TURNING INFORMATION INTO PROFITS.

DATA BY METOS

Strategy & marketing for OEM channel

Pessl INSTRUMENTS

JUL 2020

STRATEGY: WHY DO WE NEED DATA BY METOS?

The OEM Channel

HEADACHES:

- Dealing with tedious HW/field stuff

- Cost per data point = unit economy

- Grow as I go / cashflow issues

- Can I absorb knowledge from supplier / gain value by outsourcing

- Time-to-Market / shortcuts

- Positioning my own brand / Will supplier not bypass my business

- Create trust in market / don't damage by product because of supplier

- Does my product have a justification / value added (not repacking beer cans)

METOS	3RD PARTY DIGITAL AGRICULTURE PLATFORM	FARMER

Digital Business Landscape & METOS Position

What every Data Scientist learns in School: "You are given a Data Set of [....] which are i.i.d. (i.e. perfectly representative) [...]. Do something Smart..."

Note that 80% of this statement is almost never true in practice.

Focus 1:
OEM offer

Focus 2:
Teaching / Field service / Marketplace

MAKE SURE YOU HAVE THE RIGHT DATA, CORRECTLY PREPARED

COMPUTING POWER AND THE RIGHT DEV ENVIRONMENT

PLATFORMS USING AI/ML TO TURN DATA TO RECOMMENDATIONS

IMPLEMENTATON, FARMER TRAINING, SALES, MAINTENANCE

Rational

Why Data:

Most business people start from the hypothesis that data are available in abundance and thus it is only a question of how you can use them. But that is not true for agriculture. Traditional brute force algorithms (neural networks, classifiers, all supervised) need a data quantity (called n) which is higher than the number of possible variables (called x). Corn has about 5.000 variations, along with all climate factors, nutritional and soil characteristics etc., while for many models, data observations are available in years or days on maximum hours. You will never get the needed quantity of data. It's much more likely that the big breakthrough in AI in Agriculture will come from approaches which do not rely on brute force/big data, such as Reinforcement Learning, Modelling, Bayesian inferences or meta learning. Here, it is of utmost important that data is good and the right one, with the correct representation of real world, as wrong data can destroy then entire algorithm. Hence, we shall focus our business on providing solutions for right data.

Why Users:

Even in the most advanced countries, no more than 10-15% of farmers are using digital technology. This is a phenomenon called the chasm. Today, our market is conveyed to early adopters – people who use the technology for the sake of using technology. It's like the freaks back in 1985 who uses MS Dos. To reach the early majority, we need to change the way we deliver the service. Early adopters don't want to go to platforms and (try to) understand charts, graphs and correlations. They want to have convenience in their process, because their mental capacity is focused on other things. Also, they are not rationally focused people, at least not in digital agriculture, who would like to get logical arguments for the service. They would rather rely on their instinct and want to trust.
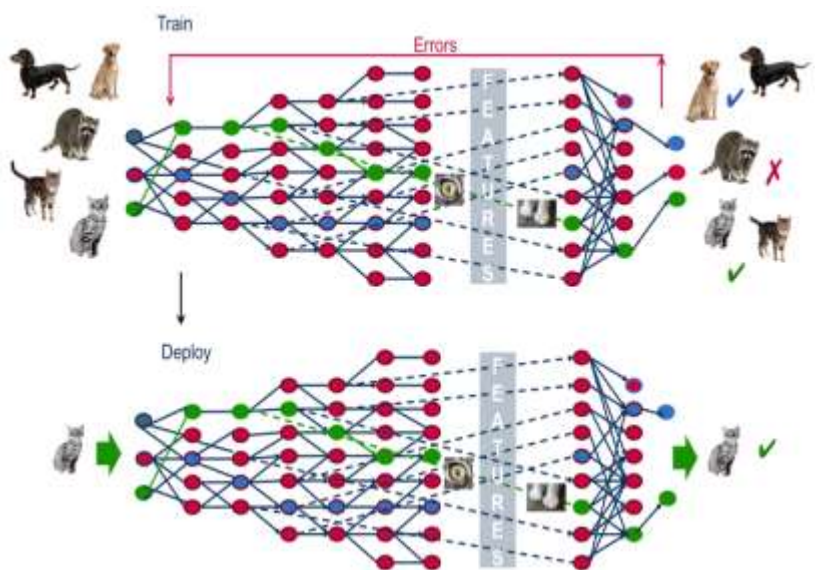
Machine Learning Trends

