



# Towards BIM-based code checking in Finland

## Benefits for the entire industry

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ABOUT ME



# Topics

- Drivers
- Development
- BIM requirements
- Benefits

# CLIMATE CHANGE

Our environment is undergoing unprecedented change. Extreme climate events have become the new normal. The storms are more intense, more frequent, and increasingly hitting areas where they have been infrequent. Unusual dry seasons are making it harder to grow food. Heat and floods are destroying infrastructure and killing people. Warming polar regions raise ocean water levels and affect ocean currents. Ocean warming will have irreversible impacts on biodiversity. The disappearance of animal and plant species from our planet will have unpredictable effects on the balance of nature and, by extension, on the human habitat.

Carbon dioxide released into the atmosphere is affecting climate change at an accelerating rate. Deviations in climate affect our daily lives.

# CO2

The built environment is the platform for human life and activity on Earth. Living, working, and moving around are fundamental values in our lives. We all have a close relationship with the built environment. At the same time, it is one of the primary producers of carbon dioxide.

To control and regulate the emissions of the built assets, we need a vast mass of data that can only be managed through digital tools and procedures that enable the automatic flow of information.

# DATA

The flow of information between the different registers is still manual in many respects. The lack of harmonisation of the format of the data in the different repositories means that transformations have to be made when data is exchanged. Conversions are often man-made. Changes to the content of data in one repository are not updated in other repositories. The information is not in a standardised format, making it difficult to interpret.



The workload for public authorities is constantly increasing, while municipalities are struggling to find qualified staff to carry out building control tasks. At the same time, legislation on building permits is becoming more complex. Municipalities are already facing financial challenges and the pressure to speed up administrative processes is in conflict with the resources available.

# RESOURCES

# interoperable europe

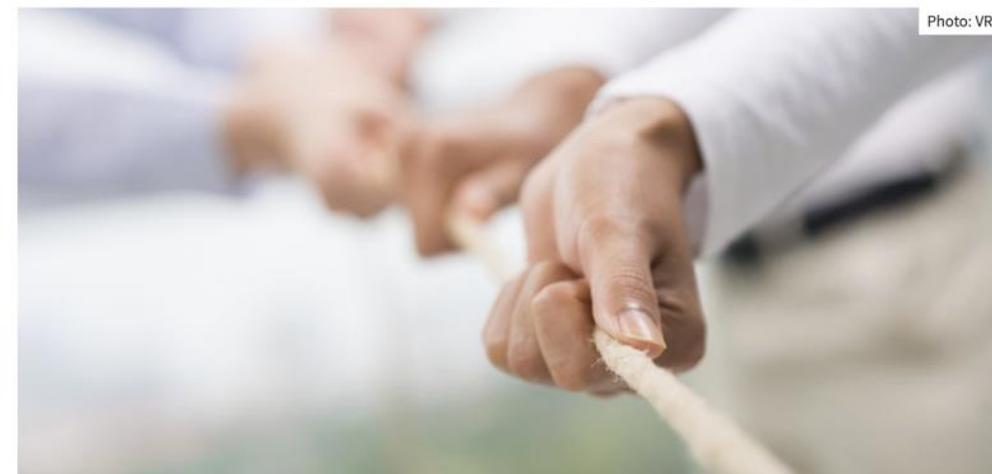
Interoperable Europe is the initiative of the European Commission for a reinforced public sector interoperability policy. The Interoperable Europe Act proposes a strategic interoperability cooperation mechanism across the European Union.

[Learn more](#)

## We support the public sector in understanding digitalisation

Maria Vuorensola

23.10.2019 - 07:41



The needs of Finland's abundant and diverse public sector challenge us to develop support for the development of public digital services. How do we develop Suomidigi, the self-sustaining service that supports public sector employees and the developers who work for the public sector?

