



**A Premium Geospatial Industry Conference**

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# Geospatial World Forum (GWF)

- *Digital Agriculture* -

## Data Driven Agriculture – 5G and autonomous systems



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# TITUS Research GmbH

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In research and development, TITUS Research deals with autonomous vehicle systems, corresponding infrastructures, organisational forms and business processes.

Autonomous systems are able to solve complex tasks independently without human interaction in the context of legal and context of legal and ethical requirements, given varying targets, initial and environmental conditions.

They are able to independently generate a plan of action with regard to a given task, with which the overall goal specified by the overall goal specified by the operator of the autonomous system is achieved.

If individual actions fail during the execution of the plan, the system independently carries out a revision of the current plan in of the current plan in order to achieve the specified goal by alternative means.

# TITUS | fields of action



- Education



Study course  
"Autonomous  
Vehicle  
Systems"

- Training
- Certification



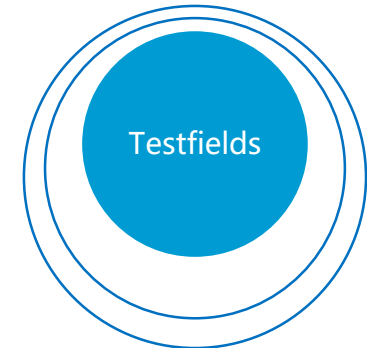
- fully automated mission evaluation
- data management (Big Data)



- Navigation
- Positioning (exact, precise)
- Energy management
- Safety, security



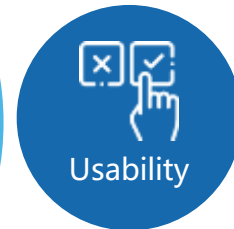
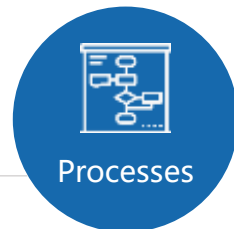
- Platforms
- Sensors
- Actuators



## cross-cutting issues:

- communication
- cyber security
- blockchain
- simulation
- AI (machine/deep learning)
- AR/VR
- ...

- full digitization
- integration of unmanned (autonomous) systems



- Process oriented mission planning
- Mission control (e.g. AR, gesture, speech)

- Airport management
- Port management
- Yard management
- Fleet management
- Access management (e.g. industrial parcs)



