Transformation Pathways

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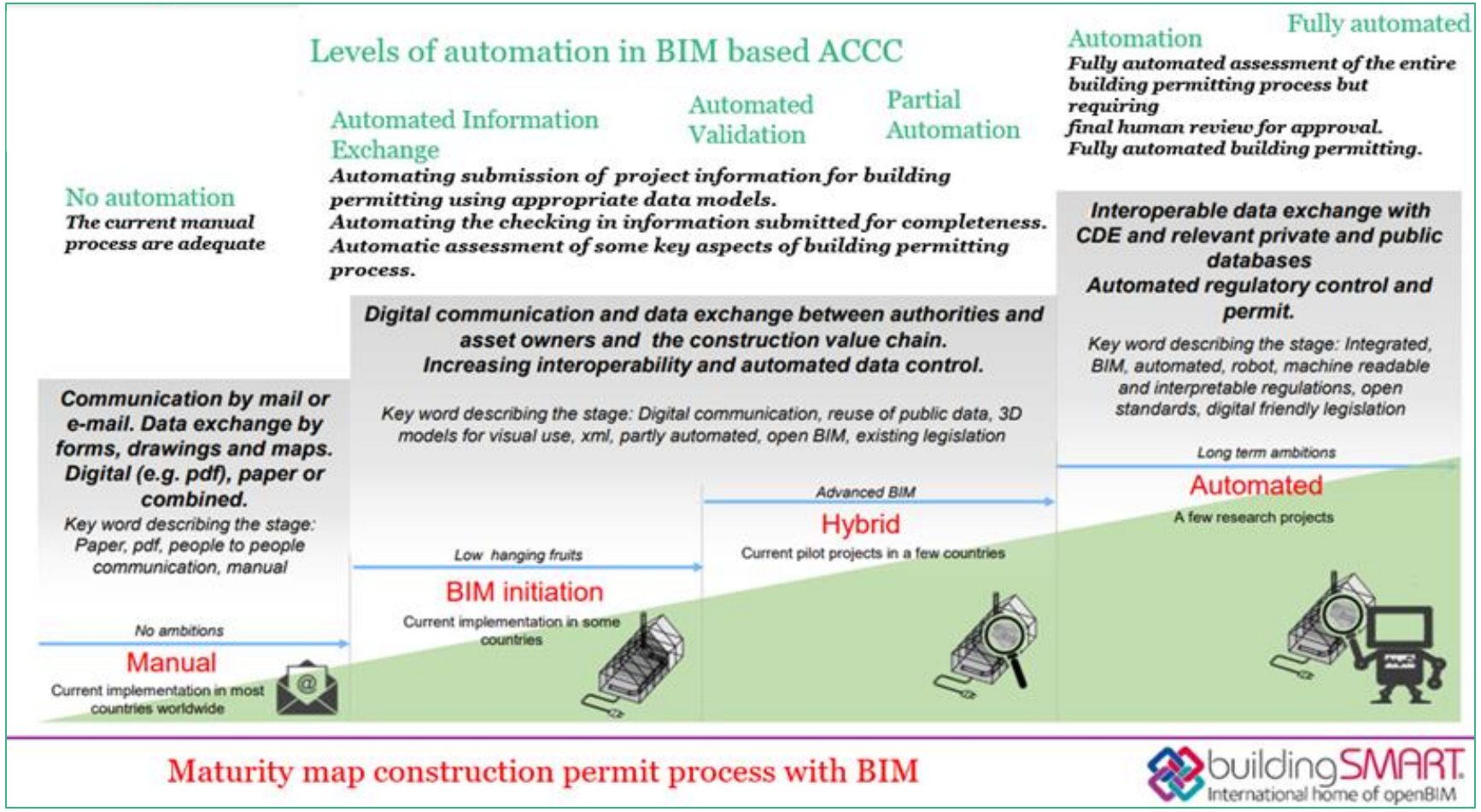
Pathways towards automated permitting… and beyond



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Goals to formulate the transformation pathways

Understanding what will change?

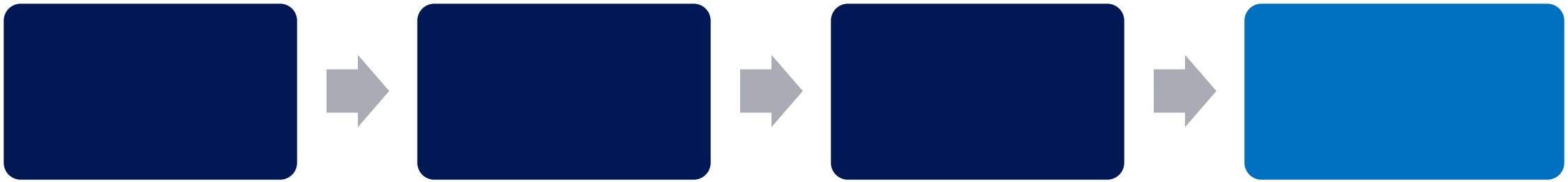
To support regional / national transition from the perspectives of main actor groups

