


DIGITAL FARMING

Opportunities for new business models and artificial intelligence in the field



A faded background image of two men, likely farmers, standing in a grassy field. The man on the left is wearing a plaid shirt and overalls, and the man on the right is wearing a light-colored shirt and a dark vest. They are both looking down at something in their hands, possibly a clipboard or a piece of paper. The background shows a grassy field and some trees in the distance.

*„Two aspects are essential for me:
it must **work properly** and
it needs to **pay the bill**“*

– Every farmer, everywhere, always

A WORD FROM MANAGEMENT

The agriculture machinery industry and digitalization go hand in hand. Artificial Intelligence, Internet of Things and Digital Services are highly prioritized topics. Opportunities offered through digitalization can be applied along the manufacturers entire value chain.

Our clients are willing to take the path into a digital future and often have one essential question: “Where to start?”

As one of the leading consulting companies in the field of innovation and digitalization, Capgemini Invent supports you in the definition of your digital initiatives and accompanies you as a partner into your digital future.

We are looking forward to taking this path together with you.

AGENDA

1. Challenges for agriculture machine manufacturer

2. Opportunities for agriculture machine manufacturer

- *Deep Dive 1: Insights Driven Operations*

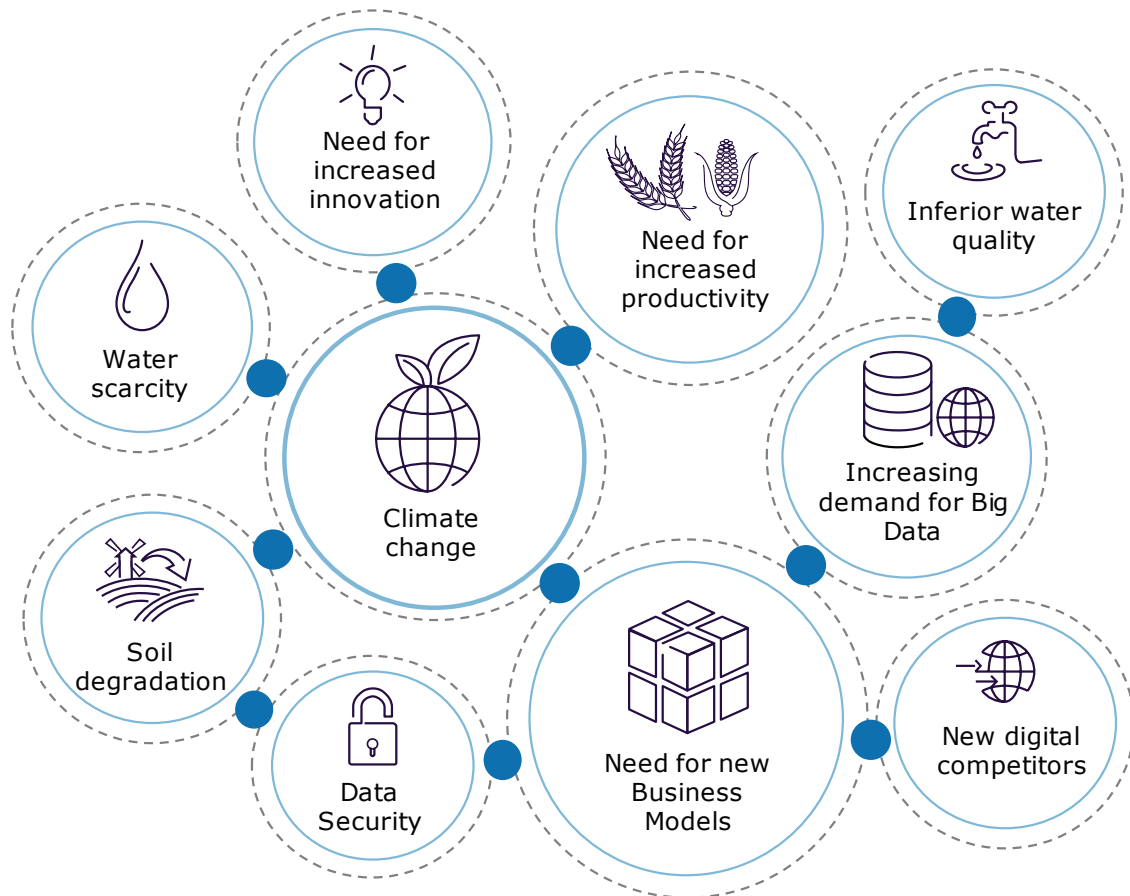
- *Deep Dive 2: Connected Services*

- *Deep Dive 3: Intelligent Automation*

3. Digital Farming @ Capgemini Invent and whom to contact

THE DEVELOPMENT TOWARDS AGRICULTURE 4.0 IS ACCELERATED BY VARIOUS CHALLENGES

Challenges for agriculture machine manufacturers



NEW TECHNOLOGIES HELP TO ESTABLISH A FLEXIBLE AND OPTIMIZED VALUE CHAIN

Digital Farming Opportunities

By plant data

Precise agricultural decisions made at the plant level (sense, decide, learn, execute) to increase planning, harvesting, feeding etc., ultimately maximizing yield

Sensors

Smart sensors collecting data, helping farmers monitor crop health, weather & soil quality

