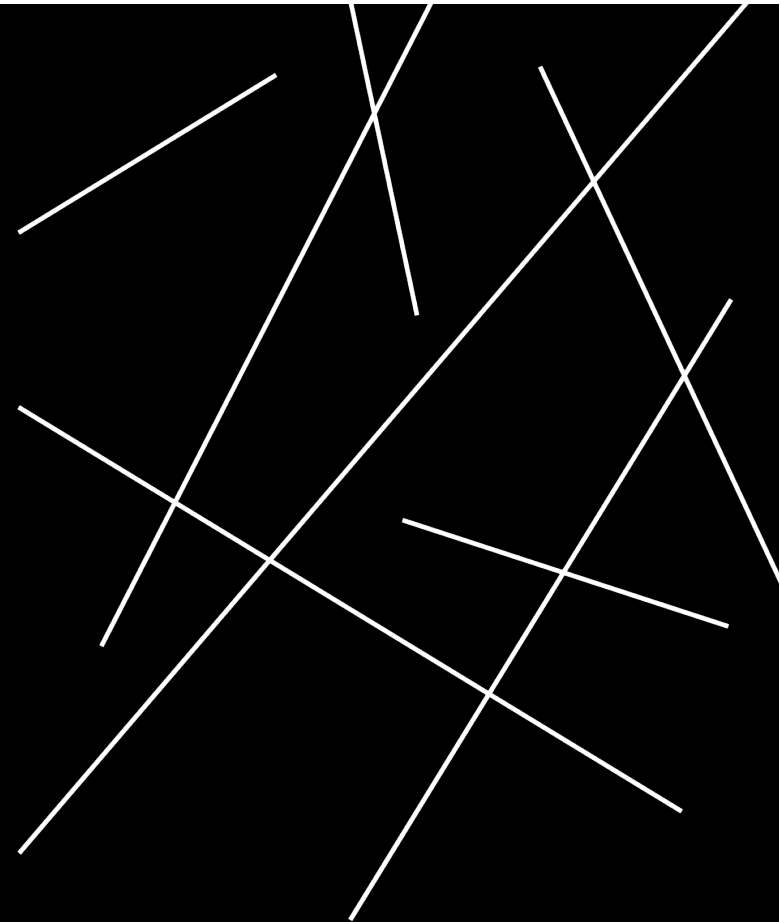


SILLI®

From Model-Centric to Data-Centric AI

Practical steps to business relevant AI

Sami Laine, Competence Lead, Silli Solutions Oyj



What does Data-Centric AI mean?

Data-centric AI is the discipline of **systematically engineering the data** needed to successfully build an AI system.

*Andrew NG, AI Minimalist:
The machine-learning pioneer says small is the new big
IEEE Spectrum, April 2022.*



Why from Model-Centric to Data-Centric AI?

Not everyone has
hundreds millions
images or records
to train ML models

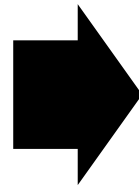


More data does not
necessarily improve
prediction quality

*Andrew NG, AI Minimalist:
The machine-learning pioneer says small is the new big
IEEE Spectrum, April 2022.*



Don't waste time
tuning endlessly
algorithms



Change data to get
better algorithmic
results



What does it mean to 'change data'?



