Annex81: Data Driven Smart Buildings

Data Driven Smart Buildings

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IEA Technology Collaboration Programme on Energy in Buildings and Communities Webinar
"Building Energy Efficiency and Indoor Air Quality"

9th November 2021, 12:00-15:00 UTC / GMT

Data-Driven Smart Buildings

Why are we interested?

- Poorly maintained and improperly controlled HVAC equipment wastes up to 30% energy
- HVAC offers a large untapped resource of flexible load that can support increased use of variable renewable electricity sources
  - … and other bundled comfort and productivity services

Can 'digitalization' unlock energy savings and flexible demand?

FDD savings and costs snapshot

	Year 1	Year 2
Median savings	6%	**9%**
Median savings ($/sf/yr)	$0.17	**$0.24**

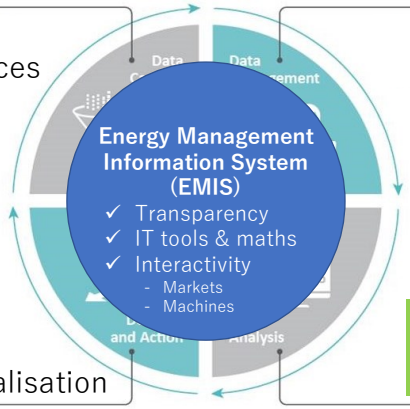
Costs	Per point	Per building	Per sq ft
Base software and installation (one-time cost)	$8	$12,500	$0.05
Annual software + MBCx service provider ($ per year)	$5	$3,503	$0.02

Many additional results on measures IDd, enablers, barriers, payback …

US DoE Smart Energy Analytics Campaign
- 104 organizations, 6500+ buildings
- ~2 year payback time

What is Digitalization/ Industry 4.0/ Smart-Building?

- Energy meter
- IoT sensors and devices
- BMS
- Geospatial



- Data federation
- Semantic data models
- Access controls

- Product dispatch
- Automated settlement
- Human interfaces & visualisation

✓ Model Predictive Control
✓ Fault Detection and Diagnosis
✓ Grid Interactive Buildings

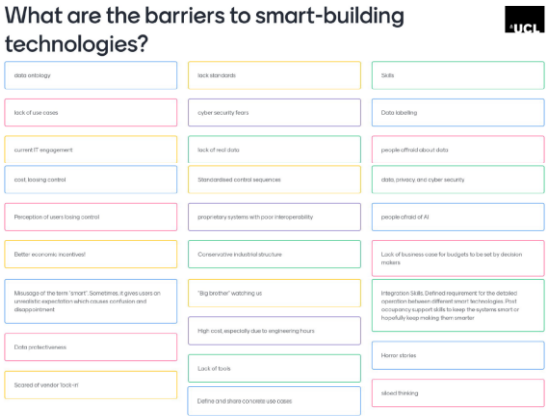
“Platform” for multi-stakeholder participation

Barriers to realising savings from digitalization

Data/System Integration Barriers
- Poor hardware/software interoperability
- Lack of standards for managing data
- Cyber security, privacy and data-leakage fears
- IT dept. engagement and conservative industry structure

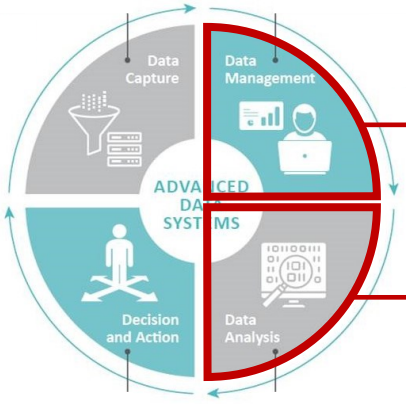
Skills Barriers
- Lack of system-integration skills
- Diverse hardware/software implementation practices

Commercial Barriers
- Commercial lock-in/ purchasing fears
- Siloed product offerings
- Lack of innovation/ narrow range of services
- Lack of clarity regarding the value for stakeholders



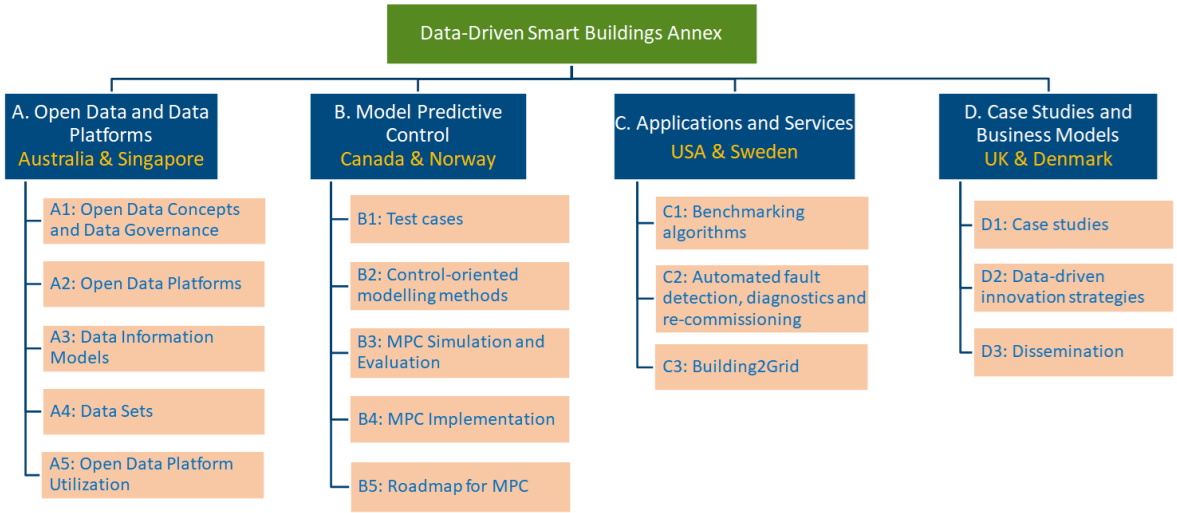
Poorly understood concept of a “digital-ready” building
Not packaged up as a clear “product” that anyone can buy or train for

Our role

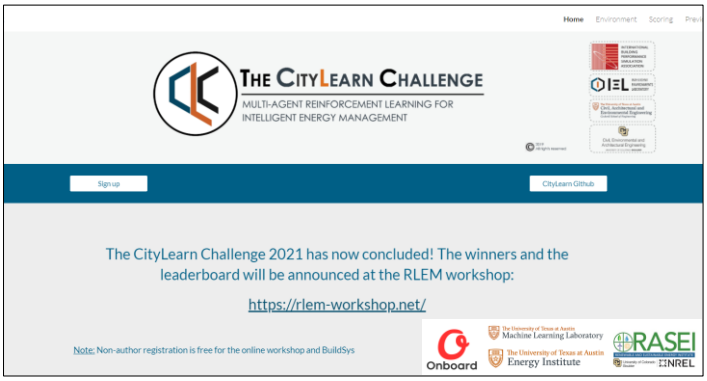


- ✓ Community of practice: networking and knowledge sharing
- ✓ Support the development of data management standards & platforms
- ✓ Transparent software "Application" benchmarking
- ✓ Drive innovation and value in data-driven services
  - Data sandpits
  - Competitions

The Annex



Competitions



What does success look like?

- Imagine if you could download energy efficiency tools like you download an “App”?
- Who would like to go first?

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Japan's Activities and Challenges

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