Customer Success Story

Department of Conservation - SAP Work Manager

Introduction

Managing the Department of Conservation's asset portfolio across some of New Zealand's most remote and rugged terrain is a major challenge.

This document provides a summary of how SAP Work Manager was **taken to the limits** to support the management of assets in some of the very best places of New Zealand's Middle Earth.

Background

The Department of Conservation (DOC) is the leading central government agency responsible for the conservation of New Zealand's natural and historic heritage.

Part of DOC's role is to look after the recreational and historic assets used and viewed by 100,000's of New Zealanders and international visitors each year.

In their custody DOC has over 72,000 recreation, historic and fence assets with a replacement value of more than NZD $1.2 billion

For the past 6 years DOC has used SAP Plant Maintenance as the basis for their Asset Management Solution. It has tight integration into SAP Financial Asset Management and loose integration with several other DOC systems.

Figure 1 - Milford Track

Business Requirements

DOC already had mobility as part of their asset management solution. They were using the SAP Mobile Asset Management (MAM) mobile application based on SAP Mobile Infrastructure. This was delivered as part of the original SAP asset management implementation known as AMIS.

The existing MAM product was highly modified in terms of both functionality and the UI to make it align with DOC's requirements.

With on-going performance issues and the end of product maintenance looming, DOC needed a replacement solution. They selected SAP Work Manager 5.3 as the replacement for SAP MAM.

The summary business drivers for the SAP Work Manager Mobile project were:

- End of life for the current product
- Resolve the complex and frustrating data management issues associated with MAM
- Lowering administration overheads through efficiencies in synchronising and loading devices
- Increasing flexibility of the mobile platform
- Lowering the cost of the mobile hardware, and increasing use of other hardware options
- Optimising the use of SAP AMIS and the mobile platform by extending the functionality to suit other asset classes and work areas in DOC
- Increasing user satisfaction and acceptance of AMIS

SAP Work Manager

While standard SAP Work Manager largely supported DOC's standard maintenance work processes, the overall solution requirements were influenced by the following factors.

Asset Types

DOC has a broad range of asset types which include:

- **Buildings** – including huts, toilets and shelters
- **Structures** – including a variety of bridge types, viewing platforms and wharfs
- **Tracks** - Walking/ Tramping/ Cycling
- **Roads**
- **Amenity Areas**
- **Signs**
- **Fences**

Figure 2 - Haurangi Hut

While most of these assets have common characteristics and processes, when combined they contribute to a diverse series of measures and measuring techniques.

Figure 3 - DOC Track Sign

Work Environment

New Zealand's 'Middle Earth' has vast areas of wilderness where cell coverage does not exist. DOC 'rangers' can be in the field for many days without the ability to synchronise.

As a result DOC's mobile solution had to be capable of taking a large amount of data into the field and have a robust solution to synchronise back to SAP when connected.

Figure 4 - Routeburn Track

Mobile Device Technology

The environment also influences DOC selection of device type. They use ruggedized units with integrated GPS that are capable of one handed operation, and able to be used for extended periods without re-charge.

With a large number of legacy devices to leverage the solution had to use the Windows Mobile 6 operating system.

DOC has a variety of devices the most common being the Trimble Nomad and Juno 5.

Asset Inspection Process

DOC is responsible for the maintenance of assets to an extensive range of standards. These standards cover both delivery of service and safety of assets.

DOC uses a combination of Equipment Classification values, Notifications and Measurement Points as part of its asset inspection and management process. Consolidated reporting of this information is undertaken in their SAP BW/BI solution.

Periodic inspection of assets is undertaken and the results are used predominantly by SAP classification dependency formula for the asset type to determine achievement of standards.

The assets inspections are not confined to simple conditional assessment. They reflect that DOC's assets are often:

- Built in challenging locations
- Subject to severe environmental conditions
- Subject to restrictive material options
- Servicing a lot of visitors

Figure 5 - Heaphy River Suspension Bridge

Inspections can vary for a given asset requiring both structural engineer inspections and DOC qualified inspectors at different periods of the assets life. Also, inspections are undertaken at varying frequencies, and because of this inspection requirements differ between assets types and can involve over 100 specific questions for a single asset.

The inspection process uses the SAP Work Orders Objects List to logically group asset inspection together. For example the inspection of a hut (remote accommodation building) will also involve the inspection of all the assets associated with that parent asset such as toilets, signs, etc.

Figure 6 - Heaphy Track Hut

Counter Readings Process

DOC uses Bluetooth enabled 'counters' embedded in tracks to monitor visitor numbers. These automated devices count the number of people passing a given point and records the date/ time of the event. Information from these counters is collected by field staff periodically.

