

»Digitalization in Food & Beverage«

Production Processes and Product Enhancement

"I would be terrified if I were a consumer packaged-goods company right now. Under the old model of food retailing the brand you trusted was the manufacturer. Today you go onto Amazon and filter everything by what's Prime."

Benzi Ronen
CEO Farmigo (food hub startup)

Join the consortium to ...

get an overview of **Industry 4.0** and **IoT applications** in the context of food and beverage production and product enhancement:

- Receive **digitalization applications** across the fields of **asset** and **supply chain management, process** and **quality control**, etc.
- Learn how data processing and advanced data analytics can help you to lower the costs for **individualization, quality control** and **labeling** of your products
- Understand fast growing **platforms** and **eco systems** and learn how to participate
- Make use of digitalization, develop **new business models** and offer innovative **services** to your customers

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End: December 2019

Digitalization in Food & Beverage

Motivation

Initial Situation

Digitalization, individualization and sophisticated data analytics are major trends affecting the food & beverage sector through the change of customer needs and preferences, product requirements and advancement of processing methods.

The leading questions of involved companies concerning this subject are:

- What will be the leading applications that will drive smart technologies in food & beverage?
- What benefits can be assumed from smart production, assets or services?
- Which technologies in terms of sensors, network technologies and data analytics can be applied for specific problems?

Major Outcome for Participants

- ➔ **A detailed overview about smart applications and enabling technologies for smart production processes, smart production assets and smart services**
- ➔ **Technological and economic transparency**
- ➔ **Access to a large international partner network**

Procedure

Within the project, current and future smart solutions from selectable focus areas will be identified. Cross-industry innovation patterns are extracted and applied to specific production processes, assets and services named by the consortium. Based on your vote, technology concepts and business cases will be established for the most relevant smart solutions.

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Focused Industries



Food & Beverage Processing



Food Processing Equipment



Food Additives



Farming & Agriculture



Food Service



Food Supplements



Packaging & Labeling



Food Products Supply Chain



Retail & E-Commerce

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Trends Affecting the Industries



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Excerpt of Technical Solutions

Smart Equipment

- Retrofitting of Older Machinery
- Condition Monitoring
- Worker Support (e.g. AR¹, VR²)
- ...

Asset Management

- Predictive Maintenance
- Remote Services
- Modular Factories
- ...

Logistics / SCM³

- Horizontal SC Integration
- SC Risk Assessment
- Item-level Traceability
- ...

Production Processes

- Predictive Process Control
- Process Automation & Agility
- 3D Food Printing
- ...

Quality Control

- Food Safety
- Prediction of Quality & Deviations
- Real-time Quality Control
- ...

Packaging

- Sustainability
- Robotic Pick-and-Pack Systems
- Blending & Formulation
- ...

Smart Labels

- Interactive Labels
- Serialization
- Intelligent Labels
- ...

Business Processes

- E-Commerce & Omni-Channel
- Sales Forecasting
- Blockchain
- ...

