



Artificial Intelligence-based Decision-Support for Construction Projects

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Rising cost of national children's hospital a scandal in the making

High levels of construction inflation resulting in bigger payments to main contractors

© Sat, Dec 22, 2018, 06:00

Paul Cullen, Martin Wall

Denver airport construction: Fired Great Hall contractors sought \$288 million to finish work, new documents show

Great Hall Partners estimated delays would push project completion back to Feb. 2024



10 Construction Projects That Just Wouldn't End

Construction projects worldwide are notorious for their endless delays and under-budgeting. Whether they've been infinitely abandoned or are seemingly ongoing, here are 10 infamous projects that, at one time or another, bit off more than they could chew.

Irish Examiner

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HOT TOPICS: GATWICK DRONES YEAR IN REVIEW 2018 CAREERS 2019

HOME ► IRELAND

Taoiseach wants cost of running Natio Hospital benchmarked against similar worldwide

Stuttgart 21 facing three- and €1bn cost overrun

THE cost of the controversial Stuttgart 21 project is now expected to be €1.1bn to €7.6bn, plus a contingency which could take the final completion has been delayed by another three years to 2024.



In Colorado, growth project management with AI

HS2 to be delayed by up to five years as cost spirals to up to £88bn

Parliament told first phase from London to Birmingham could be pushed back to 2031



The Problem

Project Management & Operation



Uncertainty ... Reactive project management

The Problem

Some facts, Construction projects

Major Construction projects rarely go as planned

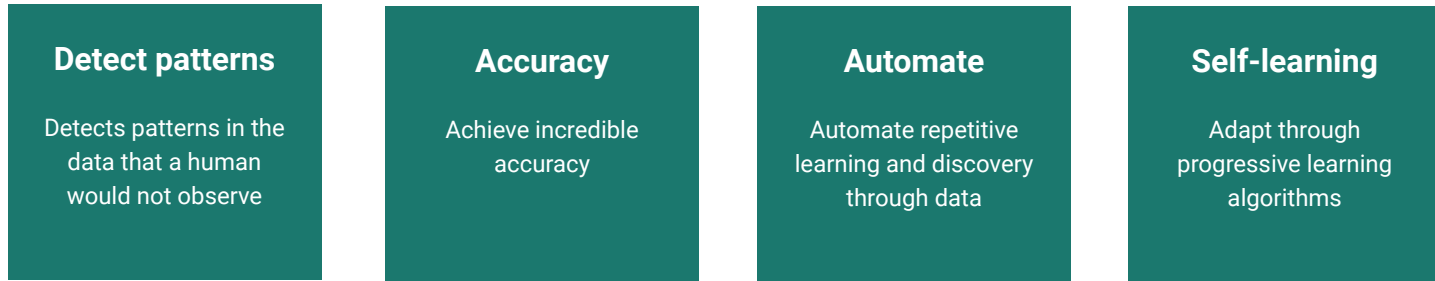
- **59%** were >10% over budget
- **75%** were delayed beyond 10% of their original deadlines

