



Visionen der Kommunikation und  
Automatisierung  
von Landmaschinen

### Visions of Agricultural Technologies

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Erfurt, Oct. 22<sup>nd</sup> 2015



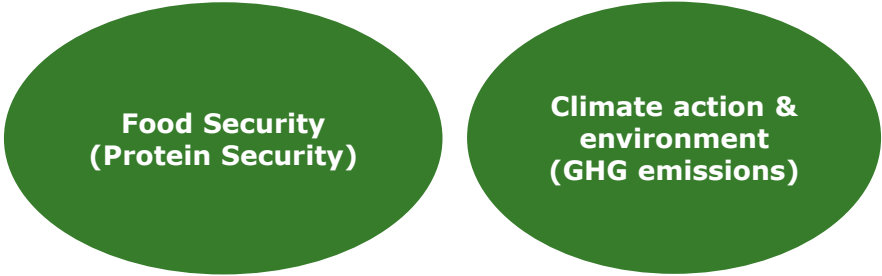
## Agricultural Technologies

## Megatrends?

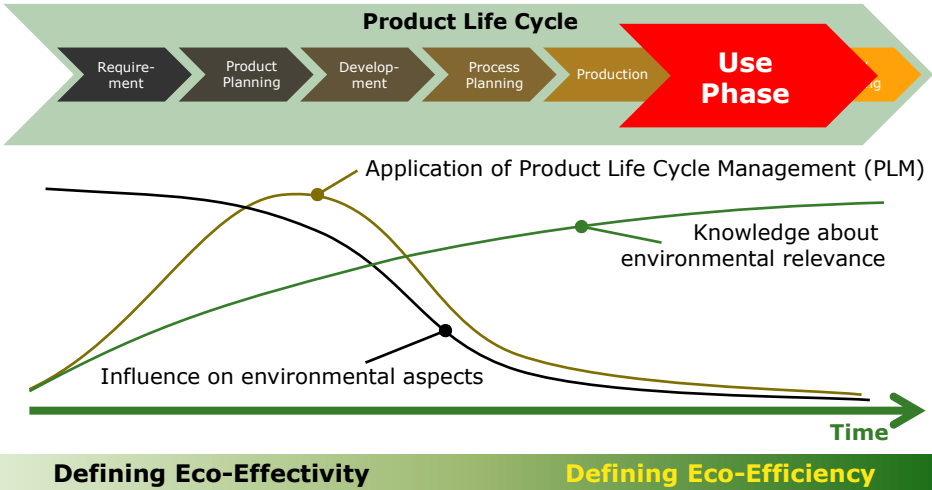
- Sustainability




# "Our" Grand Challenges



# Early Environmental Management




## Guiding Principle for Agricultural Technology




**More with less**

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## Agricultural Technologies



### Megatrends?

- Sustainability
- Automation and autonomous operation
- Reliability

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## Why Don't We Have Autonomous Machines?



⇒ **Because of safety/legal issues**

- But driverless machines are the safest machines from the driver's prospective
- But operational setting is endangered seriously

⇒ **Because of a lack of functional safety (functional stability)**

- Example: So long as there might be a pick-up (trailer) plugging a (service) person will be needed

*Automation will have to „attack“ that gap zero defect operation / disturbance management*



### John Deere Cutting Management System



## Agricultural Technologies

### Megatrends?


- Sustainability
- Automation and autonomous operation
- Reliability
- Electrification?

