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### Appendix A Interview Subjects

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Appendix B Interview Guide Internal Analysis

Interview questions AIE

• Introduction
• What exactly is the AIE according to you?
• What differs the AIE from other business units of Capgemini?
• What kind of client requests end up at the AIE?
• What is the relation between AIE Global and Local?
• What is your role within the AIE
• What type of projects are currently going on?
• What is the relation between these projects?
• How are the innovation principles (Design Thinking, Lean Start-up, Agile) applied within the AIE?
• Other
• Use proper questions when applicable.

Interview questions implementation

• Personal Introductions + Assignment introduction (innovation implementation)
• What is your experience with the implementation of business solutions?
• Can you give examples? What is the purpose of the innovation? (Product/ Process/Businessmodel)
• To what extent are existing company structures and processes included during the development of the solution?
• To what extent is the end-user involved during the process?
• Where are the largest barriers during implementation of these solutions?
• Processes/people/structure
• What scares clients the most? How do you deal with this?
• How do you recognize the innovation’s impact on the organization.
• How are the solutions implemented?
• How do you prepare employees? (training, excitement)
Appendix C Interview Guide Case Study 1

Introductions
• Explanation AIE assignment
• Introduction Solution
• What can you tell me about the [ip solution] (Probing: For who is it, what benefits does it have compared to common practices)
• Where is the IP solution developed?
• How much is already implemented? (Probe: Which customers are interested/have implemented?)

Implementation barriers/challenges
• What do you see as the biggest implementation barrier for this solution?
• Probe: How do clients look at this? Impact processes/IT System?
• What are technical challenges?
• How much does it affect client IT infrastructure? (Probe: How do you deal with this?)

Theme’s Change Management

Preparation/Dealing with challenges
• How is implementation (impact) prepared/anticipated?
• What kind of tooling is used?

Themes: Tooling, approach, preparation

Reflection to AIE innovations
• How can the implementation of AIE innovations go smoothly?
• Probe: Drones/3D-printing/Virtual Reality

Themes: IT processes and landscape
Impact people and culture
• How much does it affect current organizational routines?
• How much resistance to change does occur? (Probe: How do you deal with this?)
Appendix D Interview Guide Case Study 2

Introduction
• Personal introduction and introduction to the topic.

Introductory questions
• Interviewee’s function within Capgemini
• Example projects and clients interviewee has worked with (+- 3)

Introduction project
• Can you remember a recent case where you have implemented a new application/technology at a client that you think is typical implementation project for this application?
• What was the application about?
• Who was the client?

Or
• Can you tell me something about (Technology & application)
• What is it about?
• Can you pick one particular case that you find typical for a implementation project for that application.

• What was the reason the client wanted to implement this technology?
• What were the difficulties/problems that the client was facing at the time?
Probe: Technical issues or competitive pressure
• How would this technology help the client in overcoming his problem/provide added value
• Can you remember the main phases of the project?
• What were they?

• What were the main activities per phase?

Implementation

Beginning of project
• What were the key activities during this phase?
• What information was needed from the client How was this information obtained?
• What tools were used, which persons needed to be involved?
• What went particularly well in this stage? What do you think caused this?
• Were there any difficulties in this phase? What were they? How did you deal with this

• Were there any client concerns discussed prior to the project? What were they? What did trouble the client the most?
• How did you deal with this?
• What things could not be foreseen? How come? Was there a specific reason?

Mid-project
• What were the key activities during this phase?
• What information was needed from the client
• How was this information obtained?
• What tools were used, what persons needed to be involved?

• What went particularly well?
• What do you think caused this?
• Were there any difficulties during this phase?
• What were they? Can you give me an example?
• How do you think this happened?
• Could it have been anticipated?
• Were there any client concerns during this phase?
• What were they? What did trouble the client the most?
• How did you deal with this?
• What other uncertainties were there? Can you give examples?

Finalization of project
• What were the key activities during this phase?
• What information was needed from the client
• How was this information obtained?
• What tools were used, what persons needed to be involved?
• What went particularly well? What do you think caused this?
• Were there any difficulties during this phase?
• What were they? / Can you give me an example?
• How do you think this happened? Could it have been anticipated?
• Were there any client concerns during this phase?
• What were they? What did trouble the client the most?
• How did you deal with this?
• What other uncertainties were there?
• Can you give examples?
• Steps between Discover-Devise-Deploy
• What were the criteria to move to the next phase?
• Where there any client needs/requirements? Can you give examples?

