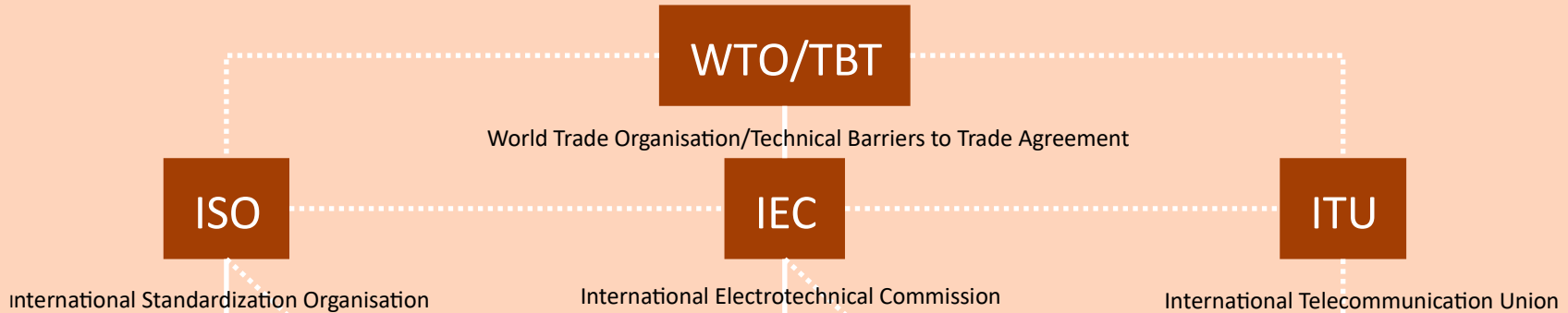


# TK 104 and Standardization

# Standard organisations

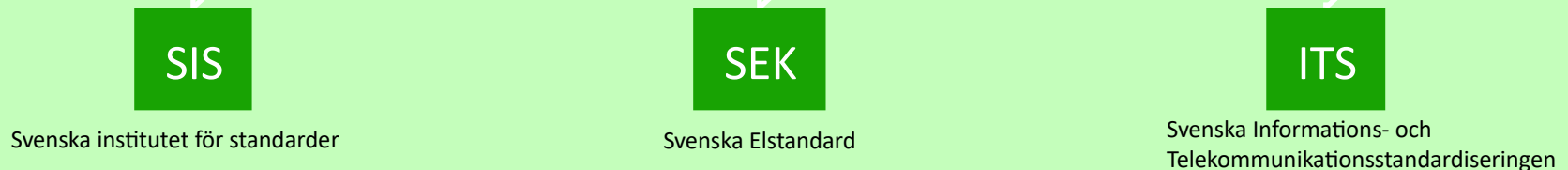
Global



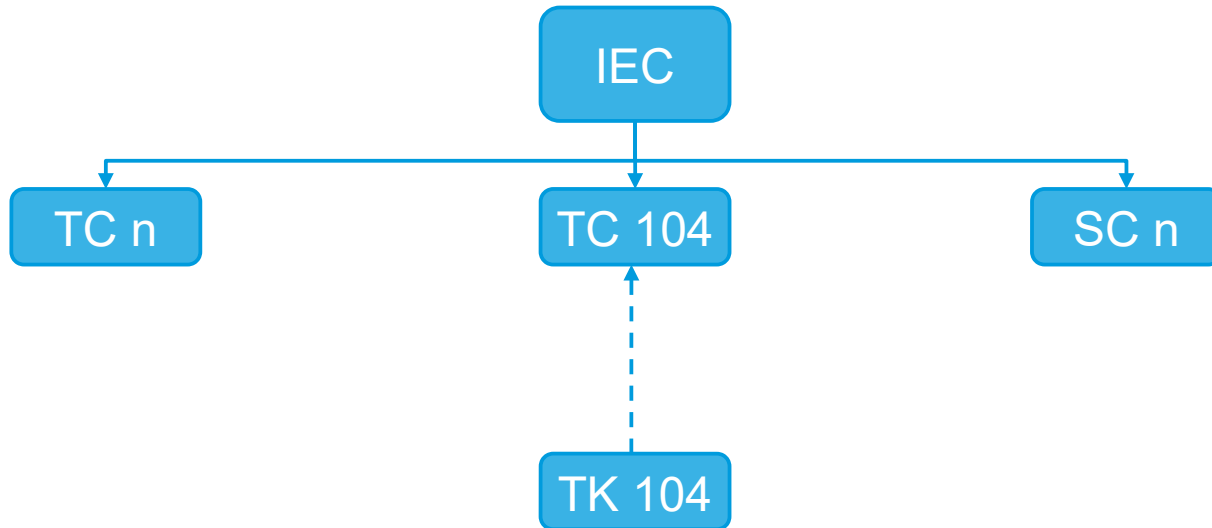
European



Swedish



# IEC structure

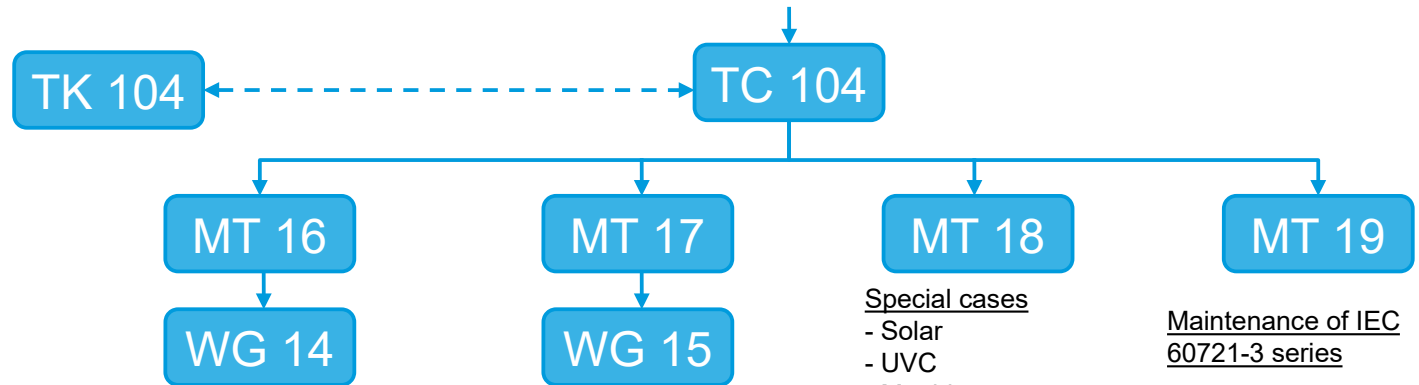


## IEC

- Total 89 countries
- Full members 62 st
- Associated 27 st
- > 34000 experts

- TC/SC Technical Committee 216 st
- MT Maintenance Team 642 st
- WG Working Group 773 st

