Test 2

.

Questions – (Lecture slides) – Answers

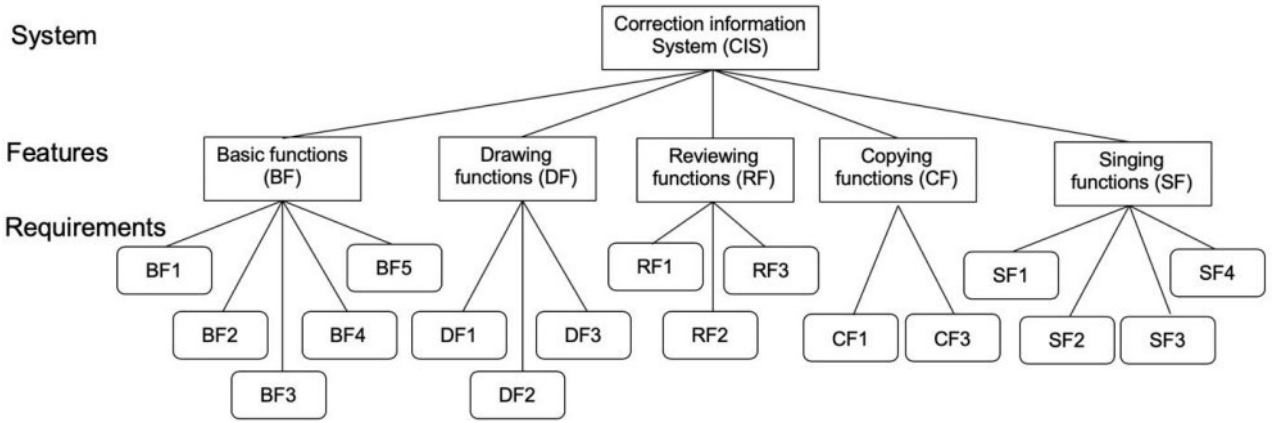
测试2

第 1 组

问题 – （讲座幻灯片） – 答案

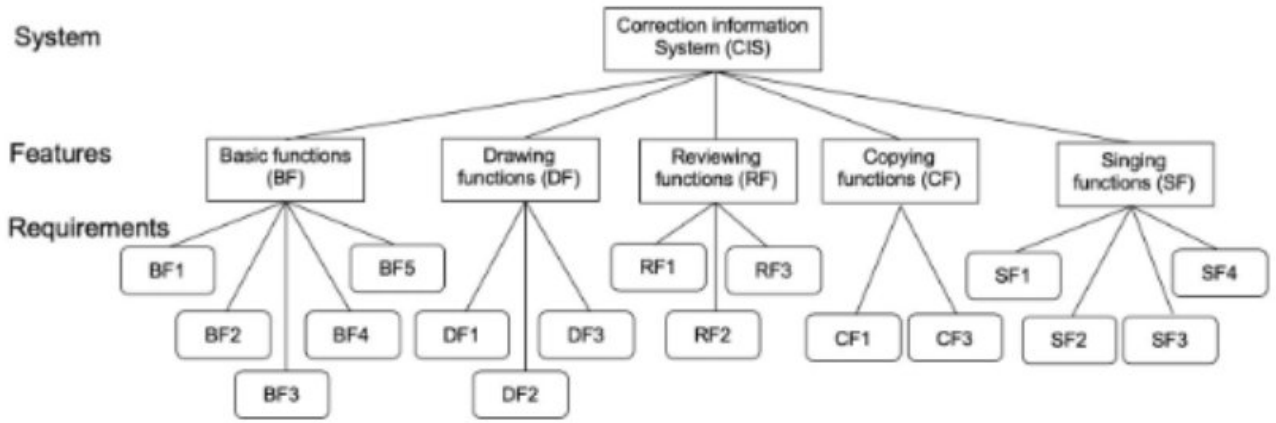
Task 1

The correction information system (CIS) requirements are classified to requirements features (see Fig. 1). The feature values are calculated as sums of the requirements' values and feature cost is calculated as the sum of requirements' costs Requirements values and costs are given in Table 1. Taking into account that Basic functions are a mandatory feature and others are optional, explain which **two** requirements' **features** should be implemented in the next CIS release.



