



Precision farming: Feeding our future with technology

Big Data e Advanced Analytics a supporto della Digital Farming

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Microsoft

If agriculture is to continue to feed the world, it needs to become more like manufacturing – Geoffrey Carr, Chief Scientist, Economist



Global Access

1 in 9 people are undernourished (UN)

65% Reduce poverty for 65% of the world's poor who live in rural areas and work in farming

70% more food is needed by 2050

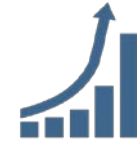


Sustainable Production

70% of global water resources are needed for Agriculture

24% of global greenhouse emission comes from Agriculture

251T liters of water to be saved in 2030 from implementing Smart Agriculture



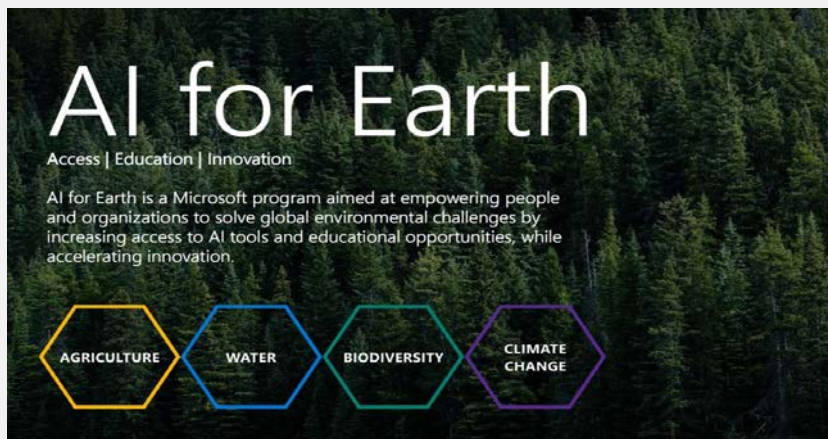
Economic Growth

30% of global workers are employed by Agriculture

10-30% Agriculture contributes 10% of global GDP and up to 30% in low income countries

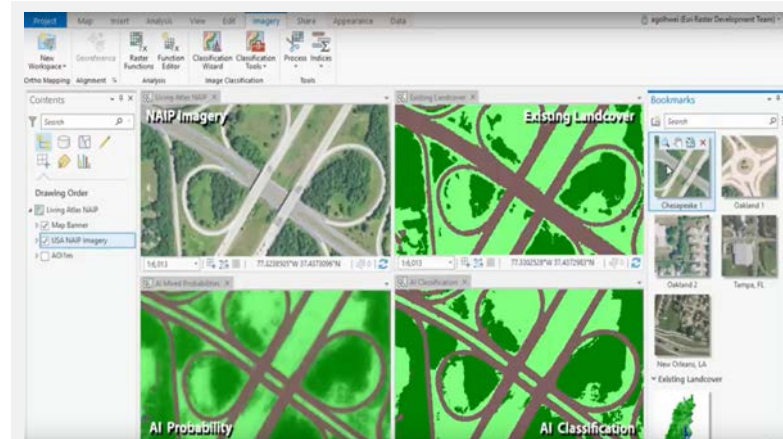
\$4.8T Global Agriculture revenue

Empowering agriculture in new and more impactful ways to help create a more sustainable future



Microsoft's Commitment:

- Grants so researchers and organizations can gain **access** to cloud and AI computing resources for environmental solutions
- **Educational opportunities** to make sure organizations know what is available
- Accelerate **innovation** in agriculture



Partnership ESRI Chesapeake Conservation

- Identify risks on farms like drought or pest infestation



First-Ever Rice Farming Carbon Credits Sold to Microsoft

- In the rice pilot project farmers collect data to quantify how several production practices
- Early drainage – reduce generation of around 30 pounds of methane per acre



What is artificial intelligence?