**Conclusion**
• Wrap up
• Summarizing/concluding story
• Final remarks/comments interviewee
The DiALM is an IP solution developed by Capgemini for clients in the industrial sector. The solution is developed with the vision of Industry 4.0, where IoT enables industrial assets to operate independently and wirelessly. Such assets carry and generate an extreme amount of data, which normally has to be gathered from all kinds of places. DiALM is a cloud platform that acts as a dashboard, where all data comes together and can be accessed simultaneously. This data has to come from all the different IT systems of the client, which are connected to the cloud via connectors. By using connectors, data streams can be configured accordingly, without impacting the existing client landscape and IT processes. If an organization for example runs on particular enterprise software, such as SAP or Microsoft, the data can be configured so that the DiALM can use it.

These connectors have either already been made during development of the solution, or can be built when a client specific connector is needed for a particular client system. Since the solution is a technology overlay at the current client IT landscape and does not affect any legacy, the implementation itself is not seen as the biggest implementation challenge by the solution lead.

“We are a technological overlay, meaning that we can basically use the data and bring it together, without having to alter or redo existing investments.” - solution lead -

According to interviewee, the barrier to implementation for the DiALM is often the lack of clarity on concrete client benefits. Before clients decide to participate in a POC, or even after having participated in one, the lacking business case withholds clients to go further towards implementation, since the direct value that the innovation delivers is not clear. The intensive and expensive implementation project, where all client systems have to be connected to the platform, outweigh the vague and potential benefits. In order to know how to deliver value for the client the right client knowledge is needed from the client to determine how the platform can deliver value for his organization. A potential enabler according to the solution lead, is to have the business case evolve over time, parallel during execution of the POC. Assumptions made prior to the POC to build a first business case for the client should be validated throughout the execution of the POC, so it can flow fluently over in a pilot, followed by the actual implementation.
The interview has been conducted with a solution architect that was currently involved with the implementation of t-Police for the Finnish police department. T-Police is a shared service application for police forces that enables higher efficiency and cost savings via standardized and combined processes. The solution is a replacement for existing IT processes and has therefore to be implemented in the existing client system. Although it could have been offered via cloud, police organizations and cloud remains a sensitive issue in regards to privacy and security.

With the adoption of t-Police and its standardized processes, employees often have to adopt new ways of working in order for the solution to provide maximum business value. This could then result in resistance and distrust in the new solution. Also the difference in age between the employees could influence the acceptance of the new solution, as it was seen by the solution architect. Older employees are often less eager to adopt new technologies. By involving people early in the process during workshops and discussions, and comparing the new way of working with the old one, this barrier could be overcome. It is important to involve the right stakeholders, who can subsequently support the adoption throughout the entire organization, also referred to as 'Champions'. This could be done via workshops, where demos and mock-ups of the solution are shown.

Besides the human threshold of implementation, the replacement and change in the IT landscape caused by t-Police also drives client insecurity. The solution can be adopted partially or entirely. In case of the latter, many current IT systems are touched upon. The uncertainty lies in what might go wrong in the system during the implementation phase, since changes might affect all kinds of places in the IT landscape. This could even result in a complete system shut down, which is of course disastrous for a law enforcement organization. By applying a phased implementation, with an Agile approach, this risk is reduced to a minimum. New software is implemented piece by piece, which creates the opportunity of going back when something goes wrong.

"Their securities or insecurities are if does not work, and if, are we able to go back, or if we turn down the system, what else is going to happen?. You can create a product that looks great, but the client will still think: “How am I going to do this in my organization. It touches upon 5,6 or even 80 systems of ours. How am I going to put this together?” - solution architect -

Another barrier discussed was the different mindset towards adoption between the Business and IT within the organization. Although the business is often eager to adopt new technologies, IT departments may feel passed when new applications are brought in from outside. An example given was the IT organization of the Dutch police, who has decided not to adopt the solution, because they rather develop applications themselves.
Odigo is a cloud-based contact center from Capgemini and functions as a layer between customers and the client organization. The software directs all incoming communications, such as telephone, texts and e-mails, from the customer to the right receiver at the other end. The platform enables clients to balance customer communication with employee availability efficiently. Odigo is not built by Capgemini itself, but obtained via acquisition of the French founder of the platform. Because it is a cloud service, no client IT landscape is affected. According to the interviewee having a telephone landline and Internet connection is sufficient to be connected to Odigo, and small adjustments of the platform can the client easily do himself via his web browser. The implementation complexity lies in the Odigo heart itself. The manner in which inbound communication is treated depends on the wishes of the client. He has to decide how to balance inbound communication with his available resources, which subsequently influences response time and customer satisfaction. The client for example has to think about how he wants his teams to be working together, how much he wants to be available to customers and what type of communication should get priority. The platform can thus be configured in many different ways with many different settings, which is perceived as complex by clients. The manner in which this is done is by ‘going through all options’.

