

A nighttime aerial view of a city, likely Dubai, showing a complex multi-level highway interchange with many cars. The city skyline is visible in the background with numerous lit-up skyscrapers. A large blue semi-transparent graphic is overlaid on the left side of the image, containing the main text.

# ENHANCING & ACCELERATING ENGINEERING PROJECTS

[www.synthesys-technologies.co.uk](http://www.synthesys-technologies.co.uk)

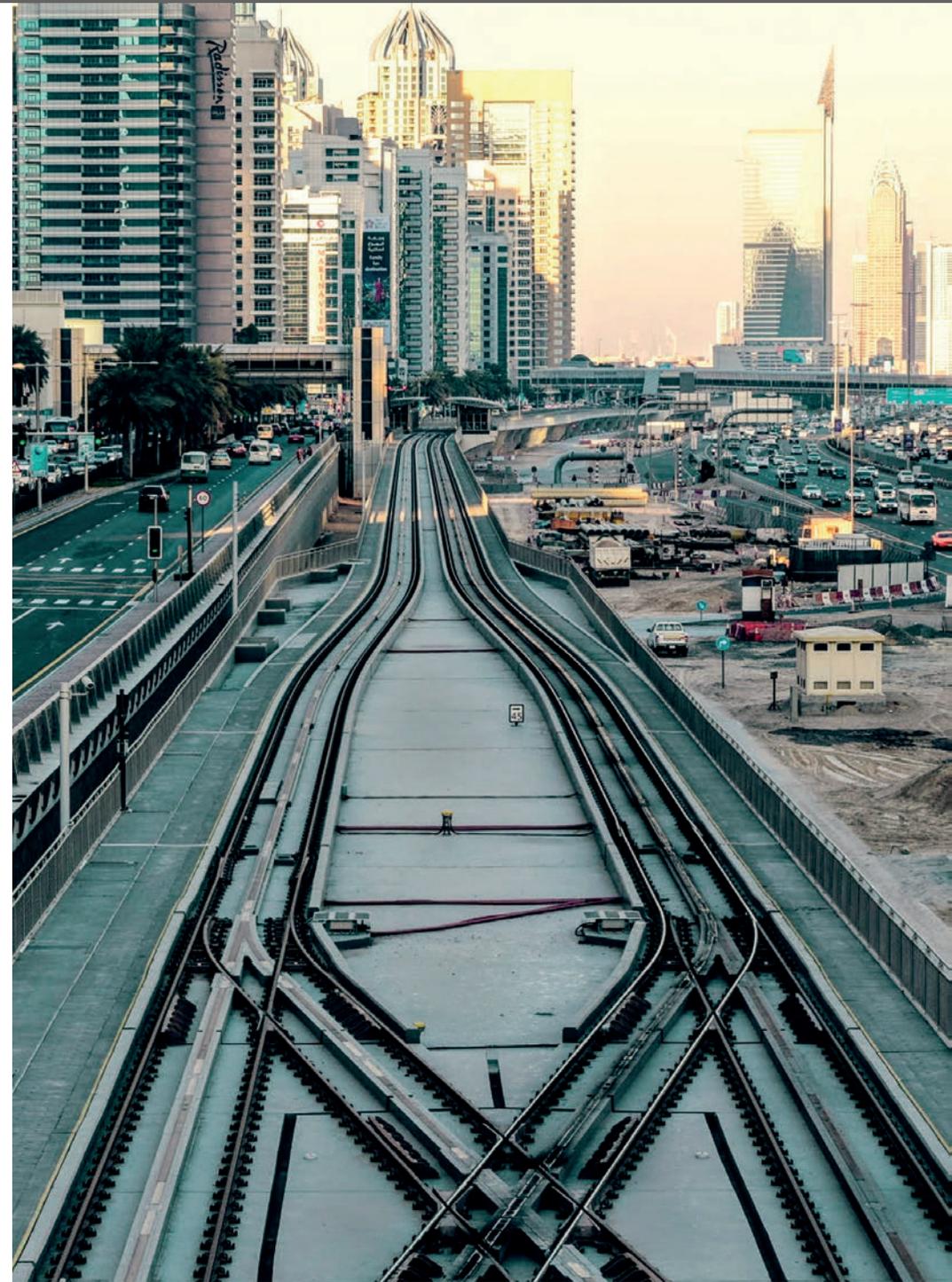


**SyntheSys**  
TECHNOLOGIES

## FULFILLING INCREASED DEMANDS

To cope with rising product complexity and significant amounts of data, modern engineering teams must improve existing methods of working whilst embracing new processes and technologies to maintain a competitive edge.

