JLL SEE A BRIGHTER WAY

# Realising the Value of Smart Buildings with Enterprise Agility for AI

Dr Matthew Marson

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# Dr Matthew Marson

*Managing Director – Technology Advisory*

matthew.marson@jll.com

+971 50 228 6872


Author, The Smart Building Advantage

Smart Buildings PhD

Columnist, Smart Buildings Magazine

MEng Structural Engineering + Architecture

Head of Smart Places, WSP

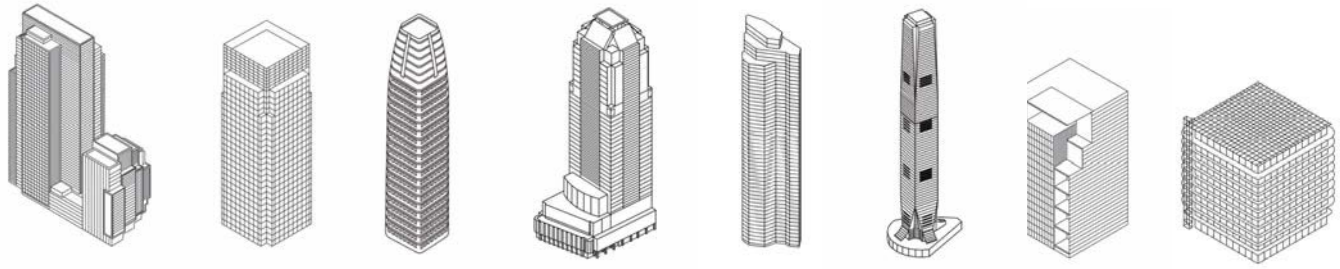
Connected Spaces Lead, Accenture

Board & Fellow at the Institution of Mechanical Engineers

Royal Academy of Engineers Young Engineer of the Year 2022

Fellow of the RSA

Co-author, Encyclopaedia of Sustainable Technologies



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**01**

**We’ve (mostly) solved the technology part**

 

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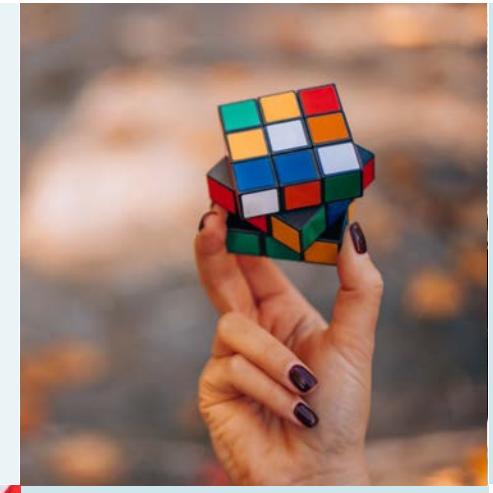

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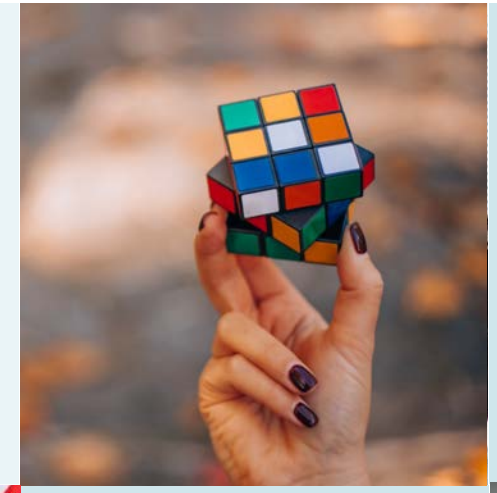

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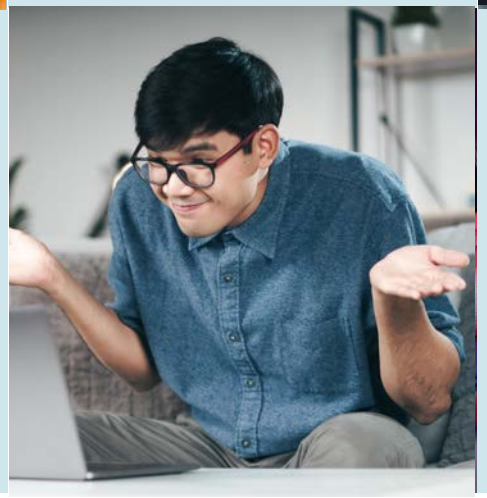


**05**

**When we have smart, we don’t really know what to do with it**

# The USS Enterprise landed, and no one knew how to fly it

# Or if they did, the didn’t believe what the data was telling them

“

Many have invested in capabilities that have translated into business impact.

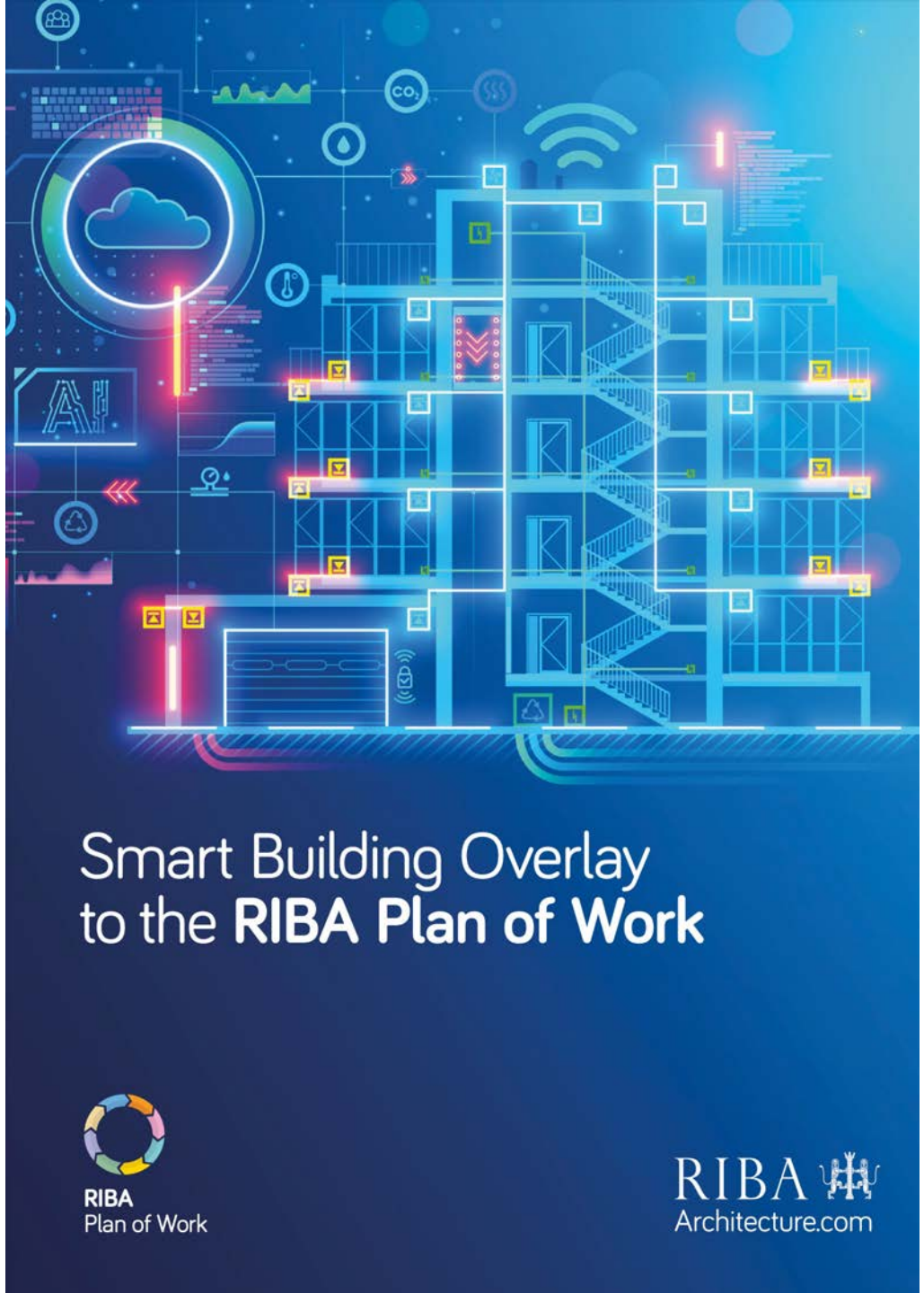
# The plastic box didn’t reshape the entire portfolio


