Software Center

PdM community session

Helena H. Olsson

Software Center Reporting Workshop, December 5th, 2019

Agenda

- 13:30 – 13:40 Opening – Jan Bosch
- 13:40 – 13:50: Requirements Engineering for Large-Scale Agile System Development (#27): Eric Knauss
- 13:50 – 14:00: Accelerating Digitalization Through Data (#5): Helena H. Olsson
- 14:00 – 14:10: Data-Driven Continuous Evolution of Autonomous Systems of Systems (#19): David Issa Mattos
- 14:10 – 14:20: Volvo Cars
- 14:20 – 14:30: Wärtsilä
- 14:30 – 14:40: Axis Communications
- 14:40 – 15:00: Discussion and closing

Software Center

Value Modeling and Digital Transformation

Helena H. Olsson and Jan Bosch

Project 5 and 9

Software Center Reporting Workshop, December 5th, 2019

Research focus

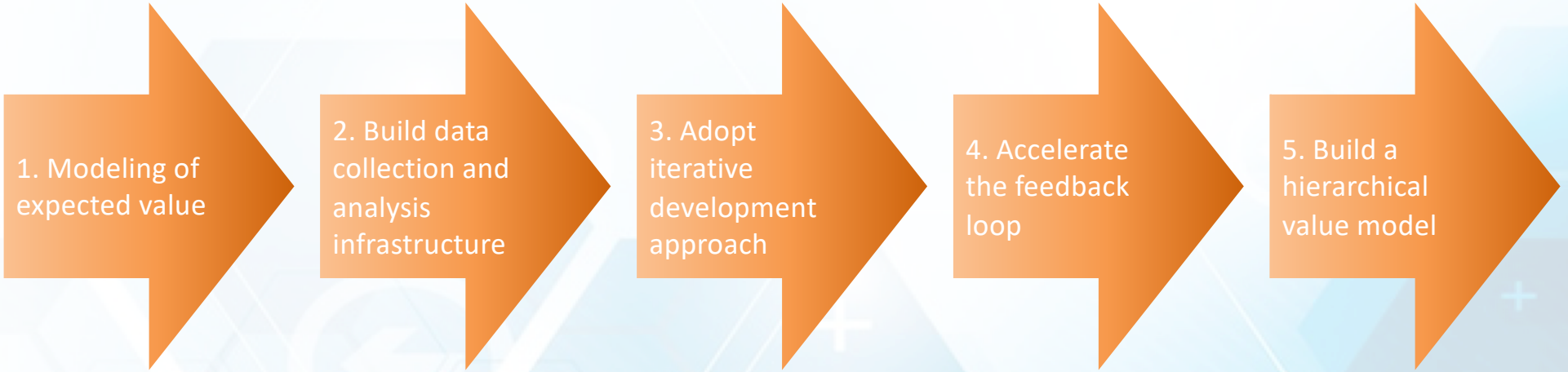
This research aims to:

- Help companies in ***using data*** from customers and from products in the field to improve the effectiveness of R&D, i.e. maximize value
- Accelerate ***data and AI driven development*** practices in software-intensive companies

What is a data driven business?

- Data-driven decision making
- Relentless experimentation (e.g. A/B testing)
- Short feedback cycles
- Decision-making pushed down in organization
- Strategic data collection
- Unified data warehouse
- Pervasive automation
- New job descriptions

Data Driven Development: Adoption Process



New or existing feature

Release cycle < 6 months

Some metrics in place

Convince stakeholders of the importance of data collection and analysis

Small feature increments

Measure effect

Adjust development Iterate (HYPEX)

