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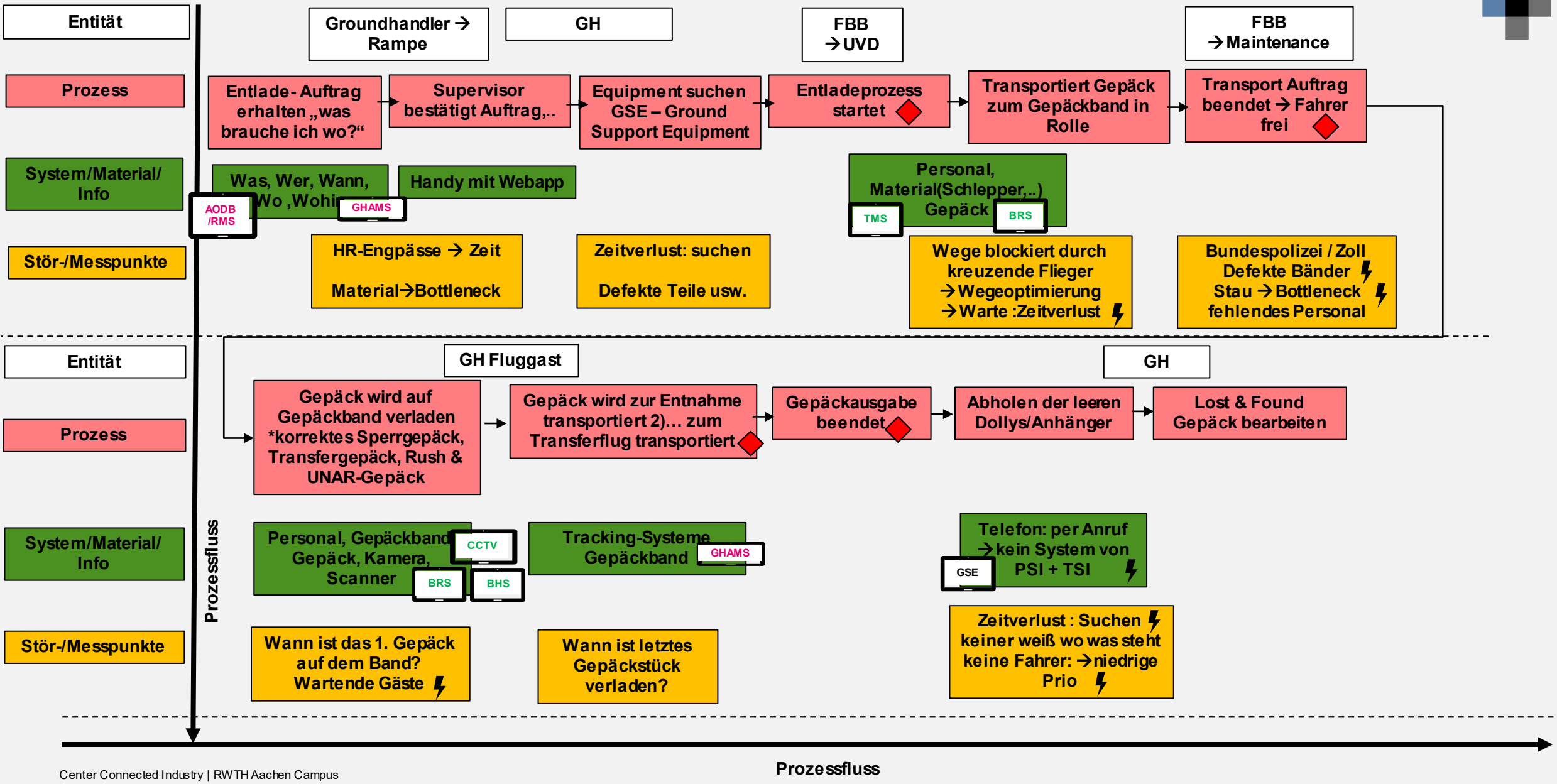
T Systems

