GAF AG
an e-GEOS (ASI / Telespazio) Company

Innovative Solutions in Support to the Governmental and Insurance Sectors

Dr. Axel Relin

Space Solutions for Sustainable Agriculture - ***Where space data, connectivity and new technologies connect with the agri-food sector***
Wartehalle, Berlin

25.01.2023

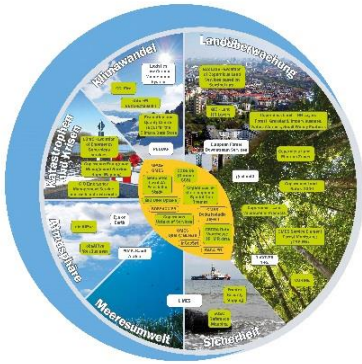
Company Information

- More than 35 Years Geotechnology Solutions
- 230 Employees (Multidisciplinary Scientists – Agriculture, Forestry, Environment Geology..)
- Munich (Headquarters) & Neustrelitz (MV)

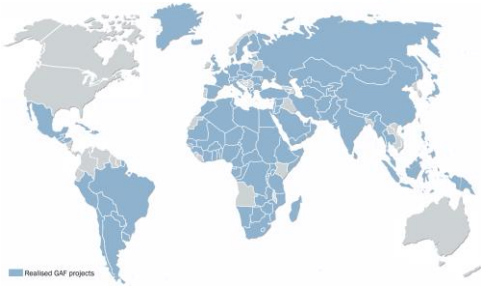
Geoinformation: Solutions from Single Source

➢ Geodata:
Reception – Distribution – Processing

➢ Services & Products:
Geoinformation Products, Systems, Software & Integrated Satellite Services

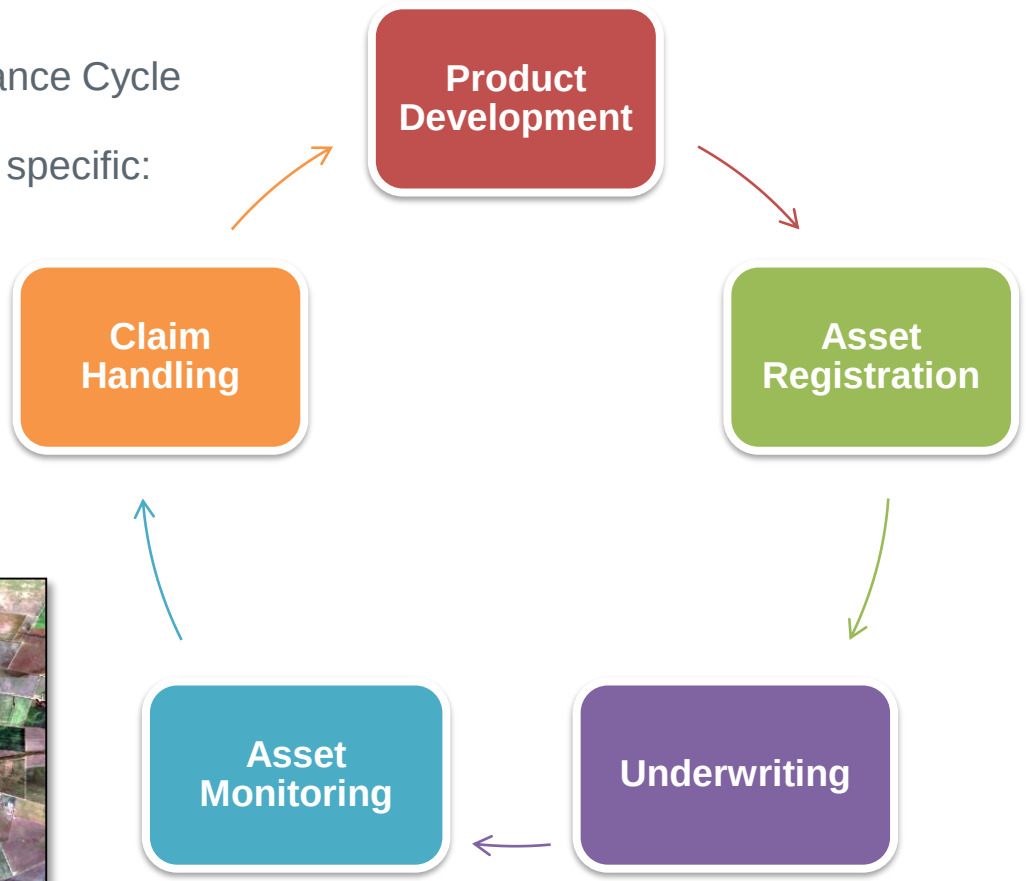


➢ Consulting Services in > 100 Countries:
Professional & Institutional Consulting, Project Management



