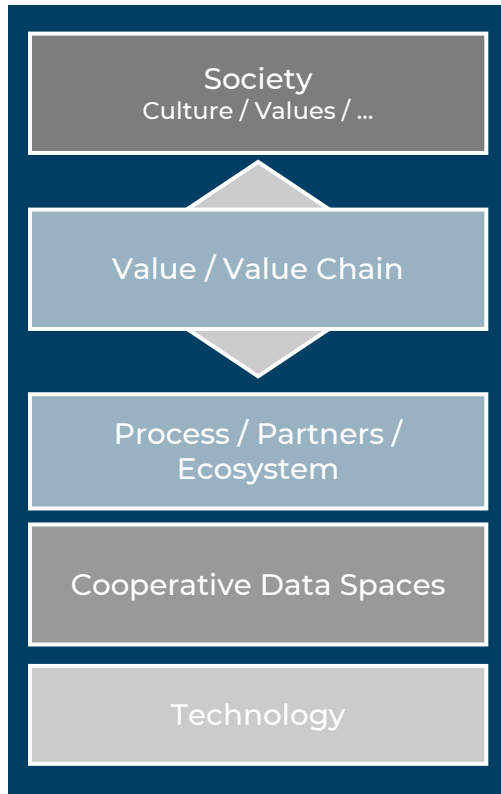


An aerial photograph of Heilbronn, Germany, showing a dense urban area with a mix of residential and commercial buildings. The city is surrounded by rolling green hills under a clear sky. A semi-transparent white box is overlaid on the lower-left portion of the image, containing the title and speaker information.

Sharable Intelligent Digital Twins in Business Ecosystems – Insights from Real-World Projects

Jens Lachenmaier, DTC Meeting Heilbronn, Jan, 28th, 25



Research Framework
Ferdinand-Steinbeis-Institut

Our focus: Sustainable Value Creation

- Duality of Science and Practice
- Interdisciplinary team
- Hollistic approach
- International liasons through the Digital Twin Consortium Membership
- Regional Impact through Real-Wolrd-Implementation-Projects



