



OEE InfoSheet

OEE Software - Buy versus Build ?

This InfoSheet examines the arguments for and against buying or building an OEE software solution.

As evidenced by several industry analysts and many manufacturing businesses, developing an internal, custom solution to drive OEE Performance Improvement is fraught with risk in terms of changing requirements, development time and cost, and ongoing, resource-intensive support requirements.



OEEsystems
Operational Excellence Solutions



Is it better to buy or build an OEE software solution ?

According to GARTNER :

"Packaged applications have found favour within many enterprises and are now considered viable choices for many corporate tasks.

In fact, corporate edicts have often been established that preclude even a discussion of the build-vs-buy process.

Therefore, buying software, under all circumstances, is the dominant trend."

This White Paper includes contributions from articles by :

Gartner[®]

 **IDC**
Analyze the Future

 **THE
STANDISH
GROUP**

Introduction

So, is it better to buy or build?

At present, according to Gartner, only 20% of IT projects are building their solutions in-house – so clearly there is a growing number who believe that off-the-shelf software has its advantages and can reduce risk.

Executive Summary

An organisation that wishes to implement a new software solution can either build the solution in-house or buy a packaged software application from a third-party software supplier. When determining the strategy for automating a critical business process, the "Build vs. Buy" choice remains a key decision.

While building a custom application may seem the most cost-effective route, this approach is fraught with problems.

Packaged software applications now offer a compelling alternative to the expensive, time-consuming quagmire of in-house development.

Overwhelmingly, organisations have proven the decision to "Buy" provides much greater value and success than the decision to "Build".

Preliminary Considerations

Whether or not to build an in-house solution boils down to an honest assessment of the needs of the organisation and what it will take to meet those needs. Sometimes the nature of the project dictates the necessary direction.

Does your organisation require a solution involving a highly specialised business function for which no commercial software exists? Then you should build that solution in-house.

Or do you need to implement a solution which is available from several 'expert' solution providers. In this case, you should give the option to buy a solution a closer look. This is especially true of an OEE solution where typically, tens of man-years need to be invested to develop the best solutions.

Build vs. Buy Criteria

Renowned research and advisory firm Gartner, Inc., who help many companies leverage technology for business success, identified four main criteria that should be examined when deciding whether to build or buy an enterprise software solution.

1. Differentiation

How should available development resources best be used?

If an organisation has ten developers, would those individuals be utilised effectively building core system functionality or developing systems available commercially?

According to Gartner, "...build activities within organisations should be focused on quick and inexpensive 'hits', as well as projects that just cannot be purchased at any price."

2. New Structures and Directions

How will applications be deployed using new technology and opportunities?

Gartner notes skill-sets required within most organisations change rapidly as technology evolves. Organisations, must realistically assess their ability to develop and maintain the skill levels required to keep pace with technology shifts that add value to the organisation.

Simultaneously, organisations must consider the cost of re-training and re-deploying technical staff while maintaining legacy systems and running daily IT operations. As Gartner states, "...the days of just sitting down and writing code as an add-on should be phased out over the next few years and a new skill set brought in."

3. Opportunity Management

Given all the choices that will be available in coming years, where should an organisation be spending its money and time in pursuit of strategic initiatives?



According to a STANDISH GROUP survey of thousands of software projects :

"40% failed completely.

An additional 33% were 'challenging', meaning that they were completed late, went over budget, or were completed with fewer features and functions than originally specified"

Senior managers need to constantly ask how resources can best be utilised to serve the organisation's constituents. Given the money and resources available, when are benefits from the allocation realised?

If a build decision is made, using either in-house staff or an outside firm, will the additional time required be justified by the increase in the quality of service delivered?

4. Market Forces

What is the potential impact of staff instability on an in-house development project?

The composition of IT organisations tends to change substantially over a five-year period. While commercial software developers and contractors face the same prospect of staff turnover, they understand contractual obligations aren't altered by the loss of staff. Software vendors typically have more flexibility to react to such changes than their internal IT counterparts.

