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Graphing Made Easy for Project Management

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ABSTRACT

Project management is a hot topic across many industries, and there are multiple commercial software packages for managing tasks available. The reality however is that the majority of project management software is not applicable for daily usage. SAS has a solution for this issue that can be used for managing tasks graphically in real-time. This paper introduces a new paradigm for project management utilizing the SAS Graph Template Language (GTL). SAS clients can use GTL to visualize in real-time resourcing, task assignments, delivery tracking, and project status across multiple task levels for more efficient project management.

INTRODUCTION

To make graphs more user-friendly for managing projects, this paper uses SAS graphing technology, in particular SAS Graph Template Language (GTL), to visualize resourcing, task assignments, delivery tracking, and project status in real-time. Samples of these graphs are presented under each section to show the power of visualizations to improve efficiency in project management.

RESOURCING

By knowing background of resource information, delivery tasks, in terms of priorities and complexities, can be assigned to team members accordingly without risking quality and/or delaying timeline.

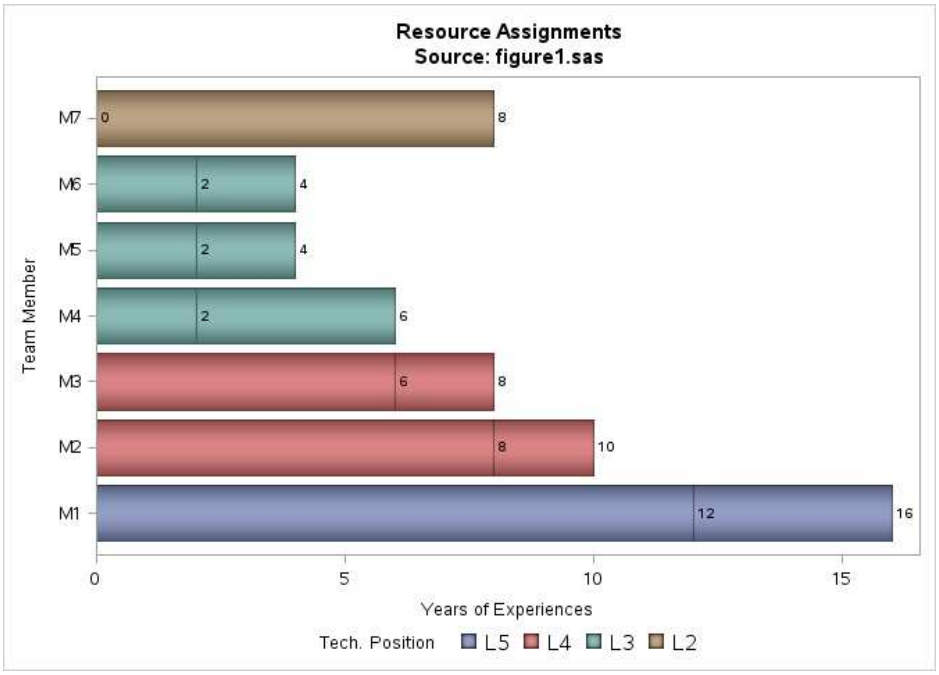


Figure 1: Resourcing within Team per Professional Experience

Figure 1 is a sample about available resource information within a team. There are all seven team members (i.e. M1 to M7) in four different technical positions (i.e. L1 to L4) with the various years of professional experience. On each bar, the first number shows the team members' years of working experience in the industry prior to working at the current company, and the second number shows the

total number of years of working experience, which is equal to the sum of the number of years working prior to the current company and the number of years working at the current company.

TASK ASSIGNMENTS

An overview of all task assignments with corresponding deliveries is a key to have a full pictures about the workloads within a team.

