



TRANSFORMING HOW WE BUILD HOMES

Work package 4:
Digital Business System

September 2021



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INTRODUCTION

The AIMCH Digital Business System work package (WP4), often termed Enterprise Resource Planning (ERP), seeks to investigate how integrating digital business systems can lead to increased productivity, quality and a reduction in lead-time, downtime, and processing time in Off Site Manufacturing (OSM) and the connected supply chain.

Whilst every business will have specific challenges, there are several potential benefits an integrated business system can bring.



CHALLENGE

The Offsite MMC construction supply chain sector has a hybrid design, manufacturing, logistics and sub-contractor construction installation business model. ERP digital business systems tend to favour either manufacturing or construction related business models, with no generic ERP system meeting the hybrid needs for the MMC supply chain sector. The AIMCH challenge was to develop a requirements and down selection process that would develop a configurable ERP solution for the MMC supply chain.



SUMMARY

The AIMCH Digital Business System, suitable for large and small Offsite Manufacturing businesses, was developed by the AIMCH partners, Stewart Milne Group, Forster Roofing, and the Manufacturing Technology Centre. The key objectives were:

- To increase business efficiencies by eliminating multiple manual administration tasks through the development of a Digital Business System.
- To reduce the level of on-premise hardware, thereby decreasing system down time and improving system performance.
- To improve customer service and provide closer integrations for both clients and supply chain.
- To develop ERP system recommendations suitable for large and SME sized offsite MMC suppliers

THE JOURNEY

A phased development approach was used to create the Digital Business System. The phased approach enabled different tools to be explored and developed. The focus was on a largescale digital business system (ERP) suitable for a mature MMC producer, such as Stewart Milne Timber Systems, with this work feeding into a scaled down system solution, for a SME new to MMC and Offsite construction components or systems, such as Forster Roofing.

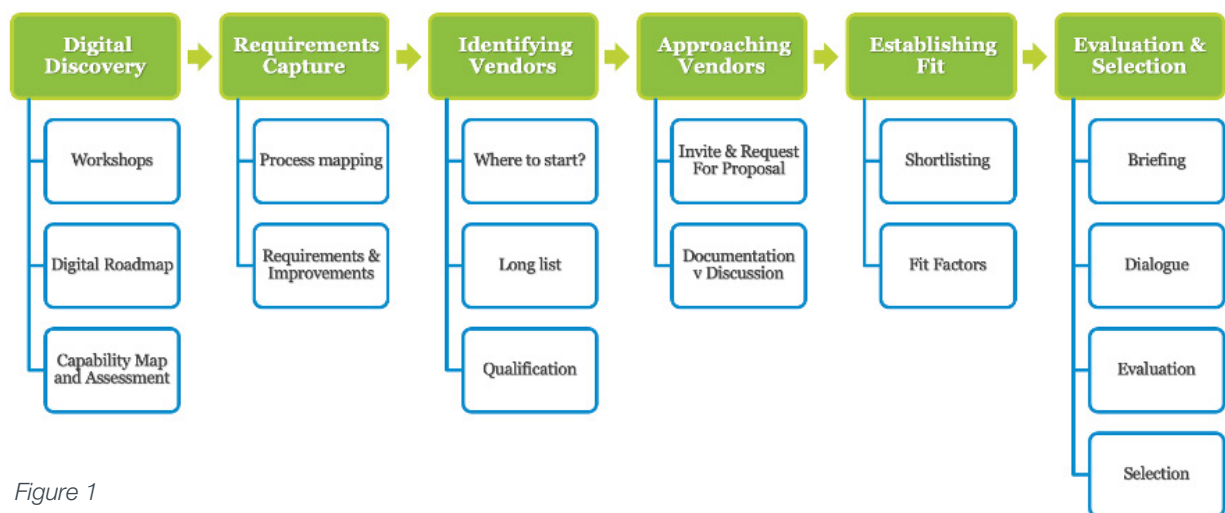


Figure 1

Courtesy of Stewart Milne Timber Systems.

Enterprise Resource Planning Down Selection Process

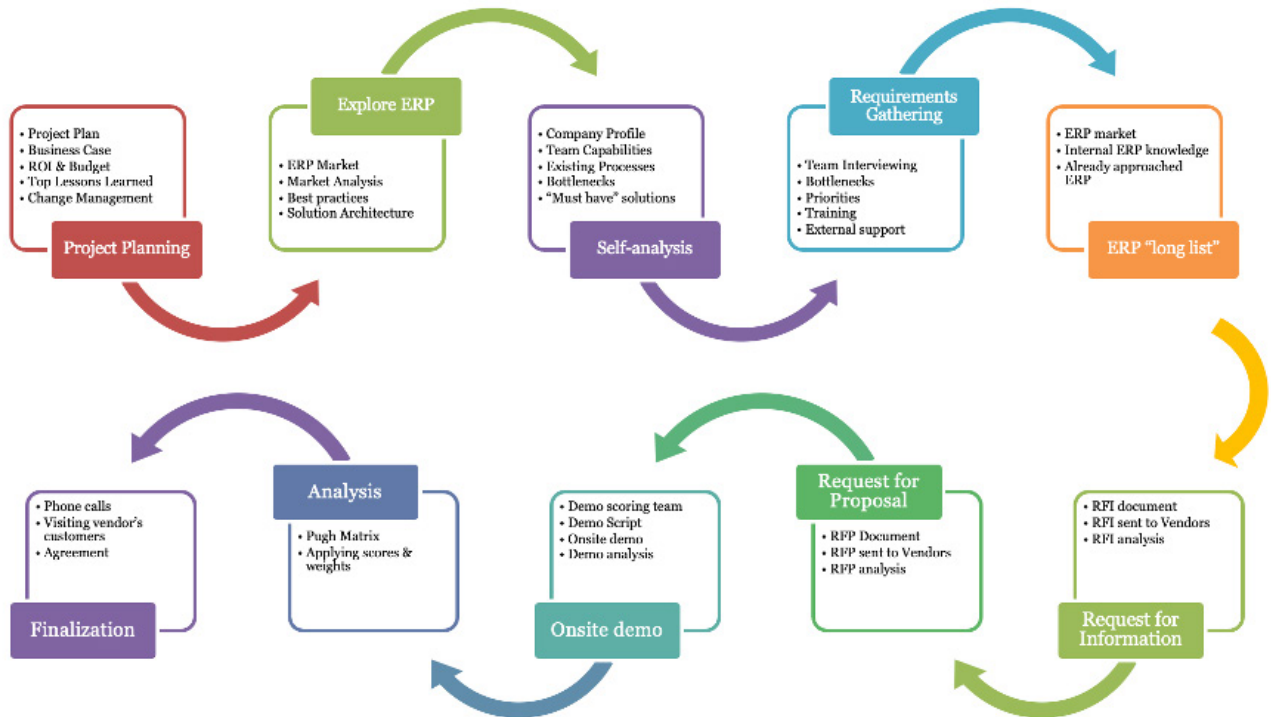


Figure 2



1. DIGITAL DISCOVERY

1.1 Workshops

An external consultancy was employed to perform a Digital Discovery along with the AIMCH Project Partners to understand how industry leading technology will affect the future of business and to appreciate how digital transformation can drive vision and goals. The digital discovery workshops were scheduled to understand how industry leading technology will affect the future of the business and to align the company strategy to the industry future.

