



Construction
Leadership
Council

One Year On Event

18 July 2019

Bartlett School of Construction - University College London



Construction
Leadership
Council

Andy Mitchell

co-chair, Construction Leadership Council

Recap

- Construction Sector Deal published in July 2018
- Product of two year collaboration between industry and government and involves significant commitments by both
- Designed to drive a step change in the productivity improvement of the Construction Sector – and support Government ambitions for infrastructure and housing

Why was it needed?

- Poor productivity performance relative to other sectors
- Skills shortage
- Substantial investment in new homes and infrastructure over the coming decade

What it is our vision?

A sector based on:

- ✓ **Digital** - deployed at all phases of design will deliver better, more certain results
- ✓ **Manufacturing** - minimise the wastage, inefficiencies and delays that affect onsite construction
- ✓ **Whole Life Performance** - shift focus from the costs of construction to the costs of a building across its life cycle

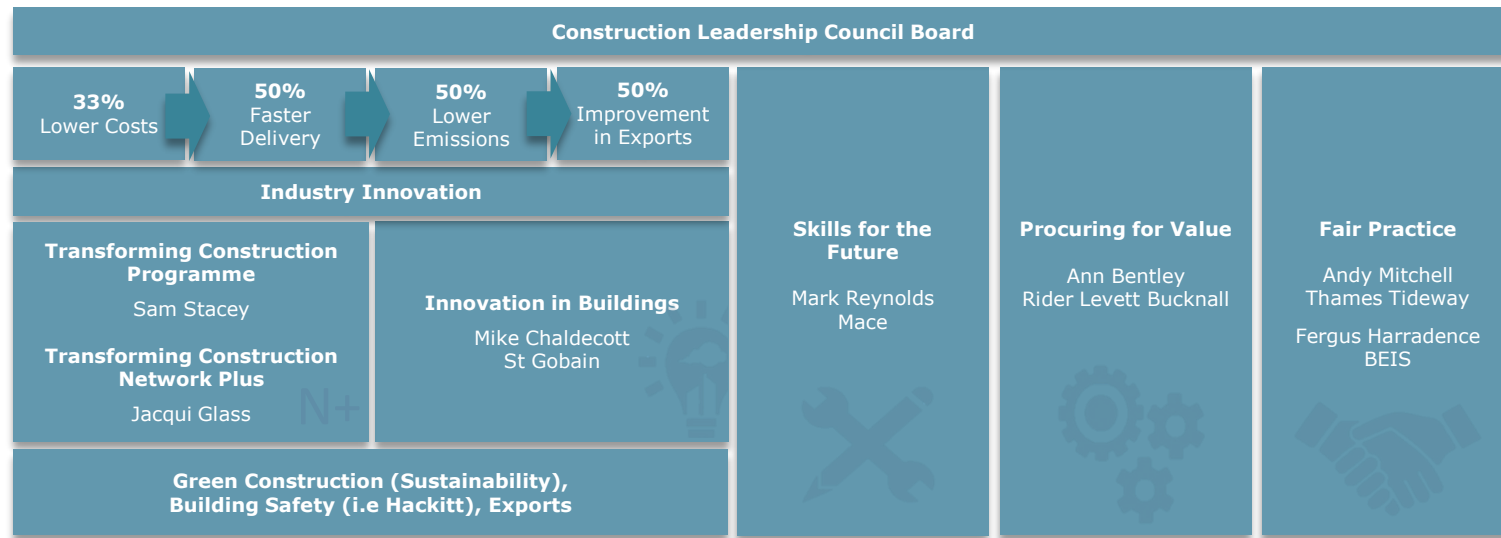
in order to achieve:

- ✓ **33%** reduction in cost, **50%** reduction in time to build, **50%** reduction in carbon emissions

What are our objectives?

- Effectively implement the Sector Deal and work towards the 2025 targets (you'll hear more about that shortly...)
- 'Convene and communicate' across the construction sector by working with related initiatives
- Build the case and an evidence base for future sector deals / collaboration between industry and Government

How are we structured?



Building a safer future

- A safety case for HRRB's
- (Digital) Golden Thread through design, construction, operation
- New duty holder regime and Gateways
- Competence framework
- Materials testing and certification [all overseen by a new Building Safety Regulator]

Fair Practice

CLC workshop in September to consider:

- Adherence to CCS's PPN March 2015 on prompt payment, and the extent of coverage
- Alternatives to retention mechanism
- Significant improvement on quality and defects
- Proper transparency of actual performance of government, client and supply chain
- Preclusion from future bidding if not complying
- Other unfair/unreasonable T&C's

So what have we done so far?

- Organised CLC workstreams organised around key sector deal activity
- Broadened our representation
- Creation of an Advisory Group which brings together leaders / influencers from across the sector to act as a “critical friend” to the CLC

So what next?

- Taking a more active stance on payment issues
- Define and refine the role of the CLC Advisory Group
- Consolidate other industry initiatives into the CLC work streams
- Continue to engage with and support the recommendations of the Hackitt review of building regulations & fire safety