Amplifying human ingenuity with intelligent technology



Reasoning

Learn and form conclusions
with imperfect data



Understanding

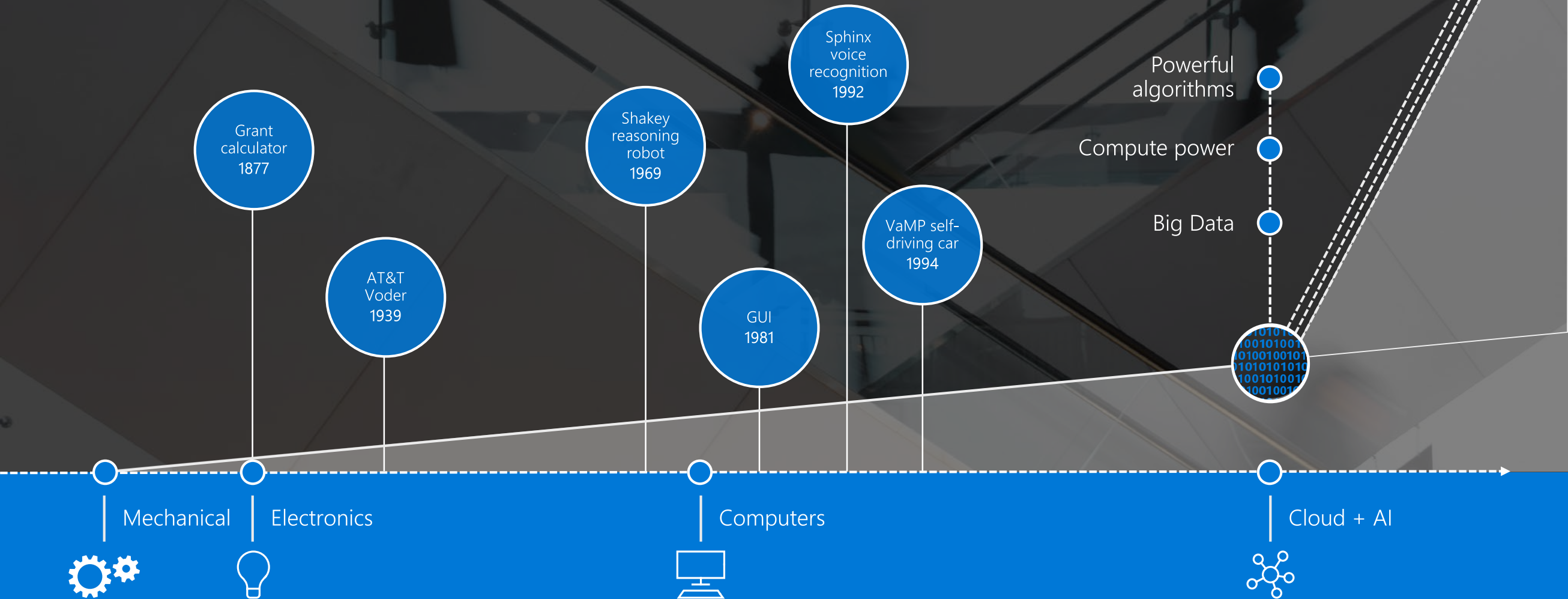
Interpret meaning of data
including text, voice, images