# Topics

- Background
- **Development**
- Implementation
- BIM requirements

# Road map for implementing digital information in authority processes

## VISION 2030

Information flows smoothly across the whole life cycle

Information and data systems are interoperable

Information is based on international standards

2025



Necessary regulation

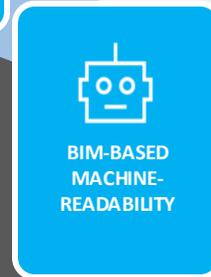


Public and private education

Continuous improvement



Digital twin

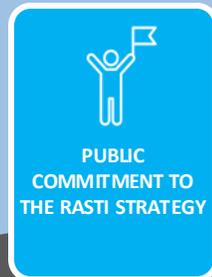


Product information

Machine-readable BIM and GIS data

2023

2018



A national collaborative body is established

International development = Finnish development



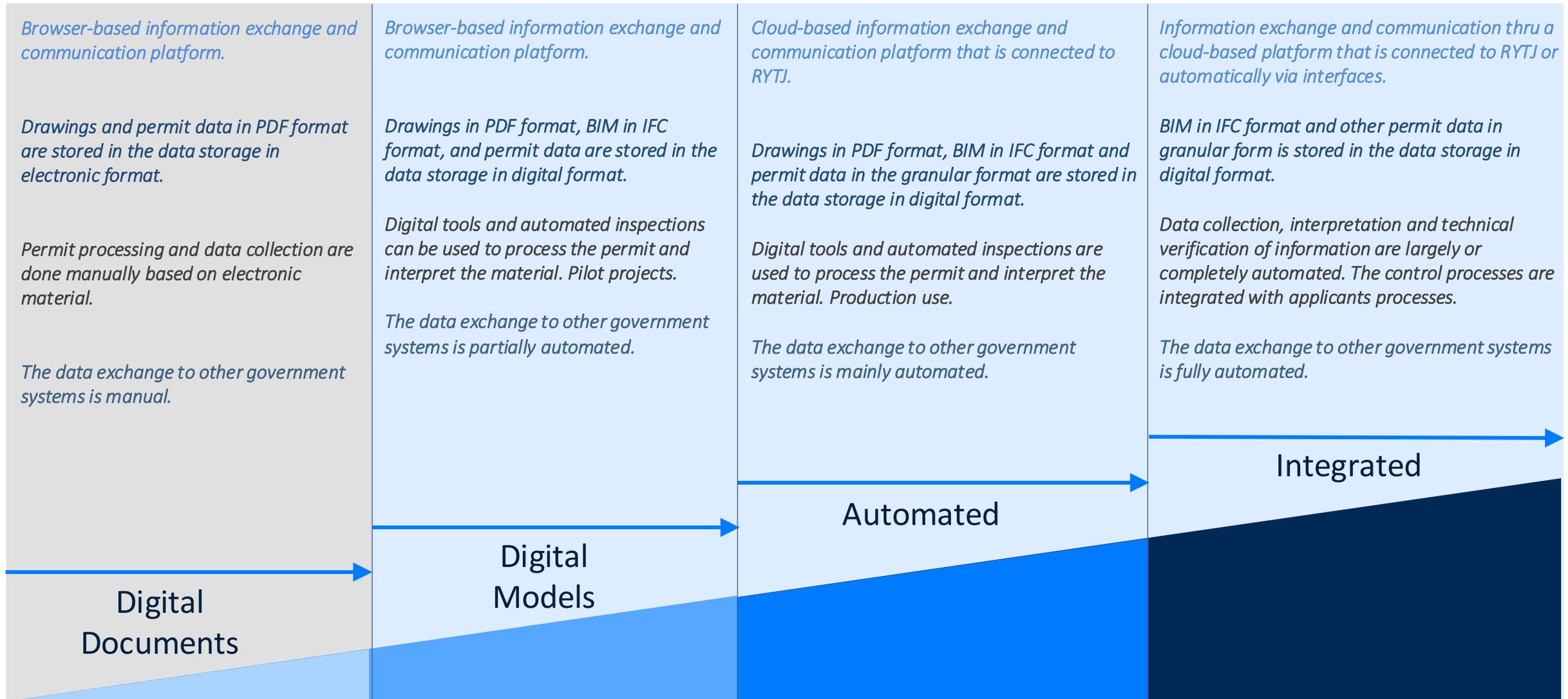
Model contracts  
Task lists

Continuous piloting

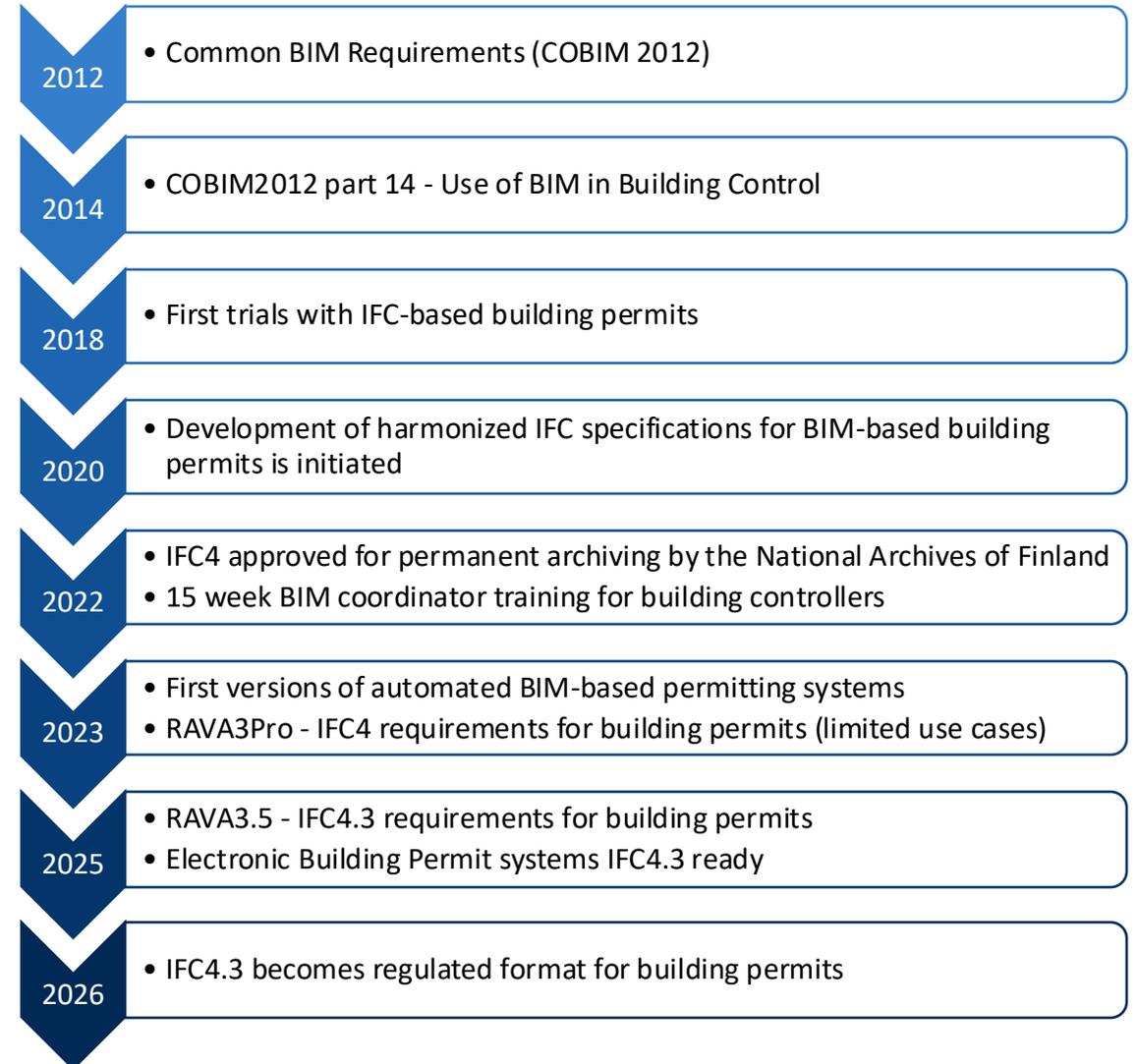
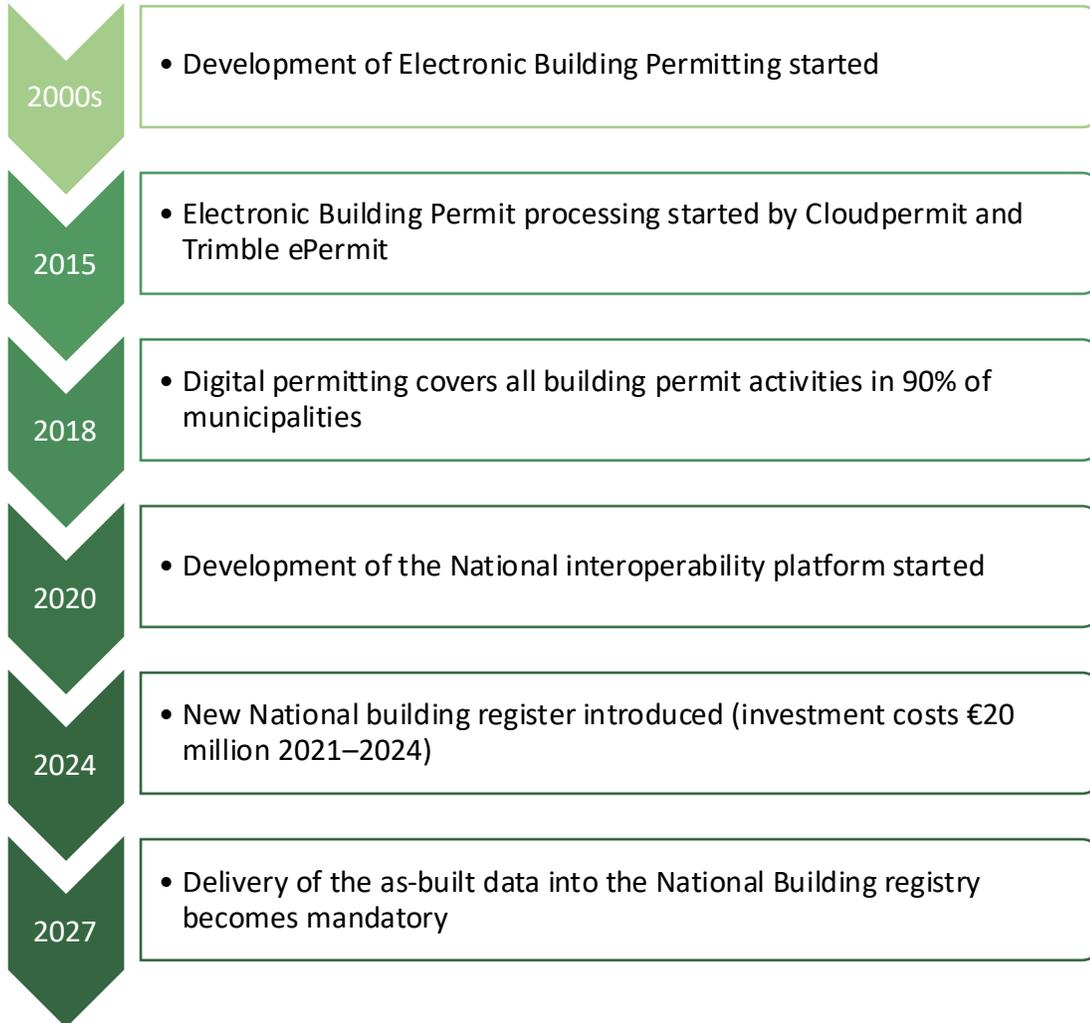
2020



