

# Defragmenting the Construction Industry

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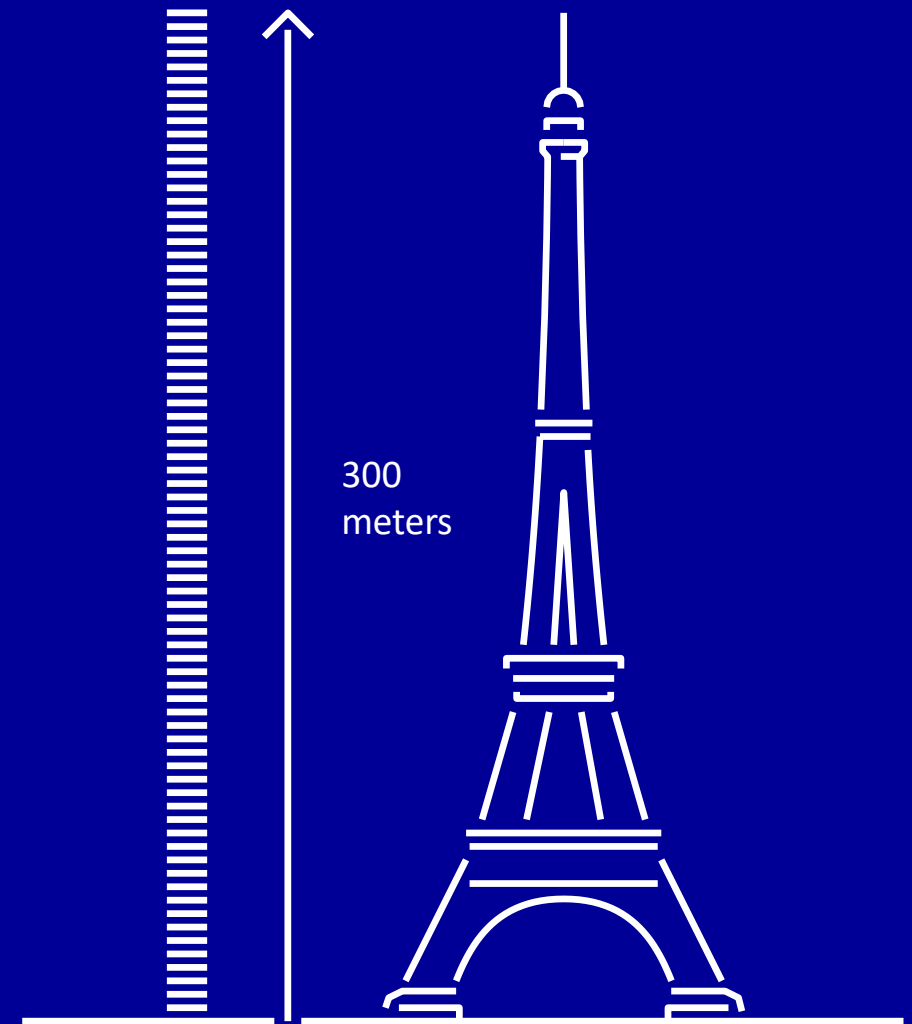
# a modest country that extends beyond its borders

- + population: 1.3 million
- + area: 45,339 km<sup>2</sup>
- + currency: Euro
- + member of: EU, NATO, WTO, OECD, DIGITAL 9
- + ICT sector: 7% of GDP



# we are a digital society

- + 'the most advanced digital society in the world' –WIRED Magazine
- + 99% state services are online
- + digital signatures save 2% of GDP
- + a few hours to start a company
- + hassle-free e-taxation