Starting Point – The case of lumber mills

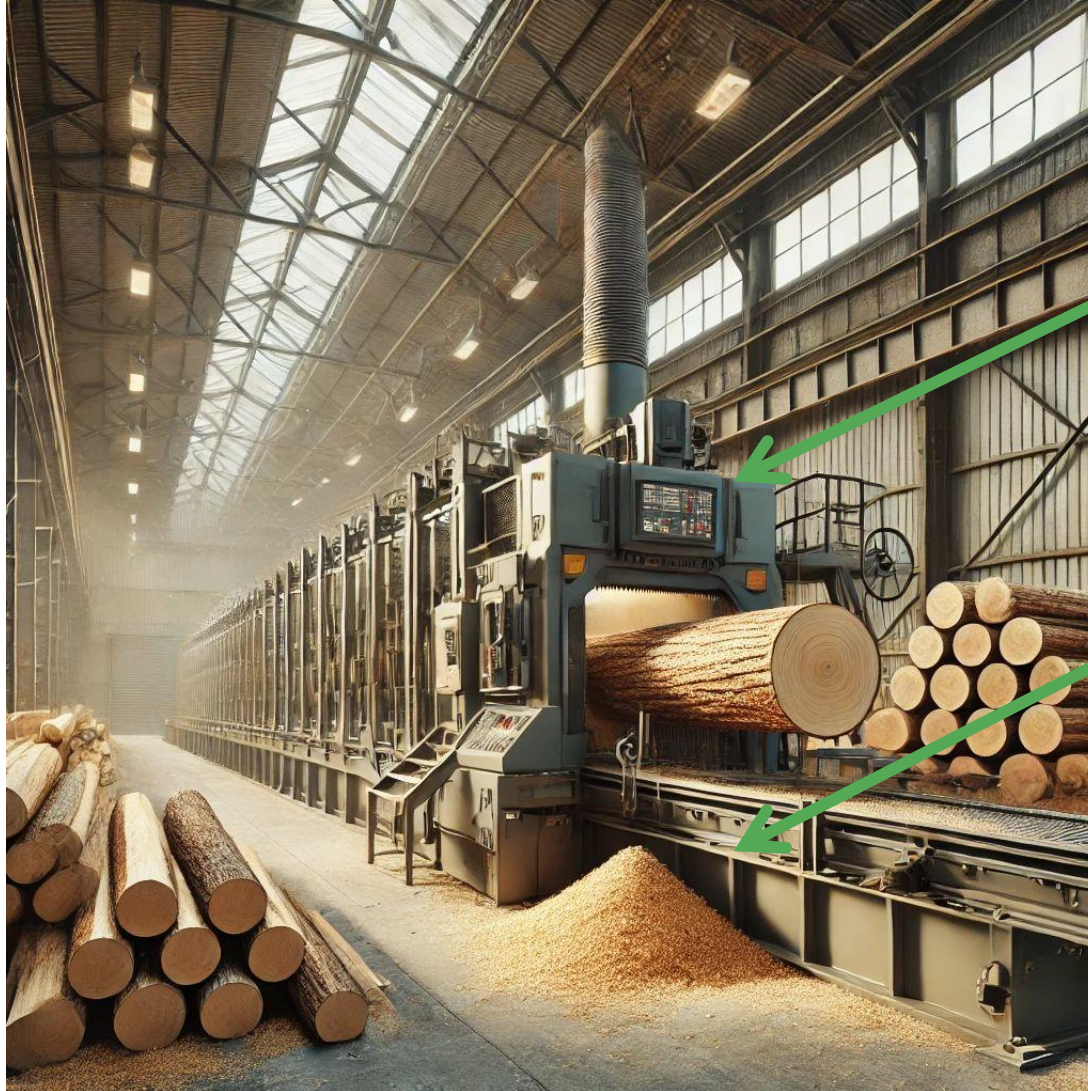


High risk of
bankruptcy
in case of fire

No insurance!

