

2026 CIC Forum Presentation Slides



May 27 – Gail Powley, Technology Alberta



**TECHNOLOGY
ALBERTA**

Building Community



ASTech Awards
Inspiring Innovation

Partnering, To Make an Impact

May 27th 2026

Technology Alberta

Industry Association: 20 years young

Members: Alberta entrepreneurial advanced technology companies

Associate Members: Champions of members; innovation enthusiasts, students

Tagline: Original - “Representing Industry” changed to - “Building Community”

Partnering to Support the Growth of Innovation in Alberta



**TECHNOLOGY
ALBERTA**

Building Community

Technology Alberta

3 Pillars:

1) Talent

2) Knowledge

3) Community

Talent Programs

FIRST Jobs/TechBOOST

- First Industry, Research, Science, Technology Jobs Program
- Win, Win:
 - Keep our world-class educated talent in Alberta,
 - to Grow our Innovation Companies
- “We attract talent from around the world
 - to our post-secondaries.
 - If we can just help them find their first job,
 - they will stay here”

UofA AI Professor

Talent Programs

5 years of Impact:

Over 1000 placements provided through partnership

- **Employers: Alberta's Companies (400+)**
- **Employee Source: Alberta's Post-Secondaries (15+)**
- **Champions: Alberta's Regional Innovation Networks**
- **Funders: Alberta Innovates, PrairiesCan, Government of Alberta**

TECHNOLOGY COMPANIES

430 Total companies

From across the province:

Blackfalds, Brooks, Calgary Metro Region,
Carstairs, Crossfield, Edmonton Metro
Region, Fort McMurray, Lethbridge,
Medicine Hat, Raymond, Taber

1,100+ Company applications

Industries
include:



Agrifood



Life sciences



Cleantech



Automation



Digital media

Roles hired include:

TECHNICAL

- Data analyst
- Full-stack developer
- Game developer
- Lab technician
- Engineer
- Machine learning specialist
- Software developer
- Technical writer
- UI/UX designer
- Web developer

BUSINESS

- Associate product manager
- Business development associate
- Business intelligence analyst
- Communications coordinator
- Content creator
- Digital marketer
- Graphic designer
- Production planner

Total Placements: 1,040+

Students/Graduates from Post-Secondaries Including

Athabasca University; Bow Valley College; MacEwan University;
Red Deer Polytechnic; Lakeland College; Mount Royal University;
Lethbridge Polytechnic; Olds College; SAIT, NAIT, Keyano College;
University of Lethbridge; University of Alberta; University of Calgary; and more

From Diploma Programs to PhD Candidates



**TECHNOLOGY
ALBERTA**

Building Community

Technology Alberta

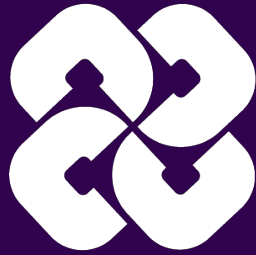
3 Pillars:

1) Talent

2) Knowledge

3) Community

Sharing Success With The Best Of All Worlds in 2026...



ASTech Awards

Inspiring Innovation



Nomination Deadline: May 25, 2026

About the ASTech Awards



37th Year of the Alberta Science & Technology
Leadership Awards

Celebrating the results achieved
through the flow of collaboration across
**Government, Industry, Academia, and
Entrepreneurship**

INSPIRING INNOVATION



Mark Your 2025 Calendars!

