



MANAGING SHOPFLOOR ENERGY CONSUMPTION IN A SMART FACTORY

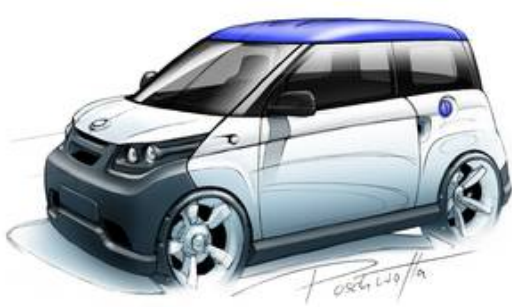
Using FIWARE for Demand Side Management

In the Smart Factory we are producing parts of an electric car

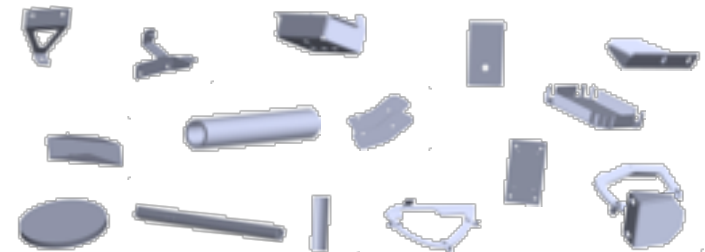
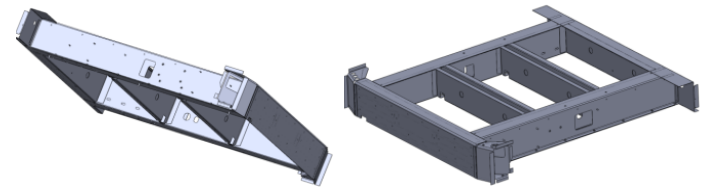
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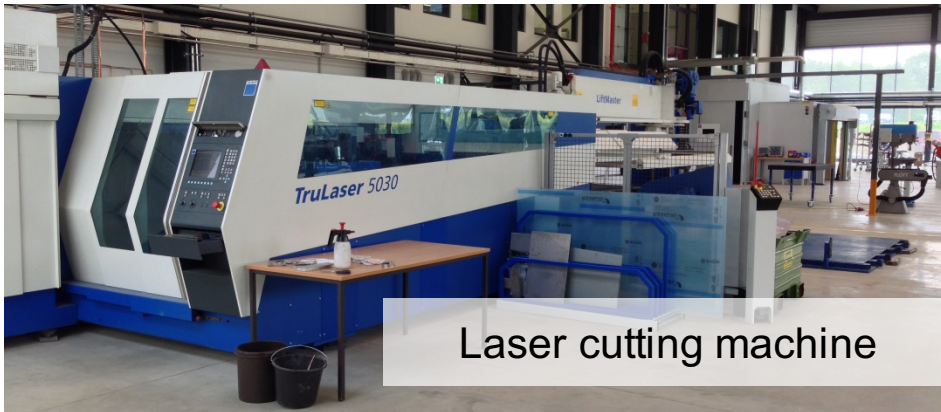
StreetScooter



Production of the underbody



The Smart Factory in Aachen



Laser cutting machine



Bending machine

Objectives

- Enable manufacturing sites to become an intelligent load in the smart grid
- Create simple-to-use and fast-to-scale energy management infrastructure

Factory setup

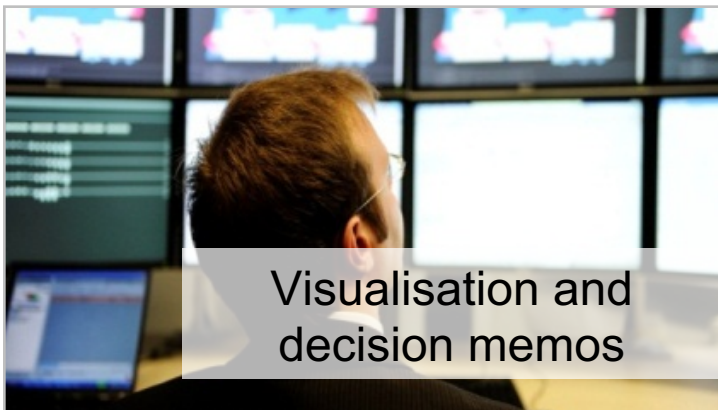
- Demonstration factory with direct shopfloor access
- Production of prototypes and pilot series to be sold
- Monitoring of energy consumption of machines