# TC 104 structure



## Climate condition and test

- Temperature
- Humidity
- Air pressure
- Dust and sand
- Corrosion
- etc.

## Dynamic condition and test

- Vibration
- Chock
- Earthquake
- etc.

## Special cases

- Solar
- UVC
- Mould
- Water
- etc.

## Maintenance of IEC 60721-3 series

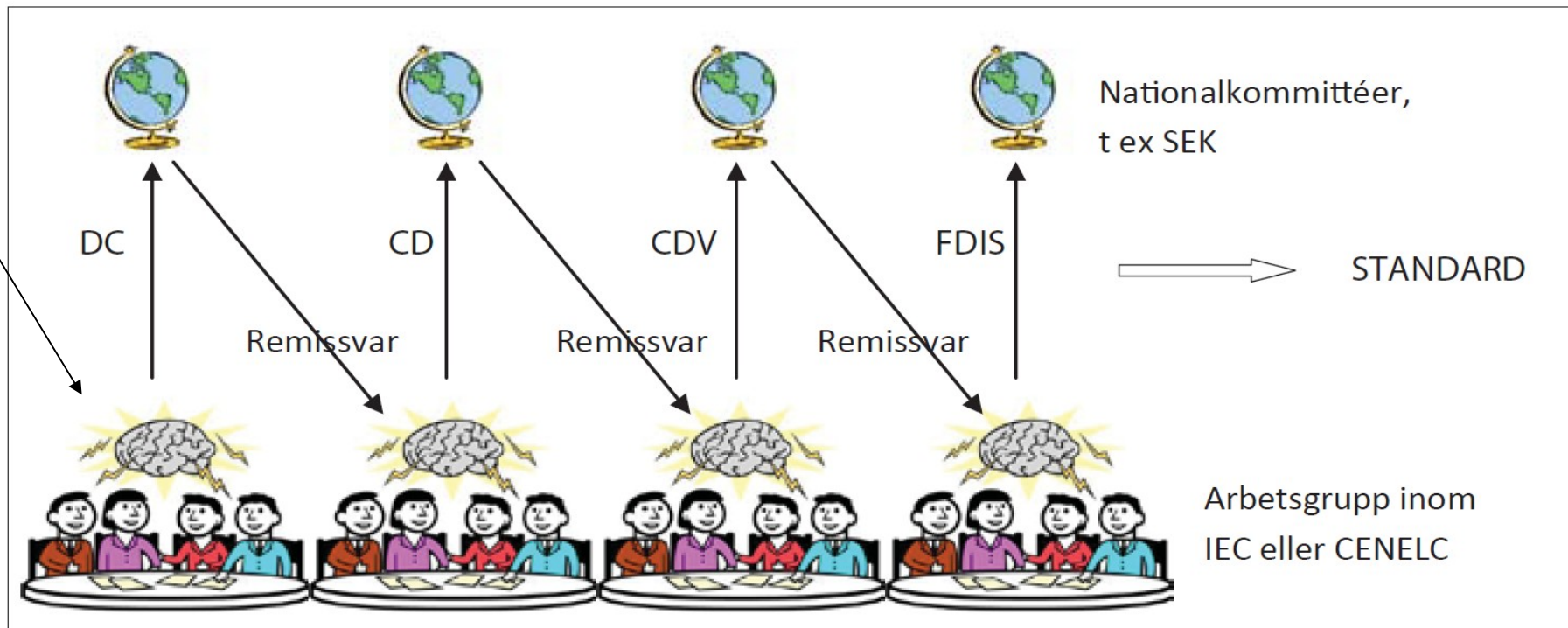
- IEC 60721-3 series contains classes for different environments
- IEC 60721-4 series corrolates severities in the IEC IEC 60721-3 series with test methods in IEC 60068-2 series

