

Developing Public Sector Digital Competency

Report on international research on developing digital competencies in the public sector.

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Published on March 31st 2024

Published by Institute of Administrative Information Systems

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Introduction

Objectives of the Report

This report is part of a larger study on digital competencies in public servants, which also takes into account the experiences of several Japanese governing bodies.

With our everyday lives being increasingly digitized, it is incumbent on almost all roles in any public organization to be able to navigate digital tools to fulfill their jobs. Over the past 10-20 years, this has become a matter of course. A sudden, quick, yet natural-feeling evolution, as it has happened simultaneously in our private and professional lives.

But as organizations of all sizes find themselves operating in pervasively digital environments, it becomes paramount that their employees really are up for the task. This is why we need to focus on the employees' ability to navigate the new digital environment, and the way we talk about this is through digital competency. Without a digitally competent workforce, we will not see successful digital transformation at the level needed.

In this report we present global insights on digital competencies, to provide a sense of where the topic is headed.

Scope and Limitations

The scope of the research is to get a sense of how public organizations outside of Japan, in digitally advanced or advancing countries, are conceptualizing digital competencies, and what is doing to develop these.

The research does not cover a literature study or a quantitative study, which is mostly due to the still nebulous character of the subject matter.

Structure of the report

The present report is following a why, what, how-structure, in order to make digital competencies concrete and actionable.

Research Approach

The empirical data for this report is based on 10 interviews conducted in the Autumn of 2023. Some documents reviews were conducted, but few materials were available due to lack of common definitions and standards, and so we relied on qualitative data as well as overarching reports from international organizations like UNESCO and the OECD.

Who did we talk to, and why

We have tried to shine a light on the issue from multiple angles, by identifying stakeholders not only within a government setting, but also around it.

Table 1: Interviewees

1	Mr. Jose Inostroza, Chief of Division, Digital Government Chile	Chile
2	- , Senior Systems Architect	Denmark, SaaS FinTech Company
3	Mr. Rasmus Balder Holmegaard Larsen, Head of Division, Youth and Kids	Denmark, Fredericia Municipality
4	Mrs. Pernille Sejr Thomsen, Section Leader, Digital Academy	Denmark, Agency for Digital Government
5	Mr. Jesper Hosbond Jensen, Head Consultant	Denmark, Komponent
6	Mr. Steve Manners, CIO	New Zealand, Tasman District Council
7	Mrs. Sarah Rackley, Project Manager,	New Zealand, Tasman District Council
8	Mrs. Jeanette Tan, Deputy Director, GovTech Digital Academy	Singapore, Government Technology Agency
9	Professor Tommaso Balbo di Vinadi	France, Sciences Po
10	Professor David Eaves	UK, University College London

Digital Competency is an overlooked part of DX

With an increasing amount of resources being put into digital transformation (DX) across governments in most countries, the stakes are also higher than ever to be able to sustain the gains achieved through the investments. As systems are not fully autonomous yet, the brunt of the work of implementing

the digital initiatives into an organization's everyday work, falls on the back of the employees. This in effect puts a burden of understanding and adaptation on people who are perhaps not qualified or even particularly interested in exploring the potential of IT.

This in turn creates a potentially serious bottleneck, if the human factor in DX is not dealt with in a comprehensive and structured manner.

This is where digital competencies come in. We need to have a shared understanding of and a framework for what we expect of people. Without this, we are leaving them to their own devices, potentially risking creating a patchwork of workarounds, band-aid solutions and knowledge being tied up with a few employees.

The need for a digitally competent workforce

Budgets are tight. In many countries, declining birth rates and longer lives leads to fewer people carrying a larger burden in the future.

Meanwhile, the speed of digital in the consumer space, heightens the level of expectations towards public services. As consumers, we expect to be able to use services online and on the phone. To some degree we expect seamless integration of services. And we expect a smooth user experience. The private sector is driving a lot of innovation in each of these categories in order to compete in a crowded market. In the public sector, where the motivation is not as urgently clear as a profit-and-loss statement, the drivers are operational efficiency within shrinking budgets and political will.

Similarly the OECD¹ has found that across member states, digital advances have not increased productivity. Instead, productivity growth has decreased over the years.

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<https://www.oecd.org/economy/growth/digitalisation-productivity-and-inclusiveness/>

As the population shrinks in the coming decades, the importance of the working population's ability to make the most of digital technology becomes paramount.

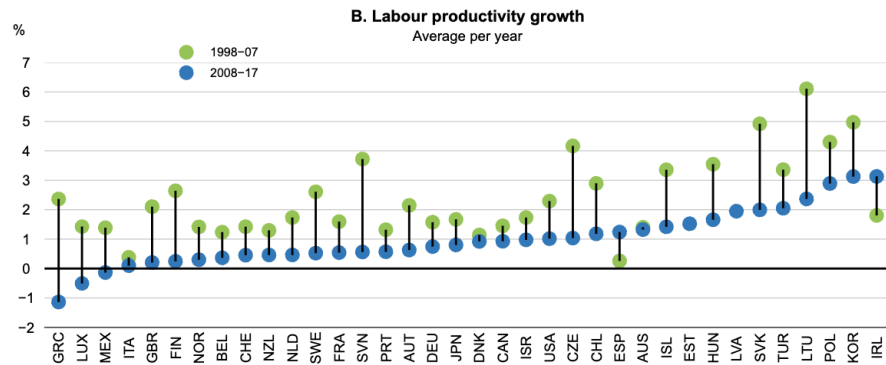


Fig 1: OECD graph on productivity growth

Digitalisation and productivity: a story of complementarities

A working group under UNESCO wrote a report² on digital competencies in 2022 where they highlight the need for government officials to increase their digital competencies in order to work in the digital reality.

CC: A pitfall for digital productivity?

Email enables us to communicate instantaneously across distances, but it would seem that we still have not entirely agreed on ways to use this tool in the most efficient way. CCing multiple people who are only indirectly concerned with the subject matter, uses up their time and introduces confusion in terms of who should be answering. Having a shared email etiquette becomes a matter of digital competency for the organization. This pertains more to conducting work in a digital environment, than it does to whether people can actually operate the email programme.

The working group started to work from categorisation, in order to get a sense of what keywords were mentioned. Most of what is written on the subject tends to be highly

² <https://www.unesco.org/en/digital-competency-framework>

contextualized to the systems and ways of working of an organization or a country. This hinders clear, common vocabulary to spread. This is exactly what we might fear can happen in Japan, where a high-context environment can hinder the adoption of new ways of working, even when the need for new technology is becoming obvious.

What are Digital Competencies



When hearing the words “digital competency” many would probably instinctively think of technical competency in terms of how to operate IT hardware such as laptops, printers or wifi, or software such as email, word processing and spreadsheet apps or role-specific applications..

But the truth is that these kinds of technical skills of the individual, is only one layer of several, that help determine the capability of a workforce in a digital environment.



Fig 2: Layers of Digital Competency.