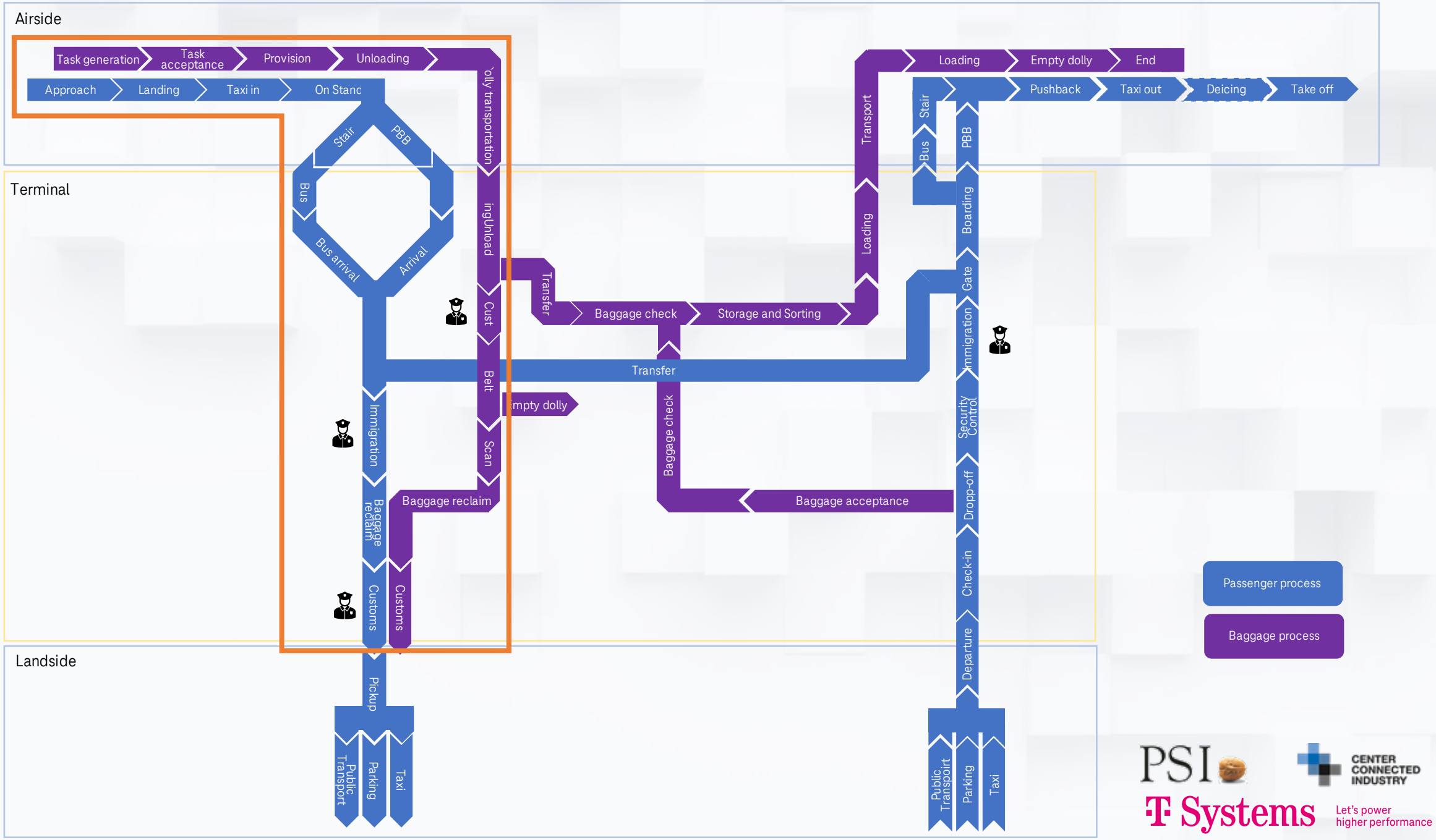
Digital Twin Airport [1742]

