

AEF project team “Communication and Marketing”



Welcome to AEF

Powering Precision Farming With ISOBUS

February 25th, 2017 – AXEMA-EurAgEng Conference, Villepinte, France

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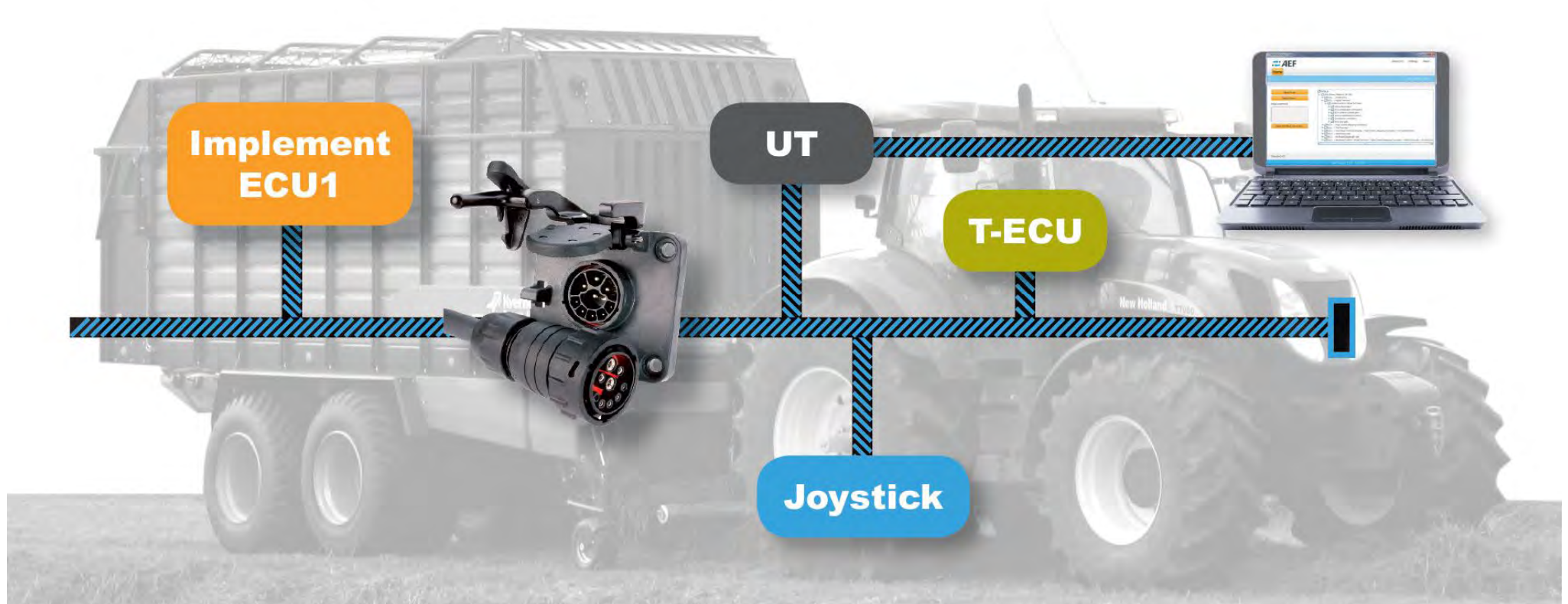
→ The AEF ISOBUS Conformance Test and Certified Label

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Introduction

- Innovative ag machinery is crucial for facing the challenges of agriculture today and in the future
- Electronics and precision farming are key for this
- Most important technique: ISOBUS
- Lack of compatibility between machinery from different manufacturers leads to frustration among customers
- And prevents customers from adopting new technologies

Introduction



Compatibility Issues

- ISO 11783 standard (ISOBUS) defines communication between agricultural machinery
- Leaves room for interpretation
- The result: A great number of innovative, but proprietary solutions

- The AEF is working against these problems by
 - Improving cross-manufacturer compatibility
 - Establishing transparency regarding compatibility issues

The AEF Project Teams – Background

- Basis of the AEF
- International teams of experts from member companies
- Working to find solutions beneficial for industry and customers
- 11 teams, each assigned with a special topic
- Solutions are specified in AEF Guidelines
- to complement the ISO standard
- ISO 11783 + AEF Guidelines → basis for manufacturers to develop ISOBUS products
- Released guidelines typically integrated into the ISO standard

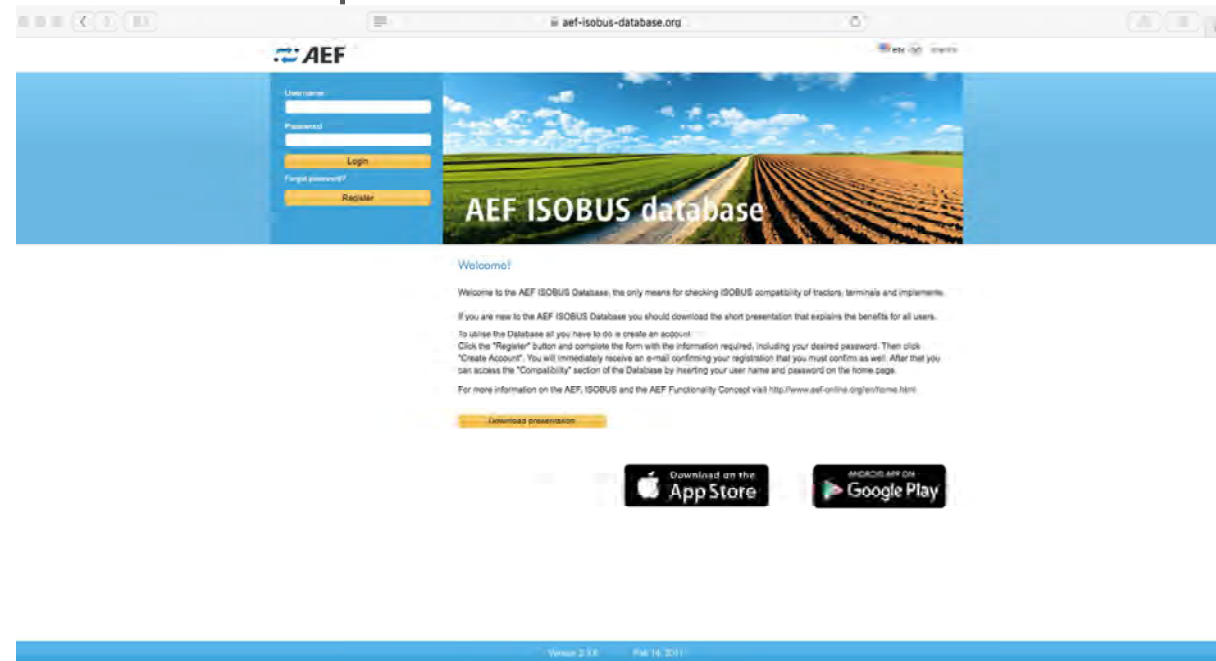
The AEF Project Teams – Topics

- Project Team 1: Conformance Testing
 - Providing and maintaining state-of-the-art testing and certification process
- Project Team 2: Functional Safety of Electronic Controls
 - Developing application guidelines for implementation of safety related applications
- Project Team 3: Engineering and Implementation
 - Coordinating launch of new ISOBUS features
 - Monitoring the ISOBUS engineering and implementation processes.