Improve AI with data augmentation

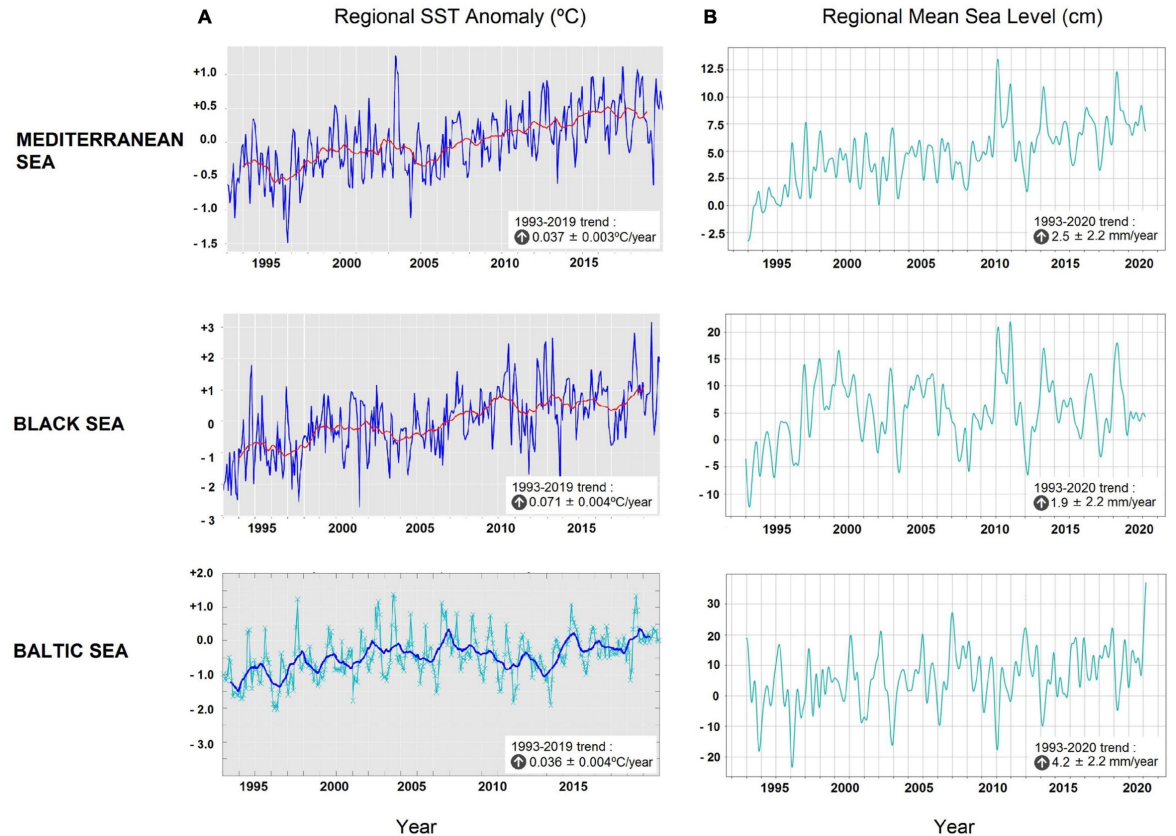
AI - when does the ship arrive to harbor?



Improve AI with data monitoring

AI - when does the ship arrive to harbor?

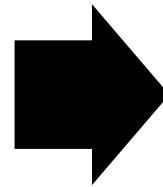
REGIONAL SEA CLIMATE CHANGE INDICATORS



An Overview of Ocean Climate Change Indicators
<https://doi.org/10.3389/fmars.2021.642372>



You have now
better data



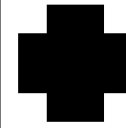
You need more
relevant data



Improve AI with better **domain understanding**

AI - when does the ship arrive to harbor?

Recognize latent variables and missing data



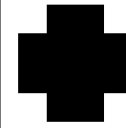
Clarify objectives and their consequences



Improve AI with better measurement practices

AI - when does the ship arrive to harbor?

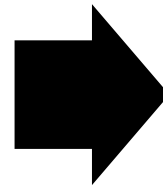
Standardize and quality control data



Open methods and contexts transparently



You have now
more relevant
data



You need more
valuable data



Improve AI value by **optimizing system**

AI - when does the ship arrive to harbor?

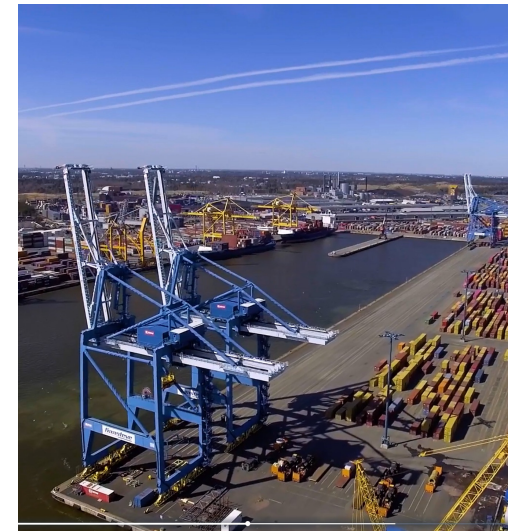
Connect data across **business value chain...**



Broken crane at destination

Longer loading times

Delayed arrival



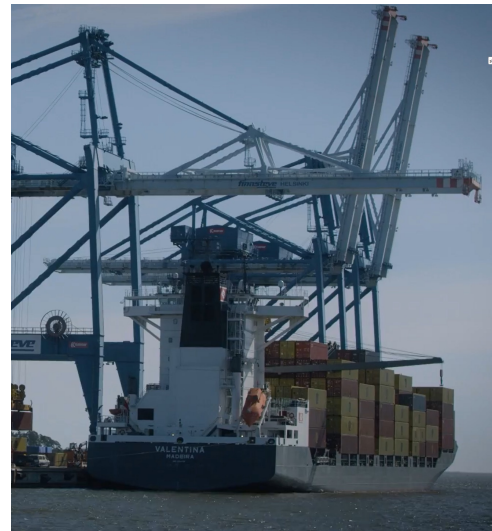
...to predict events before they happen
so you can change the future.