Step 1: Identification of critical parts

based on dicussions
with a few different
lumber mill companies

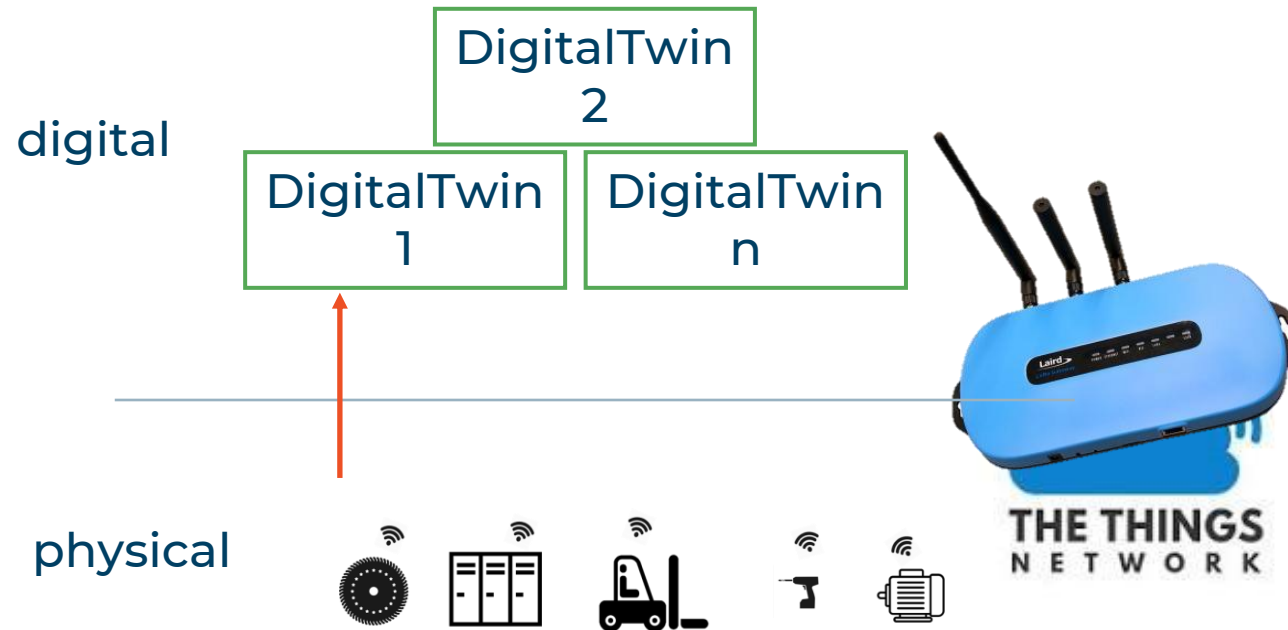


Machine temperature

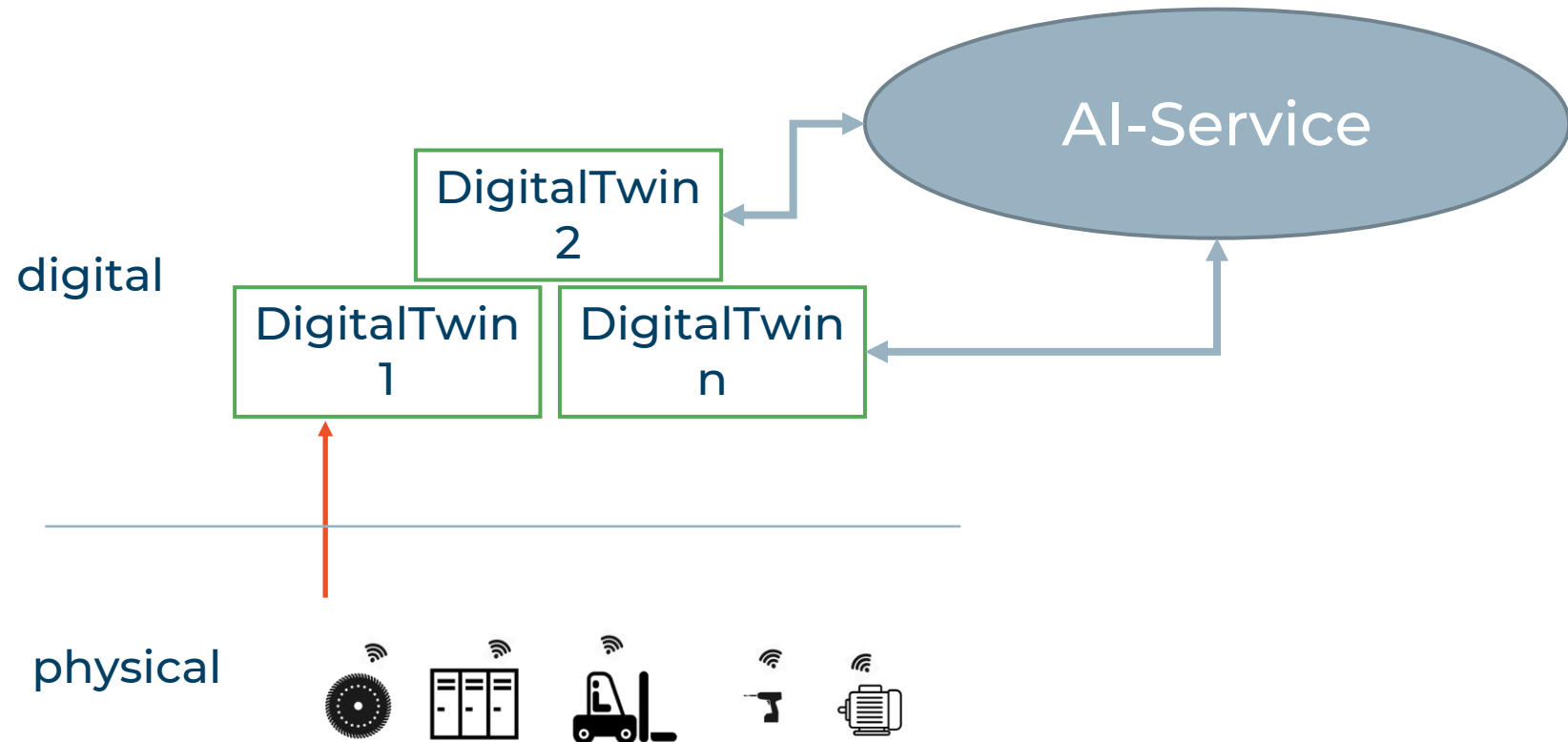