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Andrew Stephenson MP

Department for Business, Energy and Industrial Strategy



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Sam Stacey

UKRI

Transforming Construction Programme

Transforming Construction

Sam Stacey
Challenge Director



UK's Construction Sector Deal



£170m

Government
funding

£250m

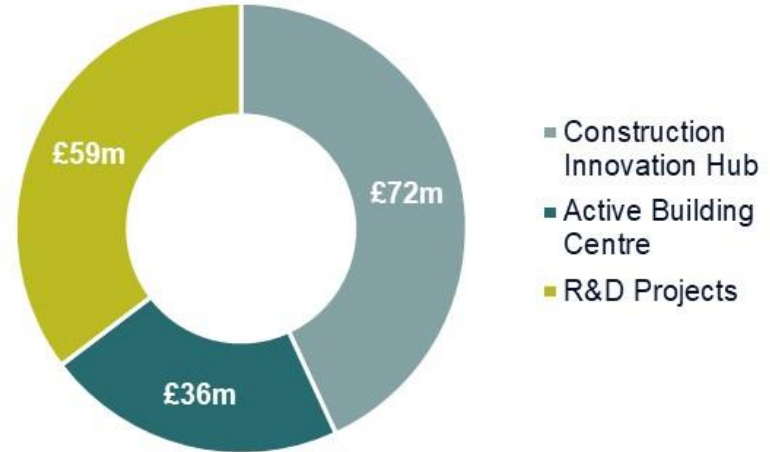
Matched industry
funding

4 years

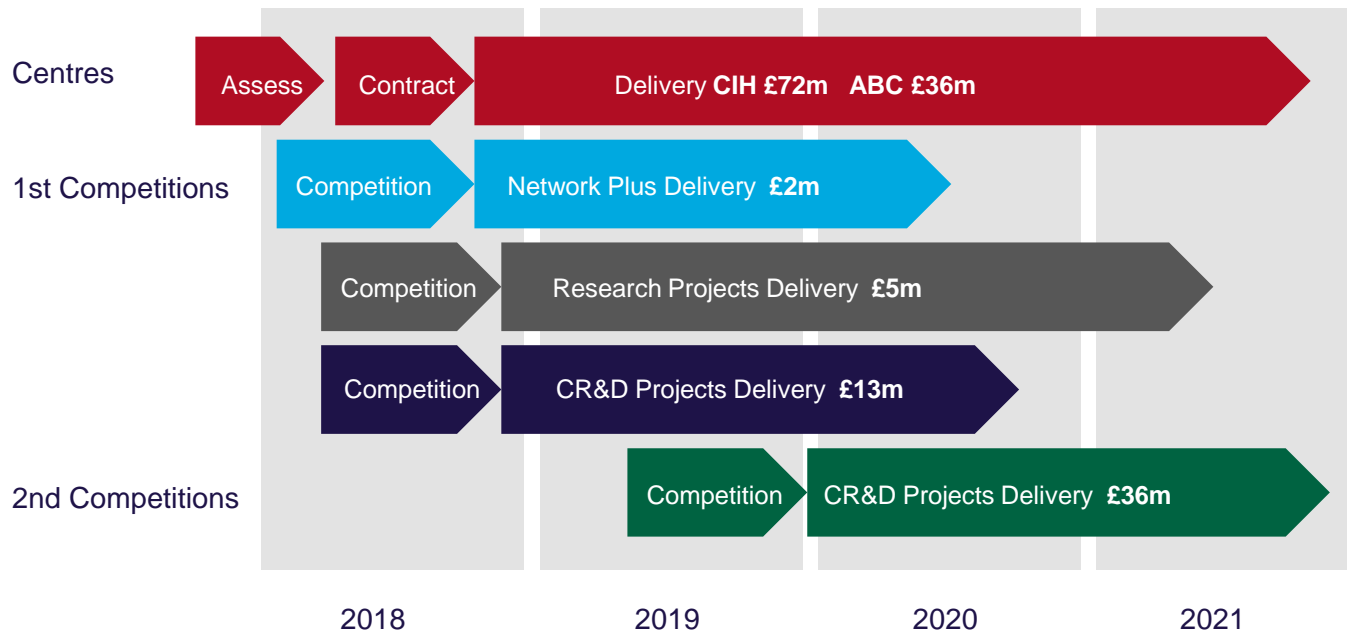
of funding

Sustainable

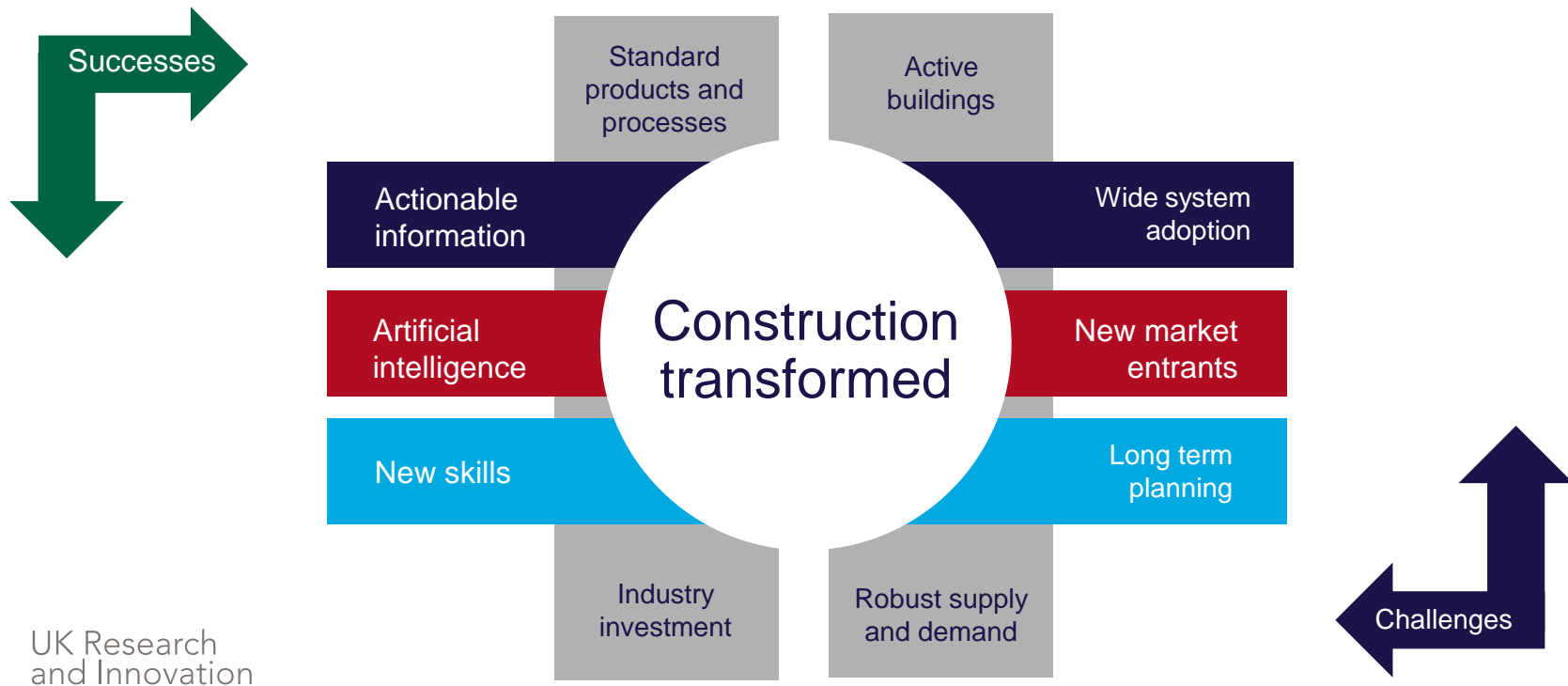
long-term model



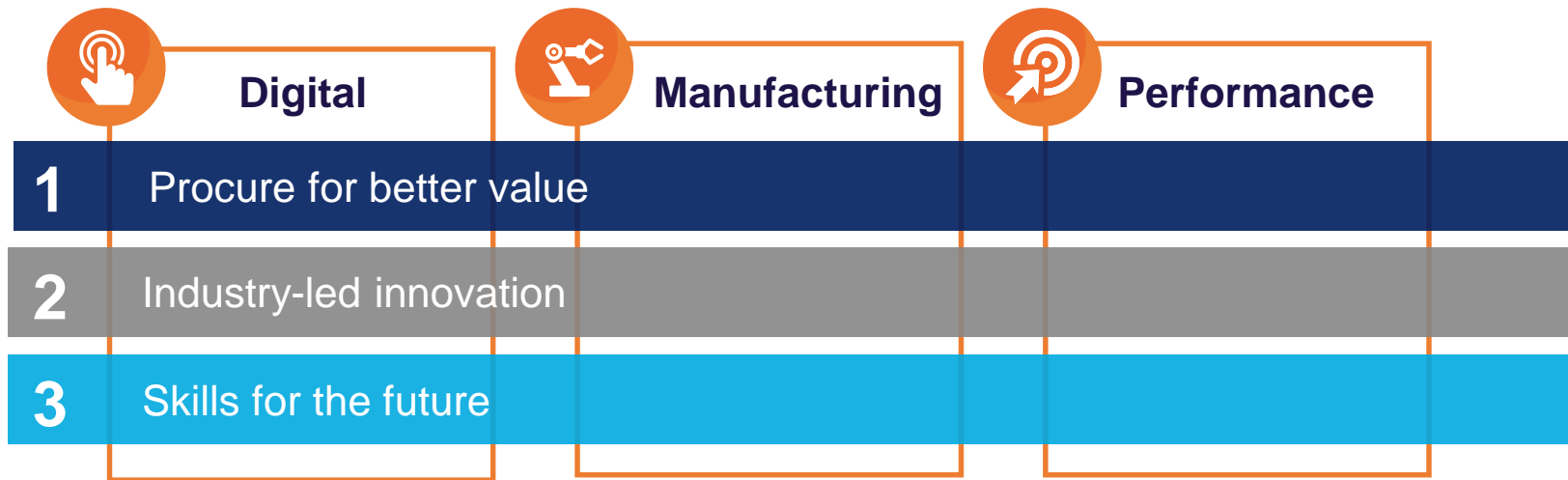
Timelines






Industry integration



Delivered through three enablers



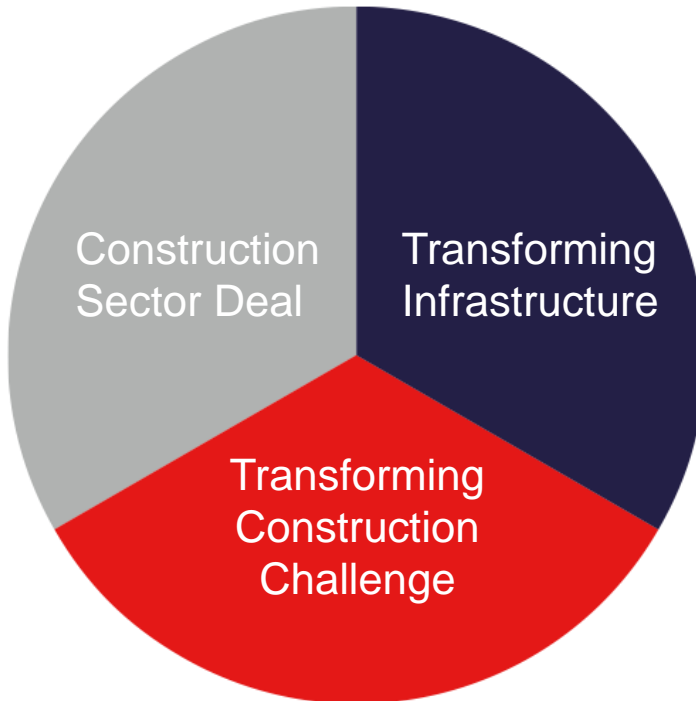
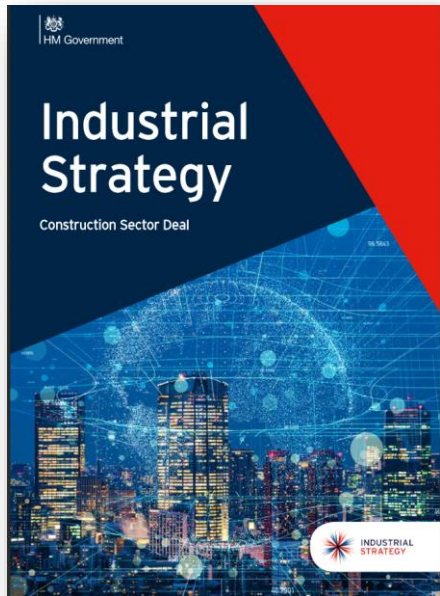
Integration models

	+	Δ
Spinoff 	<ul style="list-style-type: none"> • Little change to business • Structured learning process 	<ul style="list-style-type: none"> • Slower implementation • Re-educate supply chain
Vertical 	<ul style="list-style-type: none"> • Full-stack integration • Speed to capture market 	<ul style="list-style-type: none"> • Capital-intensive
Digital Systems 	<ul style="list-style-type: none"> • Capital-light, industry 4.0 • Agile development 	<ul style="list-style-type: none"> • Less control over product • Longer co-creation process

