



*The Abdus Salam  
International Centre for Theoretical Physics*



**2025-17**

## **Satellite Navigation Science and Technology for Africa**

*23 March - 9 April, 2009*

**John Deere Presentation**

Alexander Sassenberg  
*John Deere Ag Management Solutions Europe  
Zweibrücken  
Germany*



# **Satellite Navigation Science and Technology for Africa**

Alexander Sassenberg  
Manager, Business Development



# Content

- John Deere – **AgManagment Solutions** (AMS-Europe) Overview
- Today's Customer Business Challenges
- Benefits and Values of Guidance Systems
- Summary
- Yesterday's Future



John Deere – **A**g **M**anagment **S**olutions (AMS)







# IMET



- Intelligent Mobile Equipment Technology (IMET) provides a wide range of GPS based guidance and documentation products, i.e.
- Automatic Steering Systems
- Documentation
- Telemetric Solutions



# John Deere AMS-Europe

- AMS is part of IMET (Intelligent Mobile Equipment Technologies) organization of John Deere
  - AMS (~200 employees)
  - Phoenix International (~700 employees)
  - NavCom Technologies (~100 employees)
- Focus on trends und customer needs for productivity gains, documentation und management solutions
  - Development of “intelligent solutions” with clear customer value
  - Integrated systems for the management of Ag enterprises
  - 360° support thru John Deere dealer network, Preferred Software-Partner with hotlines and StellarSupport Internet side



# History AMS Europe

- 1997 Start of **Precision Farming** Group at JDWZ, Germany
- July 2000: **Ag Management Solutions** (AMS) is born with AMS Europe as an integral part
- November 2001: **AMS Europe** moves to M.I.P. in Zweibrücken to allow further expansion
- July 2005: AMS becomes part of **Intelligent Mobile Equipment Technologies (IMET)**
- November 2006: '**John Deere AMS Europe** – A Division of Deere & Company' goes live



