Digitalization: Emerging Technologies and their Impact

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Change is knocking on your door!

Number of employees	EU	US
Total number of employees in Total business economy	135.601.377	90.337.386
Total number of employees in Facility Services	14.438.876	9.008.432
Proportion of employees in Facility Services	10.65 %	9.97 %

- New technologies change operation and service provision
- Disruptive changes in the next 10 to 15 years
- Estimation: 40 to 68% of the current jobs are automated or done by robots
- Main question:

1. Which smart building technologies are essential to optimize the Facility Service provisions?
2. Which ones are already in use and which ones will become feasible on a short-term basis?
3. What FS are affected and by which technologies?

Methodology

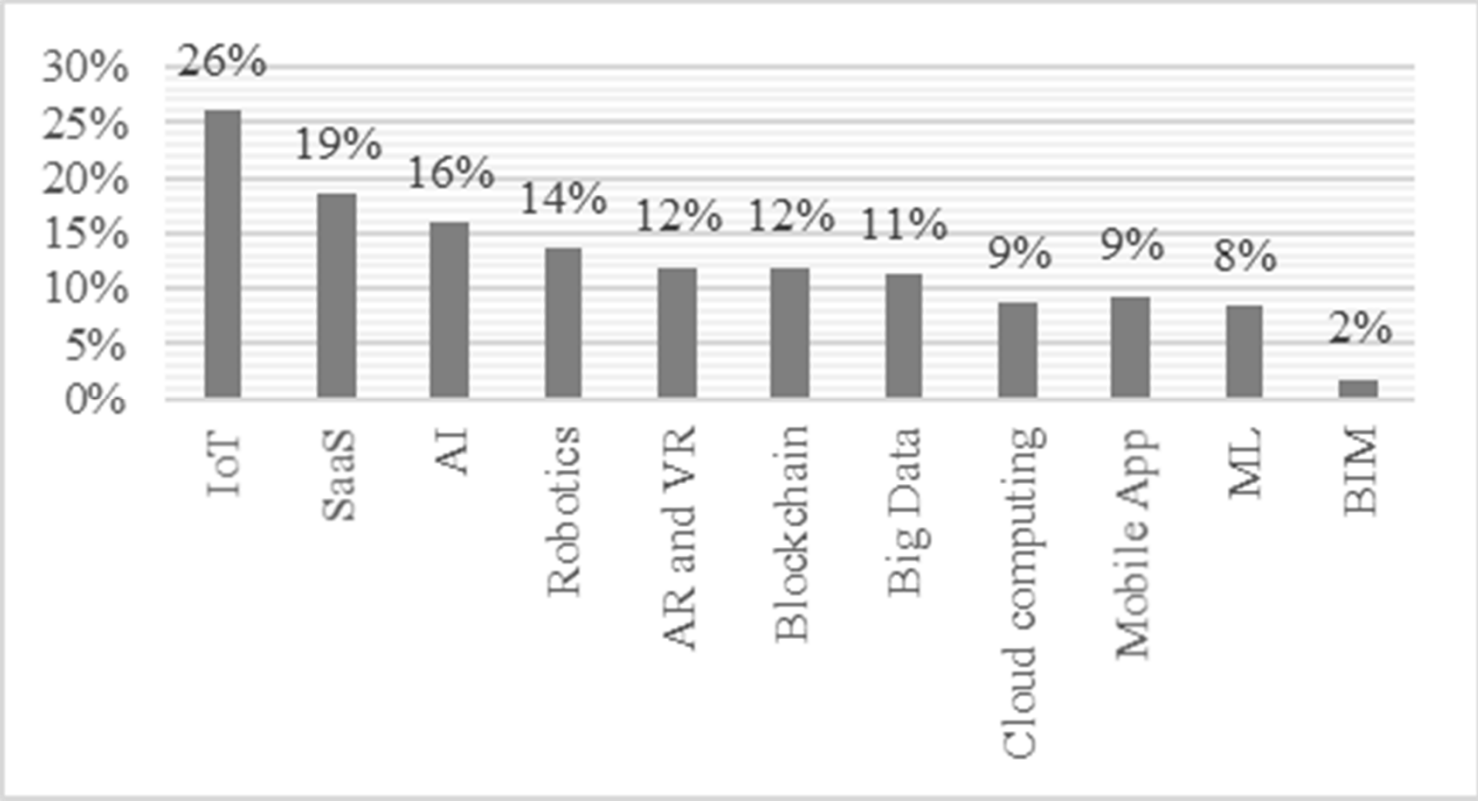
1. Qualitative pre-study
    1. Literature to define relevant smart building technologies in the area of FS
    2. Survey to determine the technical and economic feasibility of the technologies (In 2017 Fifty Fmer)
    3. Result: list of smart building technologies and the estimation of their feasibility
2. Quantitative literature analysis of more than 350 international cases
    1. Scientific studies published in peer-reviewed journals
    2. Strategy documents (scientific & strategy consultancies)
    3. White papers and business project descriptions
3. Validation of results

