

## **Between the Rock and the Hard Place - Conflicts in Implementing Integration Platforms**

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# Between The Rock and The Hard Place - Conflicts in Implementing Integration Platforms

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## Abstract

*The world is digitalizing in fast pace and the number of connections between different digital systems, i.e. integrations, is growing at the same time. That has created a need for more efficient integration management. For that reason, many companies are now implementing modern integration platforms to manage their external and internal integrations. Although these platforms are fast and easy to take in use technically, the main problems tend to be organizational. In this research, we study the experiences of the professionals, who have gone through an integration platform adoption project in their company recently. In our analysis, we found out that the technical challenges of the companies were easier to solve. However, if the organization does not have clear management, strategy or understanding on how to get the most from the new integration platforms, the capabilities of the integration platform are not used in their full scale. In the paper, we make visible the intervention points for a successful integration project.*

Keywords: Integration platforms, iPaaS, EiPaaS, digital transformation, integration management

## 1. Introduction

The digital world rely more and more on integrations, connections between different systems. However, integration as a term has many meanings depending on the field it is used and the context where it is used. Even in software engineering people can use a term 'integration' to mean a system, a condition, a process or an end-state (Gulledge, 2006). The most common integration phrase, system integration, have established it meaning to mean an integration implementation and management solutions such as integration platforms (developing, execution and governance platforms for services, applications and data), Enterprise Service Bus (communication

platform for different apps) or classical point-to-point integrations (a simple way to connect only two apps) (Gulledge, 2006; Serrano, Hernantes, & Gallardo, 2014).

The integration platform can be customized and built for your company's needs, but most commonly integration platforms run in the cloud, as a service (iPaaS) (Ebert, Weber, & Koruna, 2017) or as more efficient enterprise integration platforms as a service (EiPaaS) implementations (Dsilva et al., 2021). The most well-known integration platform products are MuleSoft, Informatica, Boomi and Jitterbit. These all have been leading companies in Gartner's Magic Quadrant for Enterprise Integration Platform as a Service (Thoo, Guttridge, Bhullar, Pillai, & Singh, 2021). In this research we are especially focusing on enterprise integration platforms as a service implementations.

One reason why iPaaS and EiPaaS are growing their popularity is that they can support a significant number of use cases, such as receiving data and transforming it, and integrate ecosystems, events and API's (such as syncing record in multiple systems or connect partners and marketplaces) (Dsilva et al., 2021). Gartner predicts that by the year 2022, 65% of the large companies have implemented a hybrid integration platform to power company's digital transformation (Van der Meulen, 2018).

iPaaS and EiPaaS can be seen as a part of bigger movements such as platforms as service, PaaS, or everything as a service, XaaS, where platforms or everything cloud-based can be ordered as a service (Duan et al., 2015). Behind of this is a bigger change in the software business from products to services (Cusumano, 2008).

As integration platforms has evolved to be offered also as a service, it is important to see how these services are implemented in the companies. In this research we are approaching the topic via two research question:

**RQ1** What are the key challenges in integration platform implementations

**RQ2** How different integration platform implementation challenges are seen at different organizational levels

To answer these questions we made 20 interviews with professionals, who have gone recently an integration platform implementation project in their company. We identify different challenges between different organizational levels and roles, and propose intervention points for the integration project.

In the next section, we go through the research around modern integration platforms and decision making. In Section 3, we present our data collection and analysis process. Section 4 reports the results of our analyse and in Section 5 presents the discussion around our findings and previous integration platform decision-making research. Section 6 draws the conclusions of our research.

## 2. Background

Integration platforms are fairly new phenomena and the surrounding research is still more focused on technical viewpoints (Ebert et al., 2017; Hyrynsalmi, 2022). However, some decisions frameworks or models have been proposed around the integration platforms decision. For example, Freire et al. (Freire, Frantz, & Roos-Frantz, 2019) suggest a methodology to rank integration platforms from each other. They are focusing on technical elements, especially to the integration platform's performance capability. The study of Ebert et al. (Ebert et al., 2017) categorizes some well-known integration platforms from the security-related and technical viewpoints. Recently there has been more business-intensive approach to integration platforms and for example the study of Neifer et al. (Neifer, Lawo, Bossauer, & Gadatsch, 2021) focus on the practices of software vendors and the drivers for the adoption of iPaaS.

