A completely new platform to harmonize Lufthansa Group's network planning

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Speakers introduction

Fabio Ghielmetti is the **Head of Business Development & Analytics Network** at Lufthansa Group. He has been leading various initiatives around software solutions for strategic network planning, optimization and scheduling. In previous roles, he gained experience in Network Management and strategy, mainly at Swiss International Air Lines.

Susanne Schwanz is **Product Owner at Lufthansa Systems** responsible for the development of a new network planning solution for the Lufthansa Group in an agile project set-up. Over the past 12 years she has supported various airlines worldwide with extensive knowledge in Network Planning and Forecast Modelling.

Agenda

Challenges of Lufthansa Group Network Planning (pre-Corona)

Design Sprint – the first step towards a solution

Identification and definition of new module developments

The new harmonized process

Development method

Questions & Answers

The aim of the Lufthansa Group airlines was to manage market planning scenarios more efficiently

Network Strategy

Fleet Development

- Capacity development
- Economical analysis of fleet orders
- Long-term fleet requirements
- Wet Lease management

Market Development

- Long-term market development and analysis
- Competitor monitoring

Market Planning

Network Development

- Route and destination planning
- Network topics that focus on frequencies, time-of-day patterns, allocation of aircraft types etc.
- Medium-term network design
- Seasonally competitive and commercially optimized route planning
- Alignment between hubs

Scheduling & Slot Mgmt

Scheduling

- Aircraft rotation planning
- Monitoring of the operational feasibility (crew, aircraft, maintenance and ground times)
- Short-term alignment of capacities to short-term market variations

Slot Management

- Securing landing & takeoff rights (“slots”) for all planned flights at all slot constrained airports

long-term → short-term

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Network Planning is an essential part of the Airline's Strategy and the integration of all Lufthansa Hub Airlines plays a critical role

Pain

Extensive interpretation and limited comparability of business cases

› Each airline had their own evaluation logic and process

Non-harmonized network planning across Lufthansa Group airlines (LH, LX, OS, SN, ...) and challenging collaboration

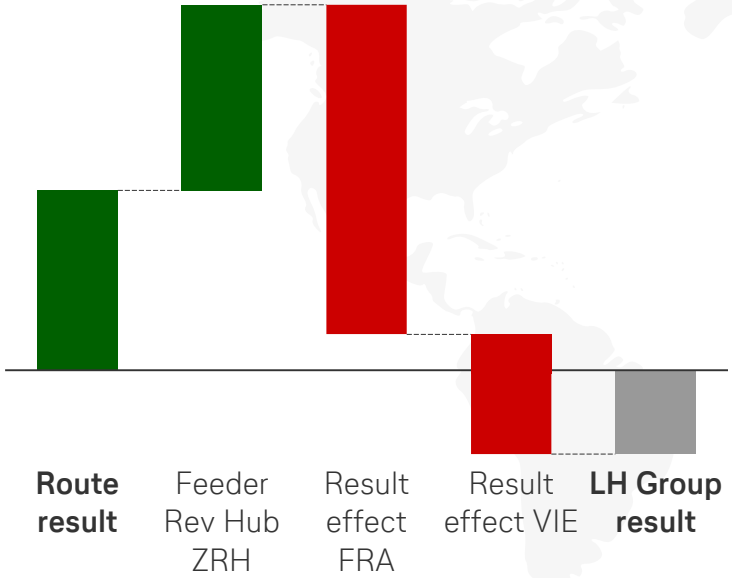
› Airlines were using different KPIs and targets

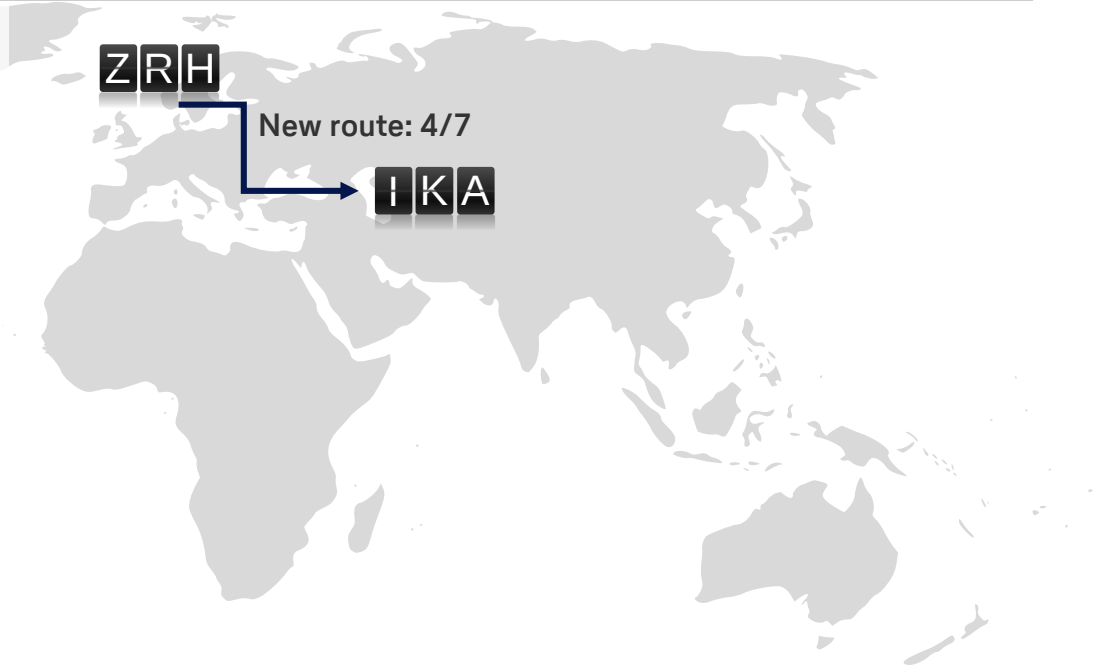
Lack of insight of the impact of schedule changes to other Hubs

