PROCESS MINING @ BMW GROUP

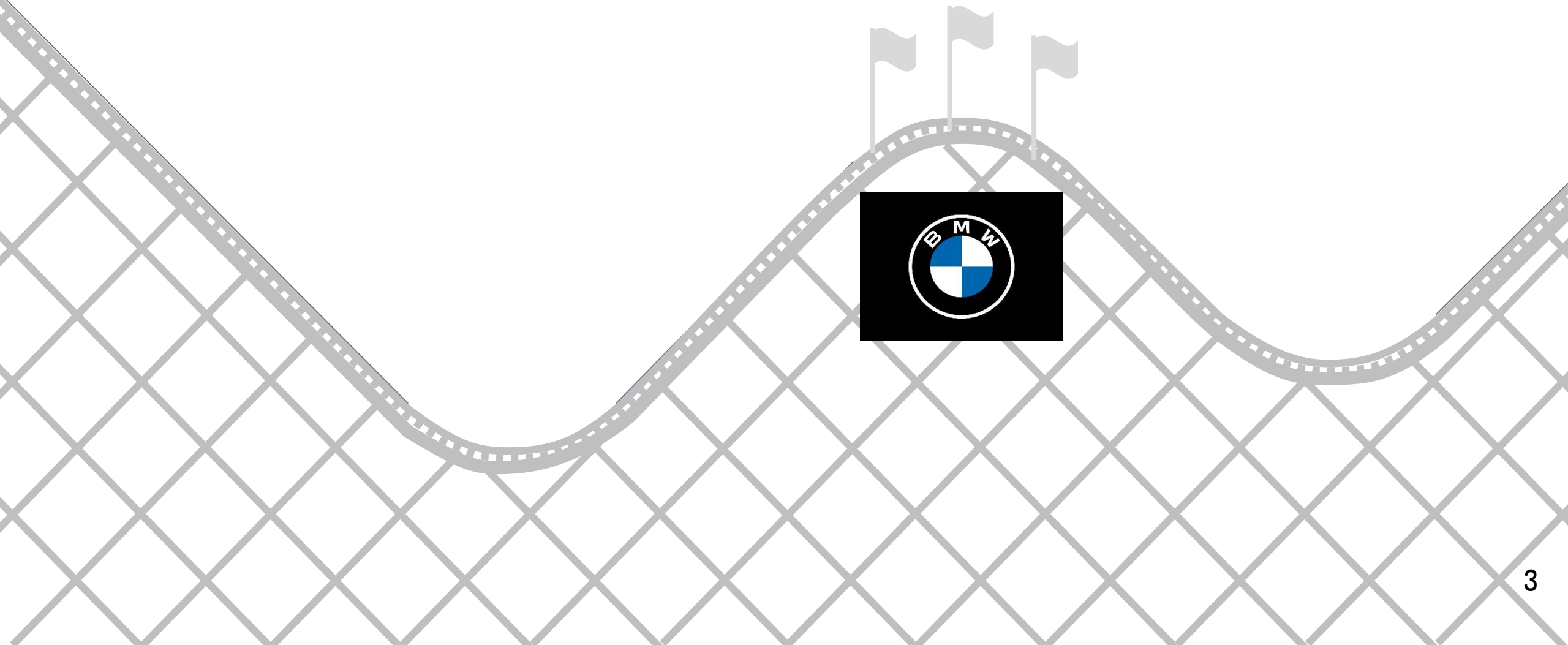
CELOSPHERE LIVE 2020

Dr. Patrick Lechner

BMW GROUP THE NEXT 100 YEARS

KEY ELEMENTS OF BMW GROUP'S STRATEGY NUMBER ONE > NEXT.

Lessons Learned –
A Rollercoaster Ride to Process Excellence.



