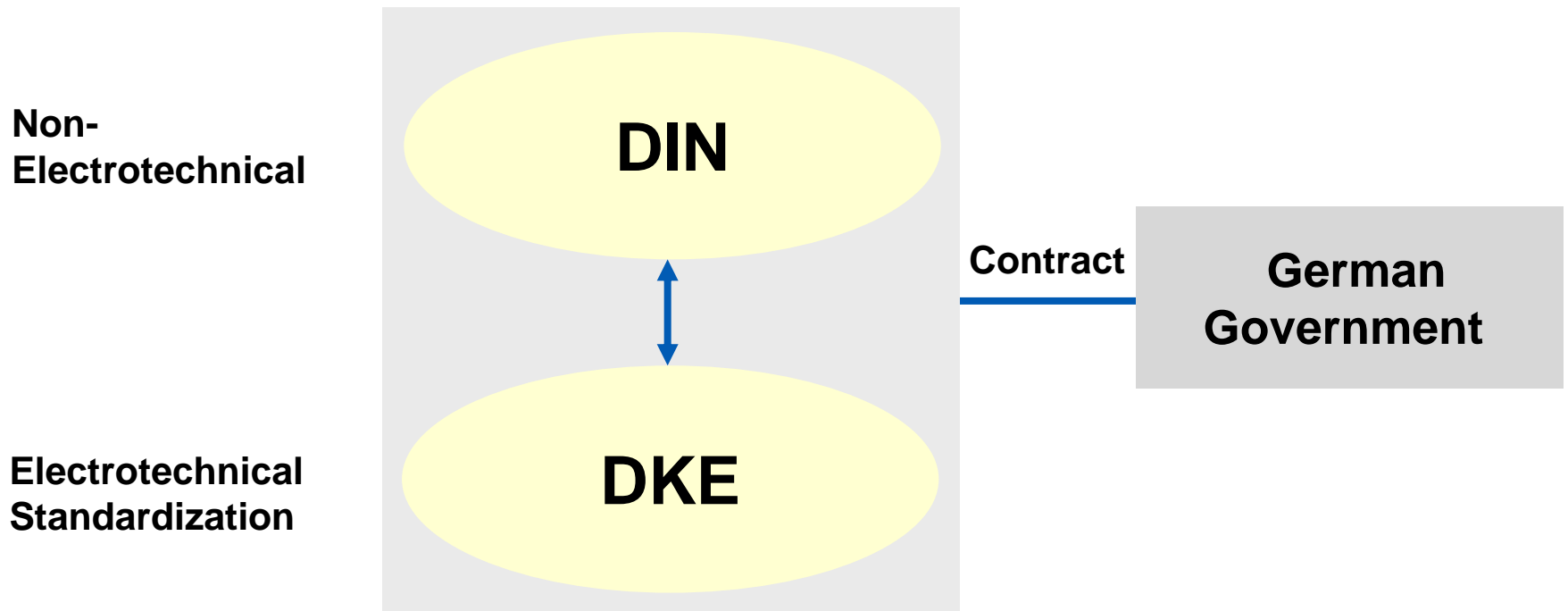


Product Safety – Fundamentals of Product Safety

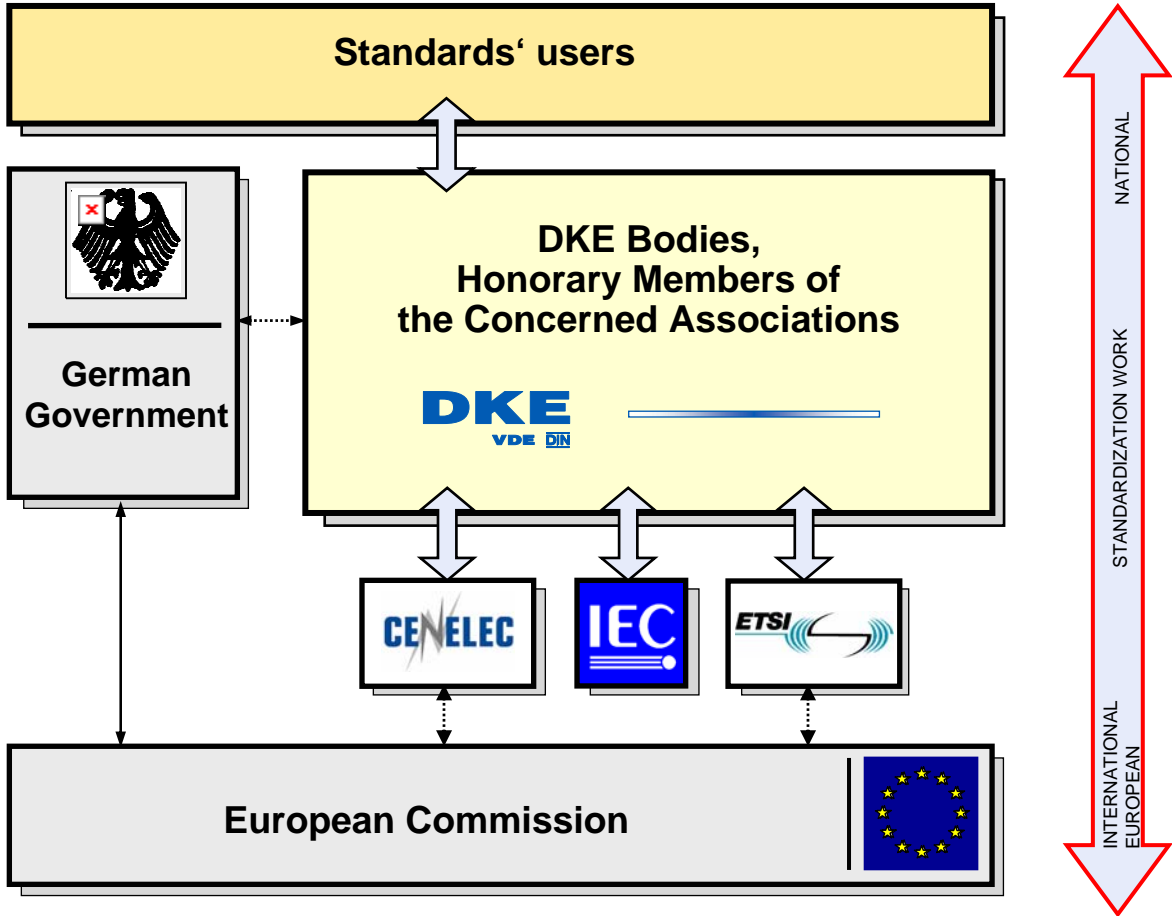
Dr. Gerhard Imgrund

DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik im DIN und VDE

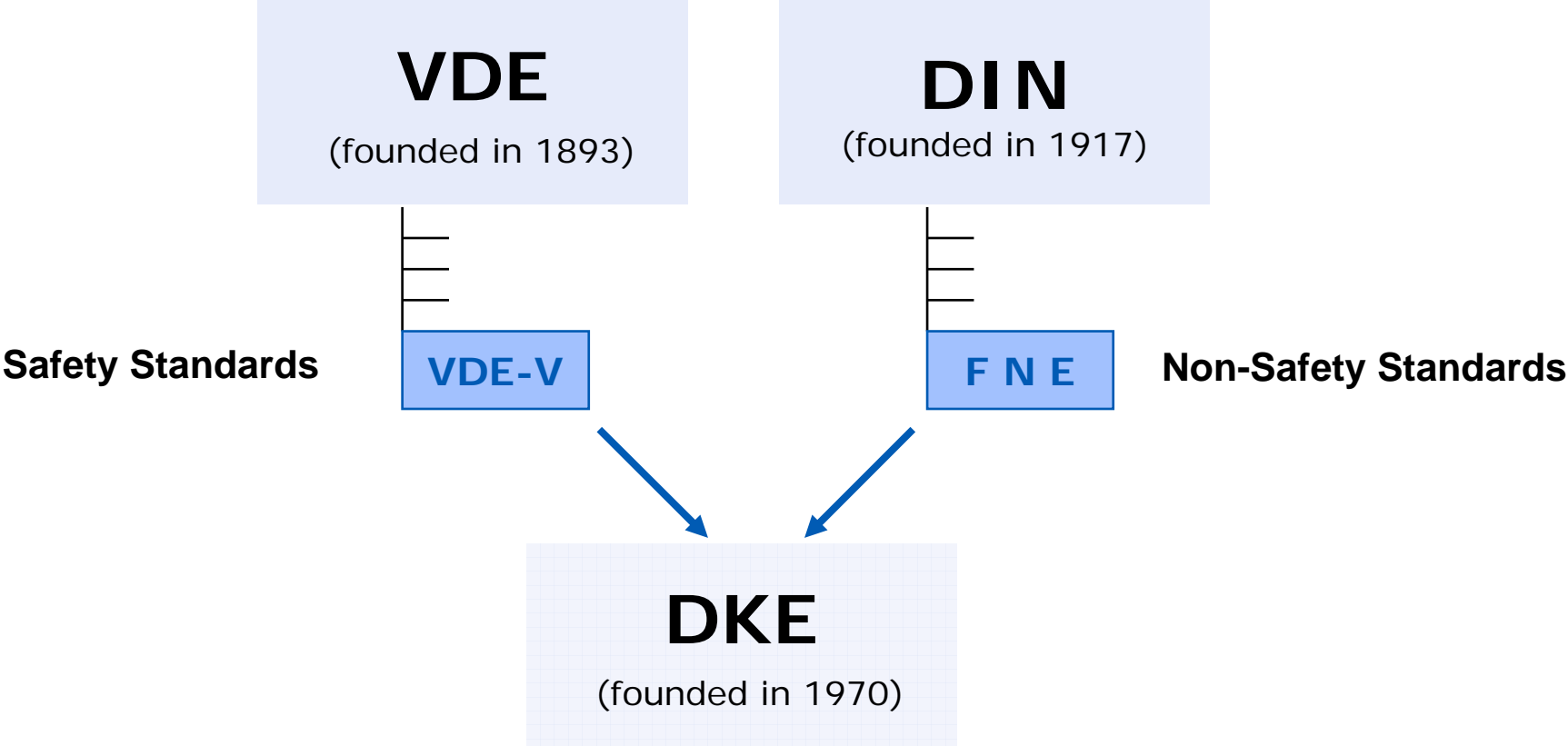
German Standardization System



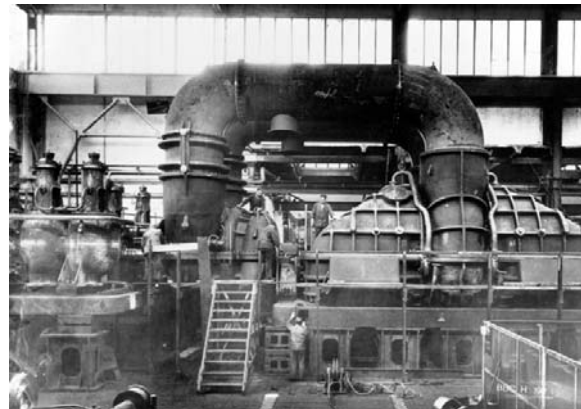
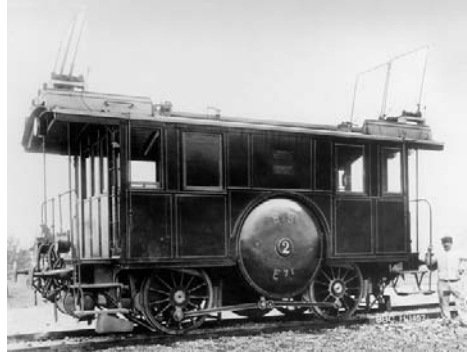
DKE Standardization Work in the International and European Environment



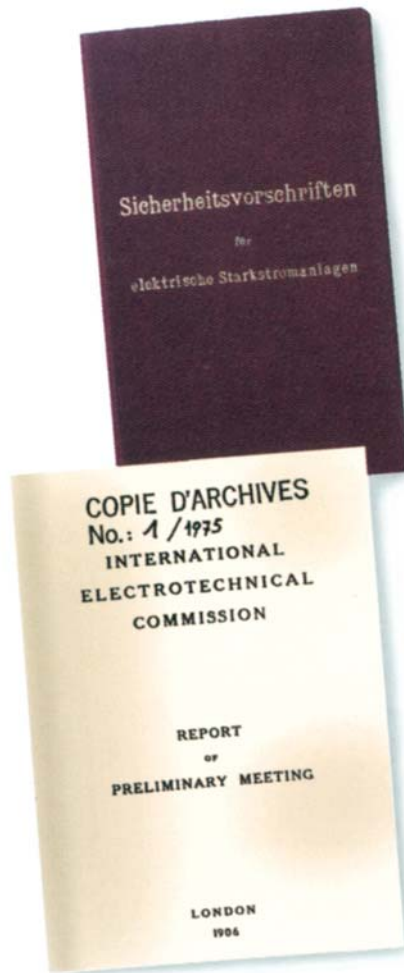
DKE - The Roots



History



Beginning of Standardization