Product Individualization

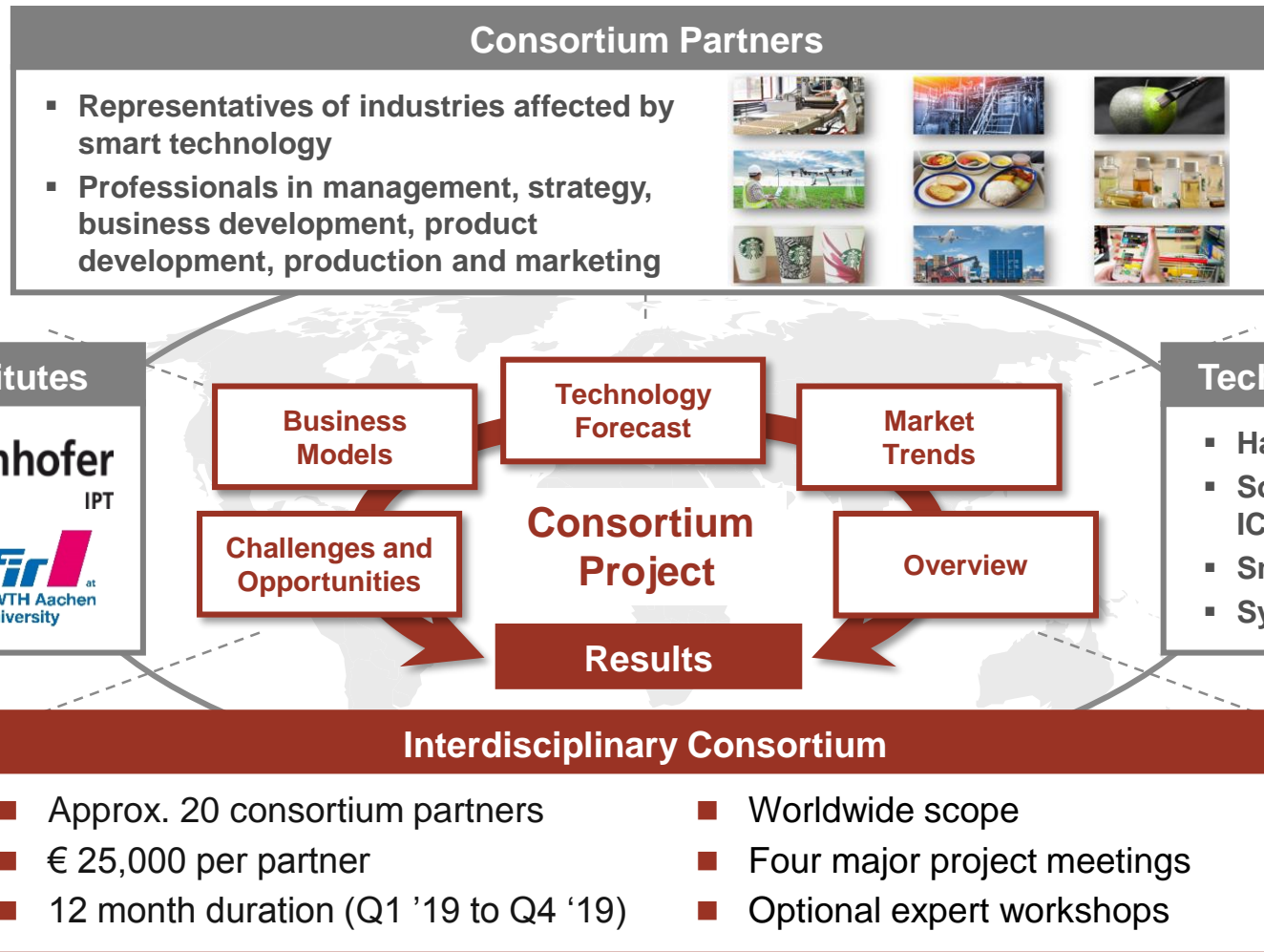
- Customized Content
- Customized Labels
- Customized Packaging
- ...

