



Smart building management systems

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Building Connectivity



Agenda

1. Customer needs and enablers
2. Viewpoint of information management
3. Current process, separate building management systems
4. Electronic process, integrated building management systems
5. Financial impact



1. Customer needs and enablers

Customer needs

1

2

3



1 Optimal surroundings at home.

Superior indoor comfort, ultimate security and significant energy savings:
Control of building technology based on needs and situations.

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Easy usage. Reliability.

Easy local and remote usage, availability of cost-efficient quality services:
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One stop shopping.
Complete HVACE solution.
Easy to understand what you are buying.
One contract.

The solution

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Superior indoor comfort, ultimate security and significant energy savings:
Control of building technology based on needs and situations.

Integrated building technology
Complete HVAC integration using open standards and cost-optimized technologies.
Horizontal integration of all building management systems.

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Secure Internet connection of integrated building technology

Efficient access rights management: COBA
Value chain stretches to different users and service providers.

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Networked business ecosystem

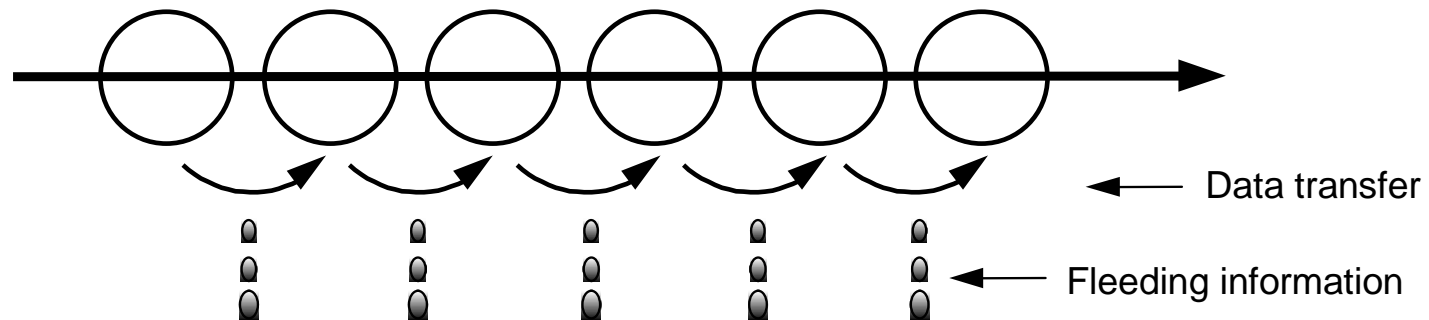
Mass-customization through product modeling.
Efficient pull mode process.



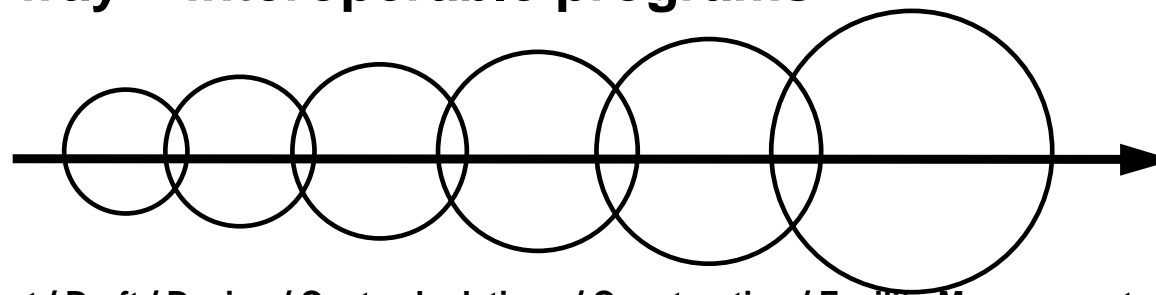
2. Viewpoint of information management

Business Process Development Principles – Data Management Viewpoint

Old way = prevailing way in building industry



New way = interoperable programs

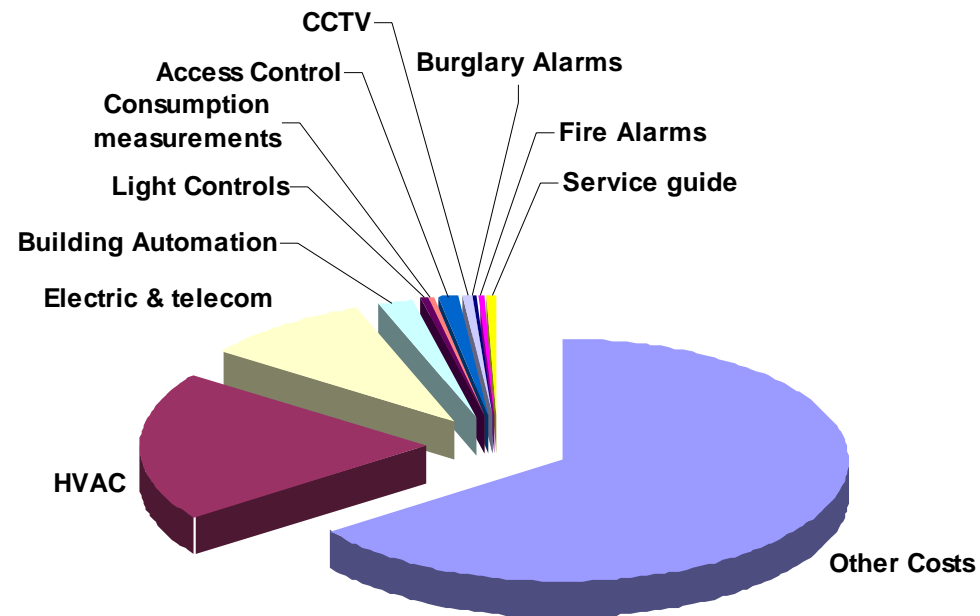


Project / Draft / Design / Cost calculations / Constructing / Facility Management