› Evaluations did not include effects (e.g. cannibalization) of a project in other hubs

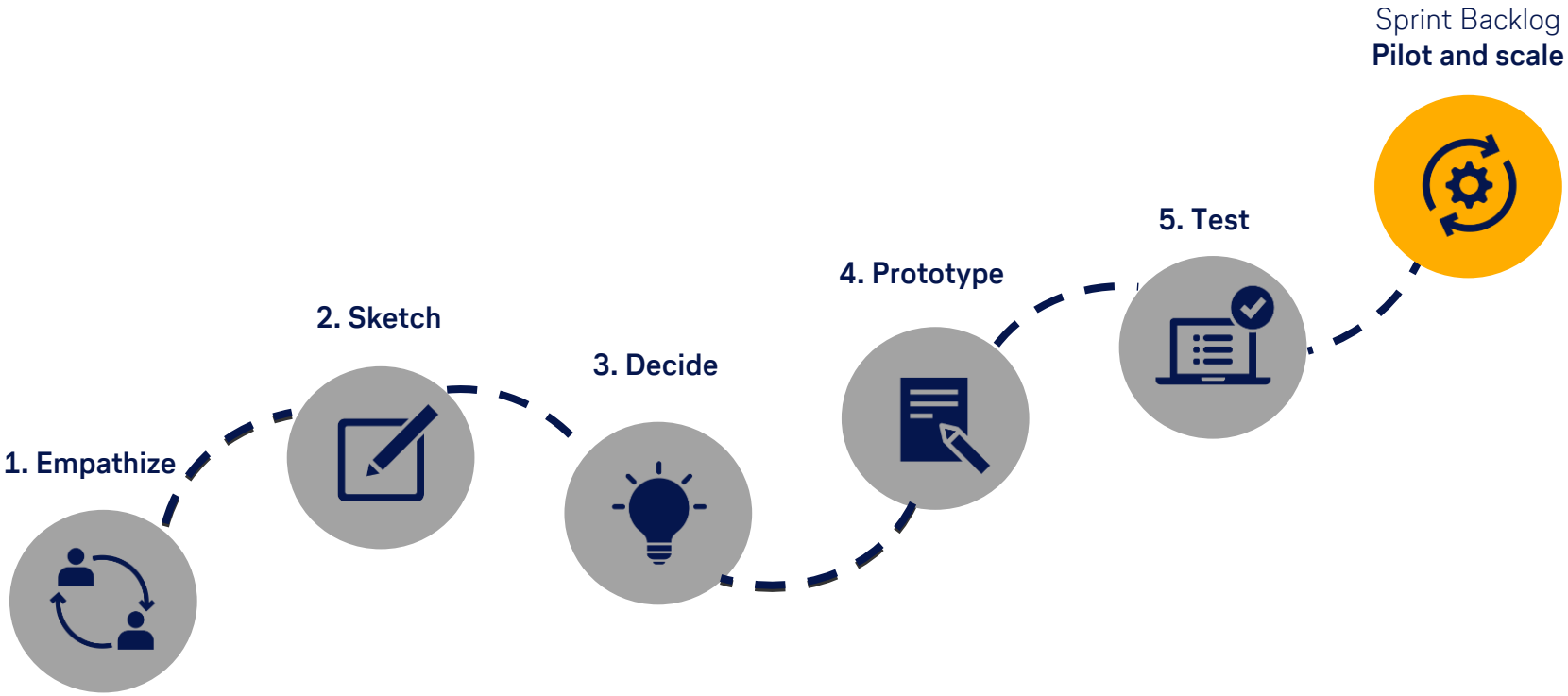
Multi hub system: A new route with a positive result can have an overall negative effect

Example: Business case for a new route





During a Design Sprint where representatives from all Hub Airline participated a first Prototype has been created



