



Club of Bologna

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***International agricultural machinery standards
for the benefit of agriculture & industry***

Norbert.Alt@VDMA.org

Content

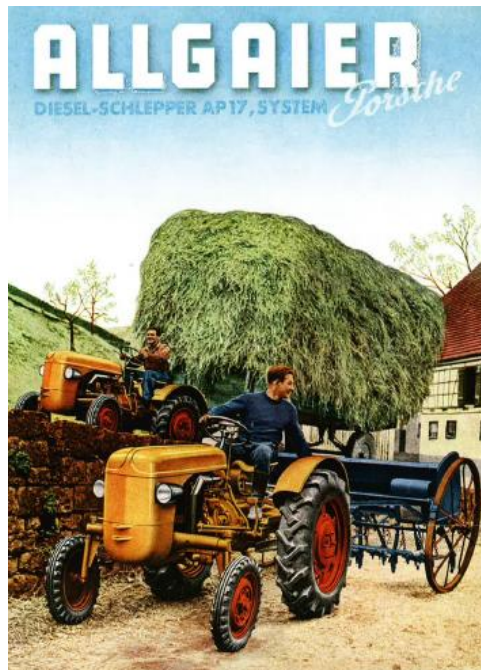
Introduction

- 1. Need for standards**
- 2. Development of standards**
- 3. Today's core areas & projects**
- 4. Future challenges**

Conclusions

Introduction

- **Standardization in the agricultural machinery sector has a long and successful tradition**
 - Foundation of ISO/TC 23 'Tractors and Agricultural & Forestry Machinery' in 1952



Klaus Dreyer
Unvergessene
Landtechnik



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Introduction

- **Individual phases¹⁾ of standardization due to changing stakeholder needs**
 - 1950s: Reduction of variety of types
 - 1960s: Interchangeability & usability
 - 1970s: Ergonomics & operator's safety
 - 1980s: Tractor & implement interfaces
 - 1990s: Operator's safety (CEN) & electronics (ISO)
 - 2000s: Focus on systems & processes

¹⁾ Wolfgang Plate



Introduction

- **Stakeholder orientation**

- Needs of industry & agriculture vs
- Political & social challenges

- **Way of working**

- Principle of delegations vs
- Co-operation between colleagues and friends
 - More efficiency
 - More fun & better results