¹AR: Augmented Reality

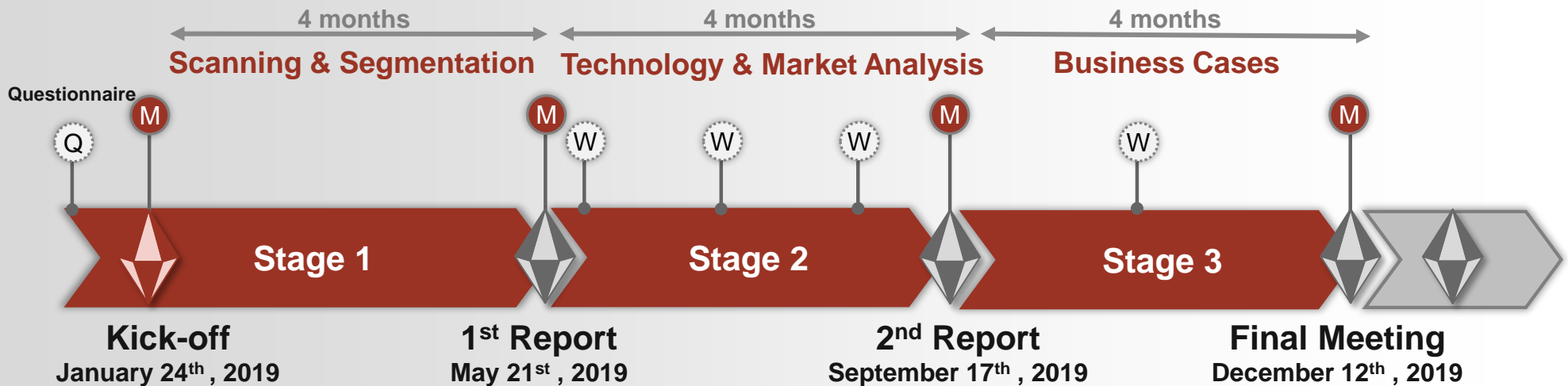
²VR: Virtual Reality

³SCM: Supply Chain Management

Digitalization in Food & Beverage Consortium Structure



Digitalization in Food & Beverage Project Timeline



Stage 1 Content:

- Assessment of **relevant market trends** and consortium **needs**
- Suggestion of **relevant segments** and sub-segments
- Scanning for **trend topics in R&D, smart applications and solutions**
- **Structured visualization, pre-evaluation**, presentation and discussion of results

Stage 2 Content:

- Systematic **selection** of the most attractive **smart applications & solutions** by the project partners
- Detailed **technology assessment** for selected applications
- Evaluation of **technological feasibility** and business potential estimation

Stage 3 Content:

- Assessment of smart service potential based on **smart products** or **systems**
- Evaluation of **market opportunities**
- Assessment of potential **business models**
- Analysis of potential **added value** and **costs for implementation**
- New **business model generation** (if applicable for the selected case)
- Results of Stages 1-3 as point of contact for **partner specific roadmaps** and **use-cases**

Digitalization in Food & Beverage Responsibilities and Effort

1

2

3

Stage	Industrial Partners	Research Partners
1st Phase	<ul style="list-style-type: none"> Answering the questionnaire with your needs and challenges Present your company at the kick-off meeting Vote for the topics you are interested in and want to learn more about 	<ul style="list-style-type: none"> Structured overview of applications and trends for Industry 4.0 and digitalization in the area of food & beverage Pre evaluation of approx. 200 applications from best practices to research
2nd Phase	<ul style="list-style-type: none"> Discuss your thoughts and questions for each topic in a workshop Vote for the topics which you want as a focus case 	<ul style="list-style-type: none"> Technological evaluation of your selected topics Overview of state of the art technology and researcher landscape
3rd Phase	<ul style="list-style-type: none"> Discuss your thoughts and questions for each focus case in a workshop Possibility to provide boundary conditions for a specific use case, we will answer 	<ul style="list-style-type: none"> Implementation guideline for your selected focus cases Evaluation of provider by price and capabilities Ideation of new business models
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All mentioned companies were partners of former projects hosted by KEX AG

* We recommend to define one responsible person and to participate with 2-3 persons in average on each meeting, depending on the topic and project phase to get the best outcome. However all input on your side is optional.