‘Well, the challenge.. Technically it is not that complicated. The moment you have a telephone or Internet connection, you should have enough to work with. In reality it is of course a bit more nuanced, but the complexity is not there’ - solution lead

Apart from the digital offering, Capgemini also delivers the Telecom side of the solution, which often brings the complexity of setting up the communication pathways properly, and the collaboration with international telecom and regulations. Adoption of the platform opens up possibilities for reorganization. Besides familiarization with new screen interfaces, employees from the client organization could also be required to adopt a completely new way of working. According to the Solution Lead of Odigo, dealing with the human barriers of implementation remained experimentally during their recent implementations and they had not found a clear approach yet. It was however recognized that this human aspect could not be neglected if the product has to be implemented successfully. Giving attention to employees to guide the change was considered a must during the process.
The Security Operations Center (SOC) is a shared service offered by Capgemini to identify and prevent cyber threats for clients. IT processes of clients are monitored and analyzed, and in case of a threat, a report is sent to a delivery team in-house that can act upon the threat. One threshold mentioned for SOC, is that clients often do not know what they ask for. According to the solution architect, they hear ‘buzzwords’ and then redirect those to the supplier and expect a suitable answer. First consultant-client engagement thus often starts with checking if clients understand what they ask for. What is important for SOC to function properly and create maximum value for clients, is that their core processes need to be identified first. To do this, insight must be gained about the client’s business and what the most important business processes are for the organization. Then based on priority, the cyber security tool is implemented. Receiving the required knowledge for successful implementation was defined as one of the biggest challenges, because there is not only knowledge needed on business level, but on operational level as well; what IT processes belong to those core business processes.

Knowledge from multiple levels of the organization is thus needed, meaning Strategic, Tactical and Operational. Strategic level defines the processes that are essential to the business and from which the loss will harm the company, while operational level defines the specific IT processes that need to be monitored in the IT landscape for security. As stated by the architect, a knowledge gap exists between these levels; the one level cannot understand the other and vice versa. A tactical person therefore needs to be involved to bridge the gap between the other two levels.

‘I have to say that that is one of the biggest challenges. To, let’s say Strategic, Tactic and Operational level, have the right people involved and that also understand each other.’ - solution architect -

For implementation, the landscape is analyzed to determine where monitoring devices need to be installed, while a procedural IT process needs to be created for reporting. Since this service functions as support of the existing business- and IT processes, and are wrapped around those ongoing processes, the security tool does not exercise any impact on the client’s processes.
The concept of Smart Digital Store (SDS) is a development from Capgemini driven by Intel technology. The Smart Digital Store is a platform consisting of multiple applications for retail environments. An example of an application is the Virtual Wall. From a technology push, their Discover captured opportunity scouting with new developments from Intel. In a Proof of Technology, they first explore the possibilities with the new technologies developed and connect them with divisions of Capgemini and suitable clients/partner. In the case of Smart Digital Store, they partnered up with a large furniture retailer that could provide them with business requirements for developing a new concept to fit within the Smart Digital Store.

When moving from Discover to Devise, an initial business case is devised based on assumptions. Because this business case assesses the market potential for Capgemini, the potential business value and impact at the client's organization have already been included in this initial business case. Then arriving at Devise, a first Proof of Concept is built with the technology, both to test the concept and assumptions of the business case. Ideally, this phase is conducted together with a client, but in the case of SDS the client lost interest for one of the applications and Capgemini therefore decided to develop it themselves as an IP product. After validation of both POC and business case, the application can move onwards into Deploy. The project had however not yet arrived at this stage. In a different project, with a different application, they were currently developing a POC for a large French Retailer.

Since concepts within the Smart Digital Store are often pre-invested by Capgemini, its business case includes the impact a particular development has on an organization. As stated by the business development lead, too much impact results in less sales. For that reason, the platform is offered as a cloud, where connectors are built to implement the solution to the client's systems. In the Discover phase, there is looked at clients' infrastructures to assess market potential and to determine what connectors need to be built, or are already in-house. Within sectors, there are often similar landscapes, thus the standard connectors can be build early. When more client specific connectors need to be built, it is done during a client specific project so the cost can be shifted towards the client.

