



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



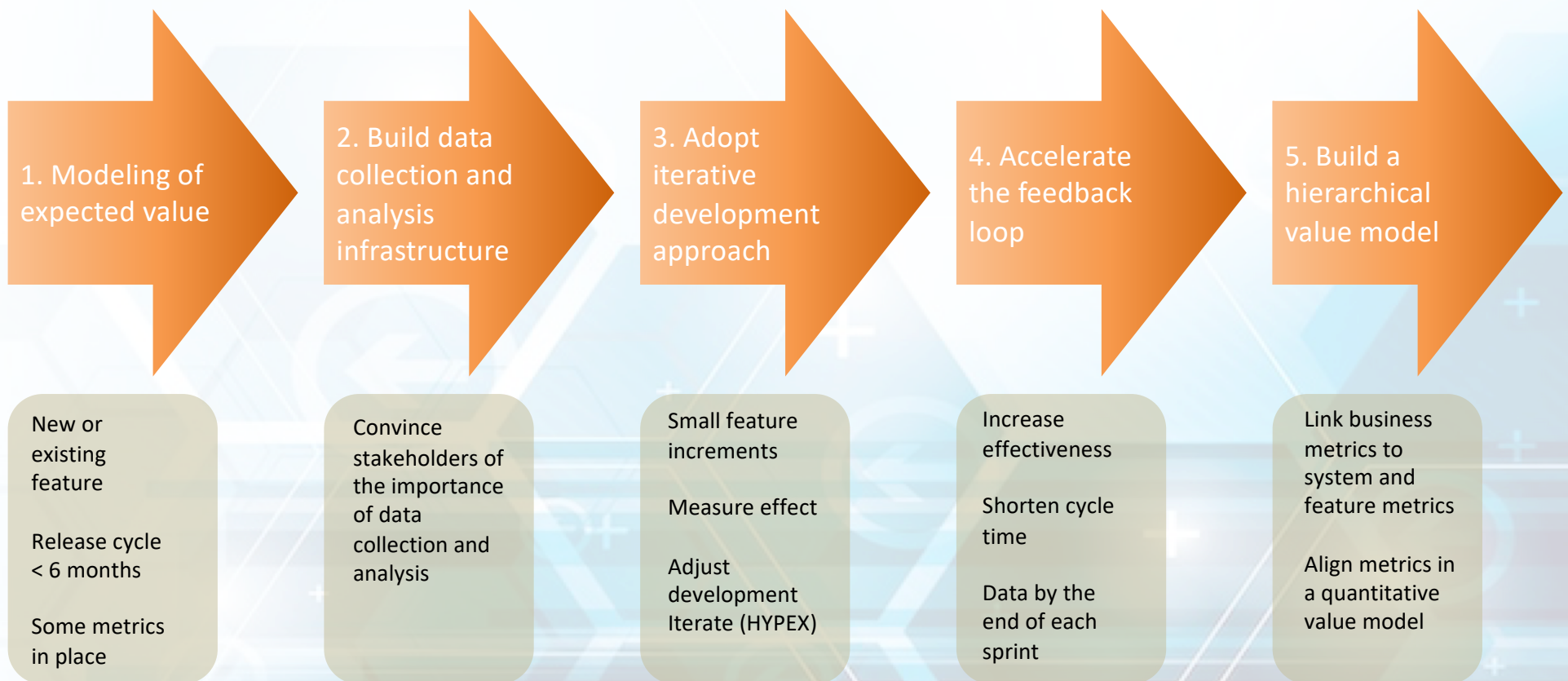
This research aims to:

- 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

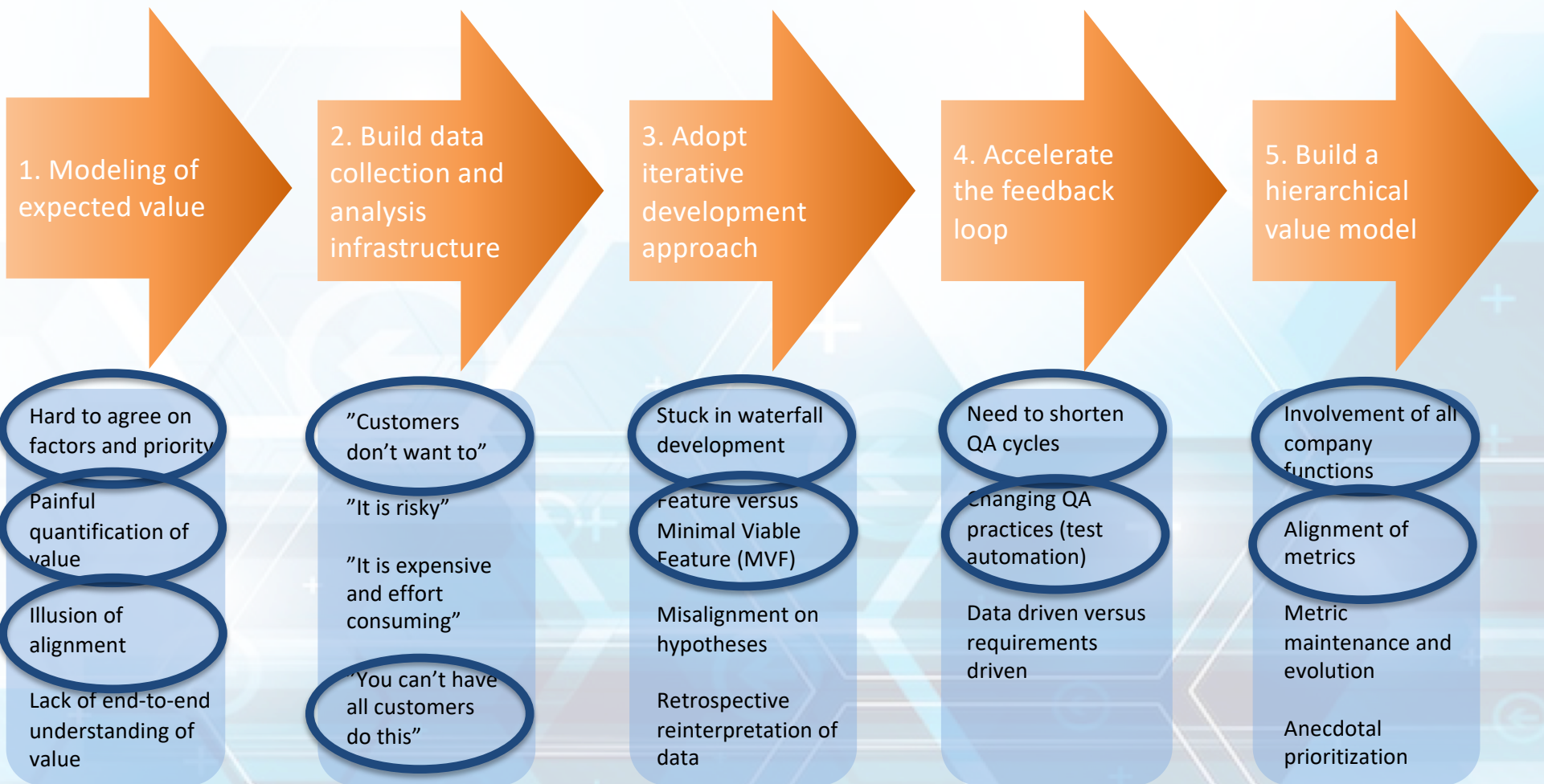
What is a data driven business?