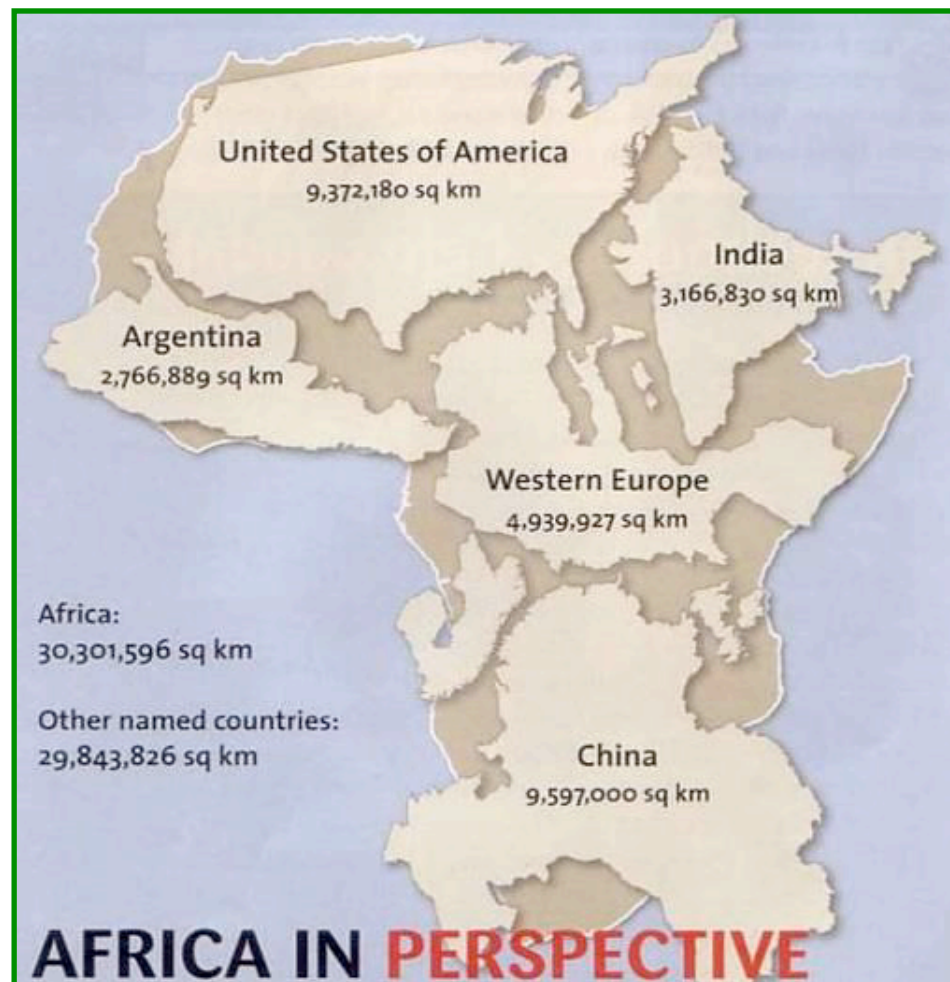


# John Deere in Africa



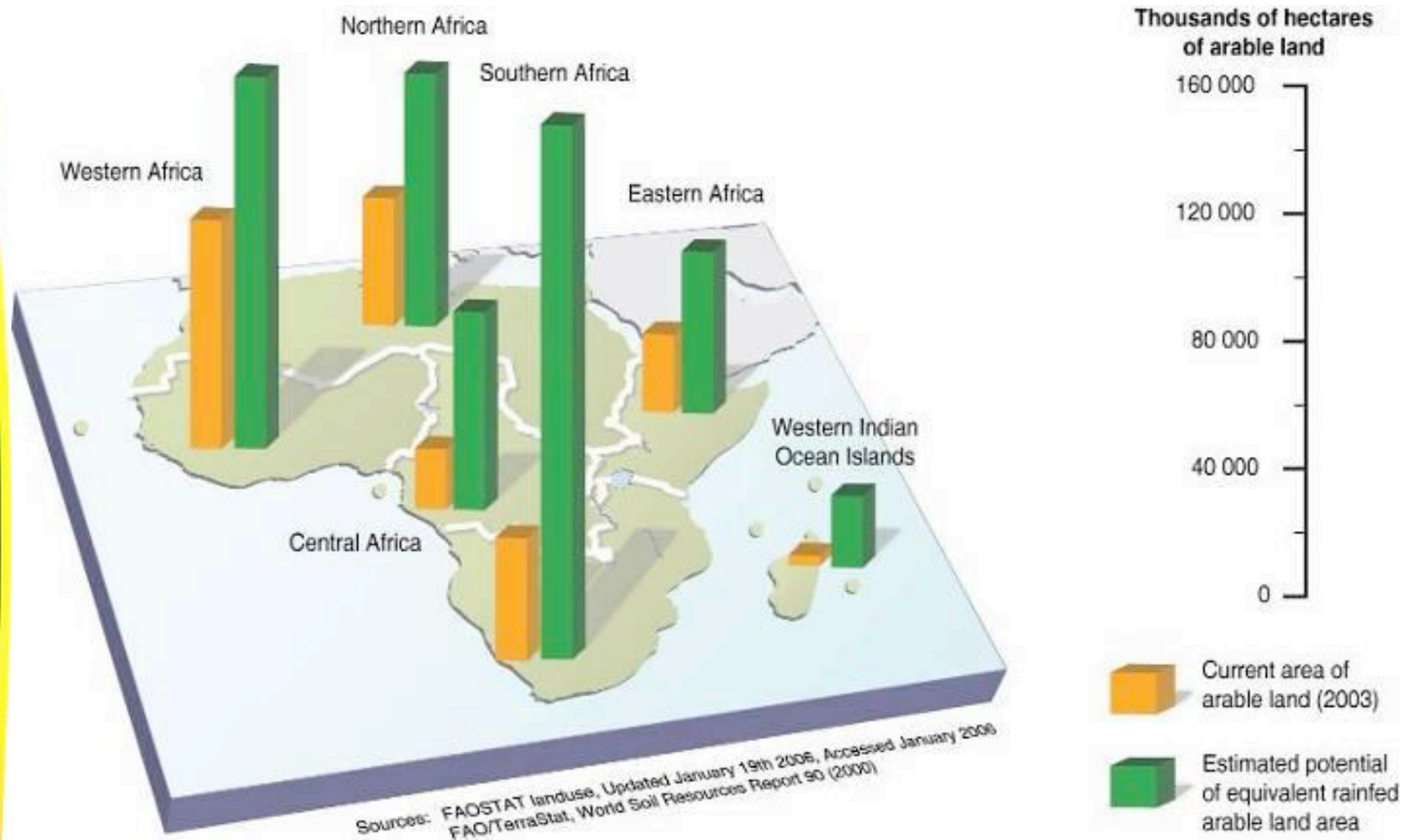
# African Opportunities

	Mio Sq Km
USA	9.4
Argentina	2.8
India	3.1
Western Europe	4.9
China	9.6
<b>Total</b>	<b>29.8</b>
<b>African continent</b>	<b>30.3</b>



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# Potential Arable land Available



