**Submitted by:** OR-AS
**Date:** 24 Feb 2012
**File name**: PSG_PlaNetsCase.p2x

# Planets Project - Student Note

## Project description

The project consists of a sequence of design, testing, and plant setup activities for a large component of an electronic system. The project has been broken down into 43 activities. These activities and their interrelationships are described in this document. The project is based on a project description originally developed by CAPERTSIM North American Aviation, Inc. and a case study published in "Cases in Operations Management" by Sasser et al. (1982).

## Project network

The network of the project is displayed in the pictures below. In the activity-on-the-arc format, each arc is an activity with a label displayed next to each arc to refer to the activity ID. In the activity-on-the-node format, each node is an activity, while precedence relations are represented by the arcs between these activities.

## Contract

Start deadline: 01/01/2011

Target deadline: 17/04/2011

Number of decisions: 6

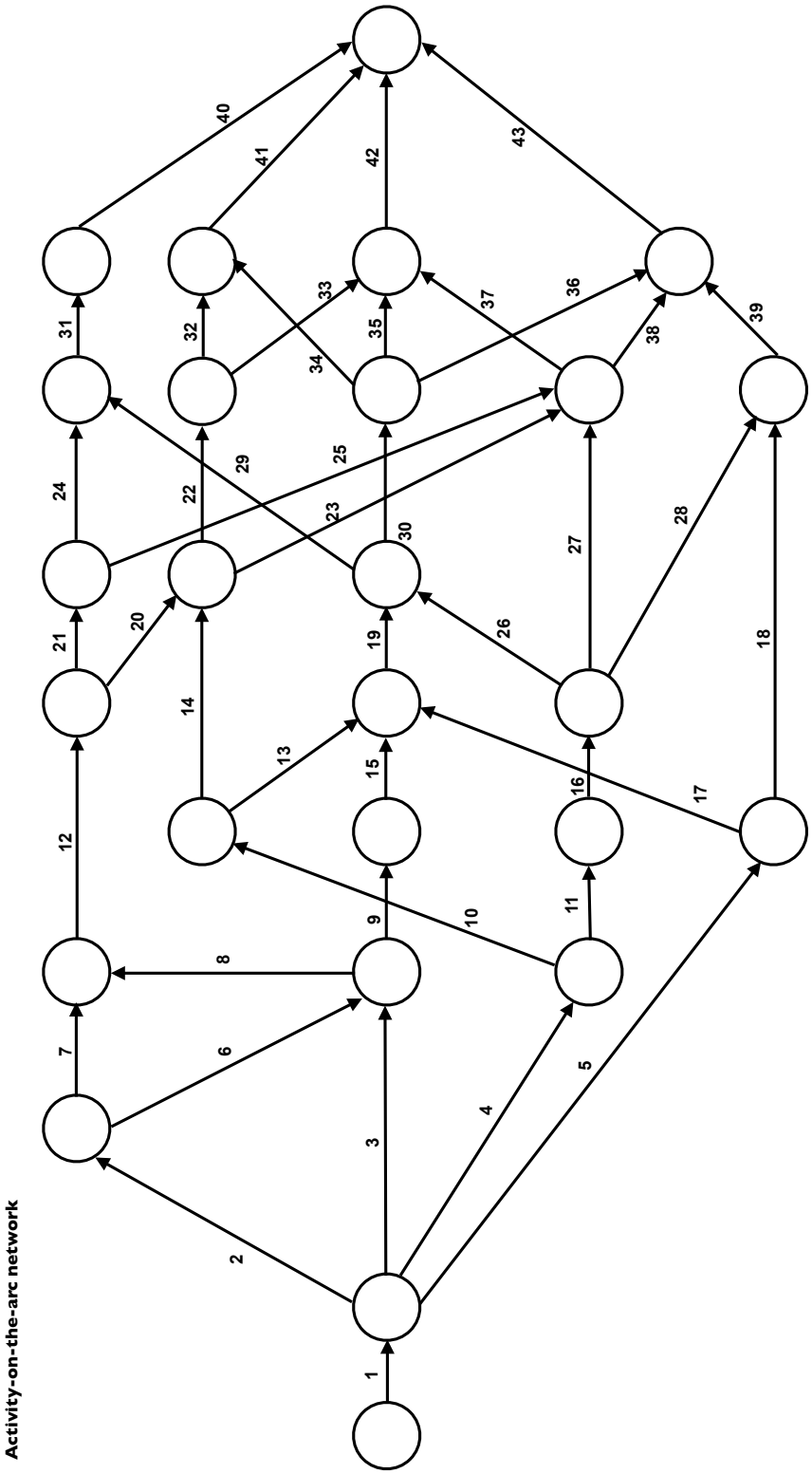
Period review: every 20 days

Penalty per day: € 500

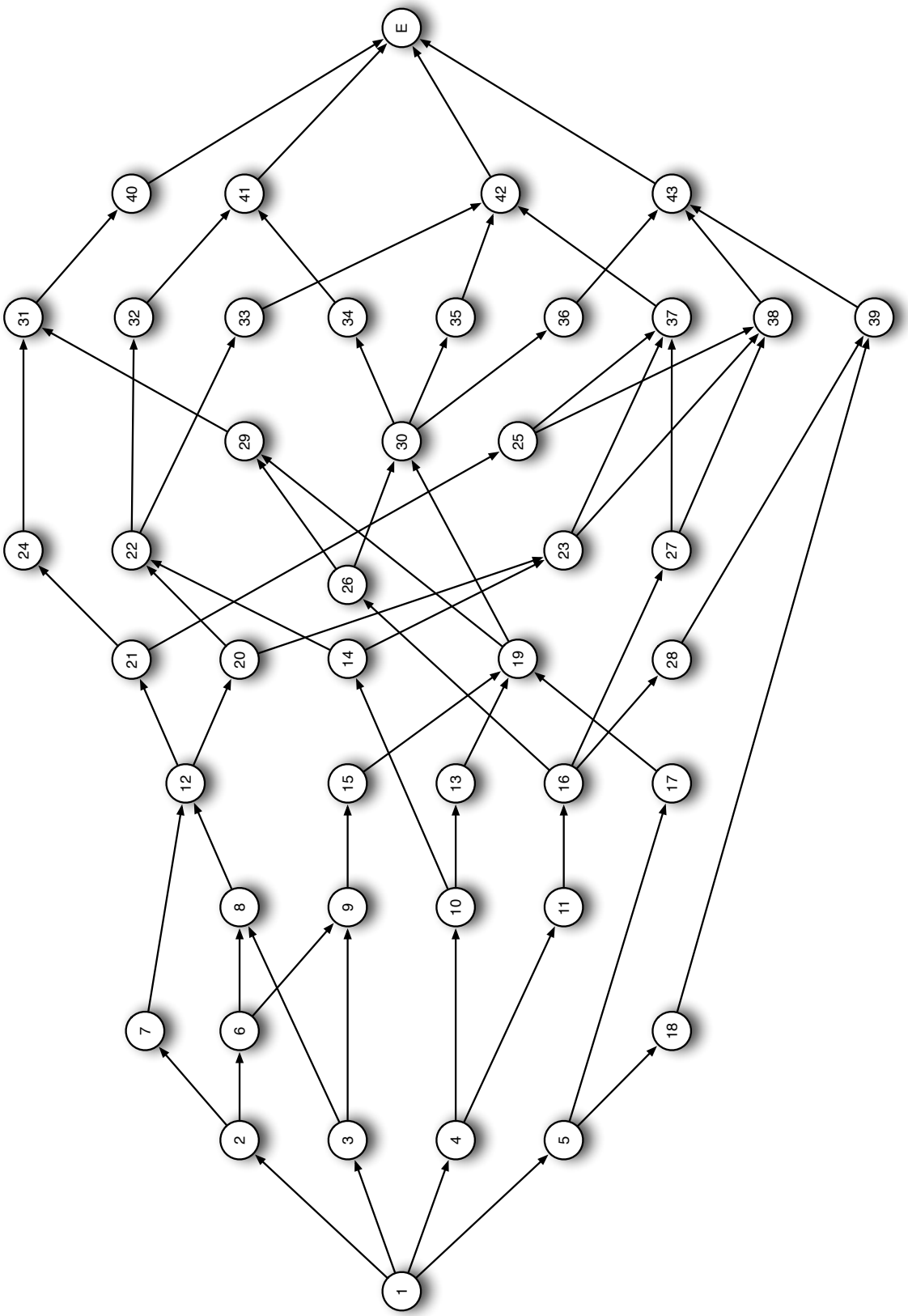