Agricultural Insurance – Specific User Requirements

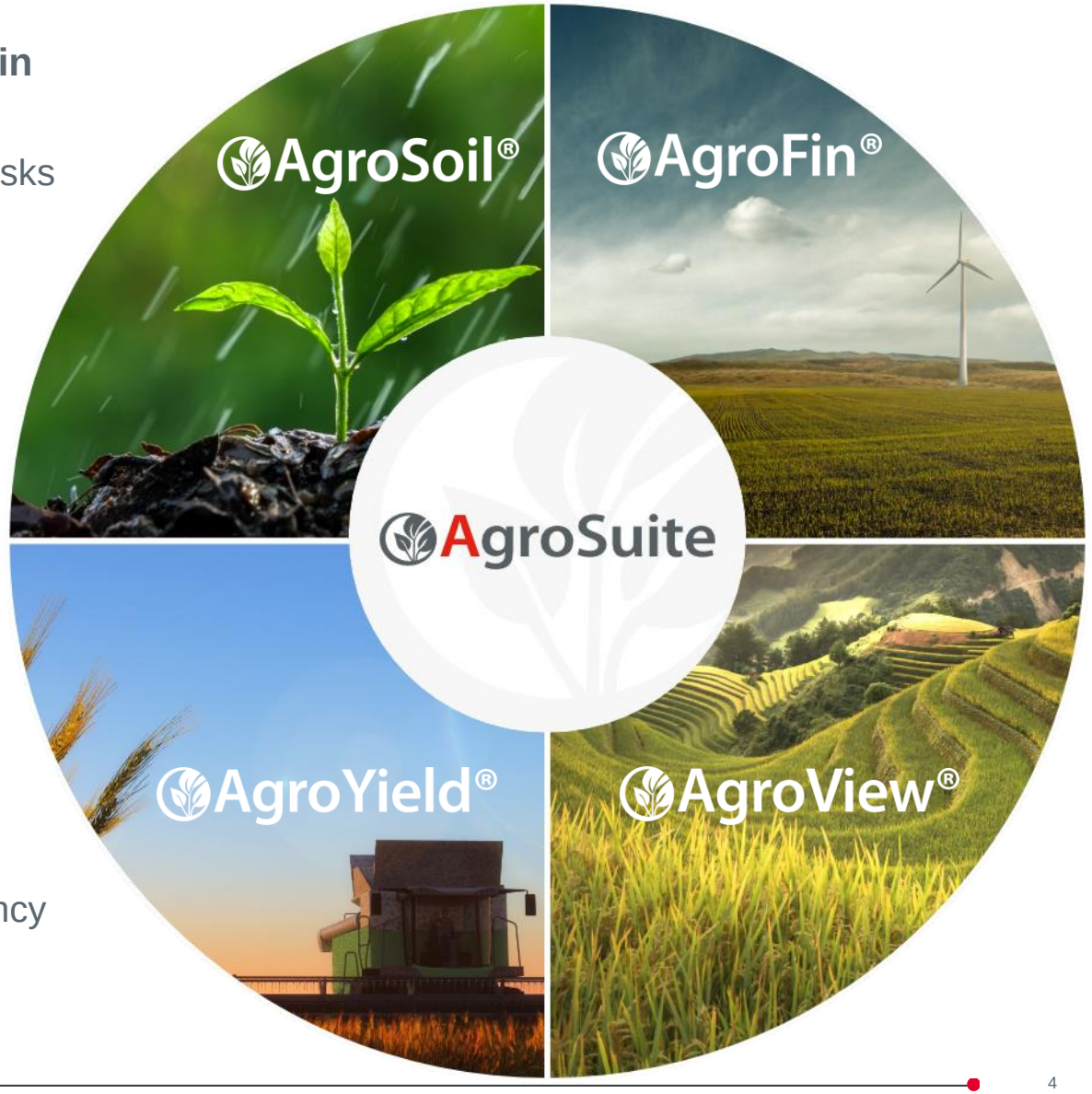
- Remote Sensing and Geodata are needed throughout all phases of the Insurance Cycle
- Requirements of the Insurance Sector on EO Products and Services are very specific:
  - Long Historic Coverage
  - Consistency
  - Data Continuity
  - Adequate Fallback Solutions
  - Accuracy & Reliability
  - Cost Efficiency



AgroSuite – Modular and flexible Solutions for Agricultural Insurance

Supporting Agricultural Insurance along its complete Value Chain

- State-of-the-Art Earth Observation and Geospatial Analytics reducing risks throughout the phases of the Insurance Life Cycle:
  - Tendering, Risk Assessment and Pricing
  - Novel Index Insurance Product Design
  - Agricultural Portfolio Monitoring
  - Claims Assessment and Settlement
- Global applicability
- High adaptability to User and Market requirements
- Fully Cloud-based solutions for reliability, performance and cost-efficiency



AgroSoil® – Global & Accurate Soil Moisture Analytics

EARSC
The European
Product Award 2022
AgroSoil
by GAF AG
1st place

- Demand for high Spatial, Temporal and Vertical Resolution Soil Moisture Data useful at field-scales
- Tailored Soil- and Crop-specific Modelling Process targeting the full rootzone (0-100 cm depth)
- Builds upon global research coupling top-notch Process-based and Machine Learning Disaggregation Models
- AgroSoil is the first Soil Moisture product to provide full-rootzone Soil Moisture at high Spatial Resolution

AgroFin® – Flexible Index Insurance Product Design

What?