FIWARE GEs are used on different layers to support integration

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Goal of the integration



Overall architecture



Data exploitation layer

Data interpretation layer

Data gathering layer



Robots



Machine tools

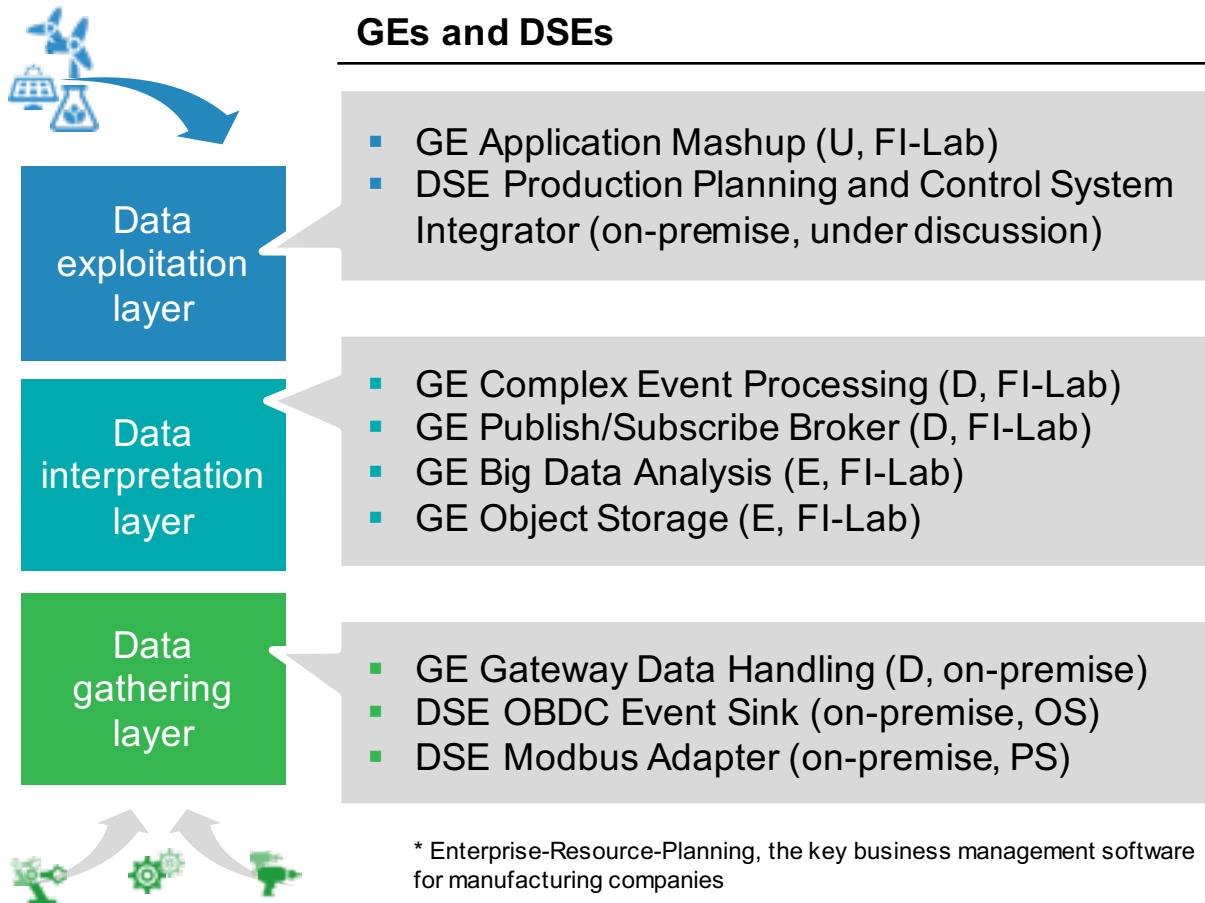