Change is inevitable - Transition is a strategic choice

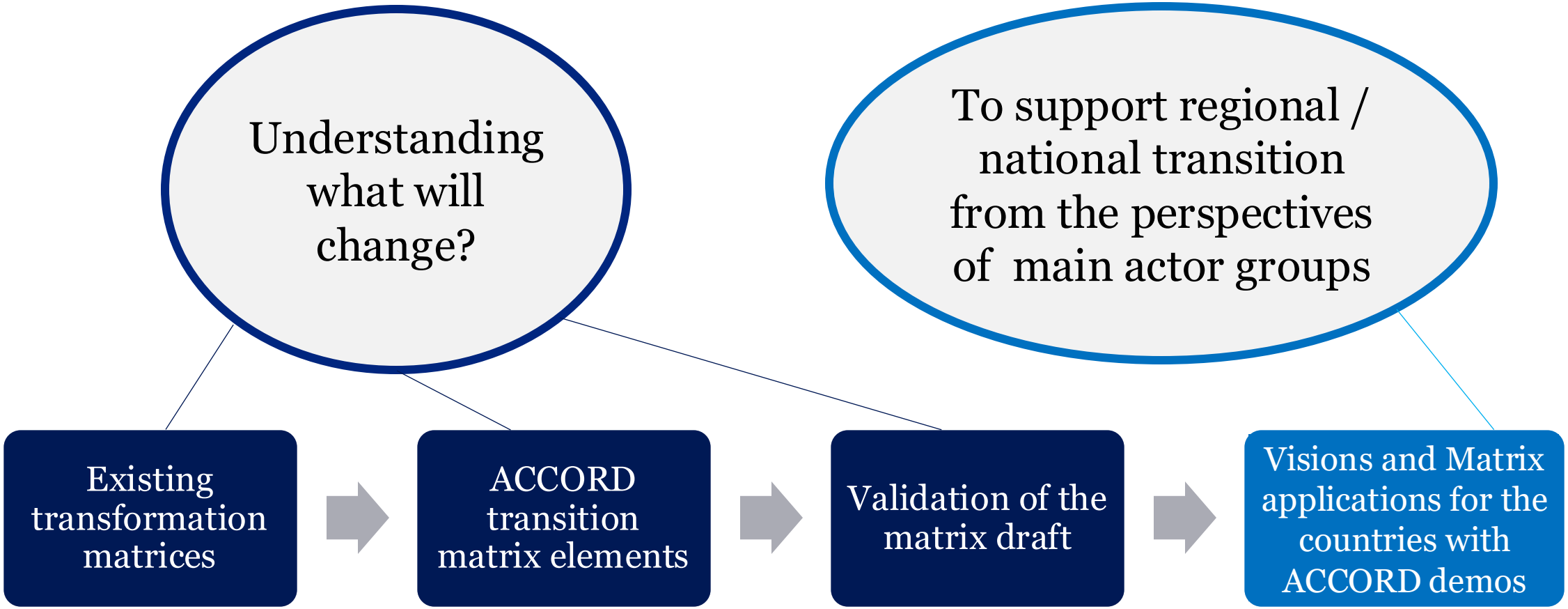
Goals and the way forward…

Understanding what will change?

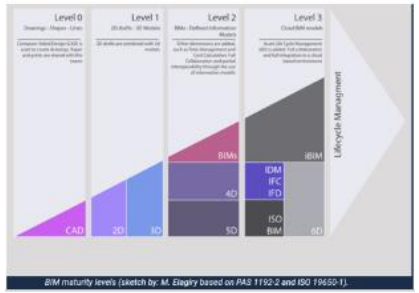
To support regional / national transition from the perspectives of main actor groups

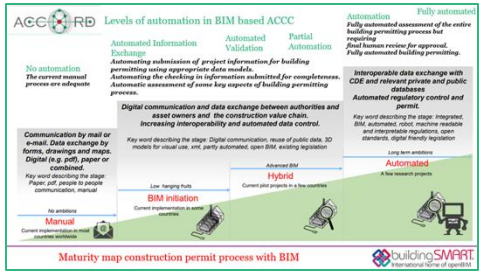


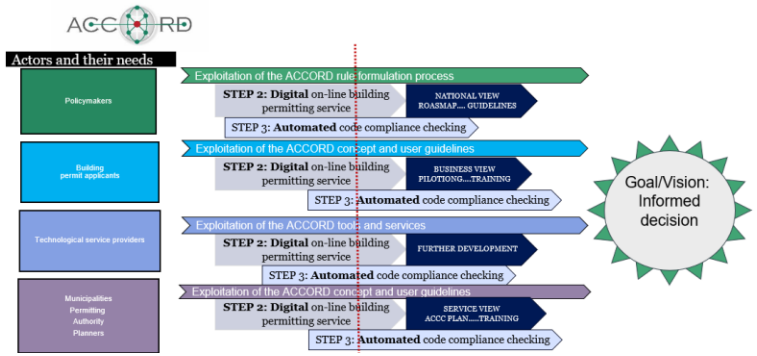
Goals to formulate the transformation pathways

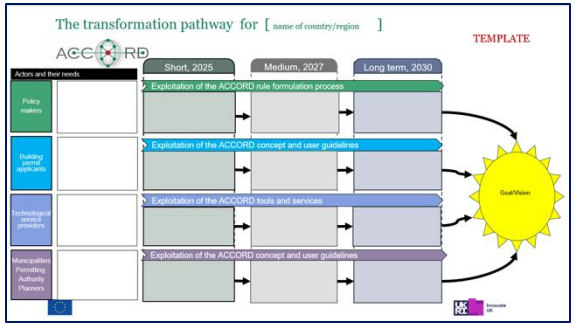


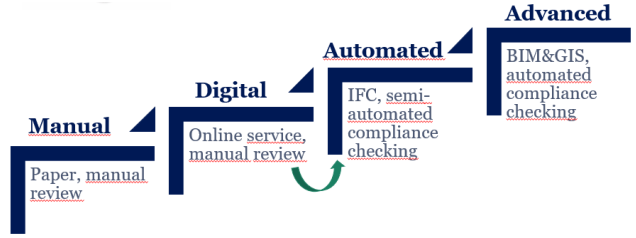
Approach to formulate the Transformation pathway maps/ Roadmaps











Existing transformation matrices → ACCORD transformation matrix elements → Validation of the matrix draft → Visions and Matrix applications for the ACCORD countries with demos → Country/ region specific roadmap and recommendations to main actor groups

Transition environment: Digitalisation levels of building permit processes – The Steps

Manual

Paper, manual review

Digital

Online service, manual review

Automated

IFC, semi-automated compliance checking

Advanced

BIM&GIS, automated compliance checking

Transition environment: Digitalisation levels of building permit processes – The Steps

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Paper, manual review

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Advanced

BIM&GIS, automated compliance checking

Competence building

What we want to do?
What the Transformation pathway is for?

ACCORD transformation pathway is a commonly agreed strategy for actors involved in the transition towards the chosen vision.

- It specifies, prioritizes and set the identified actions in a roadmap with actors specific recommendations.