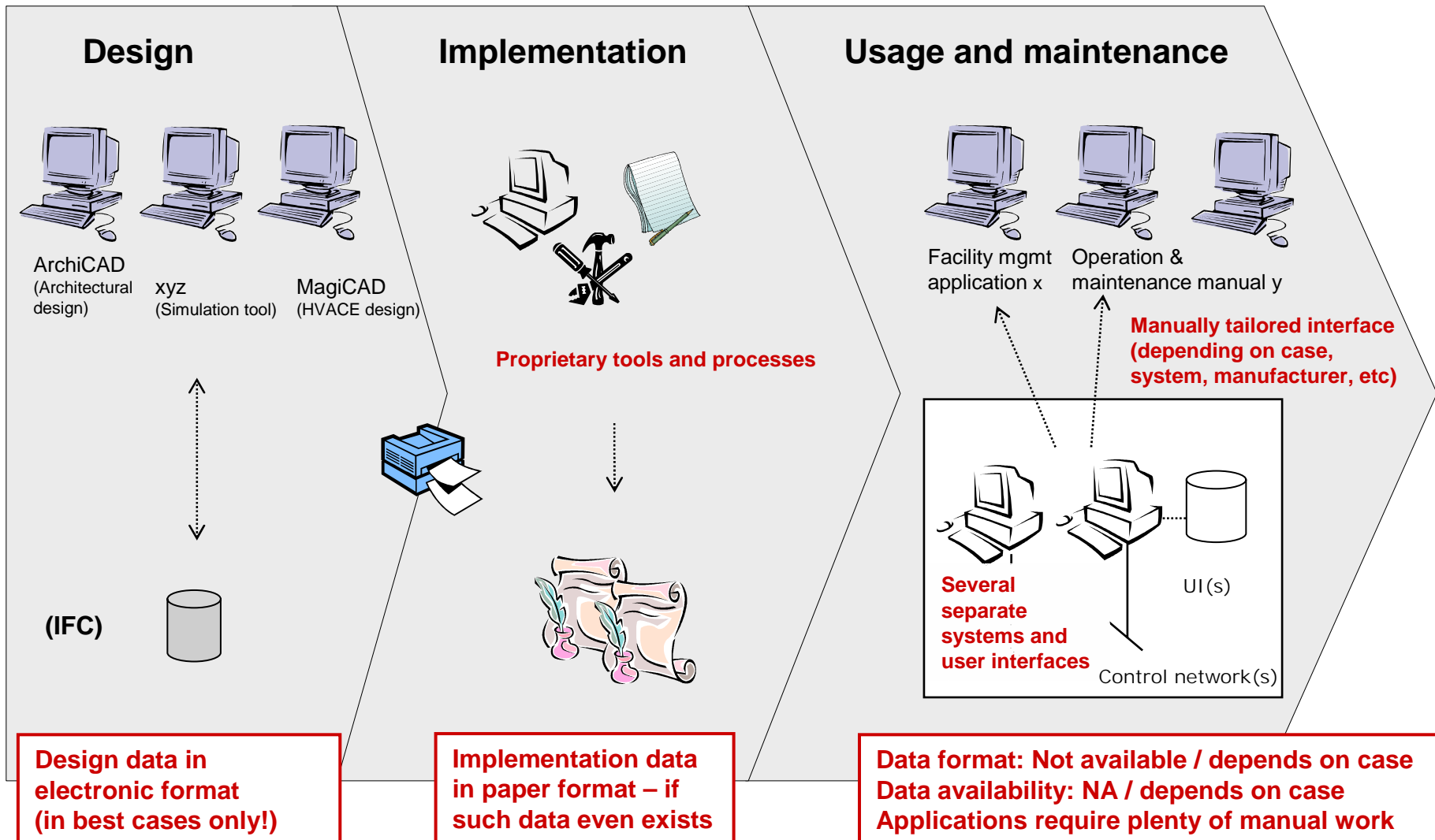
3. Current process,
separate building
management systems

Building management systems



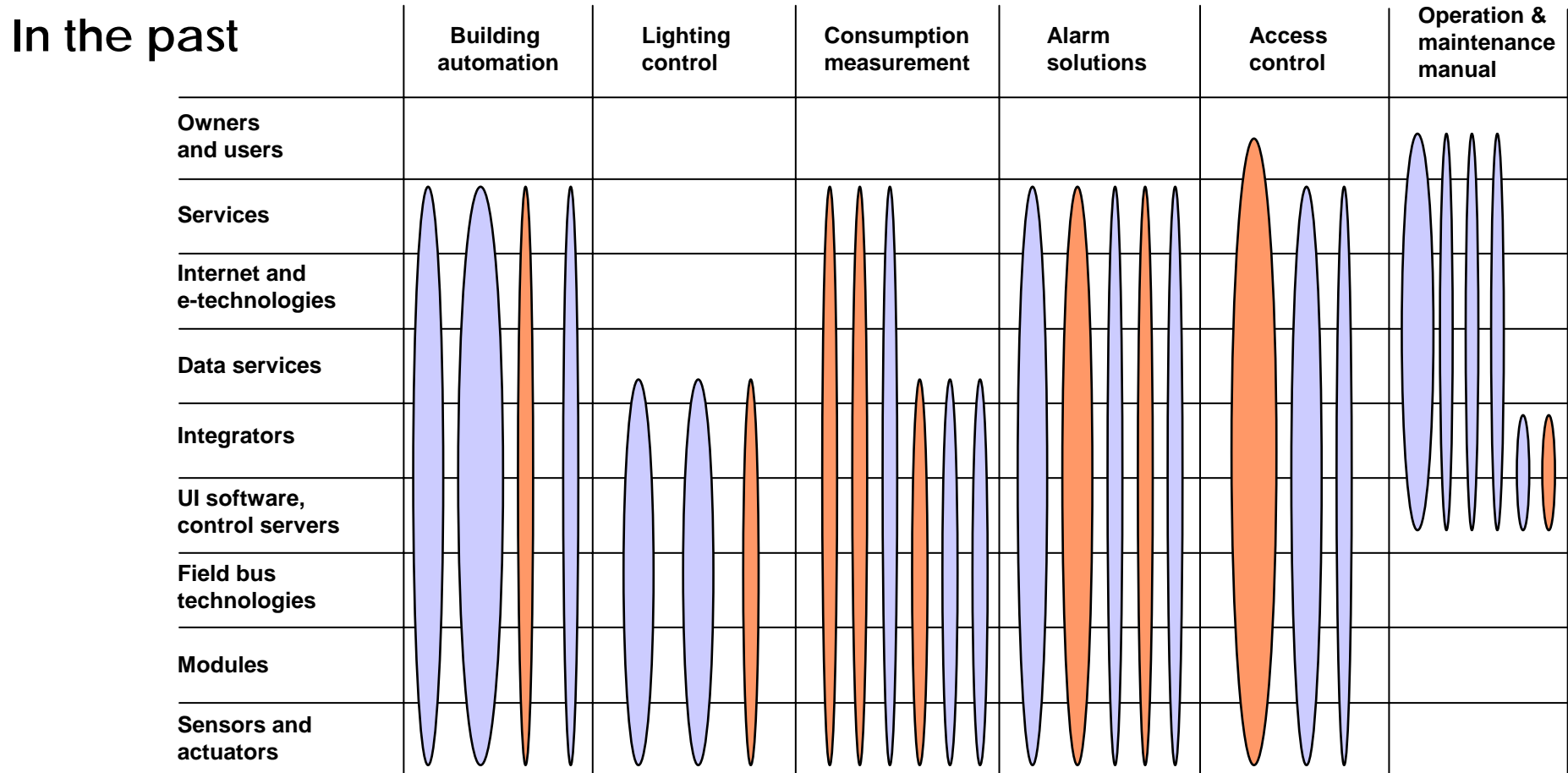
Building management systems form 5-6 % of the investment in office buildings

