



The UNECE Sectoral Initiative on Equipment for Explosive Environments

A **global legislative framework** for **Explosion Protection**

The comprehensive approach of the
UNECE Model L Regulation





Why is the UN here?

- The UN aims at protecting the safety of workers, citizens, consumers: Repeated testing means that safe and reliable equipment is unaffordable for countries that need it the most
- The UN promotes the participation of developing countries and countries in transition in international trade: Barriers to trade are lost opportunities for our membership



About UNECE

- Introduction
- Executive Secretary
- Chairman of the Commission
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- Member States and Member States Representatives
- Intergovernmental Structure
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The United Nations Economic Commission for Europe (UNECE) was set up in 1947 by ECOSOC. It is one of five regional commissions of the United Nations. The others are the [Economic and Social Commission for Asia and the Pacific \(ESCAP\)](#), the [Economic Commission for Latin America and the Caribbean \(ECLAC\)](#), the [Economic Commission for Africa \(ECA\)](#) and the [Economic and Social Commission for Western Asia \(ESCWA\)](#).

Its major aim is to promote pan-European economic integration. To do so, UNECE brings together 56 countries located in the European Union, non-EU Western and Eastern Europe, South-East Europe and Commonwealth of Independent States (CIS) and North America. All these countries dialogue and cooperate under the aegis of the UNECE on economic and sectoral issues.

To this end, it provides analysis, policy advice and assistance to governments, it gives focus to the United Nations global mandates in the economic field, in cooperation with other global players and key stakeholders, notably the business community.

The UNECE also sets out norms, standards and conventions to facilitate international cooperation within and outside the region.

The area of expertise of the UNECE covers such sectors as: economic cooperation and integration, energy, environment, housing and land management, gender, population, statistics, timber, trade, and transport. UNECE has [56 member States](#). However, all interested UN member States may participate in its work. Over 70 international professional organizations and other non-governmental organizations take part in UNECE activities.



Palais des Nations



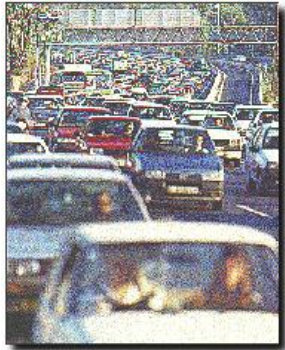
UNECE: A bit of history

- Created in 1947
- Original mission: To assist in the reconstruction and economic development of post-war Europe
- UNECE was an important bridge between the two sides of the Iron Curtain: this is why many technical issues are discussed here
- Since the end of the cold war: integration of the newly formed Central and Eastern European countries into the world economy
- Many UNECE deliverables are developed by top worldwide experts and have global relevance



1. Introduction

UNECE Work Areas



Transport



Economic cooperation



Statistics



Sustainable energy



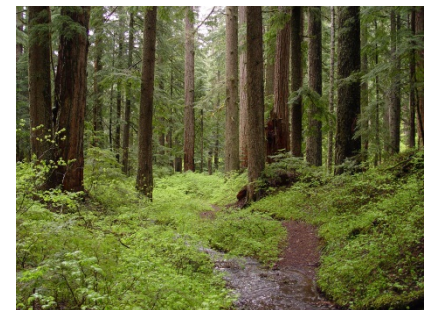
Housing



Trade



Environmental policy



Forests & timber



UNECE Working Party on Regulatory Cooperation and Standardization Policies (WP. 6)

What we are:

- Intergovernmental body
- Participation by: authorities, regional & int'l organizations, business, standards-setting bodies, certification bodies, test houses, civil society
- 1970 – 2014: 44 years

Our mandate:

- Forum for dialogue on: ☒ Standardization ☒ Technical regulations ☒ Conformity assessment ☒ Accreditation ☒ Metrology ☒ Market surveillance

Our activities:

- Share info & best practice
- Capacity-building
- Develop and maintain a set of recommendations
- Implement a set of initiatives on specific industrial sectors



WP. 6 Main areas of work

Sectoral initiatives:

- Develop a common regulatory framework in specific sectors
- So far: Telecommunications, Earth-moving equipment, ExEquipment, Pipeline Safety

Market surveillance:

- Develop and share best practice/Recommendations
- New recommendation on “Market Surveillance Policies”
- Develop a common terminology
- Advisory services/technical assistance
- Worldwide database of market surveillance authorities

Risk Management:

- Best practice/Recommendation on using risk management tools in developing and implementing regulations
- 2 Recommendations on “Crisis Management” and “Risk management in Regulatory systems”
- Book on “Risk Management in Regulatory Systems”
- Participation in the work of the ISO 31004



UNECE

United Nations Economic Commission for Europe

1. Introduction



UNECE

United Nations Economic Commission for Europe



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About WP6

The UNECE Working Party on Regulatory Cooperation and Standardization Policies (WP.6) is a forum for dialogue among regulators and policy makers. The participants discuss a wide range of issues, including technical regulations, standardization, conformity assessment, metrology, market surveillance and risk management.

The Working Party makes recommendations that promote regulatory policies to protect the health and safety of consumers and workers, and preserve our natural environment, without creating unnecessary barriers to trade and investment. They are non-binding, and are widely implemented in the UNECE member States and beyond.

Who takes part in our meetings and in the development of the recommendations?

- governmental authorities
- intergovernmental organizations
- business associations and private firms
- standards-setting organizations
- certification bodies
- test houses
- international schemes for conformity assessment
- civil society
- consumer organizations

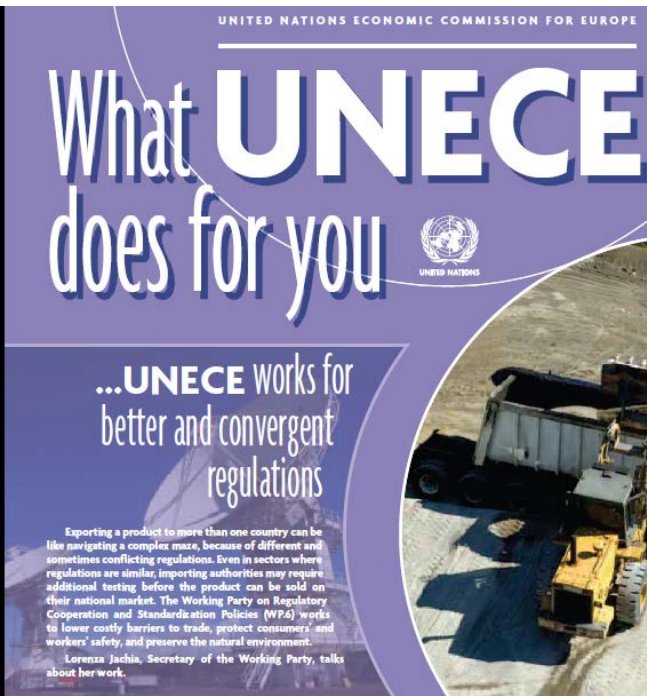
Downloads:

- [Recommendations](#) ([ENG](#) [FRE](#) [RUS](#))
- [Terms of Reference of the Working Party](#) ([ENG](#) [FRE](#) [RUS](#))
- [Regulatory cooperation at UNECE](#) (Brochure in [ENG](#) [FRE](#) [RUS](#))
- [Common Regulatory language for Trade development](#) ([ECE/TRADE/375](#))
- [Contribution of UNECE to good regulatory practice](#)
- [Compilation of sources on good regulatory practice \(GTRP/244\)](#)



WP.6 works towards better and convergent regulations

- In sectors of high concern
- Governments define “common regulatory objectives” i.e. they define legitimate government concerns (public health, safety, protection of the environment, interoperability, etc)



how to reach them

international standards

performance is assessed

conformity assessment bodies are recognized as

reference criteria are to be fulfilled



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Recommendations

Sixteen UNECE recommendations have been adopted by the Working Party^{1/} since 1970 to address standardization and regulatory issues. They set out good practice regarding:

- Regulatory cooperation
- Metrology
- Standards and Norms
- Conformity assessment
- Market surveillance

These recommendations are not binding and do not aim at rigidly aligning technical regulations across countries. Through these recommendations, the Working Party encourages rule makers to base their regulations on international standards to provide a common denominator to the norms that apply in different markets. It also seeks to promote agreements that enhance cooperation and mutual confidence in the technical competence, reliability and impartiality of other national bodies and institutions.