Improve AI value by **optimizing system**

AI - when does the ship arrive to harbor?

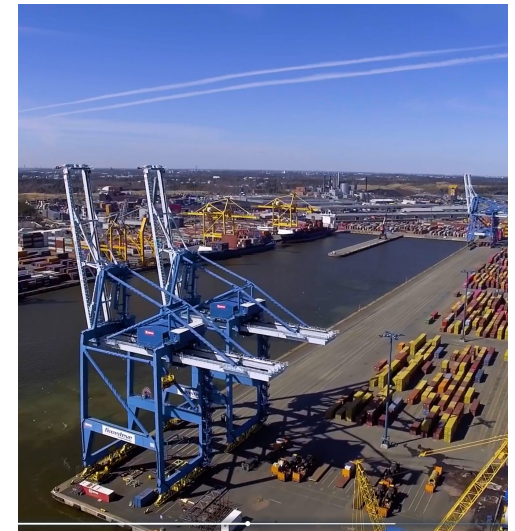
Connect **data lifecycle** from creation to deletion..



New type
of cargo

More
weight

Higher draft



...to guarantee **correct situation awareness** even when current plans have changed or failed.



Improve AI value by **optimizing system**

AI - when does the ship arrive to harbor?

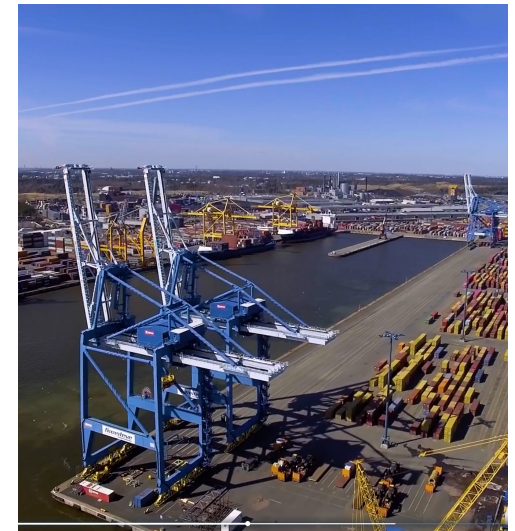
Connect **quality controls** and **audit trail** from data to results...



Ice coverage

Engine breakdown

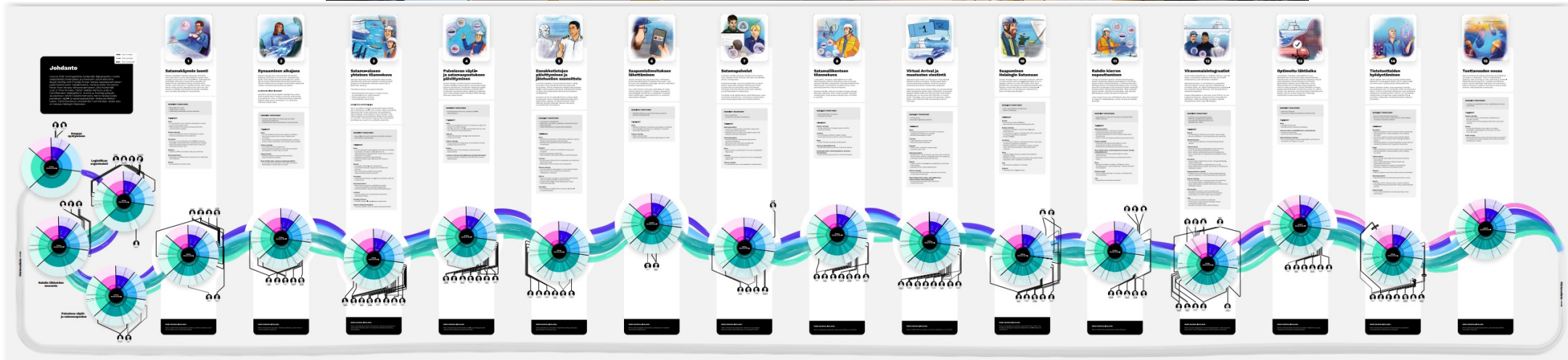
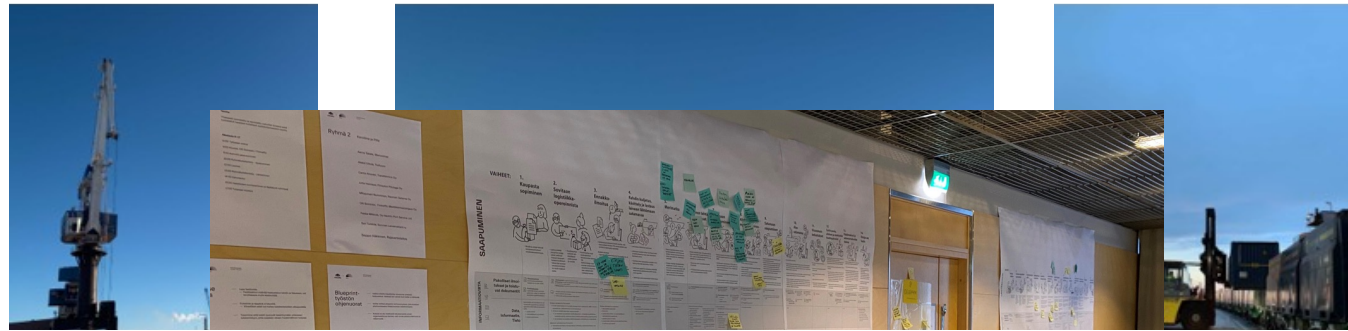
Quarantine

