control's the painter's action. This ties to autonomy, which is paramount for the painter.

AUTHORITY

insight

Insights related to Autonomy

having knowledge on painter ergonomics makes it possible to train painters on postures/movements while working. Sorada mentions truck drivers

willems
AUTONOMY phase_authority

there is no standardized organization that focuses on painter ergonomics.

willems
AUTONOMY phase_authority

painters receive some training into certain postures that are used a lot, and some which to avoid, but nothing is validated

willems
AUTONOMY phase_authority

painters constantly watch their posture so they can work better, but it's hard to have perfect posture all the time.

AUTONOMY ask

painters need complete control and flexibility when climbing up or coming down and working. The suit should support that, and not force it.

AUTONOMY ask

Different painters have different postures that work for them. It can be dangerous to force the same kind of poses for all, especially if working on scaffolding.

AUTONOMY ask

as a painter, you have to be flexible working. "Sturdy clothing makes no sense" (Ashok)

AUTONOMY ask

"The great posture. Yes, but while working when you are standing, then you have to sit, you have to bend downwards, look to the left, to the right. You just can't stand that straight there, you have to. Because you can't stand downwards like a wall, you can't. And try that only, because!"

Being flexible is an important part of being a painter. Postures will be supported, but this must be done dynamically to stay safe.

AUTONOMY DELEGATION ask

Can the robots look carefully and move around the scaffolding?

phase_reactions willems
AUTONOMY DELEGATION

Robots floating around could disturb you when working on a ladder or moving around. You might bump into it, or it goes past where you need it

willems
AUTONOMY phase_reactions

When carrying the paint, you have complete control of where you place it.

phase_reactions willems
AUTONOMY DELEGATION

Robots that can carry materials make it faster to get to work and keep working

phase_reactions willems
AUTONOMY DELEGATION

Humans do come to control and keep all the time and do not start depending too much on a robot, because then we will really lose the craft. At the pace we are then working in now. (Edsel)

willems
AUTONOMY phase_authority

"You don't have in the hand, a jar, you know of. I'm holding it here now, I'm holding it in my hand. When I'm done I'll set it aside here." (Edsel)

willems
AUTONOMY phase_reactions

It's difficult to conceive an agent that enforces good body posture because there is not enough ergonomic data for painters and everyone has different postures

AUTONOMY insight

Sorada makes a comparison to industrial factory work. In that setting, humans are treated like machines and H&E is more possible because both sides have very defined tasks in a standardized environment. In painting and construction work, there is not such a standardization. A lot of the work is about adaptation.

willems
AUTONOMY phase_authority

Painters value their flexibility and idiosyncracies. Agents that want to affect their autonomy must be flexible as well. This is in contrast with industries like manufacturing, where assembly-line work can me automated and analyzed.

AUTONOMY insight

When considering different intents (agent wants to do A, Edsel wants to do B), Edsel will follow the agent if it can articulate itself properly. If the agent sells its plan well, Edsel will follow along.

willems
AUTONOMY phase_authority

On when to agree with a robot's directive and acting on your behalf: "You always have to have your own understand, your own opinions and a good feeling about it to keep using." (Edsel)

willems
AUTONOMY phase_authority

letting an agent act on your behalf should be up to painterly intuition moment to moment. Edsel is someone who follows his intuition as he works based on his experience. If an agent and Edsel align on what they are trying to do, it's a good collaboration.

willems
AUTONOMY phase_authority

Painters should be able to make their own choices on how they work, but the foreman should also be aware that the painters are making choices that may be harmful or hurtful and can slow down the project.

Susag
AUTHORITY AUTONOMY

the suit can be dangerous if it pulls hard when you are in a precarious part of the scaffold

AUTONOMY ask

"Maybe that Antonio or that starts with a with a speaker system that then can just change your body posture. And at the moment that you bend your knees you think of that and then it helps through a voice that works more you all moves and you have a glow on that and you feel that. Then maybe that helps people in there."

willems
AUTONOMY phase_authority

Other modalities for alerting the painter about their posture are preferred — pushing/pulling is too intrusive, but sound and light are useful enough. Also useful is receiving paperwork summary of their posture (maybe a la Fibag)

AUTONOMY ask

The suit's ability to glow can serve a social function that alerts other painters who can enforce good posture

Susag
AUTHORITY AUTONOMY

Timing of feedback is also important. Micromanaging is too much, being forced to take pictures often might be too complex too, but if the painter has control it is a better room for collaboration.

phase_authority willems
AUTHORITY AUTONOMY

There should be a balance between the painter's intuition, and an agent's judgment. Agents should only interact on behalf of the painter when there is an alignment of intention.

