4th International VDI Conference

Smart Farming

March 03-04, 2020, Dusseldorf, Germany

• When Digital meets Physical: An Automation Journey
• Autonomous Tractors – A Short Term Reality?
• How to create a digital Data Ecosystem with the Farmer at the Steer
• Combining Flexible Agricultural Services and Data Sovereignty
• Measuring the Environmental Impacts of Ag

+ Interactive Round Table Discussions
+ Workshops: Turning Data into Value & Machine Data

Meet international Experts from:

An event organized by VDI Wissensforum GmbH
www.vdi-international.com/12K0100020
The Association of German Engineers (VDI) is one of the largest technical-scientific associations in Europe. Throughout the years, the VDI has successfully expanded its activities nationally and internationally to foster and impart knowledge about technology-related issues. As a financially independent, politically unaffiliated and non-profit organization the VDI is recognized as the key representative of engineers both within the profession and in public.

Supporting Experts

Dipl.-Ing. Ralf Kalmar, Business Area Manager, Fraunhofer IESE, Germany

Rhett Schildroth B.Sc., President, Redsheild Consulting, Redshield Consulting, USA

James Miller, Group CTO, Tractors and Farm Equipment (TAFE) Limited, India

Silvio Crestana Ph.D., Director-President, EMBRAPA Amapa Brasil, Brazil

Julian Sanchez, Manager User Experience, John Deere European Technology Innovation Center, Germany

Expected Participants according to Functions

Expected Participants according to Industries

Sponsoring Partner

NovAtel
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<td>Ag Robots: From Prototype/Early Adopter to Industrialization and Mass Market Adoption</td>
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### I. Towards more Automation in Agriculture

**10:15 Automation driving continuous Optimization of Ag Production Systems**
- Automation examples of production system optimization
- Automation increasingly fueled by digital platforms
- How automation enables the commercialization of autonomy

*Dr. Alex Foessel*, Enterprise Lead Architect, Automation to Autonomy, John Deere, USA

**10:45 Autonomous Tractors – A short term Reality?**
- Farmers willingness to adapt self-driving tractors
- Cost reduction potential for various farm sizes
- Identified technology gaps for self-driving tractors
- Sensor fusion technology to support autonomous tractors

*Dr. Elza Marisa Paiva de Figueiredo*, Autonomous System Manager, *Dr. Thomas Langer*, Market Development Manager, both: Danfoss Power Solutions, Denmark

**11:15 Automated L2 Trucks for Sugarcane Harvest: Faster Operation, less Fuel, better Crop Yield and relieved Driver**
- Advantages of truck vs. tractor in the 24/7 sugarcane harvest in Brazil
- New configuration with additional axle, wider track and high flotation tires
- SAE level 2 automation includes geo-referenced steering and cruise control
- Cooperation with reliable partners to execute modifications

*Camilo Abduch Adas*, Product Engineering MB Trucks, Head Validation MB Trucks for Brazilian Market, co-authors: Marcus Kliewer, Jonathan Peter Marxen, all: Mercedes-Benz, Brazil

**11:45 Autonomy and Automation: Solving Real World Problems**
- What challenges are seen in Automation, in the real world
- Automating the task, not the machine
- Looking forward

*James Szabo*, Product Manager – Autonomous Agriculture, Trimble Inc., UK

### II. Digital Integration Platforms

**14:15 How creating a universal Data Collection and streaming Solution can unlock the Adoption of a Digital Agriculture Platform?**
- The challenge in standardizing data management throughout the industry
- Accelerating the adoption rate of farm management solutions using easy data management
- The next challenge: How to inspire farmers to utilize their data

*Fabio Roverso*, Field Product Lead Europe, The Climate Corporation, Italy

**14:45 Precision Collaboration – B2B Collaboration meets Precision Ag**
- Orchestrating business processes between farmers and his supporting service providers
- Connect precision algorithms with the farmer’s data
- Maximizing “value creation” from using production related solutions for farmers

*Martin Bernhard*, Country Manager DACH, Proagrica, Germany

**15:15 Networking & Coffee Break**

**15:45 Robust AI at the Edge – Grain Handling Quality Assurance Sensor**
- The costly mistake of mixing different grain types
- Sensor architecture and data collection strategy
- AI for crop type image classification
- Ensuring robust outputs and confidence measures
- Seeing inside the “black box” Convolutional Neural Network model

*Josh Gelinske*, Director AI Systems, Intelligent Ag Solutions, USA

### 16:15 Interactive Round Table Session

The most interactive session of the program! The focus is on the delegates – Choose your preferred topic from the list below, and join the numbered table in the main auditorium. Hosted by an industry leader, it’s a valuable opportunity to share ideas, ask questions and network with other delegates focused on the same issue. Here are the first few confirmed topics:

1. **What does „User Friendly” mean for Automated/Smart Farming Equipment?**
   *Gaëtan Séverac*, Naïo Technologies, France

