



Status Stoplights with Microsoft Project

Concept designed and introduced by Brian Thompson

Overview

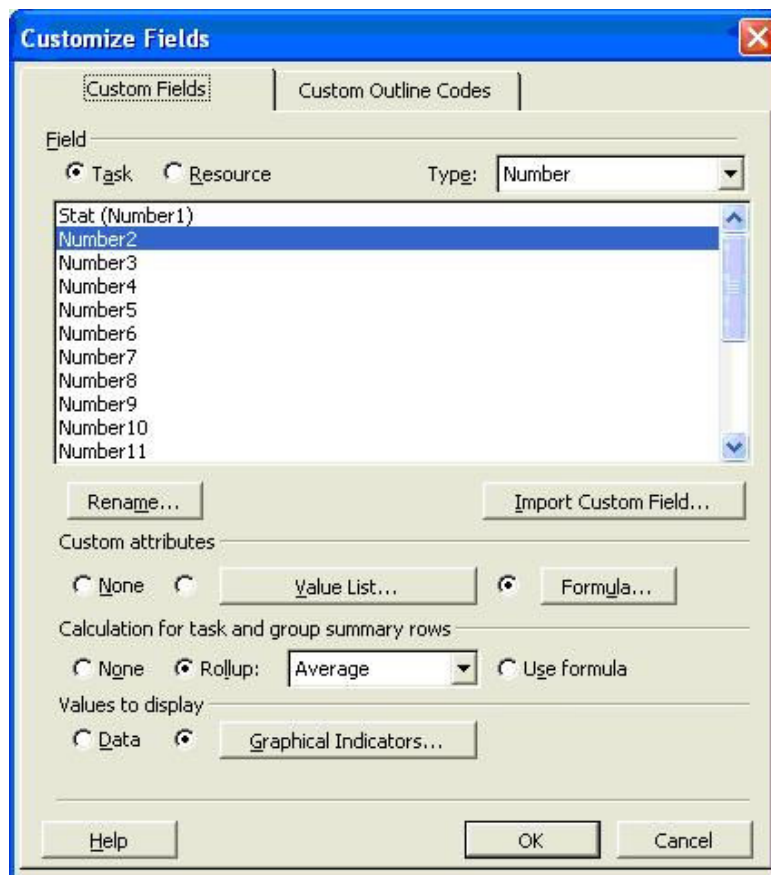
Ever wondered how to use project monitoring tools as pro-active aids instead of reactive reporting tools? Project stoplights can provide an easy guide to taking pro-active action on tasks or milestones with potential delay within a one, two or three week window to the future. Selection of the window horizon depends on the size and duration of the project. After setting up stoplights, the process is simple and hassle-free; green stoplights are good; white stoplights are future tasks with start dates beyond stoplight horizon; red stoplights require immediate attention; yellow stoplights require pro-active action to mitigate risk associated with late completion of future tasks. Read on to find out how...

Typically, stoplights are used during execution phase of a project. Microsoft Project is used in this example, illustrating how to set up stoplights and the underlying logic applied to drive the plan in a pro-active manner to help mitigate execution risk and provide a consistent early warning process to facilitate on-time task completion.

Setup of Stoplights

Step 1: Customize one of the available fields in MS Project (I selected the “Number 2” field for this purpose).