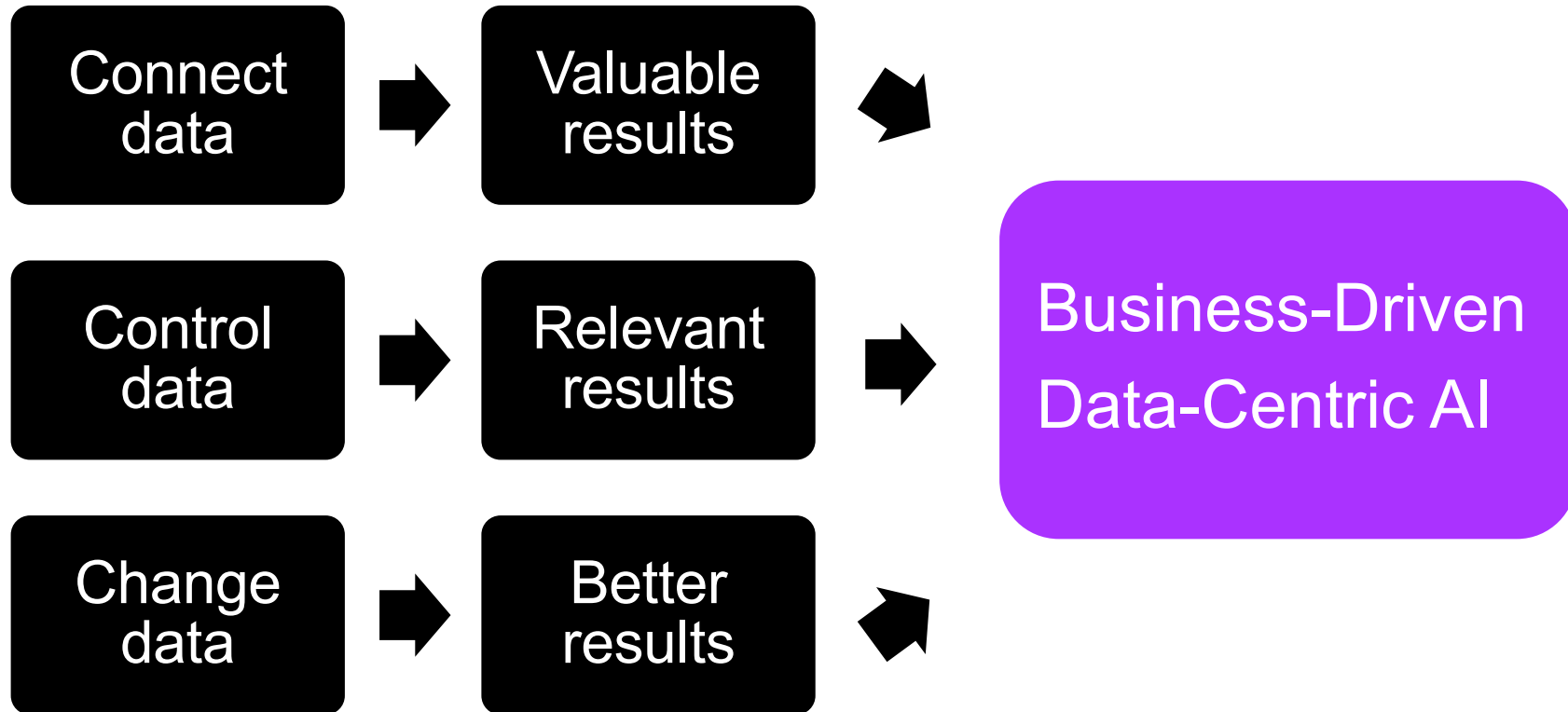


...to help **validate, contest** and **improve** false or suboptimal AI statements.



Mapping data ecosystem of the maritime traffic notification service NEMO along the business value chain







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