^{1/} The Working Party on Regulatory Cooperation and Standardization Policies had several predecessor bodies: Group of Government Officials Responsible for Standardization Policies; Working Party on Technical Harmonization and Standardization Policies

Download recommendations:

All Recommendations [ENG](#) [FRE](#) [RUS](#)

Starting with the most recent:

R. Managing Risk in Regulatory Frameworks [ENG](#) [FRE](#) [RUS](#)

P. Crisis Management within a Regulatory Framework [ENG](#) [FRE](#) [RUS](#)

N. Good Market Surveillance Policies and Practices [ENG](#) [FRE](#) [RUS](#)

M. Use of Market Surveillance Infrastructure as a Complementary Means to Protect Consumers and Users against Counterfeit Good [ENG](#) [FRE](#) [RUS](#)

L. International Model for Technical Harmonization Based on Good Regulatory Practice for the Preparation, Adoption and Application of Technical Regulations via the Use of International Standards [ENG](#) [FRE](#) [RUS](#)





1. Introduction



UNITED
NATIONS

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

Recommendations on regulatory cooperation and standardization policies

Working Party on
Regulatory Cooperation and
Standardization Policies

UNITED NATIONS ECONOMIC COMMISSION

Recommendations on Regulatory Cooperation and Standardization Policies



International Model for Technical Harmonization Based on Good Regulatory Practice for the Preparation, Adoption and Application of Technical Regulations via the Use of International Standards^{1 2}

- 13.** Where harmonization is considered useful by interested countries, the “International Model” provides practical steps aimed at facilitating and accelerating the harmonization of technical regulations by agreeing on Common Regulatory Objectives (CROs) for applicable products or product areas (sectors).



UNITED NATIONS



Recommendation L

- A set of tools
- Countries can use to harmonize their technical regulations and regulatory systems in any sector at a regional or global level
- It has also been used to harmonize regulations in all sectors between two countries or within a customs union
- Builds on the principles of the WTO TBT Agreement but goes further



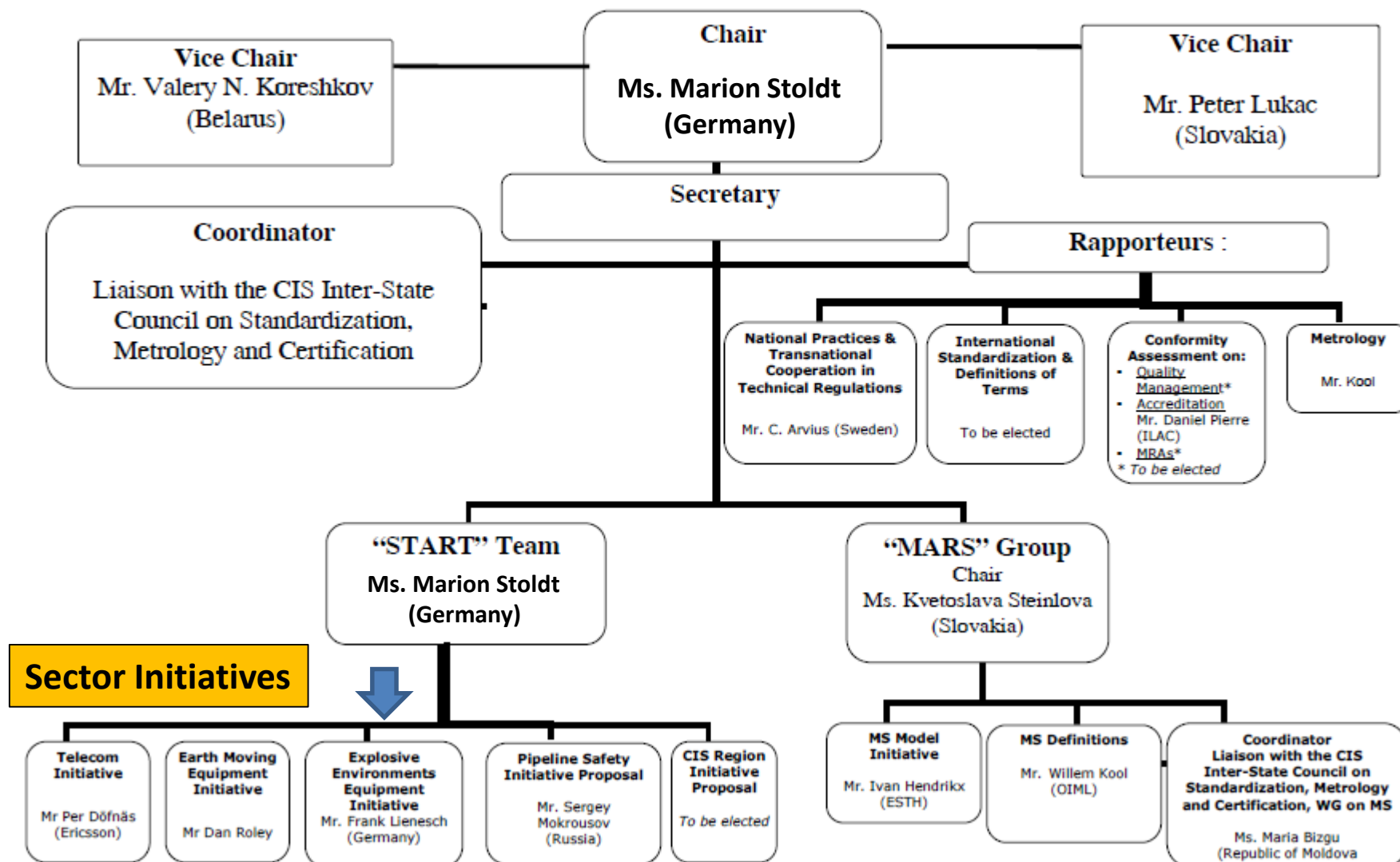
In practice:

- Authorities decide to work together on a specific sector
- They agree on CROs
- They transpose the CROs into national technical regulations
- Then, when products have been assessed in the exporting country as compliant with the CROs they can automatically be sold in other markets with no further assessment.



1. Introduction

ORGANIZATIONAL CHART OF THE WORKING PARTY





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Equipment for Explosive Environments (SIEEE)

Background information and current status:

Explosions in offshore facilities, on vessels or in mines, refineries, chemical plants or mills entail high risks for individuals and the natural environment. Equipment used in explosive environments must therefore have a high level of safety.

The initiative to develop common regulations in this specific sector was based on the international model of [Recommendation L](#) . It was launched in 2006 with a view to developing Common Regulatory Objectives (CROs) covering the definition of area classification, verification of the equipment and its production, installation, inspection, maintenance, repair and the related conformity-assessment procedures for products, services and competency of personnel. The general goal of this sectoral initiative is to promote and enhance safety, while eliminating barriers against the free trade and use of equipment for explosive environments.

The Working Party finally approved the CROs in 2010. A questionnaire was distributed to participating member States to share information about the national norms regulating this industrial sector.

Meeting in Split, Croatia, on 7 and 8 September 2011, policymakers from Australia, Brazil, the European Union (EU), the Russian Federation and the United States declared that "global harmonisation promoted and adopted at UNECE is beneficial", in particular because it "allows for reduced government liability without increasing risk to workers, and consequently enables authorities to allocate more resources to field work" and it is "fully consistent with international obligations under the WTO agreement".

