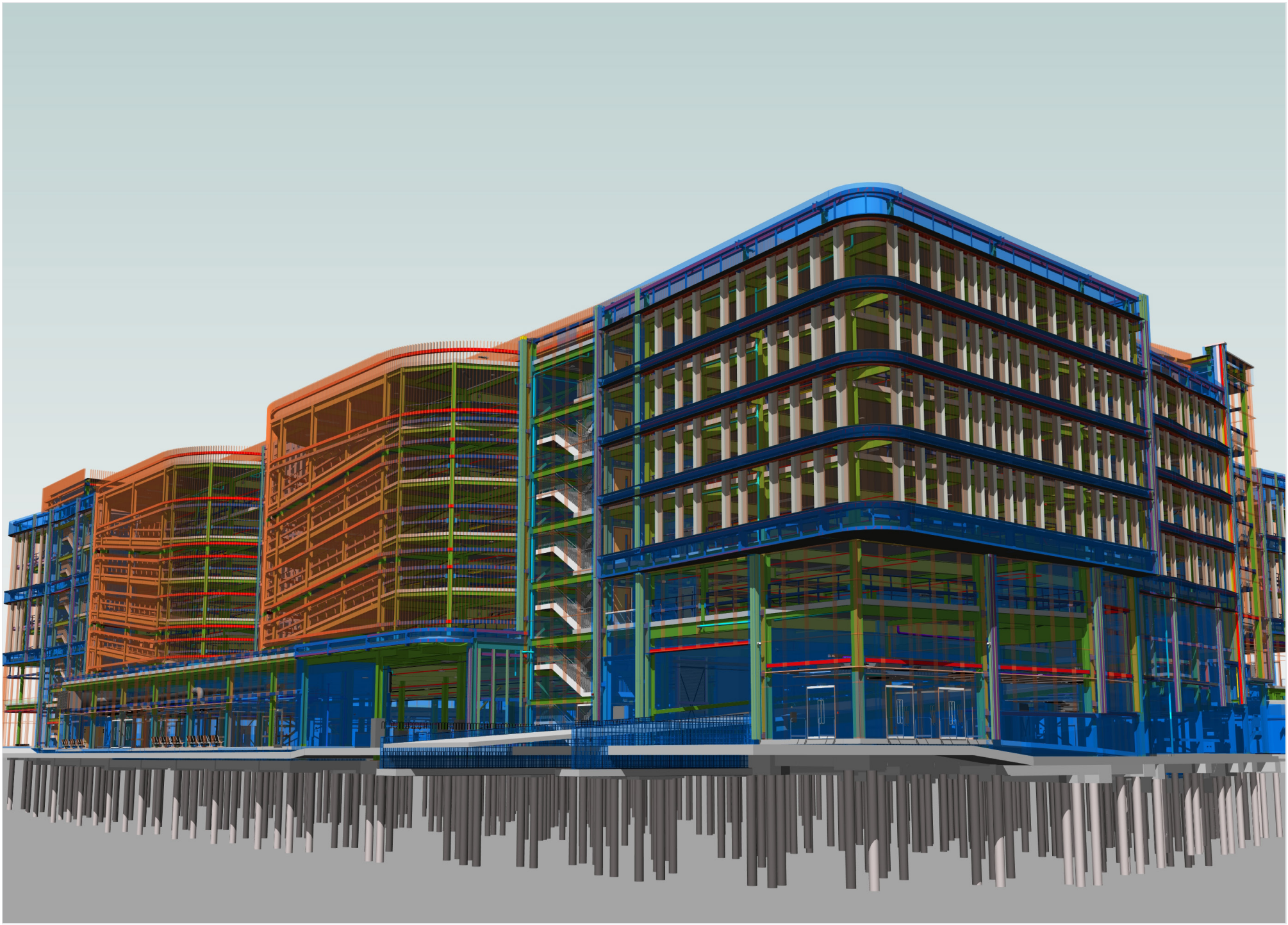
SGP DIGITAL (BIM +)
CAPABILITY PORTFOLIO

SGPDIGITAL
BIM



CONTENTS

SGPDIGITAL BIM

+ THOUGHT LEADERSHIP

Many of our clients have chosen to **work with us** for over a long period of time, particularly where we are involved with developing a Masterplan and then continue to design and deliver individual buildings.

We know our clients **invest** in us and we do the same in return, so understanding their needs and how we can assist in responding to changing markets or design parameters is critical. This underpins our approach and how we can provide **added value** to any development solution.

INCREASING THE VALUE OF A CLIENT'S PORTFOLIO

We often work with clients to provide a **long term** investment for their industrial parks providing a phased and 'lifetime' approach working from new build solutions to ultimately building replacement or refurbishment.

SUSTAINABILITY AND WELLBEING

We are **passionate** about sustainability and support our clients to achieve high quality sustainability targets by keeping ahead whether this is incorporating low carbon technologies or designing strategic infrastructure to create 'Park-Life' facilities.