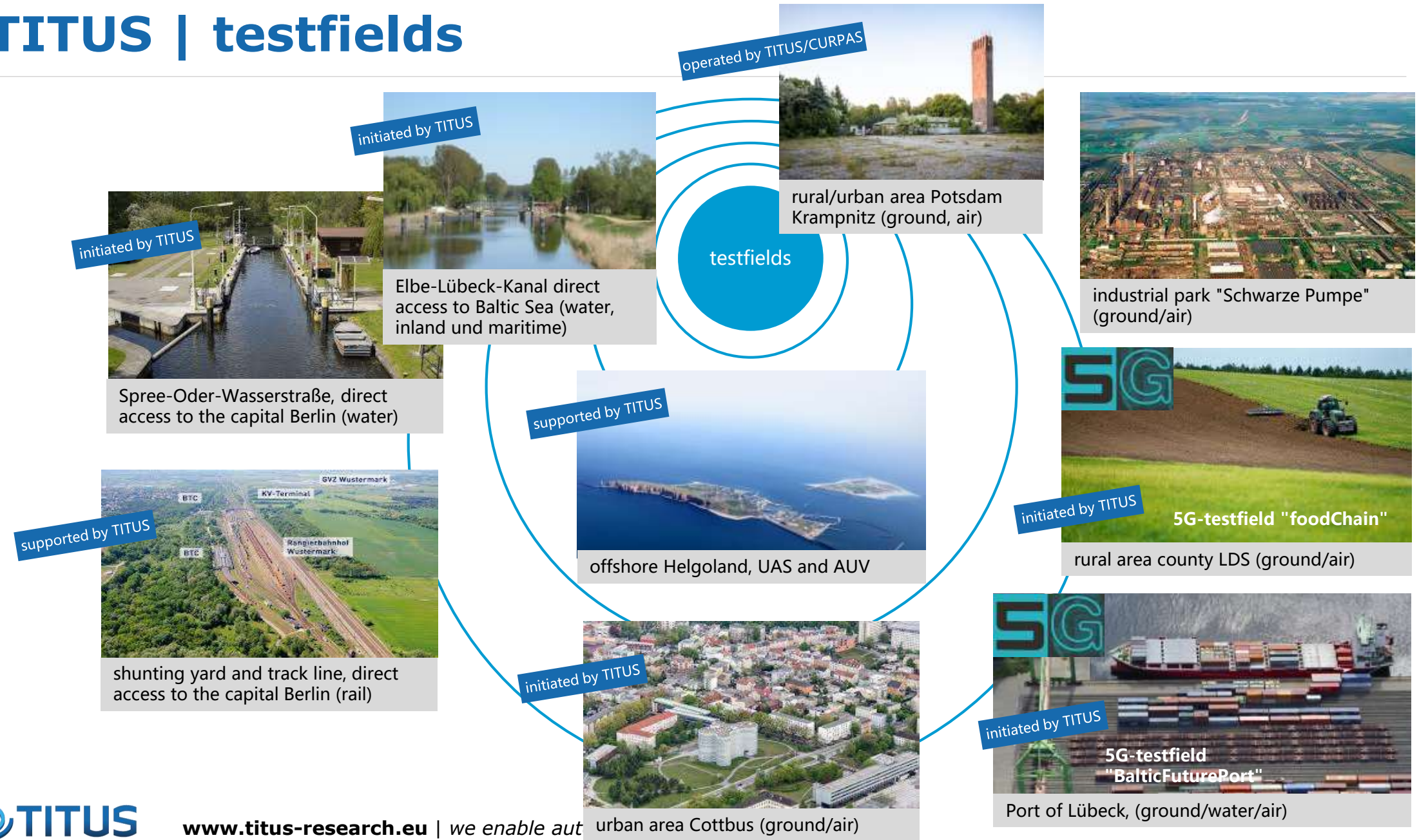
- Interaction autonomous vehicles/ automated traffic infrastructure
- Fully automated process chains (e.g. load change stations in logistics)

Urban Operating System



- Traffic-control & -management
- Accident management
- Control stations

# TITUS | testfields



# 5G | a new technology

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5G enables a new kind of network that is designed to connect virtually everyone and everything together including machines, objects, and devices.

*The features:*

## **Enhanced mobile broadband**

In addition to making our smartphones better, 5G mobile technology can usher in new immersive experiences such as VR and AR with faster, more uniform data rates, lower latency, and lower cost-per-bit.

## **Mission-critical communications**

5G can enable new services that can transform industries with ultra-reliable, available, low-latency links like remote control of critical infrastructure, vehicles, and medical procedures.

## **Massive IoT**

5G is meant to seamlessly connect a massive number of embedded sensors in virtually everything through the ability to scale down in data rates, power, and mobility -providing extremely lean and low-cost connectivity solutions.



# our project | foodChain

On behalf of the German Federal Ministry for Digital and Transport, TITUS is working on a highly innovative project to show the benefits of 5G-telecommunication for the interlinking of sustainable crop production and digital products.

