



JOHN DEERE

NGIoT - Digitalization of Agriculture

Dr. agr. habil. Thomas Engel

March 2021



OUR GRAND CHALLENGES

Food (Protein)
Security

Climate action
& environment
(GHG)



Sustainability



Precise Automation
& Autonomy

Techno-
logy
Needs

Electrification



Smart IoT
integration



Producing more
with less

DERIVED GUIDING PRINCIPLES

Independence

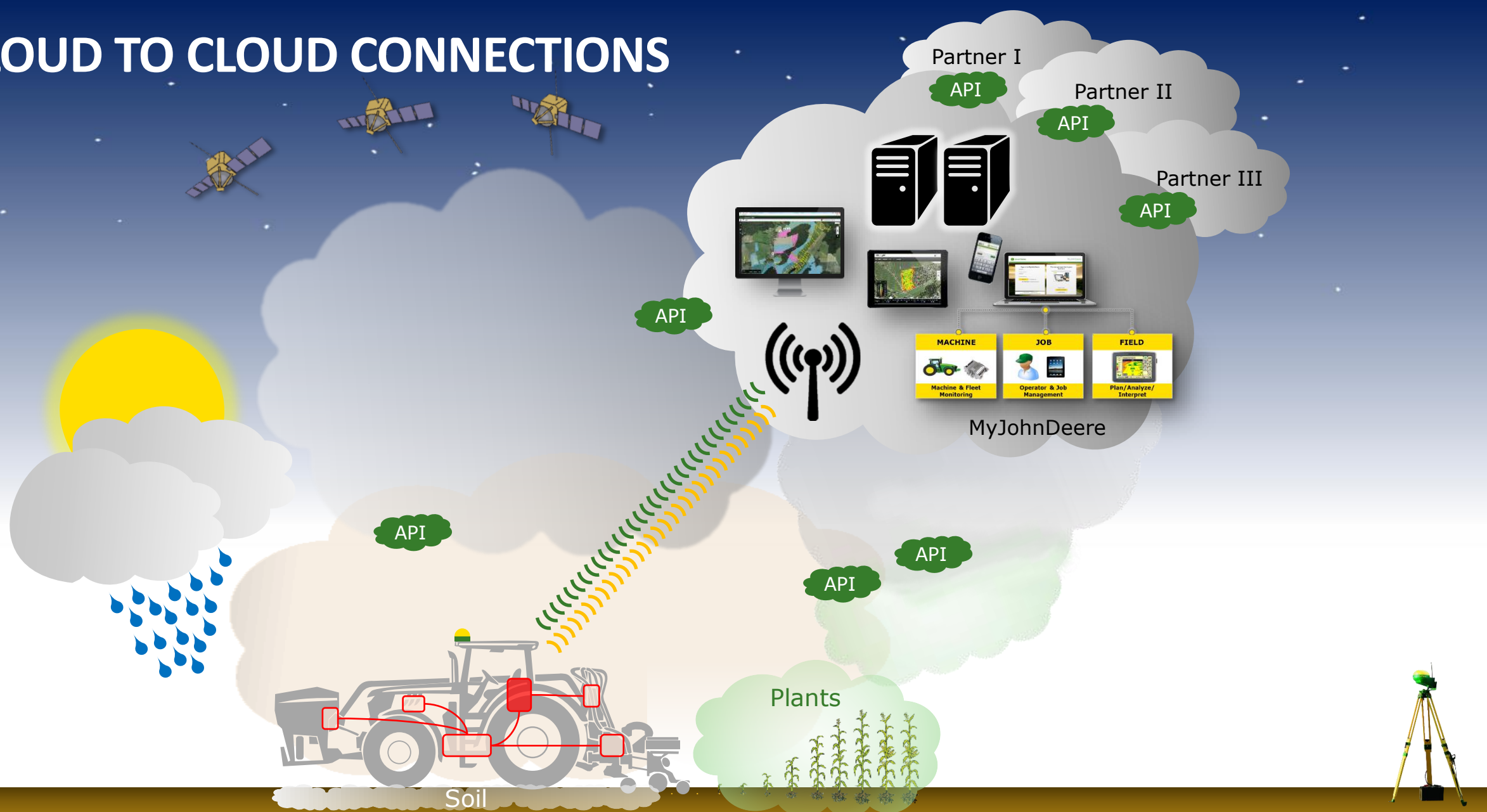
JOHN DEERE'S OPERATION CENTER



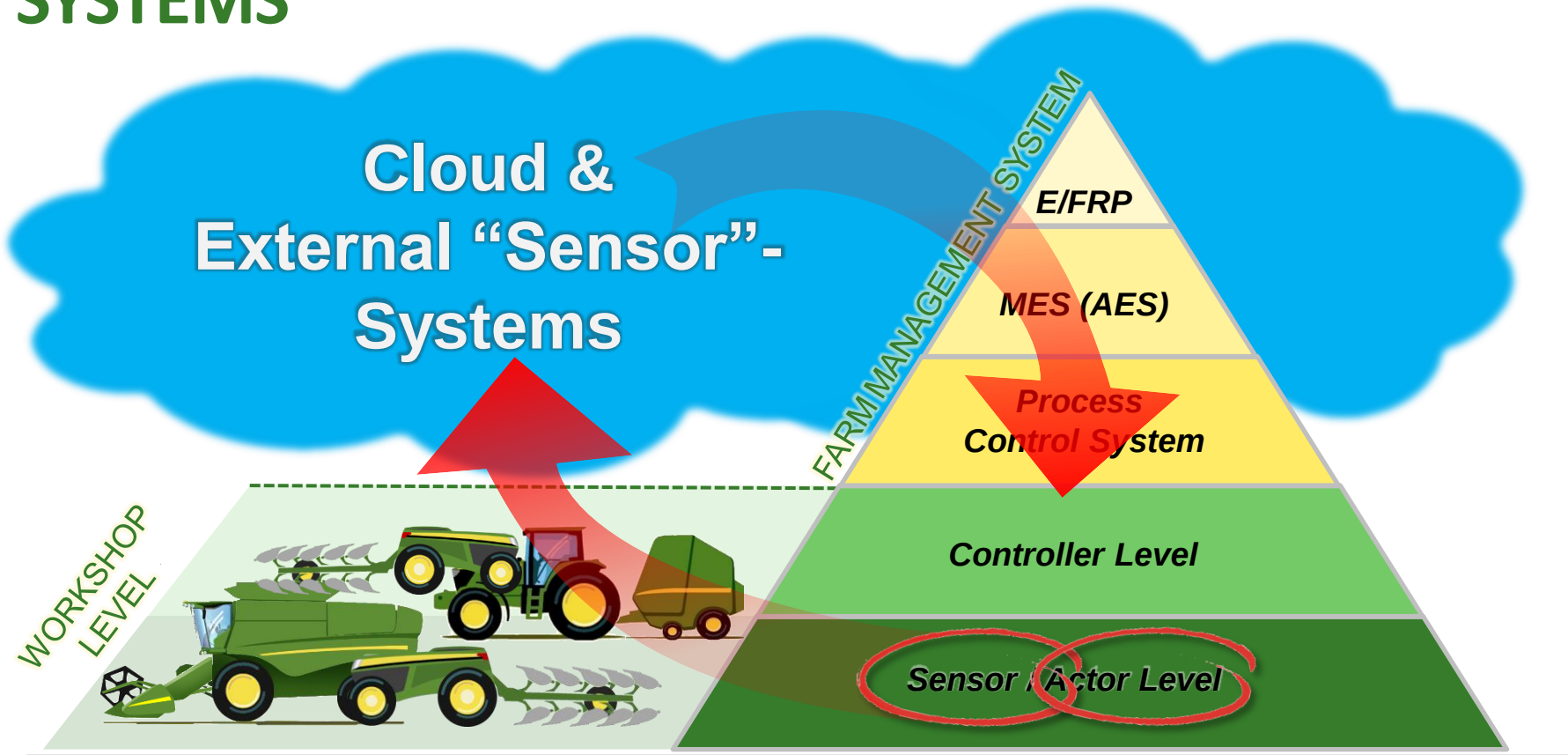
NUTRIENT MANAGEMENT



CLOUD TO CLOUD CONNECTIONS