Example

Finland

State of Practise: Digitalisation level of the Finnish building permit processes

FIN-Example

Manual

Paper, manual review

Digital

Online service, manual review

Automated

IFC, semi-automated compliance checking

Advanced

BIM&GIS, automated compliance checking

- 83% of 309 municipalities use an online building permit service
  - 2 services allow IFC submission & neighbour hearing
- Some municipalities' authorities use BIM software to review IFC manually
- Building project specific data can be automatically read from IFC to the permit service and added to the application

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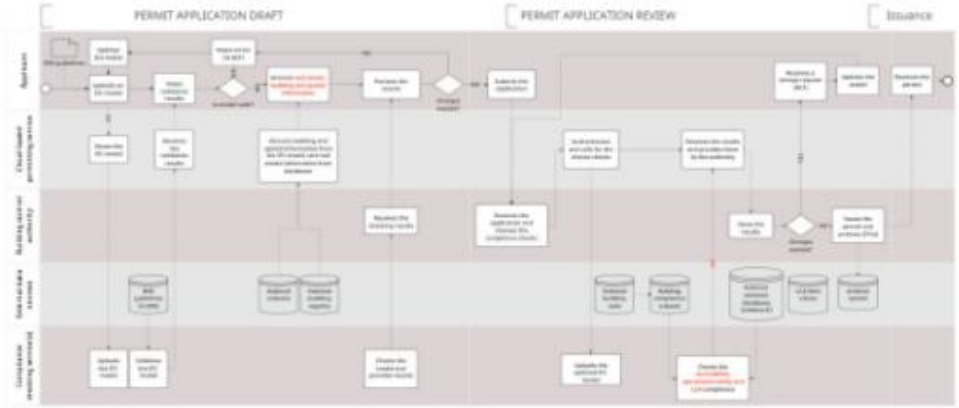
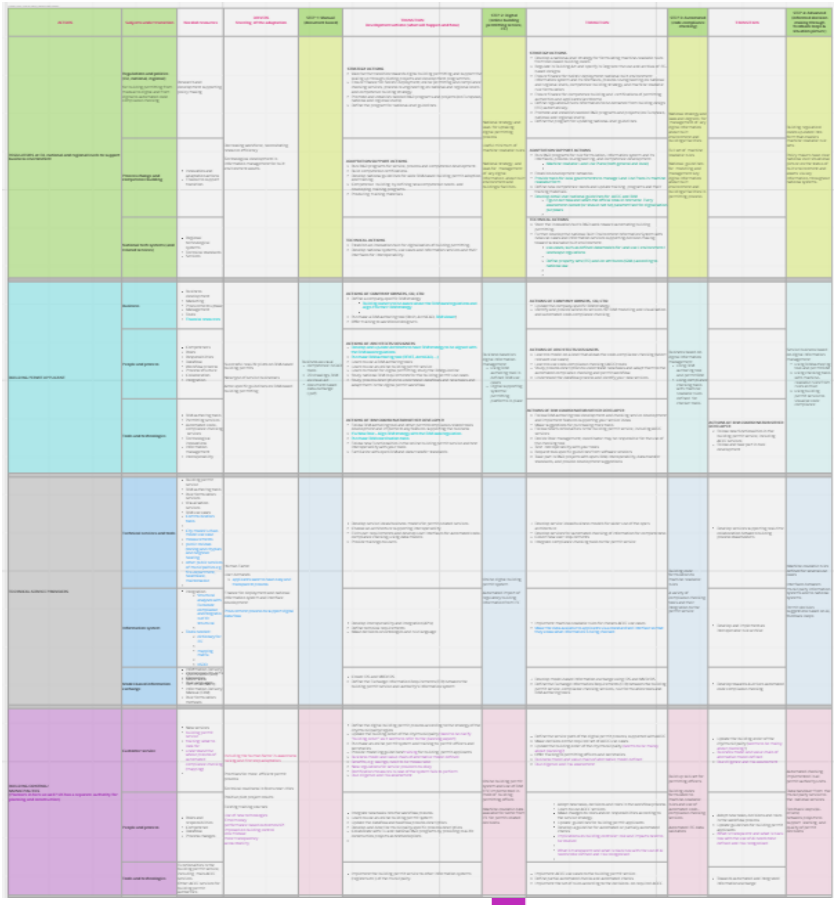
VISION 2030

FIN-Example

- Transition Matrix developed in ACCORD projects was used to understand the steps and
- Based on workshops, interviews with the stakeholders the vision for 2030 was selected as **advanced-level** of building permitting



The ACCORD Transition Matrix



Vision stages 2030

FIN-Example

Vision towards informed decision making, which is utilizing feedback loops & situational picture - during digital and partial automated permitting process.

The process is enabled by digital platform services, modeling (permitBIM) for compliance checking and other ACCC-services.

Policymakers' VISION
Building regulation/ codes up-dated into form that enables machine readable rule sets.

Policy makers have clear national level situational picture on the status of built environment and assets via key information, throughout national systems.

Applicants' VISION
Service business based on digital information management
•using BIM authoring tool and permitBIM
•using checking tools with machine-readable rules from rules archive
•using building permit service to visualise code compliance

Tech service providers' VISION: Machine-readable rules defined for several use cases.
From tech. permitting platform to service platform Interfaces between municipality information systems to national systems.
Permit decision suggestions based on AI, feedback loops

Municipalities' VISION
Automated checking implemented in all permit authority units.
Data handover from the municipality service to the national services.

Feedback loops (AI-driven) between projects to support learning and quality of permit decisions.

VISION

FIN-Example

The transformation map towards the vision is drafted for each actor. Actions (in short, medium snd long term) are supported by the exploitation of ACCORD project outcomes.

Vision towards informed decision making, which is utilizing feedback loops & situation picture- during digital and partial automated permitting process.

This process is enabled technically by (1) digital platform services, (2) modeling (permitBIM) for assessement and for code compliance checking and (3) running ACCC- service.

Policy makers	Exploitation of the ACCORD rule formulation process
Building permit applicants	Exploitation of the ACCORD concept and user guidelines
Technological service providers	Exploitation of the ACCORD tools and services
Municipalities Permitting Authority Planners	Exploitation of the ACCORD concept and user guidelines

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The transformation map (for reaching the common vision) for Finnish digi-permitting with ACCC

FIN-Example

Actors and their needs		Short, 2025	Medium, 2027	Long term, 2030
Policy makers	• Method to make regulations machine interpretable • Support for digital transformation	Exploitation of the ACCORD rule formulation process and tool Deployment of rule formulation process for a useful minimum of machine-readable rules.	Full set of machine-readable rules. Connections to national built environment platform.	National built environment platform in use and data repositories actively updated.
Building permit applicants	• BIM training • BIM guidelines • Access to cost-effective BIM and compliance checking tools	Exploitation of the ACCORD concept and user guidelines Adaptation (building up skills, defining BIM use case, procuring tools) of the digital and partially automated permitting process.	Digi-qualified designers and BIM coordinators for the useful minimum of ACCC.	Full set of ACCC in use. Building quality trough better design solutions and construction quality.
Technological service providers	• Guidelines to implement IFC requirements • Harmonised requirements (IDS) to scalable services	Exploitation of the ACCORD tools and services Implemented technical services for digital permitting and the useful minimum set of ACCC.	Implemented technical services for digital permitting and a full set of ACCC.	Uptake of the holistic permitting platform with connection to national built environment platform.
Municipalities Permitting Authority Planners	• BIM training • Tools to check compliance • Common compliance checking procedures	Exploitation of the ACCORD concept and user guidelines Adaptation (building up skills, defining BIM use case, procuring tools) of the digital and partially automated permitting process. Roadmap was created for each municipality.	Digi-qualified permitting officers. Adapted a new digital permitting process with a useful minimum of ACCC.	Adaptation of the full set of machine-readable rules completed. Transparent, effective and performance-driven digital permitting processes in place.

