IEA Smart Energy Systems Roadmap

Scaling up Smart Energy Systems

Technology barriers, supply chain issues, standards, interoperability

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EDF Smart Energy Standards

IEA
Paris
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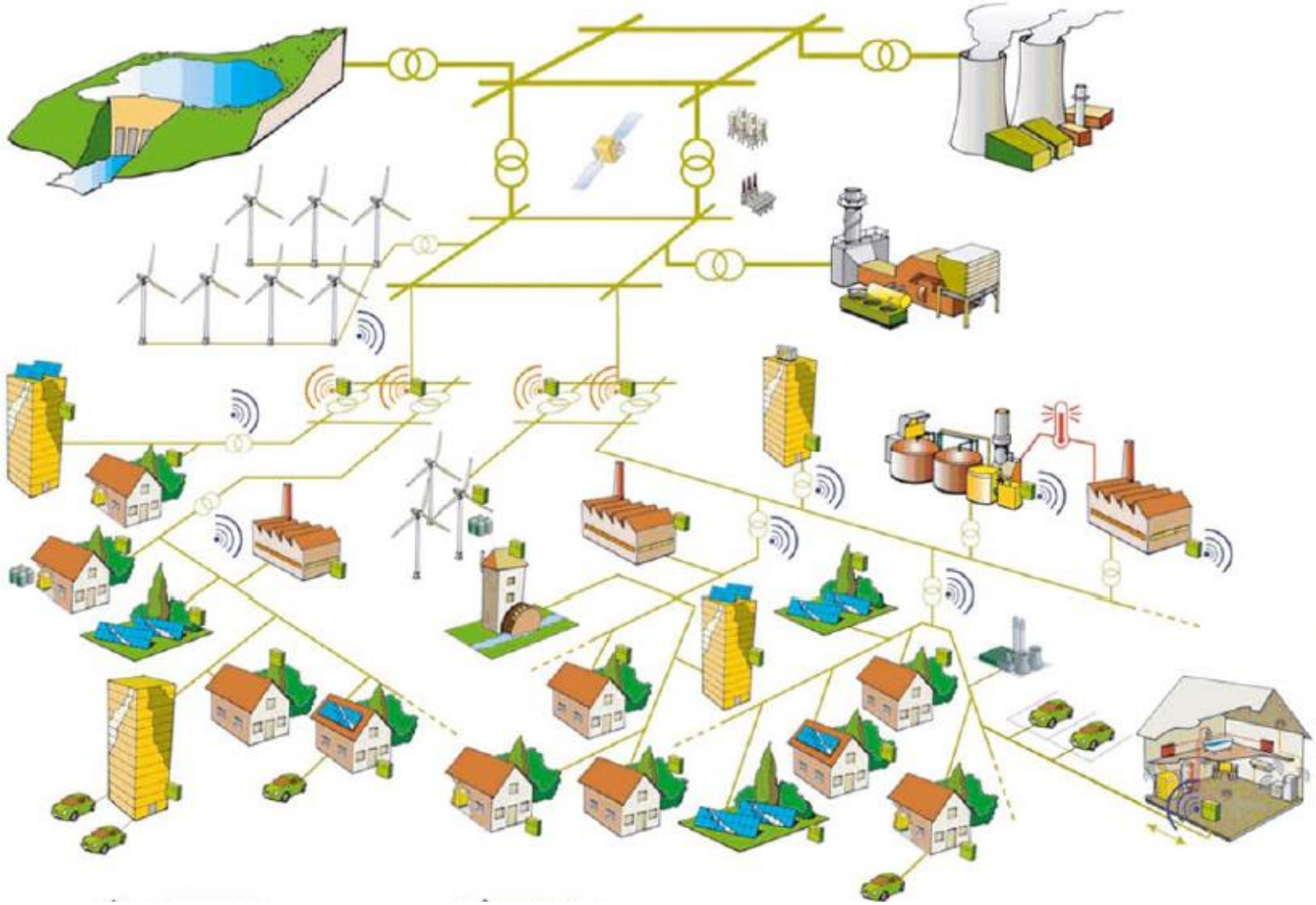
International Electrotechnical Commission

Smart Energy: «Connecting» many points of generation with many points of consumption end to end