Wood-shavings

AI generated image

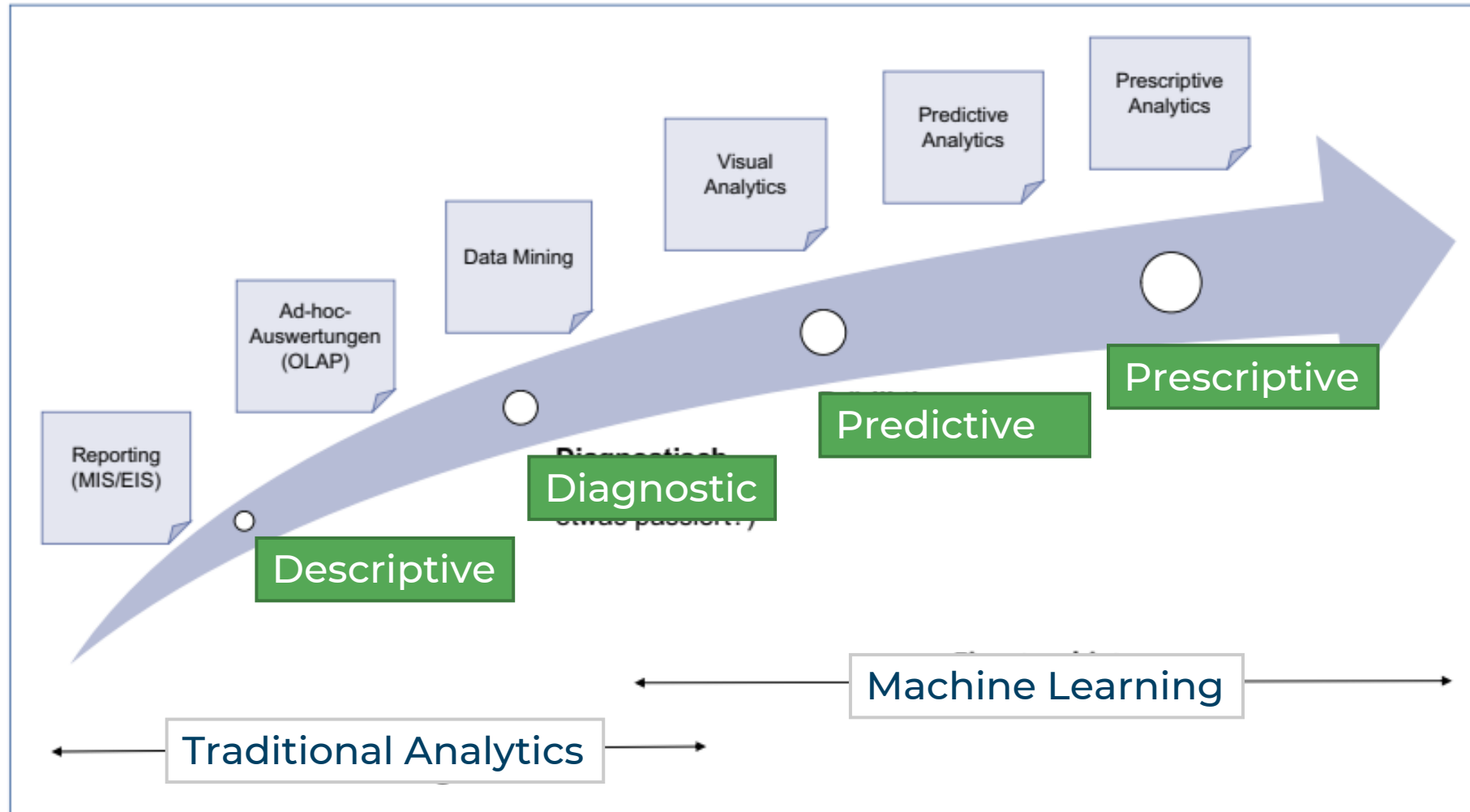
Step 2: Building Digital Twins



Step 3: Building the intelligent digital twin

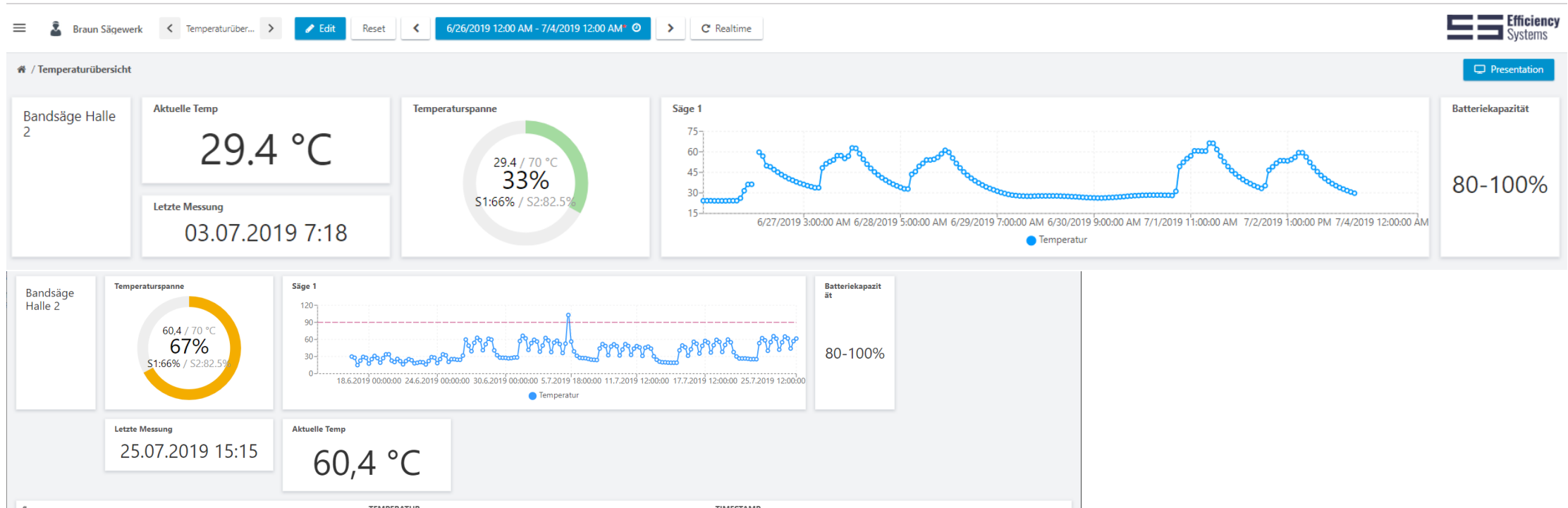