Goal/Vision:
Informed decision making through feedback loops & situation picture

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VISION

FIN-Example

Vision towards informed decision making, which is utilizing feedback loops & situation picture- during digital and partial automated permitting process.

The process is enabled by digital platform services, modeling (permitBIM) for compliance checking and ACCC-service.

Policy makers

Applicants

Techical service providers

Municipalities

For this common vision (and actor specific visions) **development actions (transition) for each of the actors are identified**

- The ACCORD Transition Matrix has been used for defining the actions

Finnish transformation pathway
Actors: Building permit applicants, building owners and chief architects

Example

Actors and their needs

Building permit applicants

- BIM training
- BIM guidelines
- Access to cost-effective BIM and compliance checking tools

Exploitation of the ACCORD concept and user guidelines

Digital on-line building permitting service

Business based on digital information management
• using BIM authoring tool in defined BIM use cases
• Digital supporting systems/ permitting platforms in place

Automated code compliance checking

Business based on digital information management
• using BIM authoring tool and permitBIM
• using compliance checking tools with machine readable rules defined for checker tools.

ADVANCED

Service business based on digital information management
• using BIM authoring tool and permitBIM
• using checking tools with machine-readable rules from rules archive
• using building permit service to visualise code compliance

Goal/Vision:
Informed decision making through feedback loops & situation picture - during permitting, enabled by digital services, BIM and ACCC.

See narrative in notes

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Recommendations for Building permit applicants, Building owners and Chief architects

Example

Actors and their needs

Building permit applicants

- BIM training
- BIM guidelines
- Access to cost-effective BIM and compliance checking tools

Exploitation of the ACCORD concept and user guidelines

Digital on-line building permitting service

Automated code compliance checking

ADVANCED

Service business based on digital information management
• using BIM authoring tool and permitBIM
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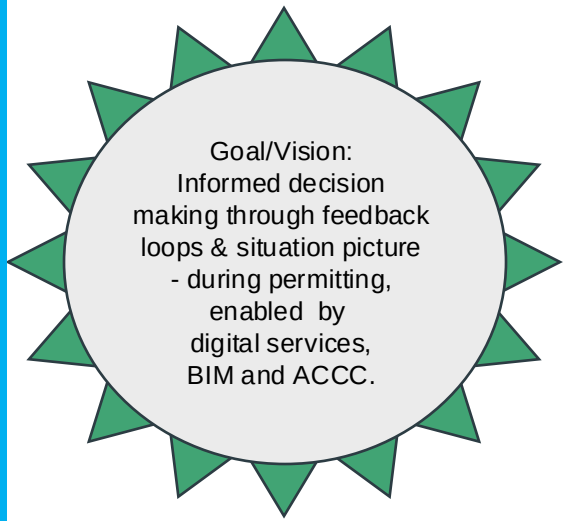


For vision **2b: Service business based on promises: Building permitting process goals (transparent and lean) reached and supporting final project goals (performances/ quality/ sustainability)**

Key development actions:
- be aware about the BIM reated laws/regulations and align it to your BIM strategy
- develop architectural offices' internal processes in-line with the best permitting process
- develop promise based offerings for buildings with higher **performances/ qualities/ sustainability.**
- if enabeled by the regulators and policy makers, develop services and references for "concept permitting".

See narrative in notes

General mindset and recommendations for Applicants, for building owners and for chief architects:

Building owners:

- Shared Vision picture and transition roadmap
- Participate in defining guidelines
- Offer piloting projects for process development
- Offer piloting for development of checkers to achieve targeted performance/ sustainability/ quality of the project

Architects (and other diciplines)

- Shared Vision picture and transition roadmap
- Participate in defining guidelines
- Participate the development actions on technical permitting platforms and tools
- Build up the needed skills set for BIM use case for digital permitting and use-cases for ACCC.

Finnish transformation pathway
Actors: Technological service providers

Example

Actors and their needs

Technological service providers

- Guidelines to implement IFC requirements
- Harmonised requirements (IDS) to scalable services

Digital on-line building permitting service

Online digital building permit system
Automated import of regulatory building information from IFC

Automated code compliance checking

Building code formulation to machine readable rules
A variety of compliance checking tools and their integration to the permit service

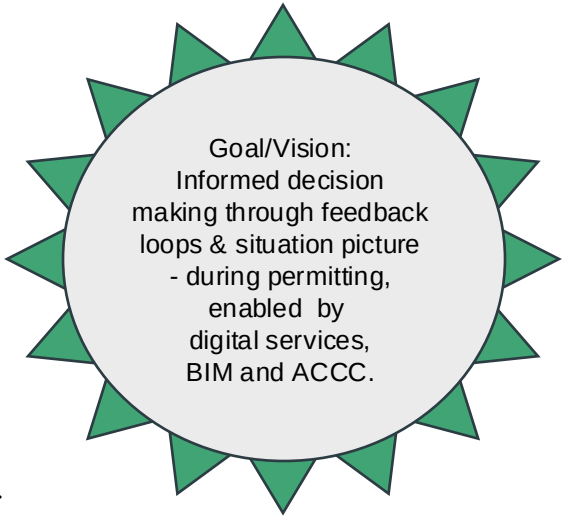
ADVANCED

Machine-readable rules and ACCC defined for several use cases.

From tech. permitting platform to service platform.

Interfaces between municipality information systems to national systems.
Permit decision suggestions based on AI, feedback loops

Exploitation of the ACCORD tools and services



See narrative in notes

Recommendations for Technological service providers

Example

Actors and their needs

Technological service providers

- Guidelines to implement IFC requirements
- Harmonised requirements (IDS) to scalable services

Exploitation of the ACCORD tools and services

Digital on-line building permitting service

Automated code compliance checking

ADVANCED

Machine-readable rules and ACCC defined for several use cases.

From tech. permitting platform to service platform.

