

The Digitization of Capital Projects and Infrastructure in the Public Sector

Building Back Smarter



The Construction Industry Now



The construction industry employs **7%** of the **world's working age** population. However, that number is declining year on year.



It is estimated to reach **\$10.5 trillion** by end of 2023, and was forecast to grow at a **CAGR of 4.2%** from 2018 to 2023.¹



Despite the promising outlook, the industry has **gained only 1% of productivity** in the last 20 years, primarily due to lack of digitalisation.



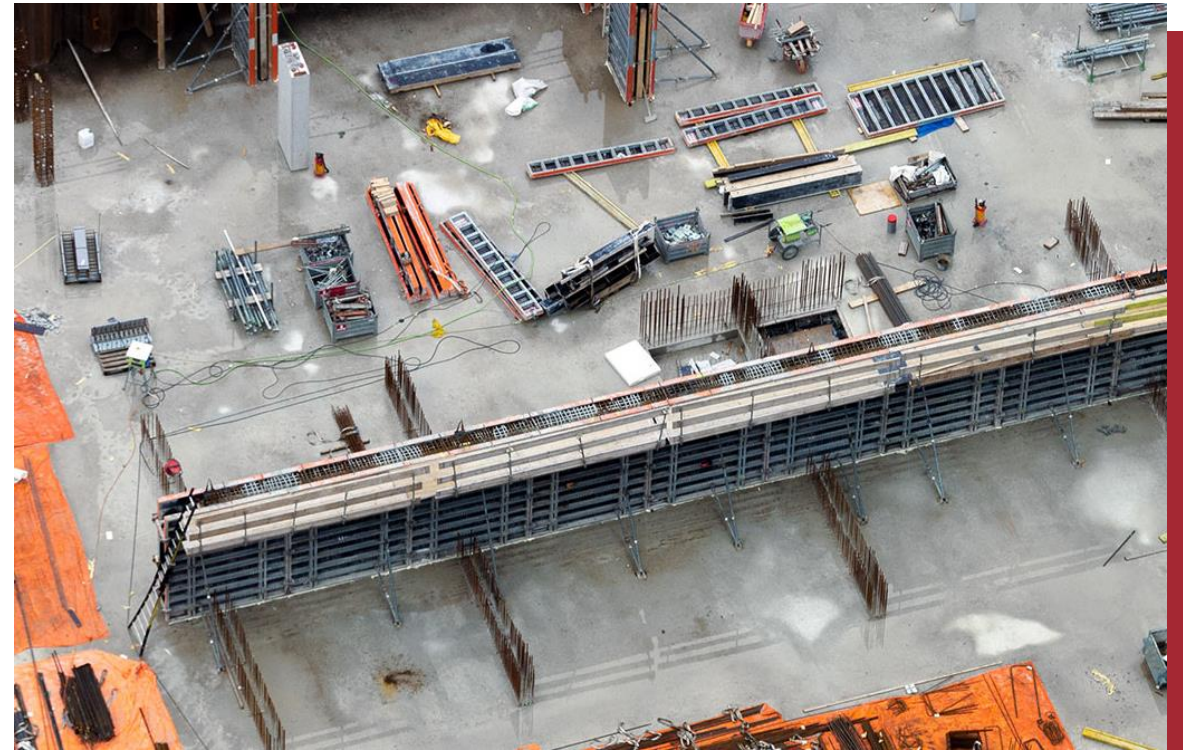
Most construction leaders spend **Less than 2%** on **Technology**.



\$1.63 trillion could be saved annually from productivity improvements.



39% of energy and process-related CO2 emissions are accounted for by building & construction²



1. Source: [Research and markets, "Growth Opportunities in the Global Construction Industry", April 2021](#)
2. Source: [IEA: Global Status Report for Buildings and Construction 2019](#)

Key Challenges Facing the Industry

01

Worker Health & Safety Challenges

65%

decline in performance after 16 weeks of extended work/overtime.

02

Managing Productivity Demands

35%

of construction professionals' time (over 14 hours per week) is spent on non-productive activities

03

Schedule Pressure

50%

variation in productivity of two groups of workers doing identical jobs on the same site and at the same time..

04

Increasing Size, Scale & Sustainability goals

98%

of mega projects become delayed or overbudget including 77% that are more than 40% behind schedule.

05

Workforce Management

44%

of firms indicated labor shortages caused them to lengthen completion time for projects already underway.

