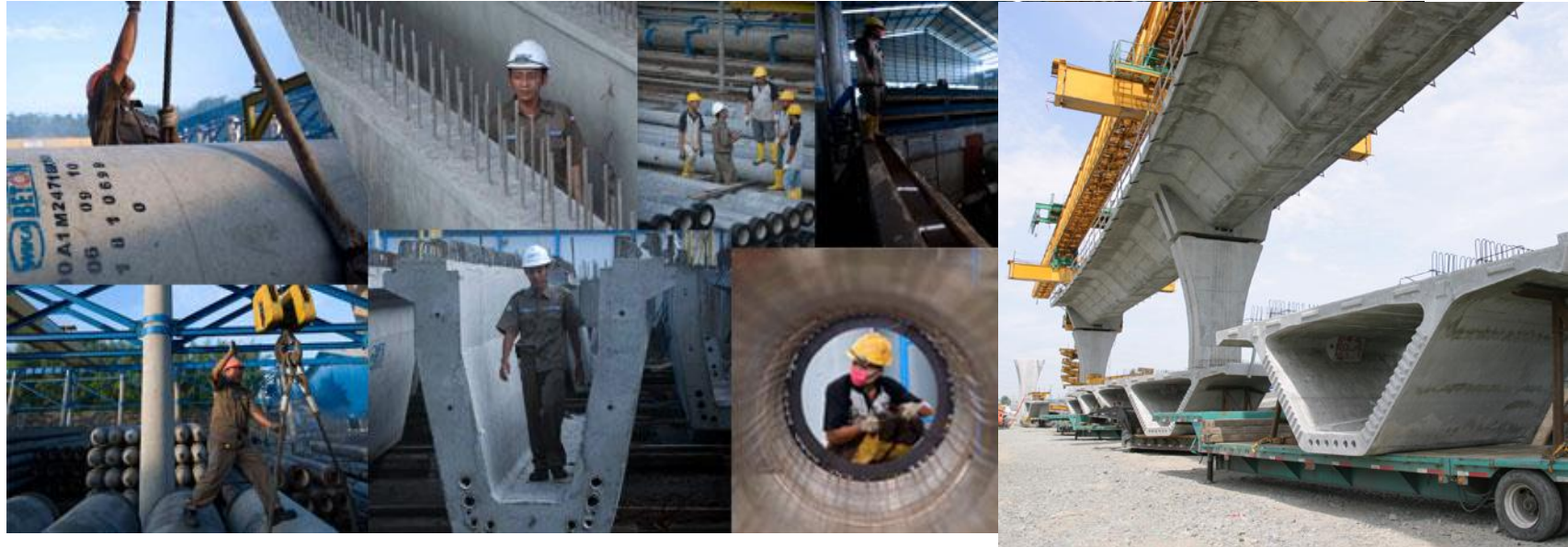


# Overview of case studies: Germany



Case study: Nanotron Technologies GmbH  
(June 2011)

# Summary

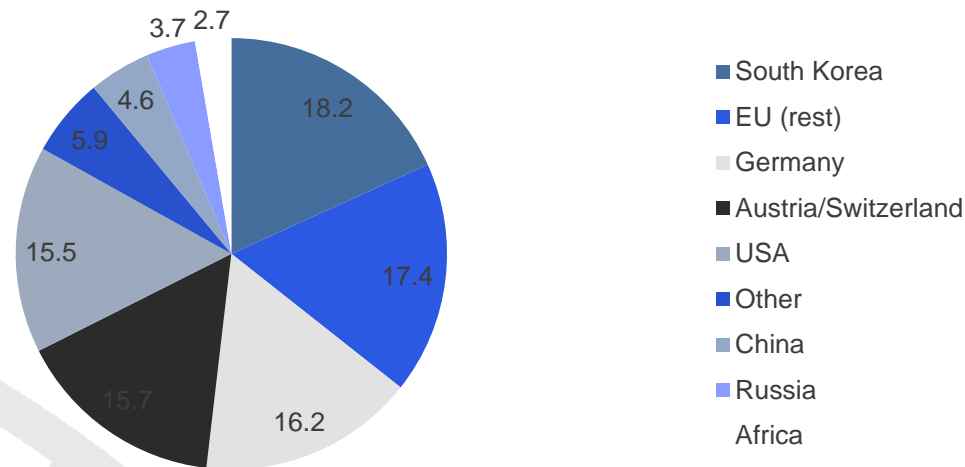
- Example of the application of the ISO methodology
  - Nanotron technologies: Information and Communication technologies (ICT)
- Credits
  - Technical University Berlin: Mr. Hannes Langer (Student, Economics and management)
  - Supervisors: Prof. Dr. Knut Blind (Technical University Berlin, Innovation economics), Mr. Heinz Gaub (DIN), Dr. Jens Albers (Nanotron Technologies)