Interfaces between municipality information systems to national systems.
Permit decision suggestions based on AI, feedback loops

Goal/Vision:
Informed decision making through feedback loops & situation picture - during permitting, enabled by digital services, BIM and ACCC.

For vision 3a: Machine-readable rules and ACCC defined for several use cases
Key development actions:
- Shared Vision picture and transition roadmap
- Year 2024: Building project specific data can be automatically read from IFC to the permit service and added to the application
- useful minimum of ACCC specified to support permitting
- Create IDS and MVD/IDS
- develop a roadmap for permitting platform services
kers, develop services and references for "concept permitting".

See narrative in notes

General mindset and recommendations for Technical service providers:

- Shared Vision picture and transition roadmap with all actors
- Be active in national level ACCC strategies, deployment and rule formulation processes
- Develop service ideas/business models for wider use of the open architecture
- Implement digital permitting platform to all municipalites

Finnish transformation pathway
Actors: Municipalities, Permitting authorities, City planners

Example

Actors and their needs

	Digital on-line building permitting service	**Automated** code compliance checking	**ADVANCED**
Municipalities Permitting Authority Planners	Online building permit system and use of BIM (IFC) implemented in most of building permitting offices Machine-readable data available from IFC for some permit-related decisions.	Build up skill-set for permitting officers. Building codes formulated to machine-readable rules and use of automated code-compliance checking services oo Automated IFC data validation	Automated checking adapted and implemented in all permit authority units. Data handover from the municipality service to the national services. Feedback loops (AI-driven) between projects to support learning and quality of permit decisions.

- BIM for permitting training
- Tools to check compliance
- Common compliance checking procedures

Exploitation of the ACCORD concept and user guidelines

Goal/Vision:
Informed decision making through feedback loops & situation picture - during permitting, enabled by digital services, BIM and ACCC.

See narrative in notes

Finnish transformation pathway
Actors: Municipalities, Permitting authorities, City planners

Example

Actors and their needs

Municipalities
Permitting Authority
Planners

- BIM for permitting training
- Tools to check compliance
- Common compliance checking procedures

Exploitation of the ACCORD concept and user guidelines

Digital on-line building permitting service

Automated code compliance checking

ADVANCED

Automated checking adapted and implemented in all permit authority units. Data handover from the municipality service to the national services.
Feedback loops (AI-driven) between projects to support learning and quality of permit decisions.

Goal/Vision:
Informed decision making through feedback loops & situation picture - during permitting, enabled by digital services, BIM and ACCC.

For vision **4a: Automated checking adapted and implemented in all permit authority units.**
Key development actions:
- focus on building up needed skill-set for permitting office
- Define partial automated checks and automated checks.
- Implement the set of rules according to the decisions on required ACCC.

See narrative in notes

General mindset and recommendations

for municipalities, permitting authority and the city planners:

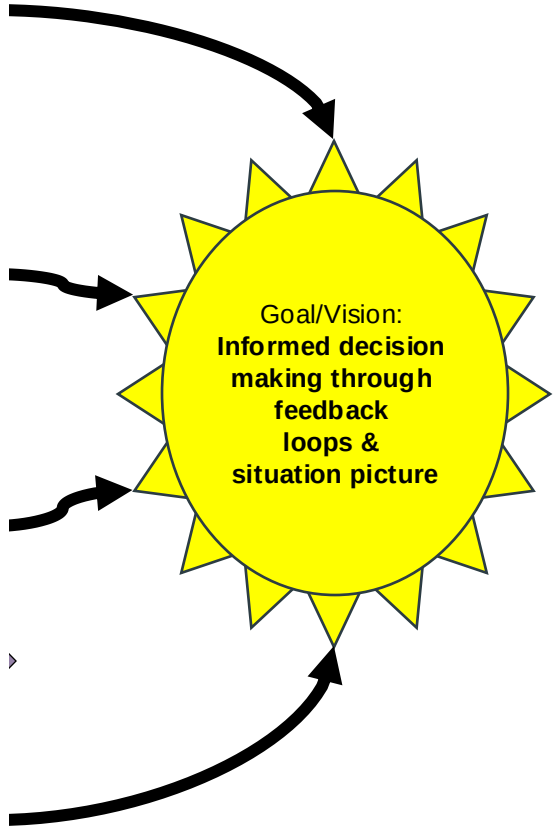
- Focus on Human Factor and User demands, the applicants want to have easy, intuitive tools and transparent process.
- Participate in development of procurement processs and guidelines to support digital data flow.
- Implement digital permitting platform to all municipalites or collaborate between cities/ municipalities in digital permitting and ACCC

Transformation map

The transformation map (for reaching the common vision) for Finnish digi-permitting with ACCC

Example

Actors and their needs	
Policy makers	• Method to make regulations machine interpretable • Support for digital transformation
Building permit applicants	• BIM training • BIM guidelines • Access to cost-effective BIM and compliance checking tools
Technological service providers	• Guidelines to implement IFC requirements • Harmonised requirements (IDS) to scalable services
Municipalities Permitting Authority Planners	• BIM training • Tools to check compliance • Common compliance checking procedures



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The transformation map (for reaching the common vision) for Finnish digi-permitting with ACCC

Example

Actors and their needs		Short, 2025
Policy makers	• Method to make regulations machine interpretable • Support for digital transformation	Exploitation of the ACCO Deployment of **rule formulation process for a useful minimum of machine-readable rules.**
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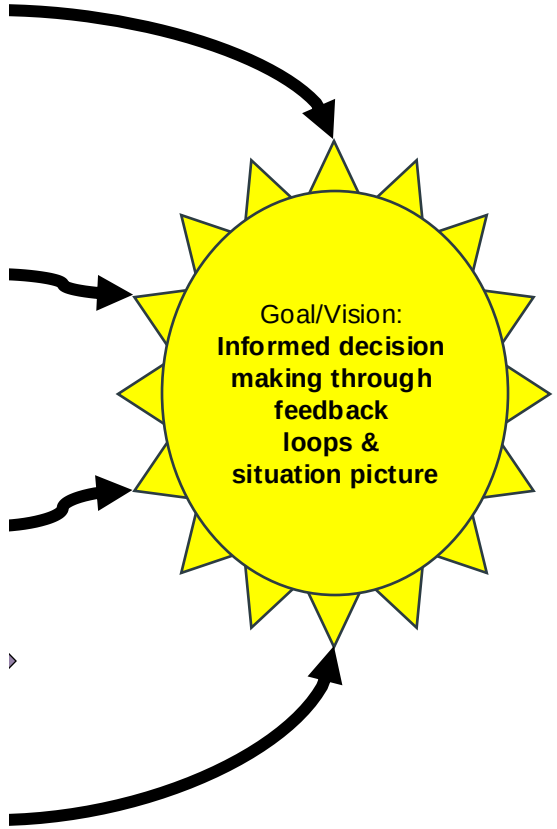
Technological service providers	• Guidelines to implement IFC requirements • Harmonised requirements (IDS) to scalable services	Exploitation of the ACCO Implemented technical services for digital permitting and **the useful minimum set of ACCC.**
Municipalities Permitting Authority Planners	• BIM training • Tools to check compliance • Common compliance checking procedures	Exploitation of the ACCO Adaptation (building up skills, defining BIM use case, procuring tools) of the digital and partially automated permitting process. Roadmap was created for each municipality.