Construction is still manual in nature with minimal real-time collaboration and significant process inefficiencies

This is down to 3 big missteps

1

A **strategic failure** to build the right operating environment and incentives to **create a data centric culture.**

2

An **inability to operationalize data and technology** for more effective decision-making as well as **completion of projects on time and within budgets.**

3

Commercial constructs create **win-lose situations** among the ecosystem of partners, instead of pulling towards win-win

60%

Of owner-operators and EPC companies claim to have used **poor or average quality data** for their recently executed capital projects¹

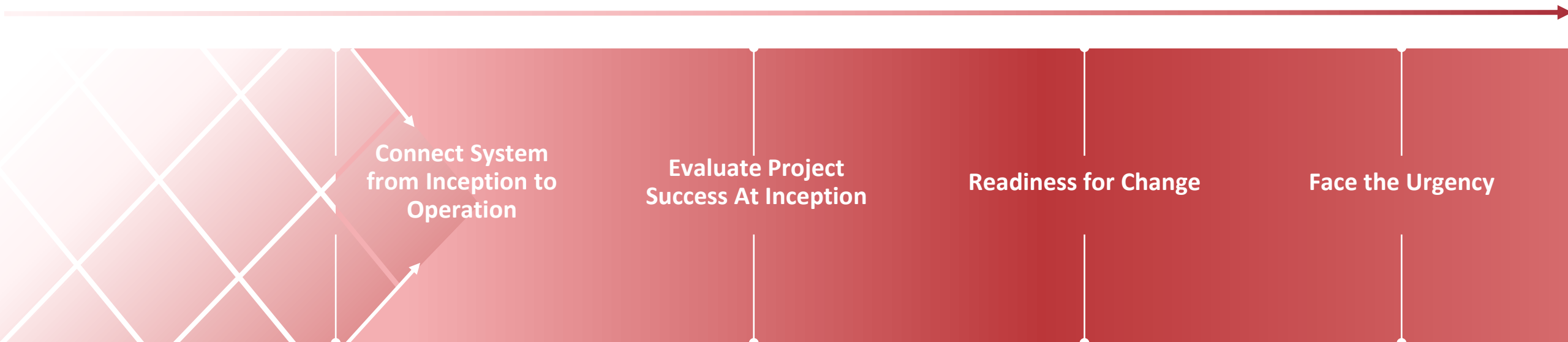
33%

Only 1/3 of the owner operators and EPC companies manage to improve their **key performance indicators with data-driven digital transformation**¹

20%

Nearly 20% of the **overall project costs result from contractors increasing their contingencies** in response to inappropriate risk shifting by the owner²

What Does The Industry Need To Improve?



Point-to-point solutions do not work...

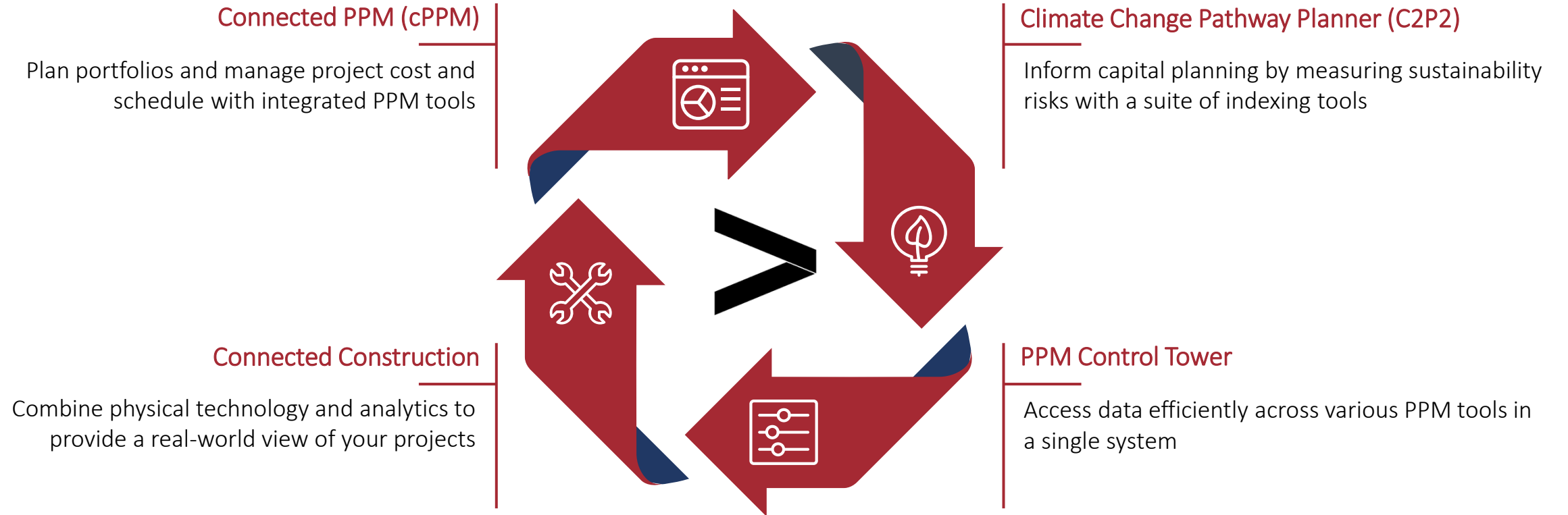
...if at inception we cannot design a system's operation, **we need to be wary of committing to meeting desired outcomes...**