Studies 2017: Digitalization of Real Estate Industry

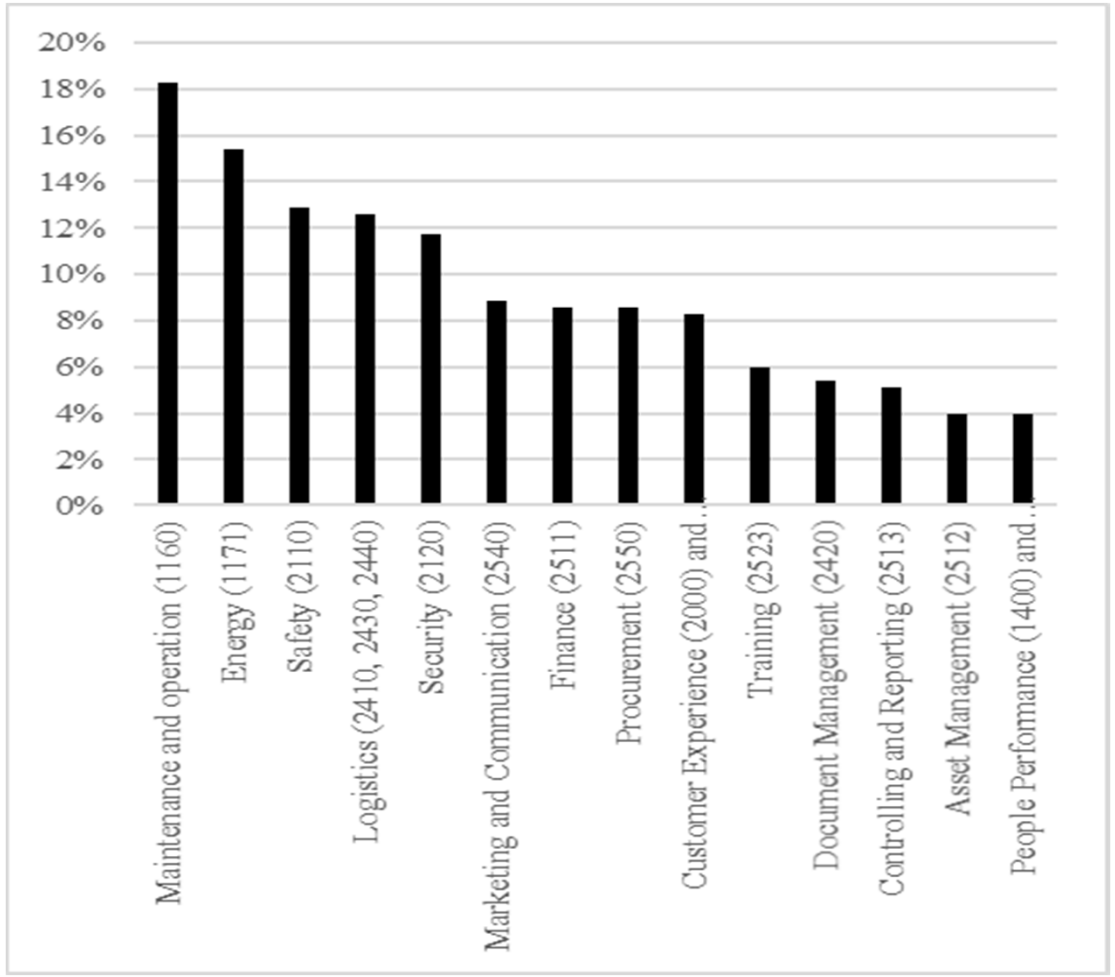
Technologies	Technical feasible	Economic feasible
	mean timeframe till feasibility	mean timeframe till feasibility
Sensors/IoT	0 – 0.55	0.73-1.79
BIM	0.33 – 1.09	1.94 – 2.24
Mobile Apps	0.36 – 0.45	1.03 – 1.33
Robotics	0.45 - 2.03	1.33 – 3.91
RFID	0.52 – 0.75	1.27 – 1.85
Digitalization / Automation	0.58 – 1.73	1.82 – 2.27
BIG Data	0.70 – 0.79	1.61 – 2.06
Virtual reality	0.91 – 1.00	1.82 – 2.42
Drones	0.91 – 2.00	1.97 – 3.52
Augmented reality	1.18 – 1.58	1.67 – 2.3