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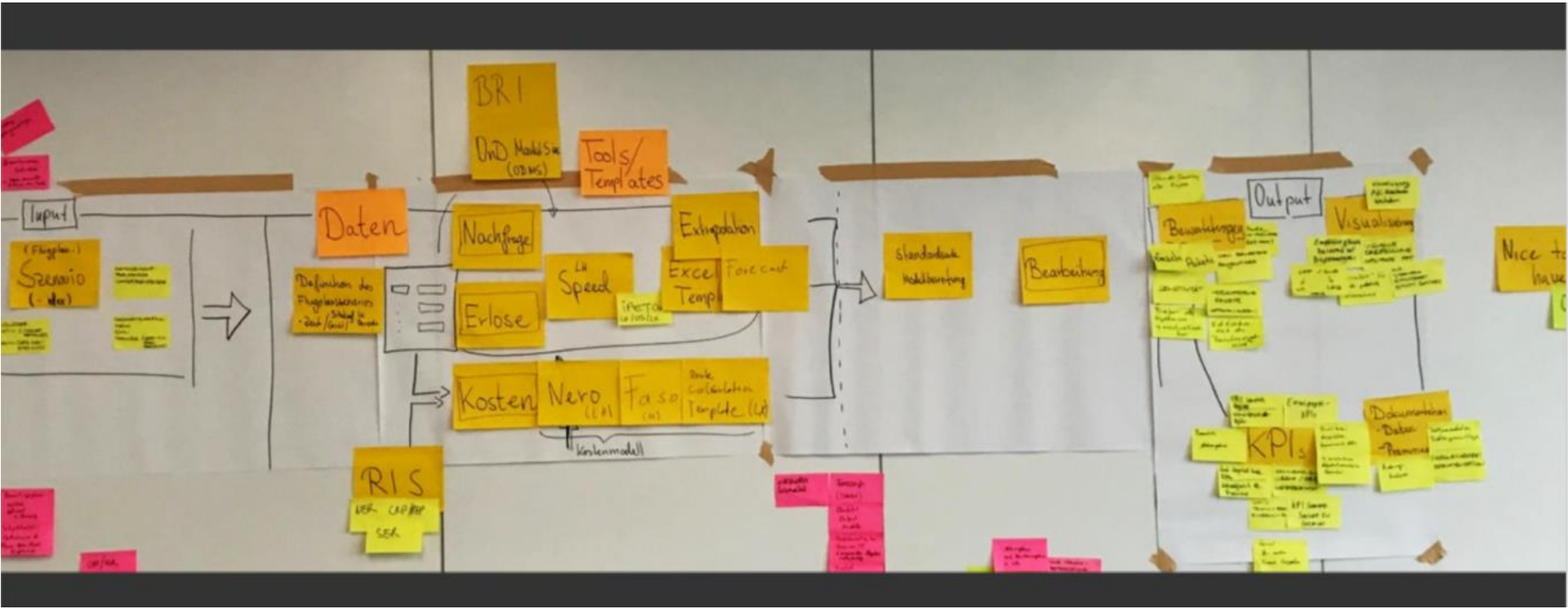
Empathize and understand the current User Experience



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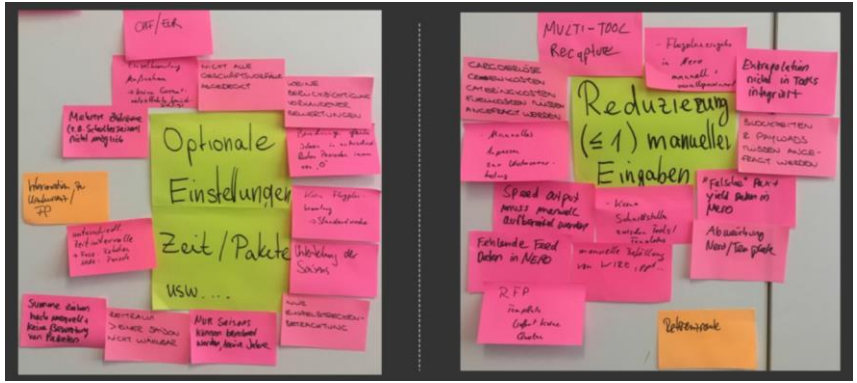
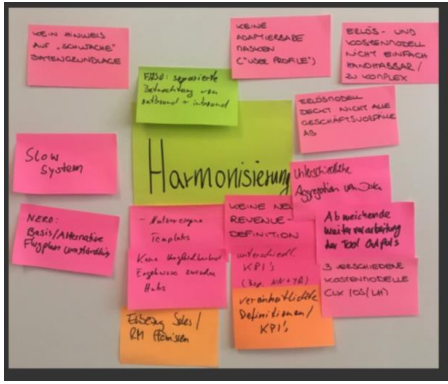
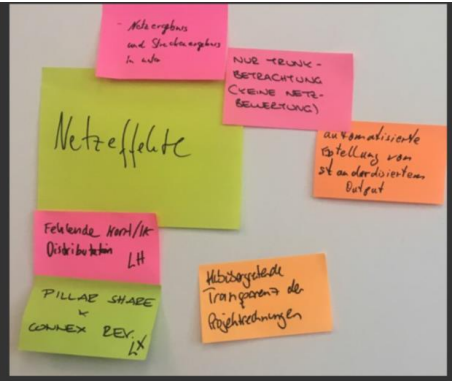
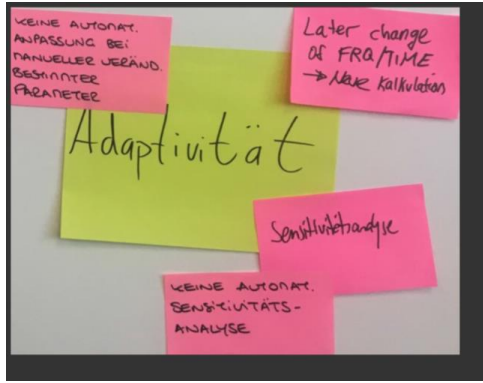
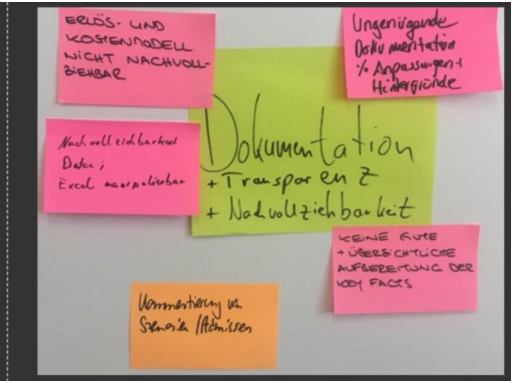
Sketch and decide on Jobs to be done & User Stories











