

Toronto Office
1 Yonge Street, Suite 1801
Toronto, M5E1W7

New York Office
734 Franklin Avenue, # 514
Garden City NY 11530

DISCUSSION ON USE OF POINT (BEST-OF-BREED) EAM¹ PRODUCTS VS SAP'S EAM SOLUTION

Introduction

Working as specialists in the EAM market place NDS frequently encounters the situation where organizations are evaluating EAM solutions and debating use of a point EAM solution versus SAP's EAM solution. (It is noted that this debate occurs less frequently now than previously - more enterprises appear to have made the strategic decision/commitment to move their core business processes to an integrated, strategic platform based on the rationale that standard processes and metrics can be applied across the enterprise and that TCO is lowered by this integrated approach).

This paper considers this choice and lays out the factors for management to consider in making a decision. It is noted that this is an important decision - with significant value at stake in terms of strategic ramifications, millions of dollars in Total Cost of Ownership (TCO) and potentially far larger sums in process efficiency and productivity.

The essence of the argument is whether **perceived** usability and functionality advantages of a point solution outweigh the benefits of using one strategic, integrated platform for core enterprise business processes with the associated reduced Total Cost of Ownership, reduced solution risk and long-term vendor stability of the SAP enterprise platform.

The chart shown overleaf lays out the main factors to bear in mind when analyzing this choice. Reviewing the chart it can be seen why this debate is becoming less and less contested. The business case for the SAP EAM platform is increasingly well recognized and the SAP EAM solution is mature and robust with a huge user base. Thus in many organizations senior management are already convinced by the benefits of an integrated platform for core business processes. However emotions and change management issues can run high around EAM system selections. This topic is further nuanced by the background of maintenance departments and CMMS systems. Historically maintenance departments have operated fairly autonomously using autonomous systems. The focus of many of these systems **has historically been more technical than business-focused**. There is thus a paradigm shift in moving the maintenance (work management) function onto an enterprise system which is fully integrated with the rest of the organization and where performance becomes more visible under the enterprise spotlight. Change of this nature naturally requires appropriate attention to accomplish the desired business results.

This paper analyzes the points raised above in more detail to enable management teams considering this issue to make the right strategic decision and achieve successful implementation of the decision and desired business goals/results.. The paper also offers additional suggestions on the process of making the decision and then ensuring a successful program based on that decision.

¹ NDS uses the term EAM (Enterprise Asset Management) extensively in this document. This term is used to denote the people, processes, systems and data required to manage physical assets through their full life-cycle across the enterprise. This covers the full spectrum of processes required to manage physical assets during their life-cycle and includes design/engineering, procurement, construction, commissioning, operation, maintenance and decommissioning. The term includes both Maintenance and Reliability (M and R).

Toronto Office
1 Yonge Street, Suite 1801
Toronto, M5E1W7

New York Office
734 Franklin Avenue, # 514
Garden City NY 11530

SELECTION FACTORS TO CONSIDER IN CHOOSING BETWEEN SAP AND POINT SOLUTION FOR EAM / WORK MANAGEMENT BUSINESS FUNCTION

No.	FACTOR	DETAIL	POINT SOLUTION	SAP EAM AND SAP PLATFORM
1	Usability		Claimed advantage	
2	Specialized functionality		Claimed advantage	
3	Support for streamlined, integrated enterprise processes	Example: Supply Chain Management, integrated project management etc	NEGATIVE	POSITIVE
		Avoidance of system duplication and disruption of enterprise process model and capability	NEGATIVE	POSITIVE
4	Reduced TCO	Interfaces	NEGATIVE	POSITIVE
		Diverse skills to support diverse systems	NEGATIVE	POSITIVE
		License and maintenance costs	NEGATIVE	POSITIVE
		Implementation excluding interface costs		SIMILAR - TENDING TO LOWER
5	Solution risk		NEGATIVE	POSITIVE
6	Vendor risk	Large stable vendor vs small vendor	NEGATIVE	POSITIVE
		Global market share in this market	NEGATIVE	POSITIVE
		Trend momentum	NEGATIVE	POSITIVE
7	Seamless cross-application capability	Workflow	NEGATIVE	POSITIVE
		Business ware-house	NEGATIVE	POSITIVE
		Document management	NEGATIVE	POSITIVE
		CATS (Time Entry)	NEGATIVE	POSITIVE
		Role-based Portals	NEGATIVE	POSITIVE
8	Growth path		NEGATIVE	POSITIVE