Today: implementation process of building management systems

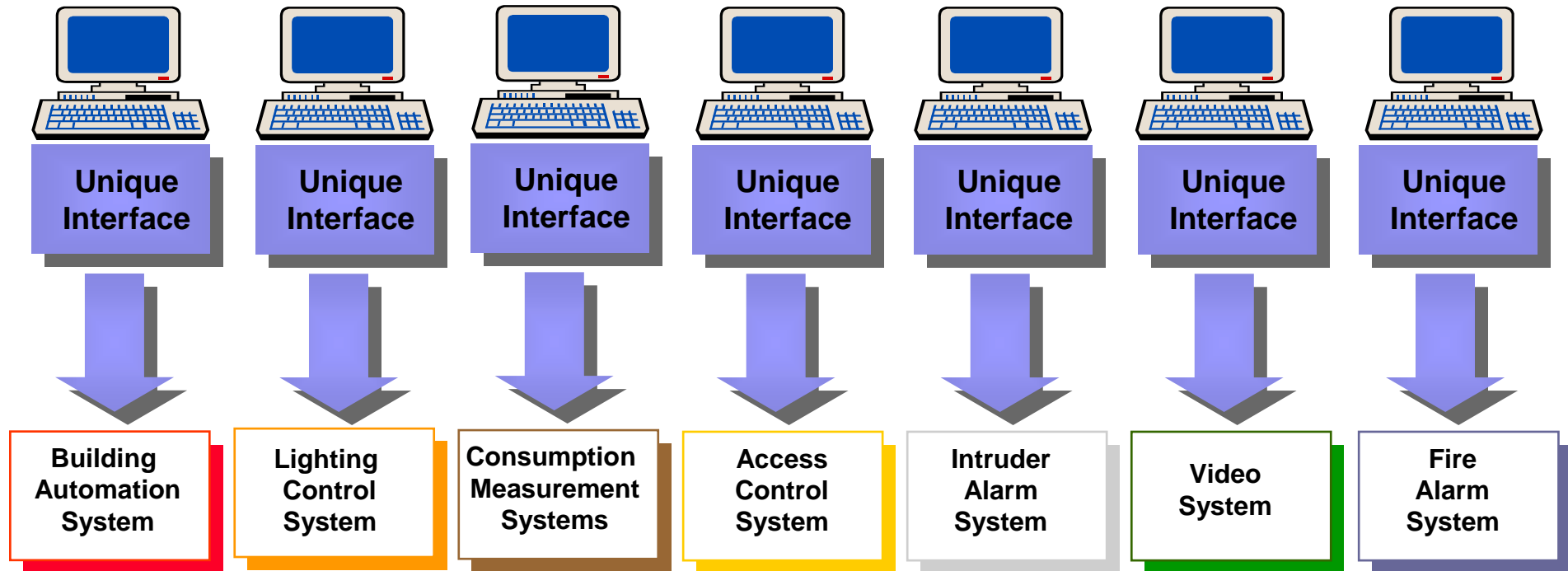




Building management system market: from vertical to horizontal



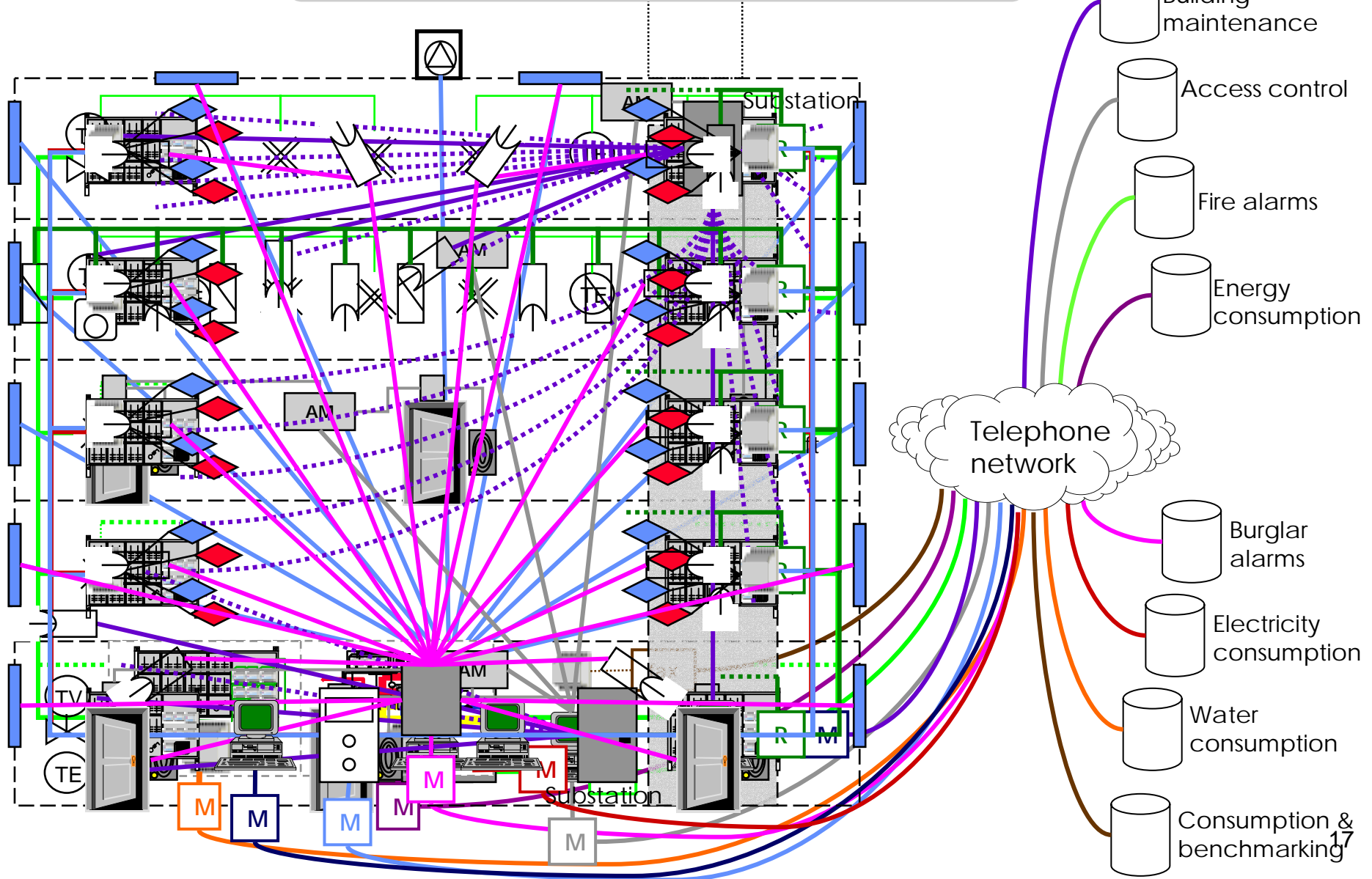
Today's Separate Facility Management and Security Systems



Proprietary Systems - each having its own, unique user interface

- Hardware based products
- Analogue technology
- Independent system design based on own proprietary center units
- Locally used and managed
- Proprietary cabling/networks to each system
- Fragmented value chain

