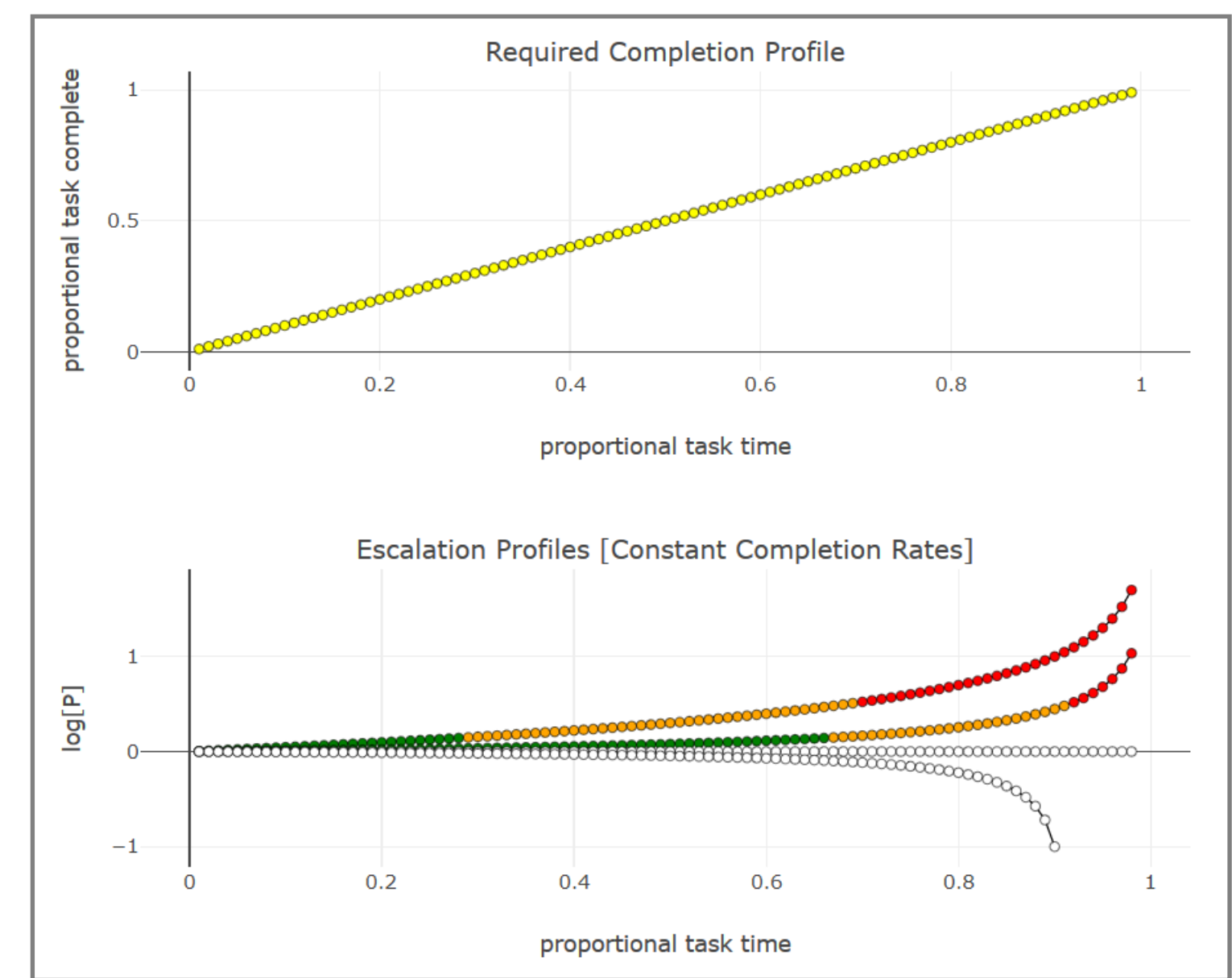


[1] Introduction

Many clinical trial activities are time critical. Thereafter resourcing and prioritizing tasks becomes the key to successful delivery. Whilst project management software defines the timelines, prioritizing and tracking the work is often manual. Described here is a method that enables task priorities to be calculated automatically based on task timelines and required task completion profiles.

