How to Build Competencies for a Data-Driven Business: Keys for Success and Seeds for Failure

Jyrki Koskinen

> *"The constant dilemma of the information age is that our ability to gather a sea of data greatly exceeds the tools and techniques available to sort, extract, and apply the information we've collected.*
>
> Jeff Davidson
> Author and speaker

Data analysis to create deep understanding and insights holds vast potential for innovation, but there is a severe shortage of data scientists. How then can a company create the competencies needed to obtain a competitive edge in the era of data-driven business? This article describes "Data Driven Business", a program developed to coach company teams in Finland in the use of an innovation platform combining data analysis and service design using real-life case projects. The results suggest that this approach is an efficient way to build data-analysis competencies in a company: after taking the 14-week coaching course, 58% of the participating companies had launched a new product or service in the market within six months from the end of the course. After the program, a network called DOBit was established to share experiences among the members and to leverage data analysis and service thinking in society. This article describes the development and implementation of the course, its results and outcomes, and the keys for success and seeds for failure when attempting to build competencies for a data-driven business.

Introduction

Data is the new oil for innovation in many ways, as we know. But what does it take to exploit data for insights? Where can a company find the data scientists? Product-based business models are vulnerable to local and global price competition. So, how can a company differentiate? To meet this challenge, customer-centric service design is a promising approach for companies to create added value with customers and to differentiate from competitors. To illustrate this promise, consider Google, which is a splendid example of a successful company that integrates data analysis and service design in the nucleus of their strategy. But Google is exceptional. So, we must ask: How could *any* company combine data analysis and design thinking into new competencies and business?

To help companies exploit the benefits of data analysis and service design, the author organized a pilot development program called "Data Driven Business" (DOB; https://coss.fi/projektit/dob/dob-in-english/) (in Finnish, *Datasta oivalluksia ja bisnestä*) The pilot DOB program was run from August 2016 to December 2017 by seven organizations: the University of Tampere, the Finnish Centre for Open Systems and Solutions (COSS), the University of Oulu, Laurea University of Applied Sciences, the Metropolia University of Applied Sciences, the City of Vantaa and TIEKE (The Information Society Development Centre). The program received additional funding from the City of Tampere, Hartela Pohjois-Suomi, and the Ministry of Transport and Communications, as well as from European Regional Development Fund.

The program developed an innovation platform consisting of processes, methods, and tools for data analysis and service design. The platform was customized and piloted in three working packages. In the first two packages, the platform was used to create services for seniors and for travellers at Helsinki Airport in Vantaa, Finland, respectively. The focus of this article is on the third package – a training course called DOB Coaching,

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which was designed to update a company's competencies in data analysis and design thinking using the DOB innovation platform.

This article introduces the innovation platform created in the DOB program and describes the results and experiences of the DOB Coaching course to train organizations competencies needed to exploit data analysis, services thinking, and design thinking. The purpose of the article is to introduce the platform developed and to share the results and outcomes of the DOB Coaching course. The article is particularly relevant to business developers who want to exploit data analysis and service design to develop new business and to human resources staff who want to have company competencies updated accordingly.

The DOB Innovation Platform

The DOB innovation platform is a general platform to solve problems and create new solutions exploiting data analysis and design thinking. The platform consists of innovation processes supported by methods and tools selected by the author in consultation with the University of Tampere (for data analysis) and Laurea University of Applied Sciences (for service design) to support curriculum development. Figure 1 illustrates the key elements of the DOB innovation platform, which are further described in the subsections that follow, including how they were applied as part of DOB Coaching course.