Nanotechnology & precision agriculture

Nanoparticles delivered to plants and advanced biosensors for precision farming

Intelligent Automation

Automation of complex processes through the implementation of advanced software

Insights Driven Operations

Precise agricultural decisions made at the plant level (sense, decide, learn, execute) to increase planning, harvesting, feeding etc., ultimately maximizing yield

1

Machine Learning and Image Analysis

prevent incidents and improve future outcomes by optimizing planning, feeding, machine health etc.

Variable Rate

Applications (VRA) focuses and first line on the automated application of materials like herbicides, chemicals, and seeds to a landscape

Vertical Farming

"Light recipes" for indoor crops and any-season-farming technology

Farm Management Information Systems (FMIS)

Application focused on performing farm financial analysis based on all farm transactions and estimating profitability

Connected Services

IoT services enable new digital business models

2

Blockchain

Track & trace from farm to consumer enables farmers see where their products are, or how many days ago their product were harvested in order to increase food security, compliance and sustainability



* = deep dive information on following pages

Digital Customer

...trends provide growth opportunities through increased customer understanding, customer touch points and a superior customer experience

Digital Operations

...trends create a momentum for operational efficiency through process automation, increased connectivity and production transparency

Digital Business

...trends enable digitally modified business or new business models based on disruptive innovations in the market

OUR INSIGHTS DRIVEN USE CASES CREATE SUSTAINABLE AND SCALABLE BUSINESS VALUE

1 Insights Driven Operations – Our Offering



Capgemini Approach

- We combine **data science capabilities** with a **business driven mindset**
- Our **industry know-how** enables tailored use cases to our clients **specific needs**
- Our collaborative approach ensures **sustainable integration** into the client organization