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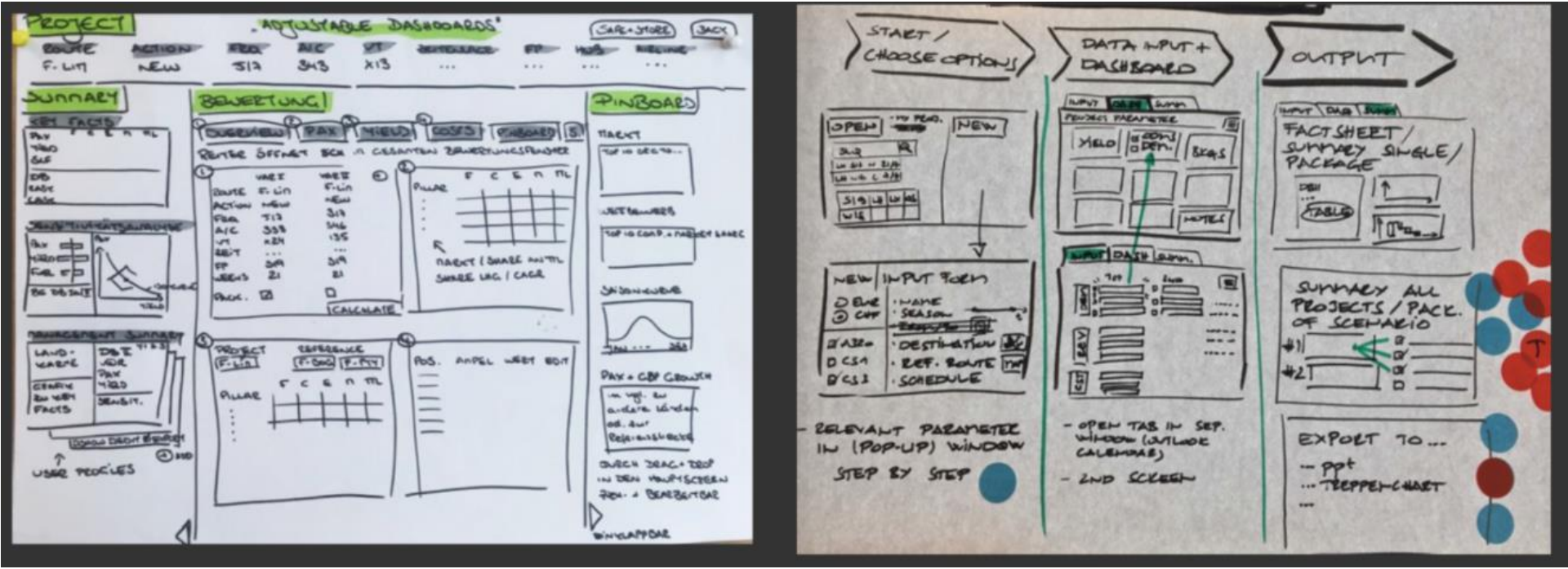
Create a Prototype on paper and test with the users



