

Rich collaboration media emulating human behaviour as a fundament to the digitally transformed organisation.

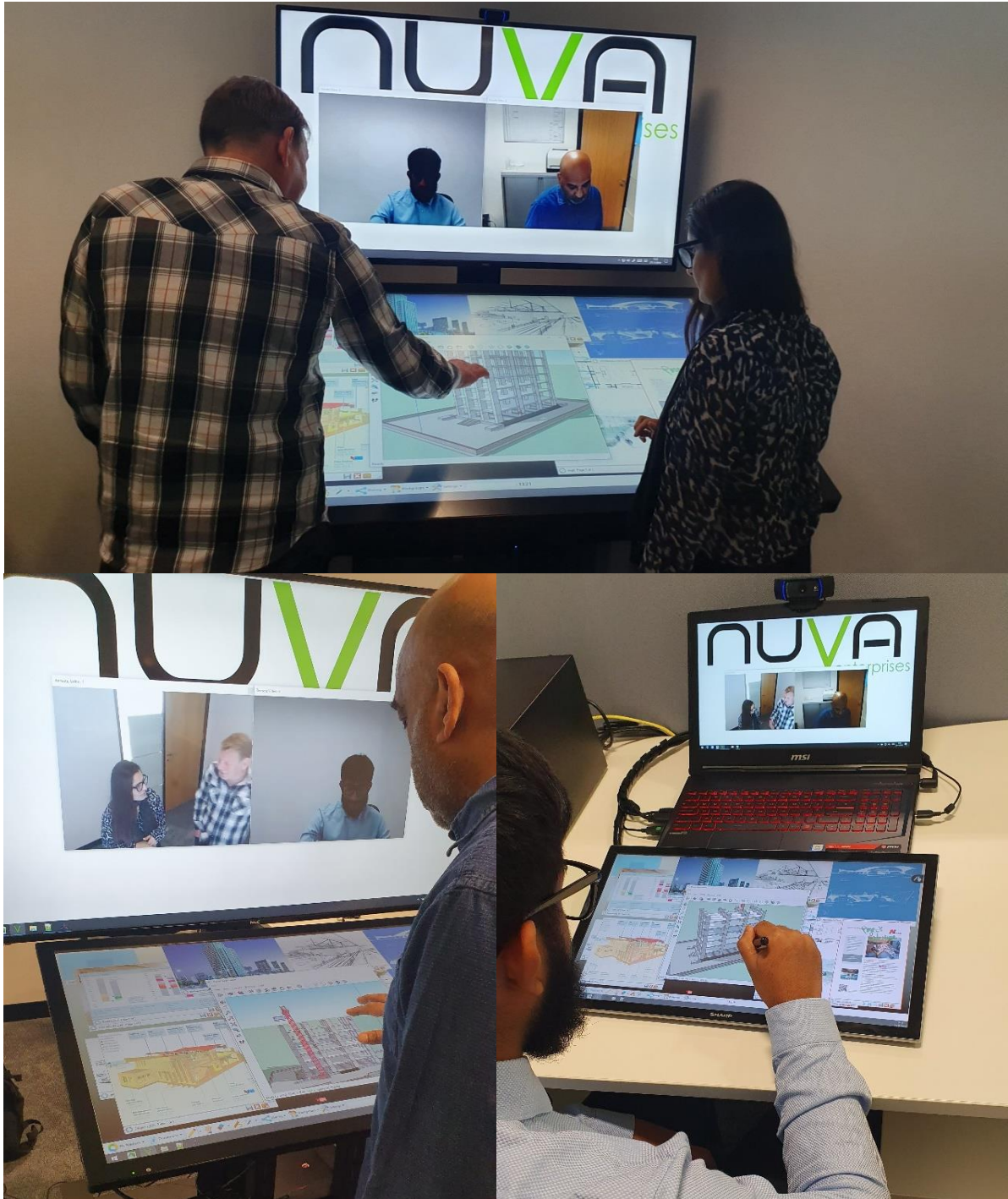
With a plethora of digital applications it may be difficult for the reader to understand precisely what digital transformation means in the context of the construction or manufacturing industry.