Data Science Expertise

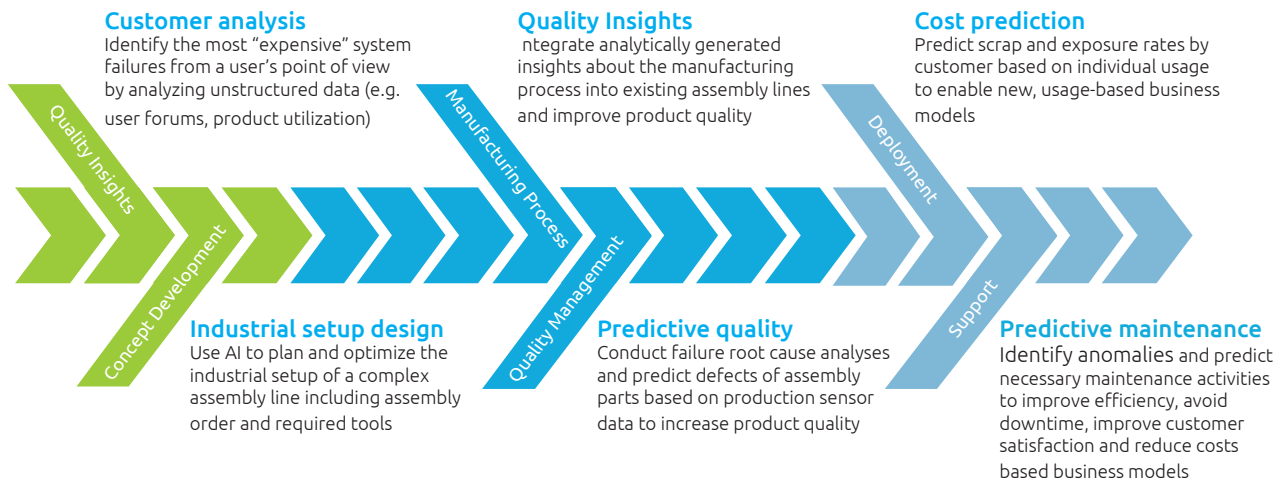
- **Artificial intelligence** for assembly line design or for predictive maintenance
- **Computer vision and machine learning** for detection of quality problems
- **Natural language processing** to enable analytics on written manufacturing documents



Client Benefits

- **Business impact** (improved quality, improved uptime, increased revenues, higher efficiency)
- **Scalability** in delivery model and across value chain
- Solutions embedded into organization, technology and processes for **sustainable results**

Insights Driven Operations – Example Use Cases



Product Life Cycle Stages:

Design



Production







Services



WE CREATED ANALYTICAL QUALITY SOLUTIONS TO REDUCE COST AND BOOST PRODUCTIVITY

1 Insights Driven Operations – Project Reference

<h3>Situation</h3> <div></div> <p>Our client, a leading avionics OEM, faces high cost of non quality along the complete value chain. Furthermore, manual evaluation and decision taking results in high workload</p>	<h3>Solution</h3> <div></div> <p>We supported the integration and linkage of quality data across units and locations to generate new insights by end-to-end KPI monitoring and search engines as well as AIs to predict and prevent quality issues</p>	<h3>Benefit</h3> <div></div> <p>Our tailored quality solutions reduced cost by easy access to quality knowledge including outcome predictions and reduces workload by automatization of complex analyses</p>	
<h3>Analytics product delivery approach</h3> <div><div>Qualification</div><div>Sprint 0</div><div>Product Life Cycle</div><div></div></div> <div><div>Review of analytics use case, business case & funding</div><div>Deep dive into product, business value, team sizing, data & architecture</div><div>Development of the product together with end users in agile mode</div><div>Maintain the product and associated service level</div></div> <p>Our proven scalable (>100 use cases) agile delivery approach for analytical solutions, considering business needs, data and architecture, ensures user-centric solutions with high quality and success rate</p>		<h3>Tailored digital solutions</h3> <div><div>Enterprise Search</div><div>Data Explorer</div><div>Quality Reporting and Alerting</div><div>Predictive Maintenance</div></div> <div><div>Search all quality data like in Google to find problem solving procedures for your quality problem</div><div>Explore and navigate the connected datasets to investigate quality issues und relationships</div><div>Automatize report generation and steer quality processes with real time KPIs and notifications quality problem</div><div>Lay the foundation for predictive and preventive quality use cases on shop floor or machine level</div></div>	

CONNECTED SERVICES CREATE NEW REVENUE AND HIGHER CUSTOMER SATISFACTION

2 Connected Services – Our Offering



Use cases

- **Digitally enable existing services**
e.g. usage-based insurance
- **New connected services**
e.g. monitoring and predictive maintenance
- **Farm-site related services** e.g. drone monitoring