...the **technology and people** are out there.

We need to **change our mindsets...**

...there is **no time for complacency**

How can technology help to drive change



Live demos of all solutions are available by request

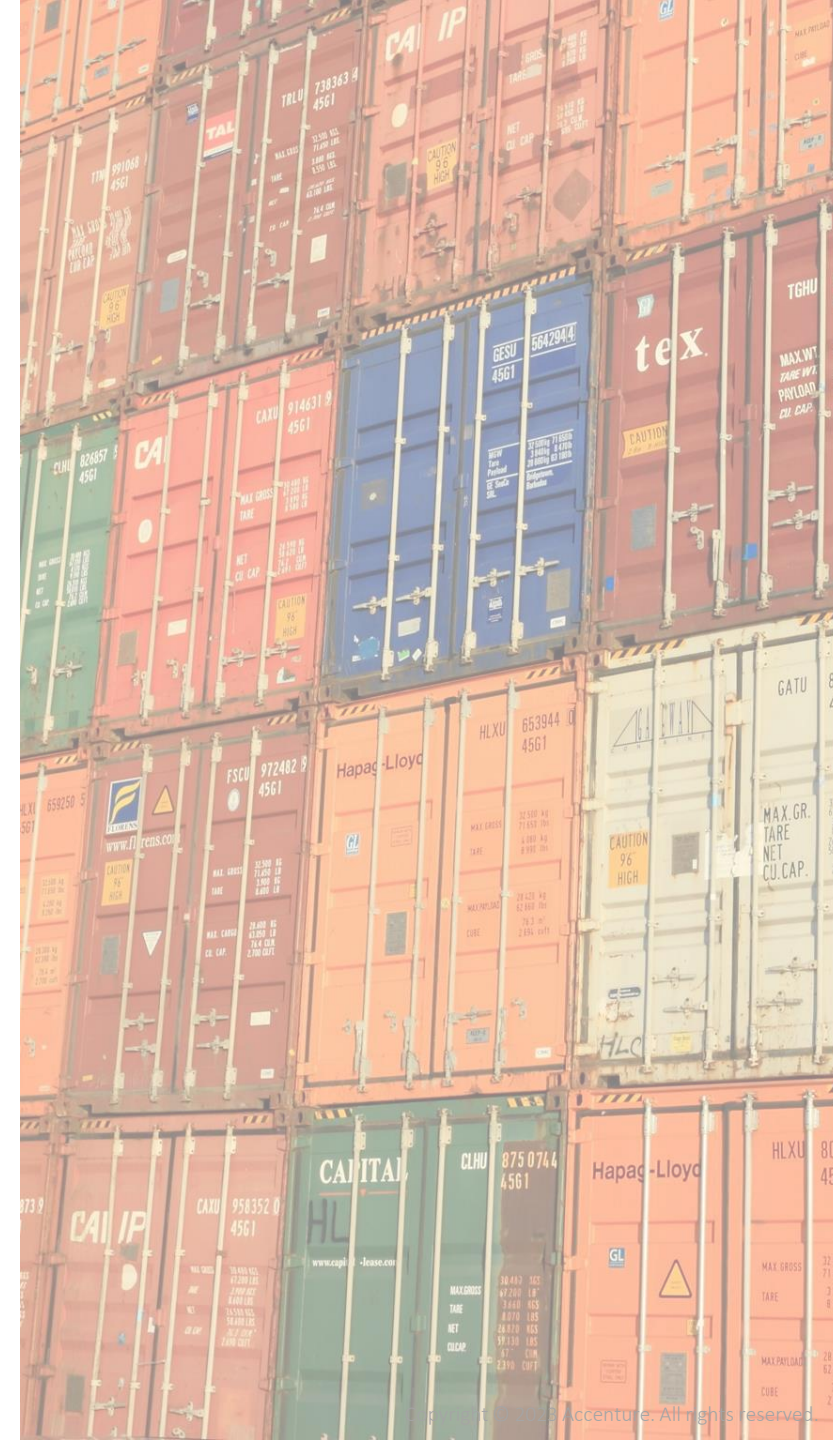
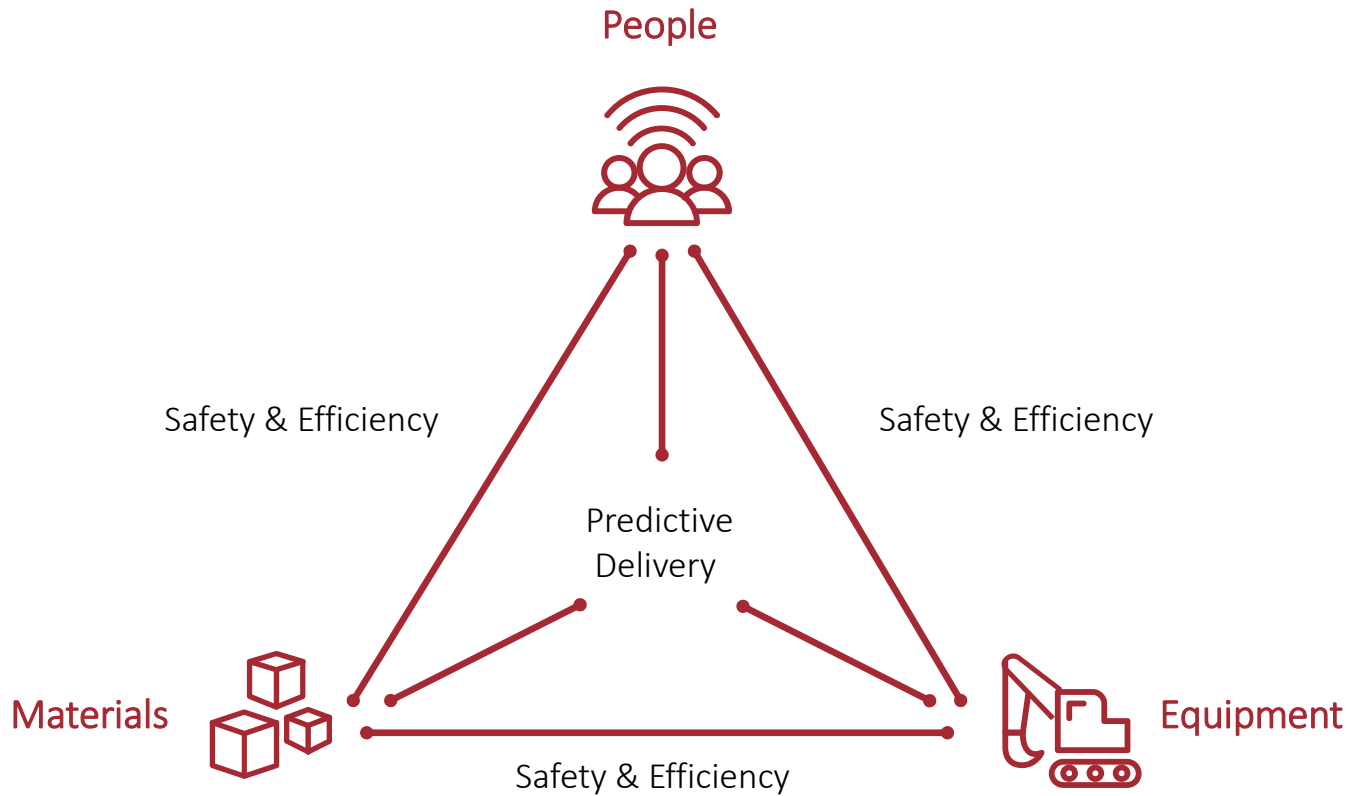




Connected Construction and PPM Control Tower

What is **Connected Construction**?

A platform that enables organizations to realize the full potential from their **people, equipment and materials** by connecting them in real-time to improve safety, efficiency and predictive delivery.



Connected Construction offers...



Control Cost and Schedule Better

Proactive actions not reactive. Identify cause of cost over-runs and schedule extensions with real time data. Create early warning systems tied to leading indicators.