The consultancy and AIMCH Project Partners undertook six full day workshops, each focussing on a specific business area, defined by well-designed process, and guided by Process Analyst Specialists. This allowed for open discussions

about every capability, reviewing the value chain and development opportunities with director level and key senior management engaged throughout to capture the strategic drivers for the business.

Taking a high-level view of the AIMCH project was beneficial and enabled project preconceptions to be re-evaluated. AIMCH Project Stakeholders were given the opportunity to review the needs of the business and define a comprehensive digital business strategy. This was achieved by holding three hour long Digital Discovery workshops where each specific capability was discussed allowed the capturing and presenting the outcome of a session in real time allowed for instant feedback and engaging visual aids helped to evaluate outputs.

1.2 Digital Roadmap V1

The Transformation Map visually represents consolidated findings from all workshops. The map provides an overview of how transitioning from the current mode of operation to the desired future mode of operation can be achieved. The total business transformation is divided into small

and achievable projects, each project providing tangible business benefits.

Note: Digital transformation is not confined to technology, but also defines how we manage data and processes. Engaging with all staff is extremely important in successful transformation programmes.

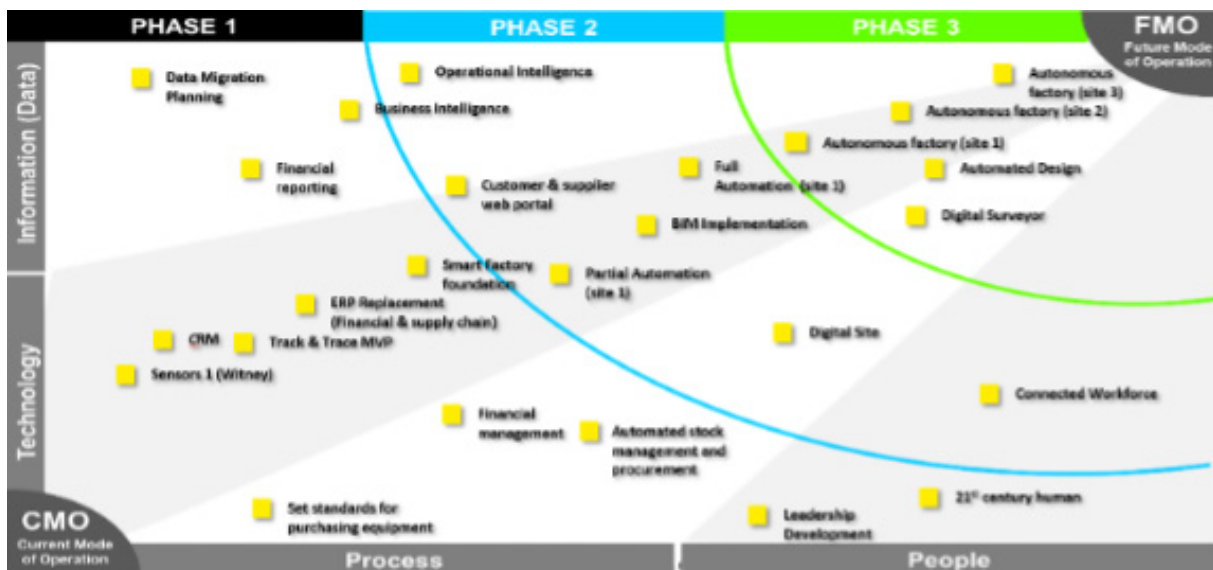


Figure 3

1.3 Digital Roadmap V2

Business operations were divided into capabilities and transformation projects, that were mapped against each capability, being aware that an improvement activity potentially affects multiple capability areas. The roadmap prioritises

transformation projects by urgency and business benefit, which enables a business to realise valuable resources for future projects as efficiency gains are realised from earlier projects.

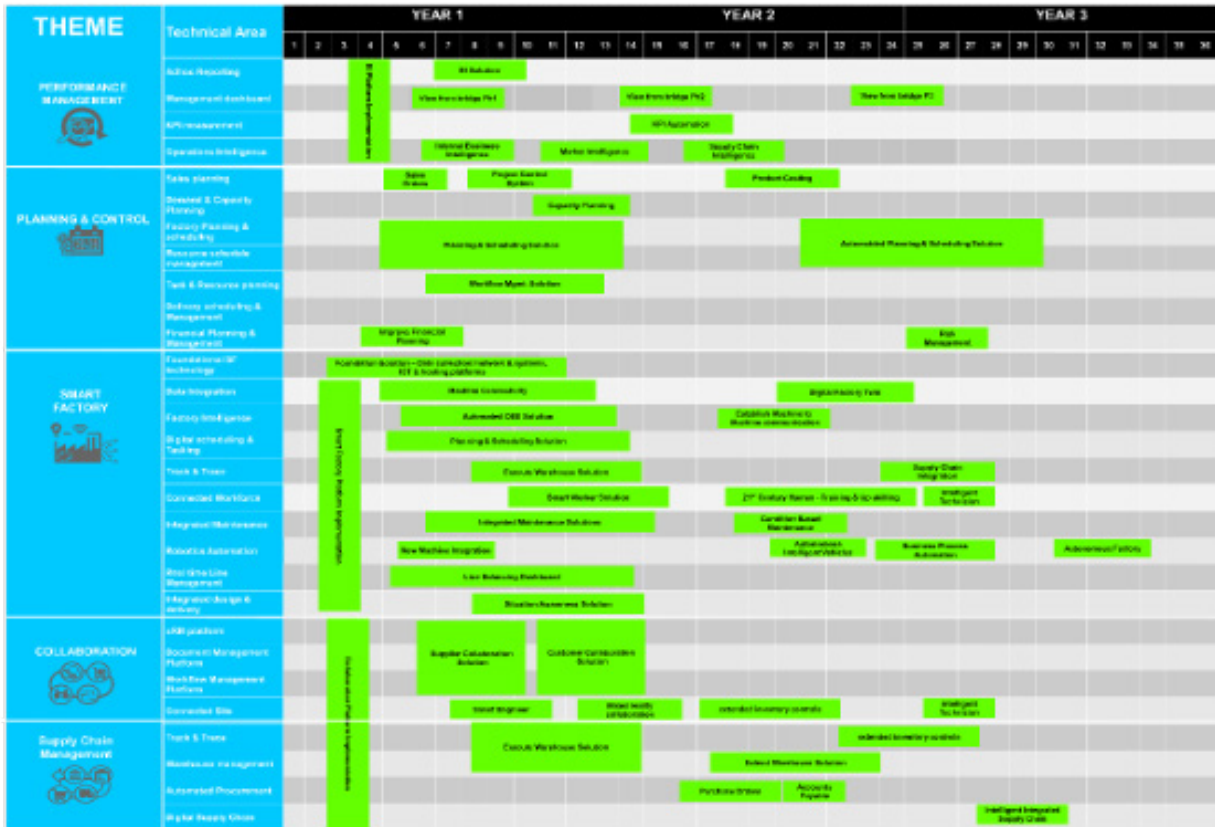


Figure 4



1.4 Capability Map & Assessment

Defining a business in terms of capabilities was a fresh approach and helped greatly in developing a strategy and to plan for the future. The business is complex and over many years has developed many extra processes to assist in managing

difficult situations. Defining the business in terms of capabilities allowed workshops to re-imagine how each function should operate to achieve the greatest efficiency.