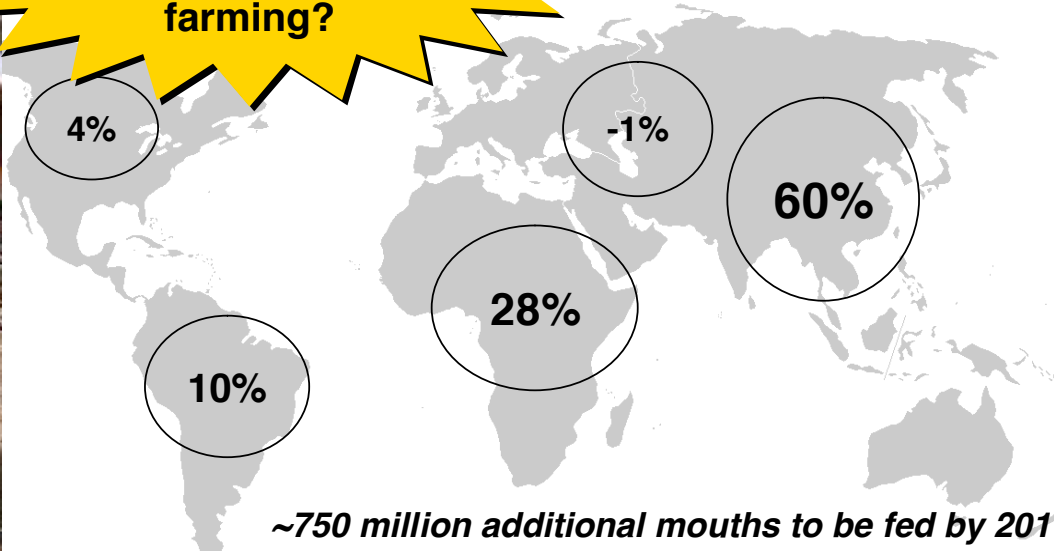
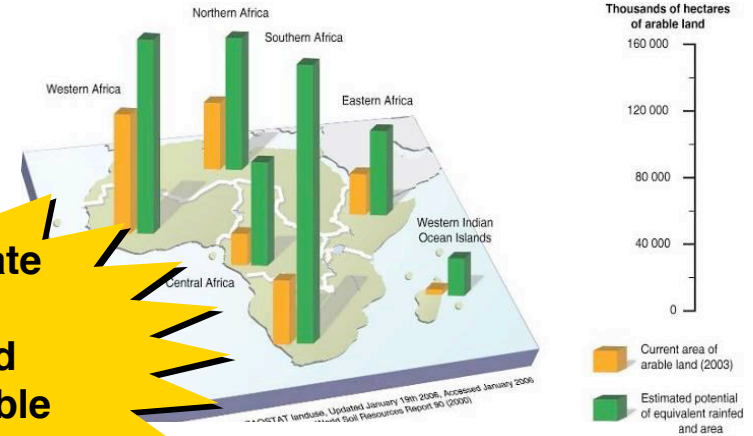
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# Trends



How do we create  
productive  
agriculture and  
enable sustainable  
farming?



*~750 million additional mouths to be fed by 2017.  
Population grows to ~7.4 billion people.*





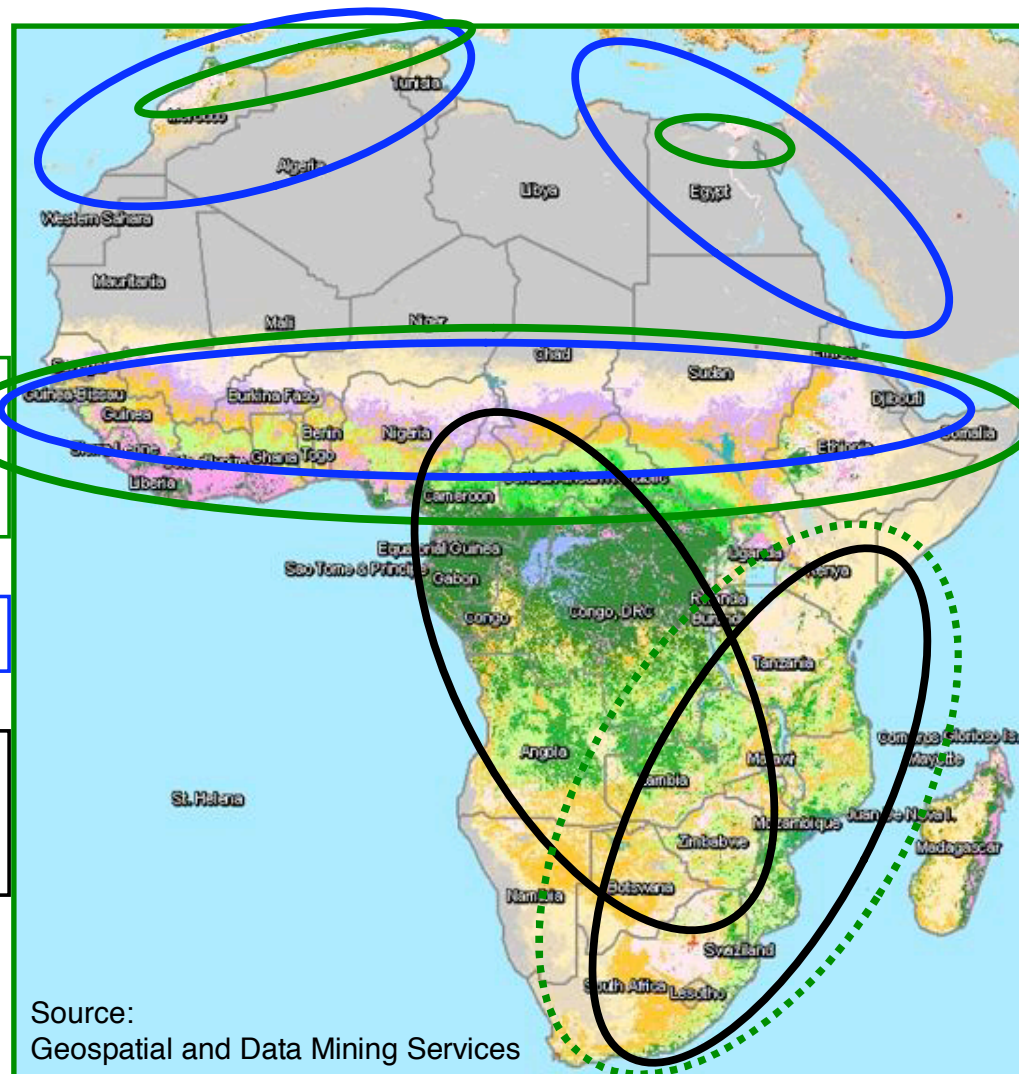
# Large Commercial Project Business Solutions