Read more

www.bit.ly/IC_industry

Policy environment



Infrastructure
and Projects
Authority



Ministry
of Defence



Ministry
of Justice



Department
for Education



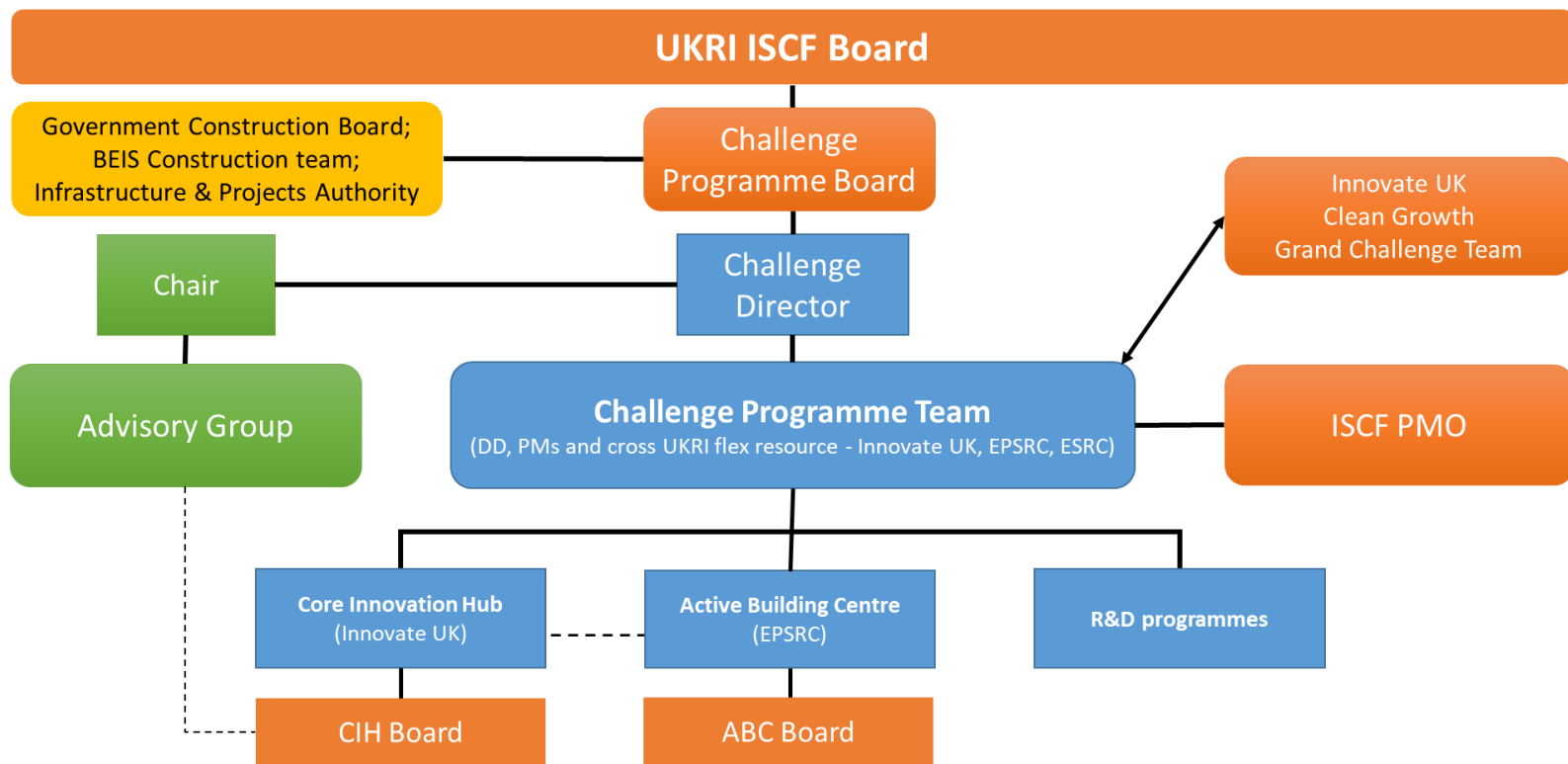
Department
of Health



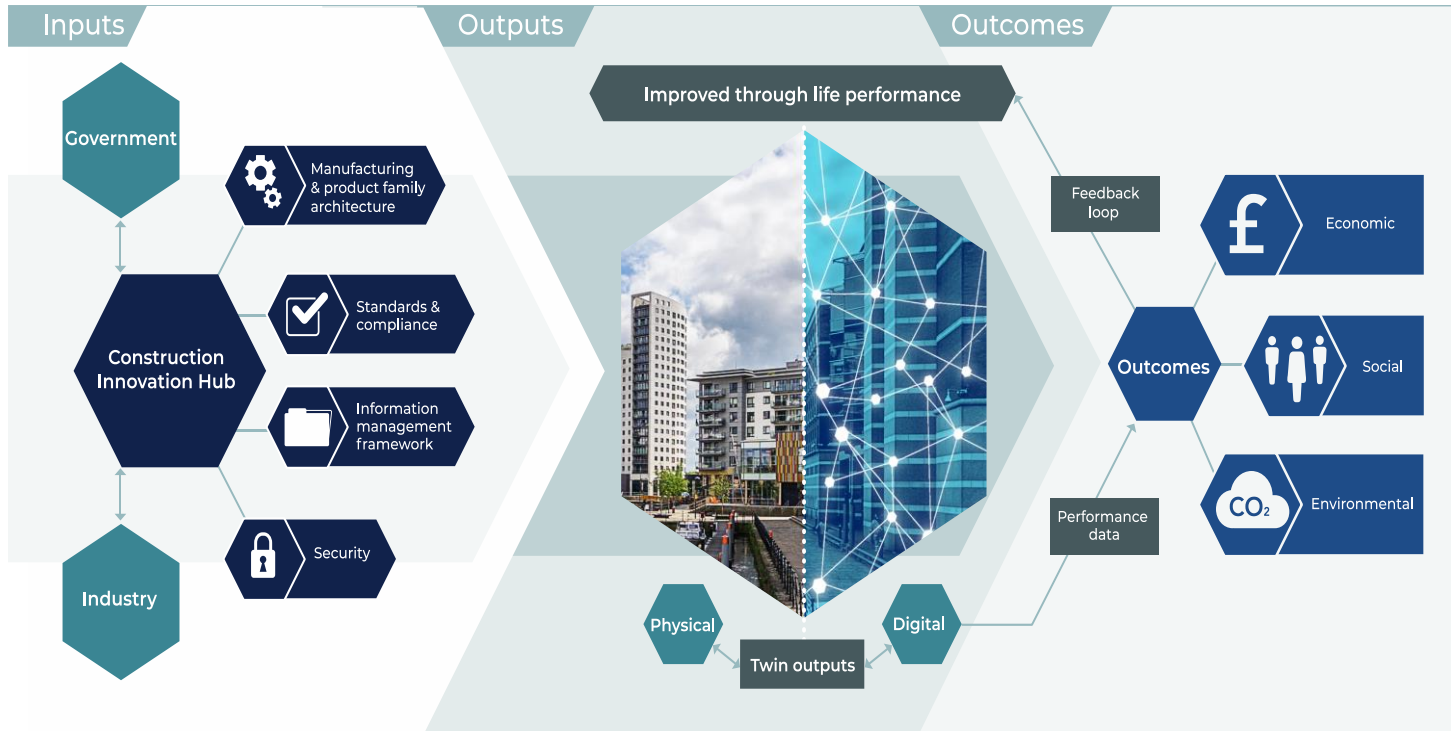
Department
for Transport

UK Research
and Innovation

Governance



Standard
products and
processes

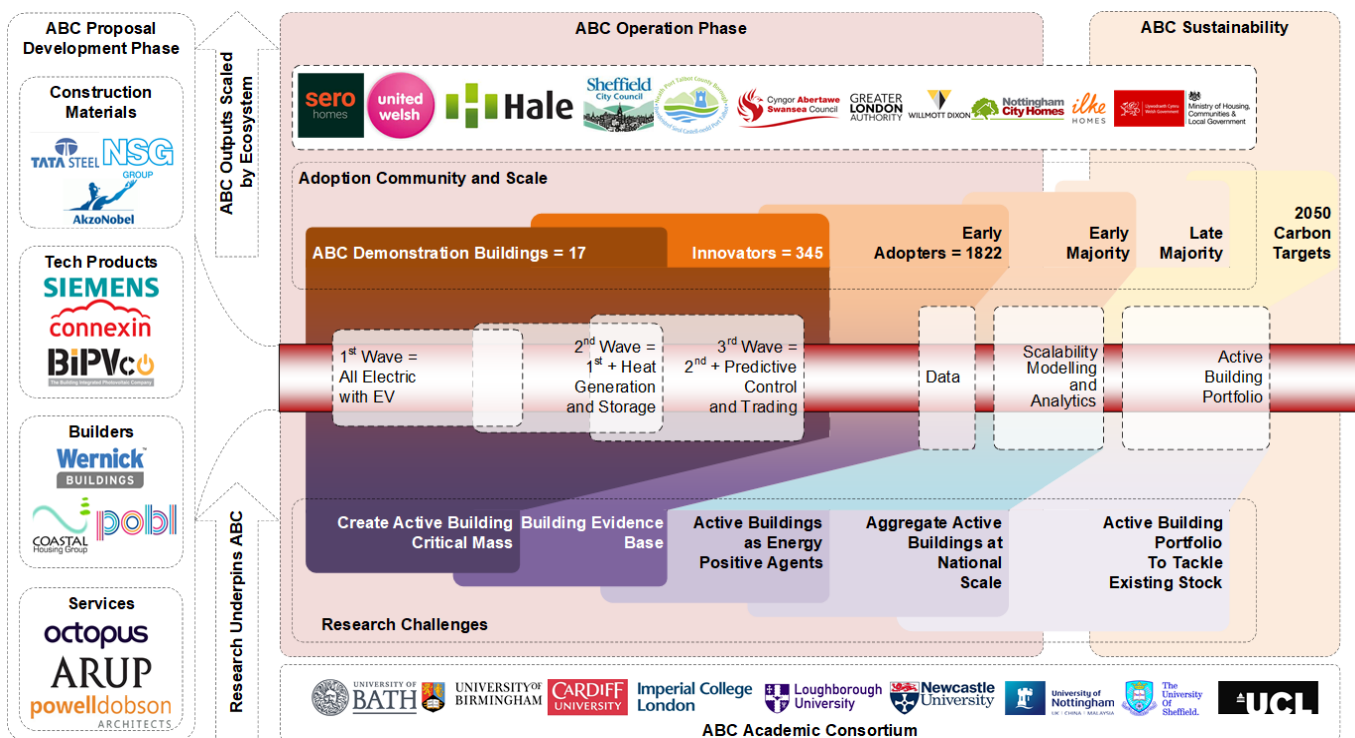




Active
Building
Centre



Active
buildings



Funded innovation



Information

- Data interoperability
- Digital integration platform
- From BIM to machine control
- AR for efficiency
- IoT for site plant
- IoT and concrete curing
- IoT and thermal performance
- LIDAR for cranes

- Robot clusters

Machine learning

- AI and logistics
- AI for programme prediction
- AI and BIM
- AI and component tracking
- AI for site safety
- AI and progress monitoring
- AI for quality
- Alexa for sites

- 3D concrete printing

Product and process

- Panelised housing
- DfMA for housing
- Modular Homes
- Industrialised homes
- Energy active prefab
- Smart piles
- Frame optimisation
- Modular steel

- Non-prismatic concrete

- UK's largest house builder and second largest social landlord coming together with their supply chains to industrialise housebuilding
- Using challenge approaches to reduce cost, boost productivity (40% target), increase safety onsite, improve quality (75% less rework) and 30% faster