Coding Key

Shading	Meaning
	No clear advantage
	Clear advantage
	Clear disadvantage

Toronto Office
1 Yonge Street, Suite 1801
Toronto, M5E1W7

New York Office
734 Franklin Avenue, # 514
Garden City NY 11530

1. Usability

Faced with selling against SAP's dominant enterprise position, vendors of point solutions have attacked SAP's EAM solution on the two points where they have some traction – usability and specialized maintenance functionality. The SAP solution is an enterprise solution which has by definition been created to provide the flexibility to handle many different types of business and to support full enterprise integration. This has created complexity for the user. In this sense, flexibility and integration are a double-edged sword. If an enterprise system is designed to provide enough flexibility to handle the needs of, for example, the US Army or Exxon Mobil on one hand versus the Houston School district on the other, the configuration capabilities must be flexible enough to be able to support these very different types of enterprise. In addition if the system is capable of supporting integrated business processes across financials, sales, projects, supply chain, CRM, human capital management etc then functionality must be included to support these processes and this is, by the very nature of the processes, complex. It is thus a given that the underlying SAP solution contains complexity – it is a corollary of the flexibility and enterprise process integration. **The key principle is to remove this complexity from the user.**

Based on this principle it is noted that on the Selection Factors Table on the previous page the Usability block is colored "yellow" (neutral) – indicating that Usability is not recognized as a clear advantage for a Point solution. The reason for this is as follows:

1.1 Usability Tools

SAP (and third parties) have introduced effective tools to remove the complexity of the SAP system from the user and, in fact, give the user a streamlined and easy-to-use experience. The SAP Portal, configurable order types, GUI-XT screen simplification, user menus/favorites, mobile front-end solutions (SAP or Third-party) and tools such as xMII or xVIP can readily be implemented to give the user a role-based experience which delivers a very clean, easy-to-use user interface not only to SAP but to third party systems such as GIS, CAD etc. ***It is undeniable that simplification of the user interface is far less expensive, less risky and easy-to achieve than attempting to interface a point EAM solution to SAP.*** In addition use of the SAP Portal can extend this user experience beyond EAM functionality to include access to other required tools and systems.

1.2. Implementation by experienced System Integrators (SI's) to ensure optimal use of SAP

Implementation of SAP by experienced SI's that really know and understand the both the SAP system and EAM business requirements/processes ensures that the product is implemented in a manner to optimally support the client's business needs. Well-designed processes and use of appropriate SAP transactions and functionality goes a long way to avoiding usability issues. Again, by its very nature the SAP system provides a huge array and flexibility of functions which an experienced team can filter to optimize support of specific business needs.

SUMMARY - USABILITY

Most maintenance users will be accessing a limited number of screens (notifications (work requests), work orders and one or two others. Planners and schedulers will be accessing several more. The work effort required to make these transactions as simple as required and to support any desired layout is minimal compared to the complexity and risk of attempting to interface a point EAM solution to SAP (see