Survey in German Speaking Countries, Sample 50 Facility Managers

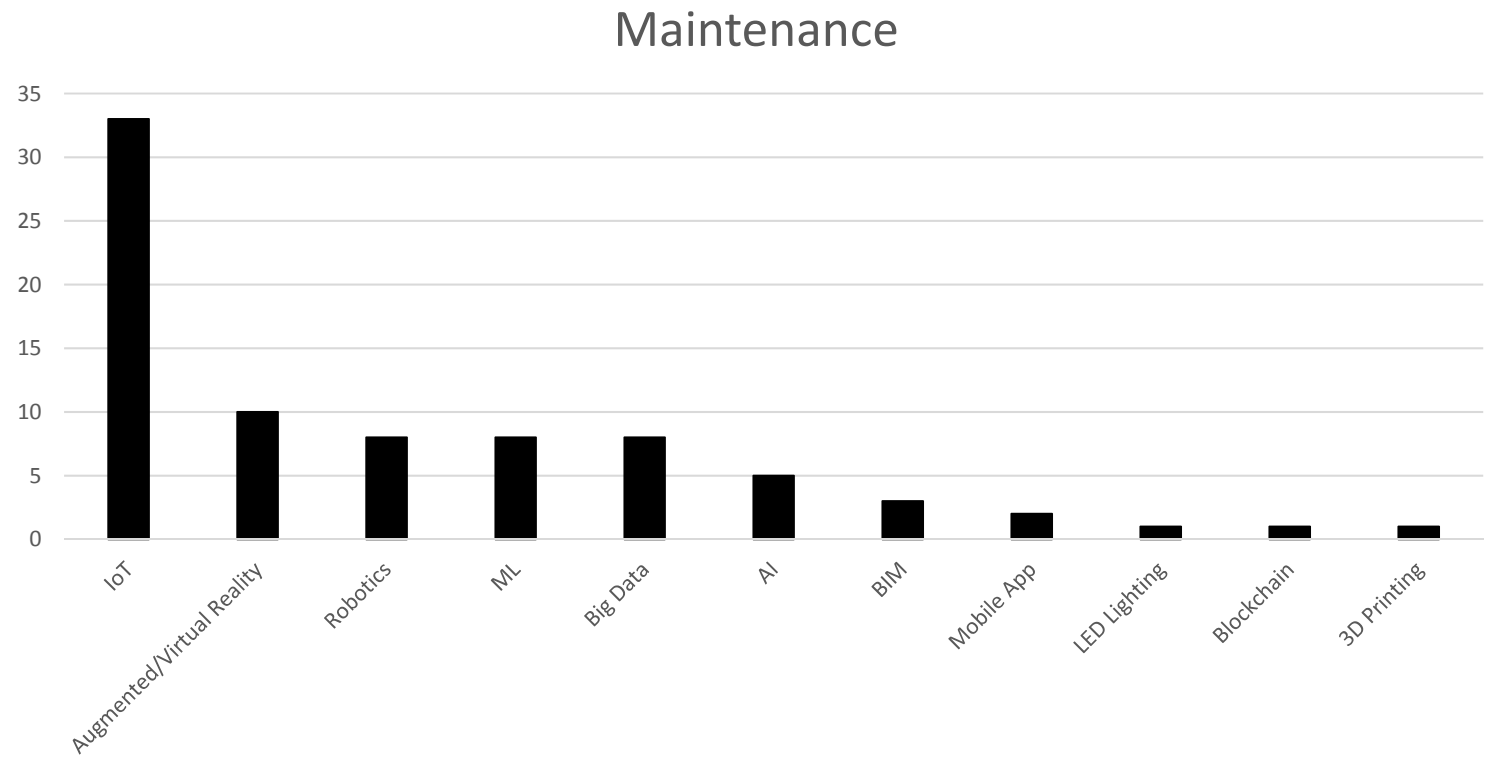
Quantitative Literature Research 2018
Relevant Technologies