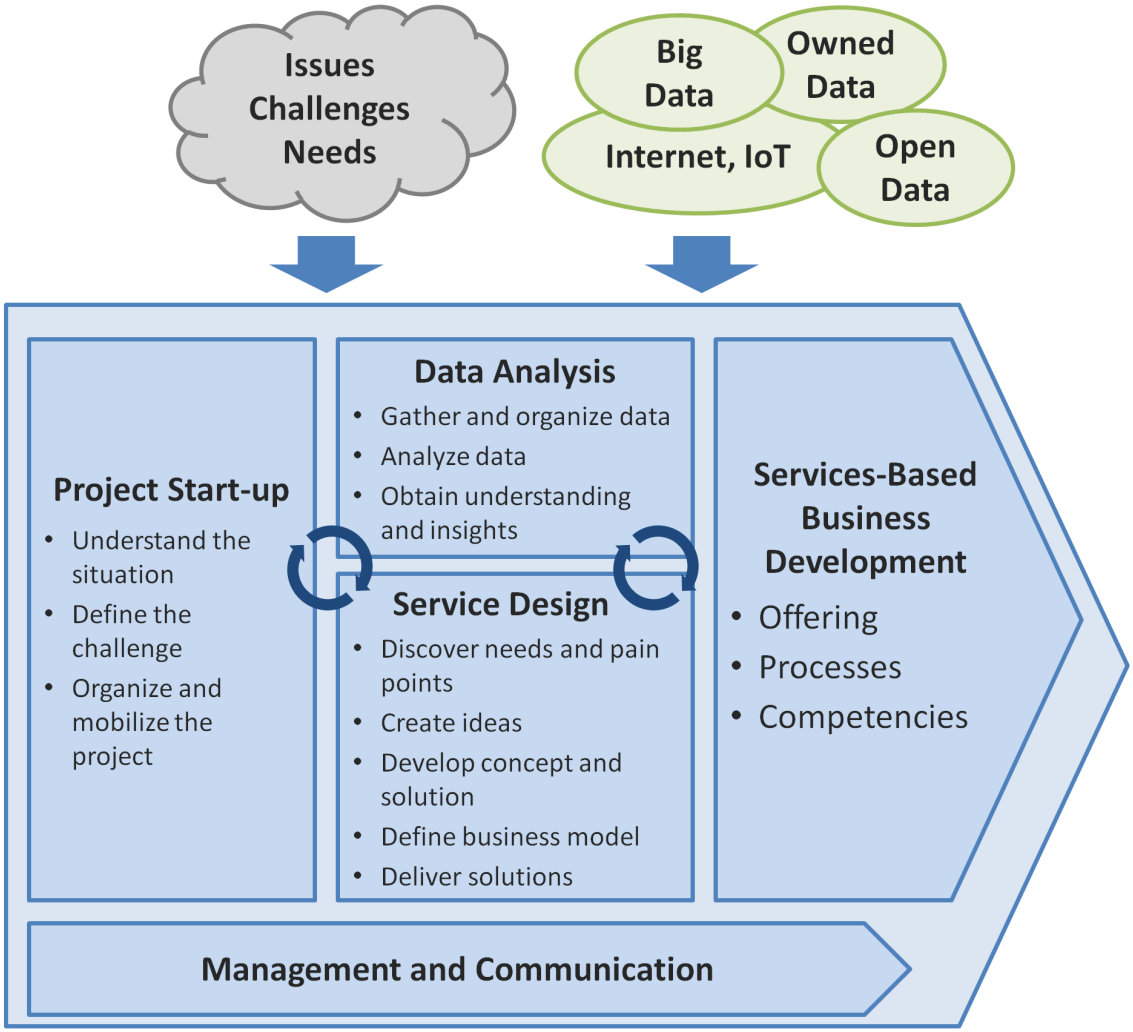

Figure 1. The DOB platform for exploiting data analysis and design thinking

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DOB project start-up, management, and communication
The first phase when applying the DOB innovation platform is to define the challenge and then organize the DOB project. What is the issue to be explored or problem to be solved? Why it is worth solving? What is the expected value? Who is the owner of the project? Who are the stakeholders? What are the organization, budget, and funding? Which other resources are needed, for example, which data might be useful to be analyzed and where can this data be found? Project management and communication include activities to run the project in an efficient and effective way to achieve the goals as part of organization's development program.

DOB data analysis
Data analysis is a process of examining, cleaning, transforming and modelling data with the goal of discovering useful information for understanding the issue and making more informed decisions and also finding valuable insights for innovation (Pyle, 1999; Theodoridis, 1993; Wikipedia, 2018). In the DOB program, the data analysis process consists of tasks, which are iterated when needed:

1. Understand the situation and needs.
2. Gather and prepare the data matrix.
3. Understand the data.
4. Make the model and apply it.
5. Evaluate results.
6. Report and deploy the results.

The analysis methods used in DOB coaching were descriptive, diagnostic, and predictive. Descriptive analysis was used to understand the data – what has happened, what you can see straight from the data using statistical analysis for instance distributions with medians, percentiles, and clusters. Diagnostic analysis was used to understand why something happened, for instance, by understanding correlations between phenomena. For example, in the DOB coaching course, one company helped their customer to better understand the usage of their products. The analysis revealed how customers were able to exploit the products and helped the company better understand the current status of their customers' operations. The results of the analysis helped to create relevant customer segments and to develop new services based on customer behaviour and needs. Predictive analysis was applied to foresee what will happen in the future using both guided and unguided machine learning. Predictive analysis is able to come out with a predictive model. The insights are based on better understanding and findings provided by data analysis, which are then brought to the service design process. In the DOB coaching course, predictive analysis was used, for example, in a case project to understand which drivers predict malfunction of a machine. This helped the company to create a predictive-maintenance business model to minimize outage and maximize the efficiency of the machines.

The analysis tools used in DOB coaching were R software (r-project.org) to create statistical models and run analyses and MySQL (mysql.com) for database management. They are both open source software without a license fee.

DOB service design and services-based business development

The DOB innovation platform exploits design thinking and service design as the mindset for value creation no matter whether the company is in product or service business. Design thinking "is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success" (Brown, 2018). In contrast, "service design is all about taking a service and making it meet the user's and customer's needs for that service" (Interaction Design Foundation, 2018).

