Creating strategic and operational insight for management by using a Higher Education Capability model

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Abstract

In this paper we will look at practical implementations of the Business Capability in a real organizational context. The key to creating a relational model is to harness the structure of a Business Capability. The prime dimension for a Business Capability being information (data), technology (tools), resources (people, skills) and processes enables us to tag each component with the capability it performs. This will create a unique view for management to see institutions functions in the context of the digital environment and services.

We assume the reader is somewhat familiar with the concept of capability, but to refresh the essential and critical component we very briefly introduce the reader to the Business Capability (TOGAF (2023)) and the Higher Education Business Capability Model (HERM (2023)). In the third chapter we describe what data has to be collected to model before capability models can be used. The fourth chapter will lead the reader to different viewpoints, creating an analytical approach compiled by utilizing the capabilities relationship's structure. We will demonstrate by example how to link the value stream to strategy, solutions (system landscape), development items (roadmap), projects and data (Master Data, ownership, integration flow). In the last chapter we will give some advice for the next steps for you to take to become the analyst of change in your organization.

1 Business Capability

The concept of Business Capability was originally developed in the Enterprise Architecture work of NATO (NATO (2018)). Business Capability refers to the ability of an organization to perform a particular activity and consists of everything that is needed to perform that activity. Capability is a high-level concept that includes people, people skills, facilities, equipment, processes, information,

information systems and technologies (Archimate 3.1 (2023)). In the enterprise architecture work, these are modeled as elements necessary for the development or management of the organization (Figure 1).
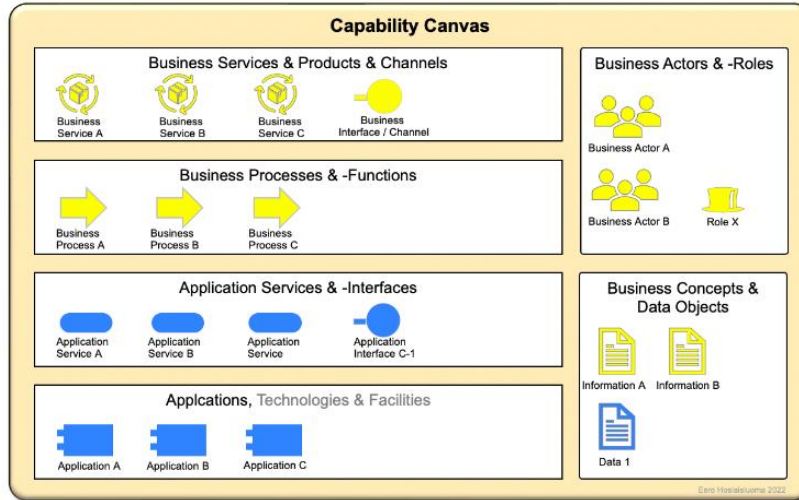

Figure 1. Content of Capability by Hosiaisluoma (Hosiasluoma (2023))

2 HERM Business Capability Model

The higher education sector has been developing common Business Capability Models since 2018. The earliest models were those created by CAUDIT and UCISA. In autumn 2021 models were used as a basis for the creation of a common Higher Education Reference Model HERM (HERM (2023)), which consists of three parts: Business Model Canvas, Business Capability Model and Data Reference Model. The HERM v.2.6.1 Business Capability Model (BCM, Figure 2) consists of three capability areas (Learning & Teaching, Research and Enabling Capabilities) and these consist of two levels of capabilities (gray elements (L1) and white elements (L2)).
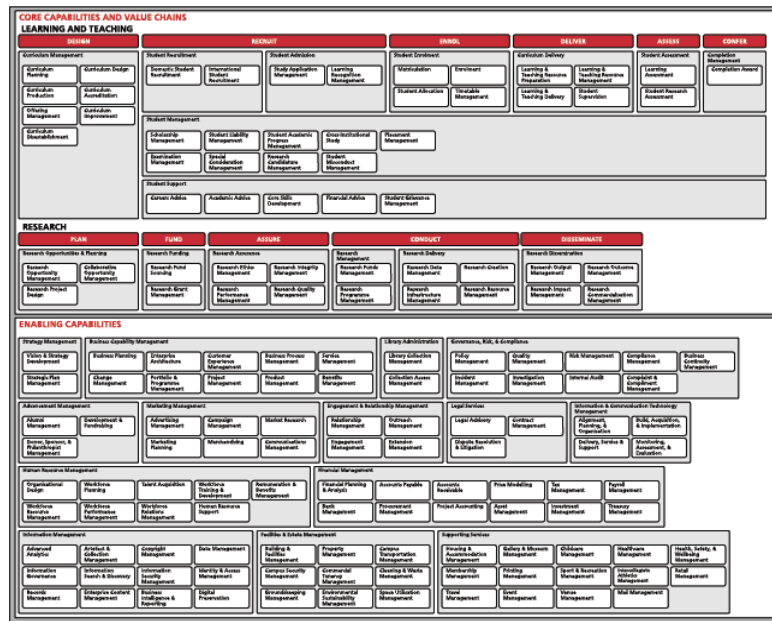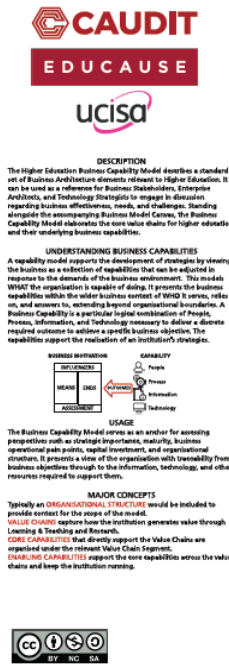
Figure 2. HERM Business Capability Model