Pitchdeck

Berlin, 7. - 8. September 2023

Workshop: Procewss Overview Flowchart





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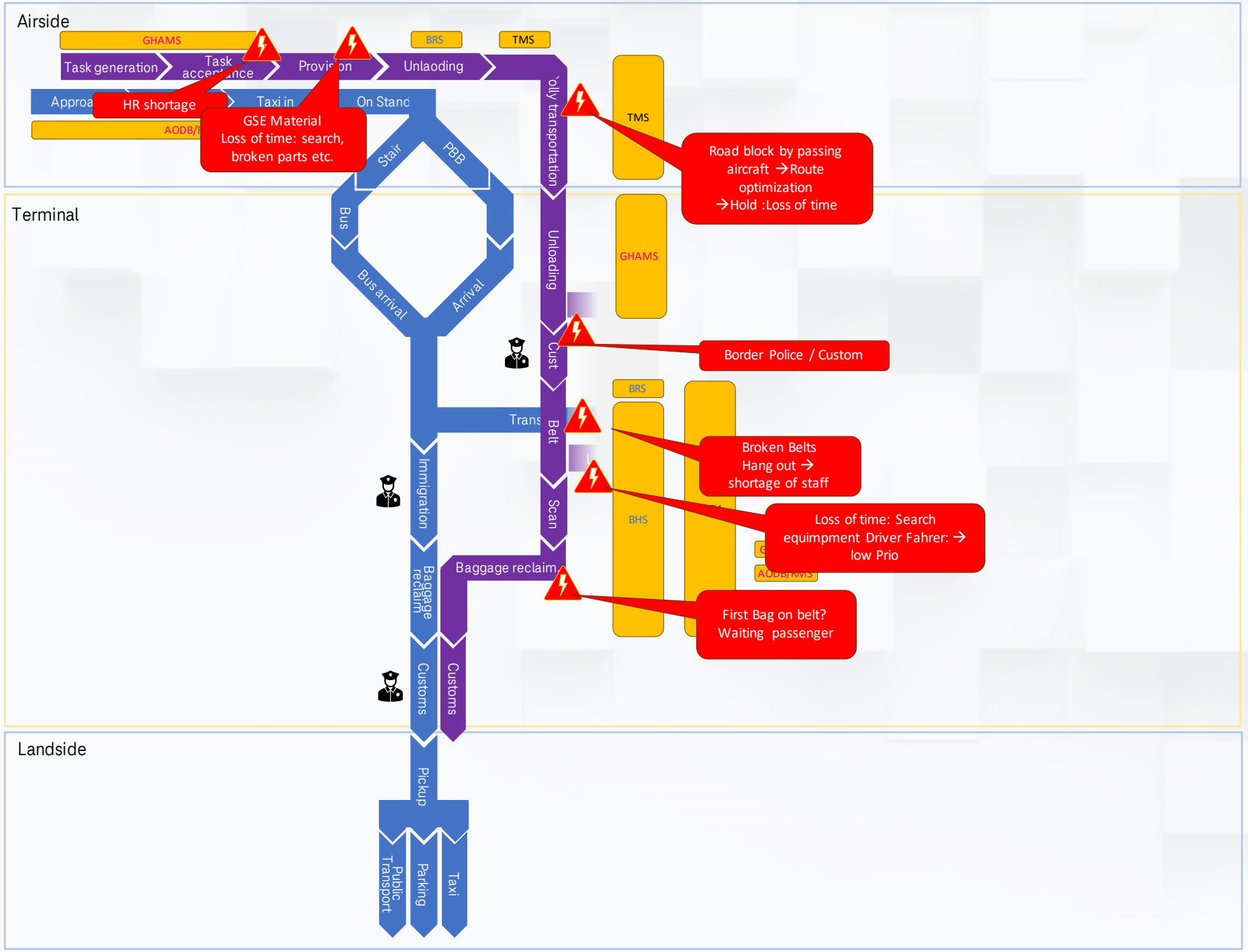
Disruption/Measurepoints on Baggage Arrival Process



Passenger process

Baggage process

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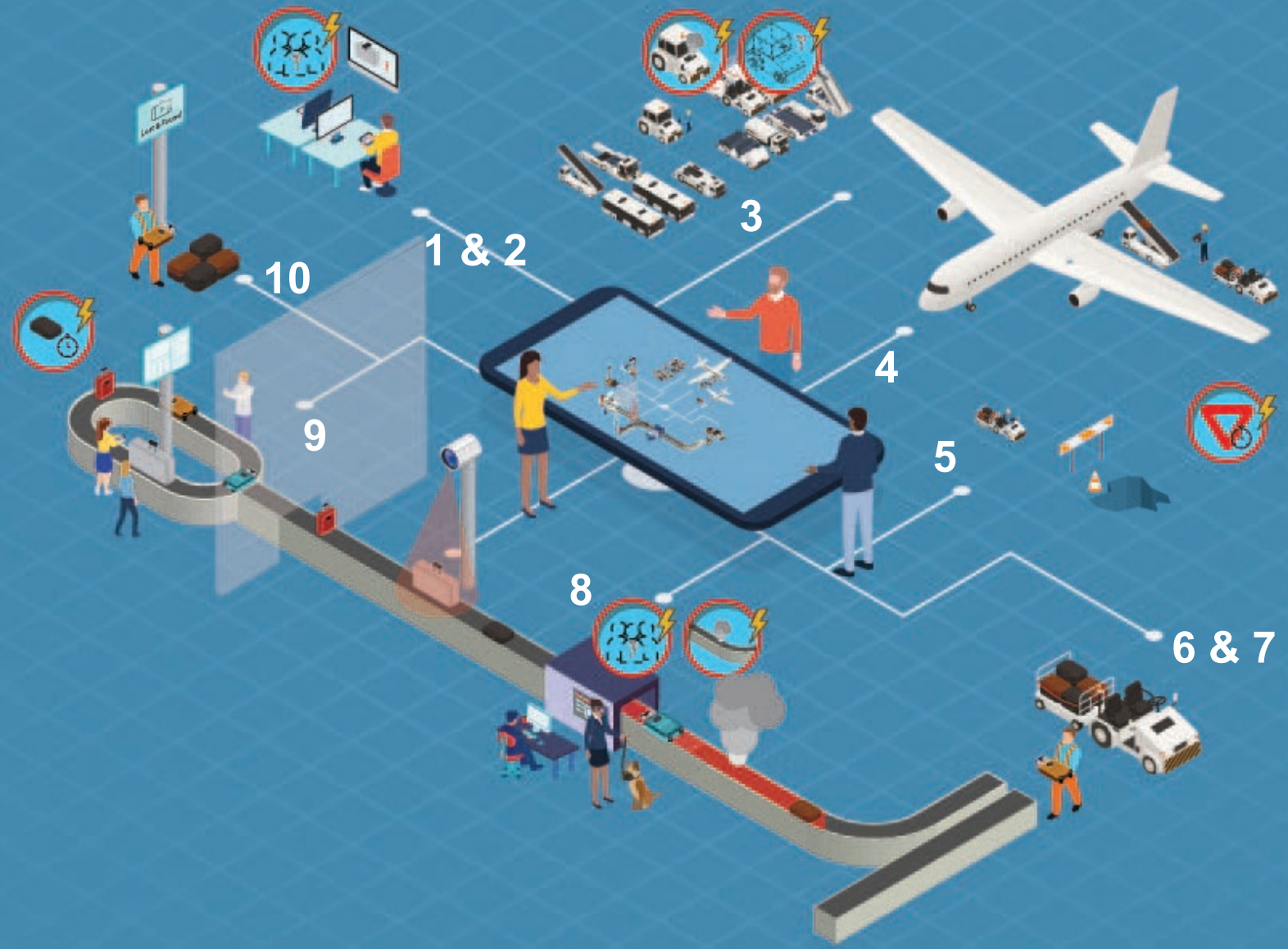
Process diagram with disruption/measuring points