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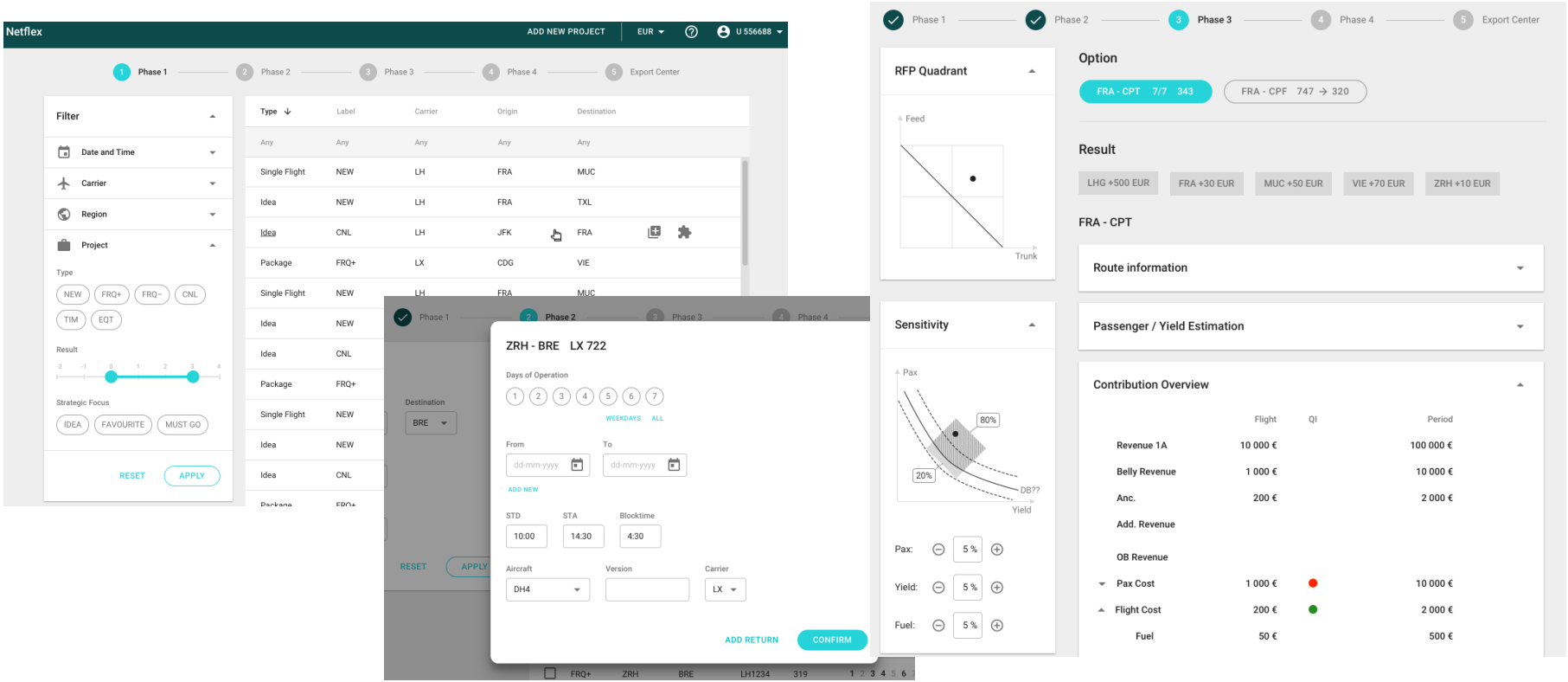
Generate Mock-up for further testing and as a basis for MVP development



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Three areas have been identified to address all challenges and build a user-friendly solution

Pain

Extensive interpretation and limited comparability of business cases

Non-harmonized network planning across Lufthansa Group airlines (LH, LX, OS, SN, ...) and challenging collaboration

Lack of insight of the impact of schedule changes to other Hubs

Solution

Automated preparation of market data

- Delta market model approach
- Includes work steps that are otherwise performed outside the tool

New user interface design

- Easy and guided workflow
- Store, retrieve, share scenario evaluations
- Standardized management reporting

BI-Reporting

- Enables flexible reporting
- Performs more detailed data analysis
- Reports can be shared with colleagues

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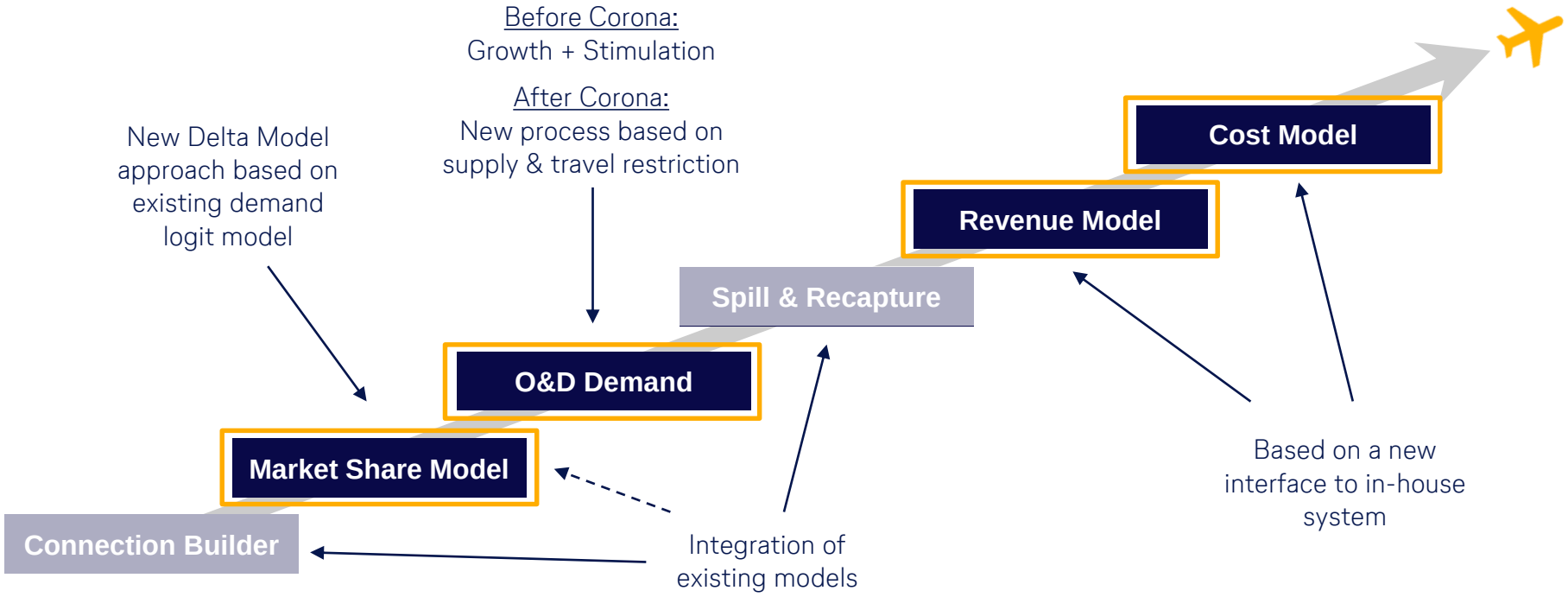
New Models and Data Interfaces have been implemented for new solution while partly existing modules could be reused



