Show me the money!

Wirtschaftlicher Nutzen für Unternehmen von KI

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DER WIRTSCHAFTLER

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Agenda

Show me the money! Wirtschaftlicher Nutzen für Unternehmen von KI

1. Not all data is big...
   and not all learning is deep...

2. Use Case Examples

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Not all data is big...

and not all learning is deep...

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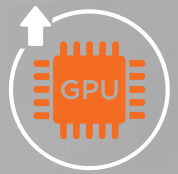
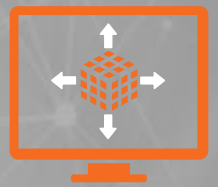
The Resurgence of Artificial Intelligence

Explosion of data

Rapid progress in research and applications using neural networks



GPUs overcome previous computational constraints



Significant technology investments

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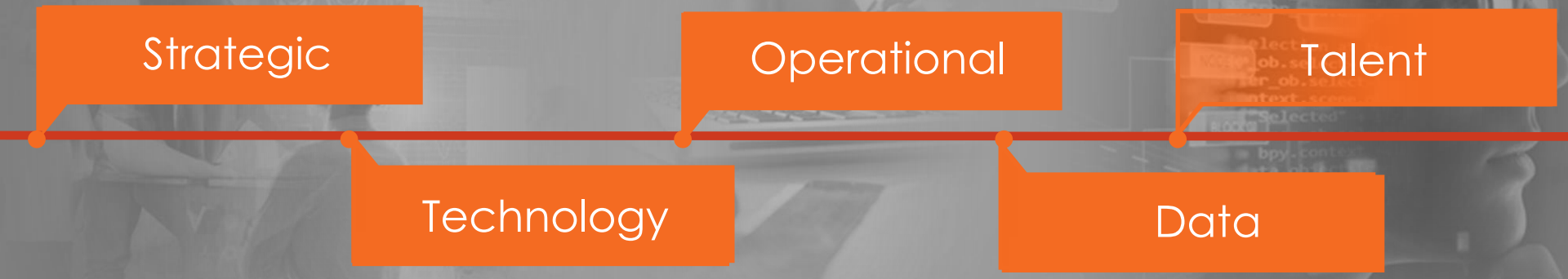
Challenges Delivering Enterprise AI



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Things to Consider

Data hungry

Deep Learning algorithms need **large amounts of data** („labeled data“) to be trained efficiently

Tools & Frameworks

Deep Learning and AI tools are fast evolving and changing; companies should avoid to get „locked-in“ with a specific tool or framework

Fantastic, but not always the best solution

Deep Learning isn‘t necessarily the best solution for each task.

Always start with the business question, then the data and only then decide about the algorithm.

Data Legislation

GDPR requires a “right to explanation” for users on all decisions made by automated or AI algorithm systems.