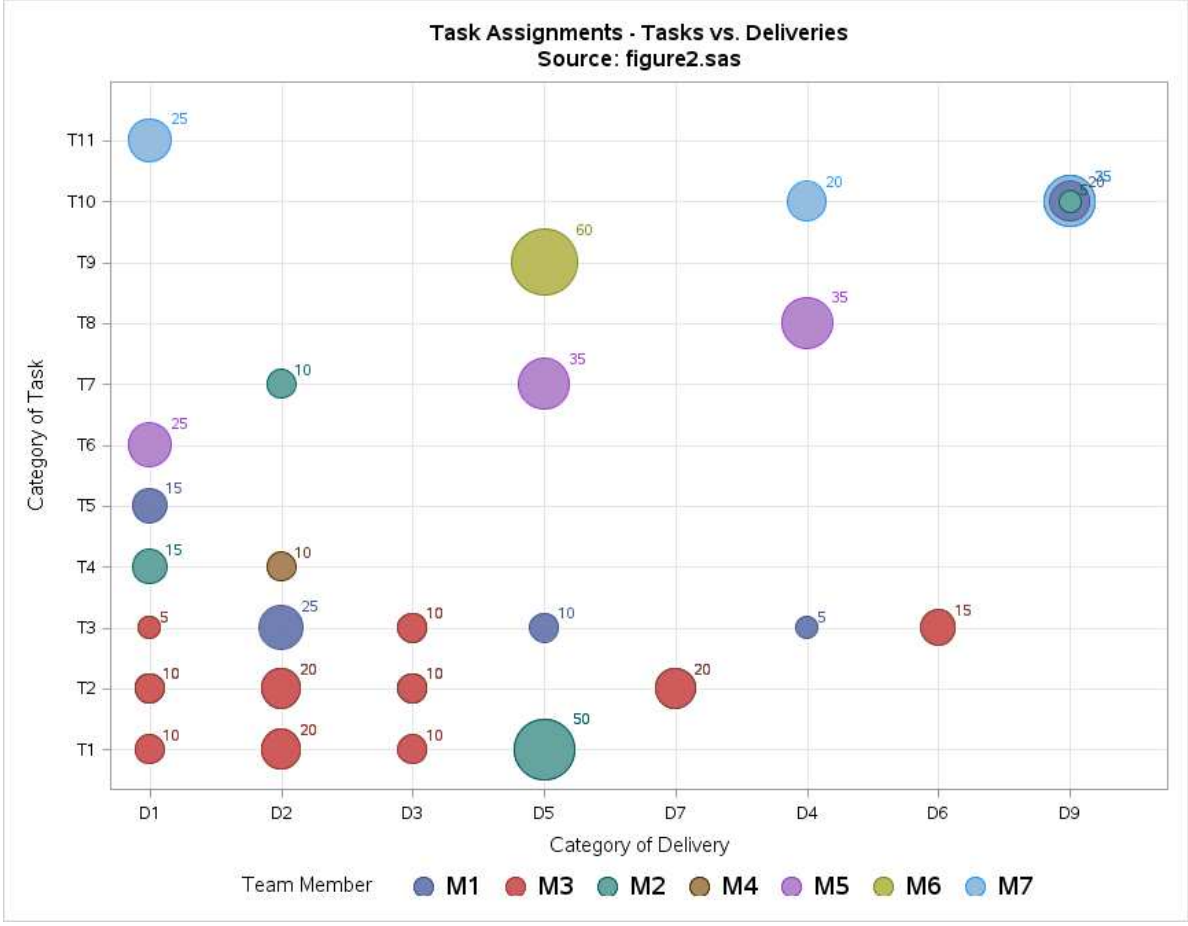


Figure 2: Overview of Tasks vs. Deliveries

Figure 2 demonstrates a matrix of tasks and their deliveries in different weights, indicated by the different bubble sizes. For example, Task #1 (T1) has a total of five deliveries (i.e. D1 to D5), and delivery #1 (D1) requires 10% of the task #1(T1) whereas delivery #5 (D5) requires 50% of the whole task. Also, as shown, there is only one delivery (D1) for Task #11 (T11).

The figure also indicates that certain types of deliveries (e.g., D1) are required for almost all tasks, but in different weights. Recognizing the importance of these more common deliveries may help ensure that their requirements are consist across all relevant tasks or, if necessary, may help to establish standard requirements for those common deliveries.

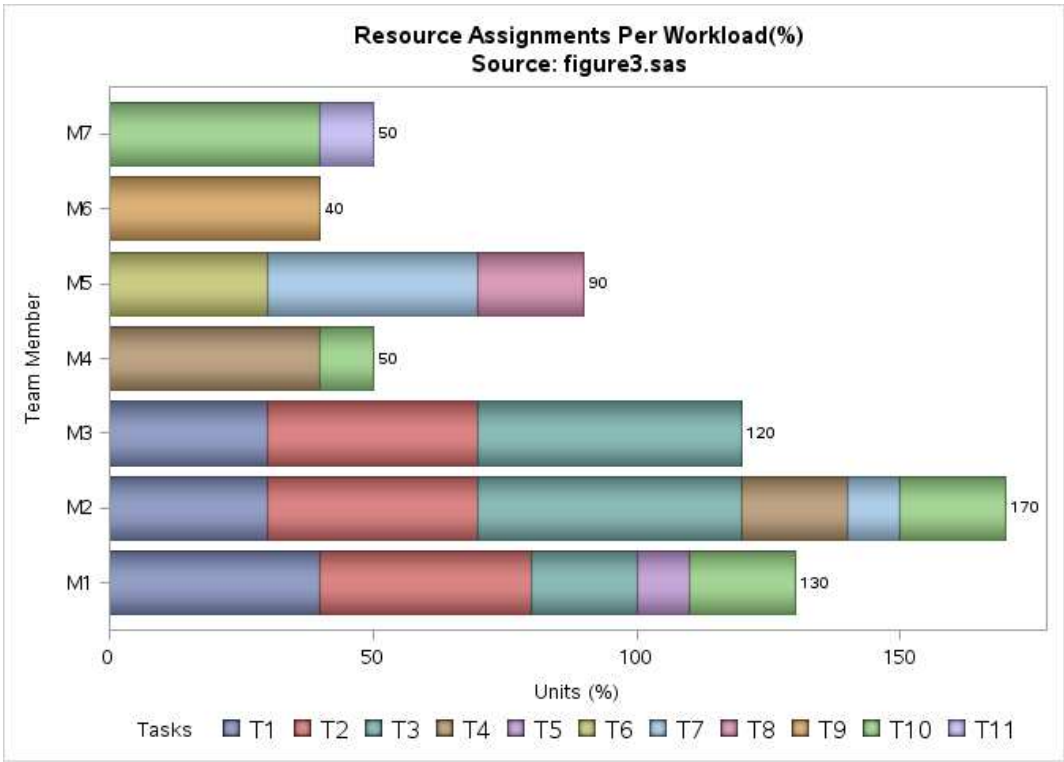


Figure 3: Workloads of Team Members vs. Tasks

Figure 3 above shows the workloads of all seven team members contributing to all tasks. The total workload for each team member, aggregating the workloads of each individual task, is also shown. It also indicates that the numbers of tasks per each team member and which team members are working on the same tasks.

For an example, one team member, M4, has only two tasks (T2 and T6) and spends about 10% and 40% of his workload on those two tasks, respectively. Also, the figure shows that there are three team members (M1, M2, and M3) working on the same task (T2), indicated by the same color on the bars.

DELIVERY TRACKING

Manually tracking all deliveries across multiple tasks responsible by each team member against the timeline could be very timing consuming job. Even with careful attentions with carrying a notebook, marking on whit board, or one to one meeting, forgetting monitoring a few deliveries could occur.