- Bringing in wider housebuilding community, and establishing data to prove the business case



Impacting 35,000 homes a year

UK Research
and Innovation

<https://www.aimch.co.uk/>



Schools

- Designed using digital tools that use data from existing buildings to optimise performance (potentially including academic achievement)
- Assembled from standardised components manufactured in UK supply chains
- Generating more power than they use through built in active energy components
- Built in weeks at approaching half current costs (9 schools for the cost of 5)



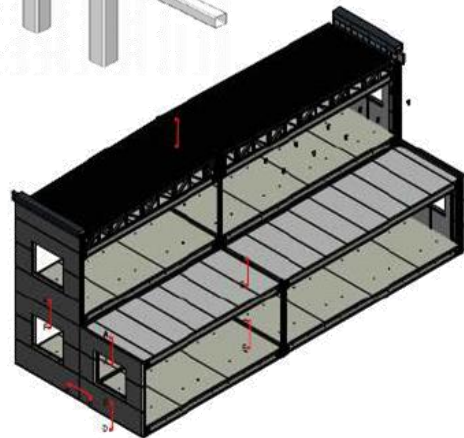
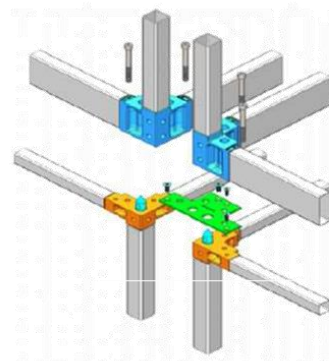
Picture: Seismic project school building design

Redesigned steel frame for school buildings, standardised across two major suppliers:

- 40% reduction in cost
- 52% faster assembly
- 57% reduction in weight (40% reduction in emissions)
- Exports - being used overseas

Market uptake:

- Steel frame on Gen. 5 procurement framework for DfE
- Interest for other buildings types
- Digital configurator
- Will extend to other components



Stimulating participation, facilitating collaboration, and encouraging exploration

The Transforming Construction Network Plus (N+) unites construction's academic and industrial communities to create a new research and knowledge base, dedicated to addressing the systemic problems holding back the sector.