# Company overview - 1

- Nanotron was founded in 1991 and started in 2001 to develop its own technology
- Nanotron has developed products on the basis of the patented chirp-technology
- Nanotron's current product portfolio is used in applications for the localization of the physical position and identification of persons and objects as well as for the installation of intelligent sensor networks
- Nanotron uses chirps, radio-frequency modules and developer kits and subsystems, which are used as a reference for final products
- Number of employees (in 2011): 25 (in Berlin, Germany)

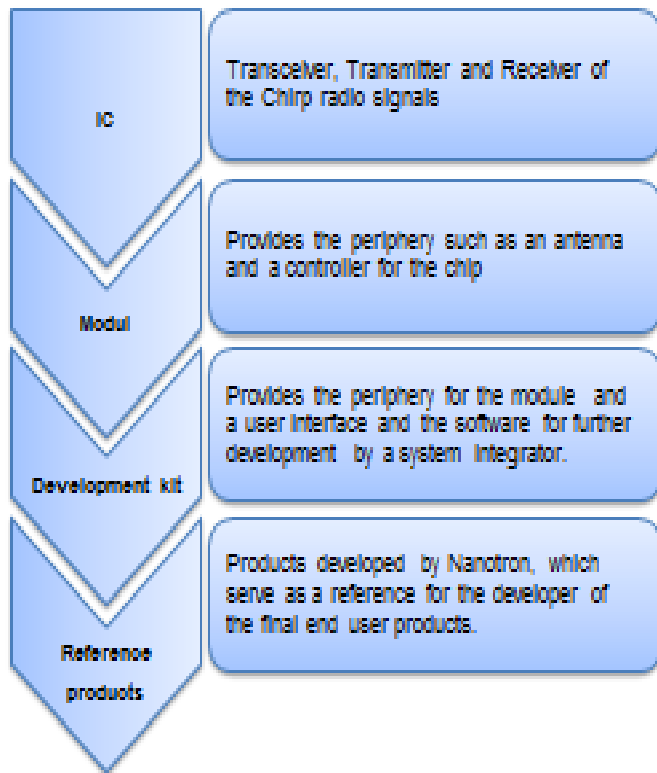
## Company overview - 2

- The production of Nanotron products is outsourced
- Sales of Nanotron: 36% in the consumer sector, the rest relies on sales in different industries
- Nanotron products are sold in the following countries and regions:



# Nanotron's product portfolio

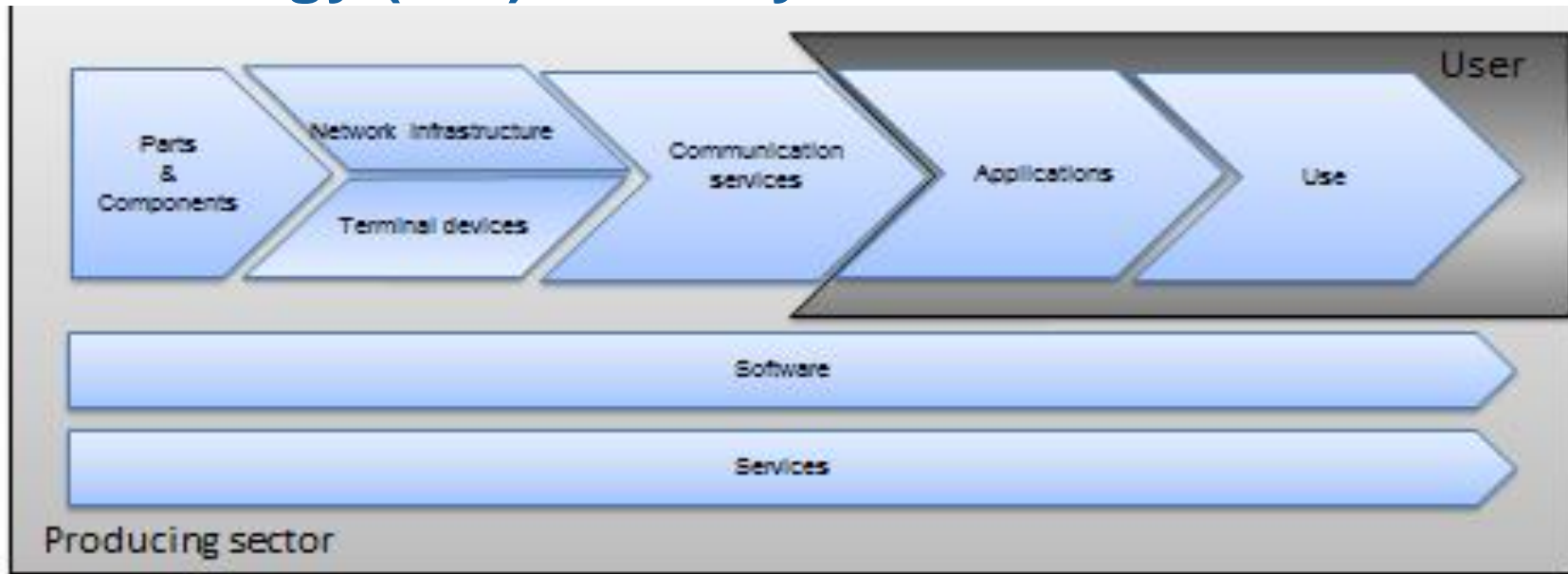
## Development stages & relationship between Nanotron products



## Types of Nanotron products

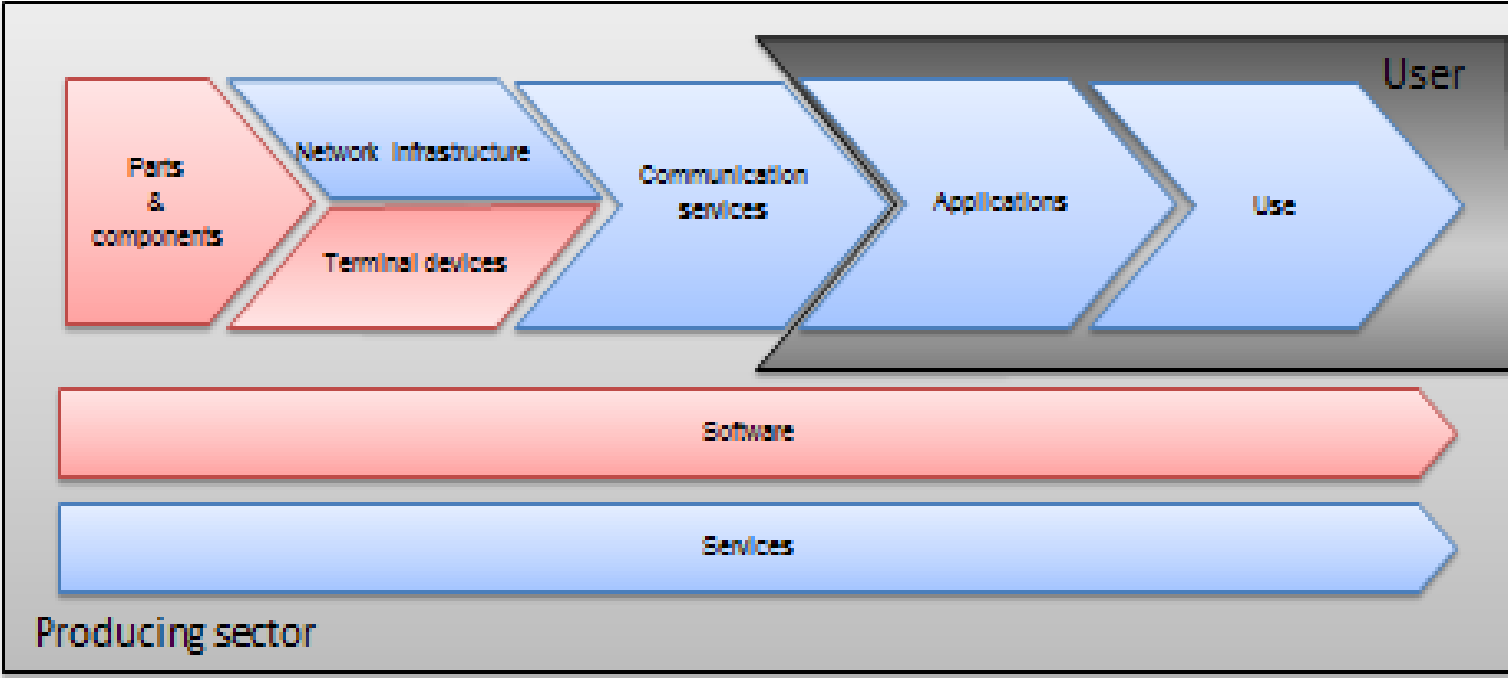
Reference products developed by Nanotron are the *Child Loss Protection System (CLOPS)*, the *Pet Fencing System, Real Time Location System (RTLS)-Tags* and *RTLS-Anchors*. The Child Loss Protection System supports parents and teachers in monitoring children to be in a "safe environment". With support of the Pet Fencing System it is possible to encircle gardens with virtual fences to restrict the movement of animals. RTLS-anchors are used to set up networks for the localization of several RTLS-Tags

