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SER415 Fall A 2024

Assignment 4: Requirements Quality

SER 415 Assignment: Requirements Quality Attributes

Procedure

Step 1: Review the list of twenty requirements below—ten from a surgery system and ten from a travel reservation system.

Step 2: Indicate whether each has any issues with respect to the quality attributes *unambiguous*, *complete*, *verifiable*, and *traceable*. Please only consider these four quality attributes. If you think the requirement meets all of these quality attributes, then write "Good" under the requirement.

Step 3: If a requirement does not meet one or more of those quality standards, indicate which quality attribute(s) are at issue and provide a brief explanation of the issue.

REQ-SS0001

The surgery system shall provide the ability to import CT scans in DICOM format.

Evaluation of requirement:

- **Unambiguous: Good** - "DICOM format" has a clear definition as it is a globally recognized standard for sharing, transmitting, and storing medical images
- **Complete: Good** - The requirement does not specify any constraints or size restrictions. However, they specify only the file format.
- **Verifiable: Good** - Verifying if CT scans in DICOM format can be imported is straightforward.
- **Traceable: Good.**

REQ-SS0002

The surgery system shall support interface functionality to electromagnetic tracking hardware.

Evaluation of requirement:

- **Unambiguous: Issue** – If many different hardware types are being considered, then "Electromagnetic tracking hardware" could be too ambiguous of a term.
- **Complete: Issue** - There appears to be a lack of indication of the exact type or range of hardware.
- **Verifiable: Partially verifiable** – This would vary on the specification of the hardware.
- **Traceable: Good.**

REQ-SS0003

The surgery system shall not display developer debugging information to end users.

Evaluation of requirement:

- **Unambiguous: Good.**
- **Complete: Good** - The purpose of this requirement is clear and straightforward.
- **Verifiable: Good** - The debug information is testable, even if hidden.
- **Traceable: Good.**

REQ-SS0004

The surgery system shall provide a four-quadrant display including the following views: axial, sagittal, coronal, and three dimensional.

Evaluation of requirement:

- **Unambiguous: Good** – The views of the display are clearly described with all necessary information.
- **Complete: Good.**
- **Verifiable: Good.**
- **Traceable: Good.**

REQ-SS

The surgery system shall refresh the three-dimensional view every 50 milliseconds.

Evaluation of requirement:

- **Unambiguous: Good.**
- **Complete: Good.**
- **Verifiable: Good.** This requirement is simple to test.
- **Traceable: Good.**

REQ-SS0006

The surgery system shall support an ergonomic mechanism for selecting view slices.

Evaluation of requirement:

- **Unambiguous: Issue** – The adjective "Ergonomic" description of this system's mechanism is subjective rather than based on facts.
- **Complete: Issue** – What is considered "ergonomic" and by what standard? What may be "ergonomic to one user of this system may not be for other users so there's a lack of a specific standard in this requirement.
- **Verifiable: Issue** - Testing this system can be difficult when there is a lack of an exact meaning for "ergonomic depending on the needs of the users.
- **Traceable: Good.**

REQ-SS0007

The surgery system's demo platform should include several application examples.

Evaluation of requirement:

- **Unambiguous: Issue** - Certain wordings lack clarity and are too ambiguous like "Several" and "should".
- **Complete: Issue** - The meaning "several application examples" is unclear.
- **Verifiable: Issue** - It's difficult to verify without specifics.
- **Traceable: Good** -

REQ-SS0008

The surgery system's minimum response time shall be determined at a later date.

Evaluation of requirement:

- **Unambiguous: Issue** – The requirement lacks a specific timeline for the system's minimum response time.
- **Complete: Issue** – Insufficient information.
- **Verifiable: Issue** – It's not possible to test something that isn't determined yet.
- **Traceable: Good.**

REQ-SS0009

The surgery system shall provide a means for users to access any menu using six button clicks or fewer.

