ICT and the Agricultural Equipment Industry

Threat? – Promise? – Reality?

Nyle Wollenhaupt
AGCO Corporation
Advanced Technology Solutions
Product Management
Agronomic Sensors

Industry “technology provider – centered” perspective

- Vision
- Needs
- Worries / Problems
Who is AGCO Corporation?

- AGCO Corporation was formed in June 1990 with an management buyout of the Deutz-Allis Corporation.
- AGCO has grown the business through 23 acquisitions from a $200 million company in 1992 to a:
  - $2.9 billion company in 2002
  - $5.4 billion in 2005 and 2006
- and branded in over 140 countries.

Currently Marketed AGCO Brands

- **AGCO**
- **Challenger**
- **Fendt**
- Gleaner
- Hesston
- **Massey Ferguson**
- New Idea
- RoGator
- Spra-Coupe
- Sunflower
- TerraGator
- White
- **Valtra**
Definitions

Agronomy: “the art and science of crop production” (Webster’s Dictionary)

Farming: is the business of raising food, fiber and energy for profit

Farmers buy AGCO machines to mechanize their farming business.

Value Chain....

A string of companies working together to satisfy market demands. The value chain typically consists of one or a few primary value (product or service) suppliers and many other suppliers that add on to the value that is ultimately presented to the buying public.
DuPont recently announced the commercialization of soybean varieties using a technology that increases yields by as much as 12 percent per acre. This technology - called Accelerated Yield Technology™ (AYT) - uses proprietary molecular breeding techniques to rapidly scan and identify genes that increase yield and then incorporates them into elite soybean genetics.
Information Technology Value Chain

Machine Manufacturer

Machine Engineering

Technology Engineering

Technology Manufacturer

Engineered Installation

Installation "Cookbook"

Design Collaboration

Office Software & Support

Value-Add Service

Data

Machine Customer

Factory Installed Technology

Machine Dealer or Distributor

- Technology Warranty
- Services, Parts, Support
- Operation Training

Tractor – Implement “Plug & Play”
ISOBUS – Reduces Complexity

- Reducing the need for duplication of electronics on farm machinery
  - one terminal does it all
- Standardize data exchange between machines and FMIS (desktop software)

Tractor Company Participation in ISO 11783

- Case
- New Holland
- John Deere
**DICKEY-john IntelliAg Planter Controller**

The new standard in versatility

ISO Implements – North America

Monosem

Topcon Sauer-Danfoss

Great Plains

YP-2425
ISO Implements – EAME

Monosem

Amazone

TeeJet - SpraySystems

Pöttinger

Müller - Tecnoma

ISO Implements EAME – The Kverneland Group
Dicky-john – Trimble Partnership

Trimble Auto Pilot operated through the Waachendorf A1 with GTA VT Server and Task Controller licensed from AGCO.

Global Participation - First ISOBUS Workshop in South America

Participants
- John Deere – Germany
- AGCO – North America
- Embrapa
- Spraying Systems
- Jacto SA
- Stara
- Lohr - Rexroth
- AEM
ISO Implements – South America

Task Controller

Data formats and data exchange defined as ISO Standards
(Task Controller, ISO 11783 Part 10 and Data Dictionary, part 11)

Desktop applications following ISO Task Controller standards can send and receive instructions and data to and from AGCO ISOBUS compliant machines....

OPEN ARCHITECTURE
### Task Controller xml

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<xml>
  <Product Definitions>
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```

### Field Operations Data Model (FODM)

**FMIS**

**FODM**

**FODDataDrivers**

Company Approved / Developed

**Read Task Data**

- Database III
- File
- FOD
- FODController
- FODController XML
- Advanced Yield File (txt)
- Field
- SD Card
- Grid
- Yield Data (qad)
- Field Data (qgd)

**Write Task Data**

- Database III
- File
- FOD
- FODController
- SD Card
- FODController XML
- Advanced Yield File (txt)
- Field
- SD Card
# The Current Terminal Situation in AGCO

## Current Factory Installed Terminals - Combines

<table>
<thead>
<tr>
<th>MODEL</th>
<th>CLASS</th>
<th>FACTORY</th>
<th>Controller</th>
<th>Type</th>
<th>Machine Control</th>
<th>Precision Farming</th>
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Current Factory Installed Terminals – Global Summary

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<tr>
<th>Terminal/Console</th>
<th>Tractors</th>
<th>Combines</th>
<th>AED/ACE</th>
<th>Planters</th>
<th>Baler</th>
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<th>Forage</th>
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</table>

18 Terminals
13 Suppliers

Impact on AGCO Corp.

- **Purchasing**
  - Volumes are distributed amongst several suppliers
  - Loss of volume discounts
  - More suppliers means additional time for negotiation and contracts
- **Engineering**
  - Additional costs to accommodate the machine electronics
  - Can not share technology products across factories
  - Can not share engineering costs across factories
- **Product Reliability**
  - Requires more people to support the same number of whole goods,
  - Increased work to develop support/training materials
  - "Shared knowledge" base (Source) is much less beneficial
An AGCO Dealer in Europe May Sell……

- Beauvais FR
- Randers DK
- Breganze IT
- Jackson MN USA
- Houston KS USA

Impact on the AGCO Dealer

- Makes technical service, which is already difficult, even more difficult,
- Additional investment for service training and service tools
- Additional investment in parts inventory
- Sales staff required to learn multiple similar products – often means they don’t learn any well
- Can not offer a “common platform” fleet to compete with John Deere
Impact on the AGCO Customer…

- Different user experience in every vehicle making operator training more difficult
- Retraining for every season
- Expensive technology components are not interchangeable
- Data logging formats are often incompatible

AGCO Terminal Strategy
AGCO Electronic Communication Design Standard

Platform for a Standard Man-Machine Interface

- Color Scheme
- Layout Manager
- Work flow
- Standard Icons
Software Strategy – How do we decide?