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UK Research
and Innovation



Imperial College
London



THE UNIVERSITY OF WARWICK

Provoke, enable and amplify innovation, through four main objectives:

- Knowledge
- Business models
- Community building
- Investment and legacy

1. Interoperability

2. User experience

Next call Sept 2019

3. Space tech for
hospitals

4. Benchmarking

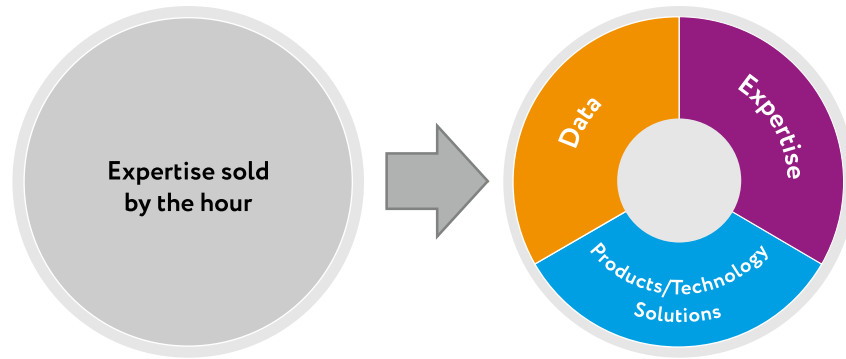
@TCN_Plus #TCNPlus

enquiries.tcnetworkplus@ucl.ac.uk

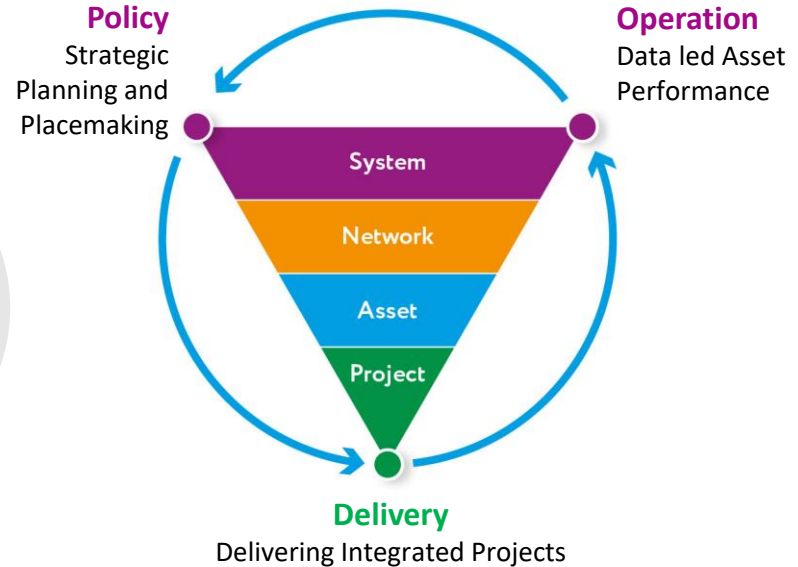
www.bit.ly/transforming-construction-network-plus

Future of Consultancy

Consultant services



UK Research
and Innovation



R&D Competition Round 2



£36m total R&D funding available

Two competitions will run in parallel:

£26m Demonstration fund

£10m Collaborative R&D fund

Spending Profile:

£27m in FY20/21

£8m in FY21/22

£26m Demonstration

- Opens 28th August 2019
- Closes 6th November 2019
- Projects start 1st April 2020

£10m CR&D

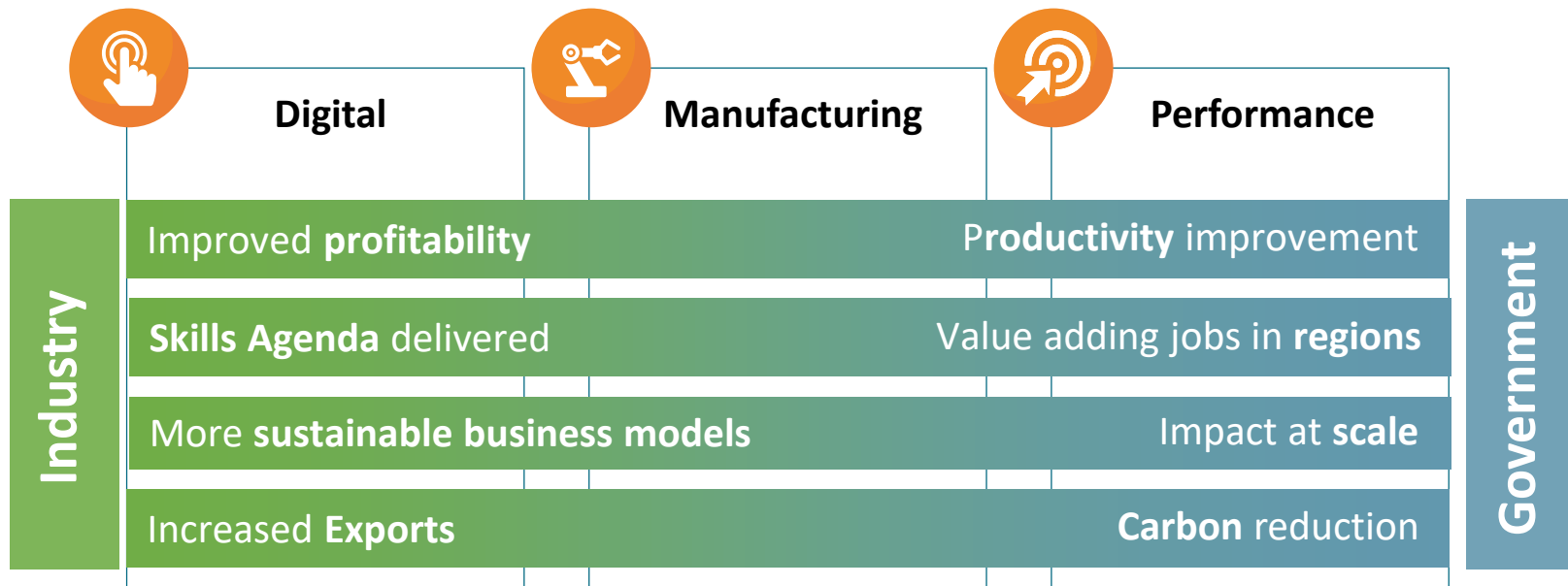
- Opens 28 August 2019
- Closes 30th October 2019
- Projects start 1st April 2020

Draft Benefits Map



Benefit Title	Benefit Type	Method of Measure	Target Value
Reduction in whole life costs	Economic	Contracted projects influenced by TC programme - total value to date, where calculated lifetime cost is reduced (around 33%).	£3bn projects at around 33% reduction
Reduction in delivery time	Economic	Measured reduction in time versus baseline for project conception to delivery for TC influenced projects - target of £3bn worth	50% reduction for £3bn projects
Reduction in Trade Gap	Economic	Measured trade gap for construction sector including engineering services.	£200m
Reduction in greenhouse gas emissions	Economic	Target - £3bn assets with reduction in lifetime emissions.	£3bn projects
Reduction in productivity gap	Economic	Target £10bn projects contracted with increased productivity.	£10bn projects
Increased industry investment	Economic	Measured match and aligned funding (influenced R&D and project builds) by the TC programme	£250m
Critical mass of active energy positive buildings.	Economic	Value of buildings contracted or specified using active energy technology, influenced by the TC programme.	£280m
Demonstration of the business case for active energy buildings	Technology	Measured/calculated from TC influenced projects.	5 - 3 years
Uptake of concepts at scale	Economic	Measured % of government contracts enabling TC methodologies, e.g. modern methods of construction (offsite or pre-manufactured value).	15% contracts
Higher levels of lifetime build asset performance	Economic	Measured value of projects influenced by TC programme that demonstrate greater whole-life performance, or include value measures.	£2bn of projects
Improved assurance of buildings	Legal / Regulation	Measure engagement level of sector/government in new assurance approaches.	No easy metric, will constantly review with gov oversight