We tend to think of digital competencies as the individual’s ability to operate certain software or hardware, but in order to work effectively with them, we need to comprehend them on an organizational level as well. Furthermore, the meta context that the organization is situated within, affects what the organization and individual can do.

To add, subtract or replace

On a fundamental level, as the world is changing, we need to ask ourselves whether the proliferation of digital technology is about adding new skills to an existing way of working or doing business - “business as usual, plus digital” - or whether we need to rethink the way we do business altogether - “business = digital”. Most people concerned with digital transformation would certainly tend to agree with the latter.

Depending on the way this framing is done, we approach the topic of digital competencies differently.

In the “business as usual, plus digital”-scenario, people tend to think “before there wasn’t anything called coding, but now there is, so we should add that to the skillset of public servants”. In one of our interviews for this research with professor at University College London, David Eaves, who posits that this framing is not beneficial. Instead, we should be discussing what the competencies of public administration is in a digital reality. This makes it less about adding, and more about subtracting and replacing.

One danger professor Eaves points out in talking about digital competencies, is that it will lead to people thinking they are a separate, distinct group that can be packaged and prioritized among other relevant competencies. But his fundamental argument is that it’s less of a question of adding new competencies, and more about adapting the very business of public administration to a digital reality.

We will keep this perspective in mind as we proceed with our investigation. For the purposes of a common vocabulary, we will use “digital competencies” as a concept that inherits the spirit of professor Eaves’ distinction, while maintaining the phrase itself, as it is commonly used globally.

The tacit competencies

Professor Eaves points out that there is an unspoken expectation that people are digitally competent when they are hired. We do not test for basic reading or writing skills, instead we take for granted these nebulous skills that people can orient themselves in and participate in the digital environment of the modern workplace.

A peculiar aspect of digital competencies is that they quickly become tacit skills. Actions, knowledge and ways of thinking that must be internalized, in order to optimize your operations in the new technological landscape. To highlight this point, professor Eaves pointed out how email happened as a technology, and the workplace adapted to this, without

adding a requirement in job ads for “minimum email experience of 5 years”.

This has a security dimension too, as fraudulent actors send malicious links via email, and hope that employees without the trained sense or suspicion opens them. File Sharing with big organizations can often be complex, as employees are sometimes not even aware of what security measures are in place, and so unsure of how to have files shared to them from the outside. A digitally competent, or proficient, stance is to be aware of the common problems and make external collaborators aware of any particular security setups when asking to have files shared.

Curiosity is a relevant concept in this context, because it can help keep staff aware, and so it can be a silent hero in terms of how well the employees and in turn the organization can work with digital tools. We talked with mr. Jesper Hosbond Jensen of the municipal think-tank Komponent in Denmark, who mentioned it as a characteristic trait they see in many Danish public servants. A curiosity towards how digital technology, with which they are otherwise unfamiliar with or have only rudimentary knowledge of, might help with their work. The curiosity comes from an understanding, a sense, of the value and potential of technology yet to be deployed. It is common in the literature to find that cultivating curiosity is best done by actively setting an example among leaders, and encouraging questions and continuous learning by providing the resources to do this. (See for example Wiley Leadership blog for a summary.³)

Familiarity with digital tools is unevenly distributed in organizations. Some people struggle with basic apps while others see connections and opportunities with new software.

We talked about this with mr. Rasmus Larsen, head of the children and youth department at Fredericia municipality in Denmark. He started out as a leader in the organization, and quickly realized that something had to be done about the

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<https://www.wiley.com/en-us/network/professional-development/careers/leadership/unlocking-the-power-of-curiosity-five-tips-to-be-more-curious-in-the-workplace>

disparity in use and knowledge of software. He made it a point to put down some *expectations*, not rules, not training, for how they should be collaborating digitally. This only covered the fundamentals of email and calendar, but given this is where the majority of employees' digital work life happens, it makes sense. This is a concrete framing of the digital competencies that professor Eaves is talking about. A more traditional, or and naive, framing would perhaps simply provide training in the software, and tell people to figure out how to collaborate from that. But the problem really is less one of lack of knowledge to operate, and more one of collaboration and expectations. It's a team problem, not a solely individual problem.

There is an aspect of technical learning which goes beyond the individual app, and points to the overlap or lack of such between several different apps or systems. As is the case in Frederica that mr. Larsen mentioned, a department may be using 7-8 different systems, with the individual employee needing to interact with 1-3 on a daily basis.

This story helps highlight the fact that digital transformation can not be achieved simply by introducing new tools, and doing courses to make sure that employees know how to operate these tools. Digital competency needs to be broadly conceptualized, and trained as a practice in the organization.

Changing how we work

With the introduction of AI in the workplace, employees will be forced, like with corona, to re-envision their work. This is where digital competencies become critical. Mr. Larsen points out how we as a society tend to have high tacit expectations of knowledge workers, that we would not have of a car mechanic for example. If a mechanic gets a new car, no one expects him to be able to work on it straight away. But with knowledge workers, we tend to think they'll figure it out.

Corona pushed people to work in new ways. This really put digital competencies to the test, both in a technical, skillset sense in terms of being able to use the various online collaboration apps, but also in a collaboration sense, as

employees were inhibited in terms of covering insufficiencies in understanding with quick face-to-face interactions.

In understanding digital competencies, and being respectful about dealing with them, we should recognize that to many people, IT is not their main job, it is merely something they use to do their job.

Loom: From tool to way of working

The asynchronous video tool Loom is used by many companies to share information in a more contextually rich way than text alone can do. The tool itself is simple, and works by recording video from both screen and webcam at the same time, so employees can explain their work in their own words. But companies introducing the tool face challenges in how to get employees to use it effectively, and change their habit of asking for a meeting. This is an example of a technology that only works if new ways of working can be forged along with its introduction.

In the books 'Remote: Office Not Required'⁴ and 'It doesn't have to be crazy at work'⁵ The authors and entrepreneurs Jason Fried and David Heinemeier Hansson provide very good examples advocating for a new way of working that is utilizing digital tools, without becoming tutorials about a certain app. Principles such as "discussing work where the work is" and "keeping meeting time to a bare minimum through text updates", are examples of behaviors that mesh very well with prof. David Eaves "business = digital"-approach to digital competencies.

Frameworks for Digital Competencies

It is only in recent years that governments and intergovernmental organizations have really begun trying to define what the competencies are that enable public servants to do their best work in the digital era. In this section we will

⁴ Jason Fried and David Heinemeier Hansson, "Remote: Office Not Required", 2013

⁵ Jason Fried and David Heinemeier Hansson, "It Doesn't Have to be Crazy at Work", 2018

pick up 4 frameworks from the Danish government, the OECD, UNESCO and the academic programme "Teaching Public Service in the Digital Era" as they together provide a good foundational coverage of what is generally taken to be important to look at.