World market: what «investors» want

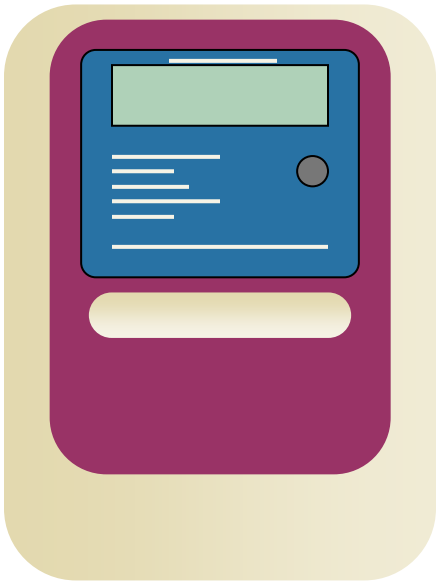
Equipment
Vendor A

interoperability

common data

common
language

common behaviour



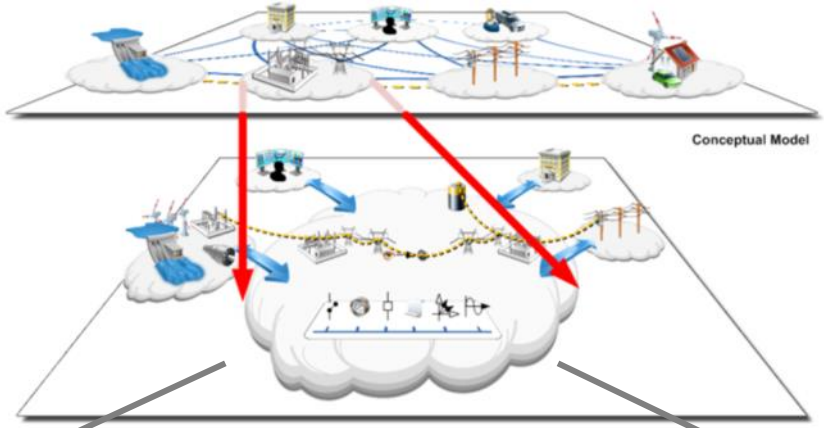
Equipment
Vendor B

interchangeability

from specifications, not from blueprints

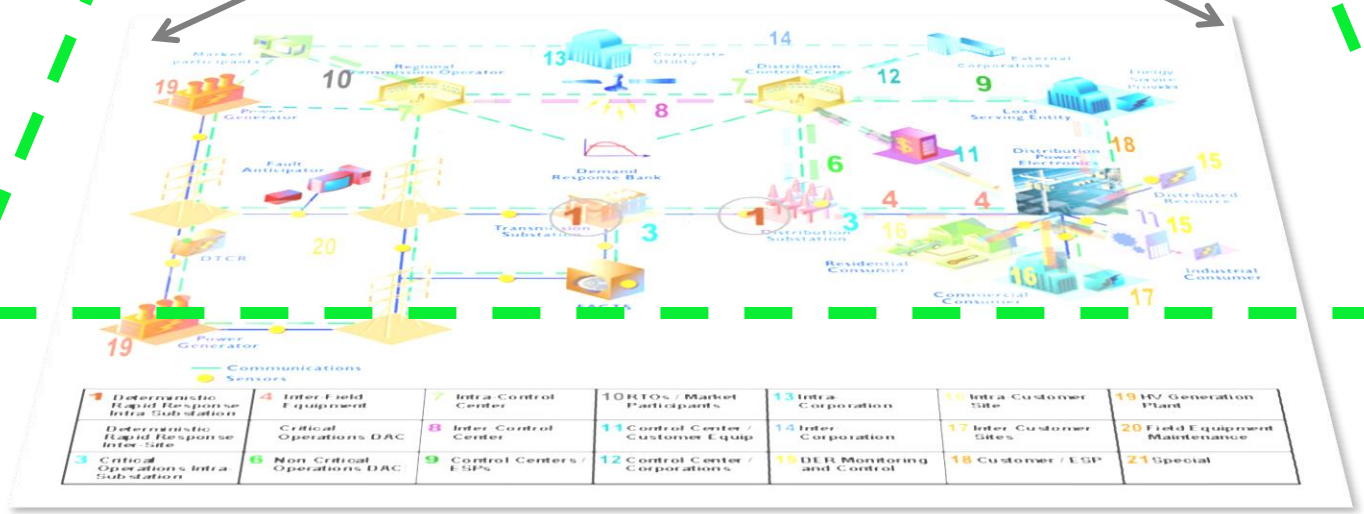
to allow competition for innovation !