2. **Will Artificial Intelligence accelerate the Adoption of Smart Farming in agricultural Practice?**
   *Dr. Christian Linke*, Owner, Ingenieurbüro Dr. Linke, Germany

3. **Central and independent Data Platforms for the agricultural Data Space**
   *Bernd Rauch*, Fraunhofer IESE, Germany

**17:15 End of Conference Day One**

**17:45 Get-together**

At the end of the first conference day we kindly invite you to use the relaxed and informal atmosphere for in-depth conversations with other participants and speakers.
III. Farm Data Value

09:00  FarmBeats: How Data & Analytics are enabling Data-Driven Farming
• Enabling better farming decision to increase yield, lowering cost, sustainable farming, and dealing with uncertain conditions
• Eliminating data silos and reasoning over geospatial and time aligned data
• Detecting coherences & patterns with AI that allow to take preventative action
Claudia Roessler, Director Agriculture Strategic Partnerships, Microsoft, USA

09:30  Balancing global OEM digital Agronomy with regional FMIS Partners
• As digital hurdles come down, service demands rise
• Farming is local, demanding regional services
• More access leads to better services
• Partnerships and relationships are required for balance
Dan Danford, Global Industry Relations/Digital Agriculture, co-author: Claudio Ladeira, Sr. Manager Connected Products, both: CNH Industrial, USA

10:00  Combining flexible agricultural Services and Data Sovereignty
• Data driven business models in the agricultural domain are on the rise
• Keeping control of data is becoming increasingly hard for data originators
• The research project „Cognitive Agriculture“ explores concepts for digital ecosystems
• Proposal of a concept for data usage control by technological means
Bernd Rauch, Architecture Centric Engineering/Senior Software Architect, co-authors: Jens Henningsen, Manuel Rudolph, all: Fraunhofer Institute for Experimental Software Engineering (IESE), Germany

10:30  Networking & Coffee Break

11:00  The Data Hub for Agri-Food in Flanders: Digitizing the Ag Code of Conduct to create a digital Data Ecosystem with the Farmer at the Steer
• DjustConnect: A unique data sharing platform in the Flemish agro food chain
• Creating trust based on the The EU Code of Conduct on Ag data sharing: The farmer is recognized as owner of the raw data
• A fundamental tool for developing more secure and smart applications
Dr. ir Jurgen Vangeyte, Director of the Agricultural Engineering Department, Research Institute for agriculture, fisheries and food (ILVO), Belgium

IV. Key enabling Technologies

11:30  Smart Farming towards Precision Ag with a Case Study – Levelling & Sensing Technology
• Smart Farming towards precision agriculture introduction in India
• Requirements of land levelling in India and its effect on Farm Field
• Tractor electro hydraulic system
• Case study – Smart way of using laser land levelling
Raja Elango, Principal Member – Centre of Excellence, R&D, Precision AGriculture (PAG.), TAFE, India

13:00  Seeing the Visible – Real Time Image Analysis for Agriculture
• Unique challenges for vision systems in agriculture
• Design of a real time image system used for obstacle detection
• Lessons learned deploying machine vision on agricultural platforms
Rhett Schildroth, President, Redshield Consulting, USA

13:30  Seeing the Invisible – Multispectral Image Analysis for Ag Use Cases
• Foundations of multi- and hyperspectral image capture and processing
• Drone as a service – An overview about current remote sensing technology and upcoming trends
• Plant stress factor detection in multispectral imagery – Examples
• Use cases – Variable rate applications for fertilization and crop protection
Henrik Battke, Regional Managing Director, co-author: Dr. Klaus Schneider-Zapp, Technical Lead radiometry, both: Pix4D, Germany

14:00  Networking & Coffee Break

14:30  Panel Discussion
The next five Years – What new Trends will occur in Agriculture?

V. Addressing ecological Sustainability with Smart Farming

15:00  eAgronom AI: Harvesting CO2 from Air into Soil
• eAgronom has working AI and paid customers who use it
• Most successful farmers turn CO2 from air into soil to increase humus each year
• Factory in farming is environment around the farm
• By improving environment (factory) farmers can save a lot of money
Robin Saluoks, CEO, eAgronom, Estonia

15:30  Smart Farming Technologies and Sustainability: An NGO Perspective
• Seductive technologies: Digitalization, precision, automation, geo-spatial
• Examples from the field: US, Brazil and Africa
• Technology as moral hazard: Climate change
• The political economy of access: Realizing technology’s promise in the real world
David Cleary, Director of Global Agriculture, The Nature Conservancy, USA

16:00  Conference Chair’s closing Remarks
16:15  End of Conference
Turning Data into Value

Workshop Chair
Dr.-Ing. Andreas Jedlitschka, Head of Data Engineering and AI & Dr. Julien Siebert, Senior Engineer AI, both: Fraunhofer Institute for Experimental Software Engineering (IESE), Germany

Date and Venue
March 02, 2020
Van der Valk Airporthotel, Dusseldorf, Germany

Time
10:00 - 16:00

Content
One of several „V“s in the definition of Big Data stands for Value. Interestingly, it was missing in the first definition, and in recent years many projects seem to not have delivered the expected value. There are many reasons for this, among them, misaligned goals and exaggerated expectations. In particular, for smart farming, the value proposition for farmers is a crucial element. During this workshop we will use a smart farming scenario to, on the one hand, give you an overview of a well-proven, lessons learned-based methodology that addresses above mentioned issues and, on the other hand, take a deep-dive into important steps for making data useful in the agri-domain such as business understanding, data preparation, modeling, evaluation as well as into the underlying technology.