任务1

修正信息系统（CIS）需求被分类为需求特征（见图1）。特征值计算为需求值的总和，特征成本计算为需求成本的总和。需求值和成本在表 1 中给出。考虑到基本功能是强制性功能，其他功能是可选的，解释一下这两个要求的功能应在下一个 CIS 版本中实现。



Task 1

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BF2. CIS should save document.	3	5
BF3. CIS should print document.	4	6
BF4. CIS should share document.	8	3
BF5. CIS should close document.	8	6
CF1. CIS should copy document's text.	6	8
CF2. CIS should paste document's text	7	2
DF1. CIS should draw rectangle objects.	5	9
DF2. CIS should draw circle objects.	4	9
DF3. CIS should have color pallet.	9	2
RF1. CIS should open review window.	3	7
RF2. CIS should mark commented text.	3	9
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Basics of Prioritisation

- Need to select what to implement
  - Customers (usually) ask for way too much
  - Balance time-to-market with amount of functionality
  - Decide which features go into the next release
- For each requirement/feature, ask:
  - How important is this to the customer?
  - How much will it cost to implement?
  - How risky will it be to attempt to build it?
- Perform Triage:
  - **Some requirements *must* be included**
  - Some requirements should definitely be excluded
  - That leaves a pool of “nice-to-haves”, which we must select from.

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First feature : BF

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第一个特点：**BF**

A Cost-Value Approach

- Calculate return on investment
  - Assess each requirement's importance to the project as a whole
  - Assess the relative cost of each requirement
  - Compute the cost-value trade-off:

→ **Two approaches**:

Absolute scale (e.g. dollar values)

- Requires much domain experience

Relative values (e.g. less/more; a little, somewhat, very)

- Much easier to elicit
- Prioritization becomes a sorting problem

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Feature	**Value**	**Cost**
CF	13	10
DF	18	20
RF	10	19
SF	18	11

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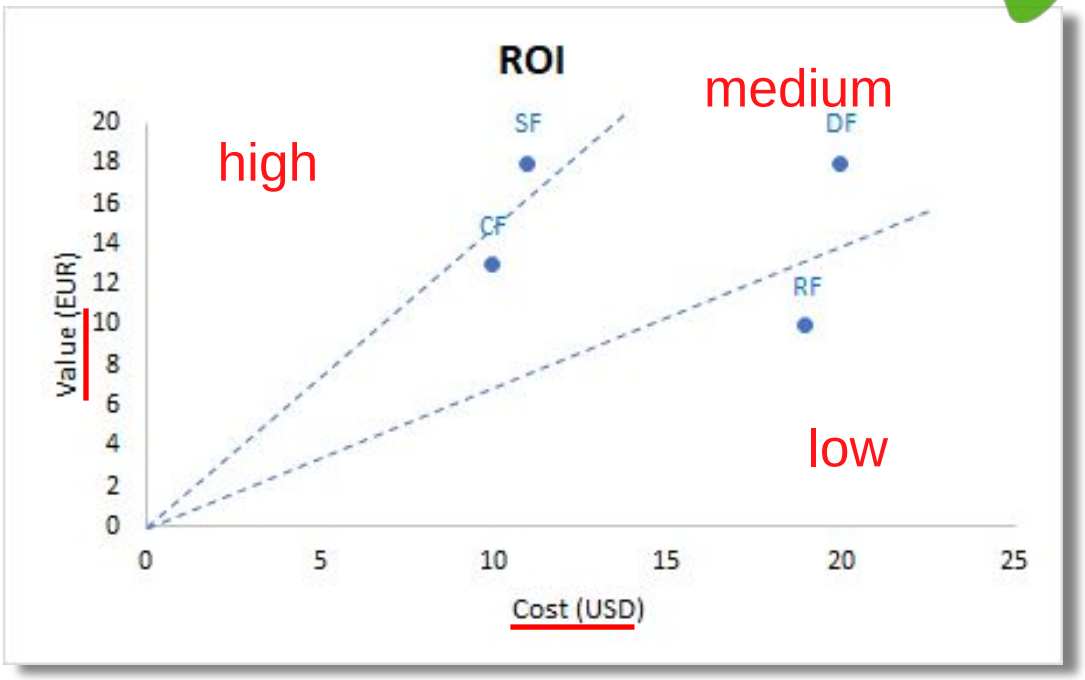

