Join the consortium to …

gain an understanding of the **technologies** behind the trend and learn to evaluate relevant **use cases**:

- Get an overview of **application fields outside of crypto-currencies** like healthcare, logistics, automotive, machine and plant engineering, pharmaceuticals, chemistry, etc.
- Identify **specific applications** that are relevant for your company like **fraud prevention**, **release of specific features** and **elimination of unwanted counterfeits**
- Evaluate the **technological and economical challenges** and **chances** behind the industry trend

Start: March 2018
End: December 2018

“I guarantee you – Blockchain will play an important role in every company”

Achim Berg
President of Bitkom

“We don’t believe that traceability is the goal. We believe that transparency is the ultimate goal. Blockchain will give us the ability not only to track where food came from, but how it was produced.”

Frank Yiannas
Vice President of Food Safety at Walmart

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## Motivation

### Initial Situation

*Distributed Ledger Technologies (Blockchain, Tangle, Smart Contracts…)* are told to be revolutionary - the “new internet” - which could *solve* current *issues related to digitalization and globalization*. Starting in the financial sector the hype spills over in multiple other industries, leading to many open questions:

- What are the **opportunities** behind this technology and what are new fields of application?
- What are the potential **implications** for my markets, sector, business unit and team?
- What are the **challenges** of relevant and developing technologies?

### Procedure

- Starting point is an **overview** and **SWOT** analysis to create a **general understanding** of the technologies and their potential impact on selected application fields
- **Best practice applications**, **high potential applications based on partner needs** and **research applications** will be structured and offered for further evaluation
- Based on your vote, a **deep dive on technological and economic aspects** will be executed for selected applications

### Major Outcome for Participants

- Understanding the concepts of blockchain technologies and the implications for your business
- A detailed overview of current and future blockchain and tangle applications, underlying enabling technologies, software tools and enabling partners
- Technological and economical evaluation of potential implementation of selected cases
- Access to a large cross-industrial & interdisciplinary partner network
Potential of Blockchain / Tangle Usage

Build Trust
- Reduce risk of collusion & tampering
- Prevent counterfeiting
- Build trust quickly between new partners
- Create transparency

Reduce Costs
- Remove intermediates and middlemen
- Get rid of expensive overhead

Accelerate
- Reduce the time required to get a secure answer
- Allow autonomous M2M interactions

Source: IBM Watson IoT
Potential Focus Areas

**Smart Production**
- Production
- Data Handling
- Supply Chain & Logistics

**Smart Products**
- Product
- Transparency
- Product Data Handling

**Smart Processes**
- Smart Services
- Collaboration Platforms
Stage 1 Content:
- Development of a **structured and detailed knowledge base**
- Internal and external **expert input** regarding different underlying technologies like blockchains and tangle
- **Segmentation** of different application fields and target markets

⇒ **Information for a common understanding and profound basis**

Stage 2 Content:
- Assessment of most relevant **use cases, best practices and research activities** within the derived segments
- **Technical** and **economic** evaluation in terms of short fact sheets
- Assessment of **potential collaboration partners & solution providers**

⇒ **Information basis for selection of relevant detail cases**

Stage 3 Content:
- **In depth technological or economic analysis** of defined use cases according to the partners needs
  - **Technical implementation**, to develop a **roadmap** and define stage gates
  - Assessment of potential **added value, costs for implementation or business model generation**

⇒ **Information basis for subsequent partner-specific roadmaps/decisions concerning the initiation of specific monitoring, demonstration or implementation projects**
Project Framework

Market Perspective

How do I evaluate the economical potential of a blockchain solution?

How can I establish the right network of partners for leveraging the potentials?

For which of my business needs is a blockchain applicable?

Structured Overview

Which other applications exist based on markets and focus areas?

Which applications could disrupt my current business?

Knowledge

How do I implement gathered data in a blockchain / tangle?

What infrastructure do I need to setup in my company?

Deep Dive

What kind of Distributed Ledger Technologies (DLT) exist beside blockchain?