Component Overview

Looking at the frameworks side by side (see fig. 4 in reference document), it is clear that they share commonalities around user-understanding, agile working methods, a sense of digitizability, the organizational context and understanding of data-flows.

It is close to impossible for a given framework to cover everything that enables success in a digital environment. This means that competencies are seldom outlined in focussed frameworks, but rather tend to appear as part of something else. This was also what the UNESCO working group found according to professor Tommaso Balbo di Vinadio from Sciences Po. as adding complexity to a framework makes it difficult to work with and anchors it to a very specific context in time and space.

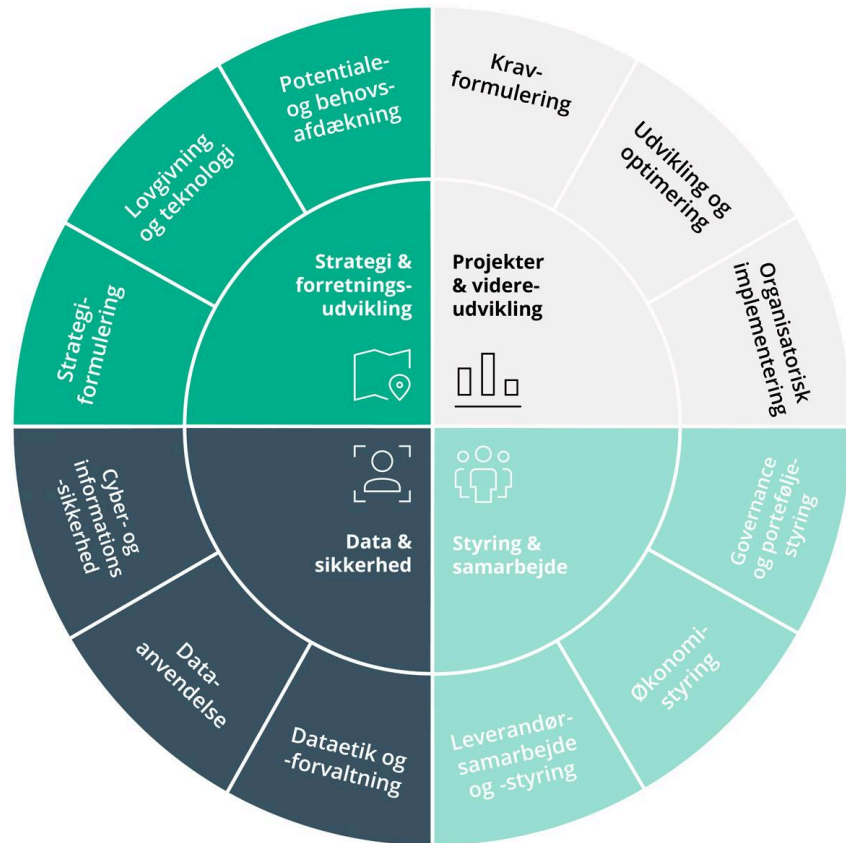


Fig 3: The Danish Competency wheel used by the Danish Government's digital agency as well as the association of Danish municipalities.

This model is a good example of what the administrative skills are, that go beyond technical skills when discussing digital competencies.⁶ By The Danish Agency for Digital Government.

On the point of organizational context professor Eaves noted how it matters a great deal, because it is of no use if you have a lot of individuals proficient in agile methodologies, if they aren't organizationally allowed to make agile-led project suggestions.

6

<https://digst.dk/styring/statens-digitaliseringsakademi/model-for-digital-e-kompetencer/>

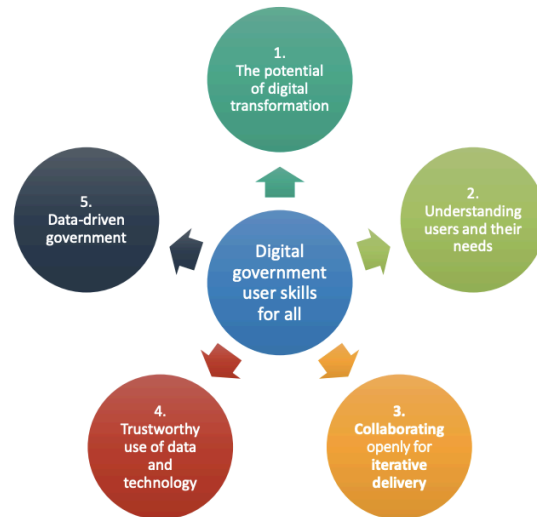


Fig 4: The OECD Framework for Digital Talent and Skills in the Public Sector. OECD has also investigated what categories of skills are necessary in the digital era.⁷ By Barbara Ubaldi, Benjamin Welby, Lucia Chauvet.

Reversely, if the system itself was changed from above, people would ideally have to develop their competencies organically to try and fit into it. But the current situation in many governments and municipalities around the world, is that the system is on the one hand encouraging digital (and innovation) skills, while at the same time being hostile to new ways of working. This is all about the organizational context, and it is too much to put the onus on the individual.

Different Contexts

Digital competencies pertain to individual skill sets, traits and attitudes, but also the organizational environment, and then there are the ways that competencies interact with other, larger frameworks.

Metalayers

In Europe the recent roll out of GDPR has introduced a whole host of considerations for public servants to do in relation to their jobs. This is a broad contextual change to their work, but

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<https://www.oecd-ilibrary.org/docserver/4e7c3f58-en.pdf?expires=1701144342&id=id&accname=guest&checksum=8AoCoBFDCf9FC9oAAED4CEAAFFD426AC>

the individual competencies of each employee determines how adaptive they are to this change.

Similarly, as consumer technology becomes ever more pervasive, the knowledge and expectations of citizens grows. Mr. Larsen from Fredericia municipality in Denmark, mentions how these expectations can reach further than the traditional purview of the public service and into the broader digital landscape of for example banking.

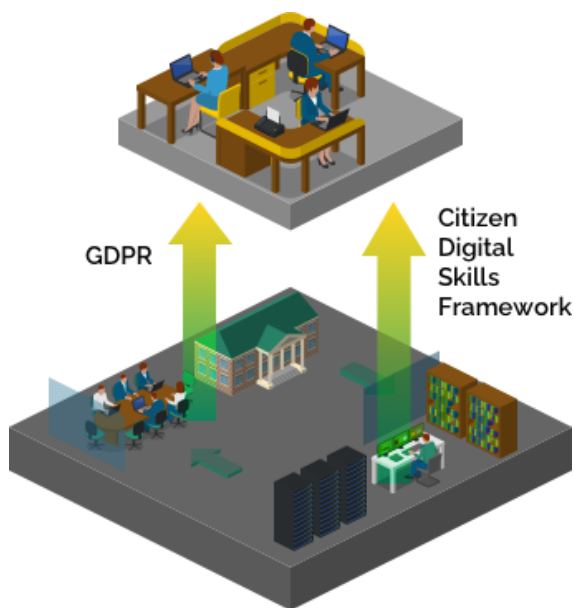


Fig 5: Nested Frameworks

*We should keep a focus on the digital competencies of the public servants, but in doing this, we should be mindful of what the greater context is that the citizens are dealing with. The GDPR is one such context which influences digital competencies, while the digital skills of the citizens themselves is another, even bigger context. Governments grapple with this by creating other frameworks such as the Essential Digital Skills Framework⁸ from the UK or Singapore's Digital Media and Information Literacy Framework⁹.
By Esben Groendal*

This hints at a meta layer around digital competencies, which reach out beyond the tasks of the individual or the team. To understand the meta layer, is to understand the digital reality outside of the organization which impacts how digital competencies are put into play. In that sense it is a combination of technical understanding and empathy that is

⁸

<https://www.gov.uk/government/publications/essential-digital-skills-framework>

⁹ <https://www.mci.gov.sg/files/mci%20dmil%20framework.pdf>

needed to really understand the broader impact of what a service provider is asking of the user.

