



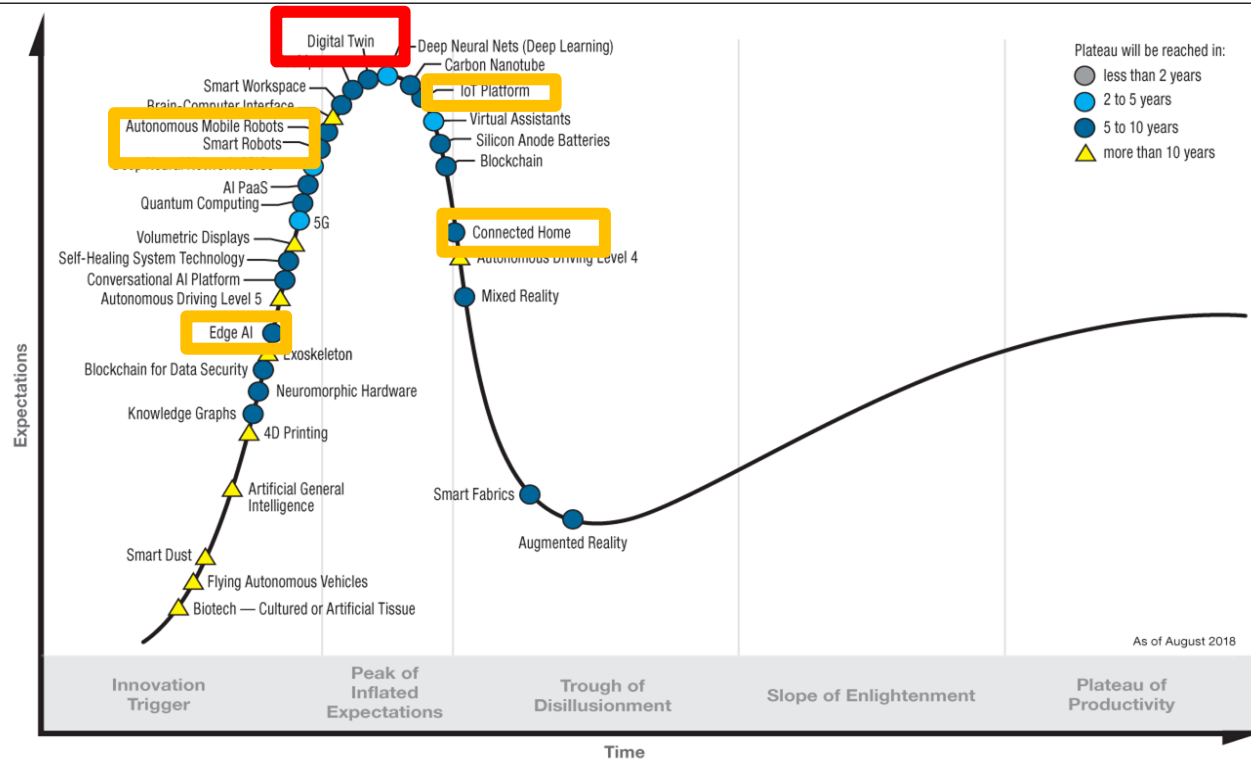
**JOHANNES KEPLER
UNIVERSITY LINZ**

Praktikum Software Engineering

Antonio Garmendia