## MODERN ENGINEERING DEVELOPMENT



## TODAY'S ENGINEERS ARE FACING A DRAMATIC SHIFT

Competitive pressures to bring products to market faster, slash development costs, maintain quality standards and counter competitor innovations are forcing organisations to change fundamentally the way their engineering teams work.

Customer and market demands are driving the need for companies to overhaul their old methods for newer, more agile processes that optimise the entire engineering life cycle.

The following explores these challenges and presents SyntheSys' approach and solution to accelerating engineering projects through effective Collaborative Engineering Management.

## WHAT'S THE CHALLENGE?



# COLLABORATIVE ENGINEERING MANAGEMENT



Collaborative Engineering Management describes SyntheSys' approach to Engineering Management with expert personnel, process advice and appropriate tool support. We have helped many organisations increase their competitiveness through advice on processes, training and the introduction of software tools.

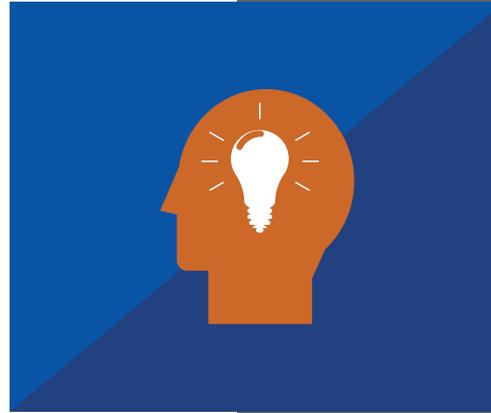
**TALENT. PROCESS. TOOLS.**



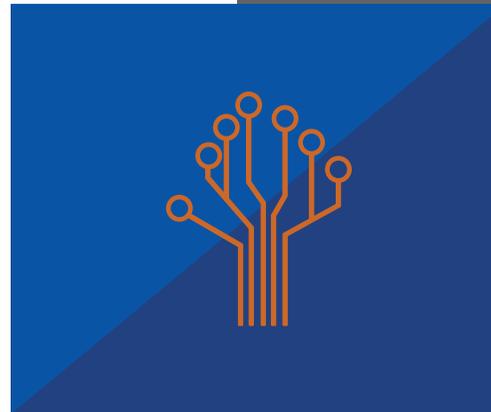
**Collaborative  
Engineering  
Management**

presented by SyntheSys Technologies

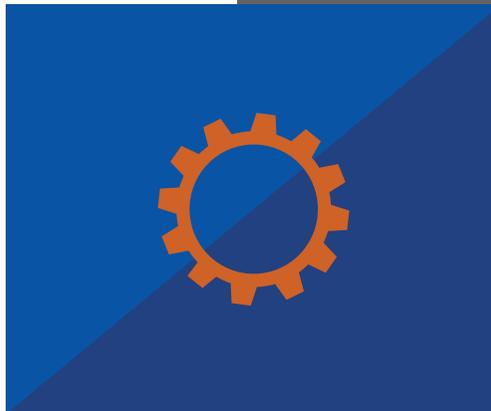
# BROADEN YOUR PERSPECTIVE



**TALENT.**



**PROCESS.**



**TOOLS.**

# COMPONENTS

We view **Collaborative Engineering Management** as a mix of three elements which are interdependent and reliant on each other. As such, our engineering services view the **TALENT** in your organisation as the heart of your business, providing creative and intuitive input. We view your **PROCESS** as the brain, providing a reasoned logic to how your business works. The **TOOLS** you use during your development could therefore be viewed as the skeletal network of data and functionality connecting and automating each of the elements.



**TALENT. PROCESS. TOOLS.**

# ENABLEMENT THROUGH MENTORING & TRAINING

## COLLABORATIVE ENGINEERING MANAGEMENT TRAINING

Our formal and bespoke training gives a high-level foundation to the principles and practices of a formalised engineering management approach.

## CERTIFICATION TRAINING

We prepare students to sit the International Council on Systems Engineering certification exam.

## ENGINEERING TOOL TRAINING

We offer an unrivalled depth of knowledge into the implementation, maintenance and improvement of powerful engineering development tools. Our consultants are some of the leading specialists in tool-supported engineering application.