Increase effectiveness

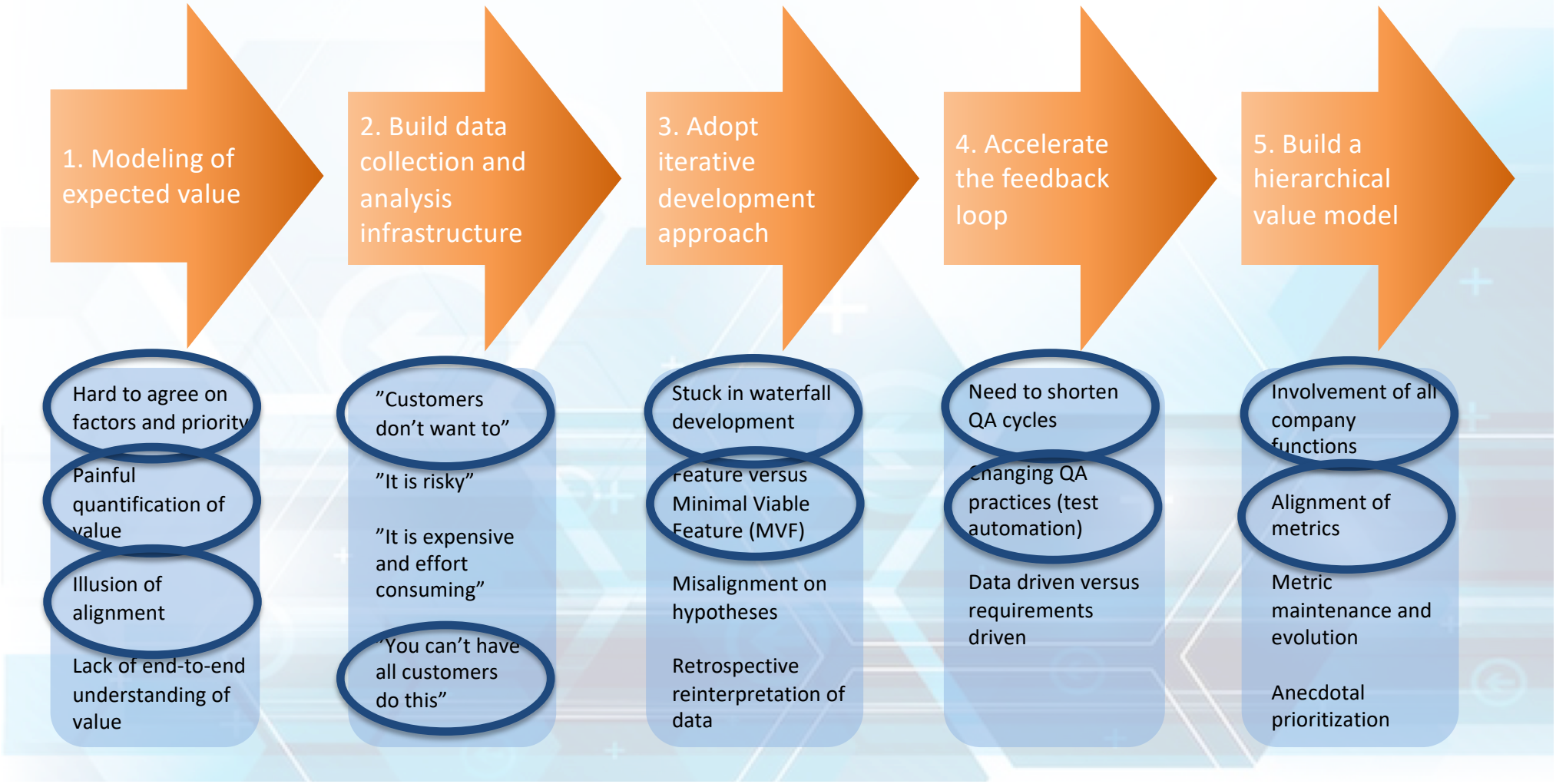
Shorten cycle time

Data by the end of each sprint

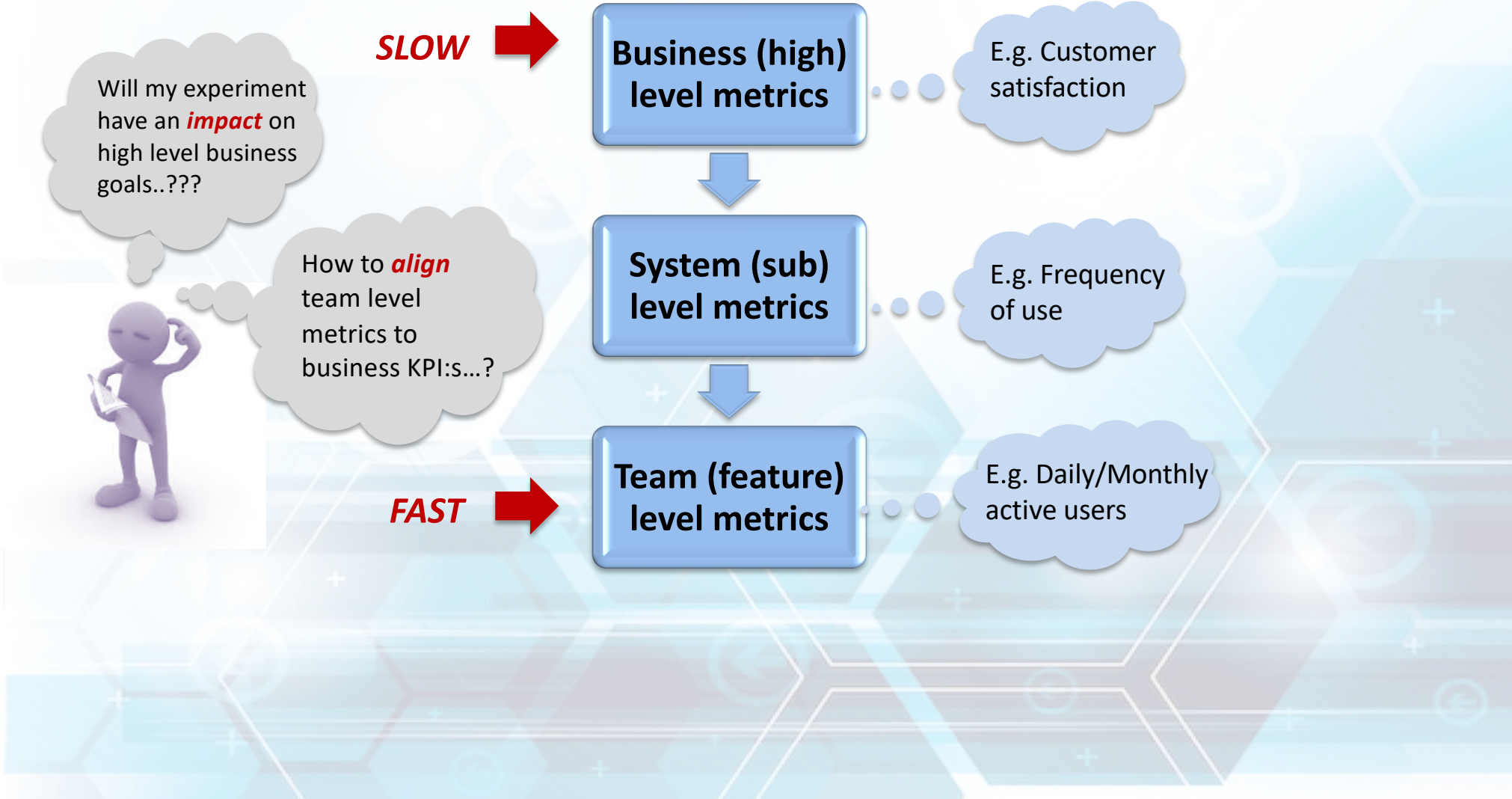
Link business metrics to system and feature metrics

