Nitesh Bharosa

Designing responsible GovTech

The good, the bad and the ugly

TU Delft

Hooggeachte Staatsecretaris van Huffelen,

Hooggeachte Ambassadeur Khargi,

Mevrouw de Rector Magnificus,

Collegae hoogleraren en andere leden van de universitaire gemeenschap,

Zeer gewaardeerde toehoorders.

Het is een eer om vandaag voor u allen te spreken.

Ik zal nu overschakelen in het Engels.

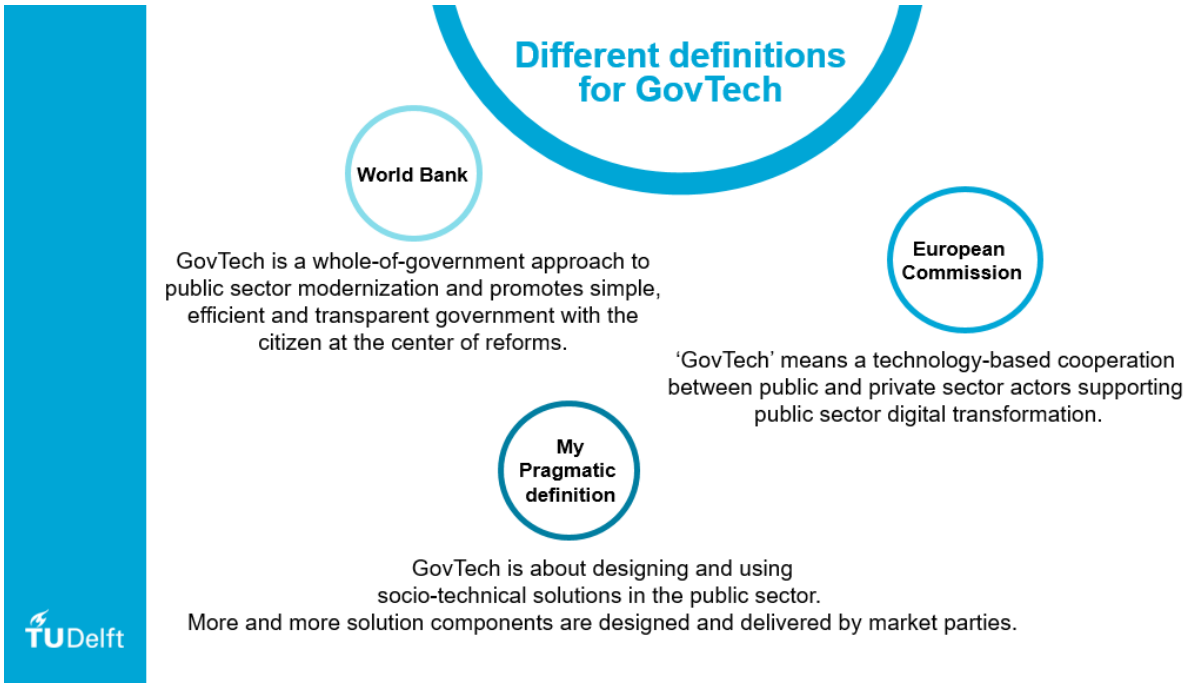
The good, the bad and the ugly

Please allow me to share a childhood story with you. As a young boy growing up in Suriname, I loved to watch movies. I can still remember the night that my dad allowed me to stay up and watch one of his favourite movies with him. It was a western, called the Good, The Bad and the Ugly.

Please raise your hand if you have seen this movie. It seems that many of you have seen this movie. In this movie, it gradually becomes clear who is good, who is bad, and who is ugly. However, in real life, it is not easy to determine who or what is good, bad, and ugly. The same holds for GovTech. What is good GovTech? And What is Bad and Ugly GovTech?

Defining GovTech

Before we can answer this, we need a definition for GovTech.



GovTech is short for Government Technologies. The World Bank defines GovTech as a whole of government approach to public sector modernisation. The European Commission defines GovTech as a collaboration model. We can spend hours debating on different definitions. If you want to do so, please join one of my lectures.

For today, let's use my pragmatic definition: GovTech is about designing and using socio-technical solutions in the public sector. And, more and more of the solution components are designed and delivered by companies and non-governmental organisations.

Socio-technical is the keyword here, and the main reason why GovTech research belongs at the Faculty of Technology, Policy and Management of Delft University.

GovTech solutions have technical components, for example for authentication, authorisation, secure data exchange and cloud storage. And in the age of artificial intelligence, different types of algorithms can be used for data analysis and decision-making. All these technical components need to work together in concert before you can use a GovTech solution.

GovTech solutions also need social components or institutions like norms, policies, laws, human support structures, financial models and governance structures. These components try to safeguard public values like fairness, transparency, legal certainty and privacy. And they try to create trust in GovTech.

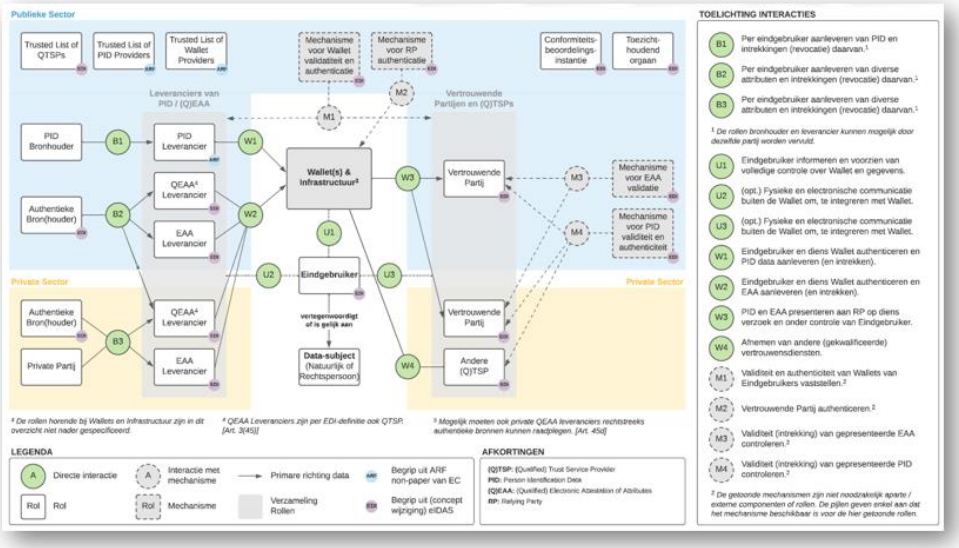
Trust is needed to boost adoption. Yet trust is difficult to design in a multi-actor environment in which multiple public and private organisations provide GovTech components.

GovTech example: the data wallet

An example here is the ongoing debate over the system architecture for digital identities and data wallets. On first sight, the solution looks simple: everyone gets a data wallet with all important credentials like your passport, drivers licence and diplomas. This sounds good right, no more paper documents!

When you zoom in, a complicated system architecture emerges.

Example of a complicated public-private GovTech puzzle

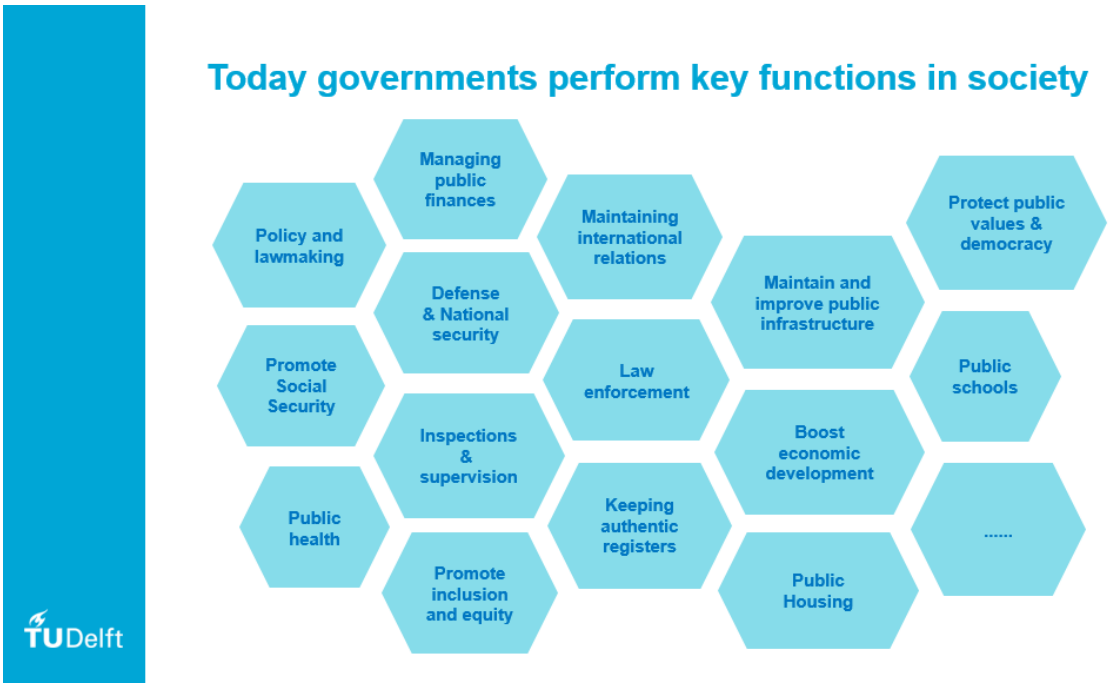


Determining what the public sector must do, and what the private sector could do, is a complicated puzzle. Many hands are involved, and nobody wants to take responsibility over the entire system performance. How do you determine who, and what is trustworthy? Moreover, there are political and ethical choices to be made: what must remain under public sector control, and what can the private sector do? When confronted with political and ethical choices, we can talk about what is good and bad.

But what do these normative words actually mean in the context of governments? To really understand this, we need to go back to the foundations of governments.