# Roadmap to BIM-based building control



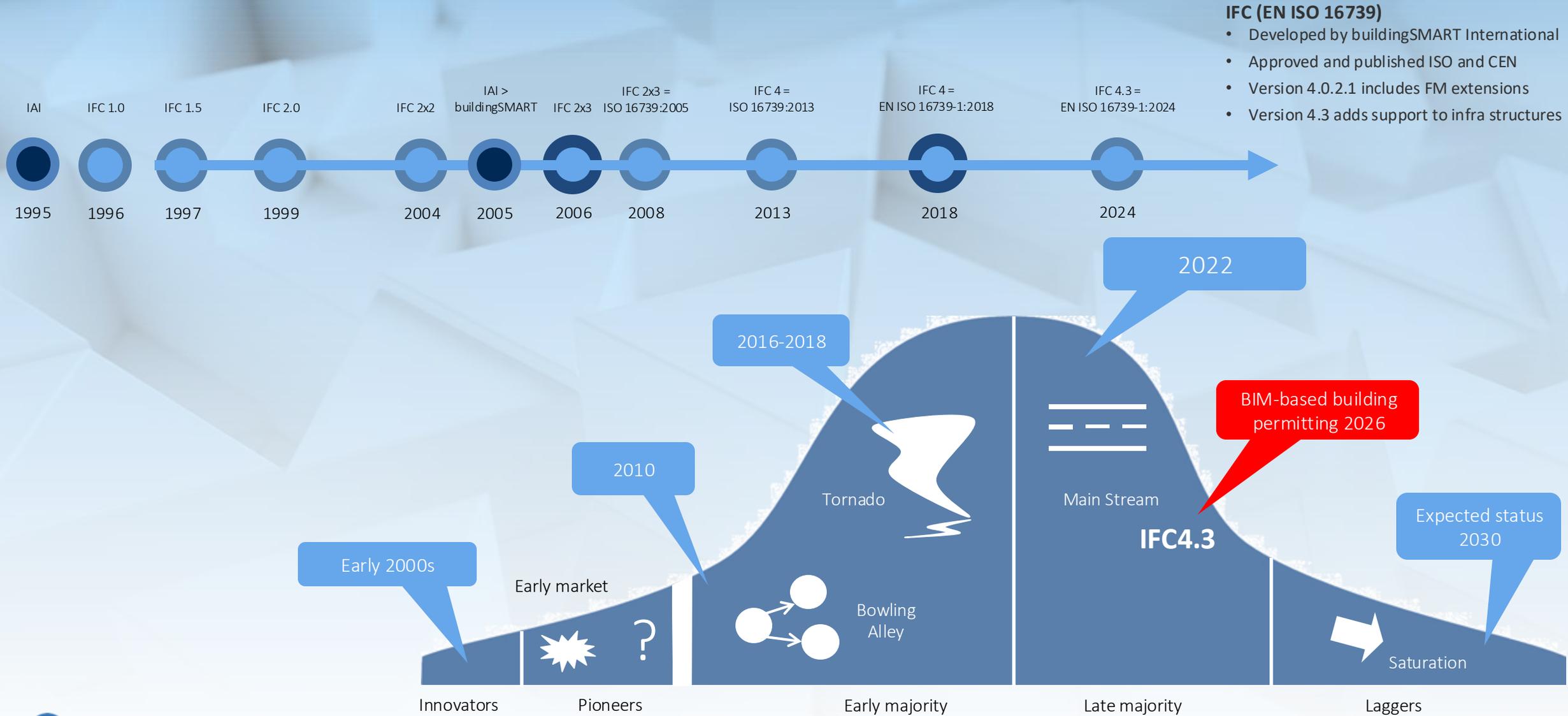
# Overall development





**BIM in Finland**  
**=**  
**open standards**

# IFC and BIM in AEC sector in Finland



# Topics

- Background
- Drivers
- BIM requirements
- Benefits

# Actors

## Ministry of the Environment

- Legislation
- National registry for built assets
- Digital interoperability of the built environment

## Municipalities

- Requirements for building control
- Short-term storage of digital assets

## Building Permitting Systems

- Reading and checking of IFC-based information
- Data delivery to national registeries

