OR-AS Operations Research Applications and Solutions	Case Name: **Digipolis Talent Management Suite**	Sector	IT (HR)
	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	Annelies Troch		
Date	December 19, 2012	Project Control	Automatic tracking Tracking based on user input
File Name	C2012-09 Digipolis Talent Management Suite.p2x		

1. Project description

Project authenticity

Implementation of a new HR system called Talent Management Suite in the Digipolis software, which is used for public service purposes in Ghent and Antwerp (Belgium).

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

2. Project properties

2.1. Baseline Schedule

General	
# Activities	279
Planned Duration (PD)	162 days*
Budget At Completion (BAC)	4,899,912 €
Renewable Resources	1
Consumable Resources	-

Network topology	
Serial/Parallel (SP)	1%
Activity Distribution (AD)	22%
Length of Arcs (LA)	0%
Topological Float (TF)	28%

* standard eight-hour working days

2.2. Risk Analysis

Random simulation by ProTrack was performed using the default symmetric triangular risk distribution profiles.

	Cost sensitivity		
	avg [%]	std dev [%]	skew [-]
CRI-r	5.7	8.0	6.4
CRI-rho	17.3	18.9	1.3
CRI-tau	34.6	36.3	1.1

	Resource sensitivity		
	avg [%]	std dev [%]	skew [-]
CRI-r	21.0	0.0	N/A
CRI-rho	22.0	0.0	N/A
CRI-tau	17.0	0.0	N/A

	Time sensitivity		
	avg [%]	std dev [%]	skew [-]
CI	1.5	9.4	6.9
SI	11.8	17.4	3.0
SSI	0.7	5.2	8.0
CRI-r	7.2	7.6	1.9
CRI-rho	18.1	18.0	1.0
CRI-tau	35.9	35.1	1.1

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) has 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	135.1	-32.4
PV - SPI	78.2	78.2
PV - SCI	78.4	78.4
ED - 1	3,449.6	3,412.6
ED - SPI	78.2	78.2
ED - SCI	77.8	77.8
ES - 1	31.1	-23.0
ES - SPI(t)	30.6	28.7
ES - SCI(t)	30.7	28.7

Simulated EAC accuracy		
method (PF)	MAPE [%]	MPE [%]
1	2.8	-0.7
CPI	2.7	-0.3
SPI	36.2	36.2
SPI(t)	35.4	35.4
SCI	36.2	36.2
SCI(t)	35.4	35.4
0.8 CPI + 0.2 SPI	23.0	23.0
0.8 CPI + 0.2 SPI(t)	21.5	21.5

According to the MAPE values[1] the best performance for time forecasting is expected from the Earned Schedule methods. For cost forecasting the unweighted and CPI-weighted methods should yield the best results.

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)?