## Activity time/cost trade-offs

A list of activity time/cost trade-off options is listed below. The first column displays the possible durations of each activity. The second column displays the corresponding cost (in €) for each activity. The third column displays the marginal cost decrease (i.e. cost decrease to go to the next row in the table) per time unit for each activity.

**Submitted by:** OR-AS
**Date:** 24 Feb 2012
**File name:** PSG_PlaNetsCase.p2x



**Submitted by:** OR-AS
**Date:** 24 Feb 2012
**File name:** PSG_PlaNetsCase.p2x



**Submitted by:** OR-AS
**Date:** 24 Feb 2012
**File name:** PSG_PlaNetsCase.p2x

| Activity 1 | | |
|---|---|---|
| 4 | 1,000 | - |
| **Activity 2** | | |
| 9 | 500 | - |
| **Activity 3** | | |
| 7 | 3,985 | 160 |
| 8 | 3,825 | 125 |
| 9 | 3,700 | 100 |
| 10 | 3,600 | 82 |
| 11 | 3,518 | 68 |
| 12 | 3,450 | 58 |
| 13 | 3,392 | 50 |
| 14 | 3,342 | - |
| **Activity 4** | | |
| 9 | 3,033 | 122 |
| 11 | 2,790 | 90 |
| 12 | 2,700 | 77 |
| 13 | 2,623 | - |
| **Activity 5** | | |
| 31 | 19,032 | 274 |
| 33 | 18,484 | - |
| **Activity 6** | | |
| 2 | 650 | 167 |
| 3 | 483 | - |
| **Activity 7** | | |
| 12 | 4,000 | 45 |
| 14 | 3,911 | 111 |
| 15 | 3,800 | 50 |
| 16 | 3,750 | 28 |
| 19 | 3,666 | 35 |
| 20 | 3,631 | 31 |