The DOB innovation platform uses a double-diamond process for the service-design domain (The Design Council, 2015), as shown in Figure 2, which cycles through phases of divergent and convergent thinking, thus forming the diamond patterns. The process starts by gaining a general understanding of the issue with the stakeholders involved: What does the customer do as well as other stakeholders that have a role in the value chain? This is the "what is?" phase. The key question is what is their ultimate aim and what are the pain points that can be addressed to help them achieve this aim? The next phase is to create ideas about how to fix the issues and pain points by asking: What is the dream? This "what if?" phase sets the goal and defines the problem. Service design continues with an idea phase about how to achieve the goal – "what wows?" Different options are evaluated, and the most feasible

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one is chosen for delivery – "what works". The delivery phase consists of fast trial-and-error activities to find the solution that meets the needs of the customer and is doable. A business plan sums up the offering describing how the organization will create value with the customer as part of customers everyday life and processes. It identifies and describes the key resources to deliver the solution, the partners needed, and the business case. It also explains where the money will come from. A business model is needed when communicating with the stakeholders, for instance, to obtain buy-in from sponsors for investments. Service design is really only "done and ready" once the service is in use.

Developing a services-based business is an ongoing process expanding the offering, processes, and competencies together with the value network creating value together with the customers, customer's customers, and partners – with the ecosystem.

Co-creation was facilitated during DOB coaching using the CoCo Cosmos co-creation tool (tinyurl.com/ybae8u99). This tool was used to understand the current situation and to plan for the future. Brainstorming with post-it notes was used for ideation and different visualizations and prototypes were used when sketching and designing the solution to be developed for delivery. The business model was created using the service business model canvas (Ojasalo & Ojasalo, 2016).

DOB Coaching Course

DOB coaching consisted of a six-week joint-education section with lessons and rehearsals followed by an eight-week real-life case project, which each company ran by themselves to create a new service or product. The data analysis part was trained by teachers from Tampere University; the service design part by teachers from Laurea University of Applied Sciences. The

