

BUILDING AN ASSESSMENT FRAMEWORK FOR RFID DATA DISCOVERY SERVICE ARCHITECTURES

ABSTRACT

A Discovery Service (DS) is an information system designed to facilitate RFID data exchange between trading partners in a supply chain, in a secure and scalable manner.

There are several Discovery Service architecture proposals, but it is unclear what is the best architecture for a given supply chain problem.

This poster presents a framework that is being built to evaluate and compare Discovery Service architectures with quantitative metrics.



How do we find RFID data ?

MIGUEL L. PARDAL

Miguel.Pardal@ist.utl.pt

JOSÉ ALVES MARQUES

Jose.Marques@link.pt

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

INSTITUTO SUPERIOR TÉCNICO, TECHNICAL UNIVERSITY OF LISBON



http://web.ist.utl.pt/miguel.pardal/

DISCOVERY SERVICE CLASSIFICATION

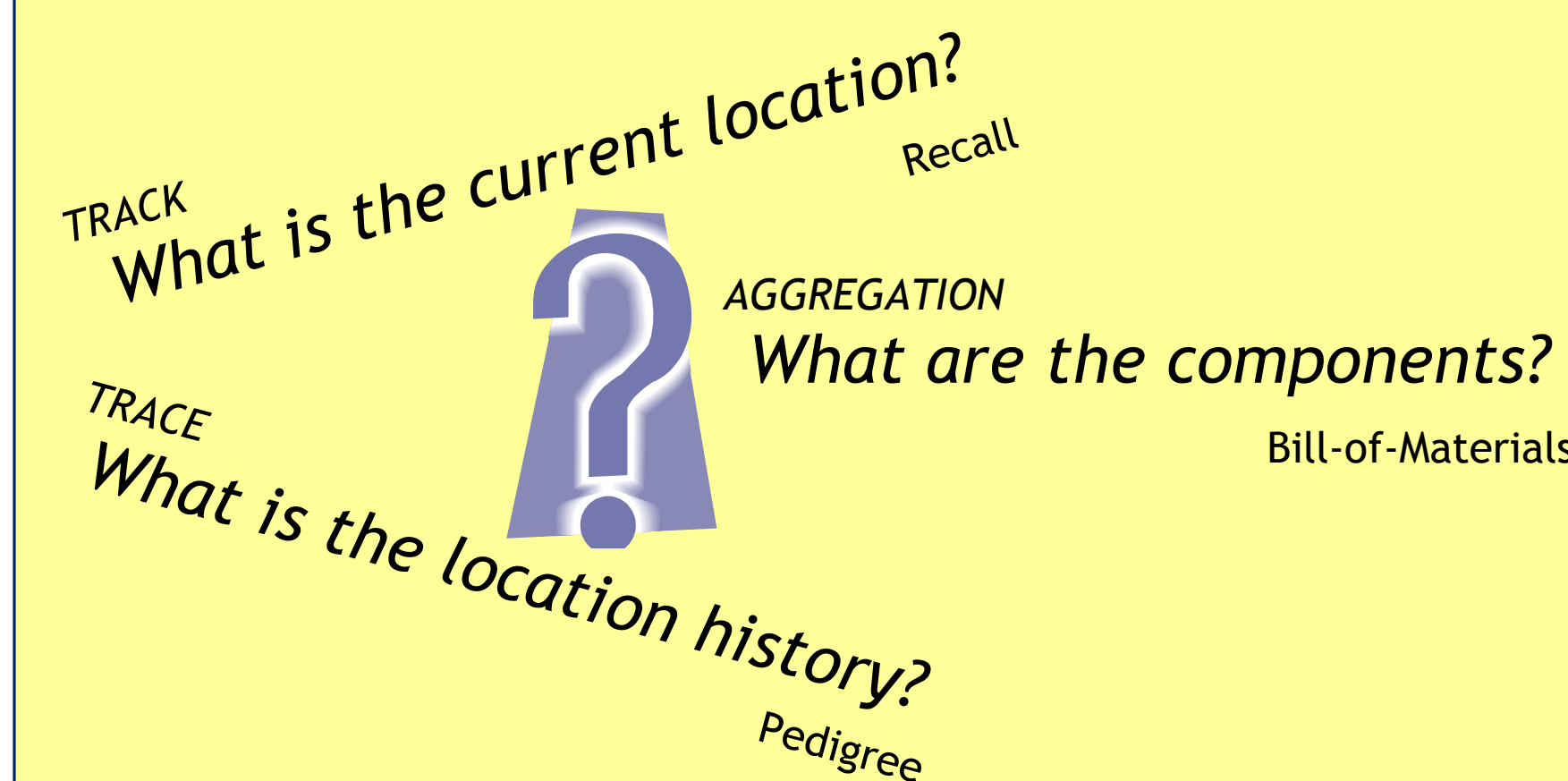
We surveyed over twenty DS proposals and summarize the results below. The classification criteria [22] are: **data integration** and **centralization**.