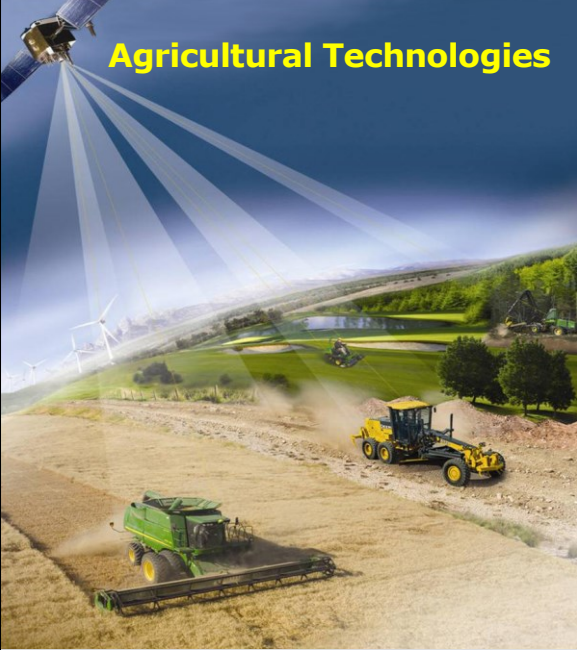
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## Why Electrification?

- Efficiency
- Controllability and dynamic response behaviour
- Using Renewable Energy






## Agricultural Technologies

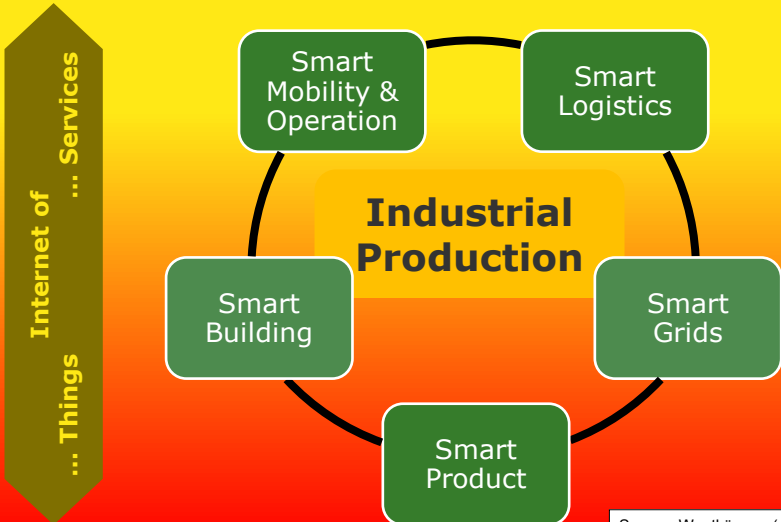
## Megatrends?

- Sustainability
- Automation and autonomous operation
- Reliability
- Electrification
- Internet of (almost every)thing(s) and services

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## Smart Automation

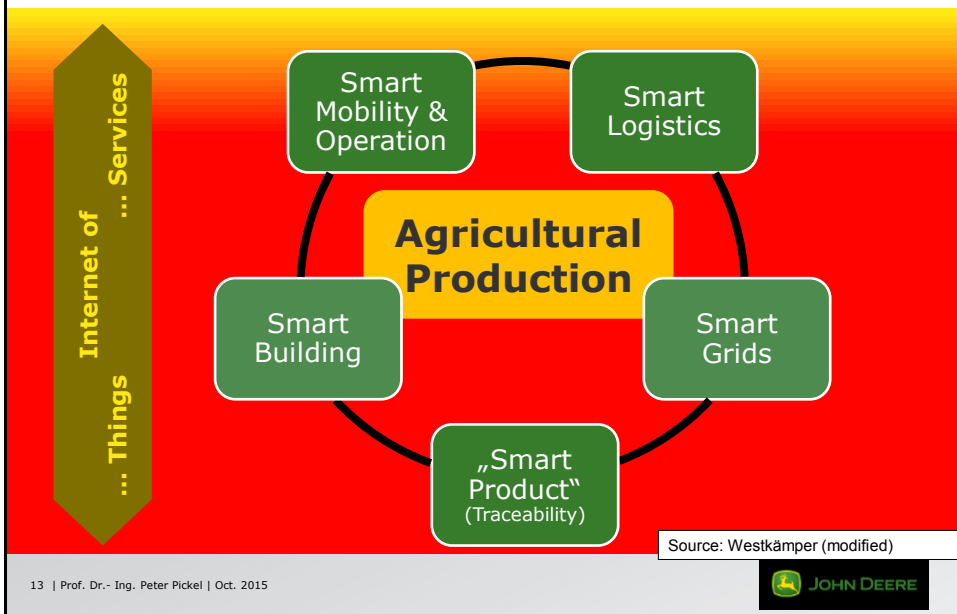


Source: Westkämper (modified)