The Challenges with Custom Solutions

The complexity of today's computing environments only magnifies the difficulties of implementing custom software applications. Problems inherent in building these solutions from scratch include:

- ▶ Too expensive to develop
- ▶ Too expensive to maintain
- ▶ Too time consuming
- ▶ No real process improvements

Too Expensive to Develop

An in-house project may appear to have no real cost - the in-house programmers' time is already paid for, after all. However, in-house development can be much more costly than it appears - far more so than that seemingly expensive software package. Developers must be trained and code must be carefully tested. Consider the salaries of the development team, the downtime in

user departments during all phases of development, and the opportunity cost of not putting developers on other worthy projects that would propel the business forward. The bottom line - labour costs dominate custom coding projects.

Too Expensive to Maintain

Maintaining a custom-built application and keeping it running on the current platform or a succession of platforms can be an expensive proposition. And what happens when the programmers who developed the original application move on to other projects and other jobs? The maintenance of custom integration applications is complex, time-intensive and fraught with risk. And, unless the application is well documented the business will end up throwing more money into maintenance than was ever planned.

Too Time Consuming

Traditionally, in-house application integration projects have involved long learning curves and slow deployment schedules. Custom development requires considerable due diligence to scope and plan the entire integration project. Once again, the developers' time can be better spent - and time is money.

No Real Process Improvements

One danger of in-house development lies in the tendency to follow the old ways of doing things, which won't necessarily yield the optimal solutions. In-house programmers need to be versed in the latest best practices, and even if the organisation's business processes have evolved over time, they may still not reflect best practices.

Leveraging the knowledge and experience of a software provider makes good business sense. Rely on the experts. A company with decades of experience developing, implementing, training and installing OEE software solutions is always a good start.



According to an IDC report :

“There has been a misconception that pre-built products seem expensive but once a ‘build’ project is put under the CFO’s microscope, with all its ancillary costs accounted for, the same amount will most likely have been paid out as for the cost of software licensing.

To compound matters, the company has to pay to maintain the product, and the development time will have been lost that could have gone into the core product.”

Other Challenges to consider:

Business Focus

The focus of the business is manufacturing - not manufacturing software. A third-party software supplier can spend the time and resources on developing the technology, products, and support, allowing the business to spend time and energy on managing the business.

Reputation

A software partner with a portfolio containing dozens of successful deployments will produce great insight into the needs of the market.

This leverage puts both the company and its software partner in a unique position to continually develop new products, features, and functionality in addition to anticipating your needs.

There's a good chance that they'll know what the business needs before the business itself does.

Industry Knowledge

Many third-party suppliers have industry experience and employ people who are skilled in process engineering. This however, is not enough to guarantee success. Serious consideration should be given only to firms who are skilled in business and operational process improvement and who have detailed knowledge of the manufacturing sector.

Institutional Risk

Partnering with a firm that provides low cost solutions that involve minimal development and faster deployment reduces the institutional risk. Cost overruns, delays, or inefficient applications will not be issues. Success will be more evident with a quality-tested, market-proven, and industry leading product. Statistics show that the risk of failure in large-scale development projects is high, as is the likelihood of cost overruns and time delays. There are many factors that can contribute to such failures and only careful planning and excellent management can minimise the risk.

Failure

While different organisations have reached different conclusions about the causes of failure; there is a general sense that a project will largely be doomed from the outset if there exists vague or conflicting objectives, politics, poor planning, poor design specifications, little user involvement or lack of executive support.

The Standish Group has reported that in spite of improvements associated with project management and newer resources over the years, only moderate changes had occurred in the rate of success.

Documentation

When considering the issues, decision-makers must assess the ability to develop in-house, or pay for, technical and end-user documentation. Technical documentation is particularly critical when the system is to be maintained by internal staff, because it must be assumed that the "experts" on the system at the time of development won't be around forever. Without this critical documentation, it may become impossible to adequately maintain a complex, custom-developed system.

Enhancements

Related to support is the issue of on-going enhancements to the application. Policies and procedures change; laws change; technologies change. The organisation must decide if it can operate for 7-10 years with a system that is essentially stagnant or if it will be able to regularly allocate resources to enhance the system, either with in-house staff or a vendor. Third party software providers should be expected to provide enhancements to all clients subscribing to a maintenance/support program.