"With Intel and Cap we try to build as many standard connectors as possible. We usually work sector-based: within the sector are often familiar landscapes. In Europe you know that half runs on SAP and that there are five other options and flavours that are standard." - business development lead -

Another approach taken is to build the concept modularly: within the large solution Smart Digital Store, the individual concepts and applications can be adopted separately. This benefits the adoption decision, and therefore higher sales. In retail is often seen that clients are mostly interested in the front-end applications that can be displayed in-store, such as the virtual wall. Implementation projects thus begin with selling the front-end application only. The sale of the back-end occurs subsequently in a different project, often one or two years later.
The second case was a Big Data architect, who reflected upon an implementation case within data warehousing and reporting. The object of implementation was a new piece of software for reporting from the data warehouse, which would allow more automated changes from the business into the dashboard. The client was a large manufacturer of imaging and optical products (camera’s, printers etc.) The project has been conducted in a traditional Waterfall approach. The first phase of the project (Discover), captured gathering of requirements, both functional and nonfunctional, from the business. This was done via workshops and standardized templates. This worked extremely well according to the architect.

Based on the requirements gathering, the design of the architecture of the solution. This first starts with a high level design, which strictly captures the headlines. When approved within the team, the functional and technical designs are constructed. A difficulty in this phase was obtaining the required access to the data systems. Before the needed sources could be reached, several protocols within the client company needed to be followed, which ultimately took more time than was told.

When access was obtained and all designs were approved, they could go into development and build the system (Devise). Difficulties discussed in this phase were the collaboration with different parties, such as project teams deployed in India and partners from the client that were responsible for certain hardware. When the system was built, tested and met all acceptance criteria, the system was implemented in the client’s landscape during Deploy. The challenging aspect of the project in this phase changes had to be made into the system, while all other IT processes were required to stay live (‘Reconstruction while the shop is still open.’). The system was thus implemented functionality by functionality to minimize the risks. Rollback scenarios were created prior to implementation, which allowed the project team to go back once something goes wrong.

‘It has happened that you are dependent on another party, or other domains that do something with data, because in Datawarehouse, you retrieve data from certain systems and that they just did a particular deployment and that their datastructure had changed relative to how it was communicated to us.’
Thunderhead is a partner from Capgemini that offers a cloud service that can provide real-time insight into customer journeys. The solution tracks customers via multiple channels and can directly report on their behavior. Among the benefits for clients is the direct opportunity to act upon their customers' journeys, for instance if those customers get stuck at a specific point in the customer journey or are displaying dissatisfaction, such as contract termination.

In the Discover phase, the consultants of Capgemini and employees of Thunderhead engage in a first client meeting, where they gather information about the client and his business. This gives subsequently insight in what value can be delivered and assumptions are done based on similar implementations. The establishment of success criteria delineates what should be delivered at the end of the project. Also security and privacy issues need to be discussed beforehand. The outcome of the Discover phase is an initial business case for the entire project. During Devise, they conducted several workshops, in which they devised the business specific solution for the client, which is done for a couple of channels as a trial. Once the business case is validated and the decision to adopt is made, the same activities are done for all channels of the company, and thus scaling the solution to the company.

Implementation thresholds for Thunderhead mostly lied on the human end of implementation; during project for a Dutch utility company, the project team failed to involve a responsible manager, who by the time she got involved became very resistant to the newly acquired business tool. In another case for a Dutch bank, Thunderhead required the company to be structured differently in order to operate as an ‘Omnichannel’. Omnichannel is the aim to deliver the same brand experience over all customer touch points seamlessly. At the Dutch bank, the existing silos were broken down to create a more horizontal organization. Consequently, employees became worried that they were not able to meet their current KPI’s and new KPI’s needed to be devised. On the technical end of implementation, there is relatively little complexity according to the consultant. The thunderhead platform is implemented via connectors that allow them to configure the required data to the platform without having any impact on the client’s IT landscape. To do so, early access to the IT systems of the client is needed, for which the IT department of the organization needs to be involved. Early involvement of IT also reduced the amount of resistance from the IT department towards the new platform. Instead, they created a ‘Champion’ out of the enterprise architect, who then went supporting the initiative within the organization.

‘Top management is often convinced, but then you still have to get passed that marketeer or IT guy. That guy has been crafting for a half year to connect those channels and has not been able to succeed. And then you suddenly enter with a SaaS solution and claim you can do it within two weeks. Then all those guys dig their heels in, because that is supposed to be their job.’ - senior management consultant -
This interview was conducted with a former architect, now Agile coach, who had done implementation cases in the past. The interview became more general about the challenges that arise during development and implementation. Among the problems discussed was the topic of lacking proper nonfunctional requirements, involving IT Operations department and the accompanying acceptance criteria they use. This party is responsible for maintaining the IT landscape of the client, and most often use a set of criteria that a new initiative must meet before it can be implemented into the existing infrastructure. These criteria include for example the mandatory tests that need to be executed before implementation. For application development, these acceptance criteria need to be translated into the right nonfunctional requirements so that the development team can work with them.