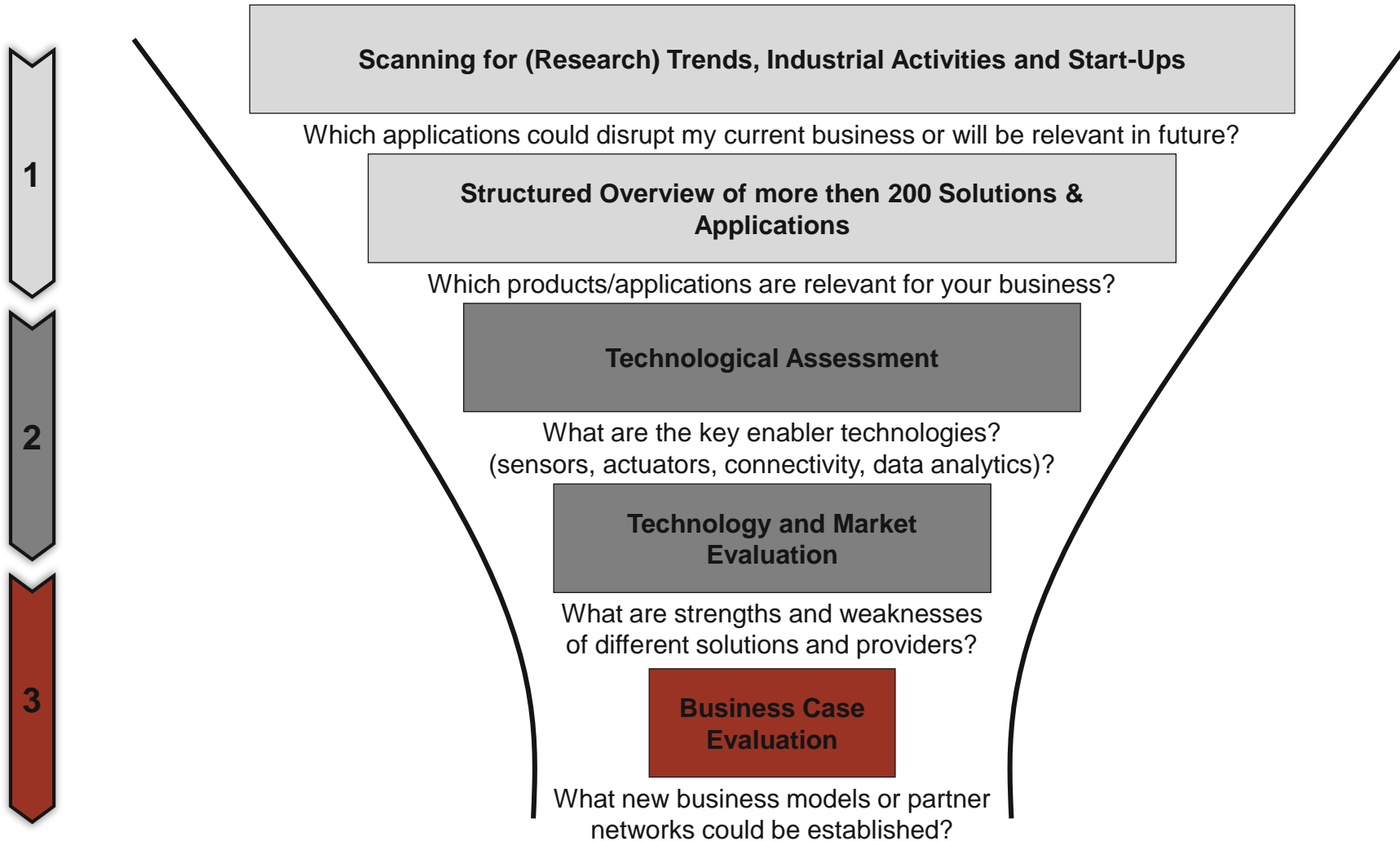
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Project Focus & Framework

