

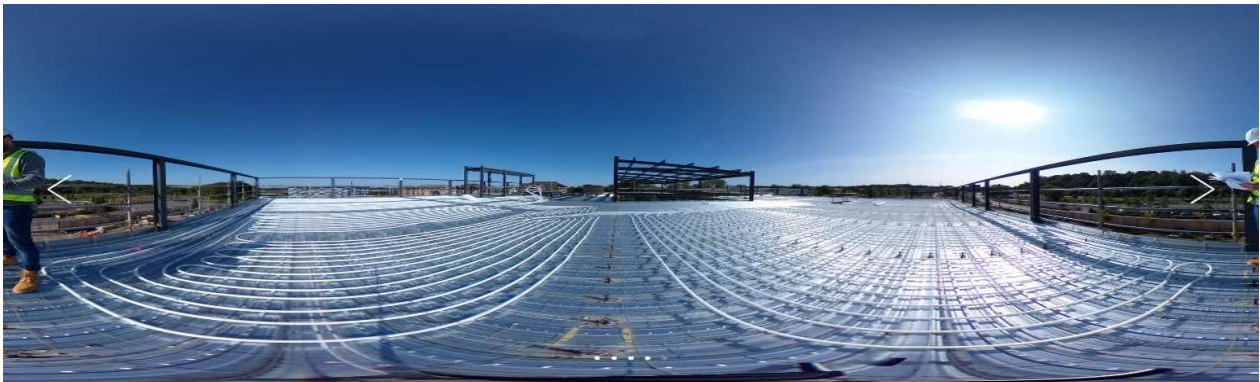
Trial project: Dudley College Institute of Transformational Technologies	New delivery model / procurement route: Integrated Project Insurance
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Case Study 2

Key Specific Objectives:

- Predictability of completion at a cost which is below the agreed Target Cost
- Build quality to give an exemplar to learners and staff, with a high-quality learning environment that inspires
- ‘Function over form’ to ensure the best possible facility for training within the investment target and the maximum possible delivery space is achieved within the envelope
- Highly efficient methods, including off-site manufacturing and new methods of construction are considered in the design and delivery of IoTT eliminating waste in materials, processes and procedures
- It should create 20 apprentice positions and a live training environment for the college and its partners as part of its construction
- The IoTT is required to achieve an EPC A rating.

Trial report sequence:	Kick off meeting	Brief / Team Engagement	Decision to Build	Build and Occupy
Cost saving basis:	Investment Target	Challenging cost target	Agreed Target Cost	Outturn Cost



360° photo of TABS system in roof structure before concreting

Project title	Institute of Transformational Technologies
Clients	Dudley College
Overall project value	£25.7m including land, equipment & fittings and VAT
Investment Target (capital cost)	£17.36m
Form of project	New build educational facility
Independent facilitation and risk assurance	IPInitiatives Technical: Building Life Plans Financial: Rider Levett Bucknall
Alliance Members	Dudley College Cullinan Studio: architects

	GCA (UK): structural and civil engineers Cundall: multi-disciplinary engineers Fulcro: digital co-ordination Speller Metcalfe Malvern: constructor Derry: building services specialist
IPI Brokers	Marsh
Key Suppliers in Phase 1	Traditional Structures: steel frame MSW UK Ltd: structural floors Uponor Ltd: TABS System (heating & cooling) BC (Roofing Contractors) Ltd: external cladding Dunton Environmental: ground remediation Walsh Construction Ltd: groundworks All Glass Systems Ltd: windows & curtain walling Monarch Roofing Co.: roof system Planet Partitioning: glazed partitions Roskel Contracts Ltd: drylining
Other key suppliers	Hadley Group: steel frame system Independent Scaffolding: scaffolding LCS Mechanical: mechanical labour Monarch Electrical Contractors Ltd: electrical labour

Executive Summary

This Institute of Transformational Technologies (“IoTT”) facility is the second project to be procured and delivered on behalf of Dudley College under the Integrated Project Insurance model which applies an integrated collaborative working approach throughout to a level which exceeds any other previous procurement routes the College has used. It requires the adoption of a Project Bank Account, BIM, and lean design and implementation practices. Via IPI the College seeks to achieve cost, time and carbon savings in line with the “Government Industrial Strategy: Construction 2025”.

Guidance on the IPI model was published by the Cabinet Office in July 2014

The College selected the IPI model as the procurement route under its application for funding under the Government’s Institute of Technologies programme and the Black Country LEP. The first Case Study described how the designers, specialist contractors, constructors and project coordinator/integrator were appointed at the outset under an “Alliance Contract” which has been developed for fully integrated collaborative working under the IPI model; it concluded with a description of the early Phase 1 activities.