Make visible and traceable multi-dimensions system interdependencies



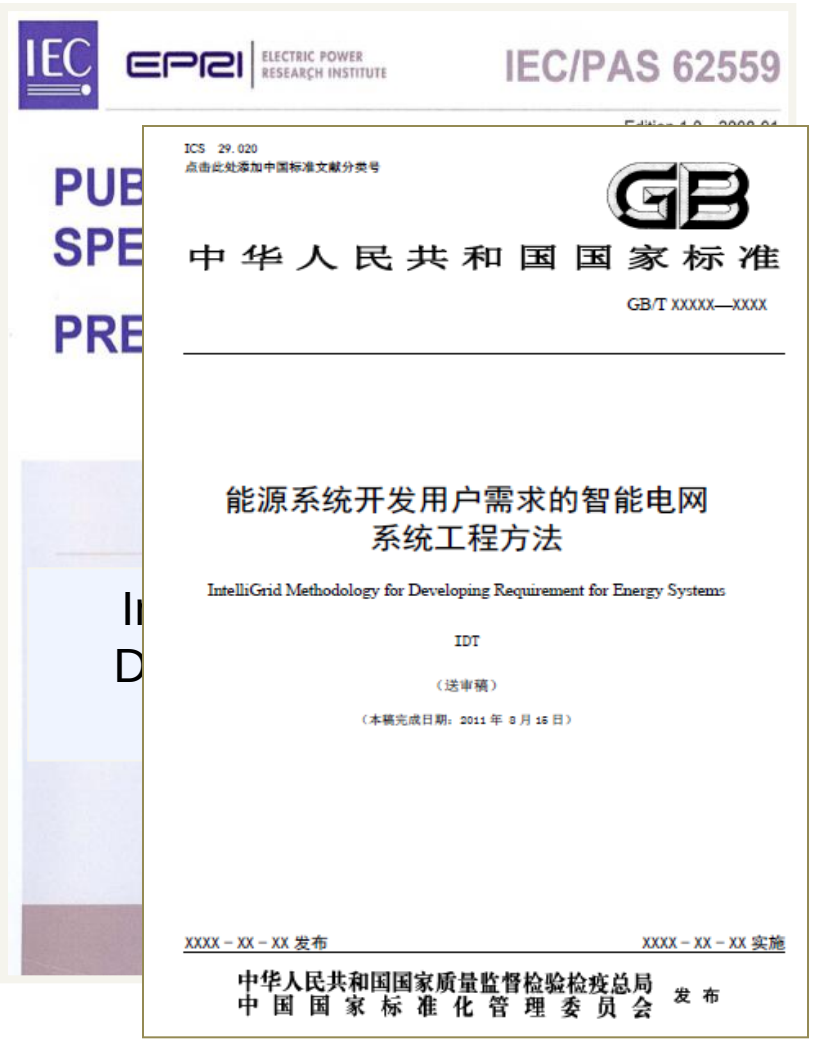
concepts

Reference Architecture



field

Define the needs before the solutions!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ICS 29.020
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中华人民共和国国家标准

