symbiosys
BUSINESS SOLUTIONS

Bespoke Software Development

Executive Overview

May, 2006

1. Why you should read this document

Whatever the size and maturity of your business, be it an SME or a department or unit within a much larger entity, this document will be of value to you if any of the following are true:

- Your organisation runs unique business processes that generate high value.

  This document will show you how Symbiosys Business Solutions can help support and enhance those processes by developing bespoke software.

- You currently only use packaged software in your business.

  This document will demonstrate how using Symbiosys Business Solutions expertise in the selection and development of software solutions can deliver increased value to your business.

- You have experiences of bespoke software development projects that have not gone according to plan.

  This document will demonstrate how Symbiosys Business Solutions successfully and consistently delivers its bespoke software projects.

In summary this document provides a brief overview of the philosophy, methodology, and background to Symbiosys Business Solutions bespoke software development approach, and illustrates how our experience of, and approach to, bespoke software developments can deliver significant benefits to your organisation.

2. Bespoke or Packaged Software?

Which is right for your organisation, packaged or bespoke software? It all depends on the business performance you require, the state of your current and planned business processes, and your organisation's desire to either implement a standard solution or to strive for the highest value possible.

In general, packaged options are the right choice when standard business solutions are required. For example, few modern companies write finance and accounting software applications. Given the plethora of packages, from single-user solutions through to Enterprise Resource Planning-scale solutions, it rarely makes business sense to write a bespoke accounting system.

In contrast, where an organisation runs genuinely unique business processes which generate differentiation and value in the market place, bespoke solutions can deliver very high business benefits. In these cases the bespoke option delivers the ability to achieve competitive advantage in a focused and customised way that packaged software and suppliers find difficult to match without incurring punitive costs or delays. In addition bespoke software enables your business to exploit opportunities by using innovative technology without waiting for package suppliers to play 'catch up'. Finally, bespoke software also enables a business to take full control of the features and functionality of software systems and, therefore, gives the ability to react rapidly to market trends and changes.

Of course, successfully developing and implementing bespoke software presents its own challenges. If managed and delivered properly, it delivers significant advantages to companies, of all sizes, and at all stages of their development.

The rest of this document assumes that your business is considering the commissioning of bespoke software.

3. Business Benefits, the driving force

It is vital to identify and concentrate on the commercial benefits a packaged or bespoke software development project would bring.

The understanding of how the organisation's performance is to change sets the framework within which software can be designed (or selected) and developed to support the business processes which will, in turn, generate a tangible and measurable change in performance.

High quality, effective, software development professionals keep their focus on business benefits at all times; from initial conception, right through to project completion and beyond. This ensures that all the elements necessary to generate benefits are planned and delivered, including software, hardware, business process changes, training and education.

3.1 Project Methodologies, SUMMIT and PRINCE 2®

After evaluating many software development projects and project management methodologies, some software specialists elect to develop their own methodology. SUMMIT (**S**ymbiosys Business Solutions' **U**nified **M**anagement **M**ethod for **I**nformation **T**echnology) is a good example of a successful method, designed to work equally well in large and small software projects.

The PRINCE 2® project management approach has become the *de facto* standard for governmental and non-governmental projects of all kinds, throughout the world. Whilst some find that PRINCE 2® is certainly effective, its 'cover all' nature means it is not ideal for software development projects on its own. Hence, specialists occasionally use their own methodology for software development projects *within* an overall PRINCE 2® project framework. This is a specialised approach requiring in-depth expertise.

3.2 Project Estimation: How much is enough?

Independent research carried out by Forrester revealed that two thirds of all UK software projects fail and that 75% of those failures resulted directly from bad estimates.

It is commonly accepted that 100% accurate estimates are impossible to achieve early in the project. SUMMIT elevates the whole estimation and re-estimation process to a new level.

The foundation of this process is based on metric data, obtained from many, professionally managed software projects - both large and small. Adding Function Point Analysis (FPA) helps define exactly what will be involved in building a system. Some software developers avoid using FPA because they feel it is either too complex or is inappropriate for the sector in which they operate. This is a pity because it has a proven track record as a flexible process which, if used well, provides excellent estimates.