## MENTORING & CONSULTANCY

Our consultancy and support services focus on Collaborative Engineering Management best practice and how enriching your people, process and development products will ensure you meet commercial objectives.

**TALENT.**



# A FORMALISED ENGINEERING APPROACH



## DECOMPOSITION & DEFINITION

Stakeholder Requirements  
Definition and Analysis,  
Design.

## INTEGRATION & RECOMPOSITION

Implementation,  
Integration,  
Validation, Verification,  
Transition

## CHANGES AND UPGRADES, RETIREMENT

Service Agreement

PROCESS.



# LEADING ENGINEERING TECHNOLOGIES

We partner with some of the leading suppliers of engineering development tools to give our customers access to robust and powerful functions which automate, accelerate, improve and adapt engineering programmes.

## REQUIREMENTS MANAGEMENT

Providing effective ways to manage requirements, improve staff efficiency and reduce unnecessary re-work.

## DESIGN MANAGEMENT

Proven functionality for modelling and design management to manage complexity within your development processes.

## WORKFLOW MANAGEMENT

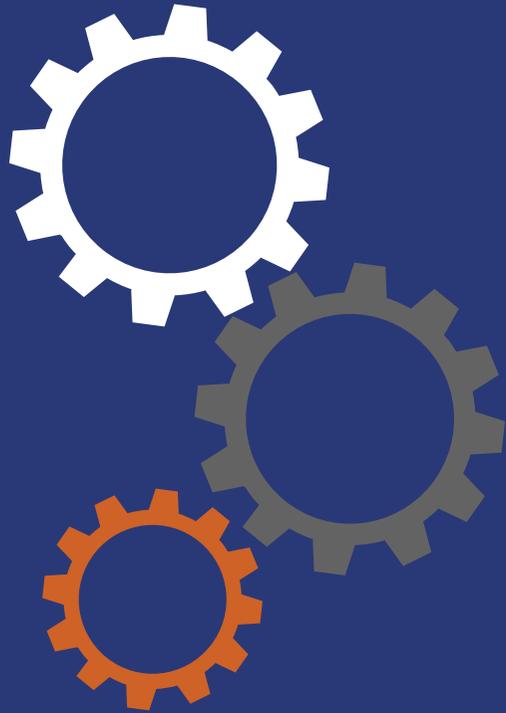
Facilitating individuals and teams to collaborate by providing a common work environment for alignment.

## TEST MANAGEMENT

Offering test planning, construction and artefact production which assures quality and gives you automated control and governance.

**TOOLS.**





# Collaborative Engineering Management

presented by SyntheSys Technologies

Unlocking Engineering Growth and Profitability

# MANAGING ENGINEERING COMPLEXITY

Don't let Engineering Complexity  
Reduce Quality, Speed to Market and Profitability

As increasingly complex products and services are delivered to the market, end-user and consumer demands evolve, adapt and change which leads to further demand for complexity. Complexity drives complexity.

A major challenge facing engineering teams is how to manage many different interfaces and sub-systems which all contribute to end-product features and capabilities.

To manage complexity, engineering teams are integrating the engineering development life cycle by connecting and automating requirements, design, development and deployment stages.

SyntheSys' approach to Collaborative Engineering Management has the requirement to manage a high level of complexity at it's core. We assist engineering teams in managing complexity through process definition, automation and training to cut time to market, reduce engineering development costs, maintain quality standards and create a competitive advantage.

# ACCELERATE TIME TO MARKET

Digital Engineering Transformation is Key to Shortening Your Engineering Life Cycle and is Proven to Accelerate Time to Market by 20%

In environments where different parts of the development team work in siloed environments, with each function working towards their own operating procedures and tools, accelerating the product development life cycle is notoriously difficult to achieve.

The key to solving this challenge is to embrace a digital engineering approach which enables effective workflow management and life cycle integration. Design, build and test your products in an automated way to shorten the development life cycle and verify your product.

Our Collaborative Engineering Management approach takes into consideration all factors of a digital transformation effort. We will facilitate you to shorten your time to market by understanding your existing processes, where this process may be adjusted, and go on to demonstrate how tools can automate the process.

We will then enable your people to use and grow the engineering development tools and processes.