TRADITIONAL AI APPROACHES

Neural Networks use a brute force approach. Thousands/millions of labelled data go through a black box, which, by coincidence, learns some features. This has limitations: data are unavailable in Agro, global limits never found and task is very narrow.

MODERN APPROACHES

Human Centred AI, Machine Teaching, Multiagent RL, parameter synthesis, Meta Learning or good old parametric modelling: Focus: use much less data, but they are very representative and you control what machine is learning. You need to care about RIGHT DATA!

It's sure that the future in Agtech is not in Big Data, but in Right Data – Deliver the correct data to teach a specific task is 95% of the problem.

DATA BY METOS BUSINESS MODEL

Data by METOS – Business Model

Field Sensors
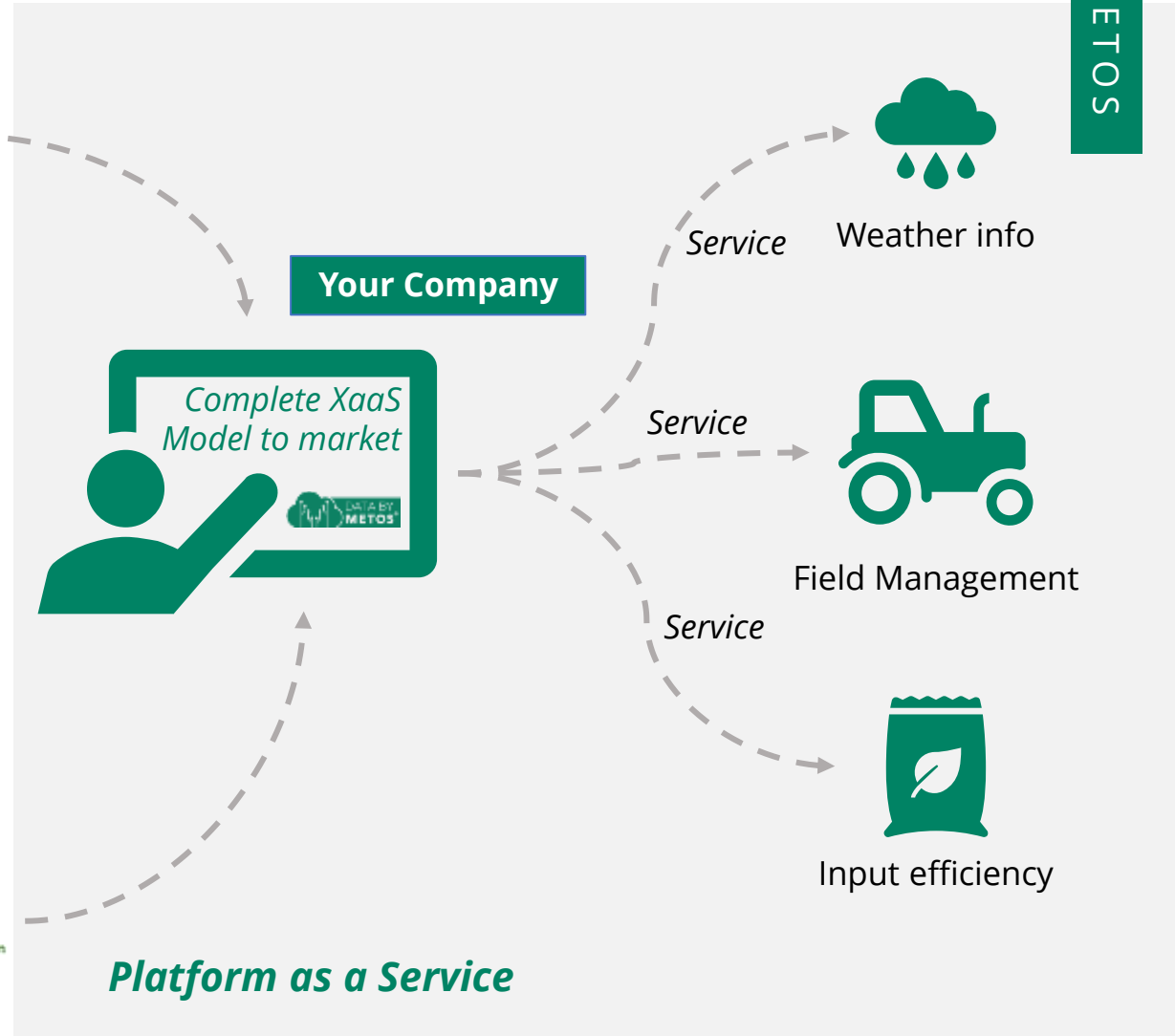Best field data HW including deployment concept and infrastructure