It is not a surprise that the integration platform research has been mainly focusing on technology, as for the long time they are meant to solve mostly technical challenges and manage integration flows. Also new kind of challenges and questions have emerged in integration platforms. One of the questions is about the implementation environment. Integration platforms can be implemented as internal and external solutions and they can run at on-premise, hybrid or full cloud environments (Zhang & Yue, 2020; Hyrynsalmi, Koskinen, Rossi, & Smolander, 2021).

iPaaS and EiPaaS projects have conquered the market very fast and in the year 2020 iPaaS market generated \$3.47 billion in revenue and grew by 38.7% compared with 2019. They are estimated to exceed

\$9 billion in revenue by 2025(Thoo et al., 2021). iPaaS and EiPaaS services can work both in hybrid (cloud and on-premises environments) and in full cloud environments. The researchers have found several risks from cloud computing, including security, budget, controllability and vendor lock-ins (Dillon, Wu, & Chang, 2010; Gai & Li, 2012). However, the cloud has also many positive elements such as resource pooling, broad network access and environment for self-service. When looking about platform as a service research and the cloud environments, there has been also found out still some difficulties in reaching common understanding about the way a customer develops and deploys cloud applications. (Dillon et al., 2010)

Besides the environments, there are different ways to approach integration in the development. Integration professionals have been working hard to transform code-centric integrations to more model-centric ones to increase the potential of the integration platforms (Frantz et al., 2021). However, integrations are sometimes misunderstood as a concept and term(Gulledge,2006). Limited understanding about what integrations are and what kind of role they play in the IT modernization or digital transformation project can affect on the whole integration implementation project success.

There are a lot of terms around integration management and architecture, which can make the understanding and communication about integration's possibilities even harder. Most of these terms are focused on enterprise management or architecture, such as SOA, EAI, ESB and Microservices. SOA (Service-oriented architecture) is an architectural mindset for software engineering in the enterprises (Perrey & Lycett, 2003; Erl, 2005). Microservices is a similar approach, but it highlights the modular architectural style (Pahl & Jamshidi, 2016; Dragoni et al., 2017). When talking about modern integration platforms, terms such as iPaaS (integration platform as a service) and EiPaaS (enterprise integration platform as a service) are used. From these terms, iPaaS is still the leading one but there has been seen a slow shift towards the EiPaaS term.(Hyrynsalmi, 2022) Both of the terms are made popular by the research consulting company Gartner that has now focused on using EiPaaS to highlight the elements of a modern integration platform - such as scalability, data utilization, automation, AI and security. (Thoo et al., 2021)

EAI (Enterprise Application Integration) is a process where software applications and software systems are integrated across enterprises (Linthicum, 2000). ESB (Enterprise service bus) in the other hand provides a middleware model for integration of applications

and architectures (Chappell, 2004). Furthermore, the terms integration and Enterprise Architecture (EA) can also be seen challenging and confusing terms. Even the discussion about digital transformation can be challenging. For example the research of Wessel et al. (Wessel, Baiyere, Ologeanu-Taddei, Cha, & Blegind-Jensen, 2021) raises a question if there are any differences between digital transformation and IT-Enabled Organizational Transformation.

Digital transformation can be seen as a process where digital technologies create a change which forces companies to investigate their strategies for new value creation paths. In that, companies have to manage their structural changes and find the organizational barriers which could affect negatively or positively to the digital transformation outcome. (Vial, 2021) Research around the digital transformation and integration platform utilization is important if we want to learn more how to use integration platforms to speed up in the digital transformation. However, it is still under research how organizations manage platforms to generate opportunities and how they overcome challenges in doing so (Rolland, Mathiassen, & Rai, 2018). These challenges apply also in the integration platforms implementations.

### 3. Research process

In this study we used thematic analysis (Braun & Clarke, 2006) to identify, analyse and report the key challenges and decisions in integration platform implementation projects and how different challenges during the project are faced on different organization levels.