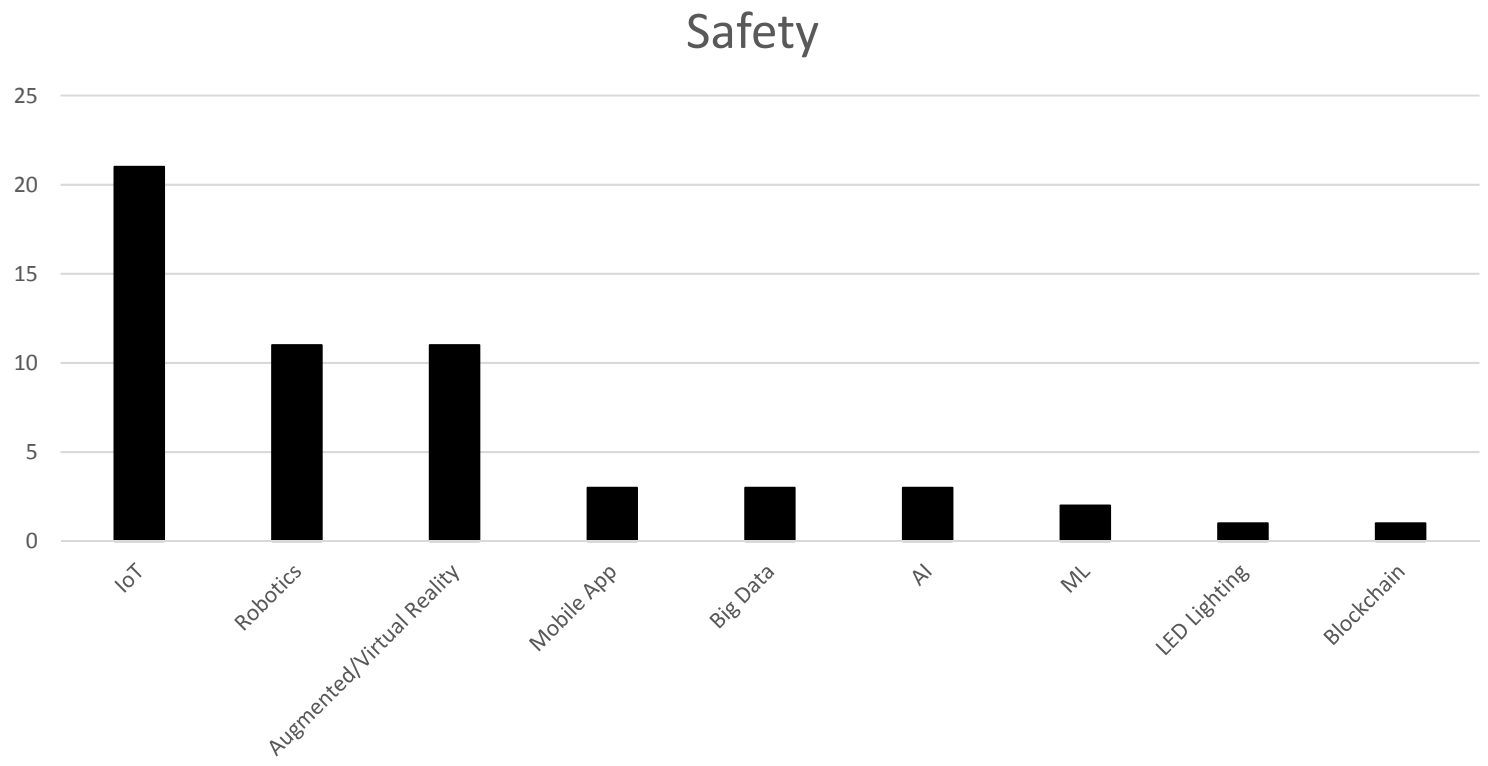
Quantitative Literature Research 2018
Affected Services



