Capstone Projects SE 490

Eliciting User Requirements

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Review: The nature of user requirements

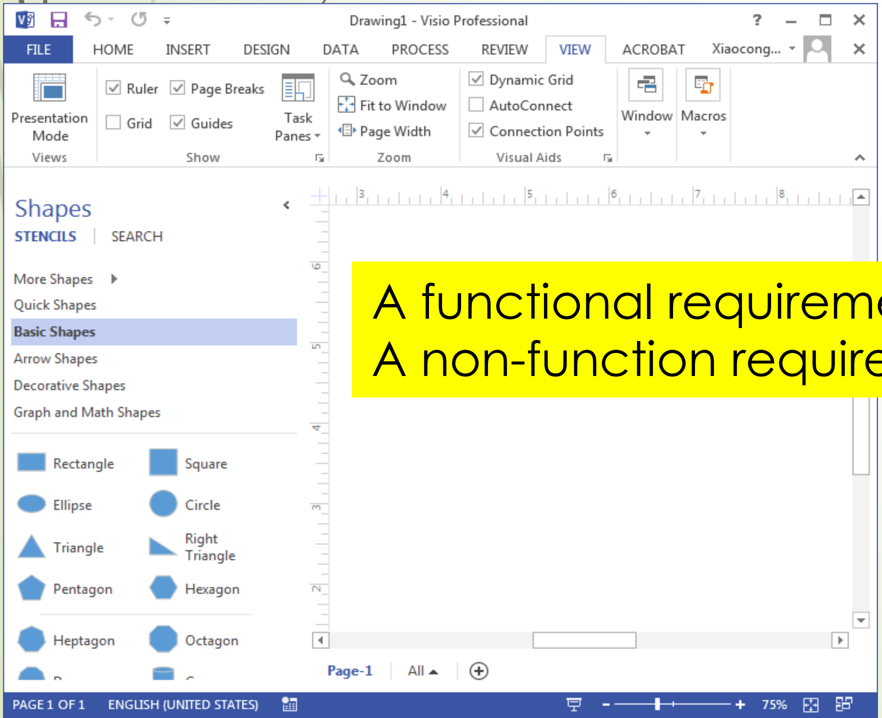
- Software requirements are descriptions of the **services** that a software system must provide and the **constraints** under which it must operate

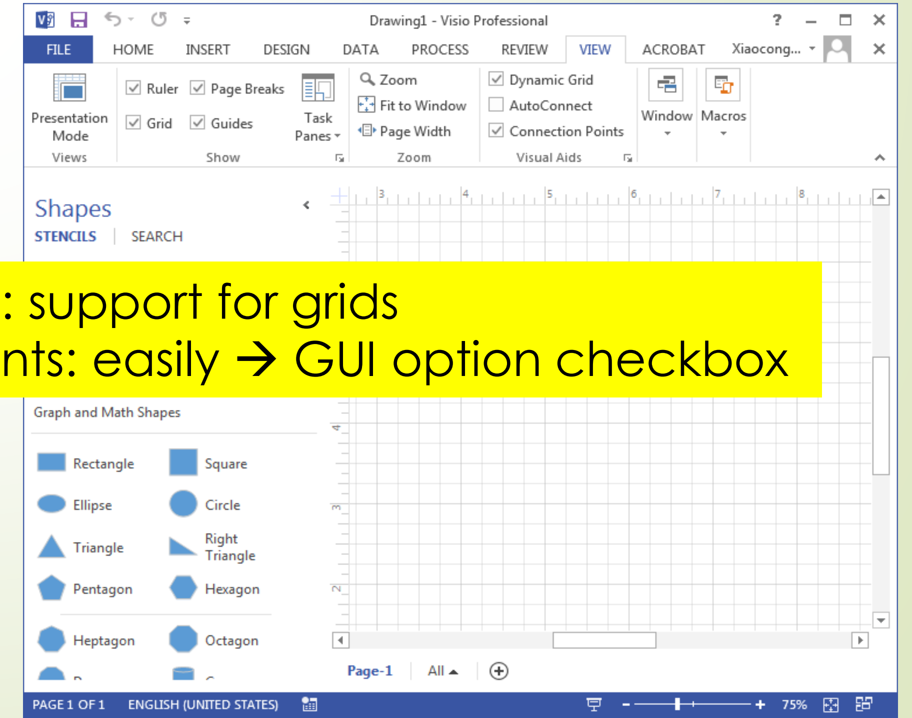
- **User requirements:** Written by users (customers) or for users (in natural language)
  - Ambiguity
    - Readers and writers may not interpret words in the same way
  - Over-flexibility
    - The same thing may be expressed in a number of different ways
  - Requirements amalgamation & confusion
    - Several different requirements may be expressed together
- Challenge: Domain specialists understand the area so well that they do not think of making the requirements explicit