Thematic analysis was chosen because it is a tool and method to analyze and categorize a large amount of qualitative data (Braun & Clarke, 2006). With the thematic analysis we could identify different challenges and categorize them under themes and in that way to answer our research question. In this section we describe the data collection and analysis process.

#### 3.1. Data collection

We collected the qualitative data with semistructured interviews to get a deeper understanding on timely themes in the integration management. The interview themes included the change of the integration management, the platform economy, the decisions made on platforms, the challenges and best practices. Our aim was to get more understanding about ongoing challenges and find out how companies have solved these challenges.

We made 20 interviews during May 2021 – March

2022. The focus was on IT managers and other professionals, who had participated recently in a leading position to the integration platform project in their company. Respondents represented mostly Technology, IT or Data officers and there were also some senior level Architects.

We approached the interviewees individually by their expertise and role in the integration platform projects. The criteria was that they had been in an important role in the projects. We were especially looking for people who had a long experience in the field, so we could also get understanding on how integration platforms projects differ from for example Enterprise Service Bus projects. We also wanted to get more diverse views on the topic and get deeper understanding about the decision process and therefore we interviewed people from various roles. The interviews were made in Finnish and they were recorded as Zoom/Teams recordings. We found the respondents via researchers' networks or searching from the internet, especially from the professional networking platform LinkedIn. We paid special attention that we did not collect just a successful case companies provided by software vendors, but we wanted to include a more diverse set of companies, with differing sizes, industries and experiences.

#### 3.2. Data analysis

After the interview data was transcribed, we went it through using the steps of the thematic analysis guidelines (Braun & Clarke, 2006) to find themes and patterns around the challenges and decisions of the integration platforms.

In the analysis phase we did not use any seed codes when we started the coding. The first author had already made some notes and highlights during the interviews and the analysis phase started by familiarizing with the data. In the data familiarization phase, we read the transcriptions and made more notes, but made no codes yet. After the data familiarization phase, we started the coding of the themes. We encoded first all the transcriptions. Then we examined the list of the codes and classified the codes under combining themes.

We identified many challenges in the integration platform projects and divided them into the two main categories: *Technical challenges* and *Organizational challenges* (Figure 1). We also divided the organizational challenges under two themes: Overlapping systems and Management and communication.

**Table 1. Background info from the interviews**

Interview ID	Industry	Title	Company ID	Company Size (people)	Length(min)
P1	Transportation	Manager	B1	5 000 - 9 999	47
P2	Banking	Architect	B2	10 000 - 19 999	58
P3	Transportation	Manager	B3	250 - 499	51
P4	Logistics	CIO	B4	20 000 - 34 999	52
P5	Media	CIO	B5	1 000 - 2 499	49
P6	Financing	CIO	B6	100 - 249	44
P7	Public Sector	CIO	B7	5 000 - 9 999	41
P8	Energy	CIO	B8	20 - 49	51
P9	Engineering	CIO	B9	100 - 249	41
P 10 & P11	Public sector	Architect	B10	250 - 499	57
P12	Public sector	CIO	B11	1 000 - 2 499	50
P13	Service sector	Manager	B12	100 - 249	64
P14	Construction	Manager	B13	1 000 - 2 499	54
P15	Financing	Director	B14	500 - 999	47
P16	Engineering	CEO	B15	20 - 49	51
P17	Food industry	Manager	B16	250 - 499	65
P18	Pharmacy	CIO	B17	20 - 49	62
P19	Telecommunications	Architect	B18	2500 - 4 999	75
P20	E-commerce	CDO	B19	500 - 999	47
P21	Telecommunications	Architect	B18	2500 - 4 999	41

## 4. Results

### 4.1. Challenges faced in the integration platform projects

We identified that conflicts and challenges in integration projects can be divided into technical challenges and organizational challenges (Figure 1). From these the technical challenges were more motivational for starting the integration platform project such as old legacy systems or maintenance challenges. The organizational challenges can be divided into conflicts and challenges caused by overlapping systems and challenges and conflicts caused by management and communications problems. In the following we will discuss with more detail the technical and organizational challenges and their sub sections.

