European Spallation Source

ess

Quality Management in a
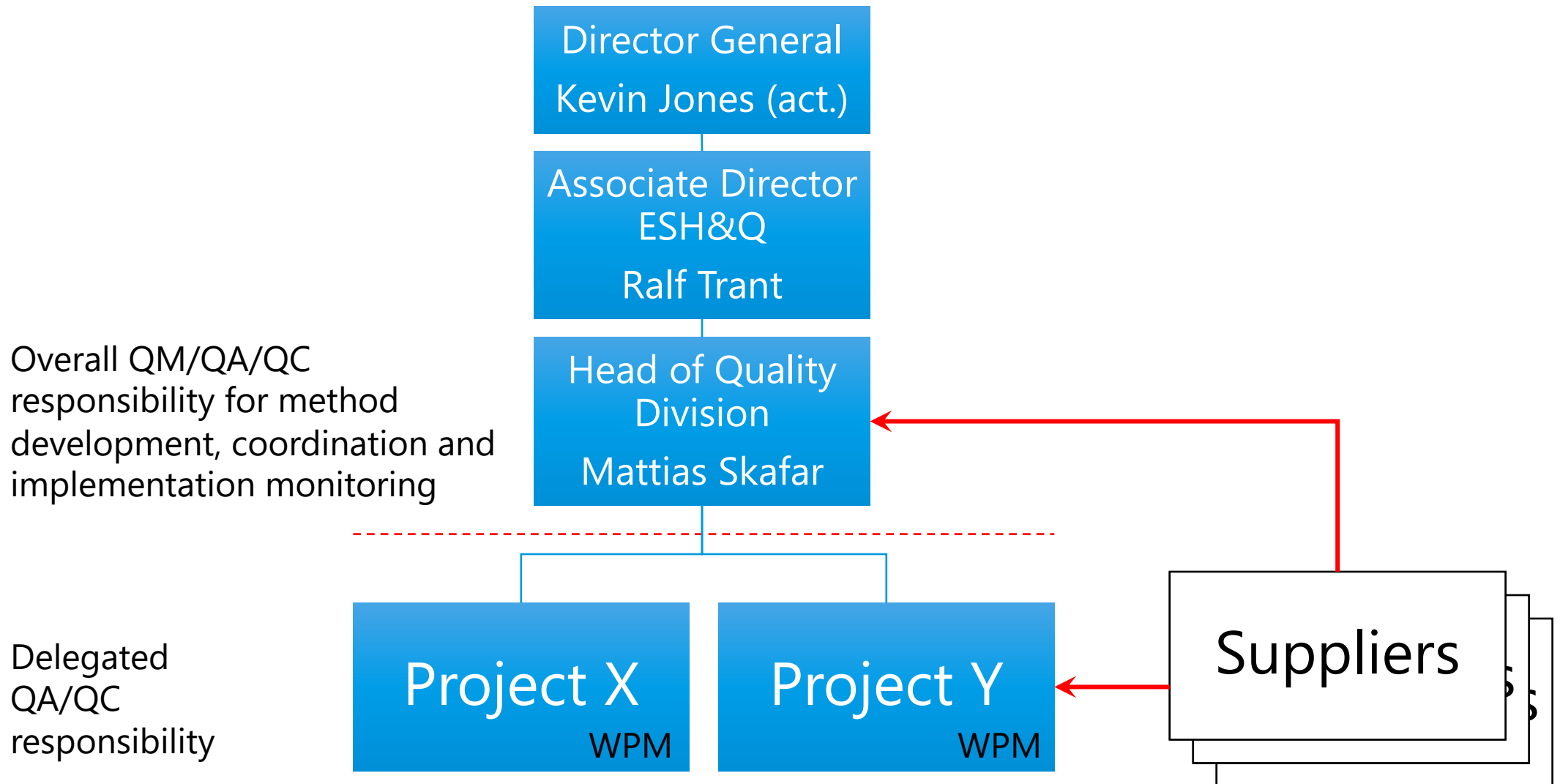Research context

The European Spallation Source Vision

Address some of the most important societal challenges of our time by enabling scientific breakthroughs in research related to materials, energy, health and the environment.