Not taking things for granted

An example from the Association of Danish Municipalities' Digital Program 2021-2025¹⁰, in which it notes that service designers should be conscious of whether citizens can appropriately download and handle a digital file.

There is a foundational knowledge of concepts such as "download", "PDF" and "Digitally Sign", and then there is the fluid application of these concepts and actions in a secure and efficient manner, which is hard to articulate, and therefore train and measure.

Professor Balbo di Vinadio echoes this notion on a more general level, with digital technology being increasingly available to the general public, they expect more (or take for granted) that public servants also work in this way. This introduces a clash between a rapid changing external environment, and a conservative internal culture.

The Digital Landscape Outside the Municipality

An example of the meta layer is the Youth department in Fredericia municipality, where they often help vulnerable young people get their first part-time job. But because of the progression of digital society in Denmark, where bank accounts are mandatory and you need an online ID to get one. This means that part of the help they offer in the department, is to guide the young people through these procedures, even though they are not under the purview of their department per se. That issue is hidden in the meta layer until they discover it through practice. But from the citizens' perspective, the municipal workers are expected to know everything about such processes, which put a strain on the individual worker, that they didn't have before.

¹⁰

<https://www.kl.dk/oekonomi-og-administration/digitalisering-og-teknologi/indsatser-og-fokusomraader/kommunernes-digitaliseringsprogram/digitaliseringsprogram-2021-25>

There is also an expectation, says mr. Hosbond Jensen of Komponent in Denmark, that the municipality or the government agency, is in control of citizen data and their case. This means the professional staff should be able to read, interpret and understand the information that has been given previously - whether physically or digitally. They should know the boundaries and possibilities of their access to information.

We talked about this with mr. Steven Manners, CIO in the Tasman County Council in New Zealand, about this and he points out that it is pertinent for public servants to maintain a sense of being a citizen too. Employees tend to feel that technology is difficult and inapproachable in a work-context, but they are curious and learning in a private context.

Characteristics of the Public Sector

The public sector is working through other mechanisms than the private sector. This point bears repeating, as it defines the context in which the nominally same digital transformation is taking place.

To get a sense of the bigger government planning level, we spoke with mr. Inostroza, Chief of Division, Secretariat to the Office of the President of Chile, who made a point about how the political system has simply not been adequately focussed on adaptation and preparation for future technological changes.

According to mr. Inostroza, this leads to a conservative bureaucracy, where the norm has been to issue more rules and regulations. This has created a rigid organization and stifled innovation. Instead of rethinking how work is done, processes are introduced to manage and control employees. The technical competencies and literacy is often present throughout the bureaucracy, but it is the policy landscape that keeps change from happening.

In order to counter such a massive hurdle, in Chile the government is working towards using available data to increase transparency of operations. Through this, they hope to change the mindset of the bureaucracy. Digital should be by design, and not the third-tier consideration after legal and procedural concerns.

The way they work is dictated by law, so they need to change some laws to really deal with the bulk of the issue. Telling people to be curious about new technology, for example, is not feasible or realistic if they are not really allowed to incorporate it in their workflows. Procurement is an example of this. Successful implementation and consideration of technology requires experimentation, but the system does not accommodate this as it is.

This is also a point that professor Balbo di Vinadio raises, as they point out how big development projects worth millions of dollars are not developed iteratively, because their procurement platform can not handle it.

As another point relating to the legal context, the ability to see what the digitizable procedures in a given law is, is vital to support public sector digital transformation. Some procedures are very strictly defined with clear data sources and uses of these, while others specifically leave room for individual employee judgment. IT systems are not well suited to handle administrative exceptions, so spotting these and effectively combining automation with human judgment is a cornerstone in the skill set of the digitally competent public official.

Misunderstanding scope can be costly

In Denmark, there was a system called AMANDA which was supposed to shorten service time for work-related injury compensation through automation. But the problem was that the processes defined in the law are extremely vague. There's a lot of exceptions, and computers are very bad at that. The system was eventually scrapped. This is an example of a lack of digital competency on the procurement side, as there was not a sufficient understanding of the possibilities and limitations of IT in the given context.¹¹

¹¹

<https://www.version2.dk/artikel/amanda-er-lagt-i-graven-det-var-dyrt-dri-ve>

Hiring practices is another aspect which differs between the public and private sectors. In the public sector organizations can't hire who they want, at the rate they need. So in many cases, they have to contract out at considerable expense. This means the public sector is working much more on a rent basis, instead of building things themselves, which in turn implies that they outsource systems, and competency. This raises the need to be able to work with vendors better. Being able to procure better and create specifications better.

Organizational Environment

It is important to not focus solely on the competencies of the individual, as one person is not responsible for every facet.

But there is also a low-level practical context of the actual digital environment employees are required to navigate. Mr. Inostroza in Chile made this point in connection with how they are not using the best or newest technology, and so people are stuck with old and clunky UIs, even though in their private time they are used to good UI and UX. The thinking goes, that with better UX for employees, they will have a better attitude towards their digital environment. It is an inclusive way of thinking, rather than a top-down, mechanistic one, where employees are recognized as feeling humans, rather than rational machines that mindlessly conform to any environment. Perhaps they will conform, but in order to spur innovation, they need the employees to be engaged.

"if we don't deploy good technology, we'll continue to see resistance to technology"

- Mr. Inostroza, Chief of Division,
Secretariat to the Office of the President of Chile.

The role of leadership

Mr. Larsen from the Danish municipality of Fredericia laments the fact that the organization has not yet published clear guidelines and expectations. In this environment, he takes a two-legged approach, trying to be reactive and receptive to new initiatives from above or feedback from below, while at

the same time being curious and asking questions of current procedures and systems.

This is opposite a more proactive approach, where you actively try to change things. But without a clear framework to enact change within, this can quickly get out of hand. A good example here is AI. The advances in generative AI is something all municipalities in the world are considering, but it is still quite abstract, and it is only very few that has managed to make actual guidelines.

In the context of digital competencies, such guidelines help to demarcate expectations of individual focus and knowledge.

