

WELCOME



*Working Group on
Agricultural Engineering Technologies*



Workshop Nov. 10th, 2023 -

Agricultural Engineering Community
Achieving Visions with Horizon Europe

WELCOME

8:30 **Registration and Welcome Coffee**

9:00 **Section 1:**
Agricultural Engineering Objectives

Chairman: **Prof. Dr. Peter Pickel**

John Deere, MANUFUTURE Sub-ETP AET

1. Research & Innovation in support of Agriculture Technologies – Instruments under Horizon Europe, the Digital Europe Programme
Dr. Doris Marquardt, Programme Officer – EU Policies, European Commission, DG CNECT, Unit E4
2. EIT Food – Catalyzing the Food Transformation in Europe
Nazanin Khayyat, EIT FOOD, Key Account Manager
3. Learnings from 4 years of piloting digital technologies across European farms
Dr. Srdjan Krčo, Co-founder & CEO of DunavNET
4. agrifoodTEF: The European Testing and Experimentation Facilities for Agrifood Innovation
Prof. Dr. Stefan Stiene, University of Applied Sciences Osnabrück
(potential proxy: **Henning Müller**, DFKI GmbH)

10:30 **Coffee Break**

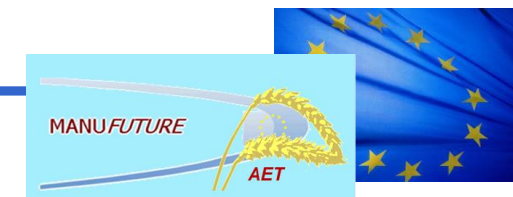


10:45 Section 2: Reports from Agricultural Engineering Research Environment

Chairman: **Jens Fehrmann**, Technical University Dresden, General Secretary of MANUFUTURE Sub-ETP AET

5. Current EurAgEng-Structures
Prof. Dr. habil. Barbara Sturm, Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), Scientific Director, Chair of the Board - European Society Agricultural Engineers, President
6. ERA-Net ICT-AGRI-Food – Objectives, impact and future perspectives
Dr. Johannes Pfeifer, Federal Office for Agriculture and Food (BLE)
7. Activities of CAPIGI Foundation – Role of Data and Robotics in Agriculture
Tamme van der Wal, Dir. and Innovation Strategist, Agri-Dataservices BioScope
8. EU Funded Projects of the European Agricultural Machinery Ass. CEMA
Dr. Vanja Biševac, Research Manager, CEMA
9. Review of latest of MANUFUTURE AET and Strategic Research Agenda(s)
Prof. Dr. Peter Pickel, John Deere Fellow, Speaker of MANUFUTURE AET
Jens Fehrmann, Researcher, TU Dresden, Gen. Sec. of MANUFUTURE AET

11:55 Break



12:00
Room 1

Joint Plenary Session with LAND. TECHNIK AgEng 2023

Welcoming Addresses and Opening Remarks by

Dr. Markus Demmel

Chairman of VDI Max-Eyth-Society Agricultural Engineering (VDI-MEG)

Prof. Dr. Barbara Sturm

President of European Society for Agricultural Engineers (EurAgEng)

Hubertus Paetow

President of the Deutsche Landwirtschaft-Gesellschaft (DLG)

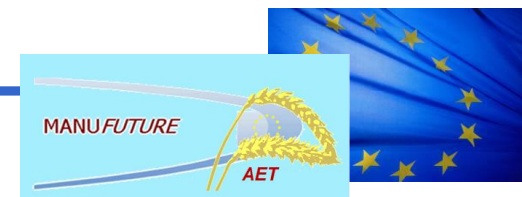
Plenary Speech – The future of responsible plant nutrition

Dr. Achim Dobermann

Chief Scientist, International Fertilizer Association (ifa)

13:00

Lunch Break



13:30

Section 3: Role of Data, Information, and Related Regulations in Agriculture

Chairman: **Dr. Thomas Engel**, Member of Supervisory Board of EIT Food, John Deere GmbH & Co. KG