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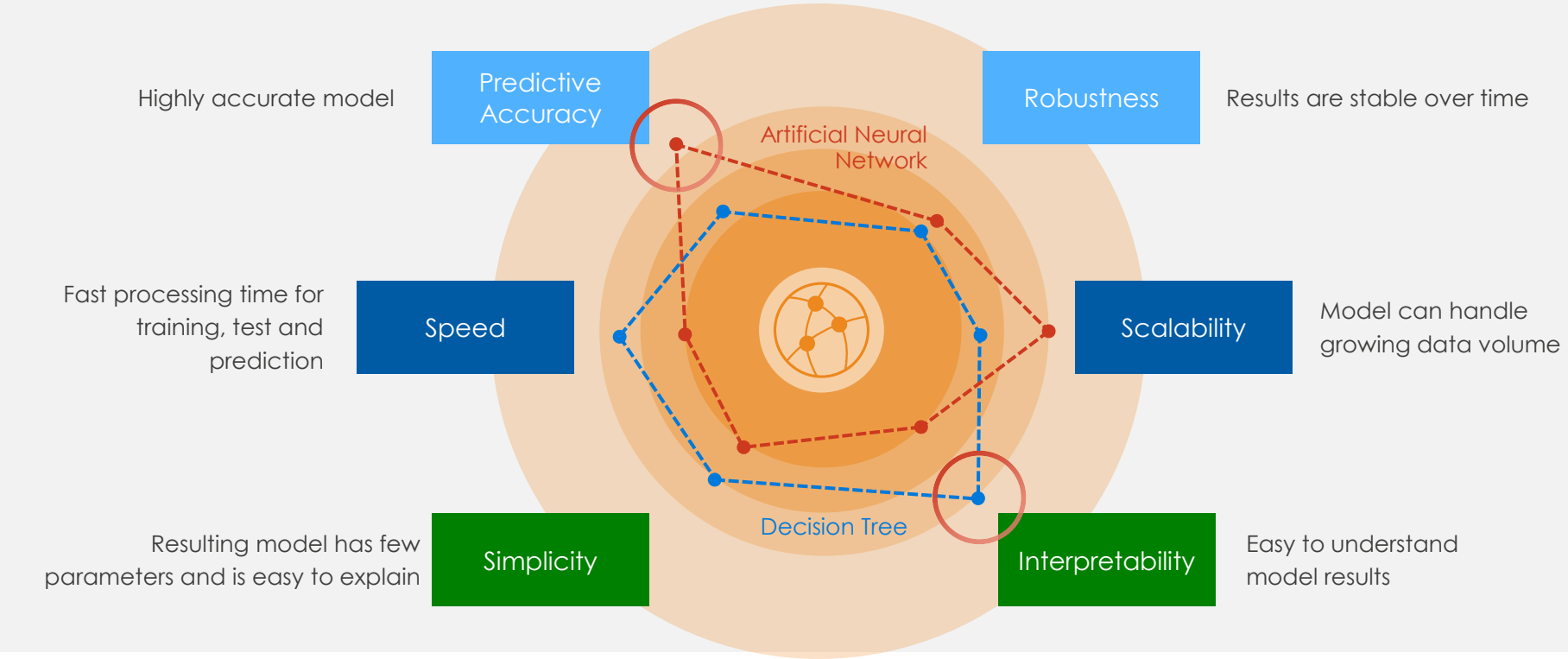
Selecting the Right Model for a Problem

Not One Algorithm to Rule Them All: Decision Tree vs ANN Example



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Use Case Examples

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Main Categories of AI Use Cases

- "Classical" Big Data Analytics
  - "rebranding" of analytics projects as AI/ML
  - E.g. classical predictive maintenance, churn prediction, etc
- Improve classical analytics with new data and/or algorithms
  - Ability to analyse picture, video, audio data
  - Better predictive accuracy using Deep Learning
- Applications that weren't possible without AI
  - Analytical tasks that can't be solved by "classical" analytical algorithms
  - Self-driving cars, intelligent chat-bots, etc

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Danske Bank

Only 40% of fraud caught

99.9% of cases investigated were not fraud

Getting worse because of new payment methods and fraudster sophistication

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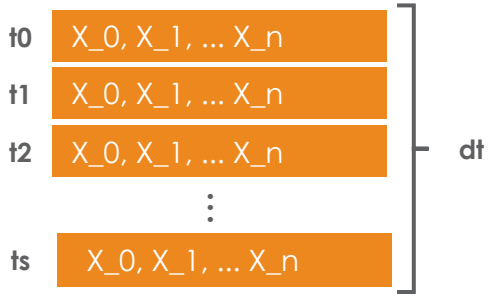
How Can We Create an Image from Bank Transactions?

Input

Raw Features



Top k Features Correlation

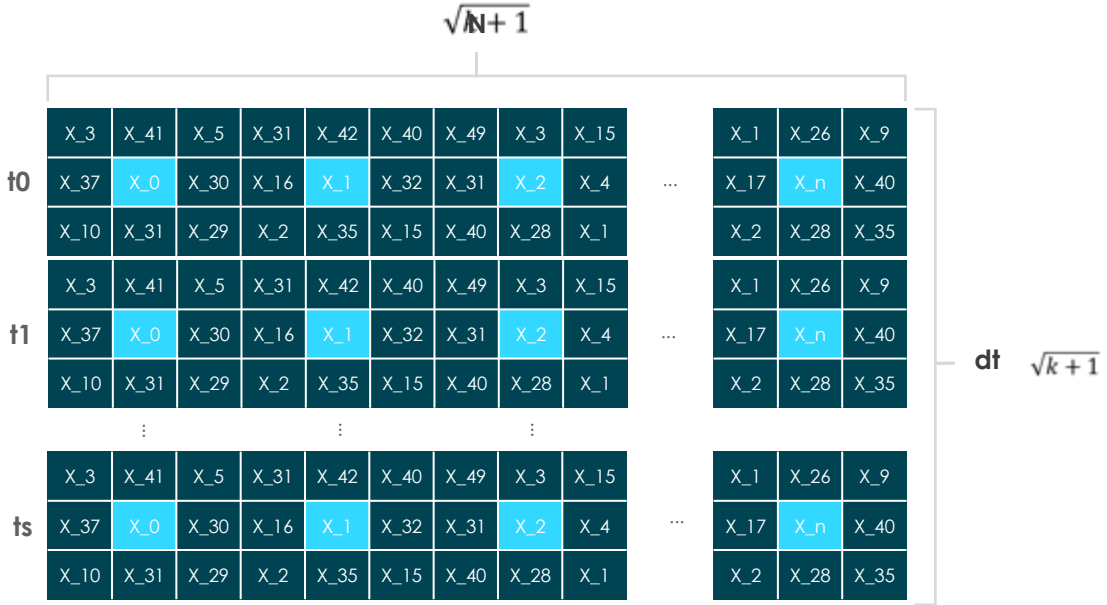
```
{0: [41, 5, 30, 29, 31, 10, 37, 3],
 1: [42, 40, 32, 15, 35, 2, 16, 31],
 2: [3, 15, 4, 1, 28, 40, 31, 49],
 3: [15, 41, 29, 16, 0, 2, 6, 14],
```