Climate Modelling
Deliver ready to use models for concrete agronomic problems

Maintenance and Run
Installation, connectivity, maintenance, calibration and data accuracy report

Agronomic Consulting:
Optional: Agronomy partner supports with concrete algorithms (e.g. interpolation)

Your Company

Complete XaaS Model to market

Service — Weather info

Service — Field Management

Service — Input efficiency

Platform as a Service

Why Do We Need Local Start-ups – Local Business!

We have:

≈ 35 different crops

≈ 20 climate zones

≈ 10 different soil types

≈ 20 main pests and diseases

≈ assume to have 5 different practices

= 700.000 Different possible settings

It makes sense that local partners develop local solutions/algorithms/recommendations for their needs.

Example:

Preventive disease alerts for Flower Botrytis in irrigated greenhouses for Biological treatment in heady soils in Ecuador.
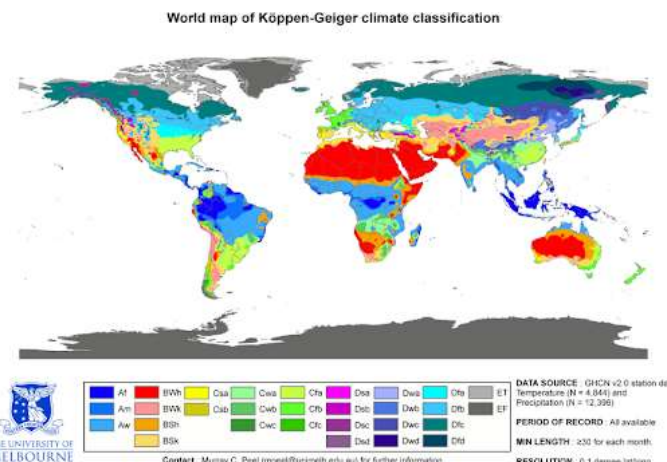
DATA BY METOS OFFER

Data by METOS – What Does It Include?

1. **FIELD SENSORS and DATALOGGERS:** The best IoT field sensors for agriculture. With 36 years of experience, they are very robust, reliable and optimized for a smooth implementation and reliable data generation.

2. **CLIMATE & AGRONOMIC MODELS:** Many key domains in digital agriculture, such as Weather modelling, disease modelling, are infeasible to develop for new companies or companies not focused. With Data by METOS, you gain access to all your models. These are the world's most precise agronomic weather models, which provide all 35 years of historic data, virtual weather stations and weather forecasts. The disease models of METOS are based on over 30 years of agronomic experience and development.