The mobile solution needed to download the visitor count data using the Bluetooth technology and transfers these results back to SAP for processing.

Solution Delivery

This section provides a summary of the core delivery areas of the SAP Work Manager solution tailored to DOC's specific requirements.

Tuning of Standard

DOC's mobile devices can typically carry the following number of objects:

- 40,000 Equipment Masters
- 7,000 Functional Locations
- 200 Work Orders – including many with 100+ inspections questions
- 300 Inspection Questions
- 100 Notifications

The large data volumes combined with device/ operating system memory restrictions meant that a number of changes were made to the standard Work Manager solution.

The changes to the standard Work Manager solution included:

- Adding a number of fields (such as the Technical ID) to Mobile screens and search criteria
- Removing Mobile fields and data that were not required
- Optimising SAP backend selection options to reduce sync time

A number of screen navigation and display options were also added/ amended. Many of these changes were identified in the initial design; others were a result of end user testing.

An example was the modification of the tile list for Work Orders to a list screen and the addition of the Equipment Tag (SAP Technical ID) field.

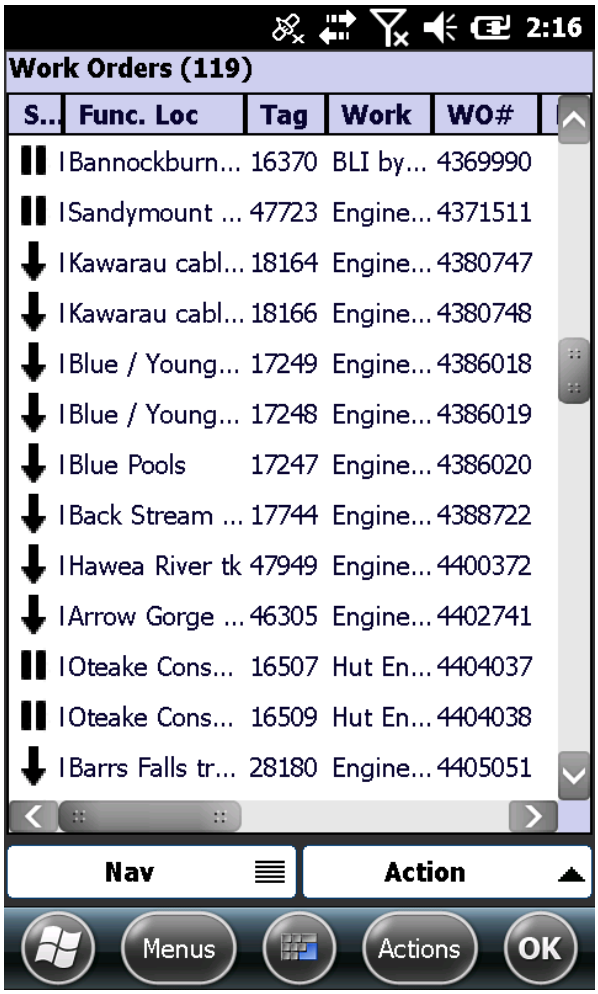

Figure 7 – Modified Work Order List Screen

Mobile Inspections

Inspection Master

Inspection functionality was delivered using a customer built solution inside the SAP WM framework and using customer developed and maintained tables in the core SAP system.

The inspection solution supports a comprehensive asset assessment process already in use by DOC.

Asset systems administrators maintain a series of questions in SAP which are allocated to inspection templates.

The appropriate template is associated with each Equipment record. The overall design allows for this to be dynamically determined based on the characteristic values of the Equipment and using standard SAP functionality.