- Ag Solutions

- Irrigation Solutions

- C&F Solutions

- Artificial surfaces and associated areas
- Bare Areas
- Cultivated and managed areas
- Herbaceous Cover, closed-open
- Irrigated Agriculture
- Mosaic: Cropland / Shrub and/or grass cover
- Mosaic: Cropland / Tree Cover / Other natural vegetat
- Mosaic: Tree Cover / Other natural vegetation
- Regularly flooded shrub and/or herbaceous cover
- Shrub Cover, closed-open, deciduous
- Shrub Cover, closed-open, evergreen
- Snow and Ice
- Sparse herbaceous or sparse shrub cover
- Tree Cover, broadleaved, deciduous, closed
- Tree Cover, broadleaved, deciduous, open
- Tree Cover, broadleaved, evergreen
- Tree Cover, burnt
- Tree Cover, mixed leaf type
- Tree Cover, needle-leaved, deciduous
- Tree Cover, needle-leaved, evergreen
- Tree Cover, regularly flooded, fresh water
- Tree Cover, regularly flooded, saline water
- Water Bodies



Source:  
Geospatial and Data Mining Services



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# Commercial Project Business Solutions

- **Agricultural**

- Grain production in highlands of East Africa
- Sorghum and Sugar cane in tropical areas



- **Water Technologies**

- Precision irrigation: i.e. specialty and food crops

- **Construction & Forestry**

- Building road infrastructure key for development
- Business potential for contract projects
- Land clearing and road building

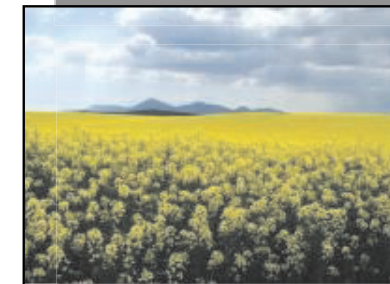


Road construction in Congo



# Bright Future for Ag Equipment

- **Expanding Population**
  - 6.5 billion – 8-9 billion
  - 23% growth in 25 years
- **Other Demographic Changes**
  - Increasing incomes
  - Changing diets – a shift to meat
- **Renewable Energy**
  - Farmers a major supplier
  - Driving farm income



# **Today's Customer Business Challenges**





# Customer Business Challenges

- **Increase productivity**
- **Cost of equipment, reliability, ease of use**
- **Environmental & legal regulations**
- **Offer price competitive services**



# Customer Challenges

*Increase productivity of existing machinery gaining cost reduction of inputs at the same time*



# Customer Challenges

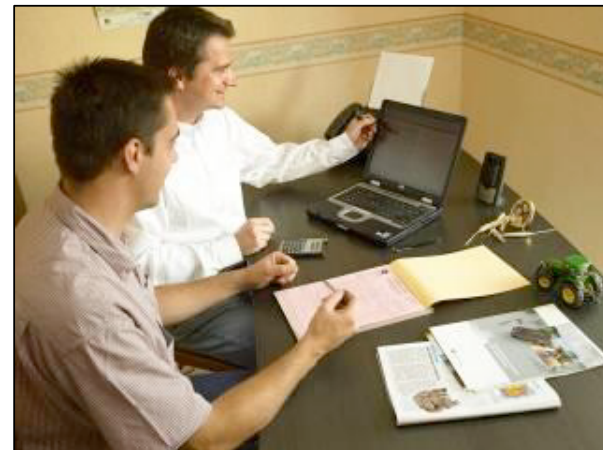
*Reduction of Complexity, Ease of Operation  
& Reliability*