Systems today: no integration



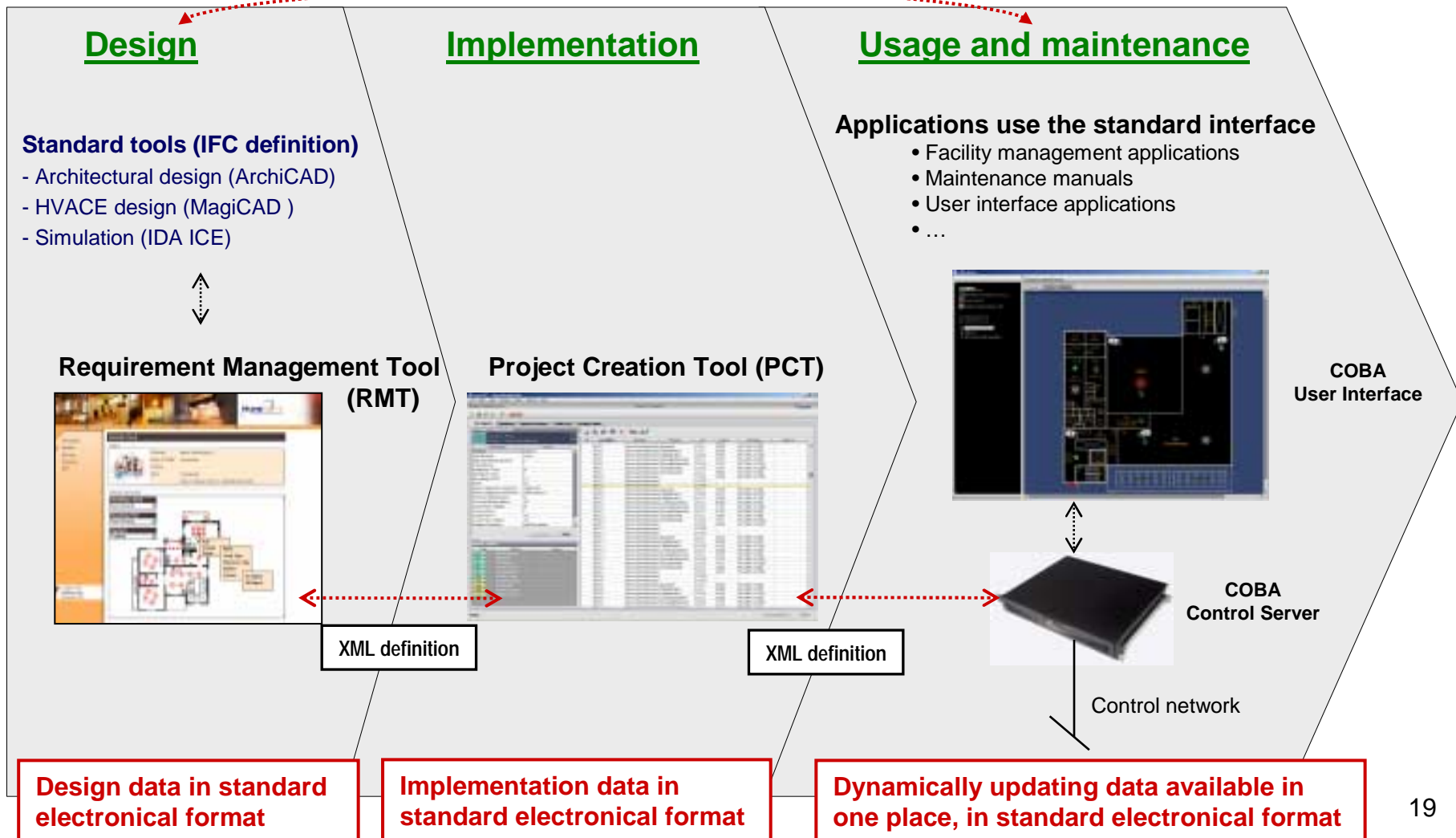


4. Electronic process, integrated building management systems

The smooth, electrical process

Feedback to design and simulation

Design and simulation data to applications



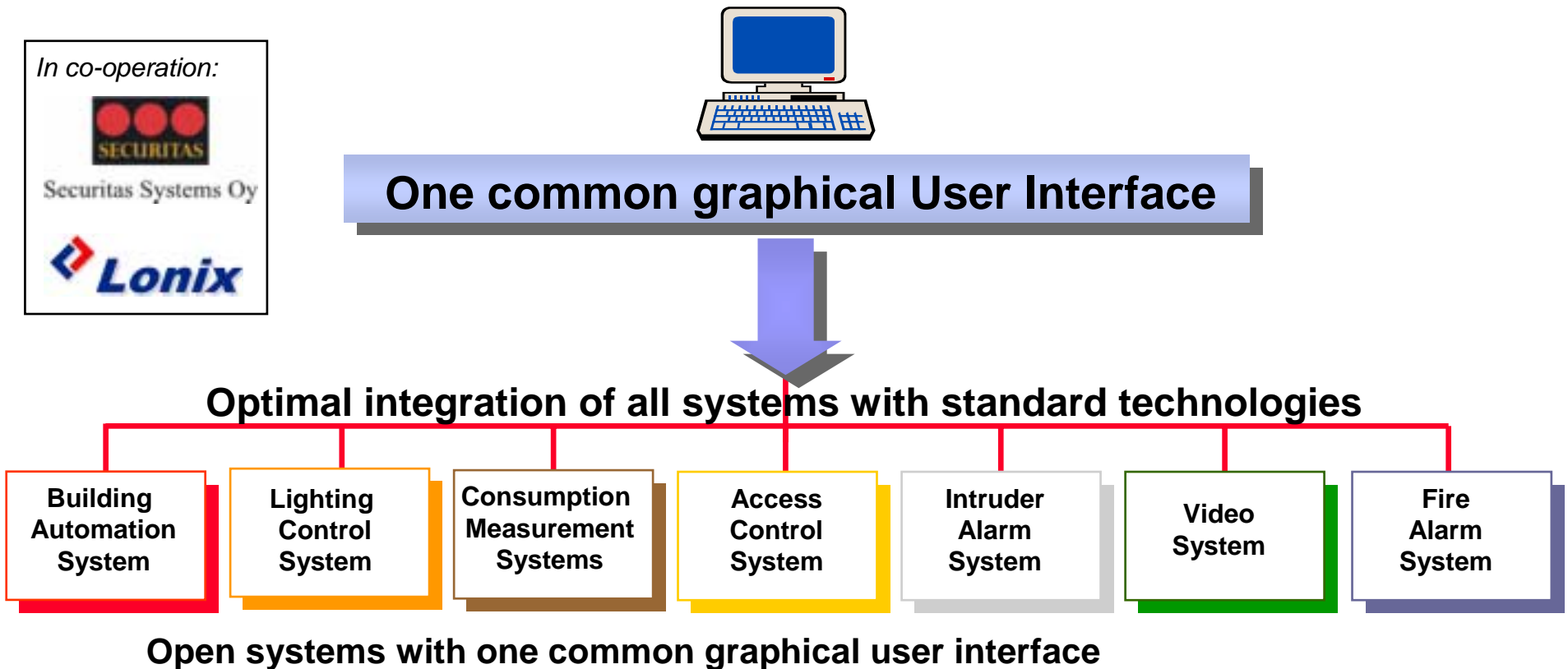


Building management system market: from vertical to horizontal

Today	Building automation	Lighting control	Consumption measurement	Alarm solutions	Access control	Operation & maintenance manual
Owners and users						
Services	ISS		VTT	Securitas		ISS
	ABB					ABB
	SOL					SOL
Internet and e-technologies	XML, Solid FE					
	TCP/IP					
Data services	Elisa					
Integrators	ABB			Securitas		ABB
	ARE					NCC
	Citect			Timecon		YIT
				COBA		Airix
						Granlund
Field bus technologies	LON					
	Bacnet	Dali	M-bus		nn	
	Modbus	EIB				
Modules				nn	Securitas	
	Lonix				KABA	
Sensors and actuators	Produal	Releco				
	Belimo	Strömfors	Suve		Idesco	

