

The journey from scenarios to roadmaps at Voith

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Stuttgart, Feb. 14th, 2019

The journey from scenarios to roadmaps at Voith.

Agenda.

VOITH

1. **Voith**
2. Project Target and Organization
3. Scenario-Analysis
4. Technology-Roadmap
5. Review and Outlook

1. Voith.

Four Group Divisions: A well positioned company.

VOITH

Voith Group



Digital Ventures

Solutions for the internet of things: networking and digitalization



Hydro

Full-line supplier for hydro power plant equipment



Paper

Partner and pioneer in the paper industry



Turbo

Intelligent drive systems and solutions

1. Voith.

Voith in figures.

VOITH

In more than

countries

60

employees

19 535

Energy

Oil & Gas

Paper

Raw Materials

Transport & automotive

markets

5

Sales

€4.2 Billion

Family-owned since

1867

R&D ratio

5.4 %

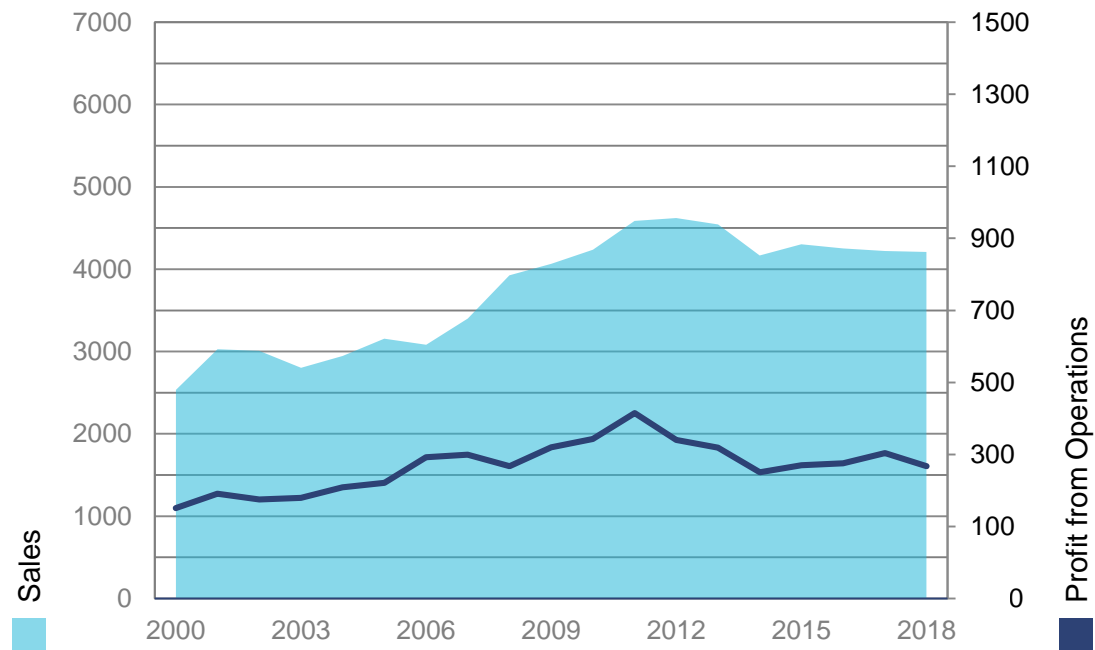
As of: 2017/18

1. Voith.

Dynamic growth and solid profits over decades.

VOITH

in € millions



- Positive results even in times of recession

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2. Project Organization and Target.

VOITH

Voith can develop an advantageous competitive position.

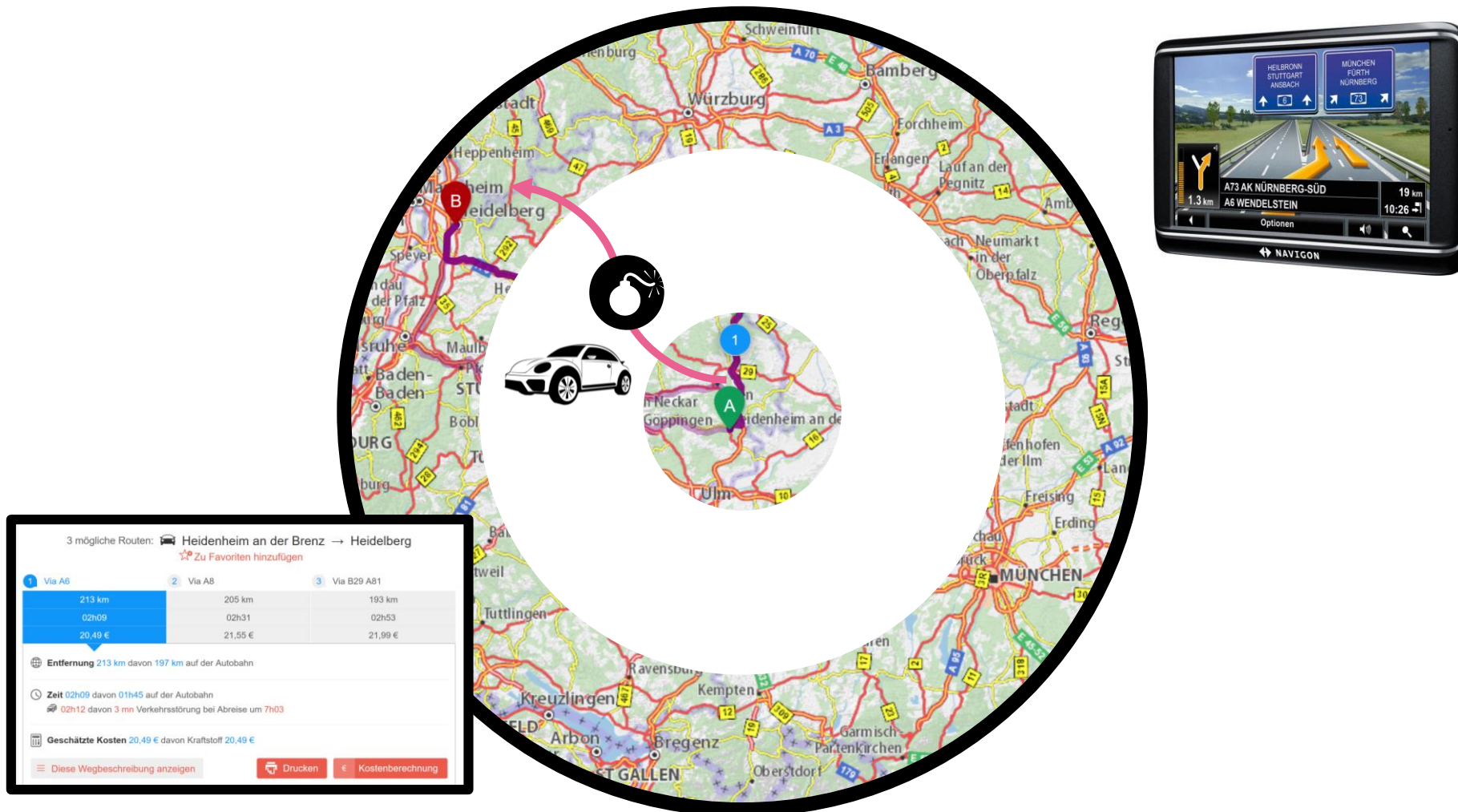
“Voith intends to establish a consistent, systematic & sustainable foresight and roadmapping process in all divisions in order to identify and understand future challenges and opportunities for product development.”