Create Smart, Productive Teams

Real time, multi-directional communication between people, systems, assets and management.



Optimize to Avoid Waste

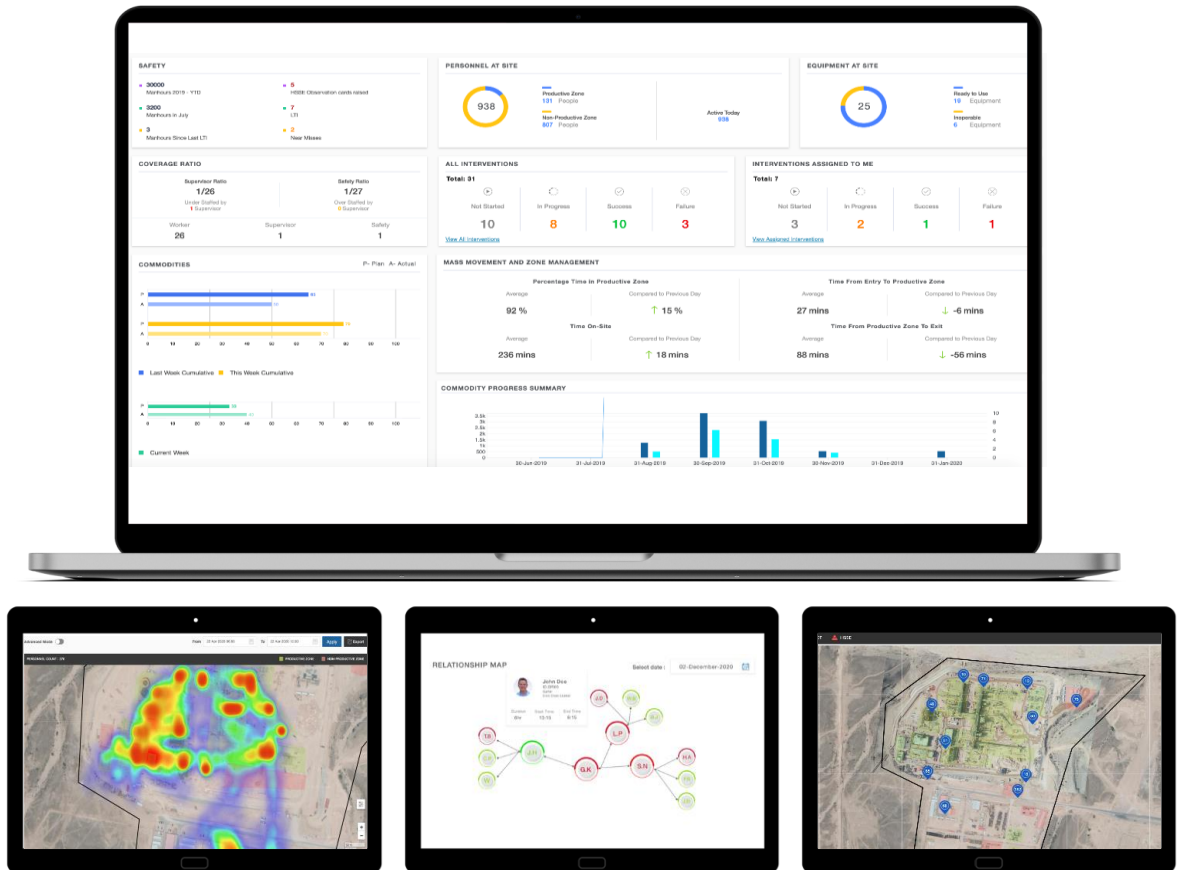
Insight into assets – real time access to capability, location and quantity of people, equipment and materials are key to successful job planning, accurate demand planning and waste avoidance or duplication.