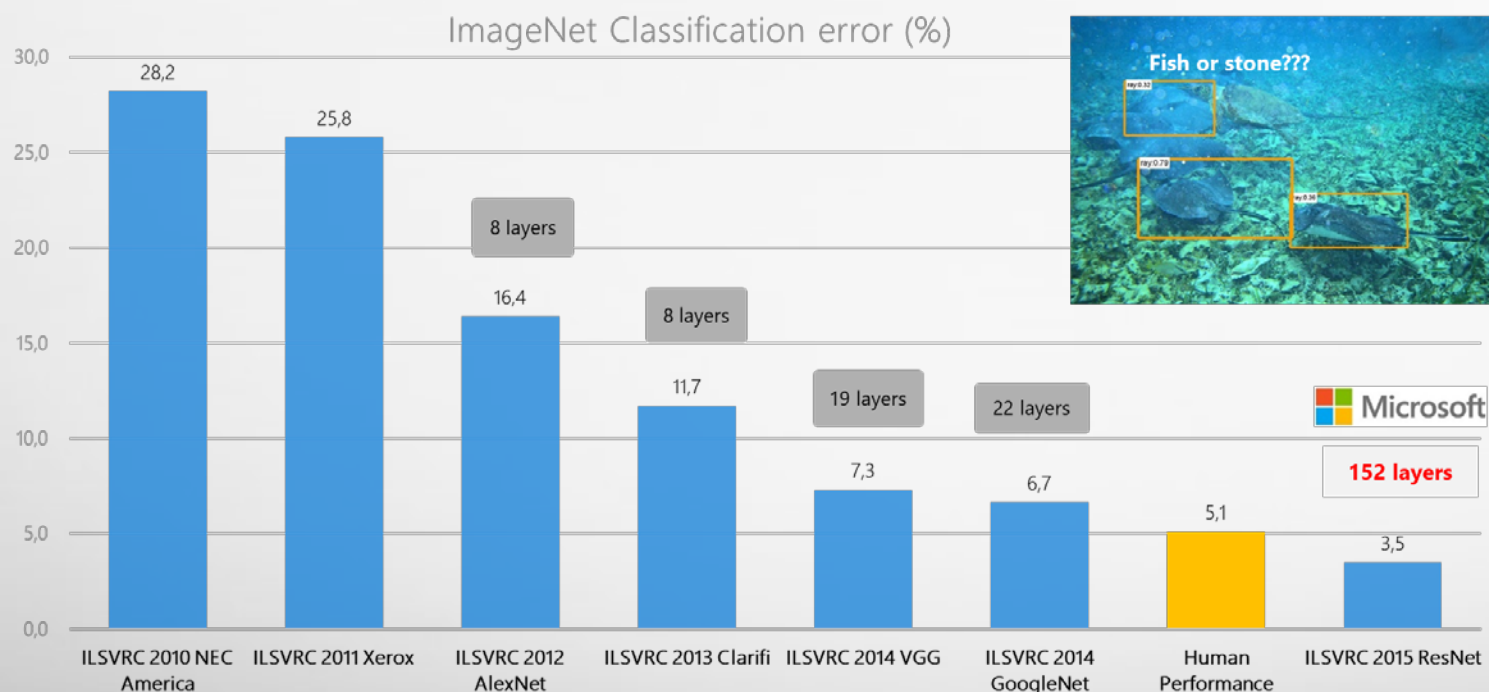
Interacting

Interact with people
in natural ways

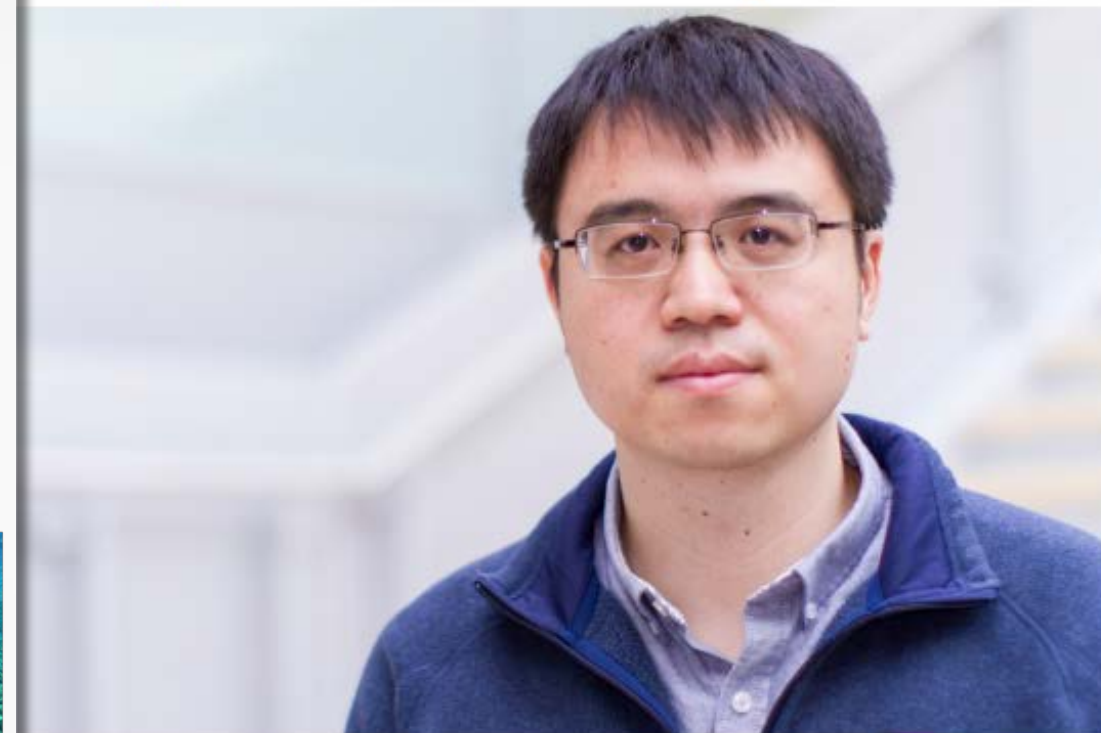
Why now?