GB/T XXXXX—XXXX

能源系统开发用户需求的智能电网
系统工程方法

IntelliGrid Methodology for Developing Requirement for Energy Systems

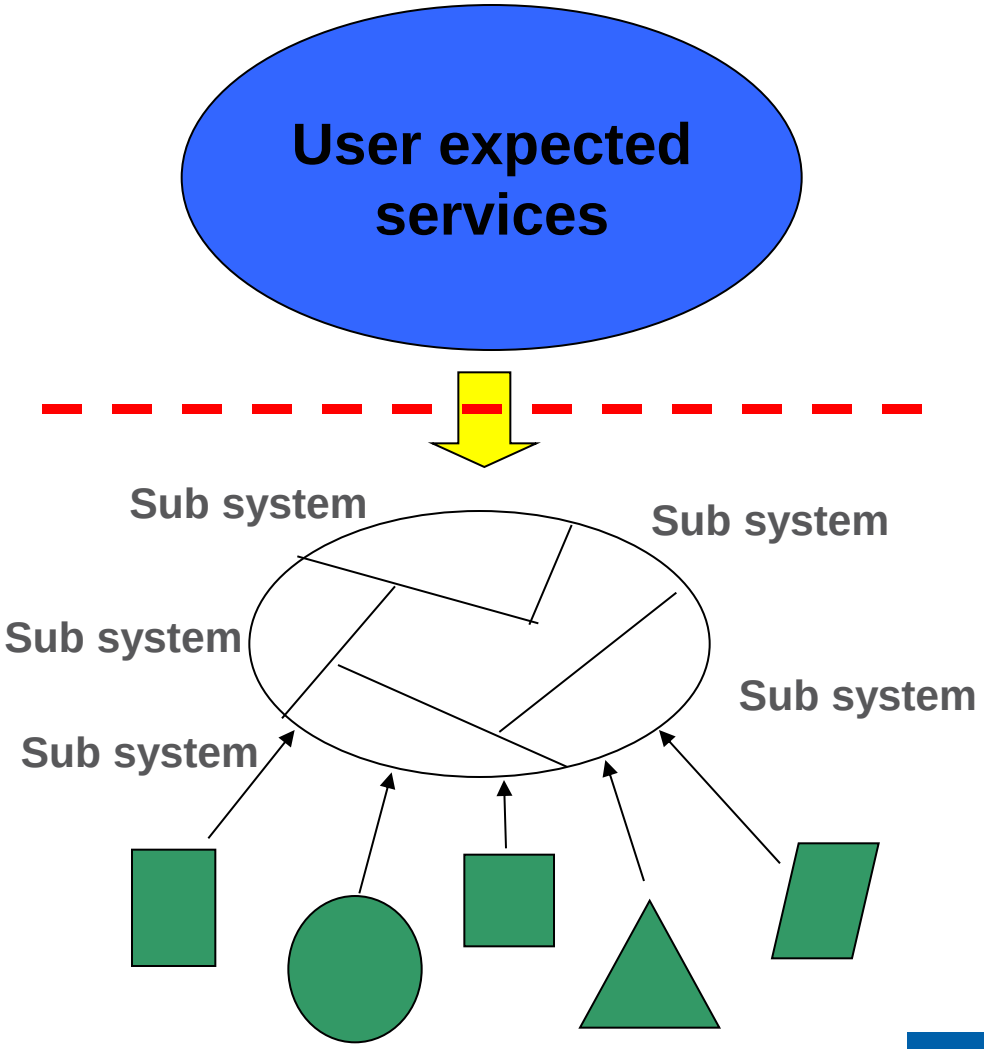
IDT

（送审稿）

（本稿完成日期：2011 年 8 月 15 日）

XXXX－XX－XX 发布 XXXX－XX－XX 实施

中华人民共和国国家质量监督检验检疫总局
中国国家标准化管理委员会 发布

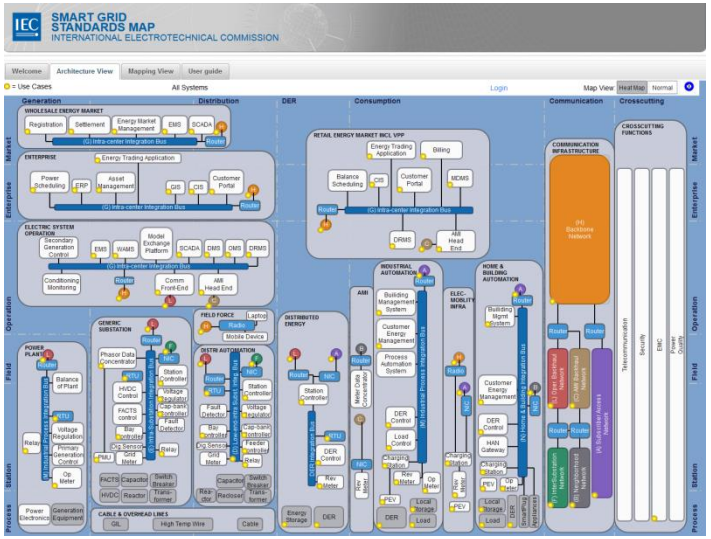


Standard building blocks

The good news: some international consensus on the approach, and valuable variations in the execution

- Many organizations have started regional or international processes to deliver to the industry recommendations on Smart Grid standards
- The general consensus on the approach is:
  - Collect the needs (national, regional or international)
  - Inventory and characterize the existing standards
  - Spot standards inconsistencies
  - Define and prioritize what should be added
- But the needs, priorities, and respective screening methods present normal and legitimate variations
- **IEC is analyzing all those (valuable) inputs to propose harmonization and suitable international course of action**

Smart Grid Standards Map solution



SMART GRID STANDARDS MAP

INTERNATIONAL ELECTROTECHNICAL COMMISSION

Welcome | Architecture View | Mapping View | User guide

Easily and instantly identify the standards that are needed for any part of the Smart Grid – no need to be a standards expert