## TC 104

- 4 MT
- 2 WG
- 94 Standards, guides, technical specifications, technical reports

# The standardization process

NP/NWIP



*Schematisk illustration av den iterativa arbetsprocessen som leder fram till en standard*

# The benefit with an active participation – how could standardization benefit the business and competitiveness?

- There are surveys that estimate that standards and certification processes affect up to 80% of all trade.
- At some point, the products and services you develop will be affected by standards, therefore it is wise to consider standards early in the development process so that you do not miss anything
- Participating in standardization means that you can influence and know what is happening so that you can plan ahead.
- E.g. test houses may have to purchase new test equipment due to new or changed test methods. Product developers may have to change the requirements specification for both products and test equipment.

# TC 104 standards structure

- IEC 60068-2 series, test methods for e.g. cold temperature, relative humidity, simulated solar, salt mist, sinusoidal vibration
- IEC 60068-3 series, guides for e.g. control of climatic chambers with and without load
- IEC 60721-2 series, natural environments e.g. solar, air pressure, temperature, earthquake
- IEC 60721-3 series, classification of environmental conditions e.g. temperature, humidity and vibration in different environments
- IEC 60721-4 series, correlation between environmental classes in 60721-3 series and test methods in 60068-2 series

# IEC 60721-3 series

- IEC 60721-3-1 Storage
- IEC 60721-3-2 Transportation
- IEC 60721-3-3 Weatherprotected locations
- IEC 60721-3-4 Non-weatherprotected location
- IEC 60721-3-5 Installed in ground vehicle
- IEC 60721-3-6 Installed in ship environmental
- IEC 60721-3-7 Portable and non-stationary use
- IEC 60721-3-9 Microclimates inside products



# Description of the class 3Mx

## Example of product description: 3K21/3Z1/3B1/3S6/3M11

### 5.7 Mechanical conditions (M)

Mechanical conditions relate to the levels of vibration and shock that may exist at the location, for example as a result of normal operations, nearby vehicular movement. These conditions are specified in Table 5. See Annex B for the definition of seismic environment.

- 3M10 applies to locations experiencing insignificant levels of vibration and shock.
- 3M11 applies to locations experiencing low levels of vibration and insignificant levels of shock, such as those transmitted from air conditioning, machines or passing vehicles in the vicinity.
- 3M12 applies to locations experiencing significant levels of vibration and shock, such as those close to heavy machines and conveyor belts.

# Severities for the class 3Mx

**Table 5 – Classification of mechanical conditions**

Environmental parameter	Unit	Class		
		3M10	3M11	3M12
Stationary vibration, random: acceleration spectral density	$(\text{m/s}^2)^2/\text{Hz}$	No	0,01	0,1
Frequency range	Hz		5 to 200	5 to 200
Shock	$\text{m/s}^2$	No	No	20

# Test severities for the class 3Mx

## 8 Mechanical conditions, classes 3M10 to 3M12 from IEC 60721-3-3

Table 7 – Class 3M10 to 3M12

Class	Environmental parameter	Environmental severity	Recommended test procedure	Recommended test severity	Recommended test duration and number of applications	Note
3M10	Stationary vibration, Random: acceleration spectral density	None				
	Shock	None				
3M11	Stationary vibration, Random: Acceleration spectral density Frequency	Acceleration spectral density $0,01 (m/s^2)^2/Hz$ 5 Hz to 200 Hz	IEC 60068-2-64, Test Fh: Vibration broadband random	Acceleration spectral density $0,01 (m/s^2)^2/Hz$ 5 Hz to 200 Hz	30 min in each direction	
	Shock	None				
3M12	Stationary vibration, Random: Acceleration spectral density Frequency	$0,1 (m/s^2)^2/Hz$ 5 Hz to 200 Hz	IEC 60068-2-64, Test Fh: Vibration broadband random	$0,1 (m/s^2)^2/Hz$ 5 Hz to 200 Hz	30 min in each direction	
	Shock	Amplitude $20 m/s^2$	IEC 60068-2-27, Test Ea: Shock	Half-sine pulse Amplitude $20 m/s^2$ , Duration 11 ms	3 shocks in each axis and each direction, 18 in total	

# Thank you

- Hur ska vi få fler att engagera sig?
- Är det viktigt att Sverige är med och påverkar?
- Ska Sverige ha kvar sekretariatet för TC 104?
  
- Om ni vill vara med så kontakta
- SEK: Tel: 08-444 14 00, eller e-post: [sek@elstandard.se](mailto:sek@elstandard.se)
- Alternativt Joakim Grafström på SEK tel: 08-444 14 12 eller e-post [joakim.grafstrom@elstandard.se](mailto:joakim.grafstrom@elstandard.se)