Unit 0 - Introduction to Digital Twins

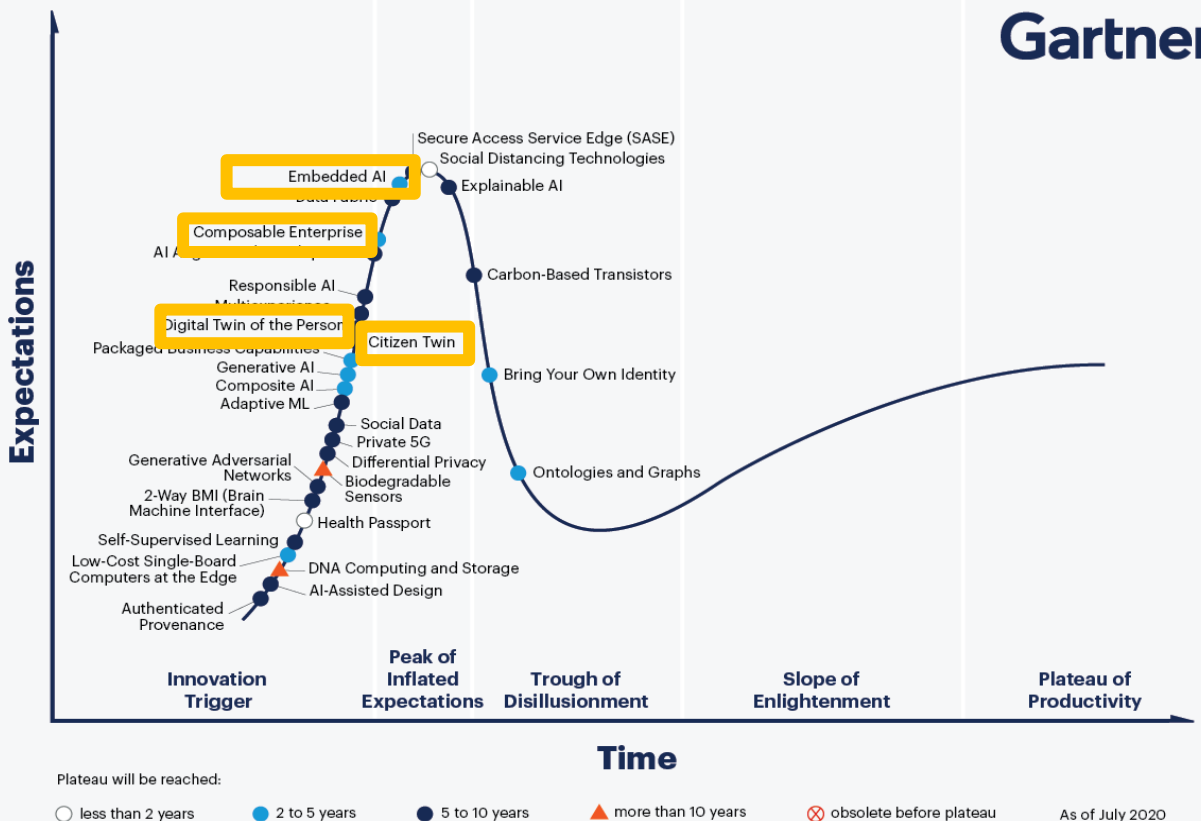
Hype Cycle for Emerging Technologies, 2018