**Technical challenges** varied depending on how well integrations were already managed in the companies. Some of the respondents were in the middle of their IT transformation project, where the integration platform was one of their modernization case points. However, in some cases the respondents were already using their new platforms and had gone through the whole integration platform project already. Both highlighted that the integration platform was planned first mostly to solve technical challenges. However, the respondents saw at the same time that there was a potential to solve more than just technical challenges — the integrations were seen as a solid base for a bigger change or a transformation project in the company and if the integrations were not in a good shape, they could cause problems for every other project:

*Then there it is that we have different speed of change in the different levels. So basic systems can take 20-30 years to change and then for example at API level*

*the solutions are changing really fast. But in the basic systems, kind of corner stone systems, eliminating the risk of the integration outages, adding more speed and power to the integration flows – that has a huge effect. (CIO, P4, B4)*

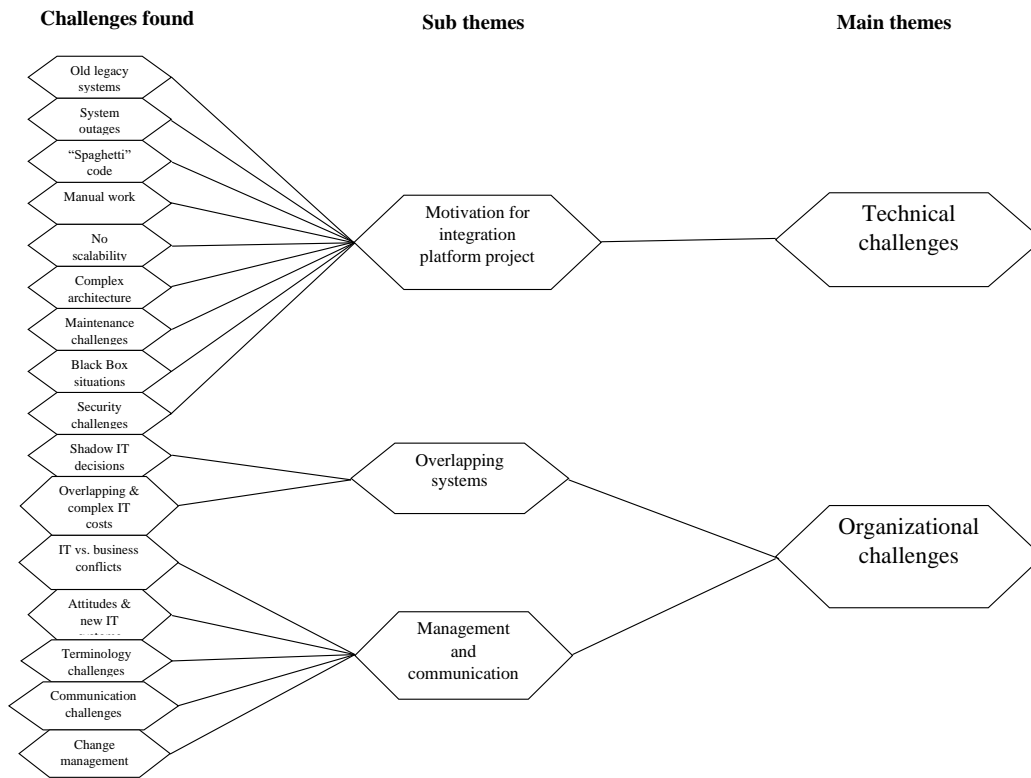
Technical challenges were affecting on respondent's efficiency at work and respondents were hoping to find solutions to fix the maintenance, scalability, security and black box challenges which also created more complex architecture to manage. System outages, and in that way the stability problems, combined with the legacy systems that required specific technical knowledge, took a lot of time and resources from the respondents daily tasks. Especially system outages had clear and direct impact on the company's business competitiveness and could create difficult situations with the customers:

*For years we had this unpleasant routine that whenever something broke down, it was usually our customer who told about it. This was especially annoying for our business people, even for our top level management. So it always took some time to hear about these outages, but it was also usually really hard to find out where the problem was and how to fix it. (CIO, P4, B4)*