Quantitative Literature Research 2018
Technologies affecting



Quantitative Literature Research 2018 Technologies affecting



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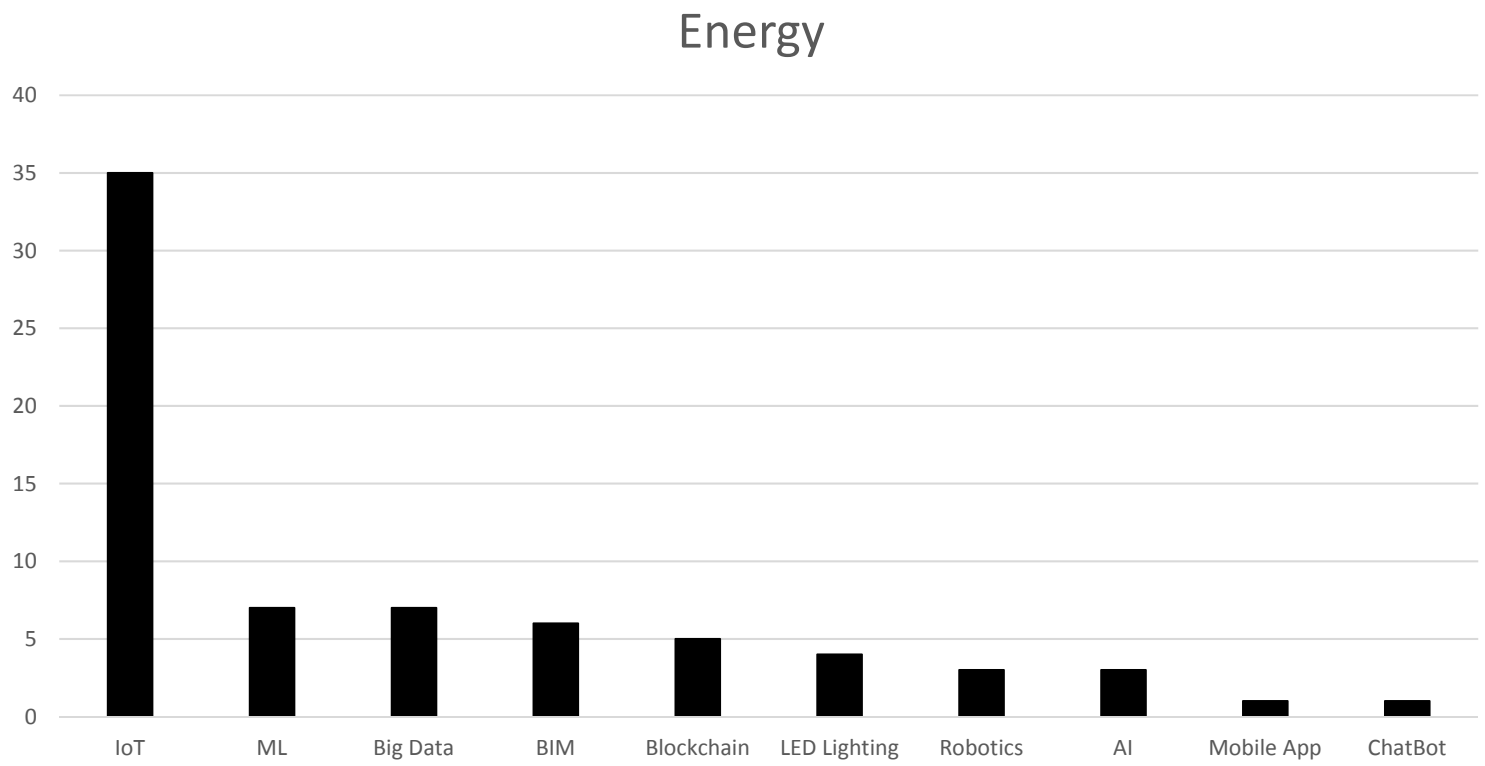