Friday, Sept 19 - ASTech Awards Opening Ceremony, University of Alberta



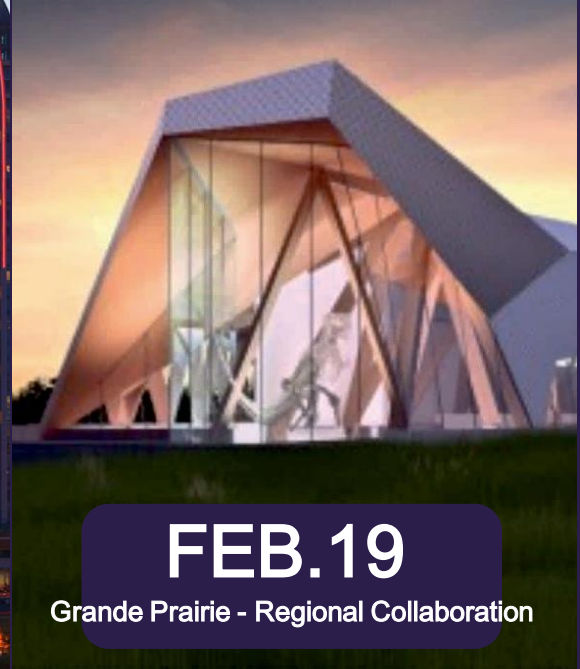
SEPT.19

Edmonton - Grande
Opening



NOV.7

Calgary - Gala Awards



FEB.19

Grande Prairie - Regional Collaboration



ASTech Awards
Inspiring Innovation

**SPONSORS, PARTNERS,
AND CHAMPIONS**



**TECHNOLOGY
ALBERTA**
Building Community

**ALBERTA
INNOVATES**

Major Partner

Supported by:
Prairie Economic
Development Canada

Canada



**UNIVERSITY
OF ALBERTA**



*Youth Innovation and
Entrepreneurship Champion*



**UNIVERSITY OF
CALGARY**



**ASTech
Awards**
Inspiring Innovation

**Thank You to
Our Partners**

2025 Speakers



Peter Kinash
Founding Member
ASTech Awards



Dr. Mike Mahon
CEO, Alberta
Innovates



Dr. Vanessa Sheane
President and CEO
Northwestern Polytechnic



Craig Werner
Director, Partnerships and
Engagement
ERA



36th Alberta Science Technology & Leadership Awards Winners -2025



AEROSPACE & DEFENCE
ADVANCED MANUFACTURING

AGRICULTURE

ALBERTA WIDE

COMMUNITY CHAMPION

ARTIFICIAL INTELLIGENCE

CHANGE MAKER

CLEANTECH

DIGITAL INNOVATION

ENVIRONMENT & ECOSYSTEMS

ENERGY & RESOURCES

HEALTH & MEDICAL

HYDROGEN

INDIGENOUS-LED INNOVATION

INNOVATION OF THE YEAR

REGIONAL INNOVATION

RESEARCHER OF THE YEAR

SMART CITIES

SOCIAL INNOVATION & EDUCATION

SUSTAINABILITY & CLEANTECH



ASTech Award Winners: Construction

University of Alberta: Aminah, Simaan

VizworX: AR/VR Technologies

Red Deer Polytechnic: CIM-TAC (Advanced Mfg) Centre

Buildbase & Rohit Group: Sustainability through Software

Levven Electronics: Wireless Switches

..and more



ASTech Awards: Key Dates

Friday, Sept 18, Calgary
Opening Ceremonies & Innovation Showcase

Friday, Nov 6, Edmonton
37th Annual ASTech Awards Gala & Innovation Showcase

Join Us - Your Collaboration Awaits!

Capital Connect

INVESTOR RELATIONS

Developing Relationships with Investors <Finalists and Alumni>



Coaching



Building Trust



Strategic Guidance

Prepare, Engage, Succeed – Before Investment



**TECHNOLOGY
ALBERTA**

Building Community

Contact Us

info@technologyalberta.com

www.technologyalberta.com

www.astech.ca



Thank you!



May 27 – Built World Tech, Edmonton Unlimited



ZACK STORMS

Built Tech Lead,
Edmonton Unlimited



VERONICA GARTH

Programs Lead, Venture Pilots
Edmonton Unlimited

Zack Storms | zack@edmontonunlimited.com

Veronica Garth | veronica@edmontonunlimited.com



BUILT WORLD TECH

Venture Pilots

Zack Storms | zack@edmontonunlimited.com
Veronica Garth | veronica@edmontonunlimited.com
May 27, 2026