Assembly stations

Integration of the GEs with good progress and results

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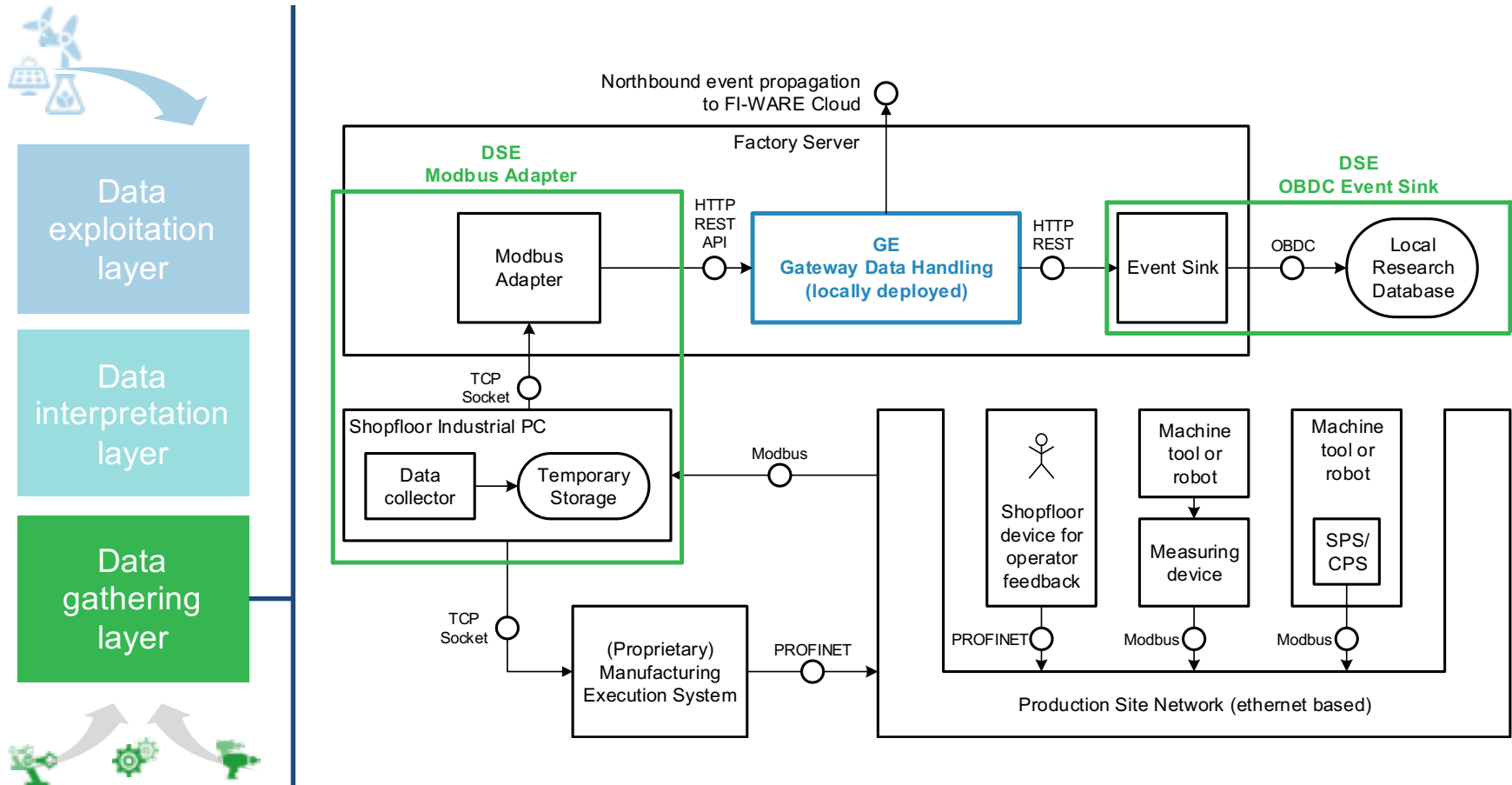
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Reminder: The GE Gateway Data Handling gathers shopfloor data