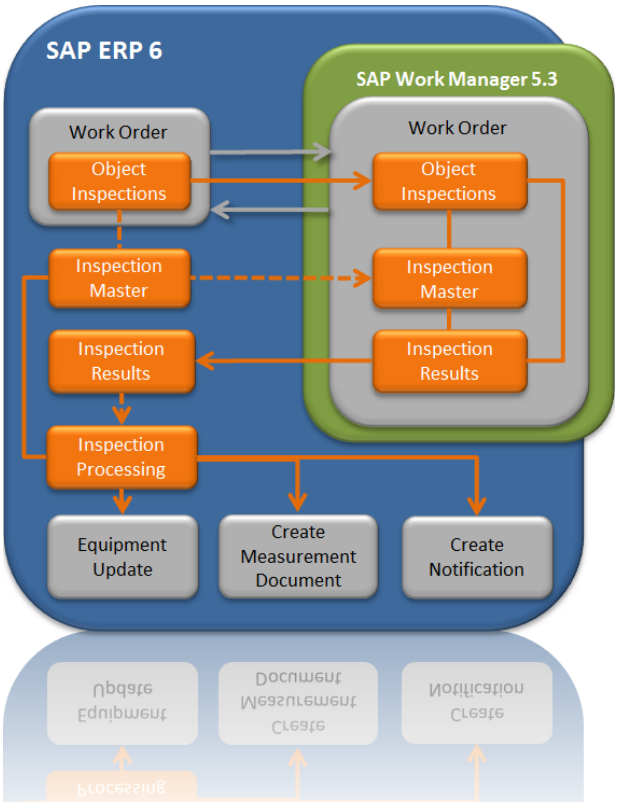

Figure 8 – Summary Inspection Model

The template questions are replicated to the SAP Work Manager application on the device.

Device Inspection Screens

Configuration within each question dictates the screen type presented. There are a range of these screens that allow for single values, multiple values, and with and without GPS coordinates.

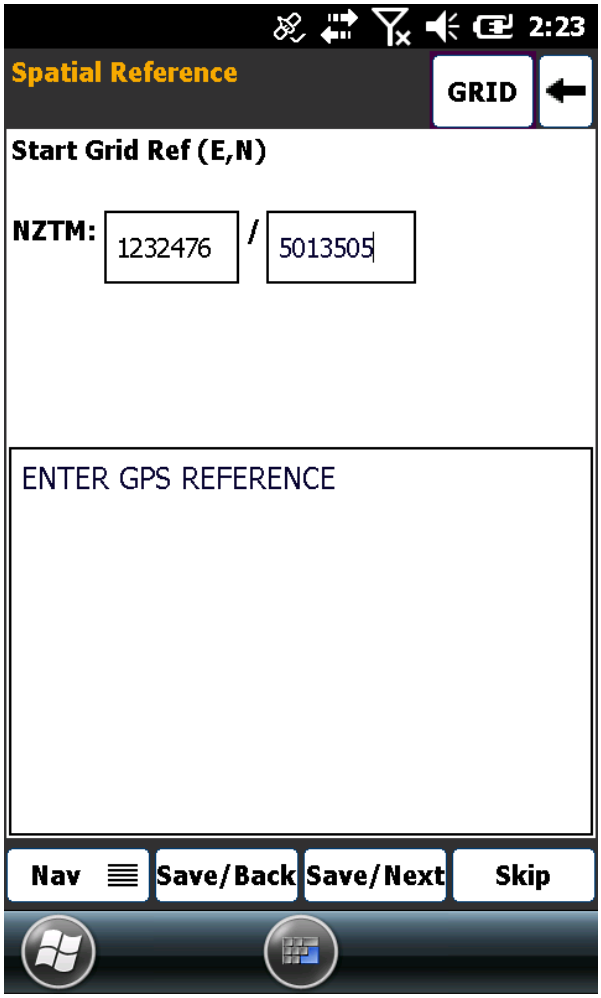

Figure 9 - Inspection Question

Some questions can have start/stop measures associated with multiple open inspection events. Generally these are for linear assets like tracks, where culverts, track condition and vegetation can all have open measures at any given time.

The ability to suspend an inspection while starting another inspection is also a key feature. So, for example, a track inspection can be interrupted to undertake a bridge inspection.

General Equipment Updates

In addition to formal planned inspections the same method was used for adhoc updates to Equipment – such as its Tag ID; GPS location and Status.