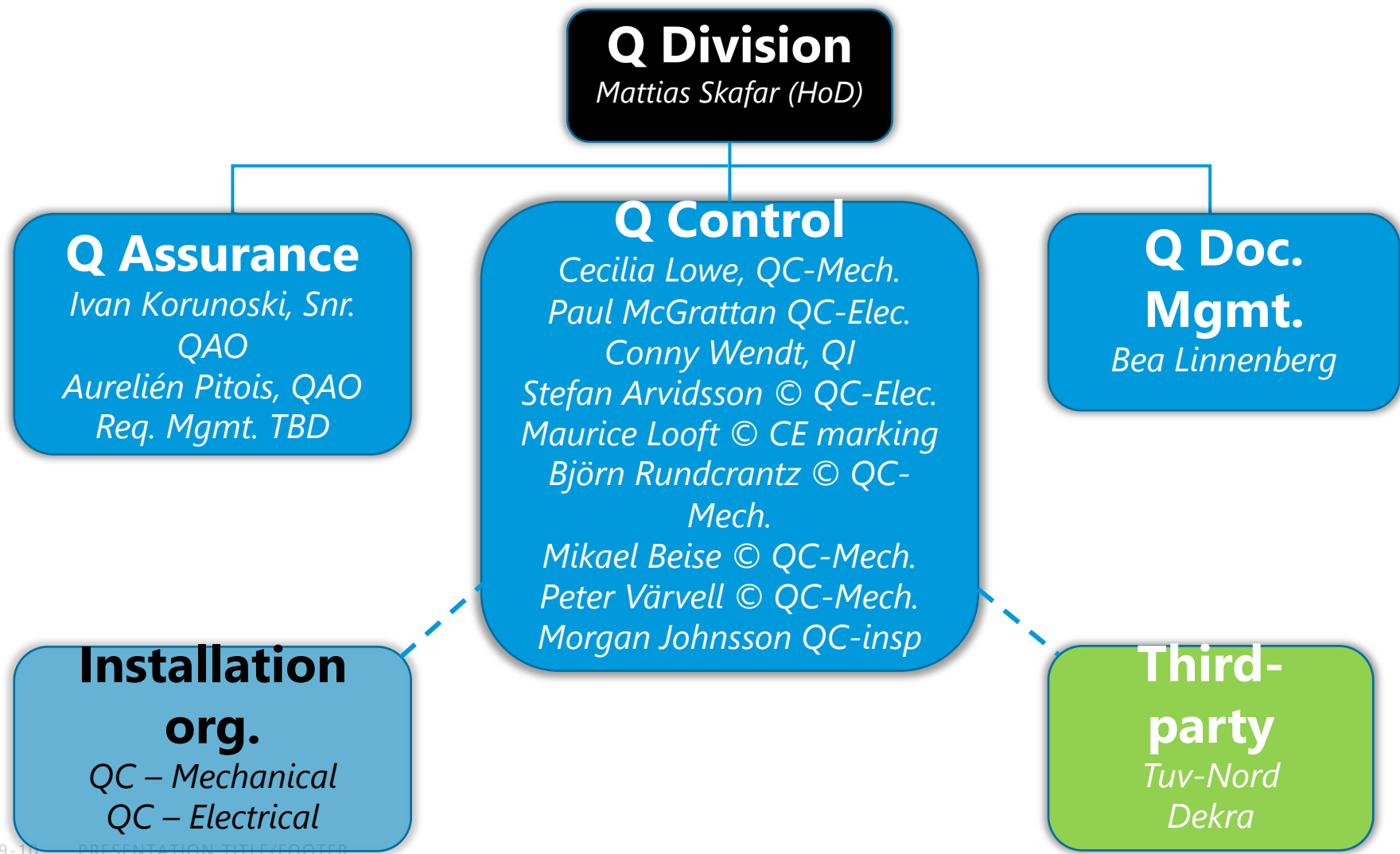
ESS Quality Program

Delegated responsibillity

Overall QM/QA/QC responsibility for method development, coordination and implementation monitoring

Delegated QA/QC responsibility

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Director General
Kevin Jones (act.)