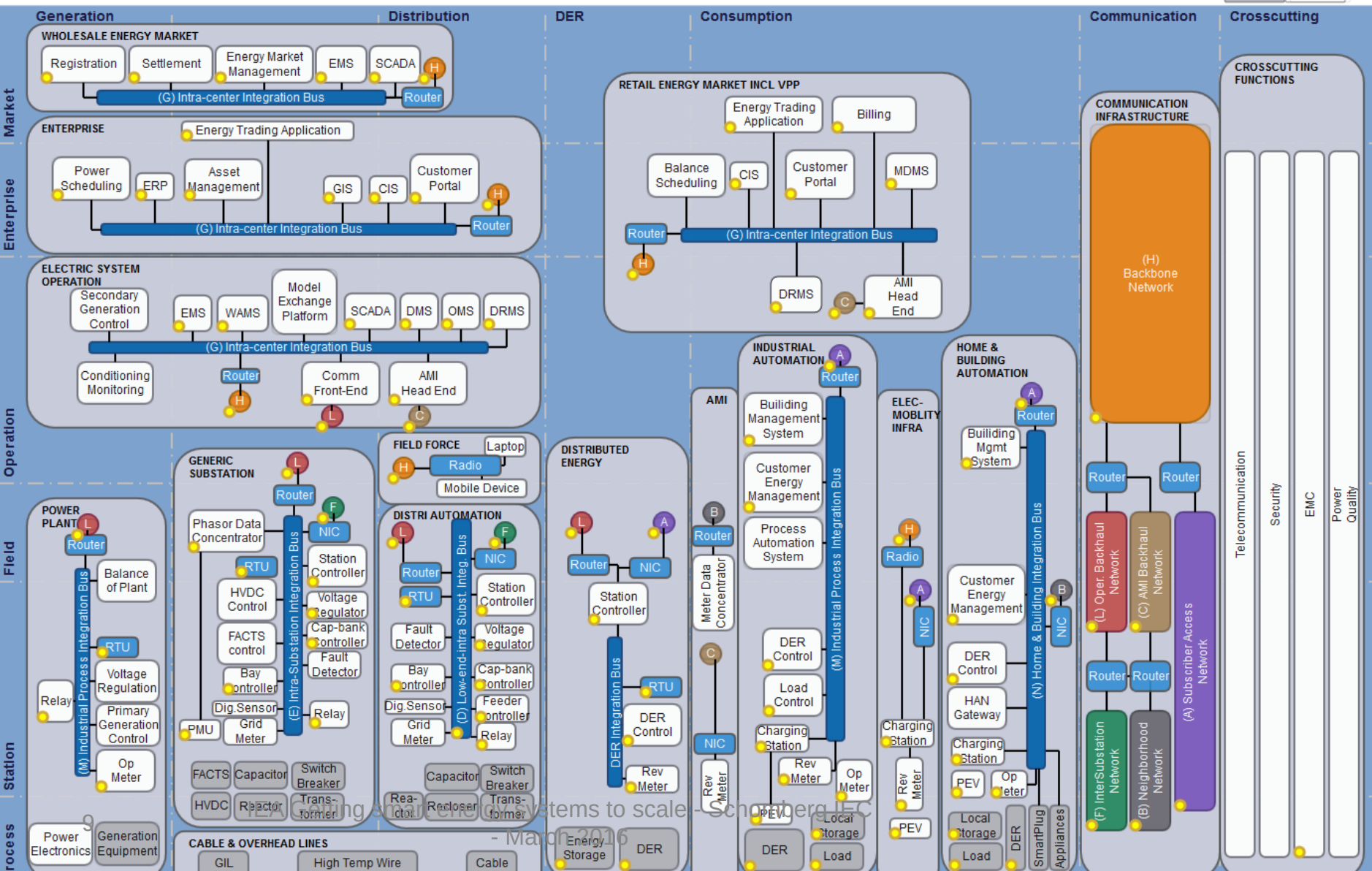
Reliable and reproducible results – every time – now and in the future
Cost-effective and fast – no need to wade through thousands of pages of standards documents

With this tool you are able to identify any given standard in relation to its role within the Smart Grid. New standards are added regularly.
If you have any suggestions or questions, please contact us.