- 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

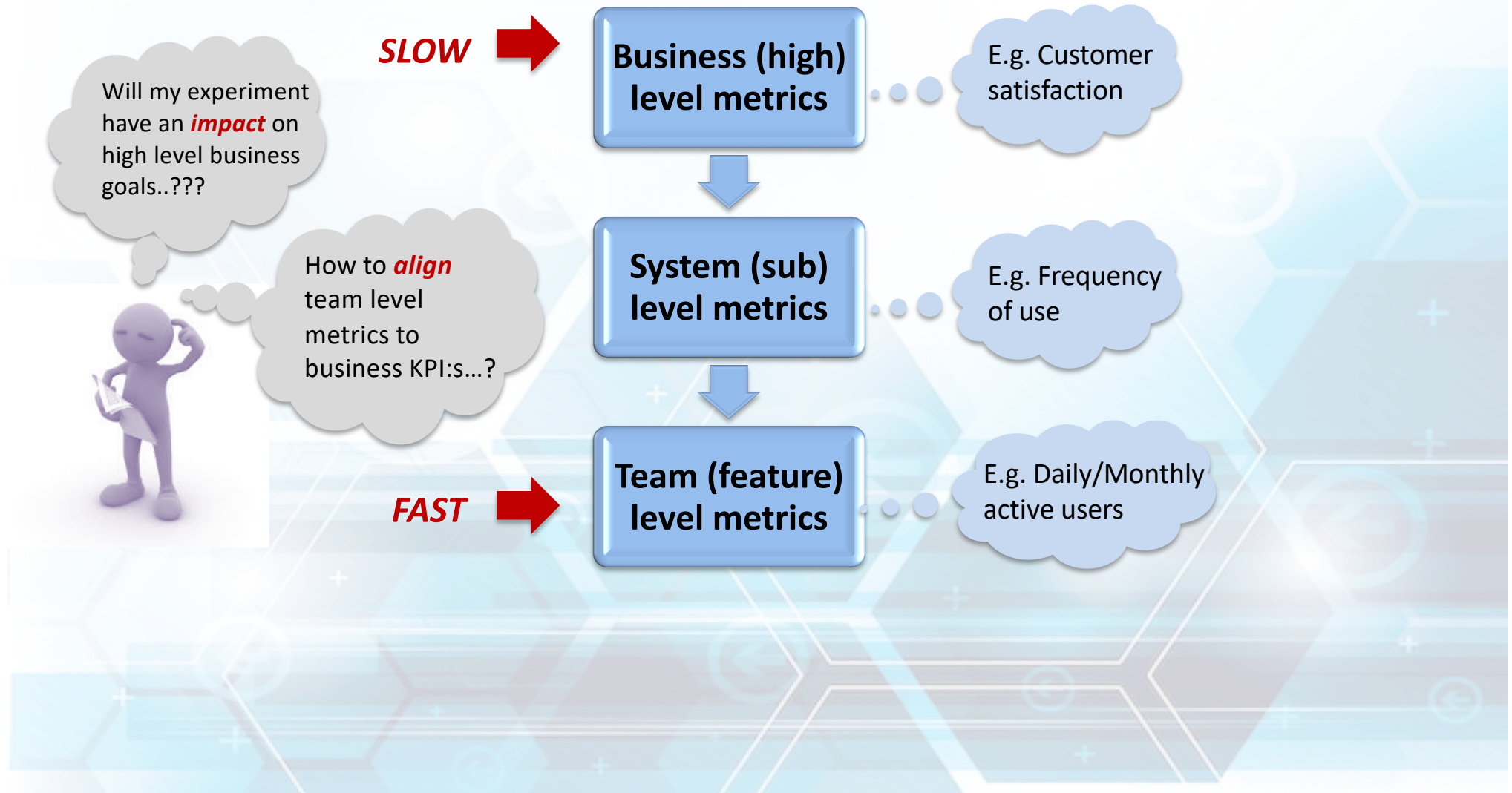
Data Driven Development: Adoption Process



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



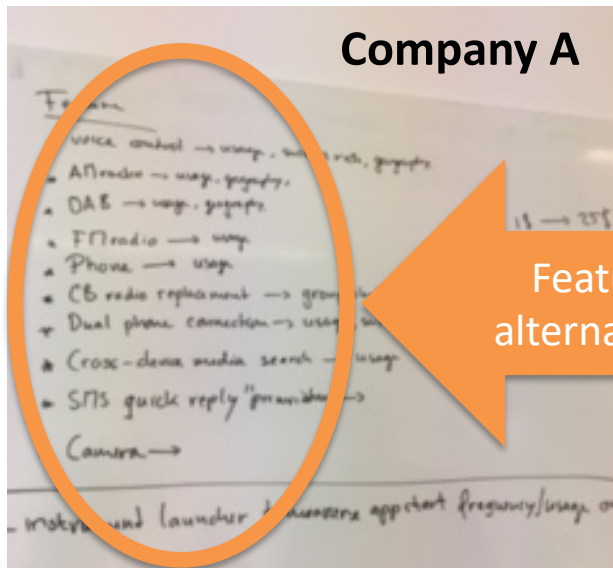
Value Modeling: Team – System – Business metrics