1. Unloading order received "what do I need where?"
2. Operator confirms order
3. Search Equipment GSE – Ground Support Equipment
4. Unloading process started
5. Transports baggage to the baggage carousel
6. Transport order terminated, driver free
7. Baggage is loaded onto baggage carousel (bulky baggage, transfer baggage, Rush & UNAR baggage)
8. Baggage will be transported for reclaim / transfer flight
9. Baggage reclaim completed
10. Manage Lost & Found Baggage



Process: Loading the baggage onto baggage carousel

Problem

- Defects are corrected instead of avoided, as there is no data-driven predictive maintenance
- The failure of conveyor belts leads to unplanned downtimes, costs and lost time (reloading baggage, waiting passengers)

Stakeholder

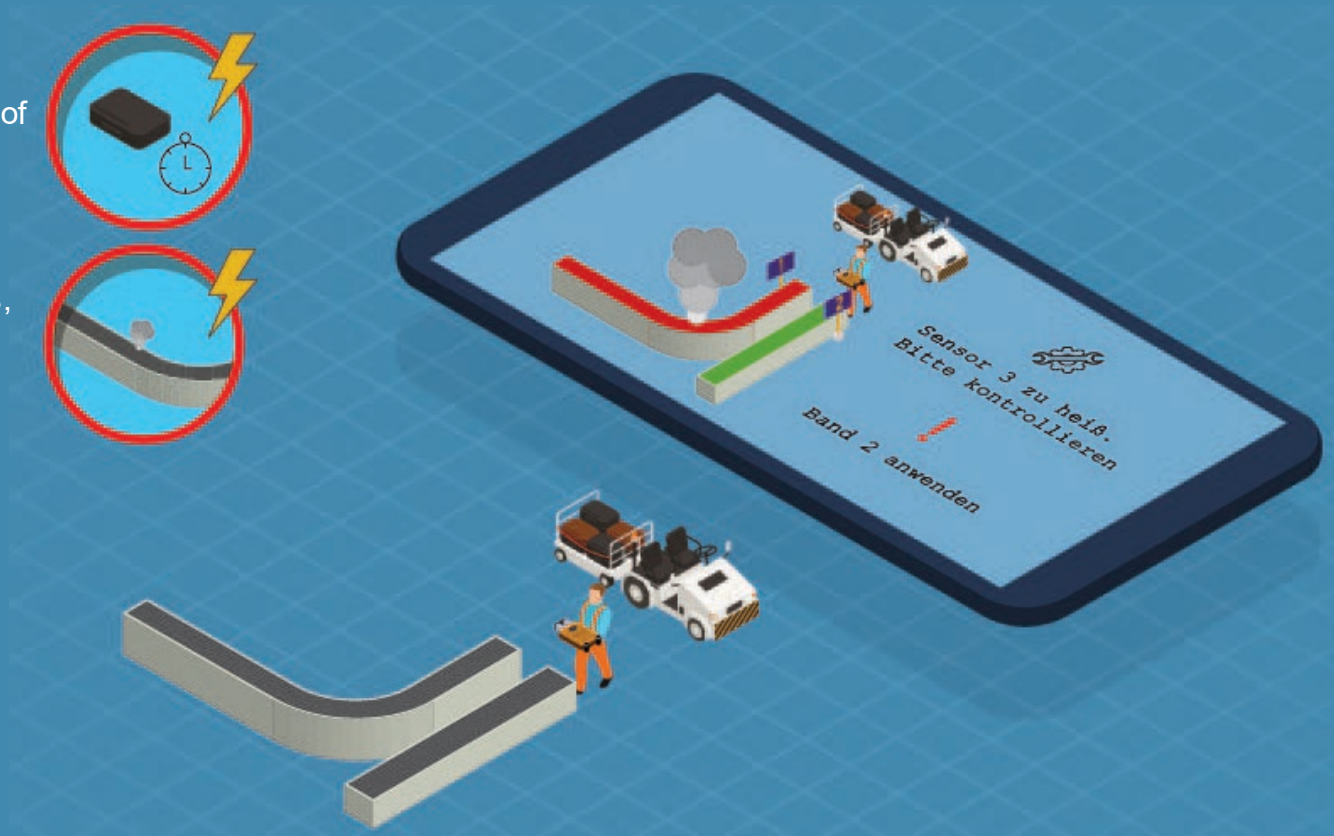
FBB → Maintenance, Groundhandler, Passengers