According to the interview subject, nonfunctional requirements are often found difficult and their presence is often lacking during development projects. This often results in development delay, because many extra task need to be executed at the last moment, prior to implementation in order to meet the acceptance criteria. To give content to the nonfunctional requirements for the development team, Operations should be brought into the project. However, this is often perceived as a constraint for innovation. From their job function, IT operations aims for maximum stability in the IT systems and therefore try to minimize potential negative impact of a new initiative on the IT architecture.

The interviewee finds it however questionable if the acceptance criteria should be brought in at the start from the development project in all of the innovation cases. The degree of disruption of the innovation may be a determinant of how those acceptance criteria should be used. From disruptive technologies, such as robotics, virtual reality and drones, little is known about what specific benefits they could bring for the business and how they could fit into the current structure as believed by the former architect. Looking too soon towards acceptance criteria may lead into constraint thinking and thereby reduce the added value of the innovation. In such a case it would be better too look at the acceptance criteria at the latest possible moment of a development project to achieve maximum potential. There should however be thought about nonfunctional requirements and how the new initiative should be maintained in the future. In such a situation, Operations could also add value to the project.

With non-disruptive innovations, when known technology is used, there is more certainty that it has to be implemented into the existing systems. The acceptance criteria should in that case be brought in early. With new initiatives it could be a challenge to determine with what kind of innovations is dealt with. This question might be answered by looking at the current business value chain of the particular client and to see if the innovation fits inside or out.

‘The average IT Operations, and then I mean the average waterfall approach, are quickly inclined to talk about stability.’ - Agile coach/solution architect -
An interview was conducted with a consultant that had formerly been active as portfolio manager within Infrastructure Services. The topics treated were the different development approaches in relation to deployment, namely traditional, modular application development and rapid deployment, where the latter two are labeled as the more ‘modern’ approaches. All three are commonly applied and serve their own purpose. Waterfall, the ‘traditional’ approach, captures the longest development process, with extensive design, programming and test phases. This approach is most suitable for large, complex applications with much different functionality. Modular application development is a more modern and flexible approach where applications are broken down into smaller ones with few functionalities, and where those applications can be tested separately. The last approach is the rapid deployment approach, where applications are built and then directly deployed. In such case, there are often no tests conducted prior to deployment, but the application is tested in the live situation. This approach is mostly suitable for applications that are less complex and do not harm a business when something goes wrong. An example would be a mobile phone application, where the user is simultaneously the tester. When malfunctions occur, the developer can quickly fix it and deploy an upgrade within hours. Such ‘quick and dirty’ approaches enable companies to constantly meet changing customer demand.

“What you see is that a developer builds something, throws it over the wall and then it enters operations mode. Then they have it running and they do a few basal tests.”
- portfolio manager -

Although all approaches are used in application development and many organizations often apply all three kinds for different purposes, there is often a lack of integration between the traditional and modern approaches. Companies often apply modern development approaches for their front-end applications, such their websites and mobile apps to meet customer demand, while their database systems are deployed and updated via the traditional approach, because that architecture is far more complex and vital to the entire enterprise. This often results in a data mismatch between applications. Illustrated with an example; a Dutch telecom provider had its cellphone application developed with modern approach, while its databases had to be configured traditionally. The result was that the cell phone displayed a different amount of cellphone minutes than that was told by the system that still operated with the use of timestamps. Such problems could have been anticipated by using the proper integration tests prior to deployment, for example with a couple of hundred employees. Such problems often only show when volume is applied. During development there should thus be though about how those two different worlds can be connected and work together. According to the interviewee, this is not only a matter of technology, but also a matter of different people: Traditional versus Modern. Especially Traditional people show distrusts in application deployment with little to no conducted tests, in regards to data leaks and security. Most often only a few basal tests have been conducted prior to implementation. A balance should thus be found in testing, without reducing the benefit of rapid time-to-market.
Appendix F Data Analysis

During the data collection, all interviews have been recorded and transcribed. The transcripts have been analyzed manually by first highlighting important parts and key phases. The events of the second case study had already been plotted within the AIE framework during the interviews. These insights have been written down on post-its and placed within the framework accordingly. This framework was laid out in the following steps: Discover, Discover to Devise, Devise, Devise to Deploy, and Deploy. The findings from the first case study have been added and also been placed within the framework.