| 21 | 3,600 | 29 |
| 22 | 3,571 | - |
| **Activity 8** | | |
| 16 | 3,750 | 74 |
| 17 | 3,676 | 65 |
| 18 | 3,611 | - |
| **Activity 9** | | |
| 14 | 8,785 | 119 |
| 15 | 8,666 | 104 |
| 16 | 8,562 | 92 |
| 17 | 8,470 | 78 |
| 19 | 8,315 | - |
| **Activity 10** | | |
| 22 | 750 | - |
| **Activity 11** | | |
| 11 | 50,454 | 3,788 |
| 12 | 46,666 | 3,205 |
| 13 | 43,461 | 2,747 |
| 14 | 40,714 | 2,381 |
| 15 | 38,333 | - |
| **Activity 12** | | |
| 17 | 10,382 | 327 |
| 18 | 10,055 | 292 |
| 19 | 9,763 | - |
| **Activity 13** | | |
| 10 | 20,000 | 910 |
| 11 | 19,090 | 699 |
| 13 | 17,692 | 550 |
| 14 | 17,142 | 476 |
| 15 | 16,666 | 416 |
| 16 | 16,250 | - |
| **Activity 14** | | |
| 15 | 19,666 | 1,041 |
| 16 | 18,625 | 920 |
| 17 | 17,705 | 817 |
| 18 | 16,888 | 731 |
| 19 | 16,157 | 657 |
| 20 | 15,500 | 596 |
| 21 | 14,904 | 541 |
| 22 | 14,363 | 494 |
| 23 | 13,869 | 453 |
| 24 | 13,416 | - |
| **Activity 15** | | |
| 11 | 7,772 | 189 |
| 12 | 7,583 | 160 |
| 13 | 7,423 | 138 |
| 14 | 7,285 | 169 |
| 15 | 7,116 | 54 |
| 16 | 7,062 | - |
| **Activity 16** | | |
| 13 | 31,730 | 1,373 |
| 14 | 30,357 | 1,191 |
| 15 | 29,166 | 1,041 |
| 16 | 28,125 | 920 |
| 17 | 27,205 | 817 |
| 18 | 26,388 | 731 |