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

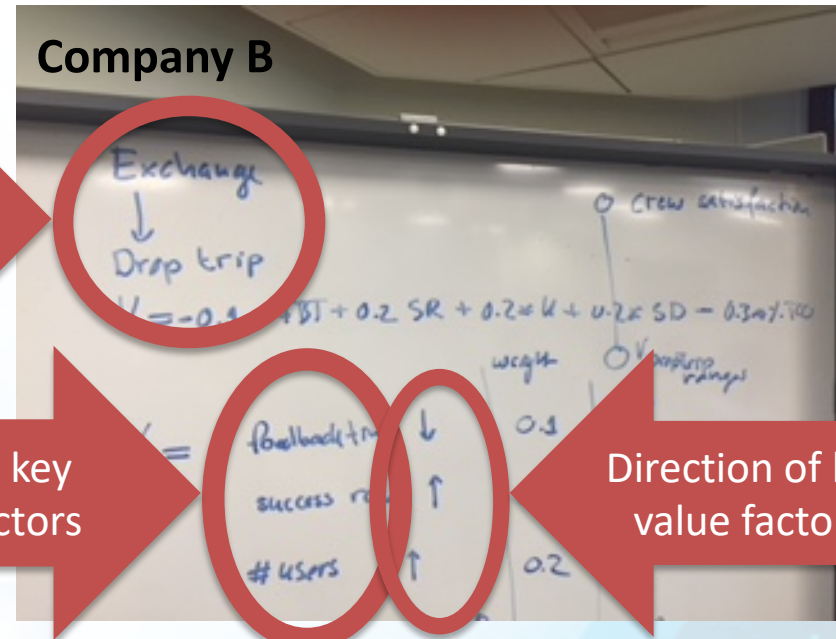
Value Modeling: In Practice



Company A

Feature
alternatives

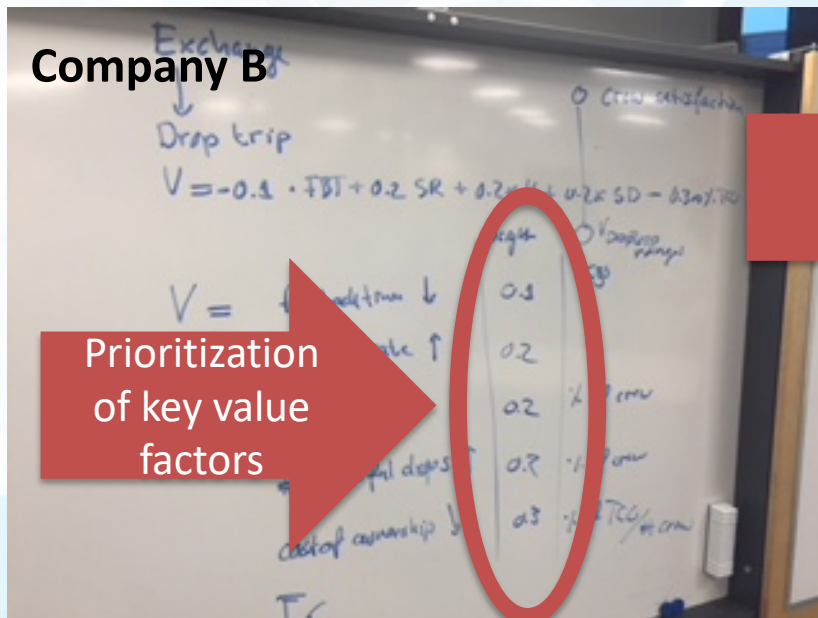
Selected
feature



Company B

Identify key