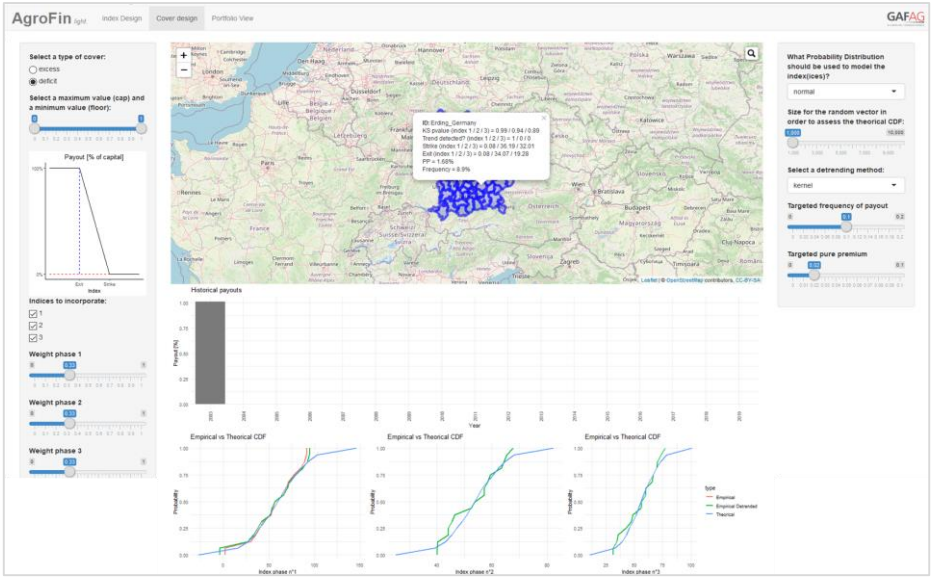
- Flexible tool for analysing and designing Index Insurance Products based on EO and Weather Data

How?

- Provides direct access to a variety of global EO-based Underlyings
- Flexible interface for Index Insurance cover design

Benefits for Insurance

- State-of-the-art Risk Assessment methodology
- Standardized Index Insurance Product Design
- Fast access and processing of numerous Underlyings



AgroFin Interface

AgroYield® – Accurate Yield Modeling

Patent Pending

Strengths

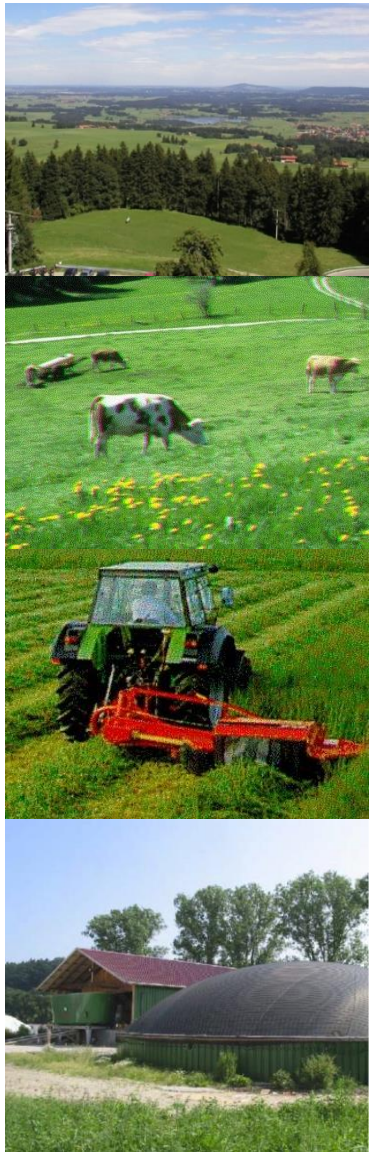
- Accurate, flexible and cost-efficient Yield Modeling approach
- Scalability to crops and regions

State of the Art

- Combines different Machine Learning models into a sophisticated model
- Data sources: Remote Sensing, Weather, Soil and other Datasets