**Submitted by:** OR-AS
**Date:** 24 Feb 2012
**File name:** PSG_PlaNetsCase.p2x

| | | |
|---|---|---|
| 19 | 25,657 | - |
| **Activity 17** | | |
| 15 | 3,750 | - |
| **Activity 18** | | |
| 28 | 35,000 | 863 |
| 29 | 34,137 | 804 |
| 30 | 33,333 | 753 |
| 31 | 32,580 | 705 |
| 32 | 31,875 | 663 |
| 33 | 31,212 | 624 |
| 34 | 30,588 | 588 |
| 35 | 30,000 | 556 |
| 36 | 29,444 | 526 |
| 37 | 28,918 | 497 |
| 38 | 28,421 | 473 |
| 39 | 27,948 | 448 |
| 40 | 27,500 | 427 |
| 41 | 27,073 | - |
| **Activity 19** | | |
| 3 | 966 | 166 |
| 4 | 800 | 100 |
| 5 | 700 | - |
| **Activity 20** | | |
| 3 | 2,000 | - |
| **Activity 21** | | |
| 2 | 650 | 167 |
| 3 | 483 | - |
| **Activity 22** | | |
| 17 | 6,411 | 78 |

| | | |
|---|---|---|
| 18 | 6,333 | 70 |
| 19 | 6,263 | 61 |
| 21 | 6,142 | - |
| **Activity 23** | | |
| 11 | 4,909 | 204 |
| 12 | 4,705 | 90 |
| 13 | 4,615 | 115 |
| 14 | 4,500 | 100 |
| 15 | 4,400 | 88 |
| 16 | 4,312 | 77 |
| 17 | 4,235 | 69 |
| 18 | 4,166 | - |
| **Activity 24** | | |
| 8 | 8,000 | 334 |
| 9 | 7,666 | 266 |
| 10 | 7,400 | 219 |
| 11 | 7,181 | 181 |
| 12 | 7,000 | 143 |
| 14 | 6,714 | 114 |
| 15 | 6,600 | 100 |
| 16 | 6,500 | 89 |
| 17 | 6,411 | 78 |
| 18 | 6,333 | - |
| **Activity 25** | | |
| 9 | 12,444 | 244 |
| 10 | 12,200 | 200 |
| 11 | 12,000 | 167 |
| 12 | 11,833 | 141 |
| 13 | 11,692 | 121 |

| | | |
|---|---|---|
| 14 | 11,571 | 105 |
| 15 | 11,466 | 91 |
| 16 | 11,375 | 81 |
| 17 | 11,294 | 72 |
| 18 | 11,222 | - |
| **Activity 26** | | |
| 1 | 150 | - |
| **Activity 27** | | |
| 13 | 9,269 | 127 |
| 14 | 9,142 | 109 |
| 15 | 9,033 | 96 |
| 16 | 8,937 | 85 |
| 17 | 8,852 | 75 |
| 18 | 8,777 | 67 |
| 19 | 8,710 | 60 |
| 20 | 8,650 | 55 |
| 21 | 8,595 | 50 |
| 22 | 8,545 | - |
| **Activity 28** | | |
| 15 | 7,266 | 79 |
| 16 | 7,187 | 66 |
| 18 | 7,055 | 55 |
| 19 | 7,000 | 50 |
| 20 | 6,950 | 46 |
| 21 | 6,904 | - |
| **Activity 29** | | |
| 14 | 7,571 | 71 |
| 15 | 7,500 | 65 |
| 16 | 7,435 | 53 |