The **health and wellbeing** of our employees is key to our commitment and success and we work with clients who equally value their workforce, considering every aspect of how their facilities can attract, retain, support health and wellness, leading to enhanced productivity through the environment they provide.

FROM THE CONCEPT TO THE VIRTUAL AND TO THE REALITY

We look to support our clients in what is important to them and the challenges they face. As an example, we provide **3D imagery** to help them attract tenants by imagining how they can best design and occupy the space. Our interiors team can apply their expertise in translating the **vision** to **reality**.

Our experience in Space Planning, Interior Design and Fit Out across all sectors means we can challenge clients and work with them on their journey to improve their business through awareness of new technologies, materials and build methods.

As we generate information models for all our projects from feasibility and conception and develop these all the way through for use in the operational phase, we are able to provide 3D imagery and VR walkthroughs direct from our design data which removes the risk of interpretation by 3rd party visualisers.

This allows us to communicate our design in the best possible way which means our clients, their clients and their end users, understand exactly what is being proposed. This engenders much more comprehensive feedback which our designs can then be developed to respond to.

The outcome? Much more considered design that's optimised to meet the needs of our clients and their end users ie a better product.

INTRODUCTION

Certified under the Lloyds Register Quality Assurance (LRQA) scheme for ISO 19650, to act as a 'Lead Appointed Party' and an 'Appointed Party'. We are passionate about Digital Transformation (BIM+) and actively embrace opportunities that it brings to all projects.

We see BIM as a main driver for collaborative working, with it being an effective enabler for improving a project's efficiency, and reducing its risk, throughout all work stages.

This is primarily because of better:

- Design optimisation, which is achieved through improved. communication, collaboration, analysis & coordination (clash detection).
- Information Management, which is achieved by planning information delivery, checking what is delivered against the plan.
- Quality Management & Assurance processes.

OUR APPROACH

The key to a successful BIM project is understanding your requirements. There is a lot of misunderstanding around BIM and what it is, so the key is to work with our clients to understand their particular requirements.

"Is it just design co-ordination? or delivery to full 'stage 2' BIM with embedded data to use as an FM resource in the future? or something in between?"

Information requirements should be designed around defined purposes. The aim of which being to target the long-term objectives of the client's organisation. Thus, ensuring any investment in capital expenditure (CAPEX) projects is aligned to, and delivers towards, these objectives. For example, to target 'Whole life cycle design' to support achieving their net zero targets.

This 'design for operation' approach saves our client's cost and carbon in the operational expenditure (OPEX) phase of the built asset.

A 'one size fits all' solution doesn't exist, we therefore look to tailor the BIM delivery of the project to suit it's needs to reduce waste and risk.

Upon appointment from the offset, we look to proactively engage with the Client (Appointing Party) or Contractor (Lead Appointed Party), so that we can best understand the needs (e.g. level of information) of the project, and its stakeholders. This enables us to effectively plan and then deliver the projects Exchange Information Requirements (EIR) as a collaborative team.

We begin the process with the end in mind, so that we can optimise the delivery of the right information (What), to the right person (Who) at the right time (When).

In line with our company values of 'We Care'& 'We Challenge', we actively question the need and find by doing this that we capture the things that others miss.

From the very outset, we look to implement a clash avoidance process with collaborative working, which is then supported with regular workshops to review and report coordination issues so that these can be resolved as early as possible in the design process, therefore mitigating the risks as much as possible of redesign and the associated abortive works on-site.

OUR CAPABILITY

In terms of our BIM capability, we have been using Revit as part of a BIM process for many years now. In addition, around 95% of our projects are being delivered in Revit, with varying levels of co-ordination and integration depending on client requirements and consultant engagement.

Our Architecture and Digital teams have the skills and capabilities to deliver BIM projects to 'stage 2 maturity' as defined in ISO19650-1:2018, and have practical experience of delivering numerous projects like these.

This year (2022) SGP achieved official recognition of its organisational capabilities to deliver projects in accordance with ISO19650. We achieved our certification under the Lloyds Register Quality Assurance (LRQA) scheme for the role of 'Lead Appointed Party' and/or 'Appointed Party'.

+ INTRODUCTION

EFFECTIVE STRUCTURES, ROLES & RESPONSIBILITIES

Our business is committed to investing where required to meet the needs of the future industry and has seen this as an opportunity to drive positive change.

Our Digital team consists of five members of staff, who are employed full time as dedicated resource to drive our BIM development, training and consultancy services; and to most importantly support the wider business in their project delivery.

The team is headed up by our Digital Director (James Blood) who works closely with our Senior Digital Coordinator/Information Manager (Joe Marlow) who is responsible for their respective strategic areas within the business. Joe is supported by our Junior Digital Coordinator/Information Manager (Prashanth Manohara) and our Trainee Digital Coordinator/Information Manager (Ross Hennigan).

The business has established an Automation Group, which is led by our 'Head of Automation' (Jack Cole), who dedicates 50% of his time to pursue the research, development, and implementation of all the associated technologies, process and skills needed to deliver effective process and design Automation capabilities.