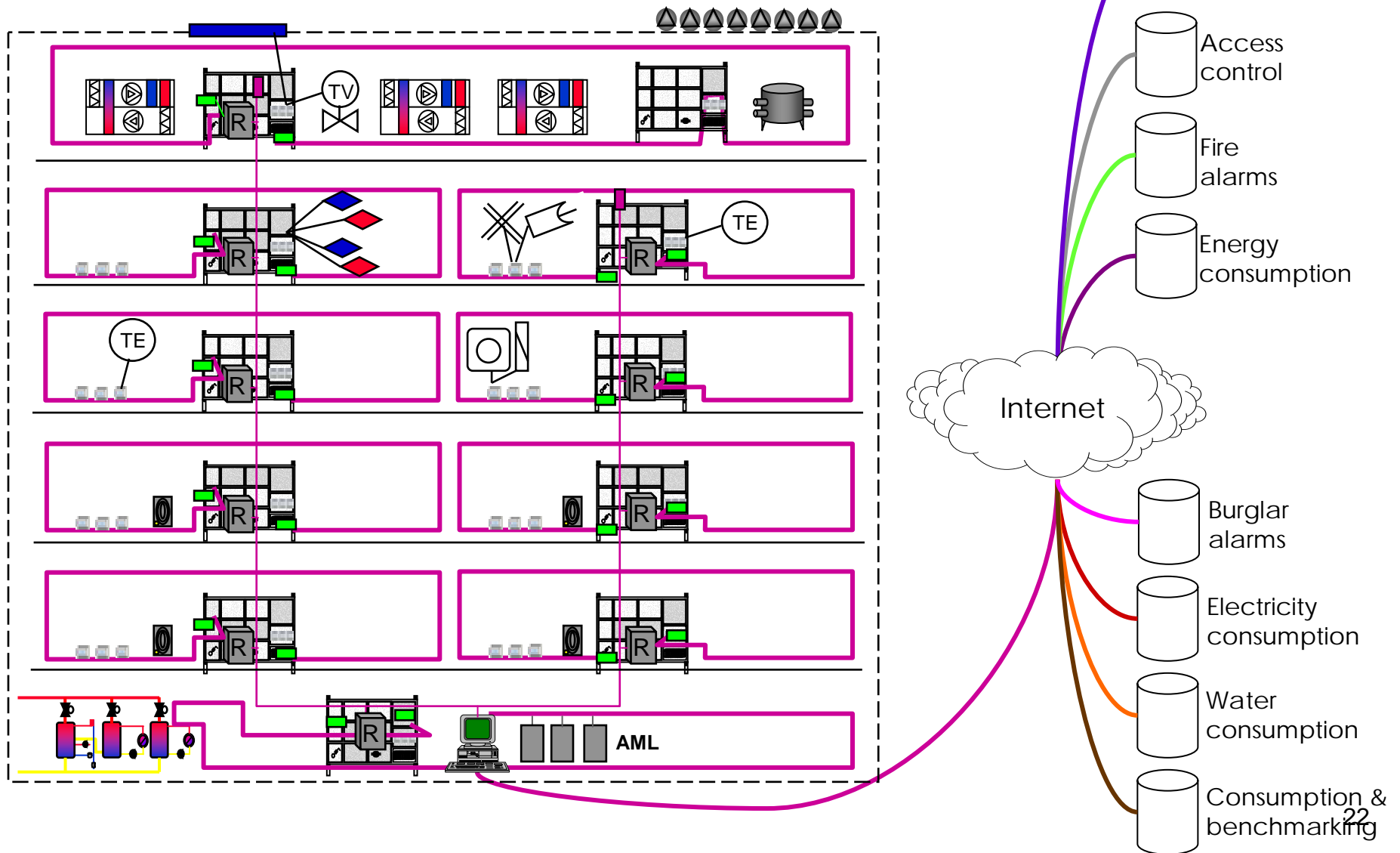
Note! The companies mentioned in the figure are examples only.