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The transformation map (for reaching the common vision) for Finnish digi-permitting with ACCC

Example

Actors and their needs		Short, 2025	Medium, 2027
Policy makers	• Method to make regulations machine interpretable • Support for digital transformation	Exploitation of the ACCORD rule formulation process Deployment of rule formulation process for a useful minimum of machine-readable rules.	**Full set of machine-readable rules.** Connections to national built environment platform.
Building permit applicants	• BIM training • BIM guidelines • Access to cost-effective BIM and compliance checking tools	Exploitation of the ACCORD concept and user guideli Adaptation (building up skills, defining BIM use case, procuring tools) of the digital and partially automated permitting process.	**Digi-qualified designers** and BIM coordinators for the useful minimum of ACCC.
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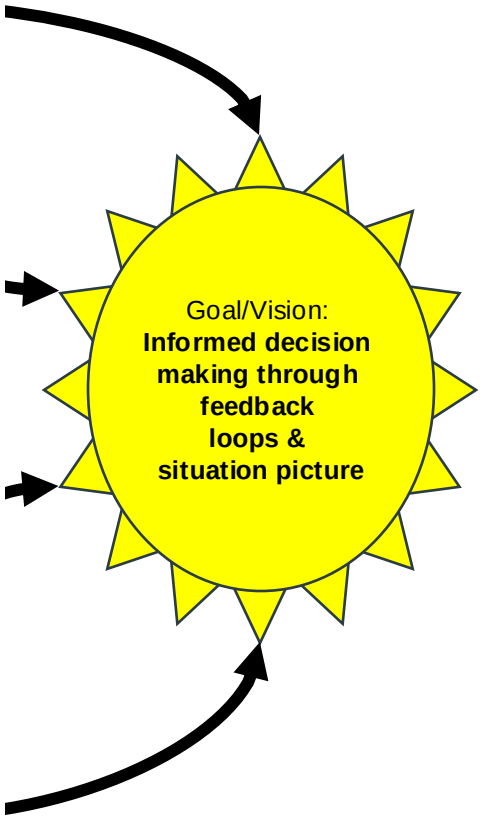