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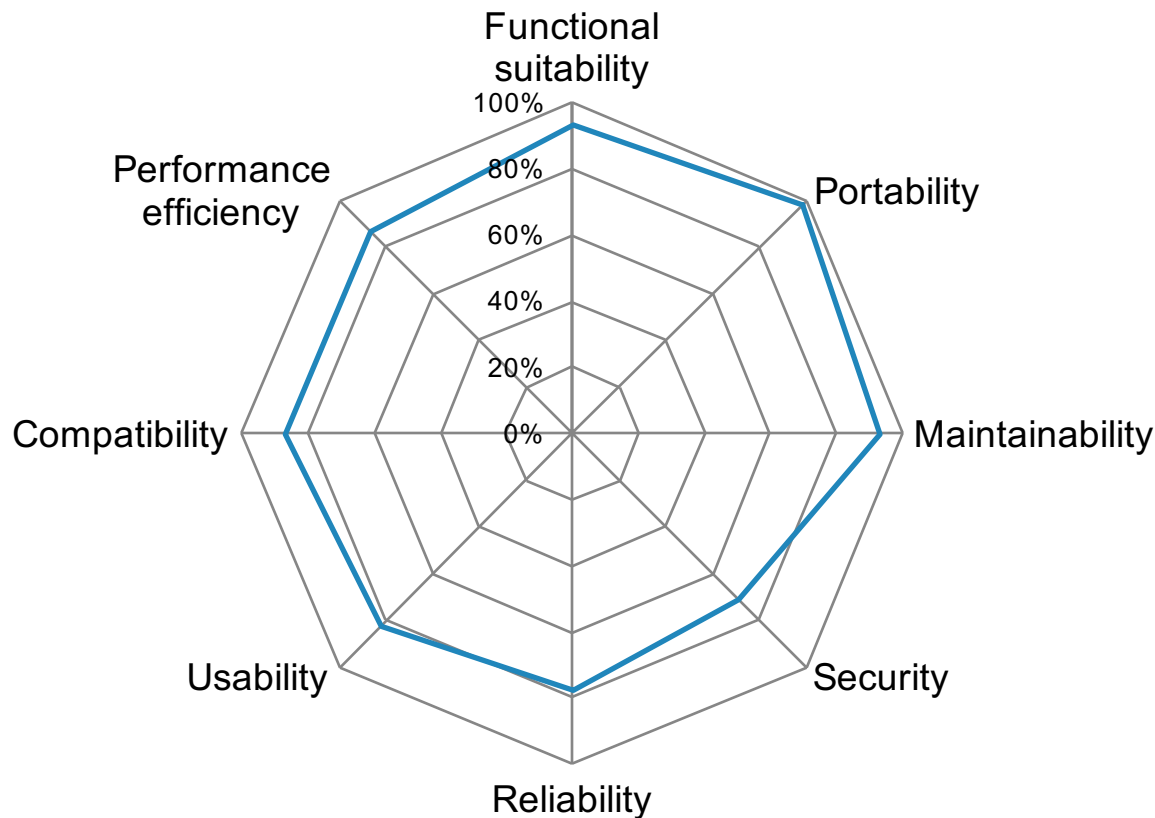
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Assessment of the GE Gateway Data Handling