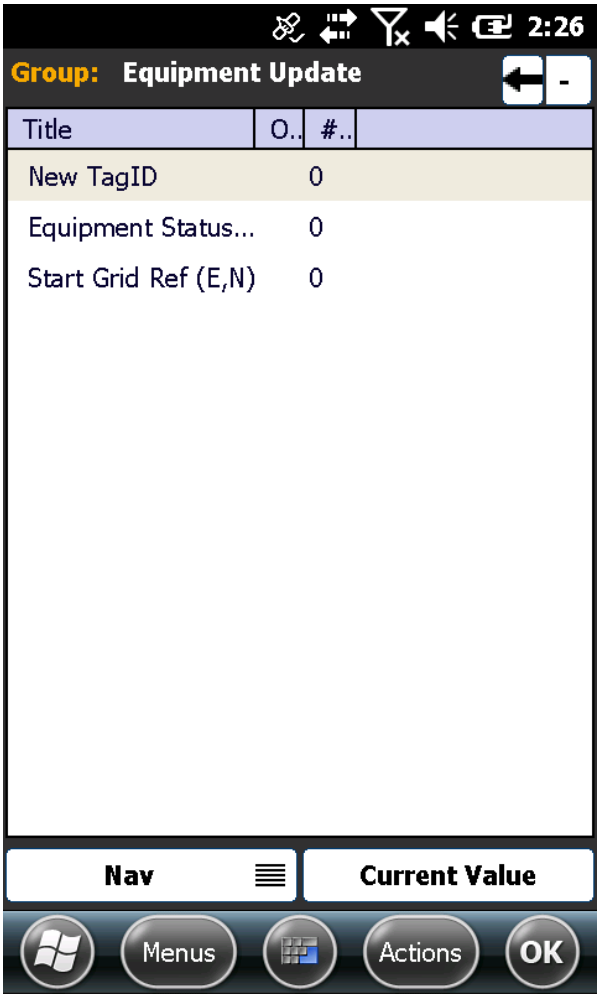

Figure 10 – General Equipment Update Inspection Group

Device Synchronisation and SAP Processing

On device synchronisation, the inspection results are posted back into a SAP table. A scheduled program then runs in SAP and depending on the question configuration it can:

- Update Equipment values
- Create Notifications
- Create Measurement Documents.

These SAP ERP transaction events directly integrate into and support the existing SAP asset management solution.

Visitor Counters

The solution downloads information from Bluetooth visitor counter devices into Work Manager. The raw data is then passed through to SAP for further processing, analysis and reporting.

Major Challenges

There were many challenges encountered and solved on this project. Here are some of the highlights:

- The limitation of Windows Mobile operating system and memory restrictions
- The mobile application handling of memory issues
- UI design conflicting with user expectations – pre-developed meta applications versus rich UI native applications
- Performance tuning of core SAP ABAP Add In
- During the implementation there was a lack of an active SAP support community. This has now been addressed
- Change control process covering multiple international developers

Customer Success

The mobile solution is just one element of a wider work program to improve asset management within DOC. It links with initiatives around improved work planning in and field force management.

The mobile SAP Work Manager solution has been productive for several months now. The initial deployment was with a staggered release of functionality to selected user groups.

Full deployment to 400 field staff is underway (due to be completed in December 2013) and the positive feedback received during training and deployment has been encouraging.

Directly supporting the other asset improvement program initiatives, the mobile solution looks set to play a key role in connecting field staff with the SAP based asset management solution.

Conclusion

DOC has extensive experience in field mobility operations and an evolved series of business requirements. The SAP Work Manager solution provided a solid foundation of standard functionality and tools to deliver on these requirements.

The project had a number of significant challenges to overcome. These included large data volumes, mobile technology limitations and the complex of process.

While the user experience on a Windows Mobile 6 device isn't as rich as other available SAP Work Manager devices, the robust nature of the overall solution has been welcomed by DOC.

The delivered inspections solution is fully extensible to cover other assets types and even industries. Its flexibility means that inspections can be refined over time and without additional development investment.

Delivery of a standard solution is always a prime objective and SAP is renowned for its continuous research and development of its products. The DOC project has shown however, that the SAP Work Manager solution can be **taken to the limits** where required.

About the Authors

Craig Bennett

Craig has 17 years' experience with SAP across a broad range of client engagements and covering enterprise mobility, solution architecture, project management, functional and technical roles.

Craig is passionate about delivering business value to our clients through the use of mobile processes and technology. He is the Mobility Manager for Soltius leading a team focused primarily on the SAP mobile product suites.

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Rikardt is a skilled SAP Technical Architect with extensive experience across a wide variety of technologies and platforms. In addition to his core SAP ABAP and SAP Agentry skills Rikardt also has experience with web development, SAP 'Sybase' technologies, Java and .Net development.

About Soltius

Soltius New Zealand Ltd is New Zealand's longest serving and most successful SAP partner.

We are 100 percent New Zealand-owned and our clients range from some of New Zealand's most innovative medium-sized companies to the country's largest corporates.

With 90+ consultants and offices in Auckland and Wellington, Soltius has delivered SAP services to more than 70 organisations since 1996. Our focus on enduring relationships means many of our original clients are still valued customers today.

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We can licence SAP and carry out entire implementation projects – from evaluation, business process design, blueprint and realisation, to project management and full life-cycle support with our SAP-certified support centre.

For further information visit: http://www.soltius.co.nz

Acknowledgements

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For further information visit: http://www.doc.govt.nz/

Vesta Partners Pty Ltd.

For this project Soltius partnered with Vesta Partners. Providing a Syclo expert, Vesta was involved from the initial design through to the technical delivery and with a focus on the mobile inspections.

For further information visit: http://www.vestapartners.com/

SAP Asia/ Pacific

A SAP specialist SAP Work Manager resource was involved in the early design work around the standard use of SAP WM.

For further information visit: http://www.sap.com

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