The business has established an Automation Group, which is led by our Digital Director who dedicates time to pursue the research, development, and implementation of all the associated technologies, process and skills needed to deliver effective process and design Automation capabilities.

STAFF COMPETENCIES

Our business is committed to ensure our Technical Staff have all the training and support required to ensure they are competent to deliver the project's requirements.

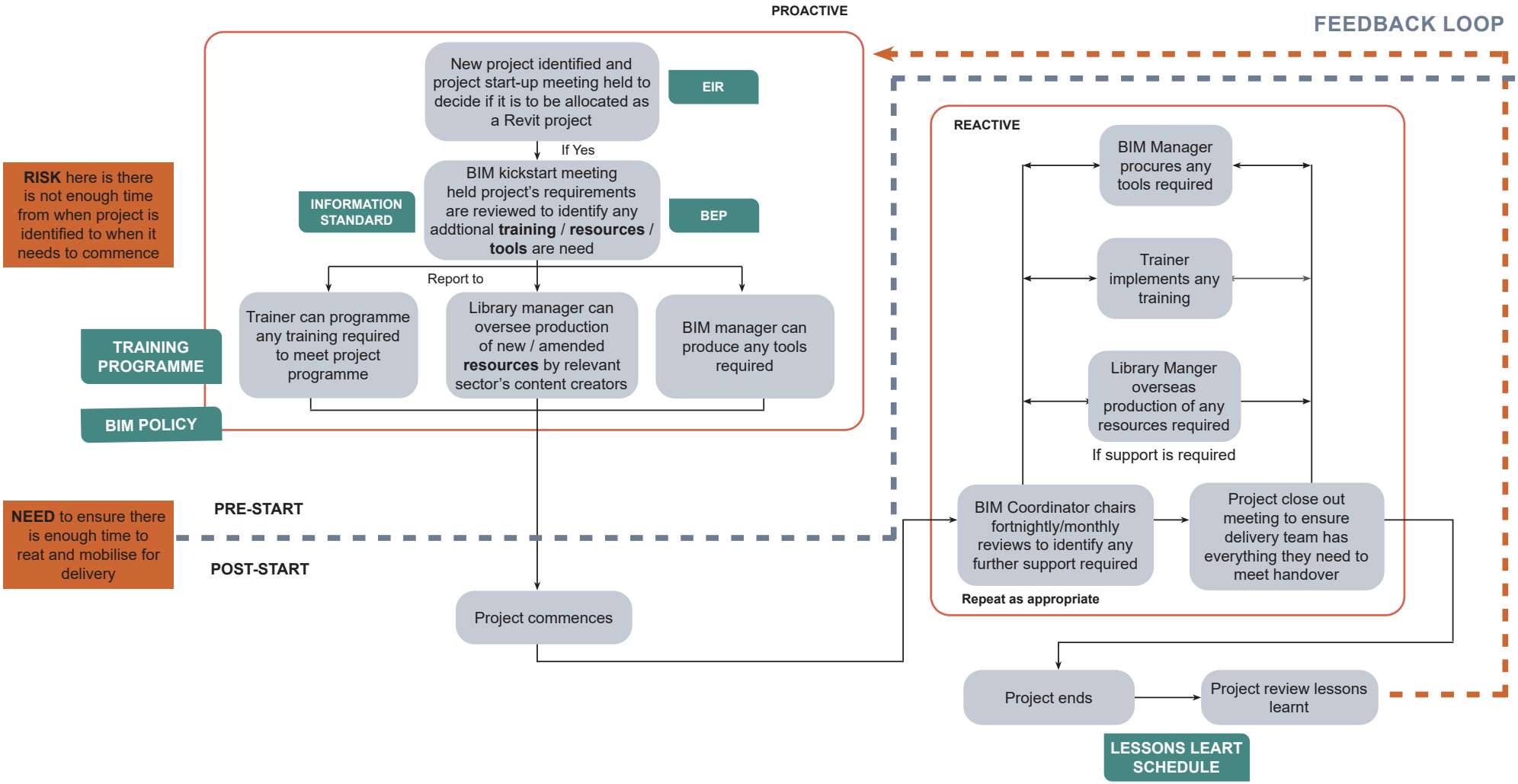
To meet this commitment, we carry out regular role-based assessments, that generate the associated training programmes for all our technical staff. The training is inhouse with more specialist tools being proved by the relevant external 3rd parties, when and where required.

Within SGP the technical staff are set on a continuous journey of professional development & training on Digital Transformation. Our digital lead addresses company messaging on strategies and implementation plans, the wider industry picture and thought leadership.

The two other main routes are led by the Senior Digital Coordinator/Information Manager and the Digital Resources Manager. Whereby knowledge and skills are fed down to our sector's architectural teams via the model managers and content creators' groups. This promotes wider knowledge sharing and ensures that the projects have the resources they need; and our models are lean, clean, and following good practice, company standards and policy.