1

2

3



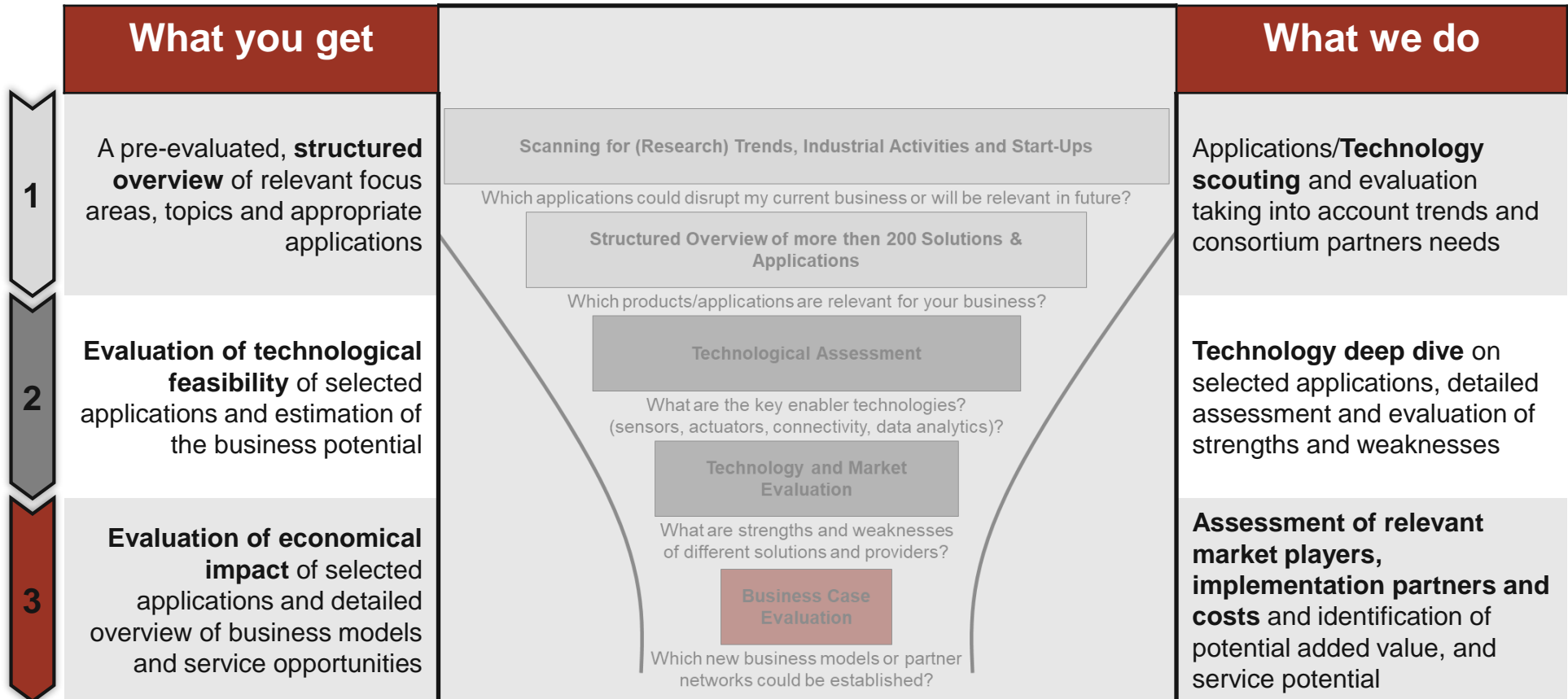
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Project Outcome

1

2

3



+ Networking and discussion with other consortium partners within your business area and along the supply chain

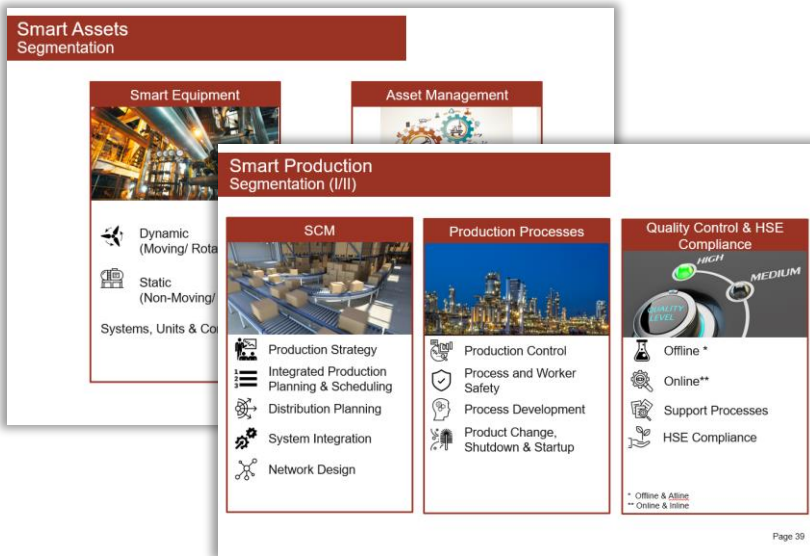
Proceeding – Example of a Previous Project

