

Journey from traditional to smart buildings

<2010 Traditional Building

2010 Automated Building



Domain know-how (in silos)

- On-site solutions
- On-site services
- People/assets protected only on-site, in specific areas/floors



- + Fully integrated management stations
- + Energy Efficiency
- + Single domain management stations (comfort, fire, ...)
- + Some remote connectivity
- + Information largely limited only when physically in the building

+ Building twin

2020

Integrated Building

+ Remote connectivity & analytics

- + Fully integrated management stations incl. cross-domain (safety, comfort, energy)
- + Workplace Experience
- + Full situational awareness incl. multi-sites
- + People protected also outside buildings
- + Digitally enhanced services
- + Mobile applications, anywhere, anytime
- Information on all devices, real-time

202X Smart Buildings



+ Simulation and artificial intelligence based on Building Twin

Intelligent management systems utilize advanced analytics and AI/ML to learn and self-adapt; fully embedded in smart buildings

- + Buildings/campuses connected to wider infrastructure (environment), full data exchange
- + Hybrid solutions cloud/on-premise
- + Beyond mobile apps, advanced dashboards
- + Computer guided intervention

Smart Buildings – interdisciplinary collaboration over all project phases Stakeholders with different business targets



Stakeholder	Concept & Design	Construction & Realization	Operation & Usage	Revitalization & Sales
Developer/ Investor/Owner	1	1	1	1
Consultant/ General Contractor	2	2		2
Corporate Real Estate Manager	3	3	3	3
Building Operator/ Facility Manager	4	4	4	
IT Manager	5	5	5	
Sustainability manager	6	6	6	6
Corporations/ Tenants			7	
Workplace Manager	8	8	8	
HR manager	9		9	
Increasing influence				

The Siemens Headquarter in Zug, Switzerland User-centricity, flexibility and sustainability





Siemens Real Estate as Investor, Developer & Owner "Secure & optimize fair value"



<u>Siemens Real Estate & Siemens as</u> <u>Owner & Tenant</u> *"Reduce energy consumption & CO2 emissions"*



<u>Siemens as Tenant & User</u> *"Use space efficiently & provide unique workplace experience to employees"*



Bouygues as Facility Manager "Optimize FM processes & reduce maintenance costs" Flexible

Flexible



The Siemens Headquarter in Zug, Switzerland Digital Building Twin as enabler of value adding uses cases



Cost saving in Predictive & Preventive Maintenance field Innovative and Outcome-based Asset Performance Services



Fewer but more informed and actionable tickets



Replacement of HVAC facility management tasks or be supported by data-analytics



weekly/monthly visual inspection tasks replaced by analytics



Identification of hidden issues and failures



drop of service requests related to indoor climate

>10%

of energy reduction

>40%

40 % of onsite HVAC facility management tasks replaced by data-analytics

Comfort settings

Create an individual workplace experience which increases productivity and talent retention



Employees are more satisfied and Up to 5%¹ more productive when they can adjust their workplace settings of their desired levels. Doing so over their smartphone reduces touching shared surfaces, making them feel more safe.

83% of occupants are more satisfied with their thermal environment.²

59% reduction of calls to maintenance requesting temperature changes.²

28% of energy savings while maximizing comfort and well-being of occupants.³

1 JLL 2016; Are smart buildings smart for business white paper
2 GSA Public Building Services 2015; Socially driven HVAC optimization
3 Smart real estate expert



The Siemens Headquarter in Zug, Switzerland Access to Digital Building Twin on-site or remotely





thank you!