Total Facility Management & Security System Service Concept

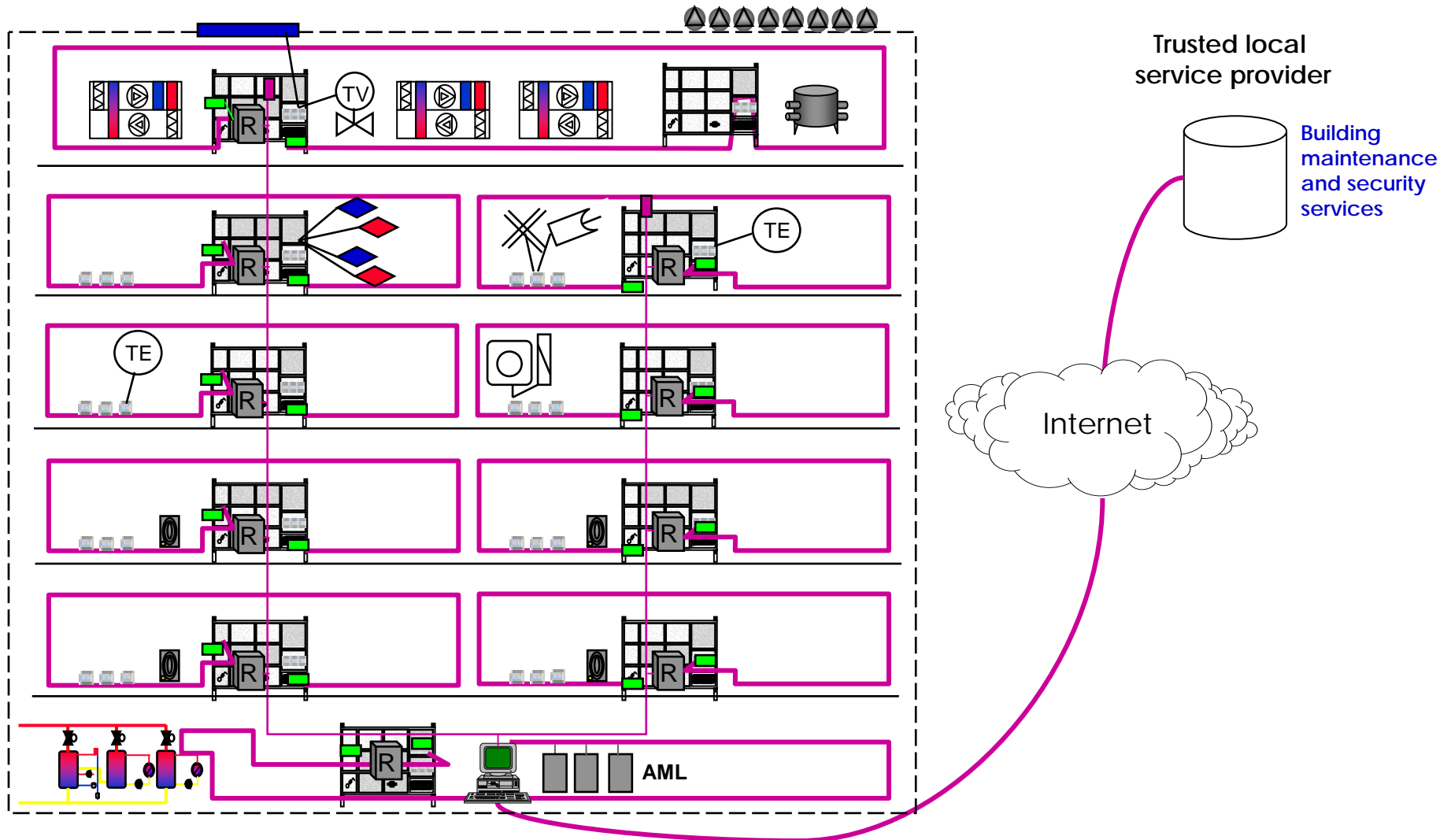


- Software based products
- Digital technology/common IT trends
- Integrated open system architecture (building management & security)
- Local and remote use & management
- Common cabling, standard networks, TCP/IP, LON
- From devices to services - take care of the whole value chain

What if systems were integrated?

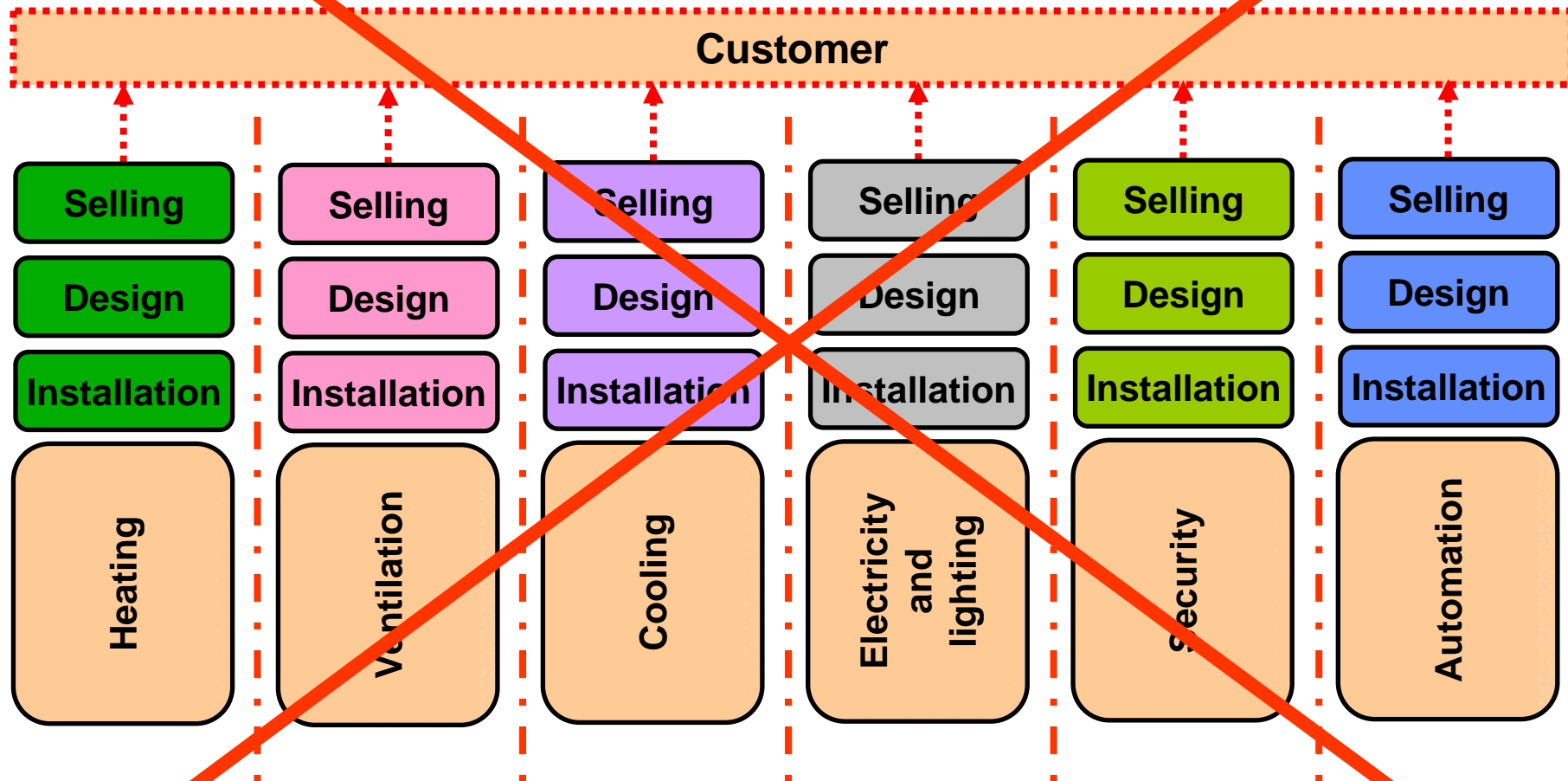


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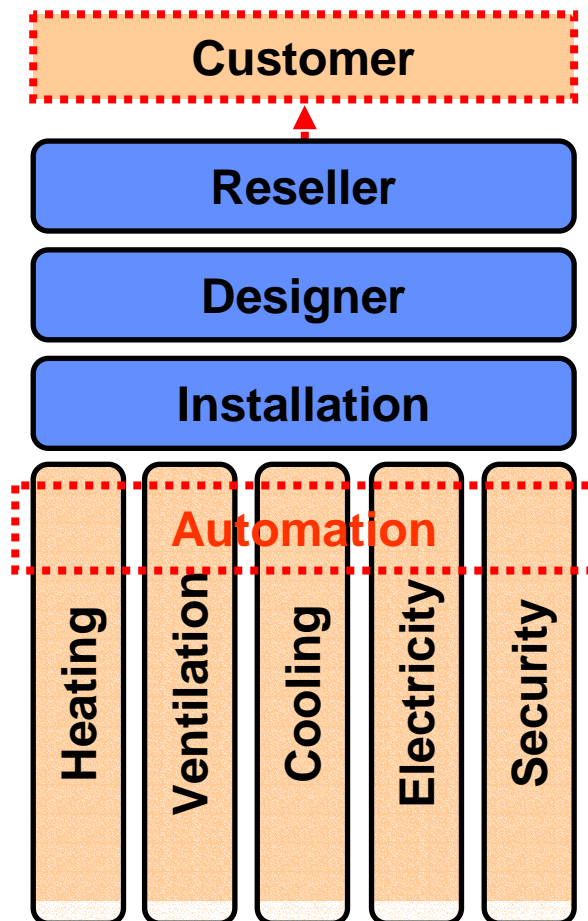
Purchasing process to one-family houses

