OUTPUT VALIDATION

Validation of the content

• **Completeness of artefact/document**
  – Does the requirement artefact / document **contain all relevant** information and requirements

• **Completeness of requirements**
  – Does each requirement **contain all the information**
    • that is needed according to the relevant reference model (e.g., template)
    • that is needed to perform subsequent development activities?

• **Consistency**
  – Can the **system meet all requirements** together
  – Are there requirements that **contradict** each other

• **Correctness of requirements**
  – Does the content of each requirement correspond to the **actual stakeholder needs and wishes**
  – Are all assumptions about the system context made when defining the requirements correct?

• **Correctness of requirements classification**
  – Has each requirement
    • assigned to the right **requirement type**
      – goal, scenario, functional, quality, constraint, etc.
    • **documented at the proper place**

Validation of Documentation

• **Correct documentation format**
  – Does the requirements artefact have the prescribed **documentation format**

• **Comprehensibility**
  – Are the **documented requirements comprehensible** in the given context
    • *e.g.*, all terms that are used in the requirements artefacts clearly defined

• **Unambiguous documentation**
  – Does the documentation format of the requirements artefacts allows for an **unambiguous interpretation** of the requirements
  – **Could ambiguities be avoided**
    • by using a different, more appropriate documentation format

**Compliance with documentation rules**
  – Does the requirements artefact adhere the documentation (or specification) **rules and guidelines**?
Validation of Agreement

- **Agreement**
  - Did the relevant **stakeholders agree** upon each requirement

**Agreement after modification**
- Has **approval** of the relevant stakeholders been obtained anew after
  - a requirements was modified
  - the content of the requirement changed

- **Check for conflicts**
  - Have the requirements been **checked for potential conflicts** caused
    - e.g., by conflicting goals?

**Conflicts resolved**
- Have all **known conflicts** been resolved for each requirement

INPUT VALIDATION

**Subject facet**

- Have all relevant **objects** been identified and documented?
- Have all identified **objects** been captured completely and **correctly**?
- Have all **quality requirements** for the **representation of objects** been captured?
- Have all relevant **legal requirements** (e.g., privacy regulations) for **representation of objects** in the system been considered?
- Have all relevant **requirements sources** been incorporated in the **identification** of the objects, their properties and relationships?
  - Stakeholders, documents and existing systems

**Usage facet**

- Have the **desired interaction** with the environment been captured completely and **correctly**
  - **stimuli** the system must detect and
  - **responses** the system must produce
- Have the **quality requirements for interaction** with the environment been captured completely and correctly
  - desired performance
  - robustness against faulty operation and correct inputs
  - prevention of misuse
- Have the **specifics of different user groups** been taken into account
– *e.g.*, specific requirements for different cultures and countries

• **Have the usage goals** of the **relevant stakeholders** and the **relevant systems** been elicited completely and correctly

• **Have all relevant requirements sources** for the usage facet been involved
  – *e.g.*, expert for human-machine interfaces for the corresponding type of system

**IT facet**

• **Have the relevant properties of the hardware and software components** with which the system interacts or that belong to underlying hardware and software platform of the system been captured completely and correctly

• **Have all required system interfaces** and
  the **relevant protocols** at each interface been documented completely and correctly

• **Have all relevant IT strategies** been considered appropriately
  • *e.g.*, with regard to the use of upcoming or future technology
  • **Have all relevant IT policies** been considered and documented
    • installation, update and backup policies

• **Have all relevant requirement sources** of the IT system facet been involved in the requirements elicitation activities

**Development facet**

• **Have all requirements pertaining to the languages and development tools** to be used been captured completely and correctly
  – Specification languages, programming languages, etc.
  – **Have the requirements for the development process and development standards** been captured completely and correctly
  – including the development rules and guidelines with which the project must comply

• **Have all development artefacts** to be provided or exchanged been identified
  – *e.g.*, between the client and the contractor

• **Have the targeted project duration** and **cost** been checked for feasibility after all (essential) requirements been agreed on

• **Have all relevant requirements sources** of the development facet been considered

**Execution of activities**

• **Has the execution of the activities** been **documented** in the prescribed way?

• **Have all activities** that are required according to the process definition **been performed**

• **Have all inputs** defined in each activity description **been considered for the respected activity**
• Does the **execution of each activity** correspond to the **rules and guidelines** defined in the activity description

• Have all **outputs** defined in each activity description been created

• Have all **stakeholders** who are relevant for performing the respective activity been involved in the execution of the activity