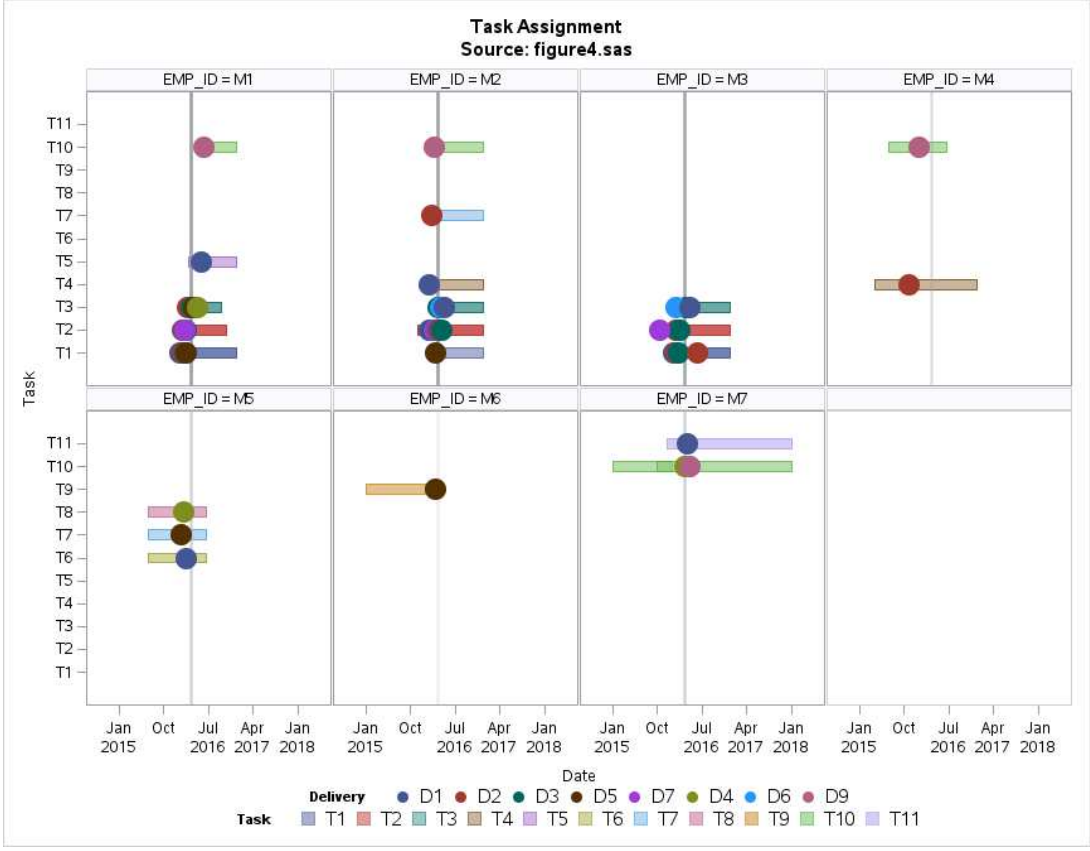


Figure 4: Overview of Delivery Timelines for All Team Members

Figure 4 above provides an overview of the timelines for all deliveries under all tasks by all team members, with the vertical line in each box representing the present moment. It is also easy to identify any overlapping delivery timelines for any team member across multiple tasks, as well as to see if any delivery is overdue or quickly approaching its due date.