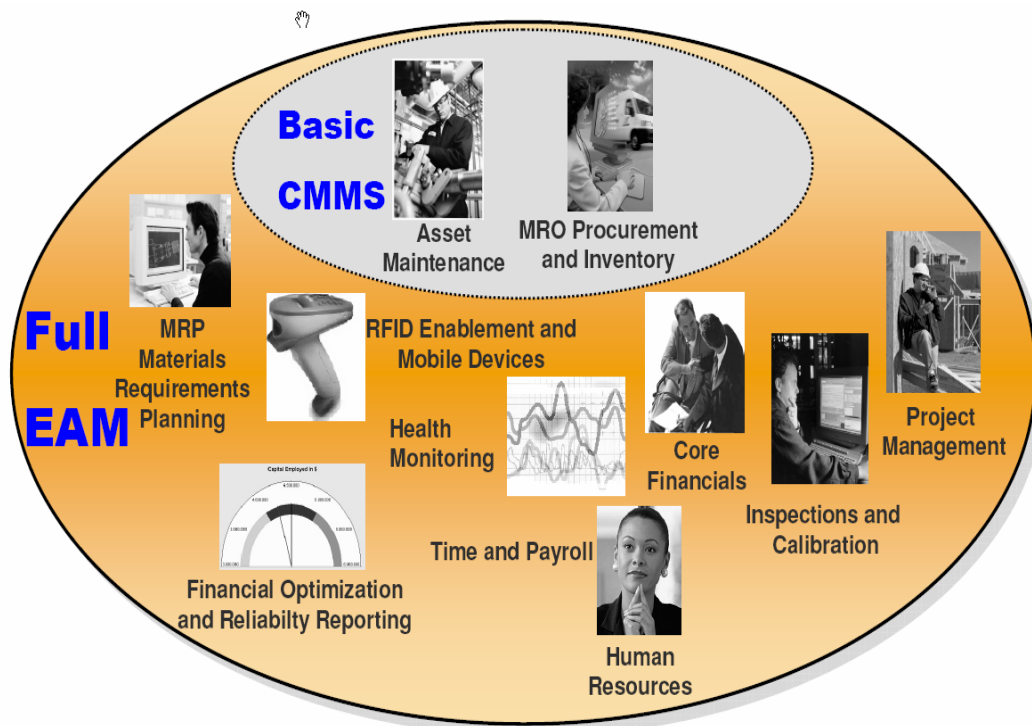
Toronto Office
1 Yonge Street, Suite 1801
Toronto, M5E1W7

New York Office
734 Franklin Avenue, # 514
Garden City NY 11530

Point 3). To gain user confidence in this aspect (usability) and with regards to functionality, NDS recommends building a small-scale prototype using an organization's own data and supporting the organization's key required business processes. This point is addressed at the end of the paper in terms of an effective process for making this decision. *We have mentioned that SAP is a configurable system. Users should see the system configured for their own data and business processes and showing the ease-of-use options.* It has been our experience that this resolves the negative perceptions and rumors created by point-solution vendors and victims of poor implementation projects.

2. Specialized Functionality

Specialized functionality is the other point raised by Point EAM solution proponents. However numerous analyses of EAM functionality requirements prove that overall the SAP EAM solution offers superior functionality. If one does a comprehensive EAM solution functionality requirements review, the SAP EAM solution will come out significantly ahead when looking at the total picture (and more so when functionality requirements are weighted by real importance to the business objectives and needs i.e. managing resources and money)



In the event that esoteric EAM functionality is required to accommodate specific industry needs it is typically a significantly lower cost and less risky option to either build (develop) this additional functionality or to bolt-on a small specialized solution to provide this, rather than to try and interface a point EAM solution to SAP. There are two analogies to consider here:

Toronto Office
1 Yonge Street, Suite 1801
Toronto, M5E1W7

New York Office
734 Franklin Avenue, # 514
Garden City NY 11530

a. Analogy 1 – Specialized Functionality Consumers buying cars do not usually choose which car to buy based on (for example) the sound system they would like to have. If the standard sound system does not provide the required functionality, it is either modified or a new one fitted that has the desired functionality. The car is selected based on overall requirements. The analogy is that if an organization is committed to an enterprise solution this strategy should not be sidetracked by the need for specialized functionality. It is more sensible to either develop this or add a bolt-on (as in the case of GIS or CAD system for example). EAM or Work Management is an enterprise process and must be part of the enterprise platform.

b. Analogy 2 – Interfacing Point EAM Solutions to SAP If a consumer already owns a car, it is absolutely not sensible to cut the car in half to try and fit on half of a different car so as to get a different sound system. If one studies the integration points on the work order (see Point 3) it can be seen that there a large number of integration points between the work order (heart of the EAM system) and other enterprise systems (e.g. financials, HCM, SCM etc). The number of these connection points is analagous to the number of sub-systems you would need to reconnect in joining the halves of two different makes of car – with the same problems in terms of design logic and interoperability on these sub-systems.