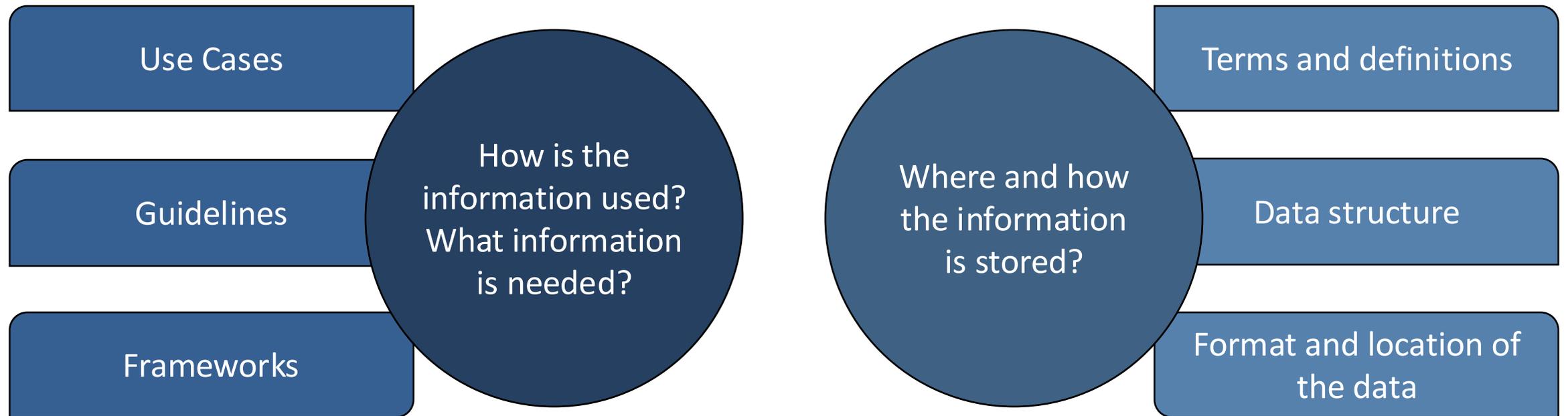
## National Archives

- Rules for digital archives
- Long term archiving of digital assets

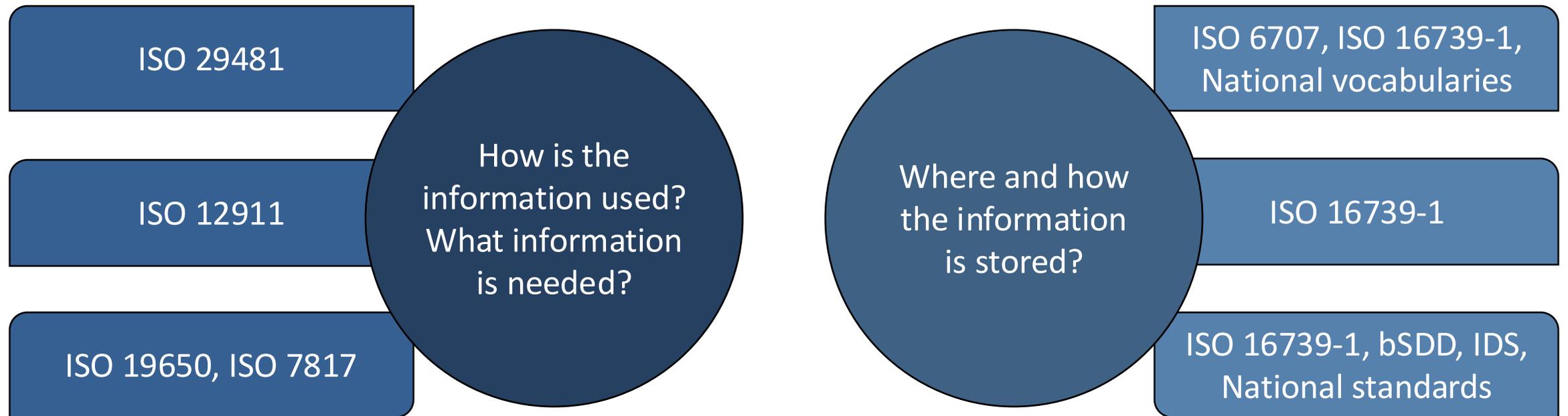
## Industry

- Consulting
- Content creation

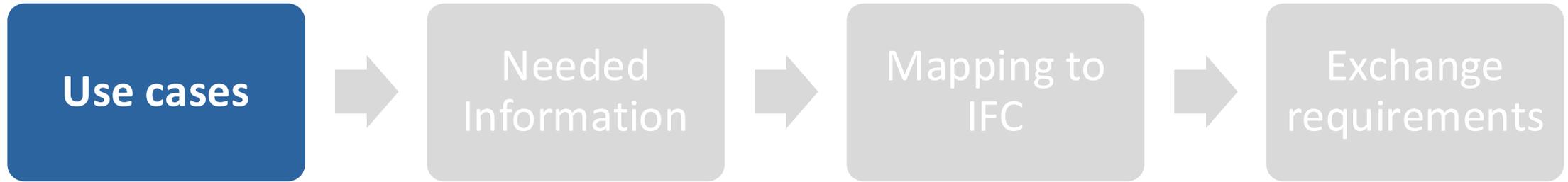
# BIM requirements



# BIM requirements

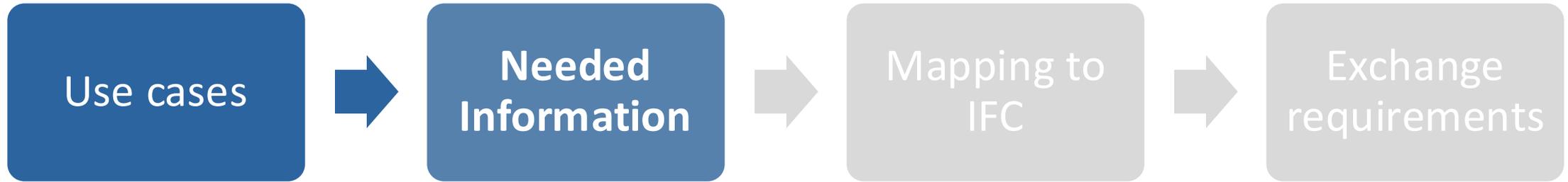


# Setting up the IFC requirements



Identifying and selecting the use cases based on the legislation (Accessibility, Fire Safety, In Use Safe, Acoustics etc.)

