

Foundations for the Future questions and answers from live stream:

Anonymous Attendee 11:34

We have now developed our own patent pending platform and disassembly system P-DfMA+D for use on all sectors which is game changing, exciting time for us with a fully integrated supply chain. MMC for the future will be manufactured led integrated delivery team from concept to handover. What is the panels opinion on this manufactured led approach for the future?

Sam Stacey: Your approach is very much the future for the industry. It is mandated by the Construction Playbook and encouraged by the TIP Roadmap to 2030. Success will depend on organisations like yours being able to offer high quality solutions that deliver benefits in an integrated way. There is a balance et be struck between achieving return on investment in your IP and being open and compatible with the wider market, i.e. not proprietary. I recommend focussing on first-mover advantage more than exclusivity.

Anonymous Attendee 11:37

How can I as an individual commission a house with these principles embedded?

Sam Stacey: There is a rapidly growing number of suppliers offering this approach in the residential sector. TopHat, Ilke, House by Urban Splash, Etopia, Idema, Global Home, to name a few. Cast Consultancy might be able to give some detailed guidance.

Chloe Donovan (Guest) 11:47

All this talk of net operational carbon is not ambitious enough. Embodied carbon and material choices are increasingly consequential to the total carbon footprint of buildings - is there any targeted work happening or planned to look at scaling the use of innovative bio-composites within Construction?

Sam Stacey: The Transforming Construction Challenge has done various bits of work on assessing embodied carbon, but bio-composites has been mostly out of scope. I expect this to be one of the areas that Innovate UK will support as part of its Net Zero focus, that is currently being scoped.

Mike Pitts: we have a sister ISCF challenge focused on removing embodied carbon in major construction materials such as cement, steel and glass. You can see them here:

<https://www.ukri.org/our-work/our-main-funds/industrial-strategy-challenge-fund/clean-growth/industrial-decarbonisation-challenge/> and <https://www.ukri.org/our-work/our-main-funds/industrial-strategy-challenge-fund/clean-growth/transforming-foundation-industries-challenge/>

Debbie Carlton (Guest) 11:51

Hannah, in terms of the evaluation did it analyse the low maturity of the sector's work and workforce planning using AI.NLP/Knowledge Engineering and other technologies....particularly from a productivity point of view where the metrics are typically reduce labour hours versus a more agile, resilient competent workforce evidence of conformity of product, procedure and people?

David Robinson (Guest) 11:24

Debbie (Carlton).. I know a number of TCC projects included a recognition that skills change was needed and new ideas on this come from these projects

Hannah Gibson

Skills and competencies were not in the core remit when Frontier Economics were first scoping out measurements and metrics early on in the Challenge. As you know in the last two years TCC has prioritised skills and competencies and the Construction Leadership Council has a considerable focus on this via their skills for a modernised industry workstream.

Anonymous Attendee 11:56

I will rephrase my earlier unanswered question. Which major housebuilders are committed to embodying these principles?

Sam Stacey: Barratt and the other partners on the AIMCH project are a great example. Urban Splash and Berkeley Group also come to mind.

stewart.dalgarno (Guest) 11:57

Electrification of Homes and Communities is the next challenge, we need to get our grid ready, so we are zero gas and off grid dependency, utilities and energy sector, need to work with housebuilders to innovate around smart grid balancing and storage. What is IUK thoughts on future funding for this?

Mat Colmer - Innovate UK UKRI (You) 12:31

This is being touched on now, prompted also by a question from Kerry. I will ask Sam to get back to you re: future funding as this is a complex area.

Sam Stacey: This is a focus area for Innovate UK now and in the future. Current funding opportunities are to be found here [What's so innovative about the Strategic Innovation Fund? – UKRI](#). Further funding opportunities are likely to emerge as Innovation UK develops its wider Net Zero strategy.

Debbie Carlton (Guest) 11:58

Sam there has not been a system approach to competency demand and supplya missing system in the systems of systems.....a comment not a question

Mike Pitts: this would be a focus of extended work for the Construction Innovation Hub. Ideally skills would be developed through a learning-by-doing approach as new facilities come on line.