**1895: First German standard
„Safety requirements for
electrical low voltage
installation“**

**1906: Foundation of
IEC – International
Electrotechnical
Commission**

Principles of Standardization

- **Participation is voluntary**
- **Information of the public**
- **Involvement of all parties concerned**
- **Decisions are taken with consensus**
- **Unambiguousness**
- **Issue related**
- **State of the art**
- **Orientation on economic consequences**
- **Orientation on benefit for the public**
- **Internationality**

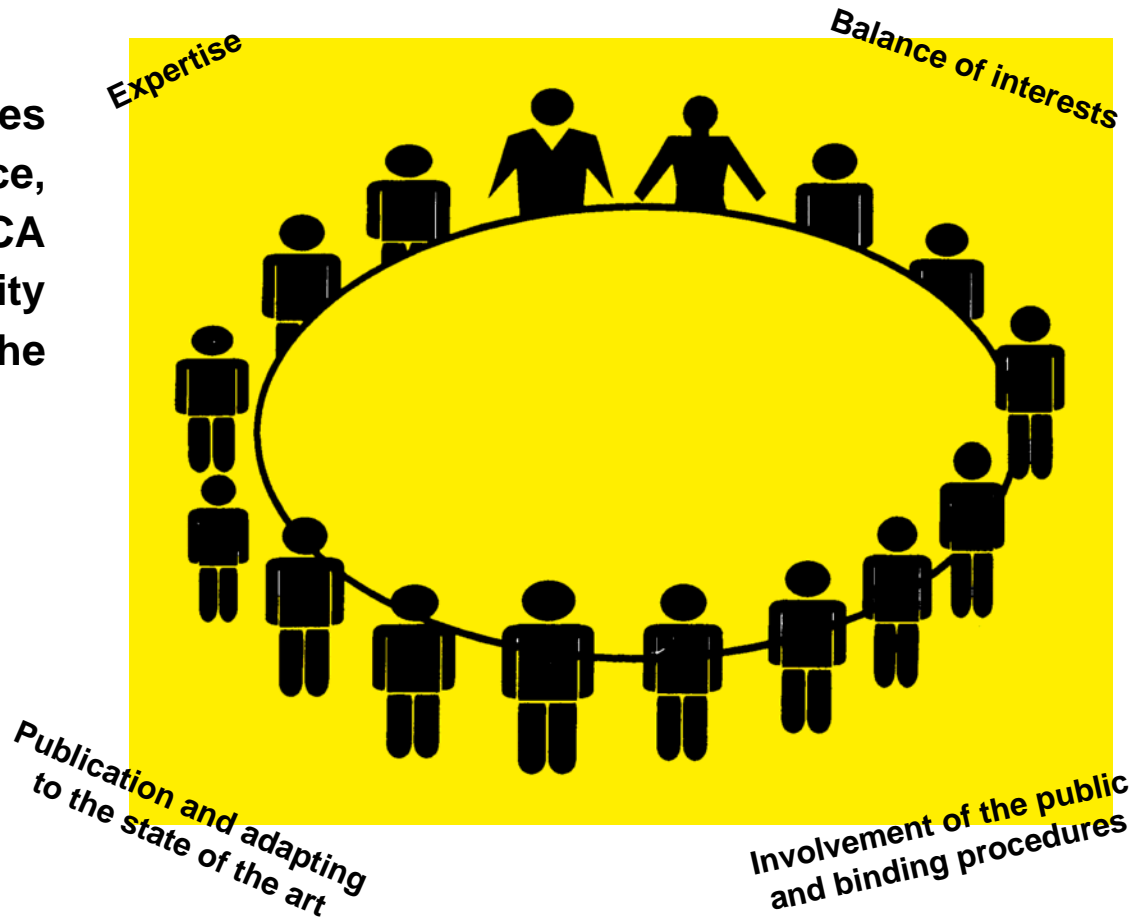
Principles of Standardization (2)