User Functional requirements

- User functional requirements are high-level statements of what the system should do (**Services**)
- Example: the requirements for a CASE tool for editing software design models have the following statement:

To assist in the positioning of entities on a diagram, the user may easily turn on the grid in a standard measurement option.


☑ Ruler ☑ Page Breaks
□ Grid ☑ Guides
☑ Dynamic Grid
□ AutoConnect
☑ Connection Points


☑ Ruler ☑ Page Breaks
☑ Grid ☑ Guides
☑ Dynamic Grid
□ AutoConnect
☑ Connection Points

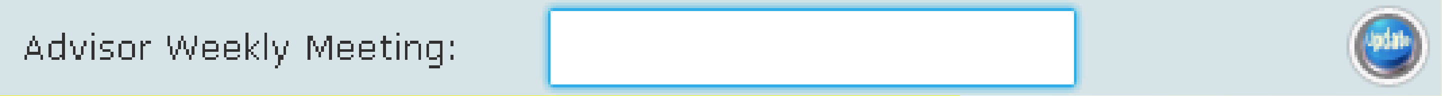
A functional requirements: support for grids
A non-function requirements: easily → GUI option checkbox

Non-Functional requirements

- Non-functional requirements are statements about **Quality of Services**
  - constraints on the services or functions offered by the system
    - E.g. timing constraints,
  - constraints on the development process, standards, etc.
    - E.g. Web services standards, Agile approach
  - constraints on the environment
    - E.g. under inclement whether

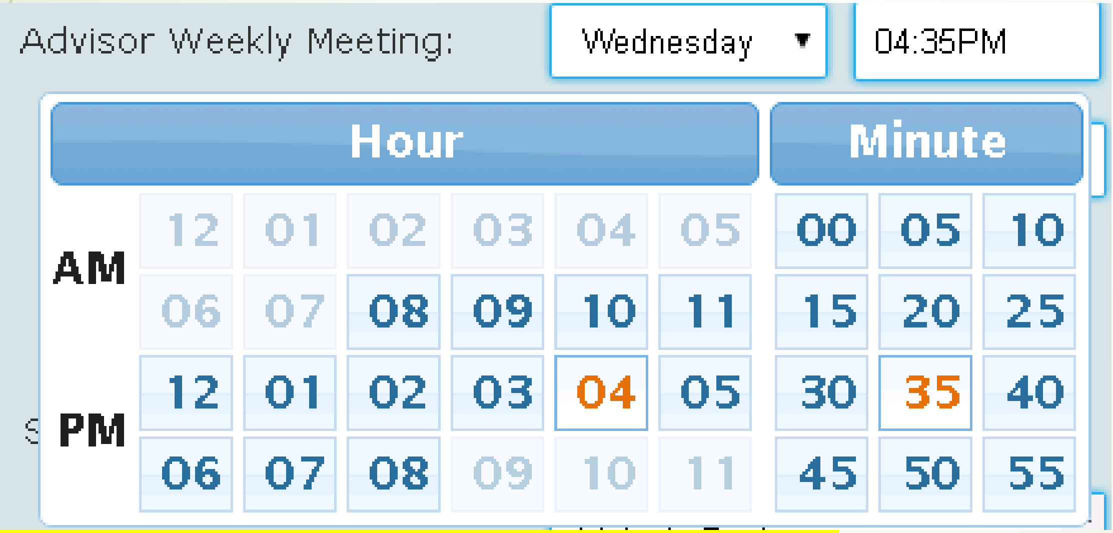
- Non-functional requirements concern about the **emergent properties** of a system (or subsystem) as a whole