The AEF Project Teams – Topics

→ Project Team 4: Service and Diagnostics

- Development of the AEF ISOBUS Database
- Troubleshooting ISOBUS systems with components from different manufacturers
- Technical documentation
- FAQs
- Training

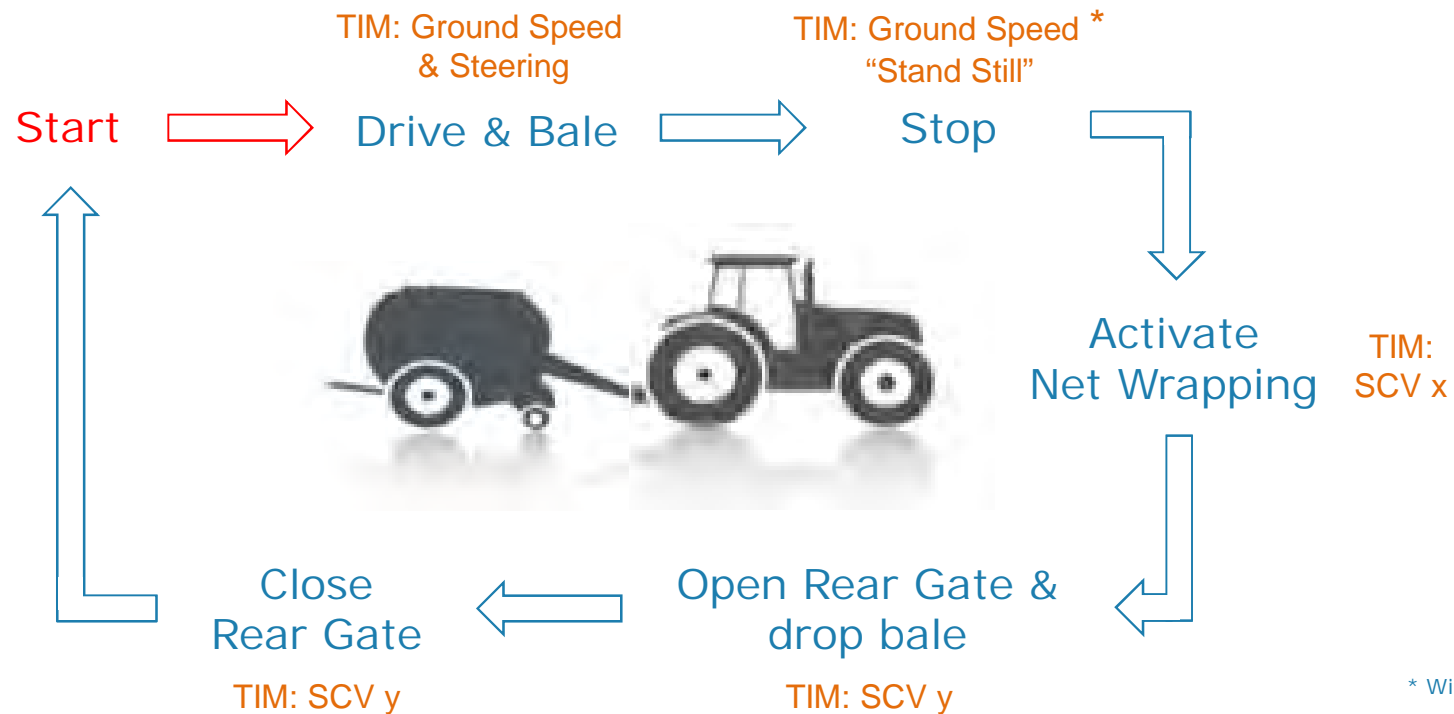


The AEF Project Teams – Topics

→ Project Team 5: ISOBUS Automation

- Defining safe and secure ISOBUS automation systems (tractor implement management systems)

- Baling is a typical example



* With CVT Transmission

The AEF Project Teams – Topics

→ Project Team 6: Communication and Marketing

- Promoting ISOBUS and the AEF tools
- Coordinating participation in exhibitions, conferences, etc.
- Responsible for corporate design, PR, etc.

→ Project Team 7: High-voltage On-board Networks

- Developing a standardised interface capable of providing enough power for large electric motors
- Based on ISOBUS
- 4 subgroups working on mechanical and functional compatibility
- Specification finalised in 2016, interface ready for launch soon
- Interface can deliver 700 V direct current, or three-phase 480 V alternating current with up to 150 kW power.

The AEF Project Teams – Topics

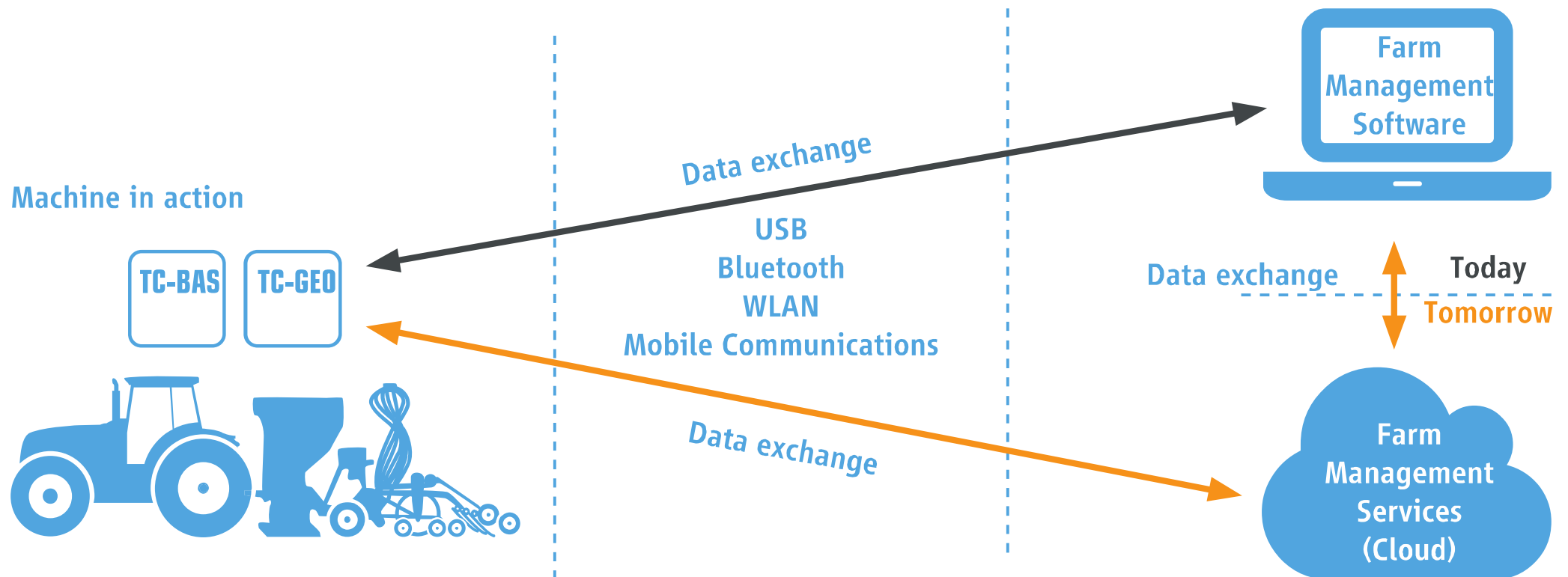
→ Project Team 8: Camera Systems

- Harmonising connectivity between cameras on implement and tractor
- Solutions for both analogue and digital image transmission are on the agenda