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The new Delta Model helps to reduce the effort of interpretation of the evaluation results and business case preparation

Δ Model = **Base** + **Scenario**

As Is
Historic Market Shares
S19

+

Δ
Forecasted Market Share
S21 minus S19

As Is
Historic Market Sizes
S19

+ **Growth** + **Stimulation**

Future
Planning Period
S21

Scenario
Evaluation
Δ to Base

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To make it more concrete – an exemplary illustration

As-is historical data summer 2019

Route to be evaluated

FRA - BKK

Market shares:

- TG 50%
- LH 30%
- EK 15%
- QR 5%

use to train the model (calibration)

Apply model to su2019 and su2021

Delta calculation

	su2019	su2021	Δ
TG	58%	55%	- 3%
LH	32%	34%	+ 2%
EK	5%	4%	- 1%
QR	5%	7%	+ 2%

Forecasted market share for su2020

	Hist. data 2019	+ Δ	= forec. Base
TG	50%	- 3%	47%
LH	30%	+ 2%	32%
EK	15%	- 1%	14%
QR	5%	+ 2%	7%

NetLine/Ne(XX)t

Simplified Calculation

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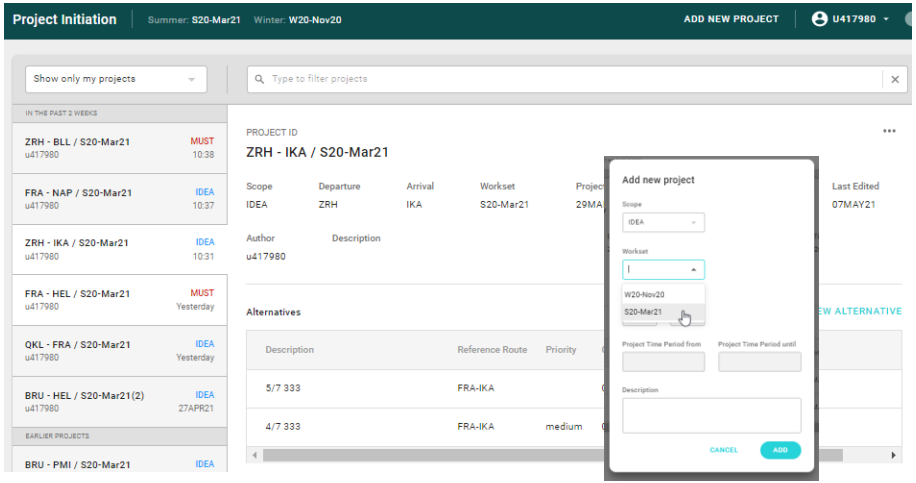
The new interface supports a common workflow to ease and harmonize the Business Case generation of all Lufthansa Group Airline‘s

1.

Business Case Initiation

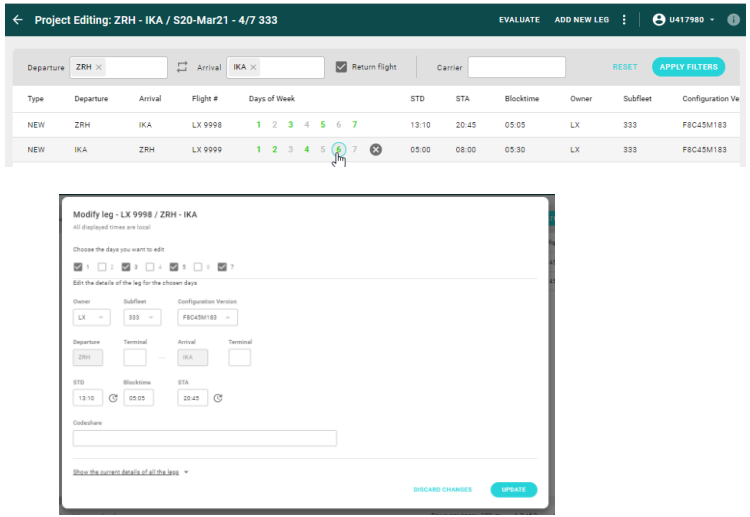
Create & manage projects



2.