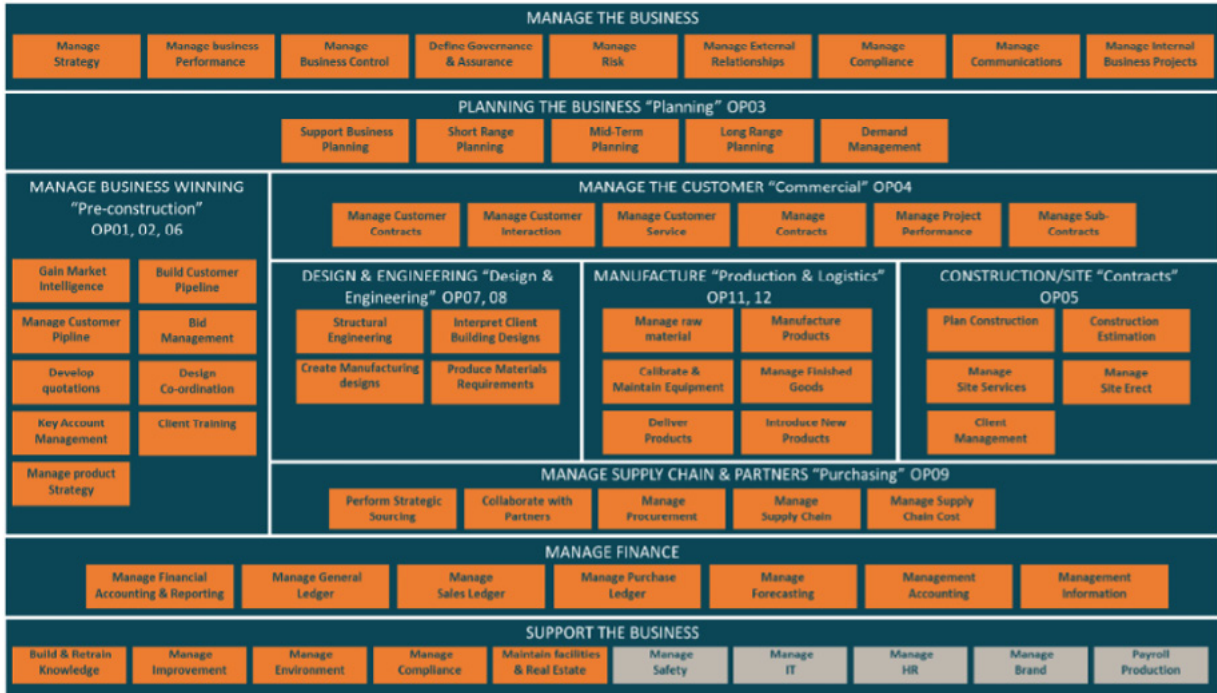
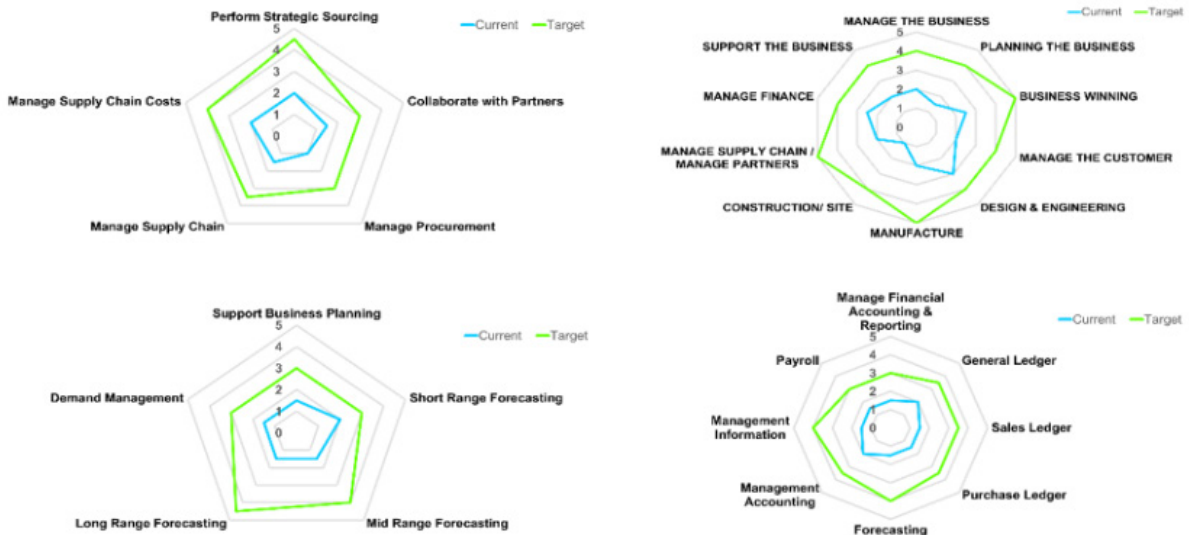


Figure 5

As outputs from the digital discovery workshops, spider diagrams provided a high-level visual representation of how the business perceives its

current digital maturity compared to where the business would want to target its future digital development within a business capability.



Courtesy of Stewart Milne Timber Systems.

Figure 6

2. REQUIREMENT'S CAPTURE

2.1 Mapping Requirements & Improvements

The requirement capture performs a detailed analysis of current processes and to capture the actual process requirements. This will identify possible improvement and define pain points, bottlenecks and wasted effort within the current strategy. The requirements capture will map data flows within the organisation.

MTC performed a series of in-depth workshops, each concentrating on a single business capability. The findings from each workshop were captured using a simplified Business Process Mapping methodology. Due to the nature of the business, the process map was captured using 'swimlines' – columns representing project stages and rows departments.

During the process, MTC captured the system requirements, focusing on system capabilities rather than functionalities. Each capabilities' processes were captured separately and then

combined into one, large process map. Once defined, the business process maps were discussed in a workshop.

The remote collaboration tools proved to be an effective medium to discuss and receive instant feedback from workshop participants. By deconstructing each business process step-by-step, it revealed an enormous amount of information, including pain points, duplication, and sub-optimal process design. The 'swimline' mapping approach allowed us to capture business processes in relation to a business project, enabling the mapping of connections and data flows between each capability.

The business documentation generated to support each process provided a visual insight into the levels of manual intervention required to manage the business and the exercise allowed an outline business case and ROI analysis to be performed.



2.2 Process Mapping

Process mapping was performed using a simplified version of the Business Process Mapping methodology to determine the eventual system requirements. An extract of a process map below shows the first two project stages and two capabilities. Mapping capabilities separately proved arduous due to the amount of process

interconnectivity. The legend to the right of the process map provides insight into the number of different aspects of a process that were captured. These included supporting documents, spreadsheets, inward and outward data flows, resources etc. The final version of the document contained over 1300 separate items.