Aid Decision Making with Technology

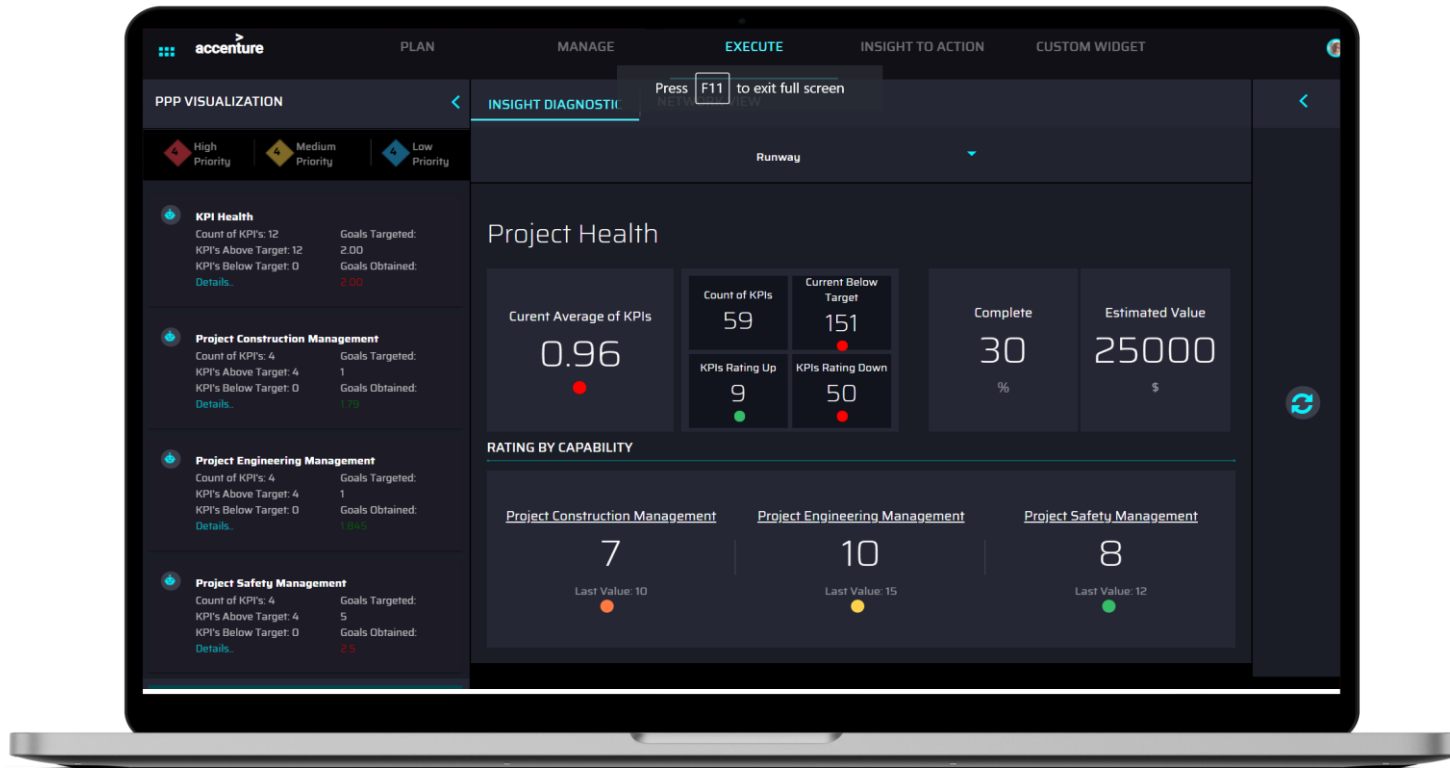
Modern policies mandate constructors to integrate decision making technology into their work practices without affecting performance or cost.

Microsoft IoT Partner of the Year 2019



What is Control Tower?

A single source of truth for engineering, procurement & construction updates to realize the full potential of people, partners, suppliers, equipment, materials and IP.



Demo



Multi-Disciplinary Single Source of Truth

Multiple structures of reporting



AI-Powered Decision Support

Capture project learning, success and failure paths, and simulate “what ifs..”, etc.



Benchmarking & Management

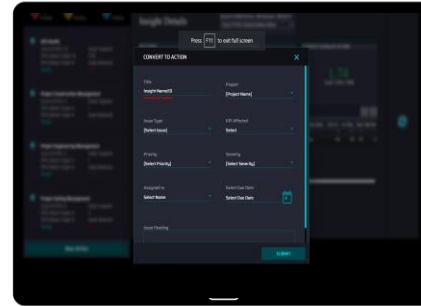
Define & manage constraints for data driven decision making

Control Tower offers...

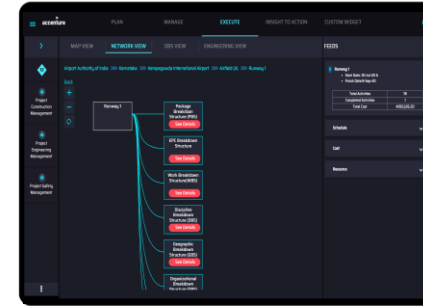
A platform to plan, manage, execute, and optimize all aspects of capital projects, utilizing industry standard project controls and decision support insights.