FUTURE SYSTEMS



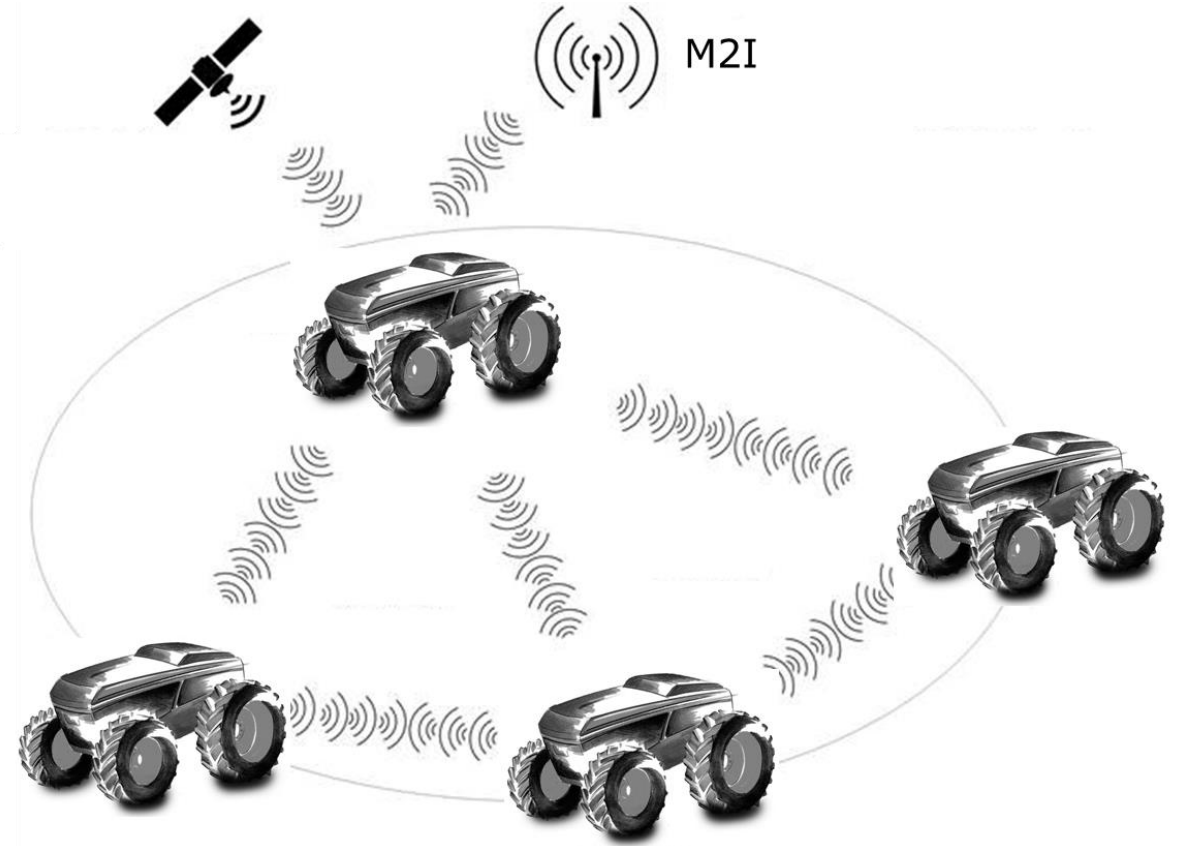
Adaptive Agricultural Production Systems providing

- Technical intelligence (such as self optimization)
- Self reconfiguration in dynamic networks
- Defect compensation / zero defect operation