WHY THIS ROOM MATTERS



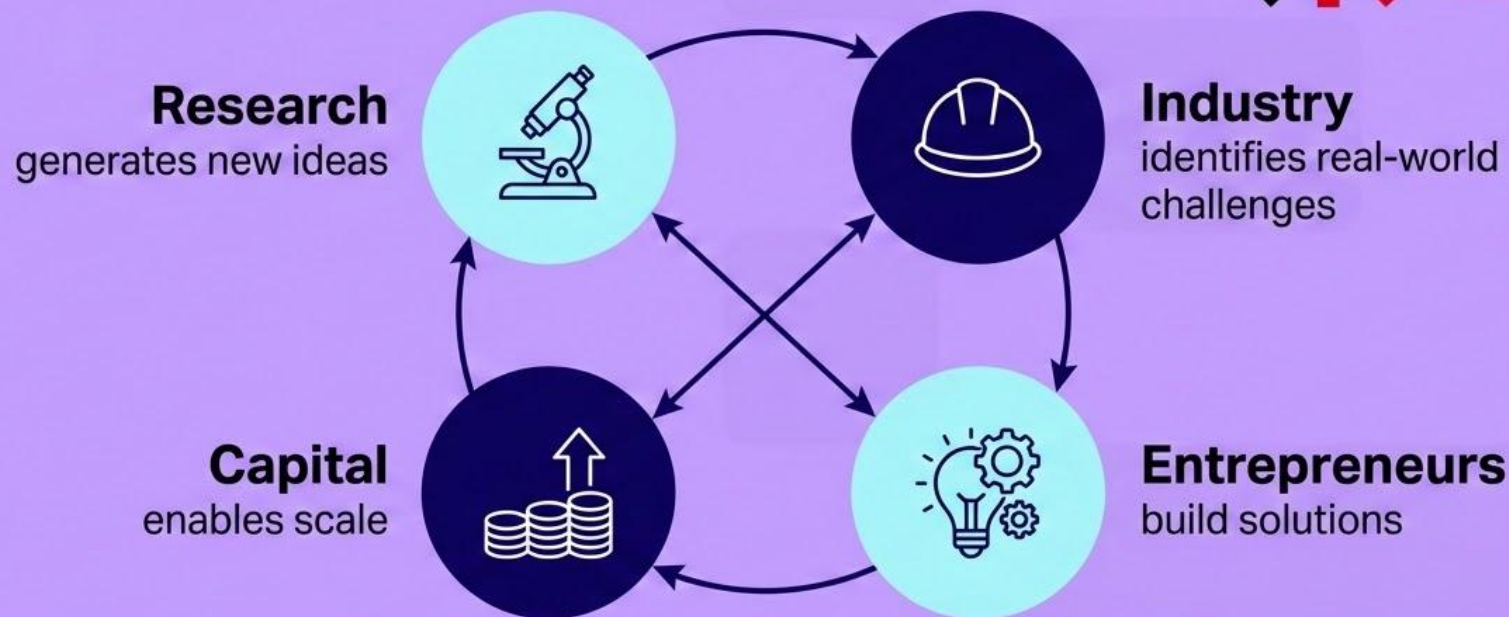
World-class research
Industry challenges

Venture-backed startups
Commercialization pathways

THE FIRST COHORT



Construction Innovation Happens When We Connect





SANGEET BRAR

COO,
Edmonton Unlimited





BRUCE ALTON

CEO & Co-Founder,
RoBIM Technologies Inc.

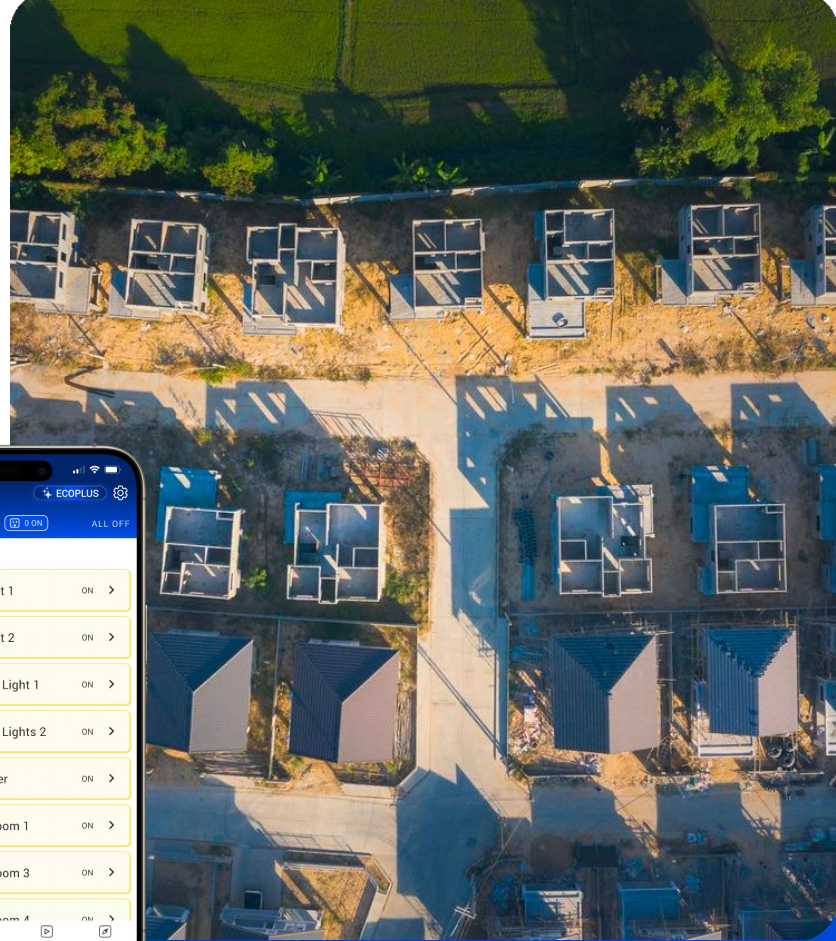
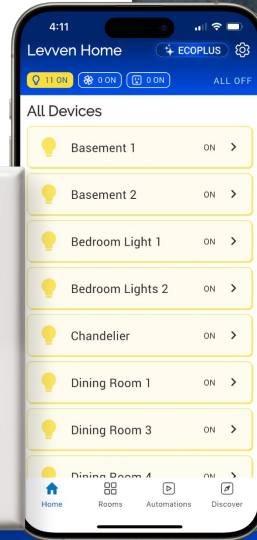