# Value chain of the Information & Communication Technology (ICT) industry



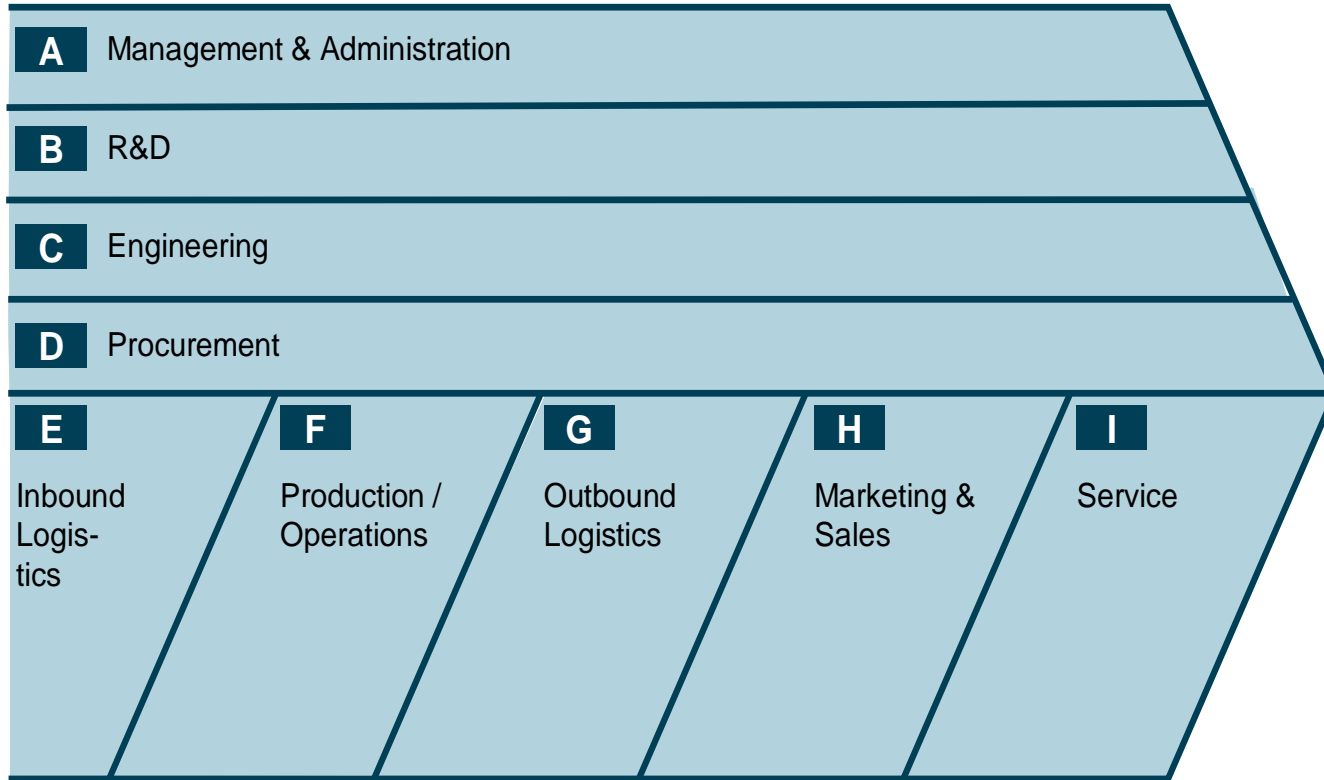
**Parts and components** are e.g. chips, modules and interface components. The **network infrastructure** includes connecting and transmission networks as well as office networks. **Terminal devices** can be telephones, computers and localization hardware such as tags and anchors. **Communication services** transmit the signals. **Applications** are - amongst others - e-commerce and e-government as well as localization. The **main use** of communication consists in transactions, information collection and the areal localization. **Software** is needed in each stage of the value chain to control the hardware. Service providers offer **services** in the form of consulting, training and other forms of support.