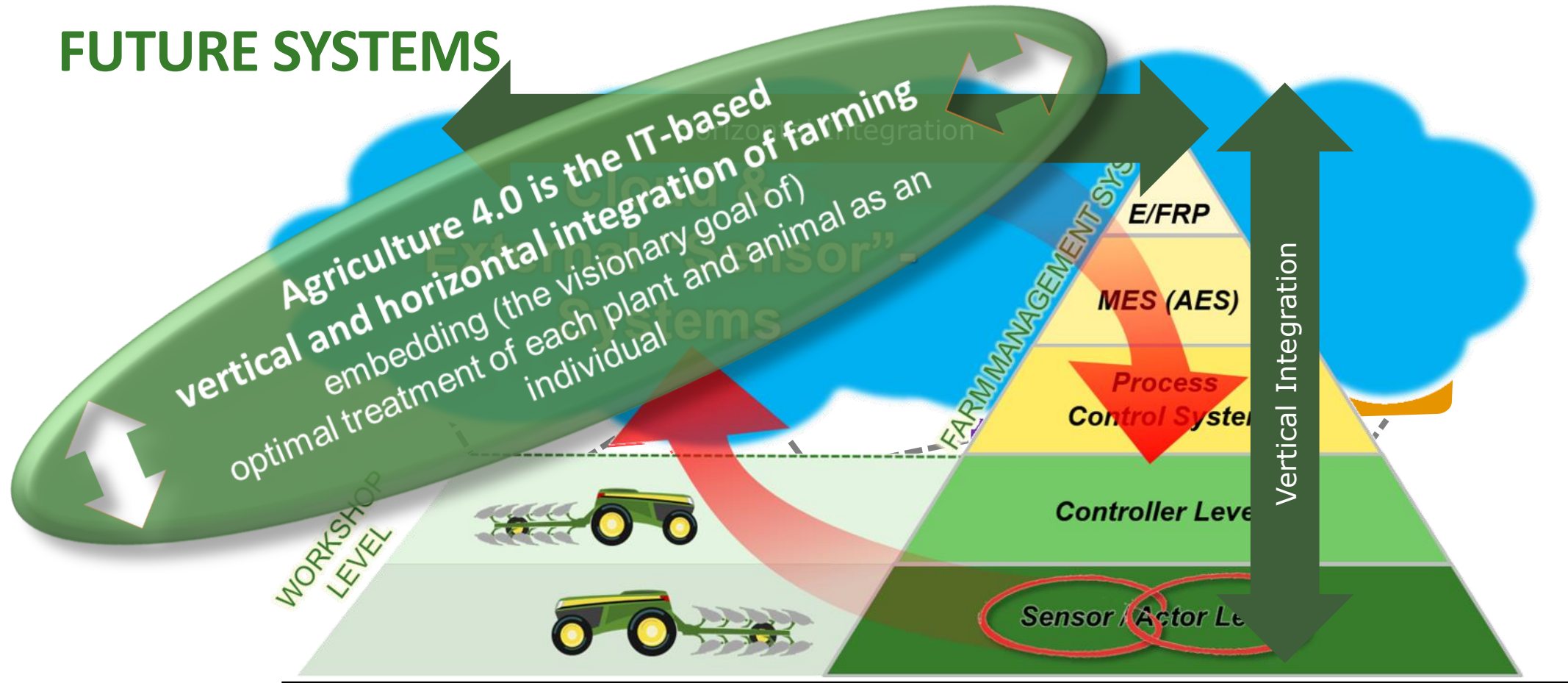
5G – AUTOMATION / AUTONOMY ENABLER

Connectivity

- Internet of things, communication between everything everywhere



FUTURE SYSTEMS



Adaptive Agricultural Production Systems providing part of

- Technological, intelligent (support for optimization)
- Self-organizing, dynamic networks
- Being implemented in a Mesh-App and Service Architecture

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.“

intended, that “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.”

Zitat von 1801 / Quotation from 1801



Bild: Humboldt-Universität zu Berlin,
Universitätsbibliothek