value factors

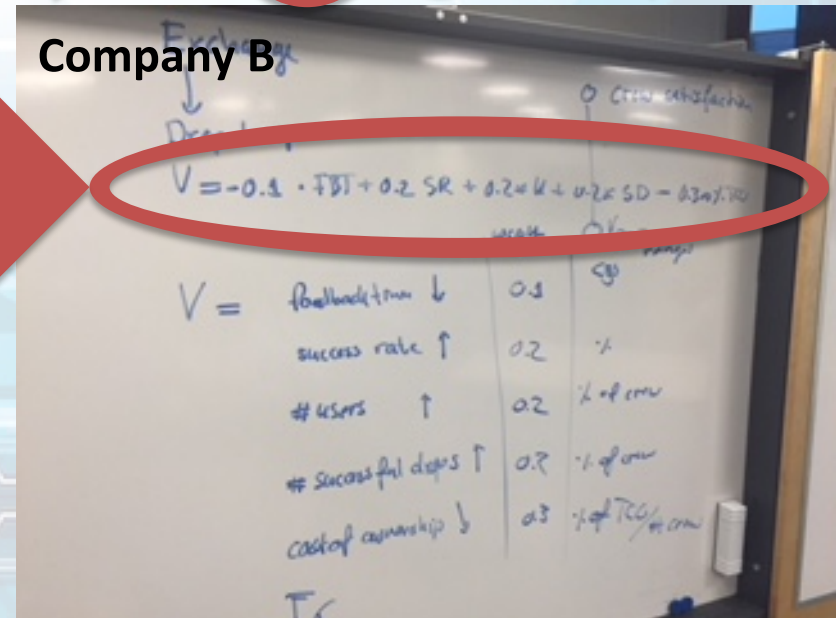
Direction of key
value factors



Company B

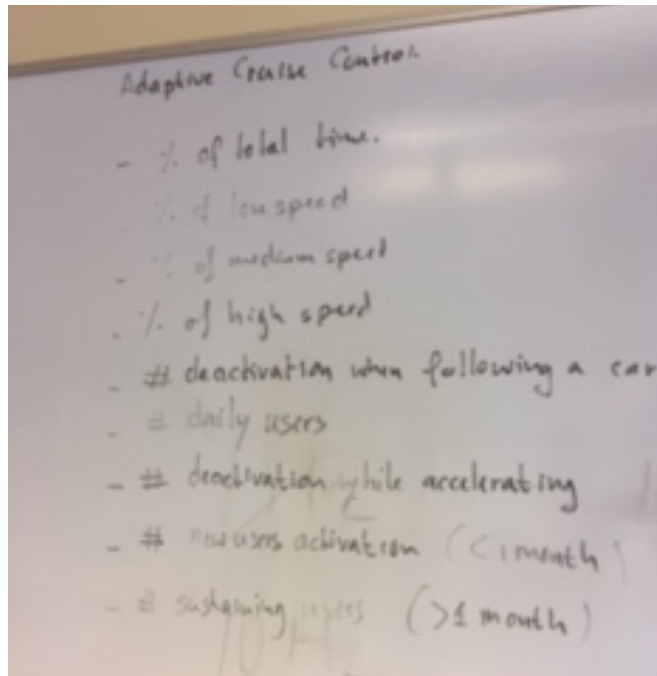
Prioritization
of key value
factors

Value
function

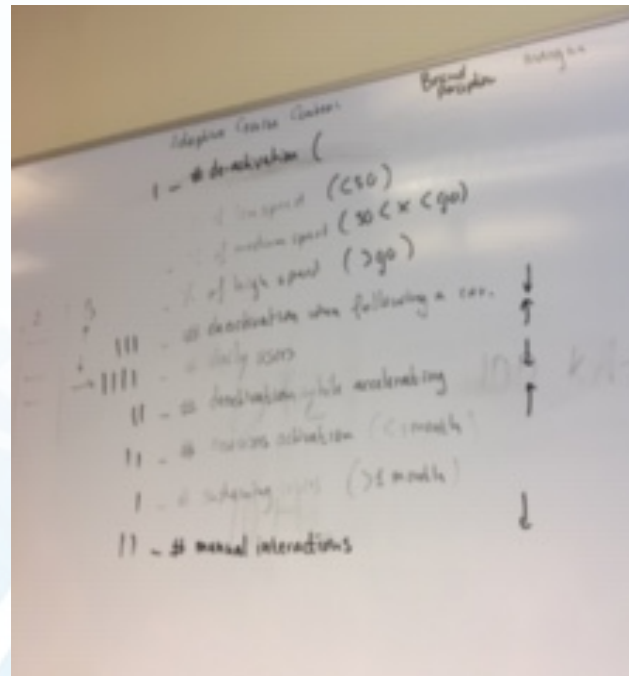


