



# WHITE PAPER

## OPPORTUNITY & RISK IN PROJECT DATA



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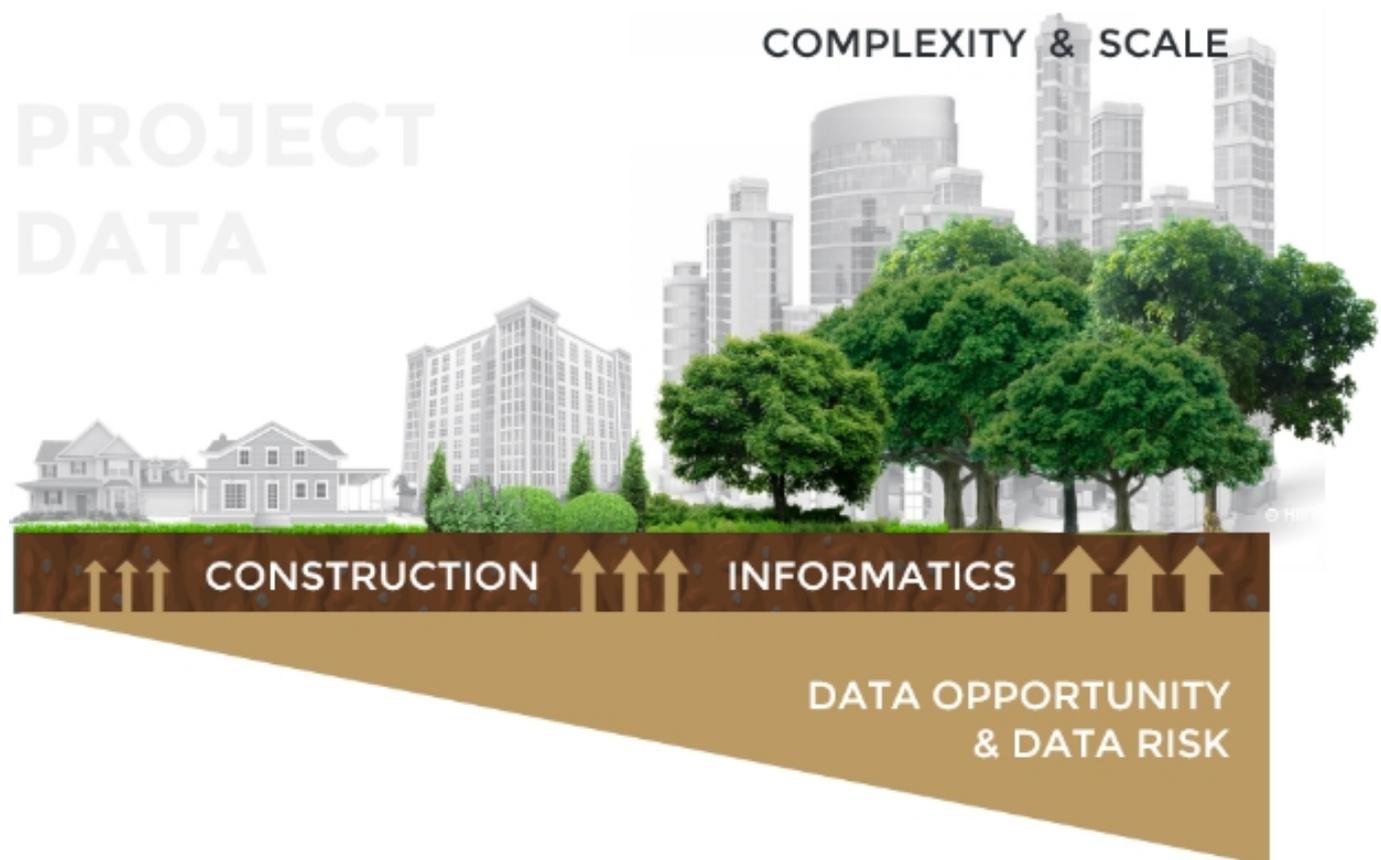


This paper looks to inform AEC business leaders considering investment in BIM enabling technology or searching for answers as to why perceived benefits have not been realised. It introduces Construction Informatics as the application of advanced technology and knowledge management to built assets.