A stack of paper saved each month



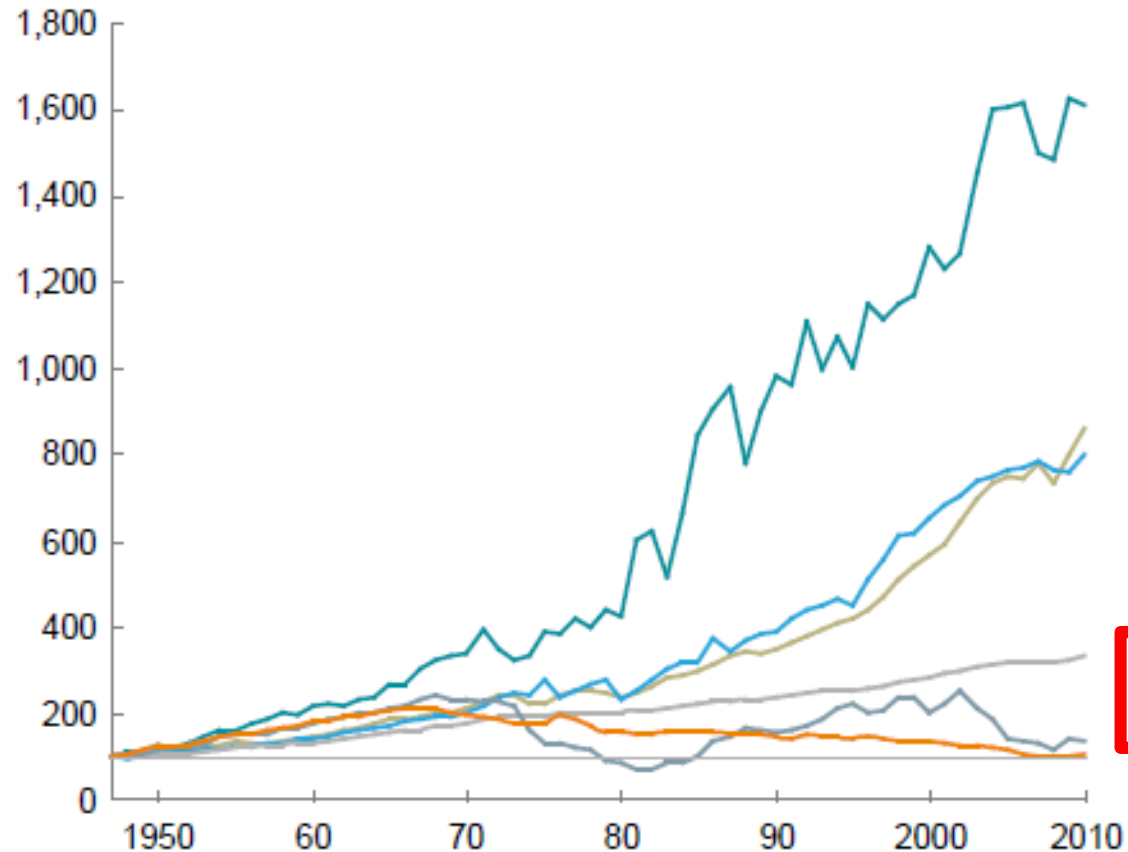
# building registry

National database for **all buildings**

- + over 3 million data requests monthly via e-government services
- + over 32k procedures handled yearly
- + 400GB database
- + 2.8 million documents

# where is the problem?

Gross value added per hour worked, constant prices  
Index: 100 = 1947



	Compound annual growth rate, 1947-2010 %	Total change
Agriculture	4.5	16.1x
Manufacturing	3.5	8.6x
Wholesale and retail	3.4	8.0x
Overall economy	1.9	3.3x
Mining	0.5	1.4x
Construction	0.1	1.1x





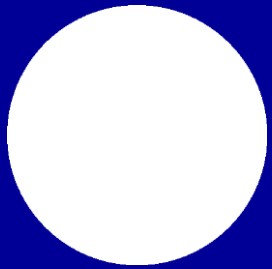
# complexity

An aerial night photograph of a city, likely Helsinki, showing a dense urban landscape with various buildings, streets, and a harbor in the background. A prominent church spire is visible in the distance. The city lights are illuminated, and the water reflects the ambient light.

- + Large amount of stakeholders
- + Fragmented nature of the industry
- + Long building lifecycle
- + least digitized

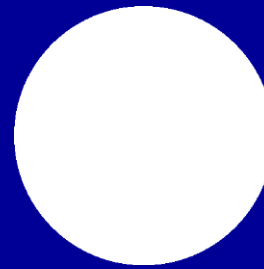


# role of government



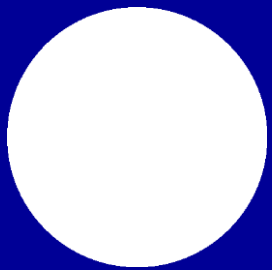
## Legislation

Direct and influence adoption of new solutions using relevant legislation



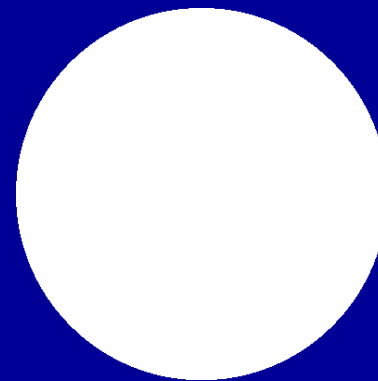
## Process improvement

Map and improve existing processes, support adoption of new tools and methods



## Education

Develop educational curriculums and government orders to develop skills for innovative