Public enquiry is one of the democratic factors

- The draft standard shall be made available to the public
- Comments received shall be discussed in the Technical Committee inviting the persons having sent comments
- If a person having submitted comments is not satisfied with the result an appeal procedure can be requested

Technical standardization – Task of Self Regulation of the Parties Concerned

Standardization: all parties concerned (industry, science, authorities, service providers, CA bodies, etc) have the possibility to meet at a round table to fix the acknowledged state of the art.



Benefits of Standards

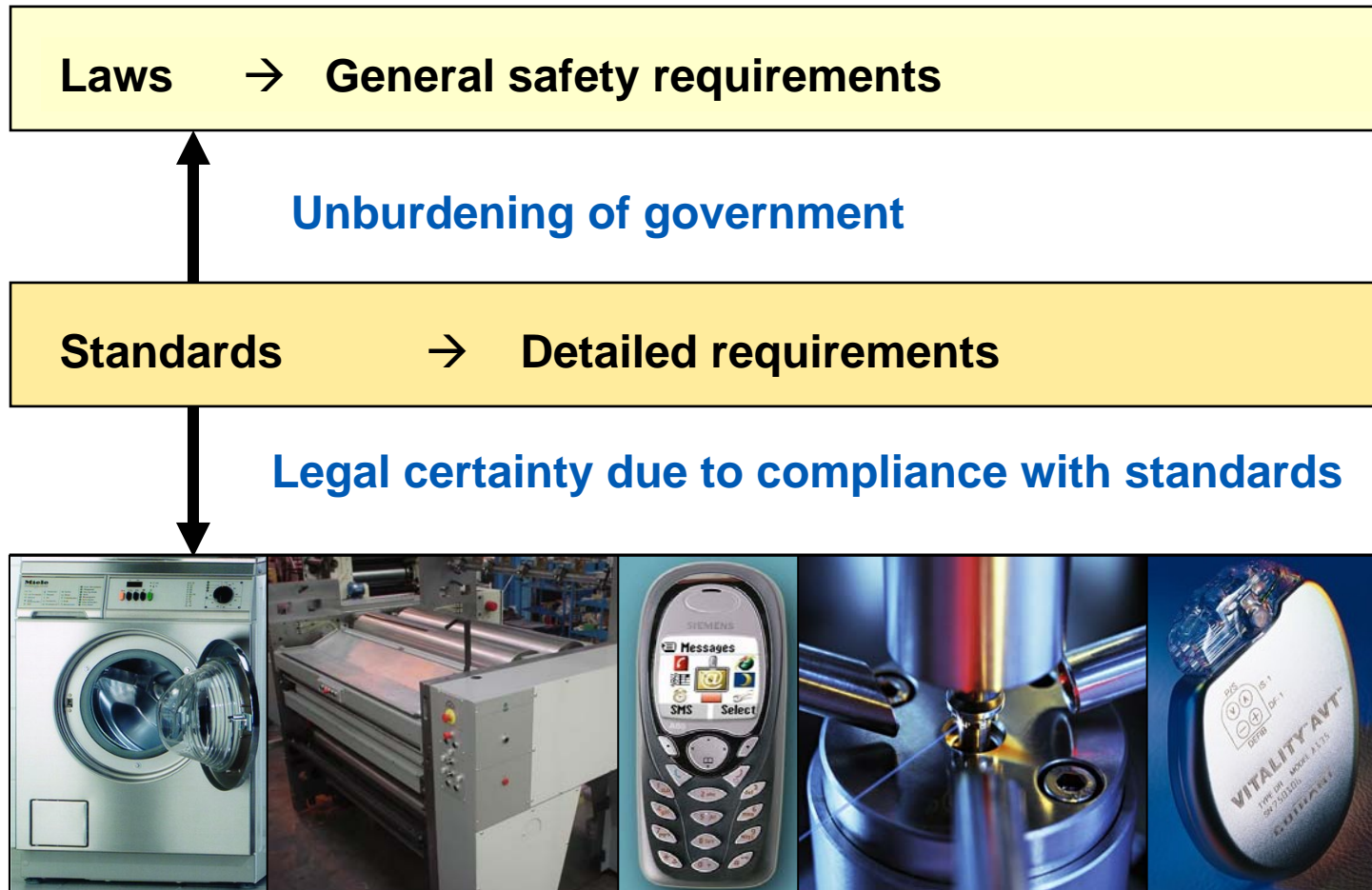
- **Removal of barriers to trade: Opening of markets for product, services and innovations**
- **System compatibility of products and installations**
- **Basis for testing and conformity assessment**
- **Safe products and interchangeability**
- **Technology transfer**
- **Standardization unburdens regulators**
- **Easy way to adapt technical requirements to the state of the art**
- **Platform for multilateral understanding between industry, science, authorities**

Economic advantage in Germany: 16 Mrd. Euro per year

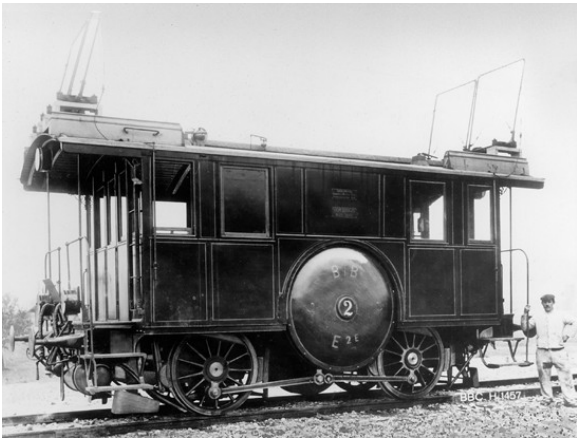
Juridical Meaning of Standards

- **Technical standards are no technical regulations**
- **Application is voluntary**
- **Mandatory application of standards:**
 - If technical regulations request this
 - Business to business contracts
- **Technical standards are basis for decisions of courts**

Standards – Benefit for Government, Manufacturers, and Users



Standards – Innovation Driver



History

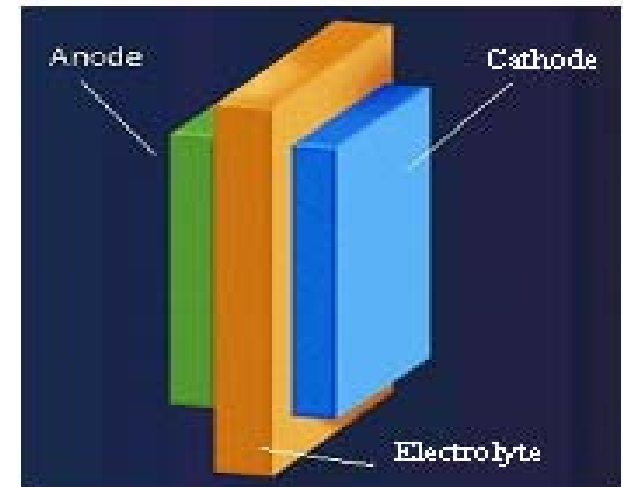
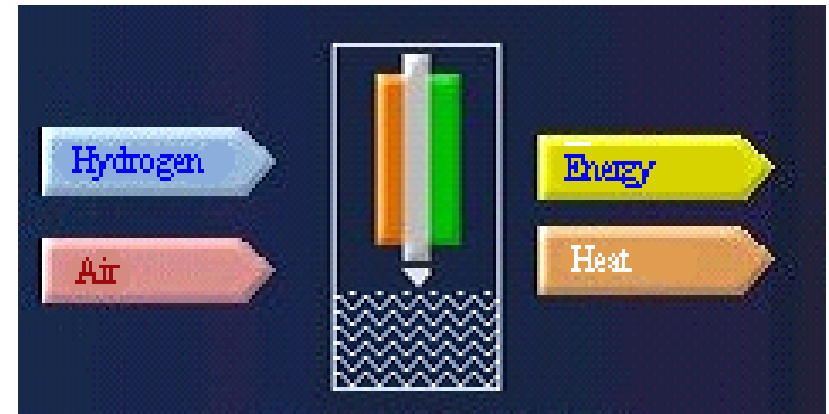
Today