10. Towards User-centered Solutions through Interoperable Data and AI Services in Agriculture

Dr. Sebastian Bosse, Fraunhofer Heinrich-Hertz-Institute

11. The EU Data and AI Acts

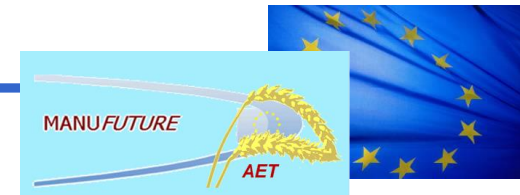
Dr. Francesca Hennig-Possenti, Senior Legal Counsel, John Deere, Chairwoman of the CEMA ad hoc group AI

12. EU Data Act and sustainability requirements

Patrick Majcen, Head of Legal and Environmental Policy Unit - Austrian Chamber of Agriculture and member of the EC-Expert Group on B2B Data sharing

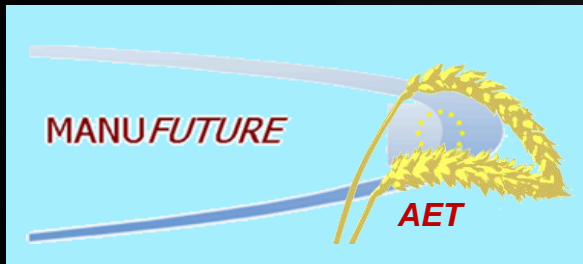
15:00

End



MANUFUTURE AET

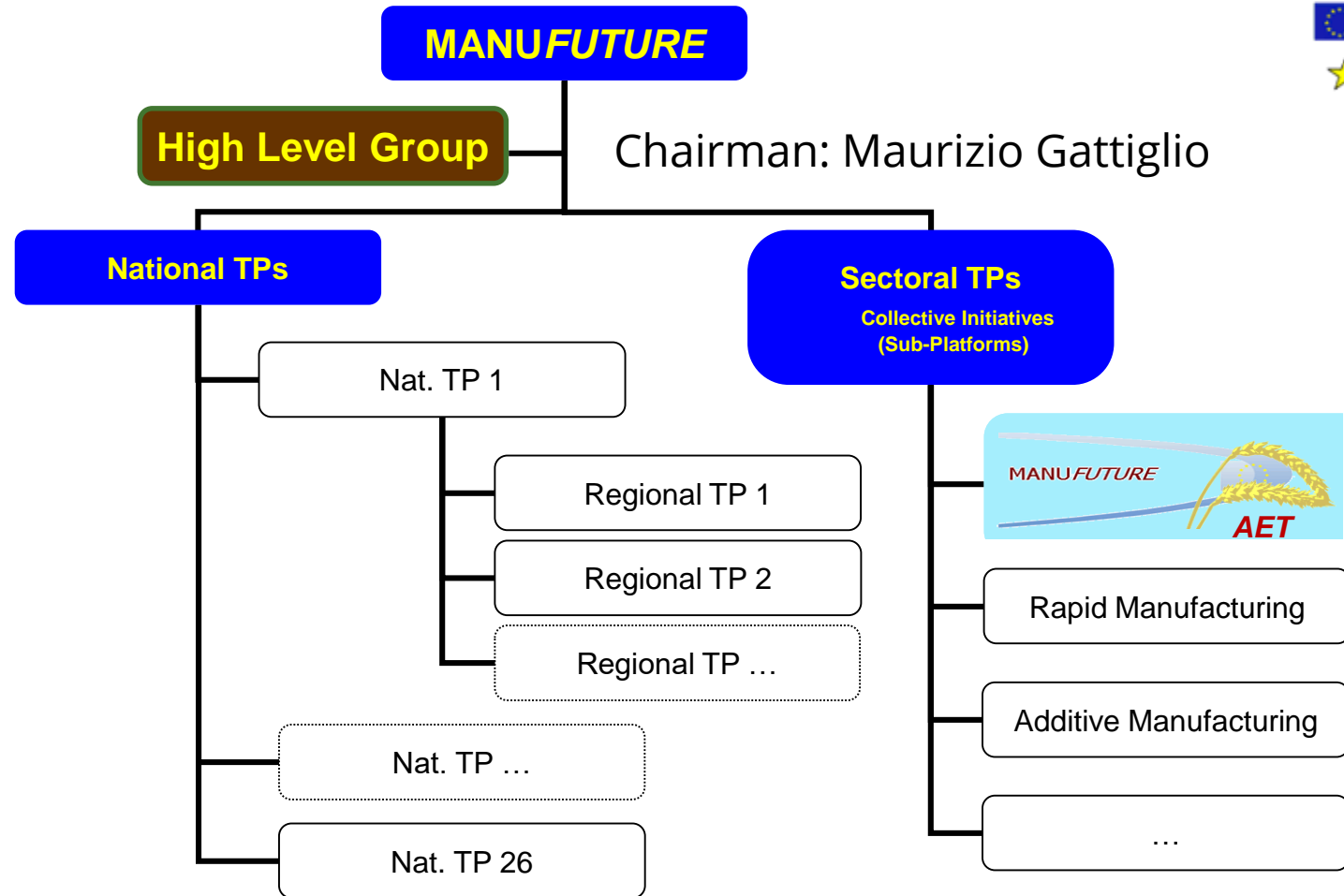
Agricultural Engineering and Technologies