SUMMARY – SPECIALIZED FUNCTIONALITY

Independent evaluations of EAM solution functionality (including those by organizations such as the Gartner Group) rate SAP as the leader in EAM solution capability and vision. Where specialized functionality is required that does not exist in SAP it is preferable to provide this by developing it or adding a bolt-on, rather than tampering with the integrated enterprise solution for core processes.

3. Support for Integrated Enterprise Processes

The ability to support integrated core business processes across the enterprise with “one version of the truth” in terms of data is one of the reasons that organizations implement integrated business systems. It is our strong view that EAM / work management business process are core business processes – these processes deal with large numbers of enterprise resources and a significant percentage of enterprise costs (in a utility these processes consume as much as 40 % of the total operating cost) and touch every department in the organization. Viewing the integration points on the Work order in the diagram shown below, it can clearly be seen that work management processes are at the heart of the business with deep interaction with virtually every other business function. **EAM/Work Management processes are core business processes and it is highly problematic to move them off the enterprise system.**

Inserting a Point EAM system into an enterprise system such as SAP causes serious integration problems and handicaps streamlined enterprise processes around for example supply chain, customer service, supplier relationship management, controlling/cost settlement, integrated project management, human capital management and the associated cross application functions such as Workflow and Business Intelligence.

In the Supply Chain arena it is not realistically possible to decouple the supply chain (materials management and external services procurement) processes from the work order. This means that these processes are typically implemented in the Point EAM solution for the maintenance function. The outcome of this is that the organization is then relegated to running two systems (the ERP system and the EAM system) for SCM/materials management and is stuck with cumbersome procurement processes with either messy hand-offs or duplicated functions.

Toronto Office
1 Yonge Street, Suite 1801
Toronto, M5E1W7

New York Office
734 Franklin Avenue, # 514
Garden City NY 11530

The reality is, that in spite of the Point EAM solution vendors claims, inserting a Point EAM solution seriously disrupts and destroys the enterprise business model, creating endless headaches and extra cost to compensate.