- **Scenario-based Roadmapping**
 - Use of state-of-the-art methods
 - Use of networks and targeted integration of experts
- **Transformation Management**
 - Integration and coaching of Voith employees in order to steady the process



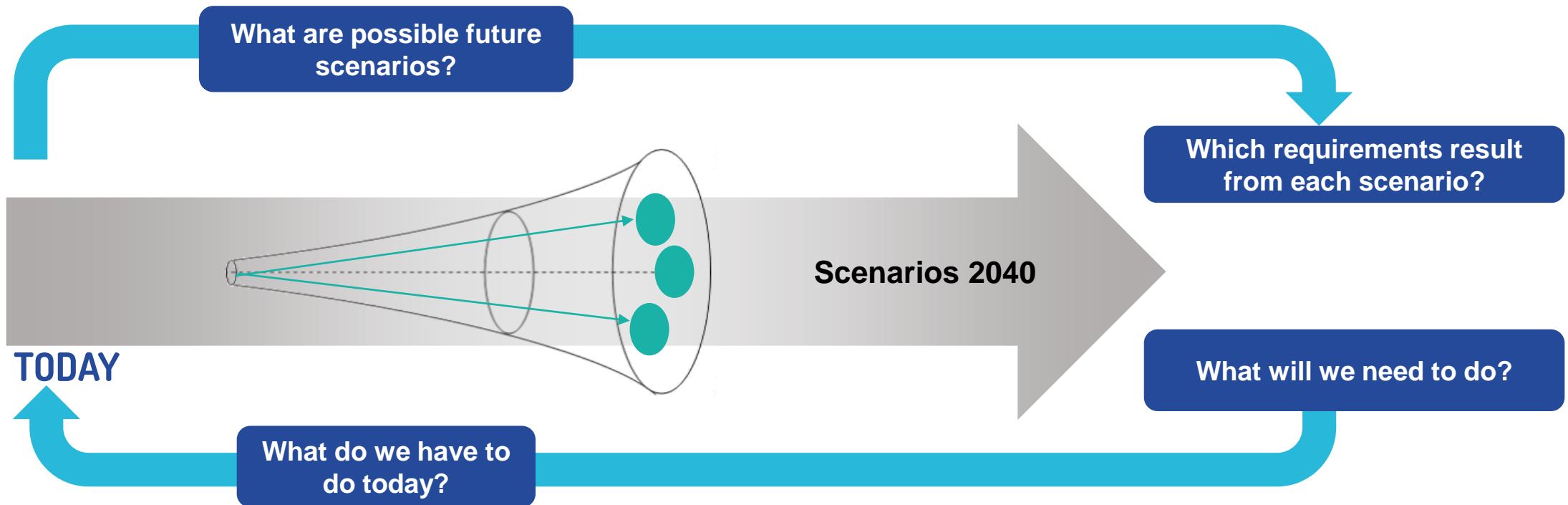
2. Project Organization and Target. Objective of future Scenarios and Roadmapping.