SMART GRID STANDARDS MAP
INTERNATIONAL ELECTROTECHNICAL COMMISSION

Welcome | Architecture View | Mapping View | User guide

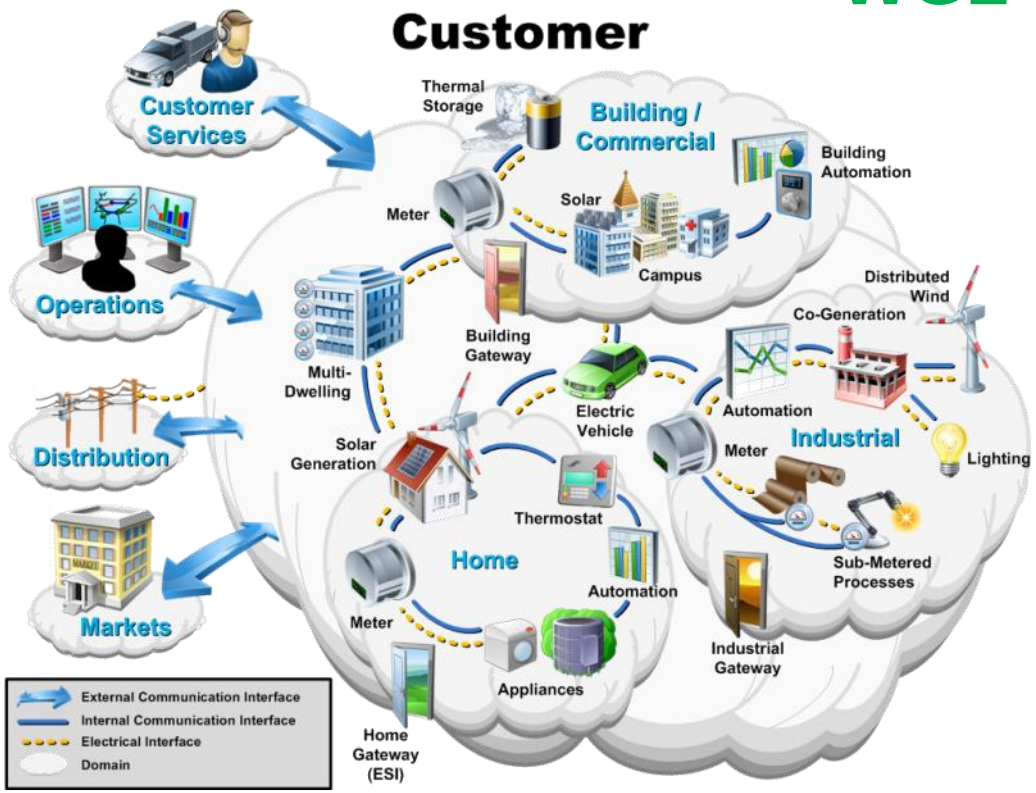
= Use Cases | All Systems | Login | Map View: Heat Map | Normal



Consumer applications – too many standards

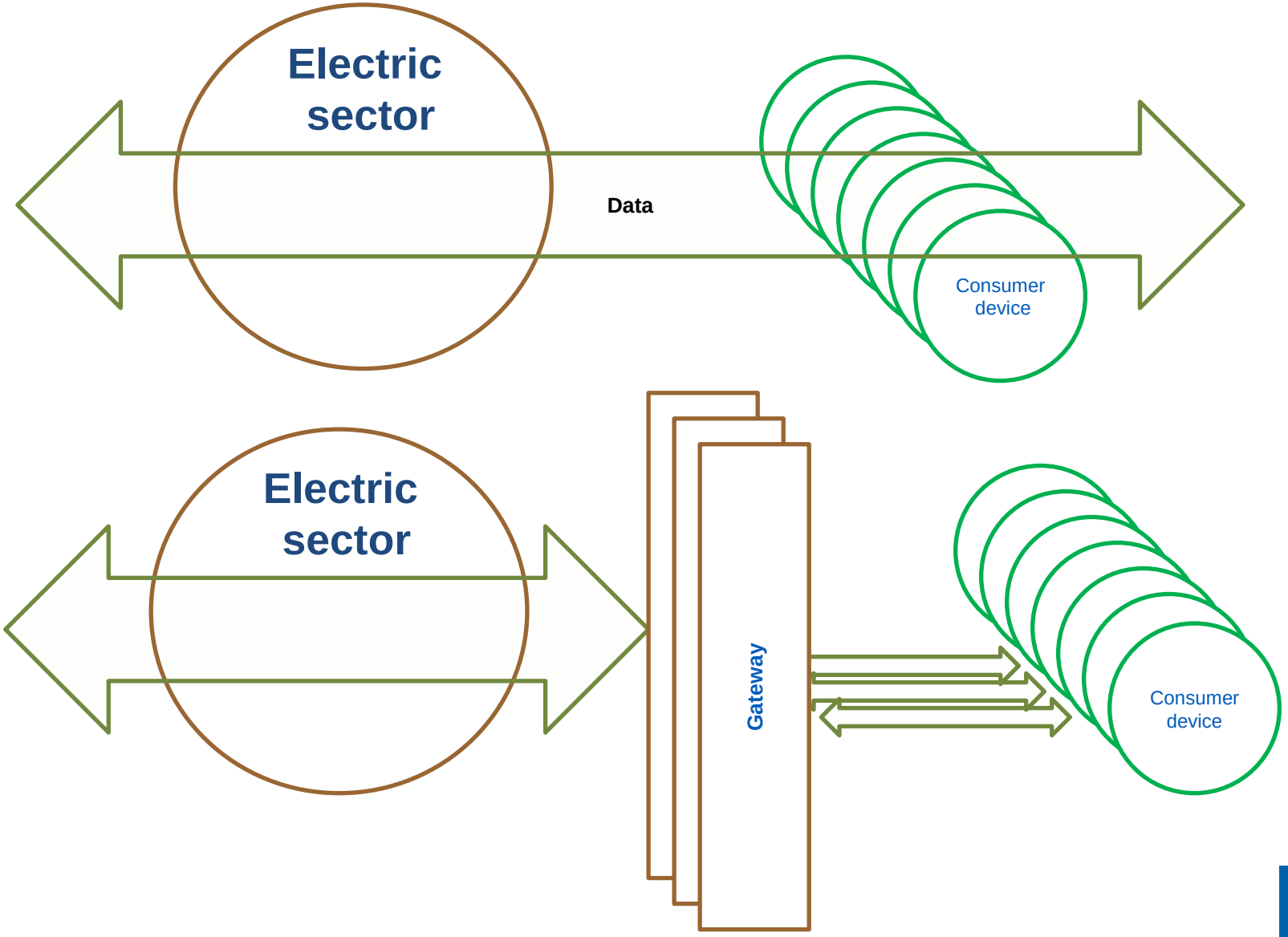
IEC Project Committee (PC118) for cross-connecting applications:

WG1- Consumer interfaces
WG2- Demand Response

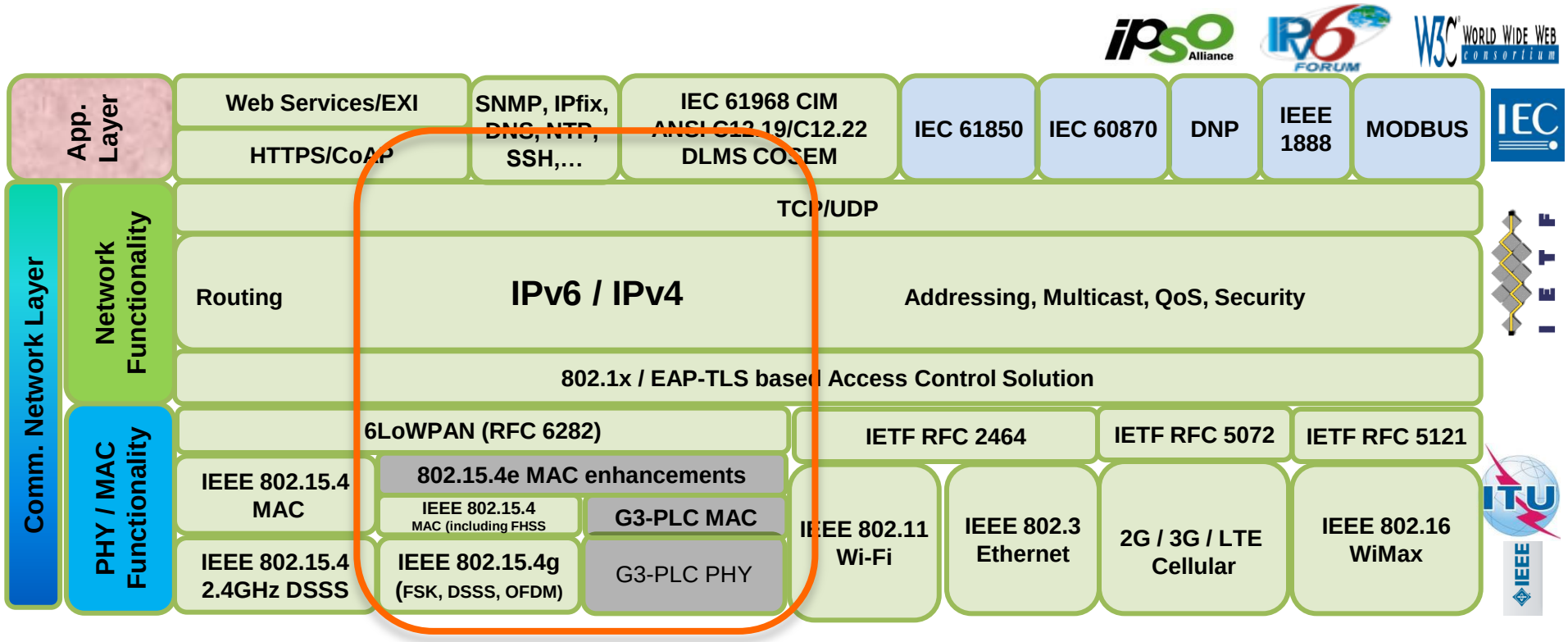


- *Consumer applications*
- *Smart homes and buildings*
- *PHEV*

Highways vs Gateways conundrum?