Summary - industry and government



* More houses * More rail capacity * Improved car journeys * Cheaper energy * Better public services

FOR FURTHER INFORMATION



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TELEPHONE: 0300 321 4357

WEBSITE: <https://www.ukri.org/innovation/industrial-strategy-challenge-fund/transforming-construction/>



UK Research
and Innovation



Sam Stacey
*Challenge Director –
Transforming Construction*
UKRI

Jacqui Glass

Transforming Construction
Network Plus

THE TRANSFORMING CONSTRUCTION NETWORK PLUS (N+)

Stimulating participation, facilitating collaboration, and encouraging exploration

The N+ unites construction's academic and industrial communities to create a new research and knowledge base, dedicated to addressing the systemic problems holding back the sector.



Imperial College
London



More information about the N+ can be find:

www.bit.ly/transforming-construction-network-plus

THE TRANSFORMING CONSTRUCTION NETWORK PLUS

- The N+ is funded **by UK Research and Innovation** through the **Industrial Strategy Challenge Fund**
- It is supported by UK Research & Innovation (UKRI) funding

The aim of the N+ is to provoke, enable and amplify innovation, through four main objectives:

- Knowledge
- Community building
- Business models
- Investment and legacy

THE TRANSFORMING CONSTRUCTION NETWORK PLUS

- Two year programme 2018-2020
- Engagement events
- Award around £1million to Small Projects, across two calls.
- A central programme of research
- Links to the Transforming Construction Challenge

THE TRANSFORMING CONSTRUCTION NETWORK PLUS



Network
Manager



Comms
Officer



Project
Engineer



Research
Fellow



Research
Fellow



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#TCNplus

Jacqui Glass
Transforming Construction Plus Network

THE TRANSFORMING CONSTRUCTION NETWORK PLUS

Academic-led and user-inspired projects, with dedicated early and mid career tracks.

Responses to TCC themes:

- Designing and managing buildings
- Constructing quality buildings
- Powering buildings

- Open
- Interdisciplinary
- Ask fundamental questions
- Shift the dial (i.e. don't do what you always do!)

THE TRANSFORMING CONSTRUCTION NETWORK PLUS

Round 1: Call for small projects

77 Proposals



41 Lead Universities



366 Individuals Named



85 Industry partners

4 Projects:

- Interoperability
- User experience
- Space tech for hospitals
- Benchmarking

Round 2: Call for small projects

Key dates:

Release of the call

Thursday 19 September 2019

Closing time and date for applications

16:00 - Thursday 14 November 2019

Projects may start from

Wednesday 1 January 2020

THE TRANSFORMING CONSTRUCTION NETWORK PLUS

International webinar – Wednesday 29 May

How new business models for modern methods of construction are emerging throughout the world and how they are relevant to creating the 'tipping point' in the sector, as envisioned in the UK's Transforming Construction Challenge agenda.

Dr Daniel M. Hall, ETH Zürich

Dr Wei Pan, University of Hong Kong

Prof Jennifer Whyte, Imperial College London



ENGAGEMENT

1510 PEOPLE DIRECTLY ENGAGED

Events

534 participants

Mailing list

796 subscribers

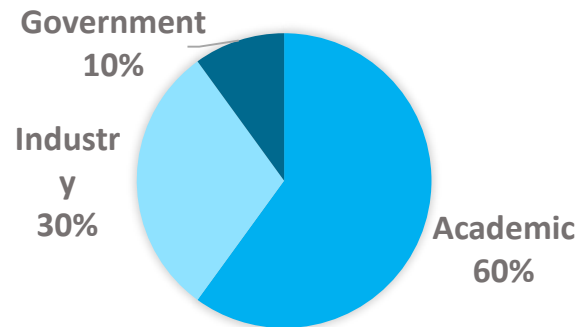
Website

7,600 unique pageviews

Twitter

355 followers – **118.9K** tweet impressions

PARTICIPATION



THE TRANSFORMING CONSTRUCTION NETWORK PLUS

CREATING A MOVEMENT FOR CHANGE

Transforming Construction Network Plus – Conference 2019

By gathering the community around a common goal, we are aiming to create a movement to change the way we build. To do this, we need ideas and we need you!

Our first confirmed speakers are:

- Sam Stacey, Challenge Director, Transforming Construction Challenge
- Prof David Gann CBE, Professor of Innovation, Imperial College London
- Dr Anne Kemp OBE, Chair, UK BIM Alliance, and Director, Atkins
- Dr Daniel M. Hall, Associate Professor, ETH Zurich
- Mike Eggers, VP, Product & Innovation, Project Frog
- David Adams, Technical Director, Melius Homes
- John Pelton MBE, Programme Strategy Director, Palace of Westminster

Register for the N+ Conference now: creating-a-movement-for-change-conference.eventbrite.co.uk

THE TRANSFORMING CONSTRUCTION NETWORK PLUS

For general enquiries about the N+, please contact the network team:

enquiries.tcnetworkplus@ucl.ac.uk



Imperial College
London



Join our mailing list to hear about the latest N+ news, upcoming events, and funding opportunities:

www.bit.ly/transforming-construction-network-plus



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Mike Chaldecott

Innovation in Buildings Workstream

Mission Statement

Embedding innovative construction techniques to improve productivity and capacity in the construction industry, and the quality and whole-life performance of buildings

Objectives

Scaling up of SMART construction by:

- ✓ Creating clear pipeline by aggregating demand across housing clients
- ✓ Establishing centres of excellence and collaboration
- ✓ Developing SMART Construction metrics dashboard



Who is involved?



and many more...

Working Groups

Mike Chaldecott
Saint-Gobain
CLC Innovation in Buildings

Centres of Excellence & Collaboration
Shelagh Grant
The Housing Forum

Demonstrator Projects, Measures & Business Case
Simon Cross
BRE

Demand Creation, Investment & Volume Surety
Adam Locke
Laing O'Rourke

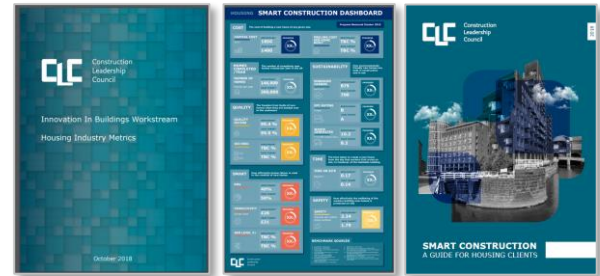
Risk-averse Culture, Lending, Valuation & Insurance
Mark Farmer
Cast

Schools
Tim Carey
Willmott Dixon

Part of the Housing Minister's MMC working group




What has been achieved?

- Suite of case studies and guide setting out the benefits of SMART Construction for housing clients
- Consolidated list of SMART construction centres of excellence to share knowledge, best practice, inspire collaboration and showcase new opportunities
- Dashboard of key metrics to enable the measurement of increased productivity and whole life performance through SMART construction
- Advocating the importance of a clear, aggregated pipeline of demand for SMART construction to create the confidence to invest



What are our priorities going forward?