Overall, the respondents were hoping that the new integration platform could fix the most challenging technical problems and make their job more predictable and remove manual work. After fixing these challenges the respondents could focus on more productive development:

*Probably the greatest benefit (in the integration platform) is that you get an infrastructural level and the management for that from the platform. And depending on the level of the platform's features included, there is less maintenance, development or management tasks for*

Figure 1. Conflicts and challenges behind and in integration platform projects



you. So basically you can focus on your core business. That is something that adds value to the company. (Architect P10, B10)

The **organizational challenges** in the 'Overlapping systems' sub theme included both Shadow IT (Handel & Poltrock, 2011) decisions (meaning an IT systems deployed by non-IT departments) and overlapping and complex IT costs.

Under the Management and communication challenges there were conflicts between IT and business departments, challenges with the terminology, challenges in the communication, attitudes towards the new IT systems and challenges overall in the change management. The IT managers usually wanted to solve these challenges, in addition to the technical challenges. Most of the respondents truly wanted to make their colleagues' life easier and help them understand what they could achieve in their work with these new services:

*I want to be an enabler in that way that people could realize that there are these new kind of services and solutions and they take advantage of them. That is probably the number one reason for me. I market our new solutions and guide our people on how they can use*

*them and what kind of new value they add to people's daily work. Secondly, I try my best to emphasize the value, which these new solutions can provide, to the ongoing project and its outcomes, because Data Managers and Project Managers may not have enough knowledge of these solutions and their advantages. (CIO, P18, B17)*

Furthermore, as highlighted in the previous research (Zhang & Yue, 2020; Hyrynsalmi et al., 2021), the decision about the implementation environment affected also for example to the costs in the long run. If company had bought an access to a full cloud environment without fully understanding the cost structure, then there was a chance for a catastrophe:

*This new platform was introduced for the first time for us and our intention was to implement it on a small scale by ourselves. I launched a service, that I had calculated and planned in the platform's own service calculator, but suddenly right after starting the platform the cost curve took a sheer jump. Luckily it was noticed in two months, but still it managed to make a remarkable expenses for us. That little bit scared us, but at least now we know the possible risks when calculating the budgets for cloud services.*

(CIO, P18, B17)

#### 4.2. Different organizational levels where decisions are made

We identified three organizational levels where the integration platform decisions were made and conflicts between these levels, described in Figure 2.

Decisions were made at:

- Individual/Team level
- Department/Division level
- Organizational level

**Between individual/team level and the department/division level** the most common challenges were **overlapping systems**. They created cost, complex architecture and IT managers often felt that they got too late information about some of the platform and tool deployments made in other departments. In these cases they felt that they could not anymore give their expertise on the case, but if there would be system outages or some other technical challenges in these platforms – then IT managers would be the ones to solve these challenges, although they have not been deciding about these platforms:

*From the viewpoint of the business department it may be challenging to understand why these systems don't talk to each other easily and why it can be so expensive and difficult. From my viewpoint, we are an organization that purchases a lot of different systems from outside. And we have a lot of knowledge about how and what should be purchased and how things should be solved. But it is not always so easy to us (IT department) to get into the process, when some other department is buying something. Sometimes things are already decided before we hear them and then it is too late to influence to the decision.* (CIO, P5, B5)

**Between department/division and the organization level** the communication and understanding of the technology and the possibilities and limitations of the technology was seen as a challenge. Without **clear understanding or the management of the platform project**, situations may emerge where the roles and responsibilities are not clear and a lot of time goes into trying to figure out who is responsible for what and how the matter is resolved:

*Then if you have system vendors, from whom you have systems A and B. Then an integrator C gets in between A and B, and then it suddenly becomes a ticket chaos. The issue didn't go from point A to B, because it gets lost somewhere between. I*

*blame first A and then B and then C. And still the solution is not found, at least not easily. But bills keep coming from every actor in the picture.* (Manager, P3, B3)

#### 4.3. Decision making and conflicts between different roles and divisions in the company

We recognized groups of decision makers that were important in the integration platform decisions (Figure 2). They were

- Architecture/Developer
- Team manager
- CIO/CTO/CDO
- CFO/CEO

The conflicts between **developers and managers** were usually about the customization and the environment (cloud, hybrid or on-premise). Especially when talking about the need for customization, some of the developers and architects were questioning the need for an off-the-self product and the high level of customization that those products would still need. In these cases, developers thought they could create better options by themselves.

