



AVEVA NET

Woodside post implementation review

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1. Executive summary

Deloitte was commissioned to conduct a post implementation review of AVEVA NET at Woodside Energy Limited (WEL); to identify the return on investment (ROI) achieved to date and forecasted through to 2014.

In 2004 Woodside commenced the implementation of the AVEVA NET application as a solution to better manage new and legacy engineering data. AVEVA NET was chosen as Woodside believed that it integrates with industry standard business and engineering applications providing a single access point for 98% of Woodside's engineering data.

As part of the AVEVA NET implementation, significant data validation and integration of legacy data from existing facilities was conducted, which significantly contributed to the benefits realised.

Four benefits were evaluated for the purpose of the ROI analysis:

- streamlined data handover
- more efficient information searching
- reduction in training costs
- reduction in the number of supported applications.

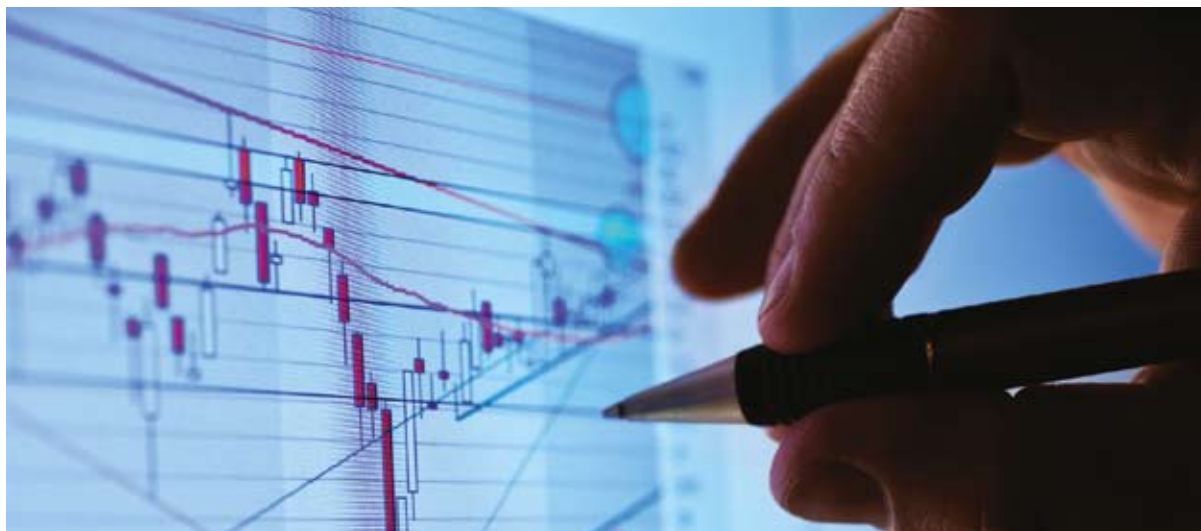
The former two (efficient data searching and data handover) were found to be the most significant by Woodside.

The majority of the benefits included in the 10 year IRR (internal rate of return) have not yet been realised and are based on assumptions provided by Woodside. The realisation of those benefits will be dependent on many factors including the robustness of the assumptions provided by Woodside. In analysing the potential IRR for similar projects, organisations need to assess their own ability to realise these savings and not rely in any way on the assumptions provided in this analysis.

The overall cost of the implementation was categorised into three areas:

- implementation and improvement costs
- total cost of ownership (TCO)
- training.

The most significant costs were incurred during the initial implementation and ongoing business improvement projects (BIP). These BIPs only relate in part to the AVEVA NET implementation but do contribute to the benefits considered in this document; as such their costs have been included in the analysis.



The ROI was determined using the IRR and payback period analysis. A 10% discount rate was used to account for the time value of money when determining the investment's payback period. Based on the assumption provided by Woodside that a 10% productivity gain can be achieved by all the users through more efficient information searching, the AVEVA NET implementation would achieve an IRR of 27% over a five year period from 2004 to 2009. With the benefits anticipated from 2009 to 2014, Woodside could expect to achieve an 84% return between 2004 and 2014 if those assumptions were ultimately correct. Under these assumptions, Woodside would achieve the breakeven point of the AVEVA NET implementation in mid 2007, 3.4 years after commencement.

It is crucial to note that the ROI analysis is very sensitive to the level of productivity realised by all AVEVA NET users and actual savings have not been verified independently by Deloitte. As such three scenarios have been considered in section 5.5 ROI sensitivity.