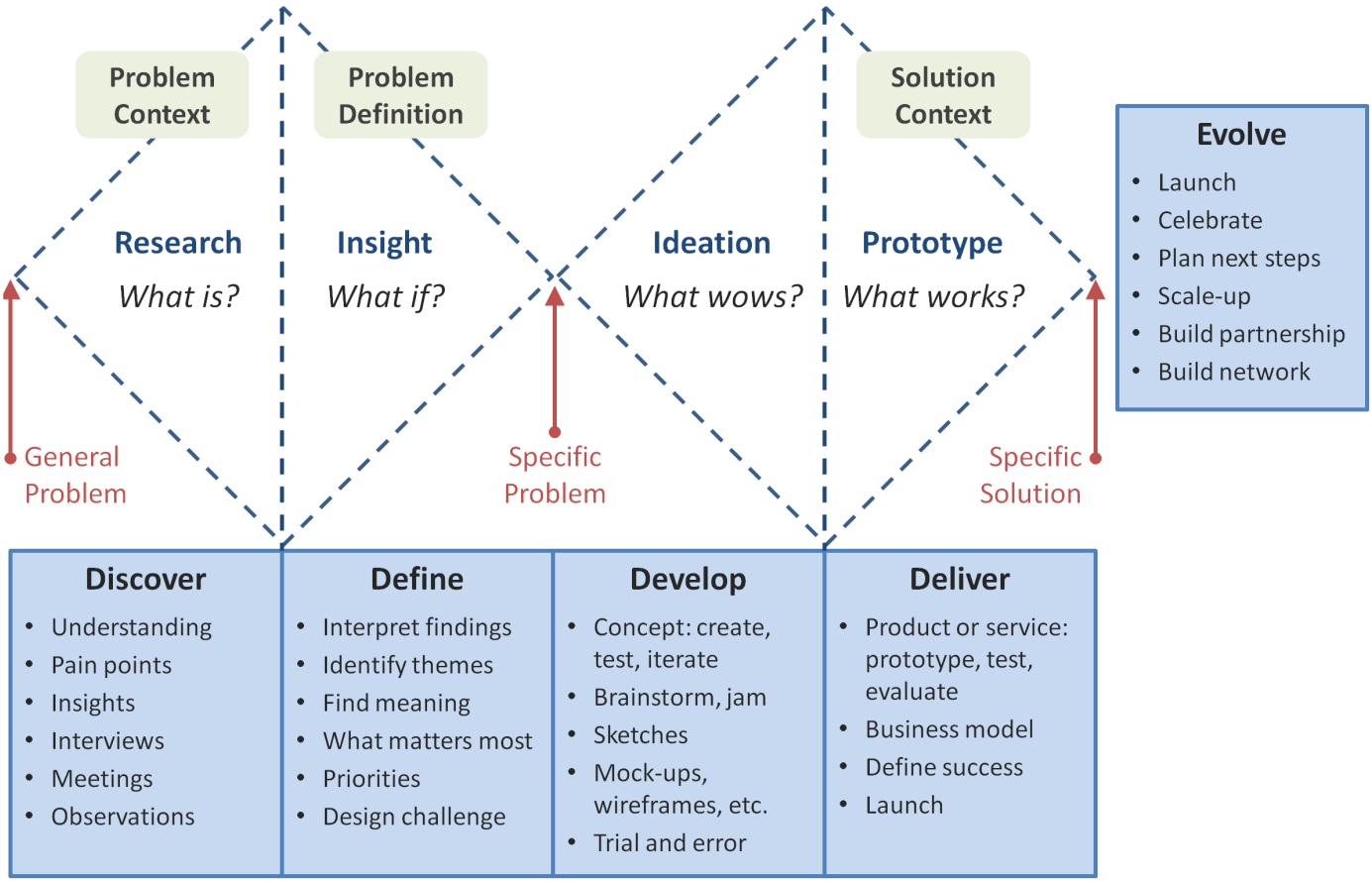

Figure 2. The DOB service design and service-business development process, which draws on a double-diamond process (The Design Council, 2015)

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Finnish Centre for Open Systems and Solutions (COSS) was in charge of the whole coaching course, having also played the role of a business consultant in the case projects. The training material – with rehearsal tasks and solutions and videoed lectures – are published (in Finnish) in the DOB Toolbox in the program website (coss.fi/projektit/dob/tyokalupakki/). The material is licensed under the Creative Commons Attribution License (CC BY 4.0; creativecommons.org/licenses/by/4.0/) and may therefore be used by anyone, including for commercial purposes.

The course started with an orientation meeting with each participating organization in order to understand their business and needs and why they wanted to attend. The meeting also helped to set expectations for the course. The educational phase featured a series of joint sessions with lectures and rehearsals. There were four joint sessions for both data scientists and service designers, eight sessions for data scientists only, and 2 sessions for service designers only. The lessons and rehearsals totalled 44 hours for data scientists and 27 hours for service designers. The educational phase was followed by a case project phase in which each team ran their real-life project together with their value network of customers and suppliers. The case project started with a case kick-off in which the challenge was defined and the project plan (with goal) and actions (with schedule and resources) were agreed. The case projects were supported by trainers conducting interventions and providing support as needed. After a couple of months, a follow-up session was arranged for the first two courses to understand how the case project had proceeded and to give support for the development process. During the 18-month DOB program, three courses were run in three cities, and 18 teams with 70 data scientists and service designers were trained.