This is especially true of an OEE software solution, where the user community is driving continuous process and business improvements, and will place ever increasing demands on the Performance Management Software.



“It is easy to trivialise the function of an OEE software solution as being a ‘performance reporting tool’, whereas the best OEE software solutions are fully integrated into the manufacturing processes, driving and sustaining process improvements by supporting line managers, minimising losses, predicting loss events as well as reporting on historical performance and identifying the true root causes of OEE losses.”

The ‘Buy’ option :

Here are the top five reasons why an organisation should buy vs. build an enterprise application solution:

1. Predictable Development Cost

Developing an enterprise application is no small task, especially when it comes to estimating the cost of development. When you buy a off-the-shelf application, you evaluate in advance the features, functions, and capabilities in an existing enterprise environment. A known cost is attached to the off-the-shelf product. If you build a system with internal resources, project costs and time to deploy may range widely, affecting the success of the project.

2. Rapid Deployment

Businesses experience constant and rapid changes. Companies merge, expand or shrink, and competition joins the market. Application developers often hear "although we needed that a year ago, it's not what we need to run our business today." Add with rapidly changing technology the adaptability of a homegrown system becomes an issue, and often a system built in-house becomes obsolete before it's complete. A packaged software application is a production-ready application that can be configured for a unique environment within a relatively short timeframe.

3. Known Maintenance/Support Costs

When an enterprise application is built, an internal dedicated team is needed to maintain and update the system. Issues such as developing and maintaining skills to keep pace with technology, departure of key resources, and transition plans become a major concern. A commercial application vendor specialises in the development and maintenance of the product. They invest in the resources required to support and upgrade the application over the course of its lifecycle.

4. Strong Knowledge-Base

Homegrown systems require an organisation to identify and develop detailed specifications which can delay and ultimately limit the value of the system. Whereas, with packaged software, industry experts, with years of specialized experience, design and develop the application by applying best practices from the industry.

An established vendor leverages expertise gleaned from similar projects and can deploy a system within 30-60 business days, realising a rapid return on investment.

5. Core Business Focus

Focus, focus, focus – the trend of the millennium, pay attention to your core business to reduce costs and increase value. An enterprise application is a significant project that requires many resources. Buying an off-the-shelf application keeps you focused on your core business while gaining the benefit of an experienced partner in the software development industry.

The Benefits of Buying an OEE Software Solution

In most cases, a packaged application can overcome the challenges presented by custom-built solutions. Packaged solutions leverage existing expertise and technology and offer the following compelling reasons to buy:

- ▶ Low total cost of ownership (TCO)
- ▶ Faster time to market.
- ▶ Flexible, scalable implementations.
- ▶ Higher level of integration with third-party technology.
- ▶ Integrated, cross-functional processes.
- ▶ Automated, standardized design processes.
- ▶ Optimization of development resources.
- ▶ High reliability through proven performance.



The STANDISH GROUP's initial survey reported that 52.7% of projects cost 189% of original estimates. Clearly, this substantiates what most commercial software firms and many development staffs have found: it is extremely difficult to estimate the time and expense associated with a major development project at the outset of the project. The scope of such projects always has a tendency to change and increase, while technology virtually always changes during the term of the development project.

Low Total Cost of Ownership (TCO)

As stated in the previous section, high costs remain the primary drawback to developing in-house applications. Development and especially maintenance costs are often underestimated. Integration costs in general continue to skyrocket as enterprise-wide computing environments become ever more heterogeneous and complex.

The most comprehensive packaged integration products keep integration costs down through:

- ▶ Automation and standardisation of the design process, which eliminate the need for costly custom coding.
- ▶ Optimisation of development resources, as programmers can plug into new, more exciting development projects that will further organisational capabilities and efficiencies.
- ▶ Fast implementation and deployment, which reduces the cost of the entire integration process.
- ▶ Broad range of connectivity options for standard schemas and disparate platforms, for leveraging of existing protocols and formats.
- ▶ Project scalability, which allows the organisation to start with smaller integration projects before investing in the whole enterprise.