Associate Director
ESH&Q
Ralf Trant

Head of Quality
Division
Mattias Skafar
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Project X — WPM

Project Y — WPM

Suppliers

Quality Division
Organisation

Q Division
Mattias Skafar (HoD)

Q Assurance
Ivan Korunoski, Snr. QAO
Aurelién Pitois, QAO
Req. Mgmt. TBD

Q Control
Cecilia Lowe, QC-Mech.
Paul McGrattan QC-Elec.
Conny Wendt, QI
Stefan Arvidsson © QC-Elec.
Maurice Looft © CE marking
Björn Rundcrantz © QC-Mech.
Mikael Beise © QC-Mech.
Peter Värvell © QC-Mech.
Morgan Johnsson QC-insp

Q Doc. Mgmt.
Bea Linnenberg

Installation org.
QC – Mechanical
QC – Electrical

Third-party
Tuv-Nord
Dekra

A coalition of 13 European countries

Host countries

Sweden

Denmark

Construction
47.5%

Operations
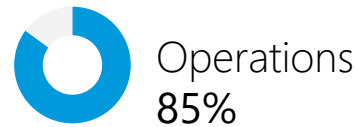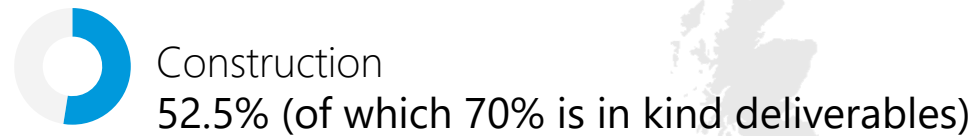15%
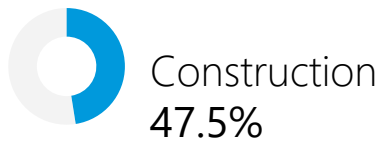
Budget for construction
1.84 billion euro.

Non host member countries

Czech Republic, Estonia, France, Germany, Hungary, Italy, **Norway, Poland, Spain, Switzerland, United Kingdom.**

Construction
52.5% (of which 70% is in kind deliverables)

Operations
85%

Procurement Rules

European Spallation Source ERIC Procurement Rules

ESS procurement governed by the European Spallation Source ERIC Procurement Rules.
(as of 1 October 2015, <u>before that ESS AB following LOU</u>)

- Purpose:

    - To explain how ESS-ERIC conducts procurement

   - Apply to all procurement from ESS cash budget

Principles and objectives

- Following the EU treaty principles of:

    - Transparency, non-discrimination and competition

- Promoting the objectives of:

    - Value for money, publicity, integrity, innovation, sustainability

- Providing a process for appeal

Guideline on Procurement Activities

In harmony with ESS ERIC Procurement Rules

Specification

Request for quotation

Evaluation

Decision

Contract
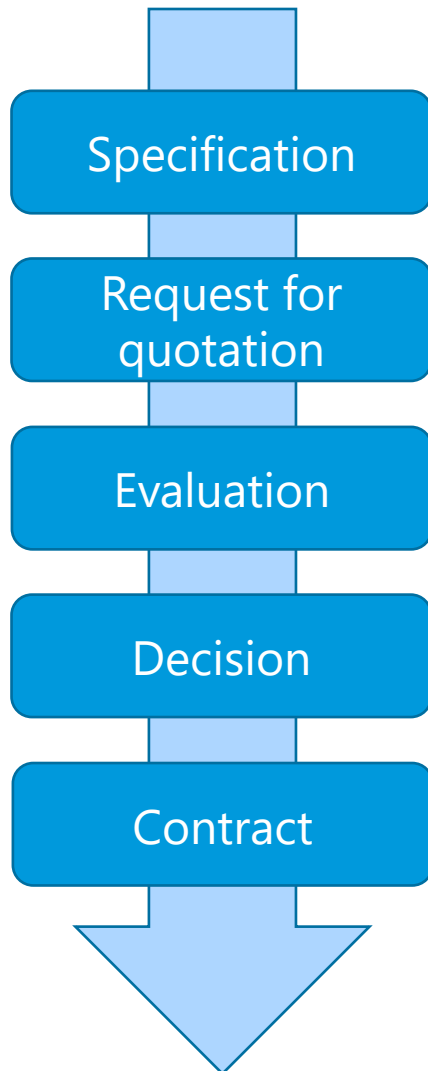
Preparing a procurement specification