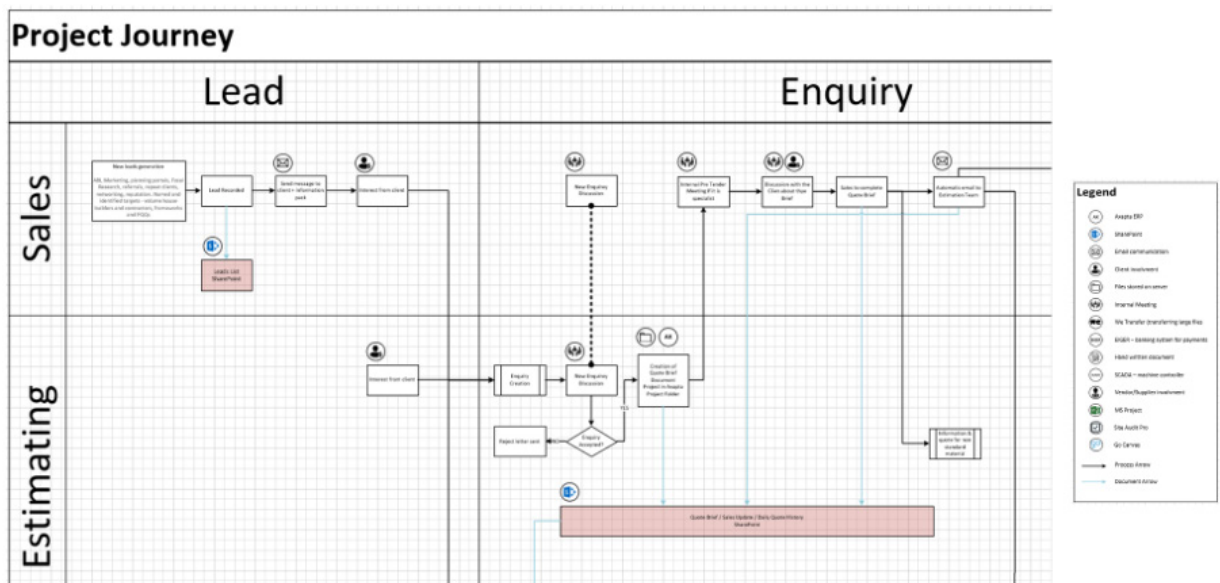
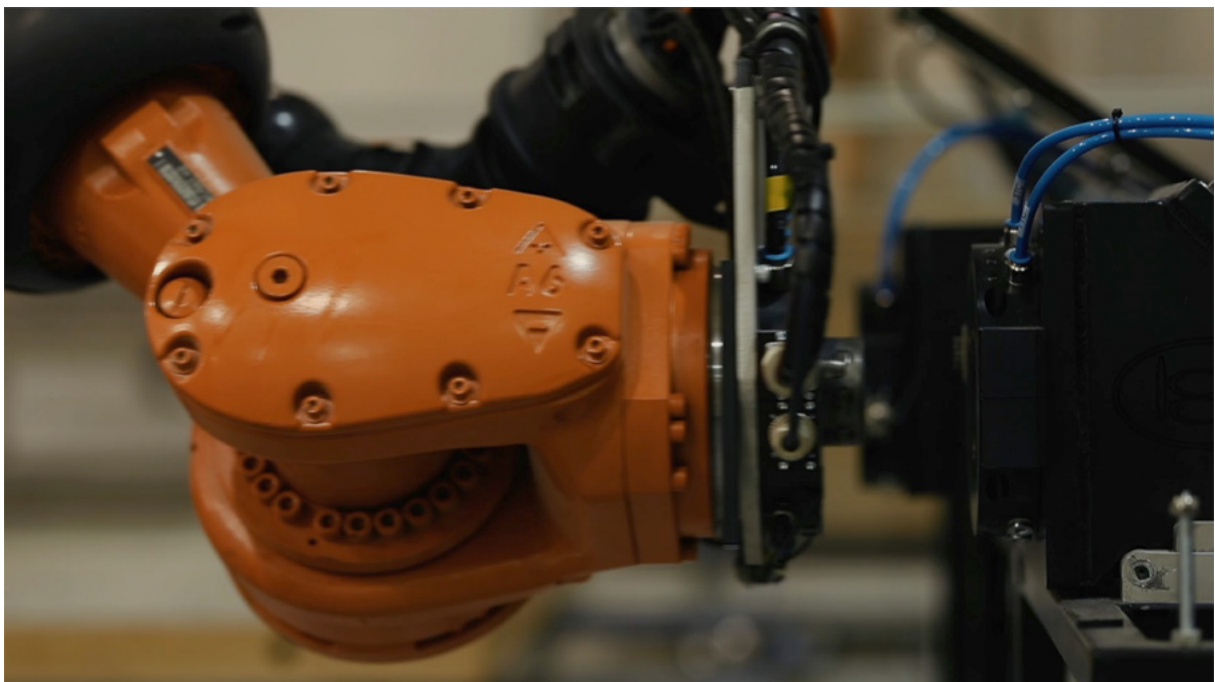


Figure 7



2.3 Requirements

A detailed requirements list was constructed using standard MTC templates. The down-selection process concentrates on system capabilities rather than individual and specific functionality. Employing this approach creates a very detailed selection, but

with a reduced number of targeted requirements. Vendors find these outputs more manageable as they only need to assess their product against several hundred requirements rather than many thousands of individual requirements.

No	Requirement	Explanation	Department
FINANCIAL ACCOUNTING			
A			
A1	Accounts payable	Tracks all payments owed and paid to vendors, material suppliers, distributors and creditors.	Finance
A2	Accounts receivable	Manages the process of generating customer invoices and receiving payments.	Finance
A3	General ledger	The main accounting record of a business. Uses double-entry bookkeeping. Tracks assets, liabilities, equity, revenue, expense items, gains and losses for an account.	Finance
A4	Job cost	Track cost and revenue information of a project and evaluates variance relative to estimates throughout the project lifecycle.	Commercial
A5	Payroll	Manages the process and complexity of paying employees, after processing withholding requirements for payroll taxes, insurance, benefits, and other deductions.	Finance
A6	Multicurrency	Allows user to track and maintain various global currencies and exchange rates.	Finance
A7	Purchase orders	Tracks purchase order amounts, dates, items, and accounts.	Purchasing
A8	Financial consolidation	Consolidates and analyzes financial results across multiple sites of a company.	Finance
A9	Bank reconciliation	Allows user to manage bank account transactions and activities within the system. For example, creating and tracking bank transfers and reconciling bank statements.	Finance
A10	Files management	System enables attachment of any kind of documents or files to any system document / process. Provides version control and access control.	All
PRODUCT LIFECYCLE MANAGEMENT			
G			
G1	Project management	Allows control of project master schedule, costs and resources in construction environment from contractor perspective.	All
G2	Quality management	Manages quality of processes and products during the complete product development phase. Includes inspection planning, supplier management, and notification of quality problems / quality alerts.	All
G3	Product data management	Provides ability to track and control product data, including technical specifications, manufacturing requirements and instructions and material requirements.	Design
G4	Routing management	In manufacturing process, assists in the development and management of routings, track and compare revisions, enable alternatives and subcontracting.	Production
G5	BOM	Main record to manufacture an item. Details product specifications including raw materials, assemblies, components and parts and quantities of each. Supports alternatives and multiple unit of measure (linear meters and construction time for walls).	Design
G6	Change management	Allows users to create and approve engineering change orders to standard product. Tracks product design changes including reason for change, lifecycle status, implementation status, and completion date.	Design
G7	Cost tracking	Allows users to track costs for each step of the production process.	Production
G8	Document management	Integrates all product documents in a single repository for easy and immediate access. Can include items like CAD files, BOM, sales orders and more.	Design

Figure 8

2.4 Improvements

The Improvements Template has three purposes:

1. To inform vendors of the clear expectations of how their system should impact the organisation.
2. To inform internal stakeholders how the new ERP system will impact the company and themselves.
3. It provides a method of calculating an R.O.I. The addition of simple logic enables the calculation of potential future financial benefits to be expected if the identified improvements are achieved.