# Customer Challenges

*Complete documentation of all operations and activities in order to*

- *analysis for doing better business management decisions, and*
- *comply with legal requirements*



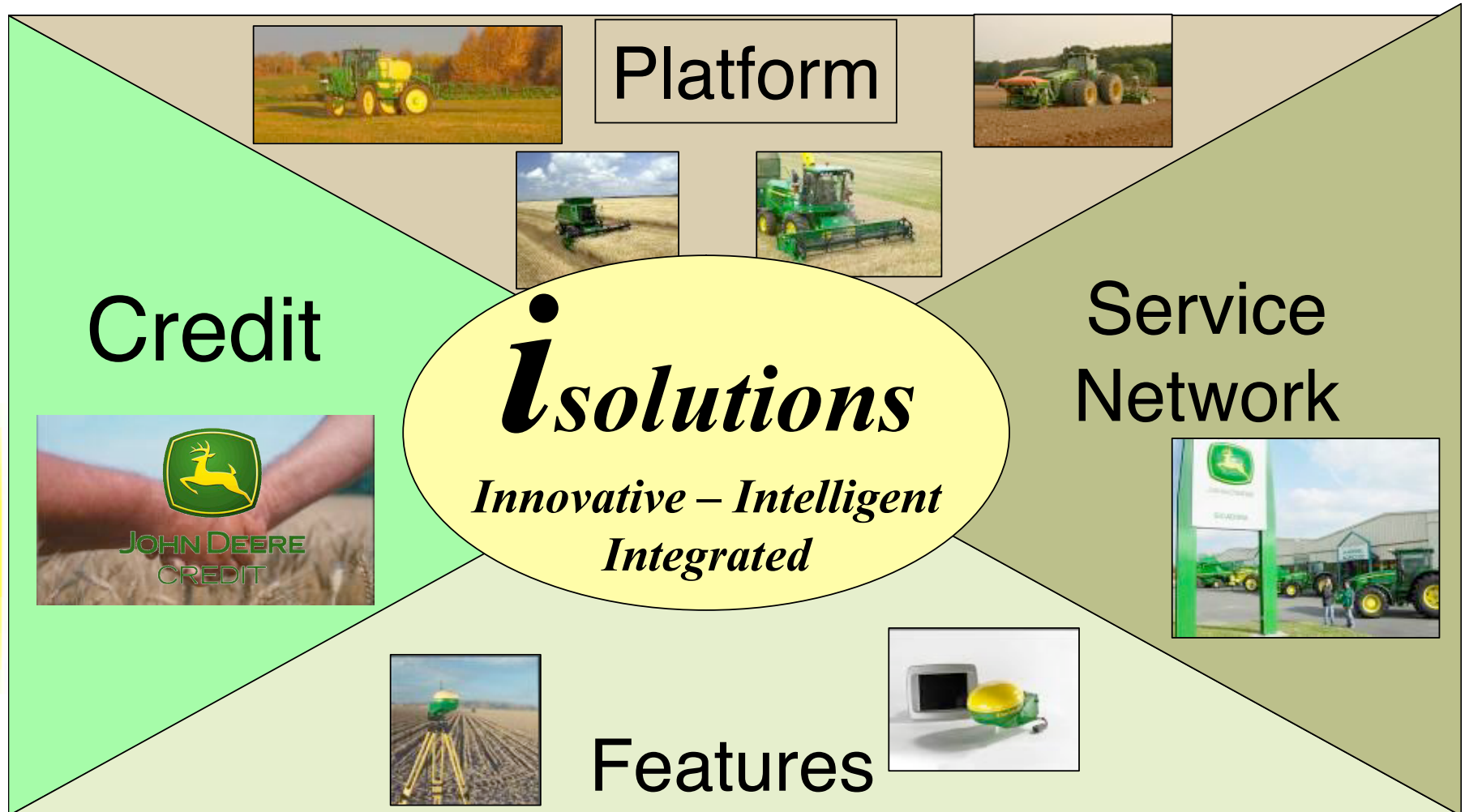


# Customer Challenges

*Safeguard the investments*



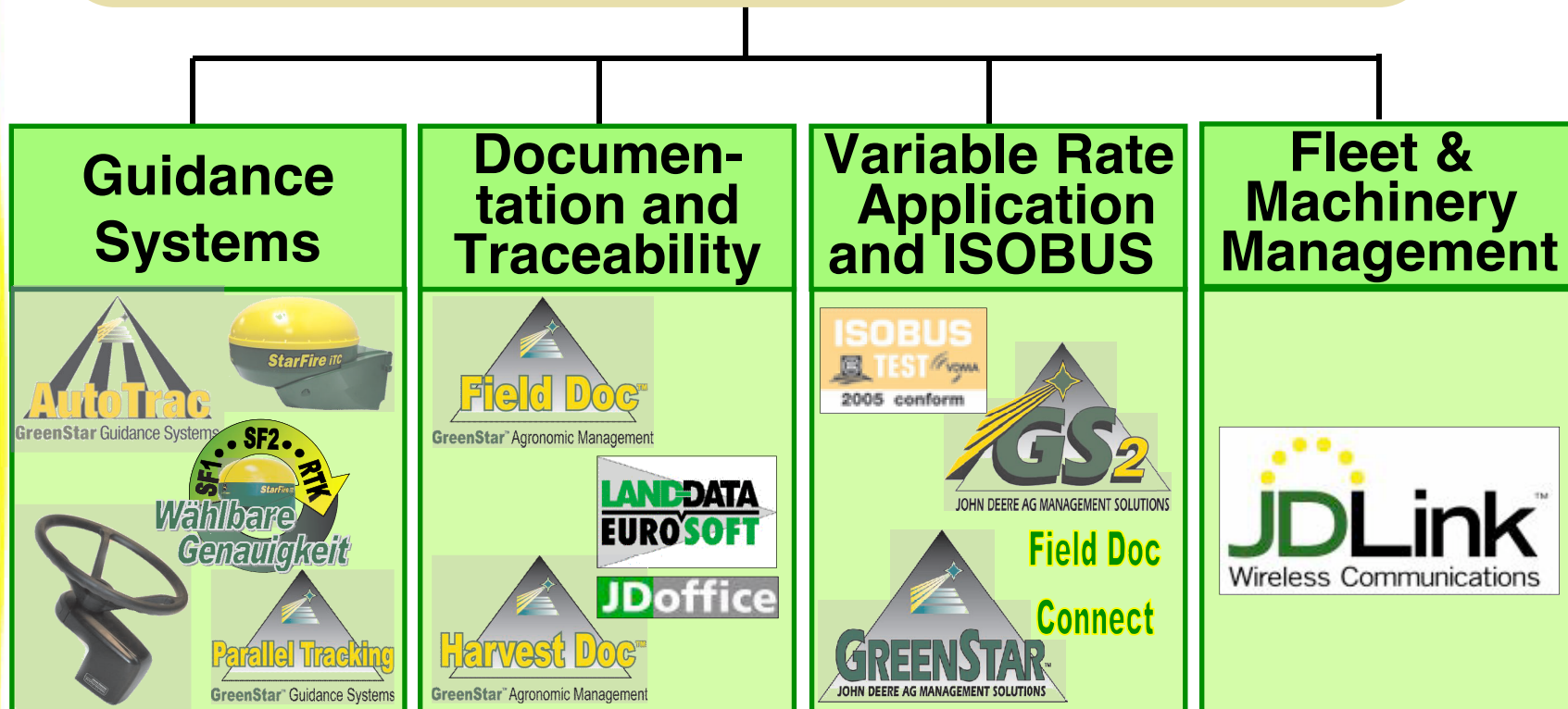
# The intelligent Advantage



# Ag Management Solutions



# The complete Precision Farming System





# Why Guidance Systems?





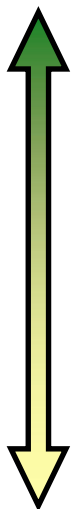