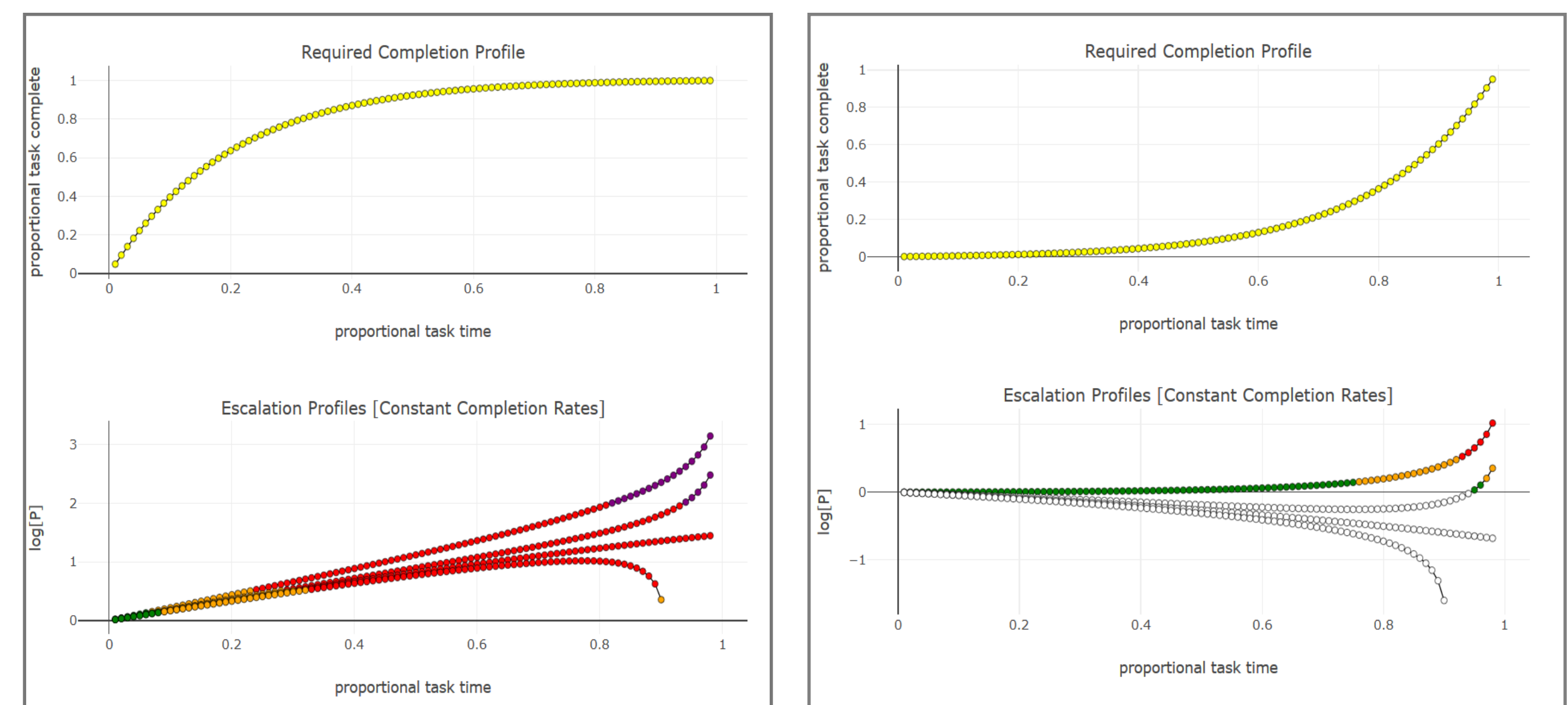
[2] Prioritization Method

The ratio of the proportional task completed / proportional task time remaining can be used as a task ‘escalation value’. Using ‘required task completion profiles’ the escalation value can be extended to reflect the task delivery schedule.