Addressing crops that are grown in organic quality and are subject to strict conditions in their cultivation, proof is provided that the intelligent combination of autonomous land and air vehicles, state-of-the-art sensor- and communication technology and the use of artificial intelligence achieve increases in productivity and quality - a major advance for agriculture.



source:  
Shutterstock

# foodChain | the farmland



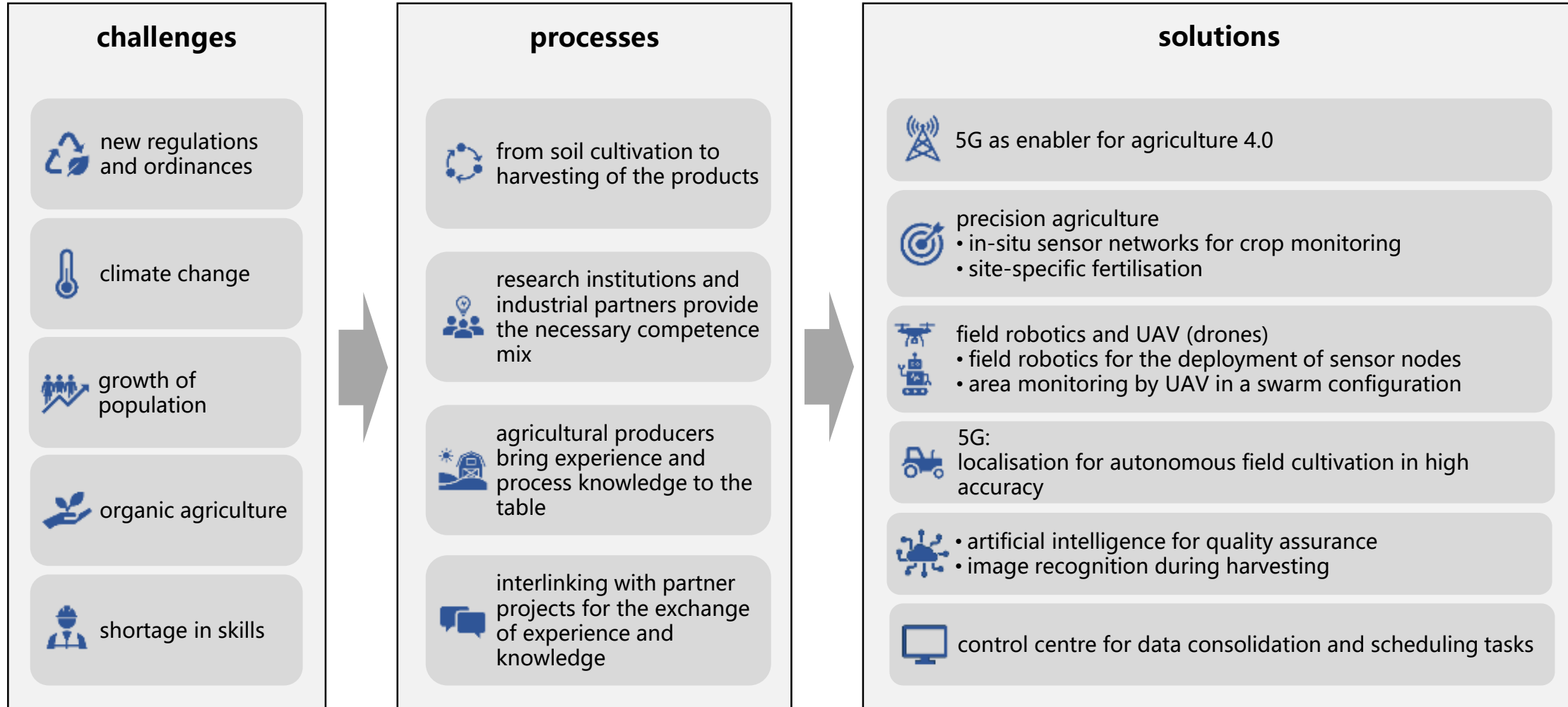
potatoes in organic quality