INTRODUCTION

OUR DELIVERY PROCESS



+ INTRODUCTION

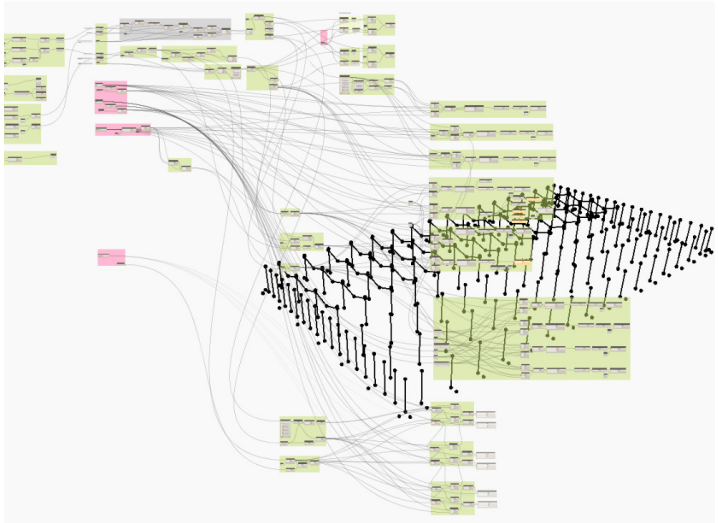
SERVICES OFFERED

- Project information delivery in accordance with 'stage 2 maturity' as defined in ISO19650 Parts 1 & 2.
- Information Management
  - Assistance with defining information requirements to deliver business outcomes e.g. Net Zero.
  - Writing Exchange Information Requirements (EIRs) & associated resources.
  - Validating the delivery of information to ensure it complies with the Exchange Information Requirements.
  - COBie generation, federation, and validation.
- BIM Project Management & Coordination
  - BEP and resource creation.
  - Model Management , Clash Avoidance & Clash Detection Workshops.
- Digital Consultancy
  - Knowledge transfer.
  - Strategies & Direction.
- Digital Integration Advisory.
  - Smart Buildings & Digital Twins (Net Zero – Scope 3).

BIM VISION & POLICY

OUR STRATEGY

- Maintain a healthy, inclusive business built around our culture and values.
- Create an accountable management structure that has space to mentor, engage, develop capability, and clearly and consistently communicate output and expectations.
- Improve and expand business development activity focused on growth, diversity, and sector targets.
- Explore acquisition, merger opportunities and new office locations.
- Improve quality and efficiency.
- Be thought leaders in the sectors we work in.
- Strive to improve the quality of our design and the quality and efficiency of our delivery.
- Adopt a robust recruitment and training programme to mentor and promote capability.
- Ensure that SGP is a sustainable business and promotes opportunities for succession at all levels.



OUR VISION

- To respond to and help deliver the company's Business Plan and its 'Mission'; to support/enhance the objectives and to ensure our core values are maintained.
- To possess the capabilities to operate on the leading edge of BIM methodology within the industry; demonstrating industry good practice within the tools we use to deliver our service. Utilising technology (software tools & hardware) to leverage efficiencies and reduce risks.
- To produce consistent, good quality information, structured around openBIM principles and standards; that is validated and verified at every stage. Using this to leverage multiple outputs/functions from the single model.
- To actively market these capabilities and pursue/embrace the business opportunities that may arise because of that.
- To look forward to the future and embrace new methods of delivery like Lean & Off-site, embracing collaborative working behaviours with likeminded partners.
- To utilise the knowledge, skills, good practice, and expertise gained with the business to develop a separate revenue stream for BIM consultancy.
- For BIM methodology and associated tools to become 'business as usual'.
- To use technology and data, to deliver safer, more sustainable smart buildings, that are fit for our future society, and optimised via the use of Digital Twins.
- To contribute to the Golden Thread actively and effectively.
- To contribute towards significant cost and carbon reductions in both Capex and Opex phases of an asset by focussing on 'Whole Life Cycle Design' (Totex).
- To contribute towards Digital Built Britain strategy and National Digital Twin Programme to help enable a circular economy.

BIM VISION & POLICY

OUR POLICY

All the above is underpinned by our commitment to the implementation and use of BIM processes/methodologies and technologies throughout all stages of our projects and covering all our sectors.

In these endeavours we are committed to:

1. Use the principles of 'Change Management' to plan, track and monitor our ongoing implementation.

2. Deliver all projects, including Masterplanning and Footprinting, in BIM where feasible/appropriate.

3. Improving our BIM capability by:

    - Carrying out regular assessments of our employees' capabilities within our core delivery systems. Assessment Data is then used to identify the skills/knowledge gaps in order to define future training subjects/courses.
    - Investing in technology where required, but only in response to a need of a predefined process.
    - Promoting knowledge sharing and collaboration both internally and with other stakeholders.
    - Developing/evolving company structures where required.

4. Maintaining our ISO 19650 Certification. Engaging in the spirit of continuous improvement to Information Management.

5. The promotion of, and an aligned delivery with, openBIM principles, standards, processes and technologies where possible, in order to enable better collaboration with a wider number of stakeholders and provide more value for our clients.