Second feature : SF

任务1

特征值		Cost
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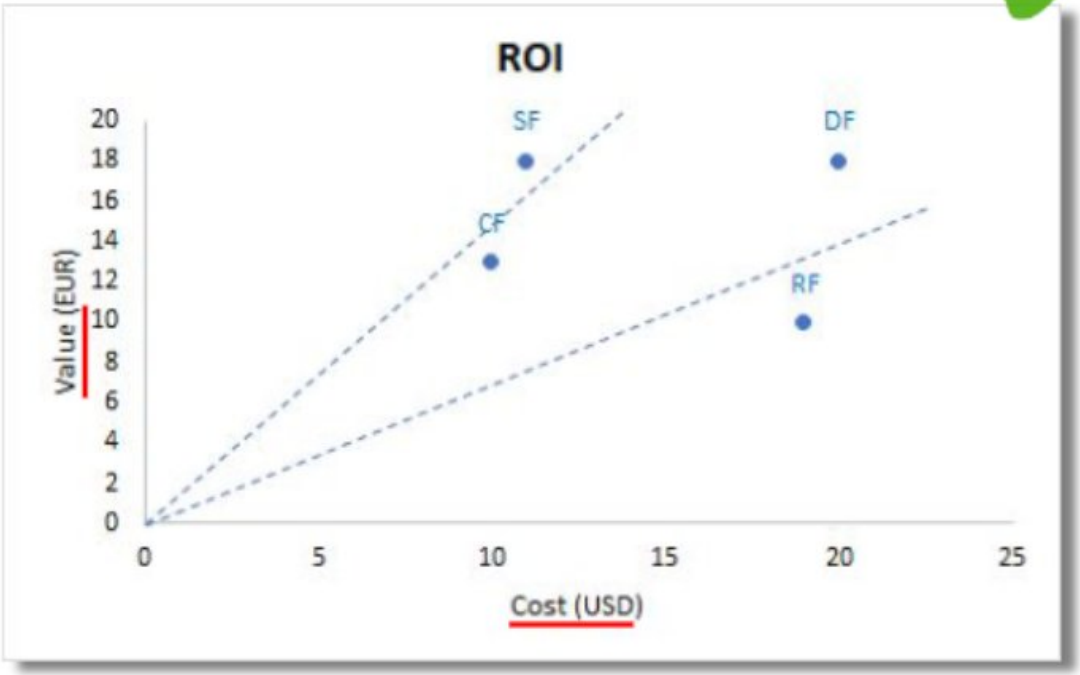
DF	18	20
RF	10	19
SF	18	11



第二个特点：顺丰

Task 1

Answer:
The next CIS release features BF and SF should be implemented because BF are mandatory and SF feature has the highest priority based on the ROI assessment.

NB: Answer should have included

- calculation of features' cost and value
- ROI plot
- Explanation of selected features

任务1

答：下一个 CIS 版本应该实现 BF 和 SF 功能，因为 BF 是强制性的，并且根据 ROI 评估，SF 功能具有最高优先级。

注意：答案应该包括

- 计算特征的成本和价值
- 投资回报率图
- 所选功能的说明

Task 2

Analyse the extract of the requirements specification for the Power AB System given in Table 2.