Example Non-Functional requirements: usability



Advisor Weekly Meeting:

Simply text input: typing time and errors

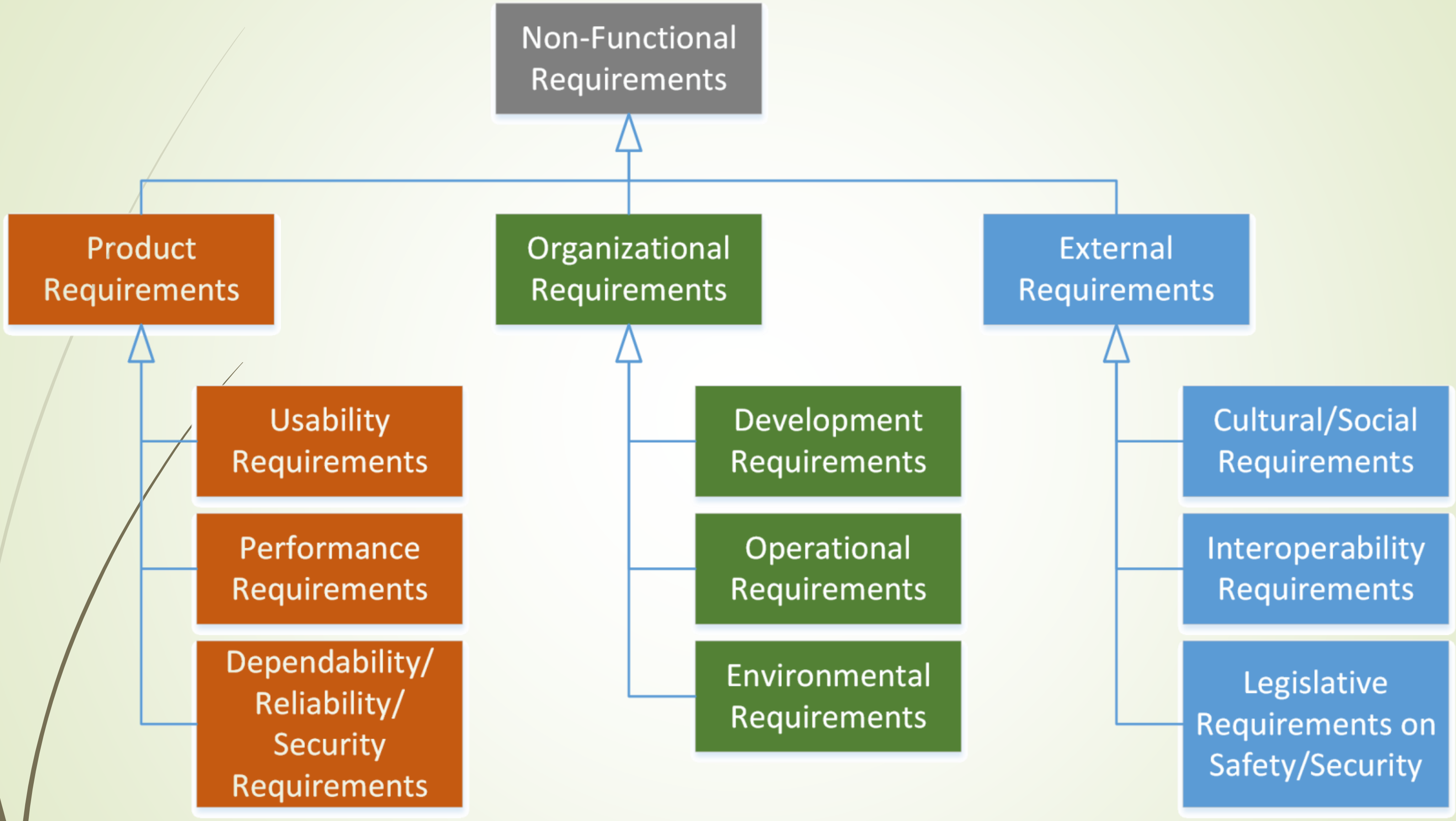


Advisor Weekly Meeting: Wednesday ▼ 04:35PM

	Hour						Minute		
AM	12	01	02	03	04	05	00	05	10
	06	07	08	09	10	11	15	20	25
PM	12	01	02	03	04	05	30	35	40
	06	07	08	09	10	11	45	50	55

Simply selections: avoid user errors

Types of non-functional requirements



Non-Functional Requirements

Product Requirements

Usability Requirements

Performance Requirements

Dependability/ Reliability/ Security Requirements

Organizational Requirements

Development Requirements

Operational Requirements

Environmental Requirements

External Requirements

Cultural/Social Requirements

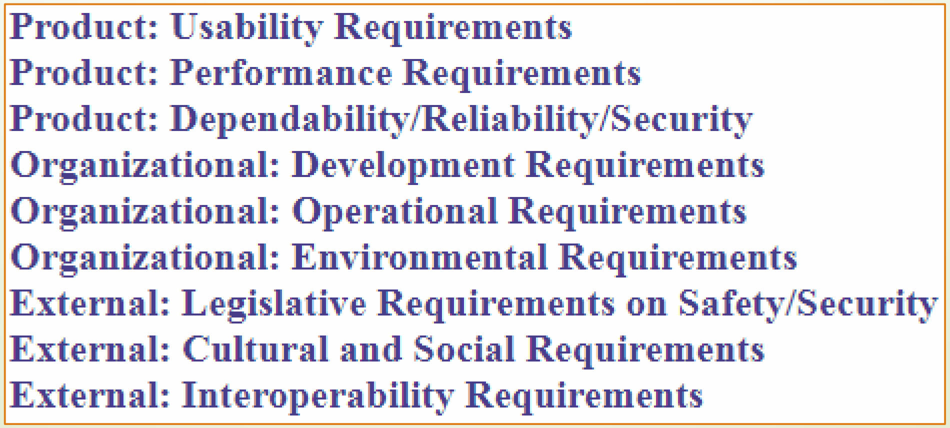