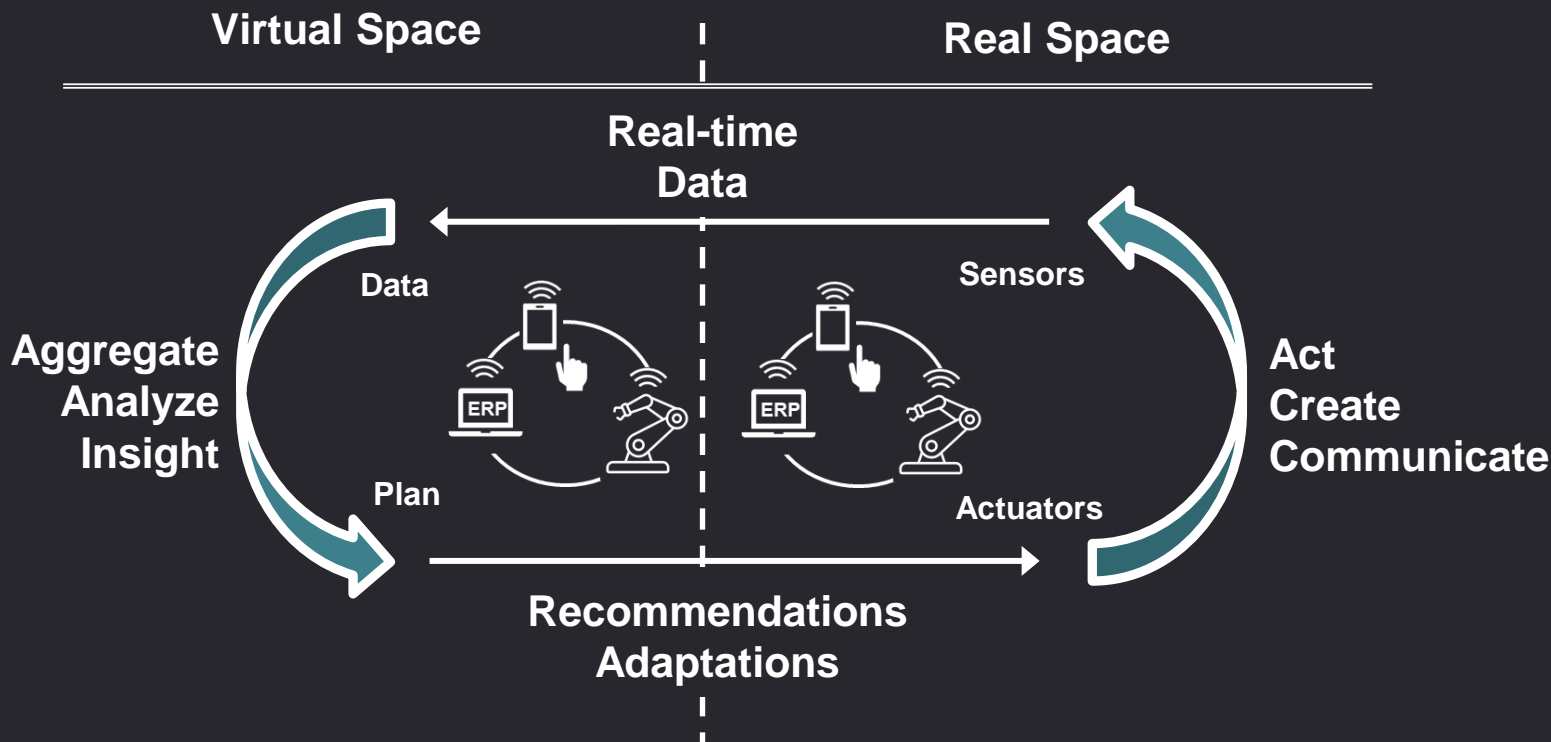
gartner.com/SmarterWithGartner

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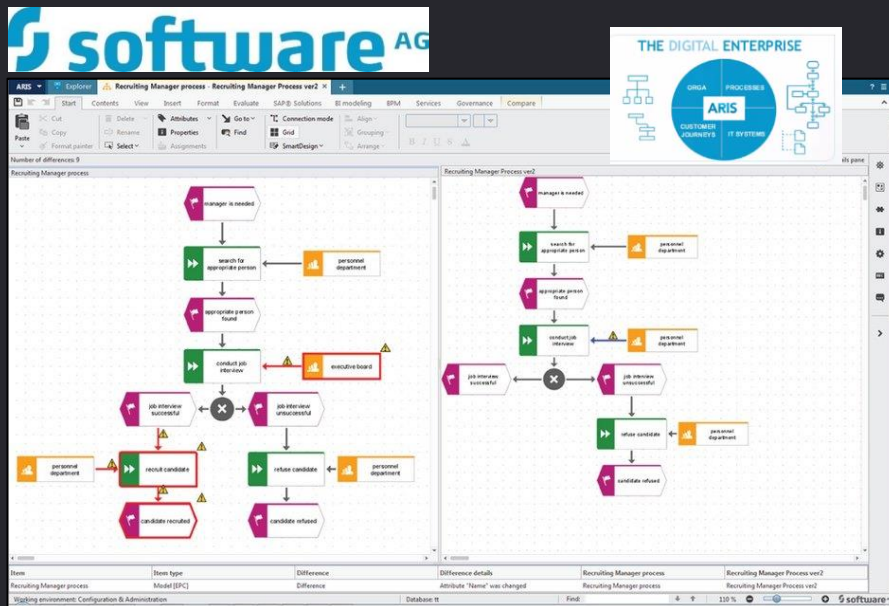
Hype Cycle for Emerging Technologies, 2020