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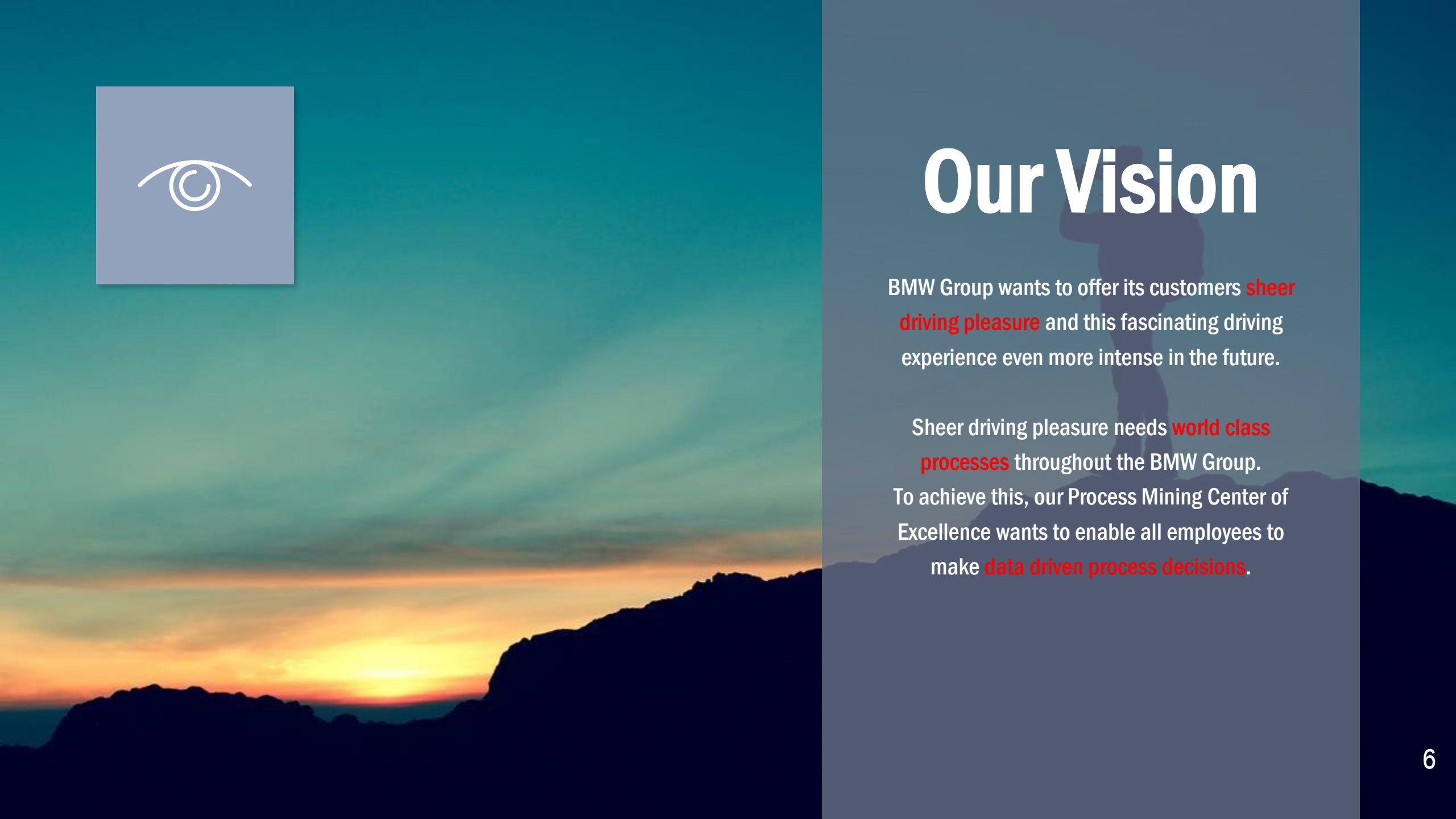
AGENDA



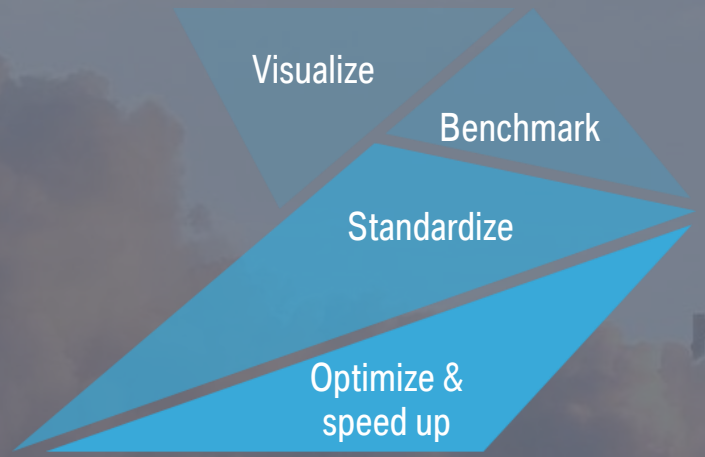
Our Vision

BMW Group wants to offer its customers sheer driving pleasure and this fascinating driving experience even more intense in the future.

