

PROGRAMME LIFECYCLE							
STRATEGIC PHASE				DELIVERY PHASE			
INITIATION STAGE	DEFINITION STAGE	ESTABLISHMENT STAGE	MANAGEMENT STAGE	DELIVERY STAGE			CLOSE
PROGRAMME OBJECTIVES	PROGRAMME SCOPING	PROGRAMME PRIORITISATION	PROGRAMME OPTIMISATION	FEASIBILITY	DESIGN	IMPLEMENTATION	CLOSEOUT STAGE
Rolling Wave							



When delivering large scale capital programmes, with high volumes of projects it is essential that standard approach is applied for estimating, cost control, risk management and planning to ensure a high consistency over the programme. There is also the fact to consider that the information for the projects within the programme will have a differing levels of maturity. Therefore it is essential to have an approach that can cater for this and is applied to every project.

## Rolling Wave is an important technique that effectively manages evolving scope within a programme

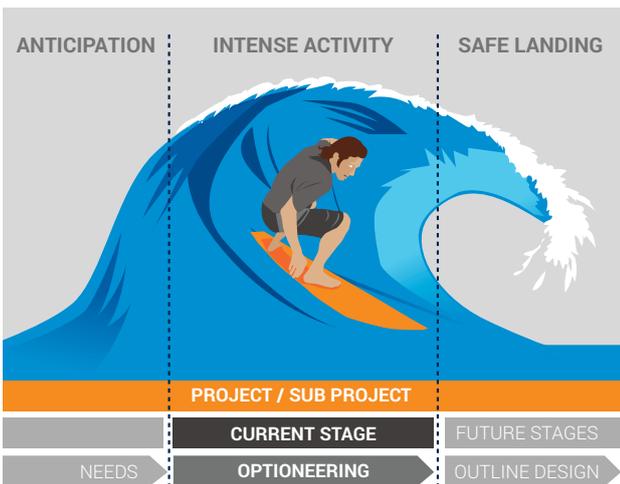
### What is Rolling Wave?

Rolling Wave is a technique used to manage a project in a series of waves. As the project proceeds over its lifecycle the later details become clearer. To accommodate this, the near-term work is planned in detail but future project work is based on high level assumptions, milestones and costs. As the project moves forward the assumptions, costs, milestones and risk information become more defined and therefore from an out turn perspective, reliable.

The technique is very effective when used on large-scale portfolios and programmes with large volumes of projects. Whilst most companies use the approach in some form or another, it requires consistency and clearly defined mechanisms that make it work effectively.

The four key mechanisms to introduce a sharp and consistent rolling wave approach are:

- Use of historic norms for the generation of regression curves which provide top down information for both scheduling and estimating
- A standard scalable Work Breakdown Structure (WBS)
- A standard scalable estimating Cost Breakdown Structure (CBS)
- Contingency split between discrete risk and estimating uncertainty



The Rolling Wave approach - dealing with the 'now' with an eye on the future



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## Key

### Speculative

This is where the depth of knowledge does not exist to give either a developed schedule or accurate costs. At this point of a project the information can only be developed from historic information on previously completed projects

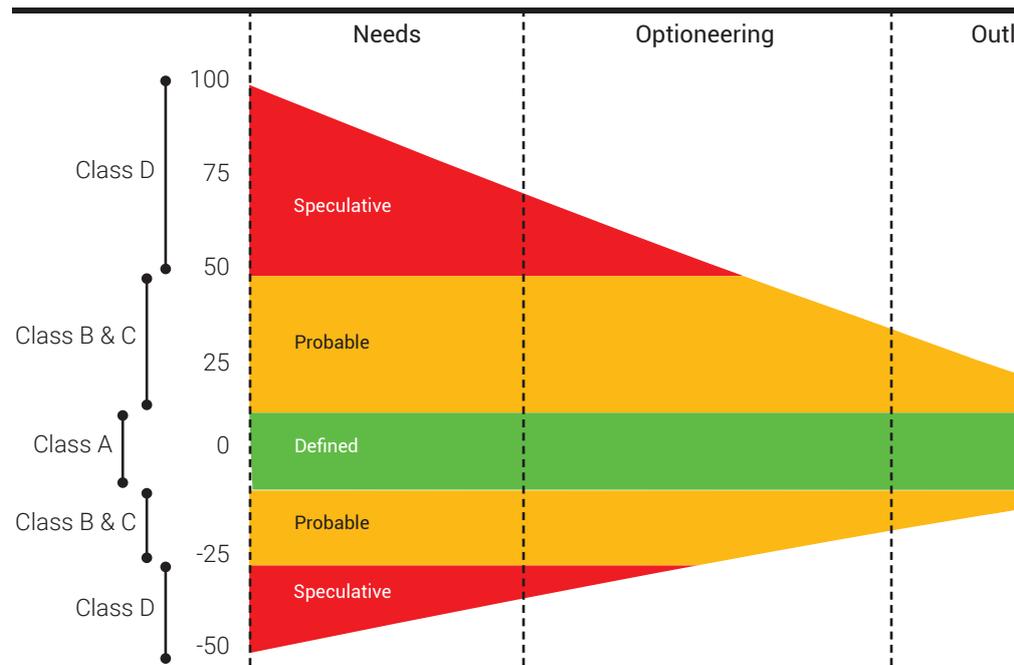
### Probable

There is a reasonable understanding of the effort needed, and whilst a flow process can be used to complete the stage, the fine details around the deliverables are not understood