Existing systems & information

CCTV, BRS, BHS

Resources

Ground service equipment (GSE), cargo, personnel, additional data sources (sensors, etc.)



Predictive Maintenance & Transport Management

- Digital Twin of GSE (machines & systems) as well as transport goods etc.
- Real-time data of the system such as operating time, speed, vibration, temperature, etc.
- Defects are predicted by simulation and alternatives are planned
- Utilization and load of the systems can be simulated
- be able to plan maintenance and repairs in a more realistic way based on environmental influences (e.g. repair during the night shift to avoid peak hours

Process: Transporting baggage to the terminal

Problem

- Disruption such as waiting times (crossing aircraft) or construction sites are not taken into account in route planning

Stakeholder

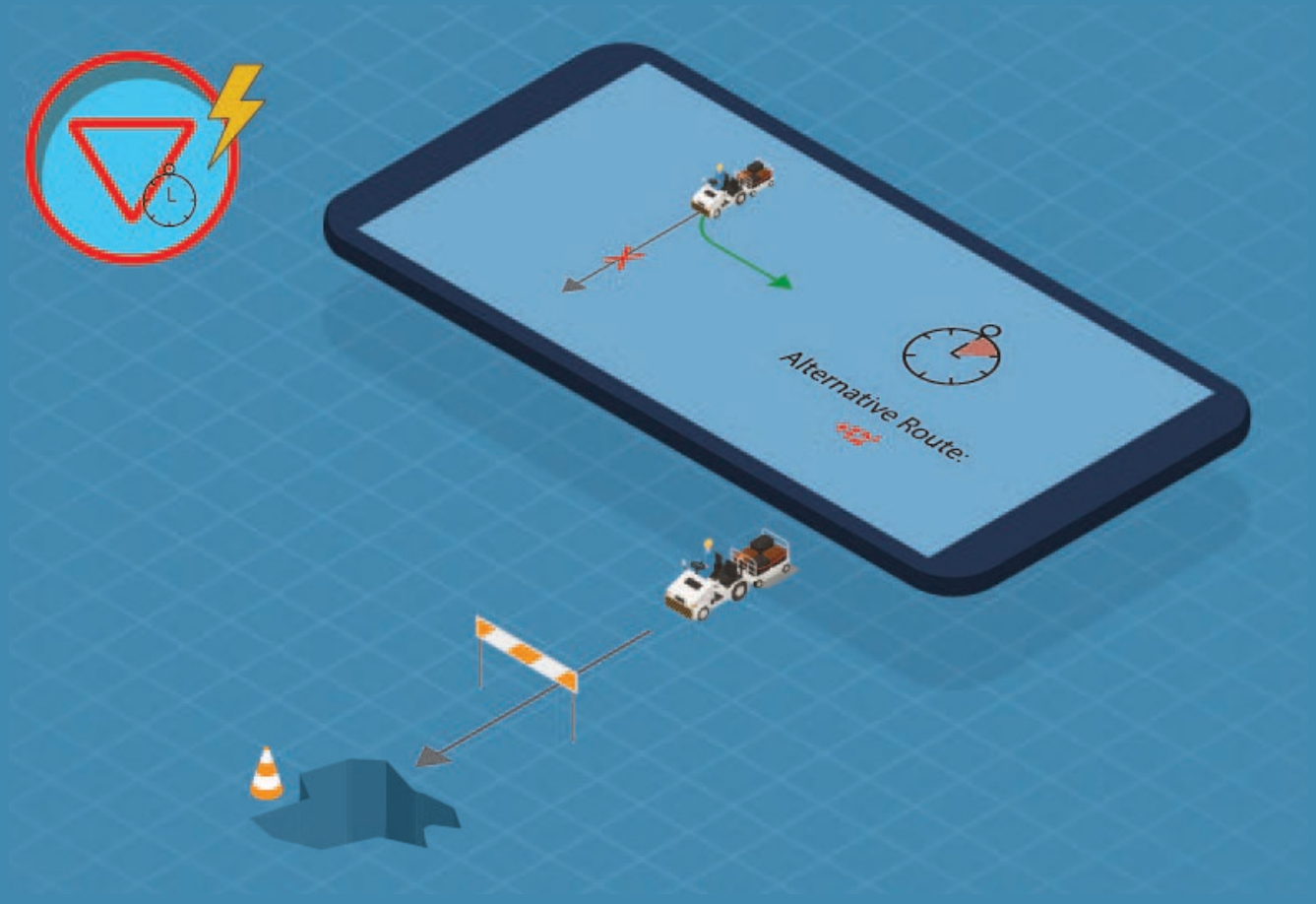
Groundhandler, Airline, FBB

Existing systems & information

TMS, BRS

Ressourcen

Ground service equipment (GSE), cargo, personnel, additional data sources (sensors, etc.)



Predictive Route Planning

- Integration of real-time data sources such as sensors, cameras or movement data of the pool vehicles in order to anticipate potential disruptions such as construction sites, traffic jams, etc.
- Alternative routes are planned and displayed to minimize time losses
- Parameters such as route comparisons, critical route sections (aircraft roads), other vehicles, construction sites, etc. are taken into account

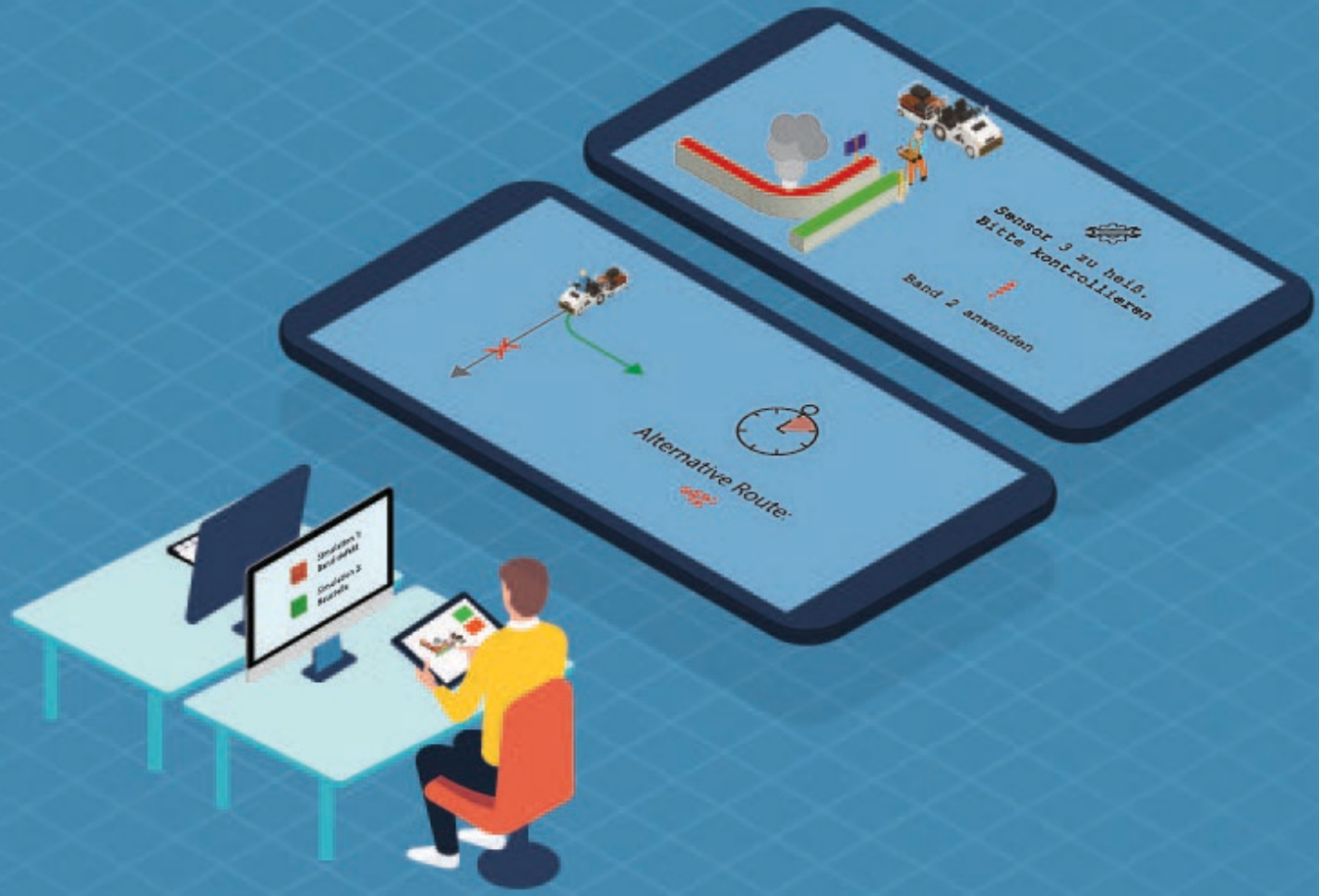
Digital Twin as Process Cockpit for Simulation & Automation