Sheer driving pleasure needs world class processes throughout the BMW Group.
To achieve this, our Process Mining Center of Excellence wants to enable all employees to make data driven process decisions.

Our Mission

To enable every BMW employee to make data driven process decisions the Process Mining CoE uses the traces a process leaves in IT systems and help to



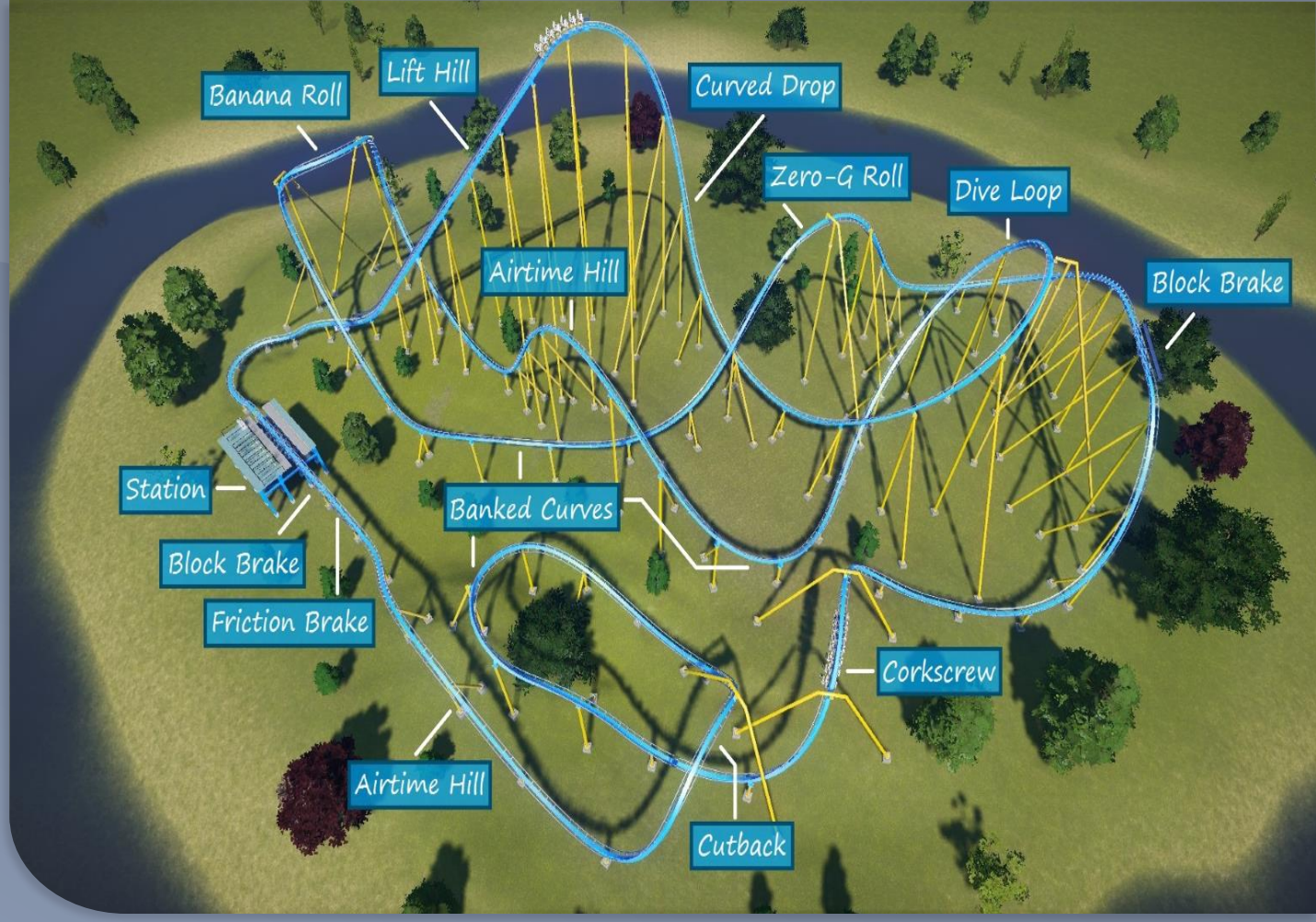
them to achieve process excellence allover BMW Group.