[3] Top: Basic linear task completion profile over time.

Bottom: Calculated escalation profiles over time for 4 different job completion rates with traffic light colours highlighting increasing task priority. Note the log scale.



[4] Task completion profiles where the work is planned or required to be completed early over the planned time [left] and late [right]. The associated escalation profiles shows how P (the escalation value) changes over (proportional) time. Log[P] = 0.0 when completed as planned.

[5] Use Cases

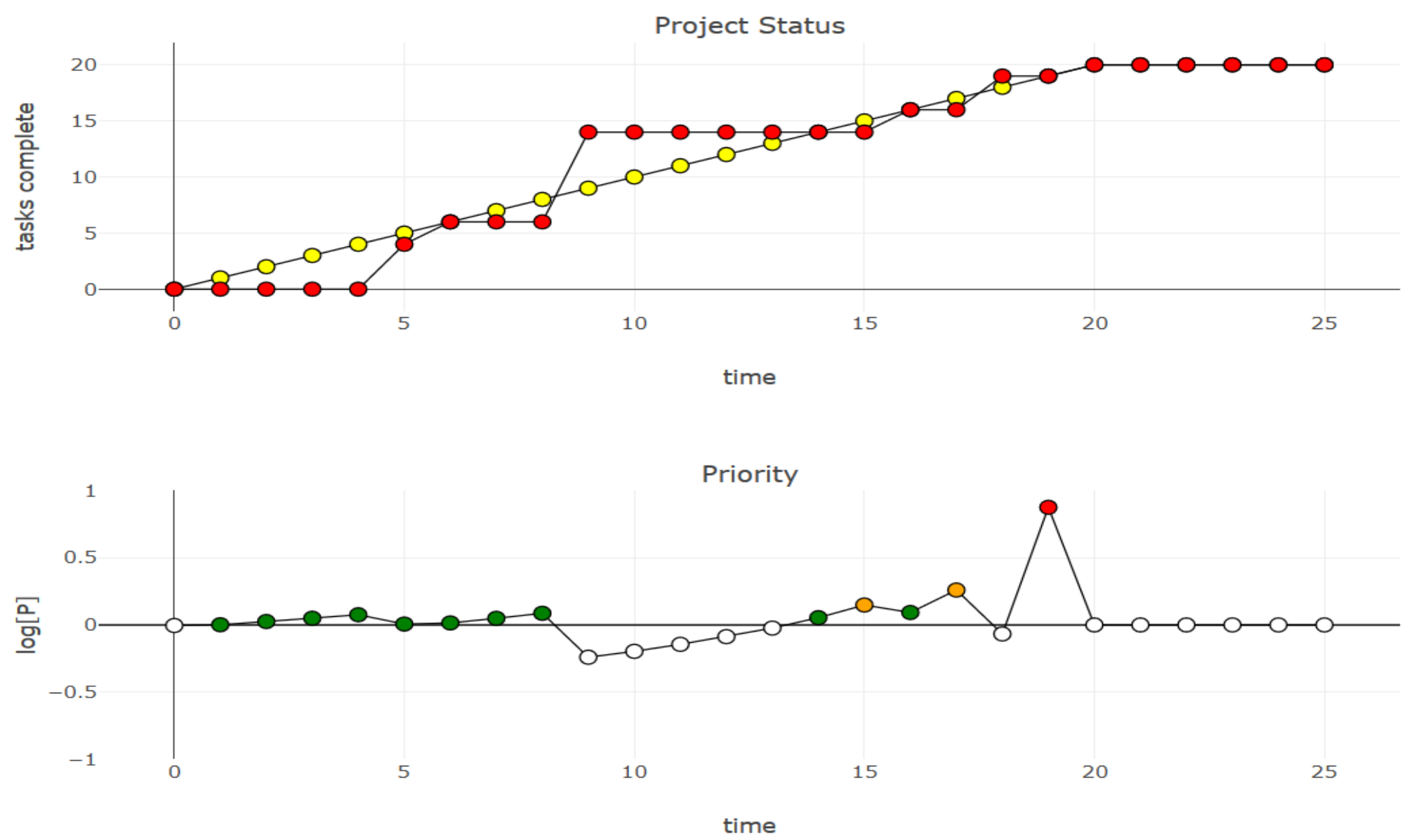
The method can be used to provide prioritizing guidance for a wide number of clinical trial operational situations. Three are illustrated: **Urgent Task Escalation, Project Progress Monitoring & SOP Status.**