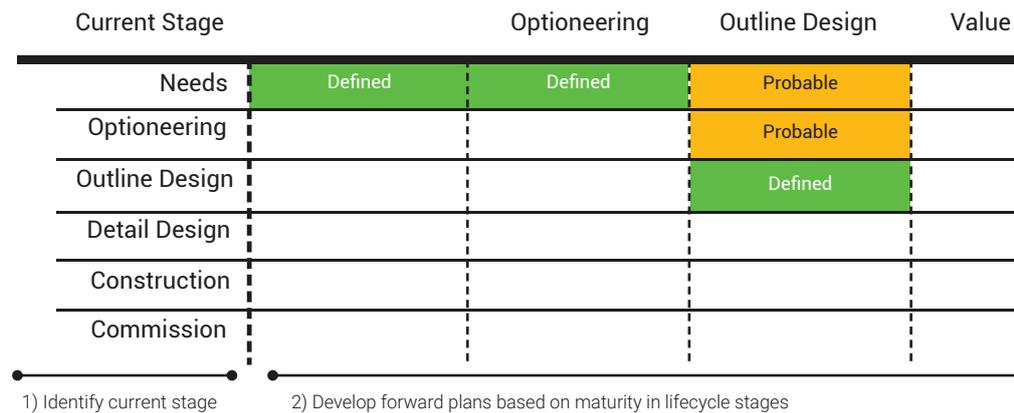
### Defined

This applies to the current work stage and in some cases the subsequent stage. The deliverables needed are fully understood and durations can be clearly calculated and the amount of effort needed can be clearly determined.