Step 1:
Planning the Ride

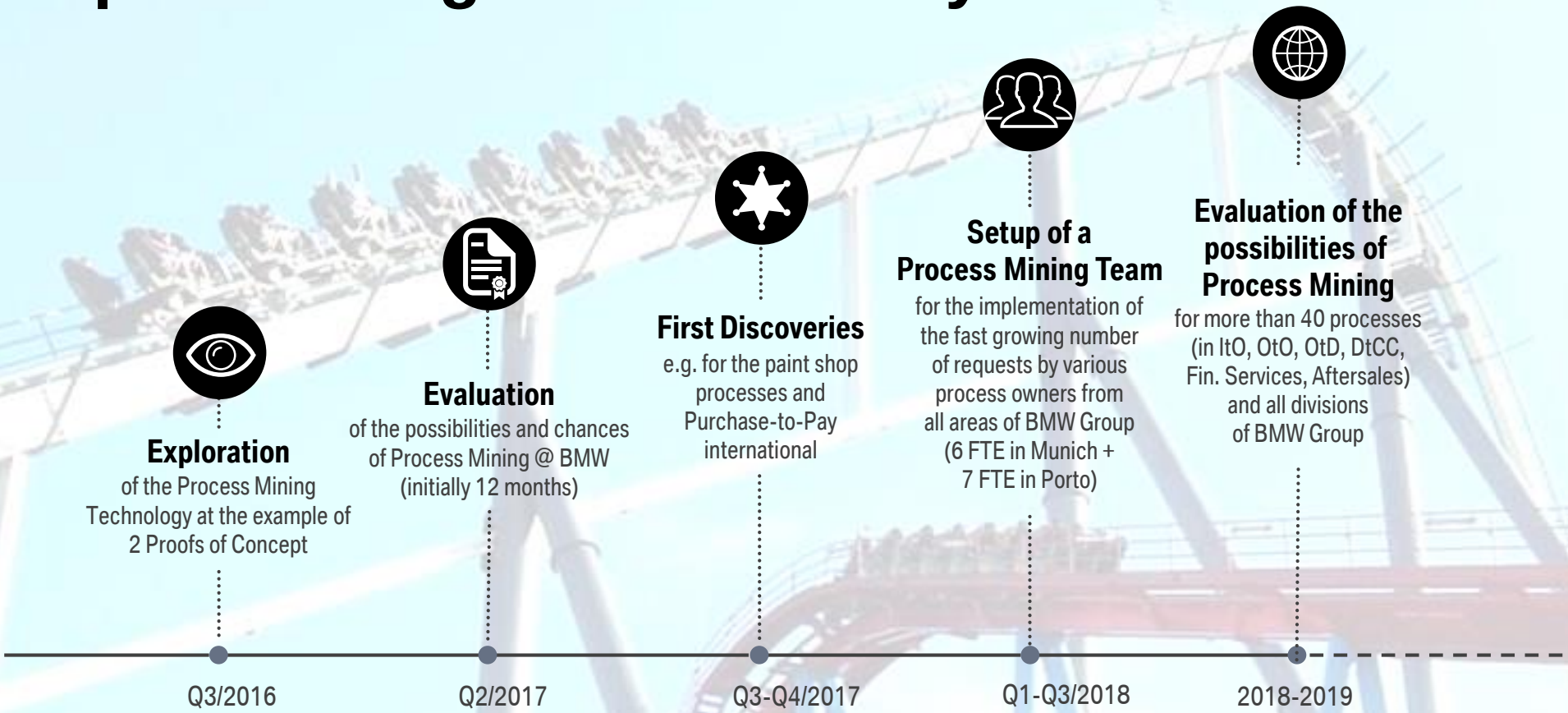
- Which process to start with?
  - Standard Process Mining Use Case?
  - Process along the value chain?
- Which department to start with?
  - Local department?
  - Best practice leader?
  - Department with known issues?
- Which user group?
  - Process owners?
  - Process users?
  - Top Management?