Benefits for Insurance

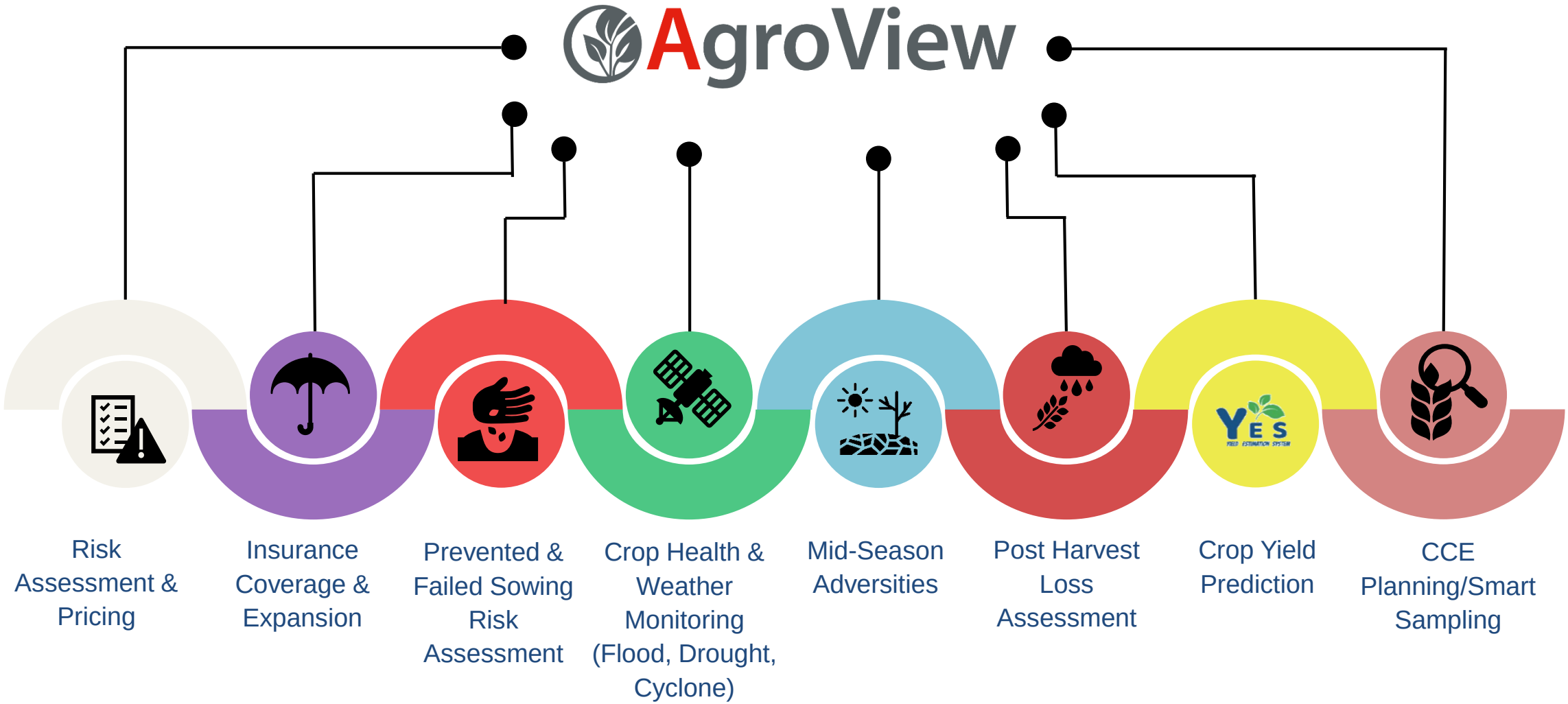
- Loss Estimation, with Yield Estimates up to 1-2 Months prior to harvest
- Reliable detection of Yield Variation, even under extreme events
- Higher precision in loss assessment