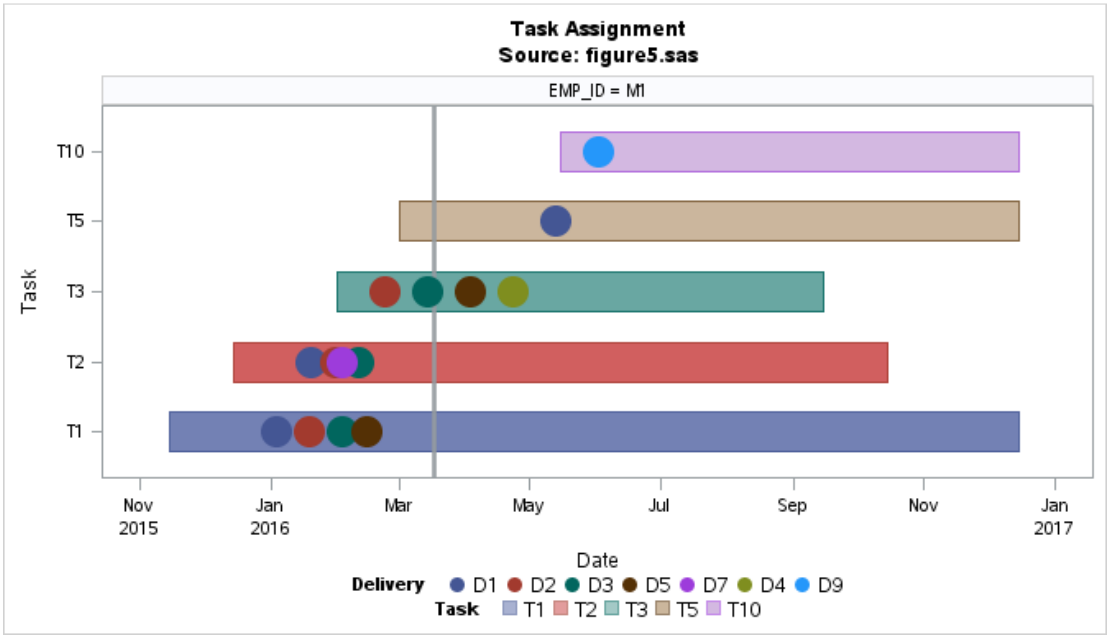
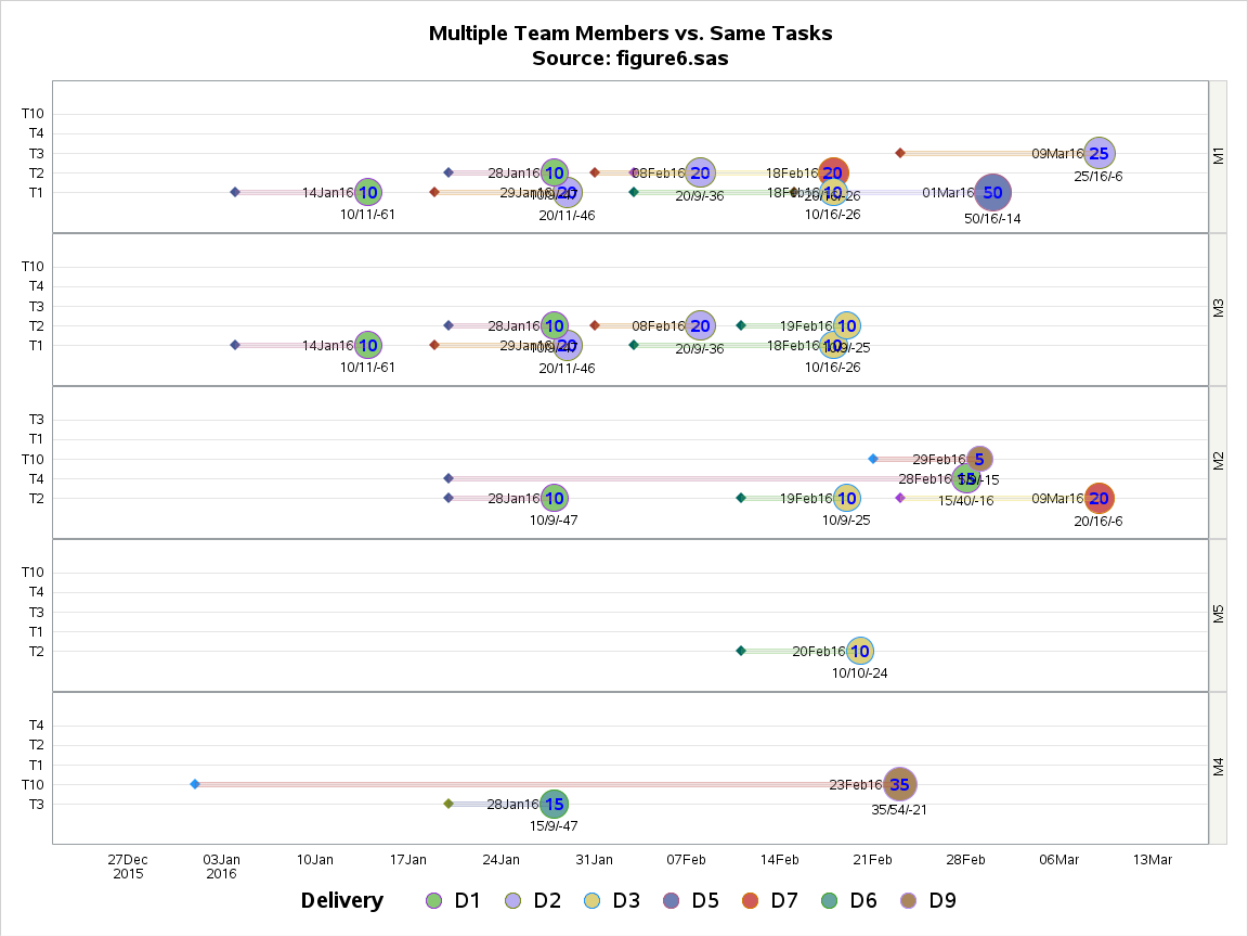


Figure 5: Overview of Delivery Timelines for Individual Team Member

In Figure 5, we zoom in to the timelines of Figure 4 to look specifically at a randomly selected team member, M1. It is very clear from our visualization that more attention should be given to deliveries from M1 during the period from February 2016 to March 2016 because M1 has been assigned a total of five tasks (T1, T2, T3, T5, and T10). The beginning and completing dates for each task is showed with a starting and ending points of each bar. More detailed information is needed to see if there are any overlapping deliveries as to avoid any delays or deviances from the planned timelines.



Figures 6: Deliveries and Tasks by Multiple Team Members

Figure 6 is the final solution from one case study, in where there was conflict for deliveries by same team member from the original plan (See the case at Appendix in detail). It shows the revised assignment of tasks where the overlapping deliveries for M1, M2 and M3 are eliminated and resolved.