Combining FPA with expertise in systems and project management results in consistently exceeding industry accuracy standards as illustrated in the table below:

Project Phase	Industry standards: Best estimate accuracy to expect, expected deviation from actual project outcome *Source: NASA's Software Engineering Laboratory*	FPA and expertise: Delivered estimate accuracy, achieved deviation from actual project outcome, based on 30 software development projects 1998-2003. *Source: Symbiosys Business Solutions*
Feasibility and Business Benefits Study	+100% / -50%	+30% / -20%

Requirements Development	+75% / -45%	+/-10%
Technical Architecture	+40 / -30%	+/-5%
Stage 1 (of 'n' stage delivery)	+30% / -20%	+/-5%
Final Stage	+/-5%	+/-0%

3.3 Saving time and money

A key element of why SUMMIT is so cost effective is the attention to detail given to each individual stage of a project. Making extensive use of the scheduled software and design documentation reviews within SUMMIT eliminates the maximum number of actual and potential defects early in the project procedure.

This approach enables those involved with such projects to realistically aim for zero defects in the resultant software, documentation and in any follow-on activities. The efficiency produced translates into significant savings in time and money during construction and in the support of the finished system.

3.4 What benefits does SUMMIT deliver?

Using SUMMIT helps increase confidence in any software project by ensuring it:

- Contains the agreed functionality
- Is delivered on time
- Remains within budget
- Is free from defects
- Delivers the target benefits

To enable this the SUMMIT process delivers:

- A controlled and managed process which is scaleable, appropriate and applicable to all sizes of software projects.
- A comprehensive understanding of the change in business performance that is required
- A clear and documented agreement of why the project should be undertaken
- A clear definition of how the software project will contribute to the improved business performance
- An accurate estimate of what the project will cost, updated at the end of each of the first three stages: Feasibility and Business Benefits; Requirements Development; and Architecture.
- An accurate schedule of what will be delivered and when, updated at the end of each of the first three stages
- Comprehensive control of the project via documented check-points, 'Go No/Go' decision points and excellent management reporting.

The following figure is a simplified summary of the main steps in the SUMMIT methodology.