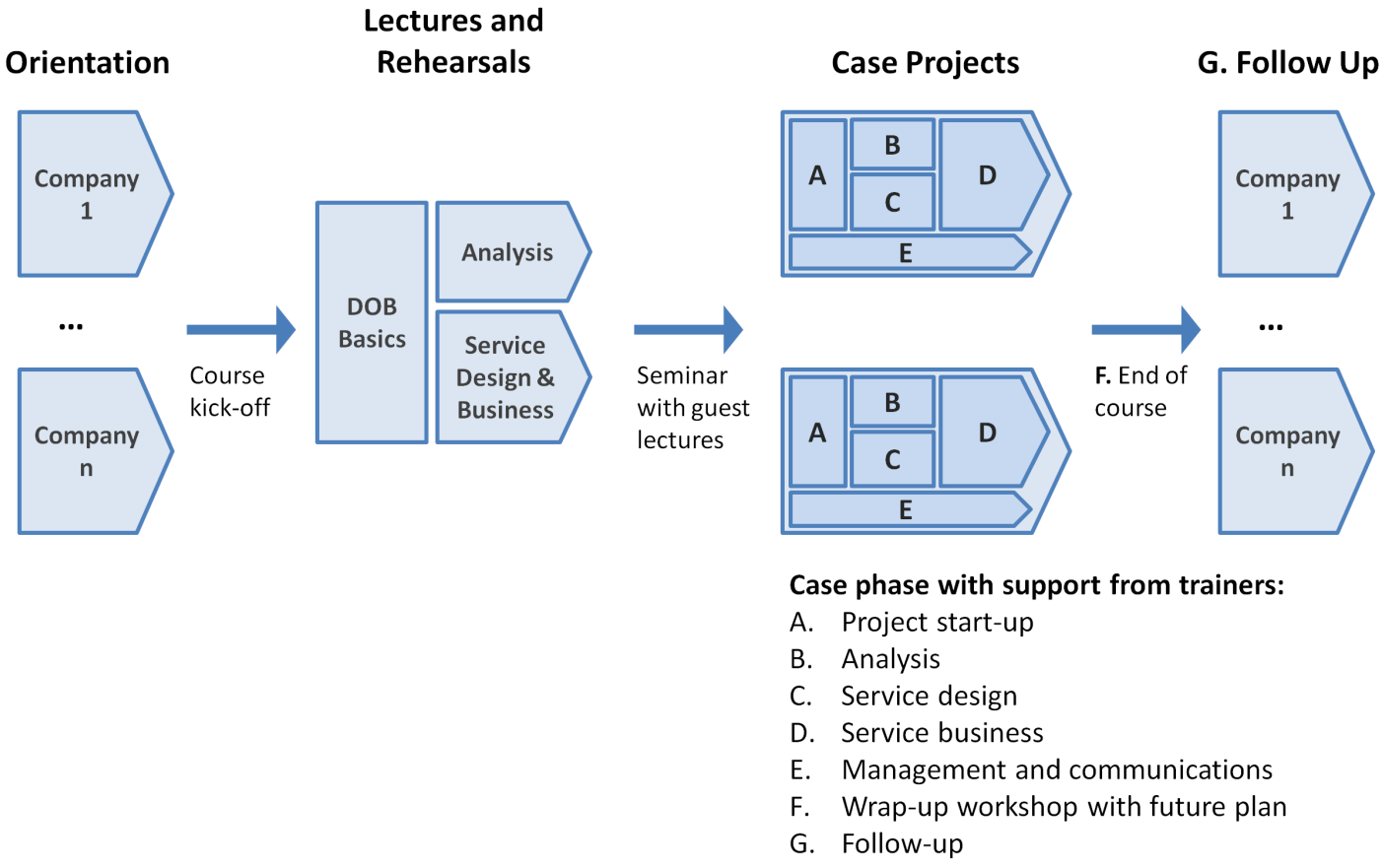

Figure 3. Structure of the DOB coaching course

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The course was free of charge for the participants and the amount of de minimis support for the participant was €9,500 ($14,000 CAD), which was the estimated market value for the course. A precondition for the course was that the data-scientist-to-be had to have basic skills in mathematics and statistical science as well as hands-on skills in programming. The typical team consisted of 1–2 data scientists and 2–4 service designers. The exceptions were one organization that sent a team of 6 people and one small start-up company that sent only one person to capture both skills. Also, one organization sent two teams to subsequent courses. The participating organizations spanned a number of sectors:

- ICT products and services: Fujitsu Finland
- Software products and ICT services: Aditro Public, Citynomadi , Granite, and Viimatech
- Consulting and ICT services: Avarea, Conmio Qentinel, Solita, Vincit, and Metosin
- Wellbeing products and services: Vivago
- Industrial services: FlowPlus
- Business consulting: FlowBrainer
- Energy consulting and services: Enegia
- Sustainable development: Natural Step
- Aviation: Finavia
- Economic research: Pellervo Economic Research Institute
- City: City of Espoo

Program Outcomes

During the program, seven teams out of twelve in the first two courses were able to release a new service or product in the market. The third course ended in November 2017, but no services or products had been released by that point and further details of outcomes are unfortunately not available.

Three of the seven products and services released during the program are described below to illustrate the types of outcomes experienced by the participants:

1. **Qentinel** (qentinel.com) is a consulting and ICT service company that works with businesses "where quality provides an edge". Qentinel exploited the DOB coaching course when developing a new service called "Qentinel Touch" (qentinel.com/customer-experience-management/) to manage the customer experience. Qentinel customized the framework and model that they had developed to understand how customer experience is born. Qentinel applies their model for customers by populating the model and its customer experience metrics with relevant data. The model with relationships is created using machine learning to understand which aspects drive customer experience and how. As a result, the customer receives a roadmap to be shared with the whole ecosystem to understand and manage the customer experience.

2. **Vincit** (vincit.fi/en/) is a publicly listed consulting and ICT service company, which has been awarded as the best employer by Great Place to Work for several years running (reviews.greatplacetowork.com/vincit). Vincit had two alternatives for the case project – an internal project to develop their human resources and a customer case to help their industrial customer to develop their business. Vincit chose the customer case, but the customer postponed the project following a reprioritization of their business development portfolio. Instead, Vincit turned to the other option, the human resources opportunity, and applied methods and lessons learned to develop their management system resulting in the "Leadership-as-a-Service" offering (LaaS; laas.fi/en/). Vincit's management system relies on self-management, where the employee is the focus. Human resources and management are there to help. Vincit's LaaS was originally developed for Vincit's own needs, but it is not limited to IT organizations; the tool can be used in all kinds of expert and production organizations. Implementation of the service relies strongly on service design. Right now, the tool is being used by over ten different organizations. LaaS is an online service that helps people to manage themselves easily and effortlessly. It helps employees to set personal goals, and it supports them in reaching them. When the service is used, usage data is gathered and analyzed, and it is used to develop the service further.

3. **Viimatech** (viimatech.fi) is a start-up company providing ICT services for industrial customers. Viimatech created a consortium with two other companies that took part in the DOB coaching course: FlowPlus is in the pump maintenance business and FlowBrainer is a business consulting company. Their joint case pro-

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ject dealt with predictive pump maintenance. Several new services are in the funnel. The first one launched was a service to optimize energy consumption and provide smart forecasting for outages based on predictive analyses of pumps.