The latest development relating to this sectoral initiative will be the 2012 gathering of business and governmental representatives with a stake in the International Electrotechnical Commission System for Certification to Standards Relating to Equipment for Use in Explosive Atmosphere ([IECEx](#)). This international conference takes place in Dubai and is organized jointly by the International Electrotechnical Commission (IEC), the Emirates Authority for Standardization and Metrology ([ESMA](#)) and UNECE.

The UNECE could not have drawn up CROs in this sector without the partnership with IECEx and the support from the Government of Germany and the Physikalisch-Technische Bundesanstalt ([PTB](#)).

Important documents:

- New Country Survey 2013 [ENG](#)
- [Terms of reference of the SIEEE](#)
- Latest progress report (ECE/TRADE/CMP.6/2012/3) [ENG](#)



Sector Initiative on Equipment for Explosive Environments (SIEEE) *Status Report:*

- ✓ Kick off meeting 2007 in Geneva
Presentations of the various systems, **Questionnaire**
- ✓ 2008 Geneva
Preparation of the **Terms of Reference**
- ✓ 2009 Geneva
Presentation of the **Common Regulatory Objectives**
- ✓ 2010 Berlin
Presentation of the **Workshop-Concept**
- ✓ 2011 Split
Presentation of various Regulation Systems and Market Surveillance Aspects
- ✓ 2012 **Dubai** First Workshop
and at PCIC (Prague) a joint UNECE-IECEx-Paper
- ✓ 2013 **Fortaleza** Update Questionnaire (Translation Spanish and Portuguese)
and the EU-Russia Industrialists' Round Table (IRT)
- ✓ 2014 **Kuala Lumpur**



1. Introduction



2012 IECEX International Conference : Equipment and Services in Explosive Atmospheres : Dubai, 20-21 March

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Meetings of the IECEX System
Fortaleza, Brazil : 16 - 20 September 2013

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Fortaleza: tug boat -|- Photo



2014 IECEX International Conference : Kuala Lumpur, Malaysia, 19-20 February 2014

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1. Introduction

Interest of the Industry using Ex-Products

Users in the chemical and petroleum industry act more and more globally with a single engineering approach for their plants

➤ to earn savings of engineering, installation and maintenance costs

➤ to buy the equipment in a larger number and to get a better price per piece

➤ to have benefit from the global competition under manufacturers

Barriers against this tendency are domestic rules and regulations which require **special engineering for the plants** from country to country.



1. Introduction

Interest of the Industry manufacturing Ex-Products

Manufacturers want to sell and manufacture their products

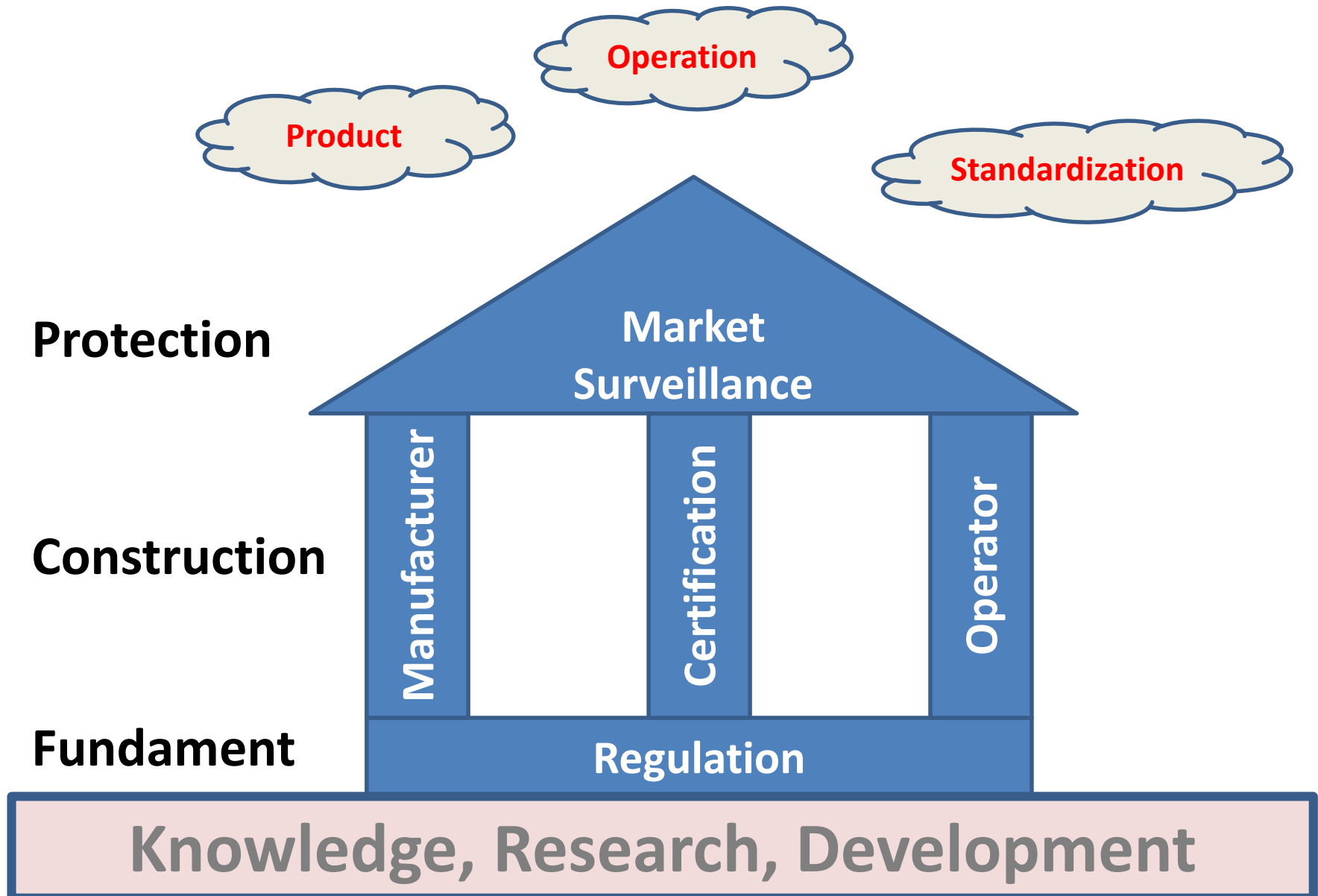
- without additional national differences for the product and delays to the market
- in accordance to one global standard (IEC / ISO)
- without double-testing of their product
- without formal restrictions to place it on the market

Barriers against this tendency are domestic rules and regulations which require **special differences for the product** from country to country.