6. Delivering well structured, concise, high-quality information that has been checked and validated, before being 'approved' to be 'shared'.

7. Ensuring, where feasible, our information is defined and structured to enable more efficient working downstream.

8. Where appropriate/feasible, establishing a **standard process** using **standard resources** to deliver consistent high-quality standards of output. This is defined at the 'SGP Global' level from which sector specific standards are then derived and further defined. Client specific standard process and resources are implemented where appropriate.

9. Actively demonstrating and promoting effective collaboration internally between sectors and delivery teams, and externally with clients and other partners and stakeholders.

10. Moving towards software enabled rules-based checking and validation for our design as well as our information.

11. Adopting software workflow automation where appropriate in order to ensure consistency and quality.

12. Using mixed reality technologies to promote and enable better design communication with the other project stakeholders and to enable better internal project reviews.

13. Adopting an approach of clash avoidance, through working in the context of others' designs. This is then backed up with clash testing as a safety net.

This policy will be reviewed annually and be adapted if changes to the company occur. This policy will be communicated to all staff via the intranet and will be readily available on our website, document management system and provided to relevant interested parties on request.

Overall responsibility and leadership for implementation rests with the BIM and Senior Management Teams.

+ CASE STUDIES

LOUGHBOROUGH UNIVERSITY SCIENCE & ENTERPRISE PARK (LUSEP)

LUSEP WAS DESIGNED BY SGP AND FUNDED BY LEICESTERSHIRE COUNTY COUNCIL

SGP was part of the design and construction team, delivering the office building as a BIM Level 2 Project with BIM having been a requirement from RIBA stage 3, with the data drops occurring from RIBA stage 3 onwards.

The contractor team worked with the Information Manager to develop the precontract BIM Execution Plan, which the team had worked to pre-tender, into a post contract document to which the team have worked since contract award.

The main BIM objective was the early completion of design information, and this then allowed early engagement with the supply chain and increased opportunities for further collaboration with specialist subcontractors.

The use of BIM has helped integrate the team and helped to enable collaboration and improved the flow of information. There have been regular BIM Workshop meetings where the design team reviewed the clash detection results in the coordination model and the interface managers and contractor team agreed resolution processes. At the BIM Workshops, the validation report for the information model was also reviewed and we worked with the Information Manager to ensure that we were delivering the correct data.

The client stipulated that COBie be used as one of the Information Exchange formats, as well as recording the as-installed assets at handover and acting as an as-built asset record. The COBie deliverable was not intended to be used as an asset management or maintenance tool handover, as the management and maintenance of the asset will be the responsibility of the Tenant.

The implementation of BIM and the requirement for models from the designers and the specialist supply chain allowed for a greater degree of coordination for some of the design packages compared to if we had just been in receipt of 2D deliverables. One issue we found was that there needed to be a cultural shift: a lot of the supply chain did not have the capabilities to deliver 3D models which resulted in a reliance on 2D drawings, slowing down the process of checking and coordinating some work packages.

There was an increased risk associated with the delivery of information, specifically the absence of detailed fabrication models from the specialist supply chain. This meant only ‘design intent’ level of detail geometry was analysed in the clash detection software, which resulted in some on-site clashes being missed as a result of the lack of detail eg bracketry in the models.

For this project, the CDE was used to store all the design information, but communication was still through emails which meant that there was not one repository of information. We found that with this method information was more fragmented and on future projects we suggest that if the CDE has the capability of recording digital correspondence, that the team utilise it.

STEVENAGE BUS INTERCHANGE

SGP WAS PART OF THE DESIGN AND CONSTRUCTION TEAM TO DELIVER THE BIM LEVEL 2 PROJECT AT STEVENAGE BUS INTERCHANGE

SGP's specialist transportation team, based at our Leeds office, developed the proposals to re-locate the existing bus station in the centre of the town to a more sustainable location adjacent to the train station. The new bus terminal hub will connect with the wider highway and public realm enhancements and will have a new terminal building with a covered concourse, internal waiting area, café, shop mobility services, toilet facilities and bus shelters.