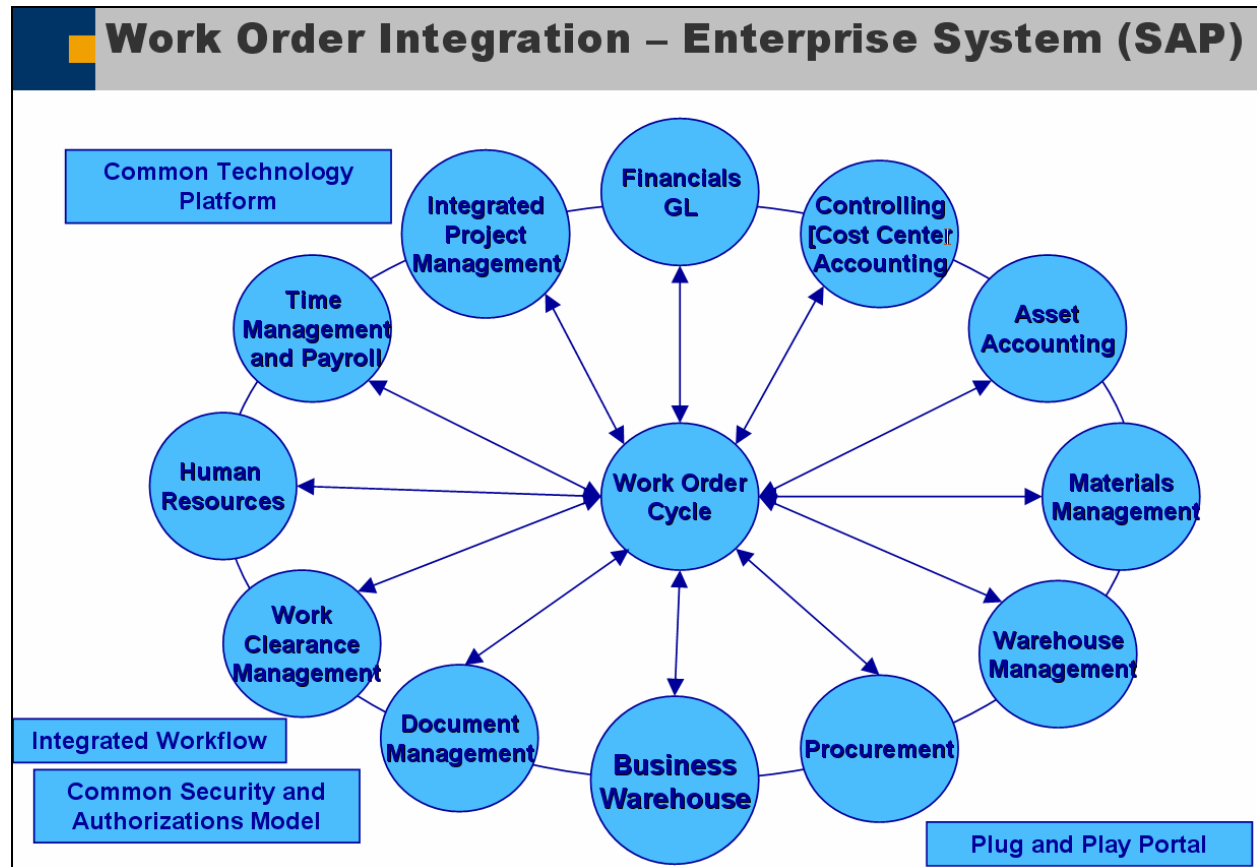
SUMMARY - ENTERPRISE PROCESS DISRUPTION

Work management processes are very much core processes and should be part of the enterprise umbrella for efficiency improvements and management control. Pandering to perceived usability and functionality issues by moving away from an enterprise system, seriously compromises business process efficiency and subverts management control and process standardization. SAP has 1,000+ utility customers around the globe – many of which are using SAP's EAM functionality with no problem. Addressing any usability and functionality issues as mentioned in Point 2 is less costly and less risky than rupturing the enterprise business model. Across the globe, organizations are spending billions of dollars in implementing SAP to get rid of the legacy patchwork quilt of interfaces and heterogeneous, stove-pipe systems – it makes no sense to go retro and re-implement this complexity by adopting a Point solution by pandering to perceived usability concerns. These perceptions can be effectively addressed up front with a well-constructed prototype.

Toronto Office
1 Yonge Street, Suite 1801
Toronto, M5E1W7

New York Office
734 Franklin Avenue, # 514
Garden City NY 11530

EAM Work Order Integration Points



The chart above shows examples of the integration points relating to an EAM work order. This supports the premise that EAM processes are fundamentally enterprise processes and that the EAM or maintenance business function is a critical part of enterprise performance.

Inserting a Point EAM solution effectively means that the work order (which is now in the Point EAM solution and not in the SAP system) must be integrated (interfaced) with the enterprise SAP system. It is not realistically possible to reproduce all the integration which comes with the SAP EAM solution out of the box in terms of integration of the work order object and all the other business functions (some shown above). The cost and complexity of trying to do this would be totally infeasible. This means that either more functionality is pushed in to the Point EAM solution (specifically around aspects such as SCM / Materials Management) or integration lapses into manual mode (the sneaker net). Pushing more functionality into the Point EAM solution means more disruption of the enterprise business model and duplication of business functions around areas such as materials management and procurement.