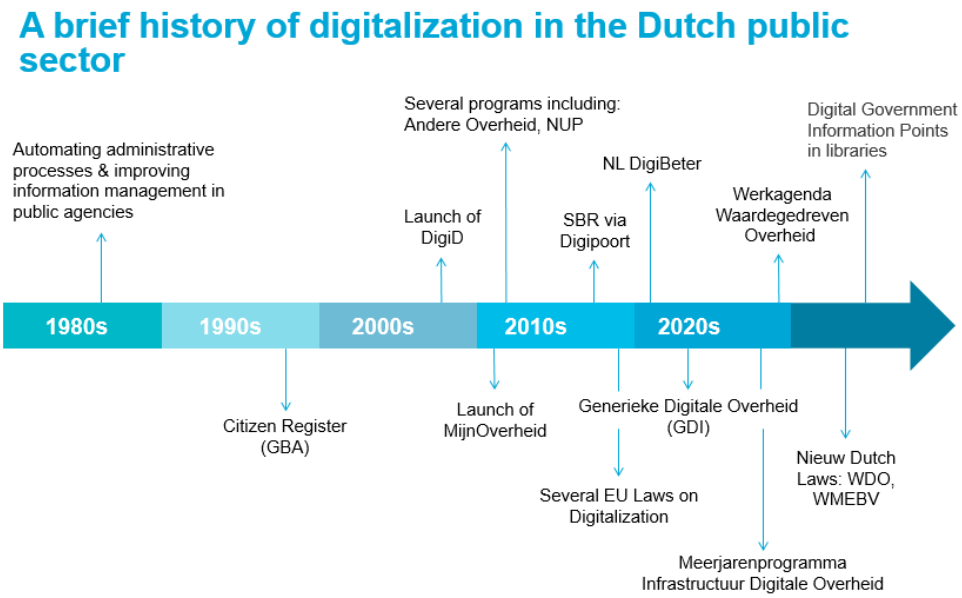
A very brief history of Government and digitalisation

The concept of a government is thousands of years old. Historians believe that the Sumerians established the first monarchy-based government almost 3000 years before Christ in ancient Mesopotamia – what we no call Iraq. They developed a system of record-keeping using clay tablets. If you look carefully, you can see symbols like animals and grain on the clay tablet. The clay tablets were the first technology used to store information. And they played a vital role in collecting tax for the Sumerian government. Since then, the concept of government has evolved on many levels.



Today, modern democratic governments perform a lot more public tasks and functions than in ancient times. As taxpayers, we expect that governments ensure that we have houses to live in, roads to drive on, and the best education and health services possible. We also expect governments to manage public finances and public registries.

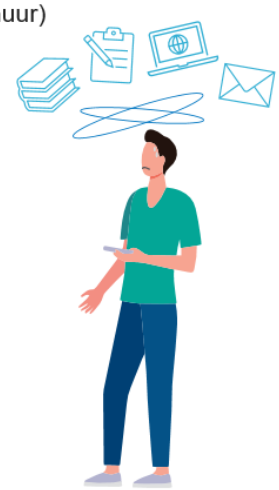
And we expect that Governments solve the grand societal challenges we face today, including poverty, mass migration and the energy transition. Governments cannot perform their tasks and address these challenges without advanced GovTech. Technologies like clay tablets and paper registries are just not sufficient anymore.



We have an advanced digital government in the Netherlands. Thanks to digitalisation, more and more functions of governments were slowly automated and can be accessed via the internet. This means that for many things, you do not have go to a government building and wait in line. We even have Digital Government Information Points in libraries across the country. At these information points, citizens that have difficulties with digital government technologies can get help. Overall, this is a great achievement. Yet, there are still some problems that require attention.

Many problems remain

- Procedure first, citizen second
- Citizens face a fragmented Government (kastje naar de muur)
- Reactive and unpersonalized services
- Labour shortages (leading to long waiting times)
- Poor data quality
- Legacy systems with high modernization cost
- Low interoperability
- Complex rules and exceptions
- Low digital inclusion and social equity
- Privacy and cyber security challenges
- ….



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These problems include reactive, complex and unpersonalised services, security challenges, non-interoperable legacy systems and high modernization cost. These are serious problems that limit the policy implementation capacity of our governments.

Problems

- Procedure first, citizen second
- Citizens face a fragmented Government
- Reactive and unpersonalised services
- Labour shortages at public agencies
- Poor data quality
- Legacy systems
- Low interoperability
- Complex rules and exceptions
- Low digital inclusion and social equity
- Privacy and cyber security challenges
- ….

and potential solutions

Artificial Intelligence

Digital identities

Data wallets

Digital Humans

Qualified electronic signatures

Multi-Party Computation

Proactive Services

Synthetic data

Edge computing

Metaverse

……

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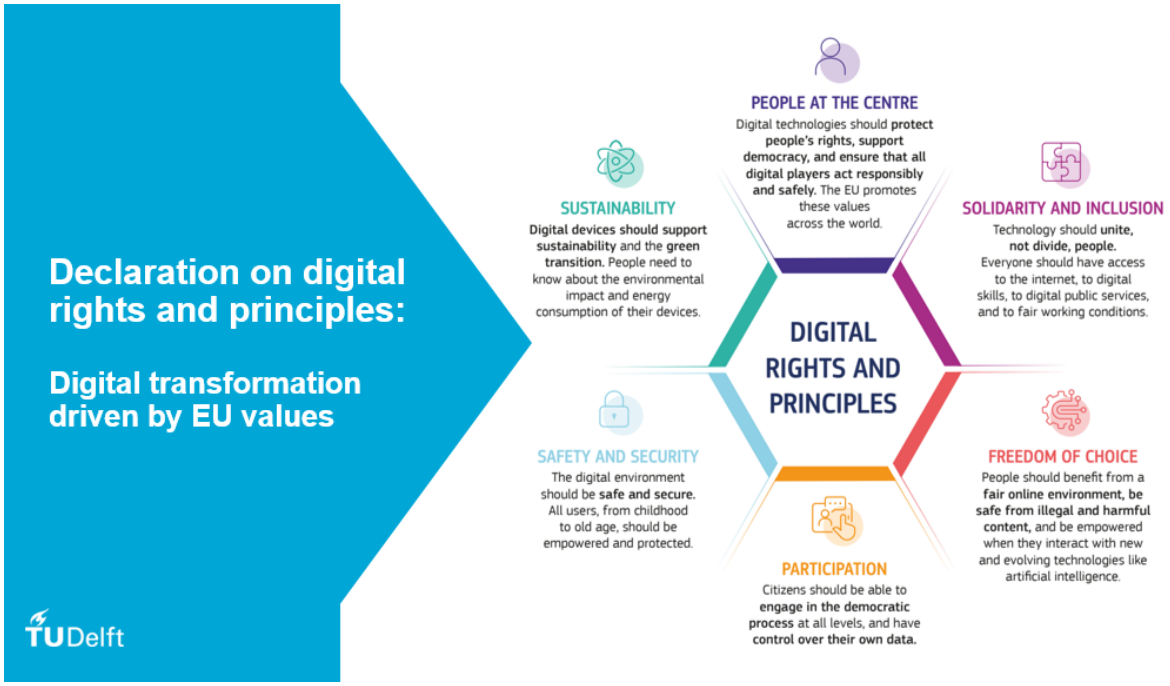
The good news is that there are many digital new technologies and GovTech providers that can help governments to modernize and overcome these challenges. Take for instance Chat GPT and other forms of Artificial Intelligence like Digital Humans, that promise to solve labour shortage problems in various sectors.

These technologies hold enormous innovation potential, beyond what we have ever seen before. Yet, they are not neutral, they do not safeguard human rights and public values out of the box.

An example of Bad GovTech



In Europe, we see a range of guidelines and laws that suggest what is good, and what is bad when using technologies. Take for example the 'European declaration on digital rights and principles for the digital decade'.

This declaration embeds respect for fundamental human rights, rule of law and democracy, and improving the quality of life for all of us. These rights put people at the centre of digitalisation, and technologies must give citizens control over their own data. Technology should not discriminate amongst people.

Bad GovTech does not align with this declaration. A revered example of Bad GovTech is China's social credit system.

This system delivers on the idea that governments should control all aspects of life, by scoring citizens' behaviour and trustworthiness. For instance, if you are caught jaywalking, or don't pay a traffic fine — you lose social credit points and certain rights, such as the right to book a airplane ticket.

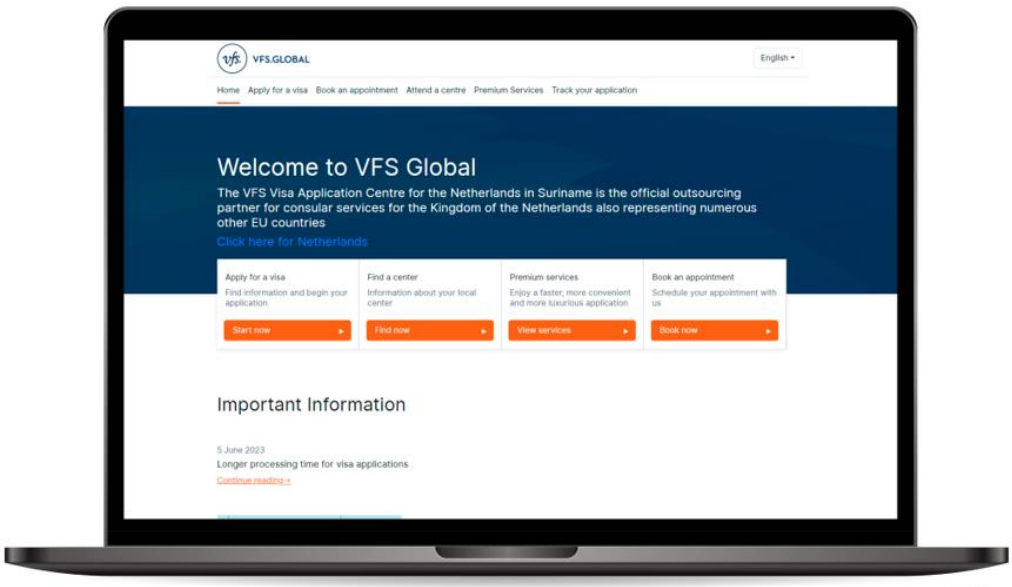
Local governments use various private sector systems to collect and process data to score citizens. In this example citizens do not check and control the state, the state checks and controls citizens.

Normatively speaking, this system can be acceptable by some in China. However, it is un-acceptable in most European countries. Therefore, I consider the social credit system as an example of bad GovTech.

An example of Ugly GovTech

The main difference between bad and ugly GovTech is intentionality. By design, bad GovTech has immoral intentions that attack human rights. With Ugly GovTech, there were good intentions in the beginning, but the solutions are poorly designed.

When it comes to Ugly GovTech, the example of the Child benefits scandal – de toeslagenaffaire - is one that you already know. Please allow me to share a different example of ugly GovTech that is less known.



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My parents are here today. As citizens of Suriname, they need visas to visit their son in the Netherlands. For the visa application process, Dutch Ambassies around the world employ VFS Global, a company based in Dubai.

What is problematic is that my wife and I must share our highly sensitive employment contracts and three recent income statements with VFS Global, a company in Dubai, unreachable via phone and not responding to emails. Where is the compliance to the General Data Protection Act in this? What else to they do with our personal data?

There is more wrong with this example. A recent investigation by Lighthouse Reports and NRC reveals that VFS Global is using a secret and potentially illegal algorithm to profile visa applicants based on their ethnicity. The algorithm is biased towards some ethnic groups. Human personnel at the ambassies rarely challenge the advice of the algorithm, because it requires a lot of effort to do so.

