Digital Transformation and IIOT at Siemens
Patrick Riordan and Edward Kovanda
What we are sure you already know
This is not SIEMENS
This is also not SIEMENS
And maybe surprising
This also not
What you probably also know
This is SIEMENS
This is SIEMENS
This is SIEMENS
This is SIEMENS
This is SIEMENS
This is SIEMENS
This is also SIEMENS

- **50+** Digi Labs and AI Centers around the globe (also in Munich)
- **500+** data scientists in Germany, **200+** in Munich
- **Thought leader** in Responsible AI (Charter of Trust, DIN Normungsroadmap KI)
- Filed **2,493** European patents in 2019 (more than any other company), **25%** in industry 4.0 and digitalization
- Corporate startup incubator Next47 with **20+** companies in the portfolio and **1bn €** to invest
Innovation happens in all core technology areas
We are IoT Digital Consulting
We are

21 offices
10 countries
+500 consultants
7,000 developers & engineers
And accompany our customers

From few central power plants ... 

... to 1000s of renewable in-feed
And accompany our customers

From manual diagnostic-based maintenance ...

... to data-driven predictive maintenance
And accompany our customers

From periodic manual meter readings ...

... to real time online monitoring
Main question for today
What is it like to do data science at Siemens IoT today?
Big to smart data
Big data vs. smart data

2000s

Big Data → Artificial Intelligence → Result
Big data vs. smart data

2000s
Big Data ➔ Artificial Intelligence ➔ Result

Today
Big Data
Domain Knowhow
Big data vs. smart data

2000s

Big Data → Artificial Intelligence → Result

Today

Big Data

Domain Knowhow

→ Smart Data
Big data vs. smart data

2000s

Big Data → Artificial Intelligence → Result

Today

Big Data → Domain Knowhow → Smart Data → Artificial Intelligence → Result
Skill #1: Work with the experts
To be able to be a leading player in this field, Siemens has transformed itself towards a software company.
Skill #2: Select the right technology
Black Box vs. XAI
“Asking for interpretability as a condition for real world usages is undermining the foundations of the whole field. If the trained model has good performances and it’s not interpretable we are probably on the right track; if it’s interpretable (and the explanation is understandable and replicable) why loosing weeks and GPU power? Just write some if-else clauses.”

Massimo Belloni, Data Scientist at HousingAnywhere in his medium post from April 30th, 2019, "If it's interpretable, it's pretty much useless"
“AI systems and their decisions should be explained in a manner adapted to the stakeholder concerned. Humans need to be aware that they are interacting with an AI system, and must be informed of the system’s capabilities and limitations.”

European Commission High-Level Expert Group on AI in their "Ethics Guidelines for Trustworthy AI" from April 8th, 2019,
Skill #3: Select the appropriate model
Let's put this to practice
Sand and Dust prediction
Skill #1
What do I know about Sand? How often do pathways get blocked? How critical is it really?

Skill #2
Who exactly and how is our customer going to be working with our solution?

Skill #3
How critical are prediction results? Life-and-death situation for involved humans? State regulated?
Don’t forget the experts

Have the end user in mind

Sexy doesn't always win
“When considering how IoT can transform your organization, remember that the **business is more important than the technology**. The technology might be exciting and new, but it must serve the business, not the other way around. When investigating the ROI of an IoT initiative, the IoT solution determines the invest, and the **business problem determines the potential return**.”

Siemens IOT Services
in their whitepaper (in print)
"Introducing IOT pays off – fact or fiction?"
Any questions?
Contact us!

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