Align metrics in a quantitative value model

Data Driven Development: Adoption Challenges in Embedded and On-premise companies



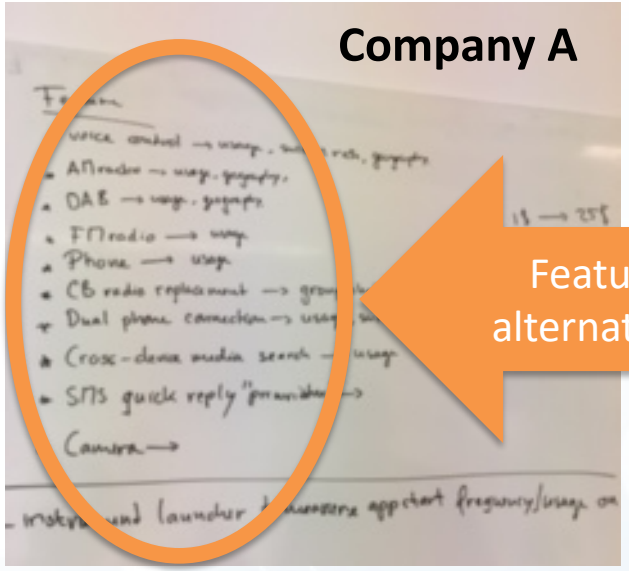
Value Modeling:
Team – System – Business metrics



Value modeling: PURPOSES/GOALS

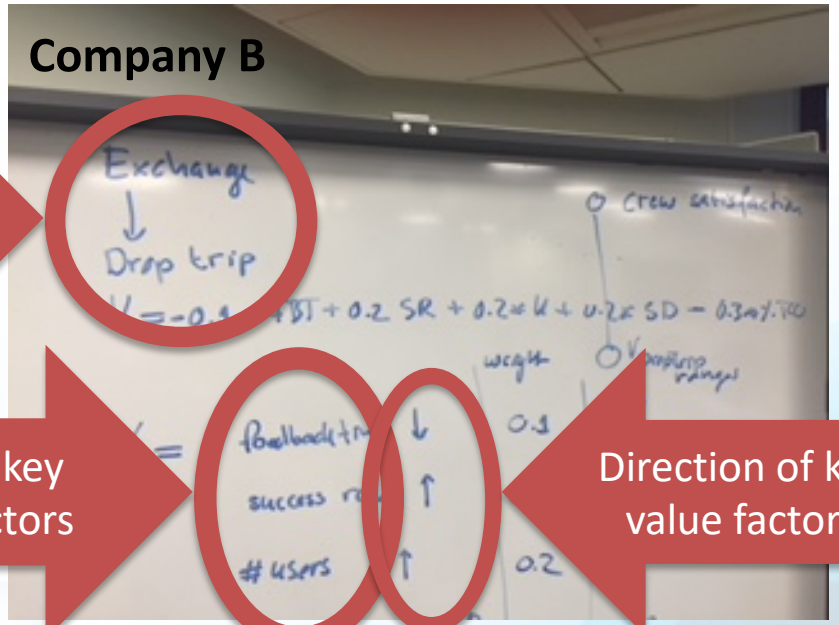
1. **Alignment of groups** around the key outcome metrics to improve and optimize for
2. **Deciding what data** to collect from products in the field
3. **Quantitatively improving value delivery** through experimentation in deployed products
4. **Empowerment** of teams and individuals by setting quantitative outcome targets as goals
5. **Precondition** for the use of ML/DL solutions