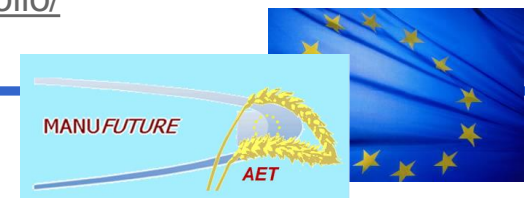
AET Report 2023

Prof. Dr. Peter Pickel (Speaker)
Jens Fehrmann (Gen. Secretary)

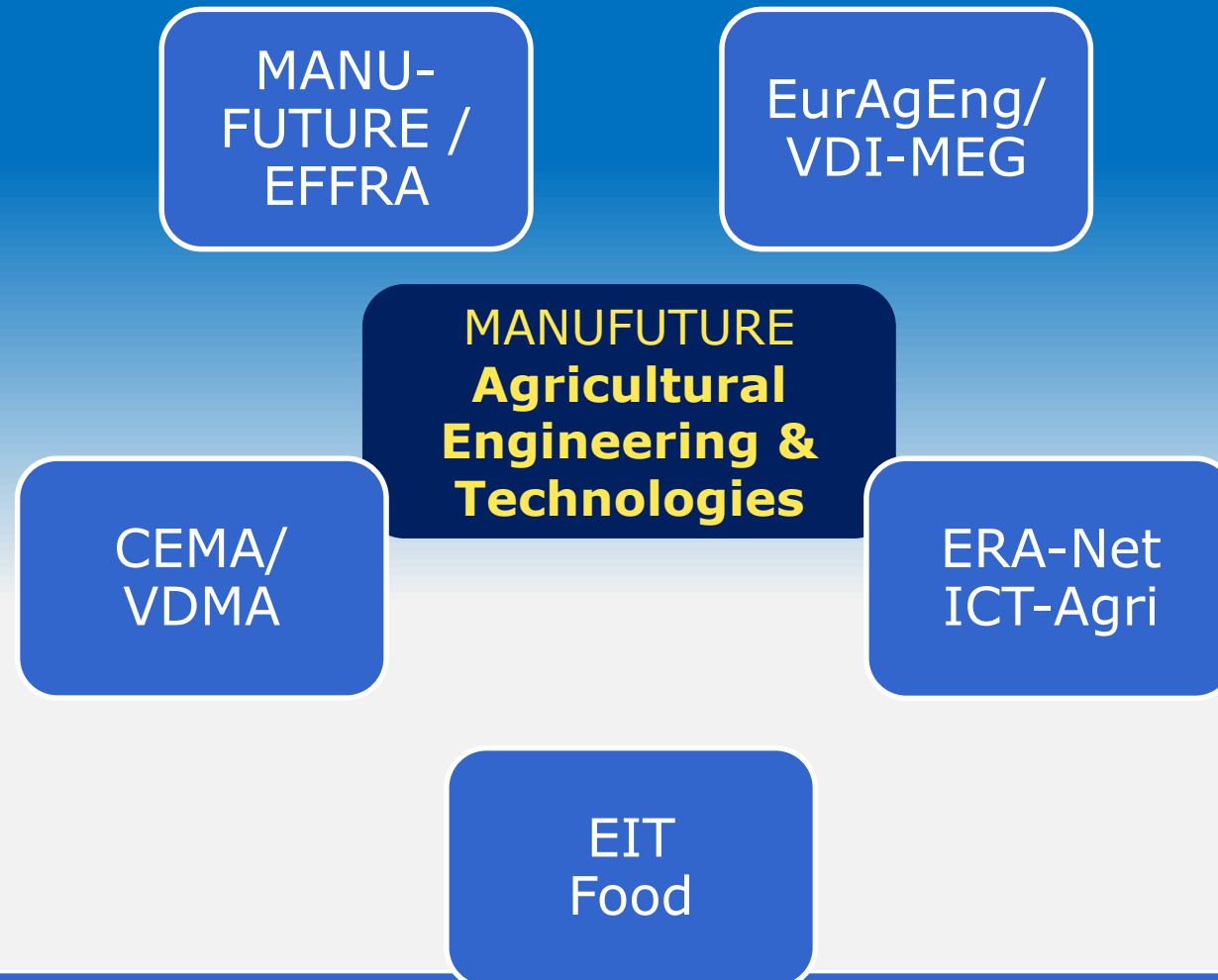
MANUFUTURE's Structure



<https://www.manufuture.org/portfolio/manufuture-subplatforms/>



AET's Environment



AET's twofold view on manufacturing ...

Quotation of a grandfather of agricultural engineering

Albrecht D. Thaer wollte, ...

dass man die „die Landwirtschaft als eine Fabrik, aber als eine sehr verwickelte Fabrik [betrachtet] und bei ihrer Betreibung alle Regeln [unterlegt], worauf der glückliche Erfolg der Fabriken beruhet.“

Quotation from 1801 / Zitat von 1801

Agriculture shall be done in a way as if being an industrial manufacturing system, considering the processes of complex industrial production which have to be applied similarly to achieve the same fruitful success as the healthy manufacturing enterprises have



Pushing EU Funding towards agricultural engineering

1. Representation of Ag Eng community in MANUFUTURE HLG (also EFFRA)
2. Contact and information to DG Agri
3. Contact and information to DG Research
4. Contact and information to other DGs
5. Cooperation with ERA-Net ICT-Agri-Food and other communities
6. Developing strategic guidelines as basis for points 1-5
7. Information about EU funding FPs to community
8. Workshops for points 6 and 7



AET's timeline

... 2005

AET became operational with mandate from VDMA, VDI, CEMA – chairman L. Frerichs, Gen. Secr. J. Fehrmann, pre-financed by VDMA