[5.1] Use Case 1: Urgent Task Escalation

The panels below show screenshots illustrating urgent task escalation. The left panel (t=0) shows 9 ‘Normal’ planned tasks of which 2 are in progress. An ‘Urgent’ job (Rnk-5) is required. At time t=1 [middle panel] the ‘Urgent’ job has been escalated to the top of queue and is already flagged as requiring urgent attention. Task escalation will continue until each job has been marked as complete [right panel]

Rnk	TaskID	Rnk	TaskID	Rnk	TaskID
0	UseCase1-Normal01	0	UseCase1-Urgent01	0	UseCase1-Urgent01
1	UseCase1-Normal02	1	UseCase1-Normal01	1	UseCase1-Normal01
2	UseCase1-Normal03	2	UseCase1-Normal02	2	UseCase1-Normal02
3	UseCase1-Normal04	3	UseCase1-Normal03	3	UseCase1-Normal03
4	UseCase1-Normal05	4	UseCase1-Normal04	4	UseCase1-Normal04
5	UseCase1-Urgent01	5	UseCase1-Normal05	5	UseCase1-Normal05
6	UseCase1-Normal06	6	UseCase1-Normal06	6	UseCase1-Normal06
7	UseCase1-Normal07	7	UseCase1-Normal07	7	UseCase1-Normal07
8	UseCase1-Normal08	8	UseCase1-Normal08	8	UseCase1-Normal08
9	UseCase1-Normal09	9	UseCase1-Normal09	9	UseCase1-Normal09