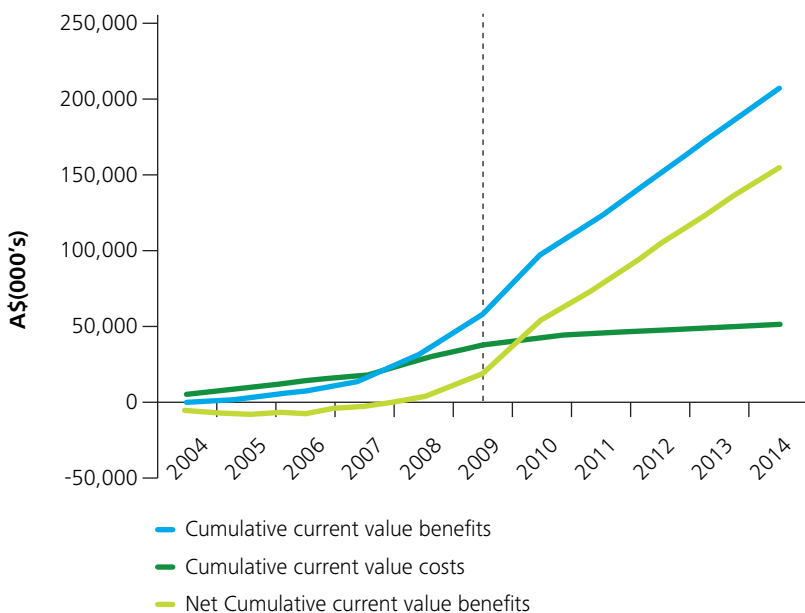
Based on the assumptions used in this review and the additional intangible benefits not accounted for in the IRR and payback analysis, the AVEVA NET implementation appears to have been a successful and beneficial investment for Woodside. Woodside further suggests, in hindsight, that an earlier payback would have been achieved had AVEVA NET been implemented across the whole of Woodside initially instead of only Brownfield's, which had a much smaller user group.

Use of this report

All data and assumptions in this report have been provided by Woodside. The accuracy of this data (including the level of benefits achieved, the level of costs incurred and the future level of costs and benefits) has not been validated by Deloitte. Our procedures and enquiries did not include verification and does not constitute an audit in accordance with Australian Auditing Standards, nor does it constitute a review in accordance with ASRE 2405 applicable to review engagements.

No review of functionality has been performed and Deloitte makes no representation as to the suitability of AVEVA NET to any third party. Deloitte also makes no representation as to the likelihood of realising any benefits noted in this report to any third party.

Chart 1: Net cumulative current value benefits



2. Background

2.1 The Woodside implementation

2.1.1 Overview of project

Prior to 2004, Woodside was experiencing difficulty in managing and accessing the large amounts of data and drawings required for the development and maintenance of their facilities. Furthermore, much of Woodside's plant information was maintained by third parties, leading to additional challenges in accessing and sharing their own engineering information.

To address this issue, Woodside accepted tenders from engineering data management (EDM) providers to provide a solution to improve the management and delivery of Woodside's engineering data. Through this selection process AVEVA NET was identified as having the best fit to Woodside's needs.

The rationale for implementing AVEVA NET was to:

- provide a single point of access for facilities, plant and equipment data
- make site and project information more widely available
- improve the currency and accuracy of information available
- reduce the number of engineering applications in use at Woodside
- reduce engineering costs by reducing the search time for information
- ensure the engineering information meets the needs of the Production division.

2.1.2 Scope of the AVEVA NET project

Woodside commenced the implementation of AVEVA NET in 2004 with North Rankin A, GWA and Karratha facilities coming online in the following year. The remaining Australian operated sites were added and completed in 2008.

To maximise the potential benefits and ensure that AVEVA NET would provide extensive and accurate information, significant data cleansing, validation and conversion was undertaken during the implementation of the existing sites.

Key activities of the initial implementation involved:

- set up and configuration of the AVEVA NET Software
- development of gateways to enable AVEVA NET to interact with existing business and engineering data warehouses
- development of a data governance framework, defined data standards, and an engineering library, ensuring that data are structured in the appropriate format and nomenclature is consistent
- collation, validation, and conversion of existing legacy data from facilities. This involved working closely with existing EPCs (Engineering Procurement Construction) and ISCs (Integrated Service Contractor) to obtain the required data in the appropriate format.

Once AVEVA NET was implemented, a number of legacy systems were phased out. As legacy data from a wide variety of sources were progressively converted, cleansed and validated, AVEVA NET gradually became the single source of engineering data within Woodside.

Much of Woodside's plant information was maintained by third parties, leading to additional challenges in accessing and sharing their own engineering information.

2.1.3 The Woodside engineering data management application landscape

AVEVA NET delivers information from a number of applications as illustrated in Figure 1 below. AVEVA NET at Woodside is known as ALIS (Asset Lifecycle Information System).

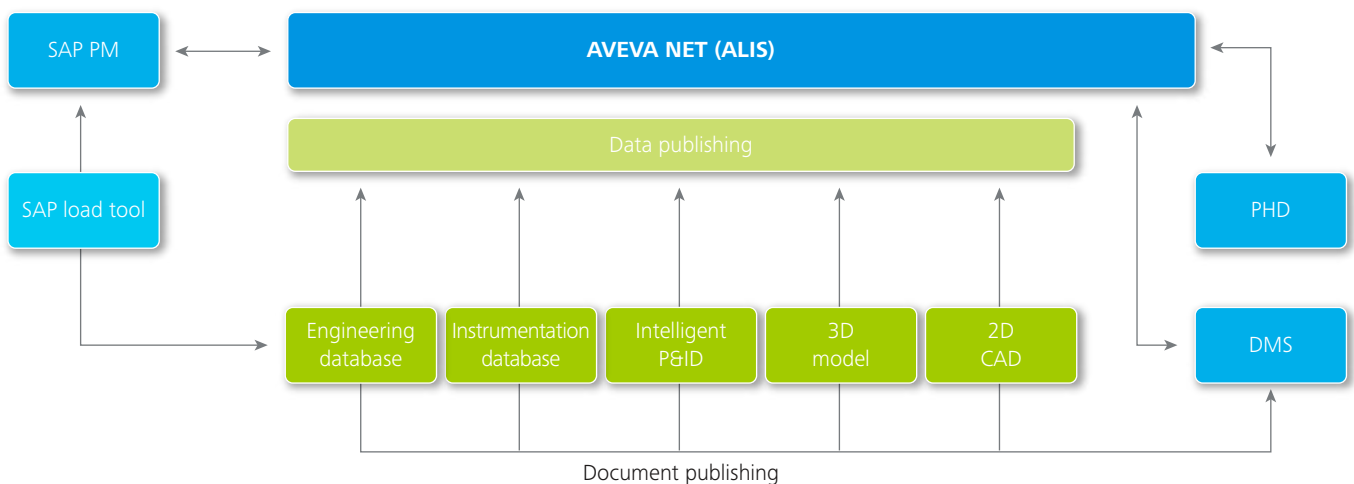
See Figure 1: AVEVA NET relationship to EDM applications