May 27 – James Kierstead, Levven Electronics Ltd.



**Builders don't buy
innovation.**

They buy risk
reduction.





What we do:

We take the wire out of switching, so builders save copper, labour, and build cycle days.

One question.
Ten years of R&D.



Risk reduction = predictable margins.

The five levers the builder gets paid to defend:
material costs, cycle time, rework, callbacks,
warranty.

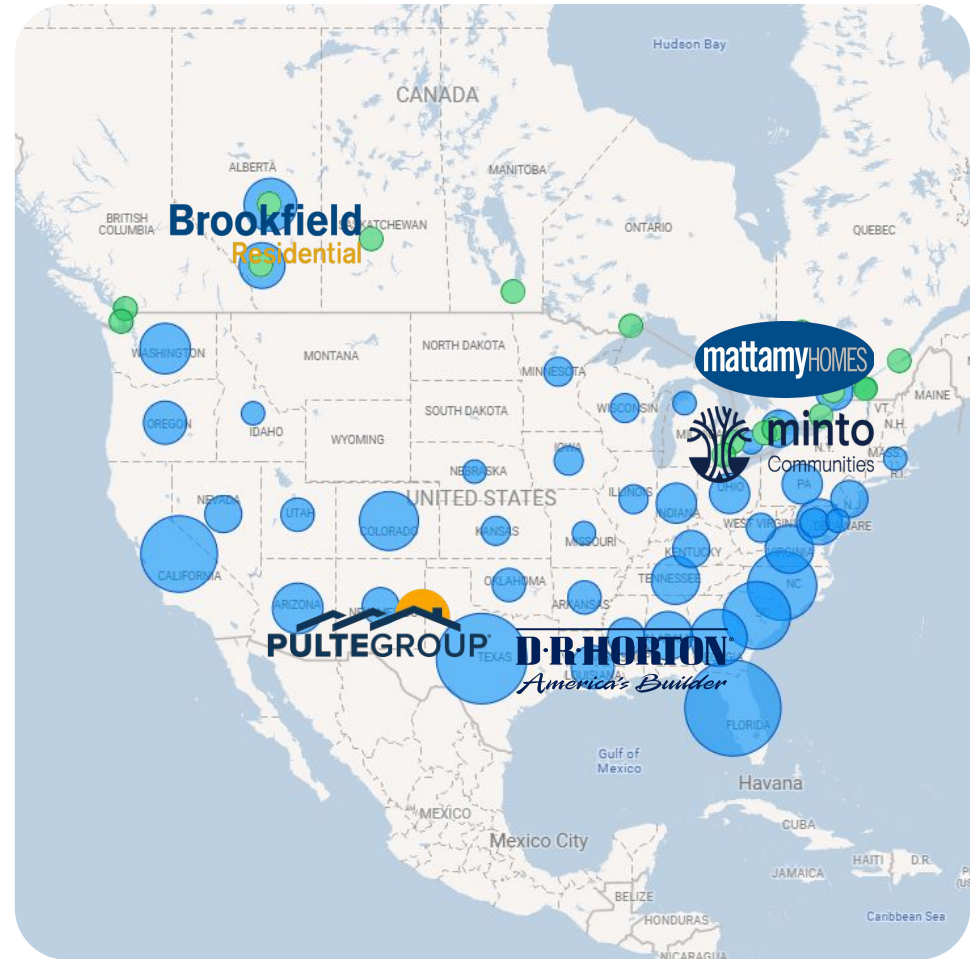
Scars, not theory.