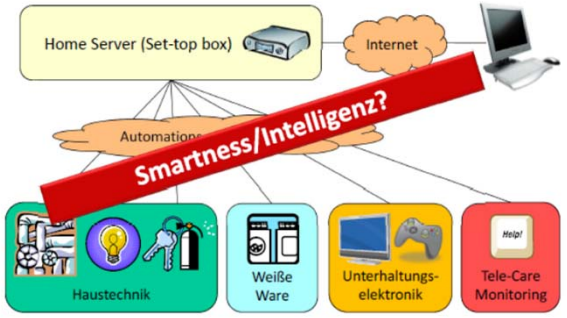
Digitalization of Facility Services: IoT

Currently available:

Sensors/IoT – everything is connected

- Self sufficient
- From preventive/scheduled to demand orientation

1. Room Climate
2. Usage of rooms
    1. Labs
    2. Washrooms
    3. Meeting rooms
3. Wearables (Mobile as wearable)



Digitalization: BIG Data / ML

1. BIG Data
   - used to store and analyze IoT data
2. Artificial Intelligence (AI) and Machine Learning to recognize patterns
   - Do I need the room?
     - Meeting room capacity
     - Forecast of workplaces
   - Predictive Maintenance
   - Video analysis (Security, Access Control, ….)
   - Taylor 2.0
3. Blockchain
   - Data Storage
   - Smart contracts

Digitalization: The Future

- 3-5 Years
  1. Augmented reality
  2. Virtual reality
  3. Robotic
     - Concierge Service
     - Cleaning
     - Landscaping
     - Security
     - Transportation
     - Exoskeletons
  4. Drones

Outlook

- Technology is developing rapidly / everything is on the move
  - IoT is becoming cheap
  - Only delivers data
  - Big Data/ML to analyze, make data usable
  - No set technology
- It is not about IT/technology, it is about
  - New demands
  - User orientation including user in supply chain as “designer”
  - Personalized products
  - New ways of operation enabled by new technologies:
- Data security becomes vital
- New Job Profiles
  - Who will define content?
  - Who will provide further education?
  - Where will the new specialists come from (software engineers)?

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A lot of Changes and Opportunities

Thank you for your attention!

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