By using color codes, the post-its were categorized into different groups. Orange captures the different challenges and problems of implementation that were retrieved during the interviews, Yellow the general activities conducted during each phase, Green the criteria and necessities that were needed to be met before moving on to the next phase. Additional comments and key quotes were written down on the blue post-it notes.

Fig F.1 The analysis process
Appendix G Variable Map

The variables that have an influence on implementation and have been identified during the case studies have been mapped. This provided a high level overview of what factors come into play during an innovation process and consequentially affect the degree of implementation complexity. The variable map that has been developed has subsequently been used as input for the Design Vision and Ideation.

**Client-problem**
The starting point for an innovation project within the AIE will be a particular client problem or business need that has been identified using in the Discover phase. The type of problem might steer towards a particular domain, business or business proces to be improved or innovated. The type of problem that needs to be addressed has thus the far most influence on the project direction.

**Technological opportunities**
Apart from the problem finding process, technology opportunities are of high influence on the development outcome. The AIE aims to make use of emerging technologies such as drones, virtual reality and 3d-printing, which are relatively well-known at this moment. This list will only grow in the (near) future, meaning that the amount of possibilities to tackle a certain problem will also grow. A parallel process of technology opportunity scouting will thus influence a project direction.

**Type of solution/application**
The solution will come out of the technology and defined problem. The main purpose of the innovation will determine the amount of impact on a certain organization. In the cases that have been reviewed,
a solution meant for business process optimization and transformation, has a much bigger impact on an organization than a business tool that supports the current organizations business value chain. Also the size of the solution obviously plays a role; smaller applications do not touch upon many existing systems, while larger applications might do.

**Type of platform**
As seen in the case studies, the type of solution and how it is offered can have a big influence on implementation complexity. In many of the cases, the implementation to existing IT systems and processes have not been considered as a big threshold, because the solutions were offered as a cloud service. In such cases, a successful implementation required a set of connectors to connect the platform to the existing landscape of the client. This is in contrast with a solution that has to be implemented into the existing landscape, which was the case for t-Police since its main purpose involves process transformation. If an application can be delivered via cloud is dependent of the client’s wishes and the type of offering.

**Potential clients**
One important variable that influences the development outcome is the one of potential clients. The aim of the AIE is to turn developments for one client into IP solutions that could also be sold to other clients. The applicability of the solution to other domains is thus of an influence on the development process, together with the IT landscapes of other clients or market domains. This variable thus also influences on what platform the solution will be offered.

**Revenue model**
In case there is decided to turn the development in an IP solution, this need to be come with a revenue model. Examples are a licensed model, Software-as-a-Service or a hosted model, which determine how revenue streams are generated with the new offering.

**Development approach**
The aim of the AIE is to use Agile software development during the Devise phase, while DevOps is ideally used in the Deploy phase. Not only the application purpose and complexity may however play a role in how this process is conducted, but also the transformation level of the client company. The maturity of a client’s IT department in regards to Agile and DevOps software development may also determine how implementation is arranged. A client might still be using a traditional development approach for instance, which will make it less likely that deployment can occur in DevOps.
## Appendix H: Ideation

On the right an example of an LSP session is displayed (via the LSP Open Source Handbook (Lego, 2016)).

<table>
<thead>
<tr>
<th>Focus</th>
<th>Facilitator’s Instructions/ Building Challenge</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills Building (Several individual builds)</td>
<td>First of all, the participants go through the several stages of a skills-building session, as described above.</td>
<td>60–90 minutes total</td>
</tr>
<tr>
<td>Core Identity (individual build)</td>
<td>“Build a model showing who you are on this team. What do you bring to the team? What could you bring? Consider building some of the functions that you carry out on the job, but also some aspects of you that are more hidden.”</td>
<td>15 minutes building and 15 minutes sharing</td>
</tr>
<tr>
<td>Aspirational Identity (individual build)</td>
<td>“Build an addition to your model that shows how you think others in your team perceive you.”</td>
<td>10 minutes building and 10 minutes sharing</td>
</tr>
<tr>
<td>Aspirational Identity (individual build)</td>
<td>“Who are you at your best, right now? Build another addition to your model showing your thoughts about this – what characterizes you right now when you are at your best?”</td>
<td>10 minutes building and 10 minutes sharing</td>
</tr>
<tr>
<td>Team Life (individual build)</td>
<td>“Keep your model – but set it aside for now, you will need it later.”</td>
<td></td>
</tr>
<tr>
<td>Shared Team Life (Shared build)</td>
<td>“How do you perceive your team? Build a new model showing what you believe your team is all about – what is the spirit, the ‘feet’, of the team right now?”</td>
<td>15 minutes building and 15 minutes sharing</td>
</tr>
<tr>
<td>Team Connections 1 (individual build)</td>
<td>“Build a shared model that shows what your team is all about – what is the team’s perception of the team? What is the team’s shared perception of the spirit and the ‘feet’ of the team life?”</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Team Connections 2 (individual build)</td>
<td>“When the team has built their shared model, the facilitator asks for a volunteer to tell the story of the model. The other team members may contribute to the story.”</td>
<td></td>
</tr>
<tr>
<td>Team Connections 2 (individual build)</td>
<td>“Now, position your own identity model in connection to the shared model of your Team Life. Use the position of your model to say something more about the team and about your connection/relation to the team.”</td>
<td>5 minutes positioning and 15 minutes sharing</td>
</tr>
<tr>
<td>Aspirational Team Life (individual build)</td>
<td>“Build two or three connections between your own identity model and the shared Team Life model. Have your connections show and tell about what in your team life you feel the most connected to and how.”</td>
<td>10 minutes building and 10 minutes sharing</td>
</tr>
<tr>
<td>Aspirational Team Life (individual build)</td>
<td>“Look at the models we have on the table, connected to each other, showing each of you in relation to your team and showing your team’s shared perception of the team life.”</td>
<td>15 minutes building and 15 minutes sharing</td>
</tr>
<tr>
<td>Shared Aspirational Team Life (Shared build)</td>
<td>“Now, each build a model showing what you aspire to be like as a team in the future.”</td>
<td>30 minutes</td>
</tr>
</tbody>
</table>