VOITH

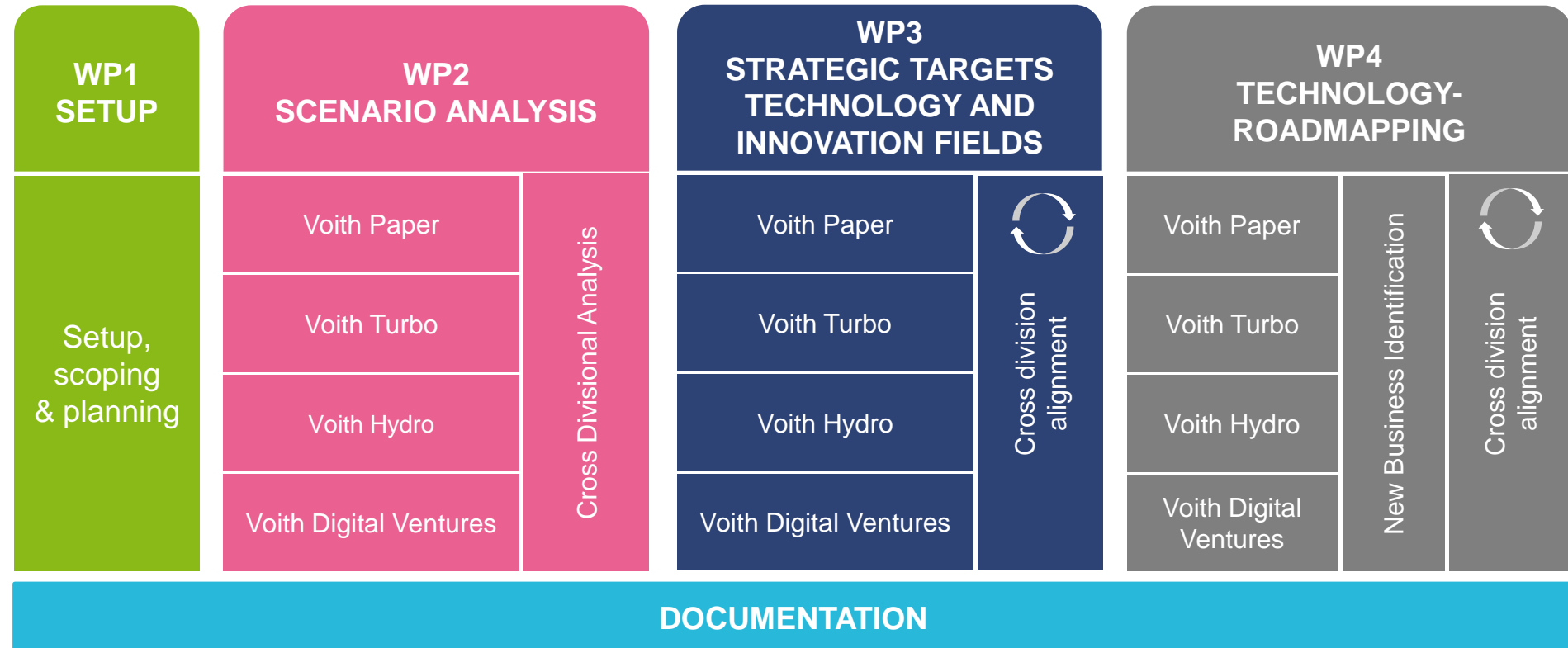


2. Project Organization and Target. Transition from Scenarios to Roadmaps.

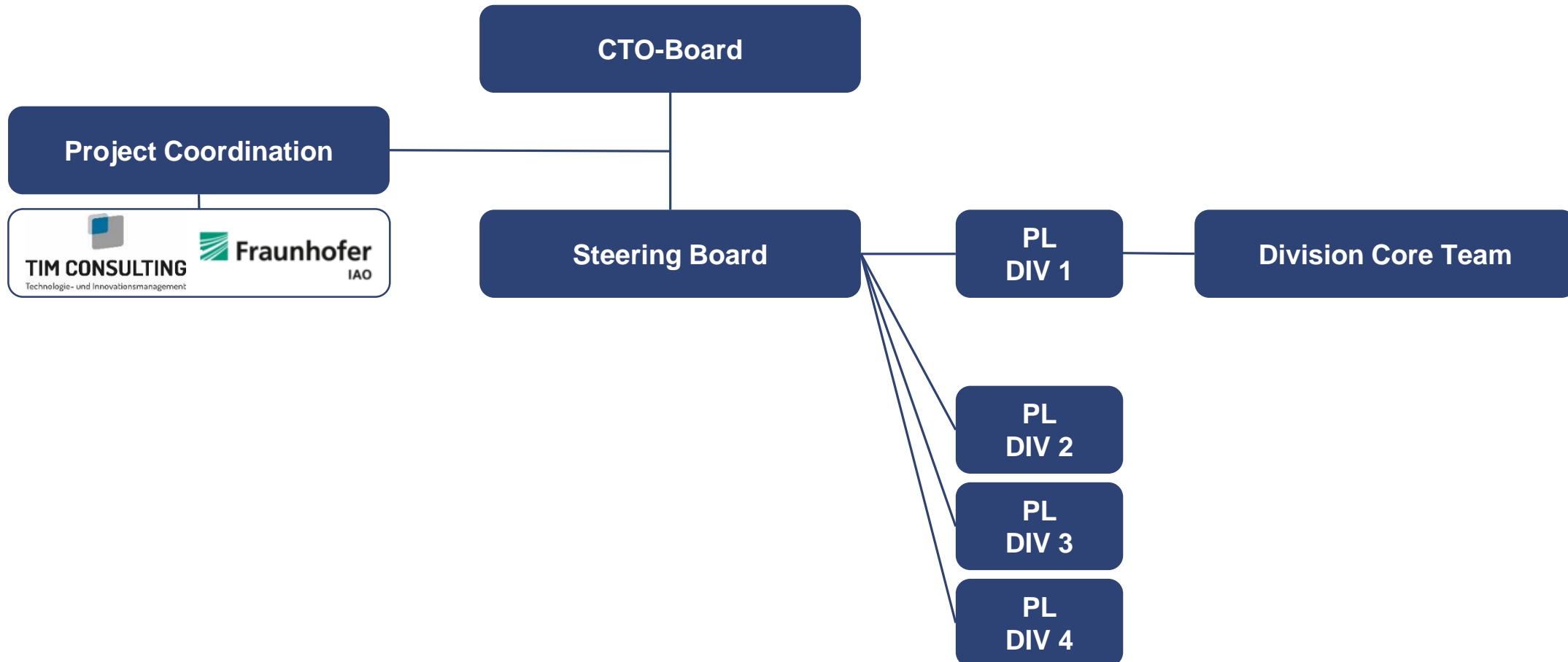
VOITH



2. Project Organization and Target. Project Overview.



2. Project Organization and Target. Organization.



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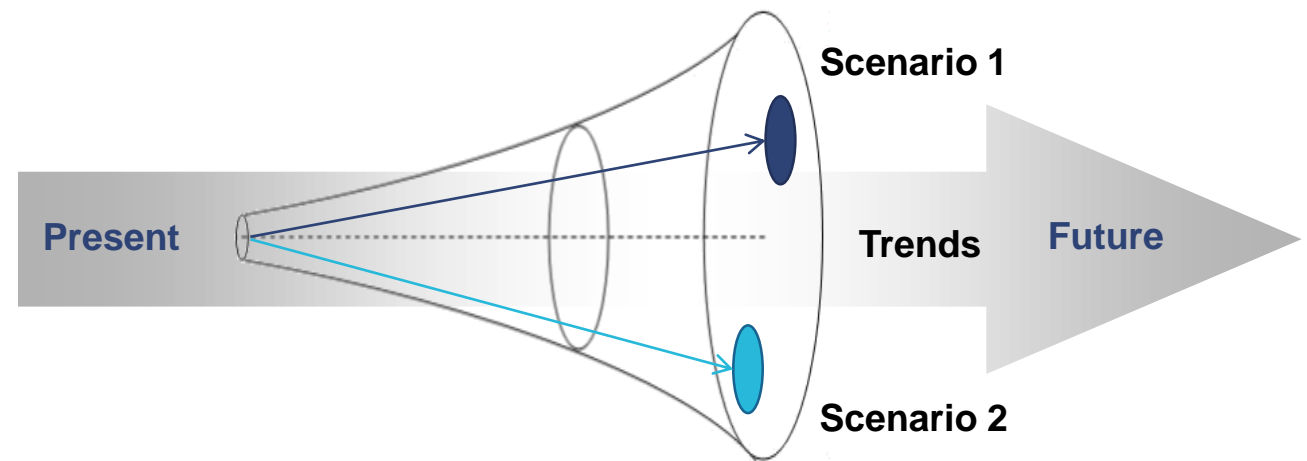
3. Scenario-Analysis.

Why apply Scenarios?

- A simple long-term extrapolation of trends does not work...
 - because trends can have uncertain, opposing directions
 - because trends can have a highly complex interdependency

What are scenarios?

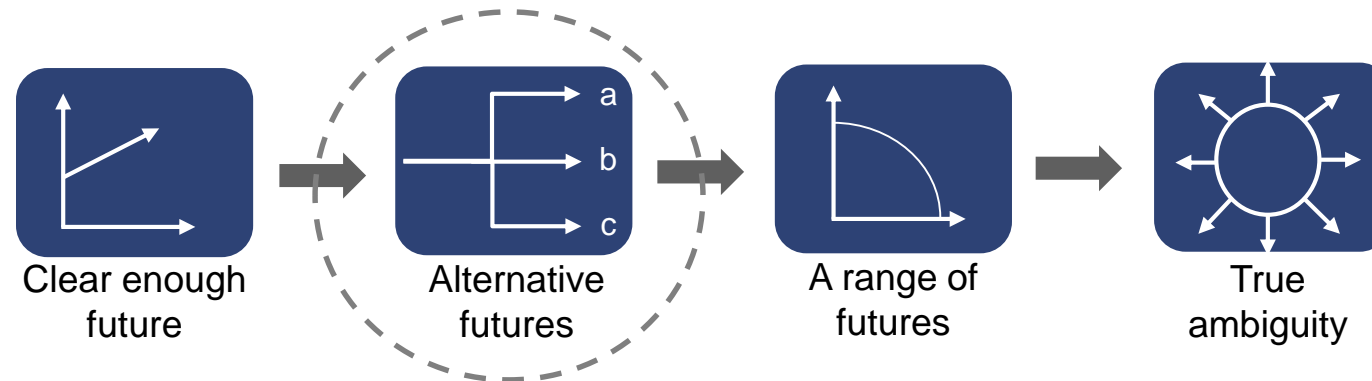
- Narratives/pictures of alternative futures
- For long-term foresight
- Generated in a systematic way based on aligned expert knowledge



3. Scenario-Analysis. Benefits of Scenarios.

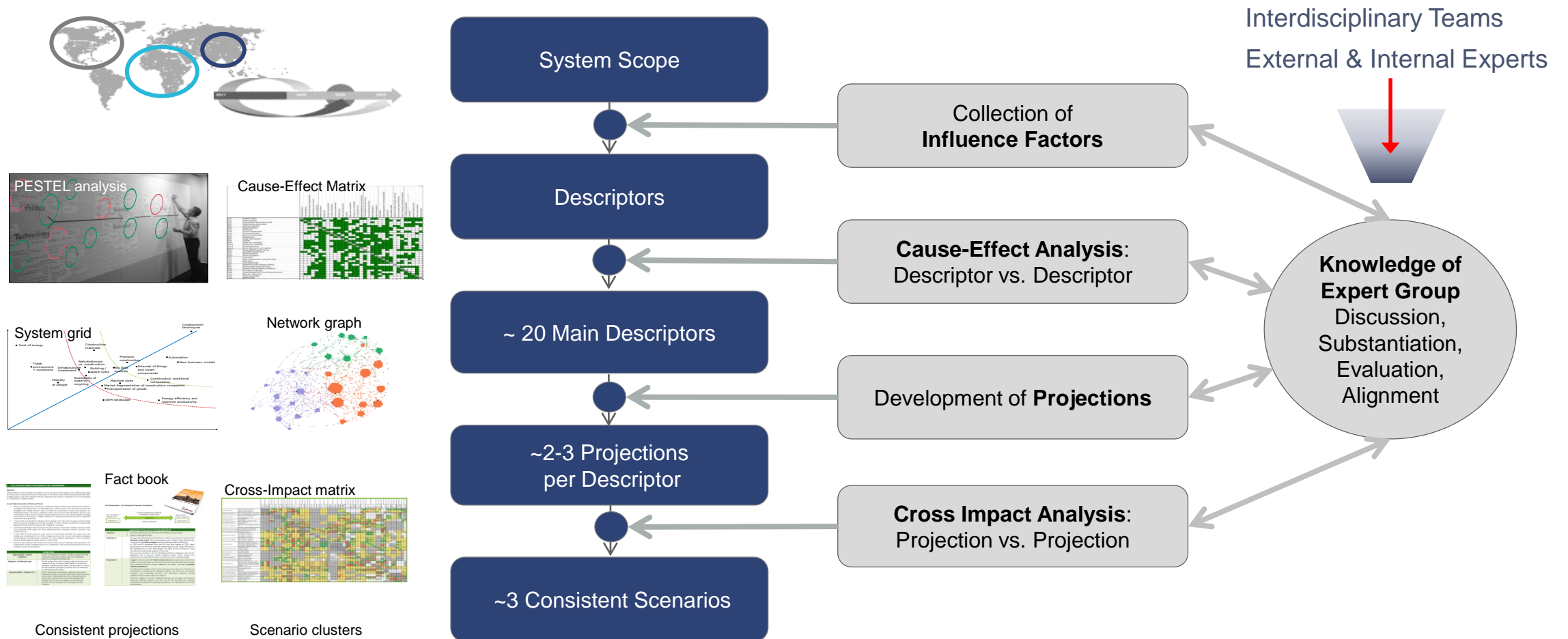
- Scenarios provide **detailed pictures** of plausible futures.
- The scenario process creates a **shared mindset**, a common language to talk about the future.
- Scenarios create a **solid basis for subsequent use**, e.g. risk assessment, strategy evaluation and development, trend monitoring, opportunity identification, etc.
- Scenarios allow to deal with ambiguities in a **systematic approach using established expertise**.