Value Modeling: In Practice



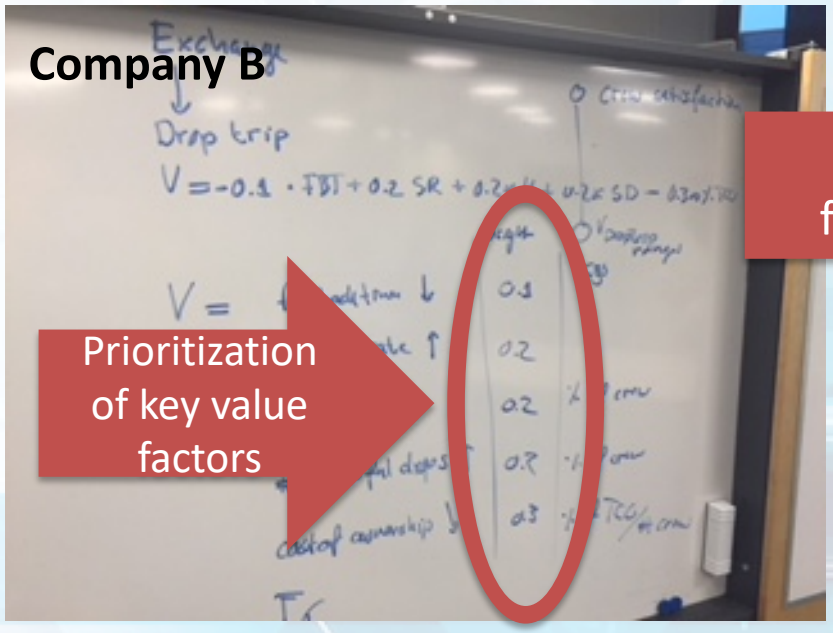
Feature alternatives

Selected feature



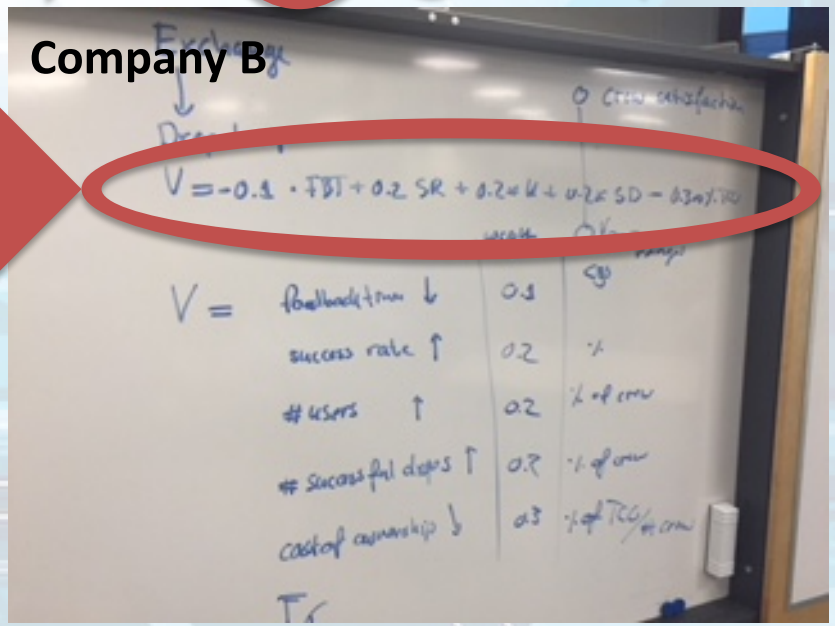
Identify key value factors

Direction of key value factors

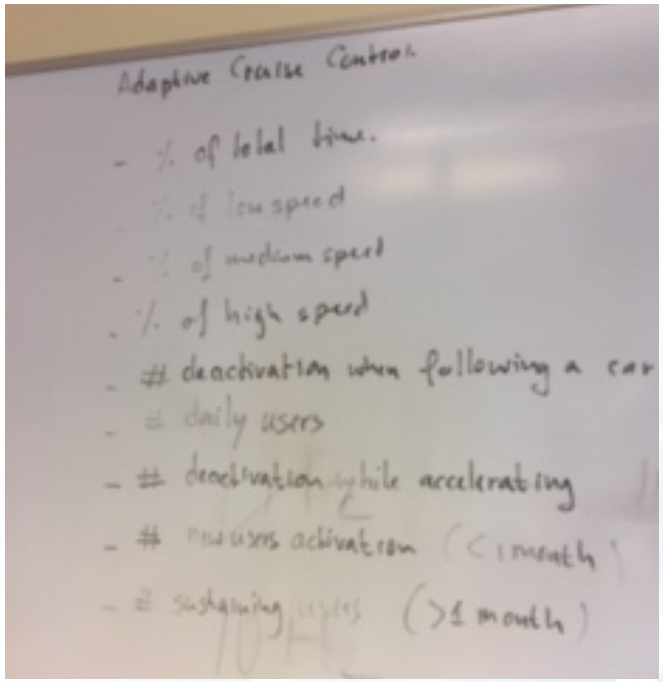


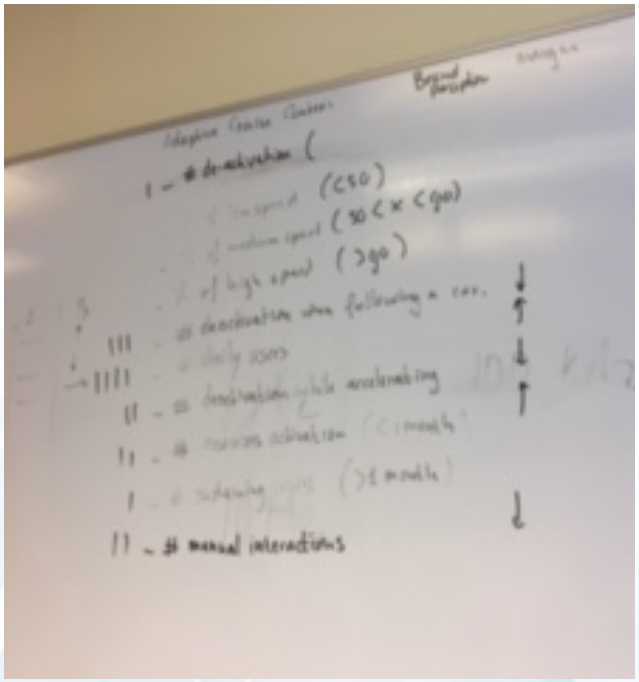