Fig. H.1 Example session
Appendix H Ideation

The two applications of LSP and Innovation Roadmapping that have been explored have ultimately been combined for a more elaborated concept, which is presented in this chapter. The concept has subsequently been discussed with consultants from Capgemini to validate assumptions and receive feedback for further improvements.

The concept
The concept is a workshop session that takes the stakeholders through a collaborative thinking process, where they go through the pre-defined steps of inspiration, envisioning, reflecting and acting. The session involves the Business, IT Operations and Development. An experienced facilitator from the ASE guides the entire process. AIE consultants could also fulfill this role once it has become more a routine. The session takes place in the step from Discover to Devise and provides insights and guidance for the entire Devise phase. The total length of the session is expected to take a full day.

Inspire
As a first step towards synchronized mindsets, the session starts off with the client’s current business strategy, presented on a timeline. Starting from now and may go up to 5 or 10 years, depending on the company. This will be briefly discussed, along with the objectives belonging to that strategy. This is followed by a presentation of pre-selected technologies that might be interesting for the client’s organization which are also plotted on a timeline, combined with interesting trends in the market and industry. An important step in this phase of the session is openly discussing the need for innovation.

Envision
During Envision, the stakeholders will think about the opportunities they see within these timelines. Important in this step is the opportunity mindset. With a collective brainstorm, using nothing more than post-it notes, the ideas are gathered on the timeline, based on the company’s strategy, technology development and market trends that have been presented earlier. The range of where the ideas take place can also range from now to 5 or 10 years. Reflecting back to the business strategy, the ideas are filtered on business value and business potential. While using Lego, the ideas are visualized on a timeline as 3d models. This is an iterative process, where insights and ideas are shared and stakeholders elaborate on each other’s ideas. The outcomes of this step are three separate models, each representing a certain goal on the timeline; short term, long term and a vision. The

![Initial thinking framework](image-url)
short-term goal would be something you could start building tomorrow, the long-term goal something that is possible in 5 years where you could build towards. The vision is a future state that is continuously re-shaped.

**Reflect**

In the Reflect step, it is time to put in the technical constraints and challenges. The company's current IT landscape can also be built by Lego, and the parts of the landscape that are expected to be involved with the new initiative will be reflected upon. What constraints are seen? What problems are expected? What major risks need to be avoided? These are topics that will be discussed in this step of the workshop. IT Operations is especially given a voice in this part of the session.

**Action**

In this phase work-arounds are discussed for the identified problems. The use of Lego enables easy alterations of the 3d-models. How changes in one area affect changes in other area’s can be discussed in an interactive manner. The IT architecture can also be arranged and necessary changes to anticipate implementation complexity can be identified. These changes in architecture are plotted on a timeline, together with the different development steps for the solution to-be-built. This timeline represents the project’s short term- and long-term goals to pursue, and a vision that gives guidance to those goals.
Inspire

‘Why do we want to innovate?’

Presentation of business strategy

Presentation of pre-selected technologies

Presentation of pre-selected trends

Envision

‘What do we want?’
Opportunity thinking

Opportunity thinking

Collective brainstorm

Plotting ideas on timeline

Reflect to strategy

Select on business value

Build with Lego

Iterative process

Action

‘How can we get there?’