Principal of Ex-Business





1. Introduction

History/Structure

	National	European		International
Regulation	Up to the seventies	"Old"	"New"	Common Regulatory Objectives (CRO)?
Standardization	DIN DKE	CEN Cenelec		ISO IEC
Certification	Product	Product	Product + Production	Product + Installation Maintenance Repair

Some basics of Ex-Equipment

Levels	Very High risk Zone 0	High risk Zone 1	Normal risk Zone 2
Certification by Third Party	Yes	Yes	<u>Yes</u> /No



Intention of the Common Regulatory Objectives (CRO)

White paper approach

- to cover comprehensively all relevant issues
in order to achieve a globally accepted safety level
- to provide a global „Best Practice“ model as template
for national regulation
- Focus to the main objectives
 - Easy to understand
 - Open for national modifications
- Specify the distributed roles and related responsibilities of
the involved parties:
 - Regulator
 - Market Surveillance
 - Certification Body
 - Manufacturer
 - End user/Operator
- Open for ongoing maintenance and modification



Intention of the Common Regulatory Objectives (CRO)

Manufacturer

Placing on the market

Market Surveillance

EN/IEC 60079-ff
EN/IEC 80079-ff

EN/IEC 60079-10
EN/IEC 60079-14

Repair

EN/IEC 60079-19

Ex-Equipment
(Installed basis)

Inspection and
Maintenance

EN/IEC 60079-17

Installation

Zone classification
("Risk Assessment")

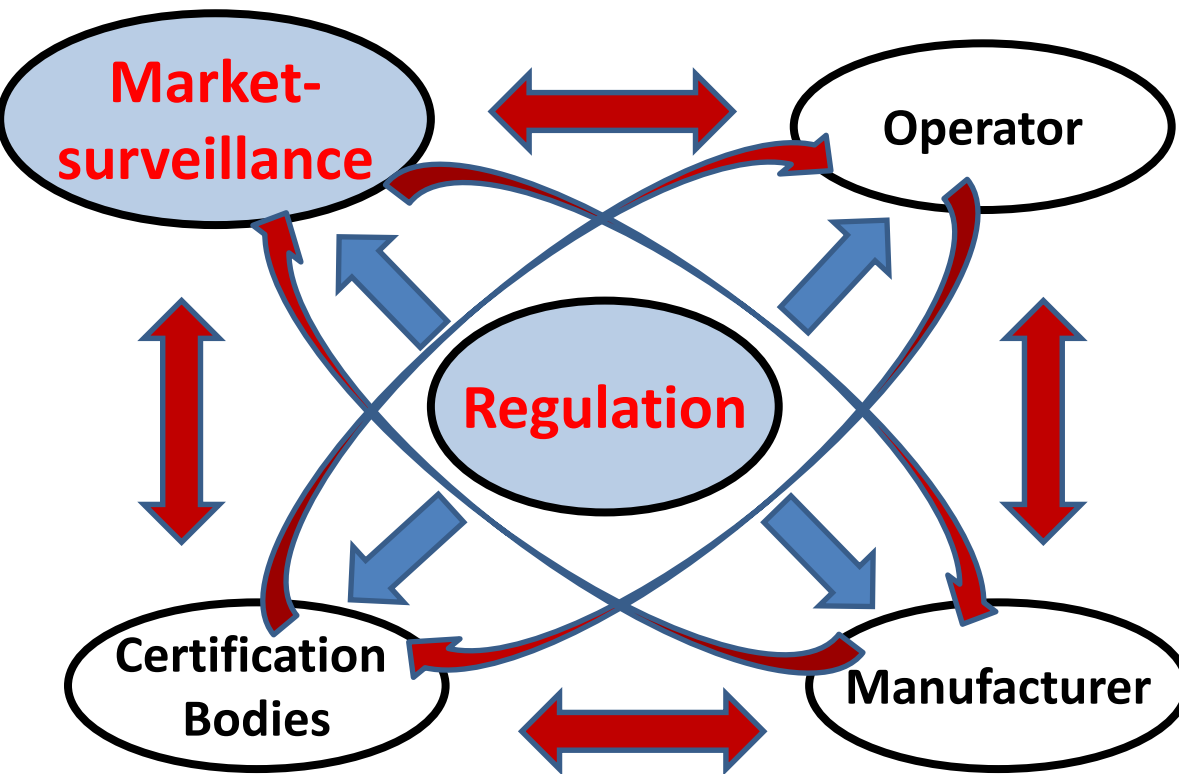
Operator

Regulators Jurisdiction

Life cycle approach



Interaction/Relationship within the SIEEE-System



1. Definition/Jurisdiction
 - a) Market Surveillance
 - b) Certification Bodies
 - c) Manufacturer
 - d) Operator
2. Interaction
 - a) Cert. B. \leftrightarrow Manu.
 - b) Manu. \leftrightarrow Oper.
 - c) MS \leftrightarrow Oper.
 - d) MS \leftrightarrow Manu.
 - e) MS \leftrightarrow Insp. B.
 - f) Cert. B. \leftrightarrow Insp. B.



CRO Part 1: Requirement for the equipment Placing on the market

- » Elimination of possible ignition sources in accordance to intended use of the equipment, typical ignition sources are:

- » Hot surfaces
- » Electrical sparks
- » Mechanical sparks
- » Electrostatic

13 Ignition sources

- » Validated protection concepts ("Types of Protection") have to be applied

IEC/ISO 60079-"X" / 80079-"X"

- » Instructions (manual) about the intended use, installation and repair

IEC/ISO 60079-"X" / 80079-"X"

- » Conformity assessment procedure in accordance to an international certification scheme such as IECEx (IECEx procedure can be seen as a reference)

IECEx-02



CRO Part 2: Safe use of the equipment

- » Classification of the explosive substances in accordance to:
 - » Ignition Temperature
 - » Explosions Groups (Ignition Energy)

Ex d e IIC T3 Gb
- » IEC-Zone Classification Concept (Zones for Gas and Dust) with the applicable Equipment Protection Levels

IEC 60079 -10
- » The equipment and its installation need to be inspected and maintained

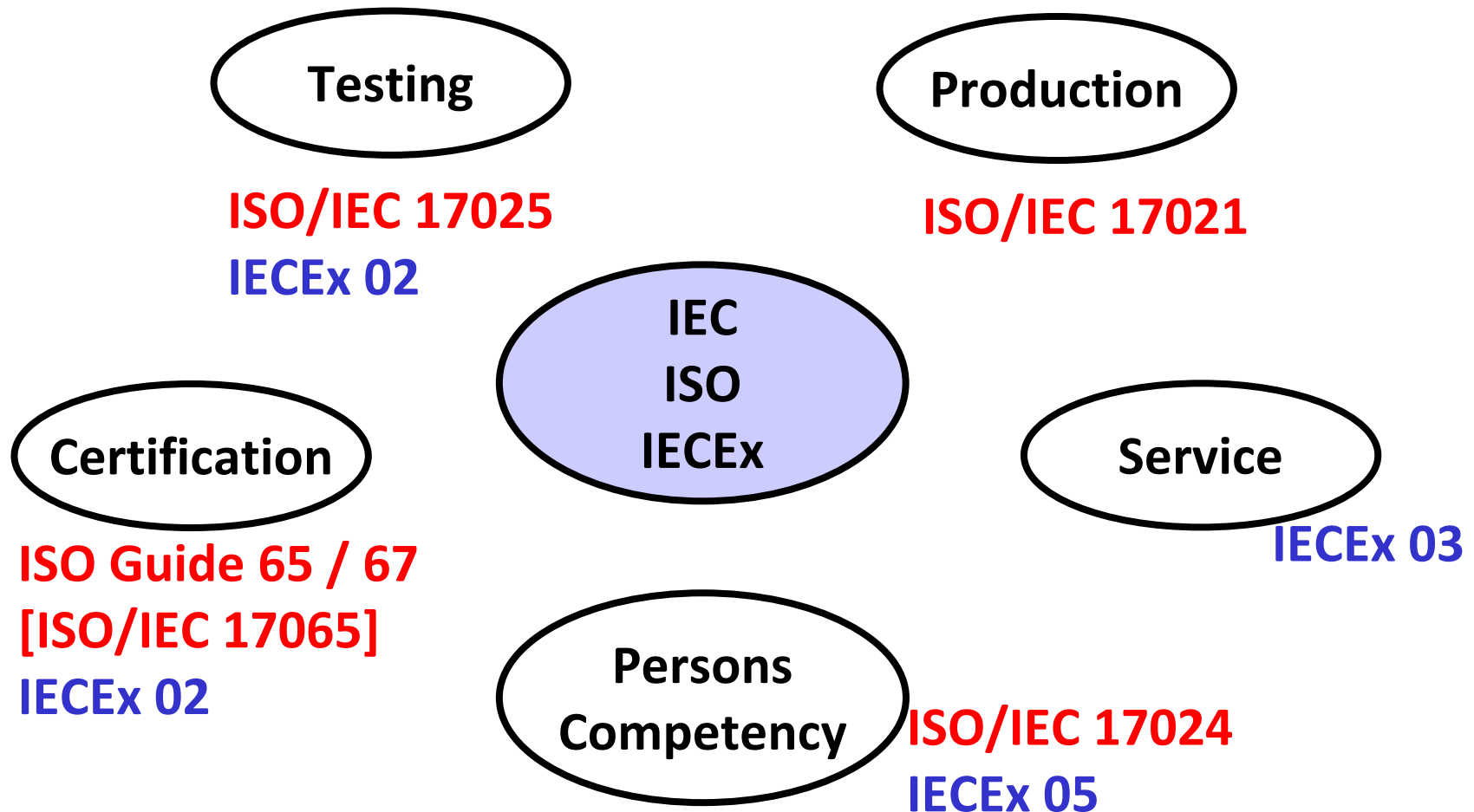
IEC 60079 -14, -17,-19
- » Requirements for the competency of persons (selection, installation, use of the equipment)