# Segments of the industry value chain covered by Nanotron



The segments of the industry value chain covered by Nanotron are marked in **red**.

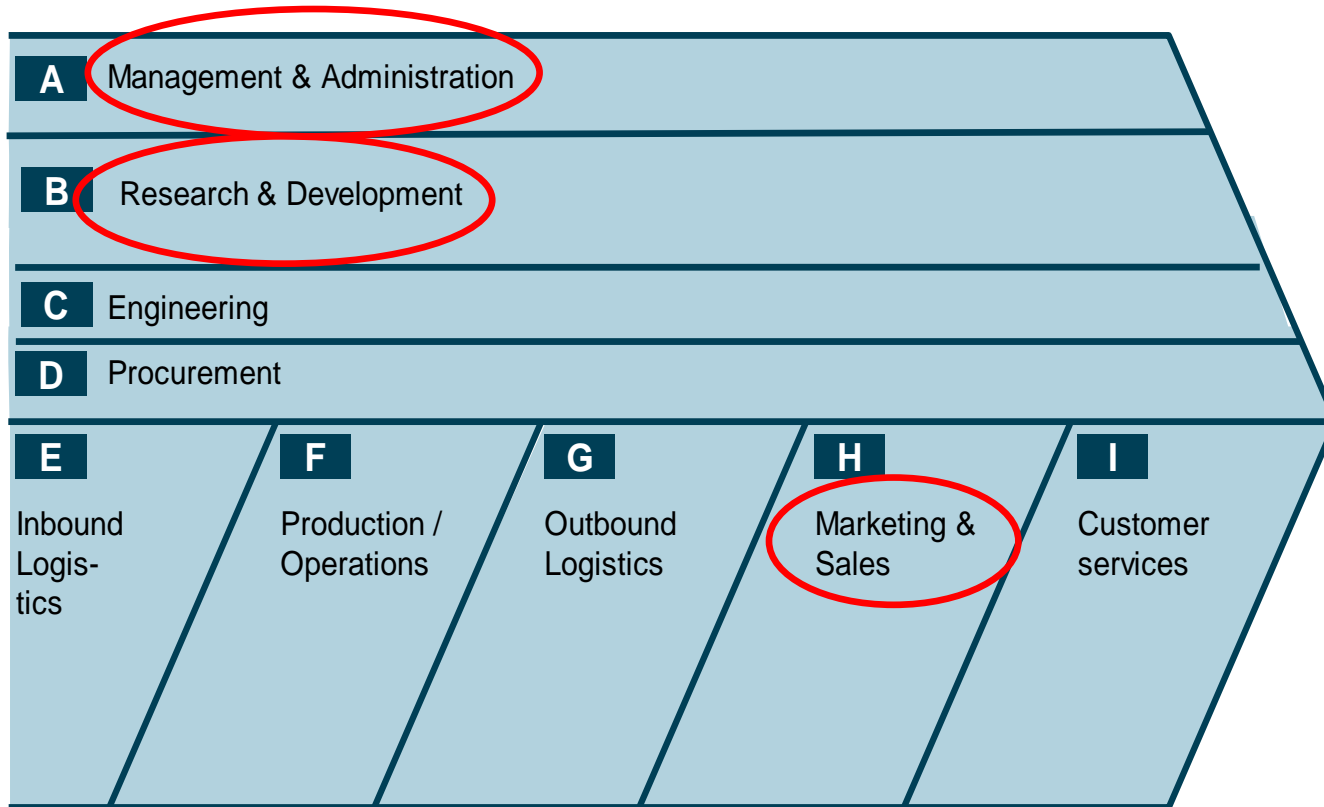
# Model of a company value chain (M. Porter)