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## Smart Automation



## Quotation of a Grandfather of Agricultural Engineering

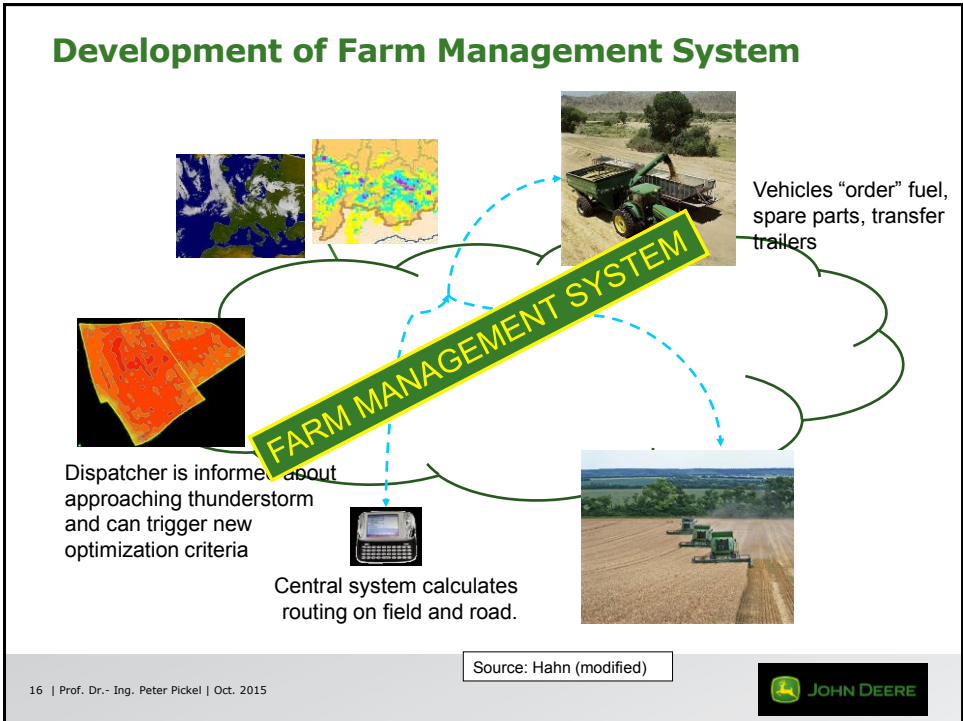
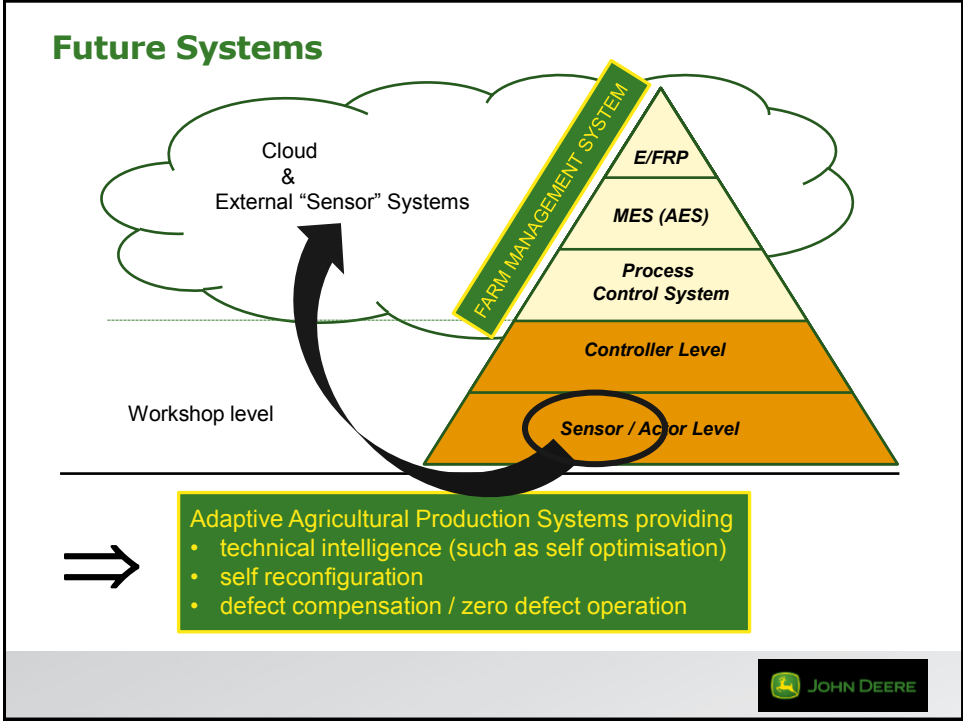
Albrecht D. Thaer wollte, ...