IECEX-05
- » Requirements for service facilities (e.g. repair workshops)

IECEX-03
- » The Explosion risk assessment of an individual plant needs to be documented in the “Explosion Protection Document”



CRO Part 1 and 2:





CRO Part 3: Standards reference list

- » Accepted Standards (ISO/IEC) are listed in an annex to the regulation (State of the Art)
- » The standards has to be accepted by a Standard Acceptance Group
- » After the acceptance the Standards can be applied by manufacturers and end users to show compliance with the regulation
- » All countries which have implemented the Regulation enjoy the advantages like barrier free trade of explosion protected equipment and equal conditions for operating a plant bearing explosion risks



CRO Part 4: Conformity assessment bodies

- » The accreditation body has to be a member of ILAC/IAF
- » The accreditation of
 - » Conformity Assessment Bodies
 - » Test Laboratorieshas to follow the applicable ISO/IEC-Standards
- » One member of the assessor team needs competence in the field of explosion protection (see e.g. the list of approved IECEx assessors).
- » Procedures and Rules of the IEC Conformity Assessment System IECEx is to take as a reference for conformity assessment



CRO Part 5: Steering Committee

- » An Explosion Protection Steering Committee is to be formed and operated under the umbrella of UNECE WP.6 (ExSC) to monitor the application experiences
- » All member having implemented the CROs can participate in the Explosion Steering Committee (ExSC)
- » ExSC notifies the members of the Standard Acceptance Group
- » Observers like
 - » Standardization Organization (IEC/ISO)
 - » Market Surveillance
 - » IECEXare also invited to attend the meetings



CRO Part 6: Market surveillance

- » A Market Surveillance network specialized in Ex-Equipment is to be formed and operated (UNECE-ExMars)
- » For critical non-conformance of Ex-Equipment an Alert-System is necessary

Ex - Market Surveillance Concept based on the general concept of the „**MARS**“ Group

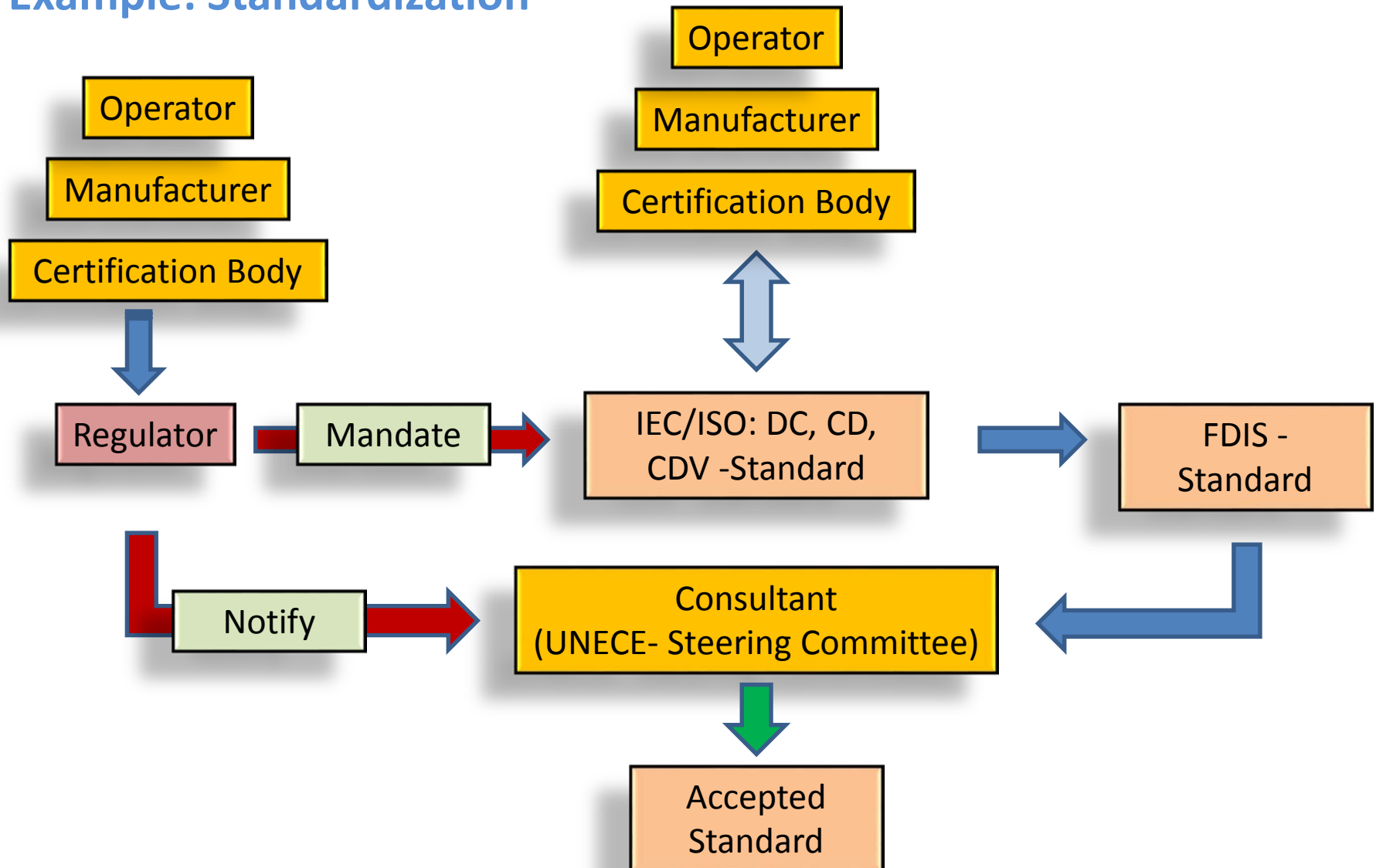
Strategy:

- Developing a general procedure for market surveillance (GMSP)
- Increasing cooperation with stakeholders and sharing the work of Market Surveillance internationally
- Increasing the visibility of Market Surveillance to the outside world