Stages of Analytics / AI



Ereth, 2016

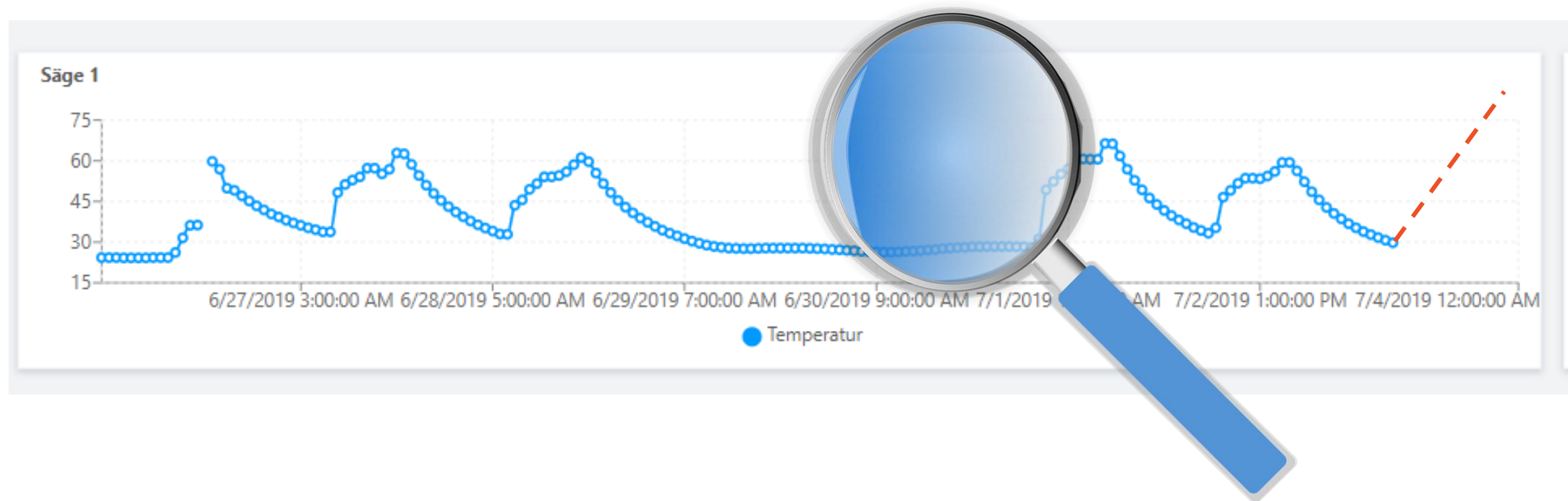
Descriptive: A Dashboard Solution



Provided and operated by the first partner in the new business ecosystem*

*Definition of a business ecosystem:
a network of companies combining their capabilities to offer a new product or service
(Moore 1993; Guggenberger 2020; Pidun et al. 2022)