***50%** of overruns tied directly to **avoidable** delays and scheduling inefficiencies*

Source: 2015 Climbing the Curve, KPMG Global Construction Project Owner's Survey

Artificial Intelligence

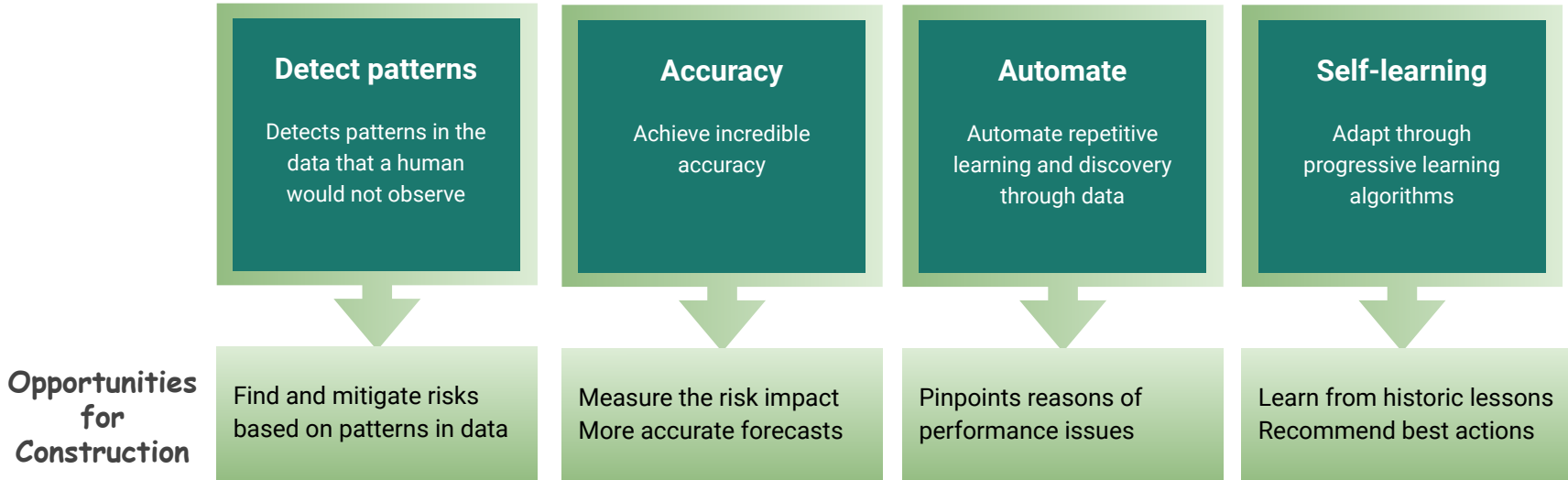
Enable computers to learn from experience, adjust to new inputs and perform human-like tasks



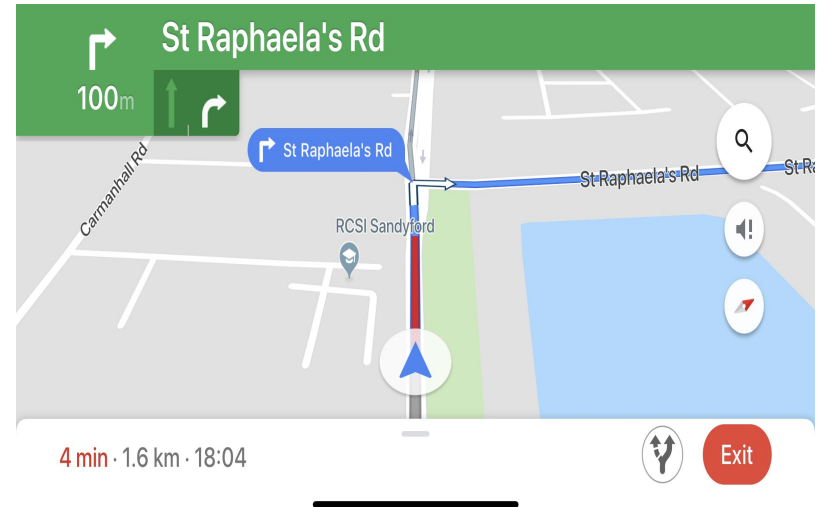
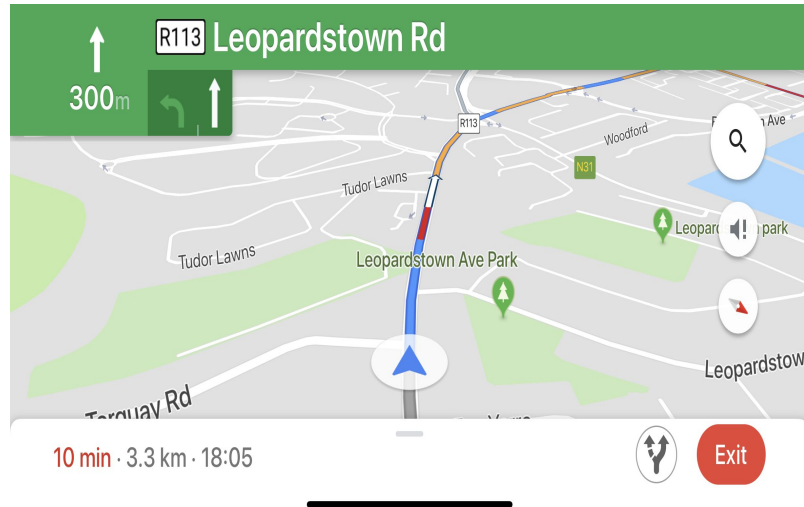
Healthcare Retail Automotive E-commerce
Financial Services Telecommunications Insurance