Asset Breakdown Structure



Insight to Action



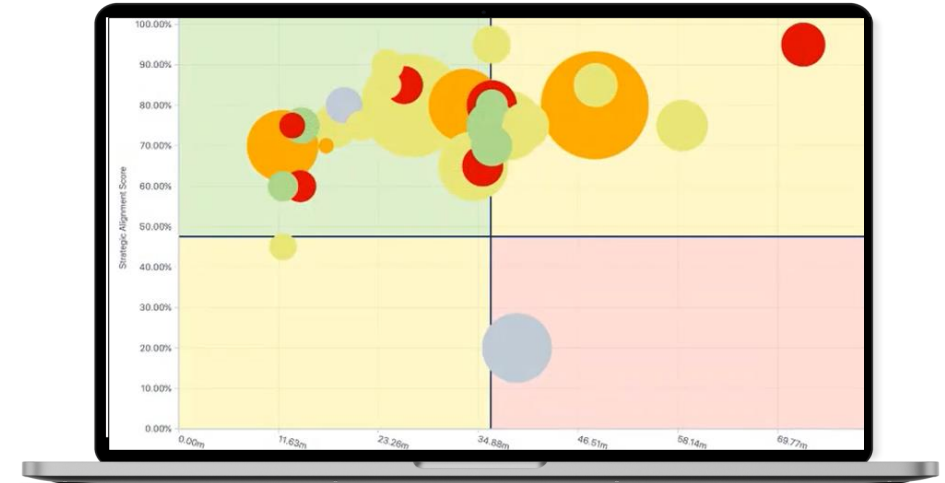
Multi-Dimensional Analysis

- **Project Controls** - manage KPIs at all levels
- **Explore Project Structures** - allowing drilldowns at any level (portfolio, program or project)
- **Descriptive Project Health Indicators** - including overall project progress to date plus look ahead
- **Predictive Leading Indicators** - for early identification of EPC trends
- **Planning Simulation, Benchmarking & Optimization**
- **Connectors Tools** and **Extension Model** - for deeper integrations and company specific requirements

Connected PPM (cPPM) and Climate Change Pathway Planner (C2P2)

cPPM solution offers...

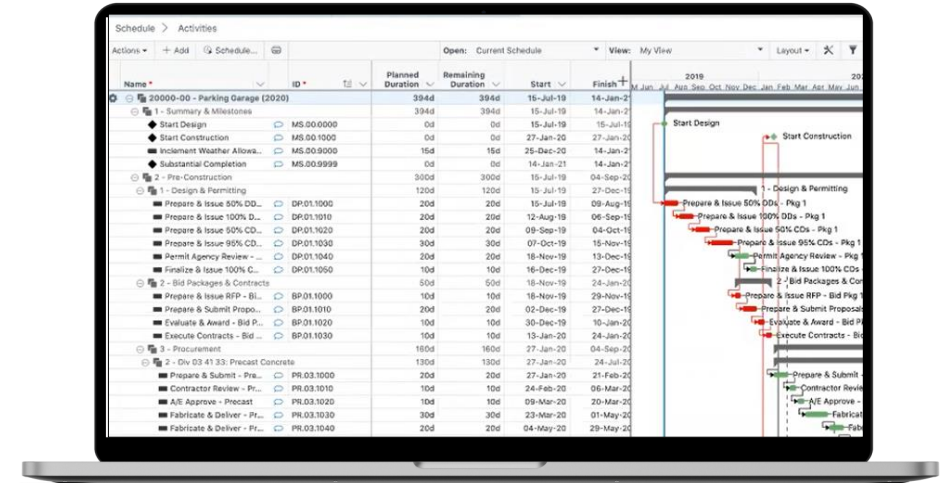
- Provide framework for multi-year capital plans, **balance critical constraints**, and **align investments** with strategic objectives
- **Track the 'color of money'** as you allocate funding
- Closely monitor capital budgets, expenditure, and **forecast across your portfolio**



- Enable intuitive and easy-to-implement **Monte Carlo analysis** to effectively identify and mitigate risks on your projects
- Provide **powerful scheduling** for both construction and less non-construction projects, ranging from simple to complex
- Help manage integrated resource capacity and **demand planning** and management across labor, equipment, and material resources

cPPM solution offers...