Evaluation of requirement:

- **Unambiguous: Good.**
- **Complete: Good.**
- **Verifiable: Good.**
- **Traceable: Good.**

REQ-SS0010

The surgery system shall handle unrecoverable errors (for example, hardware faults) by rebooting.

Evaluation of requirement:

- **Unambiguous: Good.**
- **Complete: Issue** - Would be helpful to clarify unrecoverable errors other than "hardware faults."
- **Verifiable: Good.**
- **Traceable: Good.**

REQ-TS0001

The travel system shall provide a search facility to find a reservation based on Last Name, Date, etc.

Evaluation of requirement:

- **Unambiguous: Issue** - "etc." is ambiguous as it could mean something beyond the full name and date without knowing the additional specific required information of a reservation or exactly how much more information is needed.
- **Complete: Issue** - What other requirements are there for "Last Name" and "Date"?
- **Verifiable: Good.**
- **Traceable: Good.**

REQ-TS0002

The travel system shall show all applicable taxes (including a 6% sales tax).

Evaluation of requirement:

- **Unambiguous: Good.**
- **Complete: Good.**
- **Verifiable: Good.**
- **Traceable: Good.**

REQ-TS0003

The travel system shall display the destination country code on the details page for international flights.

Evaluation of requirement:

- **Unambiguous: Good.**
- **Complete: Good.**
- **Verifiable: Good.**

- **Traceable: Good.**

REQ-TS0004

The travel system does not have to show the country code on the confirmation page for domestic flights.

Evaluation of requirement:

- **Unambiguous: Good.**
- **Complete: Good.**
- **Verifiable: Good.**
- **Traceable: Good.**

REQ-TS0005

The travel system shall display prices in dollars, euros, yen, and other important currencies.

Evaluation of requirement:

- **Unambiguous: Issue** – More clarification is needed for “other important currencies” or else we won’t know exactly what those other important currencies are.
- **Complete: Issue** – Which other currencies are important and how many more of them are there that needs to be included in this system?
- **Verifiable: Issue** – It is subjective to test the importance of certain currencies as it varies by individual business needs or preferences.
- **Traceable: Good.**

REQ-TS0006

The travel system shall display all dates in mm/dd/yyyy format.

Evaluation of requirement:

- **Unambiguous: Good.**
- **Complete: Good.**
- **Verifiable: Good.**
- **Traceable: Good.**

REQ-TS0007

The travel system shall have a natural language interface that understands commands in English.

Evaluation of requirement:

- **Unambiguous: Issue** - To get the system to understand commands in English is rather a little vague as it isn't clarified in the requirement as to what level of English comprehension is required for the system itself.
- **Complete: Issue** – What kinds of commands are acceptable or recognizable by the system?
- **Verifiable: Issue** – Testing the natural language understanding would be difficult as there is a lack of specific parameters for it.
- **Traceable: Good.**

REQ-TS0008

The travel system shall allow users to locate a reservation based on the date they made the reservation.

Evaluation of requirement:

- **Unambiguous: Good.**
- **Complete: Good.**
- **Verifiable: Good.**
- **Traceable: Good.**

REQ-TS0009

The travel system may go down for maintenance briefly each week during night hours.

Evaluation of requirement:

- **Unambiguous: Issue** – It is unclear what the meanings of “Briefly” and “nightly hours” are without a specific standard in the requirement.
- **Complete: Issue** – Lack of specific times for this requirement.
- **Verifiable: Issue** – Without a defined window, a “briefly” time would be difficult to verify.
- **Traceable: Good.**

REQ-TS0010

The travel system shall focus on reliability and ease of use.

Evaluation of requirement:

- **Unambiguous: Issue** – The terms “reliability” and “ease of use” are subjective in that it would vary by each individual user as what’s “ease of use” for one user may not be for the other users.
- **Complete: Issue** – Such attributes (“reliability” and “ease of use”) would require quantifiable criteria to measure.
- **Verifiable: Issue** – Lacking a defined parameter for the usability and reliability of this system would be challenging to test.
- **Traceable: Good.**