

# Maintenance

TECHNOLOGY MANAGEMENT MARKETS



Includes annual buyer's guide

Services and products for maintenance, repair, and overhaul!

[www.instandhaltung.de](http://www.instandhaltung.de)

## Market 2010

- The most efficient products
- The most important technologies
- The most inexpensive sources of supply

Degree Program

20 Training

30 Spares Management

34



Finally taking flight!



Did the Swiss invent it?



Conquering the nightmare



**PDA-based maintenance:  
When is this solution worth  
the investment?**

# Is it worth it?

## ROI-Analysis of a Mobile Maintenance Solution Project

**Is the implementation of Personal Digital Assistants (PDAs) profitable? How can such a 'Business Case' be evaluated? Since 1994 Solution Matrix specializes in solving such problems.**

**M**obile IT-solutions which enable service technicians to work effectively and efficiently provide a promising potential for optimization.

However, such investments also involve risks – not only because of high initial costs but also due to disruption of familiar workflows. This article provides a real Business Case of a utility company that illustrates the challenges of implementing such a solution.

The current maintenance workflow in this company is as follows: The service technicians meet at their company's depot every morning, are informed about their tasks for the day, gather the necessary documents on paper, and make their way to the actual maintenance sites. This process is not only time-consuming but also error-prone. Sometimes the wrong blueprints,

tools or materials are packed into the maintenance van. These errors result in unnecessary journey time or result in some transformers being over-serviced while others are not serviced at all. Also, incorrect transfer from paper checklists to the computer leads to poor data quality, which is essential for proper management.

The mobile maintenance solution is designed to solve these problems. Therefore all maps, plans, instructions, and checklists are digitized so that they are always available via PDA. This solves the problem of taking the wrong blueprints and sketches along. Also, the digitization of check lists saves time and the possibility of errors is reduced. The GPS equipment optimizes routing and ensures that the service technicians arrive at the exact location on time. Additionally, as the service technicians are constantly in touch with dispatch they are flexible to changes of plan.

These improvements however do come at a cost of 540,000€ which is the investment for implementing such a solution. This includes the purchase of PDAs for 100 service technicians and supervisors, the set-up of radio communication, the interface to the

ERP-system, the set-up of software, and training. All expenses are evaluated

### **A Business Case must consider a wide range of aspects**

against the benefits of the solution. A specific methodology is necessary in order to produce a Business Case that provides reliable statements on cost reduction, risk, and effects on the availability of the grid. It is important to take into account that employees have to change work routines they have become accustomed to over a long time. The supervisors may feel that they are giving up responsibilities and the service technicians may feel overly controlled by the new GPS system.

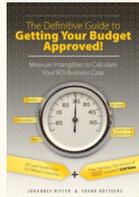
In order to structure all factors that influence the final value of cost saving in the Business Case an Influence Matrix is constructed.

This Business Case tool visualizes all elements of the project and defines the project's scope. An Influence Matrix consists of five elements: values, scenarios, decisions, uncertainties, and influences. After the value has been agreed to the scenarios for the analysis

## The bestseller on the topic

### Business Case Step by Step

Building a Business Case is often perceived as too time-consuming. This book enables you to cut the time you currently need for building a Business Case by half. A clearly structured methodology, as well as many practical examples helps you build a transparent and convincing Business Case that avoids common Business Case flaws. Besides the methodology's time-saving potential it also enables you to quantify soft benefits and qualitative values.



<http://www.solutionmatrix.com/gyba.html>

Business Case analyses which quantify qualitative values in Euro and Cent will become more and more important in the future. High quality Business Cases will enable companies and organizations to distinguish themselves from their competition by reaching their goals more efficiently and more successfully.

are defined.

The project that is to be analyzed is the mobile maintenance solution (see figure 1). The evaluation of the new solution is only possible in comparison

### The evaluation is based on the comparison of two scenarios

to the current solution. This first scenario is therefore called "Current Course & Speed", the second scenario is "Implementation of Mobile Maintenance Solution". In the example, both scenarios were at first analyzed for one year.

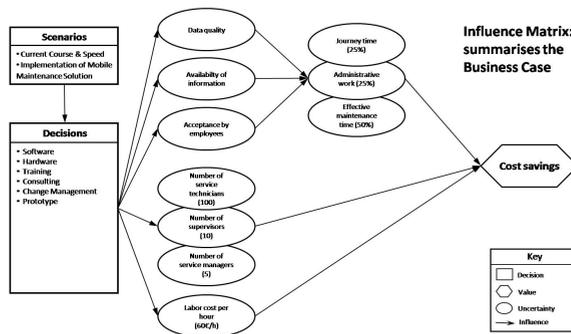
Decisions include all aspects of the project that can be controlled. This includes the choice of software, hardware, training, consulting, change management, and prototype. The uncertainties include all elements of the project that cannot be controlled. This includes data quality, availability of information, acceptance by employees, journey time, amount of administrative work, effective maintenance time, labor cost per hour, number of service technicians and supervisors, and service managers. The influences of the elements between each other are highlighted using arrows.

The Influence Matrix outlines the structure of the financial model, which calculates the cost savings through the mobile solution. All relationships between the Influence Matrix's elements are reproduced as formulas in the financial model. As there is no data available yet for future years the missing data is collected in expert interviews. The experts are usually employees of the company and therefore know the workflow and specific environment best.

As point estimates are usually precisely wrong the experts are asked to estimate a range of possible values, which they can represent with 90% certainty. One expert, for example, estimates a minimum, most likely, and maximum value for the time saved per service technician per year. This information is entered into the financial model for all values for both scenarios. The results of the financial model are influenced by the minimum, most likely, and maximum values of all uncertainties.

In order to make a reliable statement on the probability of a specific result and to identify the most important risk factors, a risk and sensitivity analysis is necessary. Using Monte Carlo simulation the range of results which will be reached with a probability of 90% can be identified. The most likely result for cost savings when implementing the mobile maintenance solution is €212,000.

### Mobile maintenance solution for utility company



Statistical validity of the results is ensured by running 100,000 trials during the Monte Carlo simulation. The result: with a 90% probability the cost savings will be between €55,184 and €345,367.

In order to identify the impact and risk of the uncertainties on the overall result a Tornado Chart is produced. The Tornado Chart shows the most important risk factors sorted by the impact they have on the final result. The result shows

### The biggest risk factor is the acceptance by the employees

that the employees' acceptance of the new mobile solution is the greatest risk factor to the project's success. The variation of this factor can change the final result by plus €100,000 or minus €124,000. The initial assumption that investment cost would be the highest risk factor proves to be false as its variation has the lowest impact on the final result.

The Business Case shows that the potential cost savings can only be realized if the employees' acceptance is considered from the beginning of the implementation process. Ensuring this can lead to cost reduction of €601,200, which means a profit of €211,200. Since the investment is already paid back within the first year, the cost savings over a period of the three years will be over one million Euros.

Johannes Ritter

Solution Matrix  
Phone: +49-69-43 05 74 27  
[www.solutionmatrix.com](http://www.solutionmatrix.com)