Tutorial #2: Decision Aid Methodology
19th April, 2011

THIS DATA IS CONFIDENTIAL!
PLEASE REMOVE IT AT THE END OF EACH LAB SESSION!

1. TecPlanner

TecPlanner is an extension module to SchedulePlanner for which the maintenance constraints of the fleet can be handled. You will see that under A/C Fleet -> Company Fleet, there are additional tabs ("Eng. Check Dictionary" is the one we will be interested in).

To highlight maintenance requirements, do the following:

I. First, use the graphical view and look at the flights of March 2010 for the DH4 aircraft. All flights should appear green, maintenances as black boxes and nothing else.
II. Now, go to A/C Fleet -> Company Fleet and select the tab "Eng. Check Dictionary". Create a new maintenance with check code Check A. Enable "aut. pl." (automatic planning), set the "Flight Hour" to 60, the duration to 1 hour and 30 minutes, active from Monday through Friday (days 1 to 5) at GVA airport.
III. Now, return to the graphical view, refresh the display (reload the data). Did anything change?
IV. Next, go back to A/C Fleet -> Company Fleet and under the "Aircraft" tab, select aircraft 3 (HB-JQA). On the "Maintenance Program" tab, use the "+" button, and add a maintenance with check code Check A.
V. Refresh again the graphical view. What changed? (we will see how to resolve this issue in the next exercise)

2. SchedulePlanner vs TecPlanner

The objective of this exercise is to visualize differences, in terms of algorithms and their results, between SchedulePlanner and TecPlanner. We will focus on the flights of February, 2010 to illustrate these differences.

1. Display, graphically, the flights of EM9 and DH4 aircraft for the month of February 2010 in both SchedulePlanner and TecPlanner.

2. Launch the Optimiser -> Run Leg Assignment in both SchedulePlanner and TecPlanner.

I. What are the differences in the parameter list?
II. Launch the optimizer in both modules with the given parameters. What do you observe? (Note: a blue leg means that it is modified with respect to the database, but not saved yet)

3. As done above, add a maintenance check Check A (every 60 flight hours, enabled “aut. pl”, active from Monday to Friday at GVA airport) in TecPlanner, and assign the check to both DH4 aircraft.

4. In both modules, reload the data of February 2010 (without saving!). Describe what you observe in both modules.

5. Run the optimiser (make sure to uncheck the Maintenance planning parameter in TecPlanner). Describe the results in both modules.

6. Now, in TecPlanner, reload the data (again, without saving) and re-run the optimizer, this time with the Maintenance planning parameter activated. What do you observe?

7. In SchedulePlanner:

I. Reload the data for February 2010 with EM9 fleet only;
II. Add a new rotation (right-click on the “EM9 Unassigned” then Sector / Serie -> Create) GVA-BCN (departure at 11:00 local time), then BCN-GVA (local departure at 13:00) active on days 1 to 5 from February 1st to February 28th;
III. Run the optimizer and comment what happens.
IV. Reload the data (without saving), and re-run the algorithm, by unchecking the “Keep Rotation Binding” box. What do you observe after running the algorithm?
V. Reload the data (without saving), and re-run the algorithm, by unchecking the “Keep Rotation Binding” box and change the parameter “Tolerance on ground times” to 10 minutes. What do you observe after running the algorithm?
VI. Again without saving, re-run the algorithm twice with the original settings, and compare it with the results when you run it with the parameter “Balanced use of fleet” unchecked. Describe the differences.
VII. Explain, in terms of the algorithm, the consequences of the “Keep Rotation Binding” and “Tolerance on ground times” parameters.

8. Perform the same steps as in 7. in TecPlanner. Do you observe any differences with respect to SchedulePlanner? Explain why!

Note: This tutorial is a modified version of the one prepared by Dr. Niklaus Eggenberg for the “Decision Aid Methodology” course for Spring 2010 session.