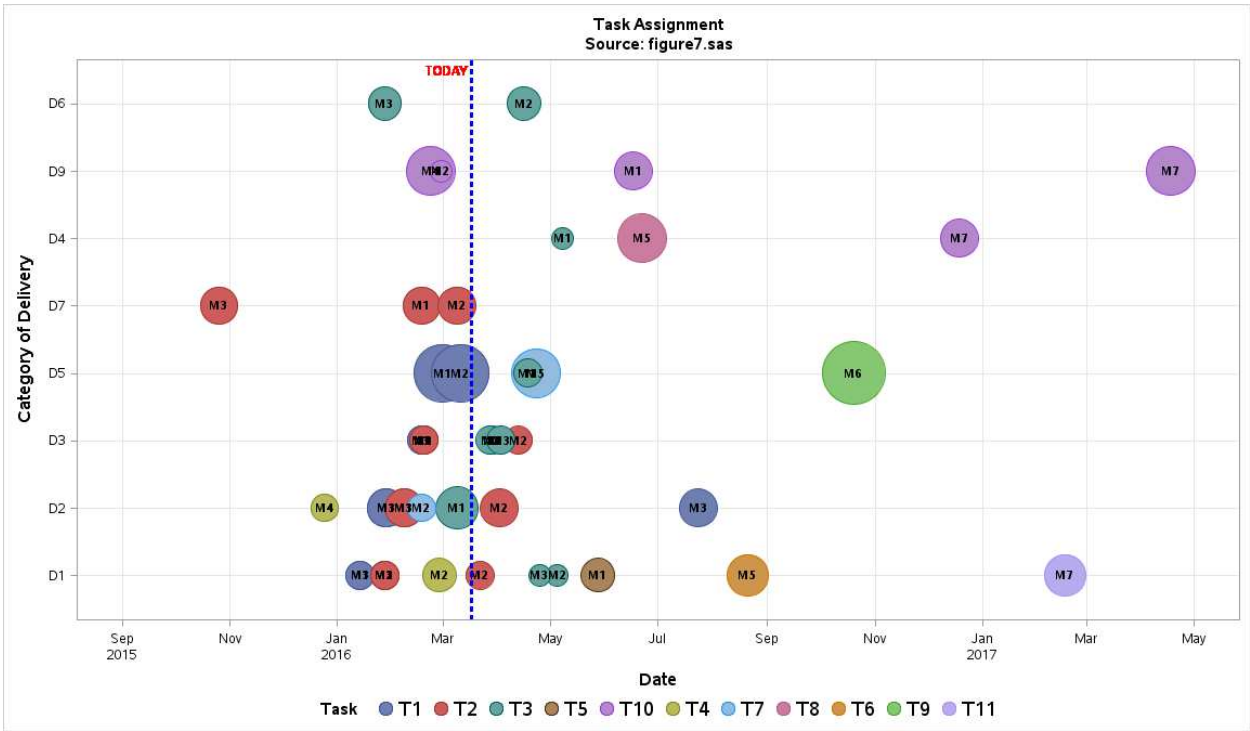


Figure 7: Overview of Timelines for All Deliveries from All Tasks by All Team Members

Figure 7 above shows all delivery information together, including dates, tasks, team members, and weight of deliveries. It is now easy to track the approaching deliveries using the vertical dotted line as a reference for the present day. For example, one observation we can make is that M2 will have the first delivery (D1) on the team for T2 with a very light delivery. The figure also indicates that there will be many more deliveries in the first half of the year 2016 as compared to the second half, so team activities can be arranged accordingly.

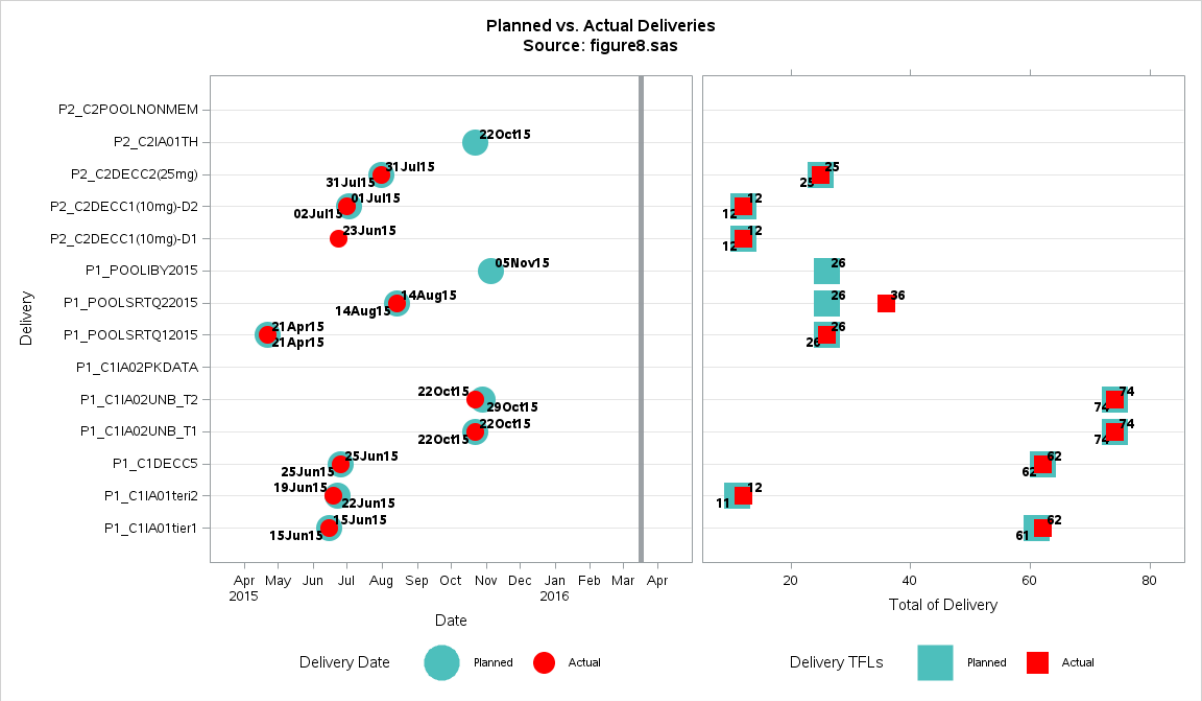


Figure 8: Monitoring Planed vs. Actual Delivery Dates and Items (Occurred)