% Project Schedule Consumed	OVERALL PROJECT PHASES	MANAGEMENT STAGES	TECHNICAL STAGES
	Feasibility Study	**Feasibility and Business Benefits Study**	**Feasibility and Business Benefits Study**
		Prepare for initial meeting as per Symbiosys' Preparation document.	- Gap -
		Meet with Symbiosys developer. Discuss initial Requirements.	Meet with Customer / Users. Discuss initial requirements.
		Define the target benefits that are required from the project	Define and document the target benefits that are required
		- Gap -	Write rest of document off-site and do initial Function Point Count.
		- Gap -	Calculate Initial Function Point Analysis (FPA) figures.
		- Gap -	Create Initial Estimate of Schedule & Effort, accurate to +30% / -20%
		- Gap -	Deliver Feasibility Study and Initial Estimate documents.
0%		Review project so far. Make Go / No Go decision on Requirements Development.	- Gap -
	Requirements Development	**Requirements Development**	**Requirements Development**
		Meet with designers.	Meeting with customer / users.
		Review and further develop the target business benefits	Review and further develop the target business benefits
		- Gap -	Design & Document
		Review designs so far with designers.	Meet to review
		- Gap -	Iterate the above as many times as required.
		- Gap -	Send final Requirements Development document.
		Review final Requirements Development document	- Gap -
		- Gap -	Incorporate final review changes.
		- Gap -	Feed new figures into FPA calculations.
		- Gap -	Re-estimate, accurate to +/- 10%.
		- Gap -	Deliver Requirements Development and Revised Estimate Documents.
10%		Review project so far. Make Go / No Go decision on Architecture.	- Gap -
	Architecture	**Architecture**	**Architecture**
		- Gap -	Technical leads create top-level Architecture document.
		- Gap -	Review work so far.
		- Gap -	Iterate the above as many times as required.
		- Gap -	Feed new figures into FPA calculations.
		- Gap -	Re-estimate, accurate to +/- 5%.
		- Gap -	Deliver Architecture and Revised Estimate documents.
20%		Review project so far. Make Go / No Go decision on Construction.	- Gap -
	Staged Delivery (Construction)	**Staged Delivery (Construction)**	**Construction - Delivery Stage 1**
		- Gap -	Detailed Design
		- Gap -	Review
		- Gap -	Construction
		- Gap -	Testing & Quality Control
		Stage 1	Project Documentation
		Stage 1 Testing Plans	Delivery of Stage 1 Products
		Testing Stage 1 Delivery	**Construction - Delivery Stage 2**
		Reporting Stage 1 Defects	Detailed Design
		Stage Review / Change Meeting	Technical & Change Reviews
		Accept / Reject sign-off.	Construction
		- Gap -	Stage 1 Defect Correction
		- Gap -	Testing & Quality Control
		Stage 2	Project Documentation
		Stage 2 Testing Plans	Delivery of Stage 2 Products
		Testing Stage 2 Delivery	**Construction - Delivery Stage 3**
		Reporting Stage 2 Defects & Change Requests	Detailed Design
		Stage Review / Change Meeting	Technical & Change Reviews
		Accept / Reject sign-off.	Construction
		- Gap -	Stage 2 Defect Correction
		Stage 3	Testing & Quality Control
		Stage 3 Testing Plans	Project Documentation
		Testing Stage 3 Delivery	Delivery of Stage 3 Products
		Reporting Stage 3 Defects	**Construction - Stage n (Final. Non-Construction)**
		Accept / Reject sign-off.	Close Project Documentation
		- Gap -	Stage n-1 Defect Correction
		- Gap -	Testing & Quality Control
		Stage n	Final Project Documentation
		Stage n Testing Plans	Final Product Delivery
		Testing Stage n Delivery	As many stages are added before the final stage as required.
		Reporting Stage n Defects	When managed properly, no Stage n defects are present.
100%		Accept / Reject sign-off.	The final stage is purely about providing a 100% Defect-Free delivery.
	Benefits Review	**Business Performance and Benefits Review**	**Business Performance and Benefits Review**
		- Gap - Typically 3, 6 and 12 months from final delivery	- Gap - Typically 3, 6 and 12 months from final delivery
		Review and confirm the delivery of projected business benefits	Review and confirm the delivery of projected business benefits

4. The SUMMIT process

Using SUMMIT means that at least 20% of the project effort is devoted to benefits definition, design work and reviews before any construction activities begin. In addition about half of the remaining time spent in the Staged Delivery phase is given to more design activities, reviews and Quality Assurance/Quality Control (QA/QC). This ensures that, in total, about two-thirds of a SUMMIT project is devoted to ensuring that all work in the project is executed in exactly the right way and exactly the right order. This high focus on agreeing and documenting what should be delivered <u>before</u> any code is written ultimately helps you, because the earlier requirements mismatches or design errors are spotted the less time and cost is required to deal with them.

At the end of each of the first three phases, re-estimating the remaining project provides clear, 'Go / No Go' decision points.

These are the major phases and steps within SUMMIT:

4.1 Laying the foundations: Feasibility and Business Benefits Study

This phase involves a number of discrete steps which ensure that the change required in business performance is fully understood and documented. Using a standard, initial meeting preparation guide, along with tailored workshops, helps specialists to guide stakeholders through this process.

Having agreed the initial requirements and business case for change, a Feasibility Study document should be created. This document includes the identified business benefits, general and specific requirements and the duration and cost estimates generated by the FPA.