# BENEFITS OF SYNTHESYS' COLLABORATIVE ENGINEERING MANAGEMENT APPROACH

## Managing Engineering Complexity

Don't let engineering complexity reduce quality, speed to market and profitability



## Ensures Regulatory Compliance

Demonstrate your compliance with industry standards in a faster, more reliable and collaborative way



## Accelerates Time to Market

Digital engineering transformation is key to shortening your engineering life cycle and is proven to accelerate time to market by 20%



## Improves Overall Quality

Protecting and maintaining the quality of your engineering output is key to engineering success



## Better Supply Chain Management

Ensure your supply chain benefits from a single source of truth to lower the cost of producing and distributing goods and services



## Manages Engineering Risk

Ensure your organisation is able to make risk-aware engineering decisions through easy access to performance and market data



# IMPROVE THE QUALITY OF YOUR PRODUCTS & ENGINEERING DELIVERABLES

Protecting and Maintaining the Quality of your Engineering Output is Key to Engineering Success

Engineering success can often depend on one factor; the quality of the products and services delivered to market. Engineering quality issues can affect organisations in many different ways, from in-service costs such as recalls and unplanned fixes to missed release dates and budget overrun.

Tackling quality issues requires that robust quality procedures are built into each element of the engineering development life cycle. To make quality prevalent throughout the entire process, we recommend automating this effort. At the heart of great, quality-driven engineering development are people, and to add quality elements to processes such as requirements management and defect management, teams need to collaborate, automate and govern.

SyntheSys' Collaborative Engineering Management approach will enable you deliver the best-in-class products and drive down associated quality costs by ensuring that quality procedures and tests are executed at every stage of the engineering development life cycle.

# BETTER SUPPLY CHAIN MANAGEMENT

Ensure your Supply Chain Benefits from a Single Source of Truth to Lower the Cost of Producing and Distributing Goods and Services

Managing the production flow of a product or service right from the raw material through to how the product is delivered to the end user requires extensive planning, sourcing, making, delivering, returning and enabling. Supply chain management has evolved somewhat from a system which was focused on movement, costs and availability to a complex discipline which impacts quality, customer satisfaction and overall profitability.

Common amongst most supply chains is a huge amount of data, and the challenge for manufacturers and engineering businesses is cultivating, sharing and managing this data so that it is useful and shared throughout the supply chain. It's also crucial that suppliers are contributing to a common system of work, and can easily communicate at Tiers 1, 2 and 3.

To tackle this complexity, it's crucial that engineers have a 'single source of truth' which flows throughout the supply chain. Our Collaborative Engineering Management approach focuses on how Commercial Off The Shelf (COTS) tools can optimise supply chain performance to lower the costs of producing and distributing goods and services.

ACCELERATE TIME TO MARKET BY

20%

WITH TOOL-SUPPORTED ENGINEERING DEVELOPMENT

# MANAGING RISK

Ensure Your Organisation is Able to Make Risk-Aware Engineering Decisions Through Easy Access to Performance and Market Data

Organisational risk comes in many different forms, and is no longer just about loss mitigation and compliance.

The engineering community has arguably been most susceptible to high risk factors during project development, and many of the modern day manufacturing and engineering methods have risk-avoidance at the centre of the method.

For many organisations, risk intelligence is driving risk-aware decision making, with the enabler being internal performance data and external market intelligence.

SyntheSys' Collaborative Engineering Management approach assists in identifying high-priority engineering risk factors for your organisation from compliance to market entry. We use leading engineering tools to identify the risk factors within your development cycle and work with your people to mitigate and manage the risk.

# MAKING THINGS HAPPEN



## JAGUAR LAND ROVER

SyntheSys trains over 800 Jaguar Land Rover employees on defining and managing requirements.  
[\[Read more\]](#)



## NETWORK RAIL

SyntheSys completes an upgrade of Requirements Management software at Network Rail.  
[\[Read more\]](#)



## SUCCESS IN THE NUCLEAR INDUSTRY

Requirements meets Verification and Validation.  
[\[Read more\]](#)



# TRANSPORT FOR LONDON (TFL)

## **MAKING REQUIREMENTS PRIORITY**

The complex nature of TFL's major projects means that robust requirements management is essential to success.

[\[Read more\]](#)

## **TOOL-SUPPORTED ENGINEERING WINS**

IBM® DOORS® Family is an integral part of the requirements management process on TFL's most complex projects, providing baselining, configuration control and the ability to link related information to each other.