SC 3
Safety & Comfort



SC 4
Tractors

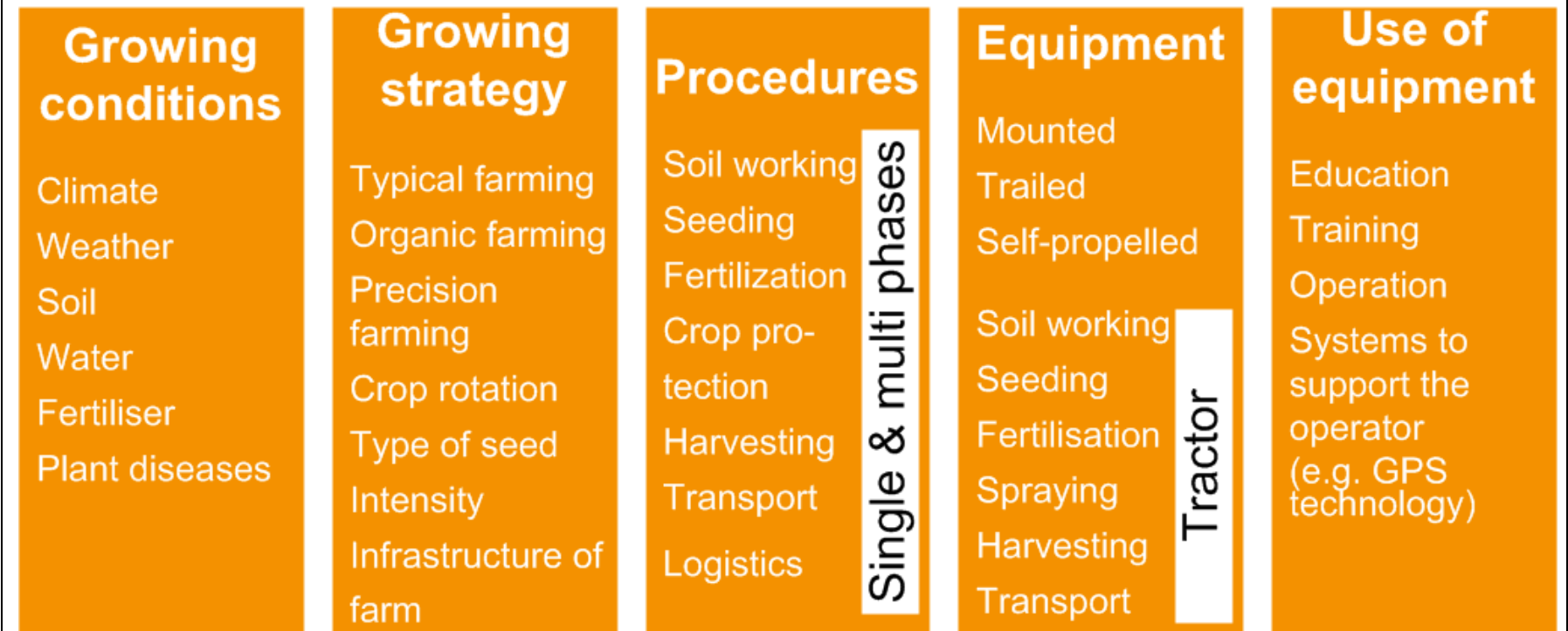


SC 7
Harvesting equipment



Need for standards

Heterogeneity of conditions in agriculture and specific needs to be satisfied by machinery industry



Need for standards

● Driving forces for standardization

- To allow the design of processes depending on individual & local conditions
- Interfaces between
 - Tractors
 - Implements
 - Farm management
 - Service providers
 - etc.



Need for standards

... Driving forces for standardization ...