Stage 1: Application/Solution Scanning & Scouting

1

2

3

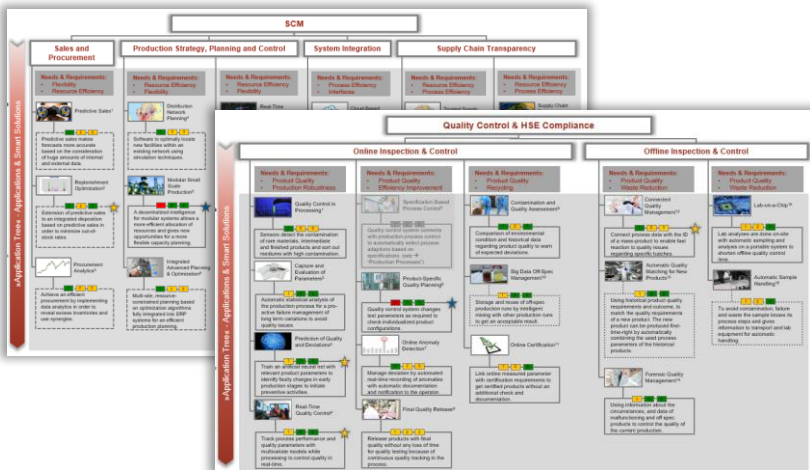


Segmentation

- Structured overview of **relevant focus areas** and sub-segments within these focus areas
- Suggestion of focus areas based on **consortium preferences** (questionnaire) and **major trends**
- High level aggregation of **market and technology intelligence** for each segment

Application Trees

- Pre-selection of the most relevant approx. **200 cross-industrial smart solutions** to be presented to the consortium during the **1st report meeting**
- Structured overview of current and future **smart solutions** in the context of **specific application fields**
- The consortium will vote for around 10-15 smart applications/solutions to be evaluated technologically in project **stage 2**



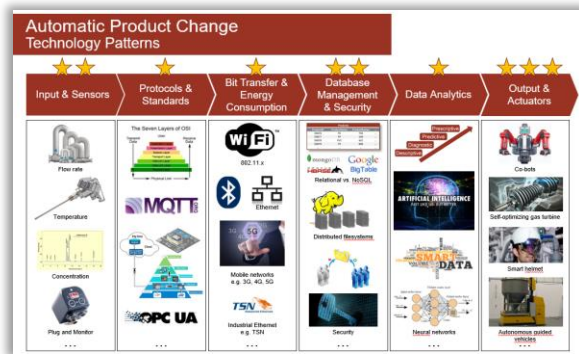
Proceeding – Example of a Previous Project

Stage 2: Technology and Market Analysis



Technology Analysis

- Scouting and presentation of relevant **key enabler technologies** for the implementation of the selected solutions
- Deep assessment of different **technological concepts** resulting up in a **deep dive report**
- Evaluation and **discussion of challenges**
- Identification of **potential technology partners**