Procedure for the Regulation

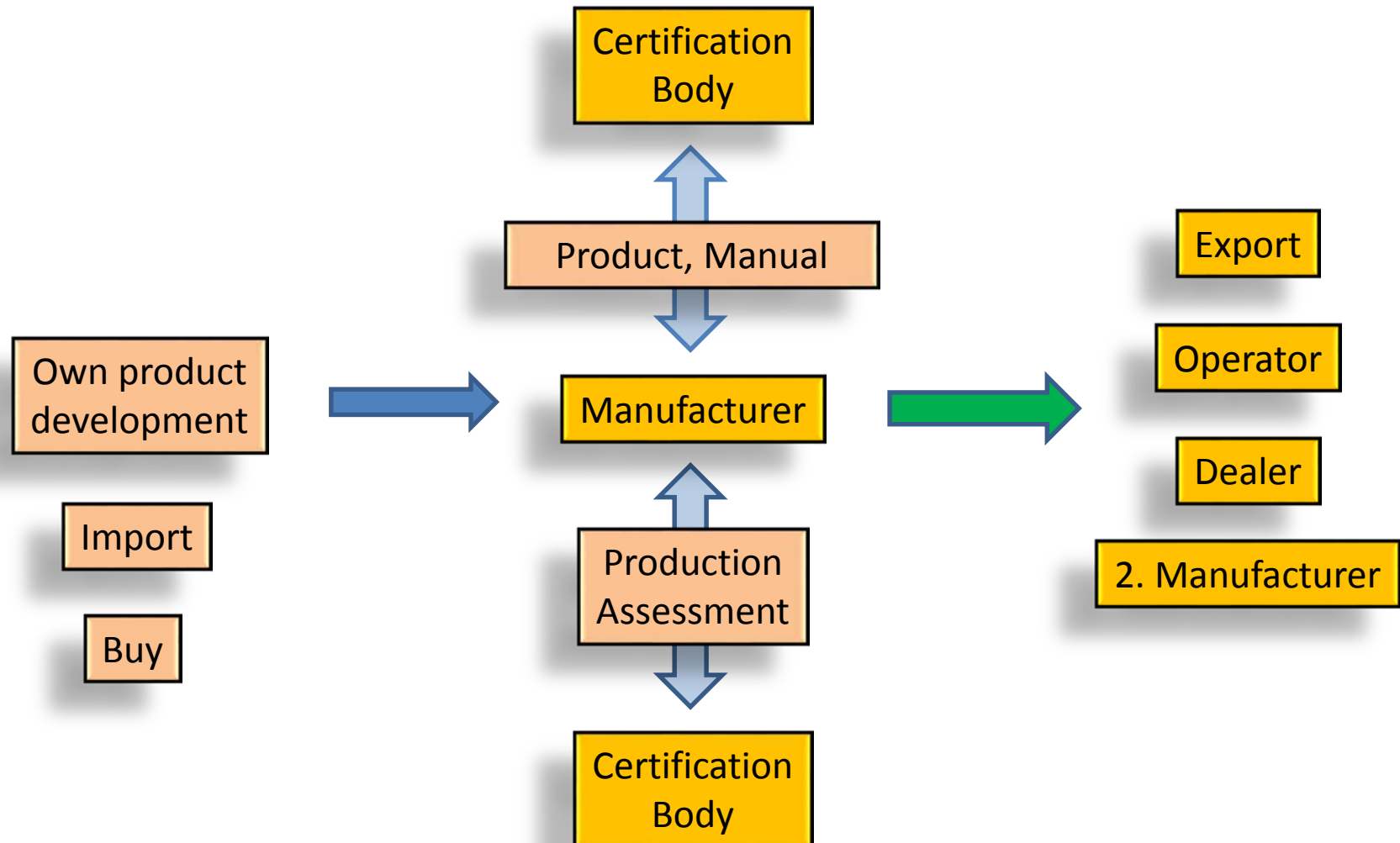
Example: Standardization





Procedure for Manufacturer

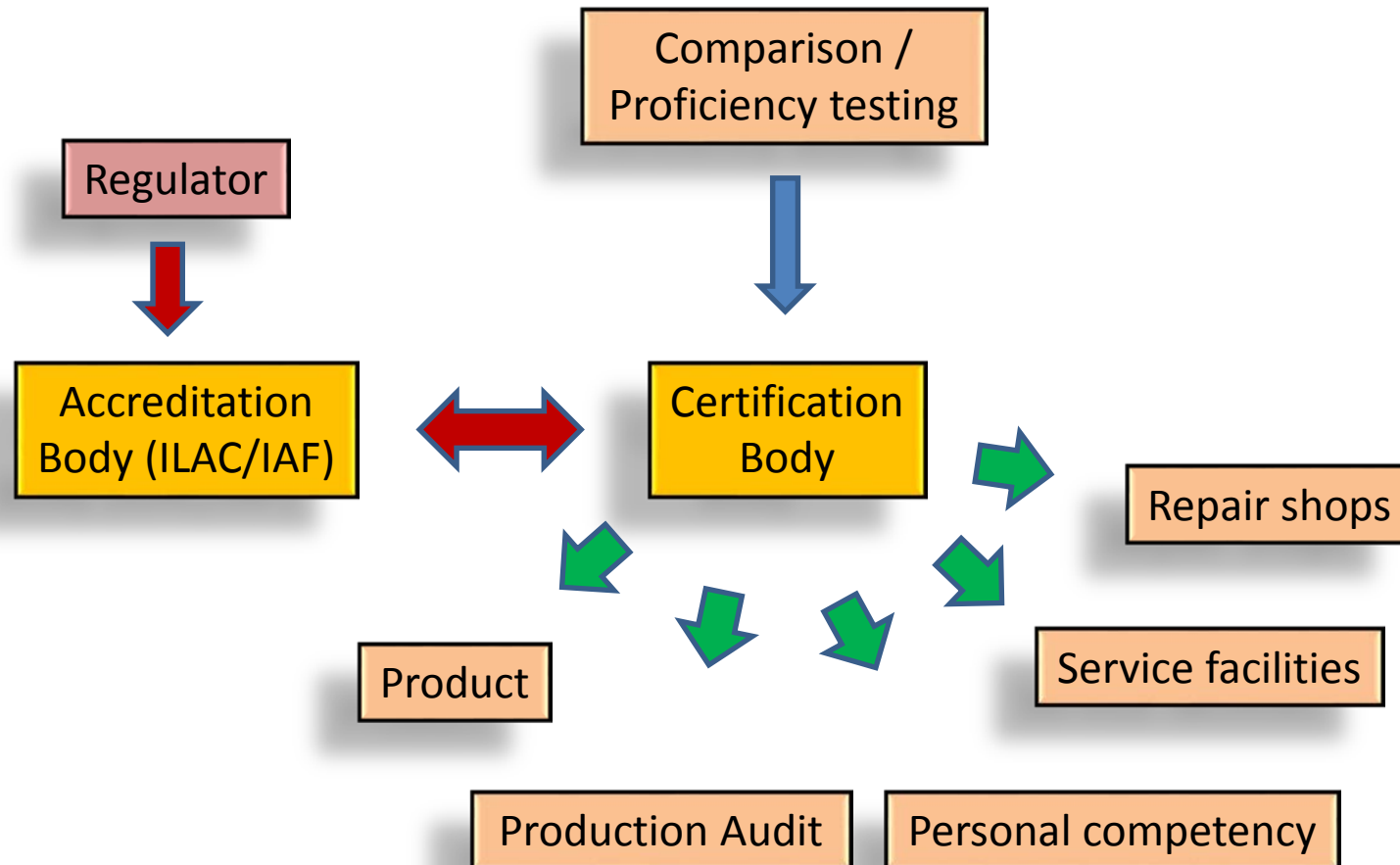
Example: placing on the market





Procedure for Certification Bodies

Examples: Accreditation