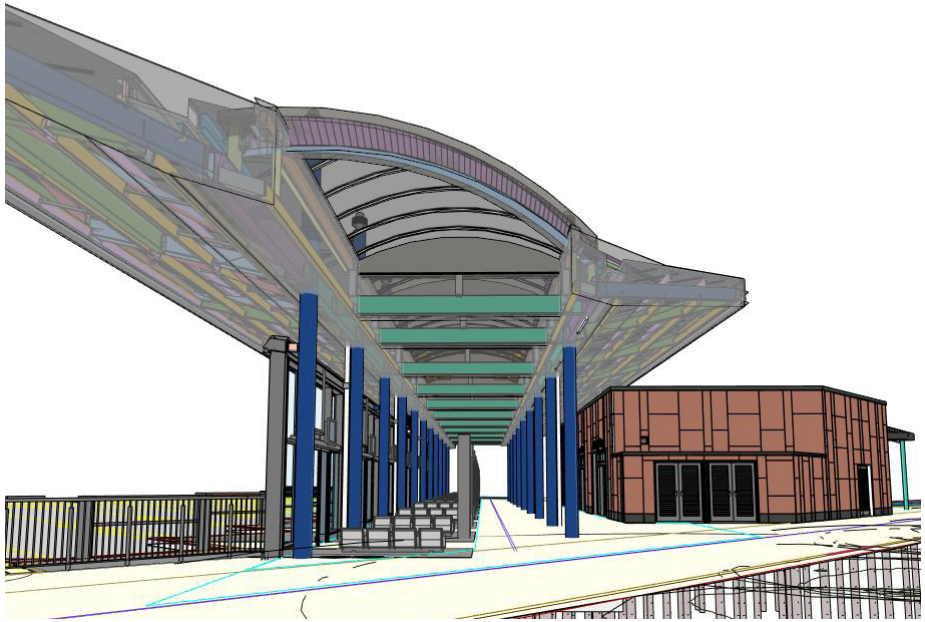
SGP worked with the contractor to deliver the project after the initial design pre stage 3, whilst the original SGP design team has been retained client side to provide technical assessment.

SGP were the Lead Designer for the project and, as part of this role, are responsible for some elements of the Information Manager and the BIM Coordinator functions on the project. We are working closely with the main contractor, Willmott Dixon, to ensure that as a team we deliver to the requirements of the Post Contract BIM Execution Plan (BEP). As the Lead Designer, we are checking that the team are successfully delivering the BIM outputs that are specified in the BEP, including COBie, Models, PDF outputs, etc.

Our role includes reporting the results of the clash detection process as well as organising, chairing and coordinating the associated model review workshops. Some of which, due to the UK being in lockdown, were hosted remotely via Microsoft Teams. Clashes were reviewed with the team, and interface managers contributed to the resolution of clashes. The scheme has successfully gained Planning Permission and started on site in the Autumn 2020.

As with all BIM projects, SGP's BIM Coordinator has worked closely with the SGP delivery team. The initial BIM Kick Start Meeting and then follow up meetings reviewed the Contractor's BEP, ensuring that the Architectural Team are delivering the correct information at the required level for the project work stages.

For this project, all information is hosted on the CDE and this includes all correspondence. This means that information is not fragmented and is traceable and easily searchable.



DAVENTRY APEX PARK PHASE 4 PLOT 1 - DC10

SGP FOR PROLOGIS, DELIVERED BY VOLKER FITZPATRICK

For this project, SGP took on two distinct BIM related roles. The SGP Architectural Team formed part of the Design and Delivery Team, working to the requirements of BIM level 2, as captured in the BIM Execution Plan (BEP) in response to the client's Exchange Information Requirement (EIR). Secondly, the SGP BIM team worked alongside the Contractor and Delivery Team as the BIM Coordinator and Information Manager from RIBA Stage 4, on this project.

At the start of every BIM Project, the SGP's Architectural and BIM teams have an internal BIM Kick Start meeting to review the project requirements, with the purpose of identifying any specific BIM requirements to ensure everyone understands what information needs to be delivered and when. Along with any specific standards, methods or procedures that needed to be followed. Any additional training and support for the Architectural Team can then be identified & organised, to ensure that everyone has the required capabilities to deliver the project.

We have found that the use of tailored BIM resources (templates and object libraries) along with bespoke workflows has made our delivery of industrial buildings much more efficient, with associated risks also reduced when compared with working in a 2D environment. Within SGP, we have sector specific Revit Kits of Parts which we use as our resource for design and detailing our projects.

The architectural team worked closely with the SGP BIM team, supply chain and main contractor. As a result, the contractor generated a Post Contract BEP, with input from the SGP BIM Coordinator, which gave us the framework for how we were going to work as a team to deliver the project.

This strategically important document made us aware of our responsibilities associated with the implementation of BIM within our project workflows and how and when we were issuing our information. The BEP was then communicated with the supply chain via a whole project team BIM Kick Start meeting, facilitated by SGP's BIM Coordinator.

Delivering in accordance with BIM level 2 allowed the team to collaborate better. One example was the issuing of a Model Responsibility Matrix (MRM). This helped us report on progress and identify any gaps within the team, be that a lack of time or a lack of any particular capabilities.

