THE CHALLENGE

The UK Construction Industry has not yet embraced change the way other sectors have. As a result, many firms survive on meagre margins, while others are losing money. Putting it bluntly, doing well in Construction equates to being on the rocks in other sectors. In an industry where up to 75% of income is spent on the supply chain and the average operating margin of the top 25 firms is 1.2%, business is on a tightrope.

The squeeze from increasing labour cost and skills shortage, supply chain costs, new expectations and regulations are finally compelling firms to seek change, and those that innovate will win. Ernst & Young predict the top 15 firms will be halved, over the next five years. In many cases Construction Firms are suffering ‘death by a thousand cuts’:

Construction firms like to grow by acquisition, a fast way to take on more market and reduce competition, and own more of the supply chain. However, this also introduces further risks, and many of the shortcomings illustrated above arise from inconsistent and fragmented governance across subsidiaries. IT, with its new Digital flavour is central to turnaround and has the ability to transform, through new solutions combined with new ways of doing business.

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• Re-invention and local solutions
• Poor costing and risk assessment
• Poor line of sight to the build stage
• Materials and cost uncertainties
• Poor governance – surprises
• Disconnected information and teams

• Poor task tracking
• Poor scheduling of people & equipment
• Illegal workers / on site risks
• Supply chain capacity problems
• Time-based asset management
• Critical asset failure
• Fines and reputational damage
• Disconnected information and teams

• Re-invention and local solutions
• Materials and costs uncertainties
• Too many RFI’s = poor understanding
• Poor governance – surprises
• Disconnected information and teams

• Poor task tracking and scheduling
• Illegal workers / on site risks
• Fines and reputational damage
• Supply chain capacity problems
• Expensive on site assembly
• Disconnected information and teams
WHERE TO START?

Without a blueprint for the industry, it is easy to get overwhelmed. Businesses that operate as a matrix with numerous business verticals, segmented by acquisitions and driven by countless projects are a multi-layered, many-headed beast. Effective change in such an environment requires substantial and sustained momentum, but also requires achieving goals:

The legacy described above typically results in literally thousands of software products in use, a significant proportion bespoke. There is duplication and gaps, data are inconsistent, businesses speak different data languages, and ‘shadow IT’ in the verticals pursue different paths, making knowledge transfer and insight extremely difficult. Governance is equally likely to require attention, and a business impatient for return on any investment will want to see benefits within months, not years.

An ‘outside in’ strategy recognises that any large engineering firm will be compelled to use a significant number of strategic tools such as Project Lifecycle Management, CAD or asset management platforms dictated by clients, subject-matter, local skills and technological advances. A much larger number of tactical tools will also be in place, growing with the Apps marketplace. To support these effectively, the enterprise platform needs to be agnostic, evolving and ubiquitous, rapidly deployable, highly scalable and able to integrate readily with strategic tools. It must be intuitive and user-centric so that users want to use it and experience its value. The Golden Thread of enterprise workflow is fundamental to this platform, running through the centre of our digital blueprint to provide business cohesion.

DIGITAL BLUEPRINT FOR CONSTRUCTION

Our blueprint focuses on all four stages of business. We and partners such as Dassault Systèmes and SalesForce believe...
the blueprint has to be supplier-agnostic, given the existence of different application and Project Lifecycle Management tools – whether Autodesk, Bentley, GIS, bespoke or other – and the need for continuity of process and information across all business lifecycles.

The ‘Golden Thread’ is a Quality Management System workflow primarily concerned with:

- Winning the right work at the right price whilst recognising and controlling risk
- Structuring, managing and delivering projects consistently and safely
- Using rigorous stage-gates throughout the value chain that can identify and deal with risk before the worst happens.

The Golden Thread does not attempt to duplicate what strategic and tactical tools are used for. Infrastructure and other projects may choose to use Bentley ProjectWise for round-trip transmittal, 4Projects or Business Collaborator for others, because projects choose the right tools for the job. However, a smooth flow of information across the business, underpinning the progression of all work from horizon-scan ning through to project acceptance and sign-off, cannot work unless there is a single conduit, and a single consistent view of performance and progression for every bid and every project, with intuitive dashboards and preventative alerts supporting every key role, in any location via any device.

Connected tools and services Dassault’s 3D Experience Platform is a good example of an open environment supporting rapid virtualisation and workflow. The Enovia app can connect to and move data between the leading technologies to provide full 6D BIM integration (3D, Cost, Time, Task). Other apps can be added for supply chain optimisation, or real time asset data. All of the capabilities (shown in green), are also supported. However, companies must build on what they have and so the blueprint must accommodate other solutions.

DATA DISCOVERY It is essential to be able to discover, harvest and re-use in order to drive up excellence, reduce risk and cost. This search and discover process must be able to consume all types of data, anywhere, automatically cataloguing using industry standard taxonomies and here there are few options. Whilst other solutions exist, Exalead is the only enterprise search engine specifically aimed at engineering data and providing materials and parts metrics. The end result is the ability to discover the best designs, parts and knowledge globally for engineering data to minimise needless reinvention, and to know how materials and costs can be optimised for any type of structure or project.

HYBRID STORAGE MANAGEMENT An agility platform is needed to take away the distraction and cost of managing enterprise systems such as ERP and Finance, which so often take centre stage and consume the bulk of budget. An intelligent, fully automated way of controlling where information is stored and accessed, and how to manage data across the Cloud and On Premises by country, business or project means that focus can be kept on where it is really needed.

STRUCTURED AND UNSTRUCTURED DATA Large engineering firms are typically awash with data on legacy network drives, CAD tools, geospatial, emails, alongside Office 365, SharePoint, PLM tools and other repositories. Added to this are sensor signals, SCADA and laser-scanned point clouds. Much of this data will be uncatalogued, often with inconsistent metadata. Tools such as Exalead are critical to unlock value, and distil what is re-usable from work-in-progress.

Given the right ‘glue’ for data and knowledge using open integration, return on investment from what exists can be driven upwards. But equally well, new and better tools can be added and contribute value ‘outside in’, rather than the old world of increasing dysfunctional.

In fact, all of the functions shown in the blueprint can be achieved As a Service, using the right open platform to extend across the enterprise, uniting all the disparate conversations into a new form of collaboration. All of the areas of operation shown in the blueprint are an opportunity to cut costs, become LEANer and accumulate value.

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Regional CSC Headquarters

UK, Ireland and Netherlands
Floor 4
One Pancras Square
London
NIC 4AG
United Kingdom
+44.20.3696.3000

The Americas
3170 Fairview Park Drive
Falls Church, Virginia 22042
United States
+1.703.876.1000

Asia, Middle East, Africa
Level 9, UE BizHub East
6 Changi Business Park Avenue 1
Singapore 468017
Republic of Singapore
+65.6809.9000

Australia
26 Talavera Road
Macquarie Park
NSW 2113
Australia
+61(2)9034.3000

Central and Eastern Europe
Abraham-Lincoln-Park 1
65189 Wiesbaden
Germany
+49.611.1420

The Americas
3170 Fairview Park Drive
Falls Church, Virginia 22042
United States
+1.703.876.1000

Asia, Middle East, Africa
Level 9, UE BizHub East
6 Changi Business Park Avenue 1
Singapore 468017
Republic of Singapore
+65.6809.9000

Australia
26 Talavera Road
Macquarie Park
NSW 2113
Australia
+61(2)9034.3000

Central and Eastern Europe
Abraham-Lincoln-Park 1
65189 Wiesbaden
Germany
+49.611.1420

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