Benefits

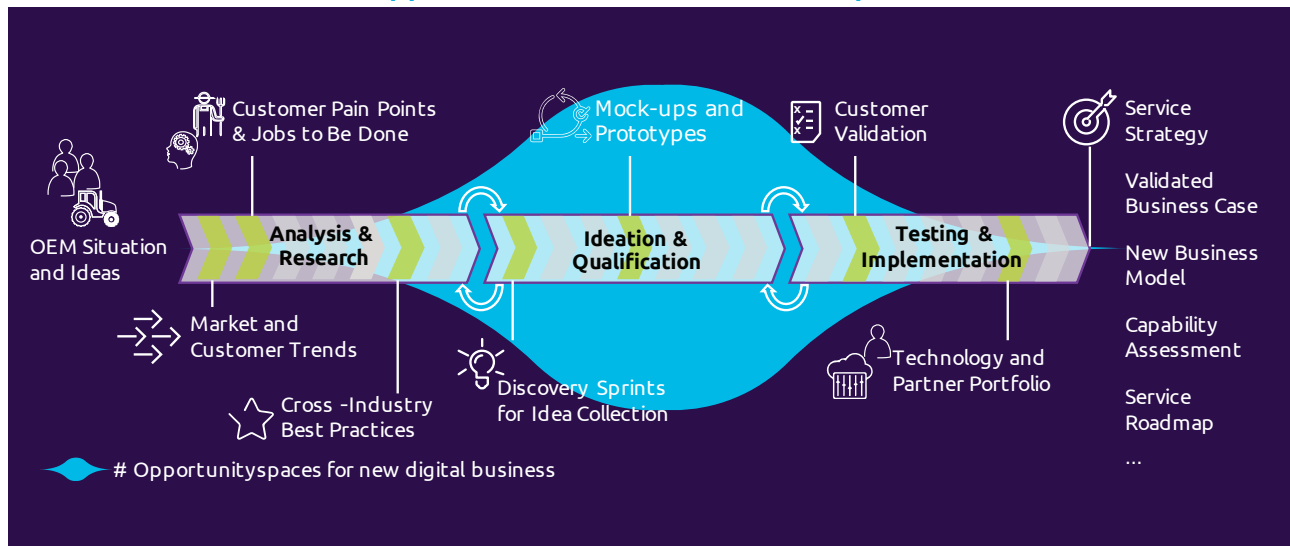
- Increased and sustained **revenue** by higher margins and automated processes
- Better fulfillment of **customers' needs and satisfaction**
- **Differentiation** from competitors and contrary to commoditization



Capabilities

- Create a **customer centric portfolio** of digital and non-digital services
- Define how to deliver services with own and dealer **capabilities**
- Design **prototypes**, develop **rollout** and how to **go-to-market approach**

Customer Centric Approach for Connected Services / New Business Models



WE ENABLE NEW SERVICE REVENUE WITH A CUSTOMER-CENTRIC AFTERSALES BUSINESS

2 Connected Services – Project Reference

Situation



Our client, a leading multi-brand agricultural equipment manufacturer, decided to drive a shift from simply selling finished goods and parts towards providing digital after sales services

Solution



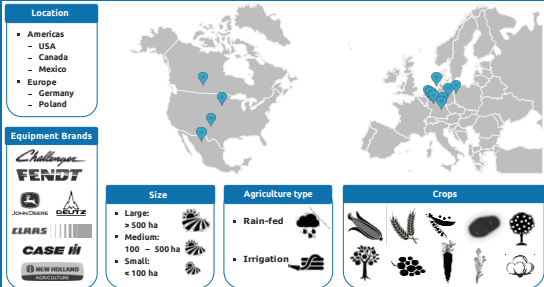
Capgemini supported the client in developing a comprehensive portfolio of their commercial services offer for connected and non-connected machines to boost customer loyalty

Benefit



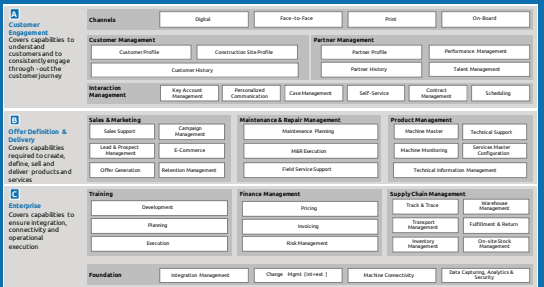
Together, we developed end-to-end processes and new service-based business models along the implementation roadmap, resulting in additional revenue streams