Step 1:
Planning the Ride

- Bottum-up or top-down?
- Implementation by IT or self service tool?
- Which software provider?
- On premise architecture or in the cloud?
- Implement internally or with an external provider?
- One time data extract or permanent connection to the data source?
- Connect data source directly or connection to the big data lake?

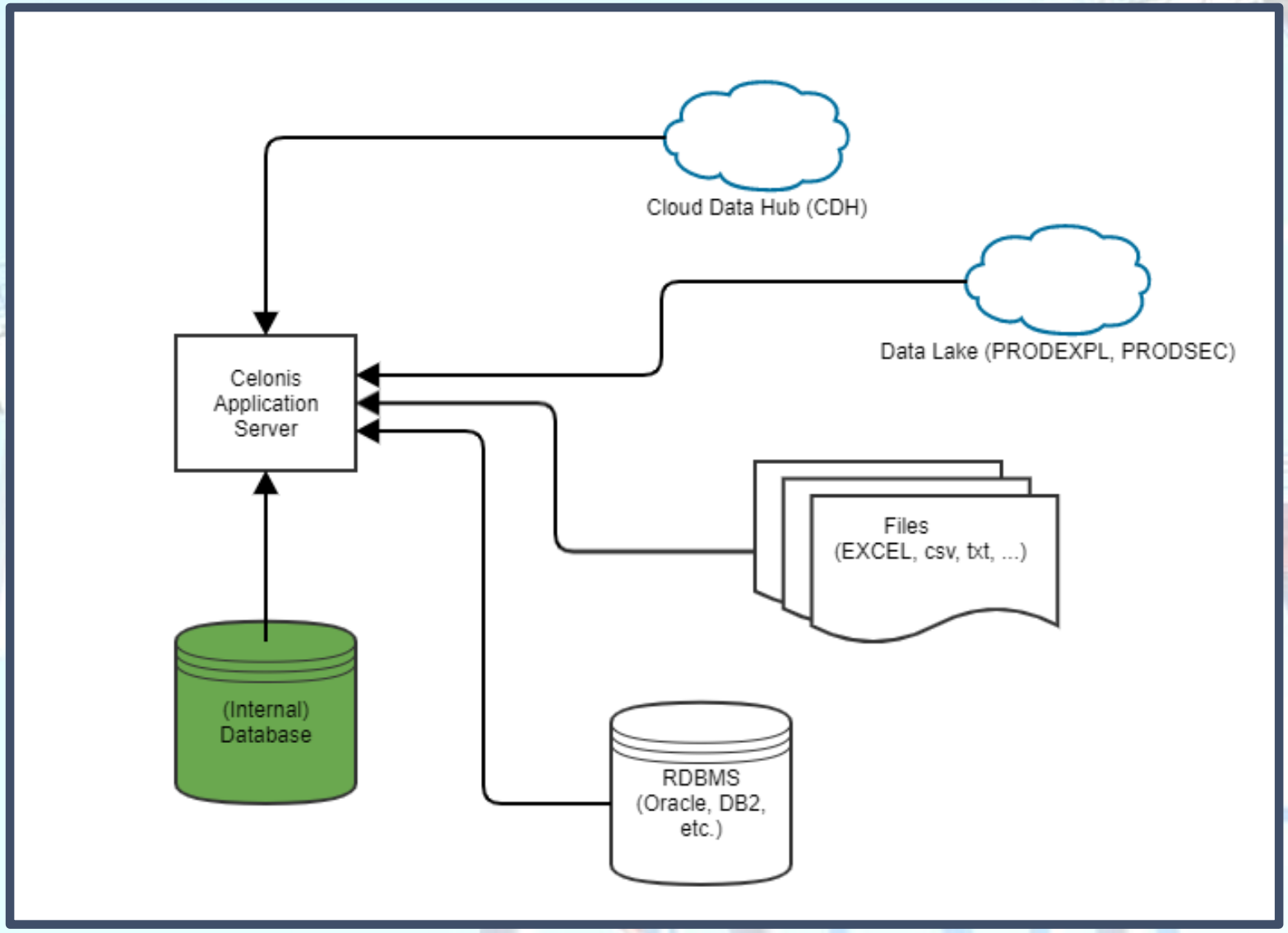


Step 2: Getting started - Analyses



With the complexity of use cases our IT infrastructure became more and more professional…