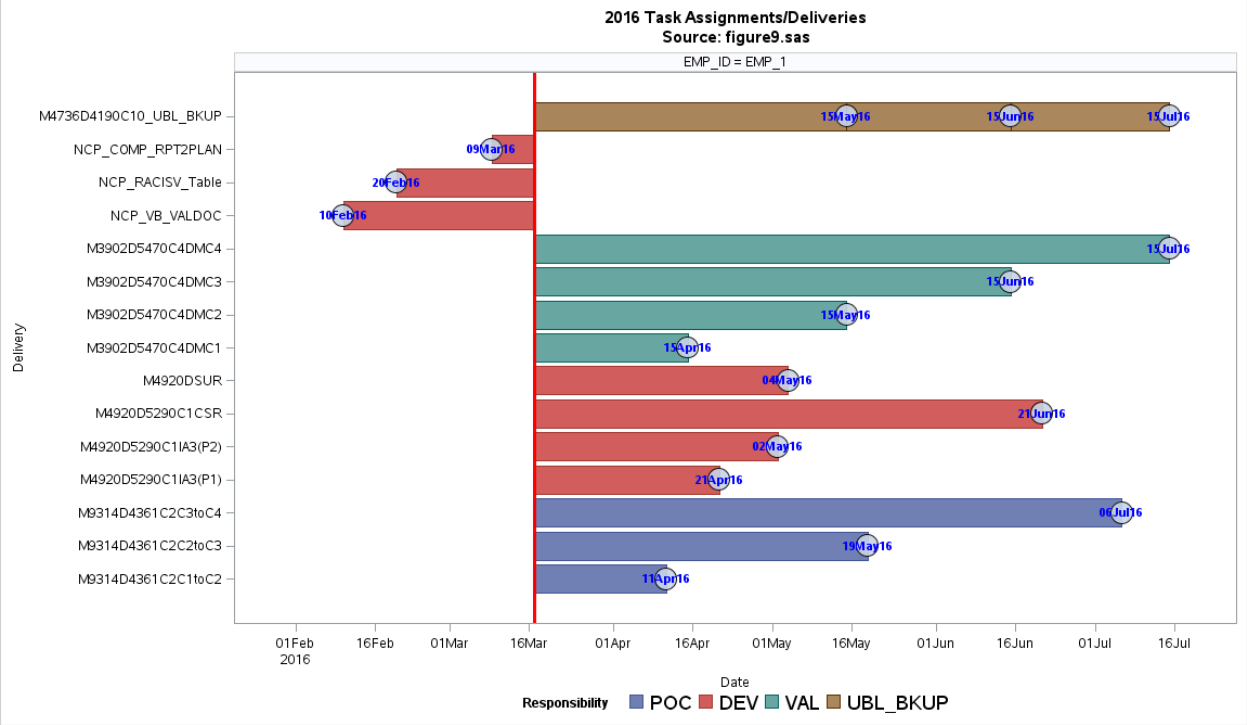


Figure 9: Monitoring Planed vs. Actual Delivery Dates (Ongoing)

There are two panels in Figure 8, showing the planned dates and actual delivery dates for delivery items. A red dot overlapping a blue dot indicates that planned and actual delivery dates, as does a red square overlapping a blue square. Figure 9 also shows the monitoring plan for all recent and ongoing deliveries across multiple tasks for an individual who has four major responsibilities.

PROJECT STATUS

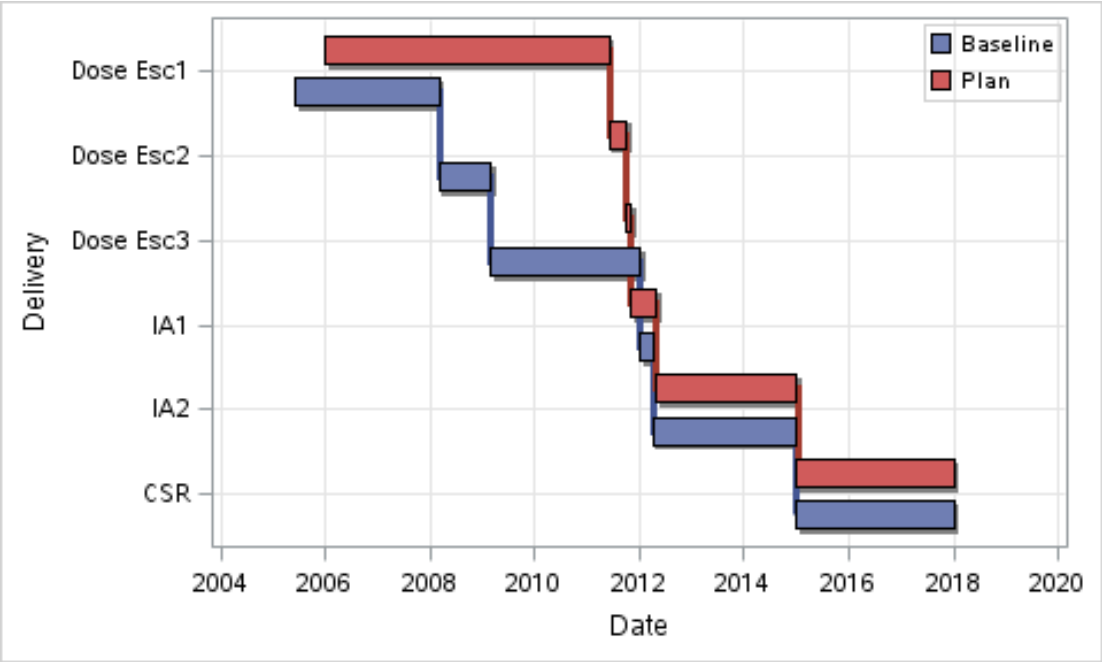


Figure 10: Planned vs. Baseline at Task Level

Figure 10 above shows a plan for multiple deliveries under a task. It also compares the status with the baseline to distinguish the differences of those deliveries on the task against the references.