All improvements were mapped against capabilities as well as business Key Performance Indicators to identify where the biggest impact will be realised.

No	Improvements	Department															
			Quality	Cost	Delivery	Safety	Environment	Morale	Customer Relationship	Vendor Relationship	Operation	Efficiency	Financial Benefits				
1	Turnaround of quote to be much quicker due to automation of process, standardisation and robust template scheme	Estimating	0	1	0	0	0	2	3	0	3	2					
2	Customer Website linked with ERP	Sales	0	0	0	0	0	0	3	0	0	0					
2.1	Automatic rough quotes of standard homes	Estimating	0	0	0	0	0	0	3	0	3	3					
2.2	Access to catalogue of products	Sales	0	0	0	0	0	0	3	0	3	1					
2.3	Enquiry capture	Sales	0	0	0	0	0	0	3	0	3	1					
2.4	Standardised source files for architects and designers	Design	2	2	0	0	1	1	3	2	3	3					
3	Booking a project and ownership of project is done by one team	Commercial	2	0	0	0	0	3	1	0	3	0					
4	Registering clients consistent and in one place	Sales	0	0	0	0	0	1	0	0	2	0					
5	Consistent Zones structure - currently production system does not work well with construction system - automatic and manual production to be treated as the same from construction point of view. Additionally customer expectation of value is also different.	All	3	0	3	1	1	3	2	2	3	1					
	Estimation to use well designed templates with RCM and Routines with																

Courtesy of Stewart Milne Timber Systems.

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Figure 9

3. IDENTIFYING VENDORS

3.1 Where to Start? Long List & Qualification

To understand the overall ERP market, future trends and to develop a targeted list of potential vendors, suitable for MMC offsite manufacturing business, it is necessary to understand the opportunities and possibilities that the ERP system currently offers. This will allow the selection of an appropriate vendor and ERP system.

MTC provided a list of 107 ERP systems with basic vendor contact information. The systems identified as having the functionality to support the business were selected using information in the public domain with a simple overview assessment being

applied. An important non-functional requirement identified was that vendors should have a UK office offering support and services. The selected companies were prioritised with 30 businesses being invited to tender with 4 vendors providing full responses to the Request for Proposal documents.

A fundamental requirement included communicating the right message, which enabled the down-selection team to concentrate on pre-selected and potential vendors and not waste time with products that did not meet requirements.

3.2 Where to Start

ERP Magic Quadrants



Figure 10

ERP Portals

- <https://solutionsreview.com/enterprise-resource-planning/>
- <https://softwareconnect.com/erp/>
- <https://www.capterra.com/>
- <https://www.selecterp.co.uk/>
- <https://www.g2.com/>
- <https://www.softwareadvice.com/uk/erp/>
- <https://www.selecthub.com/>
- <https://www.betterbuys.com/erp/>

ERP Rank

- <https://www.softwareadvice.com/erp/#top-products>
- <https://www.softwareadvice.com/manufacturing/#top-products>
- <https://www.softwareadvice.com/manufacturing/?v=2#top-products>
- <https://www.gartner.com/doc/reprints?id=1-4SZOY52&ct=180313&st=sb>
- <https://www.gartner.com/reviews/market/single-instance-erp-for-product-centric-midmarket-companies>
- <https://www.capterra.com/enterprise-resource-planning-software/#infographic>
- https://app.selecthub.com/community/scorecard_reports/284
- <https://selecthub.com/manufacturing-software/>

3.3 Long List and Qualification

Shown below is an extract from Long List of ERP systems. Green lines are companies selected for pre-tender invitation. Column H provides a very quick and simple assessment of the system according to their official website.

No	Name	Website	Rough Evaluation	In/Out	Comments
1	123INSIGHT	https://www.123insight.com/	MRP / ERP + Access Financials	in	
2	4PS	https://www.4ps.co.uk/	MS Dynamics for construction	in	
3	abas ERP	https://abas-erp.com/en/	cloud, sme, csm	in	
4	Accelerated/ICM ERP	http://www.metasystems.com/erp-software/	small, manufacturing	?	No UK office
5	Acumatica Cloud ERP	https://www.acumatica.com/	sme, construction, manufacturing	in	
6	Aquilon	https://aquilonsoftware.com/	sme, manufacturing, c/srm	?	No UK office
7	Archdesk	https://www.archdesk.co.uk	sme, construction, manufacturing	in	
8	Bitrix24	https://www.bitrix24.eu/	sme, nebulous customer journey	out	
9	BOSEnterprise	https://www.quickwaysoftware.com/boe/	sme, manufacturing, construction, cloud	in	
10	Byumit	https://www.byumit-solutions.com	SAP Business One Integrators	?	Possible?
11	BuildSmart	https://constructioncomputersoftware.com	med-large, construction, engineering projects	in	
12	Cetec HMI	https://cetecerp.com/	sme, cloud, manufacturing	?	Possible - mention
13	Clearview Infocus	https://www.clearviewsolutions.net/	sme, architect/engineering, project mgmt.	?	No UK office
14	Columbus Manufacturing	https://www.columbusglobal.com/en_gb/	sme, manufacturing	?	Possible?
15	CSB-System	https://www.csb.com	sme, food, pharma, logistics	out	
16	Deltek Costpoint	https://www.deltek.com	sme, project based, AEC	in	
17	Demand Solution DSX	https://www.demandsolutions.co.uk/	sme, manufacturing, supply chain mgmt.	?	Possible?
18	Deskera ERP	https://www.deskera.com/	sme, financials, SOP, POC	out	
19	C2 Manufacturing System	https://www.choptech.com/	sme, manufacturing	?	No UK office
20	EO M1	https://www.eosolutions.com/uk/	sme, ?	out	
21	Ecount ERP	https://www.ecounterp.com/	sme, ?	out	
22	edion ERP Manufacturing	https://edion.com/?lang=en	sme, manufacturing, construction, cloud	in	
23	emas-system	https://www.emas-systems.co.uk/	Unresponsive to CR's	out	
24	EnApps	https://www.enapps.co.uk	sme, manufacturing, integration	?	Possible - mention
25	Epicor ERP	https://www.epicor.com/en-uk/	sml, manufacturing, construction, cloud	in	
26	ePROMIS ERP	https://www.epromis.com/	sml, manufacturing, construction	in	

Figure 11

Example: it is almost certain that company specialising in food and pharma doesn't support discrete manufacturing.



4. APPROACHING VENDORS

4.1 Invite, RFP, Documentation & Discussion

A select list of vendors were invited into the tendering process, allowing them to gain more information about the requirements and for the business to learn more about the vendor's capabilities.