The majority of the organizations trained in the program also exploited their newly acquired competencies outside of their case project, as part of their everyday business. In particular, service design has been widely adopted. Among the participants, there were many ICT companies and most of those companies updated their consulting offerings based on data analysis and service design but without an explicit launch of their updated service. One team did not come out with a new service from their case project but for a very good reason: the newly trained data scientists were recruited to a customer project the company had won because of the new competencies developed through the DOB coaching.

The DOB course helped organizations to expand and strengthen their ecosystems. In total, 19 organizations took part in the course and formed 18 teams. An additional 14 organizations were asked by the trainee companies to join the case projects as customers and partners. Two companies that met each other during the course have published a joint service development effort for healthcare and wellbeing. Six companies have started R&D cooperation activities with a university.

Key Findings

This section summarizes the key findings of the DOB coaching course with case projects to create skills needed for data analysis and service design and to apply them in the case project and beyond. The findings are distilled into recommendations for others applying this program or one like it.

1. At project start-up, do things right and do the right things
When defining the DOB challenge, it is crucial that the challenge is worth solving and that it is backed up by a well-reasoned business case that makes the owner willing to prioritize the project and invest the resources needed. The case project should be challenging enough to demonstrate the strength of analytics and service design, which will help the approach gain credibility for future work.

The DOB team should be a multidisciplinary combination of data analysis, design thinking, substance experience, and customer understanding. A DOB team needs a data analyst to combine the data sources and a data scientist who runs the analysis and is able to dig out the insights that are evaluated together with the owner and subject matter experts for their relevance. The service designer is the role with empathy, which helps people to find problems and needs and comes up with solutions together with the stakeholders. The service business designer turns the invention into innovation with a business case.

When developing a service, product, or process, the whole value chain needs to be involved. However, one needs not to keep all the "bits and pieces" to oneself; partners with needed competencies can be involved. The most important point of view in the development is that of the customer, for it is with the customer that value is to be created, and it is the customer who will pay the bill.

2. Well managed, rich data is essential
Data analysis brings new understanding and may create valuable insights. The more granular and detailed the raw data, the better the opportunities for the data scientist to find patterns to help understand the phenomena. Rich data that brings surprising insights is often a combination of various sources of raw data. However, joining various datasets is laborious and does not always succeed. The two data fields in two systems may have the same name but they may have different meanings. It may be that data is not accurate or values are missing. The preparation phase to refine the data to be analyzed is usually the hard phase and does not always succeed. It often happened in DOB case projects that 10% of the effort in data analysis was the actual "fancy data analysis" and 90% was the hard work to get the data matrix in place to be analyzed.

The European Union's General Data Protection Regulation (GDPR; eugdpr.org) for data privacy has made the usage of personal data more sensitive. Someone's personal data can be used only with their permission and for the purposes agreed unless there is a legal reason. Organizations face the risk of heavy fines if their data usage does not follow the regulation. The current problem is that there are not yet concrete guidelines about how to apply the GDPR, including how to assure that analyses of data from various data sources gathered for years is aligned with the legislation. The regulation protects data privacy but, at the same time, it has clearly slowed down the usage of data analytics while industry waits for national laws and interpretations of GDPR and data management procedures to become aligned accordingly.

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The findings also underscore that the owner of the most valuable data to be analyzed is not always the owner of the challenge to be solved. If the investment incentive is not clear enough, it may be too time-consuming and laborious to convince the data owner that providing and cleansing the data is worth the effort.

Indeed, data analysis does not work always economically or technically. In the DOB program, there was at least one case where the data quality was too poor to prepare and analyze it with reasonable cost. In another case, the data volume was too low to make enough observations for a reliable analysis. Supervised machine learning demands three unbiased datasets to be used. One dataset is used to train the model to predict the outcome, the second one is used to validate the model, and the third one is used to test the final model.

3. In service design, it pays to be a curious servant
Service design will succeed if undertaken in a humble and curious way with the right stakeholders. It is fruitful to admit that the organization does not know all. A curious attitude and interest in other people's business and ideas are critical. Established organizations may have well-functioning models and designs, and a change in the current business model may be seen as a threat to the current business. For new entrants, it is easier to be naive and straightforward, to think "outside of the box", and come up with ideas that destroy an existing design. However, not only the suppliers but also customers are often trapped in the current business models and dominant designs. Therefore, the right question to ask the customer is not: "What do you want?" or "What do you need?" Rather, it is better to ask: "What do you do, what is the aim, and what are the pain points?" In that way, it is possible to find totally new solutions rather than just extensions or modifications of current ones

4. Services-based business development – a tough transformation
Transforming business from a product-driven push mode to a services-driven pull mode is revolutionary. Push mode means producing a product or service and bringing it to the customer. The attitude is "where do we find customers to buy our products or services?" In contrast, pull mode means helping the customer use different solutions: "Where can we find products for the customer?" Service thinking is all about joint value creation together with the customer. No matter if the company is making products or services, service thinking applies in both cases. A product is no more than a platform to create added value and the value is measured by the customer (Vargo & Lusch, 2004). The change to a services-based business changes everything: offering, pricing, production, and competencies needed – the whole culture.