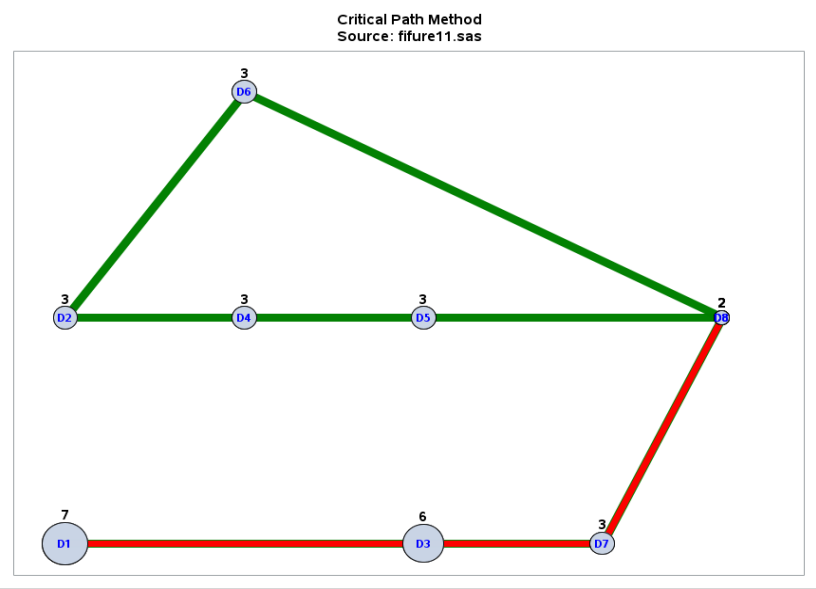


Figure 11: Diagrams of Deliveries with a Critical Path

Figure 11 above is a simplified network of deliveries (shown using bubbles) for completion of a task. The starting time for all deliveries except for D1 and D2 depends on the completions of others previous deliveries, each of which has an expected number of days needed for completion (shown above the

bubbles). The completion of the task depends on a critical path (i.e. longest route) starting from D1 and D2 and ending with D8. The route in the red color above is the critical path.

CONCLUSION

Project management is a complicated topic. Graphic visualizations of different aspects of project management can provide clarity on the key components of project, and it can help plan and monitor projects so that adjustments can be made dynamically and in advance in order to ensure the quality and timelines of deliveries. The GTL in SAS is a powerful tool that we can use to create these graphics and allow for more efficient project management.

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APPENDIX

Figures 6A-6C below is a detailed case demonstration of the status for three deliveries (D1, D2 and D3) by three team members (M1, M2 and M3) by off of their individual tasks (T1, T2 and T3). The timeframe for this demonstration is from 1/1/2016 to 3/15/2016. As the Figure 6A shows, it appears to be no major concerns in terms of meeting deadlines. However, when all deliveries from all tasks are included as shown in Figure 6B, there are some overlapping deliveries for the three team members, which could potentially jeopardize the delivery timeline. If the timelines cannot be changed, t may be necessary to adjust task assignments. Figure 6C indicates all deliveries from all tasks by all team members during the given period of the time. It seems that other team members (M4, M5, M6 and M7) are all available to help with the overlapping deliveries. Figure 6 shows the revised assignment of tasks where the overlapping deliveries for M1, M2 and M3 are eliminated and resolved.