(examples of k: client location, merchant location, size of transaction, relative size of transaction, frequency of transactions, others….)

Output

Add correlated features in a clock-wise manner

Image size is: **[10 x 3, 50 x 3, 1]**



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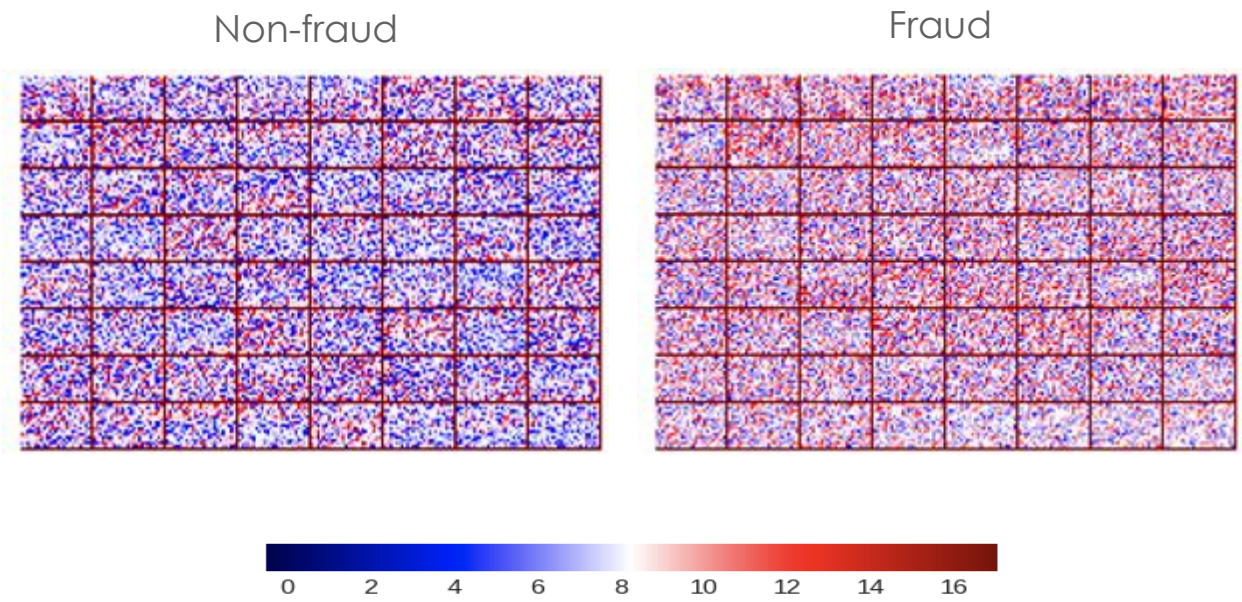
Inside the Model