→ Project Team 9: Farm Management Information Systems

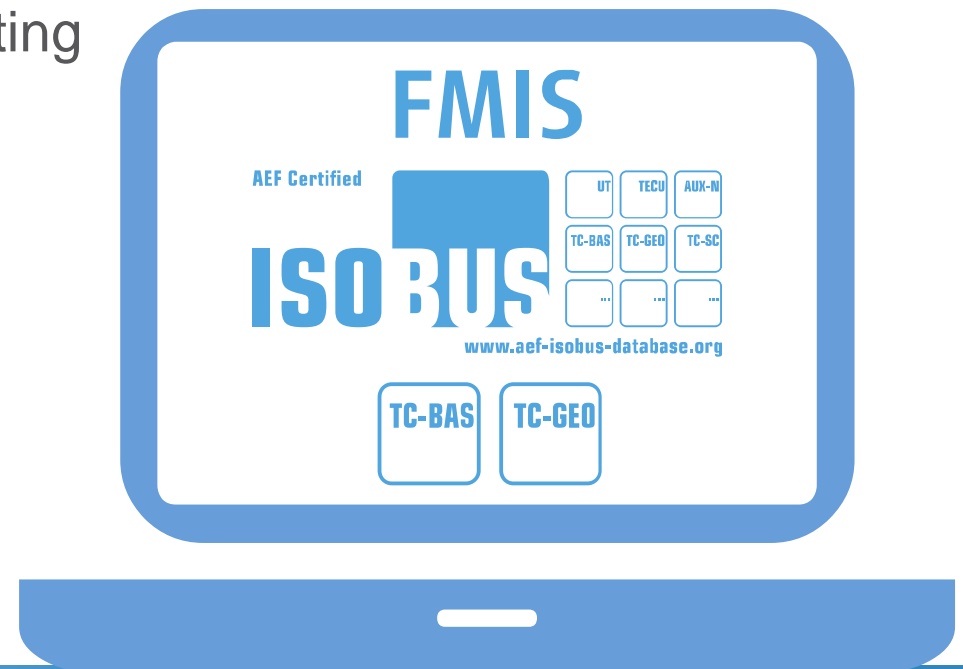
- Growing importance of data handling
- Standardisation of ISO XML interface between TC and FMIS necessary

The AEF Project Teams – Topics



The AEF Project Teams – Topics

- FMISes to be certified through AEF Conformance Test
- Certified FMISes will be seen in the database
- Functionalities for FMISes: TC-BAS and TC-Geo
- Certification for TC-BAS in Beta testing
- TC-GEO under development
- Both import and export of XML files will be tested



The AEF Project Teams – Topics

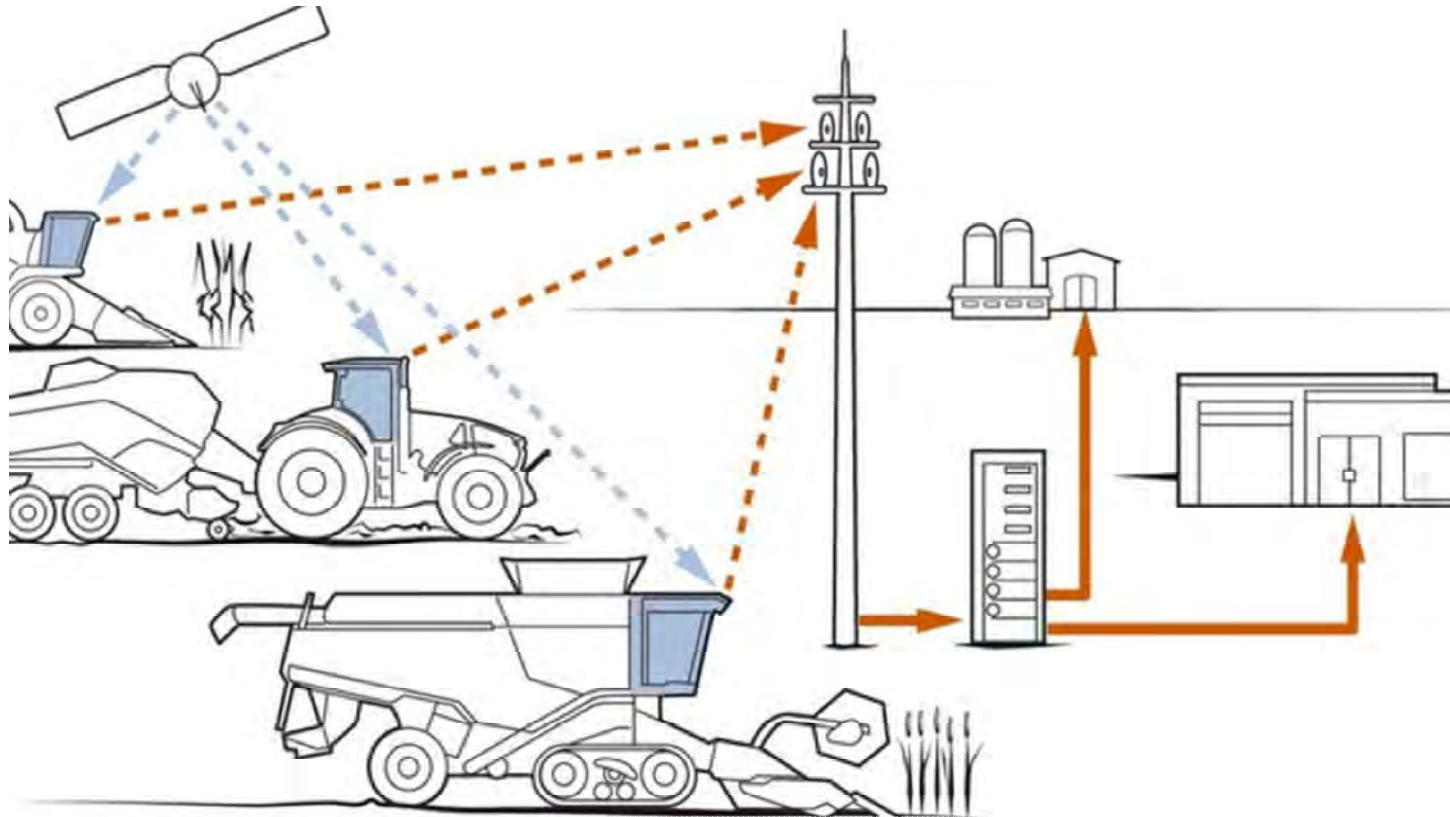
→ Disadvantages of data exchange via USB