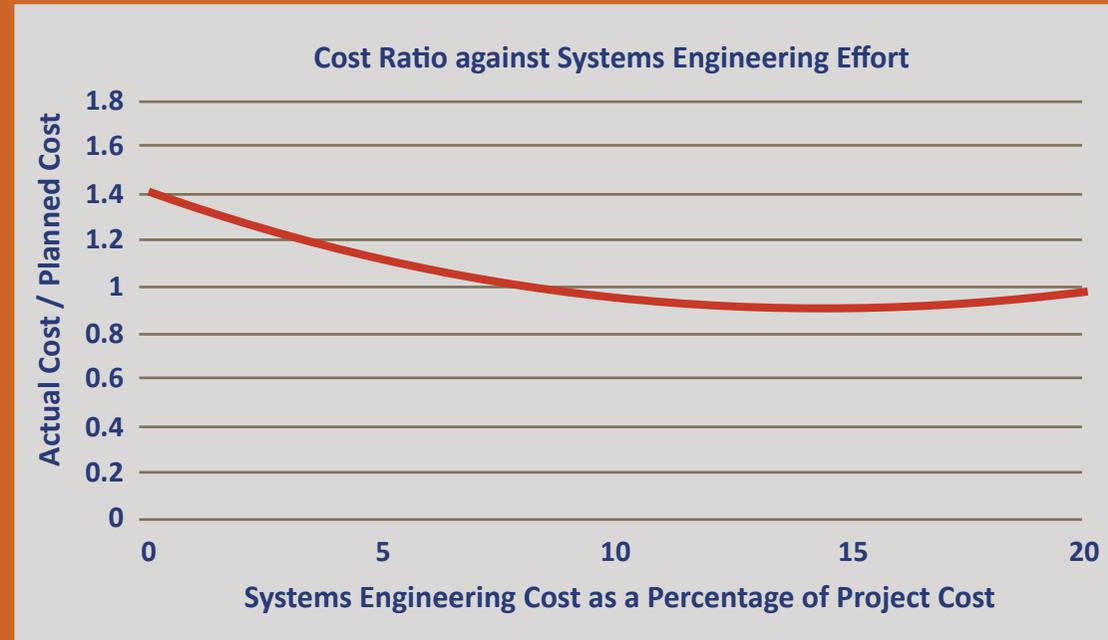
A photograph of a business meeting. In the foreground, a desk is covered with various documents, including a bar chart with blue and green bars, a pie chart, and a pen. In the background, two people are shaking hands, suggesting a deal or agreement. The scene is brightly lit, likely from a window.

# MAKE STAKEHOLDER REQUIREMENTS THE CENTRE OF YOUR ENGINEERING

Effective requirements management improves performance to help your teams reduce development costs by up to **57%**, accelerate time to market by up to **20%** and lower the cost of quality by up to **69%**.

# QUANTIFYING RESULTS

Projects that properly apply formal engineering practices perform better than projects that do not.



Research shows that there can be significant productivity gains through appropriate application of a formalised engineering method in a project.

# **AUTOMATING DEFENCE ENGINEERING DEVELOPMENT**

THE APPLICATION OF SYNTHESYS'  
COLLABORATIVE ENGINEERING MANAGEMENT  
APPROACH, SUPPORTED BY SYNTHESYS' SPIRIT  
TOOLSET HAS CONSISTENTLY REDUCED  
OVERALL MAN HOUR COSTS ON DEFENCE  
ENGINEERING PROJECTS BY UP TO .....

# 70%



# LEADING MANUFACTURER OF AUTOMOTIVE SYSTEMS CLOSES 200 DEFECTS IN 24 HOURS

A leading manufacturer of automotive systems used IBM® Engineering Lifecycle Management software to connect global partners instantly to collaborate, deploy the same tools and share testing across teams, allowing them to close as many as **200** defects in a **24**-hour cycle.

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“Systems engineering return on investment”, Eric C Honour, thesis submitted for the degree of Doctor of Philosophy, Defence and Systems Institute, University of South Australia, January 2013. Available at: <http://www.hcode.com/seroi/documents/SE-ROI%20Thesis-distrib.pdf>

## NOTATION

SPIRIT Return on Investment (ROI) calculations based on SyntheSys' cost saving ROI calculations from live system reports and trials



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**LET'S  
TALK**



**SyntheSys**  
TECHNOLOGIES