**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.“**

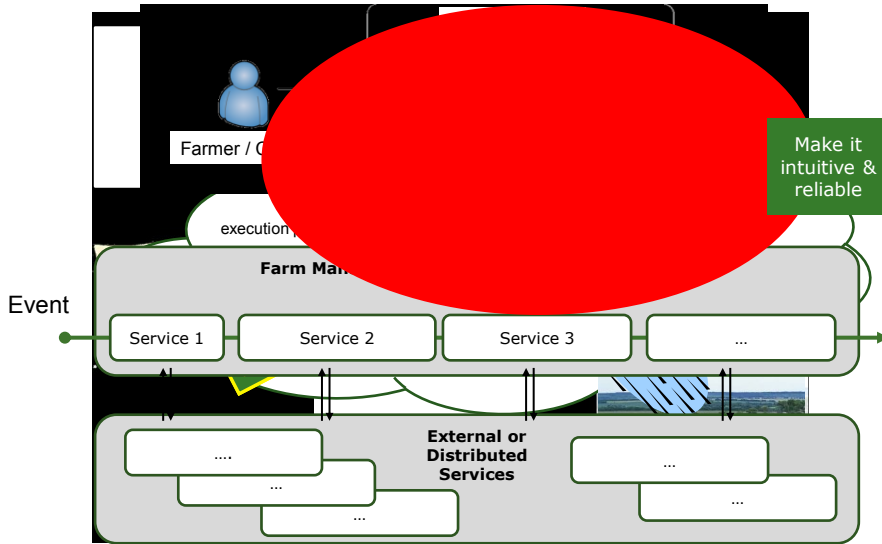
**Quotation from 1801 / Zitat von 1801**