Company B

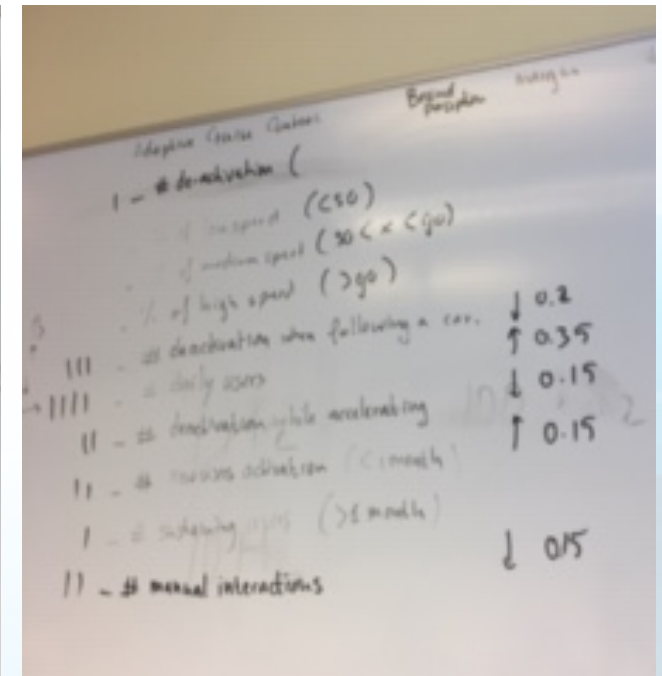
Company C



Identify key
value factors



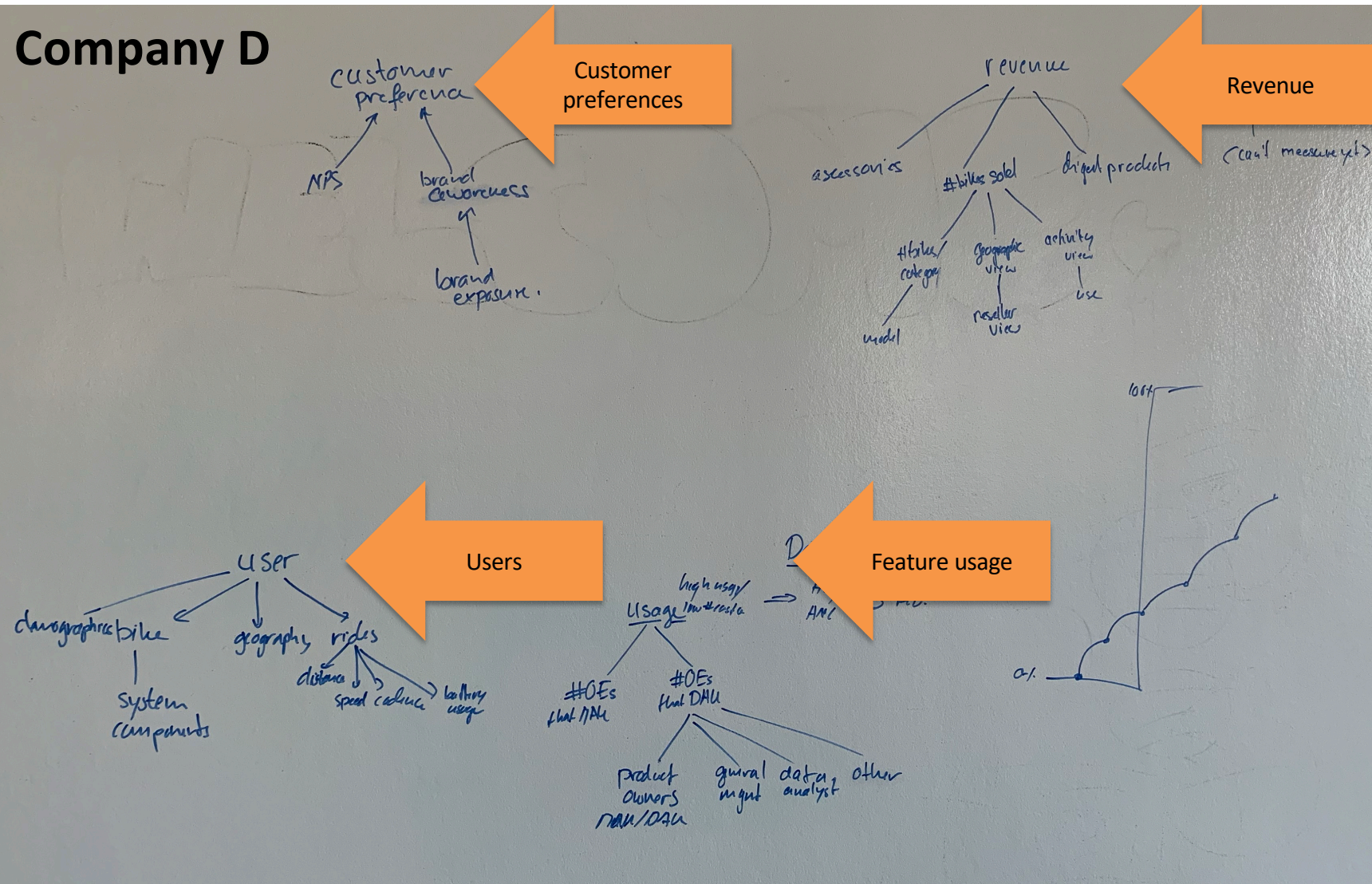
Direction of key
value factors



Prioritization of
key value factors

What do we optimize for?