Toronto Office
1 Yonge Street, Suite 1801
Toronto, M5E1W7

New York Office
734 Franklin Avenue, # 514
Garden City NY 11530

4 Total Cost of Ownership (TCO)

Inserting a point solution into the enterprise model can cause significant TCO “deltas”. One of the most significant of these is the cost of building and then maintaining additional interfaces. This cost varies according to how the solution is set up. If more functionality is pushed into the Point EAM solution so that there are less interfaces and these are more financial in nature (thus reducing interface costs), then the result is additional complexity and cost in other respects – specifically in cross-application functions (see below) and system duplication problems in areas such as procurement.

Additional costs also occur in terms of:

1. **Additional skills requirements** to support the point EAM system and its associated technology (instead of supporting only the SAP platforms)
2. **Significant additional effort in “payback²” projects around cross-application functions** such as business intelligence, portals and workflow (where everything must be developed from scratch instead of using standard, pre-built “plumbing”)
3. **License costs for solution, database etc.** In many instances where companies have acquired enterprise license deals from SAP, acquiring licenses for a point solution in the maintenance arena can be a significant extra cost, along with additional hardware costs.
4. **Duplication of effort around security and authorizations**

SUMMARY - TCO

Moving away from the enterprise model for EAM to insert and support a Point EAM solution typically comes with heavy additional cost – especially in interfacing and customizing cross application functions.

5. Solution Risk

Interfaces and complexity are well-recognized as the key risk factors on systems projects – along with Change Management. Inserting a Point solution into these key processes introduces major solution risk around interfaces and complexity. We reiterate our point from Item 2 – it is easier, less costly and far less risky to address usability and specialized functionality issues than to “chop the car in half”.

SUMMARY - SOLUTION RISK

Addressing usability and specialized functionality issues is lower risk and lower cost than “cutting the car in half”.

6. Vendor Risk

Buying from the large stable vendor ensures far lower vendor risk and reduces TCO in future. This lower TCO comes from avoiding additional system replacement in the future and from aspects such as as third party vendors ensuring that their products work with the industry leader (e.g. initiatives such as Mendocino, Adobe forms, ESRI etc etc). SAP revenues and R and D are several orders of magnitude

² The term “payback” projects is used to cover the value-added projects such as Business Intelligence which really drive value once you have gone to the effort and investment of implementing enterprise software.

Toronto Office
1 Yonge Street, Suite 1801
Toronto, M5E1W7

New York Office
734 Franklin Avenue, # 514
Garden City NY 11530

higher than the competition. A “head in the sand” attitude on this point does not make sense, where organizations have a choice to make the low risk decision. Studies of market share and growth trends show that SAP is growing far more strongly than the specialized EAM vendors so that this situation will accelerate over time. One does not usually back a tug-of-war team that has only two people when there are fifty plus on the other team. Inserting a Point EAM solution at this time may cost the organization a reimplementation in 5 to 10 years time when the industry consolidates further. This is not a risk which is worth taking.

SUMMARY - VENDOR RISK

SAP is the low risk vendor - \$10 billion in revenues and >\$1 billion in R and D speaks volumes. These figures are literally 50-100X of the specialized vendors. The application software industry is seeing rapid consolidation.

7. Seamless cross-application capability

“Payback” applications around the core business processes include workflow, easy time-entry, business intelligence, role-based portals and well-integrated document management and archiving. Where organizations adhere to a monolithic or standard core enterprise architecture from SAP these can be implemented relatively easily. Cost, complexity and RISK arises where one is dealing with a patchwork quilt of non-standard systems and everything must be done on a custom basis.

SUMMARY - CROSS APPLICATION FUNCTIONS

Standard, mass production is lower cost and lower risk. By way of analogy, high-quality mass-produced cars are more reliable and far lower cost than custom-built specialized vehicles.

8. Growth path

Utilizing software from SAP gives a stable, scalable and attractive growth path due to SAP’s deep investment and that fact that manufacturers of hardware and specialized complementary products cater to the largest market first (i.e. the SAP market).

SUMMARY - GROWTH PATH

Using SAP solutions for core enterprise processes enables a secure growth path.