WORLD LEADING OBJECT RECOGNITION POWERED BY 152 LAYER DEEP NEURAL NETWORK (December 10th, 2016)

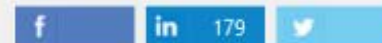


Microsoft researchers win ImageNet computer vision challenge



Jian Sun, a principal research manager at Microsoft Research, led the image understanding project. Photo: Craig Tuschhoff/Microsoft.

Posted December 10, 2015 By Allison Linn



Microsoft researchers on Thursday announced a major advance in technology designed to identify the objects in a photograph or video, showcasing a system whose accuracy meets and sometimes exceeds human-level performance.

Microsoft's [new approach to recognizing images](#) also took first place in several major categories of image recognition challenges Thursday, beating out many other competitors from academic, corporate and research institutions in the [ImageNet](#) and [Microsoft Common Objects in Context](#) challenges.



Video

Schneider Electric transforms agriculture with the Internet of Things for sustainable farming





Opportunity for social and economic impact



Agriculture: feed the world

\$830B Potential for ag-tech driven efficiency gains*



Industrial IoT: gain efficiency

\$172B Impact of industrial IoT on productivity across all German manufacturing sectors¹

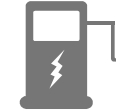


\$2.1T+
global GDP impact¹



Consumer IoT: improve quality of life

\$370B Impact of IoT on home automation/security and health/fitness sectors³



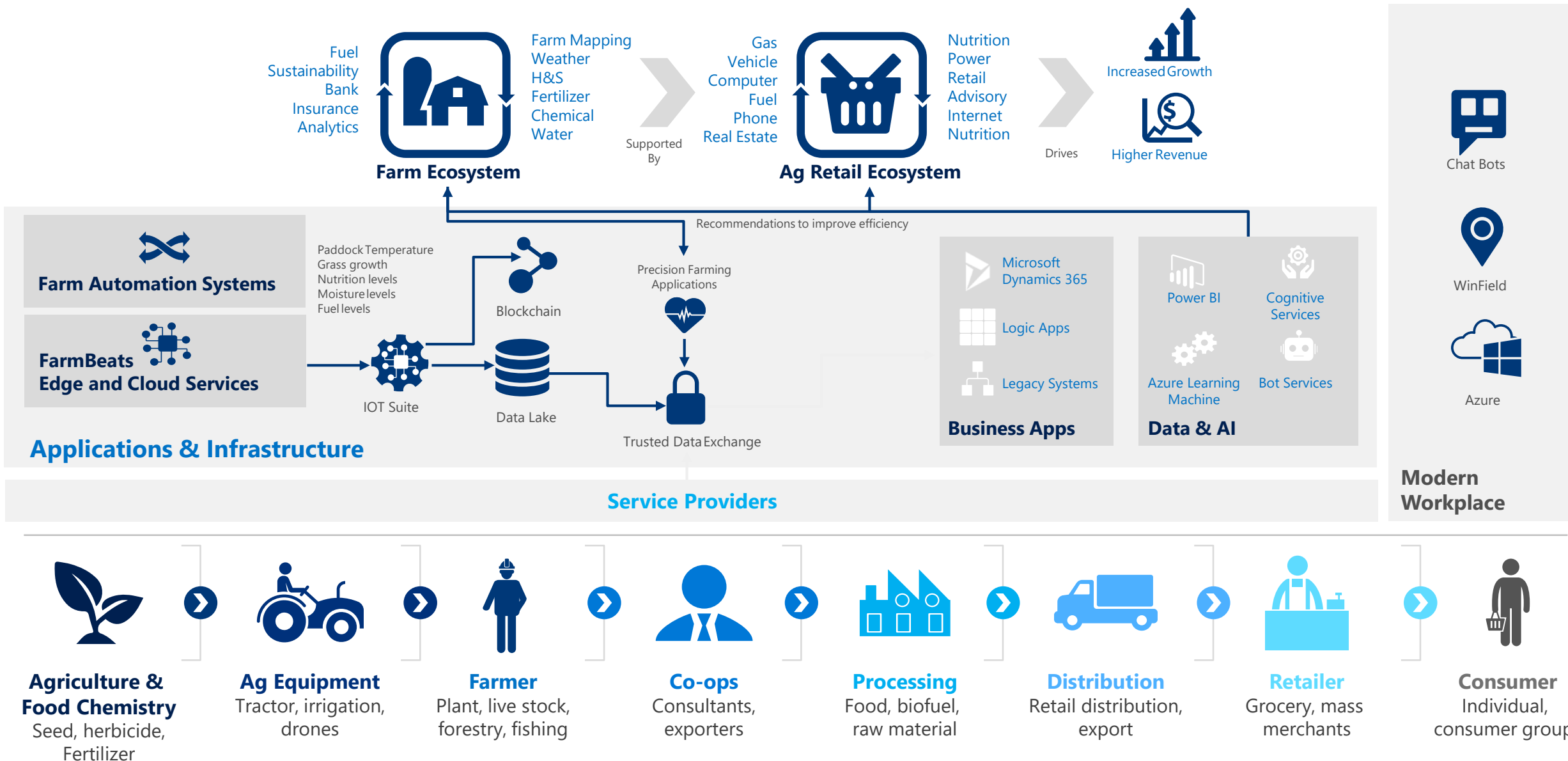
Connected Vehicle: drive mobility

\$871B Annual savings for the US DOT by implementing V2X technologies⁴

1) https://www.bcg.com/fr-fr/publications/2015/engineered_products_project_business_industry_4_future_productivity_growth_manufacturing_industries.aspx
2) Ag Tech global market assessment, Moore & Warner Ag Group, LLC 2017

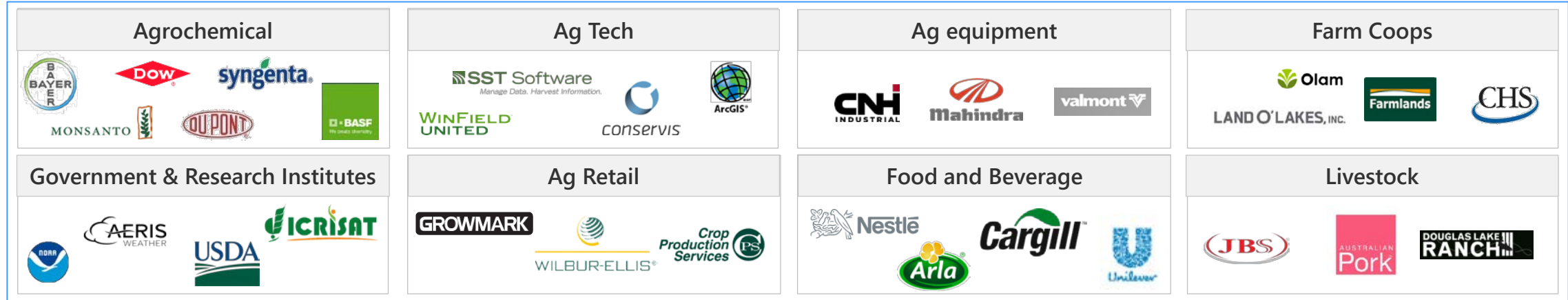
3) The Internet of Things: Mapping the Value Beyond the Hype, McKinsey, 2015
4) <https://blog.nxp.com/connected-car/five-reasons-why-we-benefit-from-v2x>