4.2 Defining the detailed functionality: Requirements Development

In SUMMIT the most important document is the Requirements Development document. This document is the classic 'system specification' developed and expanded to a new level of professionalism. It begins life as an extremely detailed specification of the whole system to be developed and ends up as the complete and fully described User Manual. The style of the document is deliberately based on '*how to do…*' rather than '*the system must do…*' In this way all the stakeholders can see exactly *how* the final system will work, with step-by-step instructions of how to perform their work, including full-colour, detailed screen-shots of every interface element and with a true feeling of how the software will 'feel'.

4.3 Turning the design into technology: Technical Architecture

This document is where the user and business terminology of the Requirements Development document / User Manual is converted into a technical design. The Technical Architecture contains descriptions of all the modules and components that will make up the finished system and it describes how all these parts interact, and which parts rely on which others. The Staged Delivery Plan for the software is created on completion of the architecture document.

4.4 Building and delivering the software: Staged Delivery

'Staged Delivery' divides any large and potentially complex project into many small and manageable units, each with their own sets of deliverables and acceptance criteria. Staged Delivery enables:

- Excellent project visibility

- Defect-free software delivery

- Accurate management reporting

- Sound management decision points

Putting substantial effort into making multiple, 'final' deliveries during each phase, along with subsequent changes or corrections, helps to guarantee the final stage of the project is 100% feature complete and defect free.

4.5 Proving the value: Benefits Review

Once the software has been successfully delivered and the full system commissioned to support the changed business processes, it is important to ensure that software specialists demonstrate that the target benefits are actually being delivered.

This review takes place with all the project's stakeholders. The original benefits, as defined in the Feasibility and Business Benefits Study document, are compared with the performance achieved from the use of the new system within the organisation. If the full benefits are being realised, actions can be defined to develop additional value; if they are not, the delivery inhibitors must be identified before taking carefully planned, corrective action. Ideally, the project must be reviewed three, six and twelve months after the final software has been delivered.

4.6 Software Support

In the long term, optimising this time-proven, software development procedure requires complimentary and innovative software support. A contract should provide easy-to-use, hassle-free and timely, software support to ensure that your systems continue to serve your business.

The most appropriate support contracts include direct access to named contacts (usually the developers who built your system) combined with secure, remote access or on-site visits, as and when required. In this way, enhancements can be introduced rapidly for new business requirements and with the minimum of disruption.

Bespoke Software Development   Symbiosys Business Solutions

5. Conclusion

Cutting corners in any software project is a false economy. Taking corrective action during later project phases is a common cause of costs spiralling beyond affordability.

Obtaining the appropriate, independent expertise and following detailed procedures is the only route to optimising business software functionality and maximising return on investment. The methodology and tools highlighted in this whitepaper have been thoroughly proven and are endorsed by some of the UK's leading, independent software specialists.

Key ingredients in assessing, delivering and supporting successful software projects are to:

- Carry out the correct work up-front
- Ensure all estimates are highly accurate
- Insist on excellent project management
- Ensure outside assistance can rapidly respond to changing business requirements
- Maintain control by using many 'go' or 'no go' decision points
- Ensure the target business benefits have been clearly defined and are delivered
- Make sure the software delivers all the features your business requires
- Aim for defect-free software

Software development projects require highly specialised expertise which is not normally available in house. When selecting a company to provide expertise, it is highly advisable to include penalty clauses in the project's legal agreement to protect your organisation from schedule or budgetary overruns. Insisting on adopting these penalty clauses, during early discussions, will improve the efficiency of your selection process and secure the best possible service from specialists who are confident they can deliver.

Symbiosys Business Solutions is a high performance, independent software development company which excels at project management and supports the use of penalty clauses in project agreements. For many years, their advanced experts have led business-critical projects for some of the UK's largest organisations. They are keen to share their experience and help organisations identify how to obtain maximum value from all software investments.

Symbiosys Business Solutions Ltd
Park View House
Worrall Street
Congleton
Cheshire
CW12 1DT

Tel   01260 281700
Fax   01260 281712
Email   info@symbiosys-bs.co.uk
Web   www.symbiosys-bs.co.uk

Executive Overview   Page 8