A procurement specification must include, at a minimum:

- Scope of work
- Performance / functional / technical requirements (avoiding brand names)
- **Quality assurance plan** or permits
-
- service, including timeline and deliverables

In addition, consider including the following items:

- Design Approvals
- Interface points
- Related tools, technologies, sub-components, competencies or other similar considerations
- Inspection and test requirements
- Installation requirements – documentation package for cases with installation
- Documentation and training requirements
- Life-cycle requirements, such as maintenance, spare or ware part requirements
- Safety and health plan
- Project management plan
- Sustainability requirements
- Service and service level agreements requirements
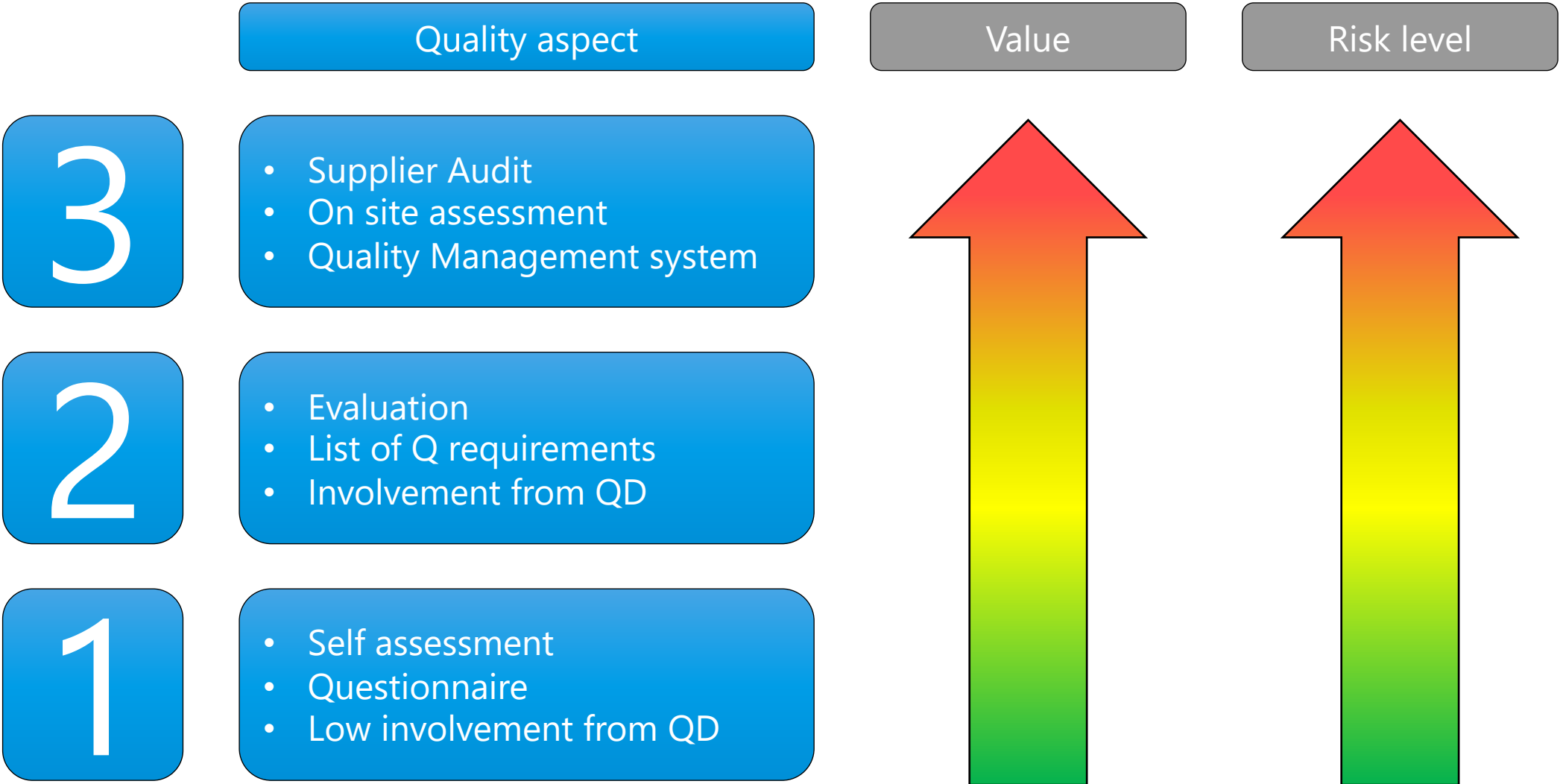- Warranty terms and conditions