Modern Technology and Safety – Safety in Manufacturing Plants



IEC 61508 „Functional safety of programmable controls“

Modern Technology and Safety – Fuel Cells



IEC 62282 „Fuel Cell Technologies“

Modern Technology and Safety – Safety in Explosive Atmospheres



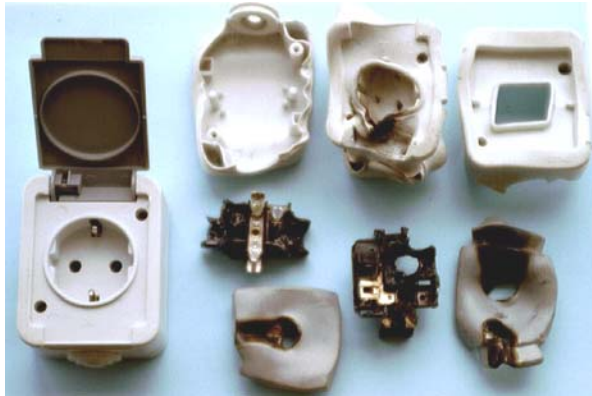
IEC 60079 „Ex equipment for use in explosive atmospheres“

Modern Technology and Safety – Safe Communication Network

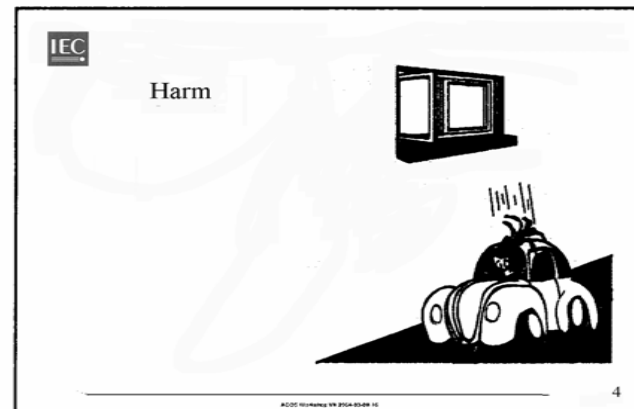
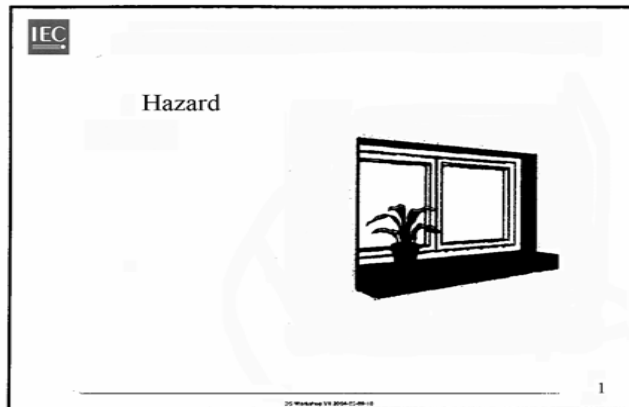