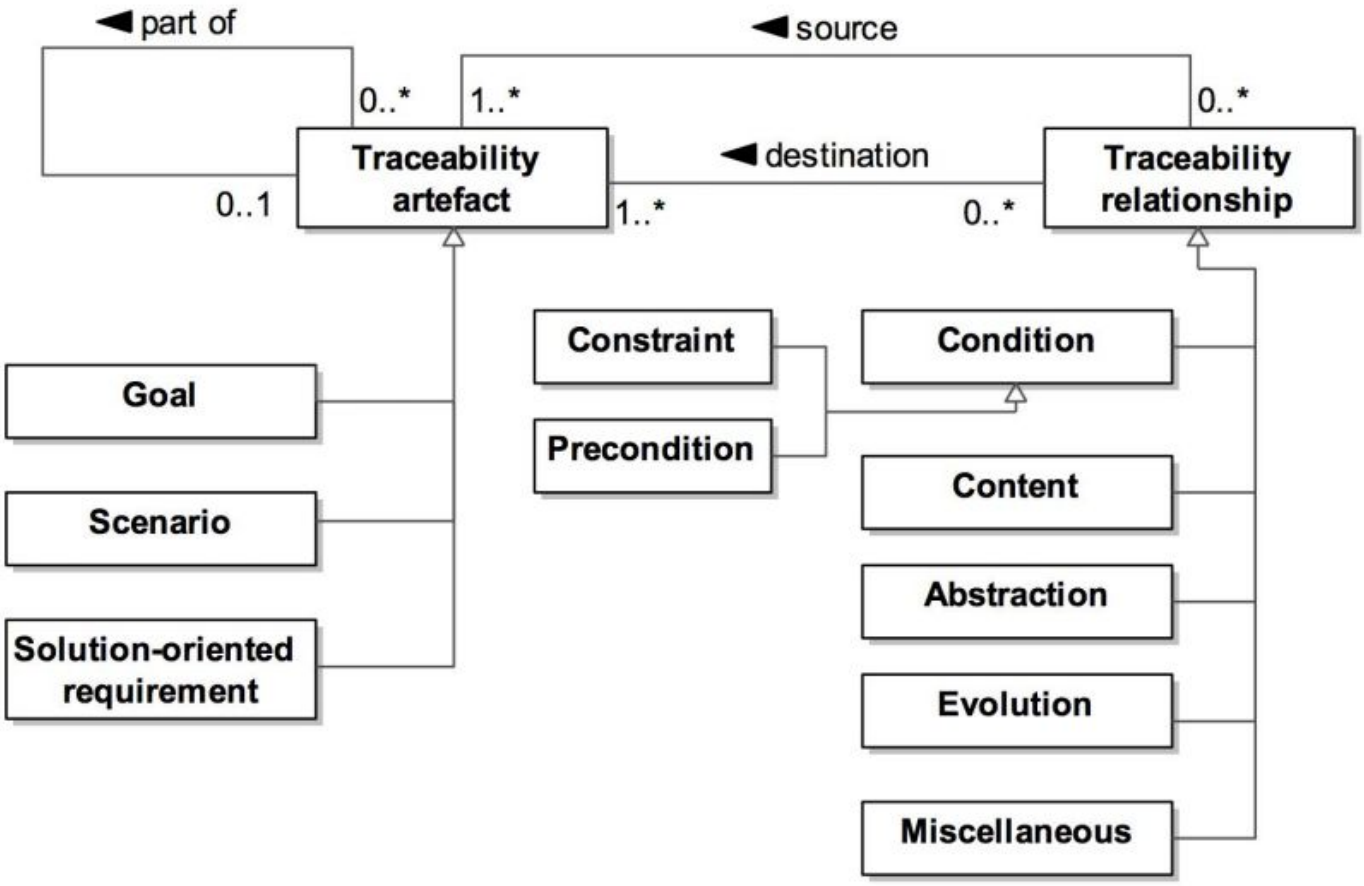
- Create the traceability model (where all eligible requirements artefacts and relationships among them are listed)
- Create one traceability matrix (another visualisation of traceability), which would capture all traceability relationships defined in Table 2.

任务2

分析表 2 中给出的 Power AB 系统需求规范的摘录。

- 创建可追溯性模型（其中列出了所有符合条件的需求工件及其之间的关系）
- 创建一个可追溯性矩阵（可追溯性的另一种可视化），它将捕获表 2 中定义的所有可追溯性关系。