Prioritization of key value factors

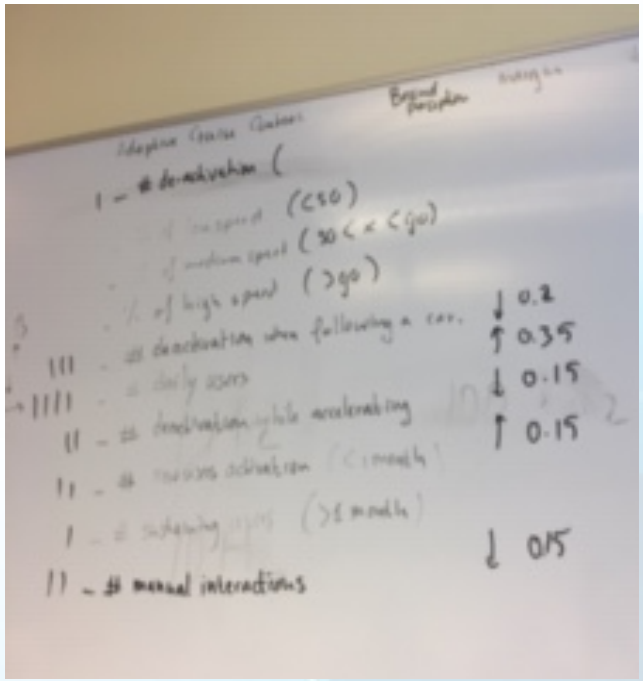
Value function



Company C





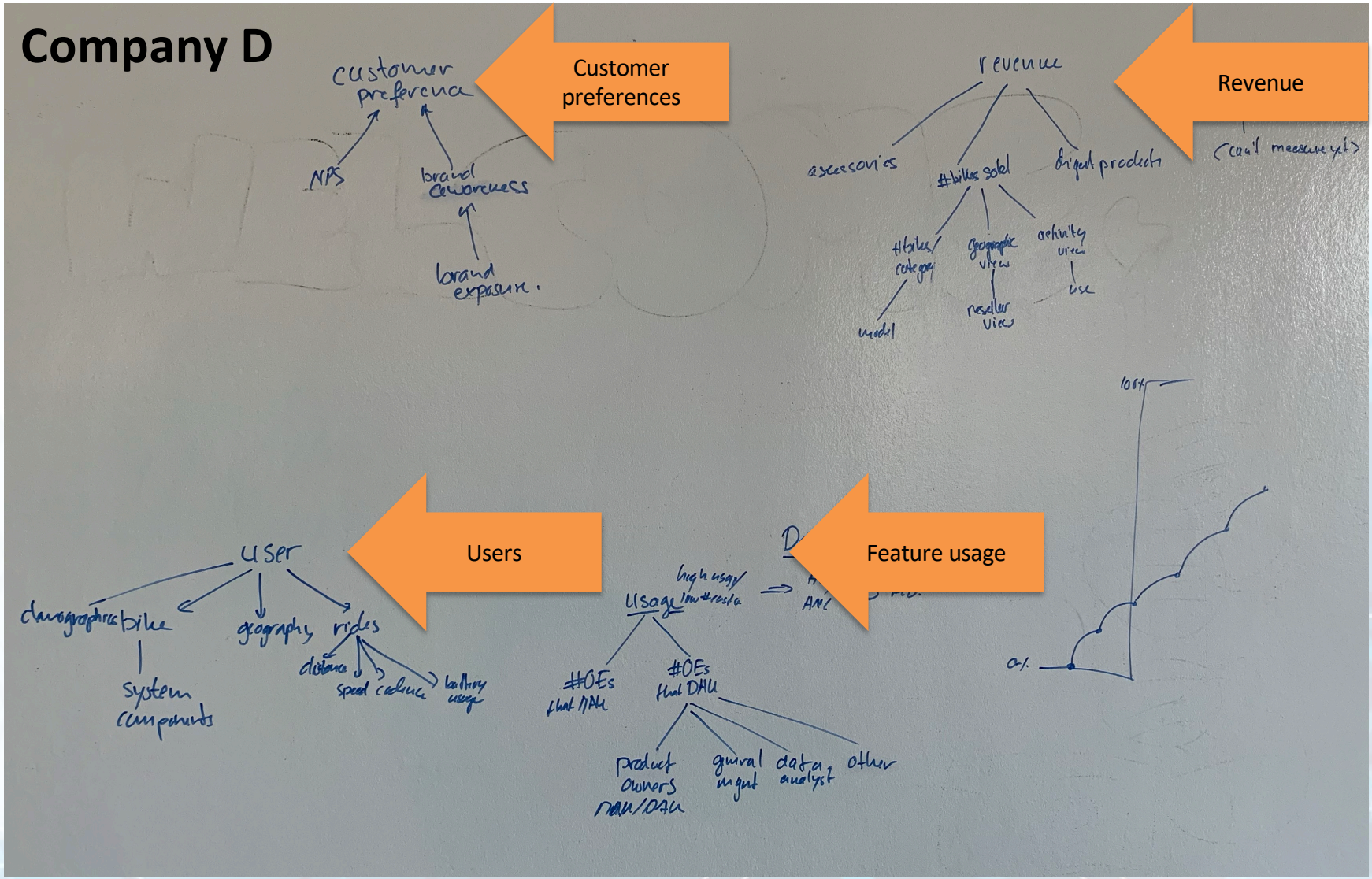


Identify key value factors

Direction of key value factors

Prioritization of key value factors

What do we optimize for?