Specifications for **technical** procurements must be released in CHESS and approved by the work package leader and above line manager **at a minimum**. The CHESS number(s) should be included in the procurement request.

It is the responsibility of the person technical responsible for the procurement to ensure that all appropriate stakeholders have been consulted and approvals received.

Supplier Assessment

Key suppliers (Graded approach)

Quality aspect	Value	Risk level

3
- Supplier Audit
- On site assessment
- Quality Management system

2
- Evaluation
- List of Q requirements
- Involvement from QD

1
- Self assessment
- Questionnaire
- Low involvement from QD

Project Quality Plan

Template introduction, based on ISO 10005 **Guidelines for quality plans**

Scope, input for PQP, g... ...f records

Project Re...
Types of resources, ...ords

Design and Develo... ...ovision
Reference to plan for ...hased

Identification and T... **Products**
Regulatory Requiremen... ...in place

Monitoring & Measurement, Audits, Imp... **Quality**
Pl...
Measurement, Review & acceptance, imple...

Document Type: Document Template
Document Number: ESS-0037830
Date: Apr 22, 2020

ESS TEMPLATE FOR PROJEC...

	Name	Role/Title
Author	<<Name>>	<<Role/ T...
Owner	<<Name>>	<<Role/ T...
Reviewer	<<Name>>	<<Role/ T...
Approver	<<Name>>	<<Role/ T...

Quality Management
Foundation

ESS

High
(Right)
Quality
Delivery

Test

Sub-supplier audits
Factory Acceptance Test

Commercial contract
Technical/functional specification
Requirements
Quality Acceptance Criteria
Project Quality Plan
Applicable standards
Non-conformity reports
Quality visits/audits
Factory Acceptance

Sub-supplier

Supplier

Commercial contract
Technical/functional
specification
Requirements

Engineering/installation work

Depending on contract

Different contract types:

- Design, Build, Install

And/or combination of these

Fundamental Quality focus areas:

- Requirement Management

- Configuration Management

- Verification & Validation
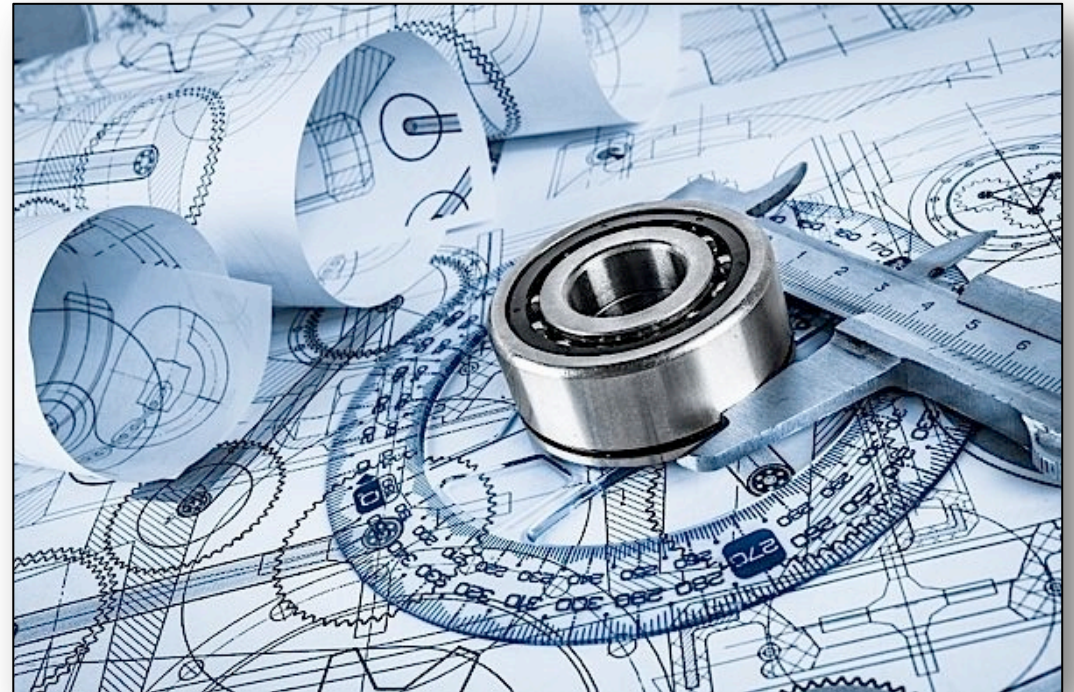
This will give us the means to:

- Install,

- Operate,
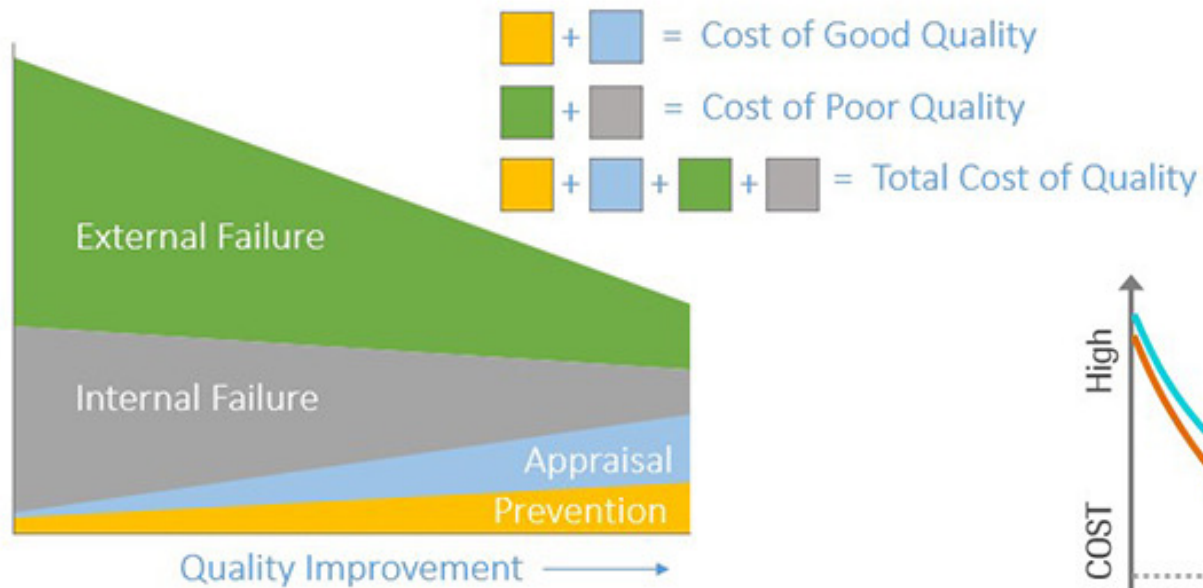
- Maintain,

- Repair and update

In a cost effective way

ESS Quality Program

Finding the "sweet spot"

Typical Relationship/Progression of Cost of Quality

🟨 + 🟦 = Cost of Good Quality

🟩 + ⬜ = Cost of Poor Quality

🟨 + 🟦 + 🟩 + ⬜ = Total Cost of Quality

External Failure

Internal Failure

Appraisal

Prevention

Quality Improvement →

Applied methods and practical quality work is of paramount importance

We have examples where the cost for replacing poor piping on a water skid was approximately the equivalent to 1 FTE.