Are there best practice examples of blockchain / tangle usage in my field of application?

Technology Perspective

Are there existing solutions for my problems and how are they working in detail?

What are the technological differences between various approaches and what is the most suitable for my use case?

How do I identify research entities, start-ups & collaboration partners for the implementation?
Knowledge Base

- **Build up background knowledge** regarding blockchain-based or blockless systems like directed acyclic graph/tangle and hybrid systems
- Understand the differences and advantages of different distributed consensus methods like proof of work, burn, capacity, stake, activity, etc.
- Generate a common understanding & discuss relevant issues with the consortium partners

Segmentation

- **Structured overview** of branches where the different technologies could be beneficial
- Possible fields of application and general concepts like smart contracts, “long data”, trace (food) contamination, verification of software updates, etc.

⇒ **Consortium votes for the most relevant segments based on partners’ needs and interests. Applications dedicated to these selected segments will be assessed in Stage 2.**
Technology & Market Analysis

- Scouting for **relevant blockchain applications**, already in use or under research within the selected focused areas
- **Structured overview** of best practices, concepts and solutions that are already in use or under development
- Analysis of the application on a **technical** level:
  - What type of **distributed ledger technology** (e.g. Blockchain), consensus mechanism (e.g. proof of work), etc. is used and why?
- **Assessment of the market potential**:
  - What is the market potential or are there possible synergetic uses?
- Identification of **cooperation partners** like suppliers, key researchers or business partners
- Identification and discussion of challenges to cope with, as basis to define a **roadmap**

⇒ **Consortium votes for blockchain applications to be further deeply evaluated in Stage 3**
Exemplary Proceeding & Results
Stage 3: Technology or Business Case

Technology Case
- In depth **technological assessment** of different concepts their advantages & challenges regarding the specific application
- **Implementation or development roadmap** to define stage gates and identify key players to talk to
- In depth analysis of a possible example use case from development to roll out

Business Case
- Evaluation of a possible business case regarding implementation costs and ROI
- **Comparison** of different solutions and concepts regarding their technological and market potential
- **Overview and suggestion** regarding possible development **strategies** within the defined scenario like wait and buy up or becoming an innovation leader
- Assessment of potential new **Business Models**

*Exemplary extract of technology case*
Consortium Structure

**Consortial Partners**
- Representatives of companies in industries potentially affected by blockchain related technologies (management & application experts)
- Professionals in strategy, business development, product development, production and marketing

**Technology Providers**
- Software, platform and ICT providers
- Smart Data providers
- System integrators
- Start-Up ecosystems

**Research Institutes**
- Approx. 20 consortium partners
- € 25,000 per partner
- 10 month duration (Mar ‘18 to Dec ‘18)
- Worldwide scope
- Kick-off and two interim meetings
- Final presentation and report
Project References

Consortial Project Framework:

- **Result generation by research partners** (TIME Chair RWTH, FIR, Fraunhofer IPT & FIT)
- **Face-to-face results presentation** and discussion with industrial consortial partners
- Moderated **cross-industrial workshops** and expert key note speeches
- **Networking** with a cross-industrial consortium and highly relevant research entities

*amongst others all mentioned companies were partners of a former consortium project hosted by KEX AG and its research partners*
Your Contacts
A Powerful Team in Technology Research

Expert Network in Aachen:

Fraunhofer IPT
Knowledge and experience in all fields of production technology for developing and optimizing solutions for modern production facilities

FIR - Institute for Industrial Management at RWTH Aachen
Industry-oriented research in the areas service, information and production management

Demonstration Factory Aachen
Application, exploration and further development of Industrie 4.0 solutions with industrial and research partners

TIME Chair RWTH Aachen
Technology and innovation management, business model innovation

Additional Experts:

Fraunhofer FIT
For about 30 years now Fraunhofer FIT has been conducting R&D on user-friendly smart solutions that blend seamlessly in business processes

Fraunhofer IML
Founded in 1981 with 260 employees is said to be first address for all questions with respect to holistic logistics

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