I believe that Minister Hoekstra has no bad intentions, yet the solution design is ugly because it discriminates.

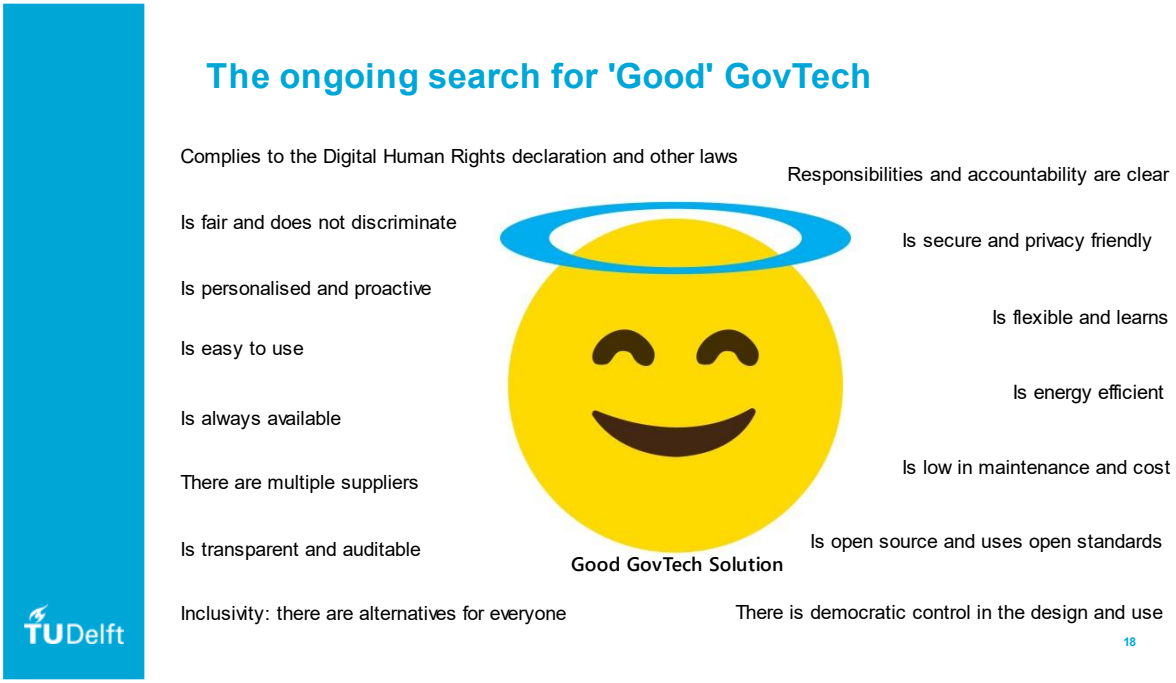
Some of you know that I am also the Diversity and Inclusion officer at my Faculty. I fear that while we are slowly making progress in debiasing and uniting people, we are rapidly losing control over biased algorithms that discriminate.

We can and must do better than this.

The ongoing search for Good GovTech

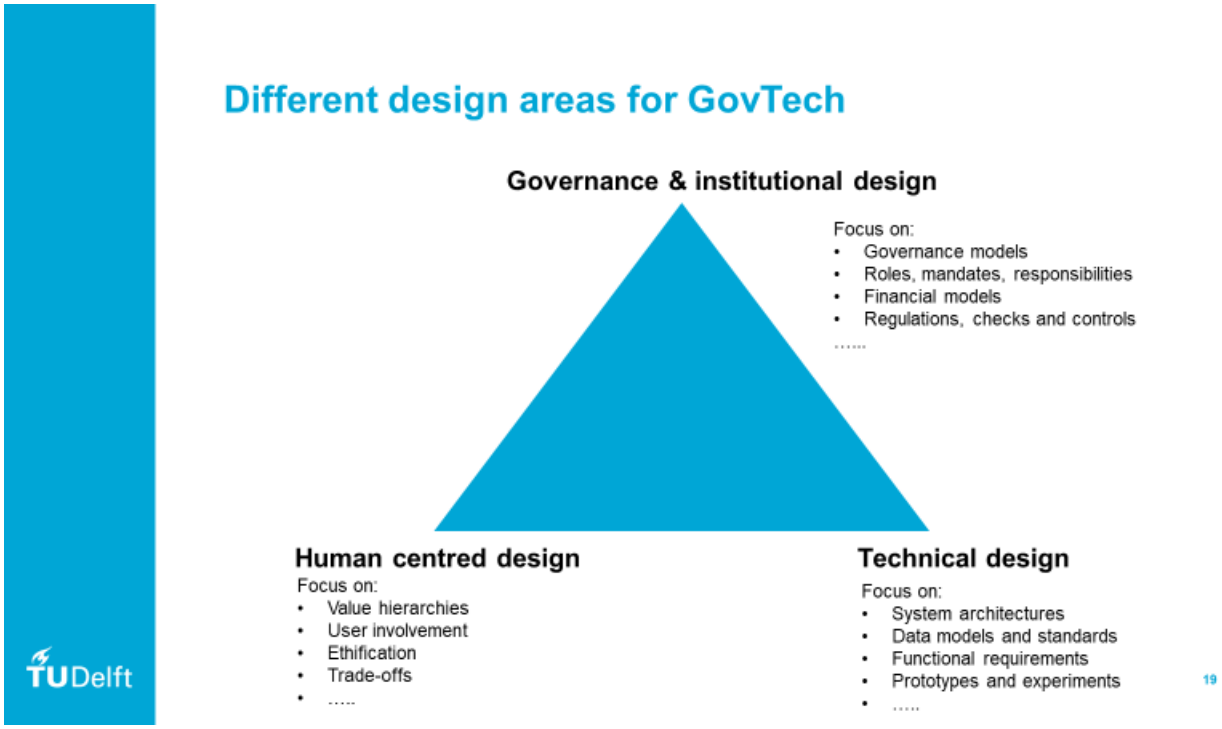
One of the biggest challenges of our time is that significant numbers of citizens do not trust governments and democratic systems anymore. Bad and Ugly GovTech can lead to even more distrust and polarisation.

Therefore, we need to intensify the efforts towards designing and delivering Good GovTech.



Wat is good GovTech? Well, we could start by saying that Good GovTech complies with the European Declaration on Digital Rights and other regulations, like the Algemene Beginselen van Behoorlijk Bestuur.

If you ask students in Delft, these guidelines are not enough for designing Good GovTech. Students quickly formulate additional technical and social requirements.



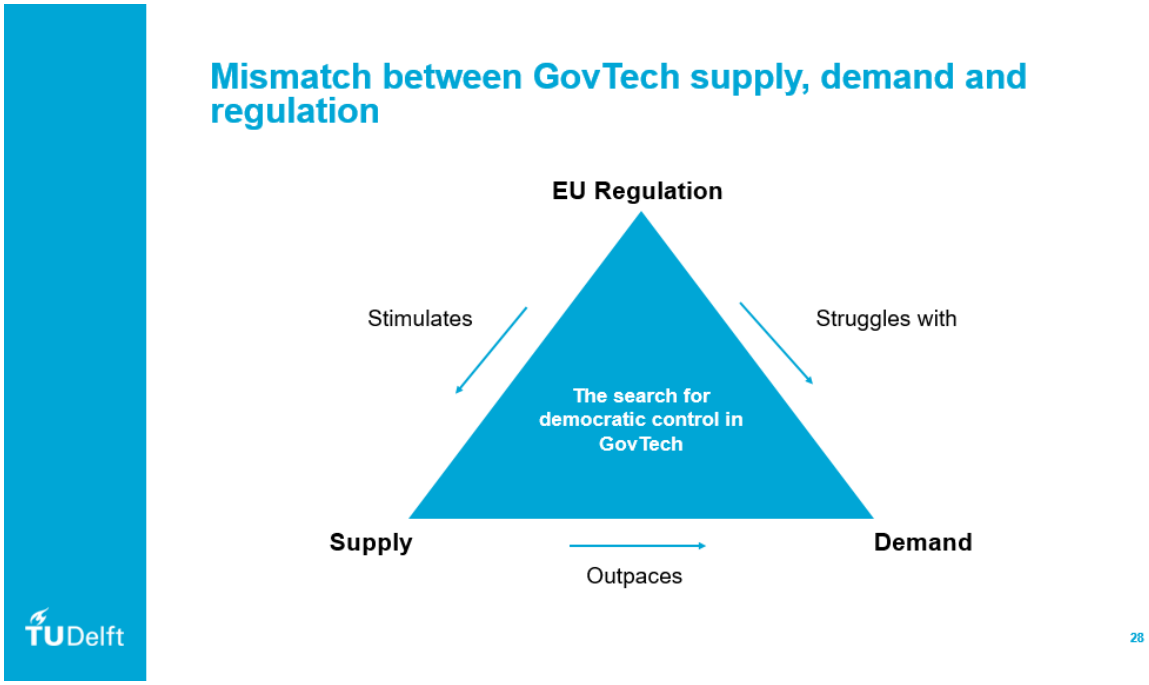
The key is to look not only at the institutional design, we must also look at human centric design and technical design. This leads to the bigger picture of multiple design arena's, requirements, methods and outputs.

Then some difficult questions come up like what kind of value trade-offs do various stakeholders make, and what kind of institutions are needed? Should Public Agencies develop their own GovTech Solutions? Or can market parties and NGOs deliver some GovTech Solutions directly to citizens? How do we maximise the potential and minimize the risks?

These questions keep me busy during the day, and sometimes keep me awake at night. And by now, I have stopped waking up my wife Shailiena for brainstorms because she always replies: go to sleep Nitesh, the questions will still be there tomorrow!

While I do not have all the answers ready for you today, I have suggestions for GovTech research, education and co-creation that should lead to answers. Please allow me to share my vision with you.