Built in is also a value stream model for both Learning and Teaching and Research that stages the value creation from an organizational viewpoint. This is indicated as a red item on top of the capability area. (Value stream, Figure 3)

Figure 3. HERM Value streams

3   Collecting data - mapping the capabilities

Documenting Enterprise Architecture (EA) can be tricky and has more to do with the overall maturity of your organization especially in relation to how holistic approach you have to change management. From experience we can tell that the starting point should be in the existing process / activity / practice of documentation / collection of data performed in your organization. You should always use something that already exists and if necessary, improve it rather than invent some new way of working that has no buy-in yet.

This also applies to business capabilities. You cannot introduce capabilities into an organization if you are not familiar (you have no documentation) with the organization's operations and information

systems. Figure 4 describes the anatomy and relationship of capabilities. Not all elements are essential, but consider which ones are necessary for your organization.
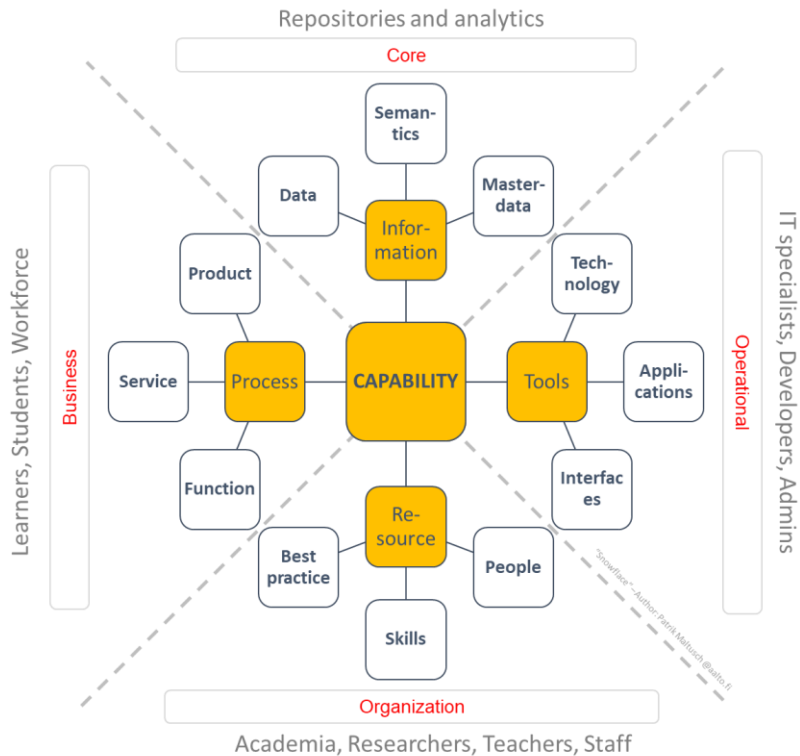

Figure 4. Anatomy and relationship of a capability

3.1 Entry point to collect data

We recommend this five-step approach to determine your point of entry to collecting data:

1   If you don't have a practice to collect and document, then that is the first step to establish regardless of tool.
2   If you have a practice for documentation, then investigate if it provides you with the necessary data, if not, improve that process.
3   If you have all the data/documentation, then look at the structure and coherence of the data, if not, improve the structure and quality.
4   If you have a structure, then look how that can be extended with a capability model or other common attribute to enable mapping
5   If you have the capability model mapped, then decide what tool you need to visualize the data and relationships gathered.