Guidelines also help to establish a clear connection between what the organization actually wants to do, and what technology is out there. Professor Balbo di Vinadio mentions how leadership in particular should be careful not to get excited about technology without understanding what's needed for it to work in the context. This requires collaboration between the business units (BUs) and the IT department.

According to mr. Hosbond Jensen, the problem in a country like Denmark, lies with the strategic, political and operational management. That is, both the directing and the enabling layers. The issue is that management must balance development and operation, with the typical focus being on operations.

The role of the IT department

Digital transformation happens more and more between departments, due to the nature of digital service provision and the flows of data required. In this environment, it becomes essential for business units or departments to effectively collaborate around what and how to change. This is a fundamental change to how an organization operates.

From an organizational point of view, mr. Hosbond Jensen points out the concept of *competence coverage* becomes important, as stakeholders must become proficient enough, and teams flexible enough, to be able to share competencies

across projects. Professor Balbo di Vinadio talks about this as the general level of agility.

However, even though the environment is changing, the basic ways of framing departments and work are not necessarily changing at a similar pace. Mr. Manners from Tasman in New Zealand stresses that there is a persistent issue with the mindset around the IT department. This is the fact that business units agree that digital transformation must happen, but at the end of the day they write it off as IT's responsibility and not their own.

Mr. Manners insists that the IT department should not dictate the value chain, even when a large part of the organization becomes digital. Digital transformation should instead be a collaboration, where the business units interact with the IT department around what is possible, but ultimately lead any change to their value chain, and the way they operate, themselves. This points to competency coverage and collaboration skills, as well as deep understanding of service context and the sense of digitizability.

Collaborating around IT

According to Mr. Manners, a recent software purchase in the Tasman Council was the first where the business unit was also the programme lead and the IT department took a step back and only supported the process. This was a major step forward in terms of operationalizing specification skills, as the business unit took ownership of change.

Another way to frame this issue comes from Mr. Larsen, who said the IT department should show the way, but there should be clarity around responsibilities concerning development of IT and understanding of IT. The IT department should advise on how things can be done, because the BU leader can not be expected to see those opportunities themselves. We spoke about this point with Mrs. Sarah Rackley in Tasman County Council, who echoes this in saying that it is the role of the IT department to be forward-thinking.

With IT being pervasive, can we say that it is everyone's responsibility? No, says mr. Larsen, because the competencies are not there. It is not about everyone being responsible for it, but rather that there is a new imperative in the organization to make clear what responsibilities people have vis a vis the example previously mentioned with checking calendars and emails regularly.

To get an outsider perspective, we spoke with a senior systems architect, who works at a FinTech SaaS company that also operates as an IT vendor to municipalities in Denmark. He points out that it is valuable to consider a sense of digitizability a digital competency. By having a rudimentary understanding of what is going on, helps people on all levels see their own work in a new light. This is especially pertinent for leaders, but as a competency it is valuable and applicable on all levels. If people don't know, they don't know to ask or suggest.

They might lose opportunities if their framing of an issue is based on a distorted understanding of the facts. This could for example be a BU casually talking with a supplier or even a colleague in another municipality, and upon hearing the monthly cost of an interesting system, immediately rejects it as being too expensive to consider. While in reality, with a better understanding to ask the right questions from, the actual value-creating functionality of the expensive system, could be recreated for a fraction of the cost in another way.

This is a move towards a more informed and dynamic relationship with IT in the organization. This is opposed to an absolute dependency on the IT department, where individual BUs would not have any rudimentary knowledge to even engage in casual conversation about IT systems.

Sensing Opportunities

A sense of digitizability could for example be the leader of a business unit in a Danish municipality who recognized a mass of structured data, and commissioned work to put them into play to save time in some of the unit's processes. This is an example of a general digital competency, which adds value through IT knowledge, without needing a technical background or in-depth understanding.

Chapter Summary: Dimensions, Environment and Contexts

One of the realizations one quickly arrives at when delving into digital competencies, is the expansive nature of the concept. Although everyone intuitively agrees that it is vitally important that public officials competently navigate the ever-changing technological landscape, it is not entirely obvious what kind of skills are necessary and how to train them.

During our research it was clear that there are both an individual aspect to digital competencies, as well as a team/organizational aspect, that strongly influences the success of digital competency deployment. We can break it down into the dimensions of individual skills, and the different contexts that influence how these can work.

A. The Dimensions of Individual Skills

a. Technical

The technical dimension of digital competency is used in the meaning of skills that can be measured and learned individually. Like how certain software is used for example. These are the kinds of skills that we often associate with digital competency programmes: do the individual know how to operate a given piece of software, yes or no?

b. Managerial Skills

Administrative skills is what professor David Eaves is focussed on, and we will see later how government frameworks similarly focus on these. They are non-technical skills that are highly relevant to the function of government. Things such as project management, user

understanding, risk understanding and planning fall under this category.

c. Traits/mindset

These are traits that any human possesses to a higher or lesser degree. Under this category falls curiosity, empathy and creativity. All traits that we can agree are important, and especially for digitization efforts, curiosity is important to improve on all levels.

d. Digital Intuition

When we combine a certain level of technical insight with a curious mindset, we get what we might call digital intuition or a sense of digitization. This is the ability to see (not necessarily to have the skillset to apply) the potential of digital in existing problems and resources.

B. The Organizational Environment

a. Competence Coverage in the Team

The digital environment is characterized by an increased need for collaboration, as cross-functional services are enabled through better and faster flow of data for example. The competencies required in an organization to succeed are too many for any individual to hold, so the team is the next focus point for training and deployment.

b. Managerial Attitude and Change Management

The managerial attitude refers to whether leadership is ready to work in an agile way. If the environment is not present, all the competencies in the world won't matter, as the way business is conducted will not allow the efficiency of digital processes to shine through. As a leadership point, setting expectations around the invisible deployment of competence is crucial to getting them put into play.

c. Digital Context

The digital context is the infrastructural setup of the organization. If the IT solutions are not on par, there is a natural limit to how far individual digital competency can work, or even make sense. An example here is how paperless environments require different digital skillsets.

C. The Contexts

a. Meta layers

i. Citizen Digital Skills

The skills of the citizens or users impact what is required from public servants. This has implications for what public servants can be expected to know, how they learn this and what sort of traits will underpin their organic growth.

ii. Legal Framework

Legal frameworks such as the GDPR impact employee freedom to act, and it places a strain on organizations to be adaptive enough within such constraints to still deliver high quality service output without an excessive amount of effort.

D. The Public Sector

a. Political Control

The background on which the digital public organization is unfolded. If the political environment is apprehensive or exceedingly conservative, the digital competencies present in an organization may not be put into play at all.

b. Procurement Practices

As the backdrop of the digital context in the organizational environment, procurement practices can directly hinder or enable agility of an organization.

c. Hiring Practices

d. Public sector hiring practices mean that public servants need to be able to work better with vendors, and have the digital competencies needed to scope projects and manage what is realistic and actually needed.