Physical


Digital



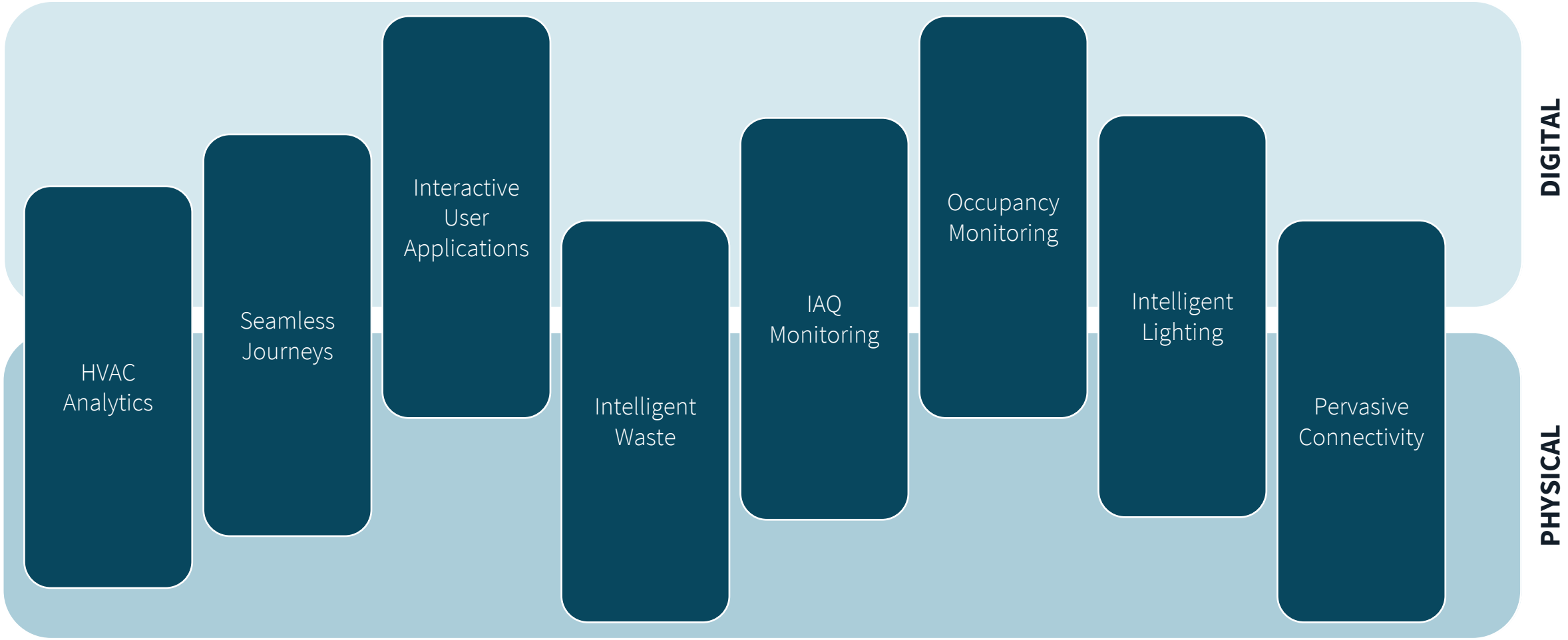

 

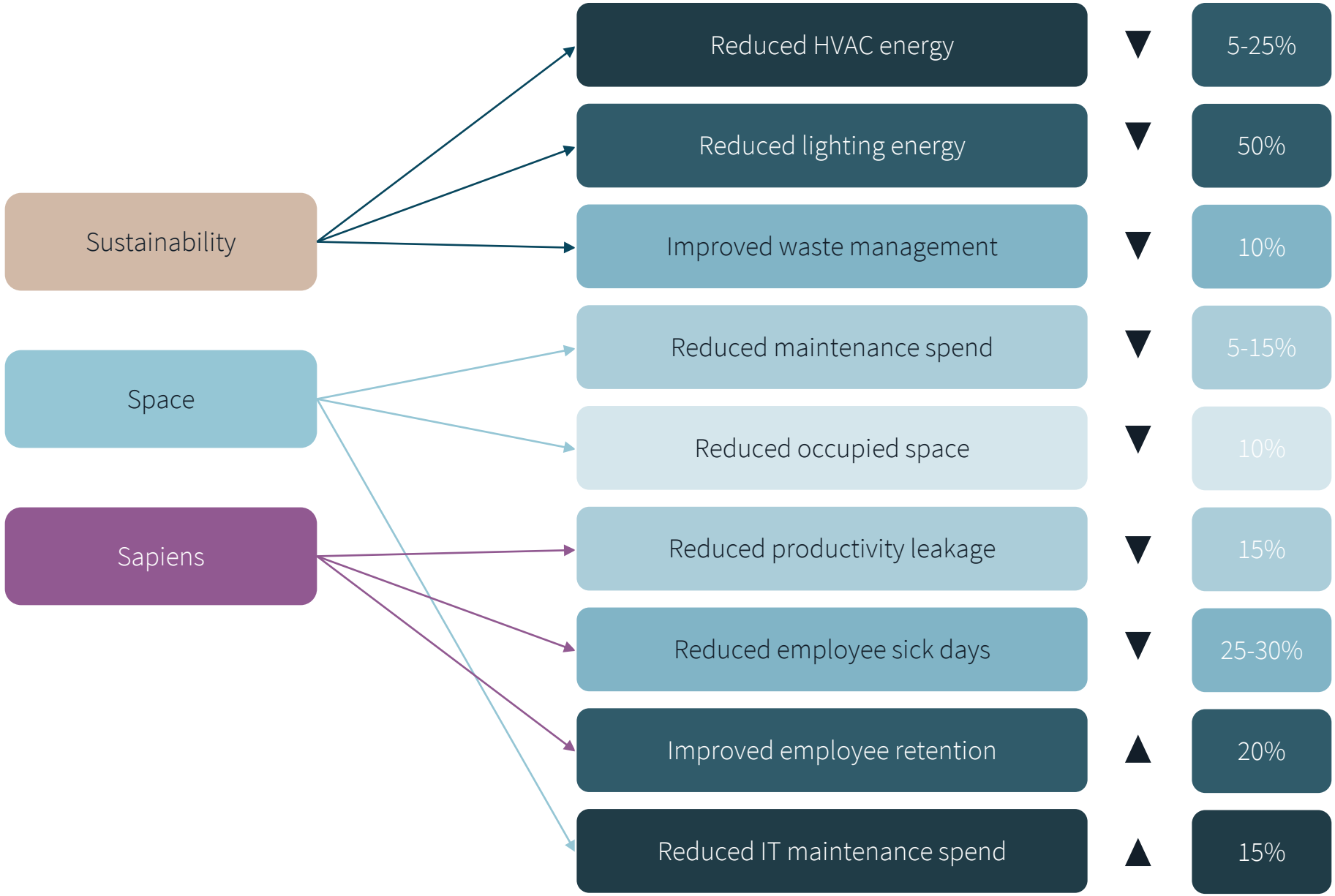

 