- No tractor – no stick – no data
- 10 tractors – 10 sticks – chaos
- No live data
- No information of where the machine is

→ Solution: Data logger

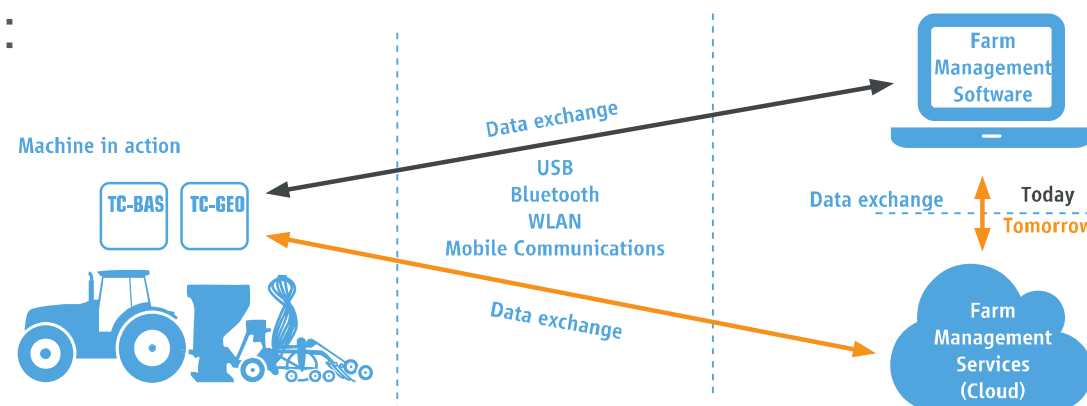
- A hardware with SIM card and software integrated into the ISO system
- Provides current GPS position with DDIs to a server on a regular basis
- 4th version of part 10 of ISO 11783 includes a first approach
- Guideline not finished yet, but a few solutions are already on the market

The AEF Project Teams – Topics



The AEF Project Teams – Topics

- Today data exchange with data logger only unidirectional (machine to server)
- PT9 is currently working on a solution for bidirectional data exchange:
- A standard for wireless communication named EFDI (Extended Farm Management Information Systems)
- It would replace the function of the USB stick in the Machine/FMIS chain
- It could use any number of methods:
 - Bluetooth
 - Wireless LAN
 - Mobile Communications
- Guideline being developed



The AEF Project Teams – Topics

→ Project Team 10: High-speed ISOBUS

- Exploring concepts for increasing bandwidth on the Bus, to ease and speed up data exchange
- This will also contribute to
 - The expansion of of diagnostics
 - The support of electric drives
 - M2M communications
 - Connection of real-time video systems.



The AEF Project Teams – Topics

→ Project Team 11: Wireless In-field Communication

- Examining suitable radio standards for machine-to-machine (M2M) communications
- Communications encryption and functional reliability
- User Cases include:
 - Process Data Exchange
 - GPS Position of machines in fleet
 - Coverage map sharing
 - AB line exchange
 - Co-operative machines
 - With/without control
 - Camera and Remote Terminal
 - Camera system on different devices



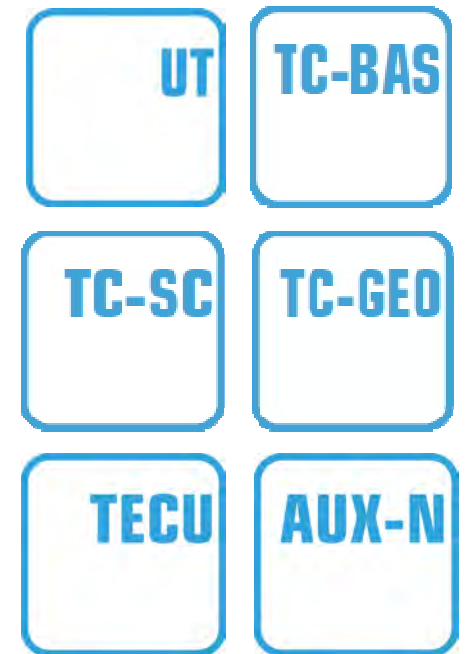
AEF Plugfests

- Twice a year
- Alternately in Europe and USA
- Opportunity for members to test their products against each others
- And to make adaptations, if necessary, before submitting them to the AEF ISOBUS Conformance Test



The AEF ISOBUS Functionalities

- A functionality can be explained as an independent module on the ISOBUS
- Each functionality is specified in a guideline
- Clear and consistent information about benefits provided
- Decisive for compatibility: The ‘lowest common denominator’
- Basis for the AEF ISOBUS Conformance Test



The AEF ISOBUS Conformance Test and Certified Label

- Designed to ensure compatibility between ISOBUS products from different manufacturers
- Proves that a specific product complies to ISO 11783 and the additional AEF Guidelines
- And that it actually supports a functionality
- Five independent test laboratories carry out the test