2008

P. Pickel new chairman, 2nd pre-financing by VDMA

2013 - 2015

European Bioeconomy panel

2006

First Strategic Research Agenda(SRA) and Implementation Plan published

2009 - 2014

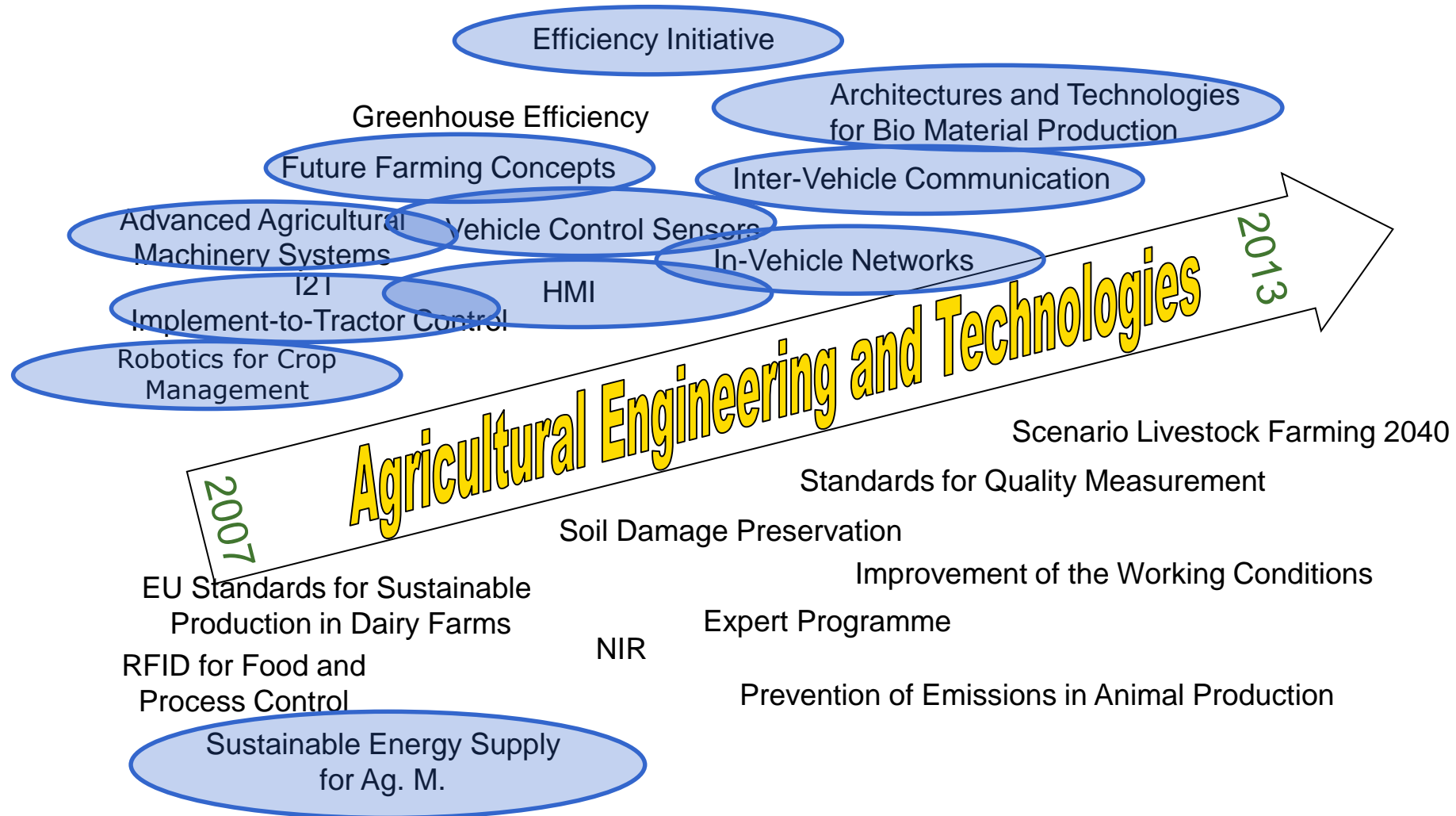
Projects
Star-Colobri, BecoTePs, Unifarm
(biorefineries, networking, positioning)

2016 - 2020

Strategic Research Agenda 2030 – Part 1
Cooperation with VDI
Part 2 published in 2023



Reworking AET's Strategic Research Agenda (SRA, 2006)



Source: Auernhammer (modified)



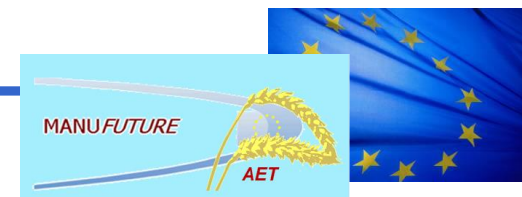
AET latest activities



Strategic Research Topics 2030

Most important chapters

- 3 DEVELOPMENTS AND CONSTRAINTS OF AGRICULTURE
 - 3.4 INTEGRATED ENERGY
 - 3.5 DISTRIBUTED LEDGER TECHNOLOGY / BLOCKCHAIN
 - 3.6 GENERATING GROWTH IN AGRICULTURAL PRODUCTION
- 4 COMMENTS TO THE: VISION 2020 AND SRA
- 5 TECHNOLOGY TRENDS
- 6 DIGITISING THE AGRI-FOOD SECTOR - A RESEARCH AGENDA BEYOND HORIZON 2020
- 7 RESEARCH TOPICS
 - 7.1 DIGITAL TRANSFORMATION
 - 7.2 CONNECTIVITY
 - 7.3 AUTOMATION / ROBOTICS
 - 7.4 NEW MACHINE CONCEPTS
 - 7.5 FARM CONCEPTS FOR AGRICULTURAL PRODUCTION AND ENERGY SUPPLY
 - 7.6 INTEGRATED ENERGY