3.2 Impact of skills to outcome and tools

In parallel to collecting data, the outcome of the data scope and quality is paramount to the skill set your people have that you plan to "use" for creating the insight to your data. Our learning of this process has provided a very pragmatic view on how skills impact the outcome and tools used.

Below is a simple listing of skill vs. outcome:

1. If technical oriented, then your documents/data will tend to more technology and application component focuses. This results in documentation from EA modeling tools (e.g. graph, metamodels, schematics, excel mapping list)
2. If solution oriented, then your documents/data will tend more to service and user focus. This results in documentation from Service Catalog, user group and licensing listings.
3. If operation (DEVOPS) oriented, then your documents/data will tend more to task, project and program portfolio focus. This results in documentation from Project portfolio, service desk and ticketing, change management and cost monitoring.
4. If business development oriented, then your documents/data will tend more to roadmap / product focus. This results in documentation from Roadmaps, feature planning, capability mapping, goals and drivers and budgeting.

In an ideal situation you already have all the necessary skills and competence to collect and build the relational view. However, most organizations have the skills, but resources are scattered and working in silos, with very limited time to collaborate on common goals. Capabilities are shared entities and therefore requires cross organizational activity.

3.3 Example data of the Business Capability in risk context

The documentation of competencies can look very different in every organization. It reflects the needs and perspectives of the organization. At its simplest, it is a table showing the relationship between capabilities and their contents (see Table 1).

Capability	Element type	Element Name
Risk Management	Process	Risk defining
Risk Management	Application	Risk Management system
Risk Management	Application	Risk Report
Risk Management	Information	Operational Risk
Human Resource Management	Process	Recruiting process
Human Resource Management	Information	Employee Information

Table 1. Example of the Capability

3.4 Example data of the Business Capability in compliance of legal requirements

Another example of a description of a university's capability (Figure 5) is the University of Helsinki's risk management capability. Finnish legislation (Information Management Act) requires public administration organizations to model their operations, data, and systems in the Information Management Model. At the University of Helsinki the modeling is carried out as shown in the figure, using the capabilities as a structure for the information management model. The information management model describes what information is handled, in which processes and in which information systems.
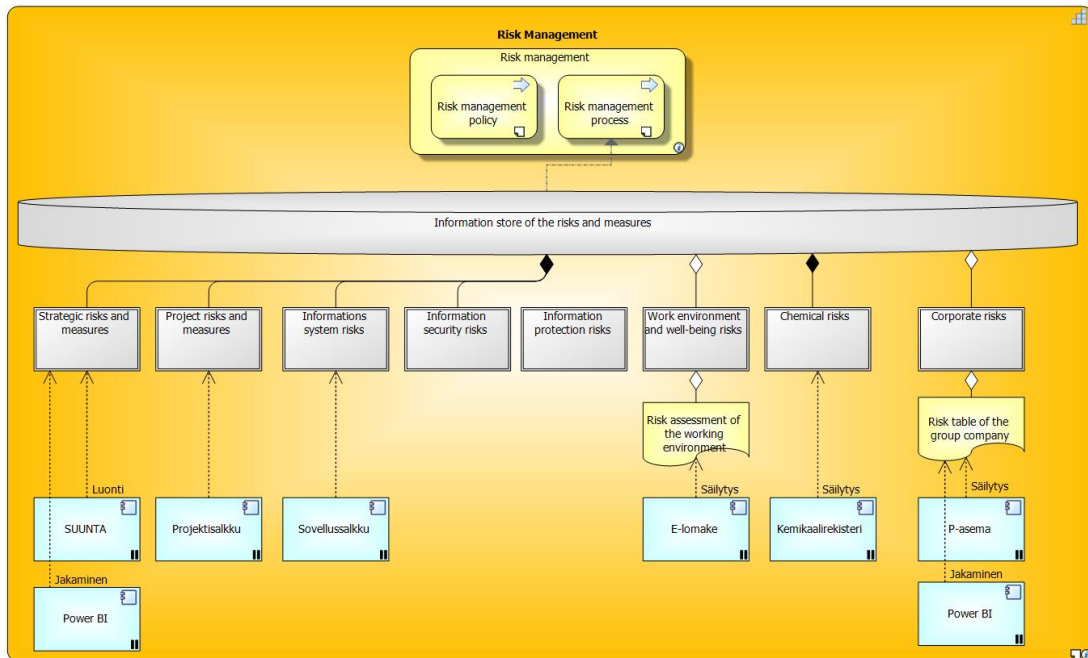
Figure 5. Example of the Capability content