- To ensure the consideration of specific agricultural needs in legislation
 - Typical operating conditions
 - Machine functions



Need for standards

... Driving forces for standardization ...

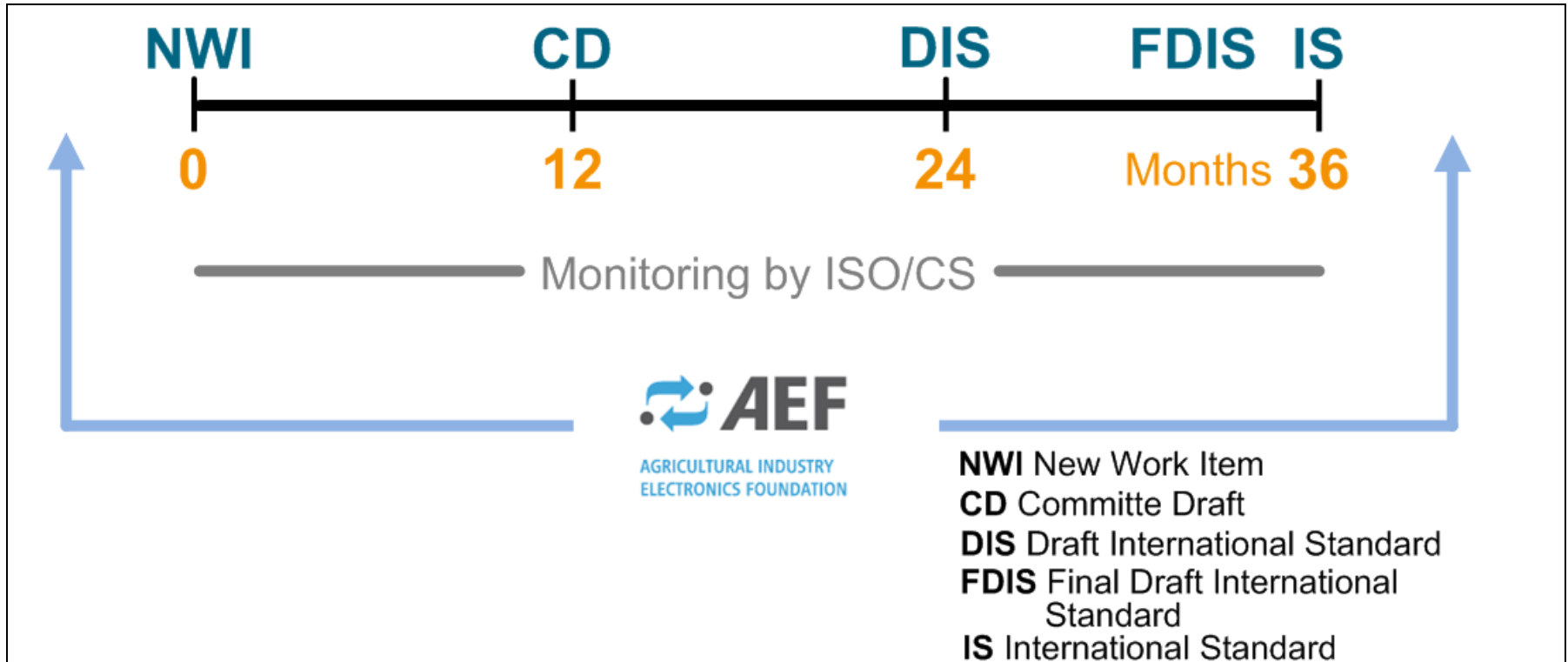
- To allow contacts & co-operation between stakeholders
 - Manufacturers, advisory bodies, scientific & research institutes, test houses, authorities, ...
 - Different disciplines such as agriculture, mechanical engineering, communication and information technology