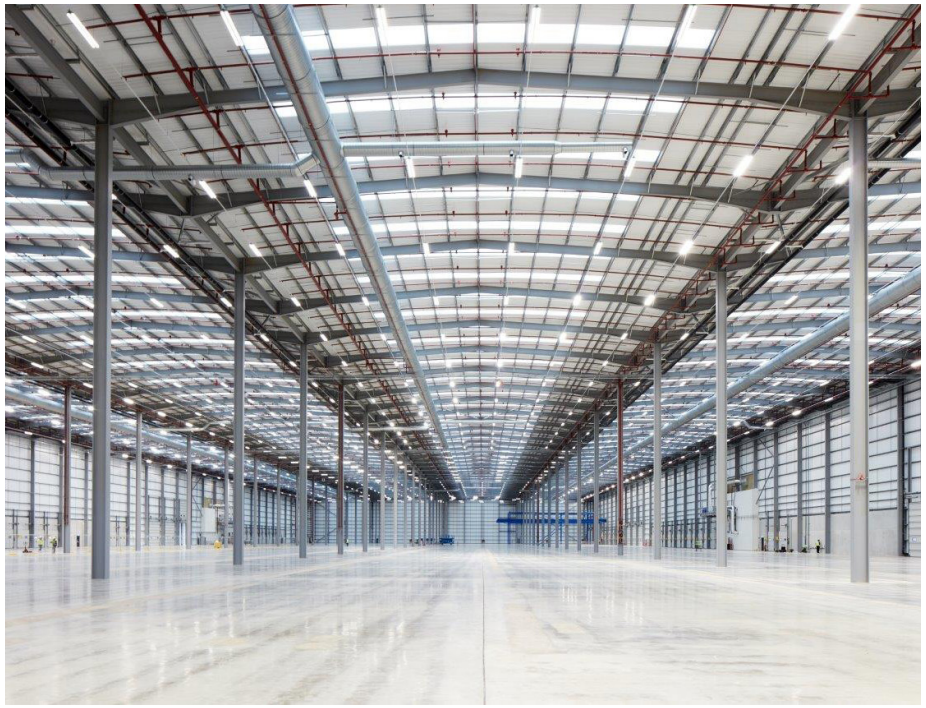
It also allowed the wider team to understand who is producing what, when and to what level of detail. It captured the LOD (Level of Detail) and LOI (Level of Information) that we were working to and made it clear in the initial clash detection workshops that it was 'design intent' geometry that was being analysed.

This highlighted the need for the specialist supply chain to deliver models that had a higher level of detail of geometry, including elements such as brackets and bolts, that are not included in 2d information but are likely to cause coordination issues on site.

This building had an end user who wanted considerable design changes and additions to the enhanced building. As a team we were able to respond to this, implementing a stringent change control process so that the potential alterations could be captured and priced. The use of 3D information and clash detection allowed us to collaborate as a team and review the design changes and options to ensure that we could deliver the design amendments without impacting on the project programme.

We are currently in the process of compiling the handover package for the client's early access milestone and populating the Revit template supplied to the project team by SGP's Information Manager, so that we can deliver our COBie information via Industry Foundation Classes (IFC).

Part of the Information Manager's role was to facilitate the collation of information from the supply chain. This is done by the Information Manager extracting schedules from the design intent model, which were given to the relevant supply chain members for them to populate. This data was then fed back into models, separate from the design intent model, for use downstream.



+

FURTHER INFORMATION
KEY CONTACTS + OUR CAPABILITY PORTFOLIOS

KEY CONTACTS

JAMES BLOOD

DIGITAL DIRECTOR

PERSONAL PROFILE

James Blood joined Stephen George + Partners in 2018. He has 25 years of experience within the construction industry. Focussing predominantly in architecture while working in a range of sectors including industrial, retail, offices, leisure, residential, education and healthcare/pharma.

He has considerable detailed theoretical knowledge and practical experience in and around BIM. Including defining business strategies; structuring and defining architectural service provision; and the subsequent implementation thereof.

All of this is done with ISO openBIM standards (Ifc & COBie) as the central focus; including the methodologies, technologies and processes used to deliver them. He also has experience assisting clients with defining their information requirements and the subsequent production of the resulting documentation (EIR & BEPs) where appropriate/required.

He has also previously acted as a consultant to major UK construction product manufacturers to assist them in the restructuring of their product data around ISO openBIM standards including the delivery into construction project workflows.

As a result of these activities, James worked closely with Northumbria University (Prof. Steve Lockley), Technical coordinator of BuildingSMART UK (Prof. Nick Nisbet) and the NBS to help develop the Xbim toolkit, more specifically the Revit add-in.

This led to him being invited to work as part of the B/555 committee, whereby he was involved in the writing of the BS 8541 suite of standards. He also worked for the technical working group within the BIM4M2 group, whereby he assisted them with ensuring the Product Data Templates were based around open ISO standards.

He has recently been moving towards a role as ambassador for the UK BIM Alliance and has been invited to sit on the BuildingSMART UK Chapter's committee; along with representing the UK's interests for product data standards at the international level.

James was involved with the first IPI (insurance backed alliancing) project in the UK (Dudley College Advance2) at a strategic level, which was delivered in the spirit of Level 2, as previously defined under the Government's mandate.

He has now started to look at engaging, supporting and enabling SGP's clients to move towards procuring smart buildings by ensuring the right data and hardware (IOT) is procured to enable them.

Alongside his BIM roles, James has previously been responsible for technical design and delivery of architectural production information and the associated running of projects pre & post novation. From outline proposals to detail design, site supervision and project delivery, James' technical based experience and attention to detail ensure the project is well organised and delivered with minimum risk/delay.