“It is better to be vaguely right than exactly wrong.”

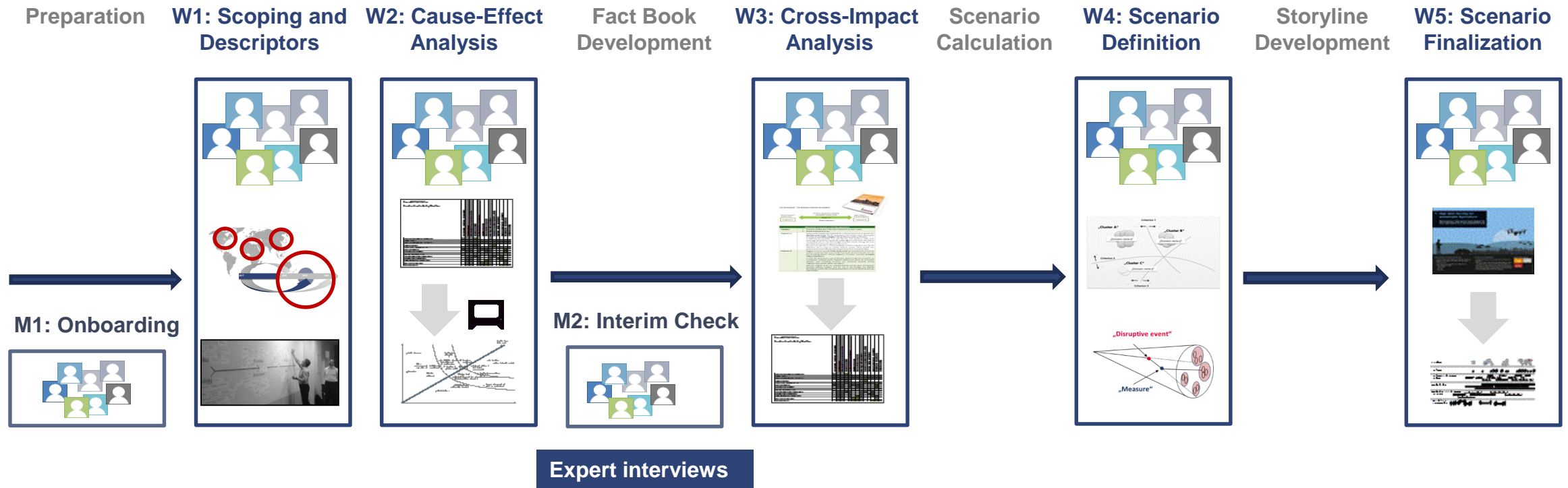


Source: Courtney et al. (1997): Strategy under uncertainty

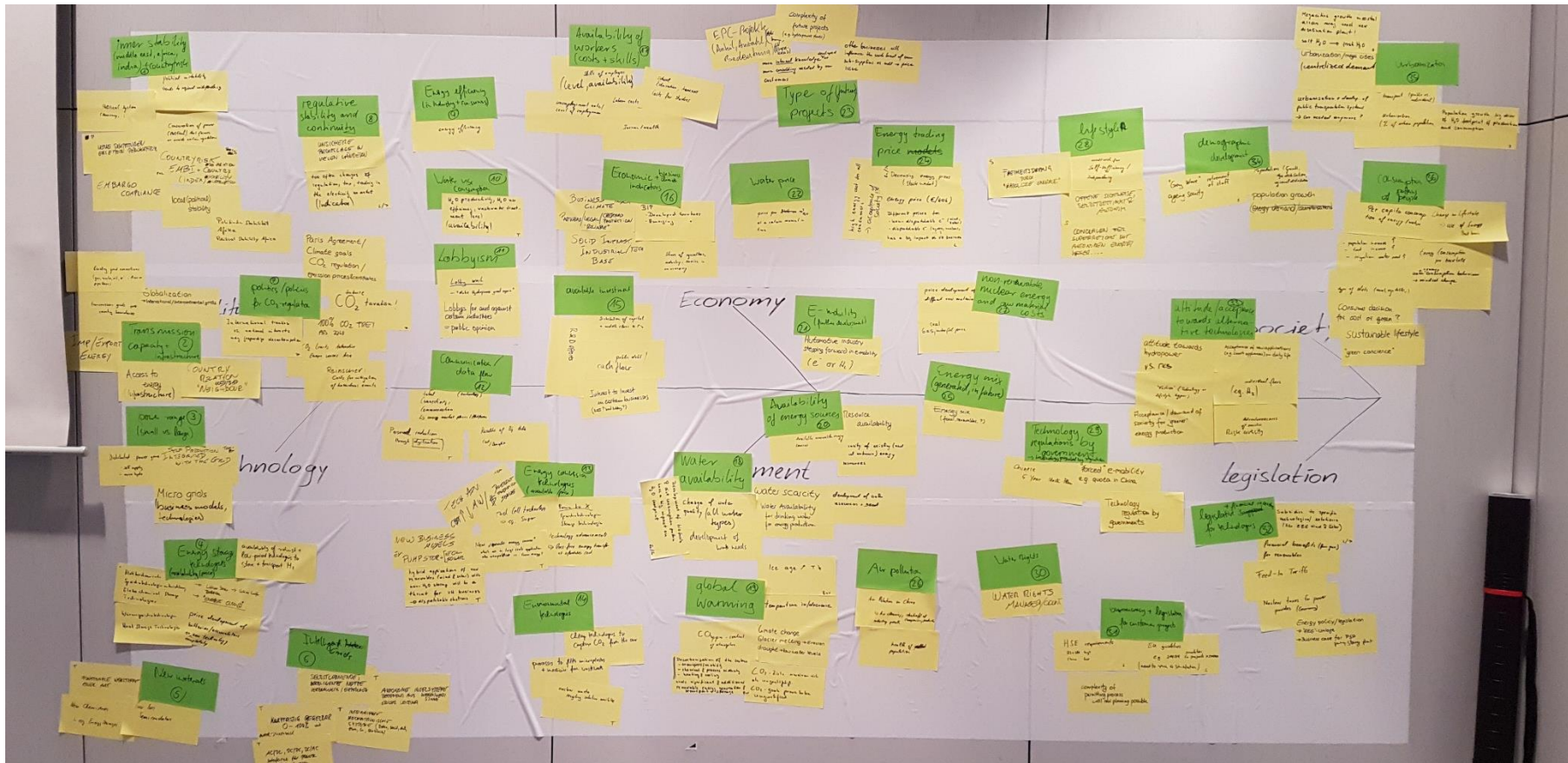
3. Scenario-Analysis. Scenario Process.