*But then there is this 'not invented here type' situation. In these situations you have those technical people who say that we can do it very easily by ourselves, let's not buy somewhere else a ready solution. And then you do not remember that how expensive it can be or how much effort, time and money the maintenance of own solutions takes.* (CDO, P20, B19)

As we interviewed mainly IT managers and professionals, it was not a surprise that the classical **Business vs. IT** conflicts were highlighted. There were companies where IT and Business collaborated well and then there were companies where there was challenges in the collaboration. Most of the time the challenges were about understanding the needs, the possible solutions and the actual costs of the different implementations.

*We have also these situations, where a business would like to buy a new solution for their needs. They want to solve a problem and they have heard about a new product which they want to try out. The problem is that do we have an understanding in the organization that what kind of technical capabilities we would already have in our company that could be used instead the off-to-shelf product. This has been really typical challenge in this organization lately. We*

*should just ask what is the real need and could be do it ourselves? Because in this case we had the technical knowledge and could do the solution by ourselves.*  
(CDO, P20, B19)

Overlapping systems creates overlapping costs. In some cases that happens because the cost structure of platforms as a service or in a cloud environment can be tricky and complex to understand and visualize. The discussion of the costs and budgets was also usually the real cause for the conflicts between **CIO/CTO/CDO and the CFO or CEO**. It usually took a lot of effort to 'sell' the idea of the integration platform for the CFO and CEO:

*This is related to the attitudes. Because there are different kind of boards and different kind of CEOs. Some of the CEOs or boards see clearly that this is it, this is going to be our key area – that IT will be in charge of new solutions and ideas and these solutions will add more business value. But that is not always the case. Sometimes the board or the CEO can think that IT is just a waste of money. How this transformation is led affects on the budgets, it affects on how we talk about these things also in the board.*  
(CIO, P18, B17)

#### **4.4. Respondent's solutions for the conflicts**

The solutions for the challenges often included clearer identification of the team's or department's need - to avoid overlapping systems - or a clearer strategy for the digital transformation and services needed for that - to add more understanding and more efficient management of the platform project (Figure 2).

For adding more **clear identification of team's and department's needs**, respondents were offering more communication between the individual and team level and the department and the division level. However, some of the examples highlighted the siloed, isolated organizational structure as something that should be solved to get things running more smoothly:

*We have several solutions, let's say a dozen different ones. And they have been bought because our organizational structure is, not so nicely described, siloed. There are these different business departments who have their own interests, and they keep it clear that they don't need anyone else to interfere in their platform decisions. They see that they can find solutions for their challenges and needs best by themselves. So this is one side. The other side is that there has been this certain problem around the old system and that is identified as a problem in the integration management. And then there has been a new implementation system bought to cover the old system and maybe the decision has*

*been made in that way, that is thought that after getting this new system, there would not be need for the old system. But in the end the old system still stays there.*  
(CIO, P4, B4)

Furthermore, a significant number of respondents skipped most of the technical challenges and emphasized the organizational challenges. When more people are involved in these platforms, in their ownership and use, it leads to more focus on collaboration between departments:

*What we have here is that the greatest challenges are not because of the technology or what it enables, but this old-fashioned organization with silo-oriented service structure. We have a situation that these function or cross-unit service processes are not properly described and labelled to the condition that they would really fit to end user needs. There is a lot of 'political' discussion around these processes and every department wants to keep a really tight ownership on things that are important for them. So finding solutions that fit for everyone is extremely hard.*  
(CIO, P12, B11)

