

Opening slide

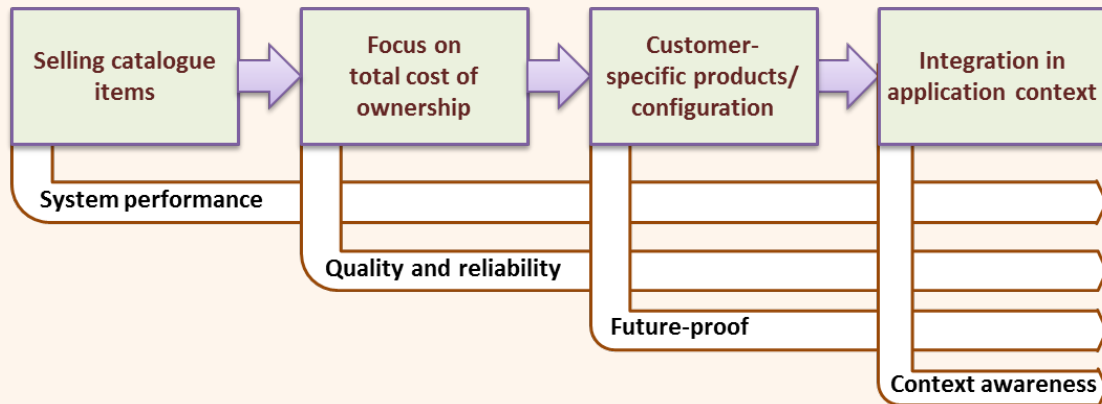
# Trends in Embedded Systems radically transform the Healthcare Industry

Zorg en gezondheid | Embedded Systems

Wouter Leibbrandt – TNO-Embedded Systems Innovation

# High Tech industry needs (as identified in HTSM-ES roadmap)

From stand-alone products to integration in application context

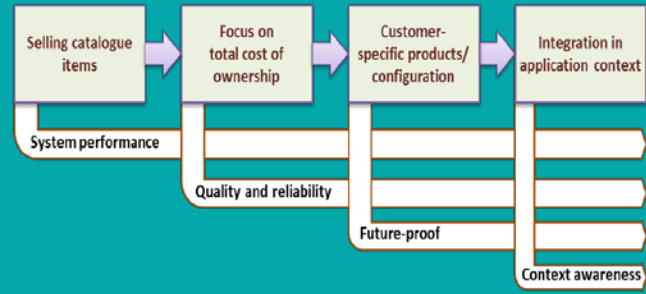


Coping with ever increasing complexity

- **Continuously Evolving Systems**  
The system has both the capability and the need to evolve over time
- **Series-of-one Systems**  
High level of customization of each system delivered, no two systems alike
- **Autonomous Systems**  
System operates without human in the loop, human interaction moves to higher level
- **Systems of Systems**  
The system is an integral part of a larger system without any control of that system
- **X-as-a-Service Systems**  
Not the machine, but the service it provides is the manufacturer's value proposition
- **Parameters-times-10 Systems**  
All current design parameters (e.g. interfaces, LoC) get one (or more) orders more demanding

# Managing complexity in the care cycle

The care cycle is fully integrated



## Complexity drivers

- Evolving systems
- Systems of system
- X-10 parameters



## Key challenges

- System architecture
- System performance
- SW quality and legacy
- Integration and test

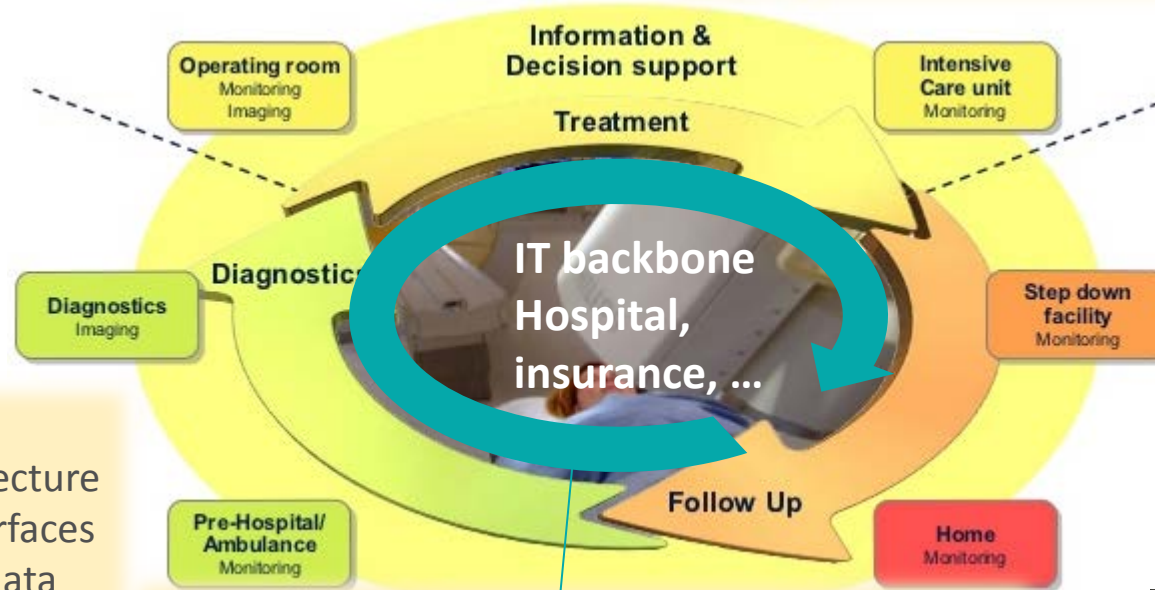
## Complexity drivers

- Evolving systems
- Systems of system
- X-as-a-service



## Key challenges

- System architecture
- Common interfaces
- System level data



## Complexity drivers

- Full customization
- Autonomous system
- X-as-a-service



## Key challenges

- Connectivity architecture
- Security and privacy
- Dependability

## Complexity drivers

- Evolving systems
- Systems of system
- X-10 parameters



## Key challenges

- Scalable architecture
- Interoperability
- Reliability



Laatste slide

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