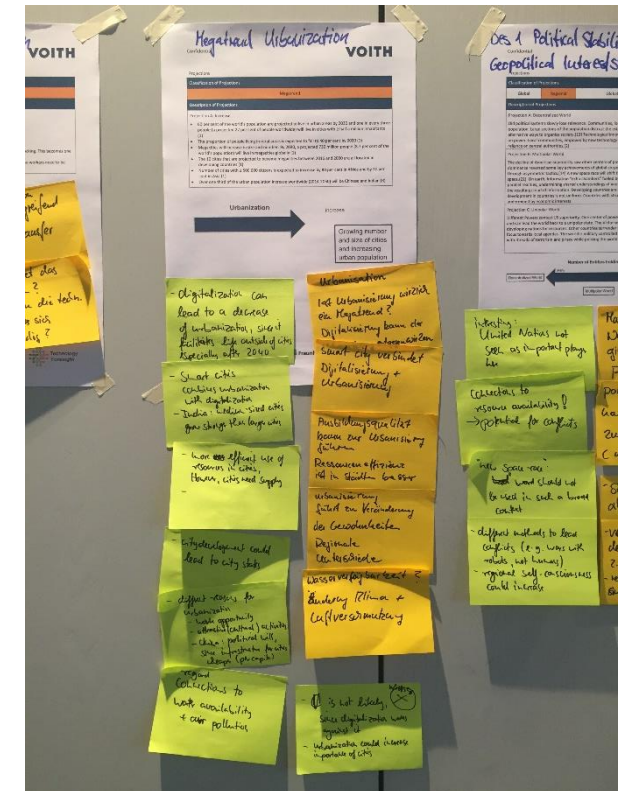
3. Scenario-Analysis. Workshop Timeline.



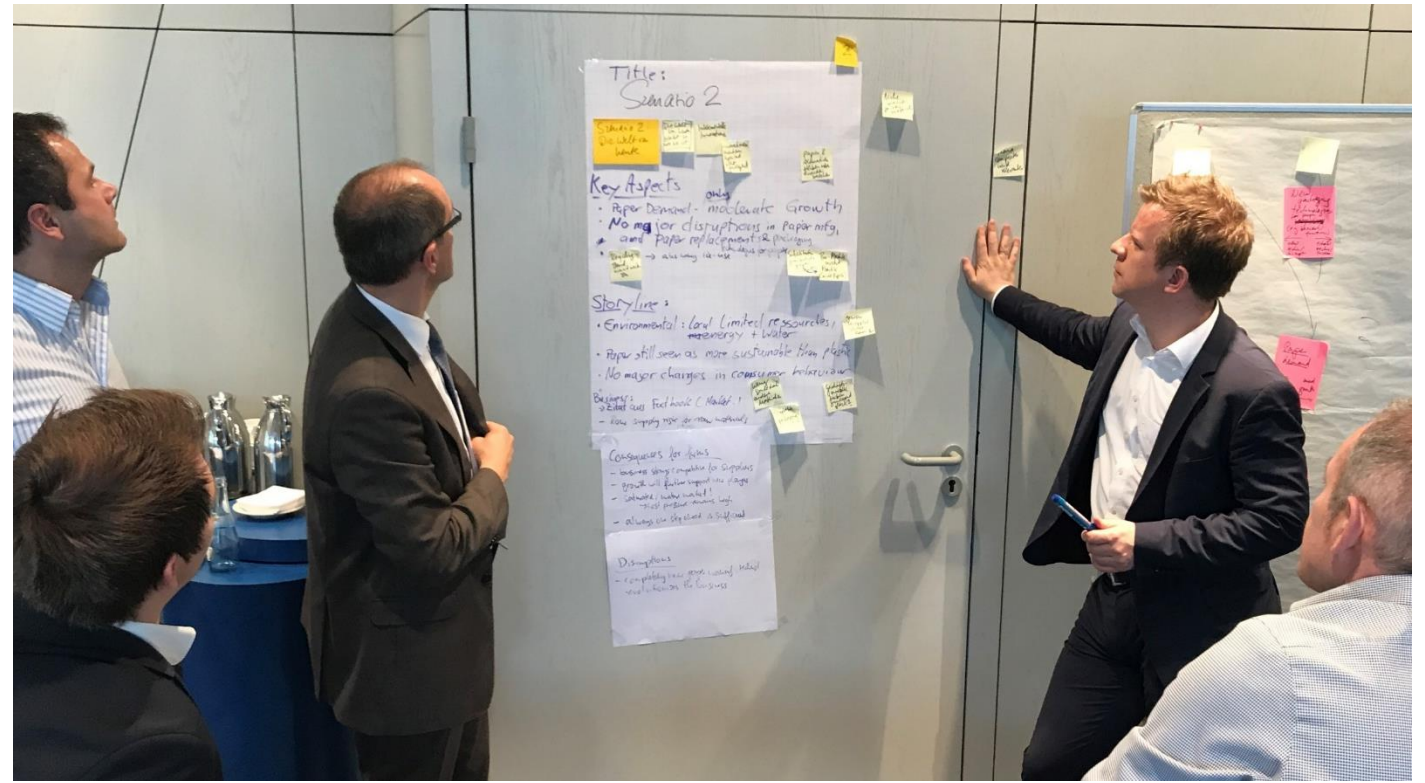
3. Scenario-Analysis. Collection of Influence Factors.



3. Scenario-Analysis. Detailing and Discussion of Influence Factors.



3. Scenario-Analysis. Definition of Scenarios.



3. Scenario-Analysis.

Three categories of Experts.

- Voith-internal expert
 - External expert related to Voith, e. g.
 - Scientific expert familiar to Voith
 - Lead customer or supplier
- and
- External expert so far unrelated to Voith offering new fields of expertise

Expert Interviews:

Name of expert: |

Organisation: |

Areas of expertise: |

Date: 2018-02-28

Interviewer: Liza Wohlfart

Questions:

- What are the two to three main trends in Environmental Technologies that will become dominant in 2025-2040 (all PESTEL categories)?
- Which developments do you foresee, which are not plausible?

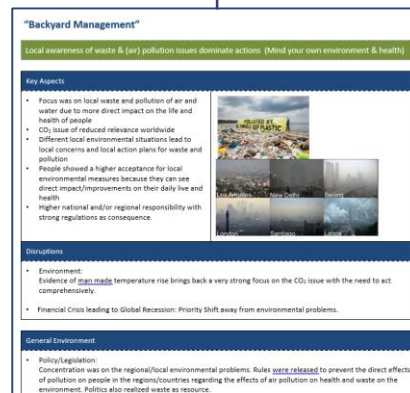
Answers:

3. Scenario-Analysis. Scenario-Formats.

Formats



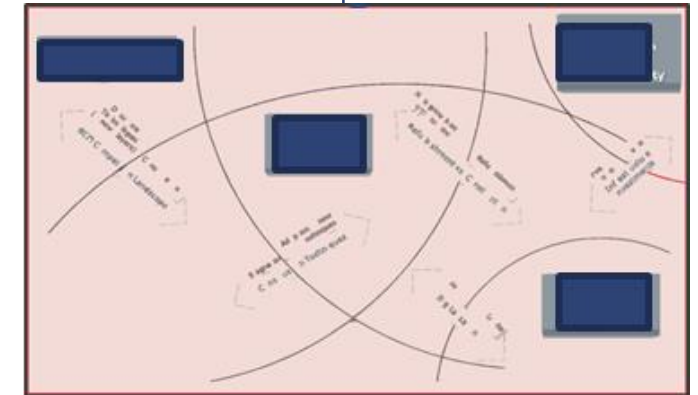
Fact Book
Basis for
scenarios



One-Pagers
Description of
single scenarios



Posters
Illustrations of
single scenarios



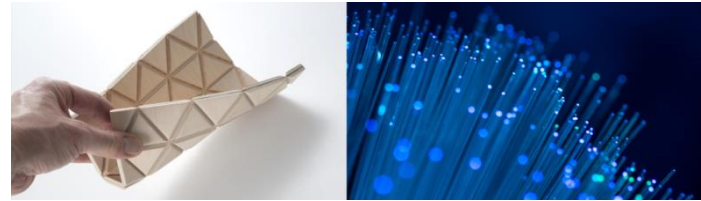
Differentiators
Distinction
between scenarios

3. Scenario-Analysis. Paper: Alternative Pictures of the Future.



> positive scenario <

- ▶ Technology disruptions in processes and products across the entire paper value chain
- ▶ ...