Step 2: Getting started – IT Architecture



Features:

- On premise architecture (Windows Application Server, several Data Bases)
- 3-tier landscape with PROD, INT and Sandbox
- Connection to application servers, as well as on premise and cloud data lake

Step 3: First Highlights – Use Cases

Navigation Systems

Problem: Many functionalities are not used by the customer, but cause maintenance and operational efforts.
Solution: Process Mining helps to display these functionalities and to reduce development costs.

Vehicle Distribution

Problem: Each vehicle on its way to the customer causes significant costs each day.
Solution: Process Mining makes bottlenecks and problems transparent and can help to reduce logistics times.

Customs

Problem: Missing customs informations cause significant additional costs.
Solution: Process Minining helps to identify the reasons for these problems and to solve them.

Warranty Cases

Problem: So far there is no possibility the analyze the warranty process for different cases.
Solution: With the help of Process Mining we will make it transparent for a large number of users in the markets.

Change Management E2E

Problem: Insufficient transparency across systems and departments of the transfer of vehicle changes from development to production (including purchasing, finance, etc.).
Solution: Analysis and reporting for a very large number of users in all BMW plants and other departments.

Process Improvements in Production & Logistics

Problem: Issues in production are often only identified with some delay and therefore cause significant extra costs.
Solution: Transparency for process improvement projects (process stability, throughput times, stocks) in production and logistics & start of worldwide rollout.

Cost analysis in production

Problem: So far no possibility to analyze the real costs and energy usage per vehicle in production.
Solution: Detailled analysis of the production costs per vehicle & cause analysis of unnecessary additional costs.

Step 3: First Highlights- Data & Facts

More than **850 registered users** on BMW Celonis Process Mining Infrastructure

49 of BMW's 50 data models are in use

More than **10 terrabyte of raw relational data** is handled on the Process Mining Databases

More than **6.4 million process variants** are currently being analyzed within the BMW Process Mining Infrastructure

More than **500 million events** are analyzed on the BMW Celonis Process Mining Infrastructure

More than **30 million cases** are analyzed on the BMW Celonis Process Mining Infrastructure

Between **400 – 600 analytical views** are provided **each day** for the Process Mining Users of BMW

600 unique analyses are currently available for the 49 data models

Step 4: Lessons Learned & Corrections

These success stories don’t mean, that everything went completely smoothly on our way…

We also had to face several lessons learned.

STEP 4: LESSONS LEARNED & CORRECTIONS.

1. Transparency can cause pain and adversities!
⇨ Convincing people can take time…

2. Naming (quantitative) business value for analytics is not always popular and easy!
⇨ However often the best way to prioritize among very different demands…

3. Our Bottom-up approach makes scaling more challenging.
⇨ But Process Mining can't get successful without winning over process experts.