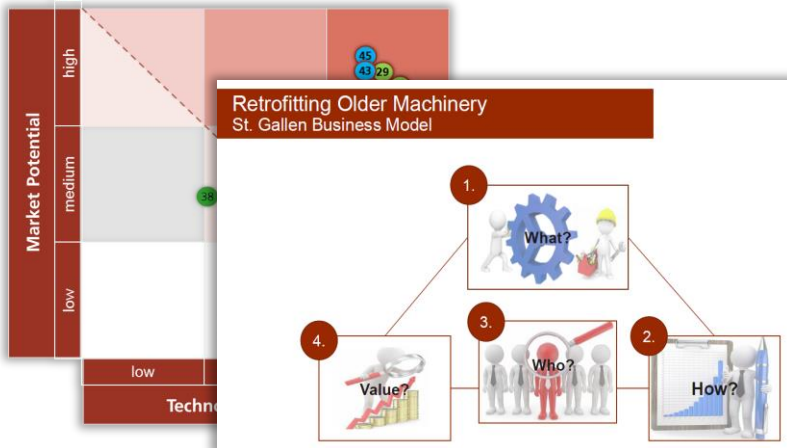


Market Pre-Assessment

- Assessment of **expected market potentials**, time-to-market and **economic competitiveness** of the selected smart solutions
- Assessment of the **potential for new smart services** as preparation for **project stage 3**

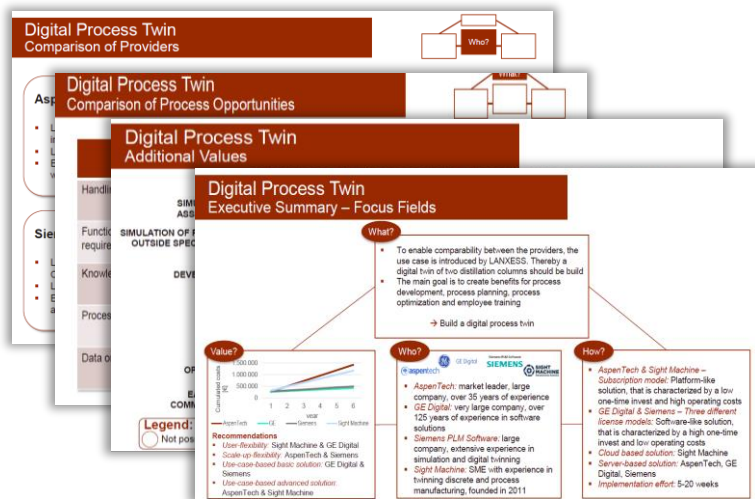
Proceeding – Example of a Previous Project

Stage 3: Business Case Evaluation & Smart Services



Smart Service Assessment

- Analysis of **smart service potential** based on technological solution or e.g. availability of valuable data
- Search for potential **innovative business models**
- Evaluation approach is based on Business Model of St. Gallen University



Business Case Evaluation

- **Detailed calculation of business cases** for the selected applications / solutions
- Assessment of potential **added value streams**
- Analysis of **added costs** for implementation
- Business model generation (where applicable)

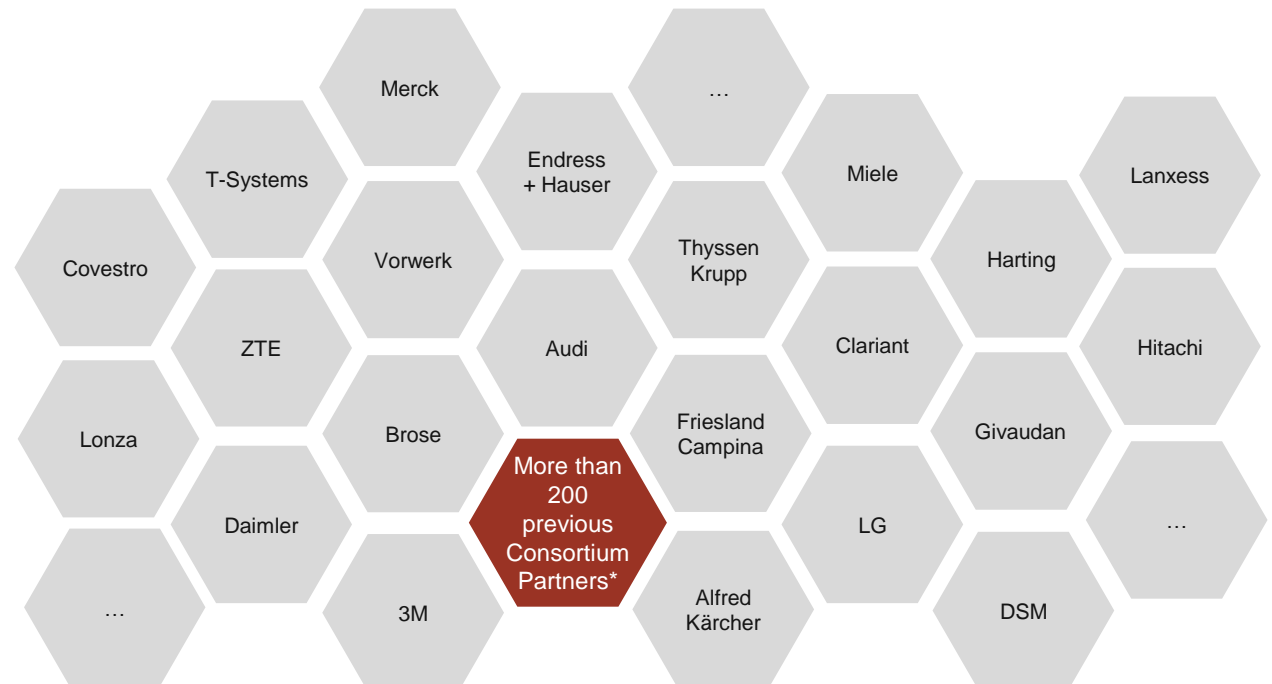
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Previous Consortium Partners