Create the environment for secure and reliable data exchange

>> e-construction platform

# e-construction platform

lossless **exchange of standardized and trustworthy data** between all stakeholders throughout the building lifecycle

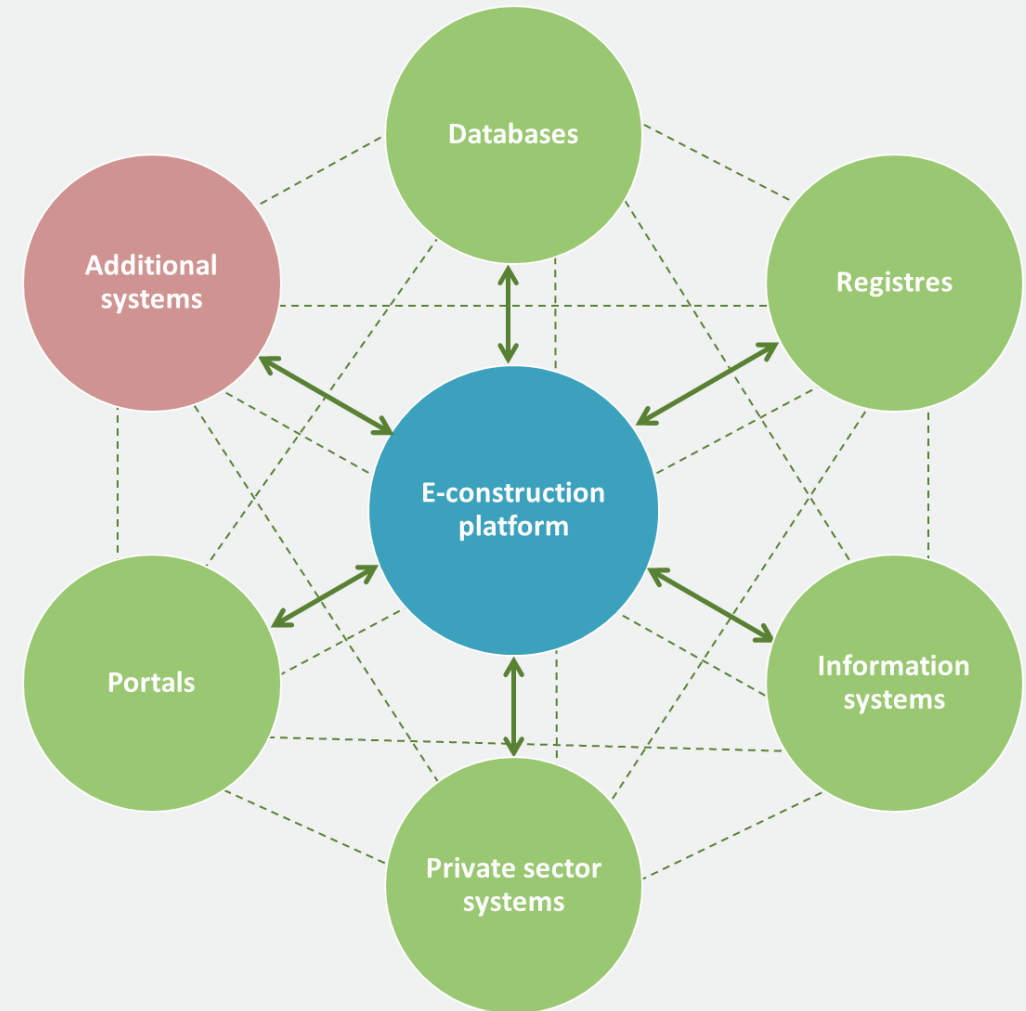
- + Better data management = improved decision making
- + BIM becomes the norm
- + more efficient and transparent public processes
- + added value from **new digital products and services**



# integration

connecting **built environment** data and services without a centralized or master database

- + using existing e-gov infrastructure (x-road)
- + open platform and API-s
- + secure by design with e-ID authentication
- + KSI blockchain used for integrity verification of government registries
- + access point to **digital twin**





# digital twin

- + “a digital replica of a living or non-living physical entity”
- + Digital mirror of the physical world
- + Information = data + context
- + Visualization helps to improve readability - adds context













Download

Underground

Above ground



2000x  
May 3 2019  
15:42:23 UTC

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CESIUM ion  
Data attribution