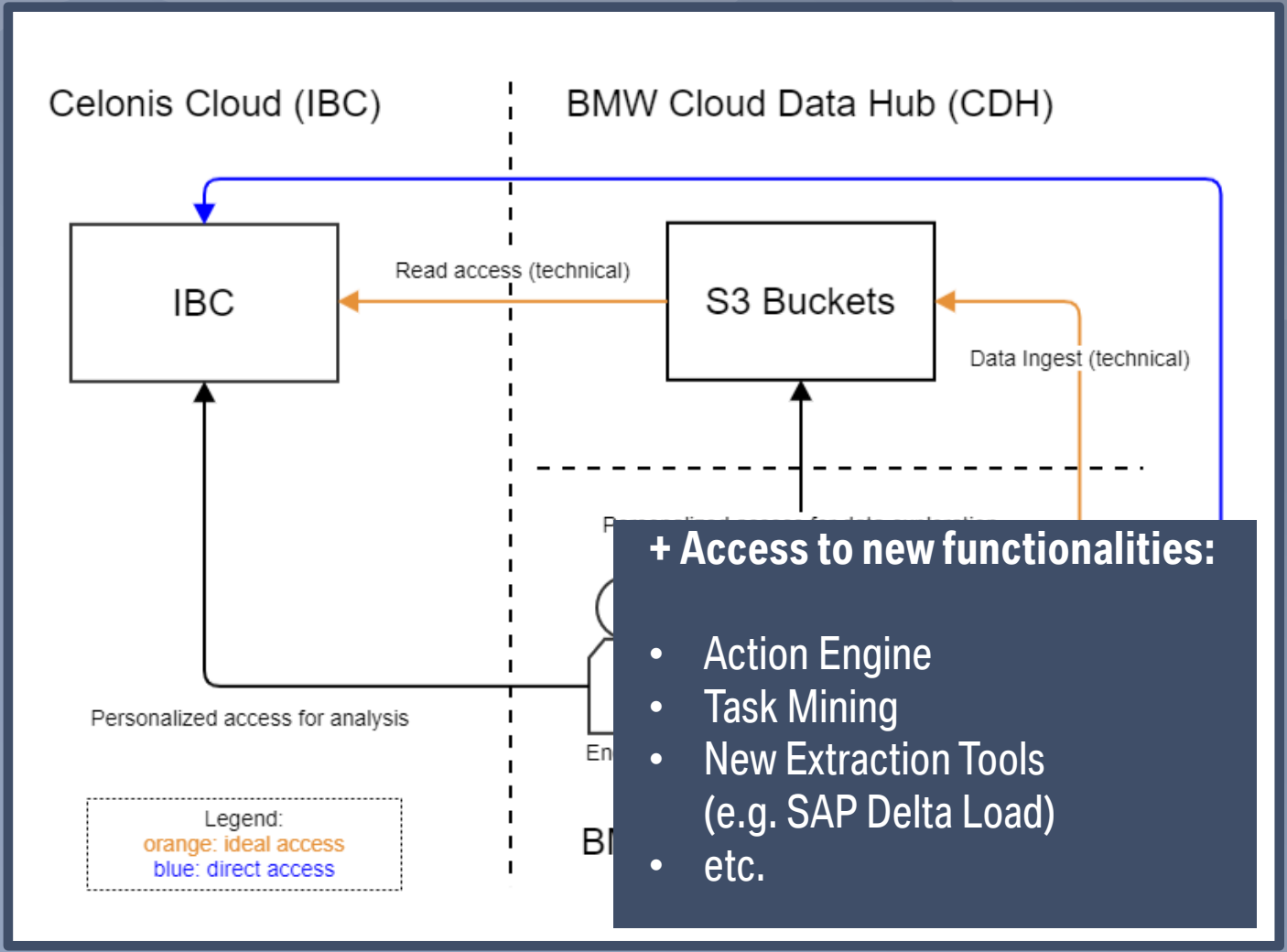
4. Enabling key users takes time and is not always easy.
⇨ It is crucial to build CoCs within the business departments to permanently improve processes.

5. Acquiring and transforming data can take up to 60% or 70% of time at the CoE.
⇨ Optimisations and standardisations in this area are a crucial success factor.

6. One size does not fit all – different business units need different solutions!
⇨ Our CoE need to act agile and adopt our solutions to the business partners.

7. The Process Mining world is fast changing.
⇨ We need to stay open minded and learn new tools and methods every day.

STEP 5: IMPROVING THE RIDE – BETTER SCALABLE IT ARCHITECTURE (IBC).



+ Access to new functionalities:

- Action Engine
- Task Mining
- New Extraction Tools (e.g. SAP Delta Load)
- etc.

Features:

- Cloud architecture (presumably Intelligent Business Cloud - IBC)
- All relevant data will be migrated into the BMW Cloud Data Hub (CDH) as soon as possible.
- In an ideal world the CDH would be the only data source.
  However at least as an intermediate solution some direct connections to the data sources will still be necessary (e.g. near real time use cases/low latency, snapshot data for evaluations).

STEP 6: OUTLOOK.

THANK YOU!

#enjoyIT

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