## Typical Investment Funnel



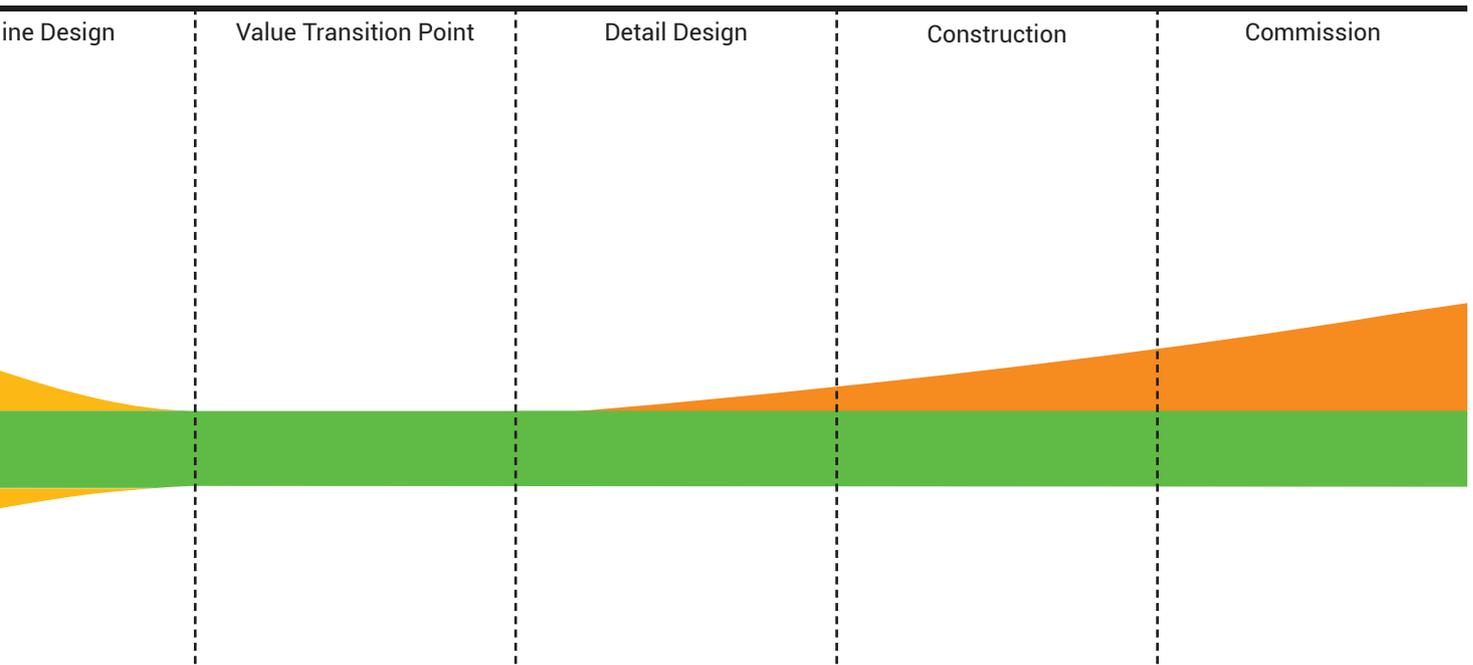
## Planning & Cost Lifecycle



## Ranges vary between companies & business sectors

Use of regression Curves for durations in later stages	Estimating ranges and classification		Primary contingency for specific phases		Future cost contingency allocation	%	
Underpinned activity based schedule	Defined	Range (+15%, -5%)	Class A (bottom up)	Defined	Discrete Risk	Defined	10%
Parametric durations with standard flow process activities	Probable	Range (+50%, -25%)	Class B&C (in-house norms)	Probable	Discrete Risk	Probable	10%
High level parametric duration based WBS activities	Speculative	Range (+100%, -50%)	Class D Parametric	Speculative	Estimating Uncertainty	Speculative	80%
Planning		Estimating		Risk Management			

As each project evolves through its own lifecycle within the overall programme, the maturity of project information available to the differing management streams also evolves. To successfully apply rolling wave requires that the evolution is effectively managed in a controlled approach, each specific management group has strict rules applied to the quality of the defined, probable and speculative information.



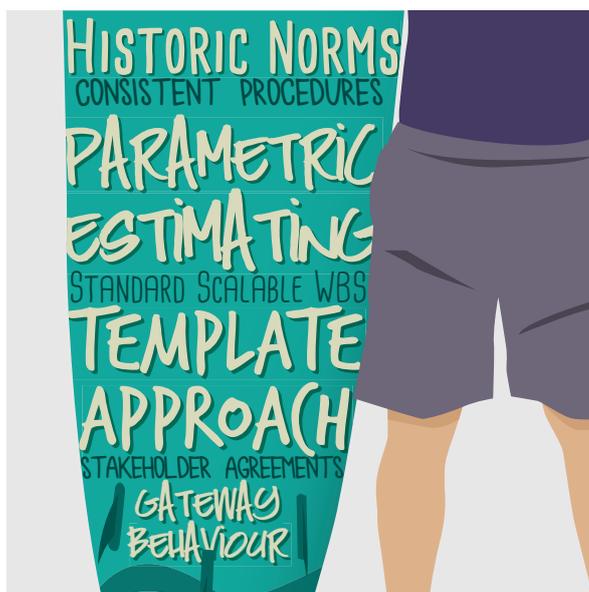
Transition Point	Detail Design	Construction	Commission
	Speculative	Speculative	Speculative
	Speculative	Speculative	Speculative
	Defined	Probable	Speculative
	Defined	Defined	Probable
		Defined	Defined
			Defined

## Using historic time and cost information for probable and speculative stages

The first mechanism needed is the use of historic norms collated, in some cases over several years. These are required to underpin confidence in out turns.

This mechanism facilitates improved information control and helps drive a knowledge culture. The approach can be supported by the use of duration and cost norms available in the public domain.

If the approach to using "Rolling wave" is clearly defined and documented, the implementation of the technique reduces optimism bias within projects. It ensures that both the cost and time-based contingency in the later stages all projects are maintained and not released until the right level of maturity has been reached.



The Rolling Wave Approach needs strong underpinning to work effectively

Rolling wave is applied on a consistent basis to planning, cost control, estimating & risk

## Key Benefits

- Improves output delivery success
- Allows projects to move forward with reduced definition
- Prevents too much contingency monies being applied into the early phases of a project
- Allows more accurate focus on risks
- Prevents projects & programmes having a too high optimism bias in the early stages
- Reduces future phase Project Management rework
- Allows future phase norm changes to cover all the programme
- Forces consistency on the use of WBS, CBS.
- Forces consistency in estimate production
- Demands knowledge capture
- Focuses business effort on the current and next stage,

### Governance rules are key to consistency of approach

The second mechanism is the use of a standard pre –defined hierarchical work breakdown structure. This ensures that information is applied in the right proportions for the defined, probable and speculative phases of the projects.

The third mechanism is the cost control approach. Again, a pre-defined standard and hierarchical cost breakdown structure is needed. Costs for the current stage are broken down in reasonable detail with costs for the future phases being consolidated at a higher level.

### Simplifying the application of contingency (Risk & EU)

Finally, a robust mechanism for contingency needs to be in place. Again rolling wave processes should also be applied. When we split contingency into its two elements of discrete risk and estimating uncertainty, a time based approach can then be used.

For the work stages that are described as defined, the discrete risk can clearly be evaluated and the impact and probability can be clearly assessed

For the future stages of a project, definition is much less clear. Historic norms and regression curves based on type are therefore used to determine time and cost. The nature of historic norms and regression curves means that previously impacted risks have been included in the values. Therefore if risk is applied again, there maybe duplication in the future stages.

Therefore, for these future stages, ranges of uncertainty will need to be applied. As a project moves through it's lifecycle the uncertainty reduces and the discrete risks can be identified and managed at control points and gateways.

The tangible benefits of using rolling wave are well defined, but to maximize the benefits it has to cover planning, estimating, cost management and risk. The approach is the most effective progressive elaboration technique currently in use . It results in far more focused and disciplined behaviour of the staff in both delivery and governance.



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