Wrong way



**Totally inefficient, separate processes from 70's
and huge amount of labour work in every step**

Shift to pull mode

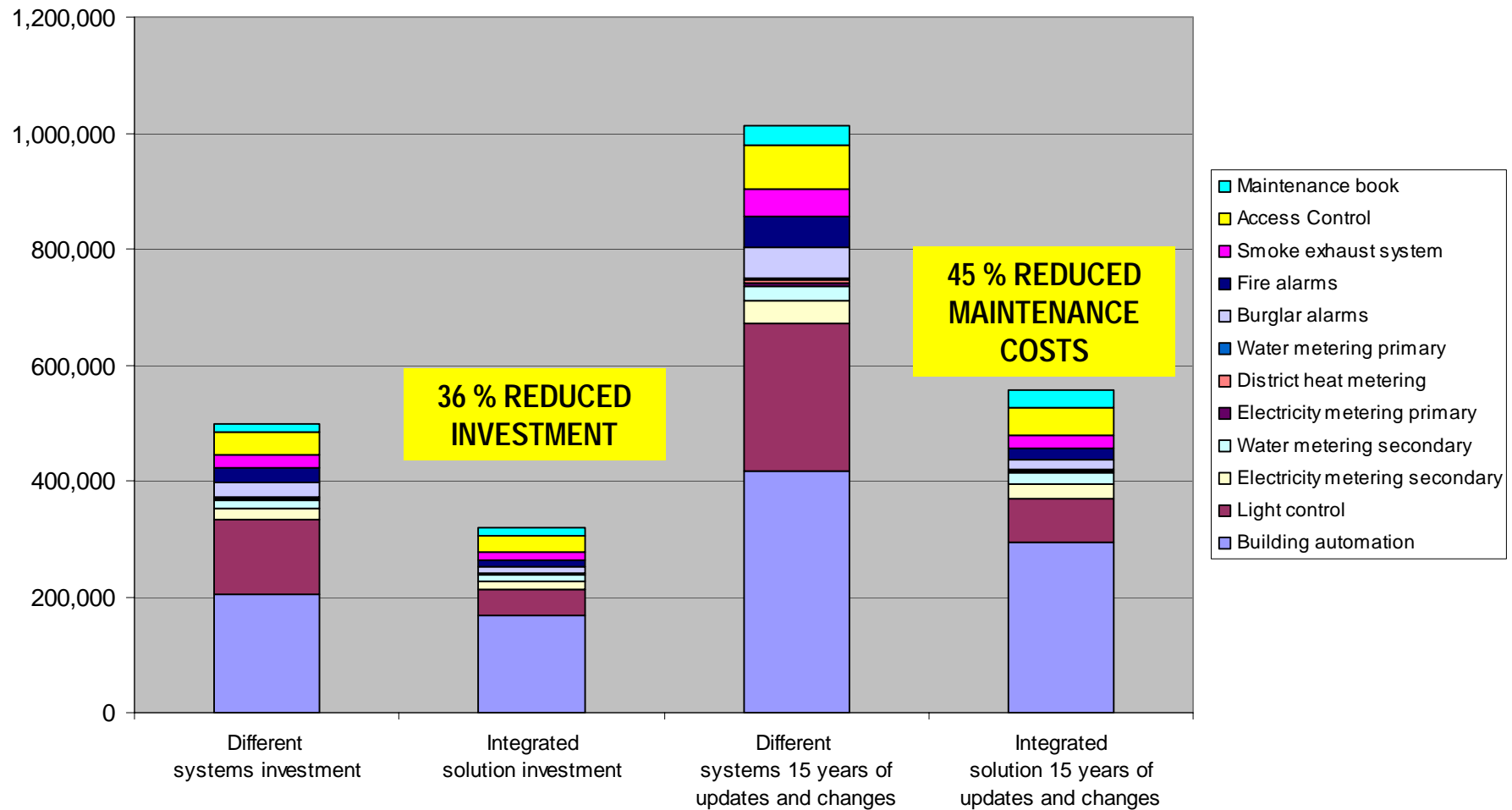


- **Whole package in one**
 - Easy to buy
 - Easy to sell
- **Automation is an essential and inseparable part of common HVACE-systems**