2.1.4 Asset lifecycle management at Woodside using AVEVA NET

AVEVA NET is available to all personnel at Woodside and is currently accessed by over 2,000 users within Woodside. Woodside has indicated that daily usage typically averages 350 users; however will exceed 1,000 users in peak periods. AVEVA NET is accessed through an intranet webpage which provides links to the various facilities, searches and reports and statistics. Typically AVEVA NET is used for:

- operational and maintenance planning
- engineering design and reference material
- confirming and updating engineering specifications and tolerances
- conducting investigations
- training and building facility awareness
- in-field verification.

Figure 1: AVEVA NET relationship to EDM applications



3. Methodology

3.1 Method

This report is the result of a post implementation review undertaken to identify the quantitative benefits realised by Woodside through the AVEVA NET implementation to date. Benefits expected to be realised over the next five years are forecasted based on the benefits observed to date. To assess the quantitative benefits, an ROI analysis has been conducted.

It should be noted that all data and assumptions in this report have been provided by Woodside. The accuracy of this data (including the level of benefits achieved, the level of costs incurred and the future level of costs and benefits) has not been validated by Deloitte. Our procedures and enquiries did not include verification and does not constitute an audit in accordance with Australian Auditing Standards, nor does it constitute a review in accordance with ASRE 2405 applicable to review engagements.

A number of methods are available for the determination of an investment's ROI. In this review the Internal Rate of Return (IRR) was used to calculate a return over the term of the investment.

The IRR was selected for the following reasons:

- it accounts for the time value of money
- there are ongoing costs associated with the AVEVA implementation which can be accounted for in the net cost/benefit
- the benefits are estimated and as such it would be presumptive to indicate a specific dollar value return as would be provided by an NPV analysis.

In addition to the IRR analysis, a cumulative current value comparison of costs versus benefits was conducted. This provided a visual representation of the investment and was used to calculate the payback/breakeven point of the investment.

As this review was conducted midway through the ten year period, half of the cash flows are in historic dollar values and the other half is in future dollar values. To ensure that the time value of money is accounted for appropriately in the Payback analysis, future cash flows have been discounted back to 2009 values, whilst historic cash flows have been inflated to 2009 values. This allows a comparison of cost and benefits to be conducted in 'today's' dollars. A discount rate of 10% has been used calculate future and present values.

3.2 Assumptions

The ROI analysis has been conducted over a ten year period, five years in retrospect and five years forecasted.

Where actual costs and benefits can be identified and quantified these figures have been used in the analysis. In all other instances of costs and benefits have been estimated using a range of assumptions outlined below. As noted above, all assumptions have been provided by Woodside and have not been validated by Deloitte. Some assumptions are considered commercially sensitive and as such are not noted.

Three key drivers used for the calculation of benefits are:

- number of 'Tags' per site
- total number of users in each year
- total new users per year.

'Tags' are essentially used as a unique identifier for an item or area within a facility. The number of tags provides a tangible method of determining the size and complexity of the facility and thus can be used to determine comparative benefits in site handover to Operations.

Chart 2: Actual and forecasted cumulative tags

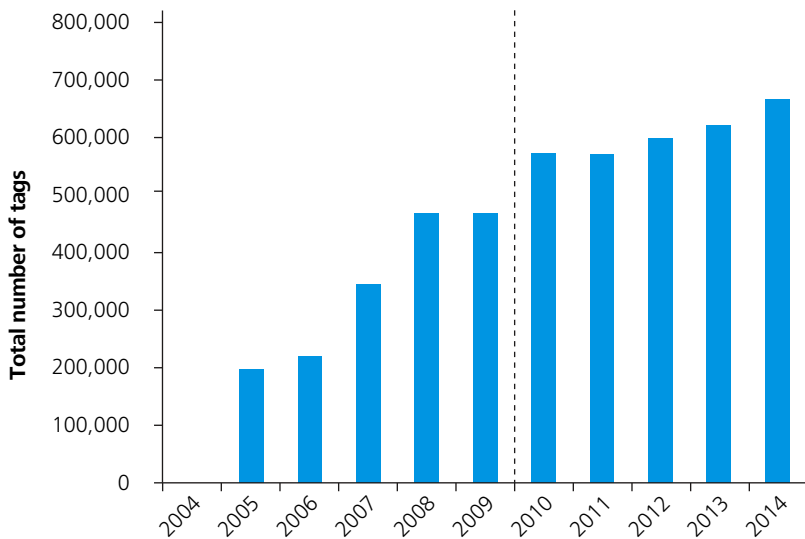


Chart 2 shows the cumulative number of tags held in AVEVA NET at Woodside to date, and the number of Tags forecasted forward by Woodside to 2014. Projects that are 'pre FID', such as 'Browse', have not been included in this analysis.