64 Filters
Activations
After the CNN
Residual Blocks



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Business Value from AI

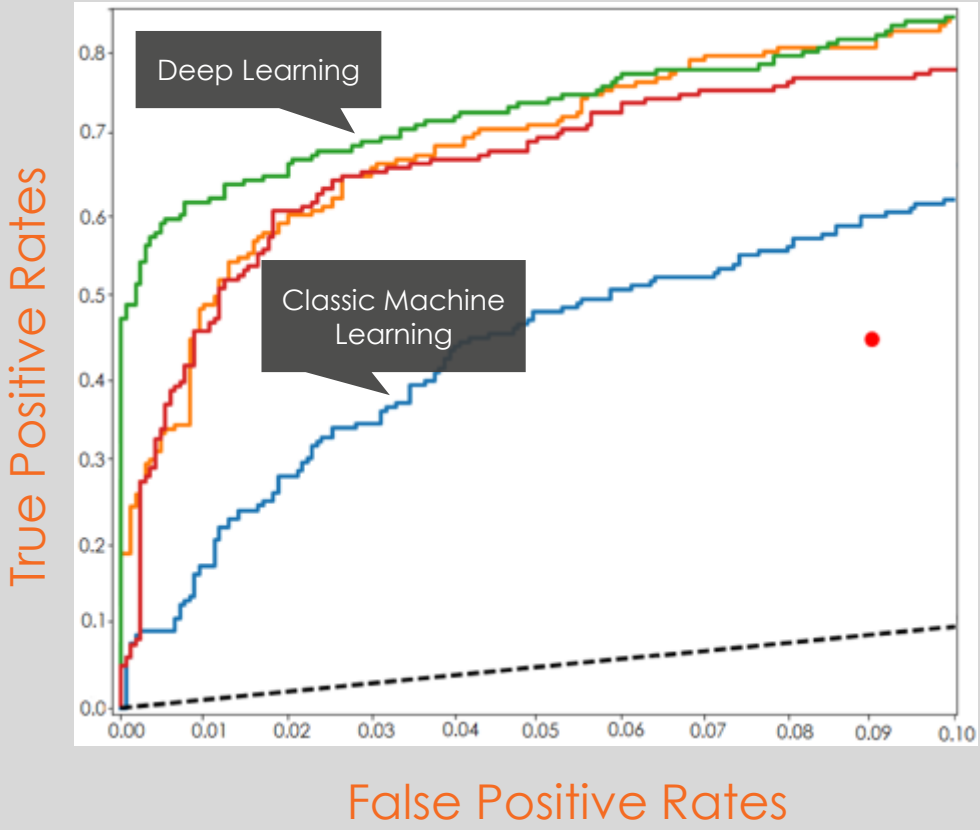
50%

increase in fraud detection rate

60%

decrease in false positive rate

From design to models in production in 8 sprints



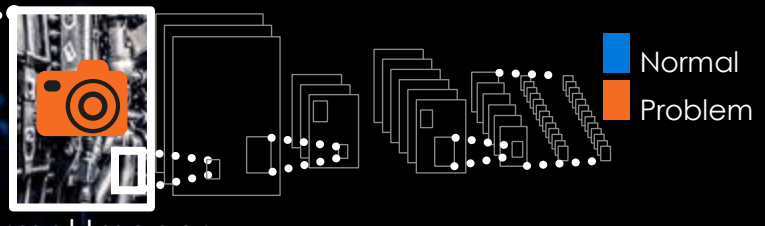
Deep Learning & Rich Media Data

PRE-DEEP LEARNING

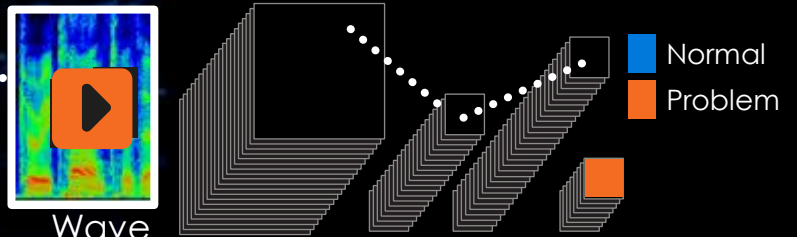
Maintenance records
Operations data
Sensor readings on temperature and vibration