The process cockpit of the Digital Twin enables the simulation of various scenarios. On the basis of the simulations, the influences on the respective business process can be recognized.

In scenario 1, for example, it is possible to simulate the influence of a failure of conveyor systems on the planned time of passenger handling

Alternatively, it can be simulated when the conveyor has to be serviced or fails under load "X"

In scenario 2, for example, it is also possible to simulate which additional times (unplanned = delay) must be expected if luggage transport through construction sites etc. has to take detours.



Dedicated process as PoC with FBB

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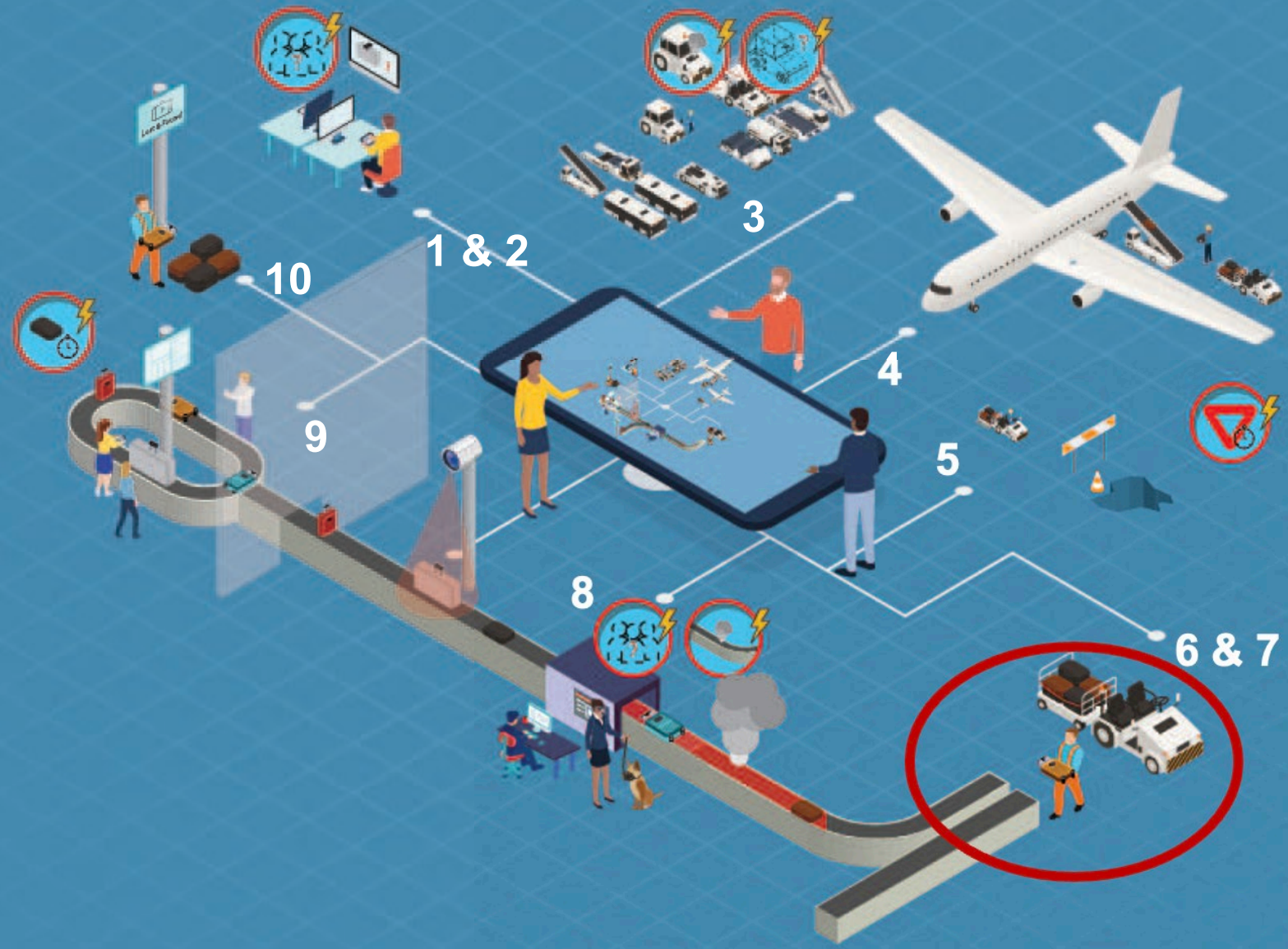