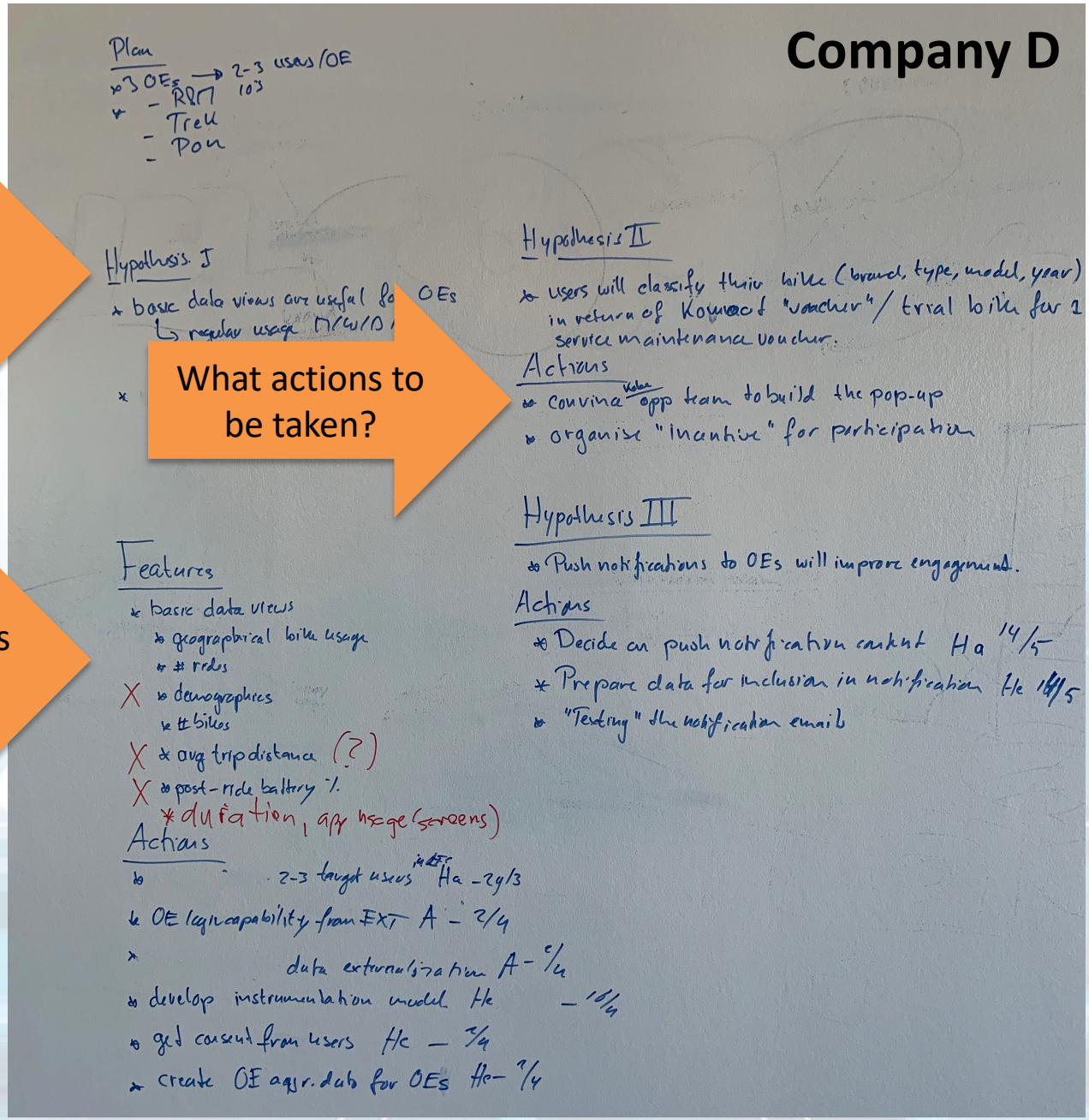


Hypotheses, Data and Actions

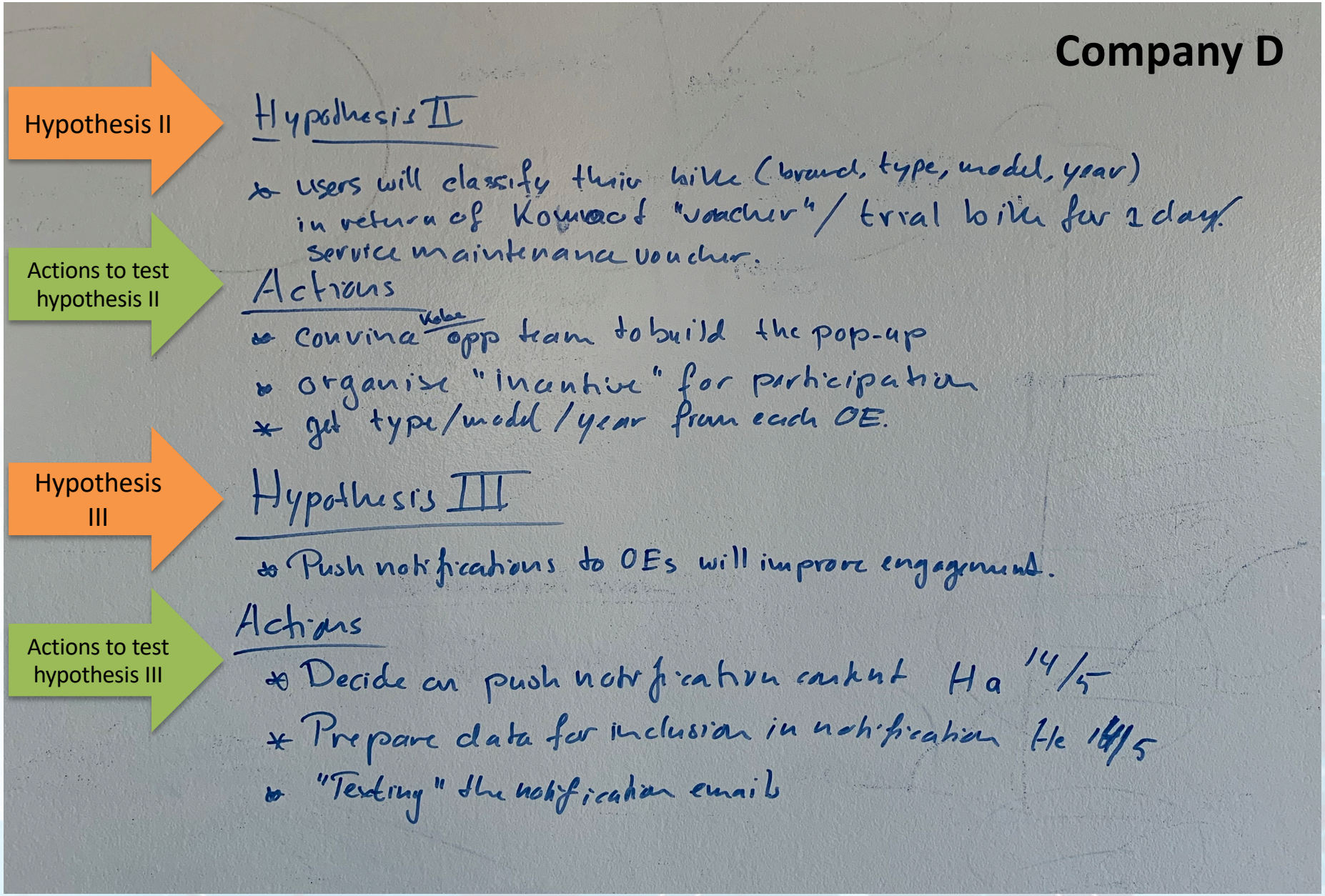
Formulation of hypothesis

What actions to be taken?

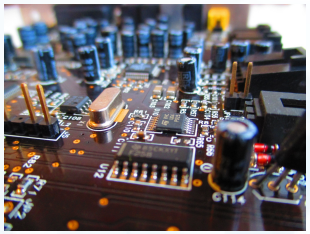
What datapoints do we need?