5. Management and communication
Resources are always scarce. In the DOB course, for some organizations, an important customer project coincided with DOB coaching course, which caused problems and delays for the coached DOB team. However, every organization that started the course completed the course. Only at an individual level did some participants have to withdraw for one reason or another. Overall, the closer the DOB case project was to the core of the business, the higher the priority and the better the results.

Some companies had a clear and pre-existing motive for their case project. They were determined and were usually able to create the intended service. Some companies were obliged to change their case project during the course but were still able to launch a new service. Some companies had a long-term goal and aimed for sustainable change. They were able to see beyond the short-term goal of just creating a new service or product to update their core competencies for the future.

Keys for Success

1. Loving the problem, not the solution
One company that took part in the DOB course decided to develop their help desk operation to improve the customer experience as part of an issue-management service. The goal was to solve problems reported by customers as quickly as possible. Plenty of ideas was developed together with customers to improve the user experience. Data analysis was used to better understand the customer point-of-view and a problem-solving process was used to find bottlenecks. After a while, the team went back to the ultimate goal and redesigned the challenge. The new goal was *not to fix* the problem as soon as possible but to *avoid the problem happening at all.* The challenge was no longer to develop a help desk but to understand why issues occur in the first place and to prevent them. How can the problems be identified and fixed before the customer comes across the issue as a problem? And, even better, how can the problems be predicted so that they do not happen at all? Predictive analysis was used to identify patterns in how issues arise and to mend them permanently. During the case project, the company became familiar with text analysis, and the case project became a reference to help win a customer project.

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2. Assembling the right team – with the customer
In the highly performing DOB teams, there were separate people for data analytics and service design and they had virtual team members from partners and customers, spanning over the whole value chain. The easiest and most straightforward way to get deep customer understanding into the team was to ask the customer to join the team. Value chains are often long, and it was valuable to also have the customer of the customer involved. Customers appreciated that their supplier was active and asked them to join. For example, a half-day service design workshop did not take much from the customer but it helped them better understand their own business as part of the value chain. A DOB team with a customer involved in an early phase landed a paying customer right away and created a service with a high likelihood of success based on a good fit to the market. Flat organization and direct access to relevant customer contacts were keys to get the right team gathered in a reasonable time.

3. Embracing all actors, large and small
In many DOB case projects, a fruitful consortium was created not by the dominant, established company as a driver but a small startup having a grand idea. For the startup, realizing the grand idea was a question of life and death, and it was willing to put in the lion's share of the effort needed to make the idea happen. Established companies are valuable in order to bring muscles and credibility to the consortium while the startup brings the brains and energy. The key lesson is that a small actor can take on a major role.

4. Understanding the domain
It helped to have the data scientist and domain specialist work in close cooperation to quickly evaluate the results of data analysis and their relevance for the business. The program showed that, even if the data is not rich enough to reveal any totally new, major findings for revolutionary change, statistical analysis and visualization of the data can bring valuable understanding to the business for evolution.

5. Recognizing that systemic problems need systemic solutions
It is important to have all the stakeholders of the value chain in place to solve complicated issues. One DOB case dealt with a construction business to build underground infrastructure (e.g., water pipes, drains, gas pipes, and telecommunication cables). The issue was to avoid an outage of services by not breaking pipes and cables when digging in the ground. One of the issues was that the maps, which the city provided to the construction companies, did not include data about how deep the telecommunications cables are buried. When operators assemble their telecommunication cables, they always assemble those above the rest of the infrastructure. So, telecommunications companies always find their cables without damaging other infrastructure. They have not had the incentive to store the depth data as part of their map information system, which they also provide to the city. The solution was simply to add the depth data to their information system. The cost to add the depth data was marginal compared to the benefit for the whole ecosystem – including also the telecommunications companies.

6. Trying "to help", not "to sell"
A good service designer forgets the earning models (for a while) but acts like a consultant to help the customer to create added value or to help the customer with their everyday issues. Once the customer is helped, the money and business will follow once the service designer comes up with a feasible earning model. When the supplier deals closely with the customer and understands how value is created together, the supplier can find totally new services and earning models together with the network.

7. Willingness to fail fast
One DOB coaching participant had already planned and prepared to augment their service assortment with a new service. The idea was evaluated in a DOB workshop with paying customers, and it proved right away that customers were not eager to pay for such a service. A new direction was chosen to further develop the whole assortment. Having a customer involved in the early phase of the development process helps to avoid false investments. In the DOB case mentioned, the intended service was actually decided to be developed but was offered free of charge to encourage expansion of the customer base.