Development of standards

- **Standardization** means
 - Discussion between interested parties (stakeholders)
 - On the basis of technical arguments
 - In search of consensus
- **Standardization process** characterized by
 - Clearly specified responsibilities
 - Forceful project management
- **Voluntary comitment** of experts for the interests of the **agricultural sector** (industry & agriculture) !!!

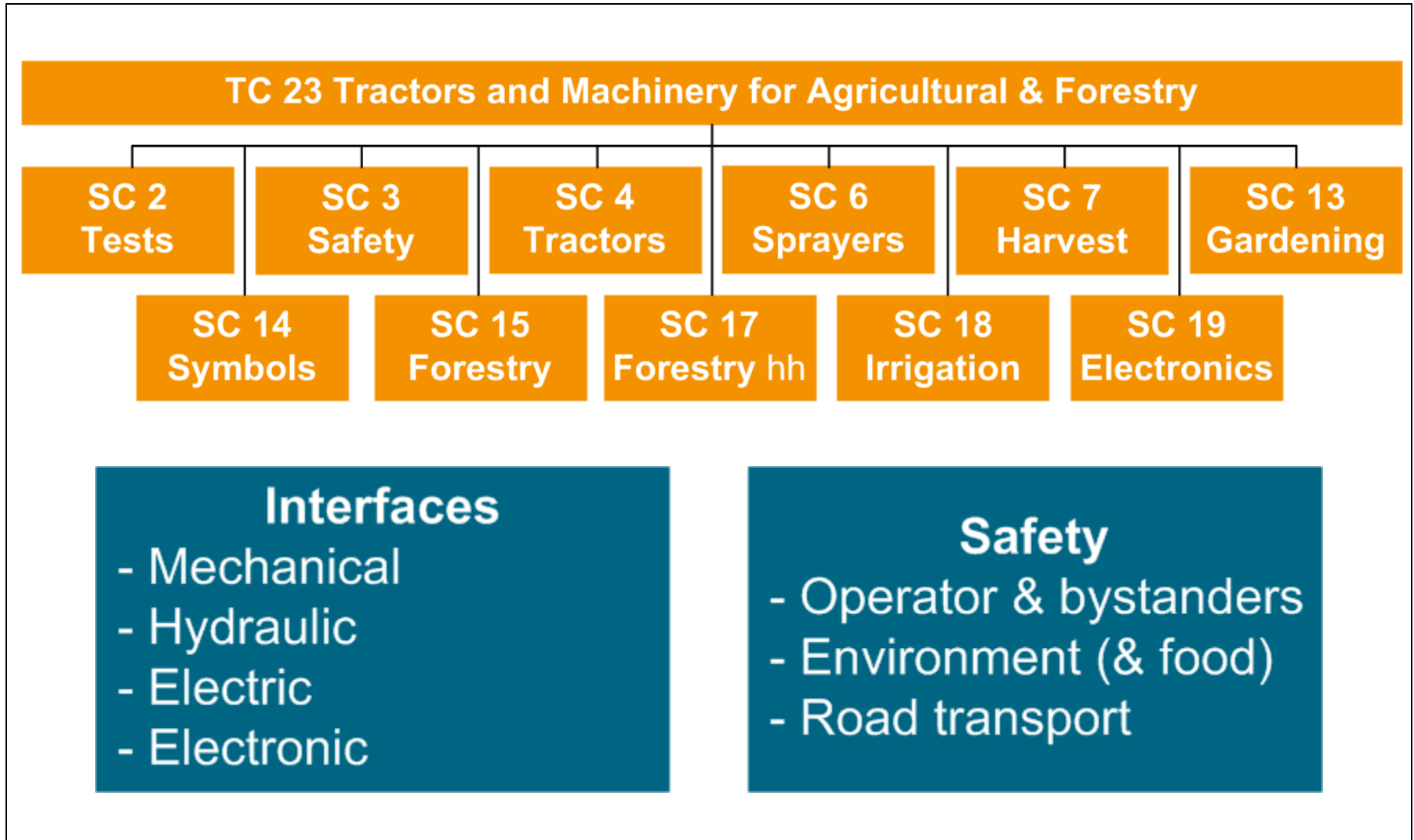
Development of standards



● ISO process

- Allows to provide fast results (standards)
- Needs the support of user organizations (identification of new items, implementation of standards)

Today's core areas & projects



Today's core areas & projects

Interfaces between tractor implement combinations

● Yesterday

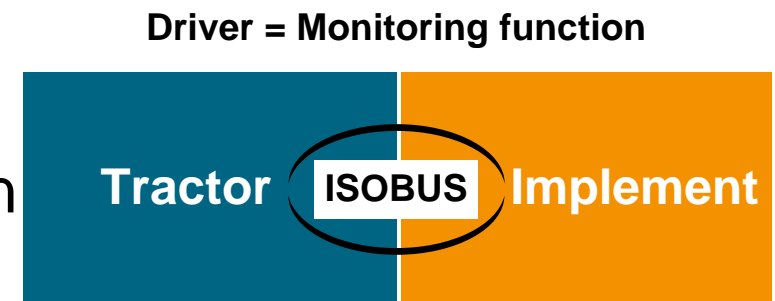
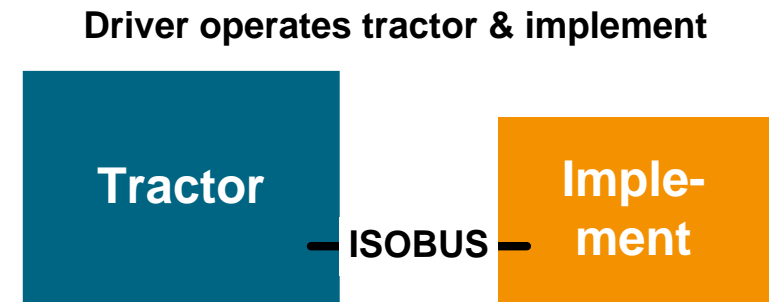
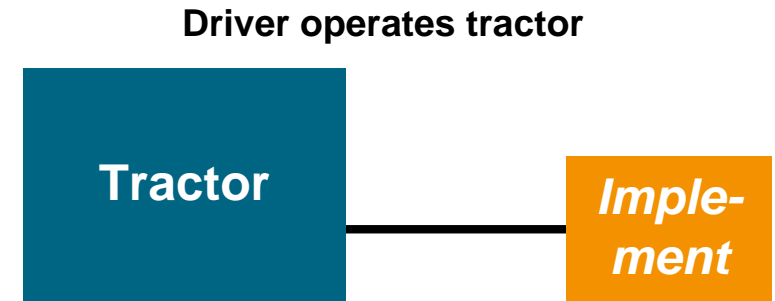
- Carrying, pulling, driving
- ISO 500, 730, 2332, 5673, 5675, 5692, 6489, 8759, ...