Navigation: Tools>Customize>Fields



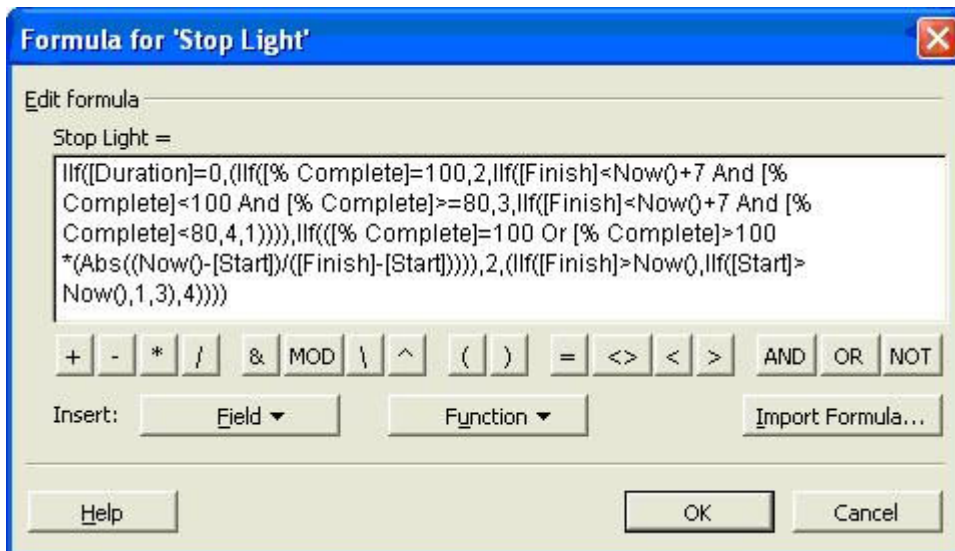
Step 2: Add a formula to support the required stoplight logic

Navigation: Click the “Formula” button

This formula supports the logic set out below:

```
IIf([Duration]=0,(IIf([% Complete]=100,2,IIf([Finish]<Now()+7 And [% Complete]<100 And [% Complete]>=80,3,IIf([Finish]<Now()+7 And [% Complete]<80,4,1))))),IIf(([% Complete]=100 Or [% Complete]>100*(Abs((Now()-[Start])/([Finish]-[Start])))),2,(IIf([Finish]>Now(),IIf([Start]>Now(),1,3),4))))
```

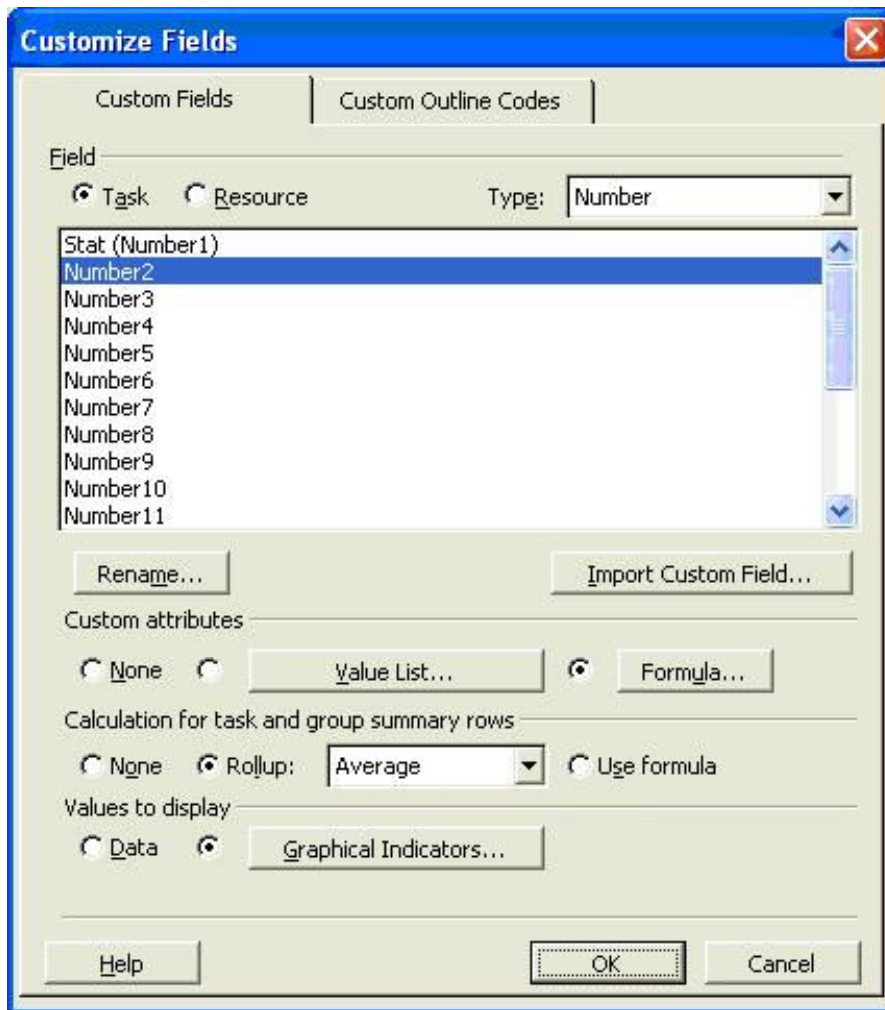
Note: For a short duration project (typically 1 to 3 months) a value of 7 (days) is recommended for the stoplight window (see **red** text in formula above) – for a longer duration project a value of 14 (days) is recommended – this provides a longer evaluation window with more time to take pro-active action. The status stoplight underlying logic is discussed in the last section.