AgroView® – Tailored Insurance Support

In collaboration with Munich RE

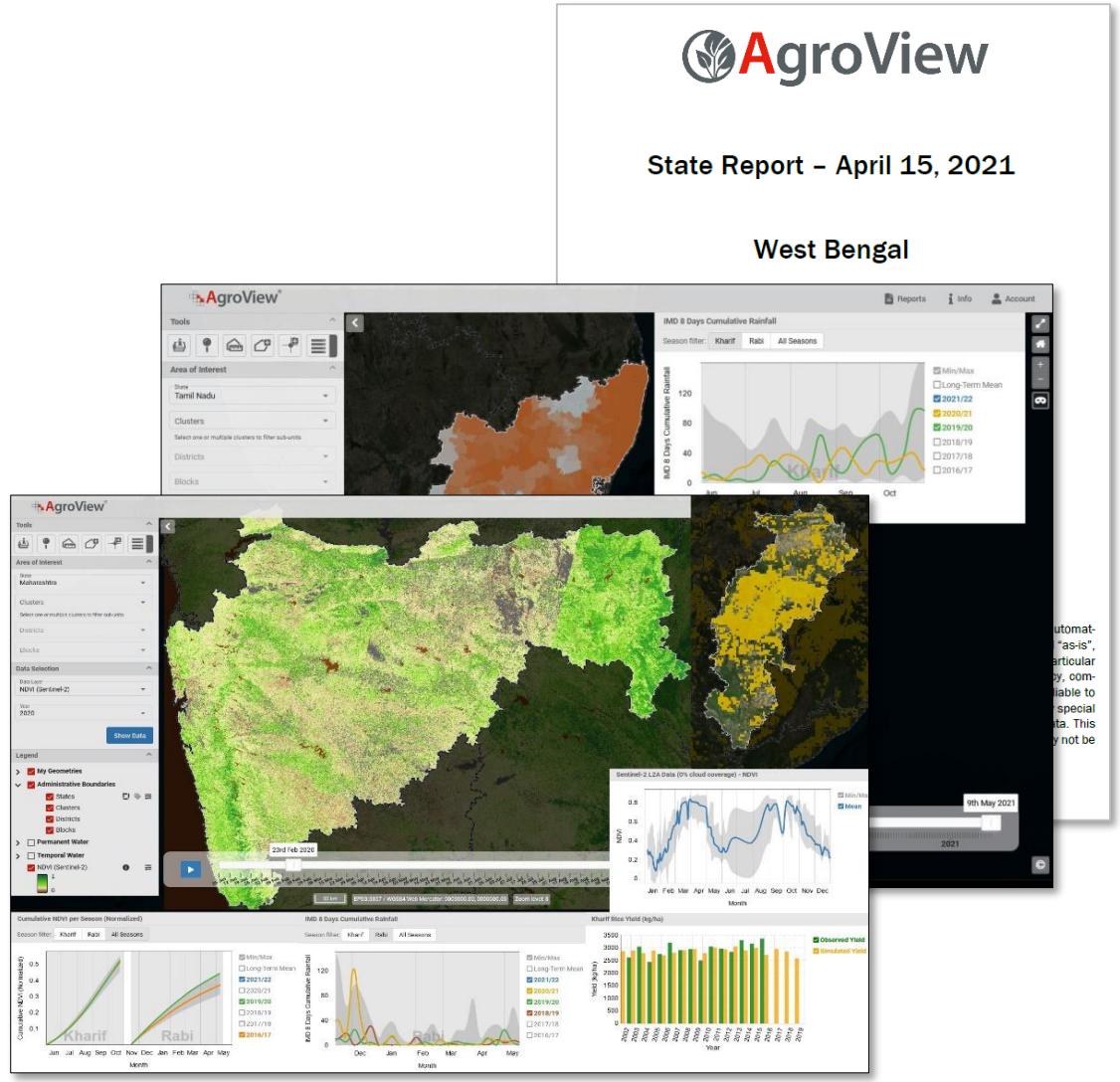
A Complete Solution for Crop Insurance



AgroView® – Tailored Insurance Support

In collaboration with Munich RE

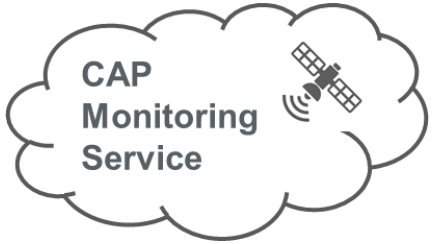
- Proven in operational use since 2020
- Used on National scale in India
- Increasingly used as well by Major Insurance Clients of MunichRe India
- Fast integration of processed Satellite Data (backend processing)
- Data Analytics available when needed & down to field level
- Numerous built-in tools and functionalities
- User-friendly packaged technology
- Easy browser access – No Plugins/ Software installation required
- Works on all types of devices



European Common Agricultural Policy – Automated Checks by Monitoring

Agricultural Monitoring for Federal Ministries of Food and Agriculture

The User Perspective…



Benefits

- Time saving purchasing of operational applications from external service providers
- Cost-efficient implementation of the area-wide Checks by Monitoring
- Flexible and customizable solutions, retrievable at any time

- Excellent technical expertise, transparent documentation and technical evaluation

Main Challenges

- Time constraints and dynamics in the national implementation of EU regulations and laws
- A ready-to-use infrastructure on both sides of the pitch
- A common understanding of technology-based Buzz Words
- Data protection requirements
- Timeliness

European Common Agricultural Policy – Automated Checks by Monitoring

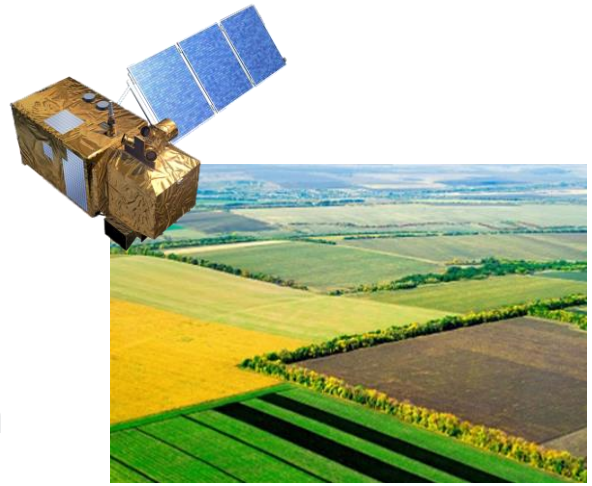
Agricultural Monitoring for Federal Ministries of Food and Agriculture