Toronto Office
1 Yonge Street, Suite 1801
Toronto, M5E1W7

New York Office
734 Franklin Avenue, # 514
Garden City NY 11530

SUMMARY ON THE POINT EAM SOLUTION VS SAP EAM SOLUTION DEBATE

In NDS's view, from a purely analytical perspective, this ceased to be a serious debate a number of years ago. The SAP EAM solution has developed into a serious product with a very large and growing user base (rated as the leader by industry analysts). We strongly believe that integration of an organization's core business process on one enterprise platform is the lowest risk, most strategic approach to follow. The SAP EAM solution is a deep well-proven solution which is in productive use across all forms of industry and has the world's largest user base of any EAM solution.

However we do recognize the reality of usability issues and perceptions. This is a serious change management and implementation issue and needs to be addressed. We have explained the background to this issue in terms of the flexibility of the SAP product and the inherent complexity of supporting fully integrated enterprise processes. However this most certainly does not mean that one should throw out "the baby with the bath water". Proven tools exist to solve usability issues (in particular the role-based SAP Portal). It is definitively a lower cost and lower risk option to solve any usability issues than to expose the organization to the risk of disrupting the enterprise solution for core business processes by adopting a Point EAM solution.

As the SAP system is a flexible configurable solution, many of these problems can be solved by presenting the SAP solution in its optimal configuration for a specific industry by consultants who know both SAP and the industry. To this end we strongly advocate the development of an SAP prototype up front. NDS has built such prototypes for numerous customers and they have consistently proved advantageous. The prototype enables the enterprise to make the optimal system choice up front and to manage change far more effectively.

PROTOTYPE PROCESS TO MANAGE CHANGE AND VALIDATE SAP EAM SOLUTION

As noted above, changing from a legacy CMMS to an EAM system can provoke a lot of emotions within the enterprise and the EAM user base. Part of this emotion is naturally related to change - with a significant aspect of this concern about change being the issue of moving from an autonomous system to an enterprise platform. It is also apparent that a lot of varied perceptions swirl around within the user base when faced with such a change. Inevitably many of these perceptions are incorrect and based on wrong information. Given that SAP is the market leader there are numerous rumors or stories circulating about SAP experiences (which are of course fanned by vendors of point EAM solutions) which tinge these perceptions within the user base.

NDS has encountered this situation at a number of organizations. We have found that a highly effective response is to build a prototype solution in SAP based on the organization's own asset systems, data and key EAM / Work Management processes. This prototype is then demonstrated to the various key stakeholder groups within the user community, showing usability features and demonstrating key functionality.

The SAP EAM prototype has proved to be an excellent change management tool which clears away incorrect perceptions. A presentation is attached which describes the results of a building such a prototype for Pacific Gas and Electric for the nuclear facility at Diablo Canyon (a situation with challenging functionality and a demanding user group). As can be seen from the evaluations the prototype was highly successful in bringing the user group on board. Perceptions changed from negative to "how soon can we get this done?".

Toronto Office
1 Yonge Street, Suite 1801
Toronto, M5E1W7

New York Office
734 Franklin Avenue, # 514
Garden City NY 11530

Apart from getting the users on board for the planned EAM project the prototype is also extremely beneficial in the Business Blueprint process in ensuring that the user team members and SME's can see the processes being discussed and how they work in SAP. It makes the Blueprint process shorter and far more productive which then leads to a productive Realization process. It is therefore money well invested and later recouped – not a throwaway.

Depending on the detail and extent of process coverage desired by the organization an SAP Prototype can be built in 1 to 3 months (the PGE prototype was a really in-depth effort and took longer. On the other hand prototyping for Bruce Power was completed in about 6 weeks). The sequence of steps to be followed is along these lines:

Development and Demonstration of 3-4 Key Business Scenarios

1. Specify in scope scenarios
2. Prepare project plan
3. Script out scenarios in word and flow charts with business process experts from organization
4. Develop scenarios on system
5. Understand audience
6. Define criteria for success
7. Demonstrate scenarios
8. Analyze evaluations

More detail is provided in the attached PowerPoint presentation on the PGE prototype. Additional information can be provided as requested.