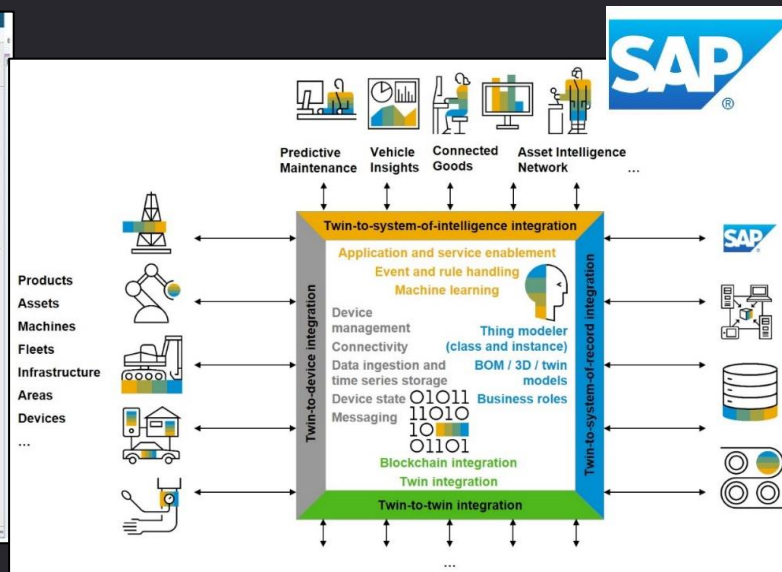
Digital Twin at a glance



Emerging Digital Twin Domains



<https://industrie.de/top-list/software-ag-stellt-enterprise-digital-twin-framework-vor/>



https://blogs.sap.com/wp-content/uploads/2017/09/Digital_Twin_Implementation.jpg

Use Cases for Digital Representations

■ Digital Model

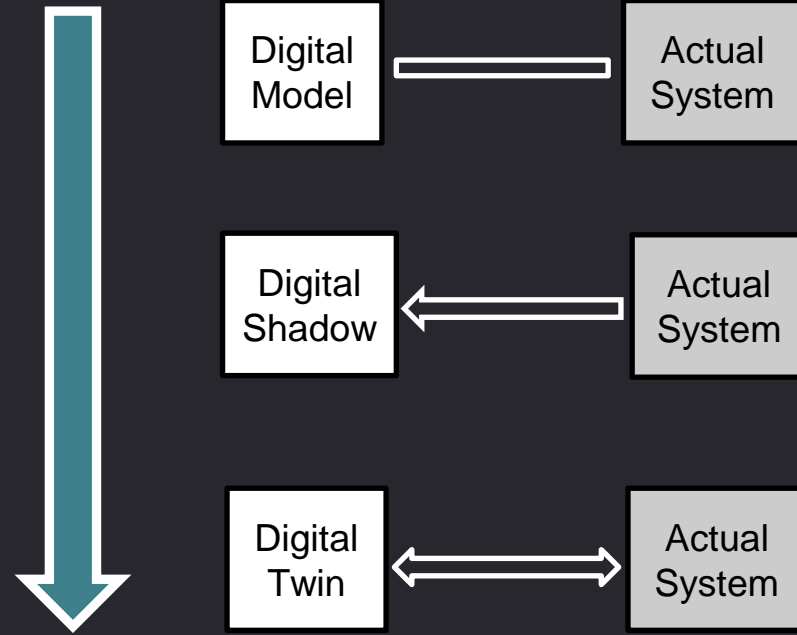
- Documentation & communication
- Simulation & code generation
- Design-space exploration
- Commissioning

■ Digital Shadow

- State inspection
- Runtime monitoring
- Predictive reasoning
- Conformance checking