cucumbers in organic quality

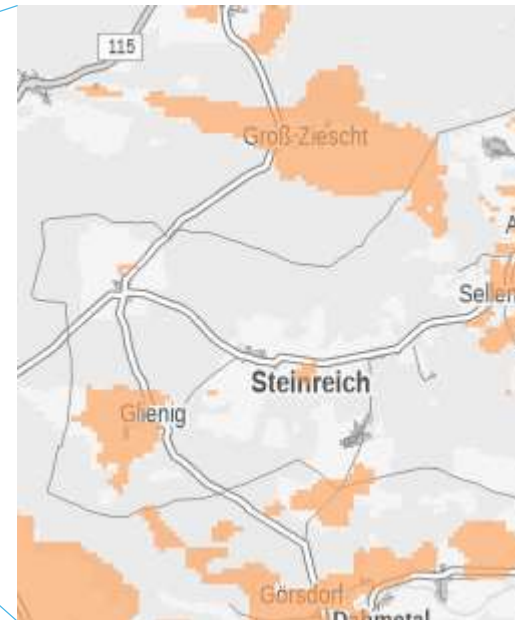
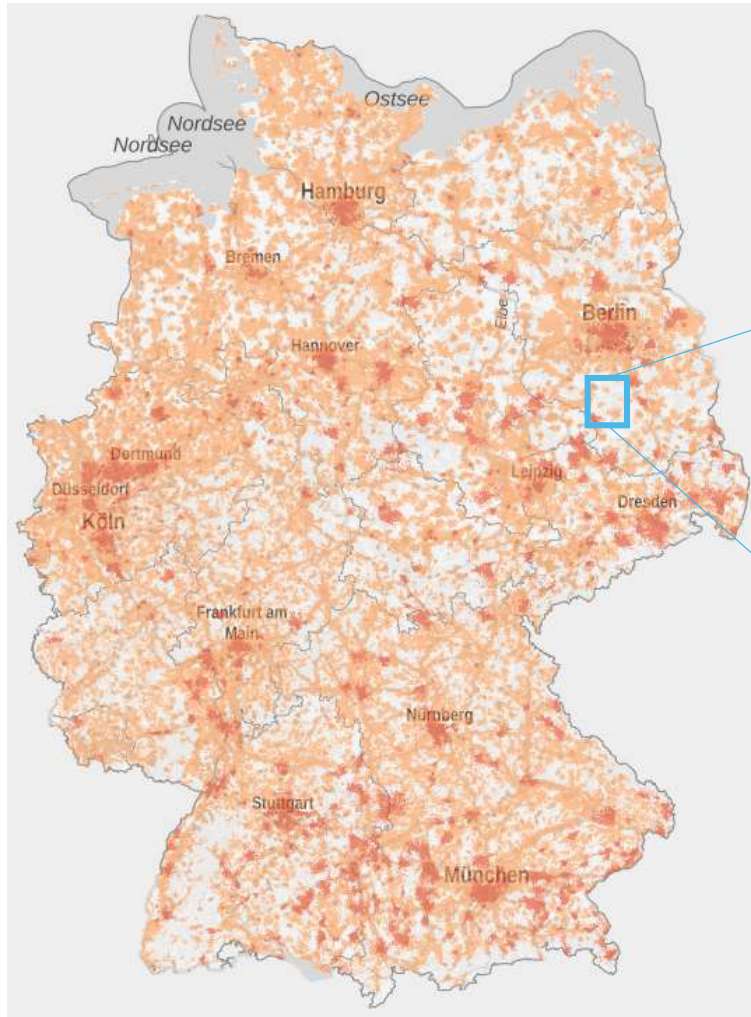




# foodChain | the concept



# 5G | network coverage | Germany and project area

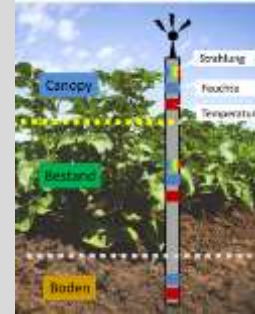


maps: Bundesnetzagentur

# 5G | infrastructure

our solution:

a private mobile campus-network  
with containerized stations



in-situ-sensors



field robot



drones



potatoe digger

# contact



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