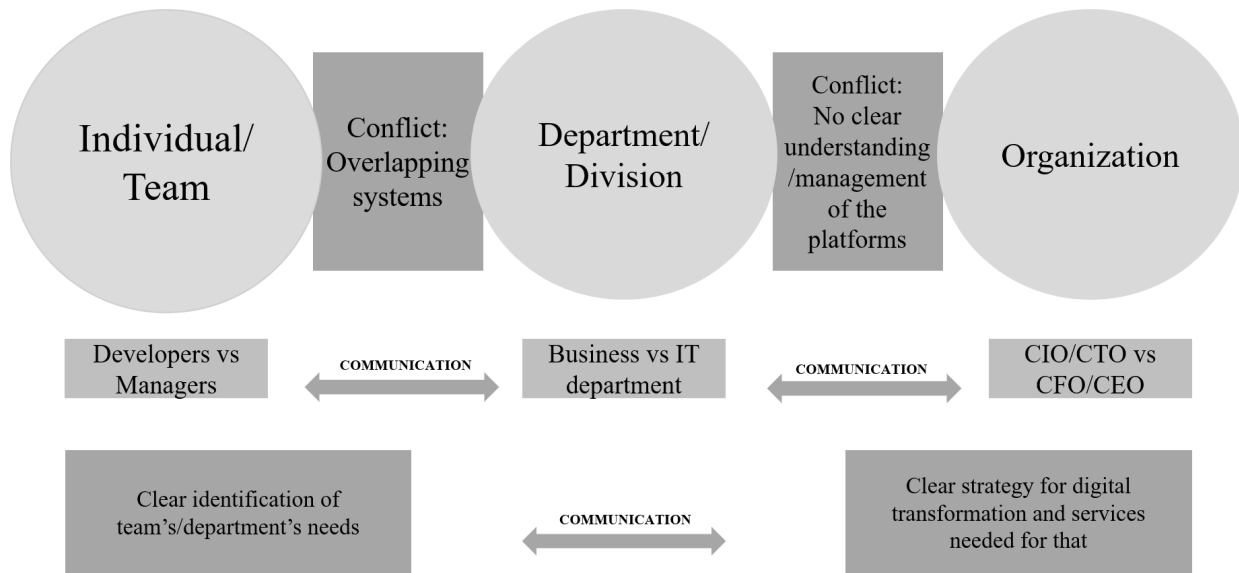
As integration platforms and integrations have an effect on the company's overall performance, most of the respondents felt that individual people from all levels should be informed and get engaged. For that, the **clear strategy and services needed for implementing that strategy** were highlighted. However, the communication should also convey a clear understanding of what are integrations and integrations platforms and what company could achieve with them:

*I think it depends on how integrations are seen, that are they just seen as a system connecting to the another system. Because in the end, that is a lot what the integration platform does in the end. However, it should be remembered that it is also something more. But If I go to the board and talk about integrations, they are 'what you are talking about?'. But if I talk about automation, then they are like ok this is good, this we understand and the value for the business. But integration platforms and automation are not the same. But this is it now, if you talk about integration, you talk more in the developer level. If you want to talk in the manager level, you have to say something different.*  
(CIO, P12, B11)

Most of the respondents emphasized that it was important that the management, in different levels of the organization, was strongly involved in the process. If the whole department management level was involved, the conflicts between CIO and CFO were not similar to those cases where the management was not seeing the competitiveness value in the modernization of the integration management:



**Figure 2. The different organizational levels, decisions makers, conflict and intervention points for the conflicts in the integration platform project**



*I think that there are always some commitment happening in every level. But I think what really makes us fortunate was that the top level management, starting from the CEO, the 'sponsors' for this cause where there. In our change project advisory board there was the whole board of our company. So in that way it was ensured that the info was spread to different departments and it was all the time known what kind of decisions were made, what kind of compromises, and in what speed we were moving. (Architect, P10, B10)*

Many respondents used words like "complex architecture", "microservices" or "modular systems" in the meaning that there were increasing number of moving parts in the big architectural picture. In some cases new services meant new roles: there were several thoughts about the changing and more business-oriented role of the IT manager. There were also suggestions about totally new roles between IT and business for a clear ownership and administration of the products, services and systems:

*In this situation it is clearly highlighted that a solution-based approach is valued, not the basic 'hands in the dirt' kind of IT doing. The solutions is what matters. In the architectural level, how this whole bigger picture is managed, there is this new service-oriented management style coming. Service-oriented management and product owners, those are growing their importance. And when we have these big solutions, some areas*

*of them belong to some exact person. Like kind of administrative roles are highlighted. (Manager, P3, B3)*

Most respondents thought that the integration platform should and could solve most of their technical challenges. Integration platforms were also giving them more scalability, stability and new possibilities to do things in the new way and get new business potential:

*I think the situation is that I should somehow manage to make it more visible in the organization, including its potential. But I think they will become clearer just by doing, so that I can show how we can move, manage and create something new from the data. Of course this requires that there will be some success stories to tell. (CIO, P9, B9)*

## 5. Discussion

We found out that companies were facing both technical and organization challenges and from these challenges, the technical ones were usually the main reason to start looking for the new integration management implementation. The organizational challenges were more about overlapping systems, lack of communication and the integration management or strategy. In addition, there was also a lack of deeper understanding of how really take all benefits from the new platform. Furthermore, similarly as researchers have debated about the challenges of the term 'integration' (Gullledge, 2006) for years, we could

see that there were also a variety in how people understand integrations. That was also sometimes the reason for communication challenges, as people were defining differently their needs or expectations from the integration platform project.

However, from the respondents answers it was seen that there was a growing interest towards the integration platforms' capabilities for providing new business possibilities and the utilization of the data. That fits well to Gartner's vision on the next level enterprise integration platforms as a service product characteristics (Dsilva et al., 2021). The new possibilities provided by the integration platforms suggest that the modernization of the IT can also be an unintended driver for a digital transformation of the company. In our research it stayed still unclear if the companies would in practice use the integration platforms for generating new opportunities in the business. That would require more clearer strategy and commitment from the management.

On technical level we also conclude that not all of the integration platforms are the same. There are differences for example in the implementation environment (Zhang & Yue, 2020; Hyrynsalmi et al., 2021) from on-premises to full cloud environments. Different integration platforms offer also different services and architectural solutions. Identifying which elements of the platforms help to solve the technical and the organization problems would require knowledge about the needs and pain points in the organization. For that, our intervention points provided in Figure 2 can be beneficial.

Our results help practitioners to identify potential conflict points in the integration platform projects. In these points companies should pay more attention and increase the communication between different roles and departments. Our findings underline the clear identification of the team's/department's need and a clear strategy for digital transformation and services needed for that.

This study used the thematic analysis (Braun & Clarke, 2006) for the challenge identification. However, there are always limitations in methodology and research. The thematic analysis has flexibility in identifying and classifying themes. However, there is always danger that not enough time and effort are used for the familiarizing data and the analysis is incomplete. For that, we used the guidelines of Braun & Clarke (Braun & Clarke, 2006) to make sure that we have completed the analysis.

The other limitations concern the selection of the respondents. In our study, all respondents were from Finland and Finnish speaking. They were professionals from various fields, which can always affect how they

see for example the business criticality of an integration platform. We tried to make sure that there was variation in company sizes, from small to big. Also, when recruiting the companies, we made sure that not all respondents were from software vendors and tried to include also some failure stories of the integration platform implementation. The roles (architecture, CIO, CDO, CTO) of the interviewees were evenly distributed but there was an underrepresentation of women in the final set interviewees. Of the 20 respondents only 2 were identified as a female. We believe that this is a general problem in the field.

## 6. Conclusions

We studied and identified key challenges in the integration platform implementation projects and how different challenges in these projects are seen at different organizational levels. We identified that there were three organizational levels - Individual/Team, Department/Division and Organization - where challenges and conflicts were faced by different roles. We also identified what kind of conflicts there were between different roles during an integration platform project. In our final analysis, we provided two solutions for the conflicts and challenges: a clear identification of the team's/department's need and a clear strategy for digital transformation and services needed for that. We also pointed out the potential communication gaps in an integration platform project. Companies should pay more attention on those gaps.

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