This Case Study starts with particular focus on benchmarking: it became clear that there was no ready benchmark that reflected the functions in the brief for this facility; and describes how the appropriate benchmark has been objectively derived. The Case Study then describes how the alliance members through their integrated project team (“IPT”) have developed a project solution which (a) has the support of the independent facilitator and risk assurers and (b) is approved by both the Insurers and the College as being “fit for the purpose” set out in the strategic brief at an agreed target cost that has adequate allowance for technical and financial risks. It highlights the further progress in Phase 1 in terms of innovation in various forms, the importance of BIM, and the learnings about how even better results can be achieved next time; it describes the process up to the end of Phase 1 and the inception of the new “Integrated Project Insurance” policy, which led to the “Decision to Build” in the 3rd quarter 2020; and lastly reports on initial progress through Phase 2 as detailed design and implementation proceed.

Project summary

Project timeline

- 8 March 2018: invitation for Expressions of Interest (“EOI”) in OJEU
- 15 March 2018: Industry Day
- 16 April 2018: return of Standard Selection Questionnaire (“SSQ”)
- 4 June 2018: return of Invitations to Tender (“ITT”)
- 18 - 29 June 2018: interviews and behavioural workshops
- 4 July 2018: announcement of Award under OJEU
- 2 August 2018: Alliance Contract signed by all the Alliance members.
- 27 September 2018: Commercial Alignment of Alliance Partners completed
- 27 September 2018: Phase 1 start and design validation
- 25 January – 18 April 2019: suspension awaiting approval of initial funding from DfE.
- 15 May 2019: admission as a trial project under the Cabinet Office/Constructing Excellence Trial Projects Delivery Programme
- 24 February 2020: commencement of site enabling works
- 24 March – 18 May 2020: suspension due to Covid-19
- 8 June 2020: release of balance of approved funding of £17.36m by DfE, enabling the Hub to proceed.
- 12 August 2020: Phase 1 solution development complete
- 12 August 2020: Phase 2 commencement following IPI policy inception.
- 31 March 2021: confirmation of impacts of Covid-19 Review Event
- 9 August 2021: target completion (after 7-week extension)
- September 2021: planned opening.

Key project features

- Integrated collaborative working assured
- Strategic brief that includes affordable investment target
- An IPI “Alliance Contract” that empowers the team
- Alliance owns solutions and outcomes

- Financial exposure capped to insured limit, client financially responsible in the unlikely event it exceeds this limit
- Outcomes insured – including overspend
- Fitness for purpose as defined in the Strategic Brief
- Efficiency gains whilst cutting process waste
- Free of liability inhibitions to BIM
- Free of insurance limitations for SMEs

Client objectives and vision

Vision

The IoT will support the development of a technically skilled workforce responding to the region’s STEM skills gap and the deficit of adults with L4+ qualifications. The IoT’s focus will be careers not qualifications including pathways for product design engineers; manufacturing technology engineers; digital engineering technicians (Building Information Modelling); construction assembly technicians; science industry maintenance technicians; biomedical systems engineers.

Strategic Brief

Accommodating over 1,200 learners per annum by year 5 of operation, including full-time, part-time and Apprenticeship study, the outline planning and funding applications for the IoT main campus were for two distinct buildings comprising the following facilities:

- Construction Manufacturing workshop for 36 learners
- Advanced manufacturing labs and workshops for 90 learners
- Materials testing laboratories for 40 learners
- BIM suites for 120 learners
- Medical engineering suite for 36 learners
- Laboratories for 160 learners
- A lecture theatre for 100 learners
- A conferencing facility for 35 delegates
- Learner services facility
- Suites of rooms including IT, general classrooms, tutorial/meeting rooms
- A Café bistro for 140
- Common room spaces for each building
- ‘iPoint’ learning zones for 80 learners
- Staff rooming for 60 staff
- Sufficient associated storage facilities