# Guidance Applications



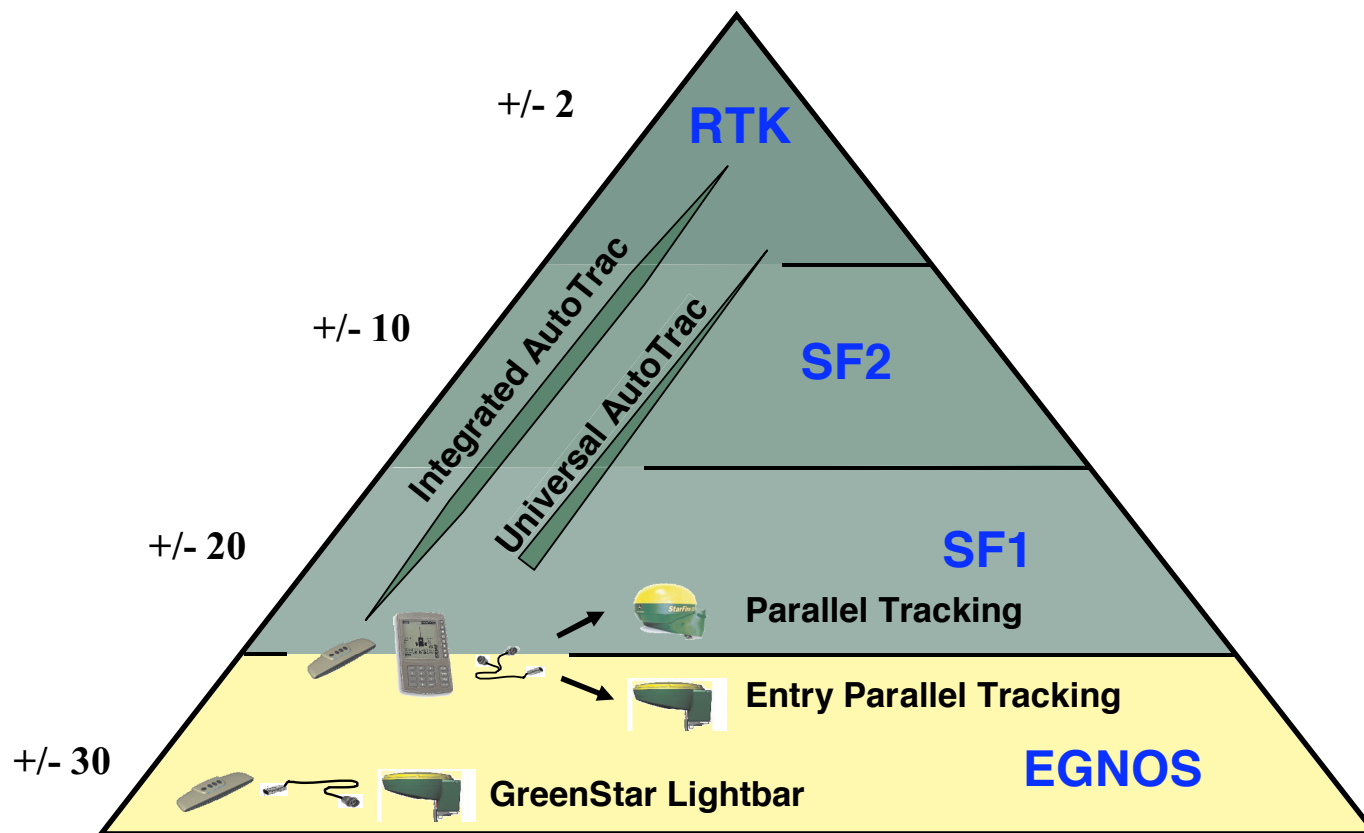


## Guidance: Segmentation

High-Spec  
Solutions

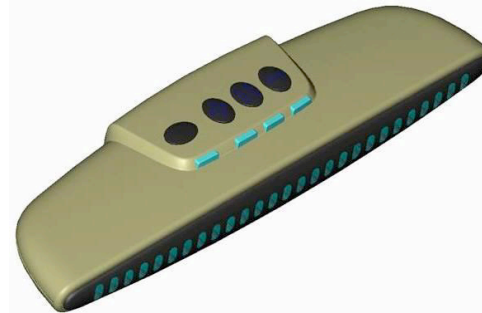


Low-Spec  
Solutions



# GreenStar Lightbar

## Lightbar:



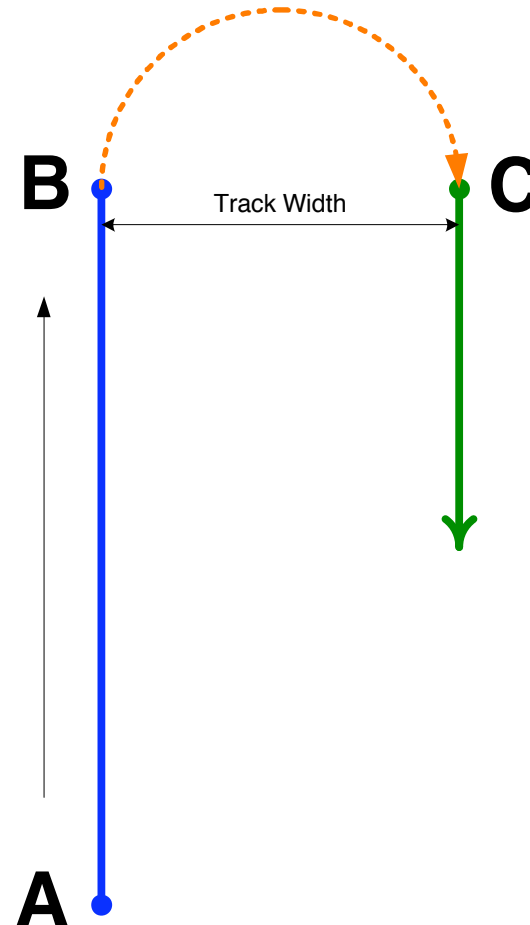
- **easy setup**

Set A => Set B => Set C

- **in scope:**

- Straight Track
- Centre Shift
- Track width adjustment
- Dimming of the LEDs
- On/Off mode

- **naming:** „*GreenStar Lightbar*“





# Universal Guidance



See [www.stellarsupport.com](http://www.stellarsupport.com) for available platforms



# **Customer Benefits of Guidance**



# Customer Benefits of Guidance

- **Less overlap (up to 90%) higher productivity resulting in cost savings (Fuel, seed, fertilizer, etc)**
- **Exact tramline while seeding**
- **Focus on application (work quality)**
- **Highest driver comfort and manpower (less skilled) utilization**
- **Modular system - extendable with documentation and variable applications**