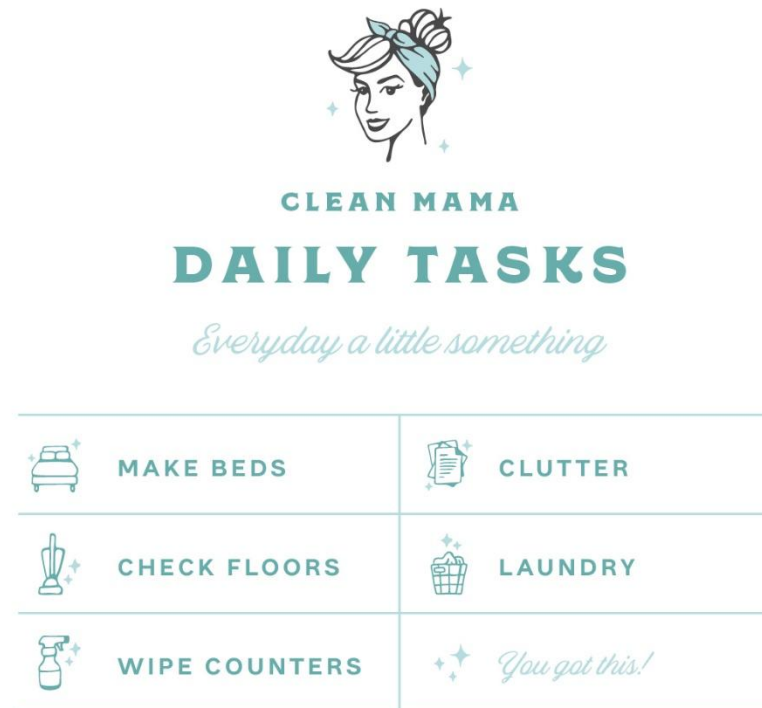
Looking ahead – improved planning



Prescriptive – bringing in insurance companies

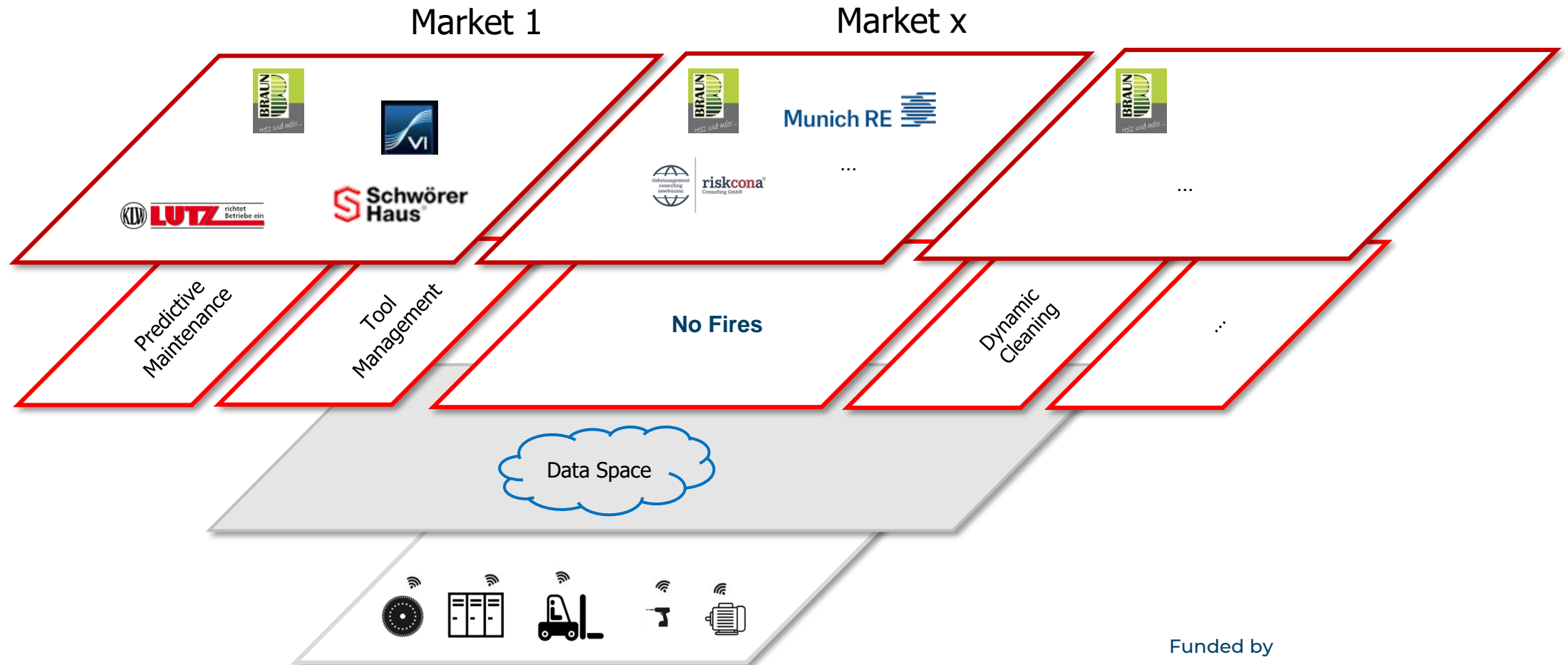
- The high risk of fires caused the lumber mill factory to be non-insurable (or at very high premiums).
- Based on the digital twins, the risk is manageable.

Routine cleaing tasks prescribed by the insurance company and a specialized risk assessment consultancy



... extending the business ecosystem with
- insurance companies
- Risk specialists

The complete picture



Funded by



Ministerium für Wirtschaft, Arbeit
und Wohnungsbau Baden-Württemberg

New Business Modells for the Partners in the Business Ecosystem

- Lumber Mill: „Selling“ data and insights to improve AI-services
- Lumber Mill: Migated risk by transparency and insurance
- IT-Provider: New customer group, new market
- Insurance: New product, new customers
- Insurance: Customer binding
- Risk consultancy: New field of work
- Cleaning service: New business model about the dynamic removal wood shavings