**Submitted by:** OR-AS
**Date:** 24 Feb 2012
**File name:** PSG_PlaNetsCase.p2x

| | | |
|---|---|---|
| 17 | 7,382 | 49 |
| 18 | 7,333 | 44 |
| 19 | 7,289 | 39 |
| 20 | 7,250 | 36 |
| 21 | 7,214 | 33 |
| 22 | 7,181 | - |
| **Activity 30** | | |
| 16 | 10,875 | 111 |
| 17 | 10,764 | 98 |
| 18 | 10,666 | 83 |
| 20 | 10,500 | 72 |
| 21 | 10,428 | 62 |
| 23 | 10,304 | - |
| **Activity 31** | | |
| 15 | 9,200 | 75 |
| 16 | 9,125 | - |
| **Activity 32** | | |
| 12 | 12,916 | 224 |
| 13 | 12,692 | 192 |
| 14 | 12,500 | 157 |
| 16 | 12,187 | 122 |
| 18 | 11,944 | 102 |
| 19 | 11,842 | - |
| **Activity 33** | | |
| 13 | 6,576 | 76 |
| 14 | 6,500 | 67 |
| 15 | 6,433 | 58 |
| 16 | 6,375 | 52 |
| 17 | 6,323 | 46 |

| | | |
|---|---|---|
| 18 | 6,277 | 41 |
| 19 | 6,236 | 36 |
| 20 | 6,200 | 34 |
| 21 | 6,166 | - |
| **Activity 34** | | |
| 14 | 13,642 | 109 |
| 15 | 13,533 | 96 |
| 16 | 13,437 | 85 |
| 17 | 13,352 | 75 |
| 18 | 13,277 | - |
| **Activity 35** | | |
| 12 | 9,916 | 94 |
| 15 | 9,633 | 67 |
| 17 | 9,500 | - |
| **Activity 36** | | |
| 9 | 7,444 | 144 |
| 10 | 7,300 | 119 |
| 11 | 7,181 | 98 |
| 12 | 7,083 | 83 |
| 13 | 7,000 | 72 |
| 14 | 6,928 | 62 |
| 15 | 6,866 | 54 |
| 16 | 6,812 | 48 |
| 17 | 6,764 | 42 |
| 18 | 6,722 | - |
| **Activity 37** | | |
| 15 | 25,000 | 625 |
| 16 | 24,375 | 552 |
| 17 | 23,823 | - |

| | | |
|---|---|---|
| **Activity 38** | | |
| 16 | 7,562 | 92 |
| 17 | 7,470 | 82 |
| 18 | 7,388 | - |
| **Activity 39** | | |
| 12 | 9,083 | 149 |
| 14 | 8,785 | 112 |
| 16 | 8,562 | 87 |
| 18 | 8,388 | 69 |
| 20 | 8,250 | 60 |
| 21 | 8,190 | - |
| **Activity 40** | | |
| 14 | 3,928 | 62 |
| 15 | 3,866 | 54 |
| 16 | 3,812 | 48 |
| 17 | 3,764 | 42 |
| 18 | 3,722 | 35 |
| 19 | 3,687 | 37 |
| 20 | 3,650 | - |
| **Activity 41** | | |
| 15 | 9,333 | 196 |
| 17 | 8,941 | 164 |
| 18 | 8,777 | 146 |
| 19 | 8,631 | 126 |
| 21 | 8,380 | 108 |
| 22 | 8,272 | - |
| **Activity 42** | | |
| 16 | 16,187 | 129 |
| 17 | 16,058 | 114 |

**Submitted by:** OR-AS
**Date:** 24 Feb 2012
**File name:** PSG_PlaNetsCase.p2x

| | | |
|---|---|---|
| 18 | 15,944 | 102 |
| 19 | 15,842 | 92 |
| 20 | 15,750 | - |
| **Activity 43** | | |
| 17 | 7,470 | 82 |
| 18 | 7,388 | 73 |
| 19 | 7,315 | 65 |
| 20 | 7,250 | 60 |
| 21 | 7,190 | 54 |
| 22 | 7,136 | - |