Click to “OK” button to save the formula. This logic will place the values 1 through 4 on tasks and milestones in the column. (4 = Red, 3 = Yellow, 2 = Green, 1 = White)

Step 3: Use averages to roll up scores to group summary rows and substitute numbers with graphical indicators.

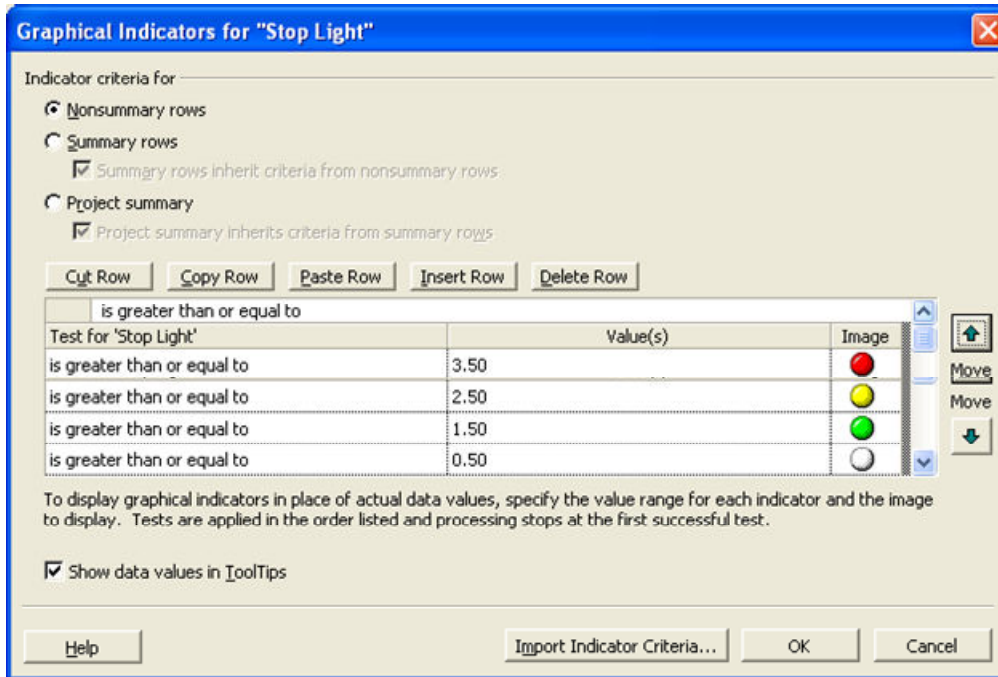
Navigation: Check the radio button “Rollup” and select “Average” from the dropdown box for group summary rows..



The logic for image selection is the first test which meets the logical argument will prevail (if the value in the column is between 4 and 3, red will prevail etc). This is useful for the summary group rollup values.

To set the flag colors, click the “Graphical Indicators” button

Set up four logic “tests for Stoplight” as depicted in the graphical.