✓ **CROP CLASSIFICATION**

> 180 crop classes

✓ **MINIMUM ACTIVITY**

Detection of minimum activity on fallow land



✓ **AGRICULTURAL ACTIVITY**

Detection of agricultural activity on grasslands

✓ **BASELINE CHECKS**

Homogeneity, non-eligible area, land use change

European Common Agricultural Policy – Automated Checks by Monitoring

Agricultural Monitoring for Federal Ministries of Food and Agriculture

Strengths

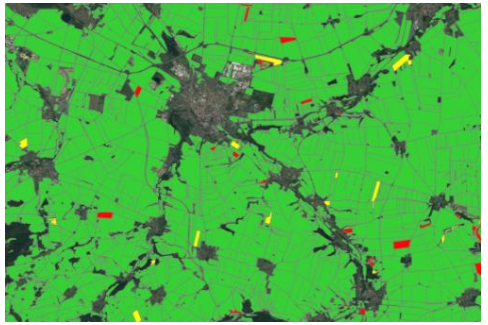
- Flexible and scalable cloud-based Monitoring approach
- Fully operational and nationally applicable

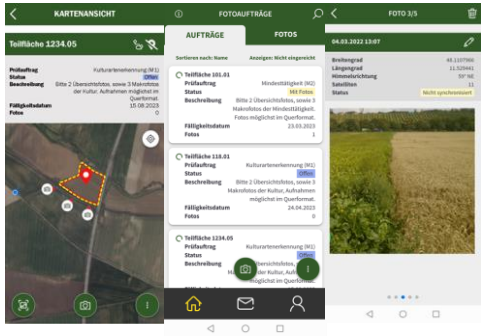
State of the Art

- Multi-source Data: Remote Sensing, Soil + Weather Data, in-situ Data
- Various Machine Learning algorithms and Time Series Analysis

Benefits for Users

- Long-standing expertise in space-based applications in the agricultural sector
- Excellent knowledge of policy, legal and practical dimensions and frameworks
- Fully flexible and customizable solutions





REGULATION (EU) 2020/2220
REGULATION (EU) 2021/540
REGULATION (EU) 2021/2116
REGULATION (EU) 2022/1173

LaFIS - Geoinformation Systems for Agricultural Administrations

What?

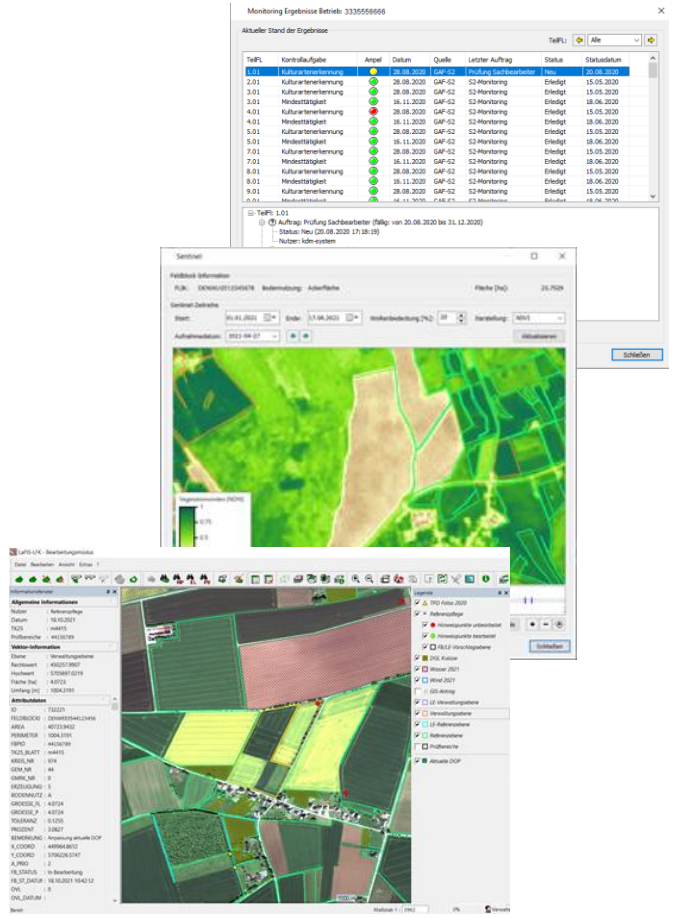
- Tailored administrative GIS solutions for the mandatory inclusion of GIS technologies in the Common Agricultural Policy (IACS-GIS)
- Management of the Land Parcel Identification System (LPIS) and on-site inspections including monitoring results