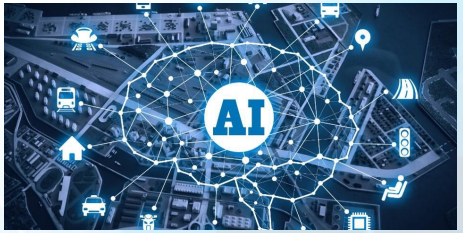


Formulation of hypotheses and actions



Technology Evolution



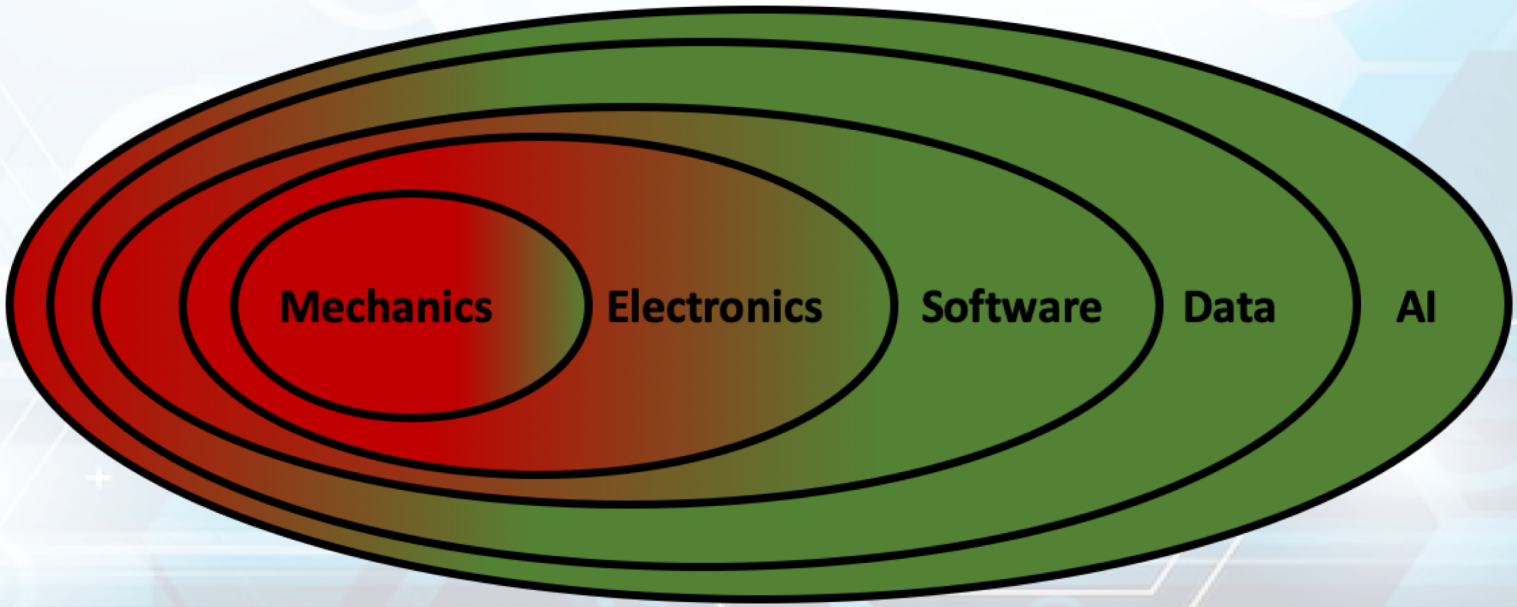


mechanics electronics software data artificial intelligence

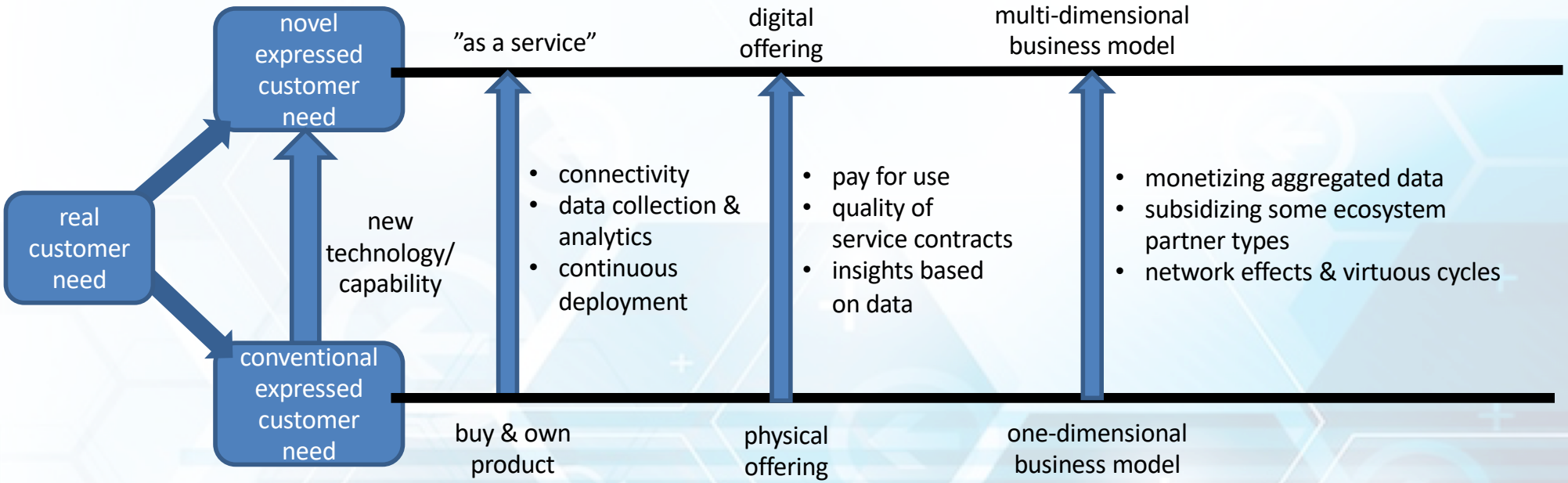
Business Evolution

: Commodity functionality

: Differentiating/innovative functionality



Digital transformation: Implications



Conclusions

- Digitalization (software – data – AI) is disrupting industry to an extent we have only seen the beginning of
- With digital technologies challenging current business practices, product management needs to become (much more) **data-driven** based on **value modeling**
- Data-driven product management focuses on fast **feedback loops**, **data-driven** development, **value modeling, differentiating** functionality and AI driven development