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SUSTAINABLE AND SMART MANAGEMENT FOR THE BUILT ENVIRONMENT

- THE CASE OF UNIVERSITY REAL ESTATE IN AMSTERDAM

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CREATING TOMORROW

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SAMENVATTING
AMBITIES EN BELOFTES

INSTELLINGSPLAN

Hogeschool in 3D

Duurzaam, divers & inclusief en digitaal voor de toekomst

2021
2026

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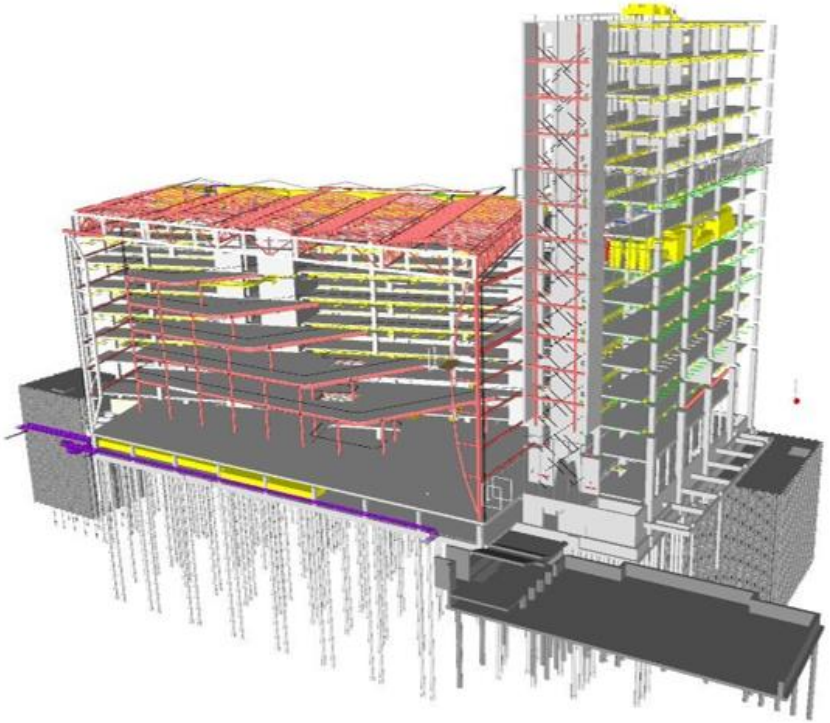
HISTORIC BUILDING DEVELOPMENTS

UvA City Campus, University Quarter, Masterplan Development to achieve 2040 Climate ambition.

NEW “SMART” BUILDING DEVELOPMENTS



AUAS, example of new “Smart Building” development Conradhuis, using BIM model

DATA-DRIVEN MONITORING OF BUILDING ENERGY PERFORMANCE - HYPOTHESES

- Enhance the collection, quality and integration of energy and related data
- Explore approaches to integrate dynamic data from buildings (e.g. coming from meters and sensors) with static data (e.g. floor area)
- Interoperability and cloud-based solutions
- New or enhance existing open source data analytics dashboards and prediction tools.
- Improved tools for digital simulation and digital twinning.
- Develop, enhance and integrate existing open data sharing platforms, including where relevant by refining and integrating building data reference architectures
- Promote fair data management practices to ensure findability, accessibility, interoperability and re-usability of data.
- Digital building logbook and digital data exchange platforms for building.

- Real use cases with business potential (e.g. smart energy services) valorising high quality building performance data
- Demonstrate that the proposed solutions allow to significantly improve the monitoring of the building stock performance
- Demonstrate that data-driven monitoring increase energy performance