3.5 Example data of the Learners needs in value stream context

Learner has a knowledge need (driver), what he/she can achieve through studying in the HEI. The outcome of the studying is then "completed studies" and the value for the Learner is that he/she can use his/her knowledge in work life. In figure 6 the Learning and teaching value stream stage have been enriched by values (ovals) for the Learner in every phase of the value stream stage. Notice that through the chain studies (after enrolment), the learner can benefit by using his/her student card and have for example discounts on traveling. This is additional value for learners, but not for the HEI. From the perspective of a degree student, the value stream stage in Figure 6 contains several nested value stream stages. Figure 6 is simplified, but by enriching the view with e.g. application or services provided by the institutions you can easily show where the values are created. By doing so you can pinpoint improvement actions and ensure the value creation is not diminished when moving to the next value stage.
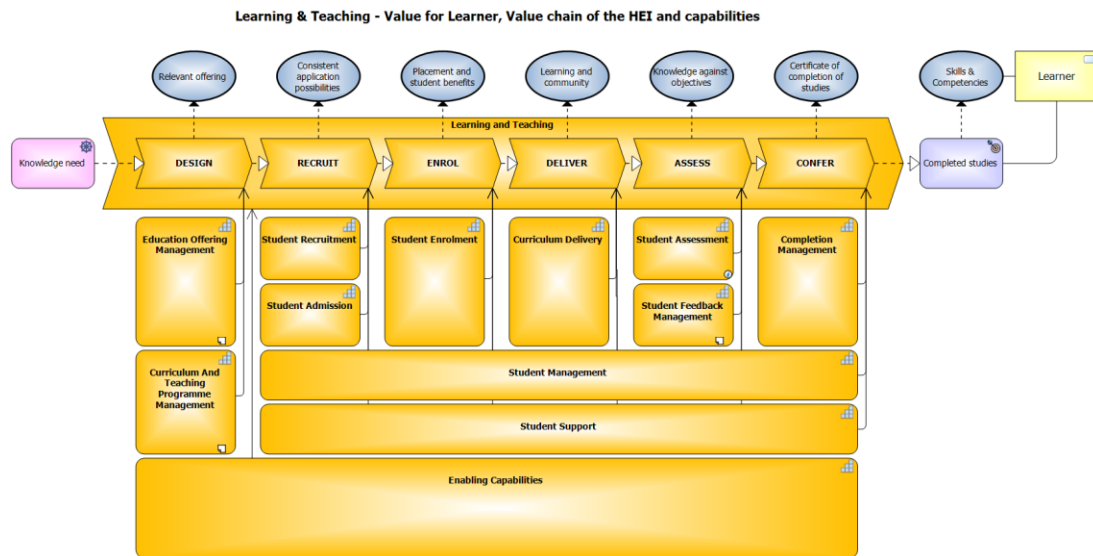
Figure 6. Example of the value stream to learner journey

3.6 Example data sources of the capability mapping as relationship builder

There are a few viewpoints for capability models and through capabilities it is possible to combine them together. Capabilities can be connected to different kinds of information like CMDBs, development portfolios, roadmaps, or master data (see Figure 7). Below a simplified table (Table 2) of key data points that could be included from other resources.

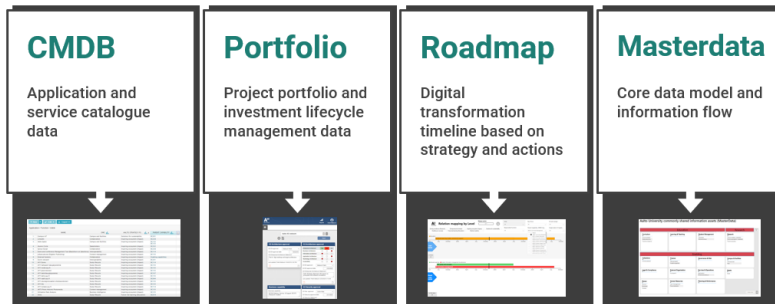| Strategy	Portfolio	Application	Roadmap
Driver	Project	Name	Title
Goal	Timeline	Purpose	Timeline
Initiative	Impact	Solution	Key focus
Milestone	Outcome	Data	Outcome
Area	Owner	Owner	Steering
Capability	Capability	Capability	Capability