8. Celebrating success
It is important to be loud and visible to encourage a positive spiral of success. For instance, Vincit has described in public how they developed the Leadership-as-a-Service concept first by asking employees what they wanted from human resources in terms of what kind of services they might need. As a result, they received rather traditional ideas for new services and add-ons to current ones. But, when Vincit went a bit deeper into the challenges the employees were facing in their everyday lives, they made the breakthrough. For ex-

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ample, they have turned the idea of the traditional development discussion upside down. The discussion is not done necessarily with the manager but with a person chosen by the employee, for instance, the CEO or a board member or a mentor outside the company. Vincit's human resources department offers many new services to help their employees work better and feel better. For example, if an employee has a baby who does not sleep well at night, Vincit arranges sleep training to help the family.

9. Realizing that building a services-based business involves more than just service design
It takes time to make the cultural change to customer-centric, services-based thinking in all activities in the organization and to have every employee internalize its principles. In the DOB coaching, helped to have several people from an organization participate in the course in order to spread the insight and new thinking in the whole organization. One DOB organization arranged an eye-opening presentation of service and design thinking for all employees in the company as part of their case project. After the company-wide session, it was much easier to "walk the talk" once everyone was familiarized with service thinking instead of only a small dedicated team.

Seeds for Failure

1. The wrong sponsor
A company having a risk-management software application for their insurance business participated in the DOB course in order to develop new services for the industry. A critical source of innovation was the application's database, which contained information about the insurance companies' customers. A service design workshop was arranged together with a customer represented by two risk management experts. The right sponsor from the customer's side would have been the business owner with an interest in developing new products and services – not the team who is running the current ones. In this case, the path to finding the right stakeholder seemed too long and the idea was abandoned.

2. The one-man band
Some organizations joined the course with a minimal team and ran the case phase as a "one-man band". However, a good data scientist is not necessarily a good service designer because the jobs differ in nature. It may happen that one talented person does have all the competencies needed to successfully run the data analysis and the service design. But, to make a cultural change in the organization from product-based business to a services-based business is a tough job for anyone to handle by themselves.

3. Poor data management
The data to be analyzed may be stored in many legacy systems with different conceptual models that have not been harmonized. It may happen that there has been "creative" misuse of data fields resulting in heterogeneous data gathered from different sources and from different geographical areas. As a result of poor data management, it can be too laborious and expensive to clean and transform the data to create a decent data matrix to be analyzed.

4. Reluctance to engage with customers
Some DOB participants wanted to "protect" their key customers from wasting their time and did not want to ask customers to get involved before they "had something real to show". When customers were asked to a "ready-made table", they often concentrated in finding faults and deficiencies in the solutions instead of finding amendments. Teams without early customer involvement could create a new service but tended not to create a perfect solution for the customer, at least not initially.

Conclusion

This article focused on the findings from the use of the DOB innovation platform and coaching course to adopt data analysis and service design as part of organization's competitive edge. Both disciplines proved to be fruitful when creating data-driven services. However, data analysis and service design do differ significantly in nature. Learning data analysis requires basic know-how in statistical science and mathematics. Also, applying data analysis does not work out every time. But, once successful, the benefit may be enormous. Insights from data analysis may be the core of a new service or product or a core for the whole business model. In contrast to data analysis, service design and service thinking do not require any preconditions, just common sense. Service design and service thinking will manage always bringing value added if not for a revolution but for evolution.

The DOB program ended in December 2017; however, the participants wanted to continue cooperation and to share ideas, experiences, and best practices in the future. A network called DOBit (tinyurl.com/y9ltpshq) was established for everyone who wants to promote data analysis and service thinking. The network decided to

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focus on two industrial themes: "health and welfare" and "the smart city". The network has currently 50 members and the first two meetings have enabled members to share best practices and plan new activities. In the health and welfare theme, the agenda is to exploit Kanta (kanta.fi/en/system-developers), the Finnish national health record, as a platform for new services to be developed by companies.

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About the Author

Jyrki Koskinen is an entrepreneur running a consulting company Avaamo Konsultointi, which he started following his retirement from IBM, where he was in charge of university relations in Nordic countries and external relations and corporate responsibility in Finland. Before IBM, Jyrki worked as a management consultant for PriceWaterhouseCoopers and in managerial positions in companies Kesko Oyj, Anttila Oy, Tieto Oyj, VTT Technical Research Centre of Finland Ltd, and Nokia Oyj. He has a master's degree in Information Systems from Turku University in Finland. Jyrki's ambition is to develop a sustainable services society for improved welfare. His special areas of interest are next-generation innovation platforms together with ecosystems, services thinking, and open technology. He has experience in business strategies, especially digital business, organizational change, and transformation as well as IT strategies, IT management, business process development and program management. His key industries include ICT, healthcare, retail, telecommunication, and insurance. Jyrki was the director of DOB program working for COSS.

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