[5.2] Use Case 2: Project Progress Monitoring

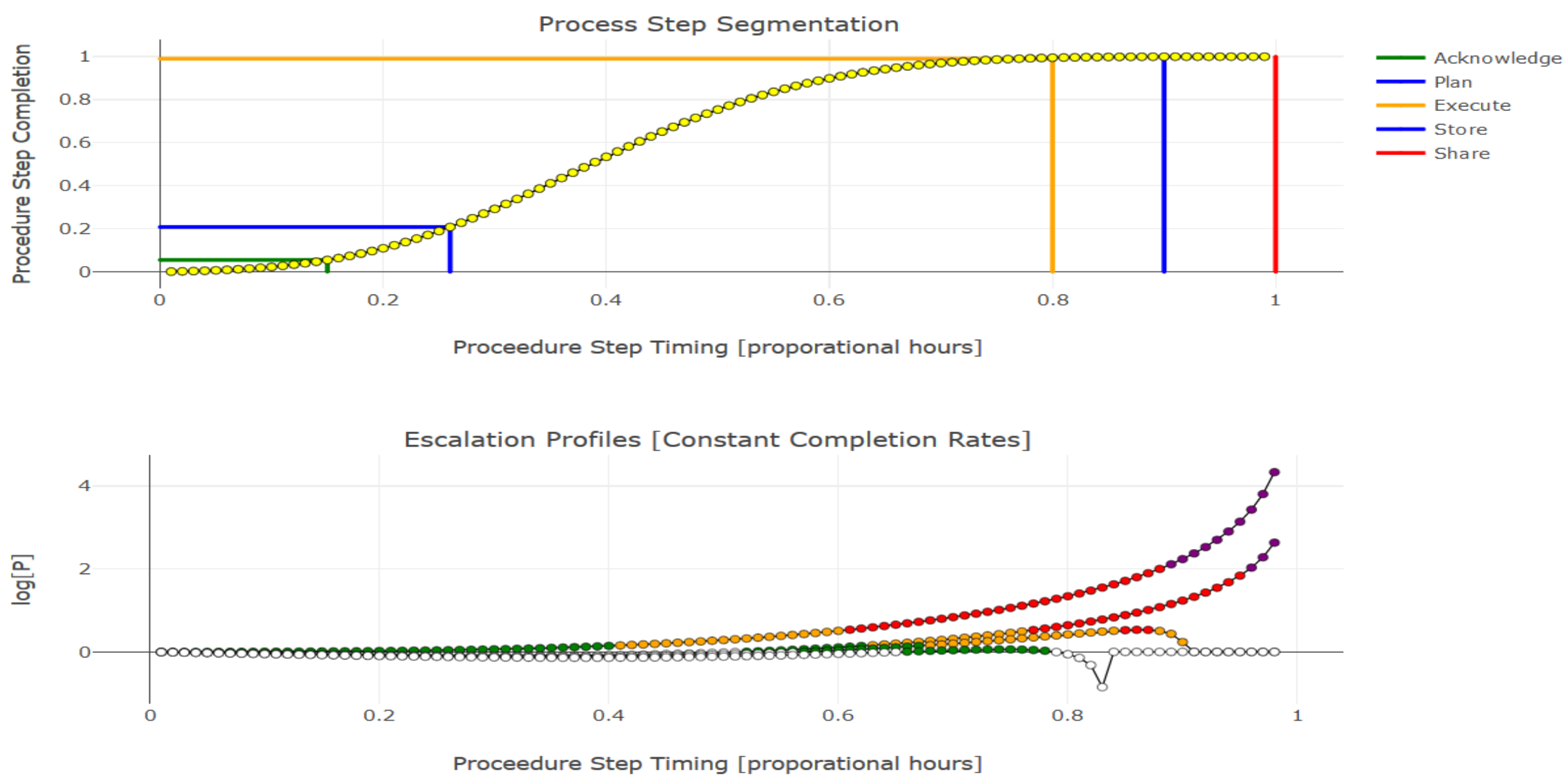


The figures above show the method used to track project progress. 20 jobs (e.g. Study SDTM datasets) are planned to be completed over 20 days at a rate of 1/day (top, yellow line). The red line shows the total number of completed tasks over the project timeline.

The bottom figure is the priority profile on each day for the actual values. This shows that except for the final delivery the project progress is on target (i.e. centred around log[P] = 0). This can be easily automated by linking to a workflow event recorded, for example, the completion of QC by an SCE or EDC system.