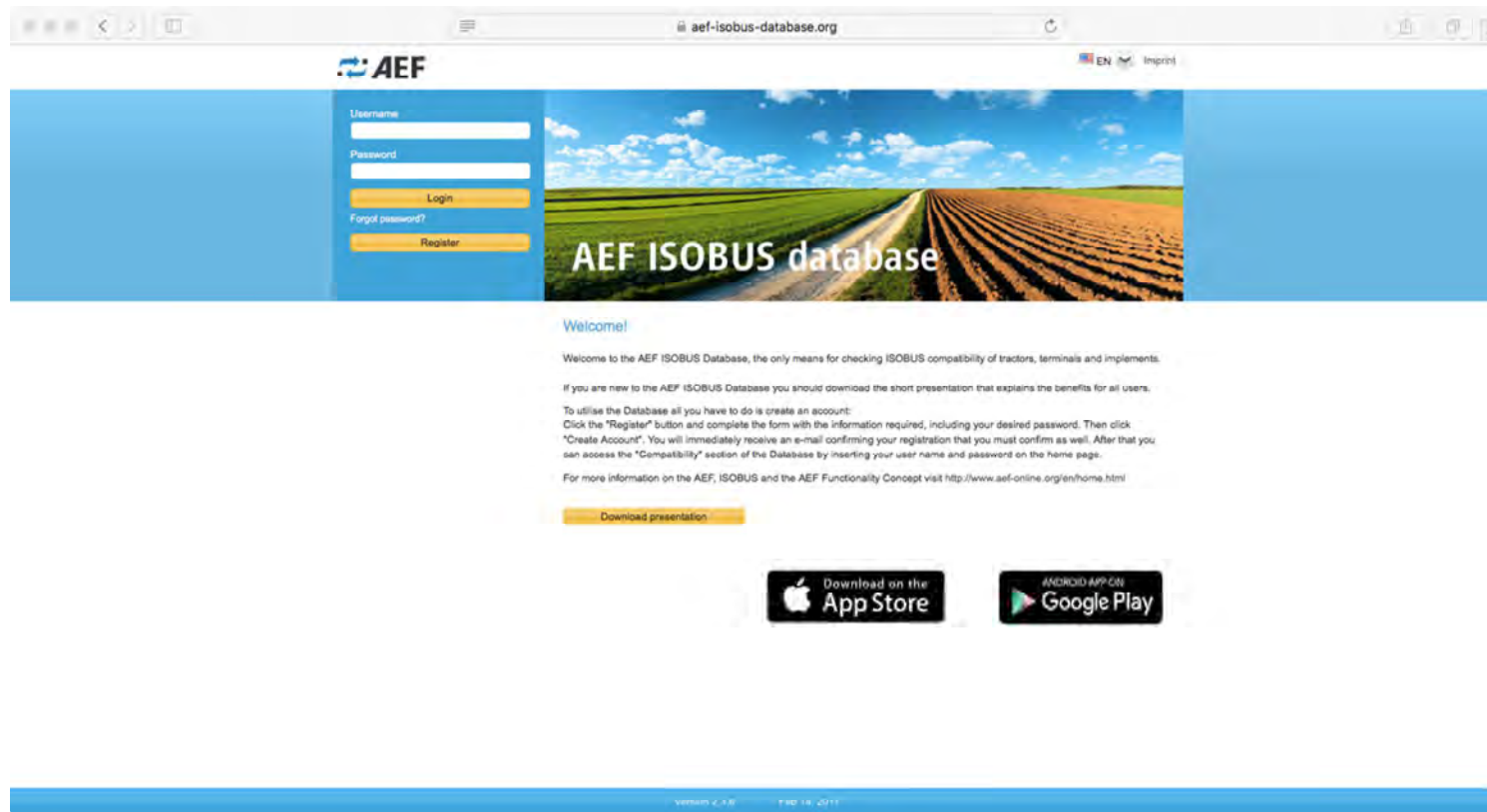


The AEF ISOBUS Conformance Test and Certified Label

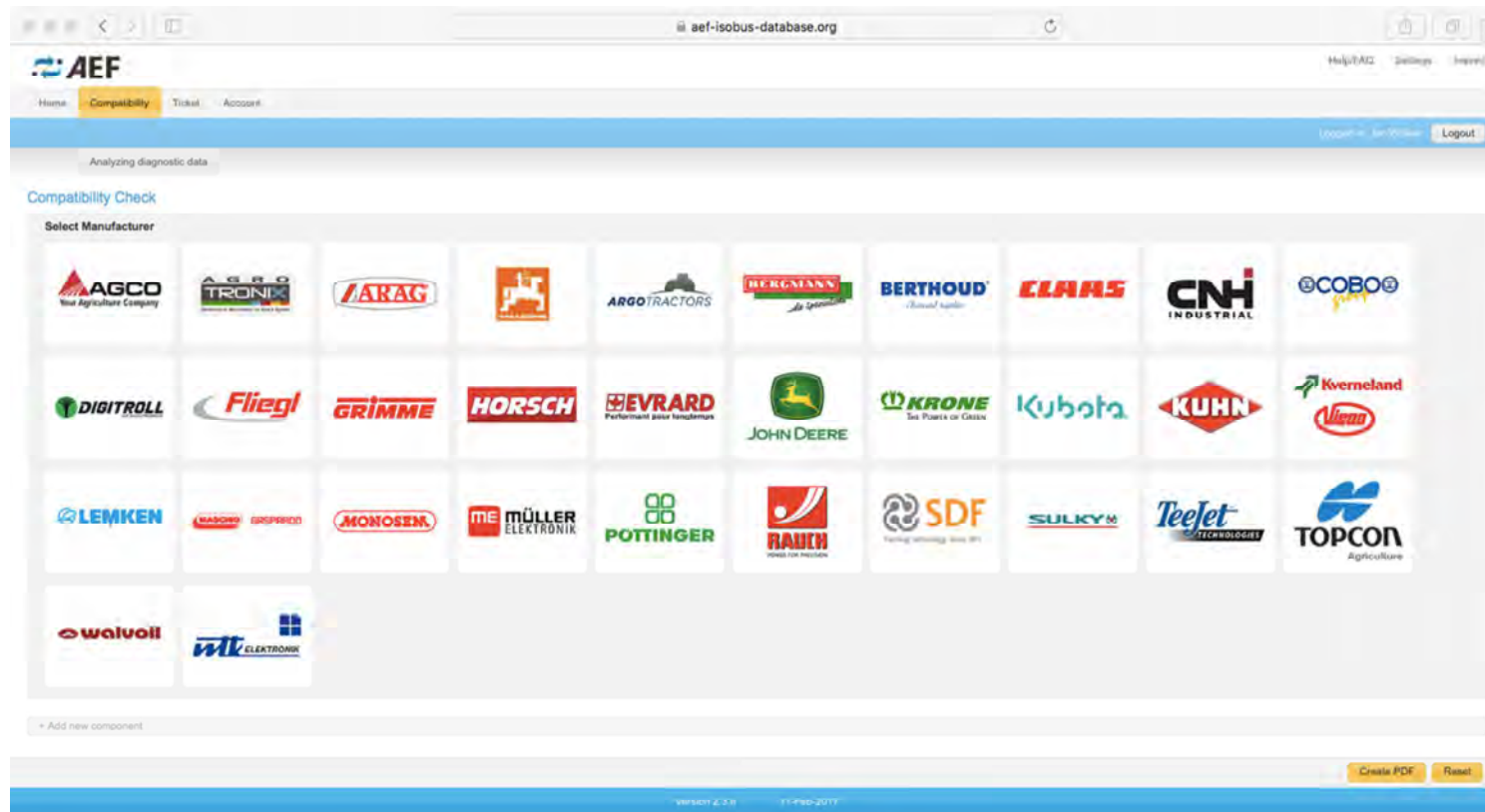
- Products that have passed the conformance test may be advertised with the AEF Certified Label