IEC 61375 „Train Communication Network“

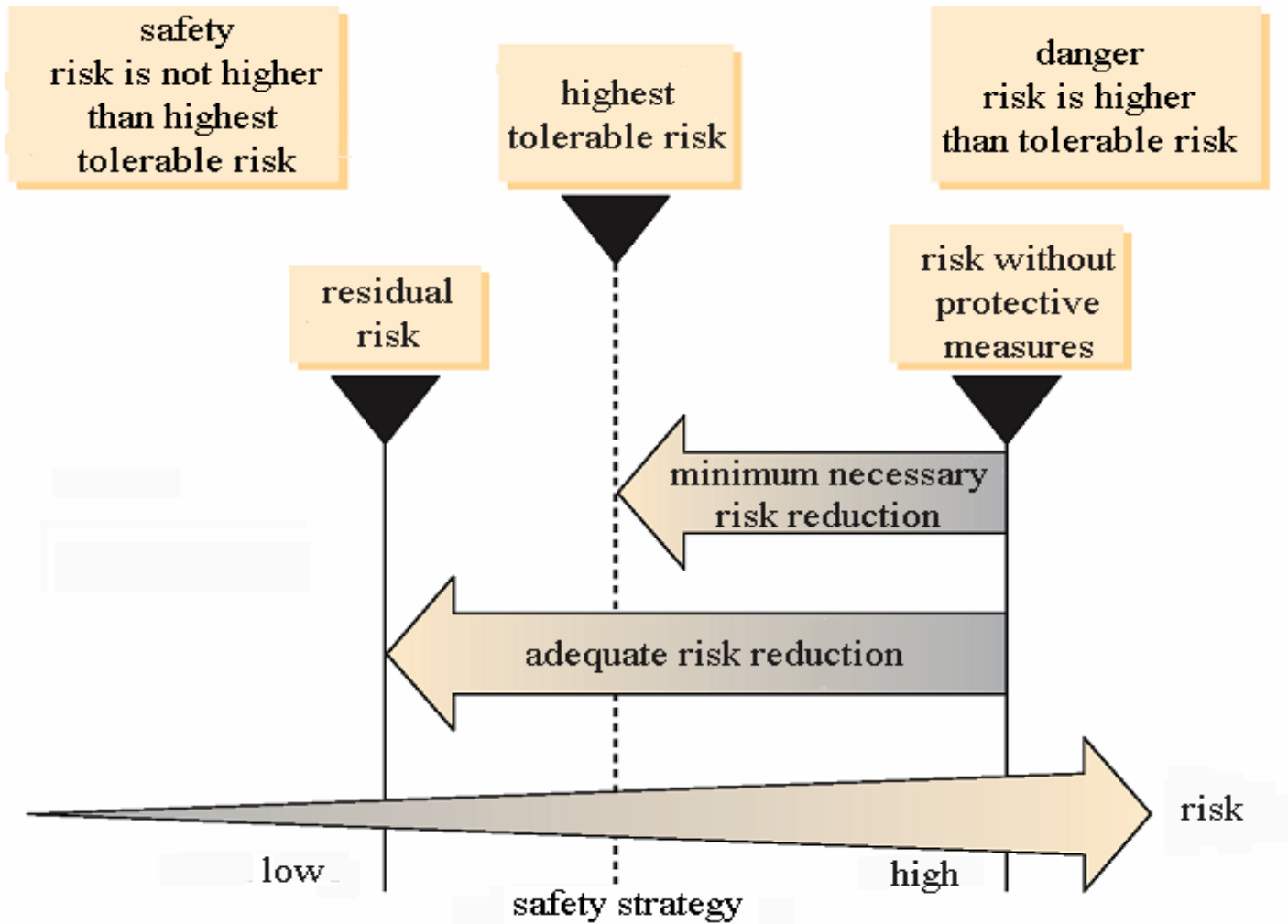
Examples for Unsafe Products



From Hazard to Harm

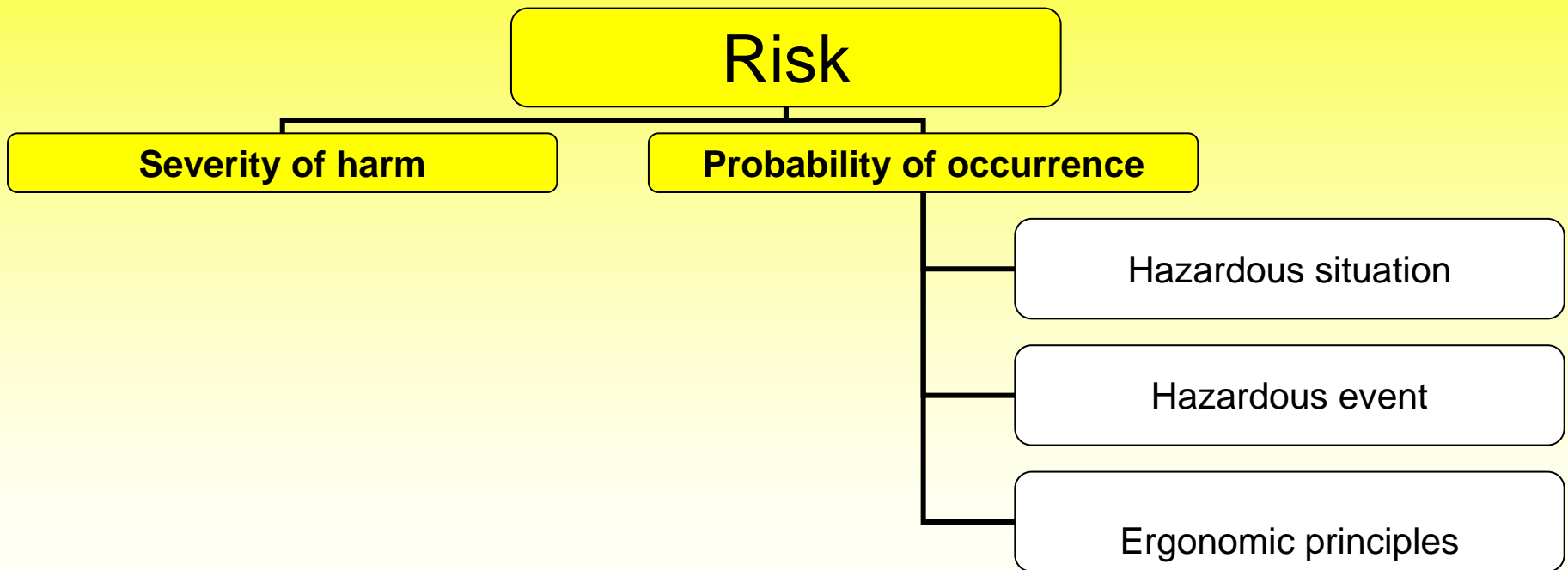


Risk and Safety

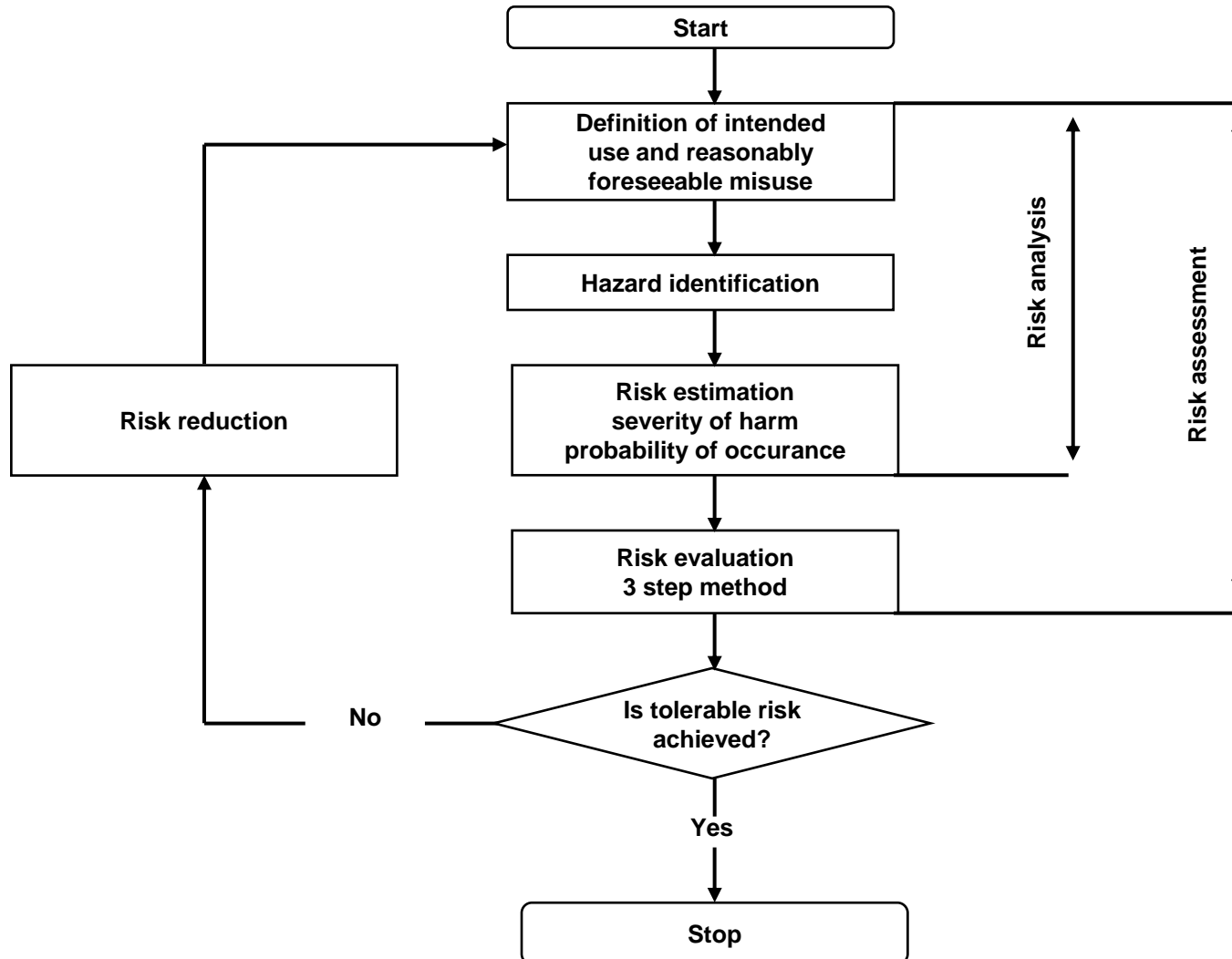


Source Prof. Hosemann, „Risikobeurteilung zur Konkretisierung staatlicher Vorschriften“, etz 12/2007