> negative scenario <

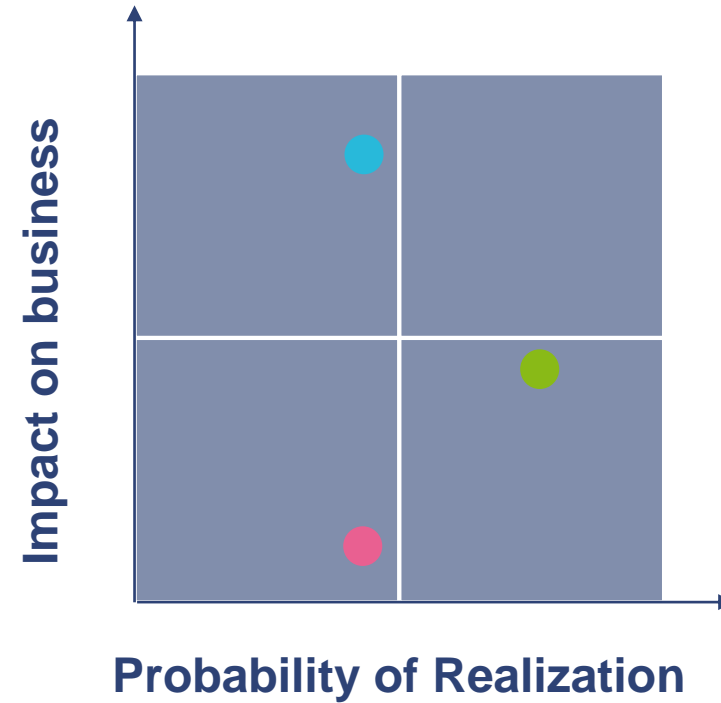
- ▶ Relevance of paper packaging is replaced by alternative solutions and changing consumer behavior
- ▶ ...



“Same same but different“

- ▶ Technological leaps occur outside the paper industry
- ▶ ...

3. Scenario-Analysis. Identification of Lead Scenarios.



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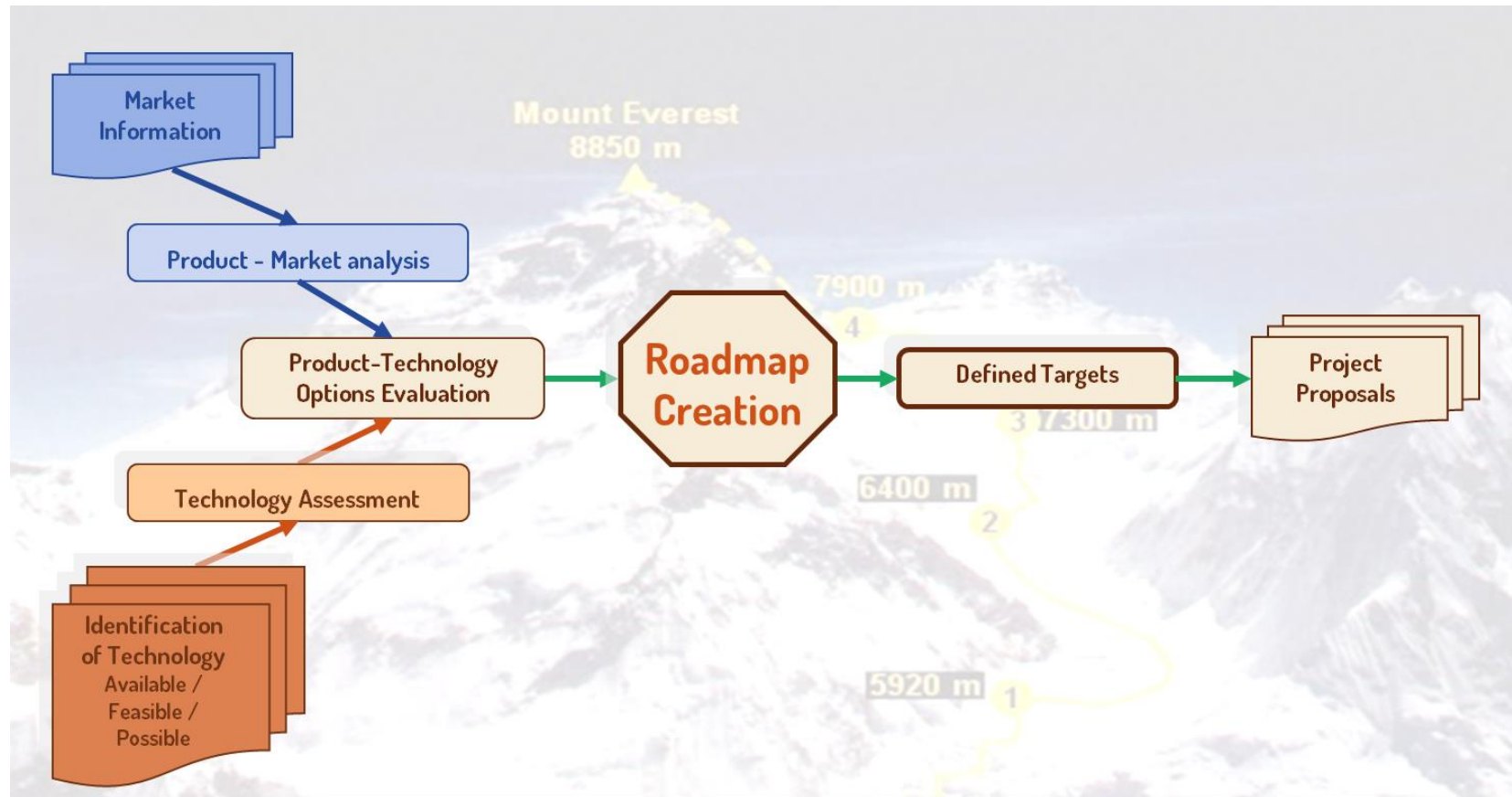
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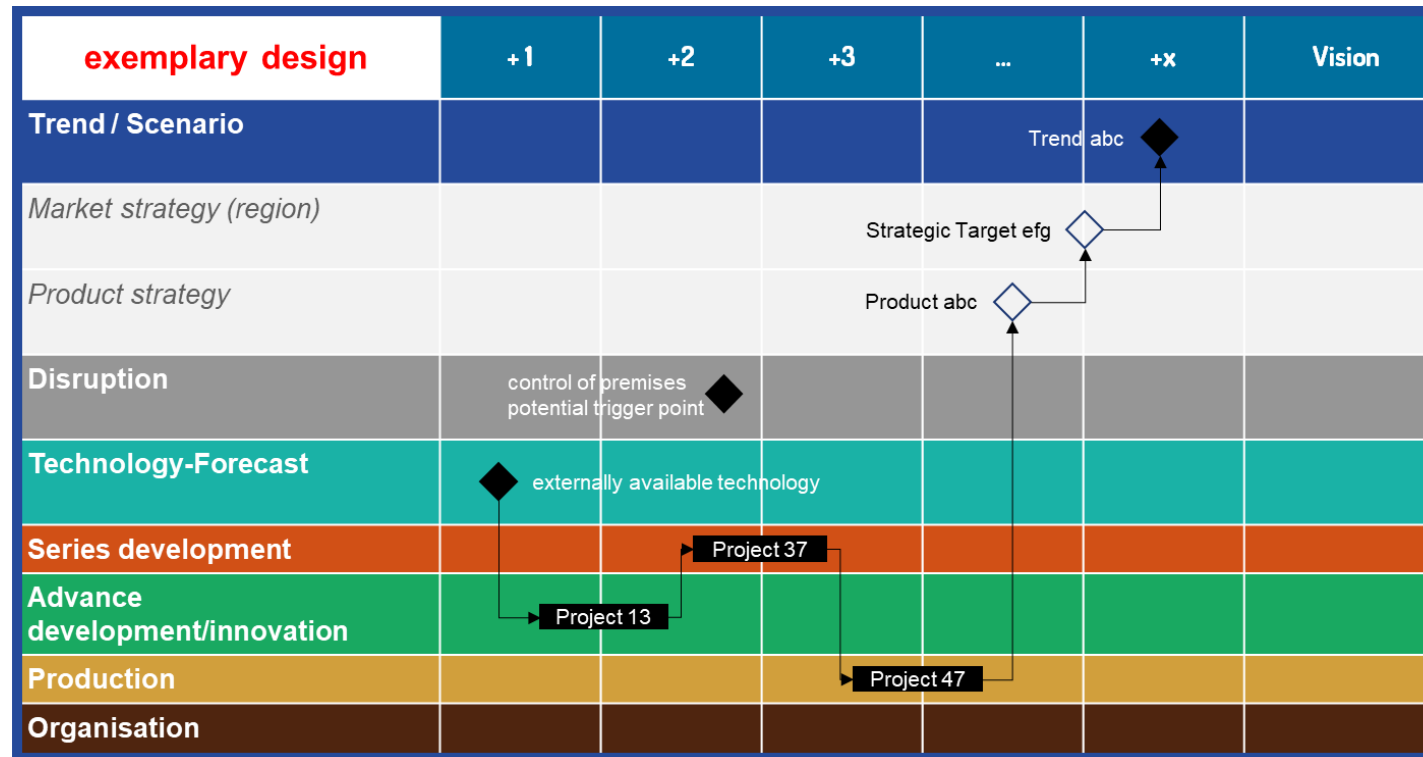
4. Roadmapping.