Agenda
• Motivation & Overview
• Alignment to Smart Farming EcoSystems
• Derive Business Goals, -Propositions, -Models
• Identify Data Sources and determine Quality
• Methods for Data Preparation, Analysis, Modeling
• Methods to assess Business Value
• Integration and Deployment
• Discussion & Conclusions

Machine Data

Anne Bruinsma, Founder, FarmHack.nl, Netherlands

Date and Venue:
March 02, 2020
Van der Valk Airporthotel, Dusseldorf, Germany

10:00 - 16:00

Content
In agriculture, machine data from the tractor and the implement behind it are an interesting and valuable data source. But farmers find it hard to exploit machine data, as the data are not harmonised, not easily accessible and hard to integrate with other data. This workshop is centred on an open source data log solution that frees up data for farmers as a free data source. The data logger is a compact box that draws data from the CAN bus/Isobus via the tractor’s diagnostics connector, and then continuously sends the data wirelessly to a cloud environment using 4G.

Agenda
• Introducing Machine Data and the Isoblu
• Briefing: Technical, legal and strategic issues
• Break out: Collecting wisdom of the Crowd
• Different uses cases of machine data
• Break out: Mini Hack canvas
• Main findings of the workshop day
5th International VDI Conference

Connected Off-Highway Machines

From Smart Sensors to Smart Systems

**Date and Venue**
March 03-04, 2020
Van der Valk Airporthotel, Dusseldorf, Germany

**Following Topics will be discussed:**
- Driving Business with Data
- Data Management across multiple Stakeholders
- Remote Monitoring for enhanced Efficiency and Maintenance
- Connected Vehicle Technologies and 5G
- Automation on the Machine and on the Edge
+ Panel Discussion on „Changing Competencies due to Digitization“
+ Interactive World Café Sessions
+ Workshop on Machine Data

www.vdi-international.com/01K0902020

Participants are eligible to attend the parallel conferences free of extra charge

2nd International VDI Conference

Electrified Off-Highway Machines

**Date and Venue**
March 03-04, 2020
Van der Valk Airporthotel, Dusseldorf, Germany

**Following Topics will be discussed:**
- New Electrification Solutions for increased Efficiency and lower Emissions
- Hybridization of Off-Highway Machines
- Developments in Battery Technology
- Well-to-Wheel: Alternative Fuels and Powertrain Solutions
- Practical Experiences and Use Cases
+ Panel Discussion on „Net Zero: Carbon-free Economy“
+ Interactive World Café Sessions

www.vdi-international.com/01K0934020
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Conference venue
Van der Valk Airporthotel Düsseldorf
Am Hülserhof 57
40472 Dusseldorf
Phone: +49 211/20063-0
Email: duesseldorf@valk.com

Hotel room reservation: A limited number of rooms has been reserved for the benefit of the conference participants at the Van der Valk Airporthotel Düsseldorf. Please refer to “VDI Conference”. For more hotels: www.vdi-wissensforum.de/hrs

VDI Wissensforum service package: The conference package includes the conference documents (online), beverages during breaks, lunch and the get-together on March 3, 2020.

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Registration

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Vanessa Ulbrich
Project Consultant Exhibitions & Sponsoring
Phone: +49 211 6214-918
Fax: +49 211 6214-97-918
Email: ulbrich@vdi.de

Become a speaker

Become a speaker at our international VDI Off-Highway Conferences. Make yourself known in the industry and discuss best practice examples with other international experts. We are looking for speakers on: Automation and Robotics in Agriculture, Sensors for Off-Highway Machines, Connected Off-Highway Machines.

Please submit your topic to:
Dr. Maria Georgiou-Smith
Product Manager International Business
Agricultural Engineering
Phone: +49 211 6214-467
Email: georgiou-smith@vdi.de

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Please submit your topic to:
Dr. Maria Georgiou-Smith
Product Manager International Business
Agricultural Engineering
Phone: +49 211 6214-467
Email: georgiou-smith@vdi.de
Yes, I will participate as follows:

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<td>□ VDI Conference 03.-04.03.2020 (12KO100020) € 1840</td>
<td>□ Workshop „Machine Data“ 02.03.2020 (01ST952001) € 950</td>
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