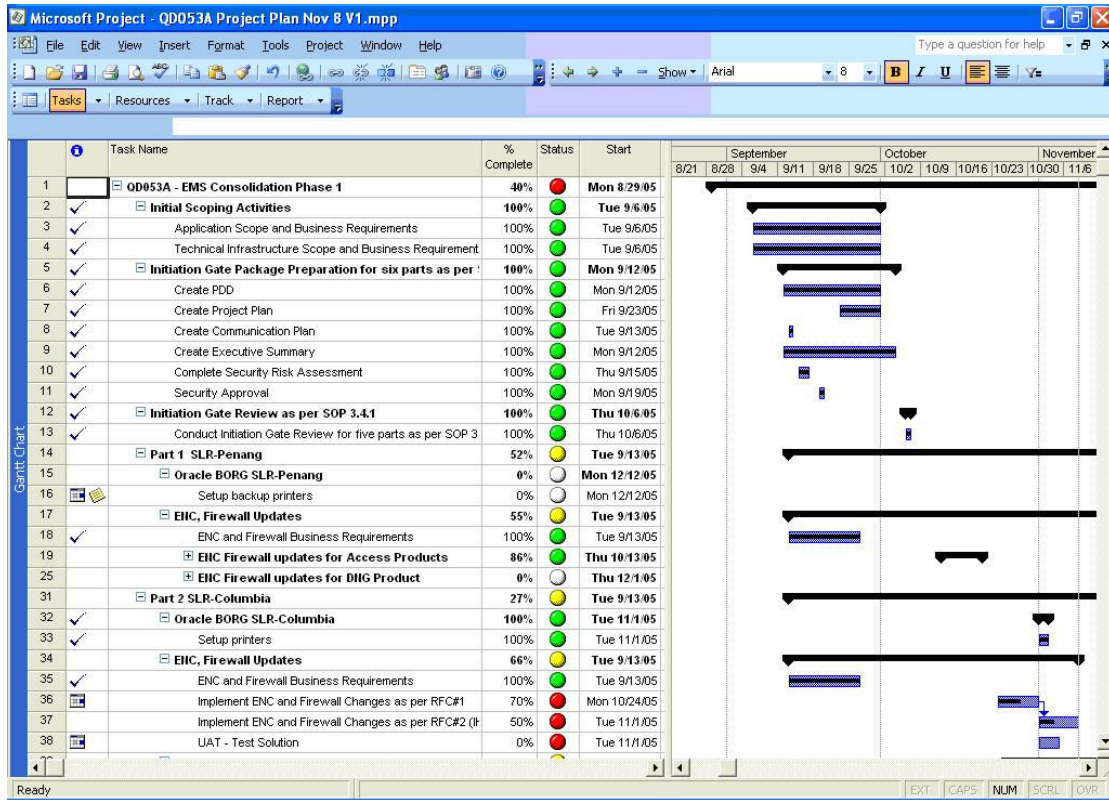
Click "OK" when done.

Step 4: Insert a column into the Project Gantt view and rename the column.

Navigation: View>Gantt Chart. Right-Click column header at the position for column insertion. Insert Column>Select Field name from dropdown box ("Number 2"). Enter a Title for the Column ("Status"). Click OK.



The column will now be in the Gantt View. See screen shot below.



Practical application of the stoplight enhancement

In simple terms a quick scan down the stoplight column will draw immediate attention to red and yellow stoplights, being the alert to take pro-active steps to re-assign resources, re-evaluate effort or update progress to facilitate on-time task completion. From the Gantt chart above, tasks may be filtered on the numeric value in the stoplight (status) column, keeping in mind that white (not started tasks) is less than 1, green is between 1 and 2, yellow between 2 and 3, red between 3 and 4, or simply filter tasks by date range and address tasks in priority sequence (red, yellow, green, white).

Import stoplights to other project plans

Once the stoplight column has been set up in an initial project plan, it is easily imported into others by opening the plan containing the stoplights, opening a new plan, inserting a numeric column, right-clicking the header, select “Customize Fields”, then click the “Import Custom Field” button to select the initial project and stoplight field. Rename the column by clicking the “Rename” button and entering “Stop Light” or any other suitable name after the import and your stoplight will be embedded into the new project.

Formula Logic

Logic used to drive status stoplights has two different drivers. First driver is the logic to apply to milestones to evaluate if any action is required on a zero duration milestone. Second driver is logic to drive actions on each task in the plan.

Milestones:

If milestone is 100% then green.

Iif([Duration]=0,(Iif([% Complete]=100,2,Iif([Finish]<Now()+7 And [% Complete]<100 And [% Complete]>=80,3,Iif([Finish]<Now()+7 And [% Complete]<80,4,1))))),Iif(([% Complete]=100 Or [% Complete]>100*(Abs((Now()-[Start])/([Finish]-[Start])))),2,(Iif([Finish]>Now(),Iif([Start]>Now(),1,3),4))))

If milestone is due within 7 days and the progress >= 80% then Yellow (This is a signal to check if milestones are still on target for completion). 80% is a good general guideline for the next two sets of logic, this value can be changed to suit your situation and/or project duration. The lower the value, the sooner the yellow alert will pop up.