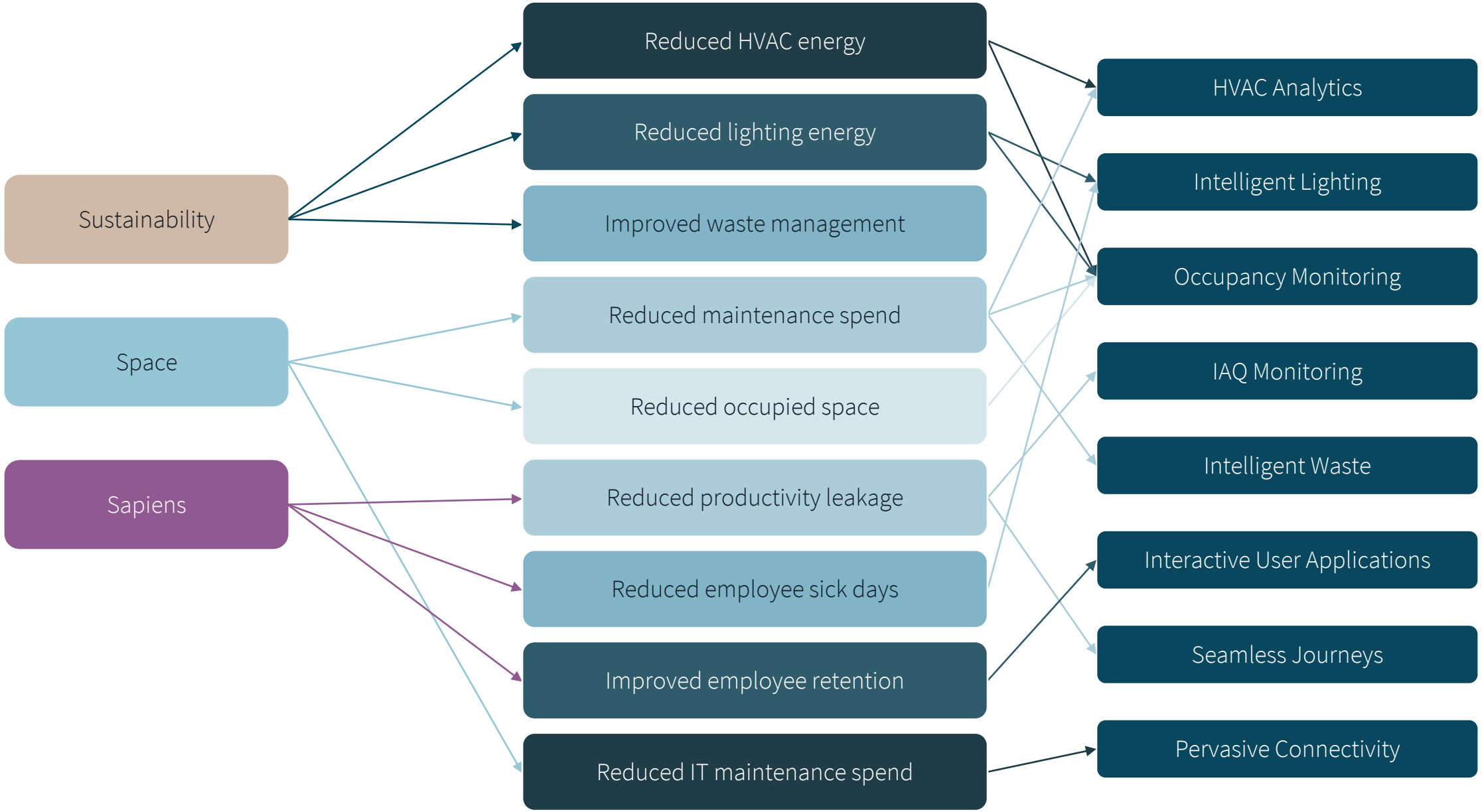
# There are a set of core technologies that unlock value







# The Smart Building Advantage

## Unlocking the value of smart building technologies



# For every $1 invested, $3 returned over 5 years*

*This ratio holds across most currencies
More square footage can yield higher savings

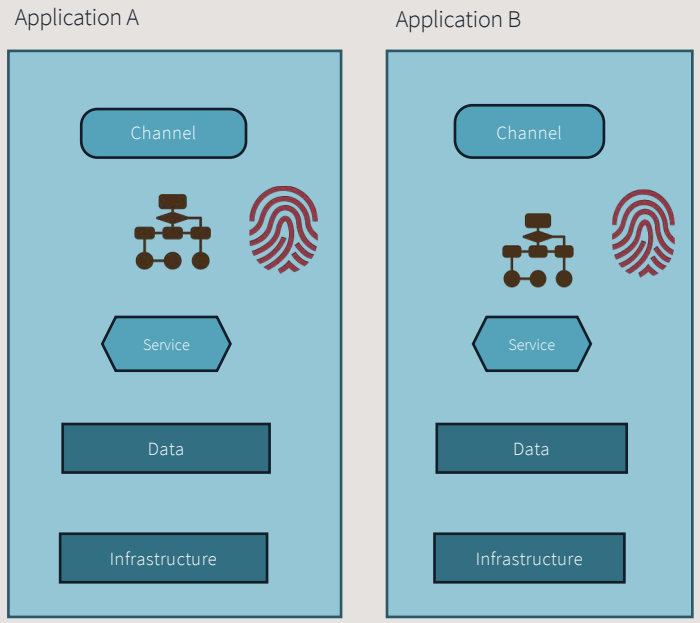
# The answer lies in existing methods

# Sounds nice. But how?

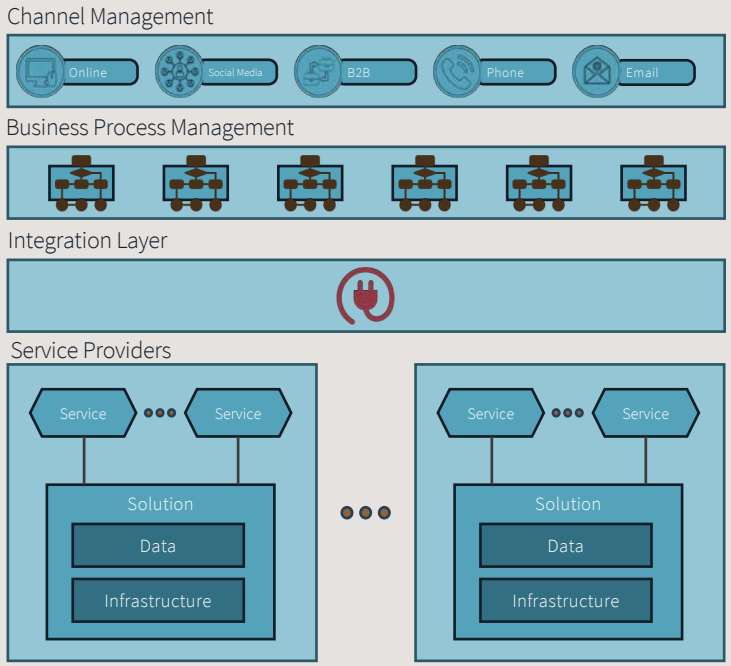
**Current State**
## Vertical Architecture

- Islands of Data
- Islands of automation
- Fragmented processes
- Inconsistent user experience
- Large unit of change
- Very complex integration requirements (or lots of “Swivel chair” integration)
- Business logic mixed with