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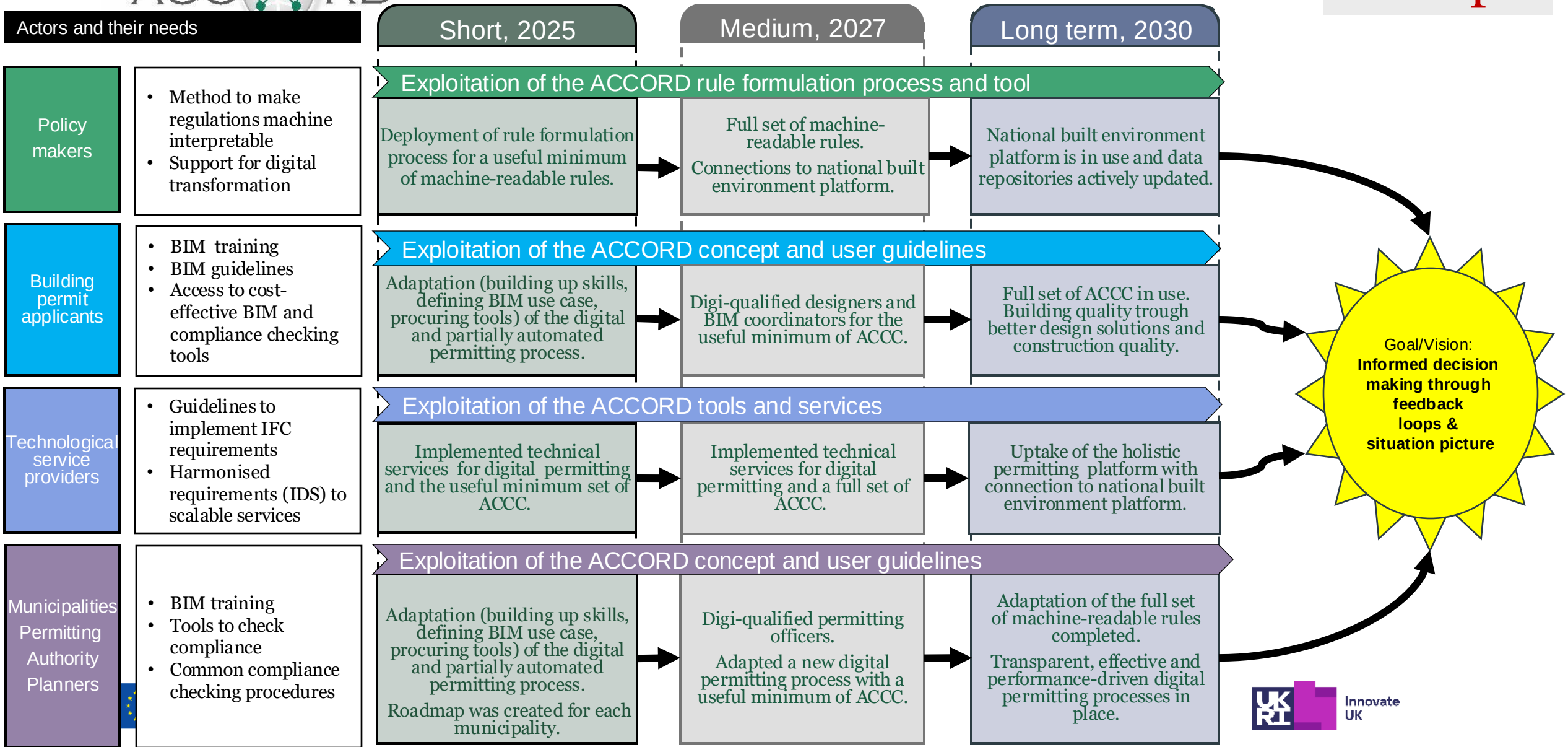
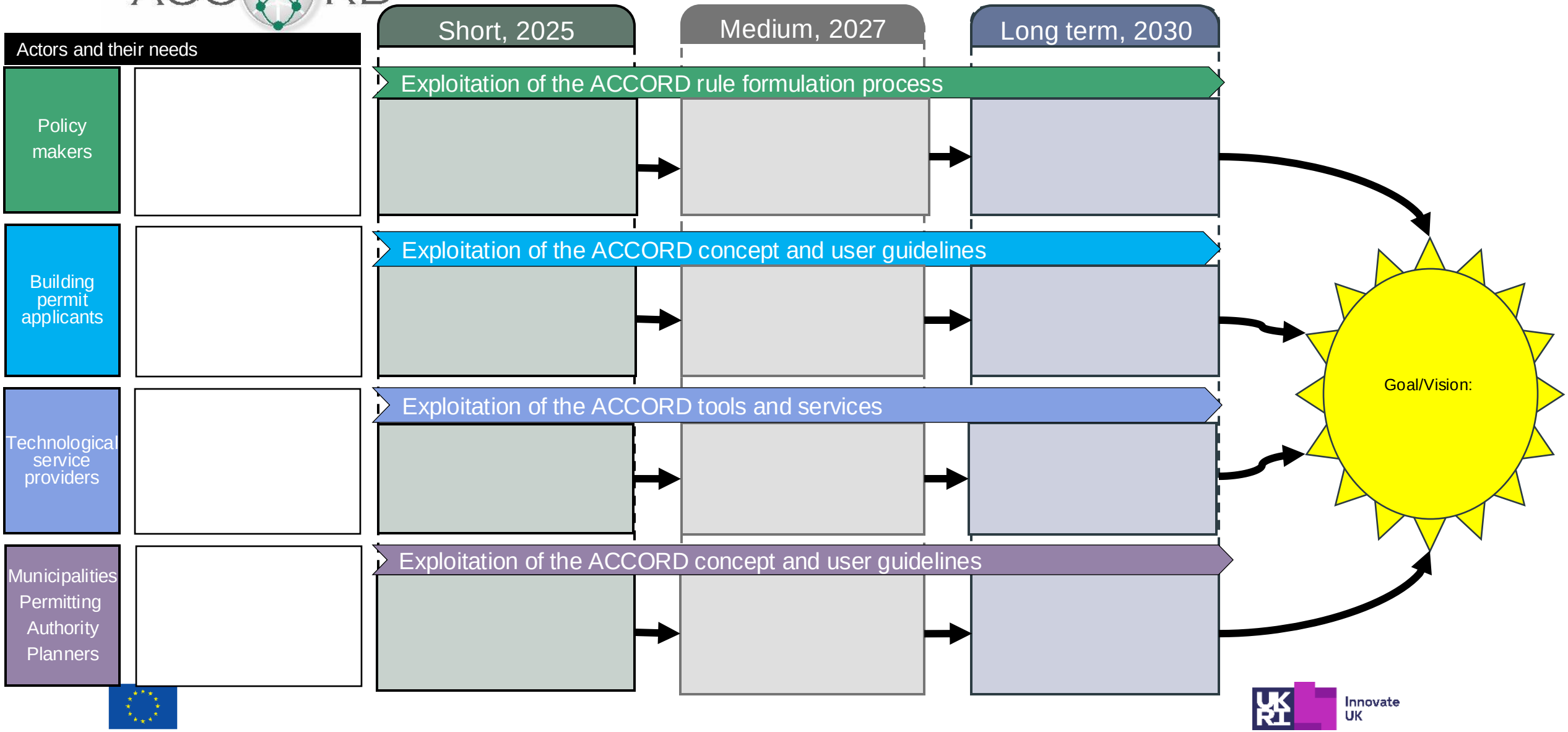
The transformation map (for reaching the common vision) for Finnish digi-permitting with ACCC

Example



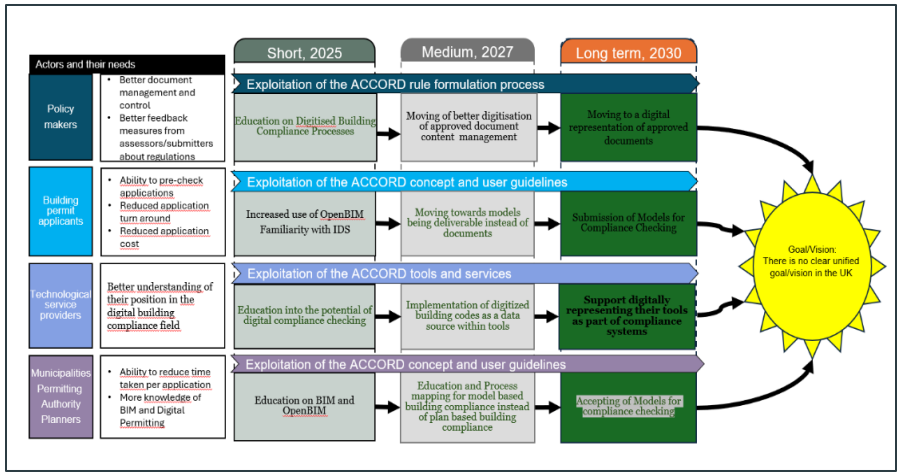
The transformation map for [name of country/region]