- Corporate Centric
  - Consistent with “core competencies”
  - Profitability
- Customer Centric
  - Satisfying customer needs
  - Completing the value proposition
- Indirect Methods
  - “Technology Snare”
  - “Trusted Advisor” strategy
The Concept - Flow of Advice and Information to the Grower

Machine Performance Technology Value Chain
Service Provider Strategy
Completing the Value Proposition

AGCO Engineering Manufacturing

Sales Engineering
Product Reliability

Global Technologies

AGCO Dealer

Grower

Service Provider

Create Mutually Beneficial Relationships

Information Technology Value Chain

Machine Engineering

Machine Manufacturing

Installation "Cookbook"

Technology Engineering

Design Collaboration

Technology Manufacturer

Office Software & Support

Value-Add Service

Data

Machine Dealer or Distributor

Technology Warranty
Service, Parts, Support
Operation Training

Machine Customer
AGCO Commitment

- ATS Advanced Technology Solutions
  - Education
    - Inform them of technology products available from AGCO
    - Learn what technology products are important to their business or are required to implement their advice
  - Training
    - Train their staff on the operation of AGCO technology products
    - Provide AGCO technology products for use in their training
    - PC software
    - Controllers & terminals
- AGCO & AGCO Dealer
  - Equipment for demonstration, research, or training
  - Financial support

Keys to Success

- Dedicated staff in each region to build and maintain relationships,
- Must be mutually beneficial to the “Trusted Advisor” and AGCO dealer,
- AGCO must sell technology products which require or benefit from “trusted advisor” services

<table>
<thead>
<tr>
<th>Whole Good</th>
<th>“Trusted Advisor” Supporting Service</th>
<th>Potential Impact %</th>
<th>Units</th>
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<tbody>
<tr>
<td>Application Equipment</td>
<td>Agronomy/VRT Map Creation</td>
<td>50%</td>
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<td>Combines</td>
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<td>30%</td>
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<td>Tractors (A5 with ISO Te)</td>
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<tr>
<td></td>
<td>Machine Management</td>
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<tr>
<td></td>
<td>Accounting/Banking</td>
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</tbody>
</table>
Summary – General Description

- Develop a corporate wide terminal strategy for a “family” of terminals which satisfy all market and functional requirements for all AGCO whole goods.
- Marketing Requirements:
  - Common software platform
  - Common hardware design – (TBD)
  - Common user interface
  - Single supplier
    - Preferred but not required
    - Must satisfy marketing and engineering requirements
  - Upgradeable between levels
  - Cost appropriate to:
    - Market segment(s) of whole good
    - Product positioning
  - Must satisfy the terminal requirements for the next 3-5 years.

Voice of Customer Feedback
North America Phone Survey - Methodology

- Protocol
  - Customers targeted according to market segment
    - 15 custom applicators - (list provided by AGCO)
    - 16 tractor owners - (2000 acre minimum)
    - 15 combine owners - (2000 acre minimum)
  - Contacted by phone to confirm participation
  - All were set a packet of information
    - “Actual size” pictures of terminals,
    - Navigation methods,
    - Terminal cab locations
  - Answered specific questions during a 30-45 minute phone call

- Focus
  - Terminal size,
  - Terminal location,
  - Navigation methods,
  - Number of terminals

Business Case
The NEUTRAL IT-Platform for Agriculture, Forestry, Ecology of Roland BERGER Consultants, FUJITSU Service GmbH, PROGIS Software GmbH

- Tractors and agricultural engines e.g. AGCO, CNH, JD
- Food industry and trade e.g. Metro, Südzucker, EDEKA
- Geodata: orthophoto, satellite image, cadastre data
- Agro-chemical industry fertilizers- and pesticides e.g. BASF, Bayer-Crop etc.
- Planning rural areas: Advisors, Planners, public and/or private
- Local and regional implementation partners
- IT Partner: sensors (meteorology water) RFID, mobile devices, mobile phones, GPS/Galileo etc.
- Navy consultant for industry, trade, banks, insurance companies
- IT-solutions for farmers and advisors, in agriculture, forestry, ecology and planning rural areas
- PROGIS Software GmbH
Risks

- Using a standard terminal requires an electronic system with ISO 11783 compatible
  - May not be reasonable for low spec. whole goods such as small round balers.
  - The overhead of the ISO software may increase hardware requirements and cost
- Developing marketing requirements for anticipated functionality needed for the next 5 years,
- Maintaining the same software release cycle for all whole goods

Fill without leaving the cab
Nursing applicator from portable bulk storage
“Conservation Tillage Application”

Whole Plant Harvester (2 horse power)
Nitrous Oxides and CO2 ??

Thank You