Table 2. Key data points of the viewpoints

Figure 7. Capability connecting all data repositories

4 Analyzing the data - a dynamic Dashboard with a relational model

Once you have collected the data through various resources, you are in a position to start pulling the data into a relational modeling tool (e.g. PowerBI) and create dashboards to analyze the relations of the information from different viewpoints (See Figure 8). The provided dashboard in this paper is just one of the many alternatives that can be built to share understanding of the past, current, and future state of activities through specific entry points of your data, but also show associated context never mapped before.
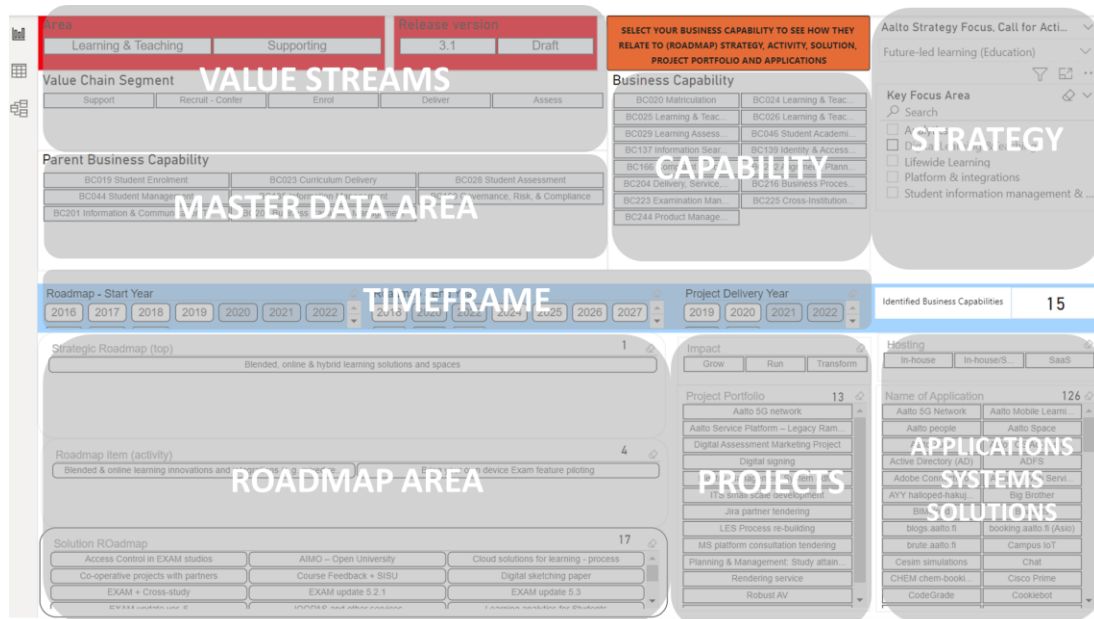

Figure 8. Interactive Dashboard with a relational model connecting all data sources.

The context of this example has a pre filter selected to highlight the strategy focus for "Future led education". Below the main context description of the mapping that is created automatically based on that initial filter selection. Multi selection of data points enables very specific viewpoint generation and by doing so changes the output of the relational view accordingly.

4.1 Value Stream (with selection of area, version, and value stream stage)

Additional filters are provided for Learning & Teaching and Supporting (Enablers) and the possibility to select a specific value stream stage. Drill down will result in specific relations per area, published version or value stream stage context.

4.2 Master Data (relational mapping through capabilities)

Parent capability is linked to the context of master data and information flow between process areas and systems (not directly visible in the figure 6). Drill down will result in specific relations per master data context.

4.3 Strategy and call for actions (with Key focus area)

Having selected the strategic focus on "Future led education" results in a list of key focus grouping (e.g. Analytics, Life wide Learning, Platforms & integrations, Digital Learning and Student information management) Drill down will result in specific relations per strategic area and actions, key focus within the area in any combination wanted.

4.4 Roadmaps (with strategic Capability, tactical activities, and solution roadmap)

Planning horizon levels are displayed as roadmaps for long term, mid term and short term activities. Each item is linked hierarchically, and the dashboard lists the activity based on the selected timeframe. Drill down will result in specific relations per level of timeframe and activities.