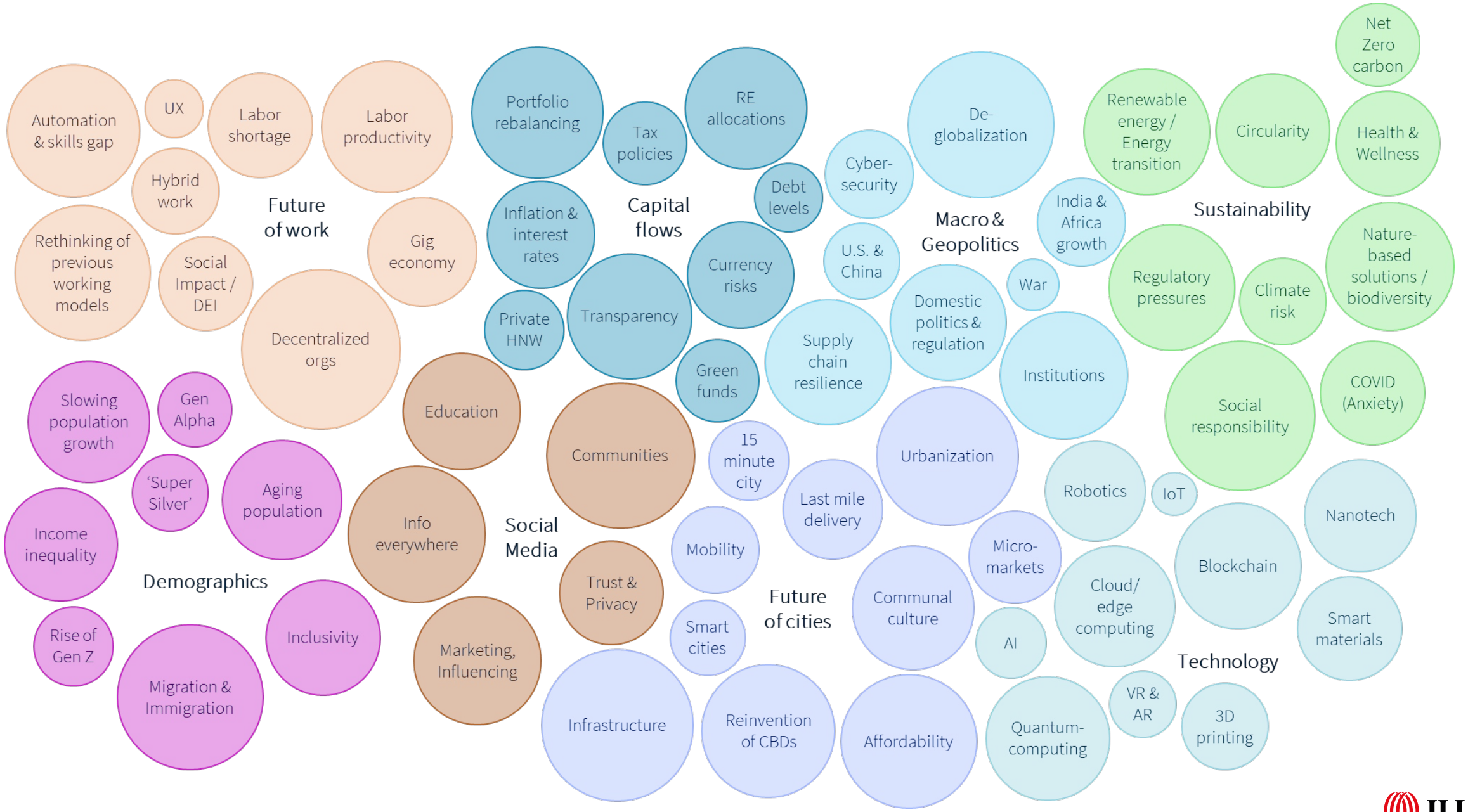

**Target State**
## Horizontal Architecture

- Channel Independent
- No business logic in the channel solutions
- No business data stored in the channel solutions
- Customer-centric design – “outside-in” design
- Re-envisioned digital interaction – not just putting paper forms online
- All inbound information converted to digital format at the channel
- All outbound data in digital native format