‘What is now?’
Constraint thinking

Constraint thinking

Build relevant part of IT architecture

Discuss potential problems

Solution development

Architecture development

Set goals & Synchronize

Iteratively make changes to solution and architecture

Fig H.3 Different steps of the session
Appendix I Creativity techniques

This appendix presents several idea generation and selection techniques that could be applied during the SPARK. These are all borrowed from Marc Tassoul’s *Creative Facilitation* (2008).

**Idea generation**

**Confrontative by Analogy**
This is a common idea generation technique where similarities of the problem are searched in other domains. There is looked how this domain is solved there and then subsequently translated into a solution for the problem-to-be-solved.

**Brainstorming**
Brainstorming is a simple associative approach that yet incorporates a strict set of rules and procedures for generating ideas. A facilitator presents a problem statement in front of a group of 6 to 8 people through h2 statements on a flip over. The facilitator is responsible to follow four different rules: postpone judgement, quality through quantity, hitchhike on other’s ideas and dare to freewheel. All ideas are written down on a whiteboard so that the entire group can see them. Through association, creativity is stimulated, which leads to more ideas.

**Brain writing**
A different associative technique is brain writing. During brain writing sessions, ideas are written down on post-its and subsequently stacked on a pile. In case participants feel the need for inspiration, they may take post-its out of the pile for elaboration. The need to share ideas out loud is optional and should be decided within the group. The process of brain writing is less dependent on group dynamics than brainstorming: introverted people are less likely to be overshadowed by others.

**Provocative questioning**
Provocative questioning is an idea generation technique that stimulates looking at a situation from different angles. The provocative questions that could be applied are for instance: Substitution (what else?), Combination (what if we mix this with..? ) Adapt (what are similar situations?), Modify (what if we give a different meaning to it?), Magnify (what if we add..?), Minify (What if we leave out..?), Reverze (what if we do it backwards?).

**Cluster technique**
C-Box is a cluster technique that captures a matrix with two axes; innovative and feasible. Ideas can range within the matrix from very innovative to not innovative, and not feasible to very feasible, which gives a useful overview of the ideas that have been given. Before selecting ideas that can be used for concept development, participants can be asked to elaborate on the ideas. This often provides additional insight into ideas, which causes them to move into the matrix.

**Selection techniques**

**Criteria**
One method to select the right ideas is to use a set of criteria that has been devised in advance. A list of criteria is comprised out of specifications, requirements and wishes. The first two clearly define what the product should do, while the third aspect indicates how good an idea really is.

**Intuitive selection**
Intuitive criteria are more determined by ‘gut-feeling’. More ambiguous criteria such as interesting, innovativeness and challenging can be applied.

**ALU**
This is a method that systematically checks the idea’s Advantages, Limitations and Unique elements.

**PMI**
PMI is about systematically checking on Plusses, Minusses and Interesting. Example questions to ask are: What is good about the idea? Which aspects need improvement? What makes the idea interesting?
Appendix J Evaluation Guide

**AIE Consultants**
- Presentation of final design
- To what extent do you think this fits within the AIE’s planned collaboration with clients?
- To what extent do you think the design supports the type of communication/discussions that would occur between the three disciplines; Operators, Developers and Business?
- To what extent do you think it brings different mindsets closer together?
- What potential risks do you see?
- What would you like to see different?
- Any final remarks?

**ASE Consultant**
- Presentation of final design
- To what extent do you think the design supports the type of communication/discussions that would occur between the three disciplines; Operators, Developers and Business?
- To what extent do you think it brings different mindsets closer together?
- To what extent does the work method fit in the work method of the ASE?
- If I would hand this over to you, what do you need to know?
- What potential risks do you see?
- What would you do differently?
- Any final remarks?

**Operations**
- Can you tell me something about your role within Capgemini?
- Introduction of assignment and problem definition.
- What is your general experience within this topic?
- Presentation design
- To what extent do you think it supports the knowledge/insights you would want to communicate?
- To what extent would it reduce innovation implementation complexity?
- What potential risks do you see?
- What would you like to do different?
- Any remarks?
Appendix K Optimization

A suggestion is given on how LSP could be used to transform the old business strategy into a new business strategy, prior to the innovation project. (1) By first presenting the current business strategy and technological developments, (2) followed by an LSP session where threats and opportunities are discussed, (3) a new business strategy could emerge from the session. As mentioned earlier in the report, the Business Strategy Consulting capability should first be developed within Capgemini before such a session could be held.

Fig. K.1 Horizon session