Traceability Model



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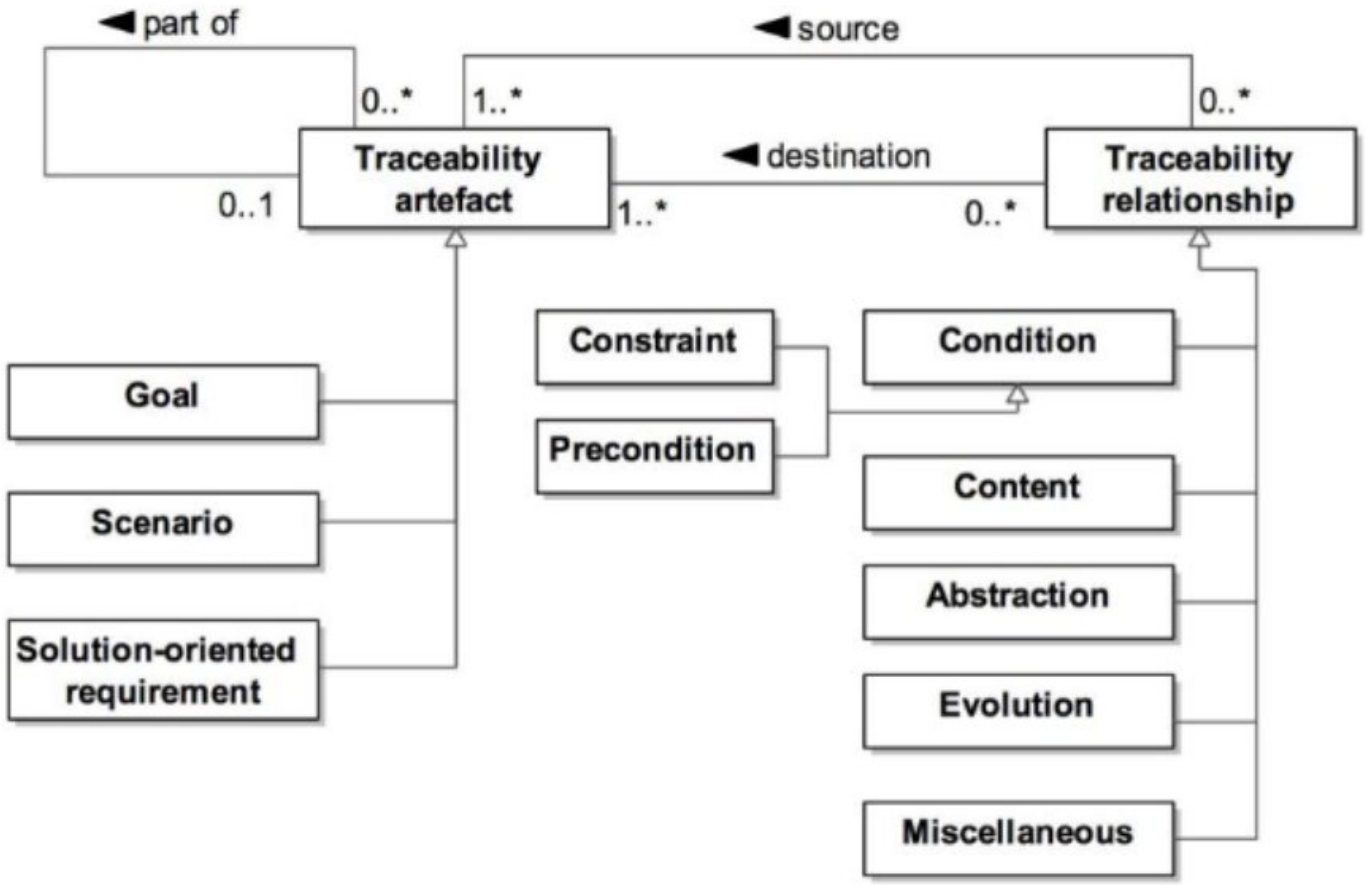


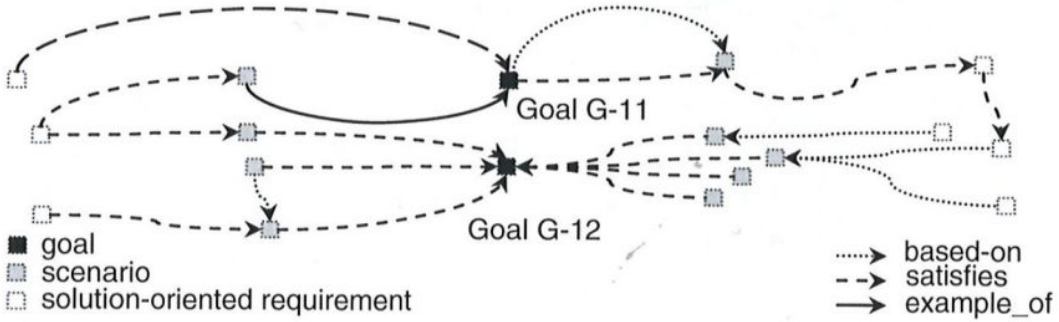
Documenting Traceability Relationships

- **Traceability Matrix**

Target artefacts

Source artefacts	Goal 1	Goal 2	Goal 3	Goal 4	Goal 5
Scenario 1	*satisfies*				
Scenario 2	*based_on*	*conflicts*		*satisfies*	
Scenario 3		*satisfies*			
Scenario 4	*conflicts*		*satisfies*		*satisfies*
Scenario 5		*satisfies*		*based_on*	

- **Traceability Graphs**



Documenting Traceability Relationships

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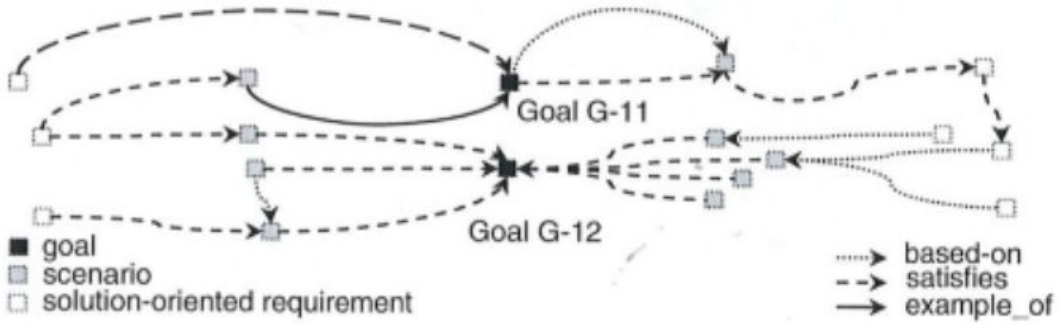