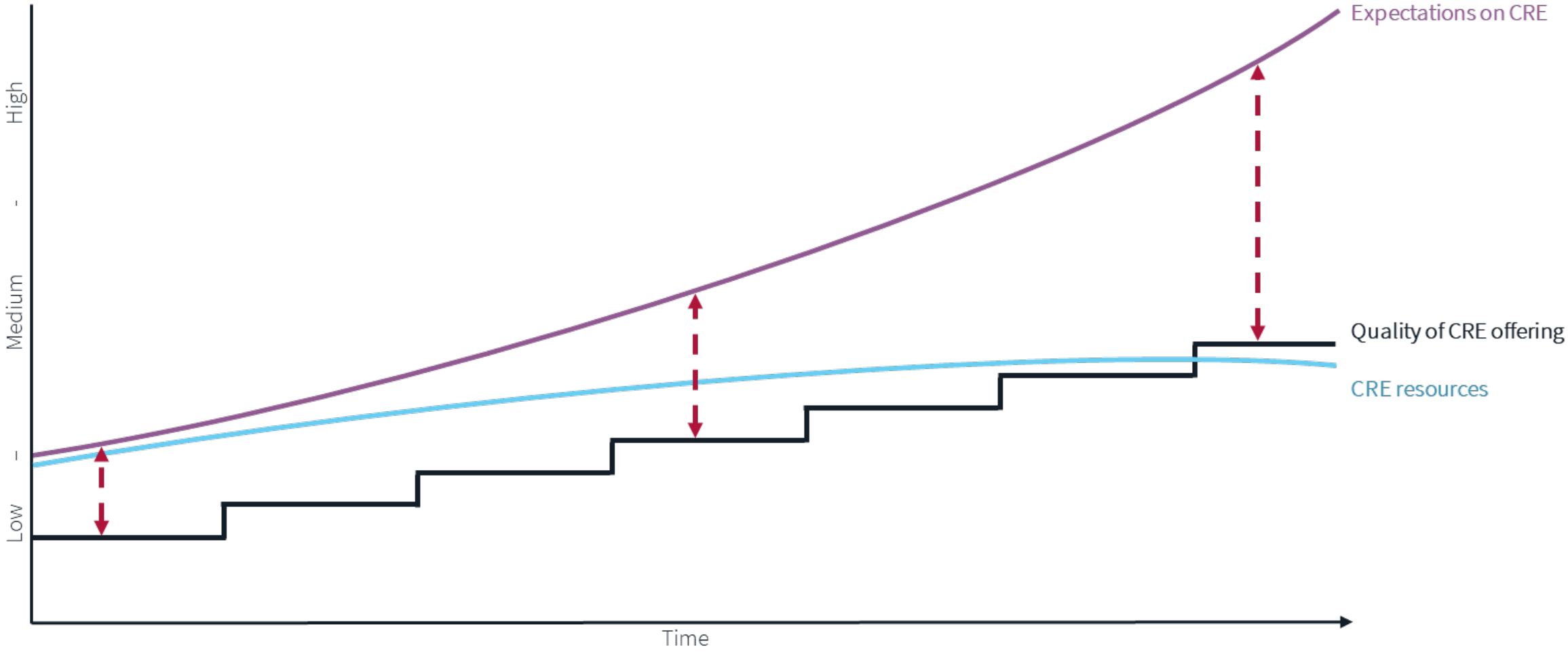






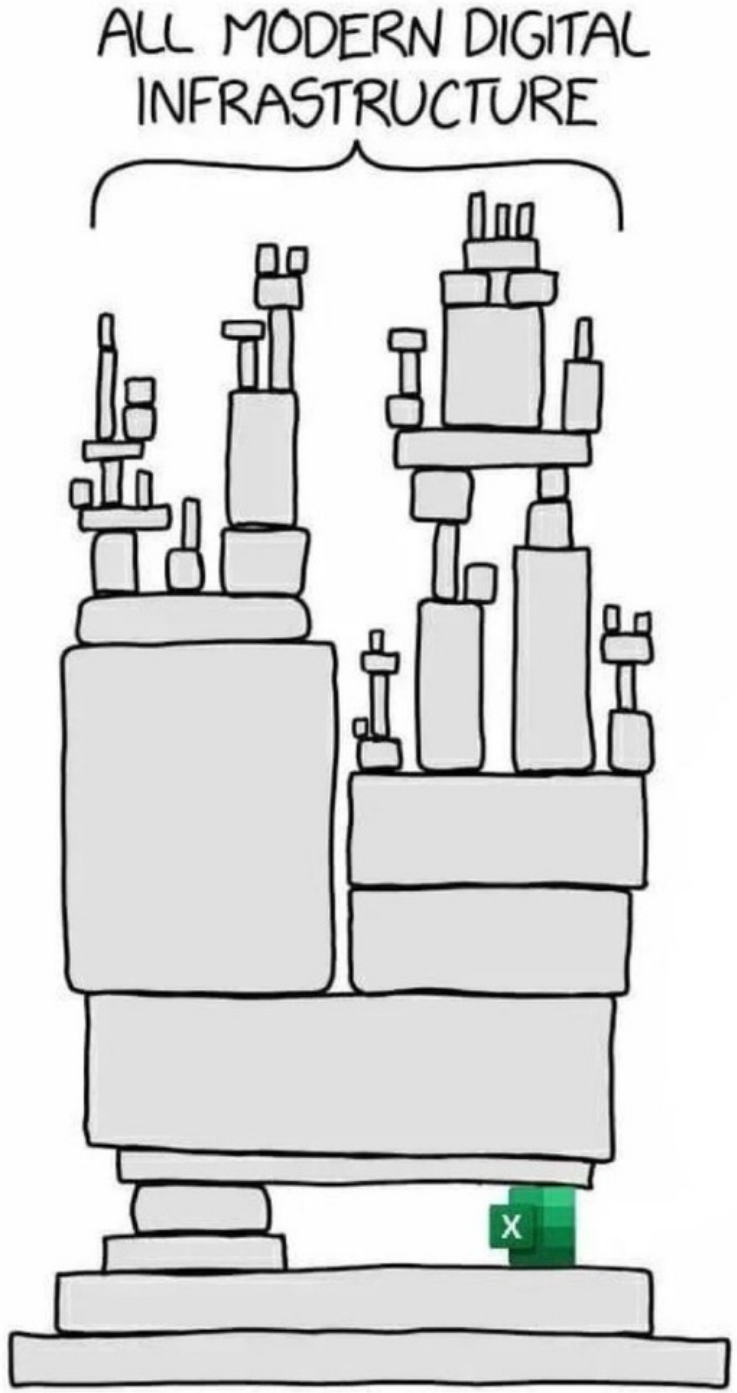



Image from xkcd.com

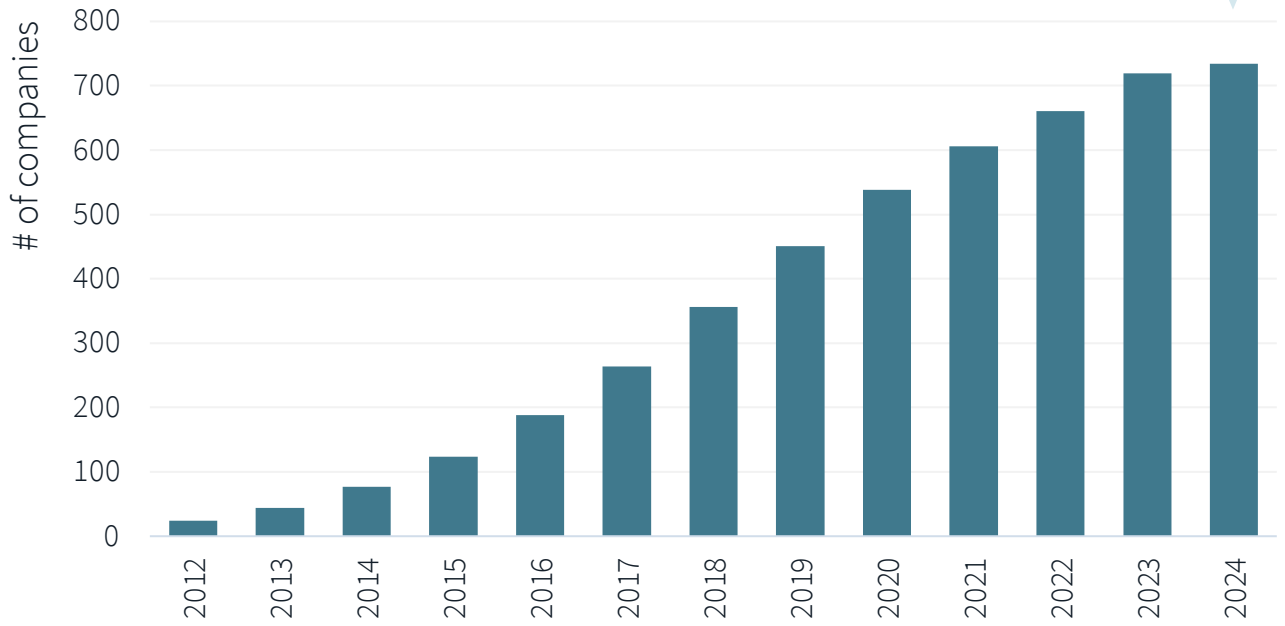
 


Hey Chat GPT,
finish this building...
Your skills are irreplaceable.
IMPACT
Satisfying jobs in construction
Hey Chat GPT,
finish this building...
Your skills are irreplaceable.
IMPACT

# It can be a little overwhelming….

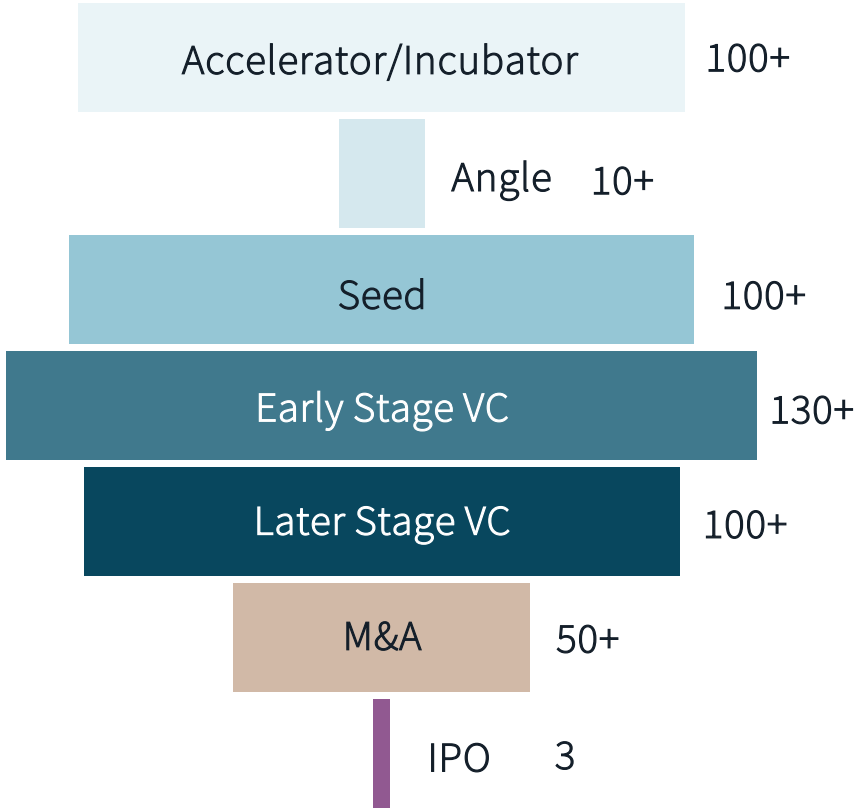
## Total number of AI-powered PropTech companies

As of now, **700+** companies globally




Source: PitchBook, JLL PropTech database

## Company maturity stage
# of companies



# …with so many AI powered technologies for CRE

## Enterprise AI

General enterprise-level AI productivity tools:

- GPT like enterprise LLMs tool
- CRM system AI plug-in
- Marketing and communications copilots
- …

*These tools and use cases are part of the overall AI business strategy and part of IT remit in most companies.