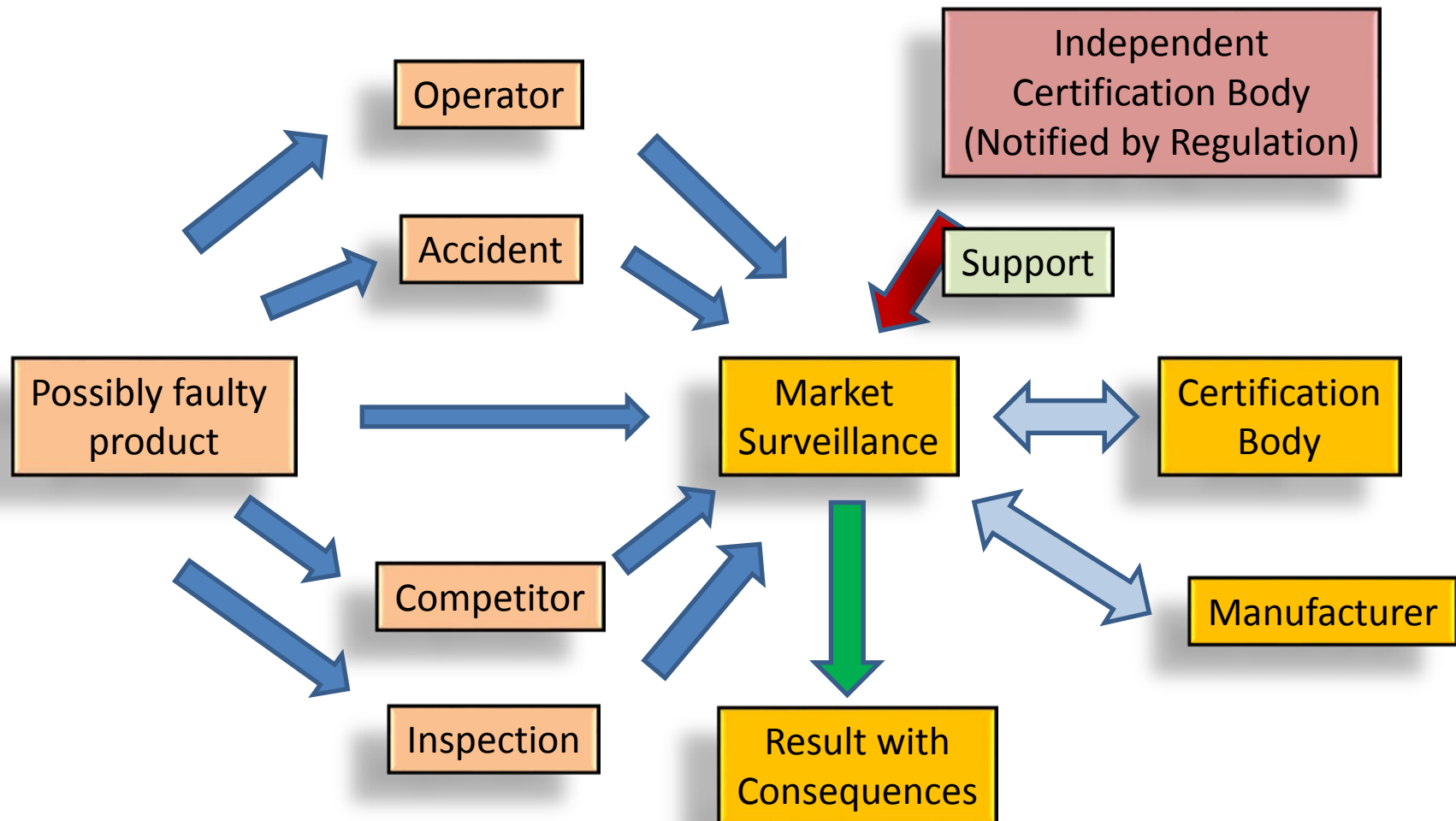




3. Procedures

Procedure for Ex-market surveillance (Ex-GMSP)

Example: Possibly faulty product

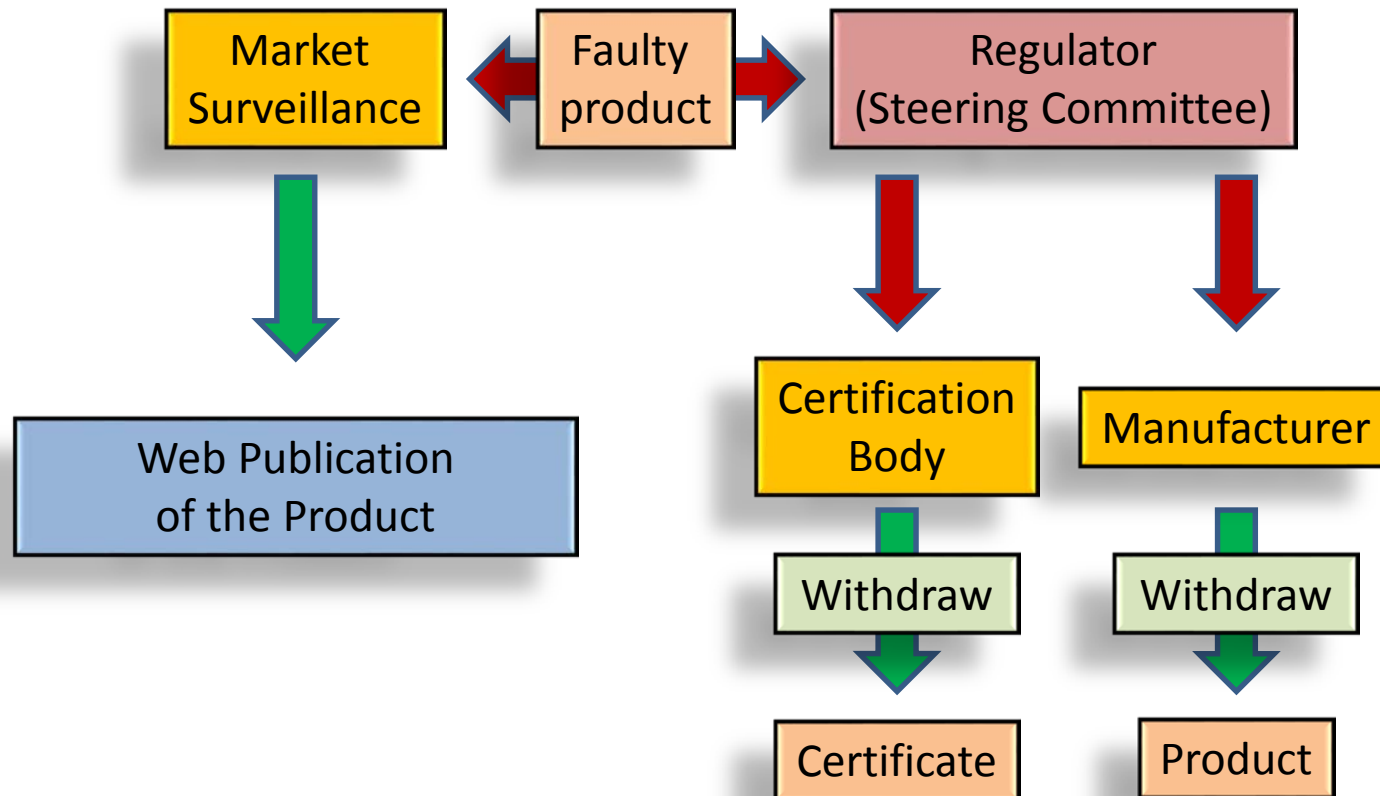




3. Procedures

Procedure for Ex-market surveillance (Ex-GMSP)

Example: Alert System, Arbitration board,...