Business Case Editing

Create & edit schedule scenarios



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The reporting on the evaluation results make the impact of schedule changes to other Hubs transparent

3.

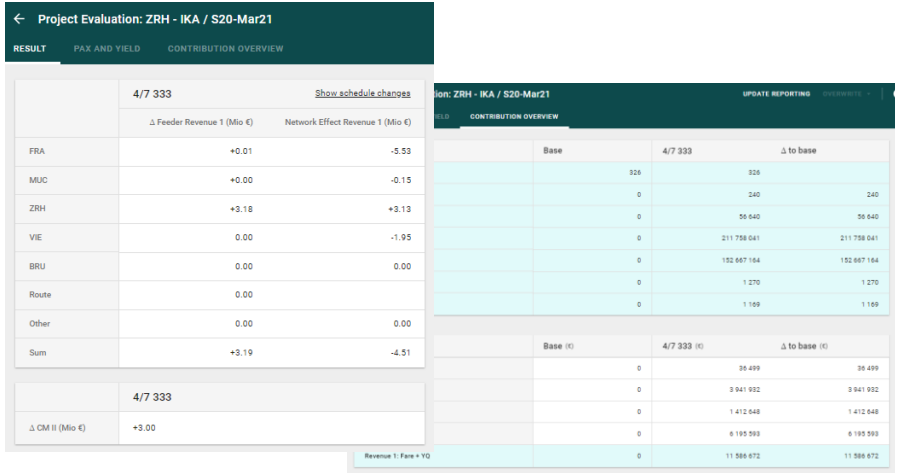
Business Case Evaluation

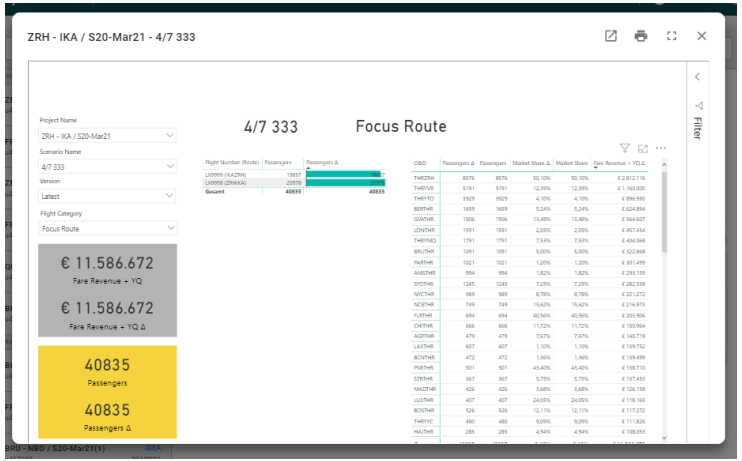
Evaluate and adjust the results

4.

Reporting

Analyze the results in detail





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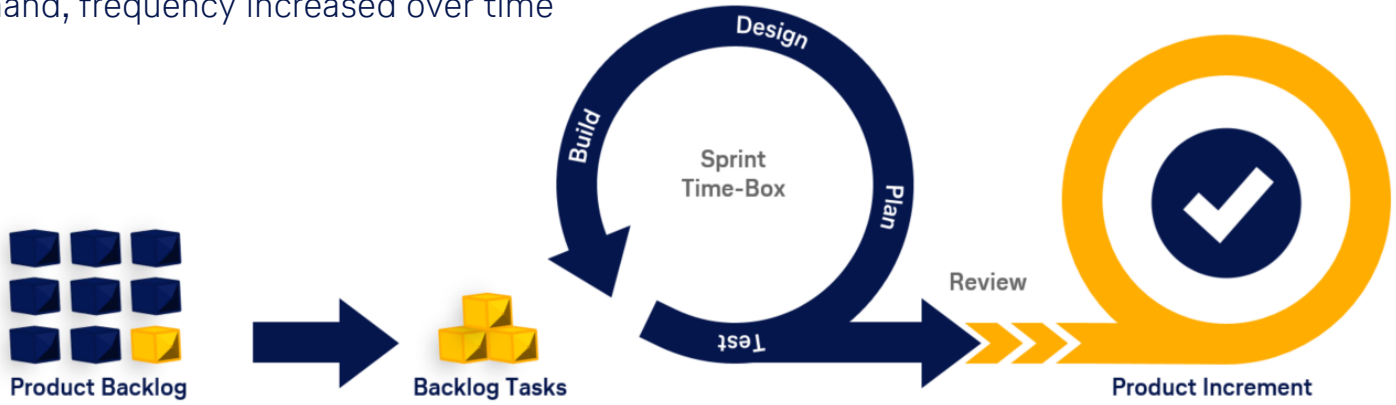
NetLine/Ne(XX)t has been developed in an agile project set-up and is successively developed further since than