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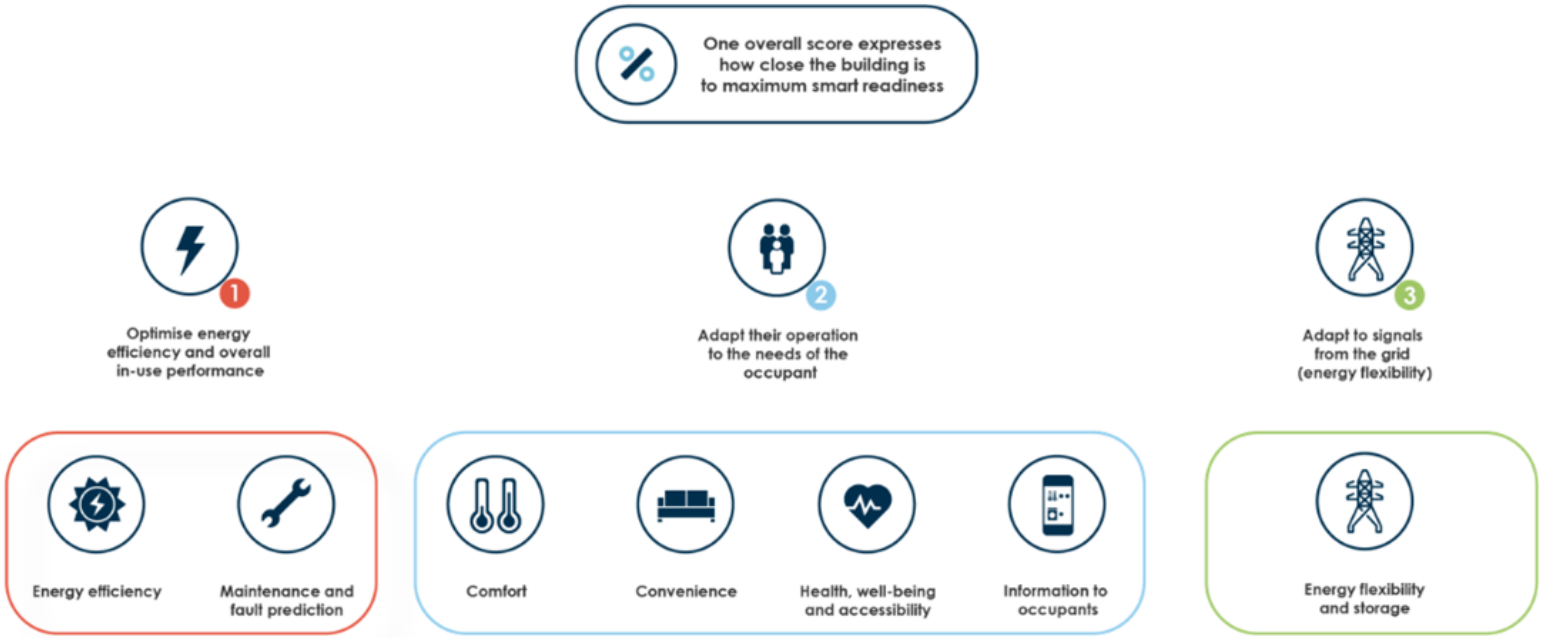
SMART READINESS INDICATOR

Figure 2 – Three key functionalities of smart readiness in buildings



Smartreadinessindicator.eu

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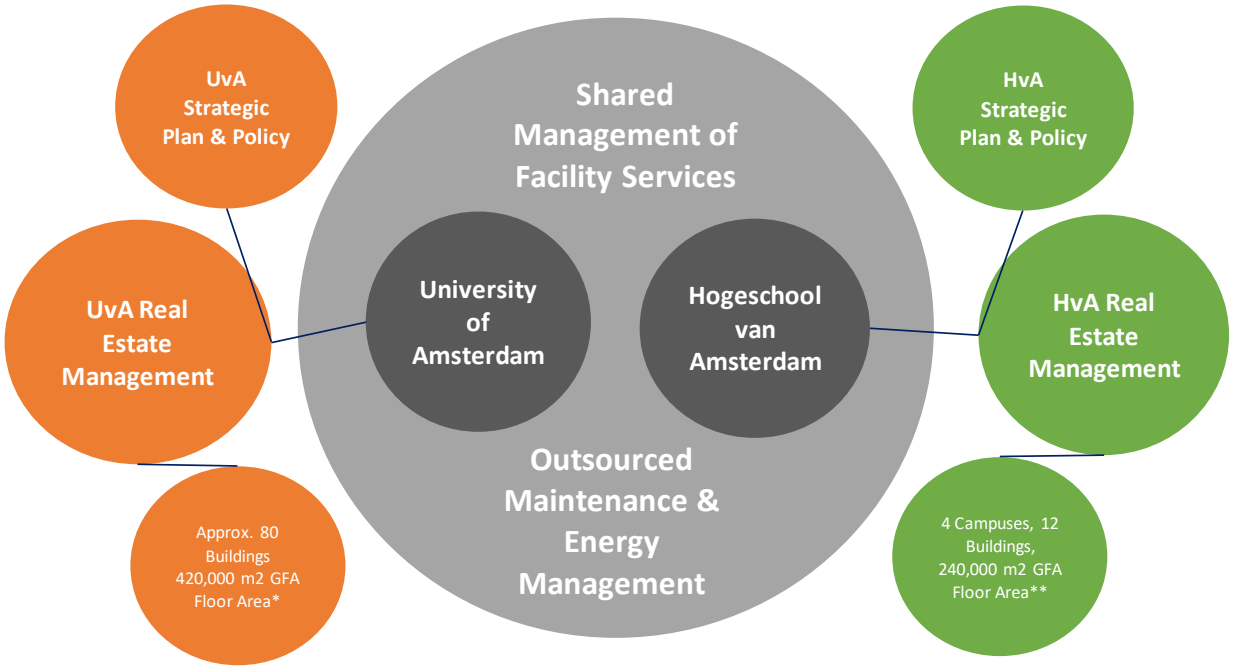
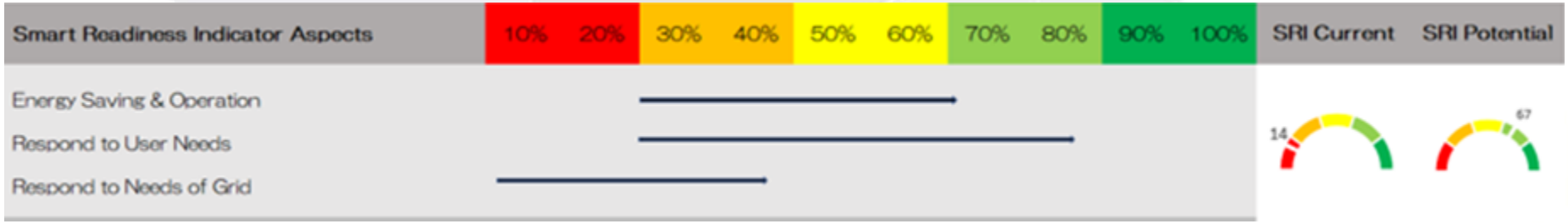
CURRENT SITUATION