Company D



Hypotheses, Data and Actions

Formulation of
hypothesis

What actions to
be taken?

What datapoints
do we need?

Company D

Plan
103 OEs → 2-3 users/OE
103
- RRT
- Trek
- Pon

Hypothesis I

- * basic data views are useful for OEs
 - ↳ regular usage 17/4/18

Hypothesis II

- * users will classify their bikes (brand, type, model, year) in return of Koyocet "voucher"/trial bike for 2 service maintenance voucher.

Actions

- * convince ^{idea} app team to build the pop-up
- * organise "incentive" for participation

Hypothesis III

- * Push notifications to OEs will improve engagement.

Actions

- * Decide on push notification content Ha 14/5
- * Prepare data for inclusion in notification He 14/5
- * "Testing" the notification email

Features

- * basic data views
 - * geographical bike usage
 - * # rides
- X * demographics
 - * # bikes
- X * avg trip distance (?)
- X * post-ride battery %
- * duration, app usage (screens)

Actions

- * 2-3 target users ^{idea} Ha - 2/3
- * OE log capability from EXT A - 2/4
- * data externalisation A - 2/4
- * develop instrumentation model He - 10/4
- * get consent from users He - 3/4
- * create OE agr. data for OEs He - 3/4

Formulation of hypotheses and actions

Company D

Hypothesis II

Hypothesis II

- ✶ users will classify their bills (brand, type, model, year) in return of Komoot "voucher" / trial bill for 1 day service maintenance voucher.

Actions to test hypothesis II

Actions

- ✶ convince ^{Kolbe} app team to build the pop-up
- ✶ organise "incentive" for participation
- ✶ get type/model/year from each OE.

Hypothesis III

Hypothesis III

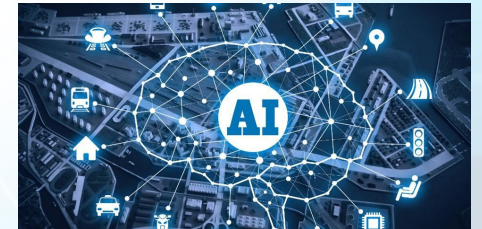
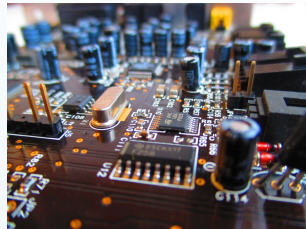
- ✶ Push notifications to OEs will improve engagement.

Actions to test hypothesis III

Actions

- ✶ Decide on push notification content Ha ^{14/5}
- ✶ Prepare data for inclusion in notification He ^{14/5}
- ✶ "Testing" the notification email