The set-up

- Agile set-up with elements of scrum
- 2 weeks sprint
- Daily stand-ups
- Bi-weekly Planning, Refinement, Review sessions
- Retrospectives on demand, frequency increased over time



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Continuous questioning of the way of working led to improvements over time

Lessons learned

- When defining a Minimum Viable Product keep it really small
- Early integrate the different modules
- Act as one virtual team also when working on different modules, e.g. by a joint daily stand-ups
- Joint refinement session with developers and customer are very beneficial
- Start early to measure the teams velocity to enable a reliable forecasting
- Celebrating milestone keeps the spirit up
- …

Did we reach our aims? And what is the Roadmap ahead?

Gain

- Unification of network planning across all Hub airlines
- Faster and more convenient evaluation of network planning scenarios
- Fundamental starting point for new technologies and scalability in network planning

Next steps

- Onboarding of further Hub airlines
- Continuous development based on user feedback
- Further improve technology set-up to increase performance and cost efficiency

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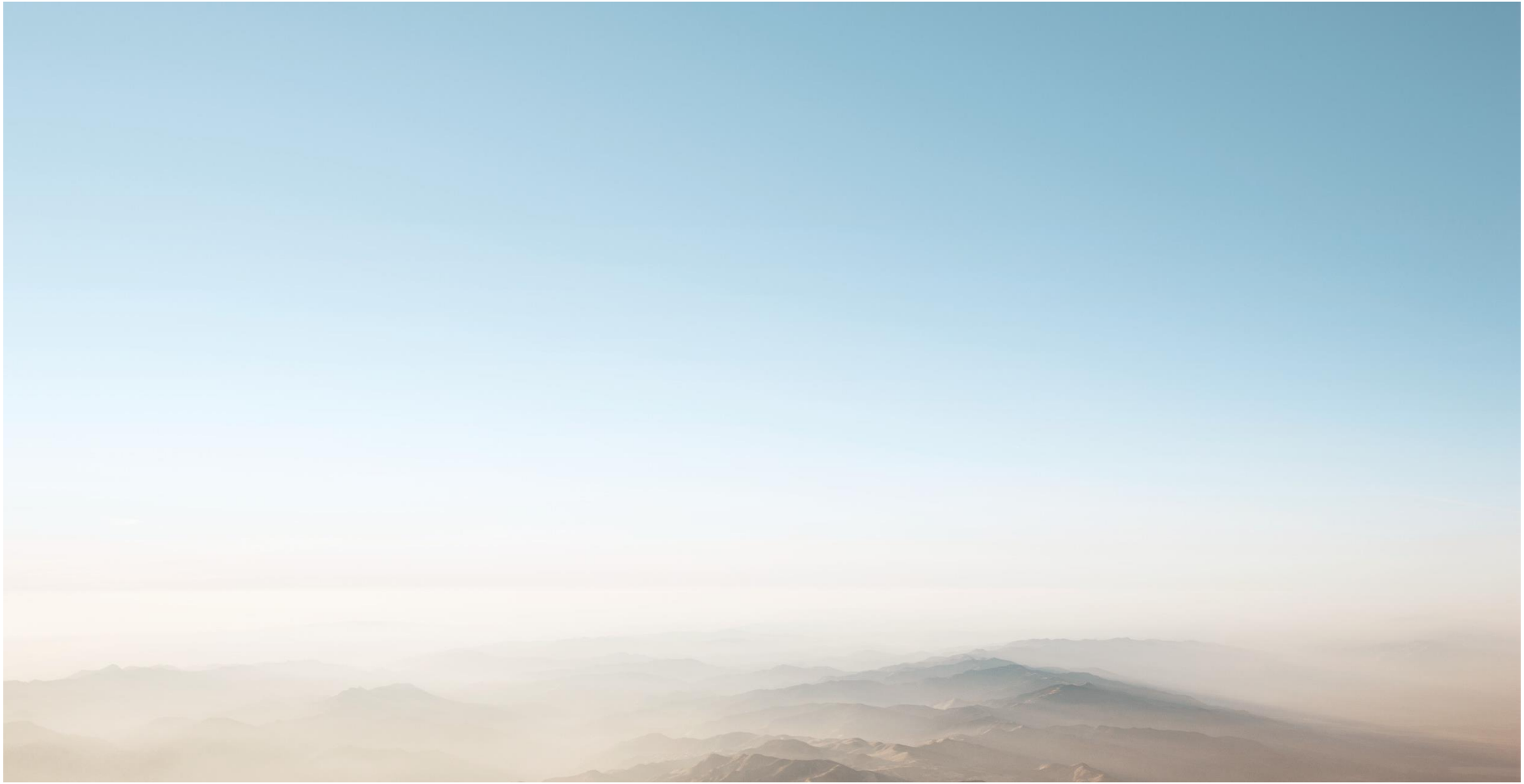

Q&A

Fabio Ghielmetti & Susanne Schwanz

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Thank you
for your attention