3. **MAINTENANCE PACKAGE:** We run your stations and just deliver you the data. We count with a nation-wide maintenance technician network, intelligent predictive maintenance, route planning systems and automatic calibration systems. This is why we can offer you the all-in-one package for a very competitive cost. You will get periodic reports about the data quality.

4. **CLOUD INFRASTRUCURE:** Our solution comes with the full infrastructure needed to run the field stations, i.e. connectivity (FieldClimate BOXED Product, AWS, Microsoft AZURE…)

5. **API/INTEGRATION SUPPORT:** FieldClimate API provides an easy, open and complete access to all data on FieldClimate. Apart from the comprehensive documentation, we also support your developers. Against small fees/or in large contracts, we can even deliver a customized API (Python or PHP) for you to shorten time to market.

6. **FieldClimate DOMAIN FOR MVP:** If you are still in an early stage and your time-to-market is critical, or you want to take advantage of the development time to test different market features, you can use a FieldClimate domain under your brand.

7. **DATA BY METOS BRAND USE:** As Data by METOS client you are officially allowed to use the label Data by METOS on both your platform product, as well as your marketing means. This helps you to stick out of the hundreds of start-ups and gives your Brand a strong association with an established brand.

8. **PROJECT DEVELOPMENT SUPPORT:** We have 36 years of experience in digital agriculture. You can access this knowledge to further refine your business model. We are also happy to brainstorm about ideas with your R&D team. Against a consulting fee, our certified agronomy partners provide you ready-to-use algorithms, such as interpolations or different optimization algorithms.

OUR MARKETING DISCOURSE

METOS' POTENTIAL DATA EXPERIENCE: **13.797.000.000**

45.000 Stations, 35 Years, 365 Days, 24 Hours

Data by METOS - Pitch

DATA BY METOS is a complete turn-key solution for your R&D team. Not only do we deliver a complete, care-free package, but you can also access our knowledge and experience of 36 years in the market. On top of that, we can also deliver some tools and services which significantly shorten your time-to-market.

INNOVATION IS WHAT ADDS VALUE TO YOUR BUSINESS

DATA BY METOS IS THE ONLY TURN-KEY SOLUTION FOR YOUR INNOVATON

Data by METOS – Long Text

DATA BY METOS IN A NUTSHELL

For 36 years METOS is in the market for agrometeorological monitoring and has over 45.000 weather stations in the field, which collect field data 24 hours a day. This multiplies to 13.878 Billion collected Data points, which represents our METOS DATA EXPERIENCE and translates into a unique set of skills, experiences and products at the intersection of Agronomy, Meteorology, IoT and Data Science. This is an invaluable treasure for the future of agriculture and may help us to tackle humanity's greatest challenges, like climate change and feeding the world.

To unlock its full potential, METOS decided to make this treasure available to all. Start-ups often have brilliant ideas, good skills and solid finances. However no business plan, innovation or fundraising can substitute experience and past data. Therefore, we invite all to join our Digital Agriculture Eco-System. Focus your resources on creating algorithms, business plans and customer experience and trust in METOS for your Data problem. Having accurate, reliable and representative data is the backbone of each digital business. Your customer may value that you rely on 36 years of experience – in fact, it's what makes your business best!

'It's better to have no data than wrong data. Coin flipping gives you at least a 50% chance. Best is having good data!'

DATA BY METOS HELPS YOUR BUSINESS TO BE THE BEST!