Guidelines for the Ex-Market Surveillance

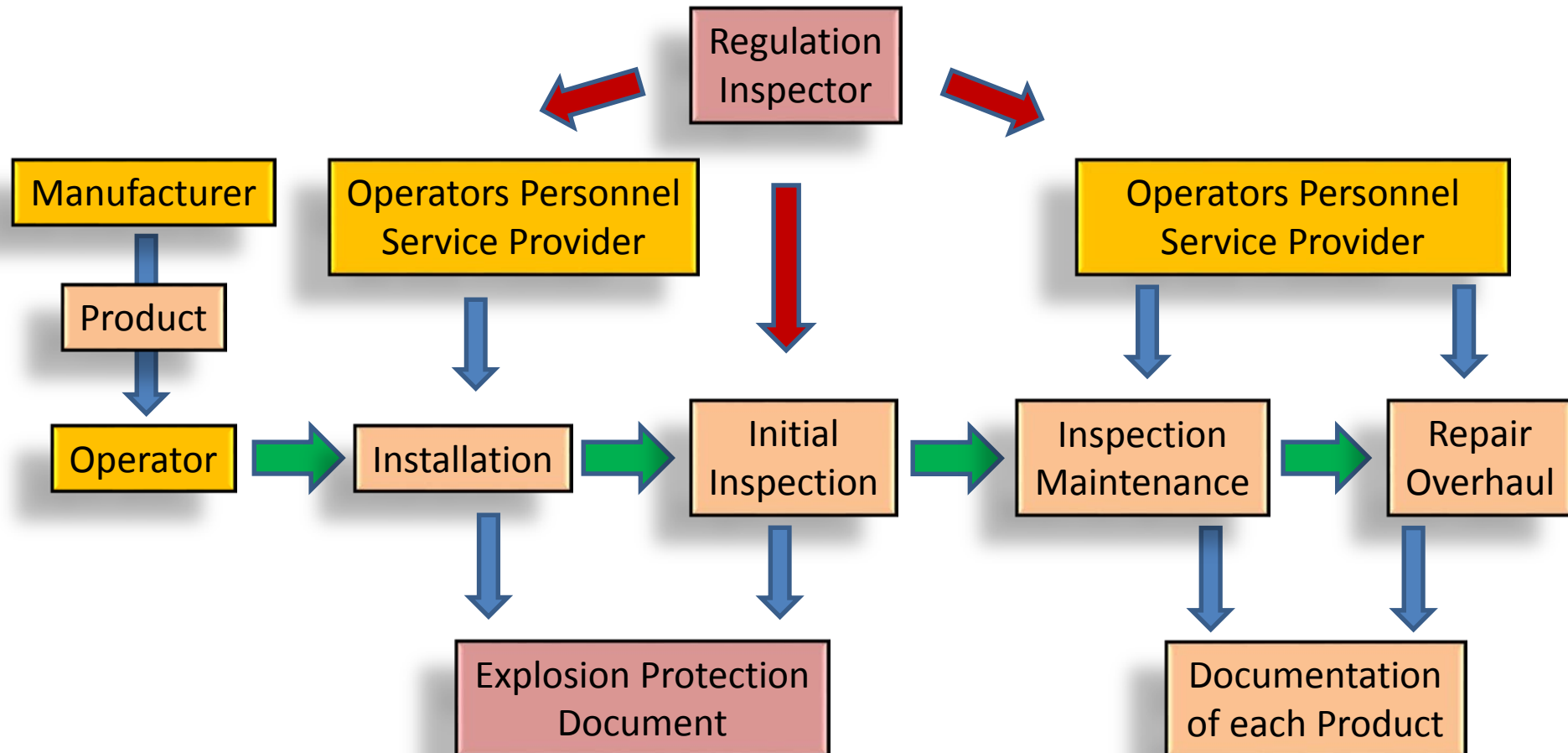
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3. Cooperation and Exchange of Experience (with other stakeholder)
 - 3.1 Internet-Platform
 - 3.2 Arbitration Board
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4. Definition of Ex-Products and the boundary conditions
 - 4.1 Zone Concept (Essential Requirements)
 - 4.2 Types of Protection (Applicable Standards)
5. Explanation of the objectives of the surveillance activities (Compliance Criteria)
 - 5.1 Labeling and Conformity Declaration
 - 5.2 Manual
 - 5.3 Technical Inspection
6. List of References



Procedure for Operators

Examples: Operation of a plant, Maintenance, Repair, Training, ...





The workshop idea: Regulators Dialogue Group



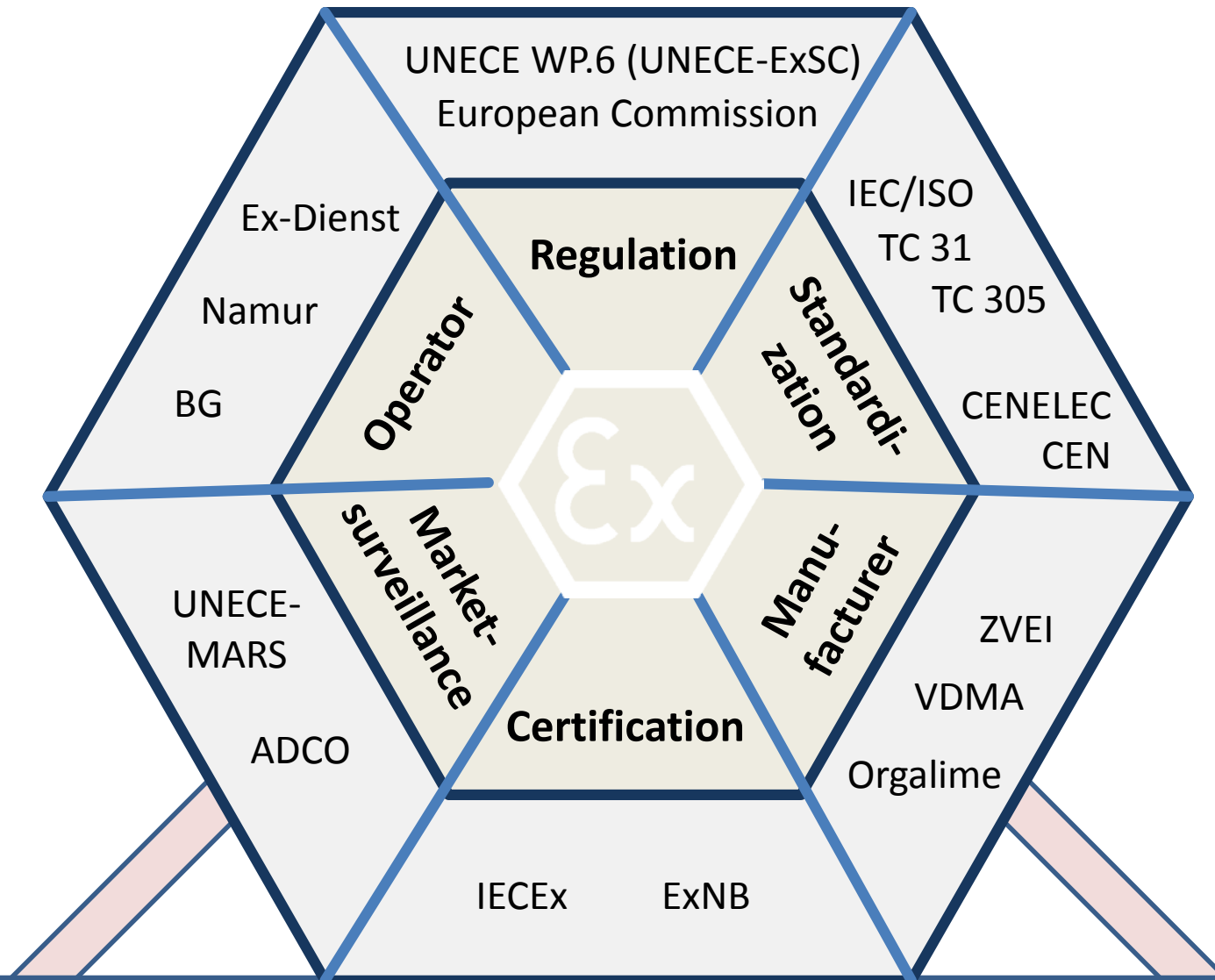
Outputs:

- Comprehensive description of the methodology of the system
- Guidance documents for the various stakeholders (Regulators, Market Surveillance, Manufacturer, Operator, Inspection bodies)





4. Summary



6 Common Regulatory Objectives



4. Summary





4. Summary

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere



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