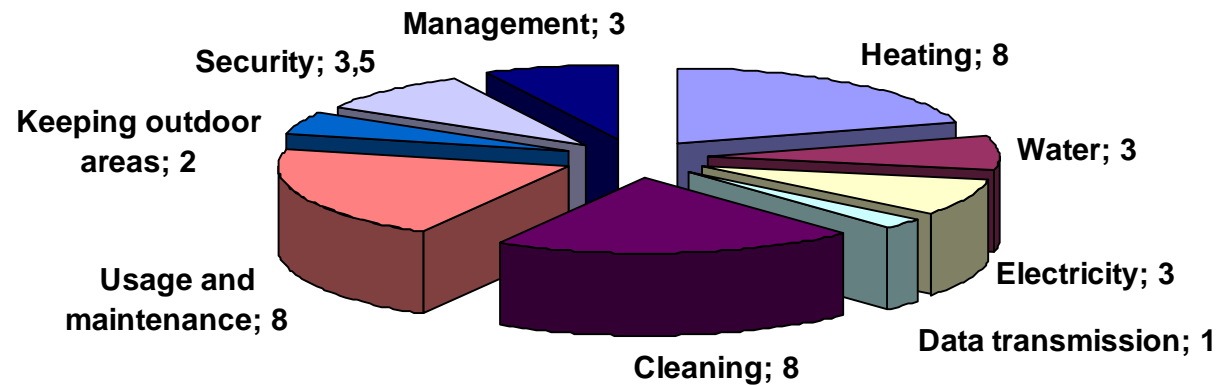


5. Financial impact

Cost of different systems vs. integrated solution in office building, eur



Costs of usage and maintenance, €/m²/year

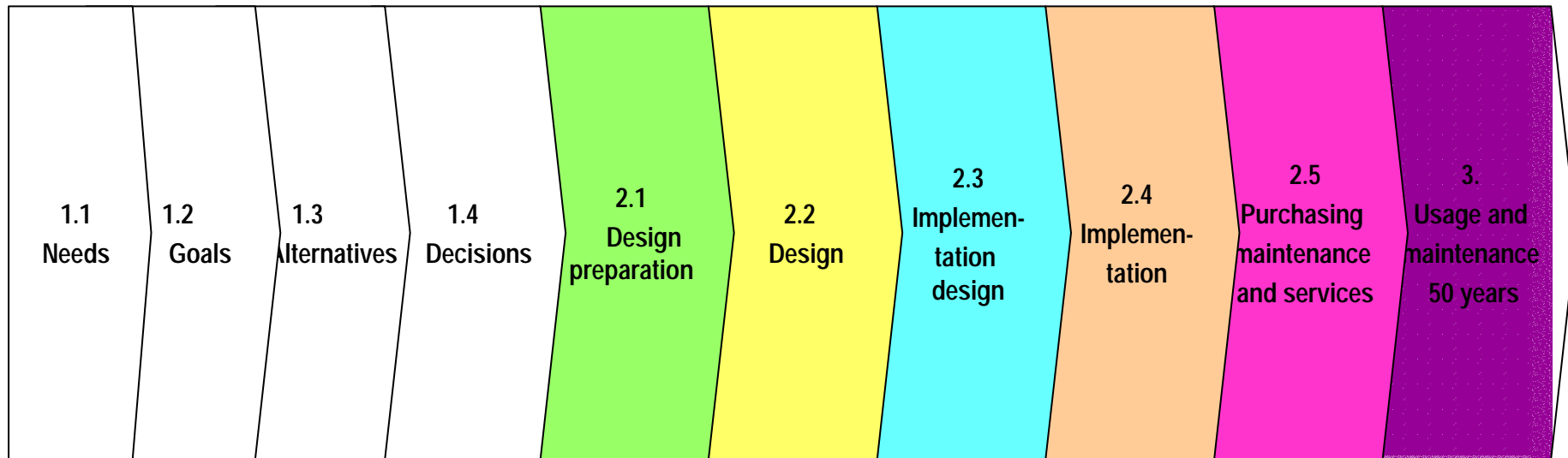


Average annual costs in office buildings 39,50 €/year = 3,3 €/month

Process

Typical costs (design and implementation = 100):

0,1 0,1 0,1 0,1 0,6 8 1 90 1 141



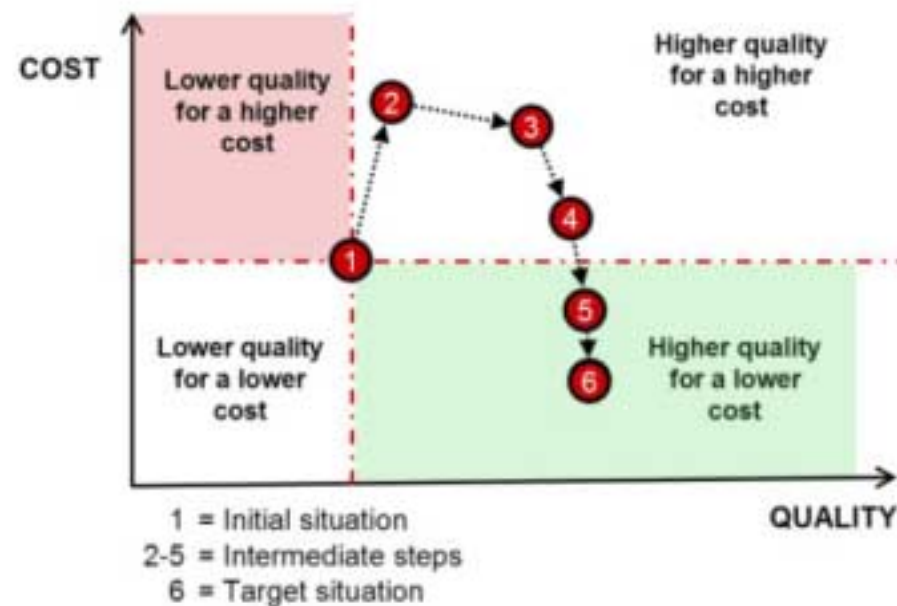
Cost change-%:	+25%	-5%	-20%
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Cost change:	+2	-4,5	-28,2
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=> Savings over life cycle of a single building: 30,7% of design and implementation costs

Preliminary Conclusions

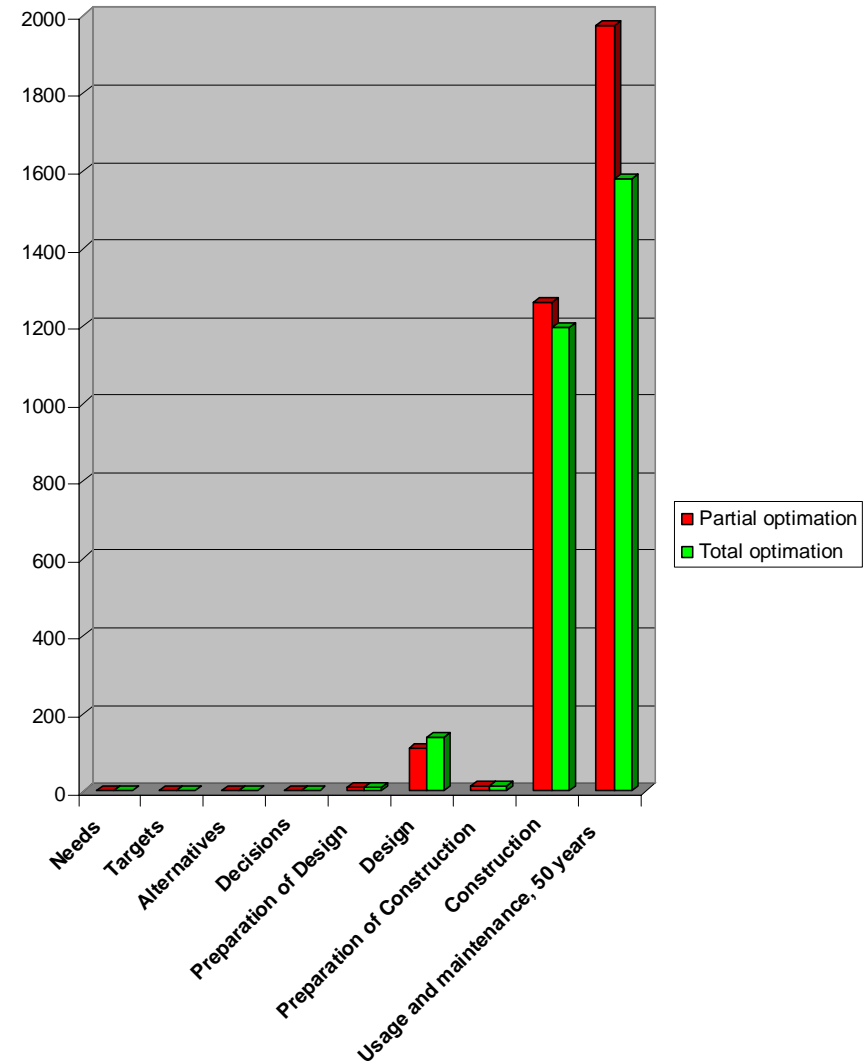
However, to achieve the potential net benefits arising from Virtual Building Environments it is essential to set targets and work towards them



Impact now

Lice cycle cost, €/m²

Separate sub-optimized
 building management systems
 VS.
 Integrated optimized building
 management systems,
 produced through electronic
 process, with simulations



Note! Does not include basic renovations



Path towards networked homes

1. Integration of building management systems
2. From A/V devices to integrated digital entertainment systems
3. Integration of 1 and 2
4. Household appliances (i.e. white goods) get connected to standard platforms