After the pre-tender invitation 11 positive responses were received. A Request for Proposal (RFP) documentation was collated consisting of:

- **ERP specification** - containing information about the tendering process as well as a customer profile.
- **Request for Information** - a set of questions designed to gather more information about the vendor.
- **ERP requirements** - a list of requirements gathered in previous stages.
- **Improvement list** - an itemised list of improvements expected after implementation of the new ERP system.
- **Price proposal template** - a template providing a consistent method of comparing price proposals.
- **Scripted scenarios** - a selection of features to be shown as part of the vendor's product demonstration.
- **Current process map**

A full set of documentation was sent to selected vendors with 5 full responses received in turn. A standardised template for gathering vendor feedback enabled quick and efficient comparison analysis of all responses allowing incompatible solutions to be quickly eliminated.

4.2 Documentation

Price Proposal

It is important to gather financial data consistently. Vendors have a range of different price plans such as: subscription, named licence, concurrent licence, or even costs dependent on number of

transactions. This template allows a comparison of the different pricing options to be compared and evaluated.



Price Proposal - SMTS ERP System		
Company Name: _____		
No	Item	Price (£)
1	Installation cost	
2	Concurrent Licences cost	
3	Named Licences cost	
4	Unlimited Licences cost	
5	Monthly subscription cost (if possible)	
6	Ongoing Maintenance cost (monthly / yearly)	
7	Additional support cost per hour - consultancy (installation, set up, data migration, new functionality scoping)	
8	Additional support cost per hour - training	
9	Additional support cost per hour - development	
10	Additional support cost per hour - travel	
11	Upgrade to new version cost	
System Users:		
xx users		
x Super Users		

Figure 12

Request for Information (RFI)

Is extremely important in assessing vendors. Not only are the vendor system capabilities important, but it is vital to consider implementation approaches, product support, training etc. to make the best selection. ERP will form a core fundamental system of the company therefore selecting the right vendor is crucial. A valuable ‘rule of thumb’ is to select a vendor (not system) with a similar size to your company.

RFI questions - SMTS ERP System		
Company Name: _____		
No	Question	Vendor Answer
A Company Background, Business Philosophy, and Corporate Vision		
A1	Is your company a software developer or value-added reseller (VAR)?	
A2	How many years has your company been involved in the ERP software industry?	
A3	How does your organization compare to other organizations in your industry relative to revenue per employee?	
A4	Do you provide a money-back guarantee or software acceptance period which will allow us to ensure that the software does everything that it was represented to do during the sales process?	
A5	Since your company was founded, how many times has the ownership of the organization changed?	
A6	What level of involvement does your organization’s executive leadership have in the daily operations of the business and future product development? Has there been any recent changeover in your organization’s senior management staff including outside investment organizations?	
A7	Are senior executives at your organization readily available to speak with customers upon request?	
A8	What is your level of experience in our industry (timber frames)? Is the proposed software solution currently in use for other companies in our industry who are of similar size or larger?	
A9	In the last two years, has your organization increased or decreased its number of employees?	

Figure 13

Scripted Demo Scenario

One of the most important ways of assessing vendor performance.

Using this approach allows customers to drive a demonstration to ensure their requirements are shown (not what vendor would like to show). In addition, this tool allows a method of quantifying vendor performance for the purposes of comparison. Concentrating on the most laborious processes provides insight into how they can be potentially improved. Evaluators assess two aspects of a task: the functional; can this task be performed in the system? and usability; how this task is performed?

Vendor Demonstration Score Card Section B - Sales									
Vendor:									
Evaluator:									
No	Item	Time [min]	Weight	Functional Score	Usability Score	Weighted Functional	Weighted Usability	Weighted Total	
B1	Demonstrate the facilities provided by your application to handle the following:					0	0	0	
R1.1	A prospect database with an infinite number of contacts for each prospect	2				0	0	0	
R1.2	The scheduling of sales related activities associated with prospects or customers	1				0	0	0	
R1.3	The recording of user definable activity results for a scheduled or unscheduled activity	1				0	0	0	
B1.4	The entry of an expected close date, sales revenue, and success probability for each prospect	1				0	0	0	
B1.5	The entry of an unlimited number of lines of notes associated with activities with a given contact which can be reviewed on demand	1				0	0	0	
B1.6	Store documents associated with a specific prospect or contact within the system in any format (e.g., PDF, Word document, HTML, spreadsheet) for random recall and viewing	1				0	0	0	
B2	Demonstrate the process of logging an enquiry (request for quotation)					0	0	0	
B2.1	Create an Enquiry ensuring that system captures relevant project data: - Project time frame - Number of Plots and Houses (including sqm) and basic time frame agents each plot - Types of Houses - Basic financial / contracts information	3				0	0	0	

Figure 14

5. ESTABLISHING FIT

5.1 Shortlisting & Fit Factors

Vendors who meet and exceed the business requirements are invited to discuss their systems and provide a live demonstration of their product. This allows the customer to match their expectations with vendor capabilities.

An analysis of systems capabilities based on responses received was performed including a comparison and evaluation of price proposals. Vendors who had been expected to respond, but did not, were contacted to ensure the opportunity to view a potential system had not been overlooked. During the review process a group IT manager was employed to manage the new ERP implementation. At this stage the requirements list was simplified, and business expectations

of possible ERP system capabilities were recalibrated. The possibility of integrating different solutions from multiple vendors was also reviewed at this stage.

By providing vendors with the company Capability Map, they were able to understand the business more fully and further personal contact with vendors enabled a better understanding of the customer requirements and capabilities.

The use of templates allowed for a quick analysis of responses. The evaluation of vendor responses demonstrated that smaller ERP providers may be capable of delivering almost all of the system requirements at a competitive cost.

5.2 Documentation

Capabilities Prioritisation

The results of the Digital Discovery process proved very useful in analysing requirements from a business focus. This allowed vendors greater insight into the company and its goals.

Furthermore, it allowed a more open and inquisitive dialogue between the customer and the potential vendor(s) as the focus became business priorities and not individual aspects of product functionality.

Business Area/Department/Capability	Risk/Impact	Opportunity	MisCoW	Business Comments
1. Board Management				
1.1 Manage Strategy	None	None	Won't	
1.2 Manage Business Performance	Low	Medium	Should	Analytics - save time collating reports by automating
1.3 Manage Business Control	Low	Medium	Should	Analytics - save time collating reports by automating
1.4 Define Governance & Assurance	None	None	Won't	
1.5 Manage Risk	None	None	Won't	
1.6 Manage External Relations	None	None	Won't	
1.7 Manage Business Compliance	None	None	Won't	
1.8 Manage Communications	None	None	Won't	
1.9 Manage Internal Business Projects	None	None	Won't	
1.10.1 Build & Retain Knowledge	None	None	Won't	
1.10.2 Manage Improvement	None	None	Won't	
1.10.3 Manage Compliance	None	None	Won't	
1.10.4 Maintain Facilities & Real Estate	None	None	Won't	
1.10.5 Manage Environment	None	None	Won't	
2. Sales				
2.1 Sales				
2.1.1 Gain Market Intelligence	None	Medium	Could	Client comms improvement (High); Connection to demand picture (High)
2.1.2 Build Customer Pipeline	None	Medium	Could	Auto share down of external data (Barbara)
2.1.3 Manage Customer Pipeline	Low	High	Should	Visibility of future demand/capacity
2.1.4 Bid Management	Low	High	Should	
2.1.7 Key Account Management	Low	High	Should	Visibility currently very manual
2.1.8 Client Training	Low	High	Should	
3. Technical				
3.1 Estimating				
3.1.5 Develop Quotations	High	High	Must	
3.1.6 Design Coordination				

Figure 15

6. EVALUATION & SELECTION

6.1 Briefing, Dialogue, Evaluation & Selection

The evaluation process ensures the business gets to know the vendor better including their system capabilities, implementation and support approach ensuring the best solution is selected.