## CRE-specific AI solutions

### Design & Construction

- Design modeling & planning
- Project management
- Construction technique/equipment
- Building components/materials

### Experience Management

- Employment experience
- Health & indoor environment

### Portfolio Management

- Portfolio data analysis
- Market research
- Marketing
- Lease & payment
- Strategy & site selection
- Carbon tracking
- Capital planning
- Portfolio benchmarking
- Legal & compliance

### Building Operations

- Facility management
- Energy & utility management
- Occupancy management
- Security & access
- Building connectivity

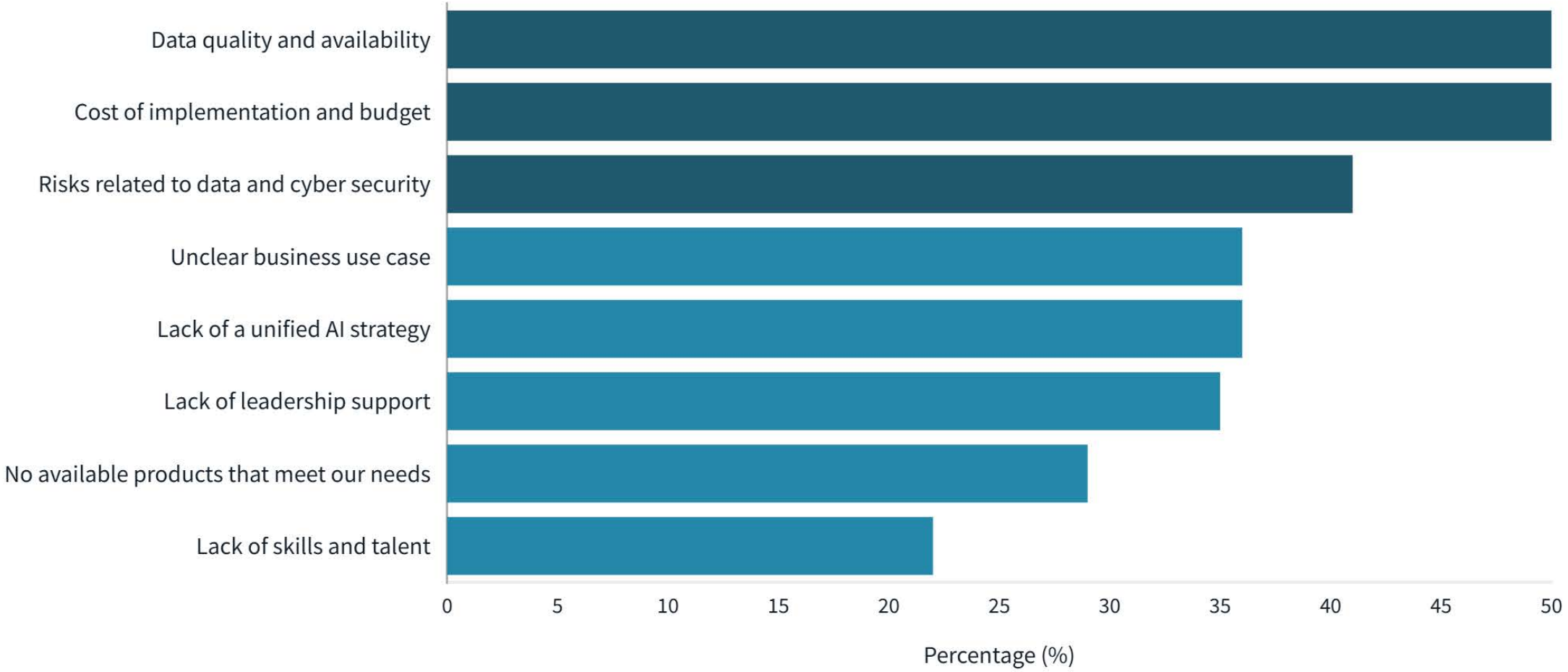

 

# Approaches to AI

| Approach | Speed to Value | Depth of Change | Impact | Culture |
|---|---|---|---|---|
| **Use Case Exploration** | **High** | **Low** | **Tactical wins** | **Cautious, needs proof** |
| **AI-Led Transformation** | **Moderate** | **High** | **Strategic** | **Ready for reinvention** |
| **Radical Future Vision** | **Variable** | **Disruptive** | **Game-changing** | **Visionary market leader** |

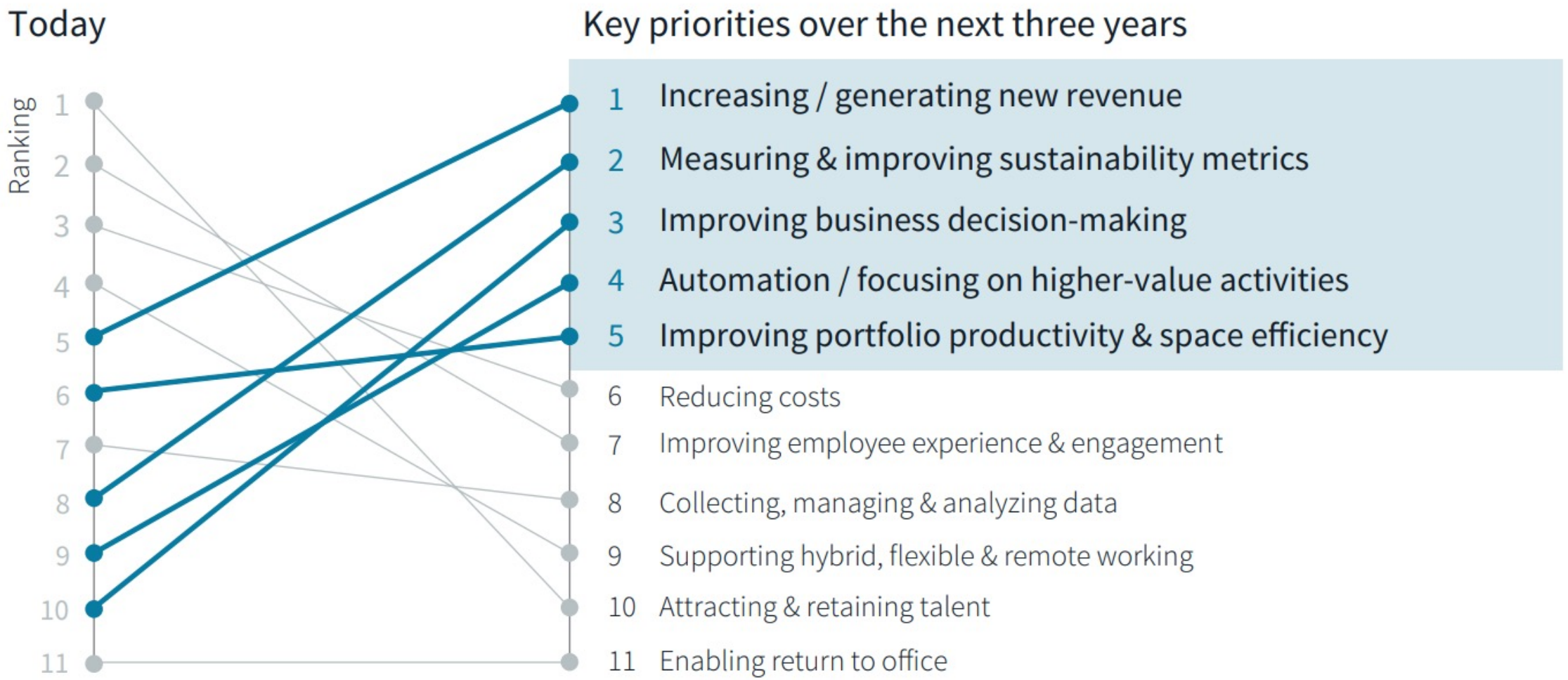
# Remember that need for data – it is one of the main barriers!