Capgemini's farmers panel for customer pain point validation



- Capgemini's farmers panel consists of >40 Farmers and Experts
- Enablement of customer pain point validation and hands on prototype testing




Sustainable increase of customer loyalty with our capability model



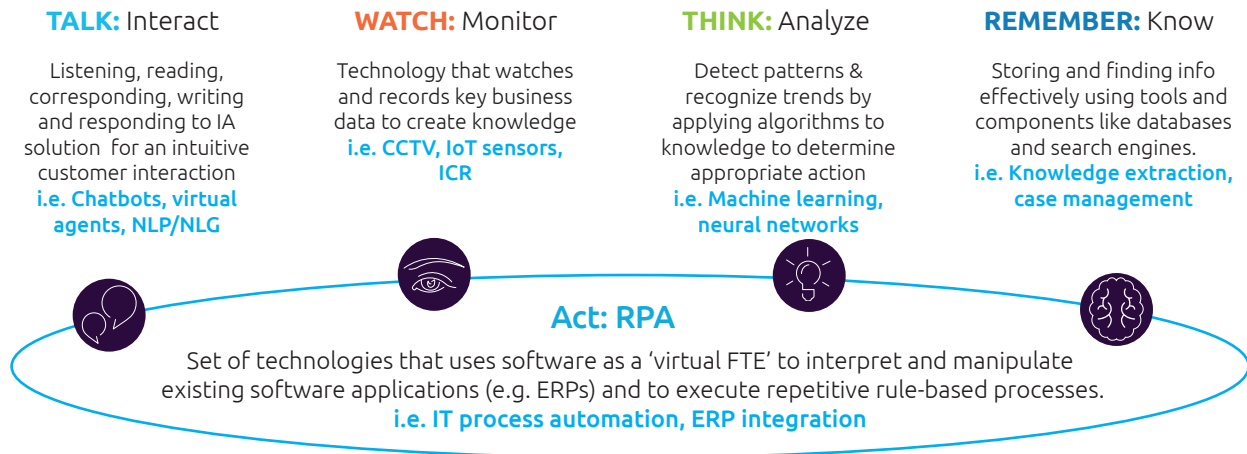
- Required key-capabilities throughout the organization to enable long-term competitiveness in delivering customer-centric solutions

IDENTIFYING THE RIGHT PROCESS CHANGES & AUTOMATION SOLUTIONS FOR YOUR NEEDS

3 Intelligent Automation – Our Offering


 Use cases	 Benefits	 Capabilities
<ul style="list-style-type: none"> • Robotic Process Automation (RPA) to manage high-volume, repetitive tasks • Natural Language Processing (NLP) and Natural Language Generation (NLG) • Machine learning enables user-level automation without changing existing processes or systems 	<ul style="list-style-type: none"> • Lower error rate through supportive technologies • Revenue boost by identifying & maximizing (sales) opportunities as well as increased operational efficiencies • Superior customer experience due to better analytics insights 	<ul style="list-style-type: none"> • Mass automation of manual entries. Implementation of Chat- & Voicebot with new user interfaces • Prediction of future customer actions and value as well as • Read-out and transformation of PDF into structured data

Intelligent Automation Service Offering



WE DEVELOPED AN ACTIONBOT THAT UPDATES MASTER DATA AUTOMATICALLY

3 Intelligent Automation – Project Reference

Situation	Solution	Benefit
 <p>Our client, a leading company of the manufacturing industry, decided to increase its customer experience by applying intelligent automation</p>	 <p>We implemented a Chat- and Voicebot starting with the input channel chat and clients' wish to change their postal address. The scalability of AI and RPA thus allowed us to extend the complexity of the use case</p>	 <p>The AI and RPA capabilities and functions are scalable. Therefore, we combine the strength of AI and rule-based RPA. Approved data is entered with-out human error potential</p>

Smart automation via Chatbot / Voicebot

Input Channel:



IBM Watson™

UiPath

SAP HANA

- Chat
- Phone

Human interaction

- Chatbot
- Voicebot

No Human interaction

- Robotic process automation

No Human interaction

- ERP-System

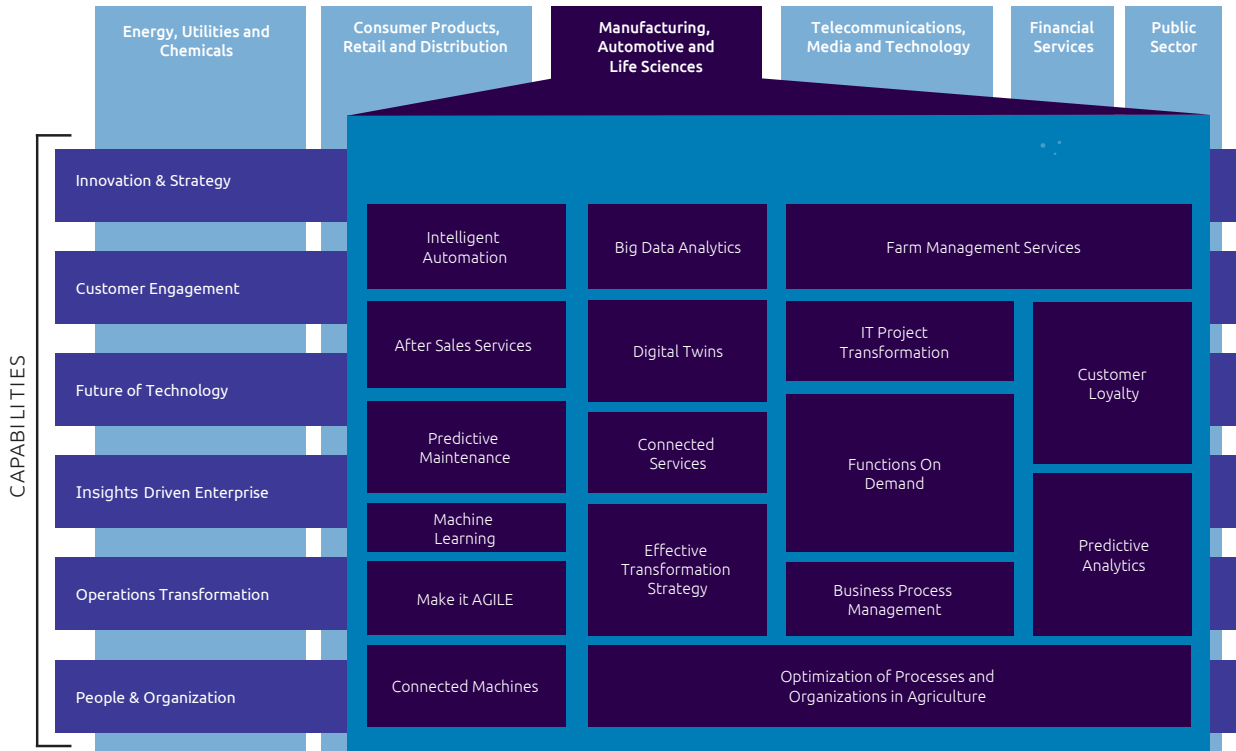
No Human interaction

CAPGEMINI INVENT COMBINES KEY DIGITAL CAPABILITIES WITH DEEP SECTOR EXPERTISE

Digital Farming @Capgemini Invent



SECTORS



WE ARE LOOKING FORWARD TO WORKING WITH YOU

Your Capgemini Invent Contacts



Steffen Elsässer

Executive Vice President
Managing Director Central Europe
steffen.elsaesser@capgemini.com



Volker Darius

Executive Vice President
Insights Driven Enterprise
volker.darius@capgemini.com



Dr.-Ing Leonardo Weiss

Principal
Customer Engagement
leonardo.weiss@capgemini.com



Bastian Thöle

Principal
Insights Driven Enterprise
bastian.thoele@capgemini.com



Aljoscha Klopotek

Principal
Insights Driven Enterprise
aljoscha.klopotek@capgemini.com





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