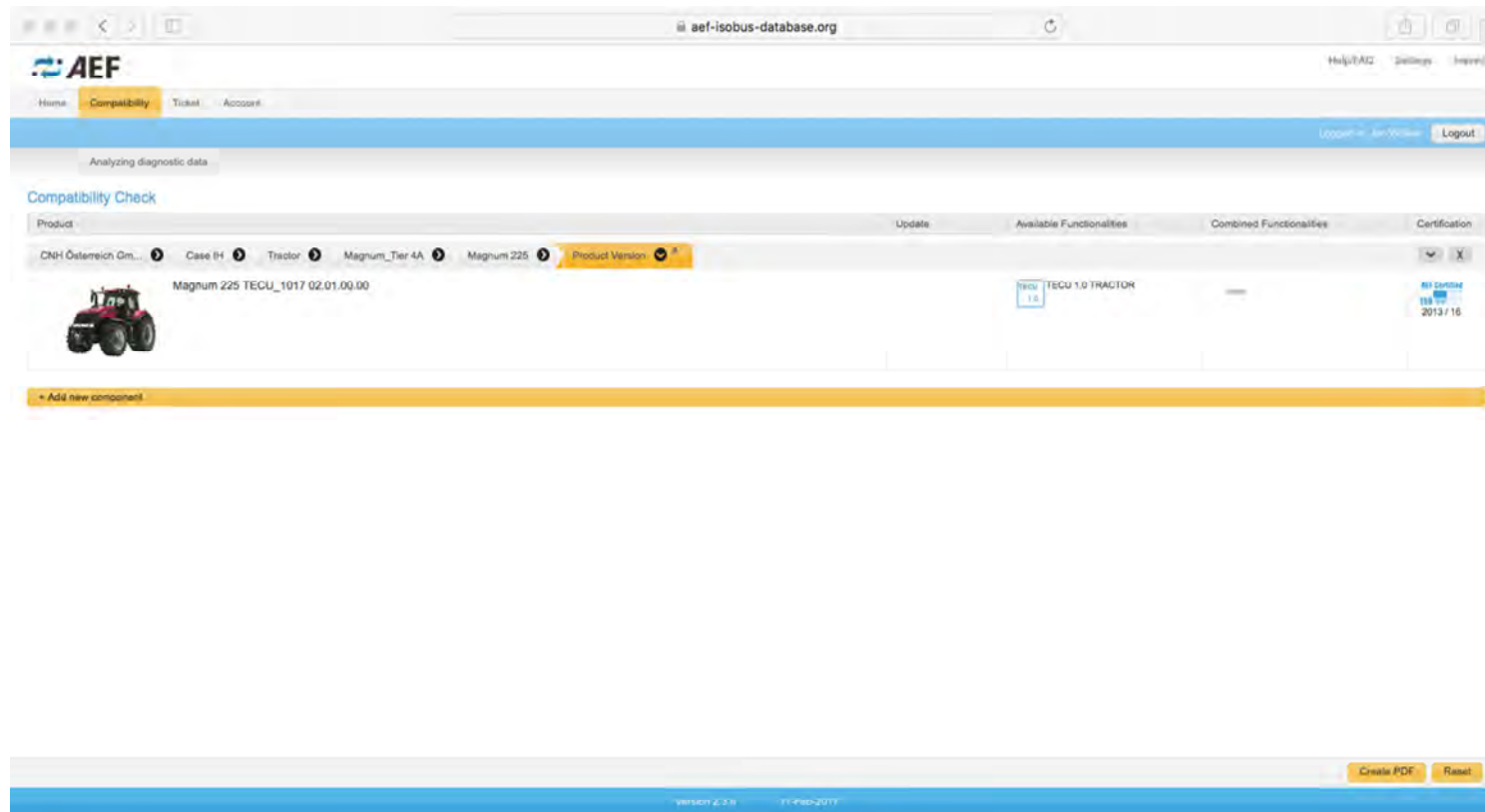
The AEF ISOBUS Database



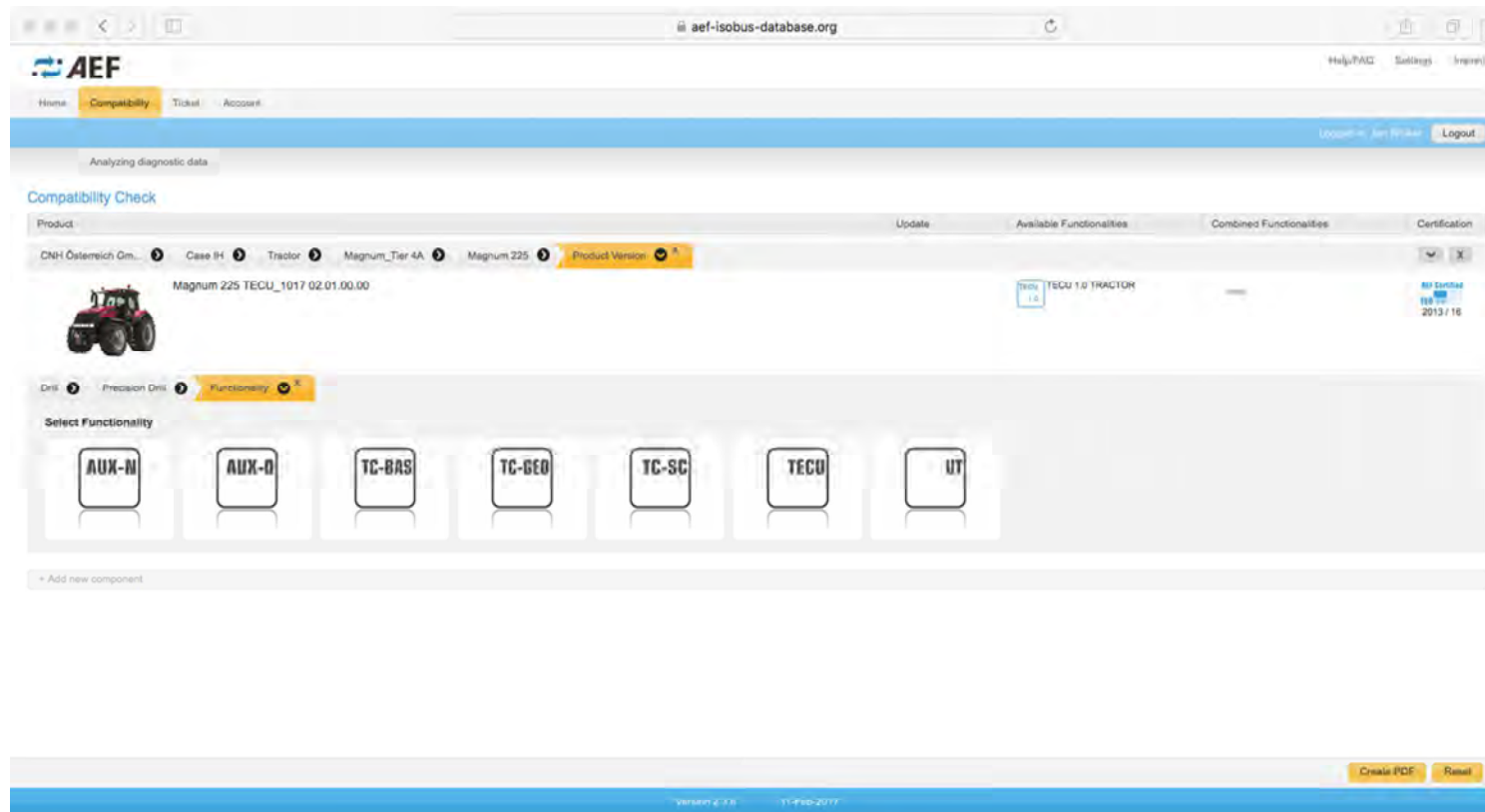
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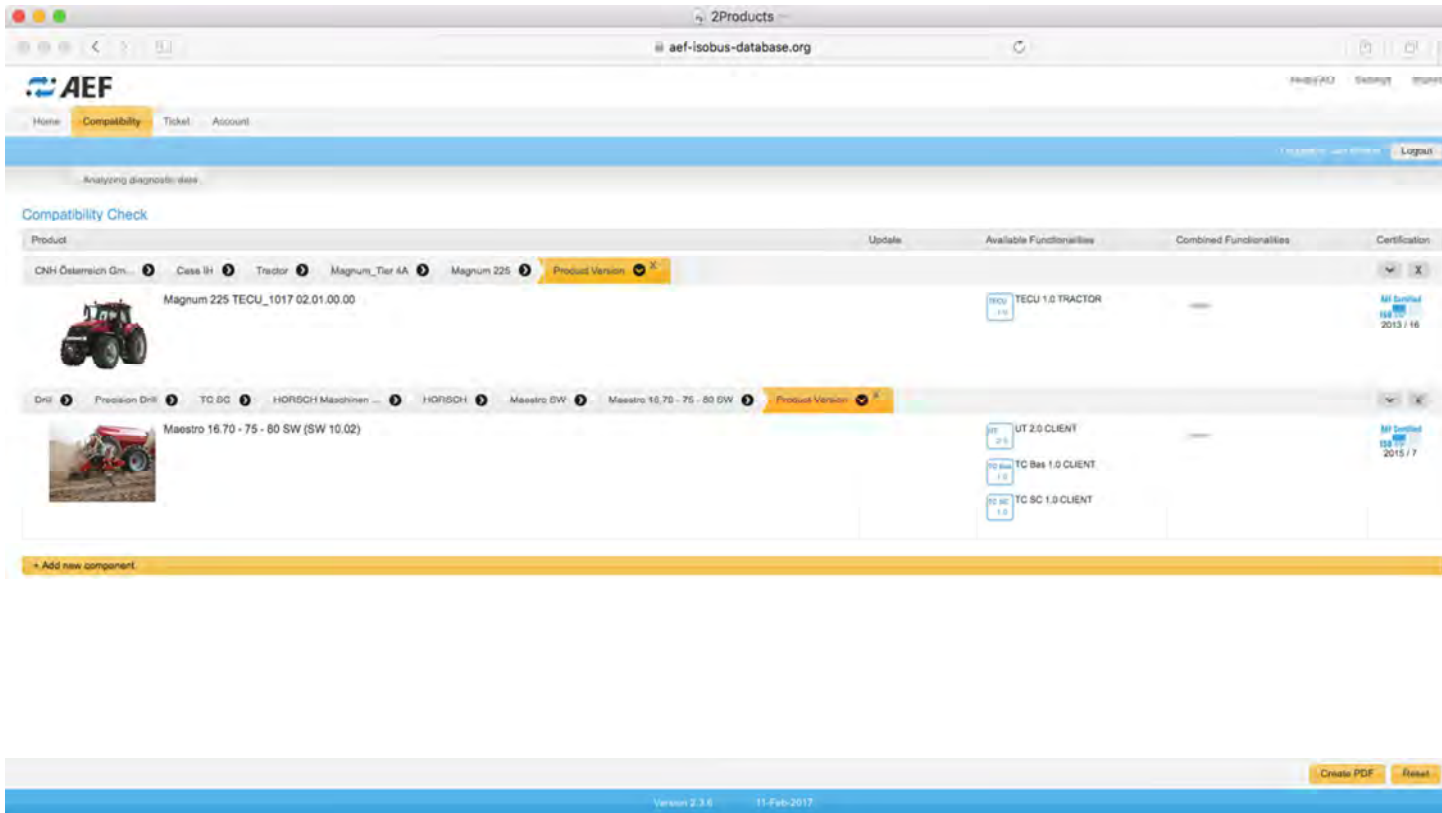
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The AEF ISOBUS Database