# Customer Value

## *i*-Farming Scenario 200ha Mixed Farm

### 200ha mixed farming

- 100ha wheat
- 50ha rape/canola
- 50ha barley

### Livestock

- 1000 fattening pigs

### Machinery equipment

- 1x W540i, 6,10m
- 1x 7730, 190hp
- 1x 6430P, 129hp
- 1x Power harrow, 4m
- 1x Chisel plow with packer, deep tillage, 4,5m
- 1x Seeder, 3m
- 1x 832i, 24m
- 1x Fertilizer spreader, ISOBUS Ready 24m
- 1x Slurry Tanker, 12m<sup>3</sup>, injection system



## ***i*-Farming Scenario 200ha Mixed Farm**

### **Used *i*-Features**

<b>W540i</b>	<b>AutoTrac, HarvestSmart, HarvestDoc</b>
<b>7730</b>	<b>AutoTrac, iTecPro, ISOBUS, JDLink, FieldDoc</b>
<b>6430 Premium</b>	<b>AutoTrac, ISOBUS, FieldDoc, JDLink</b>
<b>Seeder</b>	<b>AutoTrac, FieldDoc Connect, ISOBUS</b>
<b>Sprayer 832i</b>	<b>Sprayer Pro, BoomTrac, ISOBUS</b>
<b>Fertilizer Spreader</b>	<b>AutoTrac, FieldDoc Connect, ISOBUS</b>



## i-Farming Scenario 200ha Mixed Farm

### Monetary cost benefit over the course of the year

		Operation cost w/o labor*	Advantage i-Solutions		Savings		ha	Total
			%**	Cost	€/ha	Labor €/ha		
200 ha	General							
	Lime stone spreading	43,10 €	10%	Operation and lime	7,38	0,30	66,7	511,9 €
	Slurry disposal	47,07 €	10%	Operation	4,71	1,38	133	405,8 €
	Stubble breaking	43,10 €	9,7%	Operation	4,18	1,92	200	1220,3 €
	Tillage	37,89 €	10,7%	Operation	4,05	1,70		1151,1 €
	Management							
	Documentation		5,5 5%	Labor Documentation		8,25	200	1650,0 €
	Canola / rape							
	Seeding	105,42 €	2,2%	Operation and seed	2,32	0,56	50	144,0 €
	Crop care	166,52 €	2,2%	Operation and chemicals	3,66	0,29		197,7 €
	Fertilizer	116,20 €	2,2%	Operation and fertilizer	2,56	0,28		127,8 €
	Combining	100,10 €	16,2%	Operation	16,22	3,79		1000,4 €
	Small Grains							
	Seeding	107,38 €	2,2%	Operation and seed	2,36	0,57	150	354,4 €
	Crop care	175,39 €	2,2%	Operation and chemicals	3,66	0,29		593,1 €
	Fertilizer	173,14 €	2,2%	Operation and fertilizer	3,63	0,34		595,5 €
	Combining	99,65 €	16,2%	Operation	16,14	3,89		3004,7 €
				i-Solutions Advantage				

Source:

\* Cost acc. to KTBL, Germany

\*\* Universitiy of Halle and Munich, Magazins: Profi, Landtechnik, Loonbedrijf, 2006



## Next Steps...

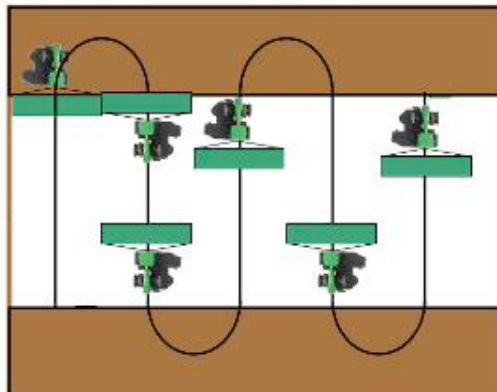


- **iTEC Pro** (*intelligent Total Equipment Control*)
  - AutoTrac + Headland-Management-System IMS



# iTEC Pro – Automation

- Intelligent Total Equipment Control (iTEC Pro) links (AutoTrac) with the headland management system (IMS)
- Tractors with iTEC Pro turn fully automatically at the headland
- The system controls tractor speed & transmission, 3-point hitch (front & rear), PTO, hydraulic control valves , 4 wheel drive and diff lock





# **Sprayer Pro — GPS triggered on/off**



# Summary

- *GNSS guidance systems* have proven itself in practical work → Customer benefit and value can be demonstrated.
- The *customer acceptance* of guidance systems applications accelerate precision farming activities
- Integrated solution comprising guidance, documentation, fleet & machinery management are vital for customer success
- *GNSS guidance systems* lay the ground for new levels of automation in Ag moving towards autonomous application

*Vielen Dank!*