● Today

- Operating implements
- ISO 11783

● "Tomorrow"

- Tractor implement automation
- Fleet management



Today's core areas & projects

- **Operator's safety** (operators & bystanders)
 - Preferred instrument: EN ISO standards
 - To satisfy European needs (Machinery Directive)
 - To allow international harmonization

- **Challenges**

- Different legal framework in the individual regions
- Different 'state of art'

ISO 4254 Series						
-1 General 	ISO/TS 28923 Guards (Tools) 	-5 Soil working equipment 	-7 Combine, forage, cotton harvesters 	-8 Fertilizer distributors 	-10 Tedders and rakes 	-13 Large Rotary Mowers 
EN ISO Standard	ISO/TS 28923 = EN 15811	EN ISO Standard	EN ISO Standard	ISO Standard EN 14017 EN 14018	-11 Balers 	-14 Bale wrappers 
	ISO/TS 28924 Guards 	-6 Sprayers 	-9 Seed drills 	-12 Mowers 		
		EN ISO Standard	EN ISO Standard		EN ISO Standard	ISO Standard EN ISO Draft

Today's core areas & projects

- **Operator's safety** (operators & bystanders)
 - **Electrification**
 - High voltage systems in machines (and power supply to implements) ISO/CD 16230-1
 - **Automated machine operation**
 - Machine functions & agricultural processes ISO/CD 18497
- **Challenges**
 - Interdisciplinary co-operation required
 - Development of technology & standards in parallel



Today's core areas & projects

● Environment – Application of pesticides

- Requirements for new sprayers (placing on the market)
EN ISO 16119 and EN ISO 19932 series
- Requirements for sprayers in use (inspection)
EN ISO 16122 series
 - Europe (Machinery & Sustainable PPP Use Directive)
 - International harmonization

● Possible need for future action

- Application of fertilizers
- Soil protection (sub-soil)



Today's core areas & projects

- **Road transport**

- Focus on components & systems
 - Hitch and coupling devices
 - Steering and braking systems

- **Challenges**

- Very different infrastructures (agriculture, public road network)
- Up-coming EU harmonization for self-propelled machinery and possible contributions by standards



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Future challenges

- **Increasing number of projects**
 - New projects
 - Revisions of existing standards
- **Increasing complexity of technology**
 - Machines
 - Machine combinations
 - Integrated systems



Future challenges

- **Increasing integration of legislation & standardization**
 - Operator's safety / road regulations / pesticide application
 - Protection of climate / management of resources / soil protection
 - Protection of data privacy
- **Increasing globalization**
 - Involvement of additional partners & markets
- **Requests to shorten time to provide standards**
 - Shorter standard development periods but also correct & reliable basis for product development

Future challenges

Possible answers

● More guidance

- Stakeholder dialogue to be intensified
- Priorities to provide requested standards in time

● More resources

- Co-ordination between organizations setting standards
- Active integration of new partners & colleagues

● More efficiency

- Scopes & objectives to be clearly specified at beginning
- Well adjusted balance with respect to technical discussion, enquiry periods and time for administration

Conclusions

- **International standards support agriculture & industry**
 - Safe and efficient processes in agriculture
 - Appropriate legal requirements for design & operation
- **International standardization also to be seen as platform with respect to**
 - Co-operation, market information and access
- **Standards & standardization to be seen as ‘product’**
 - Continuous improvement (competition)
- **Voluntary commitment & high expertise of experts**
 - Substantial strength and assets of standardization
- **New challenges and increasing demands**
 - Additional opportunities for standardization