**The productivity crisis and narrow operating margins are material risks which has the potential to mitigate. Just as farmers tend soil to increase crop yield, smart AEC organisations are looking to project data and its flow to improve performance, productivity and margins. It is records and the data they contain that inform the myriad of decisions which, when properly marshalled, enable the construction of complex projects. However as BIM gains traction, companies investing in enabling technologies are not achieving planned returns on investment (ROI) when data basics are ignored.**

**In this paper we look at some of the major risks relating to project data. By first understanding the risks readers will be better placed to see the opportunity and understand potential factors that help explain poor ROI.**



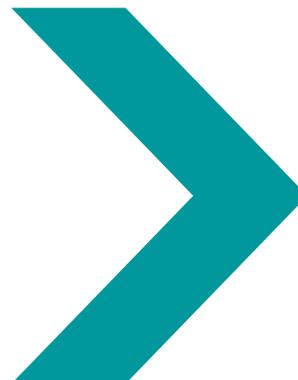
## PROJECT DATA “THE RISKS”



**PROJECT RECORD VALUE DEPENDS ON THE ABILITY TO READILY ACCESS AND ANALYSE THE DATA THEY CONTAIN - THIS IS INFORMATION LIQUIDITY**

1. In a lethargic industry that has long resisted change, the speed of increase in the volume of project data has outstripped many organisations capability to analyse and act on it. This can result in information overload or analysis paralysis - with organisational productivity impacted.
2. **The value of project records is dependent on an organisation's ability to readily access and analyse the data they contain - the measure being information liquidity.** Records are rarely conceived with this in mind with data trapped in poorly designed records or inappropriate formats, akin to removing the structure (and value) from structured data. This is a major contributor to poor quality claims which frustrate the supply chain and can lead to costly disputes.
3. The inability to timeously analyse project data can result in decisions being based on outdated information. Such latency in decision making compromises responsive commercial management and can lead to a disconnect between what is happening on the ground and instructions received from remote management teams.
4. Inconsistent use of technology, in particular PIM solutions, can actually degrade an organisations decision making ability by creating silos of information by proxy. This compromises situational awareness or the ability of management to broad frame and can result in well documented impacts.
5. Increased decision making under uncertainty which leads to increased prevalence of heuristics or bias and associated human factor risks. The errors and omissions these can cause during steering or shaping typically manifest themselves as poor execution during construction. Together these are the principal cause and effect pairing that cause mega-project failure.

**Mitigation begins with awareness. If these risks resonate with your own experience then good news, ceasing the opportunity presented by project data largely mitigates them. Next we will review some of the approaches to ensuring the data basics are in place, how these mitigate the risks outlined above and the wider opportunities presented by mastering project data.**



**FOCUS ON DATA BASICS TO CATALYSE THE LEVERAGING OF TECHNOLOGY AND BIM FOR IMPROVEMENT AND GROWTH**

## PROJECT DATA “THE OPPORTUNITY”

We identified some of the major risks associated with data both at a project and organisational level. These included poor ROI from BIM and enabling technology when data basics are ignored; and diminished value of project records due to poor information liquidity i.e. data trapped due to poor record design requiring labour intensive extraction or aggregation prior to meaningful analysis.

With foresight asset owners and AEC business leaders can unlock the intrinsic value and opportunity of project data. Relating this to the opening farming metaphor, construction informatics can achieve benefit gains that equate to a shift from subsistence farming to the tech enabled intensive farming we see today.

## A TRILLION DOLLAR OPPORTUNITY?

Industry research [1] stated less than 1 percent of data currently captured is used, the remainder representing an opportunity for optimization and prediction – the data revolution. The report projects a global GDP contribution of up to US\$ 11.1 trillion by 2025 of which 70 percent being B2B, a pie of some US\$ 7.7 trillion a year.

The global BIM market to set to surge at a CAGR of nearly 20 percent between 2015 and 2022 from US\$ 2.7 billion to US\$ 11.5 billion [2]. Extending this growth rate through 2025 would value the global GDP contribution of BIM in 2025 in excess of US\$ 20 billion.