Interoperability Requirements

Legislative Requirements on Safety/Security

What is usability? Is it the same as usefulness? Examples?

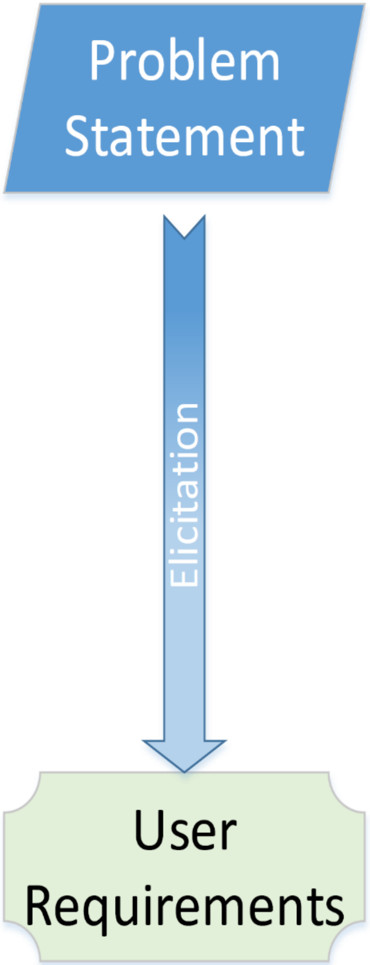
Exercise on classifying requirements

1) The system should have a built-in sub-system to identify and isolate script attacks
2) An unauthorized user should be redirected to the login page whenever a feature *protected* by *privilege* is accessed.
3) The system can recover from DoS attacks
4) A user has to be authenticated before the use of the system features
5) The system should use https (TLS) to protect its communications with other systems
6) The new system should not make another existing system vulnerable to security attacks
7) The system should not break government laws on computing safety/security