How to Develop Digital Competencies



By now we have looked at why digital competencies are important, and what the key pillars are in the discussion of digital competency. In this final chapter we should look at how actors around the world are approaching the development of digital competencies, and laying the groundwork through change management principles..

Change Management

Mr. Manners from New Zealand has a focus on change management as part of their digital transformation efforts. It's easy to underfund the necessary change management work, because you can't see it. People are much more likely to allocate a budget for equipment, whether it's entirely necessary or not, because it is a thing that is its own evidence.

Instead, an investment in change management will get people to reconsider their processes and make technology their own. People have to take on change, if value is to be generated. In Mr. Manners' experience, that value generation takes a lot longer than what is accounted for in the cost of new IT.

The essential part of change management here, is to start with why, and equip employees to embrace change, by first having them understand why change needs to happen in the first place.

This also points back to what Mr. Hosbond Jensen had mentioned about deep understanding of service context. The user journey, not as a tool, but as a concept is helpful in illustrating the kind of holistic understanding that is a tacit part of digital competency. This deep understanding is part of change management, because it aids employees in making change their own. If they understand how their function works and how they contribute to what the organization wants to achieve, it is easier for them to grasp and realize the value of change when properly proposed.

Mrs. Rackley echoes this and adds how the attitude of leadership is essential. Transformation is about doing things differently, and so leaders should be taking a stand and leading from the front. Positive role models strengthen the why.

Oftentimes, transformation in their situation was less about changing the solution, and more about getting people to change their process. They had been working with some software with a lot of customizations, so the software was adapted to their current way of working. But with their digital innovation programme, they are taking a stand to really work in a different way.

"When you're changing the software, you're dragging out the pain of change. But at some point, you have to change, right?!"

*- Mrs. Sarah Rackley,
Tasman County Council*

Mr. Inostroza in Chile mentioned how there is a generational gap between employees, as the people with long experience may feel some hesitancy towards new tech and new ways of working. It's fundamentally a problem of attitude. Mrs. Rackley and Mr. Manners from New Zealand also both mention the age gap in terms of push back. Older people are more wary of upgrades and changes.

A longer-term perspective on the change management thinking in Tasman is the way the culture is dealt with in concrete. Case in point is their onboarding process. The Tasman Council is getting good feedback from new employees coming to them from other councils. In particular, they get good feedback around their onboarding scheme. According to Mrs. Rackley, this is an important piece of their attempt to create a culture that is more change-ready. The onboarding scheme consists of 30+ meetings with different stakeholders in the various business units. This encourages mutual understanding, and cross-functional collaboration. It helps people reflect on their own role in the larger organization.

Beginning with Assessment

How do we spot a gap in digital competency? Obvious lack of technical knowledge around a certain app, is easy to deal with and easy to spot. There is less shame in asking about something completely new, compared to reflecting on how you have been working for the past year and realizing that

you've wasted your own and everyone else's time. Being able to catch inefficiencies in collaboration is hard, because they often hide behind the right outcome. The thing the employee or the team set out to achieve, has been achieved, but because of a lack of understanding of the capability of their software, they might have gone about it in a very time consuming and round-about way.

Assessment of digital competency is a crucial step in identifying skill gaps in any arena, and digital competency is no different.

One example of how to approach assessment is how the Association of Danish Municipalities have deployed a Competency Interactive Model Tool¹², to help people gauge where they are via a survey. It works by asking a series of 45 questions, which evaluates the participants along 12 categories.

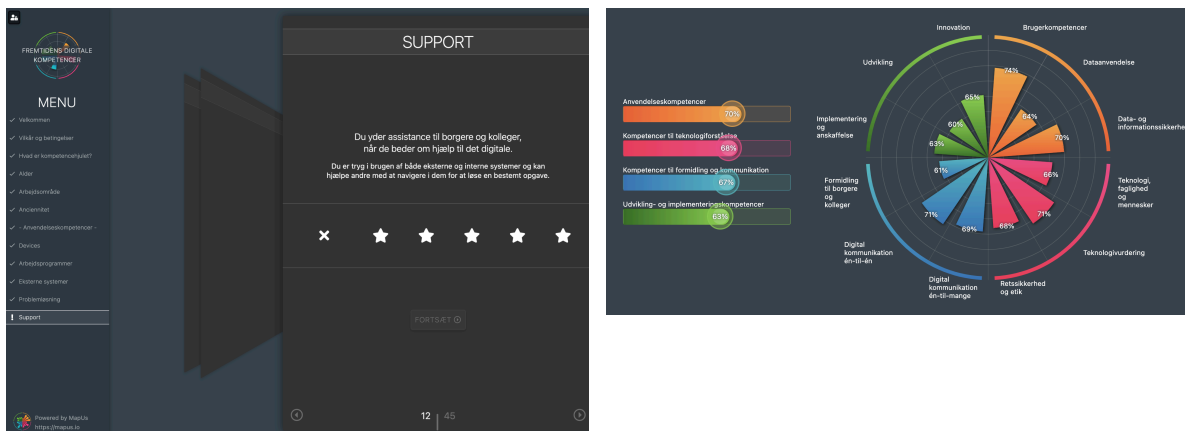


Photo 1 and Photo 2: Screenshots of the interactive assessment tool of the Association of Danish Municipalities. From KL.

Similarly the Tasman Council in New Zealand is doing assessment through custom forms for the first time in 2023, but they are taking a change-readiness perspective. Mrs.

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<https://kl.digitalekompetencer.dk/#:~:text=Fremtidens%20Digitale%20Kompetencer%20er%20et.vurdere%20egne%20styrker%20og%20udviklingspotentialer.>

Rackley did a survey across a lot of tech and platforms and how comfortable users are with those different forms of tech. And their general understanding of why and what's needed. They are taking a change management perspective, which carries a focus on having employees understand why change occurs and buy into it. In this way, assessment points back to the organization approach where the onus is taken off the individual employee.

Examples of Digital Competency Programs

We looked at some examples of how governments are approaching the question of upskilling civil servants.

We looked at the Danish government and the Singaporean government. Both are digital front runners and countries that are referenced by others.

Singapore: GovTech Academy

Their starting point was the understanding that technology was becoming critical, but that you need a lot of understanding and knowledge of the public sector context, in order to really make meaningful learning interventions. At the same time they noticed that existing public service courses from programmes like the Civil Service College, were covering basic awareness and basic understanding of ICT skills.

They realized that there was a contextual gap as skills levels advanced, and that one agency or institution would be struggling to serve all needs.

They saw that ICT projects are increasingly cross-silo, which informed their decision to make programmes that address this.

GovTech's programmes fall into the following 10 categories, with courses in each ranging from beginner to advanced.