It is now well understood that BIM and other 3D cognitive models help the human mind better conceive a particular project; unsurprisingly this is because we live in a three-dimensional world and three dimensions are natural and easier to understand. In psychology terms this understanding is called cognition and is very relevant to the industry both for safety and cost reasons.

Digital transformation is not merely about digital models existing in one place, the modern programme or project requires the electronic circulation of these models to all participants so that collaborative decisions may be immediately made by experts, ideally without travel. These days the multi-disciplinary team will be dispersed geographically, therefore we need a way to share these documents over a rich enough medium to avoid the constant delays of geographical meetings where it is common to have key people absent. These decision-making delays have major cost implications.

In the same way that three dimensional models are easier to understand as we live in that three dimensional world, so then we collaborate best at a 'natural meeting' for this is how our social activity, bodies and minds have evolved over millions of years. Sponsored academic research has validated that the more 'natural' the medium of collaboration the better the cognition. This means that if we electronically emulate a round table collaborative meeting with people and artefacts we then deliver optimal collaborative cognition i.e. we 'get' each other better. Such systems are on the market now and can radically reshape business efficiency and provide a platform for firstly the circulation of all digital models, secondly and significantly provide the human decision making element that always 'sits over' the relevant data in the most natural way. All this can now be achieved remotely saving time and associated cost but also improving safety, innovation, carbon footprint and work life balance.

These systems have been built based upon an improved understanding of how humans have evolved over millions of years from a 'campfire drawing pictures in the sand' social collaboration meeting that often-decided survival itself, and this is the same type of meeting that still pertains today. nuVa deliberately recreates this type of meeting at the Human Machine Interface, which in turn creates a remote medium of understanding richer than any other.



The nuVa software design provides the best way to collaborate anywhere and creates a platform that can not only move any digital model around to any affiliated party electronically, but allows people to sit over the visualised data and come to collaborative decisions immediately. That is all the data may be circulated and shared immediately in full context and all the participants escape from the thought constraining 'desktop cage' and can view the data just as though they were huddled around the table in the same room.

nuVa, using digital images and computer applications, puts all remote collaborative worldwide end points or offices on precisely the same page; moving a document or an application at one end moves it immediately at all other ends whilst synchronously seeing people over video with audio i.e. just

like a natural meeting with people, artefacts and documents, yet at distance. The arrangement delivers one true version that is the same for all collaborating parties thus eliminating communication errors and rework.

The benefit that the nuVa system delivers is that knowledge workers can collaborate remotely, and immediately on complex CAD and associated documents, in broad context immediately from anywhere in the world in a richer way than ever before. The safety and sustainability benefits are clear; but not only this, the system leaps from communicating with a hotchpotch of media including paper, e-mails, pictures and face to face meetings to pure digital. It creates a platform for full digital operations that can circulate models and provide the collaborative human interface that is always required to make decisions upon the visualised data provided. This is digital transformation in action.

On the nuVa platform we can circulate, collaborate and innovate over: Digital twins, Digital Thread, Block Chain, Design/Build/Operate process, Additive Manufacturing, IoT, Big Data, 5G Edge Access, or any technology enabling the digital revolution. Such a platform is the glue that holds together the people element that interprets the digital data; it allows immediate circulation of any aforementioned digital models AND the rich interface that allows people to collaborate over the information remotely.