AUTONOMY insight

Painters will agree that the agent's intents align with their own if the agent can articulate itself well

AUTONOMY insight

The suit's ability to signal is good because it can alert you about how you're working. When it gets to acting on you, it becomes dangerous

AUTONOMY ask

External notification and feedback is preferred, with a focus on raising awareness. Sometimes painters will volunteer to be recorded and then their posture analyzed like a football documentary by others, but being pushed and pulled to a better posture is too strong.

willems
AUTONOMY phase_authority

The suit is a negative incentive for getting better posture. It focuses on limiting the person's movements. Could the suit not help ensure faster work? The less time worked, the less intense the work could be. (LINES: 181-186)

willems
AUTONOMY phase_reactions

The suit is a negative way of pushing towards a better posture. Instead of focusing on making them fix their posture and dealing with a sick when they don't have good posture, it would be nicer to use technical innovation to make work faster so they don't get injured.

willems
AUTHORITY phase_reactions

The suit was a negative incentive for improving posture, because it focused on restraining the painter's movement, which goes against the painter's need for flexibility and can be potentially dangerous.

AUTONOMY insight

A secondary function of the suit, the light signaling how overextended the painter is, can serve as a signal for other painters to comment and correct someone's posture. This social approach was preferred by the painters.

AUTONOMY insight

Appendix H1: Development of design guidelines

this should be a guideline.
"Agents should be designed to tackle tasks that are repetitive or support the painter's main work: painting"

DELEGATION_01

Pride in the end result is a key motivator for painters. As a result, they want to maintain a strong control of the process, even when delegating tasks.

DELEGATION insight

DELEGATION_02

REFLECTION: The robots could provide technical execution, but they are not perceived as being able to provide beauty in their work. This might be because the painters, as trade workers, see the restoration process as creating beauty.

DELEGATION insight

DELEGATION_03

There is a necessary human touch to painting practice. Humans can best collaborate and communicate with clients and themselves to understand and achieve a good outcome.

DELEGATION insight

DELEGATION_04

Painterly understanding of agents is fragmented, with sometimes conflicting expectations. In an instance, one participant began the conversation by saying a specific agent would not be useful, but proposed an idea for the same kind of agent at the end of conversation.

DELEGATION insight

DELEGATION_05

Most painters were not against delegating tasks to robot, and could see other instances where robots could provide support by helping them prepare work materials, and assisting them in carrying and moving materials, either partially or fully.

DELEGATION insight

DELEGATION_06

Painters directly identified tasks involving repetitive actions, like sanding, cleaning and caulking (applying sealant) as tasks robots could take over.

DELEGATION insight

Agents should be flexible in accepting tasks, to match the comfort level of the painter

Painters should be able to flexibly delegate tasks to agents, with an option to take over the task themselves as needed or desired.

Painters should be able to override the agent's plan for an assigned task based on their understanding of the desired out

Painters should be able to build up the complexity of tasks they can delegate, based on their comfort and understanding of the agent

Agents should be delegated tasks that require repetitive actions or precision such as sanding, cleaning, and applying sealant.

