OR-AS Operations Research Applications and Solutions	Case Name: **Veterinary Exposition**	Sector	Event Management
	OR-AS Operations Research - Applications and Solutions www.or-as.be info@or-as.be	Baseline Schedule	Schedule with resources Schedule with costs
		Risk Analysis	Random simulation One of nine std. scenarios User defined distributions
Submitted by	N/A		
Date	December 15, 2011	Project Control	Automatic tracking
File Name	C2011-06 Veterinary Exposition.p2x		Tracking based on user input

1. Project description

Project authenticity

The planning of an edition of an annual veterinary exposition.

The project consists of activity, resource and cost data that were obtained directly from the actual project owner.

2. Project properties

2.1. Baseline Schedule

General	
# Activities	75
Planned Duration (PD)	314 days*
Budget At Completion (BAC)	54.350 €
Renewable Resources	15
Consumable Resources	-

Network topology	
Serial/Parallel (SP)	28%
Activity Distribution (AD)	40%
Length of Arcs (LA)	4%
Topological Float (TF)	12%

* standard eight-hour working days

2.2. Risk Analysis

Use of all predefined distribution profiles (symmetrical, skewed and risk-free), complemented by one non-standard triangular distribution inputted by the user.

	Cost sensitivity		
	avg [%]	std dev [%]	skew [-]
CRI-r	0.0	0.0	N/A
CRI-rho	100.0	0.0	N/A
CRI-tau	100.0	0.0	N/A

	Resource sensitivity		
	avg [%]	std dev [%]	skew [-]
CRI-r	0.0	0.0	N/A
CRI-rho	100.0	0.0	N/A
CRI-tau	100.0	0.0	N/A

	Time sensitivity		
	avg [%]	std dev [%]	skew [-]
CI	9.9	28.3	2.7
SI	11.6	20.5	2.7
SSI	2.0	9.9	4.8
CRI-r	6.8	10.8	3.0
CRI-rho	29.0	21.1	-0.1
CRI-tau	56.1	41.7	0.0

The remarkable results for cost and resource sensitivity can be explained by the absence of variable activity costs and resource costs.

2.3. Project Control

2.3.1. Simulated forecasting accuracy

The accuracy of time and cost forecasting methods has been evaluated based on Monte Carlo simulation runs using the risk profiles described in section “2.2. Risk Analysis”. Based on these risk profiles, the Mean Absolute Percentage Error (MAPE) and Mean Percentage Error (MPE) have been calculated to evaluate the expected accuracy of the time and cost predictions, EAC(t) and EAC, respectively.

Simulated EAC(t) accuracy		
method - PF	MAPE [%]	MPE [%]
PV - 1	16.4	16.3
PV - SPI	42.1	41.9
PV - SCI	42.1	41.9
ED - 1	340.8	340.5
ED - SPI	42.1	41.9
ED - SCI	42.1	41.9
ES - 1	23.7	18.6
ES - SPI(t)	29.4	23.3
ES - SCI(t)	29.4	23.3

Simulated EAC accuracy		
method (PF)	MAPE [%]	MPE [%]
1	N/A	N/A
CPI	N/A	N/A
SPI	N/A	N/A
SPI(t)	N/A	N/A
SCI	N/A	N/A
SCI(t)	N/A	N/A
0.8 CPI + 0.2 SPI	N/A	N/A
0.8 CPI + 0.2 SPI(t)	N/A	N/A

According to the MAPE values[1] the best performance for time forecasting can be expected from the unweighted Planned Value method. Cost forecasting is not relevant since there are only fixed activity costs in this project.

2.3.2. Tracking description

The user has not performed any project control and therefore no tracking periods have been defined. Tracking periods can now be generated automatically by ProTrack or by manually inputting tracking data period by period.

[1] The MAPE gives the best indication for the forecast accuracy (the lower the MAPE, the more accurate the method) since all deviations from the targeted real duration (real cost) are cumulated, whereas for the MPE underestimates can be compensated by overestimates and vice versa, possibly leading to an overly positive evaluation of a certain method. However, the MPE can provide useful information about the nature of the deviations, i.e. does the method rather underestimate or overestimate the real duration (real cost)?