8,000+

homes installed.

700,000+

devices in market.



Mistake 1

**We sold the tech.
Nobody bought.**



Mistake 2

Code locked us out.

8 years in Canada.

6 years in the US.

Mistake 3

**Faster install.
Same paycheck.**



Same crew. Same code. Same Tuesday.

The morning the framer doesn't notice anything changed.

1–2 days

off the build cycle

35%

less copper per home

30%

less electrical labour

Mistake 4

Two clocks.

Both real. Neither bends.

The moat isn't the technology.

It's the fit.

Earned over ten years.

Code cycles

**Trade
economics**

**Builder
workflow**

8,000+ homes

We're betting it's us.



Hard. Slow. Real world.

Find me after.



Making homes more affordable, personal, and sustainable.

James Keirstead · james@levven.com · levven.com

May 27 – Mustafa Gül, University of Alberta



CITYSCAN
TECHNOLOGIES

AI Solutions for Better-Maintained Roads

PROPRIETARY
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WHO WE ARE



SuRe Cities Lab

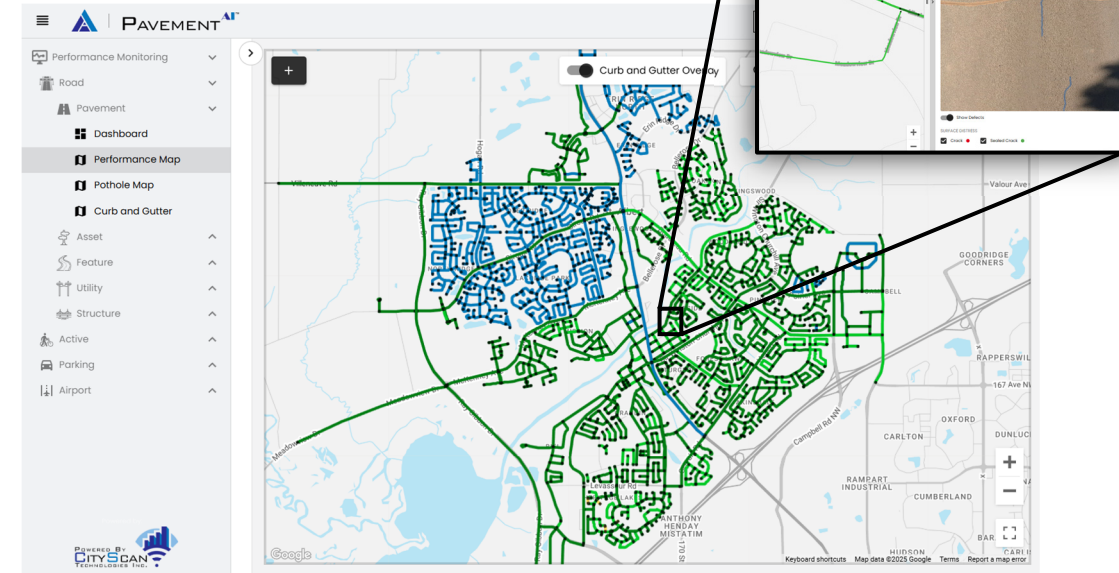
AI to monitor and assess urban
infrastructure

**Two professors
from UofA**



Real-world infrastructure
management and decision-making

Asset Intelligence



Street-level imagery → Actionable infrastructure data.