■ Digital Twin

- Runtime adaptation
- Live updates & rollbacks
- Decision making
- Autonomy



Digital Model



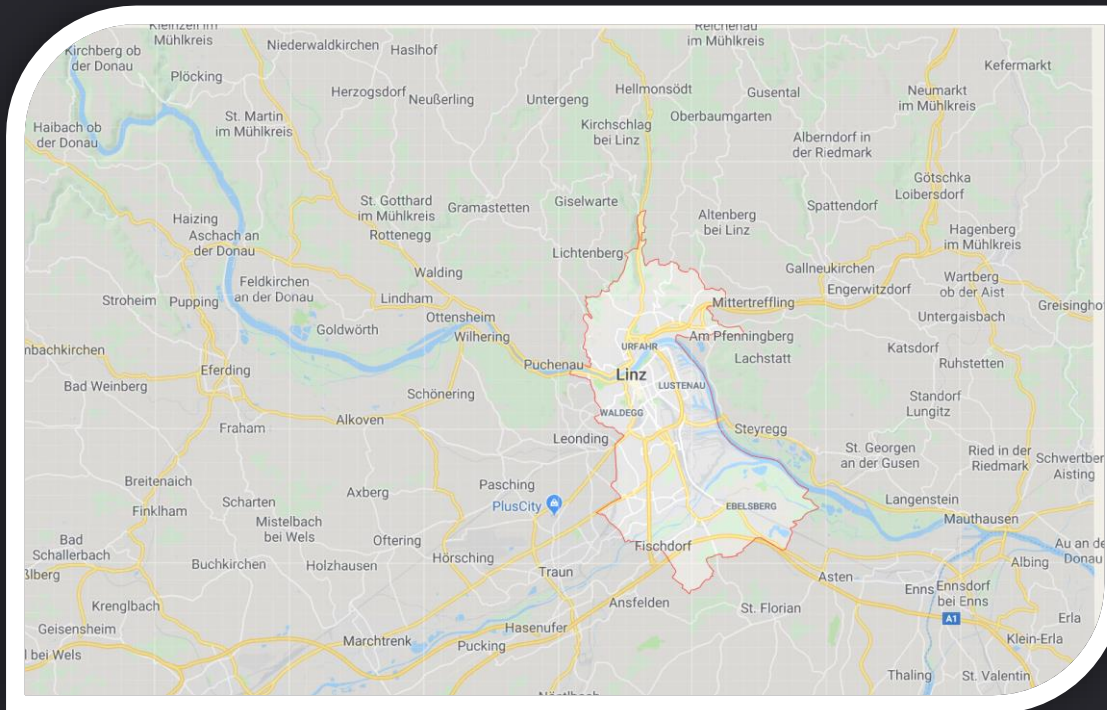
Legend:

*Automated
Information flow*



*Manual
Information flow*

Geo Data



Example: Smart Room



Digital Shadow



Legend:

*Automated
Information flow*



*Manual
Information flow*

Example: Smart Room



Note: You will be implementing this in the next months (See Basic Requirements)

Digital Twin



Legend:

*Automated
Information flow*

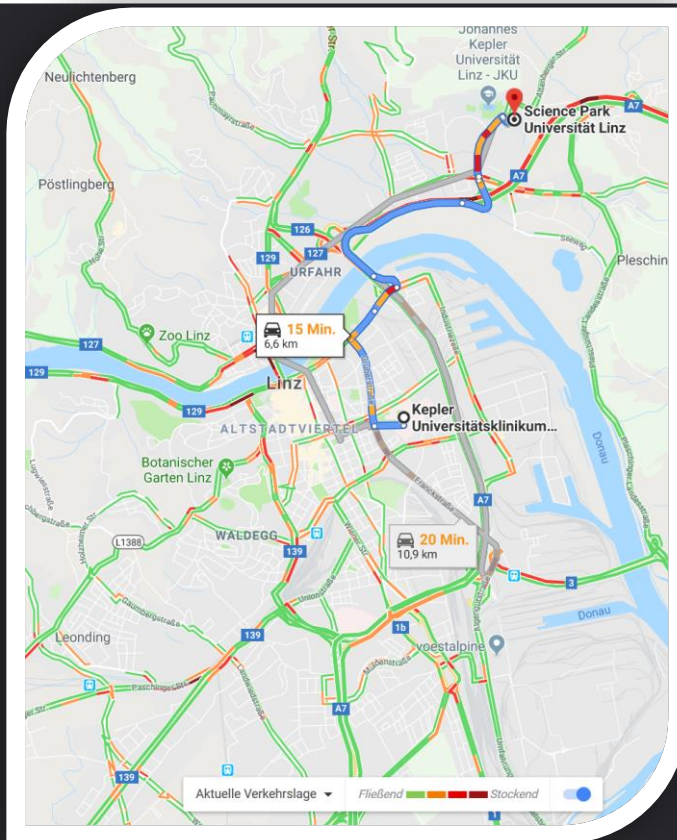


*Manual
Information flow*

Example: Google Maps

A future version may

- Route autonomic vehicles based on real-time data and smart routing algorithms



Example: Smart Room

Note: You will be implementing this in the next months (See Remote Control Requirements)