Connect with James

KEY CONTACTS

JOE MARLOW

BA(Hons) Dip Arch MArch RIBA

SENIOR INFORMATION MANAGER AND BIM CO-ORDINATOR (ASSOCIATE)

PERSONAL PROFILE

Joe joined Stephen George + Partners in 2018 after spending 15 years with her previous employer. Since qualifying in 2003, Joe has gained considerable experience of working in a range of sectors including industrial, education, retail, offices, residential and commercial, from concept stage to site supervision and project delivery.

Joe is passionate about design and construction and being part of the ever-changing industry. She is keen to be part of the age of new technologies and methods and aspires to become the digital enabled architect of the future, embracing the application of new technology and the opportunities it brings for new procurement routes and methods of working.

Joe has expertise in the use of innovative procurement routes, as Architect and Digital Co-ordinator, and has delivered projects using IPI (Integrated Project Insurance) contracts.

Joe is also involved with business development, leads the BIM Matrix Group, delivering the BIM Matrix subplan, and represents BIM in the Delivery Matrix Group.

Joe is service lead for SGP's Information Management and Digital Co-ordination Service, including leading the Information Manager and BIM Co-ordinator Teams, the Model Manager Team, and heads up the ISO 19650 audits process. She is employed by Main Contractors (Lead Appointed Party) and Clients (Appointed Party) as Digital Co-ordinator / Information Manager on their projects.

Connect with Joe

PRASHANTH MANOHARA

BEng MSc

JUNIOR INFORMATION MANAGER AND BIM CO-ORDINATOR

PERSONAL PROFILE

Prashanth Manohara joined Stephen George + Partners (SGP) in July 2022 as a Trainee Information Manager and BIM Coordinator. Prashanth is developing an in-depth knowledge on Information Management and BIM Coordination under the guidance of Joe Marlow and Digital team.

Prashanth brings knowledge attained during his bachelor's in civil engineering, master's in construction project management with BIM and Skills Bootcamp in Digital Construction. He is enthusiastic about Digital Construction and is excited to be part of the SGP Digital team.

Prashanth is developing a vast array of skills and is currently focusing on what and how for delivery of COBie via IFC. He is currently supporting the Digital Team in Project Information Management and Coordination Management and shadowing the ISO19650 Surveillance audit visits where he is working with the Lead Appointed Party Information Manager and the Appointed Party Architectural Task Team Manager. He assists Digital Team and SGP in Collaborative Working. He has an expanding skill set and is now transferring his COBie knowledge back to the architectural team to assist with data input in their models.

He is working with the Digital team for planning of the SGP Digital Twin. He is doing R&D for the BIM and Sustainability in finding and testing a suitable Embodied Carbon Calculator to use with Revit.

Connect with Prashanth

OUR PORTFOLIOS

Our portfolios are available, conveying our areas of expertise in many sectors.

Visit our website and download an electronic version from the relevant section www.stephengeorge.co.uk

Or email us at:
enquiries@stephengeorge.co.uk

Should you be interested in receiving hard copies of one or more of these, please contact any of our offices.

LONDON: +44 (0)203 833 1310

LEICESTER: +44 (0)116 247 0557

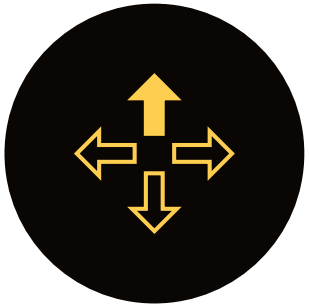
LEEDS: +44 (0)113 246 7969

BIRMINGHAM: +44 (0)121 222 5346

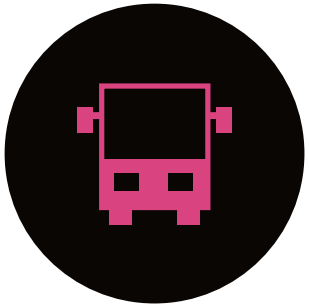
SOLIHULL: +44 (0)121 711 6929

OUR SECTORS

INDUSTRIAL



TRANSPORT



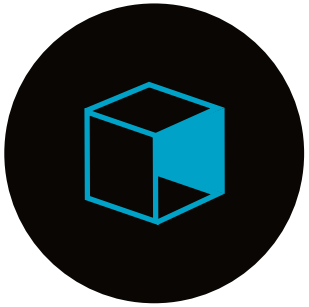
SCIENCE + INNOVATION

RETAIL + MIXED USE

EDUCATION

HEALTHCARE

INTERIORS



MASTERPLANNING

OFFICE

RESIDENTIAL

LEISURE + HOSPTALITY

LONDON
t: +44 (0)203 833 1310

LEICESTER
t: +44 (0)116 247 0557

LEEDS
t: +44 (0)113 246 7969

BIRMINGHAM
t: +44 (0)121 222 5346

SOLIHULL
t: +44 (0)121 711 6929

www.stephengeorge.co.uk

SGPDIGITAL

BIM