Success Criteria

- Predictability of completion at a cost which is below the agreed Target Cost
- Build quality to give an exemplar to learners and staff, with a high-quality learning environment that inspires
- 'Function over form' to ensure the best possible facility for training within the investment target and the maximum possible delivery space is achieved within the envelope
- Highly efficient methods, including off-site manufacturing and new methods of construction are considered in the design and delivery of IoTT eliminating waste in materials, processes and procedures
- It should create 20 apprentice positions and a live training environment for the college and its partners as part of its construction
- Leading BIM level 2 or better methods and technologies are adopted from commencement including soft landings considerations from BSRIA from the start
- Durability of the building making it robust, easy to maintain and clean, with life-cycle cost considered in all capital investment decisions
- Design, delivery and operation of the IoTT will engage all organisations in leading edge practices. All parties will promote their involvement and the successes achieved and provide legacy support to the educational functions to be delivered
- It is preferred that the buildings will be predominantly naturally ventilated
- Flexibility of the facility to be remodelled to meet future changes in demands and training methods, rather than adaptability for short term change
- Design aesthetics of the building must make a statement of its quality and that of the Institution it represents
- Where possible local and regionally based staff, operatives and SME organisations will be involved in delivering the project
- The construction site will be well organised and clean, highlighting the aspiration of the efficient procurement and construction methodology being used
- Whilst the IoTT is not required to achieve BREEAM excellent, there is an aspiration that the best from BREEAM combined with a highly efficient external envelope, in terms of air tightness and thermal

efficiency, will result in a building of very low running cost

- The IoTT is required to achieve an EPC A rating.

The Benchmark – its derivation and its implications

Under the Department for Education's Institutes of Technology competition the College benchmarked its cost plan at £3,537/m² giving (for 4,750m²) a capital cost of £16.8m which compared favourably with both BCIS sector cost norms and also the Skills Funding Agency's cost model figures, suitably adjusted but excluding land and furniture fixings & equipment. Start was delayed when the Black Country LEP, the other major stakeholder, fell short on its funding commitment; a decision was made to omit, at least temporarily, the "prototype hub" and to use Phase 1 to seek ways to reduce costs.

The question also arose whether the schools cost model [Model One], £3,265/m², which DfE had used as the benchmark (described as for 'mid-range quality' and general teaching and vocational curriculum"), could be appropriate for a building that was to be high-quality design with laboratories and specialist facilities for advanced manufacturing, modern construction methodologies and medical engineering. This question was underlined in October 2019 when the initial target cost developed by the alliance came to £18.73m. There was a risk that the pressure of an inadequate benchmark would drive cost-cutting and other devices that would jeopardise the whole life performance of the facility.

Whilst the issue of finding or developing an appropriate benchmark was investigated the pressure was partially relieved when, in June 2020, DfE agreed to fill the funding gap and recognise the majority of the exceptional items (as identified by the College), raising the funding from the original grant of £16.470m to £17.359m. This enabled the prototype hub to be reintroduced into the delivery process.

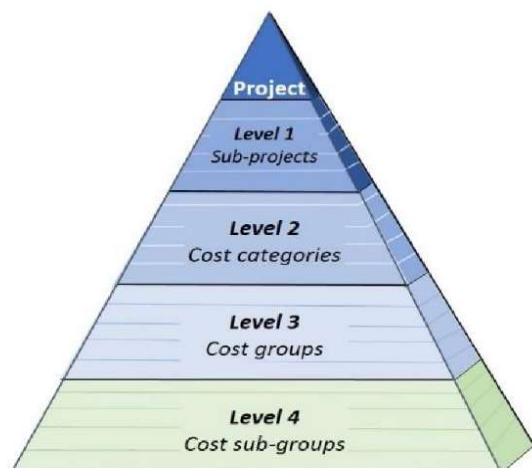
The BCIS cost information at December 2019 gave £/m² data for 4 categories of college buildings:

- Colleges 3 – 5 storeys £1,888/m²
- Colleges, specialised teaching blocks £2,083/m²

- Colleges, mixed facilities £2,504/m²
- Education, laboratories £2,864/m²

The best view RLB, as the financial independent risk assurer, could take was that IoTT Dudley would lie somewhere between “specialised teaching blocks” and “mixed facilities”; but as can be seen the range between these was some £420/m² or £2m. The College was therefore asked to produce an inventory of the 108 areas by function; enabling RLB to apply BCIS cost data to each, interpolating where there was none; this yielded a total of £2,274/m². Exceptional items as agreed with DfE were then added; and in order to preserve independence from the alliance’s developing cost plan, the standard percentages for professional fees and contingencies used by DfE were also applied, together with VAT. The gross capital “Should Cost” benchmark so derived, excluding land and furniture fixings & equipment, the review events for Covid-19 and the late incorporation of the prototype hub, was £3,726.97/m², or £17.703m.