Machine Learning Classifiers
Clustering
Time Series Forecasting

WITH DEEP LEARNING

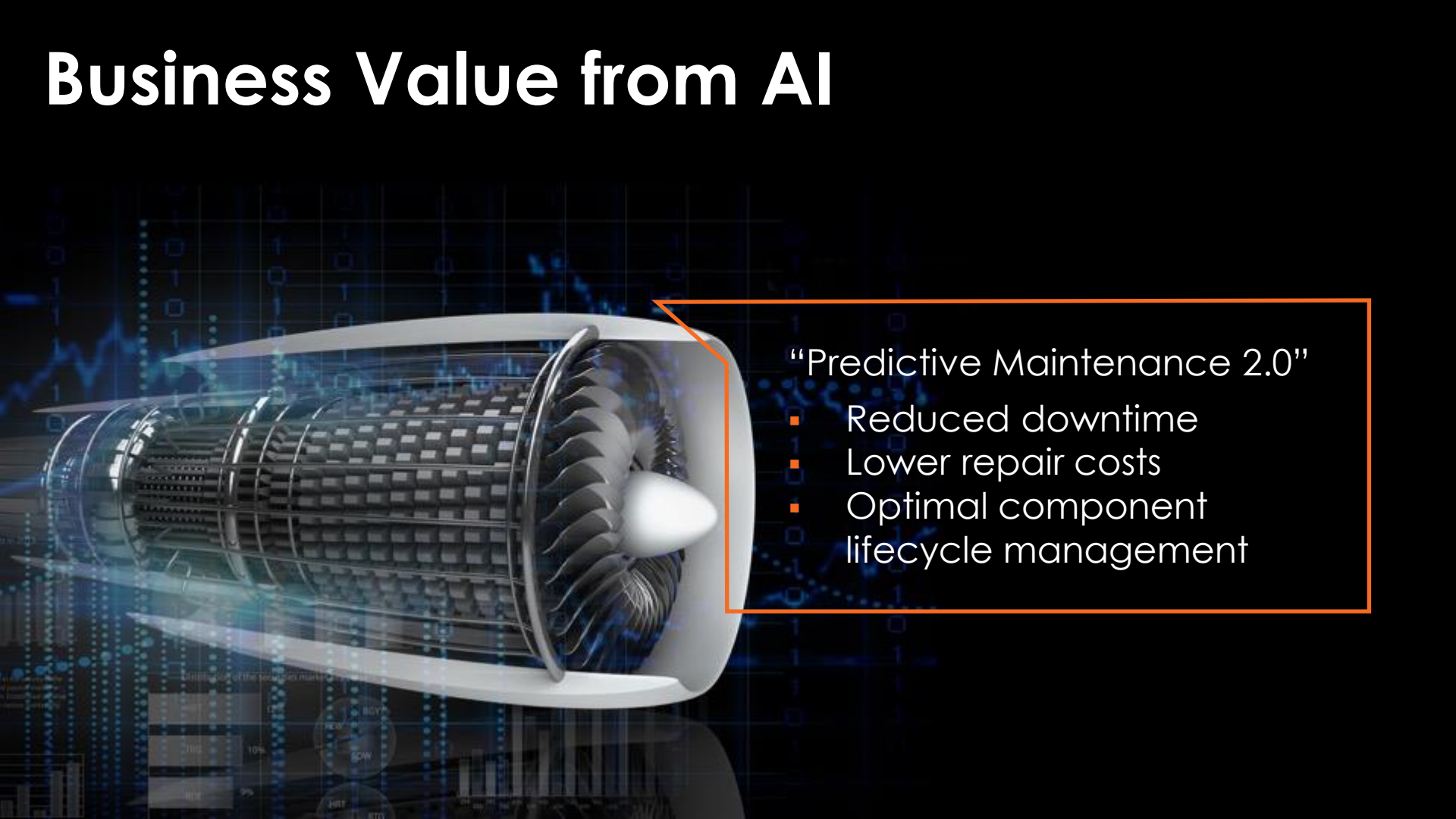


Thermal Imagery
Wear & Tear



Wave
Oscillation
Timbre

Business Value from AI



"Predictive Maintenance 2.0"

- Reduced downtime
- Lower repair costs
- Optimal component lifecycle management

Plastic bags and deep learning

More-and-more parcels are shipped in plastic bags rather than cardboard containers, because they are flexible, light and cheap and are an especially good fit for shipping clothes and toys.

However, plastic bags can stick to the sorter trays used to sort parcels and may require manual intervention. An automatic process to divert plastic bags from the line is therefore required.

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Business impact

Of 115M parcels processed annually, 7.5M (and growing!) are plastic bags.

Recognising plastic bags during sorting eliminates disruption of the existing sorting process and significantly reduces the manual intervention required to process plastic bags, leading to substantial labour savings.

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Lessons Learned / Pitfalls to avoid

- Do NOT start without a specific business question/task
- Quantify the business value the AI solution will generates as early as possible
- Think about how analytics should be operationalized and how the results will be consumed within your organisation from the beginning
- Define success criteria (predictive accuracy, interpretability, scalability, etc) BEFORE selecting the analytical algorithm/tools/technologies

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Vielen Dank
für Ihre Aufmerksamkeit!

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