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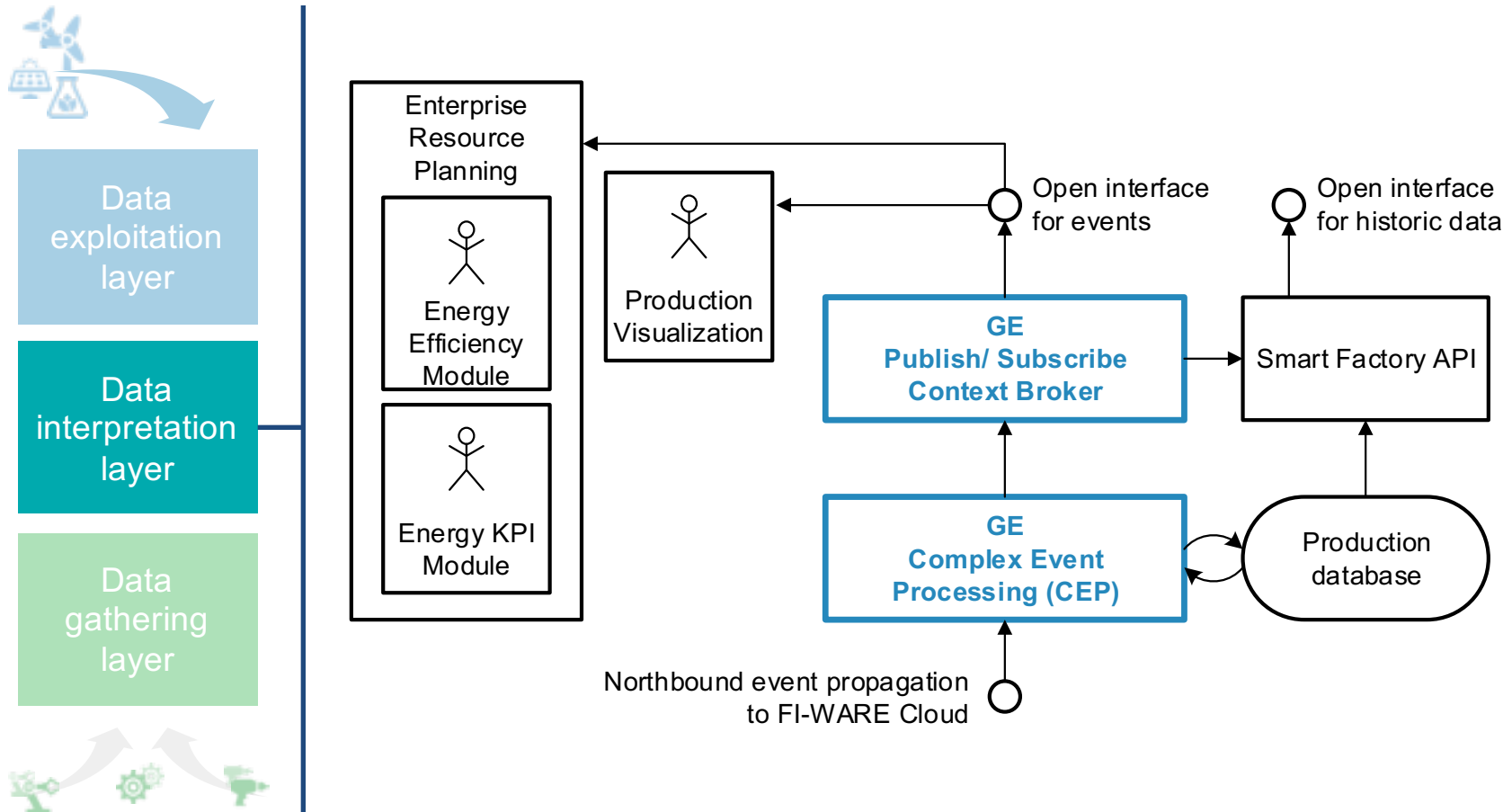


The GE Gateway Data Handling showed a very good overall result (83,85%) and greatly supports a fast and scalable integration of energy management in an industrial environment!

The interpretation layer is implemented and mainly consists of GEs

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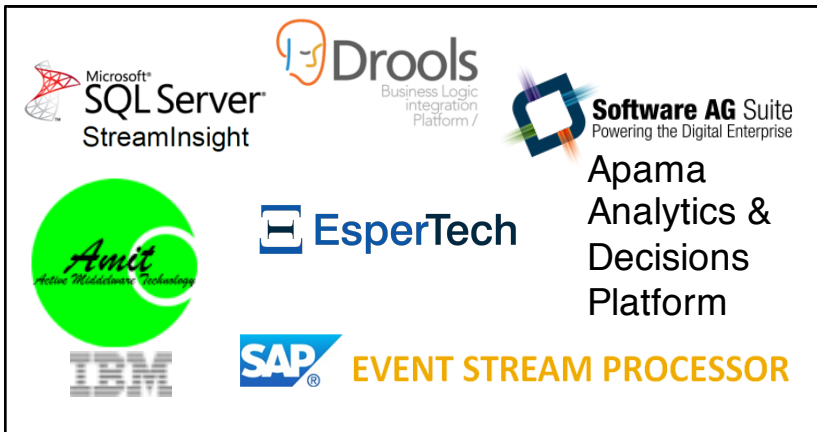


Deep-dive: The CEP performs good compared to commercial alternatives

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Several commercial alternatives