Michael Moseley (Guest) 12:04

Why will the successes of transforming construction continue? Do we not still need a structure to continue the transformational work?

Sam Stacey: I can answer this in two parts. TC has developed and proven the effectiveness of techniques that are now (or will be by September 2022) ready for adoption by the industry. Strong demand for these techniques has been locked into the system via changes in public sector procurement policy (Construction Playbook etc.). This should make the TC techniques the rational choice from here on. Having said that, there is definitely a strong case to be made that further government funding support for the scaling and embedding of the techniques would offer great return on investment for the government. This would ensure maximum consistency and economies of scale across building types, and thereby save money on the delivery of new schools, hospitals, etc.

Mohamed Salem (Guest) 12:11

What are the key issues that will influence the success, or otherwise, of a safe, sector-wide recovery after COVID-19?

Sam Stacey: Simply a commitment to adoption of the Transforming Construction techniques: value-based decision making, platform approaches, and low carbon solutions.

Adam Locke (Guest) 12:11

To use your theme- we have laid the foundations but building the future industry is not yet complete- how can the industry keep the momentum and continuity to build on what has been achieved so far ..In particular is there any next phase of Challenge Funding so that the teams simply do not just disband and the learning is not continued on...?

Sam Stacey: As per another similar question, I can answer this in two parts. TC has developed and proven the effectiveness of techniques that are now (or will be by September 2022) ready for adoption by the industry. Strong demand for these techniques has been locked into the system via changes in public sector procurement policy (Construction Playbook etc.). This should make the TC techniques the rational choice from here on. Having said that, there is definitely a strong case to be made that further government funding support for the scaling and embedding of the techniques would offer great return on investment for the government. This would ensure maximum consistency and economies of scale across building types, and thereby save money on the delivery of new schools, hospitals, etc.

Anonymous Attendee 12:22

What do you consider as main barriers as adoption of TCC concepts within and beyond timelines of research projects ? E.g. Adoption of digital twins

Sam Stacey: There are two types of barrier, one is the tendency of the industry to focus on cheapness (aka low capital cost) rather than whole life value of the built asset. The second is a possible lack of capacity/capability in the supply chain to provide digital and platform-based solutions. We call on clients to commit to whole life value and suppliers to commit to investing in capability.

Anonymous Attendee 12:24

What are your insights into the recovery of the UK construction sector and the productivity challenge through the lens of socio-technical systems?

Sam Stacey: Committing to adoption of the Transforming Construction techniques - value-based decision making, platform approaches, and low carbon solutions – will generate great social benefits. These include high-value jobs that are more evenly distributed across the UK (i.e. levelling up), better working conditions, ability to recruit more inclusively, and being able to inspire more young people to join the industry. We can make construction the industry the sector where the most talented people aspire to work.

Yusuf Arayici (Guest) 12:32

Any specific strategy or plan for the use of digital technologies for cultural heritage buildings? where the heritage sector is positioned in this transformation through funding and policies?

Mat Colmer - Innovate UK UKRI (You) 12:37

Private answer

Hello Yusuf. The TCC programme is focused on new building assets, however your question on heritage is important.

Yusuf Arayici (Guest) 12:39

thank you very much, Mat, I am researching on HBIM and digital heritage twin concepts and would like to liaise with innovate UK strategies and plans

Debbie Carlton (Guest) 12:38

Sam there has to be disruptive innovation to the non functioning skills system

Mike Pitts: we were certainly keen to do more on this and it has been a hidden thread through many projects. When the programme started skills were not part of our remit but inevitably it has been a component of various parts of the programme. We expect the CIH to take more of this forward in due course with the right support.

Casper Kruger (Guest) 11:13

Where is new funding rounds published to help develop new innovation ideas to support smart structure development?

Mat Colmer - Innovate UK UKRI (You) 11:14

Please search for the Innovation Funding Service where all new Innovate UK competitions are published

Casper Kruger (Guest) 11:15

What TRL level is the minimum level that will be considered?