Benefits

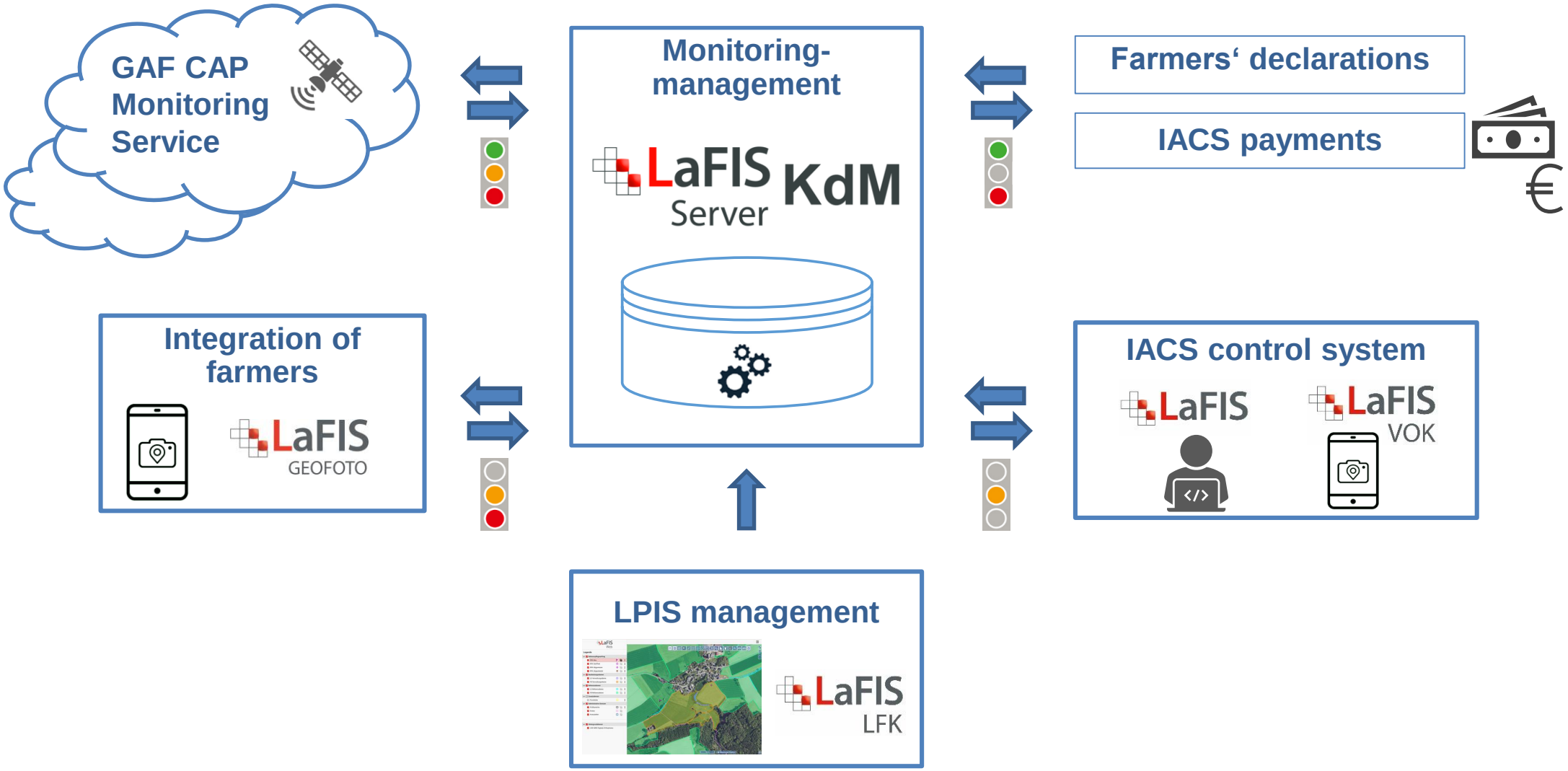
- Compliance with the applicable legislations and standards
- Various platforms: online and offline desktop clients, web client and apps
- Customized solutions

Challenges

- Adaptation to changes in the respective EU regulations, national implementations or individual customer requirements