The availability of a realistic (“Should Cost”) benchmark is of special importance as it enables the alliance to manage cost “top/down” through the IPI project process. The International Construction Measurement Standards (ICMS) as endorsed by the RICS in “Cost Prediction Professional Statement, Global, 1st Edition” (effective from 1 July 2021) should complement this process.



RICS Cost Prediction Professional Statement, Global, 1st Edition

Phase 1 – Further Progress with digital twin, despite Covid-19

In March 2020 the Government started to impose restrictions because of the growing impact of Covid-19 and to implement the Government’s social distancing recommendation the Construction Leadership Council published Site Operating Procedures, with the strong recommendation that these procedures be implemented by every operational construction site. The alliance board considered the options and decided that

- as the design was being fully developed on digital twin, with most of the human input from the IPT already based remotely, it could and should continue apace, including regular IPT workshops, largely unaffected by Covid-19.
- site enabling works should be suspended (24 March) whilst the Government’s position was clarified; but after 8 weeks they could re-commence in a sequence with just two contractors at a time - who could ensure distancing and the other operational procedures were followed.

By this stage, 10 suppliers had been engaged and were actively contributing their product knowledge and logistics experience into the design development process, foreseeing and overcoming potential issues such as relating to power and water on site. The traditional process of revisiting the design multiple times was therefore largely avoided.

Although the alliance board agreed that Covid-19 was a “force majeure” review event, it recognised that its impact and duration were uncertain and capable of mitigation by collaboration. It was decided that further delay to the inception of the IPI policy and transition to Phase 2 should be avoided by dividing Phase 2 into two parts, with Phase 2A being limited to

- completion of digital development, with all necessary input from appointed suppliers,
- manufacture of elements such as steelwork,
- continuation of sequential site activities of ground remediation, groundworks, steel frame and floors,
- evaluation of the Covid-19 review event, including its mitigation,
- development of the project execution plan including SOI and acceptance criteria.

IPI Policy Inception

*“The Mandarin Oriental London Fire, Glasgow School of Arts Fire, Primark Belfast Fire (all 8 or 9 figure losses), numerous escape of water losses and further afield (but Insured in London) the Ituango Dam in Colombia (currently thought to be in the region of USD1.3bn loss). This is off the back of seventeen years of decreasing premiums and widening of cover. These factors combined have resulted in **fourteen** insurers withdrawing from writing Construction risks”.*

This report by insurance brokers Locktons revealed the climate in 2019/20 for the placement of insurance policies. **“At least eight insurers no longer support UK construction PI risks”** reported Marsh.

IPI policies do not include professional indemnity cover, which is blame/liability-based, and despite the general exodus, insurers were ready to engage and eventually incept the IoTT policy. The level of cost overrun indemnity (above maximum pain-share/excess) was negotiated on a value-for-money basis, and it is noteworthy that the College was sufficiently comfortable with how opportunities & risks were handled on the first IPI project at Advance II that it did not require the same level of insurer indemnity on IoTT.

The IPI policy was incepted after due process on 12 August 2020 and Phase 2A officially commenced on that day.