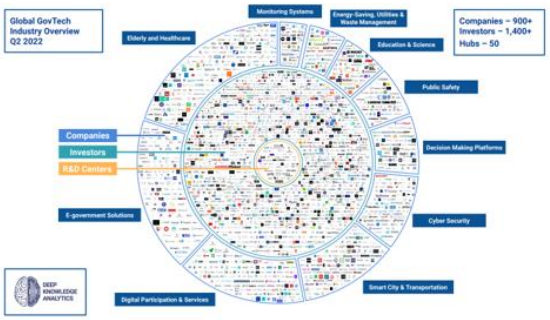
Vision for GovTech: we must fix the imbalance between GovTech supply, regulation and demand



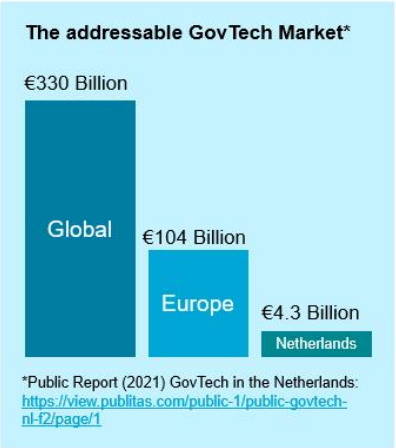
My vision on GovTech is that it can be a great opportunity for public sector innovation and societal progress. Yet there are also risks like bias, harming citizens and vendor lock-in. To understand the potential and the risks, we need to examine the triangle between supply, regulation and demand. My research observations suggest that much is happening on the supply and regulation side of GovTech. However, the demand side is struggling to embrace GovTech. Please allow me to elaborate.

The supply side

The rise of GovTech: startups and SMEs want to provide public services directly to citizens

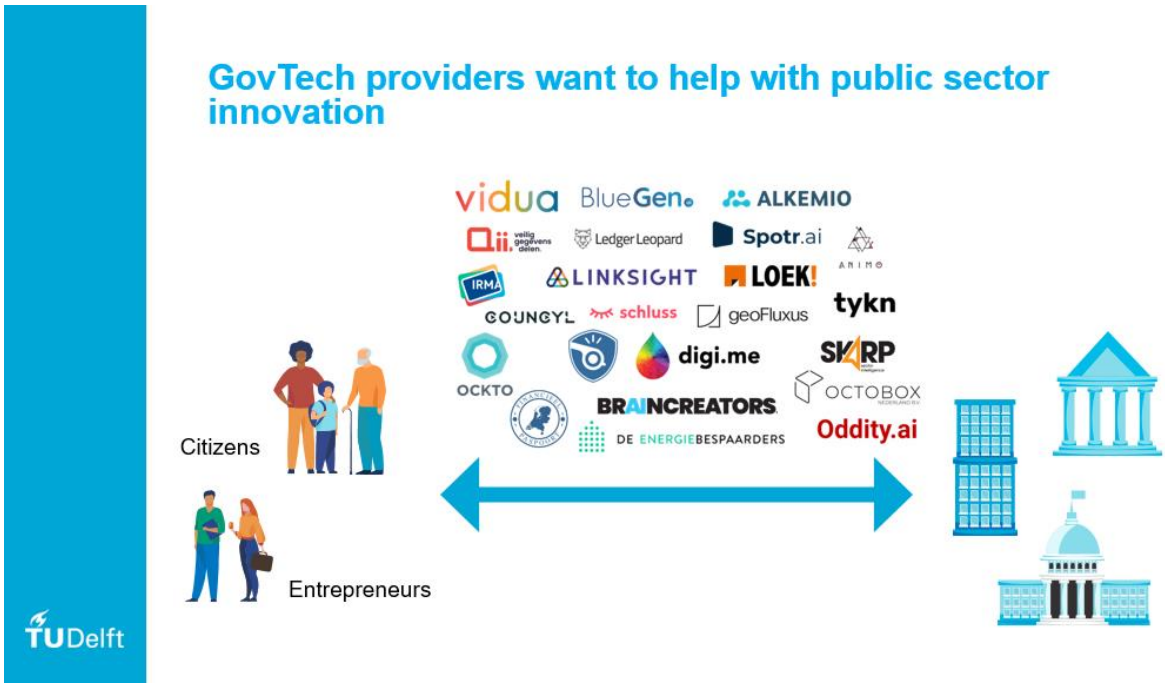


Source: www.govtech.global



Globaly we see a rise in the number of GovTech solutions designed and delivered by non-state actors like statups and NGOs'. The German GovMind database holds more than 1,850 GovTech providers across Europe.

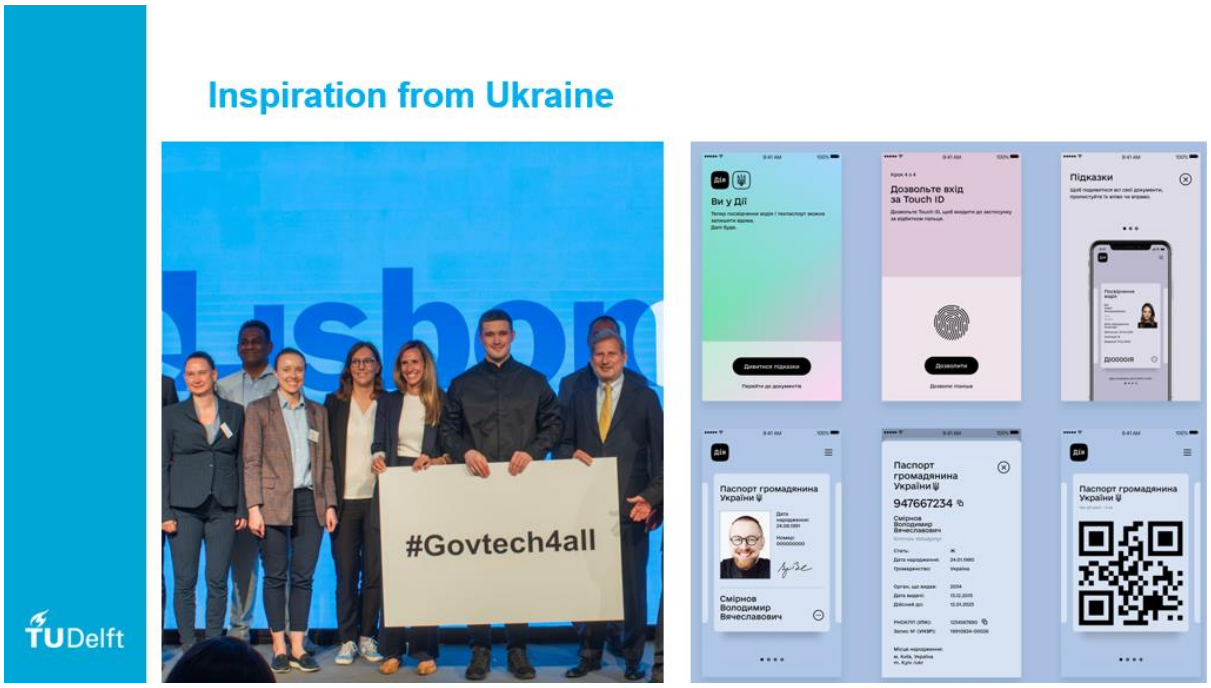
This growth suggests that you can earn money with GovTech. A study by a British consultancy firm estimates a globally addressable market of € 330 Billion a year, and a European addressable market worth €104 Billion a year. The Dutch market is around 4 billion euro's a year. Obviously, these are just estimates, but they do give a feeling about the potential.



The number of GovTech providers in the Netherlands is also growing. There are more and more startups and scaleups that want to provide socio-technical solutions for the public sector.

One of the great things in my job is discussing GovTech design, engineering and governance challenges with these innovators. I learn from them, and they learn from me.

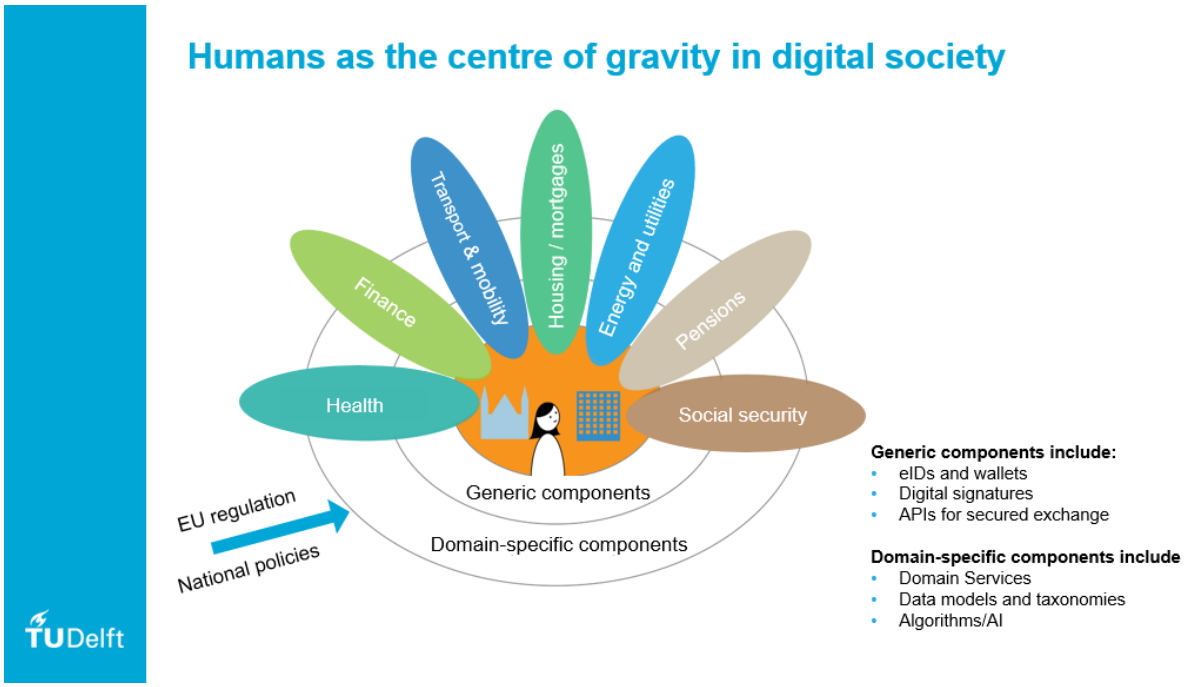
These innovators are all in the room here today and you can meet them during the reception. Just to be clear, I do not have any shares in these GovTech startups. It is thanks to Digicampus that we are in contact. They show how much we can innovate in the Netherlands. We can also get some inspiration from other countries.



I was in Brussels last month together with the Ukrainain Minister of Digital Transformation, Mykhailo Fedorov. He is the one holding the GovTech 4 All sign. He presented Ukrains Digital Government solution called Diia, which means Action. This GovTech solution keeps Ukrainain society functioning during this terrible War. Citizens can do almost everything with the app.

And the minister mentioned how the high level of automation helps to fight corruption. Algoritims do not ask for bribes, he said. The minister underlined the ambition that Ukraine wants to become the most digital convenient nation in the world.

They want to achieve this by working closely with market parties. While I do have some security concerns, and we cannot copy the Ukranian approach everywhere, there are things we can learn, and open source components that we can reuse in the Netherlands.