Win-Win-Win-Win-Scenario



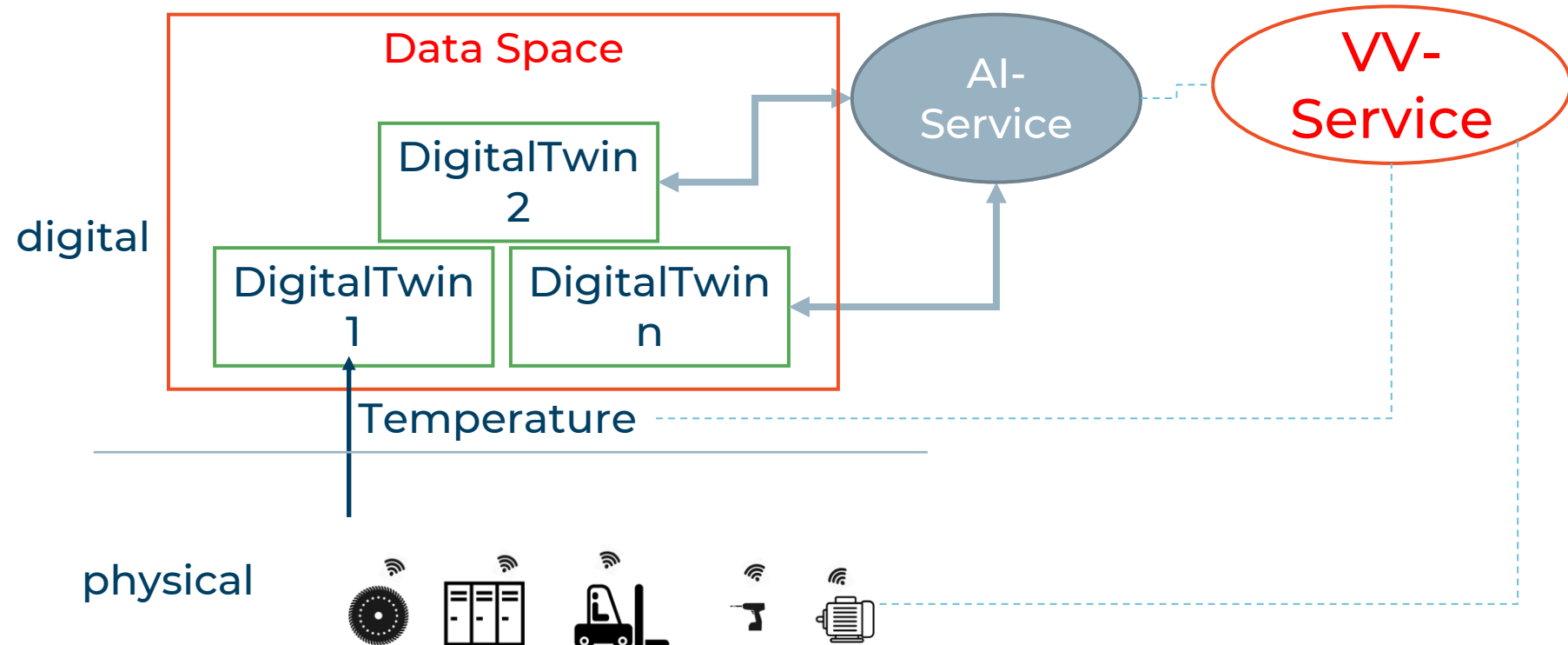
enabled by shared
intelligent Digital Twins

Micro Testbeds (selected)

 <p>Trade</p>	 <p>Customer Service</p>	 <p>Restaurants / Hotels</p>	 <p>Risk Mitigation</p>	 <p>Milk</p>	 <p>Additive Manufacturing</p>
 <p>Craft</p>	 <p>Additive Manufacturing</p>	 <p>Engineering</p>	 <p>Mobility</p>	 <p>Building Information Modeling (BIM)</p>	 <p>Coolants and Lubricants</p>
 <p>PPMP</p>	 <p>Event Planning</p>	 <p>Industrial Service</p>	 <p>Sausage</p>	 <p>Smart Living</p>	 <p>Care</p>
 <p>Logistics</p>	 <p>Forestry</p>	 <p>Pay per Part</p>	 <p>Water Supply</p>	 <p>Catering</p>	 <p>Harbour</p>
 <p>Digitale Plattform Transport</p>	 <p>Craft 2</p>	 <p>Intra Logistics</p>			

 Public funding
 completed
 ongoing

- Day 2: how do we handle the shared data space (incl. legal perspective)
- Day 3: Validation and Verification of data, processes, and digital twins, to ensure the risks are really mitigated and to assure their correctness and accuracy, increasing trust between partners



Contact Details

Ferdinand-Steinbeis-Institut



Prof. Dr. Jens Lachenmaier
Senior Research Fellow
+49(0)1515 3429608
jens.lachenmaier@ferdinand-steinbeis-institut.de



www.ferdinand-steinbeis-institut.de