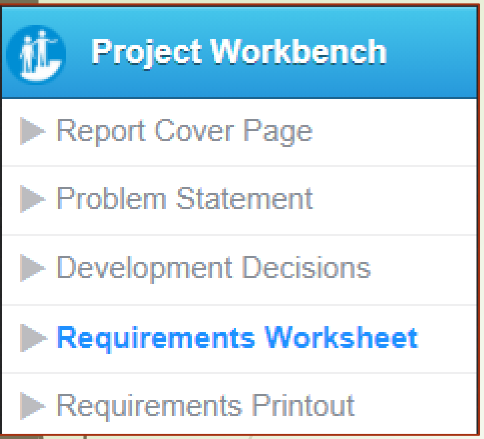
Product: Usability Requirements
Product: Performance Requirements
Product: Dependability/Reliability/Security
Organizational: Development Requirements
Organizational: Operational Requirements
Organizational: Environmental Requirements
External: Legislative Requirements on Safety/Security
External: Cultural and Social Requirements
External: Interoperability Requirements

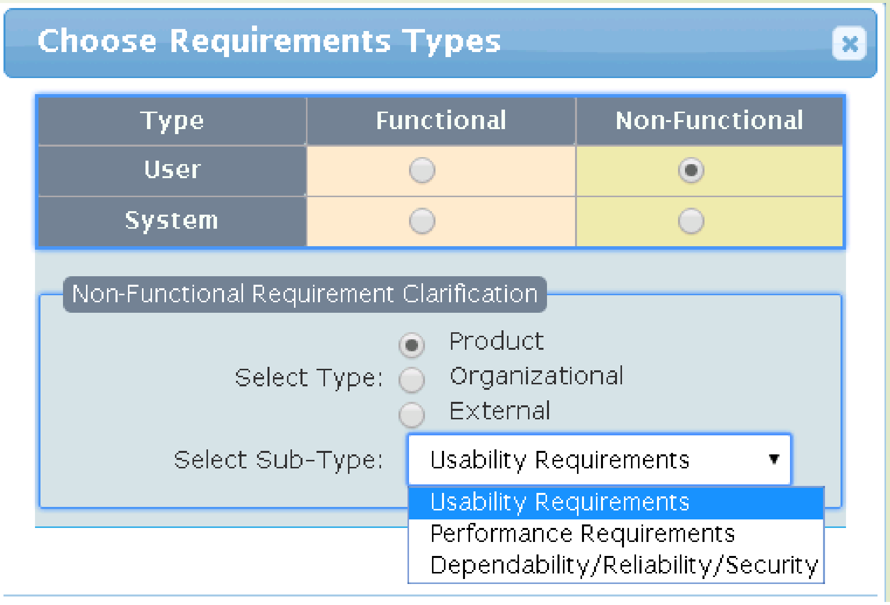
More examples



Functional Requirements (product services)	Non-Functional Requirements
	Product: Quality of Services • Usability requirements • Performance requirements • Dependability/Security requirements **Organizational** • Development requirements • Operational requirements • Environmental requirements **External** • Safety/Security requirements • Cultural and Social requirements • Political requirements
Example (UF-A) The system allows instructors to generate quizzes. (UF-B) The system allows students to take quizzes online. (UF-C) The system is able to generate quiz report. (UF-D) The system allows students to collect advisors' feedbacks.	Example (UP-01) Figures and tables in a quiz report cannot cross pages. (UP-02) The system should support secure transactions. (UP-03) The system interface should be user friendly. (UO-04) The system should support modern web browsers. (UE-05) The system should not discriminate non-English speakers.