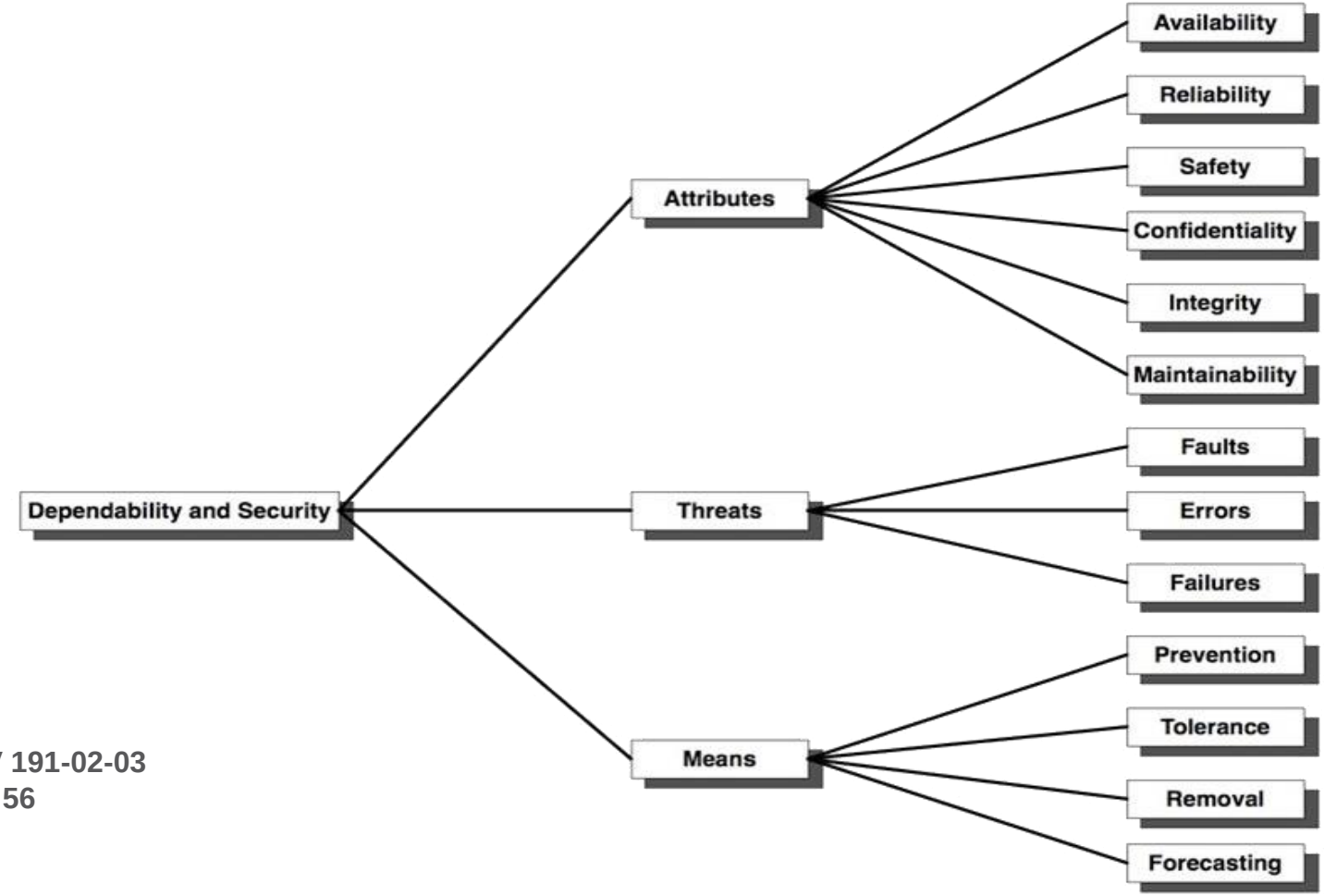


Trend: Open Standards Reference Model



- Standardization at all levels to ensure interoperability and reduce technology risk for utilities
- Enables common application layer services over various wired and wireless communication technologies

Dependability "just as needed" by design



IEC IEV 191-02-03
IEC TC 56

"The perfect is the enemy of the good"

(Voltaire 1764)

Closing the loop… one test, one certification… many countries

Smart Energy Standards:
Convergence and cooperation are on the way

WORLD TRADE ORGANIZATION

IEEE

I E T F

W3C®

ITU

IEC

ISO

Regional Smart Grid coordination groups:
USA, Europe, Japan, Korea, China

cigré

Conclusion

- **IEC is organizing standardization at the System level to deliver the full value.**
- **For proper Smart Energy Standards implementation, they should be easy to understand and easy to use! IEC is organizing a « one-stop shop » comprehensive portfolio of Standards with facilitated navigation capabilities.**
- **IEC is looking for long term solutions, taking fully into account the legacy deployments and the legacy in terms of Standards.**
- **IEC implements sustainable processes in order to develop step by step the expected portfolio of Standards, working with other SDOs, and analyzing major valuable inputs from regional organizations**

Standards = Smart Energy chromosomes