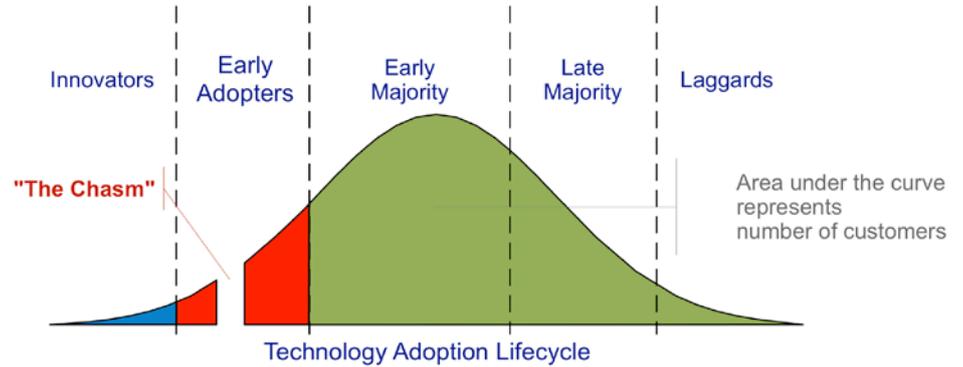
In reality the total potential value to AEC organisations and asset owners is likely to be upwards of US\$ 1 trillion by 2025 when accounting for operational optimization. At HKA we are researching the impact of asset information strategies on individual asset and portfolio valuation – something which we believe will provide the financial incentive needed to get clients to drive BIM implementation from total lifecycle value perspective.



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# PERFECT TIMING

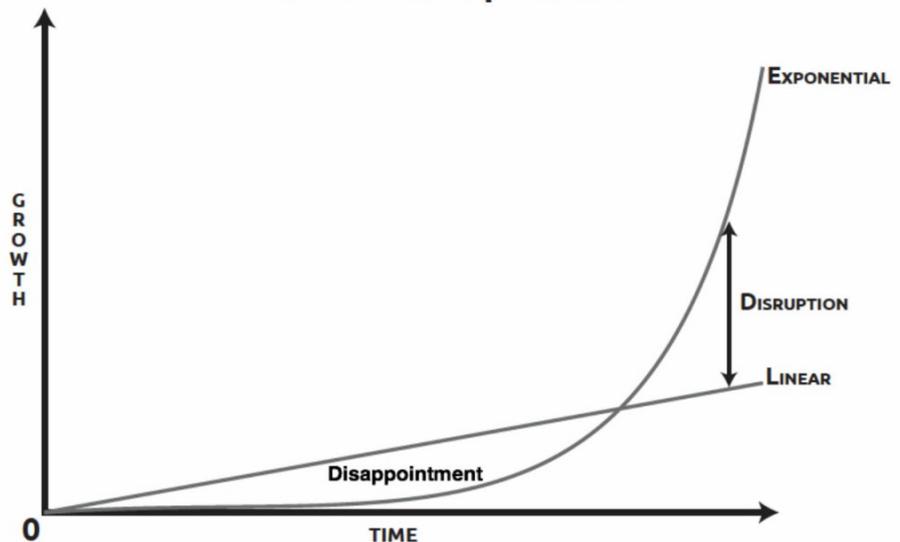
A data revolution is founded on the implementation of technology – no surprises there. In many respects the adoption of new technology is predictable, how so?



The fact BIM is undoubtedly gaining traction worldwide is evidence the market is awakening the potential of both graphical and non-graphical data. Innovators and early adopters have hit hurdles but as evidence of the value of BIM grows so its uptake accelerates.

AEC business leaders seek to maximise the opportunity of investment in BIM and IoT enabling technology. Timed correctly and they miss the frustration, uptake chasm and costs faced by early adopters; they limit the disappointment illustrated in the linear vs exponential model; all whilst ensuring they have the business systems and process in place to capitalize on the disruptive potential of the data revolution – no easy path but one can advise clients on.

## Linear vs. Exponential



# THE DATA EPIPHANY



## EPIPHANY- A MOMENT OF SUDDEN AND GREAT REVELATION OR REALISATION

**Data underpins informed decision making. The more data the better informed the decision. How much data, and therefore how informed the decision, depends on the capability of an organisation to timeously capture and analyse data. The more analysis the greater the situational awareness.**

Poorly considered or structured legacy records compromise analysis and impede dataflow. The key to realising value in the data revolution is not expensive technology but a revaluation of data and how it is used within your business from base principals and in doing so reversing the disconnect between information technology and business leaders.

**Is it reasonable if business leader decisions are informed by only 1 percent of data available?** The optimisation and predicative value of the 99 percent in the early state of the data revolution is a disruptive opportunity. As time goes on it will be the difference between success and failure of large contractors operating on small margins. It is anticipated that once investors make this connection they will pressurise boards to capitalise on the opportunity.

Without the data epiphany business leaders underestimate the systemic significance of data as the lifeblood of their organisations. There are tangible similarities between the data revolution and the dawn of internet some 28 years ago. Successful companies of the future will be the ones that strive to reverse the 1:99 ratio to drive value for clients, improve razor edge margins and out compete rivals.