Evaluation in FINESCE WP3-Smart Factory

Functional suitability: Query Language fulfils all requirements in the trial

Performance efficiency: Easily manages load

Compatibility: Out-of-the-box with Pub/ Sub Context Broker, REST API

Usability: Text-intensive interface with good structure

Reliability: No problems in trial experienced

Maintainability: No problems in maintenance so far

Portability: Standardized interfaces based on established technologies

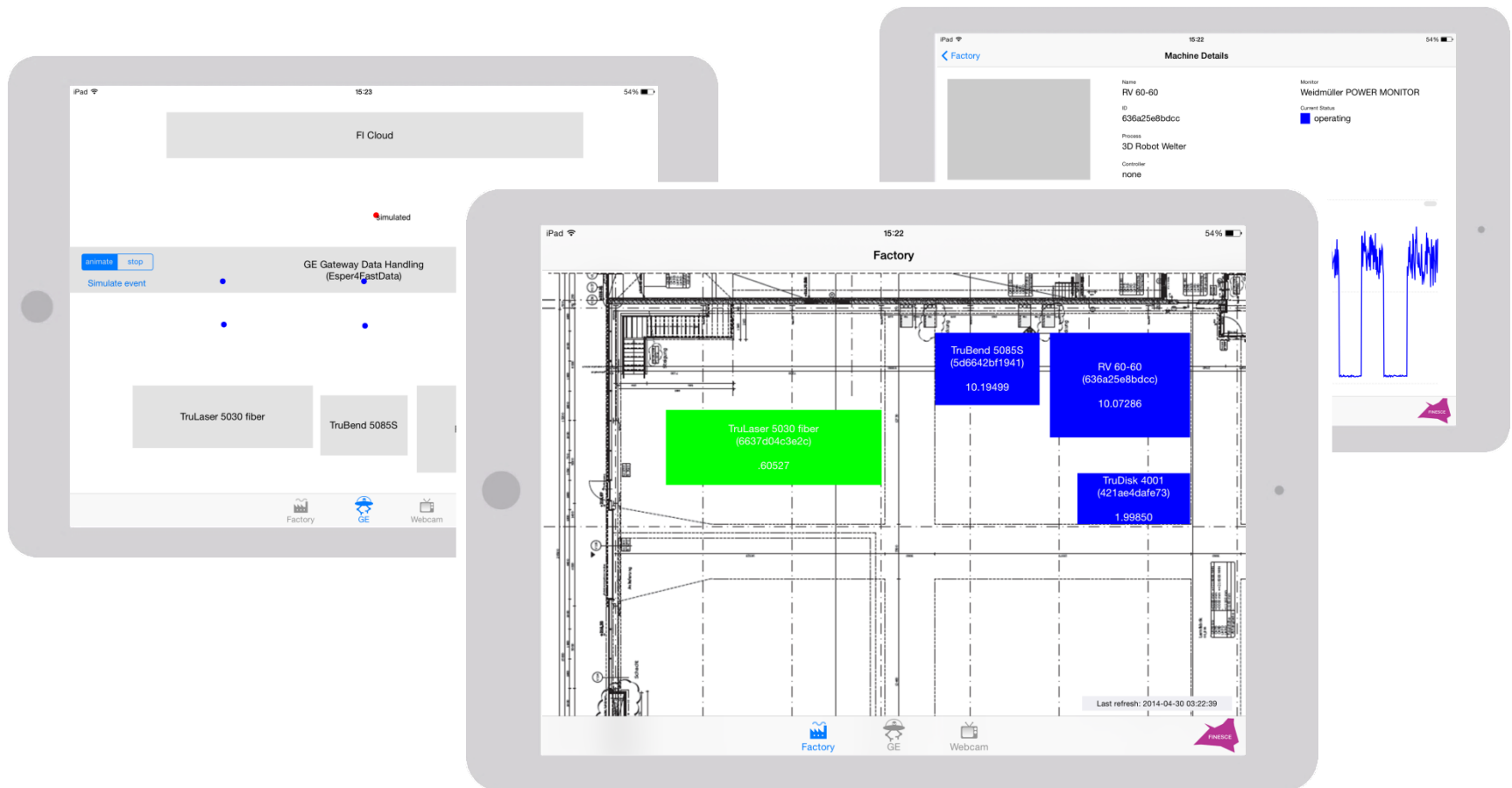
Alternatives in the research community



iPad App to visualise factory

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