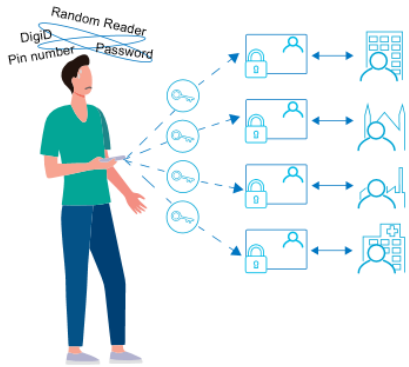
All these innovators acknowledge that humans should be the centre of gravity for GovTech design. They share the vision that GovTech is not only about digital government, it's about how we can responsible employ digital technologies across organizations, sectors and countries.

Designing GovTech solutions requires us to be more strategic about components that should be generic and useful across multiple domains, and specific components that fit the unique requirements of a domain like mobility, social security, health and pensions.

The dream of every service provider, from bank to hospital, is to give humans a personalized service. For personalisation, organisations need your data.

Data wallets as an instrument for transitions in other sectors

From: organization centric digital services



Every organization collects your data, you can only view what data they have

To: human centric digital services

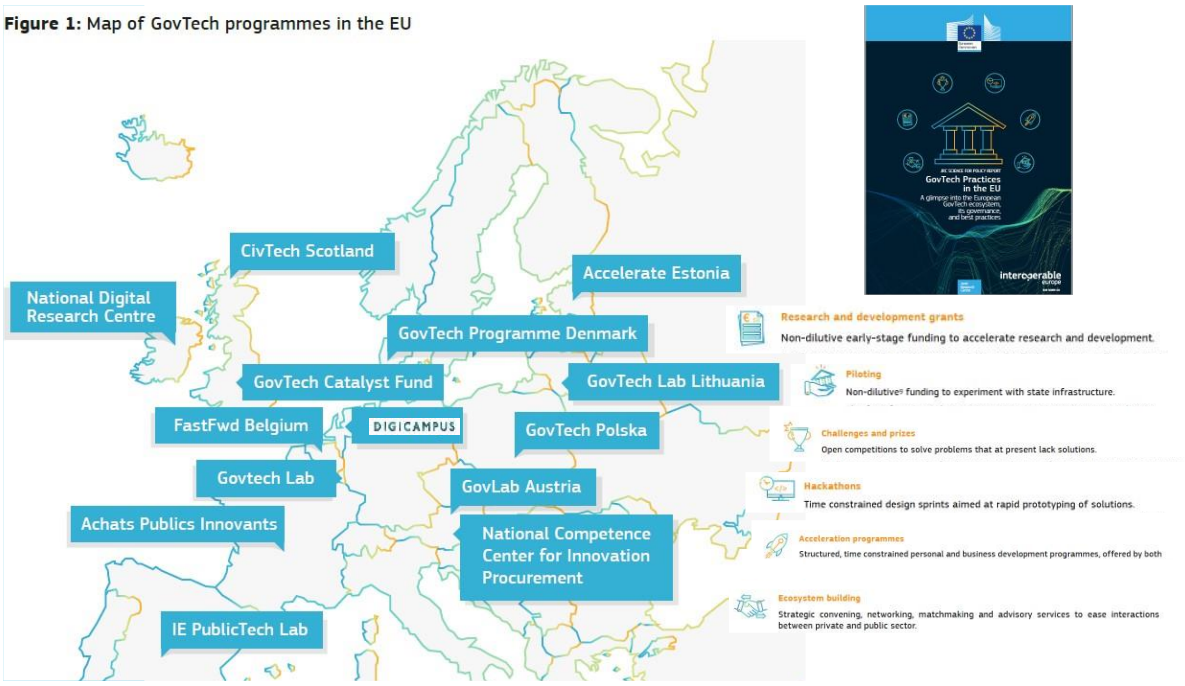
You decide who can use your data for personalized service delivery

Today, your data is scattered across various organisations in the public and private sector. Collecting and sharing data across sectors is a major burden. What if we can share data with service providers in various sectors with just a view clicks? And in return you get personalized health services, medicine or financial advice from professionals, or from AI?

Imagine that you can get personalised social benefits from governments, depending on your income, family situation, housing and energy cost? With new GovTech solutions such as trustworthy Digital Identities and data wallets, this dream can become reality.

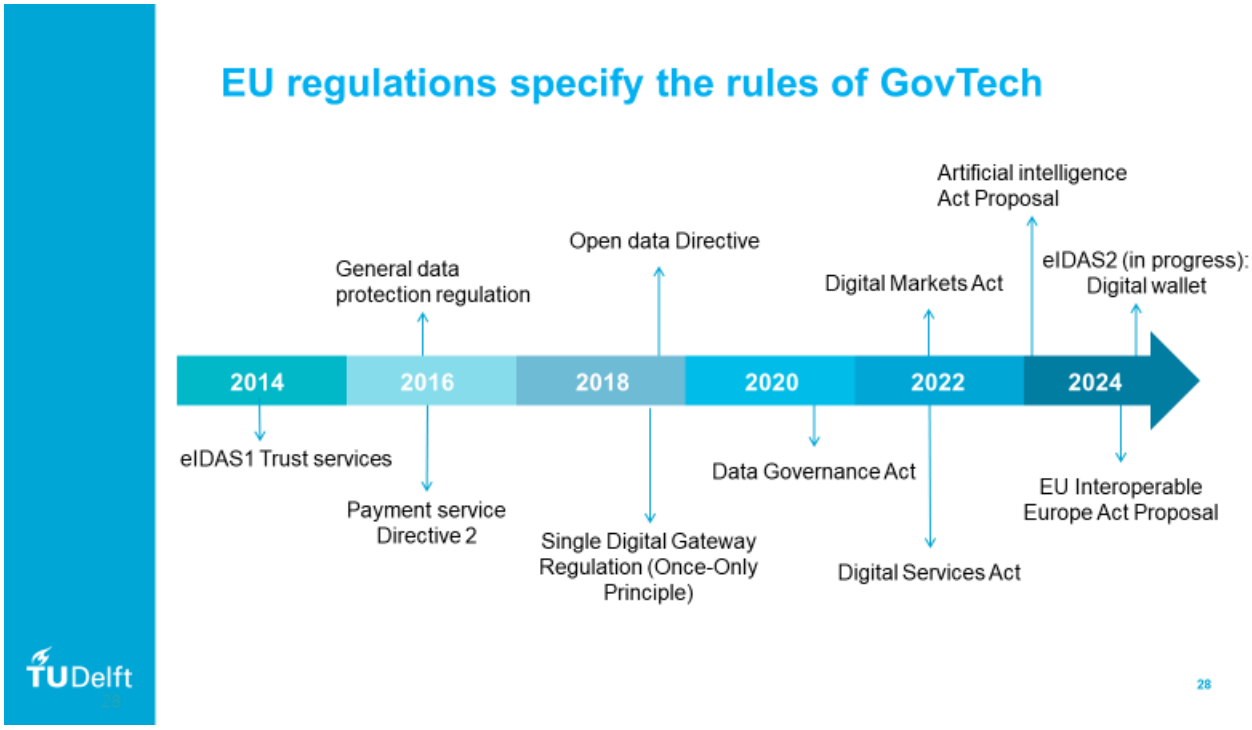
Seeking to realize this dream, we see GovTech labs, accelerators, incubators and Hubs popping up all over Europe, including Digicampus in the Netherlands.

Figure 1: Map of GovTech programmes in the EU



The regulation side

One of the reasons for the enormous interest in co-creating GovTech solutions is the clarity provided by EU regulations.



EU regulation plays a crucial role in promoting human centric GovTech, prioritizing the needs and rights of citizens.

Through guidelines, standards and building blocks, the European Commission wants to ensure that GovTech will be designed from a human centric perspective, embedding values like accessibility, transparency, and accountability.

Moreover, and this is very important, the European Commission sees European GovTech as the remedy against American and Chinese BigTech.

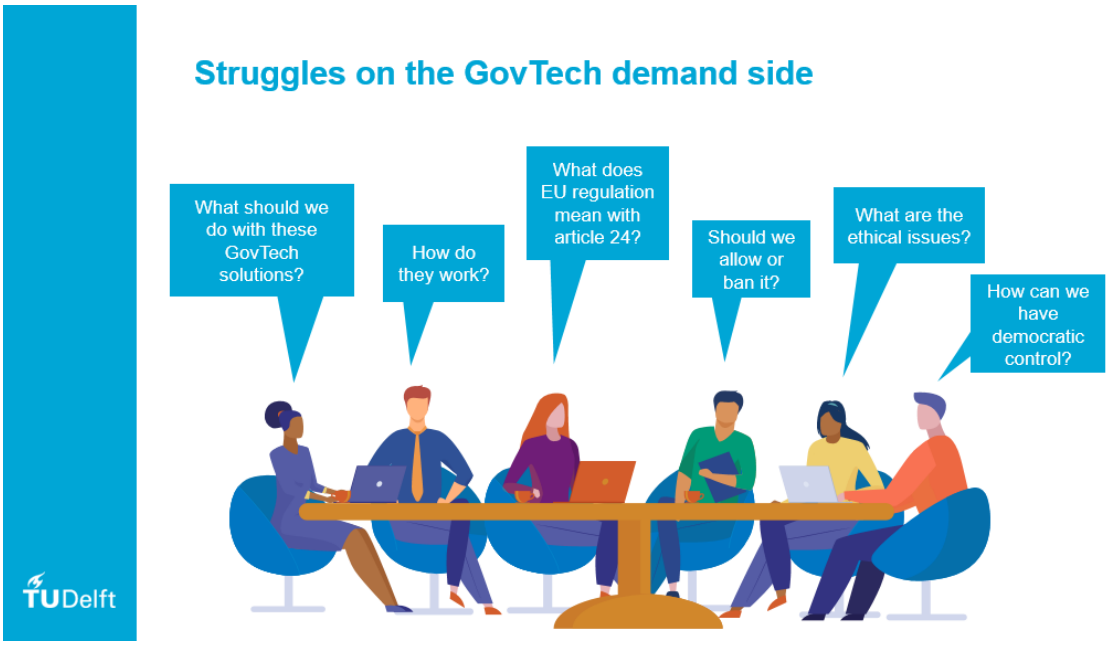
One of the key reasons the EU looks to boost GovTech is the fight for Digital Sovereignty.

All of us have benefited from Big Tech solutions from the US like Google, Microsoft, Apple and Facebook. We are now aware that even though we did not pay for many services with money, we pay with our data. When it comes to the public sector, BigTech players already dominate the market for cloud services.

The European commission is drafting new regulations against this, including the Digital Markets Act. The proposal for the new Interoperable Europe Act goes one step further and explicitly stimulates public agencies to work with GovTech providers.