NB: The forecast numbers of tags increases from 2010 as new facilities are brought online. No new facilities were handed over in 2009 and 2011.

Chart 3: Total and effective users including contractors

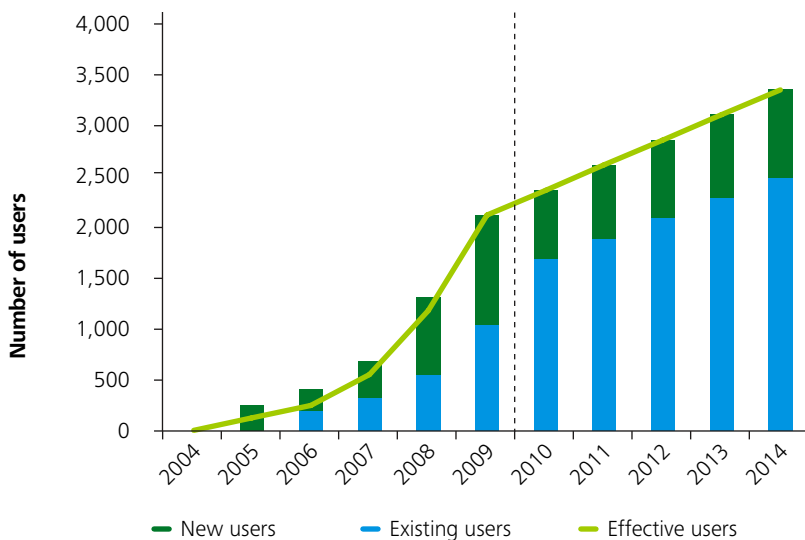


Chart 3 describes the number of existing and new Woodside AVEVA NET users per annum; including contractors. In the initial years of the implementation it is assumed that due to user inexperience and the amount of data in the system at the time, the full benefit of the system may not have been realised. To account for this, the number of users have been multiplied by an 'effectiveness' rate. This rate was assumed at 50%, 60%, 80%, 90%, in years 2005, 06, 07, 08, respectively. Full user effectiveness (100%) was assumed from 2009 on. The 'Effective Users' have been used for calculations when total users are required.

New users are people who are new to using the system in a given year. This was determined by the additional users added each year, plus the replacement of existing users due to attrition.

4. Cost benefit analysis

4.1 Introduction

The following section describes the quantifiable costs and benefits identified and used in this ROI analysis; including the assumptions that have been used to calculate them. It is recognised that there were many other significant benefits that Woodside has or could realise, however due to the intangible nature of these benefits or limited quantifiable data, they have not been included in this ROI analysis. These qualitative benefits have been recognised in section 5.6 Qualitative and Intangible Benefits.

4.2 Benefits

Through consultation with the Woodside EDM team, four quantitative benefits areas were identified. Further breakdown of the benefits are described in Appendix 7.3- Cost Benefit Breakdown. The majority of the benefits included in the 10 year IRR have not yet been realised and are based on assumptions provided by Woodside. The realisation of those benefits will be dependent on many factors including the robustness of the assumptions provided by Woodside. In analysing the potential IRR for similar projects, organisations need to assess their own ability to realise these savings and not rely in any way on the assumptions provided in this analysis.

4.2.1 Streamlined data handover

At the completion of a facility's construction phase, all the engineering design and data is handed over to the owner by the EPCs for operations and maintenance. In the past, Woodside have indicated that the handover of data following construction has been an arduous task and typically cost between \$1m to \$2.5m per facility.

Woodside has been able to reduce the cost associated with data handover and these savings were first realised at the completion of their Angel site with a handover cost of \$250k. These savings are primarily attributed to:

- establishing a defined data governance framework that ensures EPCs hand over data in the appropriate data format
- AVEVA NET enabling the effective management and delivery of engineering data once in the engineering data warehouses.

Using the Angel handover data as a benchmark, future benefits can be determined by comparing the effective handover cost per tag.

Table 1: Handover benefits

		Source
Previous handover cost (approx median)	\$1,800,000	WEL EDM Team
Actual handover cost of Angel	\$250,000	WEL EDM Team
Number of tags for Angel	9,600	AVEVA NET System
Saving per handover per tag	\$161	

To forecast future handover savings, the 'Saving per handover per tag' is multiplied by the number of tags of the facility expecting to be handed over in the planned year.

4.2.2 More efficient information searching

Prior to the AVEVA NET implementation, engineering data was stored and accessed from multiple databases and repositories held with the EPCs, ISCs, and Woodside. This inconsistent practice of data management was considered a contributor to an engineer spending a considerable portion of their time searching and transcribing engineering information.

With the introduction of AVEVA NET, access to information was improved as AVEVA NET provides a single access point for 98% of all of Woodside's engineering data. Whilst the AVEVA NET project has had a significant impact on the efficiency of this process and that time savings have been achieved, there is no quantitative data to support the quantum of such savings. The actual quantum of time spent by a Woodside engineer in this activity had not been assessed previously and there is no quantitative assessment of time saved as a result of the project (for example, a survey measuring the impacts on users) on which to qualify the benefit.