You want to be here

Total Cost of Quality

Cost of Implementing a Quality Program

Cost of Rectifying Defects

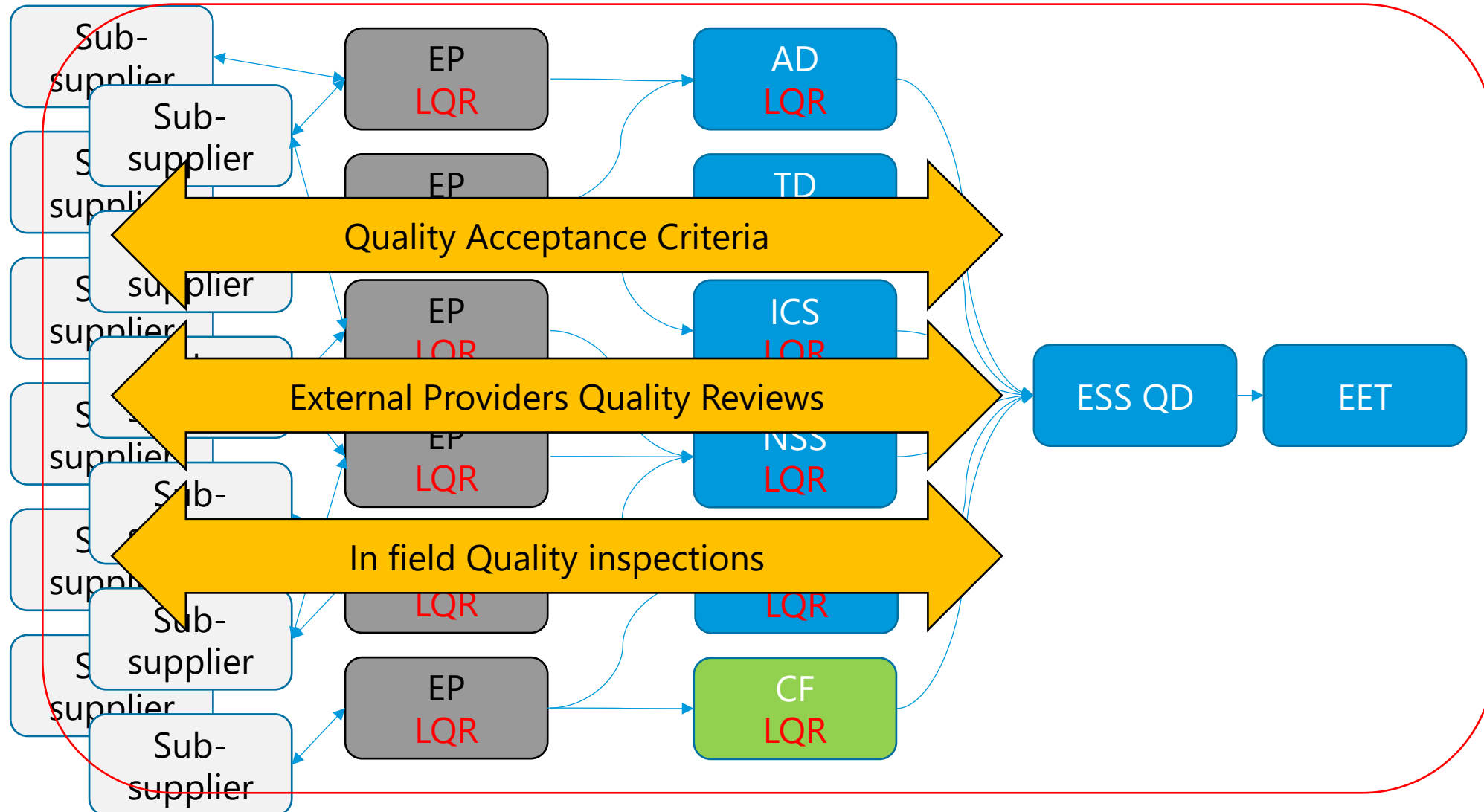COST — High / Low

QUALITY — Low / High

Source: https://www.isixsigma.com/implementation/financial-analysis/cost-quality-not-only-failure-costs