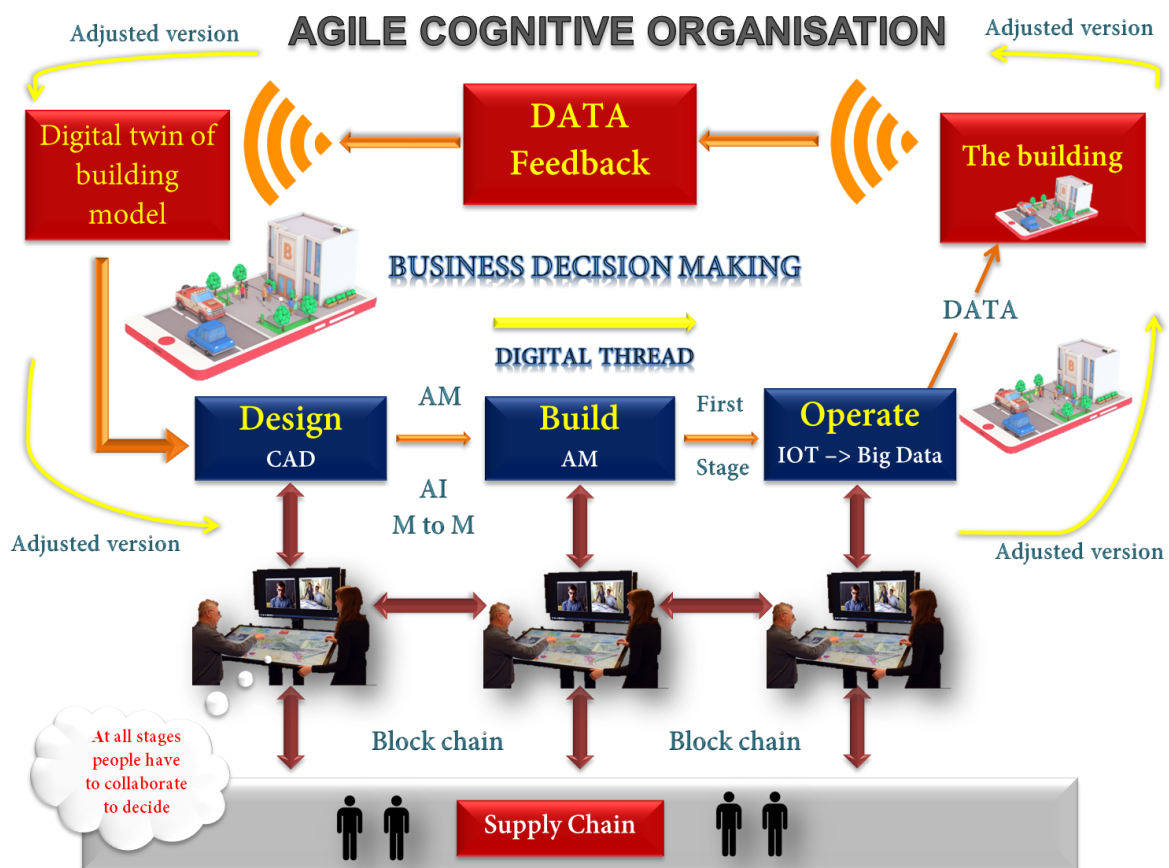


Fig a. This demonstrates how people using rich remote collaboration have to decide on the visualised data at all stages in the Design/Build/Operate product life cycle. It is always people that ultimately decide on the particular issue and nuVa allows them to do this remotely.



For any business or programme these new technologies mean the migration away from the hub and spoke programme model or the hierarchical model towards the 'workflow model', that is if there is an issue on the workflow, then the business may collaborate immediately using remote experts to fix any particular process blockage.

We believe that nuVa is of major importance for the Design/Build/Operate process and its associated digital thread and digital twin, which in turn integrates into the supply chain. The Cognitive Organisation depends on 'flow', the flow of collaborative knowledge, the flow of collaborative decision making. The nuVa collaboration medium is the 'cognitive flow enabler' allowing knowledge and decision making to be immediately applied to any client or project issues.

Circulating the knowledge embedded in the digital models over rich collaboration platforms allows the new digital organisation or programme to tend toward an 'intelligent mesh' rather like a brain with the knowledge centres as neurons and the rich communications links as the synapse; clearly if the synapse is weak the organisational brain will not work well and competitive dis-advantage ensues.

In conclusion it is clear that these technologies move the industry away from an old-fashioned serial way of working to a new parallel way of immediate expert decision making; the likely impact may well be expected to shave from 5 to 25% from programme time and cost. We can also expect reductions in the tangible costs of travel, major carbon footprint reductions, as well as an improved work life balance.