TEMPLATE

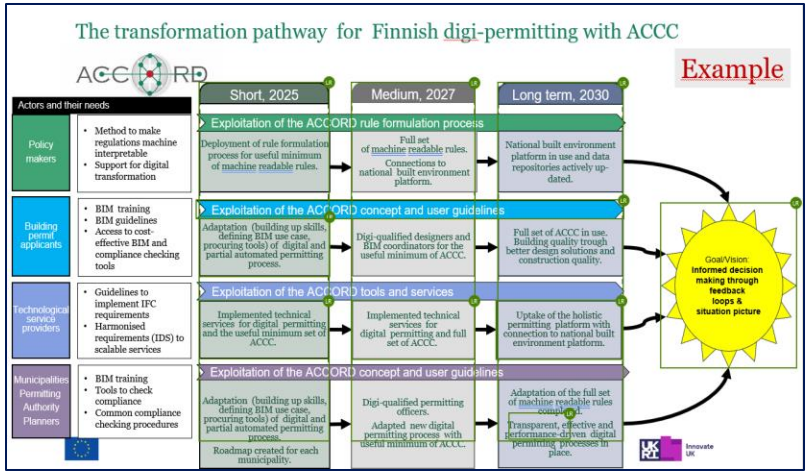


Summary in form of a national or regional roadmap

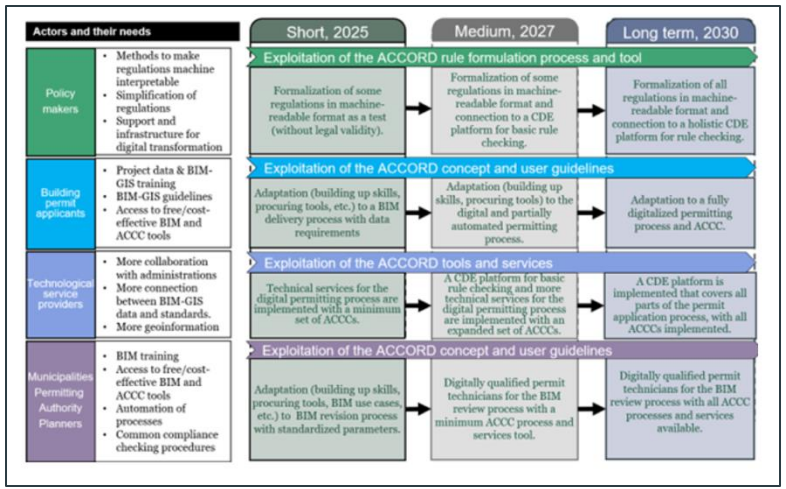
UK



FINLAND



SPAIN



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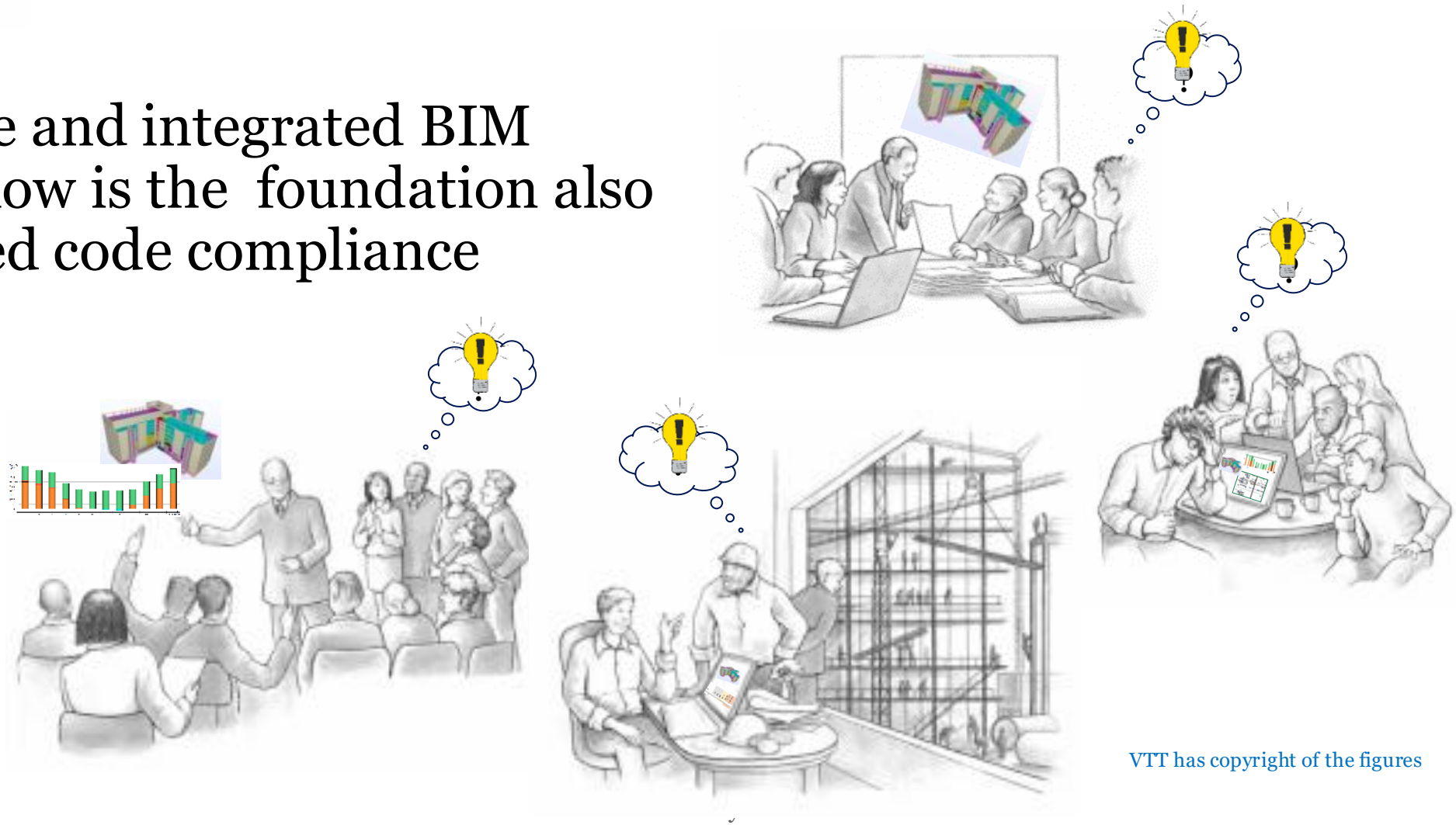
BIM and ACCC

Collaborative and integrated BIM based workflow is the foundation also for automated code compliance checking



Conlusions… untill now

- The transformation pathways in European countries and regions are not similar.
  - The state of digital construction digital permitting practises and the starting step varies.
  - The local culture of design and construction and steering of the developments in the build environment varies.

    ⇒ **There are diverse starting points for the transition activities.**

    ⇒ **There are different dynamics for the transition process.**

More Resources

https://accordproject.eu

- D1.2 ACCORD Landscape Review report
- D1.3 ACCORD Framework and User Requirements Specification
- **D3.1: Transformation Pathways Report**
  - T3.1: TO-BE Digital Permitting and Compliance Processes
  - T3.3: Transformation Pathways towards Digital Permitting Processes in Demo Countries

Thank you!

The deliverable (D3.1) will be released later this year.

For further questions, please mail us:

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