After receiving additional responses, three vendors were selected from the list of responders to perform an online demonstration with each vendor being allocated a 2-hour online session. Vendor(s) who demonstrated the best offering were then offered a further in-depth opportunity to demonstrate their solution. An analysis was undertaken following the demonstrations from

all selected vendors with the most impressive vendor being invited for a whole day demonstration of their solution, in detail, using the simplified demonstration script.

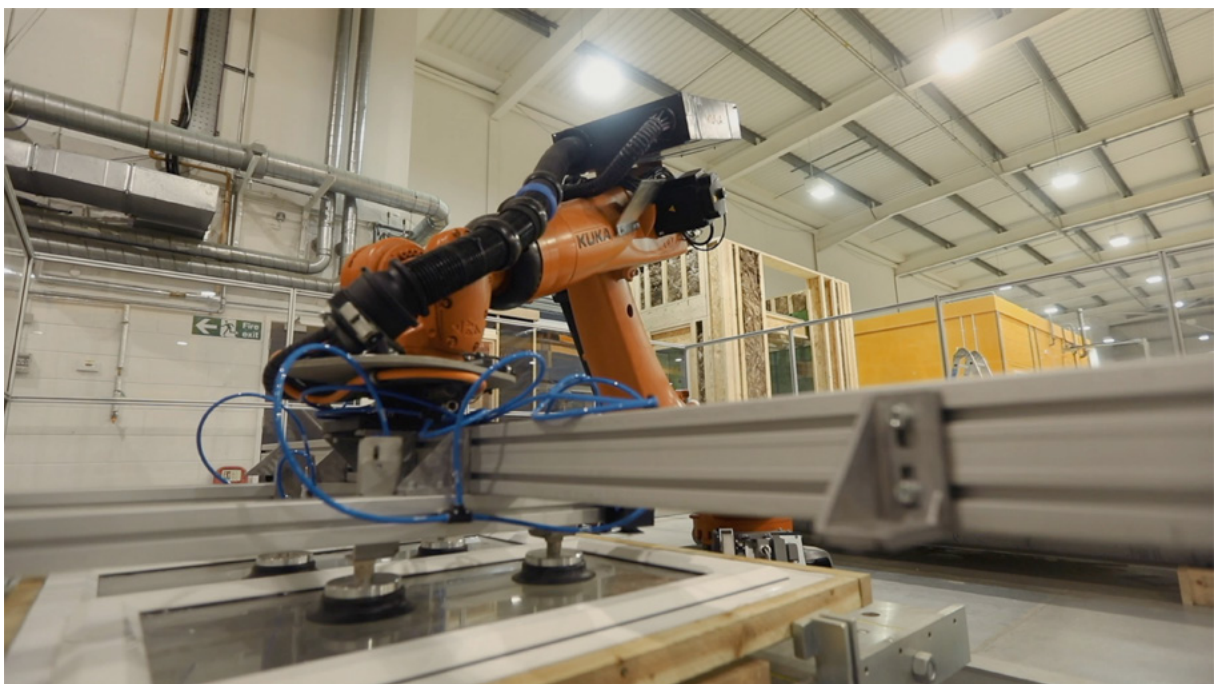
The demonstrations were recorded to allow a review from a wider audience. This resulted in the understanding that one single ERP system to manage Offsite MMC design, manufacturing, delivery, construction and project management is possible, but there are few vendors with targeted offerings in that market.

6.2 Documentation

The Indicative Demonstration Agenda identifies areas of importance to the customer and encourages the vendor to structure the demonstration to include these areas.

A drawback of this approach is that it allows

vendors to be more flexible in what they demonstrate, hence making a quantifiable comparison between vendor product demonstrations becomes more difficult and subjective.



Introduction

This document is a high-level summary of the anticipated agenda for ERP system demonstrations. This is indicative and for information only. A detailed agenda will be issued with invitations to demonstrate following review of the submitted proposals.

Items to Demonstrate

- **Brief introduction about vendor and solution overview (10 minutes)**
- **Section B - Sales (15 minutes)**
 - Handling prospects, sales related activities and information
 - Credit checking of clients
 - Logging and updating an enquiry
 - Work flow to review and approve enquiries
 - Managing Customer Satisfaction Surveys
- **Section C - Estimating (20 minutes)**
 - Transforming an enquiry to a quotation
 - Recording take-off information from drawings
 - Document management & revision control
 - Creating and amending a quotation
 - Using the system data to produce finalised quotation documentation
 - Tracking & managing quotations
 - Converting a quotation into a project when secured
- **Section D - Project Management (20 minutes)**
 - Setting project specific contract terms

Figure 16

7. BENEFITS

The scale of benefits brought by a new digital business system will vary dramatically dependent on business size, current digital system maturity and levels of digital integration ambition. The following areas have been identified as having potential to provide major benefits:

- **Business Efficiencies**
 - Eliminating multiple manual administration tasks
 - Systemising paperwork & approvals
 - Quicker, smarter decision making (single version of the truth)
 - Real-time data & transactions anywhere

- **IT Infrastructure & Maintenance**
 - Reduce on-premise hardware
 - Reduce business continuity risk
 - Improved system performance
 - Reduced system down time

- **Business Differentiators**
 - Closer integration with supply chain
 - Closer integration with clients
 - Improved customer service
 - Opportunities for new technologies

7.1 Business Efficiencies

These are all the things that make the business run more smoothly and generally result in a headcount benefit – whether that be achieved through reduction or increasing value-add activity to allow growth without requiring recruitment.

Eliminating multiple manual administration tasks

If there is no legacy ERP system (and even if there is) the likelihood is that you will have multiple systems, spreadsheets and records containing duplicated information that must be maintained. Inputting data into multiple sources not only takes time but can lead to errors and discrepancies.

Business process mapping will help identify the areas this is happening so quantifying the benefit is simpler:

- How much time would be saved if data was only input once into a single location?
- What is the cost of data not being correct and aligned – for the business, for the client, for the supply chain?

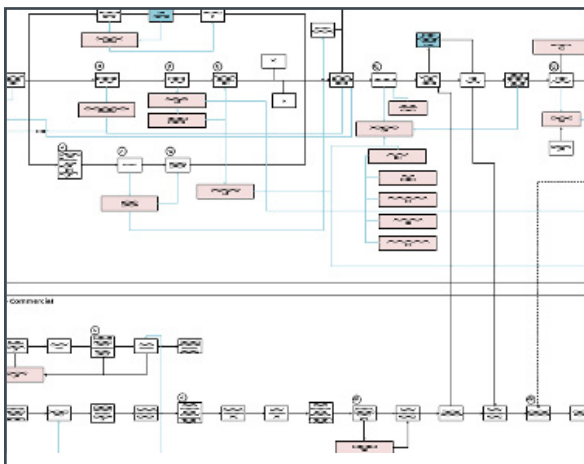


Figure 17

Systemising paperwork & approvals

The chances are you will have multiple processes that rely on pieces of paper moving around the business recording information and approvals along the way. Systemising these processes not only increases visibility of what is where but can reduce the time required manage the process.