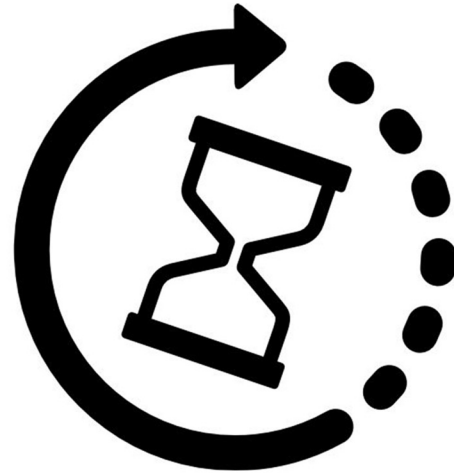
The Global Roads Are Crumbling



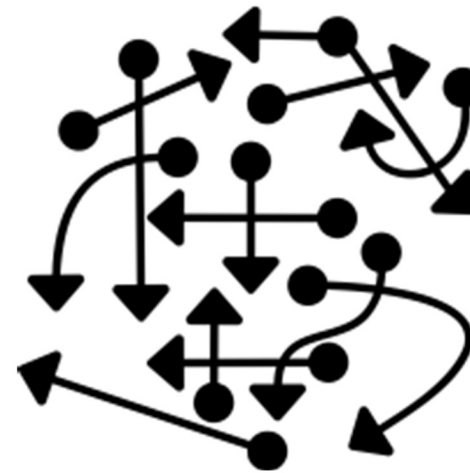
BUT CURRENT ASSESSMENT TECHNOLOGIES ARE ...



Expensive



Slow



Complex



Not Scalable



Our AI Platform

**Low-Cost
and High
Precision
Assessment**

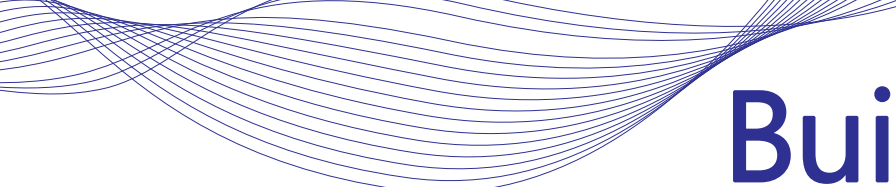
**Timely Data
for Timely
Action**

**Simplified
and Unified
Platform**

Built World Pilot with Tetra Tech

Objective: Integrate CityScan's AI infrastructure assessment into Tetra Tech's consulting workflows





Built World Pilot with Tetra Tech

We will test

- Integration into consulting workflows
- Compatibility with project data formats and reporting
- Automated pavement and curb condition analysis
- Efficiency and turnaround time improvements

Expectations

- Validated workflow for B2B deployments

Significant Business Traction



Paid Customers



Demo Projects with Potential Future Clients



IMPACT AND WHAT COMES NEXT



Technical Validation: Demonstrate integrated workflow on real projects

Operational Value: Reduce manual review with an accelerated timeline

Commercial Pathway: Establish a repeatable B2B model



Mustafa Gül, PhD, PEng

Chief Executive Officer

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May 27 – Zoe Mintram, Elementiam Materials and Manufacturing



ZOE MINTRAM

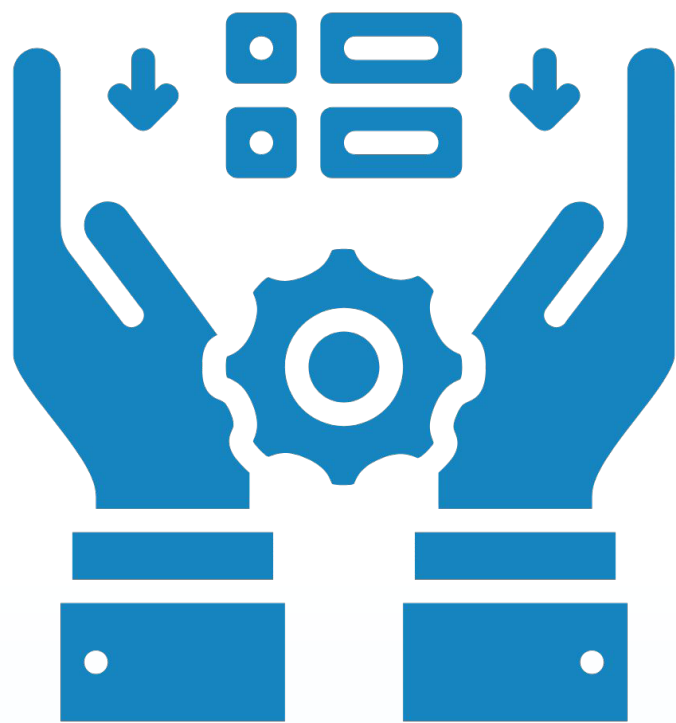
Marketing & Lead Generation
Associate, Elementiam