A company value chain & the business functions « A » to « I » that constitute the Value Chain



# Focus of the assessment of the impacts of standards on business functions in Nanotron (highlighted)



Note: Research & Development in Nanotron combines the segments «Parts & components», «Terminal devices» and «Software» in the industry value chain

# Key value drivers

- Based on interviews with executive management of Nanotron the following areas have been identified as key value drivers:
  - Strong focus on R&D and new product development
  - High capability in the definition and management of internal processes
  - Pro-active involvement in the development of key standards
  - Marketing & Sales capability: Standards are used as a strategic tool to gain customer confidence

# Attitude of Nanotron towards standardization

- Nanotron is actively involved in standards committees nationally and internationally and has shaped some key standards used in Nanotron's own products, in particular ISO/IEC 24730 *Information technology -- Real-time locating systems (RTLS)*
- The company considers involvement in standards development and application of standards as a key to market access and market creation and as a key to business success

# Use of standards in Nanotron

Standard - Typ	Standard reference	Description
<b>Product standards</b>	ISO/IEC 24730-5	RTLS - Air interface applying CSS at 2,4 GHz
	IEEE 802.15.4a	Wireless MAC- and PHY-specifications for low rate Wireless Personal Area Networks (LR-WPANs)
<b>Process standards</b>	DIN EN ISO 9001	Quality management system standard:
<b>Conformity standards</b>	ETSI: R&TTE Directive 1999/5/EC	Radio admission for 2,4 GHz CCS Low Power RF transceiver (ETSI)
	FCC: regulations Part 15C	Radio admission for RF transceiver in the range of 2,5 GHz (FCC)
	Japan's ARIB STD-T66	Radio admission for 2,4 GHz CCS Low power radio equipment (ARIB)

# Impacts of standards in Nanotron

Company unit	Standards	Main impacts
R&D	ISO/IEC 24730 IEEE 802.15.4	- More precise product specifications
Marketing	ISO/IEC 24730 IEEE 802.15.4	- Creation of a global market - Costs for the development of standards
Sales	ISO/IEC 24730 IEEE 802.15.4	- Reduced time-to-market - More efficient product description - Confidence in the product
Management	DIN EN ISO 9001	- Shorter processes and workflows

# Calculation of the economic benefits of standards

Company unit	Impacts	Operational indicators	Contribution (of sales revenue)
R&D	Precise product specifications	time savings (in %)	5%
Marketing & Sales	Reduced time-to-market	loss in revenue in case standards would not be applied (in %)	3%
	More efficient product descriptions	time savings (in %)	1%
	Confidence in the product	loss in revenue in case standards would not be applied (in %)	16%
	Creation of a global market	loss in revenue in case standards would not be applied (in %)	16%
	Costs due to participation in the development of the standard	estimation (of the absolute value)	-4%
Management	Shorter processes and workflows	time savings (in %)	12%
		<b>EBIT Impact (total)</b>	<b>33%</b>

## Results

- The contribution of standards as a percentage of the total sales revenue of Nanotron amounts to **33%**
- The impact is very high and related to Nanotron's participation in standardization by having a first-mover advantage being able to shape relevant markets
- Standards are in particular important for products based on new technology. Standards build customers confidence in the persistence and reliability of new technology
- The importance of the contribution of standards decreases as competing products enter the market and the market size increases

# Additional considerations

- Knowledge and contacts gained due to pro-active participation in standards development committees is important as well as the opportunity for an exchange of information with other market players
- Standards are key in the cooperation between the R&D-function in Nanotron and manufacturing companies to which Nanotron has outsourced the production of its products
- Marketing and Sales can assist in the procurement of externally manufactured parts by specifying relevant requirements through references to standards



# Thank you for your attention!



<http://www.iso.org>