Challenges

- Large portfolio. Mix of old, historical and new buildings
- Outsourced services
- Real Estate Policy and Management not shared
- Lack of in-house knowledge, capacity and processes for innovation



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TARGET GROUPS AND ACTORS

- Building & Portfolio Owners
- Facility, Building and Asset Managers
- Policy Officers
- Contractors
- Suppliers of equipment, installations & ICT
- Energy Advisors
- Knowledge and Research Partners
- Educational & Vocational Training Partners (Students)
- Health & Safety Professionals
- Privacy Officers & Professionals
- Energy Utilities
- Financial Institutes and Investors

Building End Users & Occupants

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DRIVERS FOR DATA DRIVEN MONITORING OF BUILDING PERFORMANCE

Reputation

Play a leading role in demonstrating how we can achieve large-scale emission reductions

Research & Education

Enabling world-leading research and supporting education. Embedding a living lab approach

Accelerating Energy Innovation. Transform campuses into smart cities and creating models that can be replicated beyond the campus boundaries.

Support strategic ambition and targets (climate, energy, digitalisation)

Partnerships

Establish industry partnerships, research collaborations and the development of technology that can be locally tested.

•Share knowledge and information

Funding

Use of university infrastructure to attract research funding and create world class facilities.

Barriers

Financial

- Limited Financial Resources
- No Specific Budget
- Limited scope for alternative business models
- Required (perceived) investments

Political

- Lacking policy framework
- Disconnected Real Estate Management / Policy
- Lacking detailed roadmap and planning to achieve strategic ambitions

Institutional

- Lack of leadership / Ownership
- Outsourcing
- Understaffing
- Systems and processes that do not allow for innovation
- Lack of integration between operations and ICT

Technical

- Lack of understanding / complexity of technologies and data processing tools and methods
- No involvement of building users – acceptance/resistance

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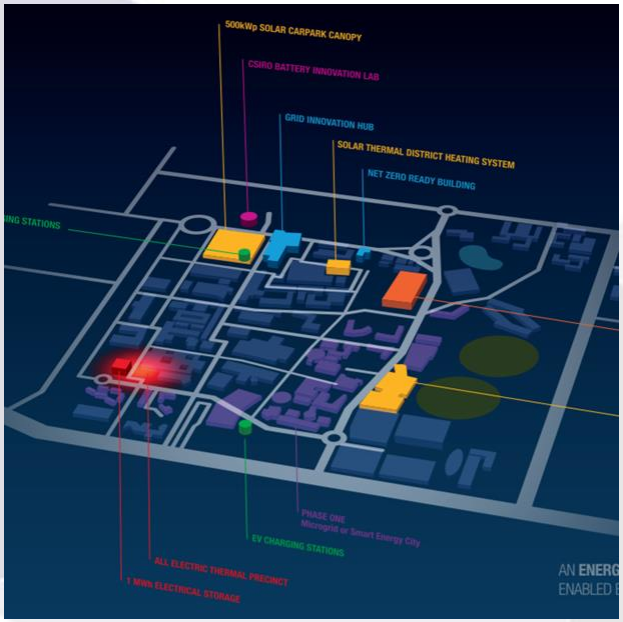
NEXT STEPS

Planning	• Adopt strategy, policy and roadmap for digitalisation of building monitoring and management • Set up M&E Framework
Engagement	• Targeted awareness raising at all levels of organisation • Involve service providers/contractors
Benchmarking	• Learn from other more advanced universities (abroad)
•R&D	• Develop a R&D portfolio approach of building specific needs, solutions and demos • Focus on building information systems and digital twinning
•Capacity Building	• In-house staff • Contractors
•Finance	• Develop alternative business models and cases to support investment
Upscaling	• Building clusters/area approach • City of Amsterdam

BEST PRACTICE EXAMPLE



Monash University – Net Zero Initiative / Smart Energy City

- Winner of global United Nations 2018 Momentum for Change Award
- Committed to invest $135M in energy transformation.
- New buildings go beyond Code (Passive Haus)
- Support at highest level (VC) – Top-down approach
- Actionable decarbonization roadmap developed with industry experts
- Inter-faculty support, co-operation and exchange – Facility Services + ICT
- Industry partnerships and collaboration with Distribution Network Service Providers
- Next-generation electricity microgrid automatically balancing generation, operation and demand.