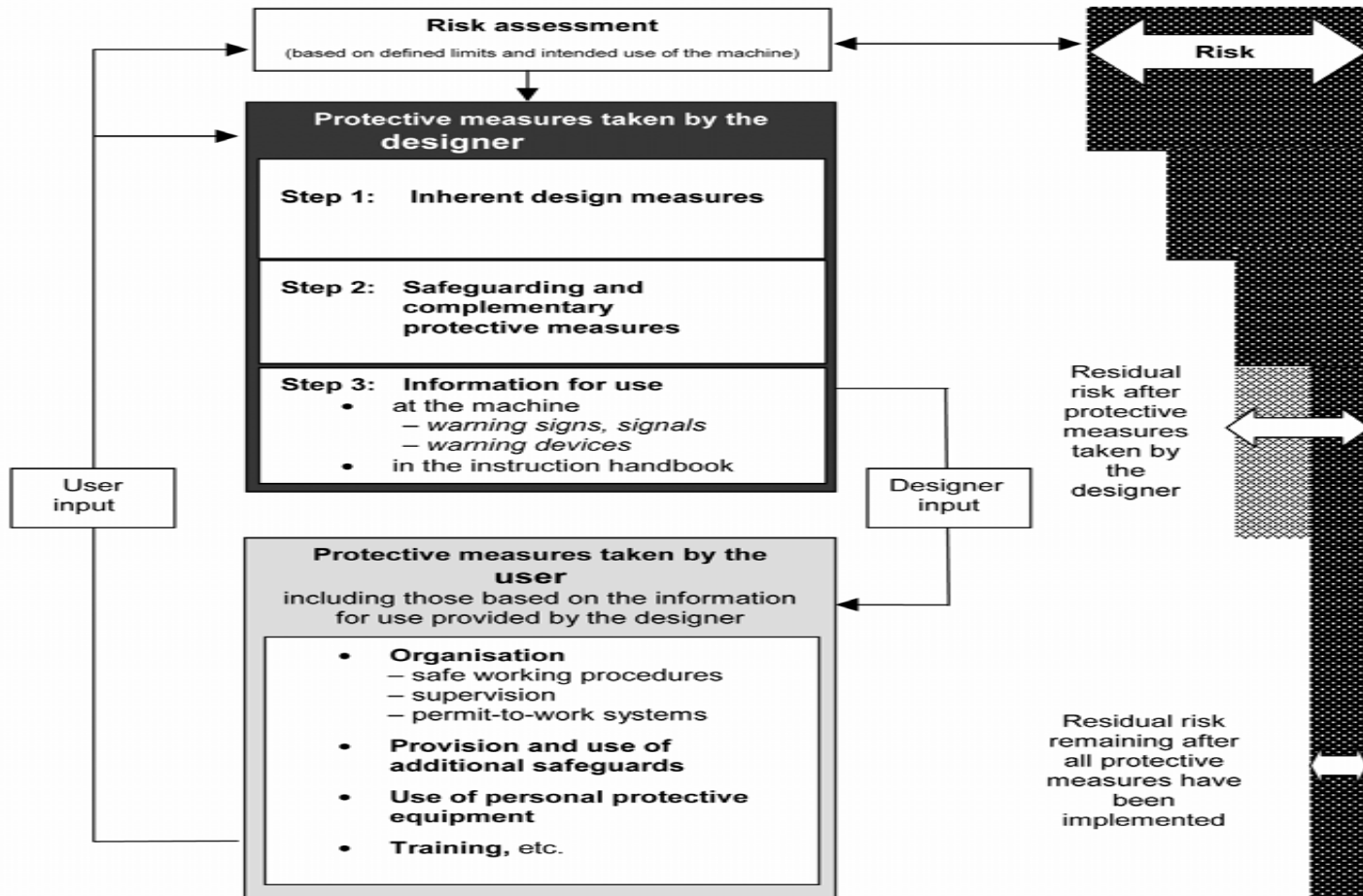
Risk



Principles of Risk Assessment



Systematic Risk Assessment



Identification of Risks and Reduction of Risks

1. Inherent safety due to construction
2. Protective measures, e.g. light curtains
3. Information of use



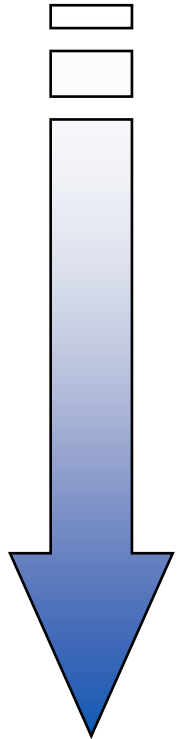
IEC Guide 104 and ISO/IEC Guide 51 Basis for Safety Standards

- Risk assessment
- Basic safety and health requirements
- 3 step method to reduce risks



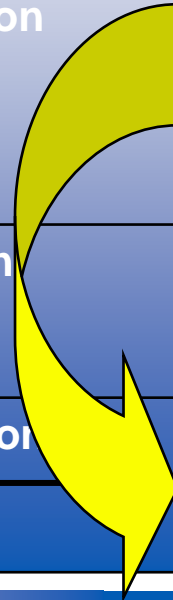
Basic Documents for Safety Standards

General requirements



Detailed requirements

ISO / IEC Guide 51:	Safety aspects — Guidelines for their inclusion in standards
IEC Guide 104	The preparation of safety publications and the use of basic safety publications and group safety publications
Basic Safety Publication - Horizontal Safety Function	e.g. Functional Safety IEC/SC 65A System Aspects: IEC 61508 Functional safety of electrical/electronic/programmable safety-related systems (Parts 1-4)
Group Safety Publication - Group Safety Function	IEC/TC 66: Safety of measuring, control and laboratory equipment
Product Safety Publication	IEC 61511



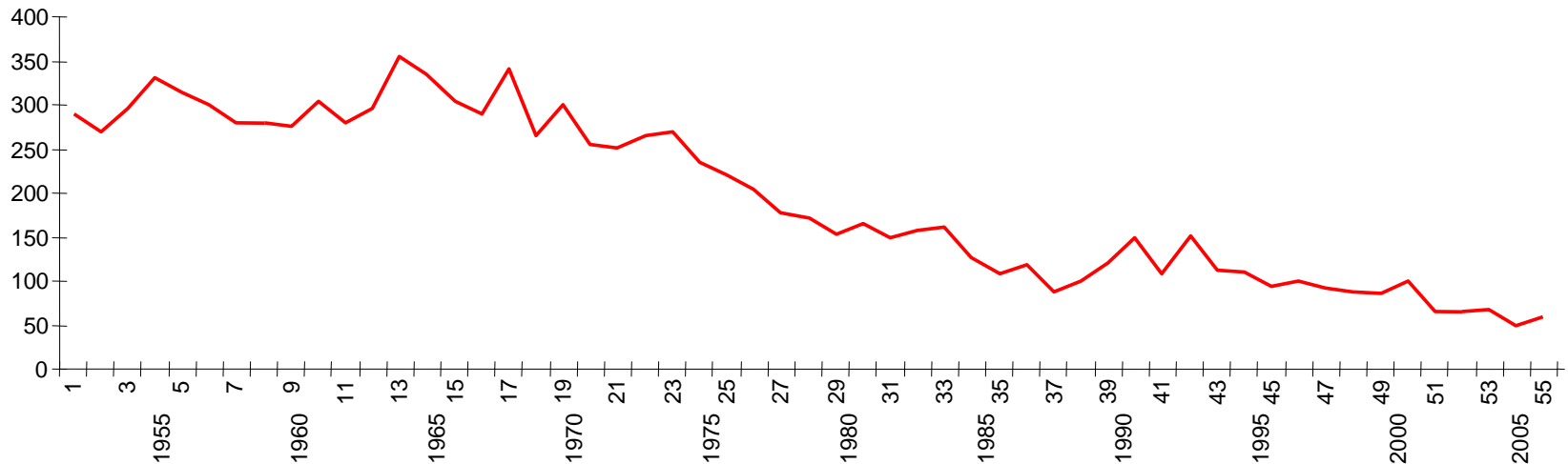
IEC Guide 104 Basic Standards Concept

- **Horizontal Safety Function:** Task assigned to a TC to prepare one or more basic safety publications
- **Group Safety Function:** Task assigned to a product TC to prepare one or more group safety publications
- To be confirmed by IEC Standardization Management Board
- **Basic Safety Publication:** publication on a specific safety-related matter, applicable to many electrotechnical products
- **Group Safety Publication:** publication covering all safety aspects of a specific group of products within the scope of two or more product TCs
- **Annex A:** lists safety related aspects to be taken into account by TCs elaborating safety standards