Given the reluctance of many AEC related industries to change the early adopter opportunity to gain and retain market share is sizeable as traditional defensive strategies such as undercutting price are not an option for industry stalwarts operating on such thin margins.

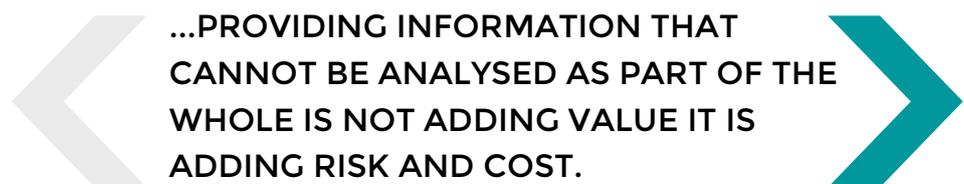


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## BIM AS THE PROVING GROUND

Part of the data epiphany is that BIM is about data informing decisions not producing 3D models. This is fundamental to business leaders understanding that models are simply a mechanism that taps into our innate visual ability to better make sense of large and complex datasets. The plethora of non-graphical project is where the true “potential” value lies.

Note it is just “potential” at this point because a systemic misunderstanding of the need for information liquidity is constraining BIM and risks wholesale undercapitalisation of the data revolution. For clients to realise the full potential of BIM i.e. the untapped value of dramatic reductions in operational expenditure over the life cycle of an asset, the supply chain must embrace information liquidity; providing information that cannot be analysed as part of the whole is not adding value it is adding risk and cost.

 **...PROVIDING INFORMATION THAT CANNOT BE ANALYSED AS PART OF THE WHOLE IS NOT ADDING VALUE IT IS ADDING RISK AND COST.**

Although the BIM process provides an approach for the development of information requirements at organisational, asset and project level these are often poorly evaluated or defined. Having experienced a data epiphany, these are the mechanism by which information liquidity can be specified and disseminated through the supply chain. It is the author’s opinion that clearly defined information requirements should, where viable, to be back-to-back through the supply chain. Furthermore clients should consider incentivising information liquidity through such agreements with stretch payments or alternatives in order to help unlock the value of project data post completion.

Why a consider BIM the proving ground? BIM is here and now. Contributing to BIM projects provides businesses throughout the supply chain with the opportunity and motivation to assess their own information requirements and the fitness for purpose of legacy records to meet them. In doing so they will shine a spotlight on poor information liquidity, data integrity and latency that impacts existing situational awareness and decision-making.

In implementing changes to the benefit of their own organisation they will find they remove much of the perceived cost of contributing to BIM and be better prepared to capitalise on the IoT opportunity that is snapping at the heels of BIM.

Much as the internet was a great leveller, project and organisational data unlocks optimisation and predictive capabilities that bring foresight into reach of mere mortals.

## REFERENCES

[1] McKinsey Global Institute - The Internet of Things: Mapping the Value Beyond the Hype

[2] Transparency Market Research.  
<http://www.transparencymarketresearch.com/building-information-modeling-market.html>

[3] Technology Adoption Lifecycle - <http://blog.ereo.io/bim-for-fm-closer-than-yesterday/>

[4] Linear vs Exponential - <https://qph.ec.quoracdn.net/main-qimg-a1a55f4a5dfa6535bf58f21b128fec2c>

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Charlie leads HKA's Construction Informatics service offering advising clients on how to best leverage technology and position themselves to capitalise on the construction data revolution. He routinely contributes thought leadership on the topic and presents at expert conferences and masterclasses.

## ABOUT HKA

HKA is the new global brand that unites the former Construction Claims and Consulting Group of Hill International and associated subsidiaries.

Following its sale and de-merger, HKA is now a privately-owned organisation with management equity, supported by Bridgepoint Development Capital, part of Bridgepoint, a major international private equity group headquartered in London, UK.

At HKA we anticipate, investigate and resolve project challenges. We understand the pressures associated with delivering successful projects, whatever their size and complexity, wherever in the world. For over four decades we've stood alongside our clients as trusted independent advisers, finding solutions amid uncertainty, dispute and overrun. From construction and manufacturing to processes and technology, our people provide the advisory, consulting and expert insight that make the best possible outcomes a reality for public and private sector clients worldwide.

HKA. Decoding Project Complexity.