

GE Energy

# Smallworld\* 4 Product Suite

Open architectures and standards:  
Focusing on the business



## Abstract

Consolidation of both vendors supplying IT solutions and of customers that make use of them has led to a focused effort to simplify the way in which complex computer systems are integrated. Underpinning this endeavour has been the emergence of technologies based on open architectures and open standards. This emphasis on the integration technology, however, is often at the expense of the quality of the systems being integrated, diminishing the real business benefits to the enterprise.

## Introduction

Enterprises look to technology to help them improve their businesses and want to both easily upgrade to better technologies when they become available and to continue to benefit from legacy systems, until they too can be replaced. This approach also recognises the fact that no one IT vendor can satisfy all the business needs of today's enterprise. The goal is to maximise the cumulative benefit of a set of best-of-breed solutions without incurring the penalty of an expensive integration process.

## Open architectures and standards

### Strength through order

An open architecture can be described as one which has been designed to be accessible to third parties via well defined means.

GE Energy's Smallworld Spatial Intelligence\*, for example, exposes much of its underlying functionality via an API exposed using the Microsoft® Component Object Model (COM). This COM API allows developers to easily extend the standard product with specialised specific analysis tools.

Another example is the Smallworld Internet Application Server\* that can expose powerful spatial and topological functionality via web services. In this case, a loosely coupled client application can easily take advantage of these kinds of capabilities on demand via the internet without having a great understanding the underlying technology involved.

The first point is that each of these architectures has been designed to be open from the outset using well defined mechanisms as opposed to an architecture

that simply makes its internal components available to anyone who wants to change them.

The second point is that choosing the right technology to provide access to the architecture is crucial. In the case of Smallworld Spatial Intelligence, the architects could have chosen to expose the underlying object model using Java Beans™ (at the time this technology was in vogue whereas COM was passé). This might have been regarded as the wrong decision if it was not for one small point: the customer. Smallworld Spatial Intelligence would be of more benefit to its users if it used COM to interoperate with other useful COM enabled desktop applications such as Microsoft Office, Crystal Reports® and so on.

Finally, humans are machines of a sort and quite often how they integrate (interact) with an existing system can be even more important than how the two talk to each other. For example, the benefit of a technology that can efficiently process volumes of data can easily be undermined by the reduction in productivity from a poor user interface (human-machine integration).

### Standards versus reality

There are obvious technical and legal ways to define an open standard, but often a more realistic way to judge a standard is to look at its adoption in the market:

- 802.11a is an open standard for wireless networking but most wireless base stations and cards are, in fact, based on another wireless open standard called 802.11g.
- The Common Object Request Broker Architecture (CORBA®) promised much during its

inception to enterprises struggling with a myriad of legacy systems, but its use is now in decline.

- Apple's iPod® and NTT DoCoMo's™ i-Mode® are proprietary technologies and yet both are highly successful.

All of these technologies are standards of a sort. However, some standards are in fact nothing more than one vendor publishing its own proprietary technology as a 'standard.' This can happen for marketing reasons (it suddenly makes the wrong technology appear right) or technical reasons (it prolongs the life of a poor technology).

Clearly, adopting an open standard for its own sake is not in the best interests of the customer. If an open standard can provide a real business benefit to a customer, this would be a good reason to use it. If a proprietary technology is available that offers greater business benefits, it would also be sensible to consider it.

### Proprietary standards

A proprietary standard might sound like a contradiction in terms but it is important to distinguish between true standards such as those regulated by independent bodies and those de facto standards that emerge because of one vendor's dominance in the marketplace. For example, Microsoft Windows® and Sun's® Java® are both often cited as standards, when in fact they are very popular technologies that are in widespread use. HTML, however, is a true standard overseen by the World Wide Web Consortium.

However, a propriety standard might not necessarily be a bad thing for the enterprise if the technology is sound and, most importantly, it is fit for purpose. For example, the fact that over 90% of desktop PCs have the Microsoft Windows look and feel is an obvious benefit to enterprises concerned about training costs.

