

ROBOT CODE OF CONDUCT

Pleasurable, Cohesive and Appropriate Behaviours for Automated Dairy Farming



WHY

Responsible design for a shared understanding with robots

Robots communicate and coexist with other agents. Moving from the notion of tools, they are becoming partners that we collaborate with. Human-robot interactions should be guided and designed responsibly. For robots to perform the best alongside users, **users should trust the systems**. I explored how to achieve that by improving explainability, predictability and expectations.

Lely has a diverse robotic portfolio with a strong visual identity but not yet cohesive robot behaviour. This thesis aims to provide tools for the company developers to design agents with pleasant and representative communication. I framed this goal by asking myself: Which set of **guidelines** could best guide the **development** of a dairy farming **robot portfolio** delivering an ecosystem of robots with **cohesive, pleasant, and fitting interactions** that represent the company through their actions?

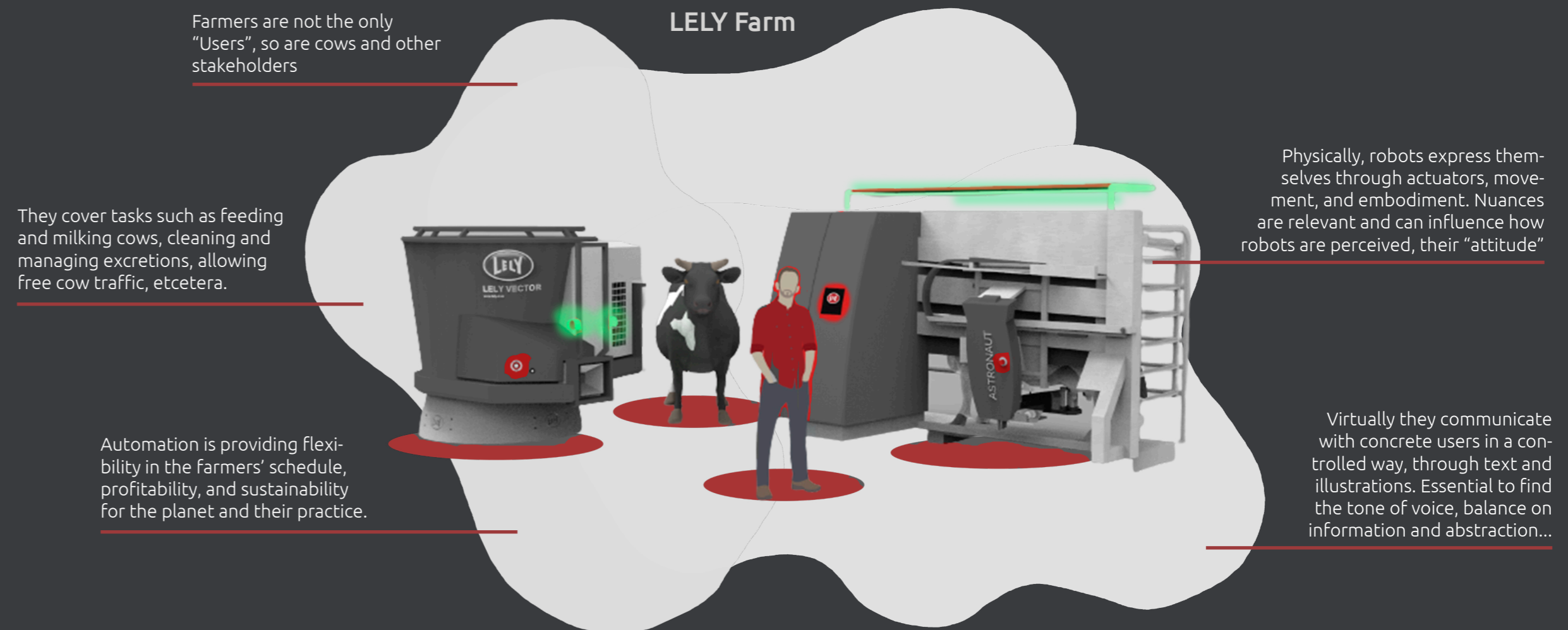
HOW

Designing a document that guides on how to act desirably and as one

A Robot Code of Conduct fits in the current picture of Lely like a merge concept-wise between the employee Code of Conduct (focused on behaviour) and the Red Rules (product-oriented guidelines). It has its unique approach while strengthening the brand identity. This document takes a step toward the company vision of communicating as one and expressing values through actions. It is a **living document** with many relevant factors with different implications for the products in the portfolio. It raises **awareness on HRI** and constitutes a **framework to support the first steps into its implementation at Lely**. Created alongside experts and grounded on their knowledge and experiences the Code succeeds in:

- ✓ Raising awareness on relevant factors to account for during the design process
- ✓ Introducing a shared vocabulary and triggering discussion
- ✓ Guides the design of robot actions in the desired direction
- ✓ Engaging the readers and being accessible
- ✓ Fit the values, vision and style

CONTEXT



"Before all that mattered was to solve the problem, now it also matters how well we solve it"

WHAT

Foundation of the code

The Robot Code of Conduct starts with basic information about its **goal and use**. Following other documents of the same kind, this code defines a purpose, target audience, and their responsibilities to comply with it and sustain the code. I created a new **Vision** that depicts the future of fully automated farms, which I aimed to complement the strongly defined Future Vision of Lely.

Vision:

Not just a robot YOUR robot: **YOUR Vector**



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The Robot Nature

The final list of values (highlighted in red) resulted from the research activities. Similar to other codes of conduct, abstraction allows these lessons to be followed by all, however, makes it easy for readers to understand them differently. I described the **robot qualities** applied to Lely, narrated by the robot, and illustrated them with examples depicting situations shaped as **fables**. This allows readers to navigate more comfortably through the document and easily remember and reference the examples.

Moral:

A reliable partner can adapt and shows its limitations and capacities



Committee
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Guidelines to design

Connecting the direction of the general values with the specific solutions, this section guides developers into mapping the factors that influence interactions. It also provides recommendations and examples on how those factors could be translated into solutions being truthful to the robot nature. It contains three templates with **20 questions** in total, a combination of **open questions and questions suggesting directions**. They are clustered in "Goal", "User" and "Context".

User:

What are the needs and motivations of the user(s)?



Practical guide of expressions

Even simple mechanisms have many layers to experiment with that alter the message (start/stop, fade, tempo, intensity, etcetera). How you use the expressive mechanisms can greatly impact the experience and even influence users' behaviour. The last part of the code introduces this richness and defines **how Lely products communicate and allow intervention** in terms of "Light/Colour", "Sounds/Beeps" and "Buttons".

Channel and expression:

When visible moving robots express an urgent alarm they use a Red light of 631nm Flashing at...