Consortium Project Framework:

- **Offline result generation by research partners**
- **Face-to-face results presentation and discussion** with industrial consortium partners
- **Moderated cross-industrial workshops and expert key note speeches**
- **Networking with a cross-industrial consortium and highly relevant research entities**



Involved Institutes and Companies

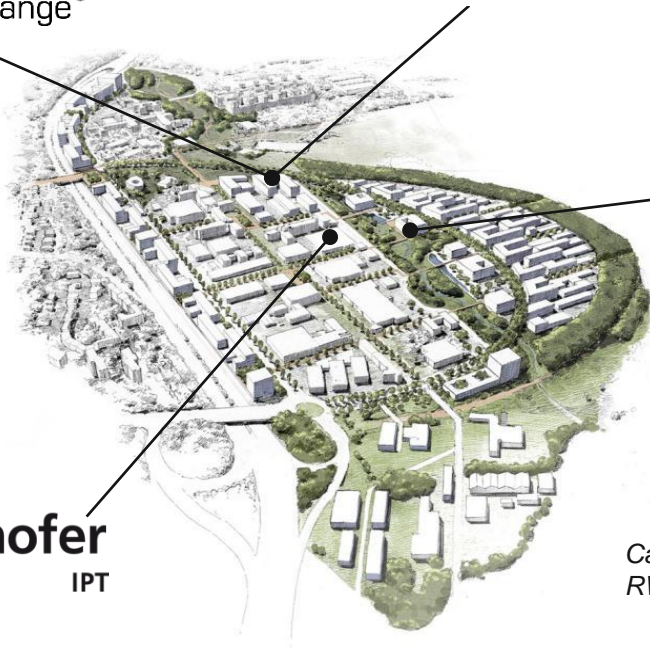
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IPT



*Campus Melaten
RWTH Aachen University*

Interdisciplinary Consortium

- Approx. 20 consortium partners
- € 25,000 per partner
- 12 month duration
- Worldwide scope
- Four major project meetings
- Optional expert workshops

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Your Expert Network:

Fraunhofer
IPT

Fraunhofer IPT

- Founding Year: 1980
- Knowledge and experience in all fields of production technology for developing and optimizing solutions for modern production facilities

WZL | **RWTH AACHEN**
UNIVERSITY

WZL of Aachen University

- Founding Year: 1906
- Engineering and production management for developing and optimizing solutions for modern production facilities

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RWTH Aachen

FIR - Institute for Industrial Management at RWTH Aachen

- Founding Year: 1953
- Industry-oriented research in the areas service, information and production management

KEX.
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KEX Knowledge Exchange AG

- Founding Year: 2012
- Technology and market information provider

Your Contacts



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