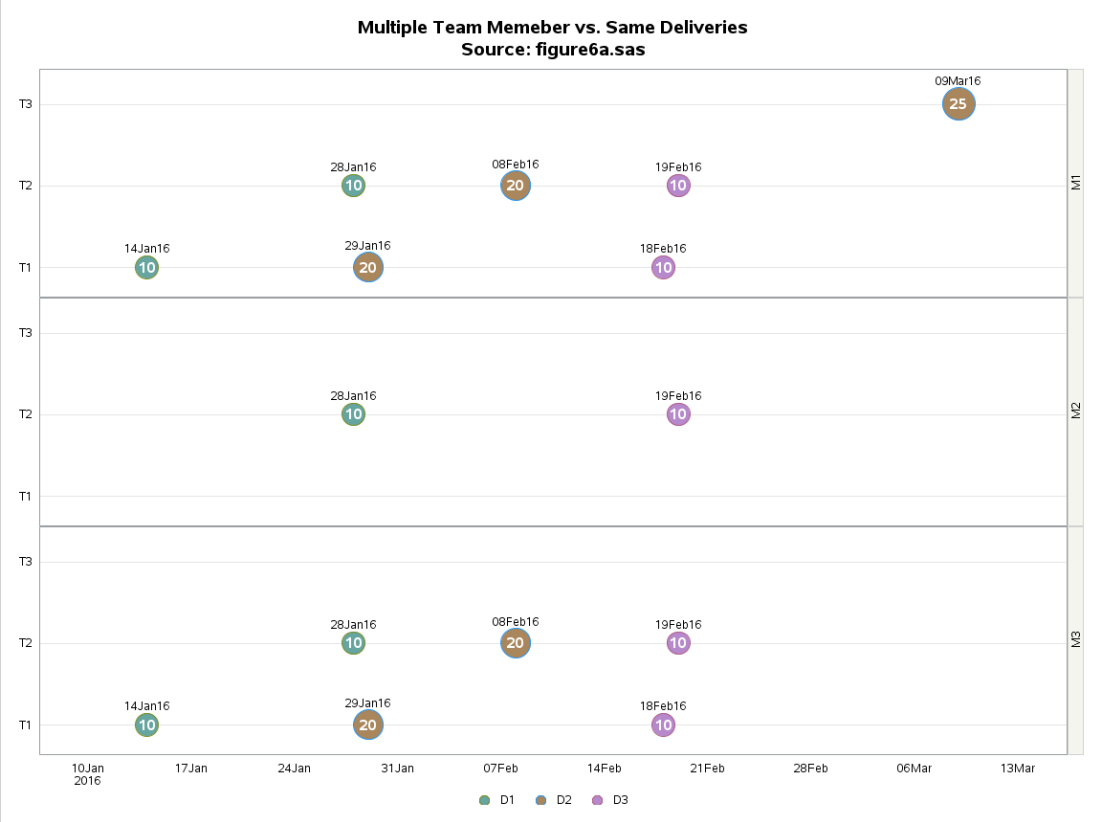

Figure 6A

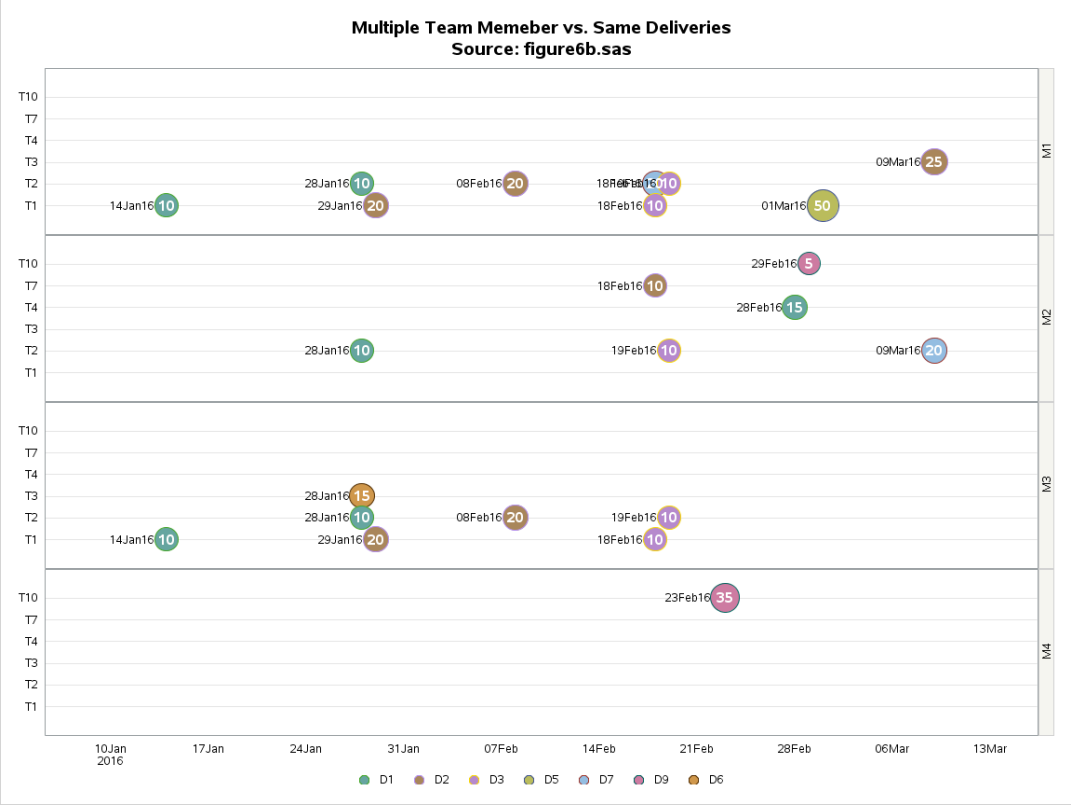

Figure 6B

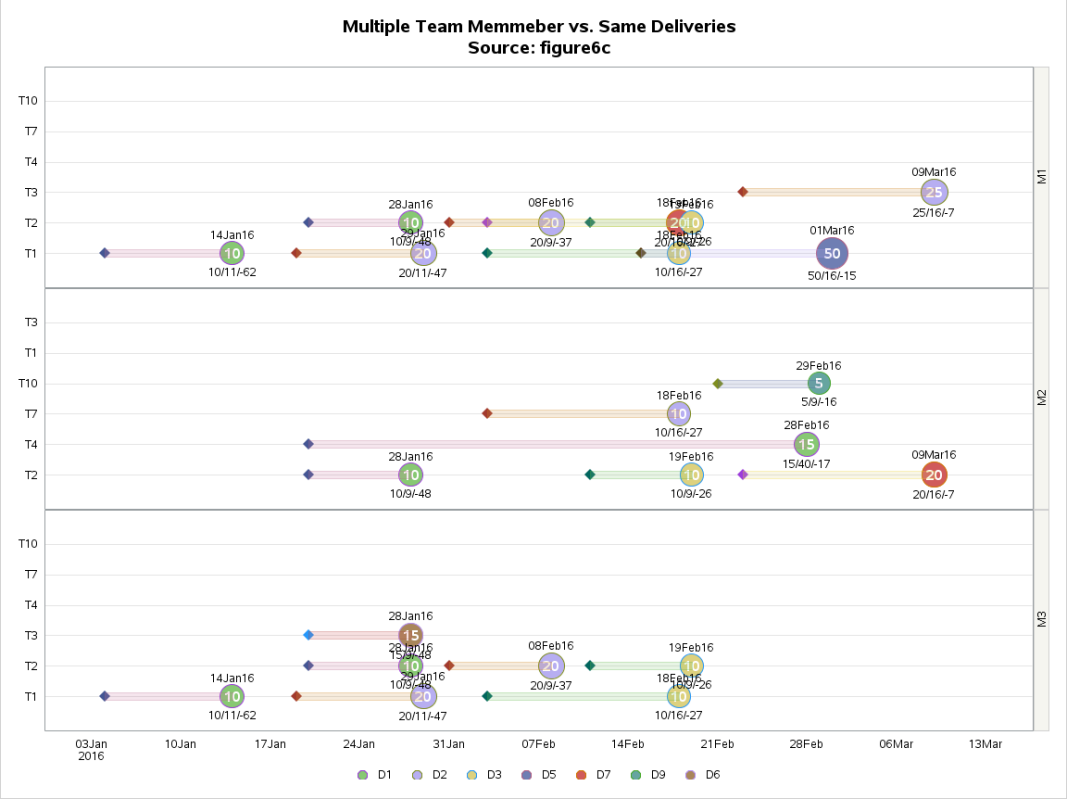

Figure 6C