Systems of Intelligence for Digital Agriculture

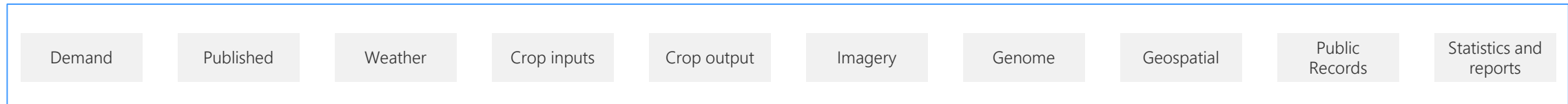


Digital Agriculture Ecosystem Opportunity

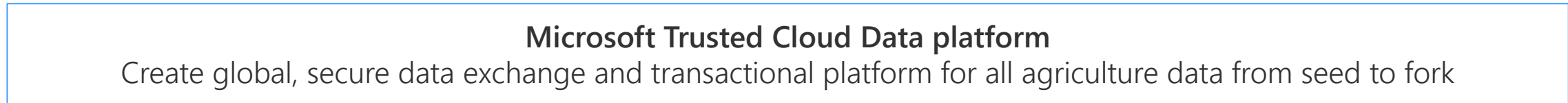
Agriculture Data Owner



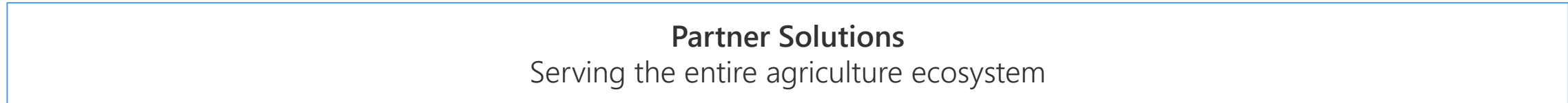
Data Sources



Microsoft

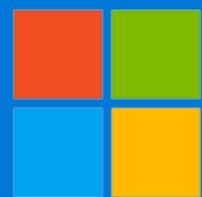


Microsoft Partners



Agriculture Supply chain

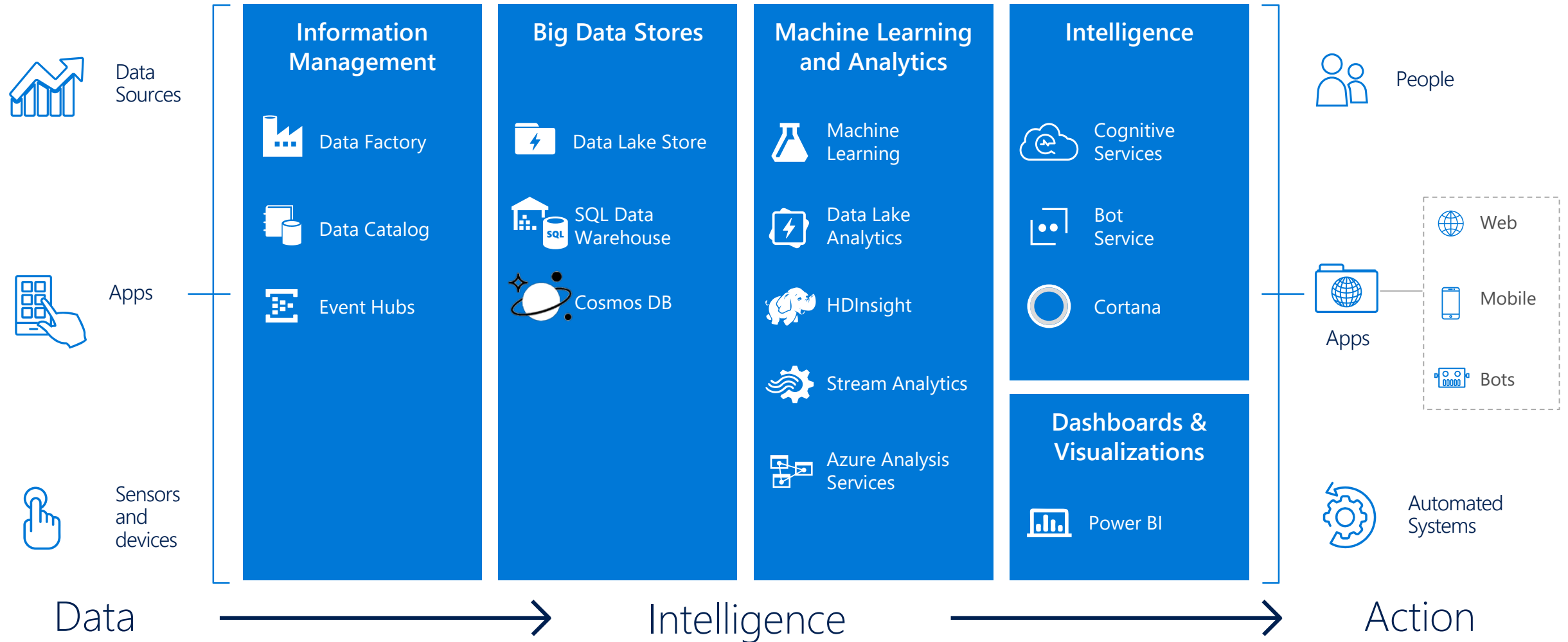




Microsoft



Microsoft Data Platform



Agriculture – a dynamic market

Industry Outlook

\$4.7T
industry

+70%
more output with the same
resources is required by 2050

Opportunity



Agriculture: feed the world

\$830B Potential for ag-tech driven
efficiency gains*

Change has already started



"We are fully committed to helping solve one of the biggest challenges of society, and that is **how to feed a massively growing world population** in an **environmentally sustainable manner**."

Werner Baumann
CEO, Bayer AG