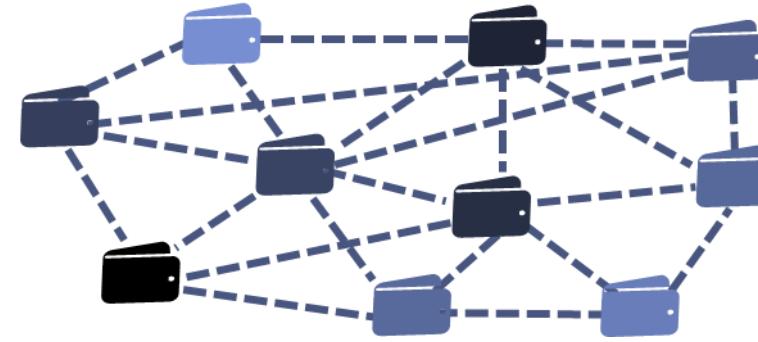


Agricultural technologies

Trends

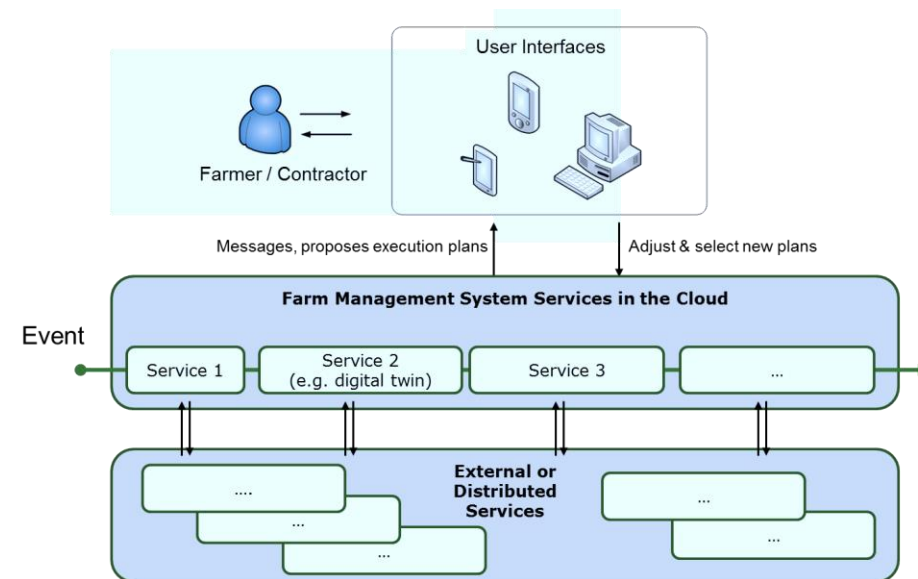
- Sustainability
- Autonomous operation
- Electrification
- IoT

Strategic technology needs



Digital Transformation needs research and developments in:

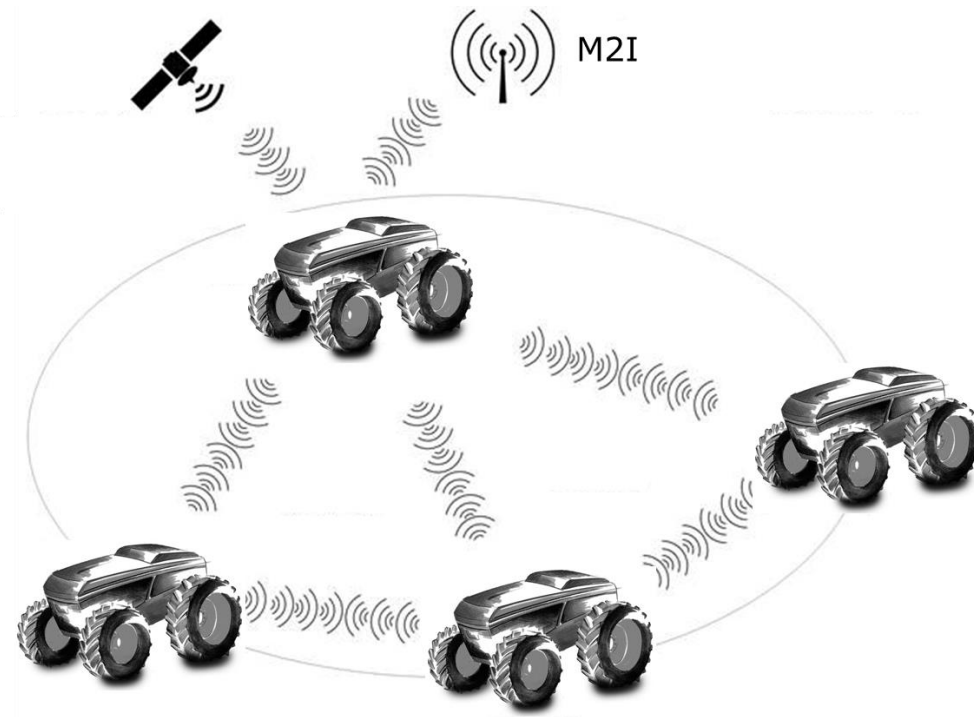
- Blockchains / traceability (agricultural product information)
- Decision support systems
- Farm Management Information Systems
- Process information and evaluation
- Digital farm twins
- Platforms?



Strategic technology needs

Connectivity

- Internet of things, communication between everything
- Introduction 5G standards
- Extended positioning services
- Digital villages
- Secure farming



Strategic technology needs



Automation / Robotics needs developments in:

- Autonomous processing
- Imagery and Sensors
- Human Machine Interfaces
- Concepts for remote operations
- M2M/M2I communication



Strategic technology needs

Machine Concepts for further increase in efficiency/performance

Compact Units of harvesting or processing machines

Separation of infield processes

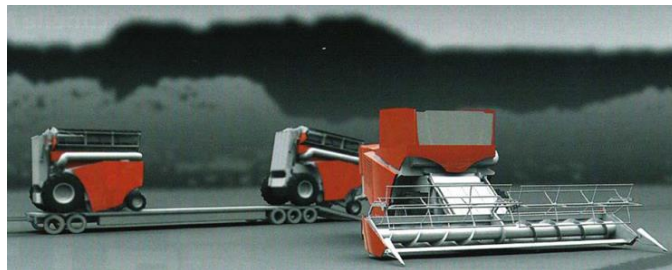
Enabler are:

Connectivity / M2M Communication

Digitalization, new operator concepts

Modular Set-up

Future need to increase efficiency and productivity



Strategic technology needs

Farm Concepts for agricultural production and energy supply

New technologies allow the establishment of new farming structures

Smaller autonomous machines and decision-making systems for site-specific farming

Urban or vertical farming

Integrated energy and agricultural production

Combination of Agro-Photovoltaics and plant production

Combination of agrothermic technology and plant production



Strategic technology needs

Integrated Energy needs developments in:

- Energy management in rural areas
- Concepts for combination photovoltaik and plant cultivation
- Alternative fuels (biomass), energy transmission
- Electric and hybrid drive trains, combination with renewable energy sources
- Methane gas combustion engines / mobile Methan-Gas supply and storage



Questions to the AET community

1. Do we need an SRA update as it does not cover current developments:
 - a) data eco systems sufficiently covered
 - b) AI and Gen AI
 - c) topics already solved or in serial development/production
2. Do we need a completely new SRA
3. Do we need AET at all? Has CEMA already taken over AET's tasks?
4. Can we integrate AET activities into CEMA?
5. How to finance AET in future?
6. Do we need this workshop?
7. Who could represent our community in MANUFUTURE HLG when not AET?
8. After 15 years: Successor of Peter Pickel?



Thank you for your attention!



MANUFUTURE AET
Agricultural Engineering and Technologies