The data integration criterion considers where data is physically stored. Data can be copied to specific locations (*materialized* integration) or referenced (*virtual* integration).

The centralization criterion considers the reliance on special nodes for data capture and query processing. In a *centralized* system there are nodes with special functions. In a *decentralized* system all nodes are functionally equivalent.

We highlight one representative proposal in each quadrant

TRACEABILITY QUERIES



ASSESSMENT FRAMEWORK

Theseos, BRIDGE Directory, ID@URI, and OIDA are all solid DS designs. However, it is unclear what is the best architecture for a given supply chain problem.

We propose an assessment framework to quantitatively evaluate and compare DS architectures.

Murthy and Robson [24] used an analytical model to compare system cost. We extended their approach.

OUR APPROACH

- Model a supply chain domain
- Model candidate DS solution
- Use supply chain data to parametrize the analytical model
- Compute results
- Validate model using simulations and measurements.

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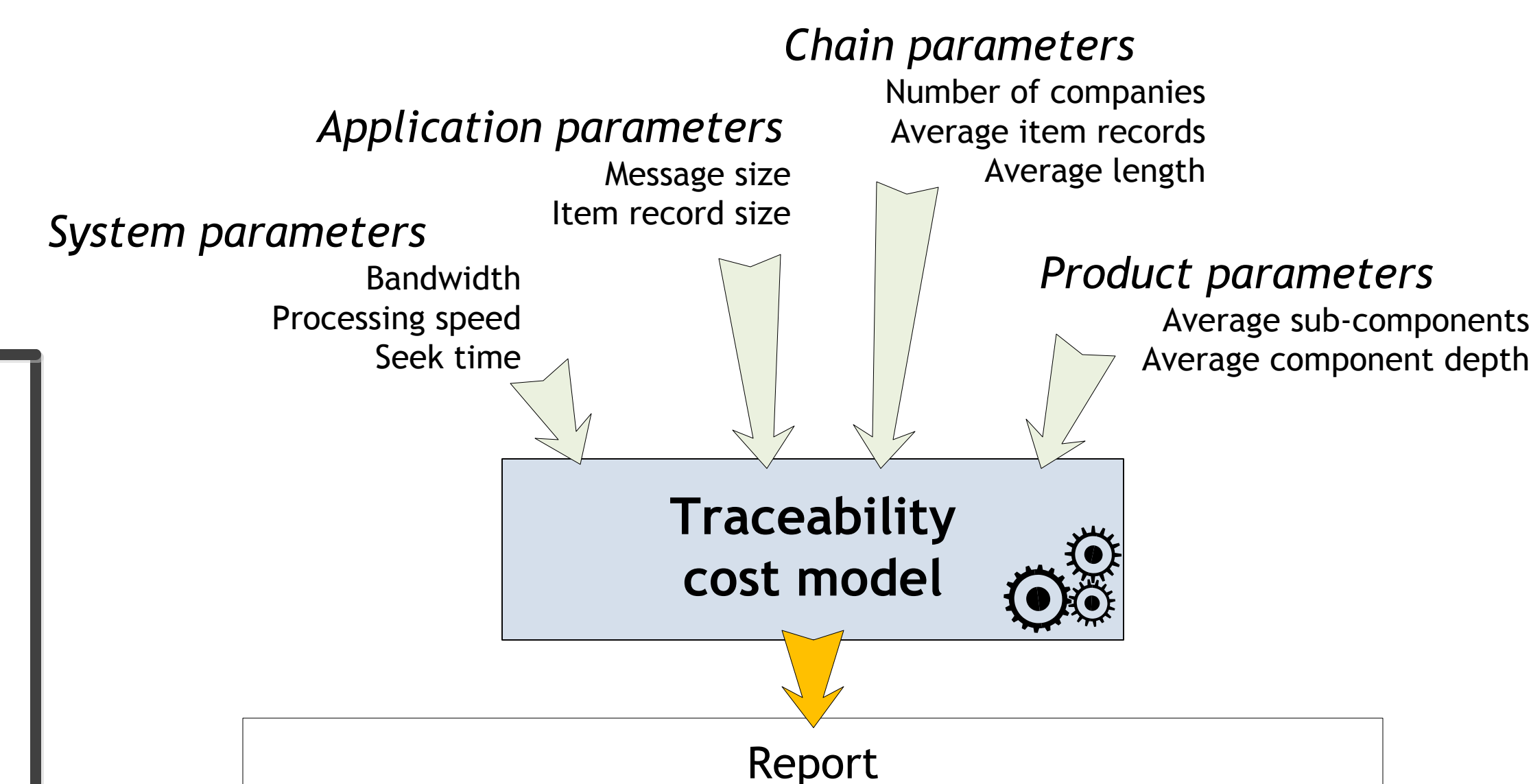
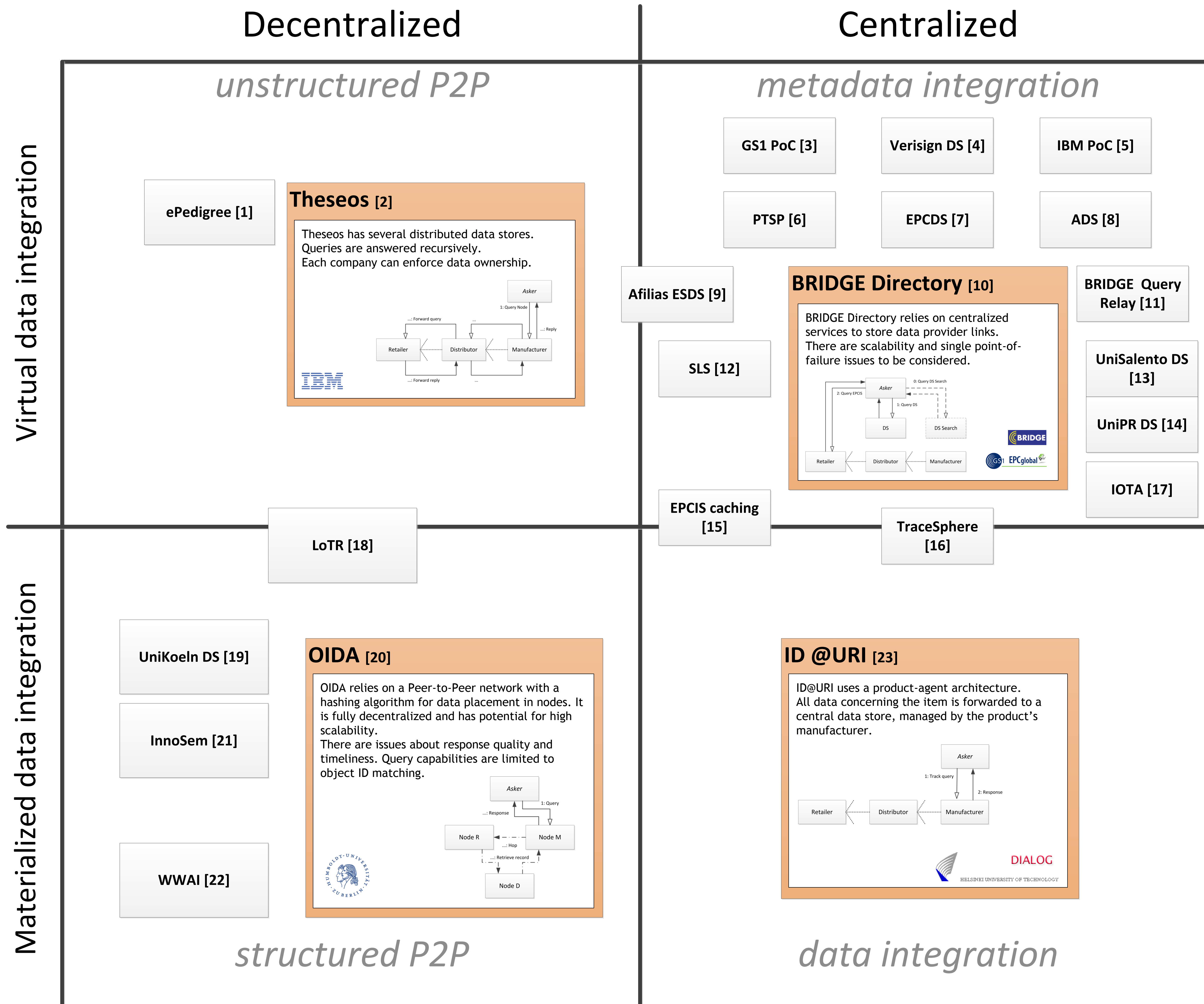
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FUTURE WORK

We will use the framework to measure how domain-specific rules can improve the system.

Leverage recurring data access patterns due to physical (*time-space*) and business realities (*documents and processes*) of supply chains.

Model data sharing trust issues.

Want to help? 😊
We could use your data!

We need *real-world* supply chain data to further validate the traceability cost model.

Multiple scenarios: Retail, Air Transportation, ...

We can start with high-level statistics and later drill-down with more accurate data.

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