Artificial Intelligence

Enable computers to learn from experience, adjust to new inputs and perform human-like tasks



Automation with Confidence



What?

AI platform for portfolio & project management

Decision-support, Optimization, Continuous process improvement

Who?

How?

**Control &
Optimisation**

Live projects

+

Retrofit

Completed,
closed projects

- ★ Executives
- ★ Project owners
- ★ Planners
- ★ Project managers
- ★ Contractors
- ★ Finance

When?

Planning

Design

Construction

Maintenance

Postmortem

Retrofit

- **Postmortem**

- Automated AI process that runs retrospective analysis across completed projects
 - Uncover inefficiencies that have lain undetected
 - Understand causes
 - Insights for future project planning & business performance improvement
- ➔ Evaluation and stress testing report
 - ➔ What went wrong?
 - ➔ Why it went wrong?
 - ➔ How to change it in the future?

Live projects Control & Optimisation

- **Practical live environment**

- 360-degree view of project performance
 - Portfolio, Project, Site, Resource
 - Accurate cost & schedule planning
 - Detect project issues early/before they occur
 - Recommend best actions to mitigate risk
 - Explain failures and delays
- ➔ Objective transparency
 - ➔ Deliver certainty of outcome
 - ➔ Remove discomfort between contractor & client
 - ➔ Efficient change management

How it Works?

Digest & Accumulate

- Collect & create new data as needed
- Integrate enterprise and PPM software data
- Excel, PDF reports, messages, documents

Retrofit

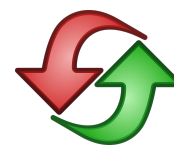
- Understand the contextual performance
- Detect patterns across projects
- Retrospective analysis automated report

Live Insights

- Interactive dashboards
- Summary, Deep-dive insights
- Risk alerts

Data refresh

- Automated data refresh from sources
- Automated data integrity assurance and quality checks



Benefits *Smartpmo*



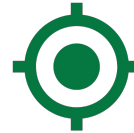
Keep projects on track,
in budget



Reduce risks & uncertainty



Maximise project profitability



Self-learning &
Continuous Process improvement



Strategic workforce &
resource optimisation



Decide faster & better

Case-study **Smartpmo**

Infrastructure Government agency - Middle east

Design, construction and maintenance of roads, bridges and tunnels

402

projects

1500

Workers

52

Contractors

Challenges

- Disparate data: MS Project, IoT sensors, Excel, Enterprise ERP
- DQ and integrity assurance for **15 years** of data
- **36%** projects behind schedule
- **41%** projects cost overrun
- High external consultant fees

SmartPMO implementation

- Retrofit portfolio of completed projects
 - Data-driven retrospective delay analysis
- Live projects
- Automated schedule quality analysis
 - Predictive Risk alerts for delay/cost
 - High-risk projects identification
 - Recommend plan for delay recovery

Benefits

- Decrease of delay from **36% to 9%**
- Reduced cost by **7.2%**
- **80%** of reporting time saved
- Schedule integrity assurance time decreased from **2 weeks to 5 minutes**
- Uncovered policy issues and informed continuous process improvement

How to Get involved?

- Pilot with Irish Construction or engineering company, Contractor
 - Construction sector
- Retrofit or Live project control & optimisation
- Data
 - Small or large data
 - Project progress record in Excel, Primavera, Microsoft project, BIM, etc.

**Finalist in Intelligent
Infrastructure Challenge**





Thank You

Get in touch

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