Discourse Opening To Start-ups

Currently, we are loosing about 50% of our input resources due to bad decisions. Climate change and regulations urges farmers to change this. This is basically an information problem and it constitutes an enormous opportunity for new information technology services. Each crop has its own needs and requirements and needs specific information – why not create a PLANT HEALTH SERVICE PLATFORM! DATA BY METOS provides you with the entire infrastructure you need to start your business.
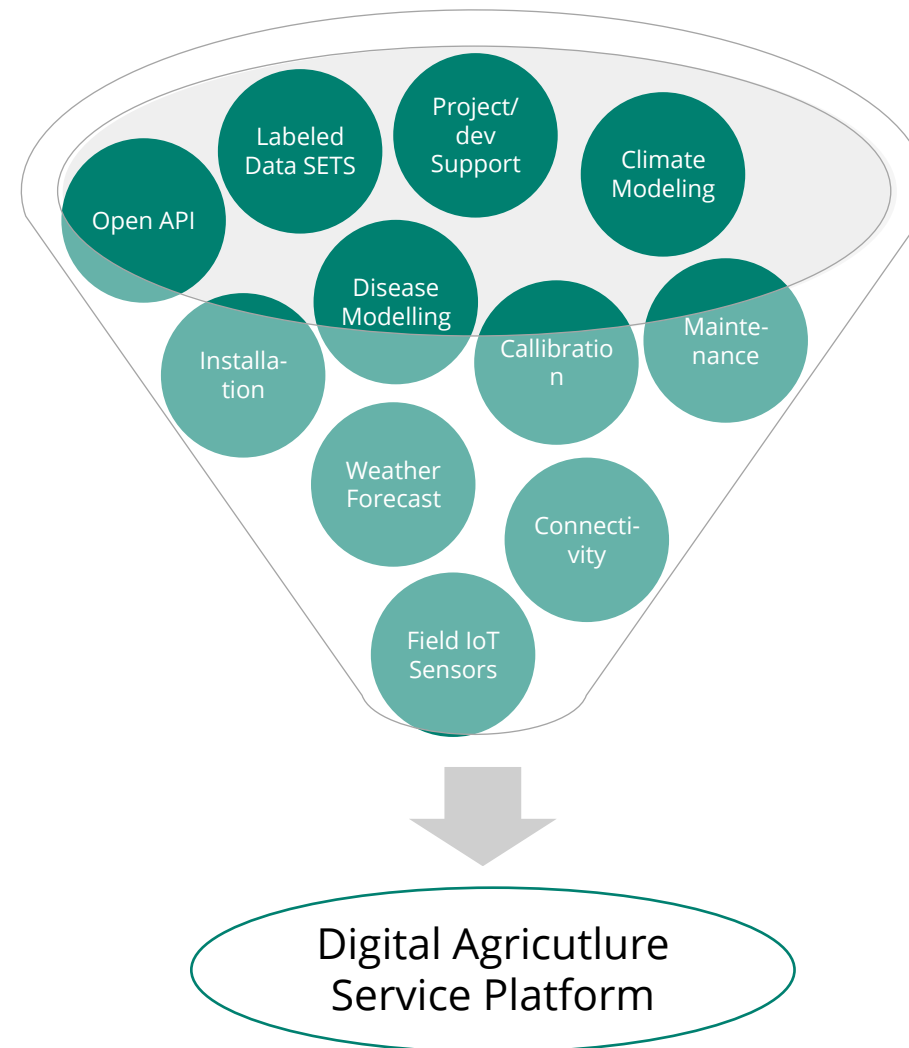
What Do We Deliver To You

Creating a new Digital Agriculture service is not easy. Not only do you need a profound knowledge in several expert domains, such as agronomy, data science, IoT and others, but you will also need to run a critical infrastructure of IoT sensors in remote places within a cost-sensitive setting.

Data by METOS is a package, which can help you with a turnkey solution for several of these challenges. METOS has a long history in integrating and working with innovative platform businesses.

Focus your resources on what your are good at – developing customer experience, intelligent algorithms and recommendations - and let METOS take care of your Data problem.

Funnel diagram containing: Open API, Labeled Data SETS, Project/dev Support, Climate Modeling, Disease Modelling, Installation, Callibration, Maintenance, Weather Forecast, Connectivity, Field IoT Sensors — feeding into: Digital Agricutlure Service Platform

METOS®

PESSL Instruments GmbH

Werksweg 107

8160 Weiz

Tel.: +43 (0) 3172 5521

Fax: +43 (0) 3172 5521 23

email: sales@metos.at

www.metos.at