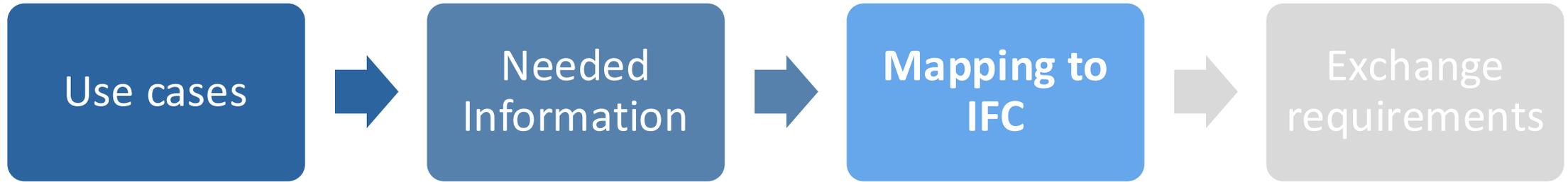
# Setting up the IFC requirements



What information is needed:

- Walk thru each clause in the secondary legislation
- Analyse how the clause can be turned into a machine-readable form

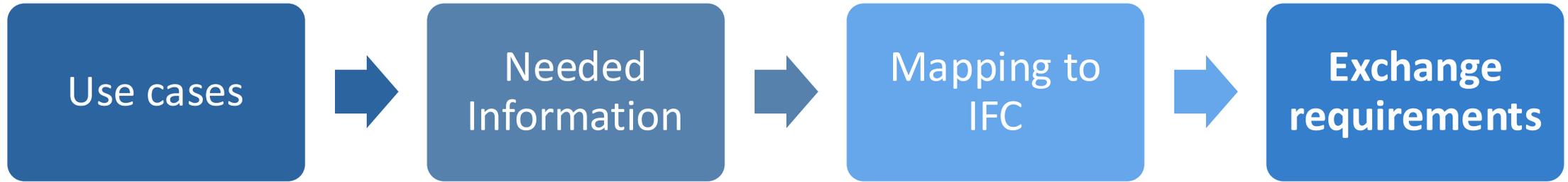
# Setting up the IFC requirements



Start with IFC Entities and IFC standard properties

- Finding out and documenting the missing items
- What is the need of custom properties?

# Setting up the IFC requirements



Specifying the geometry, properties and harmonized data contents

- Documenting the requirements

# Topics

- Background
- Drivers
- BIM requirements
- Benefits

A large iceberg floats in the ocean. The tip of the iceberg is visible above the water surface, while the much larger, jagged base is submerged below. The sky is blue with light clouds, and the water is a deep blue. The text is overlaid on the submerged part of the iceberg.