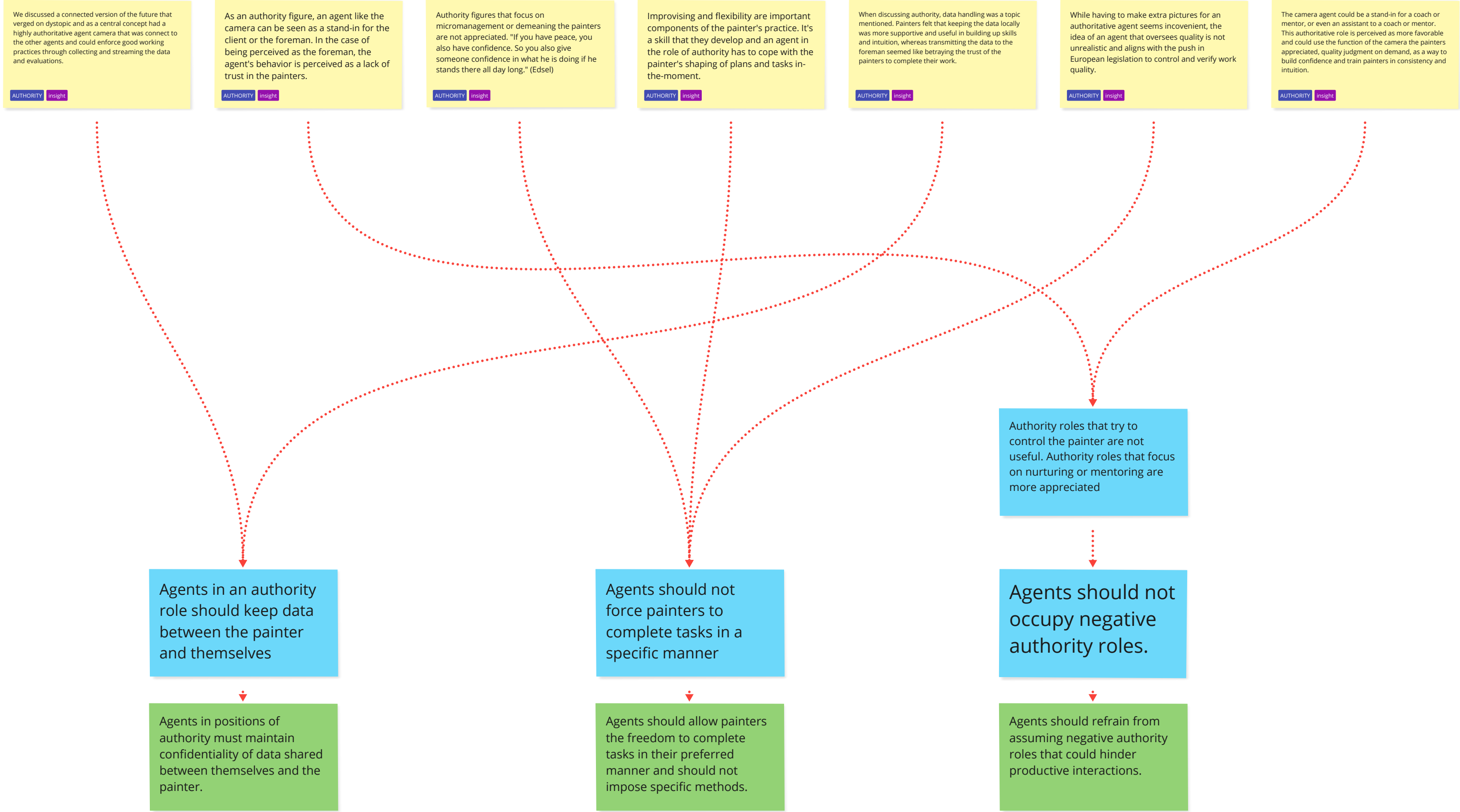
Enable painters to delegate tasks to agents with flexibility, offering an option to resume control themselves when needed or desired.

Allow painters to override an agent's task plan, leveraging their understanding of the desired outcome.

Empower painters to gradually increase the complexity of tasks they delegate, aligning with their comfort and comprehension of agent capabilities.

Assign agents tasks that involve repetitive actions or precision, such as sanding, cleaning, and applying sealant.

this should be a guideline.
"Agents should be designed to tackle tasks that are repetitive or support the painter's main work: painting"



this should be a guideline.
"Agents should be designed to tackle tasks that are repetitive or support the painter's main work: painting"

Throughout this discussion it becomes clearer that the painter wants to retain control of their work. A product/tool agent is welcome for the insights and opportunities it generates, but not for how it control's the painter's action. This ties to autonomy, which is paramount for the painter.

AUTONOMY

insight

When considering agents that could affect their work practice, painters were worried about practical matters of coordination with agents being in the way.

AUTONOMY

insight

It's difficult to conceive an agent that enforces good body posture because there is not enough ergonomic data for painters and everyone has different postures

AUTONOMY

insight

Painters value their flexibility and idiosyncracies. Agents that want to affect their autonomy must be flexible as well. This is in contrast with industries like manufacturing, where assembly-line work can me automated and analyzed.

AUTONOMY

insight

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AUTONOMY

insight

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AUTONOMY

insight

A secondary function of the suit, the light signaling how overextended the painter is, can serve as a signal for other painters to comment and correct someone's posture. This social approach was preferred by the painters.

AUTONOMY

insight

The suit was a negative incentive for improving posture, because it focused on restraining the painter's movement, which goes against the painter's need for flexibility and can be potentially dangerous.

AUTONOMY

insight

Agents should act in a way that empowers the painter's autonomy and their intents align



Design agents to empower the painter's autonomy while ensuring alignment with their intentions.

Agents should explain their desire to act and be confirmed by the painter before acting



Agents should communicate their intent to act and await confirmation from the painter before proceeding.

Agents should provide feedback that can be perceived and acted on without infringing on the painter's autonomy



Agents should offer actionable feedback that respects the painter's autonomy, enabling them to perceive and act upon it freely.

Agents should not physically act on the painter while the painter is working



Agents should avoid physically acting on the painter's behalf when he is working.



While the painter is working, agents must refrain from physically intervening or acting on the painter's behalf.