Start to document user requirements



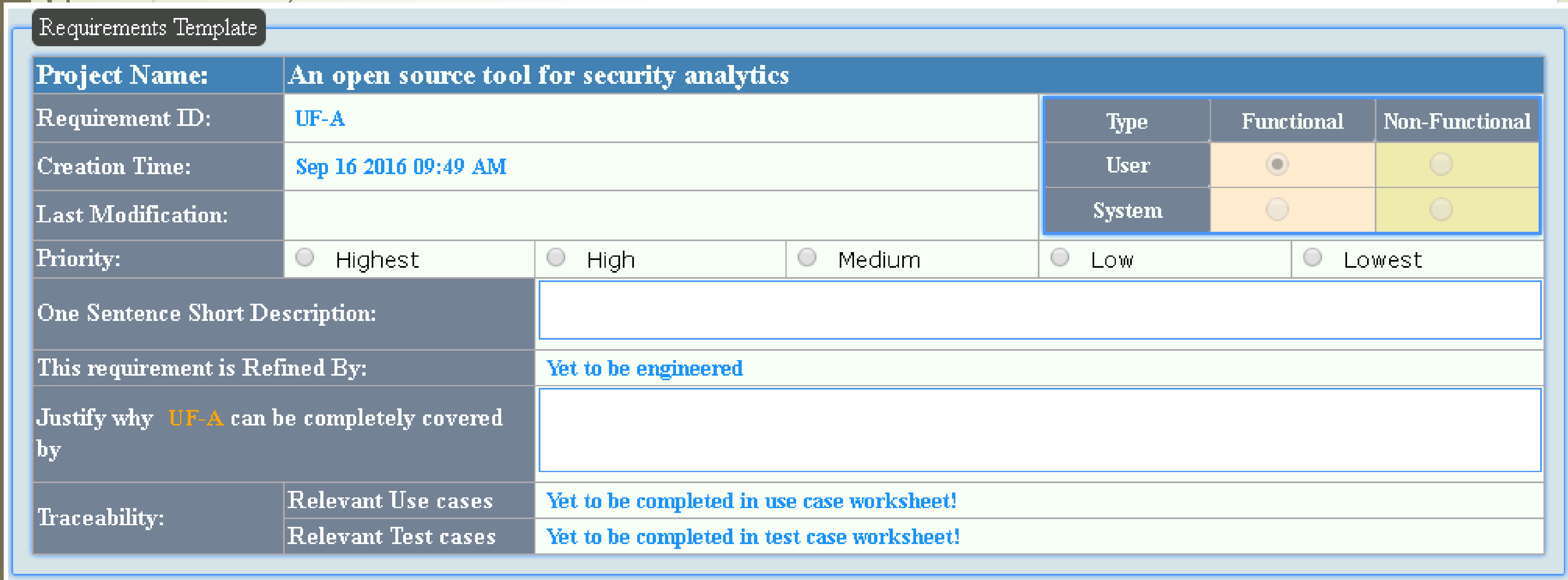

Choose Requirements Types

Type	Functional	Non-Functional
User	○	●
System	○	○

Non-Functional Requirement Clarification

Select Type: ● Product ○ Organizational ○ External

Select Sub-Type: Usability Requirements


Requirements Template

Project Name:	**An open source tool for security analytics**	
Requirement ID:	UF-A	
Creation Time:	Sep 16 2016 09:49 AM	
Last Modification:		
Priority:	○ Highest ○ High ○ Medium ○ Low ○ Lowest	
One Sentence Short Description:		
This requirement is Refined By:	Yet to be engineered	
Justify why UF-A can be completely covered by		
Traceability:	Relevant Use cases	Yet to be completed in use case worksheet!
	Relevant Test cases	Yet to be completed in test case worksheet!

Type	Functional	Non-Functional
User	●	○
System	○	○