1. App development
2. App management
3. Cloud infrastructure
4. Cybersecurity

5. Data Science and AI
6. Government Incident Reporting and Operations Centre
7. ICT Governance
8. Product Management
9. Smart Systems
10. Tech Management

The courses span the range from technical competency such as "AWS Technical Essentials" under Cloud Infrastructure to the administrative dimension of "Communication and Alignment" under Product Management.

Another venue of courses that governments can partner with, are universities and technical colleges. This is advanced information, but lacks practicality and leaves participants with the job of contextualizing learning on their own. What they heard from public servants was that they wanted to connect with the high tech industry and ICT companies.

They also saw that the people conducting the actual training were professional instructors and not doers and providers. This is a point that the Danish government also noted, but dealt with in a slightly different way than Singapore.

These insights led them to build a programme which has strong technical foundations, but is practitioner-led and contextualized to government.

In the case of the Singaporean Government the GovTech academy coincided with the creation of the strategy of digital government, and so they could align the need for ICT expertise with the parameters of their courses.

They cater to three different groups of people.

1. Public sector ICT professionals, who are very focussed on technical re-skilling and up-skilling - data analyst etc. This is a generic group.
2. Public service leaders who need to be able to and equipped to lead digital transformation and such teams. They need to know how to lead, what credibility do they have, what to consider and not to consider. They have to know about governance requirements. E.g. about

requirements and costs relating to building a government website.

3. General public officers. This is a general audience, and they share responsibility with CSC. They have cyber-security training every year, and a special focus on the people working on cross-departmental projects.

Programme Code	D126A
Domain	ICT Governance
Level	Foundation
Learning Partner(s)	GovTech
Duration	2 Days
Format	In-person
Rating	★★★★★
Competencies	
Procurement Strategy & Policy ICT&SS Procurement	
Job Roles	
ICT&SS Professional ICT&SS Procurement Specialist	

Photo 2: Course Detail from GovTech Course

GovTech in Singapore has a clear understanding of who they want to take their courses. The term functional needs is key here, as they want people who actually need the skills and can put them to use, to take their courses. This means that all their courses come with specified recommended job roles. From GovTech's Homepage.

This has been especially true for for example data analytics, where departments have recognized the problem and identified the data, and then ask someone to do something about it. Instead, this new approach focuses on identifying who in the team is most suitable to be upskilled for that, and ensure that the skill is grounded in the team or department that needs it. The people identified then get hands-on coaching from experienced data-scientists. This is a step away from a broader upskilling regimen, focused on raising the average among the workforce. The way they go about this is to ensure that functional leaders are in charge of getting the right people to attend.

When they started they focussed on what was actually needed in practice, introducing a digital maturity index where every agency's performance was public and a digitization plan on what role teams are hiring for in the next 2-3 years. These areas of focus help the academy predict what they should be focussing on.

The Singaporean government has dealt with context within which competency are deployed, by working on a Tech Stack¹³. This unifies a lot of things, and streamlines how to think of who needs to know what. This is exactly the kind of improvement the systems architect in Denmark and mr. Inozotra in Chile also suggests, when they talk about optimizing the context wherein individual digital competencies are deployed. Bad systems require unnecessary knowledge of work-arounds and creates an environment that is relationship-driven (you need to know who knows) and where tacit knowledge thrives. So by changing systems, we can define what is needed.

Something that is driving demand for their courses, is the fact that manager's and employees' KPIs are linked to them upskilling and reskilling.

Denmark: Agency for Digital Government Academy

Investing in digital competency is a way to professionalize the workforce in terms of how IT projects are deployed in government. The academy launched in 2017 as part of an effort to professionalize IT work in government.

As part of the strategy, they set up a goal to give state employees the opportunity and the prerequisites to develop and maintain projects, systems safely and efficiently, and to be able to see the opportunities that IT creates in their area of expertise.

The academy is focussed on generalists without an IT degree, corresponding to the general public officers in Singapore, as well as masterclasses for leaders. People who didn't study anything related to IT. But they cannot do their job without understanding IT anymore. It's not just about hardware, but there are also IT systems implicated in new laws or policies, which require updates or implementation. So a lot of people need to understand it in order to work with and control it. This also means that they do not offer courses on concrete software, or even certifications, because software is context

¹³

<https://www.tech.gov.sg/products-and-services/singapore-government-tech-stack/>

specific to each agency, and certifications already exist in the open market.

Similar to how the Singaporean government went about it, they involved practitioners to understand what competencies are even needed, before they created their programmes. They did around 10 workshops with over 100 public sector employees and leaders. They needed to operationalize what digital competencies mean in the public sector.

They also looked at different digital strategies from the Danish government, to understand what they needed to succeed at. They also collaborated with external stakeholders such as interest groups and workers' associations. So they took both an inside-out and outside-in perspective to cover what they needed to be better at when collaborating in a digital context.

All this work helped them broaden their understanding of what digital competencies are. Rather than being simply related to coding, IT architecture or AI, they came to understand competencies outside of 'hard' technology as being equally relevant to successfully implementing IT projects. One example is the competency of understanding users.

They see competencies as a set that has to be present in a team, in order to successfully implement IT projects. This understanding is further solidified in the way their courses are offered, as they are recently experiencing a rise in demand for team based courses, where an entire team takes a course on something, which can be tailored to their context.

Like Singapore, they buy courses externally, but are very keen to contextualize courses to the characteristics of state employees. This ensures that IT best practice and new knowledge, is being presented and digested in a way that bridges the gap from ideal to reality. An example of this is how IT projects must conform to the state's IT model and be ready to be reviewed by the IT council. By ensuring that course teachers are aware of these constraints, they can make sure that course participants do not have to make the translation on their own, which is very impractical and inefficient.



Agilitet i staten

Oplever du at de statelige rammer udfordrer agile metoder og principper i dagliglivet? Kurset klæder dig på til at få de agile værktøjer til at fungere i en statslig kontekst og er bygget op omkring øvelser, eksempler og flere practice-cases fra staten.

Kurset giver dig

- Færdigheder, der gør dig i stand til at arbejde i et agile team, hvordan processerne bag de agile metoder anvendes i praksis.
- Færdigheder for hvordan de agile metoder kan anvendes inden for rammerne af statens IT-projektmodel.
- En værktøjskasse til at arbejde i et agile team, navnlig indbyrds i det agile team, de agile metoder og de agile roller.
- Indblik, der gør dig i stand til at opbygge med og give feedback til ledelse og samarbejdspartnere og opgaveansvarlige i et agile setup.

Hvem er kurset for?

Kurset er for dig, som for første gang skal være en del af en agil organisation. Det er for dig, som allerede har erfaring med at arbejde i et agile set-up. Det er for dig, der er, som står på tærsklen til en agil transformation, og det er for dig, som er godt i gang med opfølgning. Du arbejder typisk i en statslig kontekst, men har erfaring og indsigt i et agile setup og de agile metoder. Kurset henvender sig altså bredt og godt til dig, som vil have klarere indsigt i at arbejde i en agil organisation i staten med de statelige processer, metoder og værktøjer, som følger med.