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Scenario 3		*satisfies*			
Scenario 4	*conflicts*		*satisfies*		*satisfies*
Scenario 5		*satisfies*		*based_on*	

Task 2

Traceability artefacts and relationships

US-FR-4	The station attendant should be able to save the fueling data as a receipt
Description	The fueling data entered by the station attendant should be stored as a receipt to be accessible by the department.
Traceability	**based on** PR-FR-3, a **precondition for** US-FR1, US-FR2
Goals	**satisfies** G22, **contributes to** G27
Use cases	**based on** UC-1, **refines** UC-2
Solution-oriented requirements	**connected to** SOR-F-1
Version	v.FR4.01

任务2

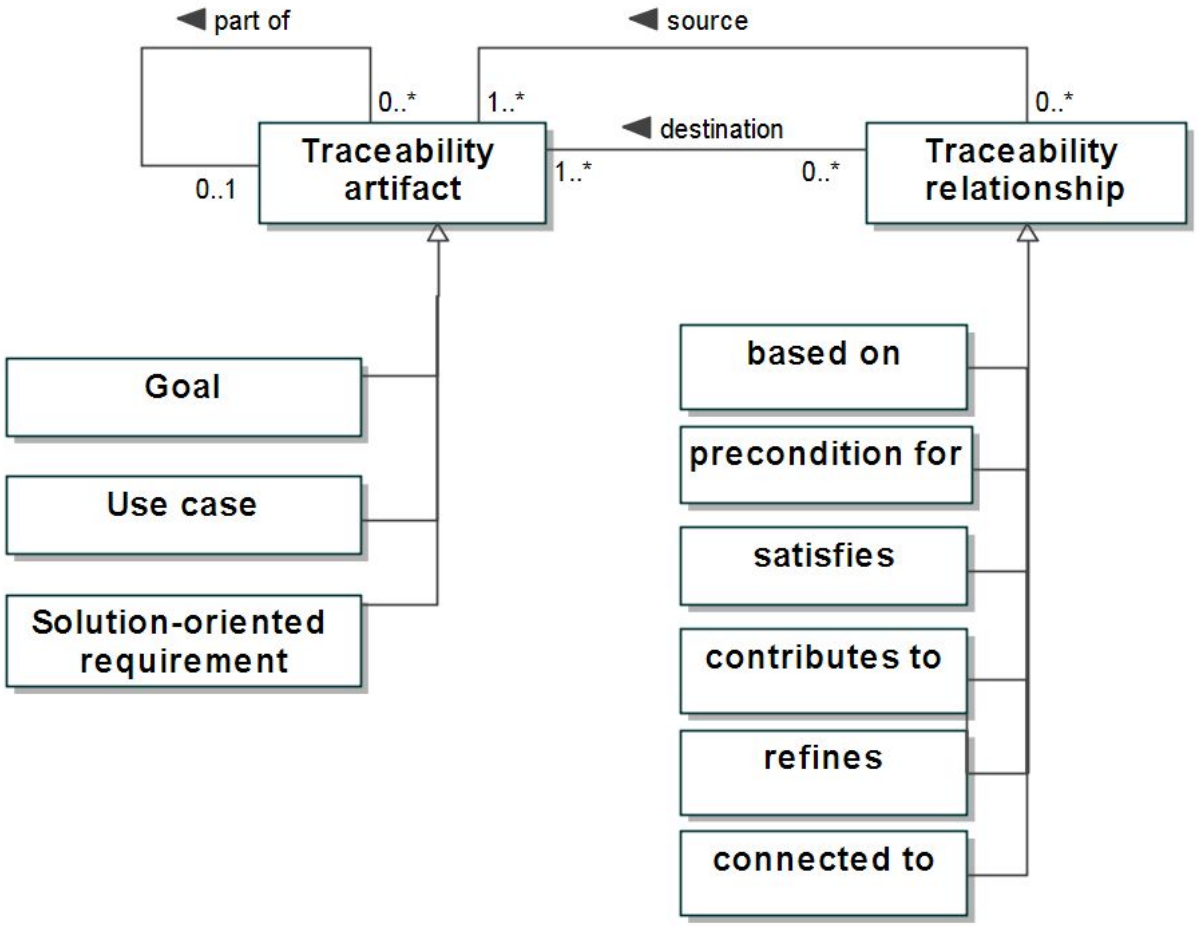
可追溯性文物和关系

US-FR-4	加油站工作人员应该能够将加油数据保存为收据
描述	加油站工作人员输入的加油数据应存储为收据，以便部门查阅。
基于 PR-FR-3 的可追溯性，是 US-FR1、US-FR2 的前提条件	
目标	满足G22，贡献G27
基于UC-1的用例，细化UC-2面向解决方案的需求	
	连接到 SOR-F-1
版本	v.FR4.01

Task 2

Traceability model

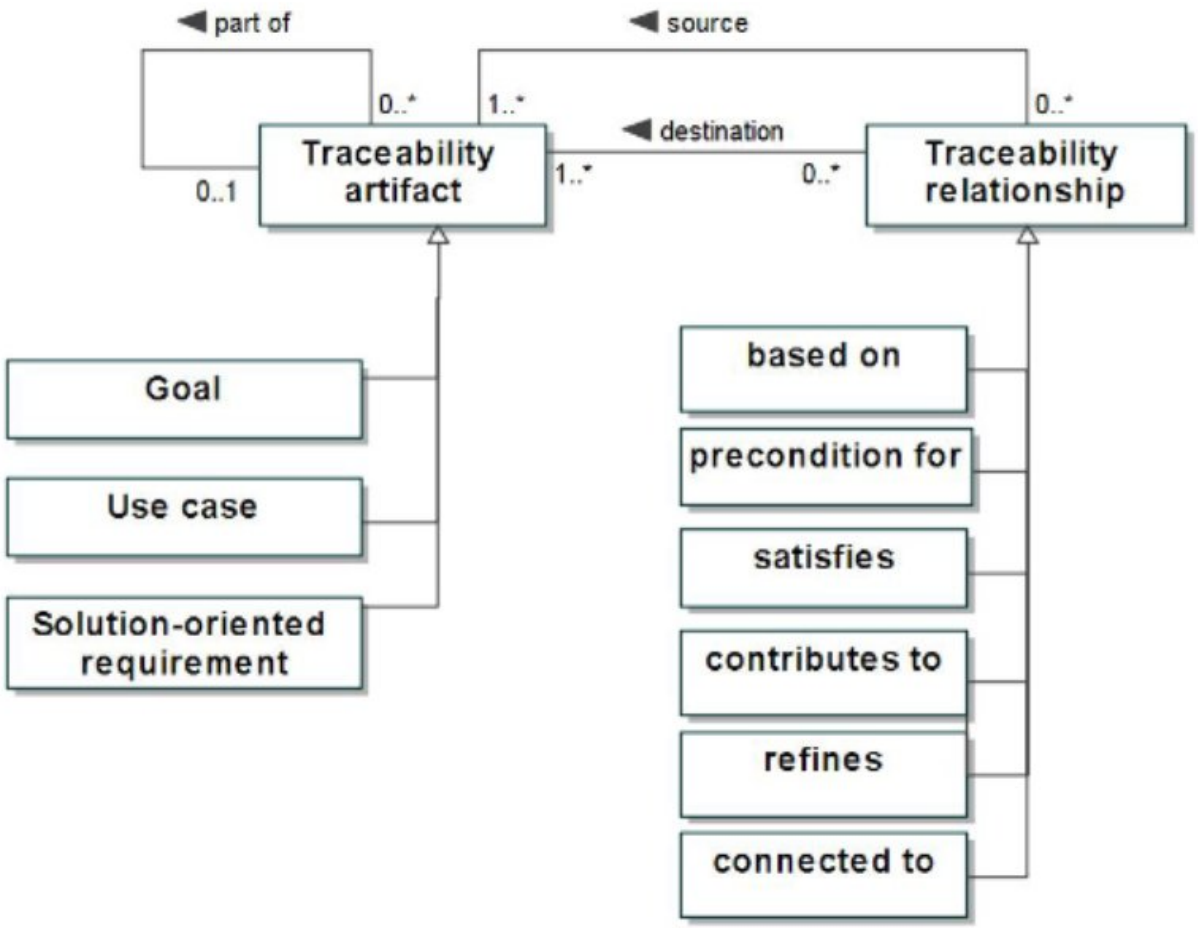
(solution)