Faster Time to Market

The long development cycle of a custom-built solution isn't an option if your organisation needs to deploy a software application quickly.

Packaged software can offer some or all of the following features that speed the time-to-value of your solution:

- ▶ Easy to learn, so developers can immediately begin working on integration projects after a short training period.

- ▶ Easy-to-design integration processes and transformation maps for faster implementation.
- ▶ Short deployment period on fundamental projects.
- ▶ Easy to use, for IT staff at the company-wide deployment level as well as end users who simply need to port data into other applications.

Higher Level of Integration with Third-Party Technologies

When an organisation sets out to develop an application in house, it may not consider additional technologies that may be adopted after the fact.

Fully functional packaged applications provide a broad range of connectivity options to production equipment, production systems, planning systems, ERP solutions, MES, SCADA and CMMS software - this saves integration time and improves data accuracy.

Automated, Standardized Design Process

When it comes to application integration, most organisations have similar needs. So why reinvent the application wheel when it already exists in the form of packaged applications? While there's plenty of opportunity for customization - as described above - the basic implementation is ready to go.

Optimization of Development Resources

A custom software application project pulls programmers away from an organisation's regular development work. After the fast deployment of a packaged application, on the other hand, you can focus development resources on your business's core competencies. Developers can get to work on exciting new projects that will further organisational goals and add to the bottom line.



Some of our Customers have attempted and/or abandoned the development of in-house OEE software solutions.

According to one Customer :

"Having spent over twenty-four months developing an OEE solution for our manufacturing plants, we found that the requirements of our Production, Engineering and Continuous Improvement teams had evolved beyond the original specifications and the cost to continue to develop and support an internal solution, while risking being continuously behind the requirements curve, became prohibitive."

High Reliability Through Proven Performance

Building a software application in-house is only the beginning. Next comes a time-consuming iterative testing process, during which developers fine-tune the application and hope for the best in terms of reliability. In contrast, a good packaged integration solution offers high reliability by definition, right out of the box. The vendor and other users can attest to its proven performance.

Still Questioning Buy vs. Build?

Consider the following:

Think about your DBMS, ERP, CRM, and HR system today. What was it ten years ago? Would your organisation code your own DBMS, write their own ERP system, or build your own CRM or HR system today?

If you wouldn't, why would you write your own OEE Performance Management system?

Commercial software advantages include amortizing the cost of development, and leveraging the best practices of many corporations to build the software. The result is a functionally-rich "out-of-the-box" application with product enhancements and new modules for many years to come.

If you insist on building, be sure the system is built on open standards.

It's much more difficult to find staff to maintain non-standards based systems than finding professionals trained on standards-based applications. Especially since the staff that built the system might not be around to maintain the system for its lifecycle. You will also need a comprehensive development plan to handle maintenance, upgrades, bugs, testing, support and ongoing training.

And, in order to guarantee success, you will need to consider the management of the total software product lifecycle - from concept to retirement.

Conclusion: Buy Trumps Build

In today's complex IT landscape and competitive business environment, custom-built applications can't stand up to road-tested packaged software.

Quick-hitting, cost-effective packaged solutions meet your organisation's business needs by leveraging existing applications and technologies while taking the burden off of internal development resources.

Where custom-built solutions present expensive development and maintenance considerations, packaged options counter with proven lower total cost of ownership.

Where in-house integration involves long deployment cycles, easy-to-learn and easy-to-use software packages speed time to value.

Where custom applications can get mired in old methodologies and lack scalability, off-the-shelf software offers the scalability that meets your organisation's needs - now and into the future.

Packaged software applications offer other compelling advantages over traditional custom-built approaches. Reusable components, high levels of integration with third-party technologies and high reliability through proven performance - all of these reduce the project risk. Instead of "reinventing the wheel," your developers can focus on the organisation's core competencies and help to propel the business forward.

Even though a custom-built integration application may seem to offer control and flexibility, it will only lock your organisation into a sub-optimal solution.

Is OEE application development really your organisation's core competency? Can you spare the programming resources? Do you have several months to develop, test and fine-tune your OEE application?

If, like most organisations, you answered "no" to all of the above, buying a highly reliable and functional packaged application is your best option.



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