Consider the time spent by staff recording their activity on timesheets, raising and approving purchase requisitions or even collating and approving business expenses each month.

The other aspect of systemising paperwork is the cost saving and environmental benefit of reducing printing, paperwork and the waste generated.

Quicker, smarter decision making

An integrated business system will provide your business with one place to hold all your data eliminating disparate reports and the inevitable debates over whose number/data is correct.

The creation of a single version of the truth not only reduces the administration burden of report creation but also ensures everyone is looking at the same information when making decisions, in a real time environment.

So along with the time saving achieved from centralising reports, the time spent debating the numbers is eliminated. Consider the impact that having clear information will have on decision making.

Perhaps a clearer view of stock holding could prevent “just in case” purchasing decisions or eliminate production stoppages due to material stock outs. What could be the impact of having a better view of demand and capacity have on manufacturing efficiencies or delivery on time in full?

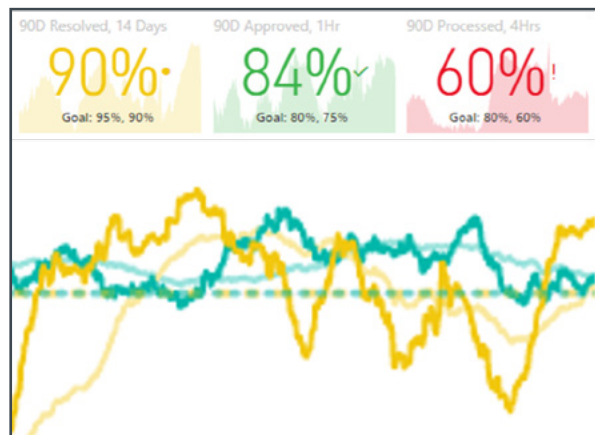


Figure 18

Real-time data & transactions anywhere

It's no good having a system to keep all the data in one place if it's not up to date. Choosing a system that enables connection via the internet opens the opportunity to use mobile devices allowing employees on the move to interact with the system in real time.

Whether its operatives live-logging material picking transactions as they move around the warehouse, construction staff submitting progress updates and site queries direct from the plot they are

standing in or the business development team checking current project status before heading into a client meeting, the whole business benefits from the ability to transact remotely.

Instead of saving up transactions to be done later, or by someone else, the staff at the coal face have reassurance of up to date information and their colleagues back at headquarters get updates more swiftly, enabling the next steps to begin more quickly.

7.2 IT Infrastructure & Maintenance

The benefits achieved from IT infrastructure and maintenance will very much depend on whether you are replacing an ageing legacy system, updating an existing system or introducing ERP for the first time.

Moving to a cloud-based system may enable you to decommission on-premise IT infrastructure and reduce the amount of in-house support required. Another benefit is the system becomes accessible from anywhere so business continuity can be preserved more easily in the event of a major issue that limits access to your buildings.

Replacing older legacy systems can provide the opportunity for certain processes to run faster so identify processes or routines that take hours to run, block other users or cause the system to crash and quantify the value of the time saved if

they were to run quicker, not prevent other users working and remain stable.

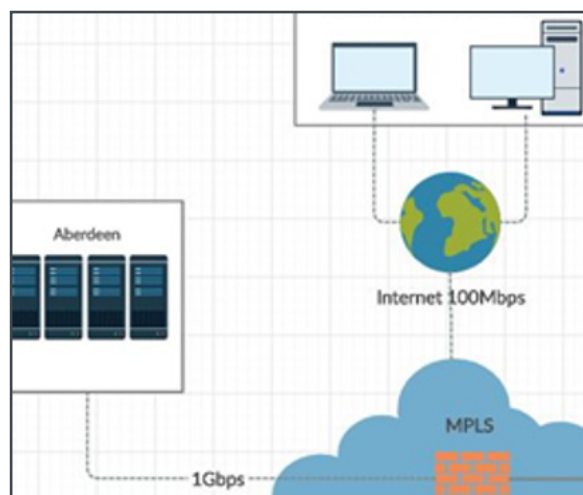


Figure 19

7.3 Business Differentiators

Adopting new digital business technology may also help to differentiate you from your competitors by enabling you to offer clients something different or respond more quickly.

Browser-based cloud solutions provide the possibility of opening supply chain or key customer portals, allowing data to be exchanged in a secure, controlled, automated and direct way. Eliminating the forgotten email, out of date report or conflicting information helps all parties to understand what is happening and respond accordingly.

Having an integrated system holding client information in one place gives the entire team visibility on what has happened, is happening and might happen to allow them to service their clients better.

Implementing a system utilising up-to-date technology can be the first step on a digital integration journey. Closer integration of BIM, robotics & automation and shop floor data capture can be explored as follow on phases, once the core system has been embedded.

8. CONCLUSIONS

Costs of digital business systems can vary hugely, depending on the scale of solution you look to implement. Benefits will be dependent on both the current situation and future challenges you face.

It can be challenging to quantify all the benefits and return on investment (ROI) may change in relation to business growth. Working with vendors to understand the what the system can do for you and using demonstrations to get a feel for usability will help.

Improvements	Department										
		Quality	Cost	Delivery	Safety	Environment	Morale	Customer Relationship	Vendor Relationship	Operation Efficiency	Financial Benefits
Turnaround of quote to be much quicker due to automation of process, standardisation and robust template scheme	Estimating	0	1	0	0	0	2	3	0	3	2
Customer Website linked with ERP	Sales	0	0	0	0	0	0	3	0	0	0
Automatic rough quotes of standard homes	Estimating	0	0	0	0	0	0	3	0	3	3
Access to catalogue of products	Sales	0	0	0	0	0	0	3	0	3	1
Enquiry capture	Sales	0	0	0	0	0	0	3	0	3	1
Standardised source files for architects and designers	Design	2	2	0	0	1	1	3	2	3	3
Booking a project and ownership of project is done by one team	Commercial	2	0	0	0	0	3	1	0	3	0
Registering clients consistent and in one place	Sales	0	0	0	0	0	1	0	0	2	0
Consistent Zones structure - currently production system does not work well with construction system - automatic and manual production to be treated as the same from construction point of view. Additionally customer expectation of value is also different.	All	3	0	3	1	1	3	2	2	3	1
Estimation to use well designed templates with BOM and Routings with											

Figure 20

Collating the potential benefits from expected improvements in a matrix enables you to score the impact and can help ensure all areas are covered as well as highlighting where the biggest wins are likely to be found.

Given the opportunities that digital technologies provide, if the business case isn't stacking up then maybe the appropriate solution hasn't been identified, it might be over-specified or perhaps you've missed or under-quantified some of the benefits it can bring.

This report is part of the AIMCH project which is developing all areas of modern methods of construction in housebuilding. For more information on the full scope and outputs of the project visit aimch.co.uk and follow us on LinkedIn and Twitter.



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