Source: JLL Research, 2024

# Goals are grounded in business need



# AI-driven CRE Use cases

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Chat bot for customer service and resource booking | AI sales opportunity prioritisation | AI-driven investment & risk analysis | Automated cleaning & maintenance scheduling | Automated data standardisation & reporting | Automated event & facility planning | Automated floorplan digitisation/mapping | Automated meeting room/space management | AI powered capital planning decision support |
| Automatic ontology and integration of IoT Systems | BMS automation & dynamic controls | CAPEX & project cost forecasting | Construction schedule optimisation | Dynamic pricing & revenue optimisation | Employee experience optimisation | ESG/decarbonisation analytics & targets | Intelligent document management & routing | Predictive attendance analysis |
| Facial recognition for security, greeting and sentiment analysis | Intelligent HR/recruitment assistance | IoT device orchestration via ontologies | Lease abstraction & automated compliance | Market intelligence & automated benchmarking | Portfolio scenario & stress testing | Predictive maintenance optimisation | Predictive occupancy & space planning | |
| Procurement spend optimisation | Smart vendor performance analytics | Tenant/client experience platform | Transport orchestration & mobility analytics | Unstructured data labelling & ontology mapping | Workflow automation for finance and automated payments | Automatic ontology and integration of IoT Systems | Instant document drafting & summarisation | |
| Smart email management & response generation | Automated meeting notes & action tracking | Knowledge & policy intelligence | Task automation & workflow optimisation | Data analysis & smart insights | Lead generation chatbot | Real-time sales coaching | Case handling & resolution flow | |
| Smart pipeline management | Automated quoting and proposals | AI-driven self-service & query automation | Contextual account insights & next best actions | HVAC energy optimisation | Energy optimisation | Automated work routing | Ai chatbot for work order creation | |

| Building technology | Property & FM management | Asset Management | Experience | Sales and CRM | Productivity |
|---|---|---|---|---|---|

# AI Success Pillars for Leaders

**1**

## Focus on YOUR business goals

**Analyze your business landscape to pinpoint AI use cases with the most significant potential to support your goal or challenge**

**2**

## Distinguish REALITY from Hype

**Knowing your AI Use Case is relevant, challenge the market to demonstrate how they will address your goal**

**3**

## Prepare for AGILITY

**Tech continuously evolves, it’s not done when it is live! Prepare your teams and your tech ecosystem to support iterative and continuous change.**

# How to go about it – a practical guide!

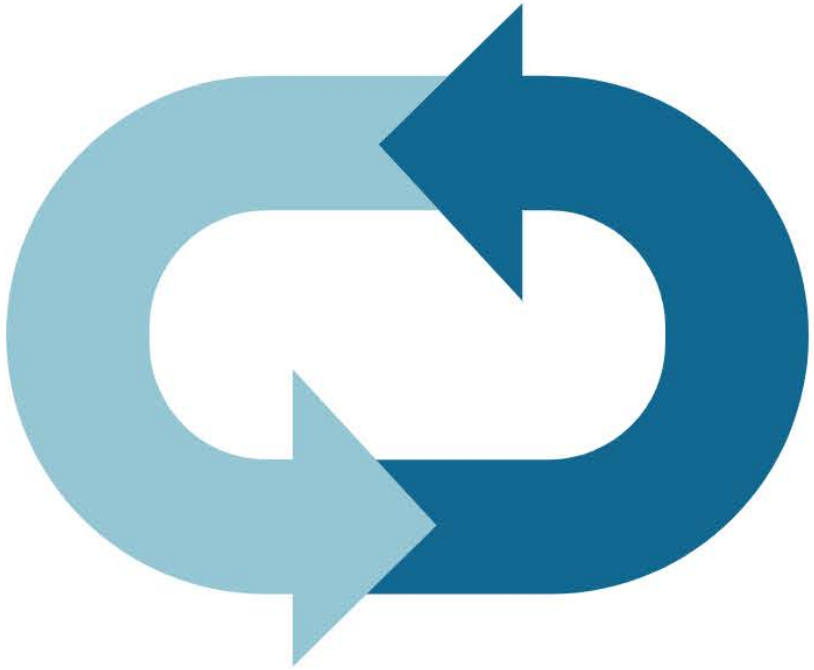
**Internal Business Demand**

**External Market Offerings**

Clarify business goals, pain points and CRE priorities

Audit and mapping of current technology systems

Identify potential use cases for AI



Conduct product demos and assess costs

Examine product feautures and capabilities

Detailed provider landscape scoping

Source: JLL Research, 2024

# Big Data, Big Mess

this has been the problem for years!




Marson, M., & Targell, A. (2025). Realising the Value of Smart Buildings with Enterprise Agility. Journal of Corporate Real Estate.

DOI: 10.69554/YPAR4079

# Enterprise Agility in the Context of Smart Buildings Design Against the RIBA Plan of Work

| 0 | RIBA 1 | RIBA 2 | RIBA 3 | RIBA 4 | RIBA 5 | RIBA 6 | RIBA 7 |
|---|---|---|---|---|---|---|---|
| | Preparation & Briefing | Concept Design | Spatial Design | Technical Design | Manufacturing & Construction | Handover | Use |

What Needs to be Done

| What will the building do? | The systems needed to deliver | What/how to buy | Detailed spec | Select, deploy, integrate, test | Support |
|---|---|---|---|---|---|
| • Demonstrate the art of the possible<br>• Present the technology trends and the impact into the future<br>• Use technology and use cases as a way of unifying conflicting requirements<br>• Create a brief for technology that external parties will be able to understand and respond to RfPs accordingly<br>• Articulate a vision that leadership can communicate | • Convert strategy and aspirations into systems<br>• Brief, support and assure consultant design engineers on the uplifts required to their standard specifications<br>• Create a systems architecture that ties together engineering, IT and the business<br>• Model the return on investment | • Convert the basis of design/concept design into a set of requirements suitable to RfP that improves pricing as clarity reduces vendor risk<br>• Down-select capabilities appropriate for building completion date | • Work with design stakeholders to ensure stage 4 level of detail is captured within the base-build systems<br>• Develop the detailed platform, application(s) and mobile app specifications<br>• RfP for construction-critical systems | • Light-touch support with vendors<br>• Coordination with fit-out team on installation, testing and commissioning<br>• Work with communications on user training and capability messaging<br>• Support operational teams on their support and continuous improvement procedures for steady-state operations | • User engagement, troubleshooting and comms<br>• Demonstrations, training, etc |

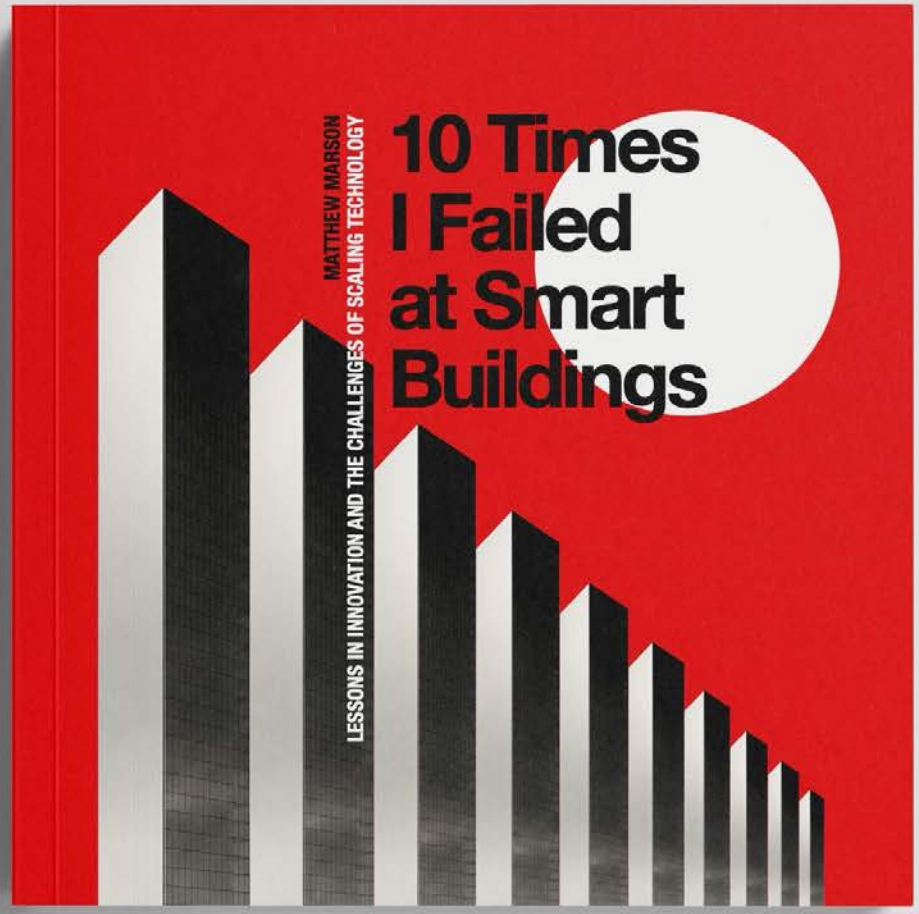
Built Environment Design Team
Predominantly physical design