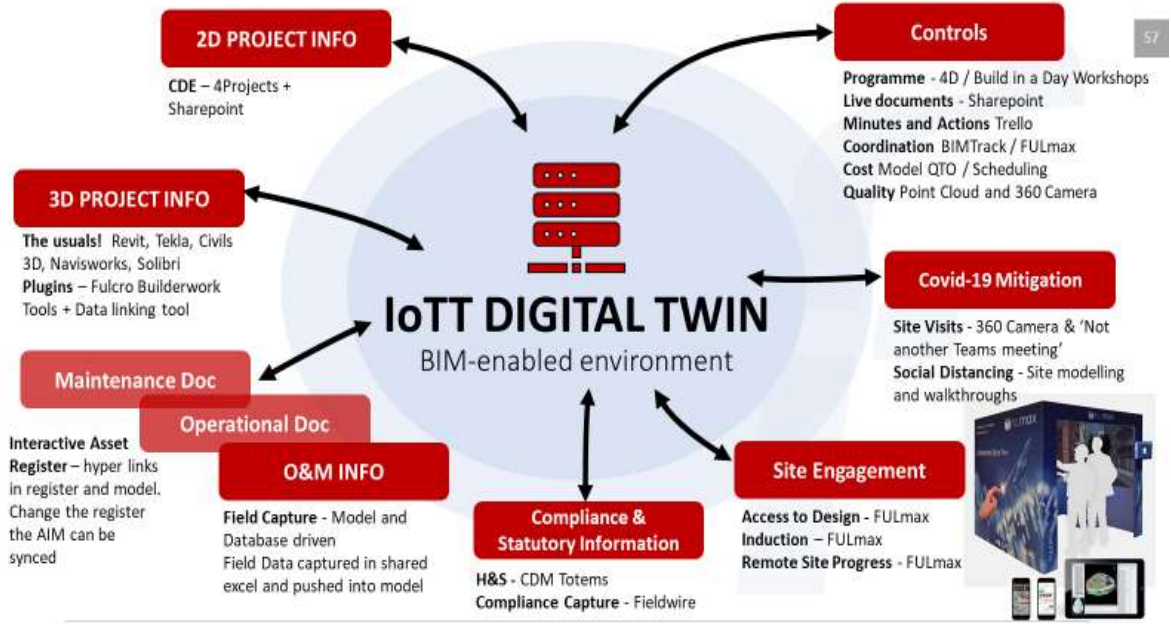
Phase 2A – initial progress

Progress at site has continued in compliance with the Site Operating Procedures issued by the Construction Leadership Council, as revised to reflect the problems created by the Second Wave of Covid-19.

Mitigation measures however proceeded off-site, including:

- Selection of remaining specialists – issue of quality questionnaire covering behaviours, alliance principles and best for project suggestions; follow up interviews. Not selected for lowest price
- Value Engineering of dry lining package with Roskell – atrium solution, sound proofing etc.
- DART sessions [November 20 – January 21] – targeted action groups to tackle ‘slippage’ in cost, programme and design co-ordination. Alliance Board intervention and team coming together to identify improvement areas / solutions to get project back on track.

The extent to which digital twin has been used can be seen from the diagram below:



Phase 2 initial progress (cont)

Progress as at November 2020 can be seen from the photograph below:



The effects of Covid-19 and the extent to which they could be mitigated were progressively evaluated over the period to 31 March 2021 when Phase 2B was formally confirmed.

Actual cost to date and forecast to completion, together with opportunities & risks, are actively reviewed by the alliance cost manager and then by the alliance manager and board. The outcome in terms of delivered “fitness for purpose”, completion/handover, final outturn cost, and predicted energy efficiency will be reported in the Third Case Study.

Guidance on the IPI Model

Guidance on the IPI Model is complementary to this case study, and is accessible at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/283331/IPI_Guidance.pdf

Of particular interest will be Section 9 which identifies the benefits the IPI Model is expected to bring for:

- The Client Group
- Lead Constructor/Project Manager Design Consultants
- Specialist Contractors
- Other supply chain members
- Insurers
- Funders
- The Local Community

For change to take off and become “Business as Usual”, there must be seen to be benefits for all parties involved. The outcomes in this context will be reported at the end of the project.

The Prospectus on Insurance Backed Alliancing is accessible at <https://constructingexcellence.org.uk/wp-content/uploads/2018/04/201803-Prospectus-rev-1-Mar-2018-002.pdf>

Authors

This case study has been developed for Constructing Excellence by Martin Davis, as IPI Mentor, with invaluable assistance from his IPInitiatives’ colleagues Louise Lado-Byrnes (the Alliance Manager), Phil Sims (Alliance Cost Manager) and the members of the Alliance.

Background: Trial Projects programme

The Government Construction Strategy aims to change the relationship between clients and the entire supply chain within the industry. The trial projects perform a central role in delivering the Strategy’s sustainable 15-20% reduction in costs and have been testing three new procurement models (Cost-Led Procurement; Integrated Project Insurance; Two Stage Open Book) that were proposed by industry and developed by a joint task group. Case study reports are therefore an output of monitoring the progress and outcomes of the trial projects. They are produced at four stages: Kick-off Meeting; Brief/Team Engagement; Decision to Build; Build and Occupy. Other case study reports can be found at:

<http://constructingexcellence.org.uk/cabinet-office-trial-projects/>

Project contacts

For further information on Insurance Backed Alliancing under the IPI model or to introduce a potential trial project, please contact Martin Davis, IPI Mentor for the Cabinet Office, at martin.davis@ipinitatives.com or Kevin Thomas at kevin.thomas@ipinitatives.com or Louise Lado-Byrnes at louise.lado-byrnes@ipinitatives.com

Successful applicants who are accepted onto the Cabinet Office’s Trial Projects Delivery Programme will then have access to the latest versions of the Procurement documentation and system, Alliance Contract, Supplier Alliance Subcontract and IPI Policy.

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