Struggles on the demand side

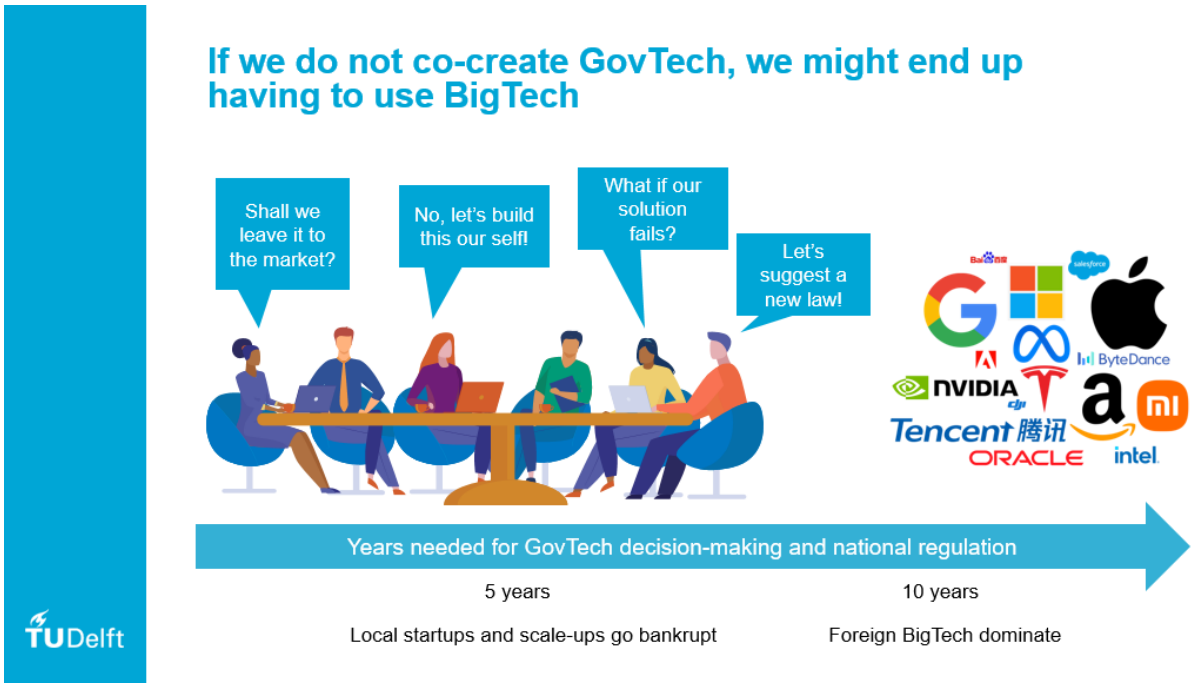
On the supply and regulation side, Europe is clearly pro-GovTech and that is fuelling the rise of GovTech solutions.



However, on the demand side, local public agencies are still struggling with GovTech. And this is understandable. GovTech will lead to change. It is not easy to envision what the new roles and responsibilities of public agencies will be. This is an uncomfortable situation for politicians and policy makers.

What should we do with these GovTech solutions? Must we allow them based on EU Regulations? Or combine them with our existing solutions like DigiD, MijnOverheid and Digipoort? How can we exercise democratic control? How do we avoid vendor lock-in? And, perhaps the question I have heard the most thus far is: How do we safeguard public values in the age of GovTech?

These are difficult questions indeed, and it will take time to do the necessary research and formulate the answers. However, there is also need for speed.



We can spend many years debating about how to regulate GovTech using classical instruments like laws and regulations. These instruments take years to develop, are reactive and are never precise and flexible.

In the meantime, foreign BigTech players are patiently studying European regulations and are preparing to comply and dominate the GovTech market. I fear that many startups and scaleups will not survive the lengthy regulatory phase and will simply go bankrupt. In that case, we unwillingly will become dependent on the Big Tech parties, because they will be the only remaining option for public sector innovation.

My proposition is that we need more precise, participative and adaptive methods for exercising democratic control. Options include steward ownership, ethics committees and public-private trust frameworks based on digital commons models, referring to the distribution and communal ownership of technical resources. A proven approach for shaping and trying out these forms of democratic control is co-creation in a multiple helix setting.

Digicampus: research and impact through mission driven GovTech co-creation

The need for multi-helix collaboration is stated everywhere

Page 33: Coalition Agreement
Science, business, startups, scale-ups, knowledge coalitions and government are joining forces to capitalize on the opportunities presented by digital technologies.

Page 18: Hoofdlijnen brief Beleid Digitalisering
It is also important for the government to work together in public-private partnerships to innovate and join forces with companies, startups, scale-ups and knowledge institutions to capitalize on opportunities.

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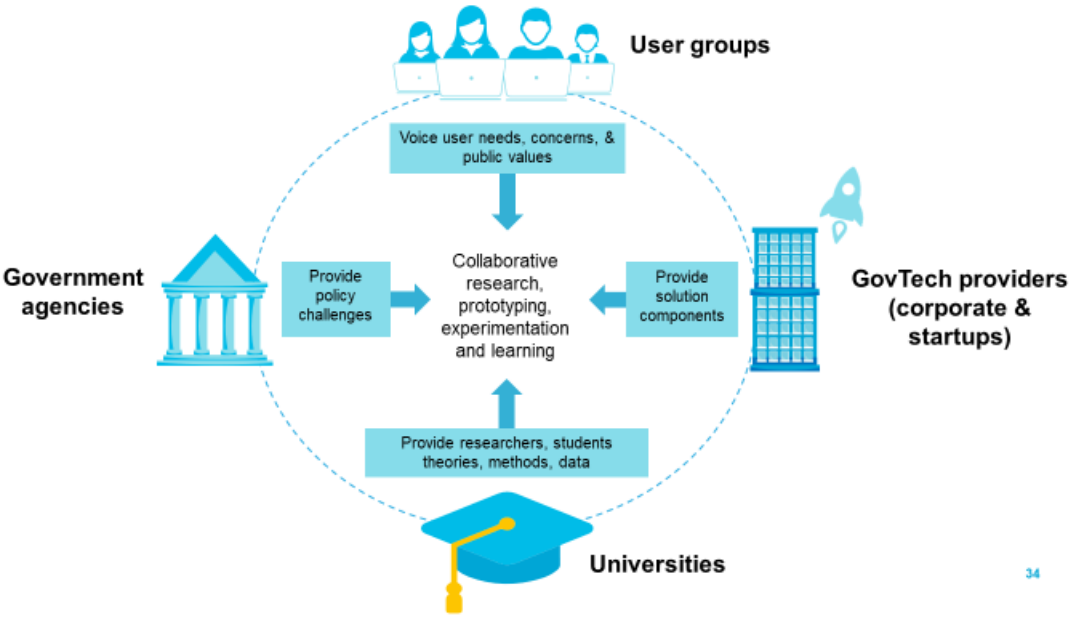
The need for multi-helix collaboration between public agencies, knowledge institutes, companies and citizens is stated everywhere, including the coalition agreement.

Working together can help us to innovate faster. Yet, it is very hard to organize this form of multi-helix collaboration.

Digicampus: a multi-helix approach for GovTech co-creation



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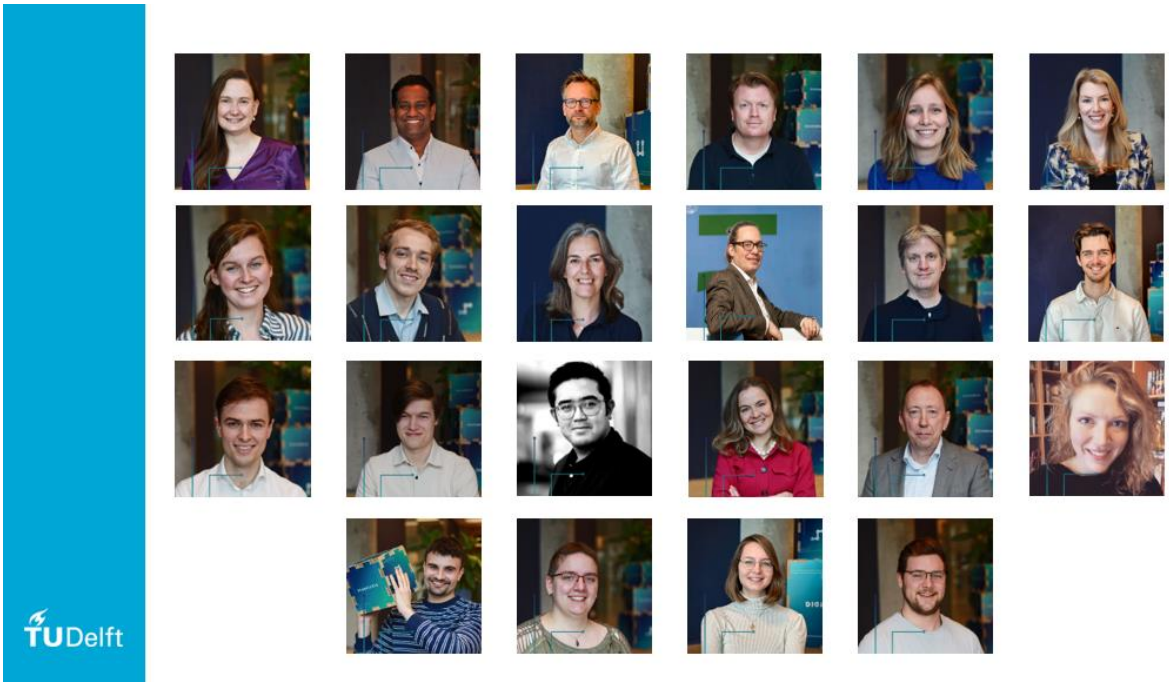
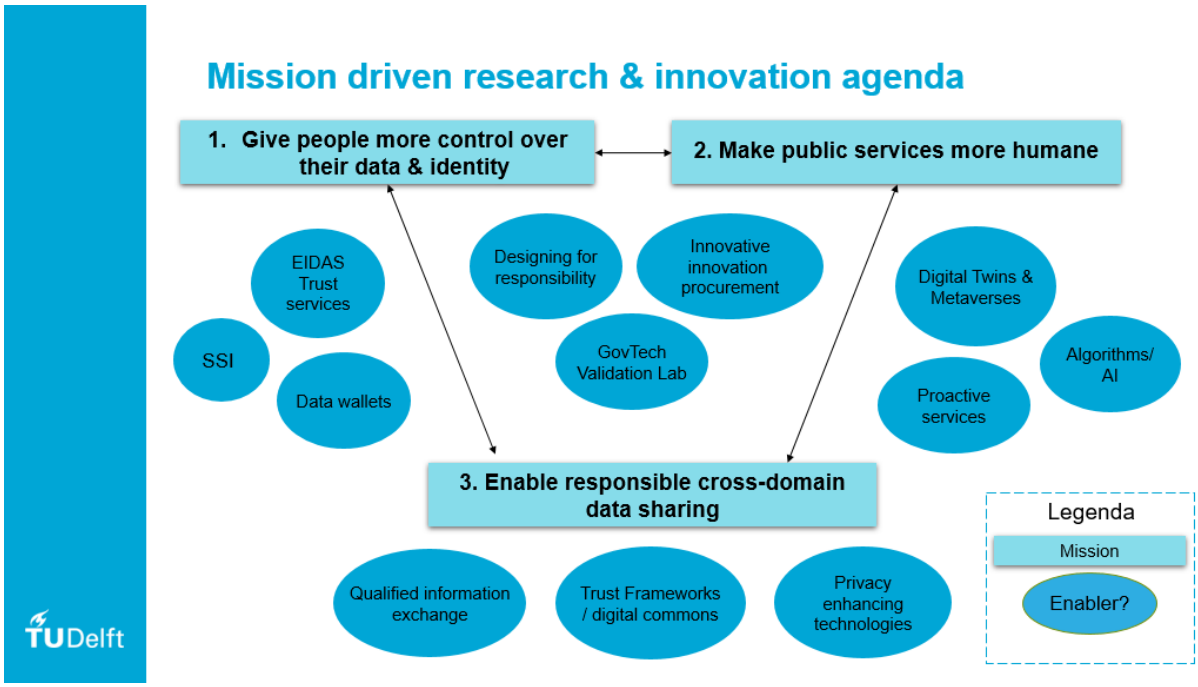
Before I started as professor, there was no place where we could collaboratively learn about GovTech. I am very happy that TU Delft, together with the Ministry of Interior, Logius, ICTU and NL Digital saw the need to launch Digicampus. Recently, the Vereniging van Nederlandse Gemeenten and the province of Zuid-Holland have also joined Digicampus.