The AEF ISOBUS Database

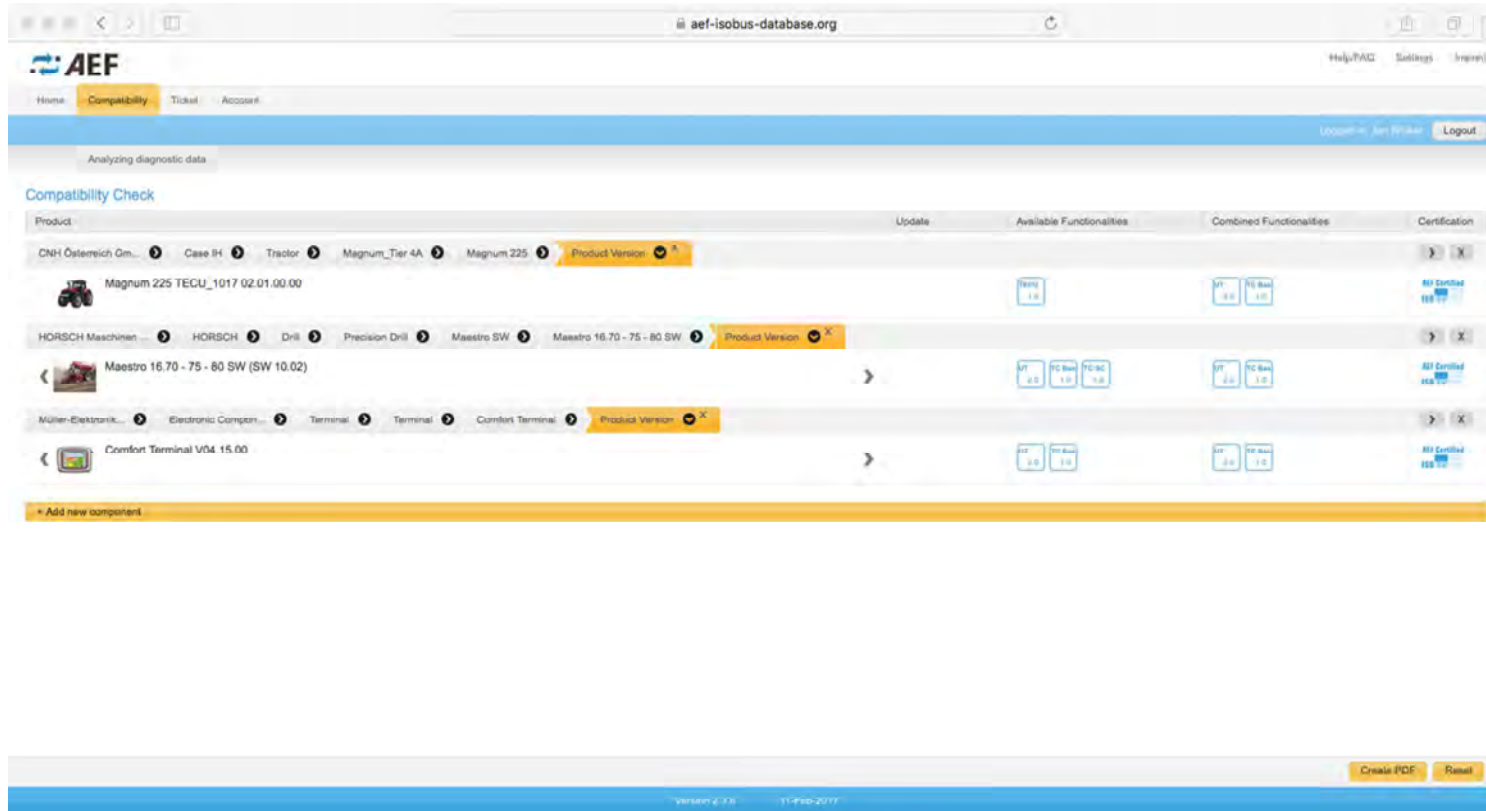


The screenshot displays the AEF ISOBUS Database web application interface. The browser address bar shows `aef-isobus-database.org`. The page features a navigation bar with links for Home, Compatibility (active), Ticket, and Account. A status bar indicates "Analyzing diagnostic data..." and includes a "Logout" button. The main section is titled "Compatibility Check" and contains a table with columns: Product, Update, Available Functionalities, Combined Functionalities, and Certification. Two product entries are visible:

Product	Update	Available Functionalities	Combined Functionalities	Certification
CNH Österreich GmbH > Case IH > Tractor > Magnum_Tier 4A > Magnum 225 > Product Version > X				
 Magnum 225 TECU_1017 02.01.00.00		TECU 1.0 TRACTOR		CE Certified 100 2013 / 16
Deere > Precision Drill > TC SC > HORSCH Maschinen > HORSCH > Maestro DV > Maestro 16.70 - 75 - 80 DW > Product Version > X				
 Maestro 16.70 - 75 - 80 SW (SW 10.02)		UT 2.0 CLIENT TC Bas 1.0 CLIENT TC SC 1.0 CLIENT		CE Certified 100 2015 / 7

At the bottom of the table, there is a link: [Add new component](#). The footer of the application shows "Version 2.3.6" and "11-Feb-2017", along with buttons for "Create PDF" and "Reset".

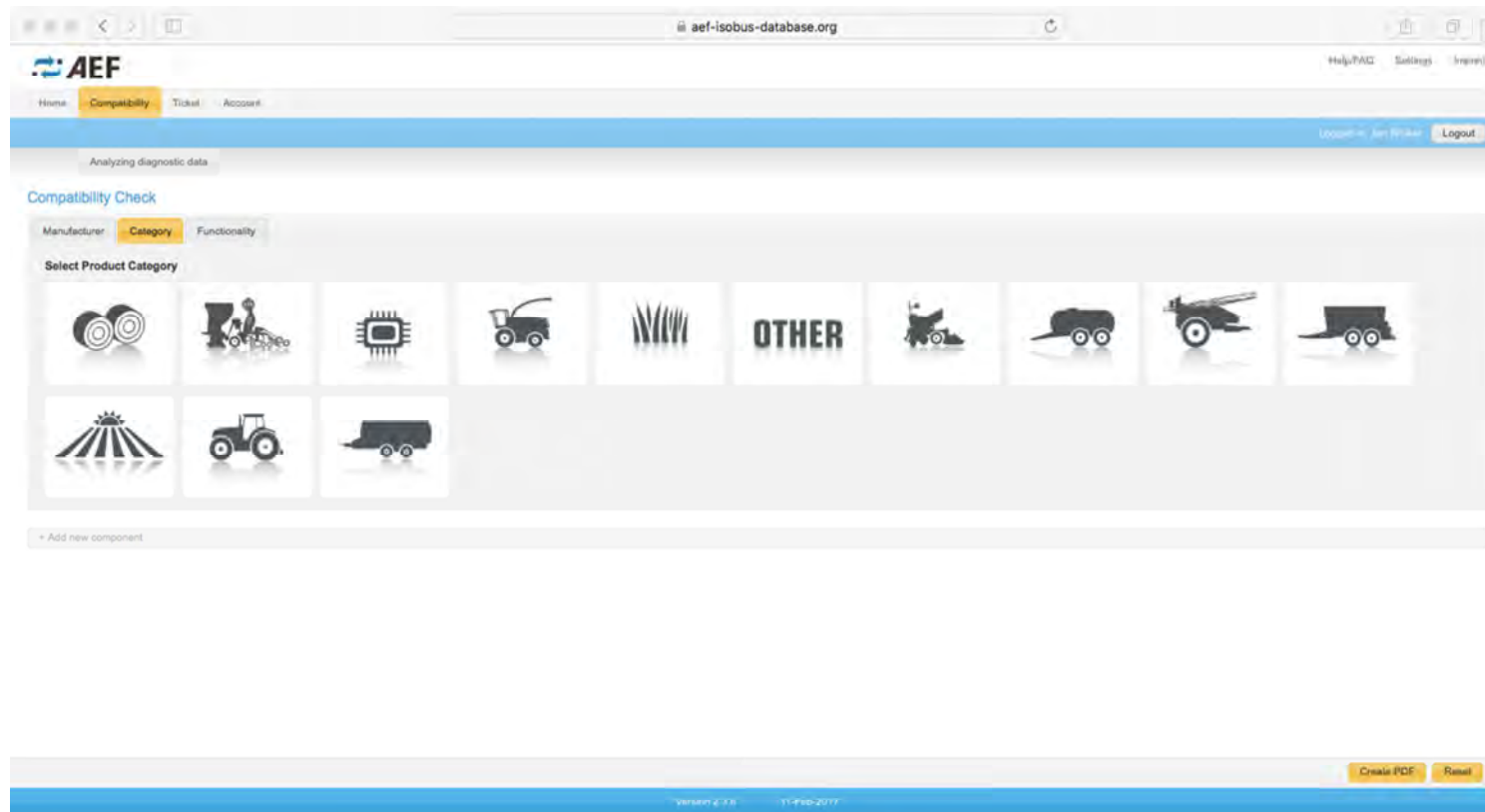
The AEF ISOBUS Database



The screenshot displays the AEF ISOBUS Database website interface. The browser address bar shows 'aef-isobus-database.org'. The website header includes the AEF logo, navigation links (Home, Compatibility, Ticket, Account), and user options (Logout, User Profile, Logout). The main content area is titled 'Analyzing diagnostic data' and 'Compatibility Check'. It features a table with columns: Product, Update, Available Functionalities, Combined Functionalities, and Certification. The table lists three products: 1. CNH Österreich Gm... (Case IH) Tractor, Magnum_Tier 4A, Magnum 225, Product Version 1.0, Certification: Not Certified. 2. HORSCH Maschinen... (HORSCH) Drill, Precision Drill, Maestro SW, Maestro 16.70 - 75 - 80 SW, Product Version 1.0, Certification: AEF Certified. 3. Wülfer-Elektronik... (Electronic Computer) Terminal, Terminal, Comfort Terminal, Product Version 1.0, Certification: AEF Certified. A yellow bar at the bottom of the table says '+ Add new component'. The footer shows 'version 2.0.0' and '11-Feb-2017'.

Product	Update	Available Functionalities	Combined Functionalities	Certification
CNH Österreich Gm... Case IH Tractor Magnum_Tier 4A Magnum 225 Product Version 1.0		1.0	1.0	Not Certified
HORSCH Maschinen... HORSCH Drill Precision Drill Maestro SW Maestro 16.70 - 75 - 80 SW Product Version 1.0		1.0	1.0	AEF Certified
Wülfer-Elektronik... Electronic Computer... Terminal Terminal Comfort Terminal Product Version 1.0		1.0	1.0	AEF Certified

The AEF ISOBUS Database



Thank you for your attention.

Questions?

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