May 3 2019 12:00:00 UTC

May 3 2019 16:00:00 UTC

May 3 2019 20:00:00 UTC

May 4 2019 00:00:00 UTC

May 4 2019 04:00:00 UTC

May 4 2019 08:00:00 UTC



## J. Vilmsi tn 37

Nimetus	elamu
Ehitisregistri kood	101015442
Seisund	EHITIS_SEISUND_KASUTUSEL
Ehitisealune pind (m <sup>2</sup> )	186
Suletud netopind (m <sup>2</sup> )	471.8
Maapealsete korruste arv	3
Maa-aluste korruste arv	-
Kõrgus (m)	10.2
Energiaühikuklass	-
Aadress	Harju maakond, Tallinn, Keslinna linnaosa, J. Vilmsi tn 37
ADS-OID	EE00636697
Esmase kasutuselevõtu aasta	1949



CESIUM ion

Data attribution

Sep 23 2019 08:00:00 UTC

Sep 23 2019 12:00:00 UTC

Sep 23 2019 16:00:00 UTC

Sep 23 2019 20:00:00 UTC

Sep 24 2019 00:00:00 UTC

Sep 24 2019 04:00:00 UTC

Sep 24 2019 08:00:00 UTC





## Base layers

[Land Board map](#)[Land Board photo](#)[GeoDataHub map](#)

## Utilities

- ☒ Communication
- ☒ Drains
- ☒ Street lights
- ☒ Water
- ☒ Sewers
- ☒ Low voltage cables
- ☒ Medium voltage cables
- ☒ Gas
- ☒ Unknown objects



CESIUM ion

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# collaboration

between public and private

- + Public procurers as the model client
- + National digital infrastructure for construction
- + Active participation and support from private sector, open sharing of knowledge
- + international co-operation



# agility

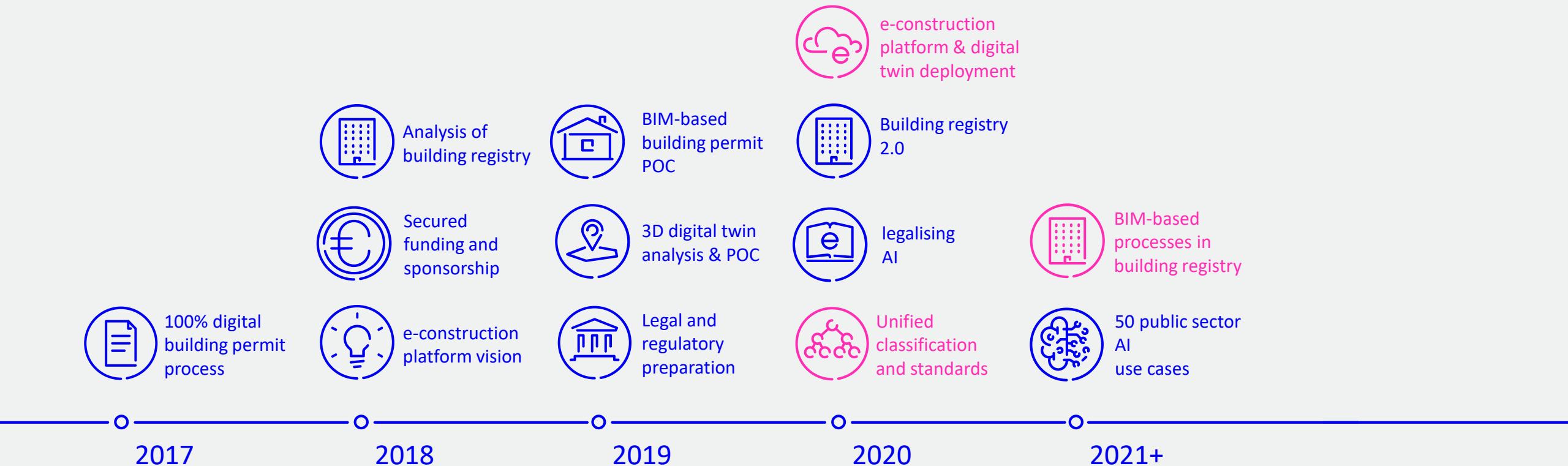
start-up mentality  
in government

- + over 600 startups in Estonia
- + 4 unicorns - #1 in start-up friendliness
- + deliver incrementally
- + fail fast and improve
- + build to scale-up





# e-construction roadmap





# digital leadership

The strongest leadership brings enlightenment.

+ Technology or money is not the solution



join 33,000+ e-residents





# Thank you!

- + Collaboration and transparency is key
- + Public infrastructure for connecting data and services
- + Use International open standards
- + **Be bold and agile**

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