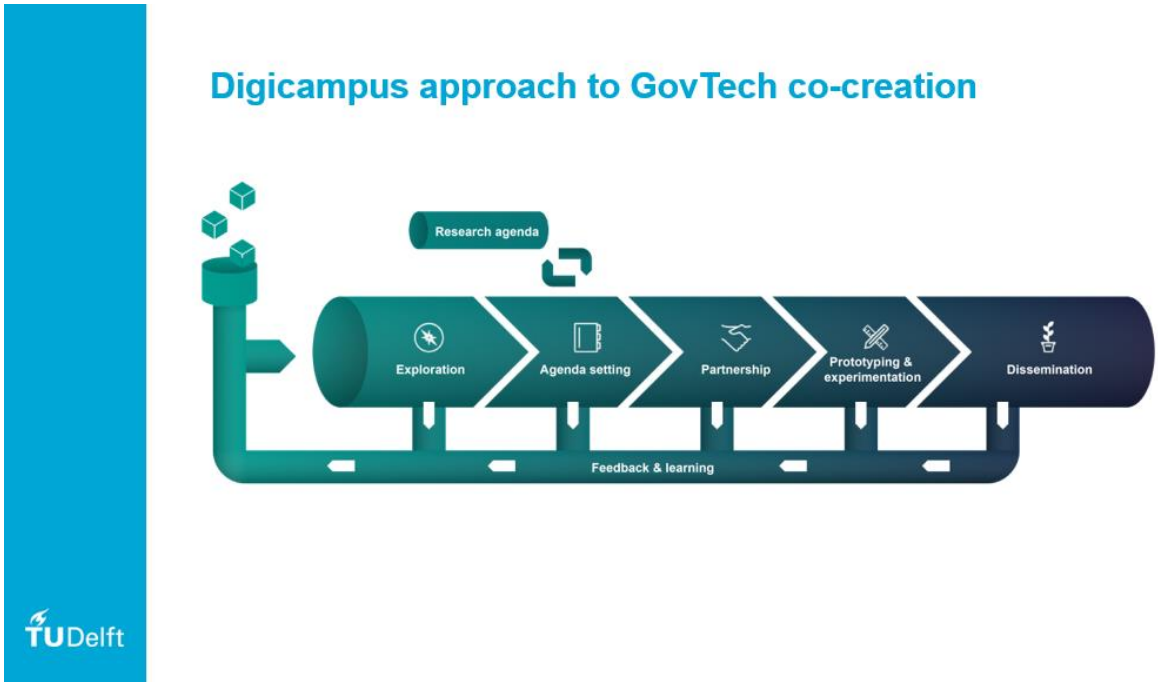
Now, four years later, Digicampus has become an internationally recognized vehicle for collaborative GovTech research, experimentation and learning.



My friends at Digicampus are all in the room. If you have any difficult questions on GovTech and cocreation, please ask them during the reception.



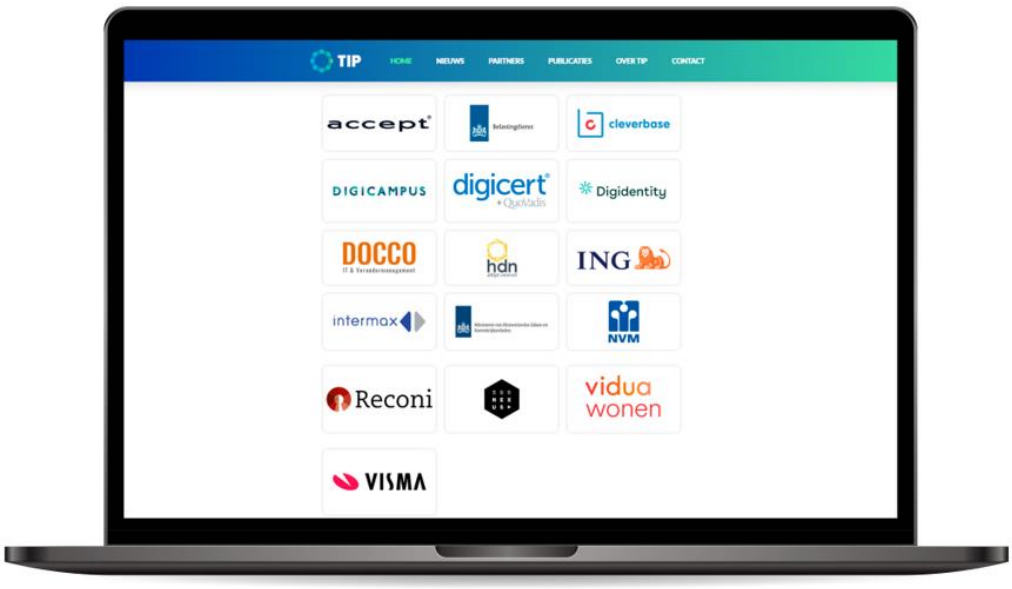
At Digicampus, we work on building coalitions for responsible GovTech co-creation. We consider new concepts and technologies like data wallets and AI not automatically as solutions, but as potential enablers for responsible innovation.



This means that solutions are designed via collaborative processes like prototyping, experimentation, learning and standard setting in a multiple helix setting. We work together with the Delft Digital Ethics Centre – led by Professor Jeroen van den Hoven - for the ethification of solutions.

Example of a successful co-creation coalition

An example of a successful co-creation coalition shaped by Digicampus is the Trusted Information Partners (TIP in short).



TIP started at Digicampus in 2020. Today, TIP is chaired by Arjan Gielen, and includes several partners from the public and the private sector.

Following the digital commons model, the goal is to co-create standards for trustworthy data sharing that can be used across multiple domains, including public services, banking, and health.

Trusted Information Partners as an example for GovTech co-creation

- Public-private co-creation of a cross domain trust framework and interoperability standards.
- Compliance by design to EU regulations such as eIDAS and GDPR.
- Digital commons: distribution and communal ownership of technical resources.
- Openness, everyone can join the governance.
- Knowledge development and sharing together with universities.

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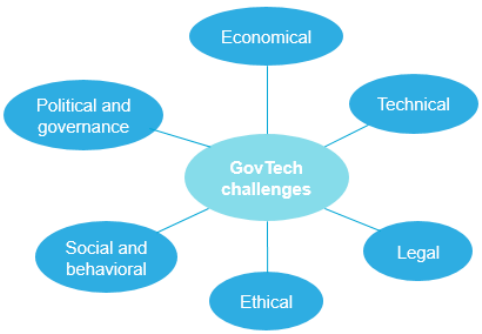
TIP lays a foundation for developing Good GovTech. Why? Because it satisfies several requirements for responsible innovation and data sharing, including the public-private co-creation of a cross domain trust framework and open standards.

By satisfying these requirements, TIP also seeks to mitigate the main risks posed by GovTech, including a winner takes all a monopoly based on a closed digital platform.

We need more precise and transdisciplinary GovTech theories and methods



- How can we design for trust in GovTech ecosystems?
- What are responsible GovTech architectures for data exchange?
- How can we balance system performance and human control?
- How can we minimize the risks and maximize the benefits?
- …..

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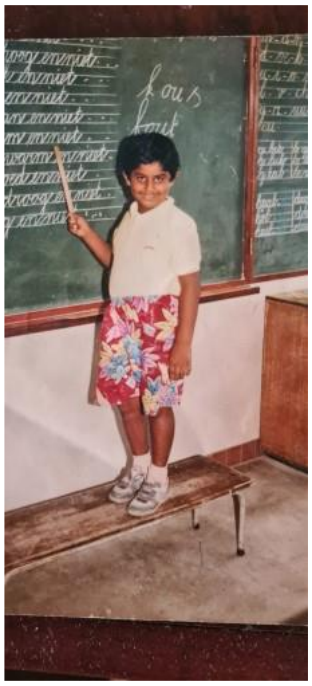
TUDelft

TIP is just one example and there are still many research questions open when it comes to GovTech co-creation.

Questions like how do we design for trust in GovTech ecosystems? And What are responsible GovTech architectures for data exchange? Given the socio-technical nature of GovTech, we need transdisciplinary theories and method geared towards the specific characteristics of GovTech. I have the privilege to perform this research with a great team of PhD candidates.