Fundamental Concept: Bridging the gaps.



Source: EIMRA, 1997)

4. Roadmapping. Generic questions and expected result.



a. Why do we need to act?

b. What should we do?

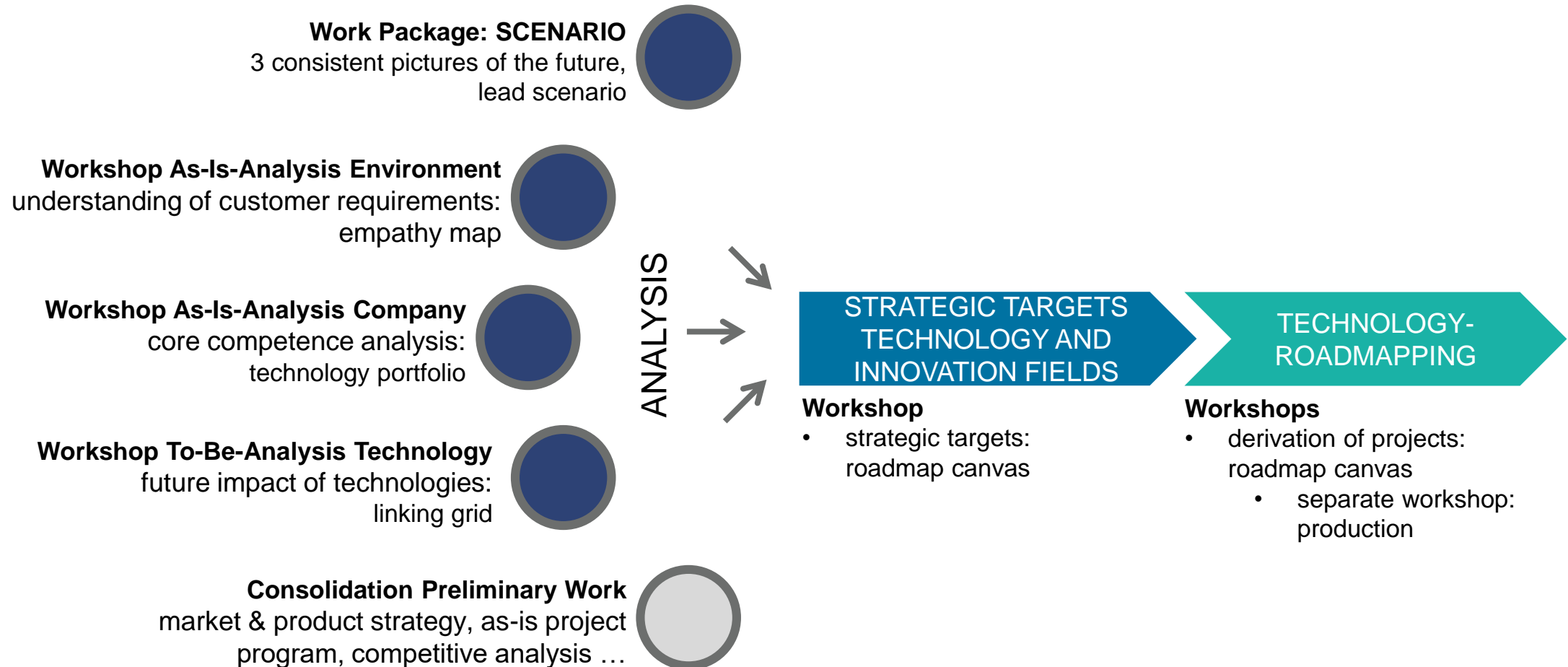
c. How can we do it?

2. Where are we now?

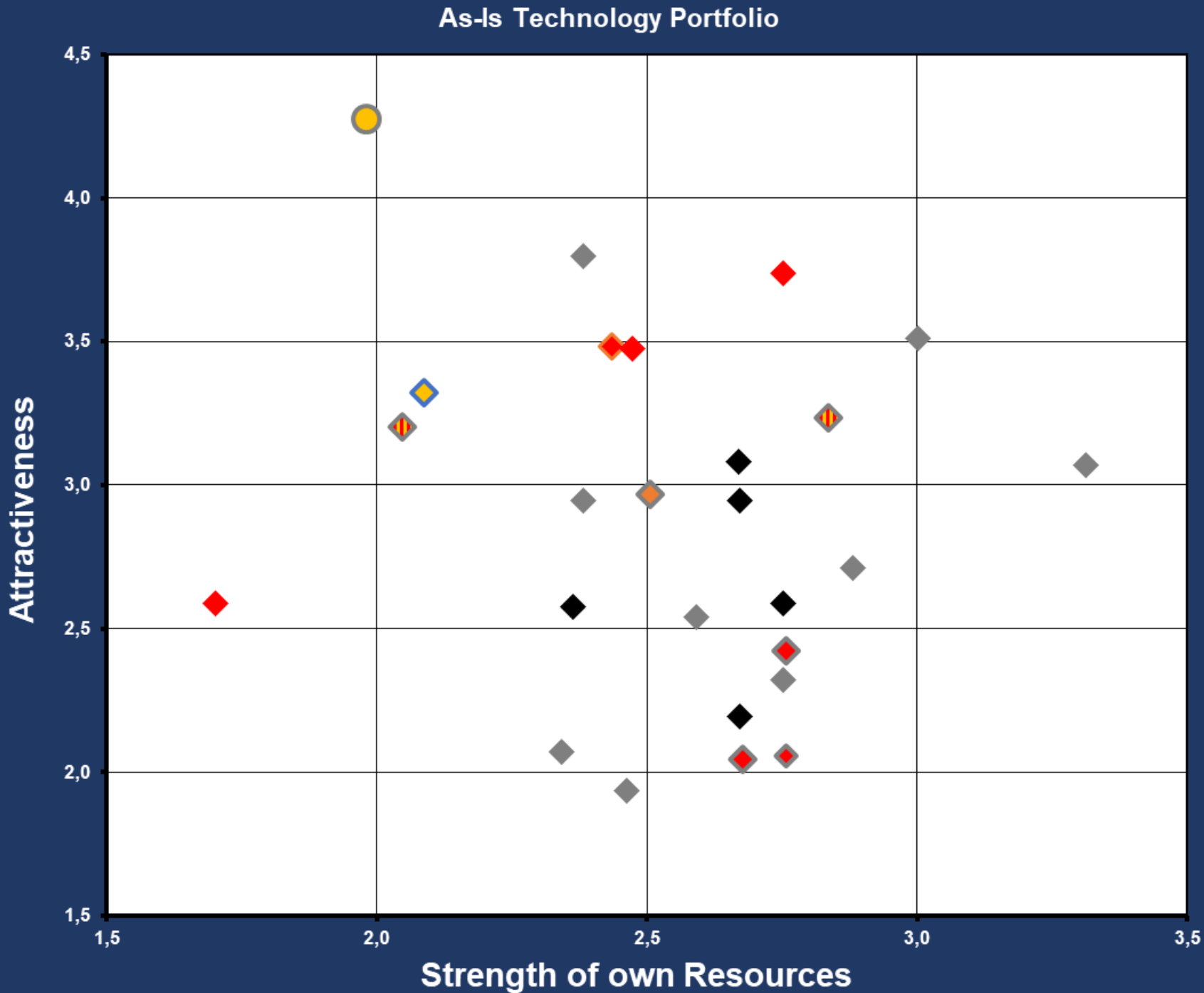
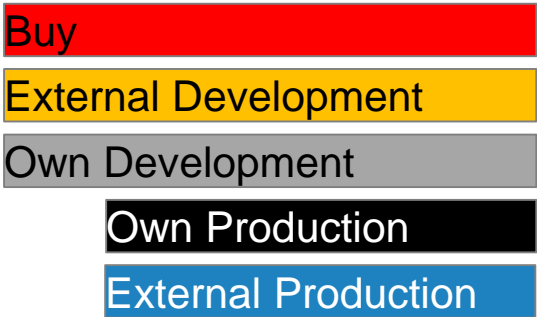
3. How can we get there?