[5.3] Use Case 3: Operating Procedure Status

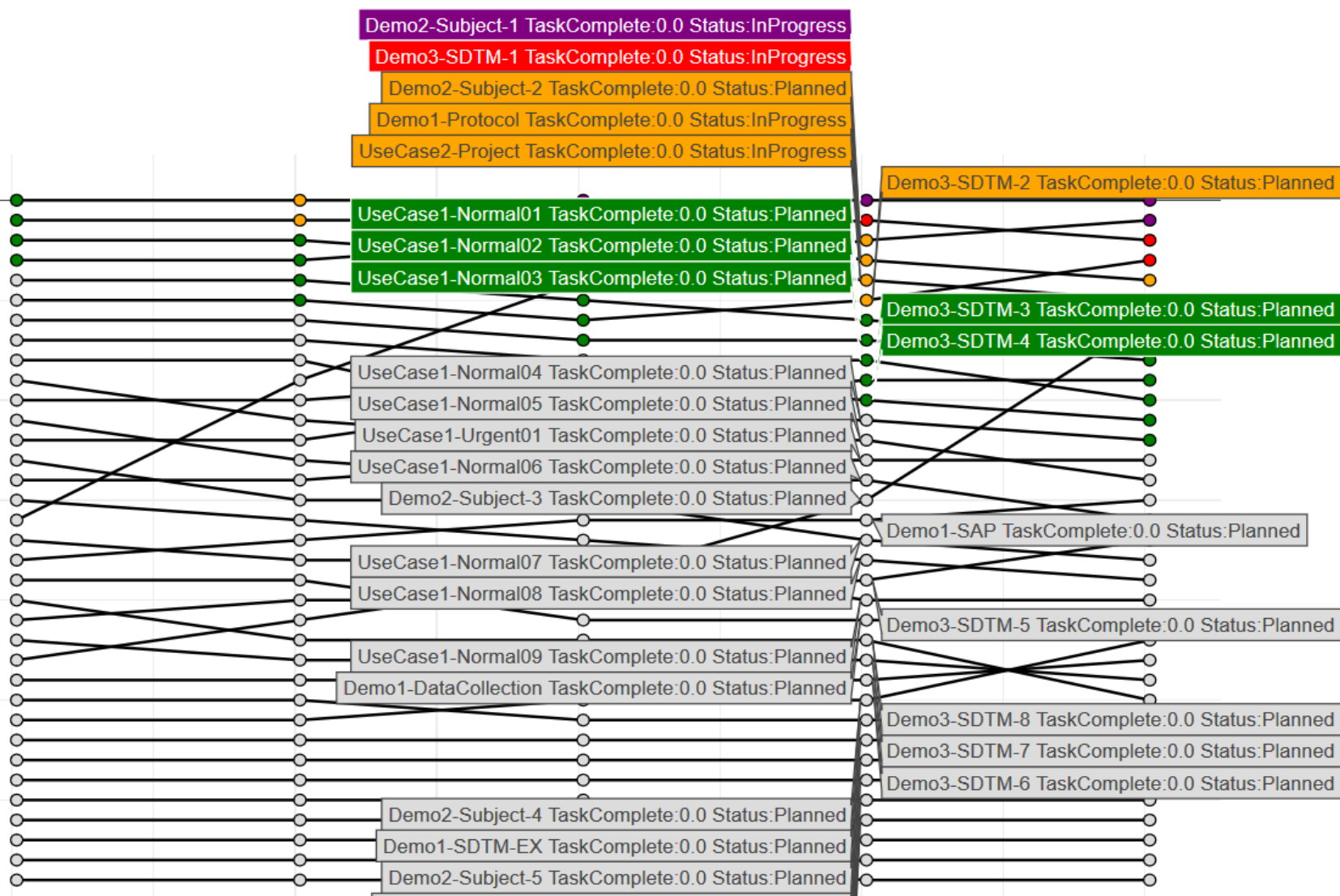
An example of a more complex completion schedule is shown below. The delivery times for a five step procedure (APSS) have been mapped to each of the procedure steps using a sigmoidal function. Proportion hours here could reflect either total elapsed times or billable task hours as recorded, for example, in a timesheet system. By recording the completion of each step the escalation profiles can then track either process progress versus plan or budgeted hours.



[6] Implementation

The method has been implemented in support of a number of operational tasks for both administrative activities as well as study related tasks.

The screenshot shows an demonstration example of a dashboard panel showing forward priority ranking under a ‘no further work’ conditions. It is useful for recognizing and responding to potential forward planning resourcing or delivery issues.



[7] Summary

This work describes a systematic configurable method for prioritizing tasks that reflects both task timelines and task work schedules. Integrating this with other tools (e.g. PM software or workflow apps) enables it to be implemented in support of existing operational management processes.