Mat Colmer - Innovate UK UKRI (You) 11:16

We tend not to go by TRL level and it depends on each competition. We do fund feasibility right through to pre commercialisation but every project needs to be business led to get IUK funding.

Debbie Carlton (Guest) 11:16

I don't believe TCC has focused enough on the 'people' change aspects that are required. The emphasis has been on technology and process. We need much more intelligent, digital approaches to understanding competency demand change resulting from MMC/DfMA so we can upskill/reskill faster and with more agility so people can flourish in the system. We also have a 'skills system' does not work and we need an ecosystem approach to improving the mediation of competency demand and supply. When will there be a focus on this?

Mat Colmer - Innovate UK UKRI (You) 11:18

This is acknowledged and the TCC challenge was focused on technology and market development. We have done work on skills alongside the CITB and Supply Chain School, but know there is more to do here

Anonymous Attendee 11:17

Can the government commit to ensuring that Homes England fully engage with, and adopt the solutions, technologies and ideas coming out of Transforming Construction?

Mat Colmer - Innovate UK UKRI (You) 11:21

We cannot comment on government policy and direction. However we are always working to ensure that our evidenced work is shown to ministers and policy makers. That is one of the reasons for today's event

Mike Pitts – we have worked with Homes England throughout the programme. Projects such as AIMCH worked directly with them. MMC is a priority for DLUHC who fund Homes England.

George Martin (Guest) 11:21

The current building regulations will not deliver net zero carbon in use. Here are two of the barriers:

1. SAP needs to be equivalent to PHPP
2. Regulations need to be based on design for performance and NOT design for compliance

George Martin Chair, Building Performance Network

Mat Colmer - Innovate UK UKRI (You) 11:31

We fully appreciate this. There are tools as part of the TCC that address design for performance please search for the Transforming Construction Stories Catalogue for examples

James TEAGUE (Guest) 11:22

Entirely endorse the need for training strategy - it takes a long time and unless it can be done well it could only exacerbate the skills shortage.

Mat Colmer - Innovate UK UKRI (You) 11:29

Thanks James

Hugh Parnell (Guest) 11:24

Much innovation is already done, as the video showed. Scaling these new ways to 100% of public construction and private sector is vital. How do UKTI/BEIS see this happening v soon? Will there be mandatory 'codes' again or other incentives to make constructors adopt these new practices?

Mat Colmer - Innovate UK UKRI (You) 11:28

There are various tools to allow constructors to adopt these new practices. For public sector buildings there is the Construction Playbook to change public procurement to a value led approach. Our Construction Innovation Hub have tools for value, the platform approach and quality

Mike Pitts – Hugh, please also look at

<https://www.gov.uk/government/publications/transforming-infrastructure-performance-roadmap-to-2030>

Ian Heptonstall (Guest) 11:24

The initial focus of TCC was on the 3 identified areas of intervention.

Going forward what scope is there for other possible interventions, and in particular research into the underpinning causes of underperformance?

We have identified and addressed some opportunities, but not all. There are other improvement levers we are not pulling. In TCC I was told the research funding was only for the targeted interventions - is this the plan going forward too?

Mat Colmer - Innovate UK UKRI (You) 11:35

There always opportunities to help us identify areas where future focus is required. Please keep in touch.

Debbie Carlton (Guest) 11:26

Mat.....there is a very long way to go especially post Grenfell and the forensic lens of competency assurance. You can't have an innovation ecosystem without a digitally enabled competency management ecosystem - see this research <https://www.igi-global.com/chapter/transforming-the-productivity-of-people-in-the-built-environment/279420>

Mat Colmer - Innovate UK UKRI (You) 11:29
Thanks Debbie

Philip Jackson (Guest) 11:29

Hi Mat - just on your answer to that previous anonymous question on Homes England in which we also have a vested interest - would it be possible to pass on my contact details to the Minister please? We'd be delighted to engage directly...! Thanks. Phil.

Mat Colmer - Innovate UK UKRI (You) 11:32
Private answer
Hi Phil. Will try but I think he may be leaving mid point so getting to his people may be challenging.