Benefits

- Transparency of processes
- Simulate disruption
- Reliable planning

Short-term

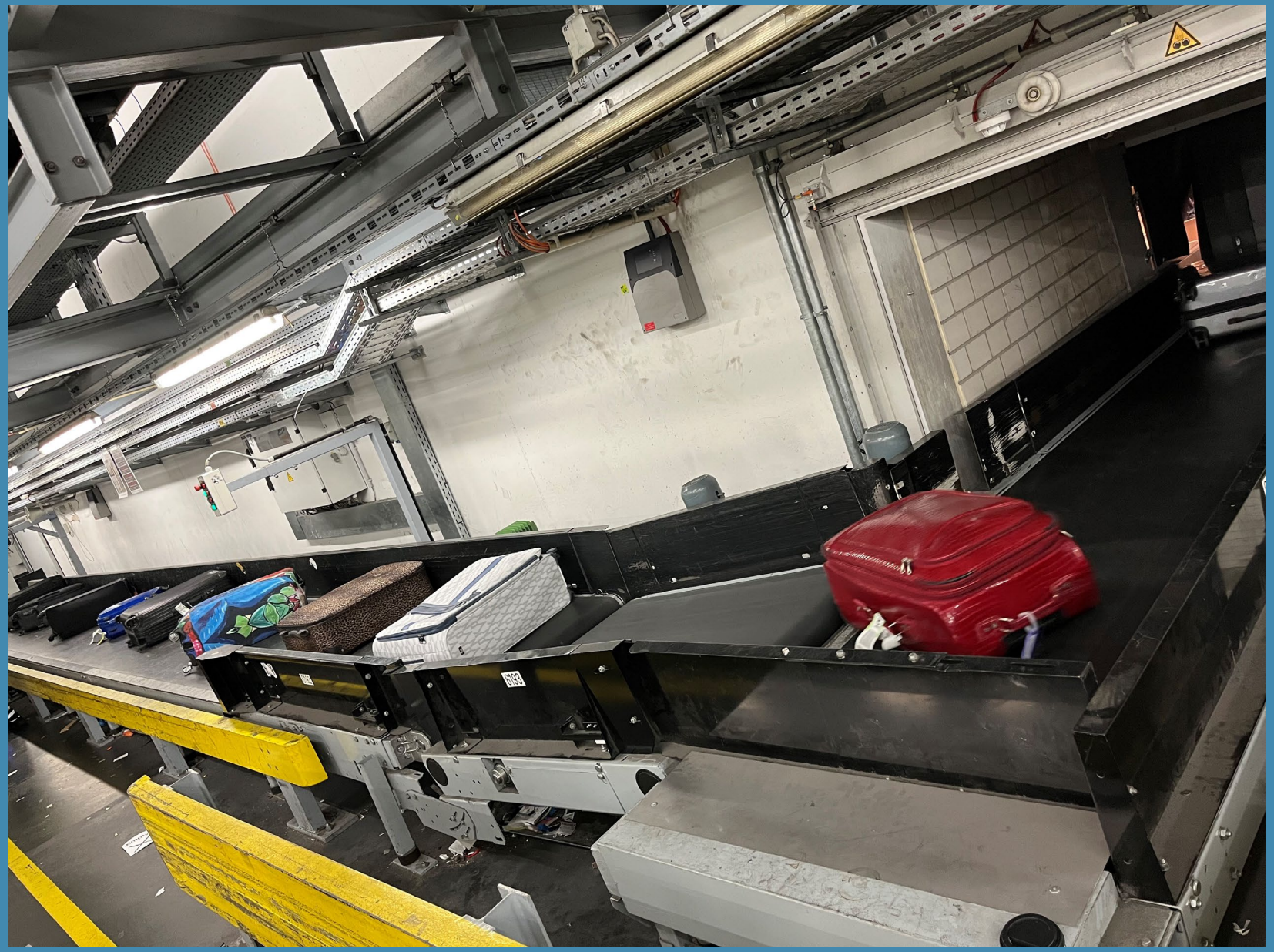
- Reliable figures, data, facts
- Improve maintenance planning
- Passenger satisfaction

Mid-term

- Connect to cleaning services for the facilities
- Reduction of operating and investment costs
- Connect to public transport and Taxi services

Long-term


AKH
IBERIA
CARGO



Thank you for your attention!

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