The important point is that the goal should be a business oriented one such as increased productivity, reducing cost or improving customer satisfaction. Often,

however, the opposite happens and the technology rapidly becomes more important than the original business goal leading to a poor implementation, missed deadlines and unrealised benefits.

### Safety in numbers

The real danger arises from the assumption that a technology is right for a business purely because it is mainstream. Businesses should always choose technology that delivers the greatest business benefit. This inevitably is a risky proposition for some IT professionals, as the wrong choice often has an unfavourable impact on the careers of those who made the decision. Playing safe with established brands is a comforting fall-back position when the decision making process becomes difficult.

Gambling on an unfamiliar technology is a concern cited when choosing lesser known vendors over their mainstream rivals. However, choosing the right technology need not be a game of chance: competitive analysis, benchmarks and pilot schemes are all excellent ways to determine the best solution. And although more expensive initially, it is an investment that pays recurring dividends over the long term in the form of improved business processes, lower costs and increased customer satisfaction.

### Choosing to pay upfront or to pay later

Unless the enterprise is a technology vendor, most businesses use technology in a supporting role in much the same way as a sales person takes advantage of a car to visit prospective customers.

Quite often a business will have to modify its internal processes to accommodate the new technology. In some cases these changes might be trivial while in others it might actually introduce unanticipated costs. For example, field crews that find a user interface confusing often experience a fall in their productivity.

Clearly for most businesses this choice is trade off between what can be afforded up front against expected additional costs that might be incurred in

the future. One problem in confronting this dilemma is that progress is often impeded by a belief that a technology with an open architecture using open standards has to be the right choice. Making this choice, it is believed, is in effect the same as taking out an insurance policy against future unforeseen problems. However, like most insurance policies, premiums frequently start out low but inevitably increase over time (often for inexplicable reasons).

It is easy for vendors to present open architectures and standards as a panacea while at the same time ignoring the real business needs of the customer. Many enterprise IT projects take several years to implement and cost millions of dollars to finance and so it is not surprising to learn that many businesses have developed a jaded view of technology. After all it is easy to be cynical with an industry that has, in just the last few years, championed the use of COM, DCOM, the internet, Java Beans, CORBA, .NET, various bus technologies and web services as the way forward for many businesses.

### The real value of open systems and open standards

At this point the reader might be thinking that this paper does not advocate the use of open standards and architectures: this is not the case. This paper advocates the use of the most appropriate technology. Sometimes that will mean using an off-the-shelf product from a large vendor, while on other occasions a more customised solution will be required from a smaller vendor. Both approaches are valid if they each meet the business needs of the enterprise.

Products with open architectures are obviously more amenable to integration than closed systems. The use of open standards often results in easier interoperability. These are important issues in markets that are experiencing rapid consolidation, increased competition and more stringent regulatory obligations. Systems that were historically part of different companies are now part of the same

company as a consequence of an acquisition or merger. Technology has spread more widely throughout the organisation resulting in many systems each holding important data. Bringing this data together often has a greater value to the business than the sum of its parts.

The real advantage of an open architecture or an open standard is that it facilitates innovation: outdated technologies can be easily replaced by superior alternatives. The technology inside each system should be irrelevant to the business regardless of whether it is written in .NET, C++, assembly language or even powered by steam. What matters most are the real business benefits of that system.

It is easy to forget that open architectures and standards are really the equivalent of IT plumbing: connecting systems together to cumulatively deliver real business benefits. A system may have the most open architecture in the world and be certified by plethora of standards bodies, but the fact is that if at its core the technology is poor all that will be achieved will be a mechanism for efficiently distributing mediocrity.

### Conclusion

The emergence of increasingly open architectures and standards are a welcome trend but they should not outweigh the quality of systems they integrate. Poor technology that does not deliver real business benefits will not deliver real business benefits, irrespective of how well it can be integrated.

The Smallworld architecture has evolved during many years of experience helping to manage the spatial and network needs of enterprise customers. This has resulted in an open architecture designed to yield real business benefits to the customer and integration technologies that enable enterprises solve practical, day to day business challenges.

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