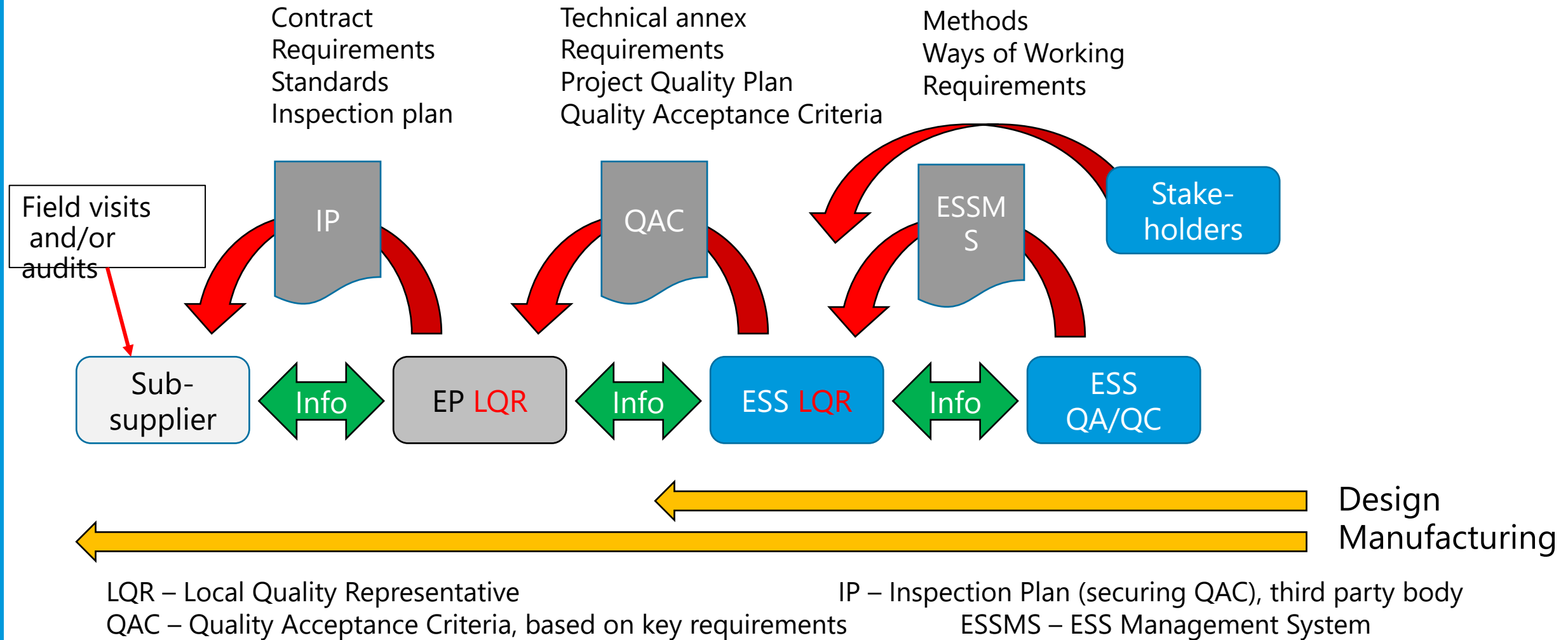# ESS Quality Program

Proactive collaboration

EET – ESS Executive Team
QM – Quality Management
LQC – Local Quality representative

Information flow

ESS stakeholders to External Providers (EP)

Contract
Requirements
Standards
Inspection plan

Technical annex
Requirements
Project Quality Plan
Quality Acceptance Criteria

Methods
Ways of Working
Requirements

Field visits and/or audits

IP

QAC

ESSMS

Stake-holders

Sub-supplier ← Info → EP LQR ← Info → ESS LQR ← Info → ESS QA/QC

Design
Manufacturing

LQR – Local Quality Representative
QAC – Quality Acceptance Criteria, based on key requirements

IP – Inspection Plan (securing QAC), third party body
ESSMS – ESS Management System

Information flow

ESS stakeholders to External Providers (EP)

Sub-supplier ←**Info**→ EP **LQR** ←**Info**→ ESS **LQR** ←**Info**→ ESS QA/QC → Content Mngr. → Operations / Config. Mngr. → Maint. / Archiving

IR

DoC

Final doc.

Verification & validation
Inspection reports
NCR´s
Technical documentation
(Based on QAC)

Complete Technical file
Instructions
NCR´s
Declaration of Conformity
(Based on QAC)

Installation & commissioning →

LQR – Local Quality Representative body

QAC – Quality Acceptance Criteria, based on key requirements

IR – Inspection Report (securing QAC), third party

DoC – Declaration of Conformity

Thank YOU for your time!

Any Questions?