4.5 Project Portfolio (with impact to business operations: run, grow, transform)

The implementation activities for the strategic intentions are visible in the project or program portfolio. The impact to business operations is visible, but it is interchangeable with any other criteria (e.g. cost, priority, status or criticality) used in the portfolio. Drill down will result in specific relations per project or impact of operative mode.

4.6 System landscape (with applications, solutions, and host platforms)

The components of the system landscape are visible regardless of size or complexity and there is no surprise that many applications realize the same functionality and thus the number of overlapping components is high. Drill down will result in specific relations per application, solution, system, and the hosting platforms operating model.

4.7 The relational model - connecting the dots

At the end the model itself is very simple, but powerful for analyzing and discovering the relations between various data sources where essential information is hosted for the organization. Adding the

right nominator in each data source, connecting them through the capability and you are taking your first holistic approach to modeling the impact of change (Figure 9).
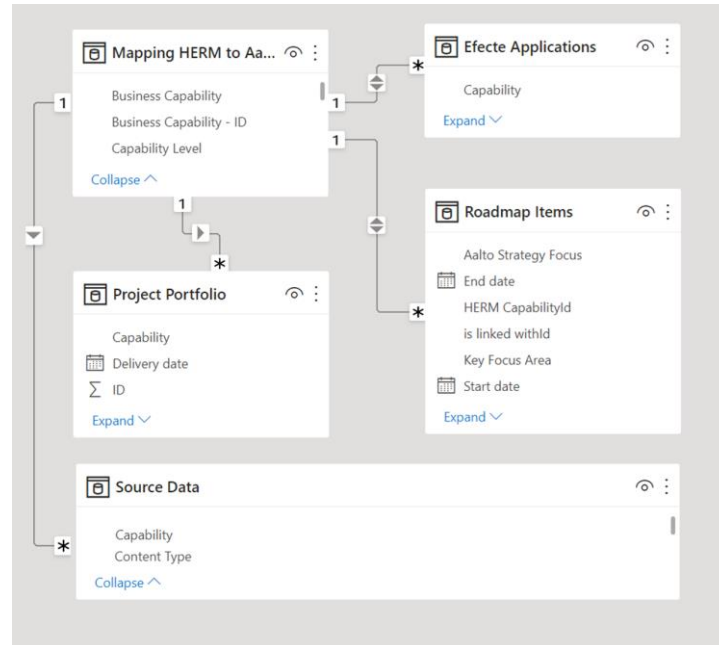

Figure 9. Simplified relational model connecting all data points.

5   Summary

Today we have the means and tools to provide multiple viewpoints with the same data in a much richer context using a relational model that is harmonized and mapped with a common nominator from a capability model. We can finally say that "different viewpoints do not mean different data". We can connect the dots in an automated and reliable way that simplifies the view in a very complex relational model without making it complicated.

5.1   Insight and learning

Our insight is mainly based on the work we have done the past 3 years building, collecting, visualizing, and presenting outcomes to management with a high acceptance to further continue with extending the practice inside our organizations. Having shared outcomes with peers and colleagues we have gained valuable feedback from those organizations who are just starting the journey. Below is a simple list of insight and what we have learned.

- The term Business is not to be interpreted as solely commercial or monetary activity, it should be understood to be a professional activity or core function performed by the institution.
- Define terminology and make your institute familiar with it, if necessary, sign off with management.

- Business Capability is an understandable term for both Business management and IT, but there is a difference between Skill and Capability. Skill is the ability of an employee to perform a particular task, but capability is the ability of an organization to perform a particular activity.
- Define responsibilities, delegate responsibilities, and spread the work appropriately.
- Translations are not just translation, they need to address localization context (culture, semantics, practices, and legal structure)
- Know your environment - processes - information - IT systems - and get familiar with your organization's strategy, roadmaps, and development portfolio. Then use capabilities as a glue between them.
- Use the capabilities for a variety of purposes, so that they become familiar to the organization and people get to know them.
- Don't be afraid about things getting complex, you will master that with terminology, structure, and models. Logic is your friend. You should be worried if you go the lane of making it complicated by not using a known methodology.

5.2 Next steps

Appointing a responsible person, engaging with stakeholders, building an initial outcome to prove insight is valuable for the organization, is essential to be able to model the impact of change. This paper has shown you that it is possible and how to do it. The rest is only putting hours into collecting and mapping the data.

6 References

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7 **Authors**

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