

UMS Group Inc. SOS: A Different Approach to Multi- Year Optimization



COMPANY

A Dutch Electric Transmission system operator managing over 290 kilometers of high-voltage lines and cables and approximately 250 substations in the Netherlands.



BACKGROUND & BUSINESS CHALLENGE

UMS Group was engaged to redesign the company's risk management and investment planning processes, facilitate scenario analysis of the investment portfolio, and support in the transition towards full risk-based Asset Management based on the international standard.

The project included the development of a business value framework, development of risk valuation criteria, implementation of the Spend Optimization Suite (SOS), and data improvement of the risk register and the investment portfolio.



APPROACH

The data of the existing investment portfolio was enriched with extra information to apply risk criteria and risk evaluations. The enriched data was loaded into the initial version of the Spend Optimization Suite, which was used to do sensitivity analyses on the portfolio to create overviews of the investment portfolio over a 5 year period.

Subsequently, the company determined that they wanted to take a different approach to the standard optimization algorithms. They engaged a team of UMS Group experts together with a mathematics company to develop an alternative Investment Optimizer Module that could shift investments to the optimal timeframe within a five to ten year period with various constraints and parameters applied.

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SOS: A Different Approach to Multi-Year Optimization



RESULTS

The initial project was completed in less than 3 months; the most important deliverables and outcomes were:

- Evaluated and adjusted business value framework and risk criteria;
- Definition of parameters for sensitivity analyses on the portfolio, like variance in expected through time of projects and the resource availability of service provider(s);
- Sensitivity analyses of the investment portfolio;
- Proposed investment portfolio (funded and deferred project sets);
- **Reduction of investment portfolio of about 10% of the CAPEX compared to previous years;**
- Cash out projection for the upcoming investment year;
- Overview of the expected investment portfolio for the coming seven years.

In addition, changes were made to the risk and investment planning processes which resulted in an embedded rolling forecast process.

The subsequent engagement to implement the alternative multi-year optimization analysis approach allowed the company to utilize their several years of proposed investment data to optimize simultaneously across all year and “schedule” projects in the optimal year(s). With this comprehensive data set, this allowed them to achieve greater value for less cost over the multi-year period.

DEMO – RUN WITH STANDARD METHODOLOGY

Project	Length (yrs)	Y1	Y2	Y3	Y4	Y5
Project #1	3			5	25	
Project #2	3	1	8	7		
Project #3	2					5
Project #4	1	12				
Project #5	2				20	
Project #6	4					
Project #7	4	8	15	15	1	
Project #8	2		5	10		
Project #9	1	6				
Project #10	1	3				
Total cost:		30	28	30	28	30

	Total Cost	Added value
Result	146	78%

DEMO – RUN WITH ALTERNATIVE METHODOLOGY

Project	Length (yrs)	Y1	Y2	Y3	Y4	Y5
Project #1	3					5
Project #2	3			1	8	7
Project #3	2				5	5
Project #4	1	12				
Project #5	2					
Project #6	4	7	13	12	5	
Project #7	4	8	15	15	1	
Project #8	2				5	10
Project #9	1				6	
Project #10	1					3
Total cost:		27	28	28	30	30

	Total Cost	Added value
Result	143	87%

This particular data set demonstrates the following the for the standard vs. alternative multi-year approaches:

1. The alternative methodology prevents 'cutting projects' (mid-stream delays)
2. Based on multi-year instead of single-year effects constraints
3. Higher total added value and lower total portfolio cost (in this demo data set case)