Iif([Duration]=0,(Iif([% Complete]=100,2,Iif([Finish]<Now()+7 And [% Complete]<100 And [% Complete]>=80,3,Iif([Finish]<Now()+7 And [% Complete]<80,4,1))))),Iif(([% Complete]=100 Or [% Complete]>100*(Abs((Now()-[Start])/([Finish]-[Start])))),2,(Iif([Finish]>Now(),Iif([Start]>Now(),1,3),4))))

If milestone is due within 7 days and the progress < 80% then Red (This is a signal to check on milestone status and potential problems which could mean moving a milestone).

Iif([Duration]=0,(Iif([% Complete]=100,2,Iif([Finish]<Now()+7 And [% Complete]<100 And [% Complete]>=80,3,Iif([Finish]<Now()+7 And [% Complete]<80,4,1))))),Iif(([% Complete]=100 Or [% Complete]>100*(Abs((Now()-[Start])/([Finish]-[Start])))),2,(Iif([Finish]>Now(),Iif([Start]>Now(),1,3),4))))

Tasks:

If task is 100% complete or if ratio of days since start divided by task duration is less than “% complete” then Green to indicate complete task.

Iif([Duration]=0,(Iif([% Complete]=100,2,Iif([Finish]<Now()+7 And [% Complete]<100 And [% Complete]>=80,3,Iif([Finish]<Now()+7 And [% Complete]<80,4,1))))),Iif(([% Complete]=100 Or [% Complete]>100*(Abs((Now()-[Start])/([Finish]-[Start])))),2,(Iif([Finish]>Now(),Iif([Start]>Now(),1,3),4))))

If today (date) is past the end date of the task and task is not complete, irrespective of progress reported, then Red to indicate an overdue task.

IIf([Duration]=0,(IIf([% Complete]=100,2,IIf([Finish]<Now()+7 And [% Complete]<100 And [% Complete]>=80,3,IIf([Finish]<Now()+7 And [% Complete]<80,4,1))),IIf(([% Complete]=100 Or [% Complete]>100*(Abs((Now()-[Start])/([Finish]-[Start])))),2,(IIf([Finish]>Now(),IIf([Start]>Now(),1,3),4))))

If today (date) is past the start date of the task and progress is reported < (days since start/duration) then Yellow to indicate a task with insufficient progress.

IIf([Duration]=0,(IIf([% Complete]=100,2,IIf([Finish]<Now()+7 And [% Complete]<100 And [% Complete]>=80,3,IIf([Finish]<Now()+7 And [% Complete]<80,4,1))),IIf(([% Complete]=100 Or [% Complete]>100*(Abs((Now()-[Start])/([Finish]-[Start])))),2,(IIf([Finish]>Now(),IIf([Start]>Now(),1,3),4))))

If today (date) is before start date of task then White to indicate a future task.

IIf([Duration]=0,(IIf([% Complete]=100,2,IIf([Finish]<Now()+7 And [% Complete]<100 And [% Complete]>=80,3,IIf([Finish]<Now()+7 And [% Complete]<80,4,1))),IIf(([% Complete]=100 Or [% Complete]>100*(Abs((Now()-[Start])/([Finish]-[Start])))),2,(IIf([Finish]>Now(),IIf([Start]>Now(),1,3),4))))

About the Author

Brian Thompson is a Senior Manager with Capgemini based in Massachusetts, USA. He was born in South Africa, educated at Rhodes University and Stellenbosch University where he earned an engineering degree in aeronautics. He worked in aerospace for 12 Years managing aerospace programs, projects and global projects. Re-located to North America in 1998 where he lives with his wife Tracey and two sons Brad and Matthew. Brian is a certified Project Management Professional (PMP) and an active member of the Project Management Institute (PMI). Program and project management experience in USA include managing projects and implementing Enterprise Resource Planning (ERP) solutions for a number of aerospace companies and advanced supply chain planning systems across a number of industries including financial, aerospace, automotive, consumer products, paper, gaming, leasing and government.

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