Electrical Standardization Assures Safety

Lethal accidents caused by electricity in Germany – 50 years survey

Number of lethal accidents



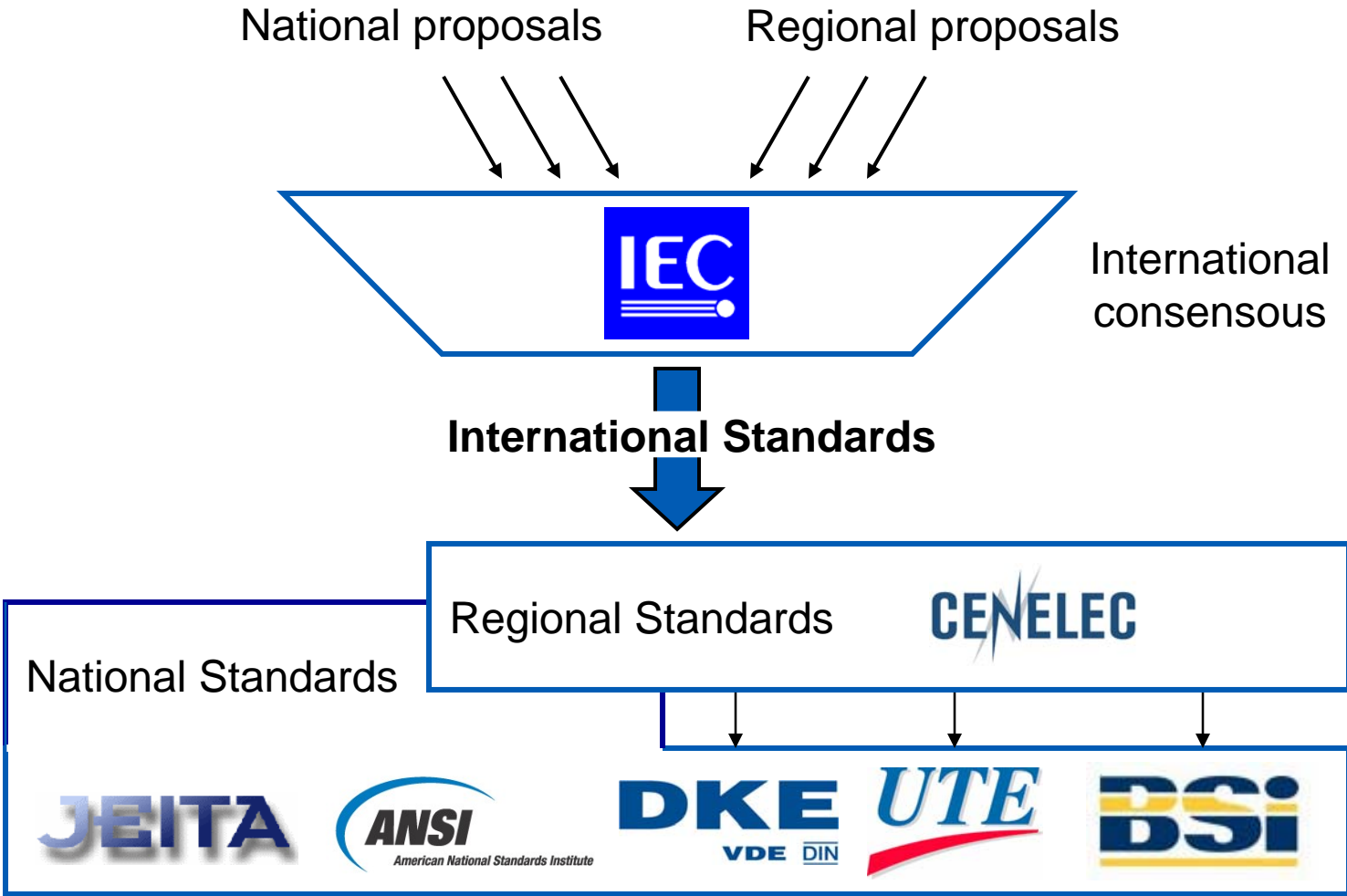
Standards for safe installations and products

Standards for safe behaviour at working places

Why IEC Standards rather than Purely National Standards?

- Electrotechnical safety is based on **physics**, not on national or regional borders
- **World wide systems** need to be interfaced
- **Globalization of the markets** calls for solutions applicable everywhere in the world
- Exploitation of **world wide know-how**
- Rules of operation guarantee a **coherent set of non-conflicting standards** and participation of all parties concerned through national delegation
- Implementation of **WTO/TBT-Agreement**