The objective of the project was to release additional productive capacity from the existing establishment. Woodside has estimated that AVEVA NET has reduced the time a user spends searching for engineering information from 40% to 20% of their time. For the purposes of this review, Woodside assumes that there has been an average of a 10% improvement in actual productivity for all users of AVEVA NET. This is equivalent to an average of ¾ of an hour saving per day per AVEVA NET user.

It is essential to note that this benefit is very sensitive to the number of users of the tool and their ability to realise an actual productivity gain through the reduction in time searching for engineering data. The sensitivities to this benefit are discussed in section 5.5 ROI sensitivity.

Table 2: Efficient information searching benefits

		Source
Employee work days per annum	200	Assumption
Productivity gain	10%	WEL EDM team
Saving per employee (days)	20	

4.2.3 Reduction in training costs

The introduction of AVEVA NET has provided a single point of access to numerous databases and repositories including:

- SAP
- instrumentation packages
- document management systems, and
- 2D/3D models.

This single access point has enabled Woodside to streamline their training through not needing to train their staff on the multiple previous systems that managed their engineering data. Woodside believes this has enabled them to reduce the time taken to train a new employee by 20 hours. Training required for AVEVA NET is 1½ hours for each new user, realising a saving of 18½ hours per user.

Table 3: Reduction in training costs

		Source
Total training required before on previous corporate tools	20hrs	WEL EDM Team
Training required for AVEVA NET	1.5hrs	WEL EDM Team
Saving in training per new user	18.5hrs	
Benefit per new user	\$1,351.60	

4.2.4 Reduction in supported applications

The implementation of AVEVA NET has enabled Woodside to rationalise the number of applications used for the management of engineering data from 253 applications to 18 core applications. This is a result of the consolidation of functionality originally held by a number of smaller applications and spreadsheets into AVEVA NET, and obviating the need for new applications to be acquired.

This rationalisation of applications has enabled Woodside to realise ongoing financial benefits by reducing:

- ongoing licensing costs
- support costs required for the application
- user maintenance.

Due to the complexity and breadth of applications previously in use, the Woodside IT department suggests that a conservative estimate of the savings achieved through the decommissioning of these applications is \$1,000 per application per year.

Table 4: Reduction in support applications

		Source
Applications prior to AVEVA NET	253	WEL EDM Team
Applications after AVEVA NET installation	18	WEL EDM Team
Applications no longer used	235	
Cost saved per application pa	\$1,000	WEL IT dept.
Annual saving from applications pa	\$235,000.00	

4.3 Costs

Costs that have been incurred by Woodside during the implementation of AVEVA NET have been categorised into three main areas:

- total cost of ownership (TCO) of AVEVA NET
- implementation and improvement costs related to AVEVA NET
- training.

Detailed breakdown of the costs are described in Appendix 7.3 Cost and benefit breakdown.

4.3.1 Total cost of ownership

The TCO for AVEVA NET includes:

- AVEVA licensing
- internal IT support and hardware maintenance
- AVEVA service fees.

AVEVA licensing and service fees were obtained from historic and forecasted amounts based on the Woodside/AVEVA agreement, totalling \$7.04m from 2004-2008. Ongoing licensing fees are \$405k pa with a CPI increase. In 2011, it is expected that Woodside will upgrade their version of AVEVA NET thus incurring an additional service cost of \$150k in that year.

IT Support and server hardware is provided and supported by Woodside IT department. The costing is based on an internal cost recovery model with a CPI increase each year; approximately \$14k in 2009.

4.3.2 Implementation and improvement costs

The implementation and improvement costs include the initial project management resources, supporting hardware (i.e. servers), development of gateways to enable AVEVA NET to interact with other systems, and initial training / change management. These costs totalled \$5.5m over the first three years. The ongoing internal resource requirement for AVEVA NET and associated products is budgeted for a core team of five people.

During the implementation of AVEVA NET, a number of ongoing business improvement projects were underway, including:

- streamlining of data capture
- data validation
- development of an engineering library
- defining EDM standards
- migration of legacy data into the system.

These projects contributed to the benefits measured and attributed in this analysis. Therefore these costs are included in the implementation costs.

4.3.3 Training

As discussed above, the initial training was included in the initial implementation costs. However, ongoing training for new users of the system is required ongoing from 2008. Woodside has budgeted \$50,000 per year for these training costs with a CPI increase per annum.



5. Return on investment

5.1 Key findings

Through the analysis of the data and assumptions provided by Woodside, it has been calculated that over a ten year period, AVEVA NET and the associated business improvement projects are expected to deliver a return on investment with an internal rate of return (IRR) of 84%. This is based on Woodside assumptions that an average 10% productivity gain is achieved for all users as a result of gains in efficiency when searching for information.

This represents a payback of the investment in Current Value terms of 3.4 years. Woodside has commented that the IRR and payback period could have been significantly improved had AVEVA NET been implemented to the whole of Woodside from the commencement of the project instead of in 2007, where it had only been implemented in Brownfield's up until that date.

The most significant benefit in dollar terms is the time saved by reducing the time it takes to search for engineering information. As the number of users of the system increases the potential benefits proportionally increase. As discussed in section 4.2.2 the actual time saved for each user is unable to be verified and an average 10% productivity gain has been assumed for all AVEVA NET users. Any change to this assumption will have a significant impact on the ROI as discussed in section 5.5.