任务2

追溯模型

（解决方案）



Task 2

Traceability matrix

solution

US-FR-4	based on	precondition for	precondition for	satisfies	contributes to	based on	refines	connected to
	PR-FR-3	**US-FR1**	**US-FR2**	**G22**	**G27**	**UC-1**	**UC-2**	**SOR-F-1**

任务2

追溯矩阵

解决方案

US-FR-4	based on	**PR-FR-3**	precondition for	**US-FR1**	precondition for	**US-FR2**	satisfies	**G22**
	contributes to	**G27**	based on	**UC-1**	refines	**UC-2**	connected to	**SOR-F-1**

Task 3

Evaluate quality of the given requirements specification

	WEIGHT	SCORE	TOTAL	COMMENT
	0 or 1, but intermediate scores (0,25; 0,5; 0,75) are also OK			
Does requirements specification follow the SPECIFICATION TEMPLATE? Has it…				
… purpose of specification?	2 w_1	s_1	$T_1 = w_1 * s_1$	
… scope?	2 w_2	s_2	$T_2 = w_2 * s_2$	
… glossary (acronyms and definitions?)	2			
… overview of specification structure?	2			
… product perspective?	2			
… product functions?	2			

…

		TOTAL:	$\sum T_i = T_1 + T_2 + \ldots$	

[per raw]
Weight * Score = $Total_i$

[Overall spec.]
Sum ($Total_i$) = Total

任务3

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	WEIGHT	SCORE	TOTAL	COMMENT
	0 or 1, but intermediate scores (0,25; 0,5; 0,75) are also OK			
Does requirements specification follow the SPECIFICATION TEMPLATE? Has it…				
… purpose of specification?	2	w1	s1	T1 = w * s
… scope?	2	w2	s2	T2 = w * s
… glossary (acronyms and definitions?)	2			
… overview of specification structure?	2			
… product perspective?	2			
… product functions?	2			
…				
		TOTAL:	Σ T = T + T + …	

[每原料]
体重*分数= 总分

[整体规格]
总和（总计）= 总计

Task 4

1 Which requirements engineering activity does help to observe the system context to detect context changes and manage the execution of requirements engineering activities?

- Requirements validation
- Requirements elicitation
- **Requirements management**
- Requirements representation

2 Why is it useful to perform traceability in requirements management?

- **To provide evidence that requirement was implemented in the system**
- **To assign development effort to individual requirements**
- To balance time-to-market with the amount of functionality
- **To support reuse of development artefacts related to a requirement**

任务4 3

1. 包括词汇正确性、语法正确性和结构正确性在内的质量称为什么?

o 经验质量
o 句法质量
o 语义质量
o 务实品质

2. 哪些类型的需求是对软件的全局约束并且通常无法在程序的单个模块中实现?

o 非功能性需求
o 质量要求
Ø 功能要求
Ø 申请要求

3. 哪些需求工程活动有助于观察系统上下文以检测上下文变化并管理需求工程活动的执行?

o 需求验证
o 需求获取
Ø 需求管理
o 需求表示

4. 为什么在需求管理中执行可追溯性很有用?

o 提供系统中已实施需求的证据 **o** 将开发工作分配给各个需求 **o** 平衡上市时间与需求量

功能性
o 支持与需求相关的开发工件的重用

Task 4

3 Which requirements activity provides the ability to describe and follow the life of requirements in both a forward and backward direction?

- **Requirements traceability**
- Risk management
- Requirements artefact
- Change management

4 Why do requirements change?

- **Problem encountered during system operation**
- Change in system release
- **Unsatisfactory system quality encountered during system operation**
- **Conflicts in the development facet**

5 What are the important activities that a baseline of requirements artefacts supports?

- Visibility of system operation
- **Basis for planning system release**
- **Estimation of realisation effort**
- **Comparison with competitor's product**

任务4 3

3. 哪个需求活动提供了向前和向后描述和跟踪需求生命周期的能力?

- o 需求可追溯性
- Ø 风险管理
- o 需求工件
- Ø 变革管理

6. 您可以验证创建的需求工件的需求吗?

- o 协议维度
- o 改变尺寸
- o 内容维度
- o 文档维度

4 为什么要求会改变?

- o 系统运行过程中遇到的问题
- o 系统版本变更
- o 系统运行过程中遇到的系统质量不理想 o 开发方面的冲突

5 需求工件基线支持哪些重要活动?

- o 系统运行的可见性
- o 规划系统发布的依据 o 实现工作量的估算
- o 与竞争对手产品的比较