1. Where do we want to go?

4. Roadmapping. Workshop Timeline.



4. Roadmapping. Technology-Portfolio.



4. Roadmapping. Linking Grid Scenario-Technologies.

Scenario			Scenario 1	Scenario 2	Scenario 3	Scenario China 1	Scenario China 2	Business Drivers
		key requirements with regard to products, services and value generation in relevant and adjacent markets (existing/emerging markets and new business fields) (contribution: 0 - no; 1 - small; 3 - medium; 9 - high)						
New Fields								
Field 1		Technology 1	1,9	6,1	4,8	1,5	3,0	6,6
...		Technology 2	1,3	3,8	5,3	1,9	2,2	1,8
		Technology 3	1,3	3,2	5,3	5,8	9,0	1,8
		Technology 4	1,0	6,1	7,5	7,5	9,0	3,8
		Technology 5	6,3	9,0	6,2	9,0	9,0	6
		Technology 6	1,9	1,6	4,7	7,5	9,0	4,4
		Technology 7	6,3	7,1	6,2	9,0	9,0	3,2
		Technology 8	1,0	2,3	5,5	4,8	4,5	1,6
		Technology 9	3,0	3,0	3,0	4,1	5,5	5
		Technology 10	3,0	4,9	6,6	6,7	9,0	4,8

STEADY STREAM

KEY
ASPECTS

...

...

...

...

...

REQUIREMENTS

related to products,
services, added value

1 ...

4 ...

7 ...

2 ...

5 ...

3 ...

6 ...

INOLOGY STRATEGY

Target

18/19

19/20

20/21

21/22

22/23

23...30

30...40

VISION 2040

M: Product Definition M&D

M: Product Definition

M: GO
decision

M: Reoccurring Annular Milestone: decision on new technologies to be integrated

M: Product Release

M: Product Release

M: Product Release

M: Product Release

M: System ready

Target 1

3

4

M3b

M4

DEEP LAKE

OPEN SEA

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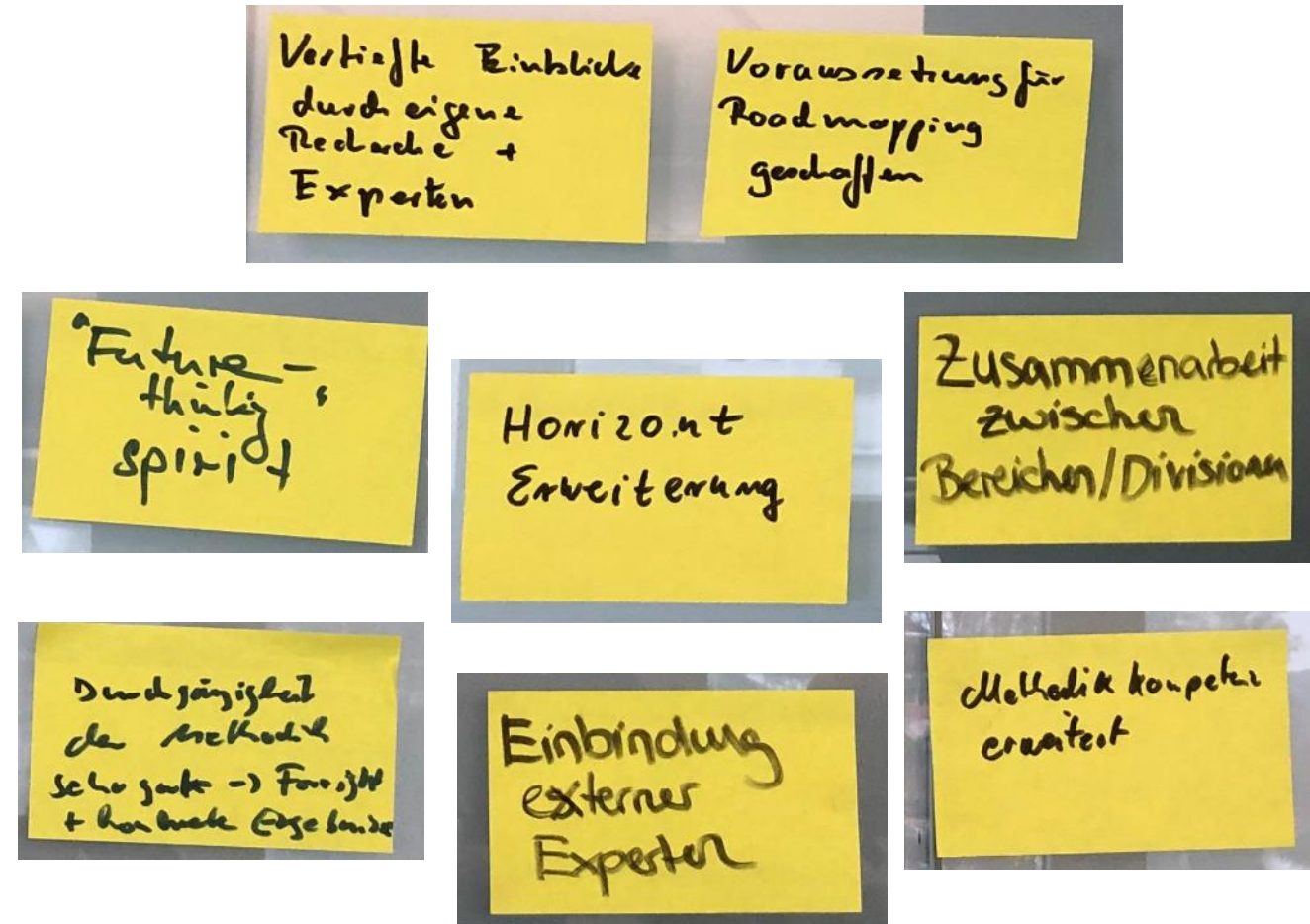
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4. Review and Outlook. Team Assessment.

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VOITH

Inspiring Technology
for Generations