Jeremy Cooke (Guest) 11:32

Is the construction industry clearly aligned and on target to meet the 2030-50 climate change targets detailed at COP26 ? (ANSWERED BY PANEL – SEE RECORDING)

Mohamed Salem (Guest) 11:37

How can we help SMEs get access to these technologies? (ANSWERED BY PANEL – SEE RECORDING)

Sam Hart (Guest) 11:41

Hi Matt - any rumblings or signs of a TCC 2.0 or similar?

Mat Colmer - Innovate UK UKRI (You) 11:44
This is all dependent on the recent spending review which we are currently working through. We clearly have more to do in this area and supporting net zero. Nothing to report as yet but keep a look-out for updates from Innovate UK and the team (see the brochure on ukri.org/tcc to see who we are)

Esra Kurul (Guest) 11:43

Following on the theme of other topics that need attention: when will there be some consideration of transforming the way we deal with our existing stock in the UK? Perhaps a programme of work to consider how the TCC outputs can be transferred into the retrofit/refurbishment sector?

Mat Colmer - Innovate UK UKRI (You) 11:47
Similar response to the previous question on TCC 2.0. We know there is more to do and are working through plans for a UKRI organisation approach

Debbie Carlton (Guest) 11:55

Why has the sector not invested in making competence frameworks etc. machine readable? In PBBS project we mined all the English Construction Apprenticeship standards. In other projects we make ISO standards and PAS machine readable. This potentially could bring real structural innovation

Mat Colmer - Innovate UK UKRI (You) 12:08
This could be a future project eligible for funding from Innovate UK via our Smart grants. See the Innovation Funding Finder for opportunities.

Vijay Pawar (Guest) 11:58

Inspiring presentation setting a vision for the future. I hope we can continue this progress. Reflecting on how other sectors are currently embracing change e.g., the many healthcare + AI initiatives etc, how do you propose to maintain and/or better engage with academia to get the required next-generation skills transfer specific to construction problems? (ANSWERED BY PANEL -- SEE RECORDING)

Anonymous Attendee 12:04

In addition to what Chloe Donovan said (see unanswered question @11:47 below), when embodied carbon is one of the firm considerations in terms of net zero, the signs are that whether a new building is absolutely necessary or not should be a key consideration. All this focus on new build, at the exclusion of such considerations, may not be that helpful.

Mat Colmer - Innovate UK UKRI (You) 12:11

We acknowledge that TCC is focused on new build assets and there is far more to do. Like everyone we are constrained by funding and need to focus to achieve transformation. We cannot speculate on future funding, but we always push for more activity in this area.

Anonymous Attendee 12:19

With the benefit of hindsight, is there anything you would have done differently in the delivery of the programme and projects to enable an even greater impact? (ANSWERED BY PANEL -- SEE RECORDING)

Sam Hart (Guest) 12:19

Do the panel foresee any issues with the drive towards an increased use of low embodied carbon, natural construction materials (timber) used on some of the specific TCC projects and the post-Grenfell ban on combustible materials? (ANSWERED BY PANEL -- SEE RECORDING)

George Martin (Guest) 12:22

Can I let everyone know that thanks to funding from UKRI we now have a Building Performance Evaluation, British Standard BS 40101. This was published on the 31st January 2022. Please consider using this for the design, construction and operational stages for ALL projects. We at the Building Performance Network would welcome your feedback on the Standard.
George Martin, Chair, Building Performance Network

James TEAGUE (Guest) 12:27

George hit it head on !The current building regulations will not deliver net zero carbon in use. Here are two of the barriers:

1. SAP needs to be equivalent to PHPP
 2. Regulations need to be based on design for performance and NOT design for compliance
- George Martin Chair, Building Performance Network

Graeme Jones (Guest) 12:32

Hope to see everyone at Futurebuild next week to discuss our launch of the modular anode unit (MAU) for the resilience management of structures. A kit of components that control corrosion and provide performance data for whole life. Stand E63 if anyone wants to meet us and support this SME!