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





## Future Operation

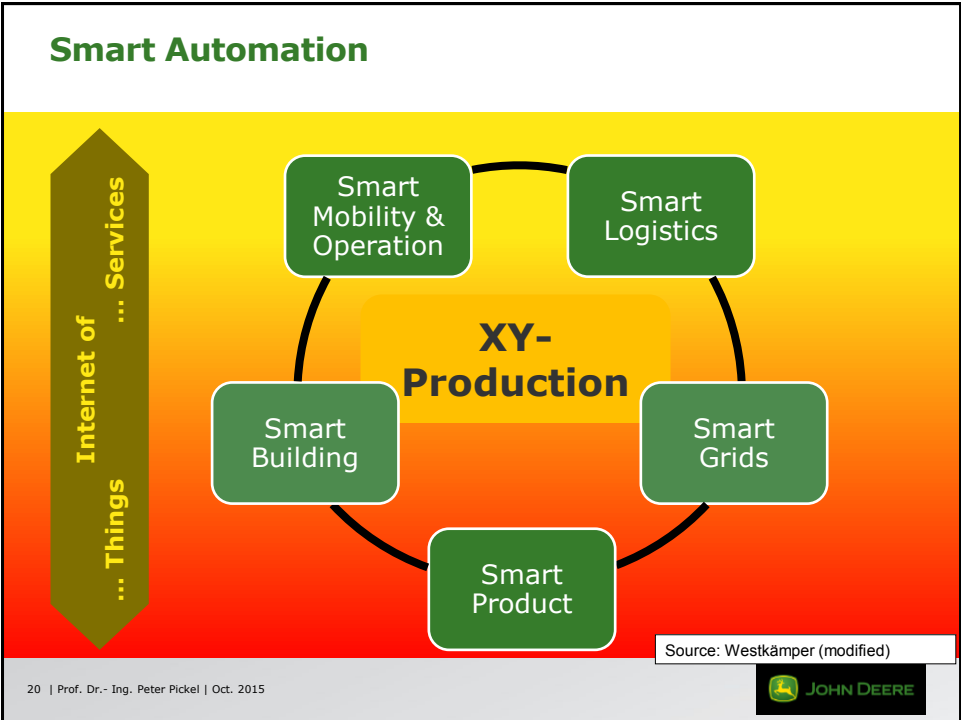
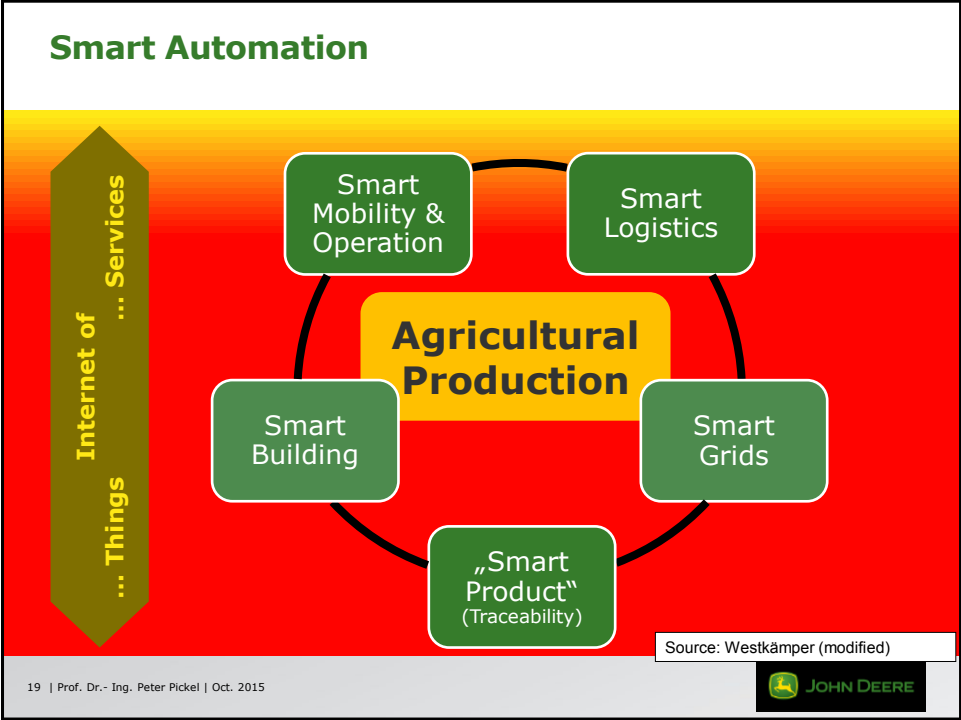


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## Connected Crop Protection / Pesticide Application Manager





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workprogramme 2016/17 for H2020 published

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- Next MANUFUTURE AET-Event in cooperation with ERA-net ICT AGRI Nov. 6th 2015 (side event of VDI/EurAgEng Conference)
  - Defining the future of AET



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