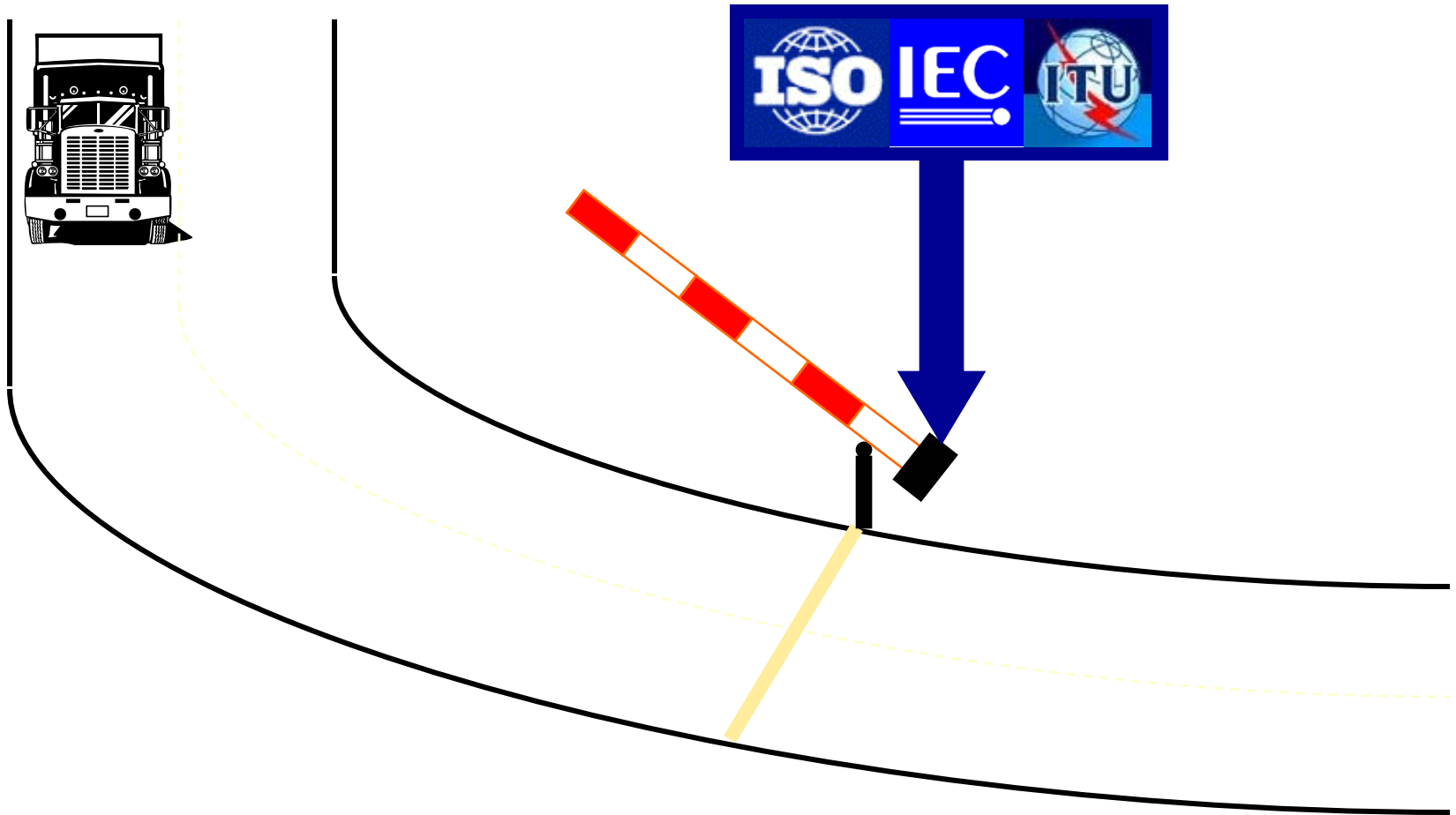
Do it Once, Do it International



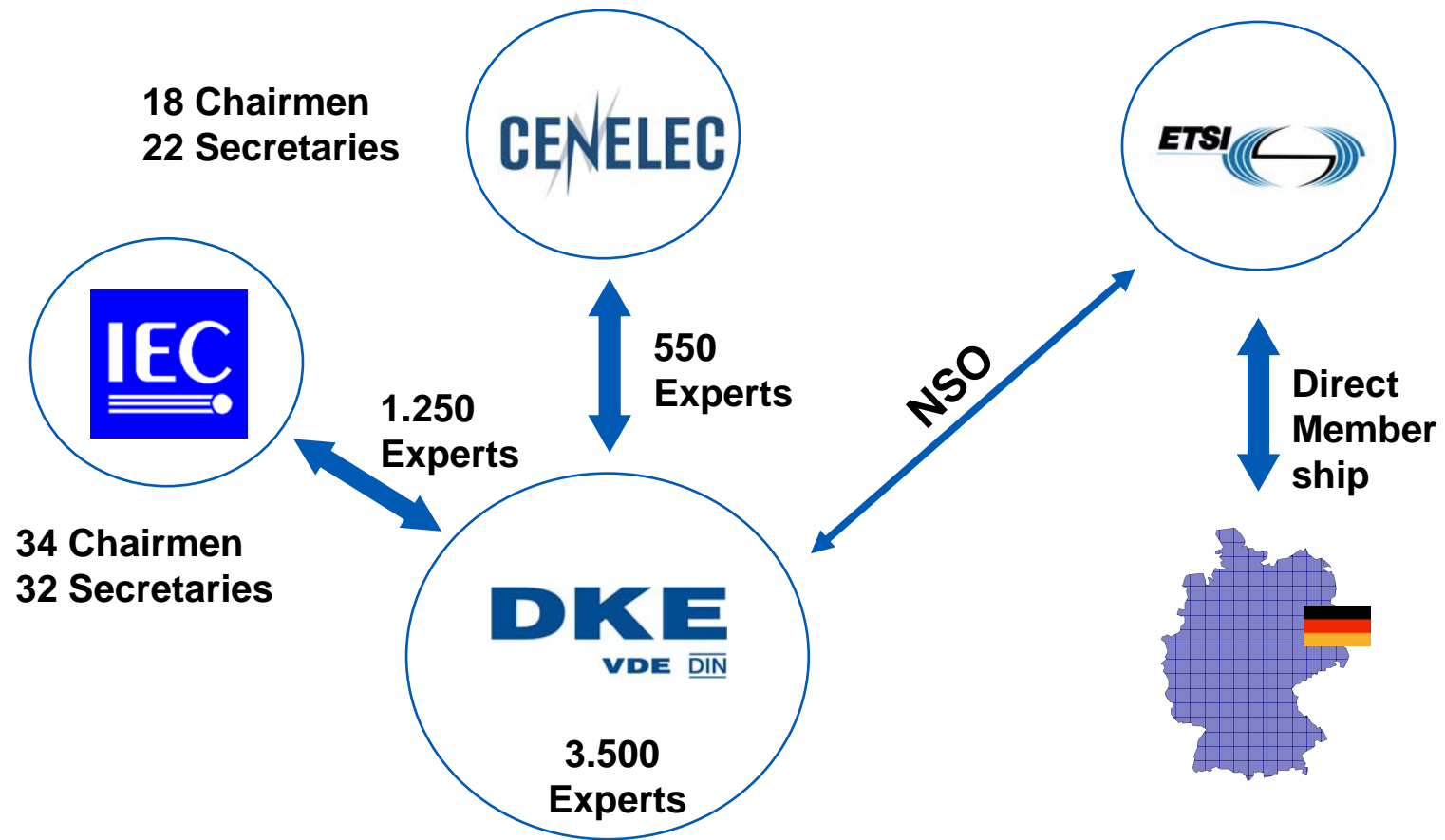
Barriers to trade

Free trade

International Standards Assure World Wide Trade

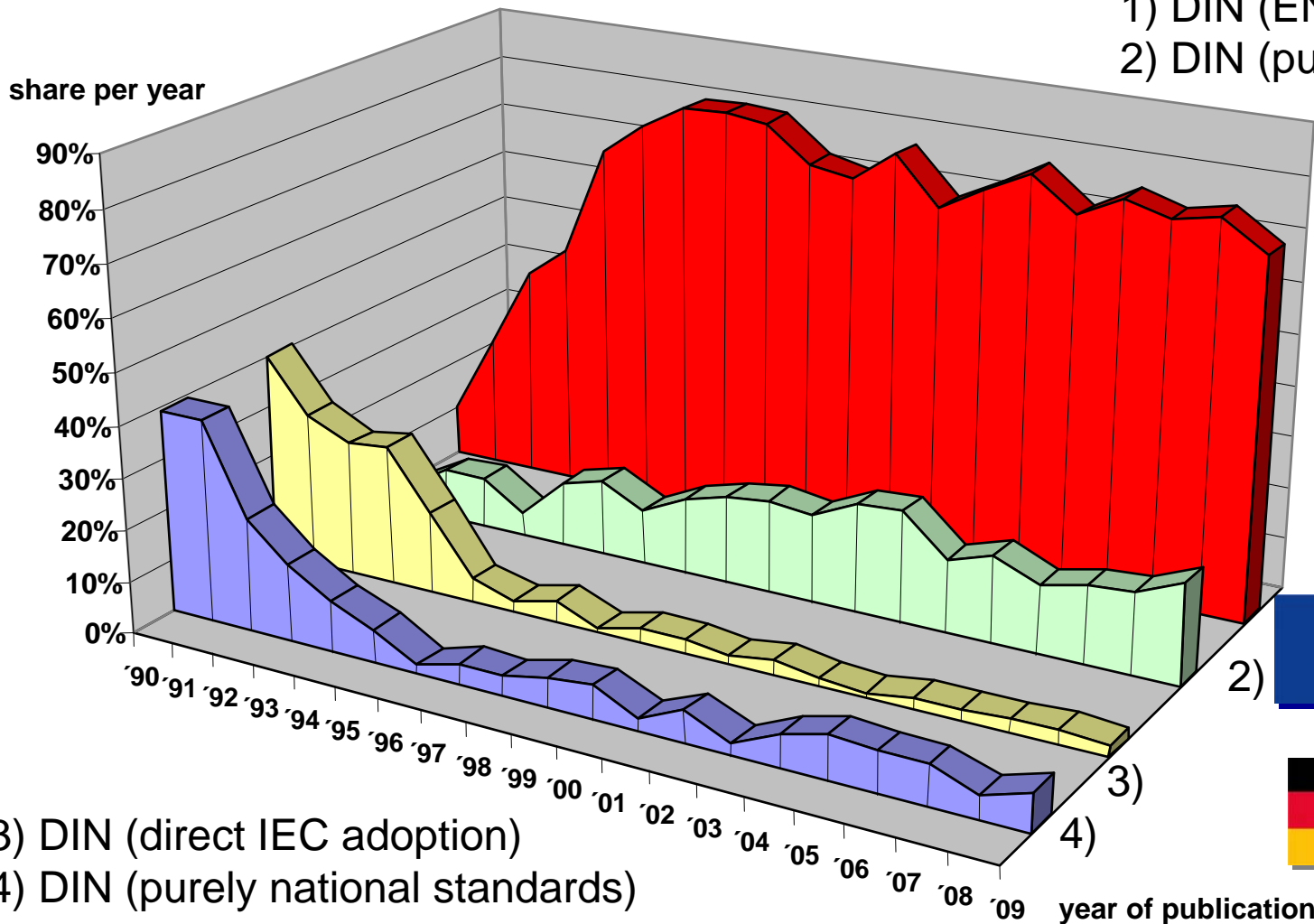


German Participation in Standardization



Development of Electrotechnical Standards in Germany

- 1) DIN (EN based on IEC)
- 2) DIN (purely European)



1)



2)



3)

4) year of publication

- 3) DIN (direct IEC adoption)
- 4) DIN (purely national standards)

Thank you for your attendance
Any questions?