

# Requirements Traceability Matrix

"A factor present in every successful project and absent in every unsuccessful project is sufficient attention to requirements<sup>1</sup>." - Suzanne & James Robertson. The *PMBOK® Guide* 5<sup>th</sup> Edition includes the gathering of requirements<sup>2</sup> and the production of a 'Requirements Traceability Matrix' as a key process in the development of the project scope statement.

Requirements traceability is the process that facilitates the description of each requirement and sub requirement and then ensures the requirement is fulfilled in the design, build and testing phases of the project and delivered to the customer or user.

The requirements traceability process operates in two directions:

- Traceability through to delivery:
  - Each requirement needs to be incorporated in the design and build.
  - Many requirements directly influence testing, if a requirement is for a process to operate in 2.5 seconds, a test needs to be included in the test plan to ensure actual performance is less than 2.5 seconds.
  - On delivery, the project needs to be able to demonstrate positively all of the requirements have been met either as tangible elements of the delivered artefact or as successful tests.
- Traceability of the effect of changes on requirements:
  - Each element of the system needs to identify what requirements its functionality supports.
  - Where a design change is being contemplated, it is important to trace the effect of the change back to the requirements and see what impact the change has on the requirements.
  - All changes to requirements should be recorded and traced.
  - If a requirement is changed, the customer needs to explicitly accept the modified requirement a part of the overall change approval.

There are numerous tools available to manage requirements gathering and traceability; the Requirements Traceability Matrix is one.

## Requirements Traceability Matrix

The Requirements Traceability Matrix can be developed in several different ways:

Each 'X' represents a point where functionality needs to be included in the system to deliver the requirement.

Requirements	Subsystems					Layers					Tiers				
	Administration	Publishing	Scheduling	Expenses	KPI Dashboard	Presentation	User Interface	Business Logic	Data Access	Services	Persistence	Client	Web	Application	Data
SR 1.1		x				x	x	x	x		x	x	x	x	x
SR 1.2		x				x	x	x	x		x	x	x	x	x
SR 1.3		x						x	x	x				x	x
SR 2			x			x	x	x		x		x	x	x	
SR 3			x			x	x	x		x		x	x	x	
SR 4				x		x	x	x	x	x		x	x	x	x
SR 5					x	x	x		x	x		x	x	x	x
SR 6	x					x	x	x	x		x	x	x	x	x

<sup>1</sup> For more on **defining requirements** see: [http://www.mosaicprojects.com.au/WhitePapers/WP1071\\_Requirements.pdf](http://www.mosaicprojects.com.au/WhitePapers/WP1071_Requirements.pdf)

<sup>2</sup> For more on **data gathering** see: [http://www.mosaicprojects.com.au/WhitePapers/WP1068\\_Data\\_Gathering.pdf](http://www.mosaicprojects.com.au/WhitePapers/WP1068_Data_Gathering.pdf)



- For software development, requirements are mapped on one axis with the system elements on the other; the matrix identifies which system elements support the delivery of the requirement.
- Alternatively, requirements may be mapped against defined objectives, to produce ‘big tasty cookies’ you need:

Req. #	Req. Description	Objectives		
		Tastes Good	Big	Safe
1.1.1	Use non-expired ingredients	x		x
1.2.1	Do not use wheat			x
1.3.1	Use gourmet chocolate chips	x		
2.3.1	Cook thoroughly	x		x
3.1.1	Cookie diameter is 6 inches		x	
4.1.1	Cooks take food handler's course			x

Each requirement contributes to one or more objectives.

- In more sophisticated situations, each requirement can be linked to specific processes or documents:

Requirement	Design Element	Construct Component	Test Case
TAB-001	D-APR607P	C-APR607P	T-004-01
TAB-002	D-ARX607P	C-ARX607P	T-004-09, T-004-15
TAB-003	D-APC103D D-APC103E	C-APC103D C-APC103E	T-004-22

- A third option is to trace requirements against the entity responsible for the work and delivery:

FPM #		Training Requirements	Responsible Organisation	Delivery Achieved
	4	<b>Training Requirements</b>		
	4.1	<b>Training Plan</b>		
	4	FPM is requested to provide and quote on an initial and ongoing training support package for VIPER and ACOS®. This quotation will include the following major components: Components and Methods of Delivery Organisational Levels for Component Delivery Ongoing Training Overheads for Training System as Designed	FPM	
	4.2	<b>Phase 1</b>		
	4.2.1	Planning staff, and Trade Coordinators, at a minimum, must be trained prior to the 09 Oct 09 delivery. Remaining users may be trained in follow-on up to 15 Nov 09 in preparation for the initial induction. Where possible, training should reduce the double up of system running process to a minimum.	Mosaic	
	4.3	Phase 2		
	4.3.1	To be defined prior to beginning of Phase 2 based upon agreed outcomes.	FPM	

This allows the status of requirements to be traced and reported

	4	<b>Training Requirements</b>		
	4.1	<b>Training Plan</b>		
5	4	FPM is requested to provide and quote on an initial and ongoing training support package for VIPER and ACOS®. This quotation will include the following major components: Components and Methods of Delivery Organisational Levels for Component Delivery Ongoing Training Overheads for Training System as Designed	Complies	Training and training documentation sufficient to start the VIPER process and start the management of the first AC are covered herein and comprise: Initial skill development Ongoing support via telephone & email Induction training for AA to incorporate The 'Train The Trainer' component will be a separate quotation which will be developed in Phase 2
	4.2	<b>Phase 1</b>		
5 5.1  5.7 5.8	4.2.1	Planning staff, and Trade Coordinators, at a minimum, must be trained prior to the 09 Oct 09 delivery.	See FPM response	FPM can comply with this, however, as indicated in AA email 12 AUG09 09:11 AA staff will not be available to train. Noting your staff availability it is unlikely that we can conduct a Basic ACOS course before 17NOV09 Noting your staff availability it is unlikely that we can conduct a Manage a VIPER Schedule course before 17NOV09
5.2 5.3 5.4	4.2.1	Remaining users may be trained in follow-on up to 15 Nov 09 in preparation for the initial induction.	Complies [see FPM response]	Subject to the availability of ECUS system training will be provided. VIPER Familiarisation will be provided. Working with WPs training will be provided

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