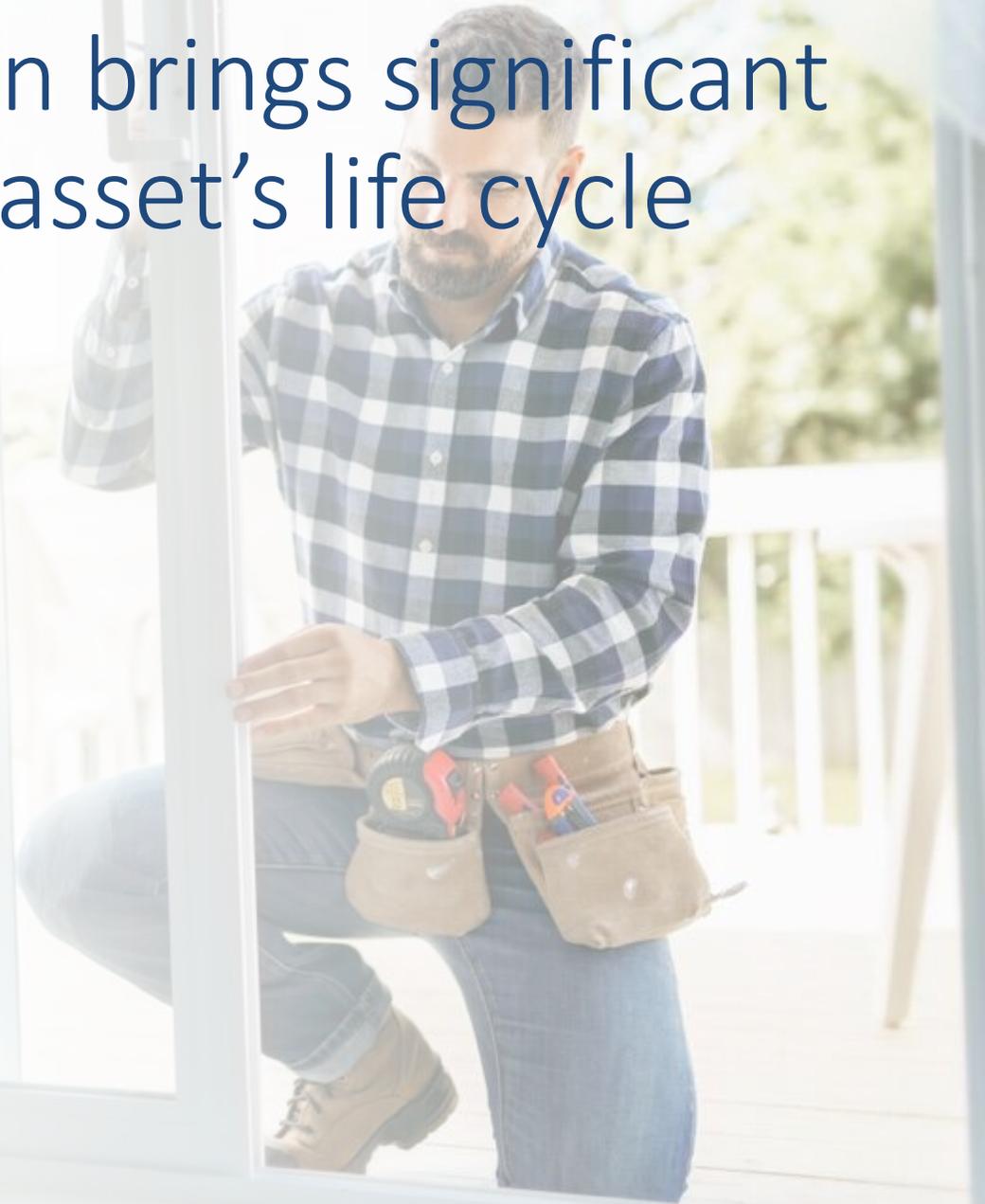
OPPORTUNITY  
building information  
in a machine-readable and  
interoperable format

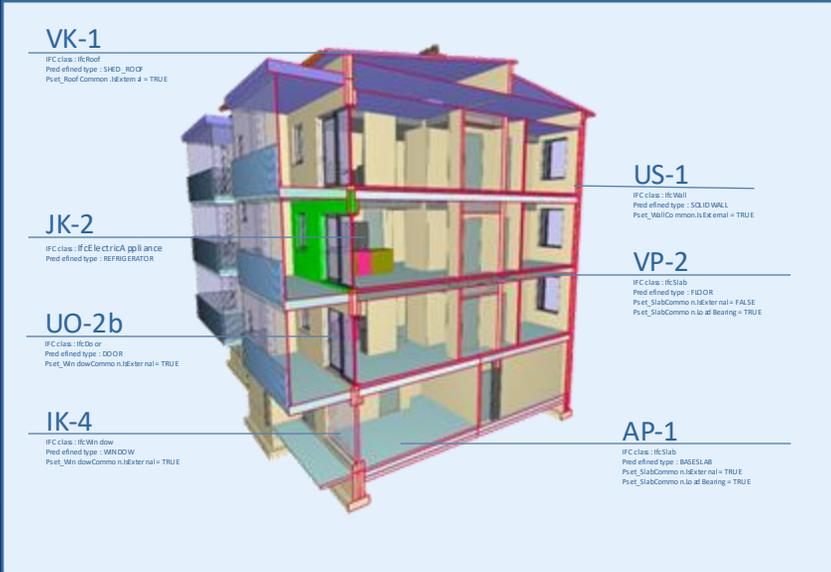
# Machine-readable, interoperable information brings significant benefits to the projects

- Efficient decision-making
  - Standardized information improves the understanding.
- Cost savings
  - The standardization of information streamlines processes and reduces delays, which directly translates into cost savings.
  - Standardization also enables the efficient use of data for procurement and implementation.
- Transparency
  - Standardized information makes reviews and reporting easier.

# Interoperable information brings significant benefits throughout the asset's life cycle

- More efficient maintenance
  - Information about the asset in a standard format speeds up troubleshooting and reduces costs.
  - Comprehensive product and material information reduces the risk of incompatible materials.
- Easier implementation of modifications
  - Clear initial data streamlines the planning and execution of renovation and extension projects.
- Circular economy
  - Documentation of materials and structures facilitates the recycling of building components.





# Next-level use cases with AI agents



# AI





THANK-YOU



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