Dag 1: Agile metoder og roller

Mål	Indhold
Vidensniveau og kompetencer	<ul style="list-style-type: none"> Præsentation af udfordringer og kontekstuel. Udfordring af eksisterende statlige organisationer.
Agile processer og metoder	<ul style="list-style-type: none"> Forskel på de agile principper, der ikke ændres og de agile metoder. Indførelse af agile principper og de agile processer i en statslig organisation. Forskel på statens metoder og agile metoder. Dimensioner af, hvordan man kan opnå optimal udnyttelse af kapacitet i et team. Erfaringsmodeller til agile og statens metoder.
Agile metoder: Scrum	<ul style="list-style-type: none"> Forskel på Scrum metoden og agile metoder. Praktisk eksempel på, hvordan man giver mening til Scrum i en statslig organisation, og hvordan det skal gøres. Dokumentation, hvordan metoderne anvendes og overføres til andre organisationer og til statens IT-afdelinger.
Agile værktøjer	<ul style="list-style-type: none"> Forskel på de agile værktøjer og de statlige værktøjer. Praktisk eksempel på, hvordan værktøjerne kan bruges til at arbejde i et agile team, og hvordan de kan bruges til at arbejde i et statligt team. Agile værktøjer og de statlige værktøjer. Agile værktøjer og de statlige værktøjer.
Åbning	<ul style="list-style-type: none"> Retningslinjer for de statlige metoder. De statlige værktøjer og de statlige værktøjer.
Tak for i dag	<ul style="list-style-type: none"> Fremtidige udfordringer og spørgsmål.

Dag 2: Styrelse af lovgivning, indkøb og andre krav i et agile setup

Mål	Indhold
Vidensniveau til dag 2	<ul style="list-style-type: none"> Opbygning på læring fra dag 1. Overgang fra lovgivning til lovgivning i en statslig organisation.
Tidstænkning og agile	<ul style="list-style-type: none"> Forskel på statens metoder og agile metoder. Forskel på statens metoder og agile metoder. Agile metoder og agile metoder.
Læring og indblik	<ul style="list-style-type: none"> Forskel på statens metoder og agile metoder. Forskel på statens metoder og agile metoder. Forskel på statens metoder og agile metoder.
Agil levering	<ul style="list-style-type: none"> Forskel på statens metoder og agile metoder. Forskel på statens metoder og agile metoder. Forskel på statens metoder og agile metoder.
Åbning	<ul style="list-style-type: none"> Retningslinjer for de statlige metoder. De statlige værktøjer og de statlige værktøjer.
Tak for i dag	<ul style="list-style-type: none"> Fremtidige udfordringer og spørgsmål.

Dag 3: Håndtering af IT-projekter og statlige interesser

Mål	Indhold
Vidensniveau til dag 3	<ul style="list-style-type: none"> Opbygning på læring fra dag 1. Overgang fra lovgivning til lovgivning i en statslig organisation.
Agile processer og metoder	<ul style="list-style-type: none"> Forskel på statens metoder og agile metoder. Forskel på statens metoder og agile metoder. Forskel på statens metoder og agile metoder.
Agil levering	<ul style="list-style-type: none"> Forskel på statens metoder og agile metoder. Forskel på statens metoder og agile metoder. Forskel på statens metoder og agile metoder.
Åbning	<ul style="list-style-type: none"> Retningslinjer for de statlige metoder. De statlige værktøjer og de statlige værktøjer.
Tak for i dag	<ul style="list-style-type: none"> Fremtidige udfordringer og spørgsmål.

Photo 3, 4 and 5: The course description of the course "Agility in Government"
 This is an example of how a 3-day programme is laid out and presented. It is striking how many different things are covered in just three days. From the Danish Agency of Digital Government.

They are building on the Danish Digital Competency model, which acts as a red thread and grounds their work. But they are still updating their offerings to fit with the technological advances.

The experience departments asking for courses, that they technically could have gone out and find by themselves in the market, but the contextualization is so valuable that they prefer to go to the Academy.

They have an interesting problem with describing the target group for their courses, because they sometimes get negative feedback from someone who went into a course with the wrong expectations. With something as hard to pin down as digital competencies, this requires a lot of practice and careful consideration to get right.

Everything they do is voluntary, and so they are fighting for people's attention in a way that was not felt in Singapore. In Denmark they have to reach out to HR departments,

leadership and also engage on LinkedIn in order for people in the Danish government to know about their offerings.

They see an increasing demand, but do not feel that it has caught up with the need they see in government. Demand is modulated by the constraints of people's time during their work.

The types of courses people want are typically associated with 'need' to have skills, that directly relate to defined tasks in the teams, as opposed to more 'general knowledge'. This poses an interesting conundrum in terms of framing and promulgating digital competencies in a broader sense, instead of being limited to what is clearly defined and tangible. In a way, the challenge it poses is to clearly articulate the value of ill-defined competencies, in tangible and relatable terms.

Chapter Summary: Developing Digital Competency

In terms of how digital competency is being developed in organizations abroad, it is clear that a broader perspective than the individual skill set is being applied.

Individual skills in context

We need to train for the digital competency of the team and organization, instead of solely focussing our development capacities on the competencies of the individual. The core shift that needs to take place is from whether or not everyone knows X to what skills are actually present in the team or organization.

Furthermore, from a change management perspective, it is an important lesson that the 'why' of the training is clear for the individual too.

Team Training

With the understanding of individual skills in context, we then need to develop the exercise of diverse skill sets across teams. To this end, training providers are seeing an uptick in demand for team-trainings, where the context is fixed on what

the team needs to do, and collaboration, which goes beyond rote-learning, can be practiced.

Organizational stance

As a natural extension of the team-approach, we also saw organizations working with something as fundamental as their organizational culture. This stems from the insight that digital competencies only truly play to the organization's advantage, if everyone is aware of the service flows in the organization.

Contextualizing assessment

Conducting assessment of digital competency with the previous points taken into account, ensures that assessment results speak to the actual local context of the organization. This can be done with simple, readily available tools such as forms, to give the department in charge an image of where the organization is.

Internalizing Training

On a national level, training coordination is increasingly being taken in-house. This is due to the understanding that best practice within IT often comes from the private sector, which operates on a different set of premises than the public sector. Tailoring is less about creating the programme, and more about preparing course instructors to handle questions pertaining to the public sector.

Conclusion



Digital competency is a key driver to reap the benefits of digital technology, and it is crucial that we broaden our perspective on what it means to be a productive, and digitally competent public servant, in order to address the gaps appropriately.

Rather than taking the narrow view that upskilling of digital competencies happens on a purely individual level through general courses, we need to recognize the broader contexts influencing the organizational environment in which digital competencies are deployed by the individual.

Taking a broad view on digital competence, and public administration work in the digital era, is key to truly achieve digital transformation of government of all levels.

The research team would like to thank everyone who has generously contributed their time to the present research through interviews and communication back and forth.

First Published
March 31, 2024

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