Significant benefits were also achieved during the handover phase for each facility. This benefit was first realised during the handover of the Angel project in 2008 which realised a saving of \$1.55m compared to similar previous projects. Similar benefits are expected when projects that are currently underway are handed over to Woodside.

The most significant costs were in the establishment of AVEVA NET and the business improvement projects (BIPs). Ongoing costs are minor due to the autonomous way AVEVA NET can be managed. Besides the ongoing licensing costs, very little AVEVA support is required as Woodside resources the ongoing EDM team internally.

Woodside had chosen to undertake a number of business improvement projects from 2004 to 2009, and plans to undertake further extensive business improvement projects through to 2014. These projects have contributed to obtaining the benefits that Woodside has been able to realise, and therefore have been included in the cost analysis.

5.2 Internal rate of return

The IRR has been calculated on the net benefits identified through the cost benefit analysis. The following table compares the IRR over a ten and five year period.

Table 5: Internal rate of return

	10yr	5yr
IRR	84.3%	25.7%

The five year IRR of 26% is from 2004 to 2009 and is based on historical assumed benefits realised and costs incurred. The ten year IRR of 84% includes assumed net benefits and five years of forecasts based on assumptions identified above.

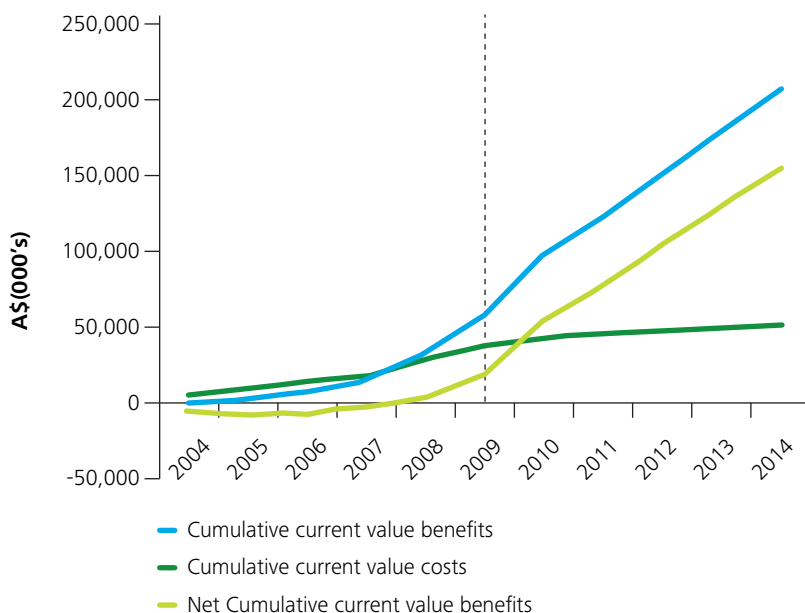
5.3 Payback period

Woodside's AVEVA NET project achieved full payback in 3.4 years or by mid 2007. The following graph describes the cumulative current value costs versus the cumulative current value benefits. The point of intersection represents the project's breakeven point.

From 2009, project costs began to stabilise as the implementation reached its final stage. Benefits increase dramatically from 2007 due to realising the benefits from the Angel LNG handover and as user adoption increases.

See Chart 4: Net cumulative current value benefits

Chart 4: Net cumulative current value benefits



5.4 Costs versus benefits

Costs in the initial four years were relatively stable during the implementation of the project. Costs peaked in 2008-2010 due to the business improvement projects which involved restructuring and validation of data. Costs from 2011 are expected to stabilise again with the majority of the cost consisting of annual licensing, internal resources, and ongoing expected business improvement projects to a lesser extent.

The first benefits from AVEVA NET were realised one year after project commencement and are forecast to increase as additional facilities were brought onto the system and the user base increased. Significant benefits are expected 2010, 2012, 2013 and 2014 as new facilities are due for completion and the benefits through reduced handover costs will be realised. 2010 benefits are expected to be higher than the following years as three projects are due for completion in that year. There are no handovers expected in 2011 which is reflected in the reduced benefits of that year.

5.5 ROI sensitivity

The ROI analysis is based on a number of assumptions provided by Woodside which are unable to be validated. The most significant benefit is the potential saving that could be realised through more efficient searching of engineering information. This benefit is very sensitive to the estimated productivity increase for each AVEVA NET user. As such, three potential scenarios that relate to section 4.2.2 have been considered to demonstrate this sensitivity.