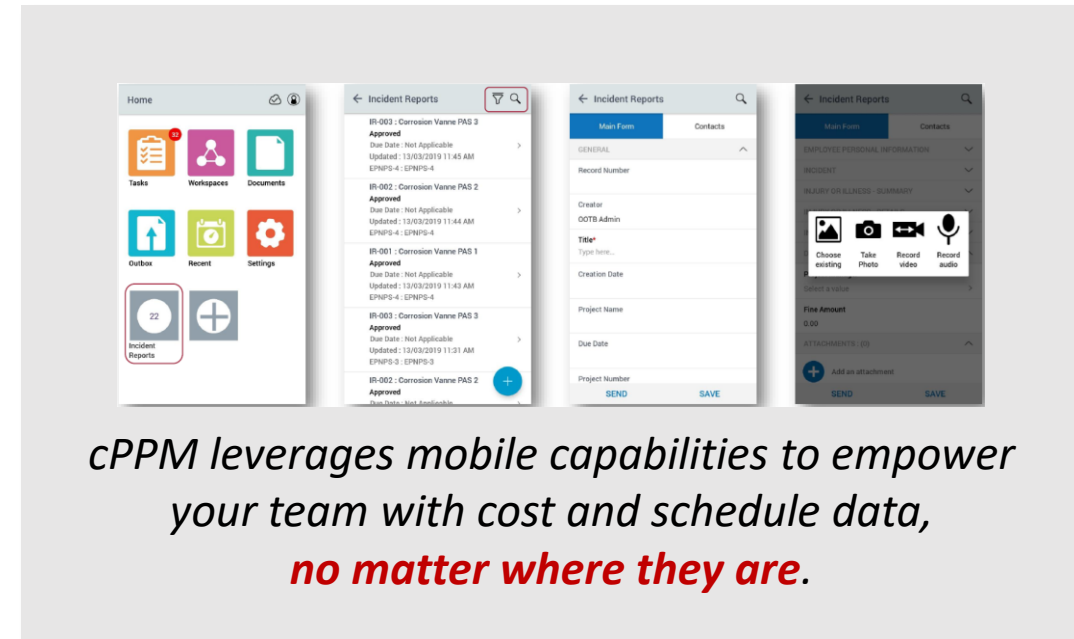
- **Monitor performance** while closely managing **contractor progress** and tracking contract changes
- Provide instant visibility into **schedule progress**, and **resource capacity** while managing risks
- Enable field staff with **field task management** for short interval planning



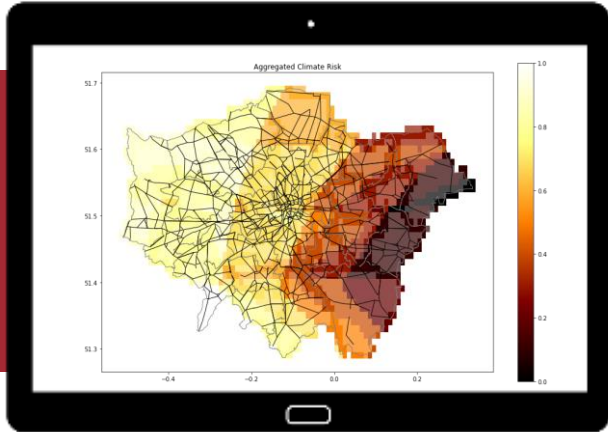
- **Automate workflows** to ensure that business processes are followed consistently every time
- Provide robust auditing capabilities to support your organization and **regulatory compliance** requirements
- Enforce **data protection** with detailed user permissions administration
- **Report** on data, documents, and workflow progress within and across projects in a variety of formats

cPPM Focus on **Project Controls** Capabilities

- Funding Allocation & Grant Management
- Estimating
- Project and Portfolio Budget Management
- Scheduling
- Contracts, Purchase Orders, Work Orders
- Risks, Issues, Change Orders
- Reports & Analytics



Climate Change Pathway Planner (C2P2) makes sustainability possible now

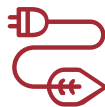


C2P2 enables owners to evaluate and increase their resilience to climate change so that they can prioritize assets, refine project plans and maximize their impact.

How can C2P2 help?



Enable **strategic decision making** and **allocation of funding** to make the infrastructure of cities more resilient to climate change



Access insights to **mitigate climate and carbon emission risks** across asset portfolios



Understand the **assets most at risk** from physical climate change



Assess the **projected carbon** associated with capital infrastructure assets and projects

Over **50% of sewage pumping stations in NYC will be under threat from floods in 2100**. Planning the infrastructure to minimize this risk can greatly benefit the city at a societal and economic level.



THANK YOU