Both design teams must work together in a holistic way

| Value Stream Mapping, Product Goals & Teams | Technology design, standards & needs | Detailed design, specs, & backlog. | Empower product teams iteratively select, deploy, integrate & test | Continuous product evolution & value creation |
|---|---|---|---|---|
| • Convert strategy and aspirations into systems and associated value streams.<br>• Frame the business capability model and map to value streams and establish target state conceptual architecture that ties together engineering, IT and the business.<br>• Model the return on investment and frame the product team scopes and goals with respect to the business case.<br>• Brief, support and assure product teams and design engineers on roles, and goals and ways of working. | • Product teams build out the key features they will be empowered to deliver.<br>• Frame the key architectural principles and standards to govern their technology choices and selections. | • Product teams work with all stakeholders to ensure stage 4 level of detail is captured within the base-build systems.<br>• Create detailed software specifications.<br>• Embed the product team planning, work tracking and team structures .<br>• In line with target architecture, frame RfP for critical systems. | • Establish customer feedback and adoption measurement approaches for product teams to establish future feature sets and evolutions for later phases.<br>• Empower product teams to execute on backlogs and ways of working to iterate select, deploy and integrated relevant technology components.<br>• Coordination with fit-out team on installation, testing and commissioning<br>• Product teams engage and communicate with users for training, capability messaging and feedback.<br>• Establish and inform relevant operational teams and partners on their support and continuous improvement approaches for steady-state operations. | • Product teams support adoption, change and ongoing user engagement, troubleshooting and communications.<br>• Product teams review user feedback and value achievement measures to review and replan next phase iterations.<br>• Execute and continuously deliver and review feedback to adjust work to meet evolving value stream goals. |

Enterprise IT Design Team
Predominantly digital design

Dr Matthew Marson
Andrew Targell


MATTHEW MARSON
10 Times I Failed at Smart Buildings
LESSONS IN INNOVATION AND THE CHALLENGES OF SCALING TECHNOLOGY

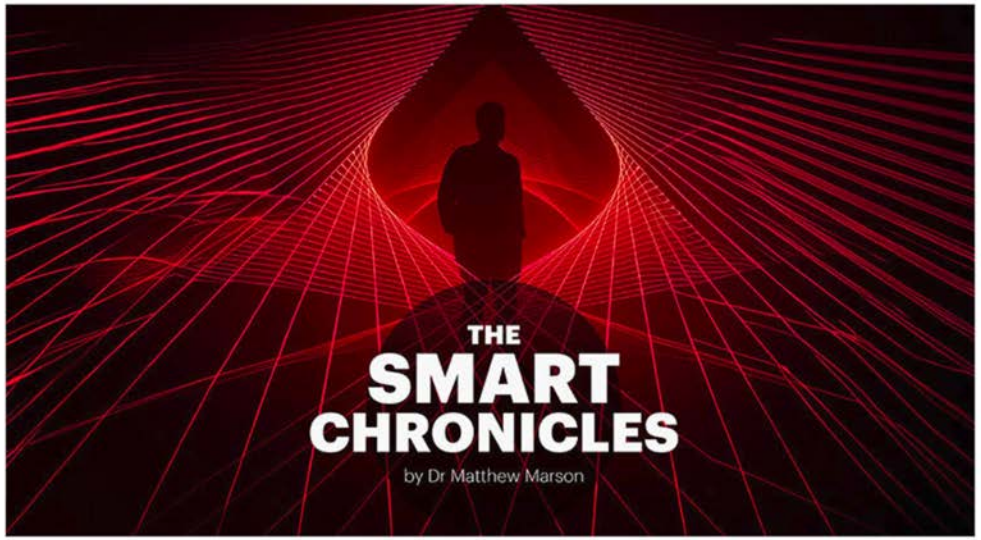

Conflicting Philosophies
In the software world, Agile project management, particularly the SCRUM framework, remains a cornerstone. This framework has teams working in 'sprints' of – typically – two to four weeks each. The groups outline a product backlog of features or tasks needing attention, decide what to tackle in each sprint, and remain nimble enough to change priorities as new insights emerge. The beauty of Agile Methodology is its adaptability to develop partial features, iterate quickly, and pivot based on real-time feedback.
In construction, however, you can't just 'pivot' in the same sense. There's a near-immutable sequence to putting up a building. The foundation must be poured before you can raise the building core. The core, likewise, needs to be finished before you erect the frame, install floors, and enclose the structure. Trying to rearrange these tasks is akin to building the roof before the walls – it simply isn't feasible. Moreover, once concrete sets or steel beams are in place, changing direction becomes incredibly expensive and time-consuming. It's quite nearly impossible unless you're paying dearly in time and money.
The conceptual mismatch between these two approaches is at the heart of BeigeCo's challenges. These conflicting mindsets had profound implications for budgeting, scheduling, hardware-software integration, and even basic communication.
60
CHANGE ORDER
66mm
86mm
32mm
17mm
Unspoken Tensions
At the onset of the project, BeigeCo secured a forward-thinking construction firm and a separate, specialised software development agency. It was a starry-eyed arrangement. The construction firm had some experience building tech-enabled offices, while the tech development agency flaunted a robust portfolio of IoT integration. On paper, both parties had reason to be optimistic, and even promising. Yet, from the outset, the project charters for each laid out contrasting definitions of success:
Contractor's definition of success: Deliver a physically finished building by the contractual completion date, on budget, and ensure that the structure meets code, is safe, and has all necessary physical fixtures installed (lights, HVAC, plumbing, walls, cables, etc.).
Software developer's definition of success: Deploy a fully functional platform with integrated sensors, occupant apps, real-time analytics, and a stable backend. This includes ironing out bugs, refining features, and responding to stakeholder feedback in iterative sprints.
No one – owner, contractor, or developer – thought to explicitly address how these definitions might clash in practice. Each side assumed the other would 'just make it work,' or the team would figure it out as they went along, which inadvertently sowed the seeds of future chaos.
Just Make it Work


ROBUST FAILURE SPIRAL
UNANNOUNCED TECH
DISCOVERY
RUMORS
MISTRUST
TAMPERING
DATA USELESS

smartbuildingsmagazine.com

## Smart building predictions for 2025

Published 2nd January, 2025 by John Hatcher




**Dr Matthew Marson gives us his view of the year ahead.**

As we look ahead to 2025, the intersection of technology and the built environment promises some steps closer to how we design, operate, and inhabit our spaces. In 2024, a lack of liquidity saw the industry cautiously dipping its toes into some of the tech it promised to. War, elections and lingering inflation prevented much of the progress we expected. I expect 2025 to have bolder demands with more systemic changes. Here are Dr four predictions for how tech will shape the built environment in the year ahead:

### 1. Generative AI becomes the backbone of design and operations

In 2024, many organisations explored surface-level applications of Generative AI (GenAI). In 2025, we'll see GenAI embedded more deeply into the workflows of architecture, construction, and operations. Design teams will rely on AI not just for efficiency (like generating floor plans or clash detection) but for more strategic design decisions, such as optimisations for circularity and embodied carbon.

On the operational side, GenAI will graduate from answering "when was the fan coil unit serviced?" to mainstream predictive maintenance powered by real-time IoT data. AI will help owners identify inefficiencies, pre-empt failures, and even suggest ways to retrofit for sustainability, all at scale.

Expect to see AI as an indispensable part of every building's digital twin, evolving from an experimental tool to a mission-critical asset. Or at least the one guarantee in marketing materials.

### 2. Smart building platforms go open source

# Thank you

**Dr Matthew Marson**
Managing Director

matthew.marson@jll.com
linkedin.com/in/matthewmarson

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