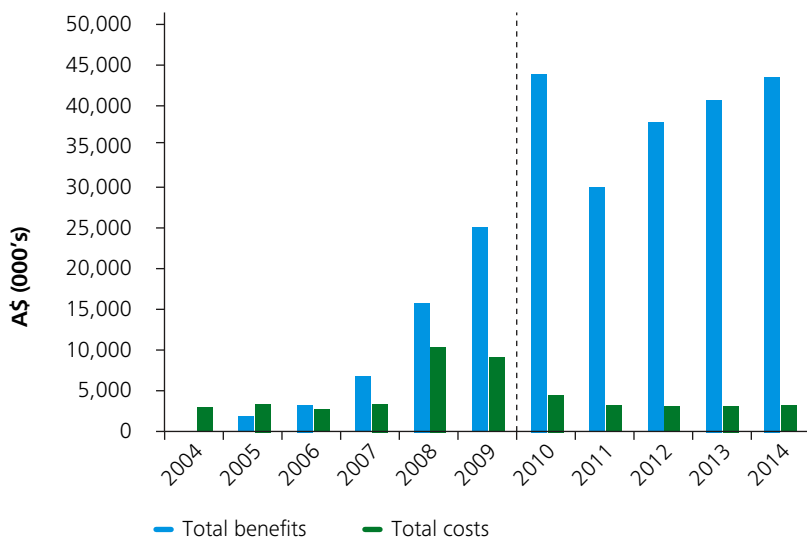
- scenario 1 – 0% productivity increase (no benefit is included in the ROI)
- scenario 2 – 10% productivity increase, an assumed saving of ¾ of an hour per day (50% of Woodside’s estimate)
- scenario 3 – 20% productivity increase, an assumed saving of 1.5 hours per day (100% of Woodside’s estimate)

Table 6: IRR and payback sensitivity

	10yr IRR	Payback period
Scenario 1 (0%)	-4.6%	>10 years
Scenario 2 (10%)	84%	3.4 years
Scenario 3 (20%)	136.4%	2.1 years

The above table describes the impact of productivity increases through more efficient searching of information on the total IRR and Payback Period. If Woodside was unable to realise any productivity increase from their AVEVA NET users through more efficient information searching, the AVEVA NET implementation ROI will be -4.6%. Alternatively, if Woodside realised a productivity increase of 20% then an ROI of 136% will have been realised with an investment Payback of 2.1 years.

Chart 5: Total benefits versus total costs



5.6 Qualitative and intangible benefits

Throughout this review, Woodside identified a number of qualitative benefits that could not be accounted for in the ROI analysis. These benefits include:

- **improved information quality leading to a safer workplace and reduced unplanned shutdown risk:** AVEVA NET has improved the quality and access to facility engineering information. It is suggested this improved data quality reduces the likelihood that incorrect engineering information is used when maintaining a facility causing a work place accident or an unplanned shutdown
- **handover and archival of abandoned or sold assets:** As with benefits realised through a handover from an EPC to the operator, similar benefits were realised when an asset was sold. By managing the engineering data in AVEVA NET, the EDM team can easily export all relevant engineering data for handover to the purchaser or for archival in a matter of hours. Woodside indicated that this previously took a small team several months
- **reuse of engineering data and designs:** Managing the engineering data and designs in a digital repository provides engineers the opportunity to duplicate or clone existing facilities, leading to further potential savings in the cost of future engineering design. Woodside stated that these benefits have been realised during the expansion and update of two existing facilities; however, the actual dollar benefits is unquantifiable
- **strategic sourcing opportunities of EPCs and ISCs:** Prior to the AVEVA NET implementation, contracted EPC/ISCs held and managed the engineering data on behalf of Woodside. This meant reliance from Woodside on the contracted EPC/ISC, thus reducing the ability to negotiate contracts in competitive market. With Woodside now self-managing engineering data through AVEVA NET, increased flexibility in negotiations and packaging of contracts may lead to potential savings through strategic sourcing.

5.7 Future opportunities

Based on the success of this project and the ROI achieved, Woodside has commenced investigating other business improvement opportunities in relation to AVEVA NET. These opportunities include:

- **integration with the electronic permit to work system:** This involves the identification of isolation points and creation of spading lists through integration with AVEVA NET's models and the existing permit to work system
- **integration with handheld devices:** This will allow real-time remote access to AVEVA NET from the field using devices such as PDA's
- **use of RFID (Radio Frequency Identification):** This will enable plant and equipment to be tagged for better tracking and identification leading to a safer and more efficient workplace
- **photogrammetry and media gallery:** Allows the interlacing of actual plant images to the design plans, leading to a more accurate representation of the facilities
- **SAP integration portal:** Would provide an easy to use and dynamic interface through to SAP PM transactions directly from AVEVA NET
- **integration with Subsea GIS / GPS technologies:** The EDM team are considering the integration of GIS (Geographical Information Systems) and GPS (Global Positioning System) technologies into AVEVA NET. These additional technologies will significantly improve the ability to locate and inspect Subsea equipment and hardware (i.e. underwater valves, pipes and trees).

6. Conclusion



The AVEVA NET implementation has provided a significant return on investment based of assumptions and data provided by Woodside, yielding a 26% IRR over the past 5 years. Further using these assumptions, it is forecast that the IRR over a 10 year period will exceed 84%. The implementation's breakeven point was 3.4 years after commencement and was achieved in mid 2007.

The most significant benefits that Woodside has realised from the implementation of AVEVA NET are:

- reduction in handover costs between EPCs and Woodside
- improved productivity of AVEVA NET users through more efficient searching of engineering information which is facilitated by AVEVA NET. A productivity boost of 10% for all users was assumed in the analysis, although this assumption has not been independently validated by Deloitte.

The most significant costs involved with the implementation, were:

- initial implementation of the system including the procurement of the software
- ongoing business improvement projects. These projects were both directly and indirectly related to the AVEVA NET implementation; however, it is through these projects that Woodside believes they have been able to maximise the benefits obtained.

Ongoing maintenance and support costs for AVEVA NET are minor as the system is managed through a relatively small team of five internal resources requiring limited external consulting support.