- Working with the Construction Innovation Hub to apply the lessons learned from housing to social infrastructure – particularly schools
- Developing a “model contract” for SMART Construction
- Building links with the Green Construction Board and the Procuring for Value workstreams
- Working with Homes England to implement the recommendations of the “Demand Creation, Investment and Volume Surety” report
- Creating a “Centre of Excellence Network for SMART Construction in Homes”

Centres of Excellence in Smart Construction for Housing						 Construction Leadership Council		
Construction Leadership Council		14-Dec-18		V5.1				
Innovation in Buildings Workstream						Smart construction capabilities, capacity, knowledge		
Centre	URL	Address	Centre email	Centre contact number	Offsite manufacturing	BIM & Digital construction	High performance building	
Physical Centres								
Advanced Manufacturing Research Centre (AMRC) http://www.amrc.co.uk		AMRC with Housing University of Sheffield Advanced Manufacturing Park Walls Way Cresfield Rotherham	acp@amrc.co.uk	0114 222 1747				





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Ann Bentley

Procuring for Value Workstream

Mission Statement

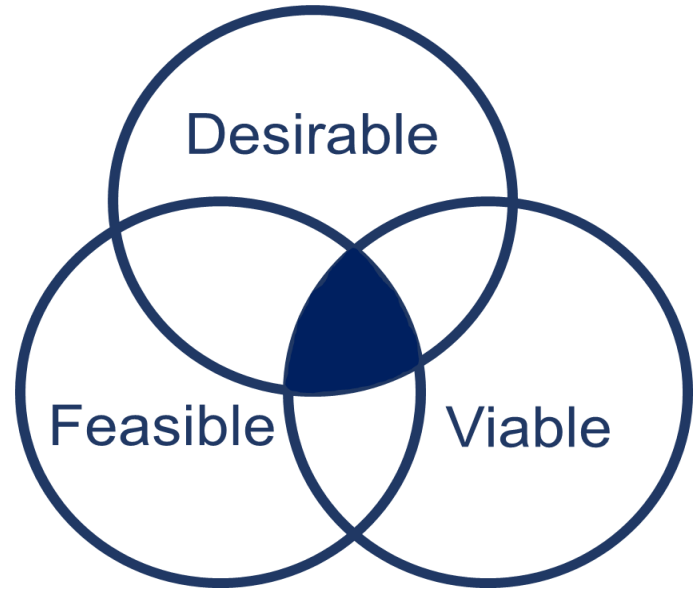
Ensure that public and private sector clients are able to effectively and simply procure on the basis of “whole life value” rather than simply “lowest cost”

Objectives

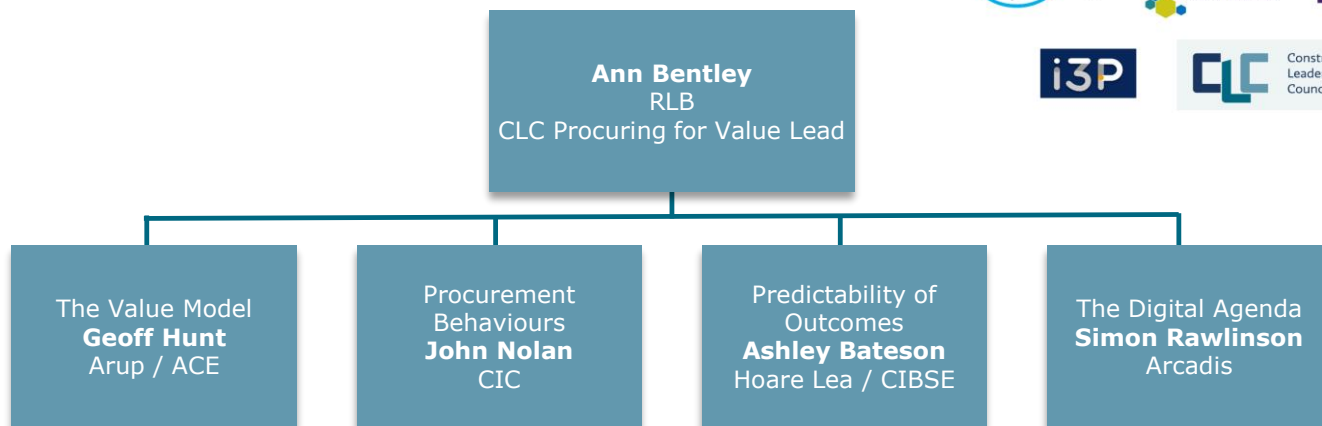
- Develop a standard approach to how value is measured and how built assets are procured with benchmarks that will allow performance to be measured and incentivised
- Increase transparency on the performance of suppliers and assets
- Develop a robust digital platform to capture and compare value and performance data both within projects and between projects.

Objectives

- ✓ Give policy makers and budget holders a deeper understanding of value
- ✓ Enable them to make meaningful value choices and trade-offs



Who is involved?



What has been achieved?

- Industry-wide engagement
- Following a wide consultation, a draft “Procuring for Value” model has been developed
- Supporting the Infrastructure and Project Authority’s (IPA) work on benchmarking and common reporting in infrastructure projects
- Supporting Build UK and CECA to develop a Common Assessment Standard which will improve efficiency and reduce cost in the construction pre-qualification process.
- Advising potential bidders to Transforming Construction R&D fund on PfV linked research

What are our priorities going forward?

- Work with the Construction Innovation Hub to refine the PfV model into a Minimum Viable Product
- Test this methodology for procurement and promote common and consistent standards across industry
- Work with professional institutions, industry groups and businesses to develop a comprehensive training programme for the PfV Model
- Start to implement PfV on trial projects and use learnings to inform wider implementation
- Work with Government to refine the cost and performance benchmarks for assets and contractors

Minimum viable product





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Lynne Sullivan

Green Construction Board

GCB provides the Sustainability workstream; it aims:

To advise government and the built environment industry on the regulatory and policy framework and actions required to overcome barriers to the delivery of green buildings and infrastructure as well as to promote the commercial opportunities of sustainable construction

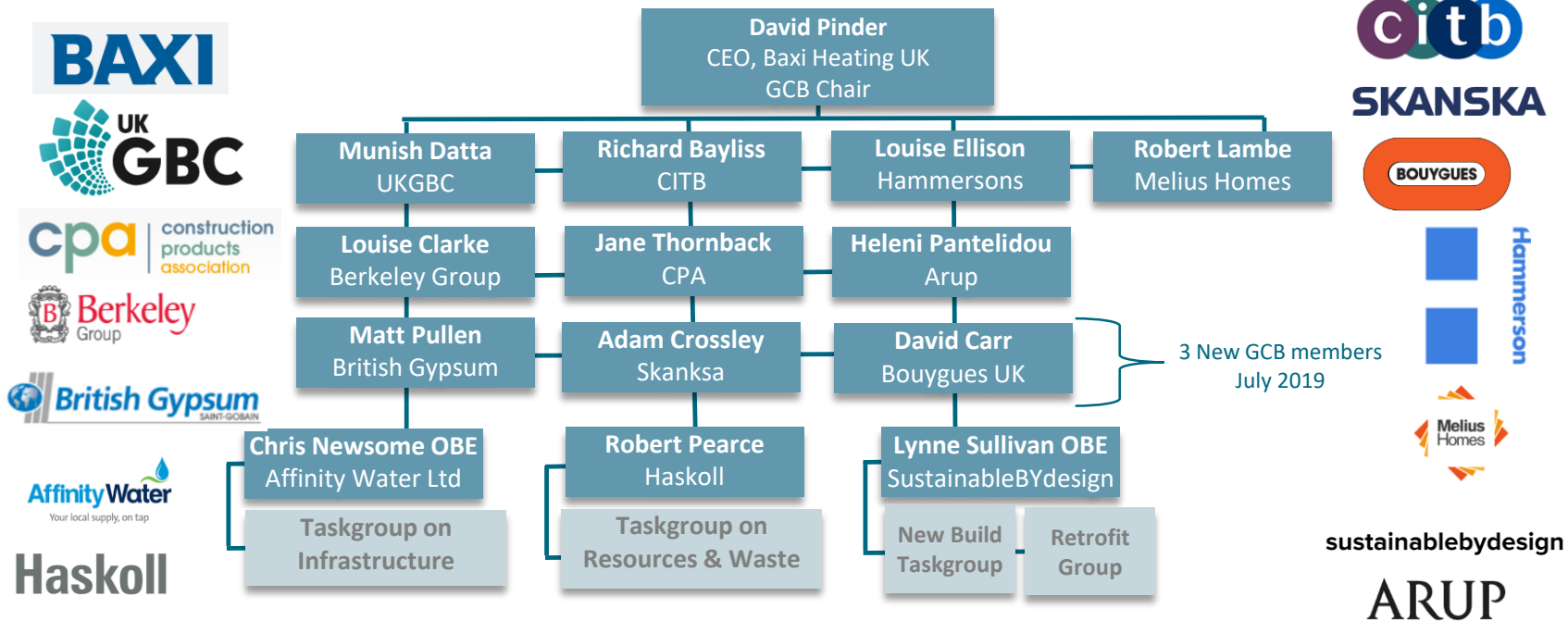
Specific Objectives:

- Buildings Mission 2030 - Improved energy efficiency in new build and retrofit, on journey to zero carbon
- Zero carbon Infrastructure delivery
- Advancing zero avoidable waste in construction and embedding circular economy principles in the industry
- Ensure skills, procurement models and green finance play an increasing role in delivering sustainability goals
- Explore the opportunities for delivering zero carbon and resource efficiency through digitalisation and MMC.

Delivers:

- ✓ Advice to Government
- ✓ Guidance to industry
- ✓ Promotes the commercial opportunities of sustainable construction for UK Plc

Who's involved?



Achievements: Buildings 2030 Energy Mission

- Evidence base of case studies to show 50% energy reduction is possible now.

Identified the set of attributes within building typologies that will most likely deliver the multiple objectives of the Buildings Mission

- Recommendations and time line to government on requirements for changes to Building Regulations, necessary research and technology developments and potential policy incentives.



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The Green Construction Board

Lynne Sullivan
Green Construction Board

Achievements:

Infrastructure:

- Secured funding for Infrastructure Carbon Review commitment *5 years on event*
- Further promotion of PAS 2080 Carbon Management in Infrastructure

Resources & Waste:

- Collaboration with Defra and BEIS on the priorities for construction in the government's Resources and Waste Strategy
- Defining an interpretation for 'Zero Avoidable Waste' in Construction

Innovation, Finance, Skills and Procurement:

- Identifying opportunities for championing sustainability



Department
for Environment
Food & Rural Affairs



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The Green Construction Board

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Green Construction Board

Priorities going Forward:

Buildings:

- 2030 Buildings Energy Mission – linking into Part L revision, Future Homes Standard and 2050 Net Zero Target
- Retrofit energy reduction - next steps for policy, innovation and finance / Advise government on the feasibility of halving the cost of retrofitting

Infrastructure:

- Reviewing the Infrastructure Carbon Review for 5 years on event, collecting case studies and gaining additional signatories
- Exploring the opportunities for low carbon concrete uptake

Resources & Waste:

- Develop a roadmap for achieving zero avoidable waste in construction
- Promoting the opportunities of green finance with the Green Finance Institute
- Championing sustainability goals in CLC procurement, skills and innovation workstreams
- Innovation and Research – input to the Transforming Construction programme.
- Champion the need for better data – regular measurement and monitoring



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Brian Morrisroe

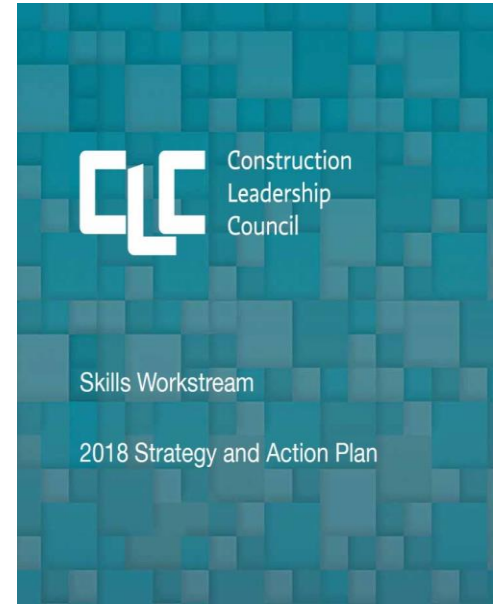
Skills for the Future Workstream

Mission Statement

- Ensure that the Construction Sector is able to “attract, recruit and retain” the skilled workforce it needs both now and in the future - and thereby deliver the vision of the Sector Deal

Objectives

- Support the growth and development of available apprenticeships, and high quality training
- Promote construction careers to a wider audience and increase the number of routes into the sector
- Understand the skills needs of a sector based around digital, manufacturing and whole life performance



Who is involved

Mark Reynolds
CEO, Mace
CLC Skills Lead

Brian Morrisroe
CEO - AJ
Morrisroe
(SME)

Steve Fox
Chief Executive
BAM Nuttall

Karl Whiteman
Executive Director
Berkerley Homes
(Attract and
Recruit)

Sarah Beale
CEO CITB
(Attract and
Recruit)
(Apprenticeships
and Training)

Paul Raby
HR Director
Balfour Beatty

John O'Connor
Commercial
Director
Laing O'Rourke
(Future Skills)

**Ruth Devine,
MD**
SJD Electrical
(SME)

David Hurcomb
CEO
NG Bailey



What has been achieved

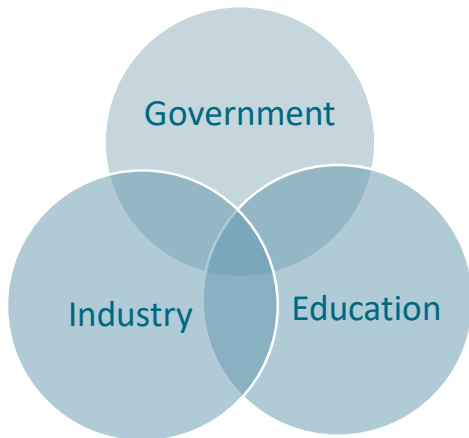
- **78** new Apprenticeship standards in construction related roles were approved for delivery by the Institute for Apprenticeships (IfA) by the end of December 2018 – exceeding the target of **50**. Further 24 to be completed by the end of 2019.
- Through the National Retraining Scheme, we have supported CITB to deliver **20 onsite training hubs** – delivering 'site ready' training to over **1200 people**
- Supported CITB's review of the "Go Construct" recruitment portal to attract a wider pool of talent and create a more diverse workforce
- Published a "Future Skills Strategy" following a wide consultation of industry bodies, client and delivery organisations and Government
 - ✓ Increased direct employment
 - ✓ Encouraging the adoption of 'Smart' Construction
 - ✓ Updating Construction training



What our our priorities going forward

- Moving focus to ensure adequate provision of new Apprenticeship Standards and increasing Apprenticeship Starts and Completions
- Implement improvements to the “Go Construct” platform
- Establish an Employer Group to work with Government on the development and implementation of the Construction T Level
- Working to implement the recommendations of the “Future Skills Strategy” and promoting wider awareness and engagement in existing funded initiatives
- Better engagement with Education and Training Providers

Skills Alignment Workshop -12th July



Department for
Business, Energy
& Industrial Strategy

Department
for Education

citb

BUILDUK
Leading the Construction Industry

ceca

NFB
National Federation of Builders

HBF
HOME BUILDERS FEDERATION

FEDERATION OF
MASTER BUILDERS
fmb.org.uk

ace

RICS

ice
Institution of Civil Engineers

**ROYAL ACADEMY OF
ENGINEERING**

Scottish
Decorators'
Federation

bre

cpa | construction
products
association

Heathrow
Making every journey better

mtc
Manufacturing
Technology Centre

BACH
BRITISH ASSOCIATION OF
CONSTRUCTION HEADS

acc
ASSOCIATION
OF COLLEGES



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Panel Q&A



Sam Stacey



Mike Chaldecott



Andy Mitchell



Ann Bentley



Brian Morrisroe



Lynne Sullivan