Technology Evolution



mechanics

electronics

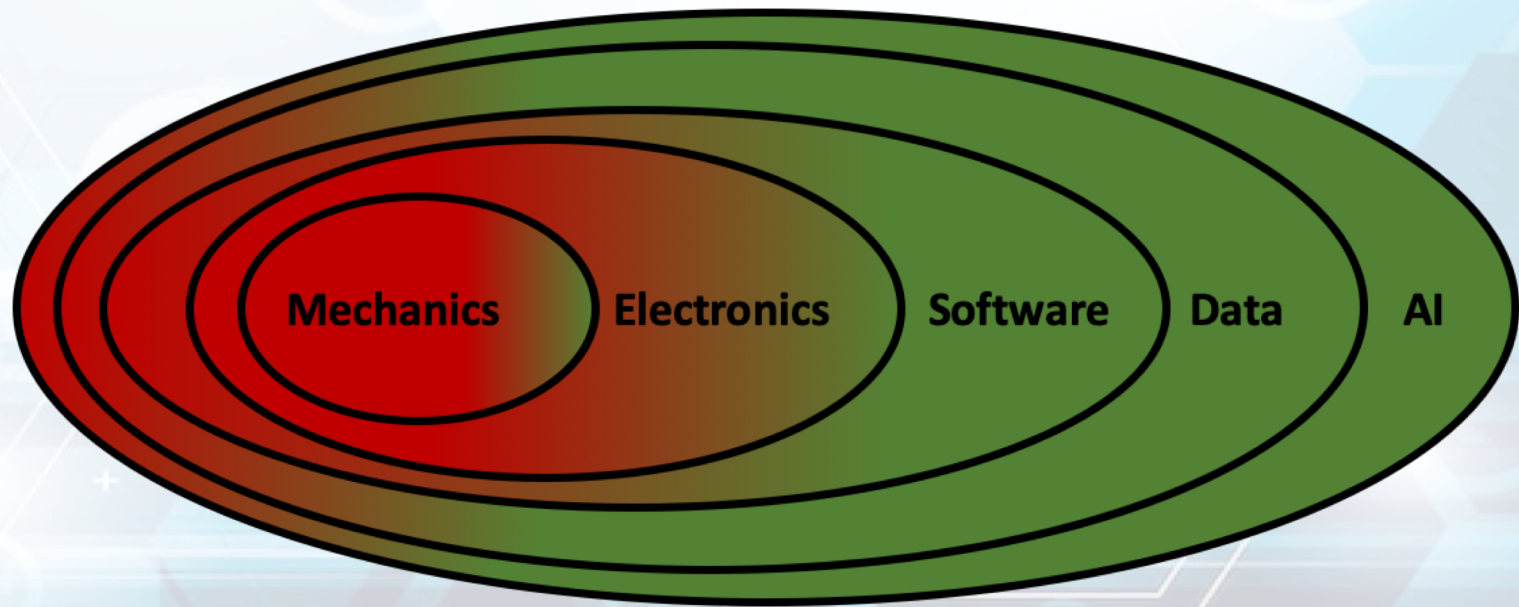
software

data

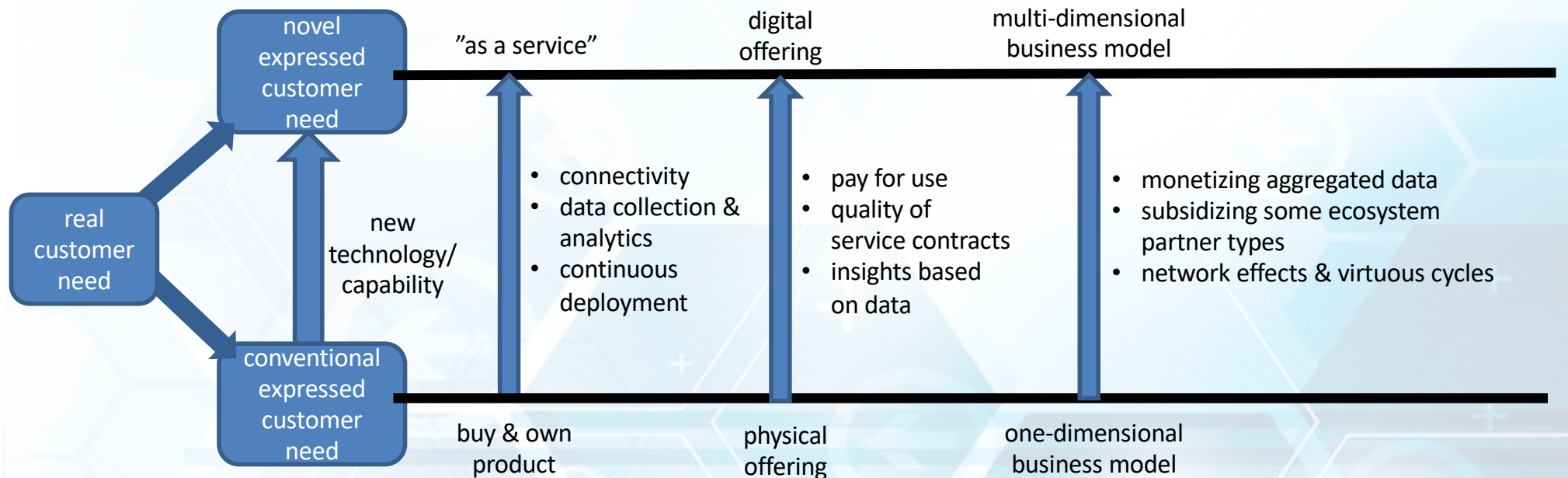
artificial intelligence

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