Education and knowledge sharing

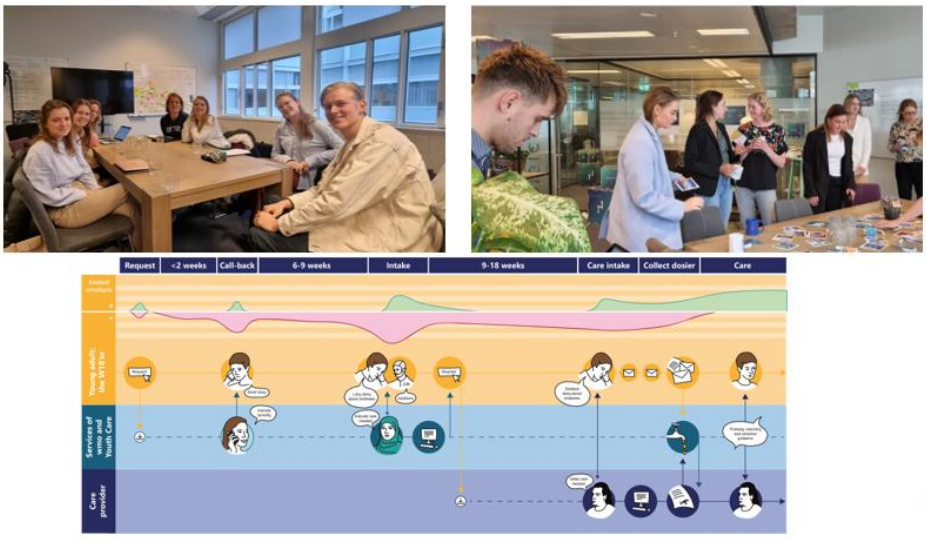
At Delft University, research forms the starting point for education. If we are to maximise the potential and minimize the risk of GovTech, we need to educate the next generation of engineers and policy makers.



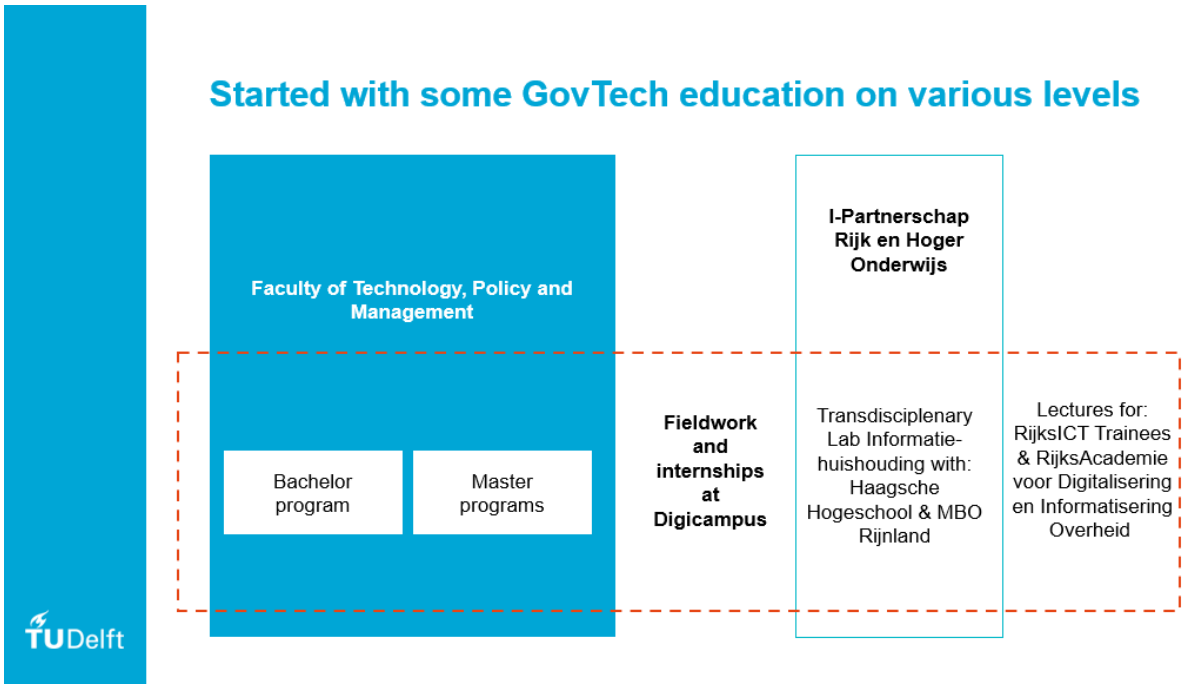
Therefore, teaching is an important part of my job. I take this role seriously and have been practising for many years now.

I enjoy teaching because you learn a lot by interacting with others. Today's students are very technically skilled, and some are idealistic. For them, it is only logical to give priority to human rights, instead of economic growth. A student even asked me how energy efficient some GovTech architectures are. I do not know, but this is a great future research subject.

Delft students working with policy advisors at Digicampus



Over the years, more than 30 students have graduated on Digicampus topics, which are often collaboratively formulated with partners at government agencies. These are not only students from TU Delft, but also from Radboud, Utrecht, Erasmus, Leiden and Haagsche Hogeschool. The creativity of the designs that students deliver for GovTech is amazing.



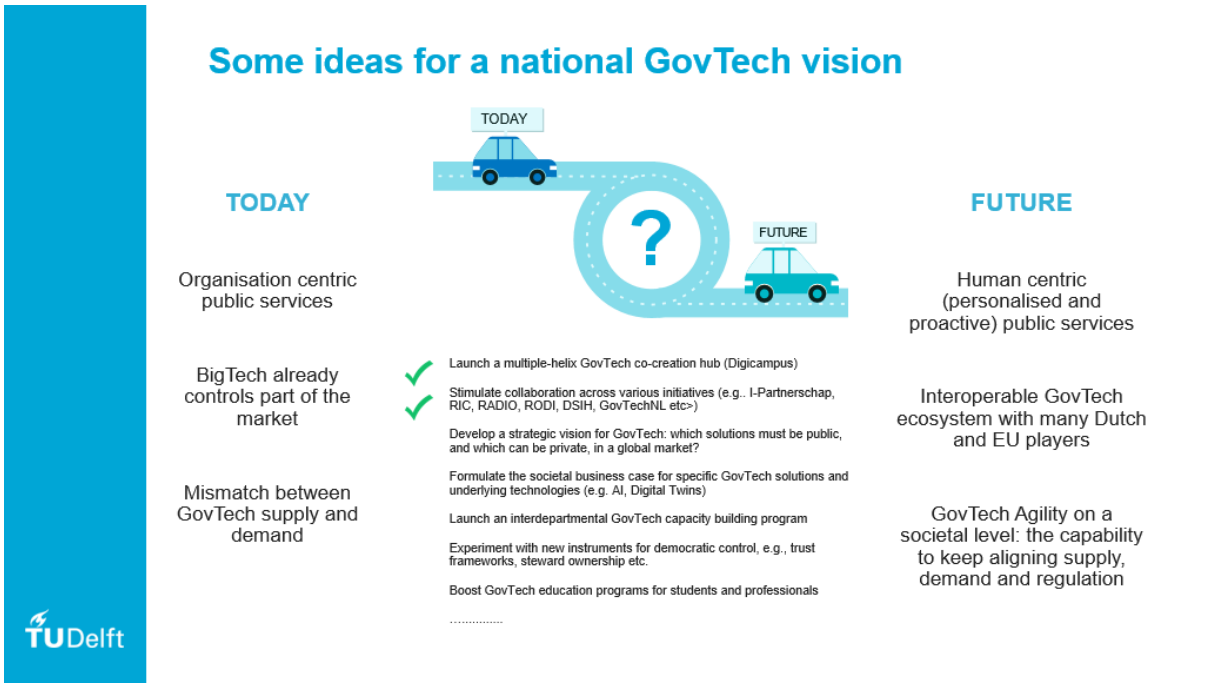
I have started with a little bit of GovTech education and graduation projects on various levels and have plans for more. An important driver to mention here is I-Partnerschap Rijksoverheid and Hoger Onderwijs. I fully share their goal to get more brainpower from schools and universities to work on digitalization challenges in the public sector.

Addressing the challenges requires that we employ all the talent in society, including the ones coming from MBO – Secondary vocational education; HBO – Higher professional education and Universities. One of the efforts here is to scale up the Informatie-huishouding Lab West, a joint effort by I-Partnerschap, the Ministery of Interior, Haagsche Hogeschool, MBO Rijnland and TU Delft. Here students from different backgrounds and with different skills and tools all contribute to innovative designs for GovTech.

Call to action: lets prevent Bad and Ugly GovTech by creating Good GovTech

The trinity of the Good, the Bad and the Ugly shows that a lot is happening on GovTech. The pessimist might say: governments do not have the right knowledge and are going to fail in co-creating GovTech with local startups and scaleups, ultimately pushing us in the hands of foreign BigTech. Those who know me, know that I am an optimist: we must maximise the potential and minimize the risks of GovTech.

So, how do we do that?



We know where we stand today. We also have a high-level idea of where we want to be in the future. The difficult thing is going through the journey together. We are on the right track in the Netherlands and have launched collaboration hubs like Digicampus, I-Partnerschap and GovTech.NL. There is more to be done. Probably the most urgent thing is to formulate an adaptive vision and plan for GovTech. We must become more strategic about GovTech. What should public agencies design and deliver, and what do we expect from the private sector? In which technologies do we want to invest as nation, versus which solutions can be build using open-source components developed elsewhere? We need to formulate the societal business case for GovTech.

I know, implementing these ideas will require investments. Let's put this into perspective. Globally, governments spend more than 500 billion euro's a year on digitalization. The Dutch Government spends almost 7 billion euro's a year on Digitalization. What if we allocate just 1% of that amount to build the Dutch GovTech ecosystem? This would help boost our national GovTech agility and deliver a human centric public sector.

Closing and thanks

I am very proud to stand here today and there is so much more I would like to say about GovTech. Let's continue the conversations another time. Before I conclude my talk, I would like to thank all of you for being here today.

My special thanks to Aukje, Caspar, Marijn, and Mark for their support for launching this professorship. I would like to thank the Minister for Digitalisation, Alexandra van Huffelen and her team for co-funding Digicampus and this professorship.

The same goes for my former and current colleagues at Digicampus, especially Thanim, Flori and Giulietta who share the dream of co-creating Good GovTech. And all my colleagues at the Faculty of Technology, Policy and Management who have given me a warm welcome.

My thanks also to Remco and Niels, who have enabled me to conduct academic research while I was working in Industry. My appreciation goes out to the many people behind I-Bestuur that have organized the GovTech Day program for this morning.

I must also thank my family and friends in the Netherlands and Suriname who make life so much more fun.

I would not stand here today without the love and support from my wife Shailiena and daughter Nishitha.

I know that it is not easy to live with someone who spends more hours working than with his family, but I promise I will do better.

Lifelong learning

Finally, allow me to close with one of the lessons I learned. When I was still a student, I competed in strong man tournaments. The hardest challenge was to flip these big tires. Since I never won, I decided to train hard and spend many hours in the gym. Now, 20 years later, I have learned, it is so much easier to just roll the tire.

Ik heb gezegd!

TU Delft

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