A number of additional significant benefits were identified but were deemed intangible or qualitative in nature. They included:

- improved workplace safety and reduction in unplanned shutdowns through better information quality
- reuse of engineering designs and data through better management of digital information
- improved opportunities in strategic sourcing and packaging of contracts as Woodside now is able to manage their own engineering data.

Use of this report

All data and assumptions in this report have been provided by Woodside. The accuracy of this data (including the level of benefits achieved, the level of costs incurred and the future level of costs and benefits) has not been validated by Deloitte. Our procedures and enquiries did not include verification and does not constitute an audit in accordance with Australian Auditing Standards, nor does it constitute a review in accordance with ASRE 2405 applicable to review engagements.

No review of functionality has been performed and Deloitte makes no representation as to the suitability of AVEVA NET to any third party. Deloitte also makes no representation as to the likelihood of realising any benefits noted in this report to any third party.

With a proved plus probable reserves to production ratio of 25 years at 2007 production rates, Woodside is poised to help meet growing global demand for clean energy.

7. Appendix



7.1 AVEVA background

AVEVA software supports the world's marine, oil & gas, power and process industries with comprehensive solutions for the design, construction and lifetime support of all types of facilities.

Proved on many of the world's most complex projects, AVEVA's best-in-class solutions let you create, control and exploit engineering data to reduce costs, accelerate timescales and maximise through-life performance.

AVEVA NET is a powerful, ISO 15926-compliant solution to control, link, evaluate and deliver all types of Plant and Marine data and documents – not just engineering information – across disparate systems, in a secure, collaborative environment, regardless of application and format.

7.2 Woodside background

Woodside is one of Australia's top ten companies by market capitalisation, and the nation's largest publicly-traded oil and gas exploration and production company.

Based in Perth, Western Australia, Woodside has major operational assets and exploration and development interests in five continents including Australia and the United States.

In 50 years, they have grown from a pioneer oil and gas explorer to Australia's largest independent producer of oil and gas and one of the world's largest producers of LNG.

Woodside operates Australia's largest resources project, the North West Shelf Venture in Western Australia, which produces about 40 per cent of Australia's oil and gas.

In 2010, Woodside will complete construction of its \$12 billion Pluto LNG Project near Karratha – Australia's second biggest resources project. Woodside is also seeking to progress its Sunrise LNG development in the Timor Sea and the Browse LNG development in northern Western Australia.

With a proved plus probable reserves to production ratio of 25 years at 2007 production rates, Woodside is poised to help meet growing global demand for clean energy.

7.3 Cost and benefit breakdown

	2004	2005	2006	2007
Benefits				
Streamlined data handover	-	-	-	-
More efficient information searching (based on WEL assumption of 10% productivity increase for all users)		1,369,863	2,709,041	6,066,849
Reduction in training costs		337,900	286,539	489,819
Reduction in supported applications		235,000	235,000	235,000
Total benefits	\$0	\$1,942,763	\$3,230,580	\$6,791,668
Costs				
Application licensing	1,903,804	532,274	464,708	608,788
IT support & hardware maintenance		12,776	13,160	13,555
Service fees & expenses	1,077,551	1,057,605	450,737	262,337
Total cost of ownership	2,981,355	1,602,655	928,605	884,680
Planning, hardware & implementation		1,833,333	1,833,333	1,833,333
Ongoing EDM internal resources				
Business improvement projects (BIP)				700,000
Total implementation and improvement		1,833,333	1,833,333	2,533,333
Training				
Total training				
Total costs	\$2,981,355	\$3,435,988	\$2,761,938	\$3,418,013
Net benefits	-\$2,981,355	-\$1,493,225	\$468,642	\$3,373,655

2008	2009	2010	2011	2012	2013	2014
1,550,000	-	16,791,667	-	5,166,667	5,166,667	5,166,667
13,058,630	23,463,014	26,202,740	28,942,466	31,682,192	34,421,918	37,161,644
1,041,271	1,462,159	916,654	984,234	1,051,814	1,119,394	1,186,974
235,000	235,000	235,000	235,000	235,000	235,000	235,000
\$15,884,901	\$25,160,173	\$44,146,060	\$30,161,700	\$38,135,672	\$40,942,978	\$43,750,284
615,821	405,000	417,150	429,665	442,554	455,831	469,506
13,961	14,380	14,811	15,256	15,713	16,185	16,670
67,599	0	0	150,000	0	0	0
697,381	419,380	431,961	594,920	458,268	472,016	486,176
1,000,000	1,030,000	1,060,900	1,092,727	1,125,509	1,159,274	1,194,052
8,705,300	7,700,700	2,994,530	1,500,000			
9,705,300	8,730,700	4,055,430	2,592,727	1,125,509	1,159,274	1,194,052
50,000	51,500	53,045	54,636	56,275	57,964	59,703
50,000	51,500	53,045	54,636	56,275	57,964	59,703
\$10,452,681	\$9,201,580	\$4,540,436	\$3,242,283	\$1,640,052	\$1,689,254	\$1,739,931
\$5,432,220	\$15,958,593	\$39,605,624	\$26,919,417	\$36,495,620	\$39,253,724	\$42,010,353

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Source information

All data and assumptions in this report have been provided and/or validated by the Woodside EDM team. The accuracy of this data has not been verified by Deloitte.

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