Train Metaphor

Adopting a metaphor for releases can be helpful to communicate release information throughout the organization. Many companies have found metaphors simplify discussions around the features included in a release by providing a language that all parties can relate to. It also lessens the political dimension that frequently results when discussing capacity using cost or staff hours.

The following "train" metaphor is provided as a suggestion to consider for discussing releases.

A train represents a release; the train seats represent the resource capacity; and the passengers represent features. This type of metaphor can work well within a defined portfolio management process. The train metaphor works on several levels:

- A train always leaves on a predefined timetable. It can be delayed somewhat while passengers are loading, but not much. The releases are deployed on a predefined timetable. They can be delayed somewhat while functionality is being implemented, but not much.

- A train has a preset capacity. Once the seats are full, remaining passengers must wait for the next train. If the train will pick up passengers at another station, the seats must be reserved. The releases have a preset capacity, as they are resource constrained. Once the release capacity has been reached, new features must wait for the next release.

- The train capacity is defined by how many passengers the train can take at one time. If you need to carry more passengers, you must add another car to the train. The release capacity is defined by how much the software engineering team can successfully analyze, design, construct, test and deploy in a given timeframe. If you need to implement more functionality in a given timeframe, you must increase the size of your software engineering team.

- The train's crew assignment is carefully planned. Switching crew members between stations is very costly and delays the schedule. If the train crew member has to unexpectedly switch between trains, both trains' schedules are impacted. The software engineering team's capacity must factor in anticipated switching.

- The software engineering team can determine what their staff month capacity is within a specified timeframe. They can then translate that into a sizing unit called "seats", which represents a specified number of staff months. Features are then estimated in how many "train seats" are required. Estimates are provided in ranges, from best to worst case. The range between the best and worst case can be narrowed as requirements and design are completed, providing more precise estimates and better understanding of what will be included.

The following table displays how you could use the train metaphor to represent a release during project planning. In this example there are 18 "seats" available for the project.

Prioritized Feature List Seats Required =>	Best Case	Expected Case	Worst Case
Reserved capacity for change requests	3	4	5
Feature A	1	1	2
Feature B (infrastructure for future release)	2	3	5
Feature C	3	5	5
Feature D	1	1	3
Feature E	3	4	4
Feature F	3	4	8
Feature G	5	6	7
Feature H	1	2	2
Feature I	2	3	4

Legend

	Within capacity
	Within capacity assuming switching does not exceed planned
	Additional capacity required

The table illustrates a number of key concepts:

- The cut-line describes a risk profile associated with how much functionality will be committed to; engineering's can only provide a "guarantee" of Features A, B, and C. Nominal planning should assume Features A-F, but that may need to be adjusted.

- The program anticipates needing to respond to changing user needs or late arriving features. The team has reserved capacity for change requests during the release.

- The team will be working on Feature B that will not be included in the release. This often occurs when a feature will take more than one release to fully develop.

- The spread of the capacity lines (e.g. between best and worst case) demonstrates the cone of uncertainty as applied to date-driven projects.

- The estimates, and therefore the capacity lines, factor in the lost productivity based on the anticipated amount of switching due to customer support and working on other projects. The features below the dashed line (highlighted in yellow) are those that will have to be dropped if the team has to switch more than anticipated.

The train metaphor can be extended to represent projects during strategic panning. Instead of using seats and features to represent capacity and demand, you would use a coarser unit called train cars (e.g. the engineering department capacity is 10 train cars and project one needs 1 – 2 cars). The coarser unit reinforces the Cone of Uncertainty concepts discussed in the seminar.