Products and services for CAP 2023



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GAFAG

an e-GEOS (ASI / Telespazio) Company

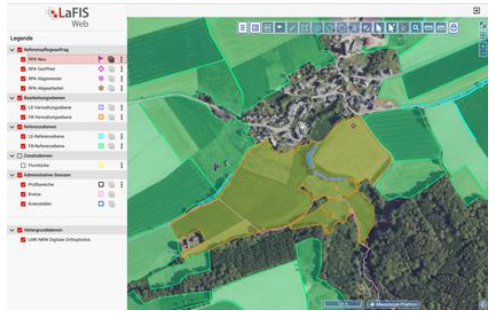
THANK **YOU**
FOR YOUR ATTENTION

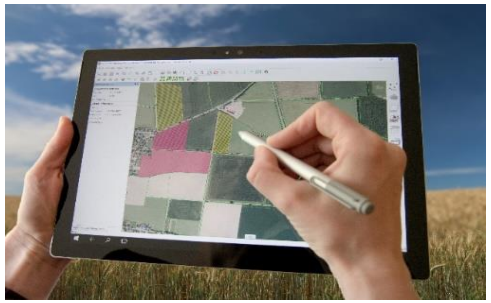
www.gaf.de

LaFIS - Geoinformation Systems for Agricultural Administrations

LaFIS® product suite – the IACS-GIS for administration

- LaFIS® EU-compliant support for administrative controls
- LaFIS®-LFK Compilation and maintenance of LPIS
- LaFIS®-Web Web-based framework for IACS-GIS
- LaFIS®-QC LPIS quality assessment and EU reporting
- LaFIS®-Server System for the execution of server-based business processes
- LaFIS®-VOK Assistance to administrative on-the-spot controls
- LaFIS®-VOK App Evaluation of monitoring results, rapid field inspection and on-the-spot checks
- LaFIS®-GEOFOTO Photo App for farmers within the framework of AMS





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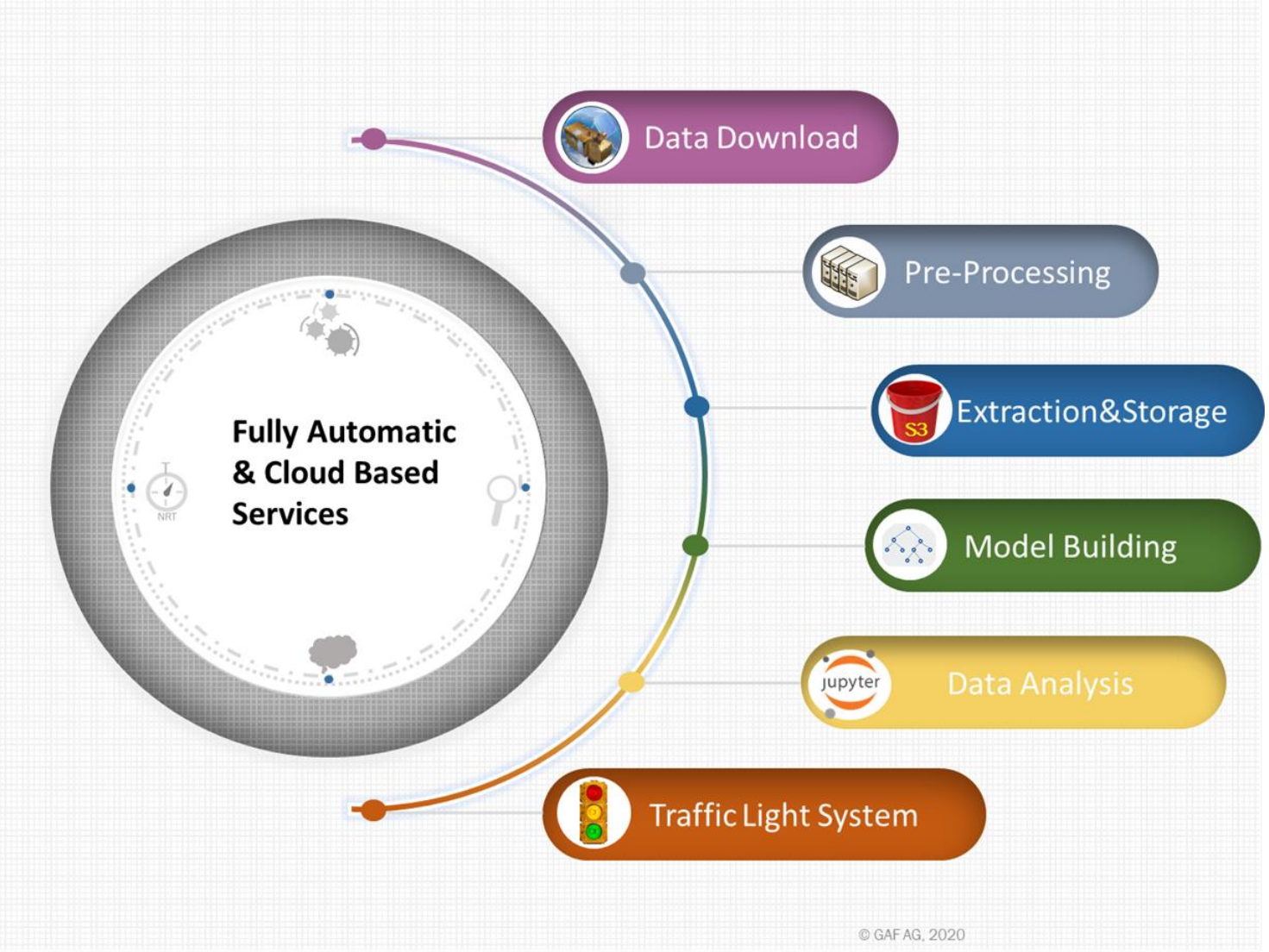

- Multi-source Data
- Optical & Radar
- Time Features
- ML & DL Models
- Time Series Analysis
- Technical Evaluation
- External Quality Control