MANUFACTURERS NEED AUTOMATION THAT ADAPTS

Transforming steel fabrication with
3D vision and intelligent systems



62%

SMALL PRODUCTION RUNS



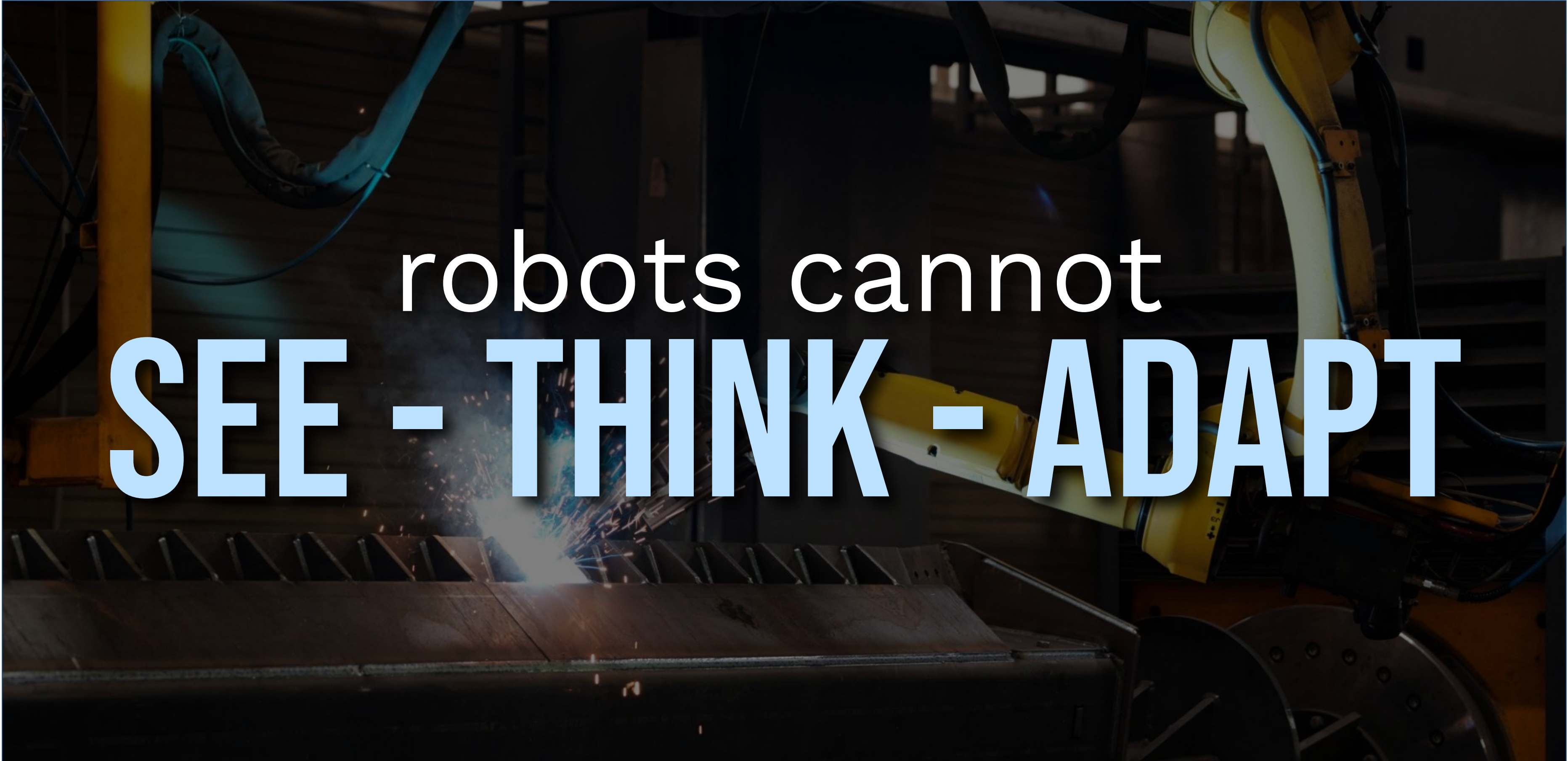
360K

WELDER SHORTAGE



\$1T+

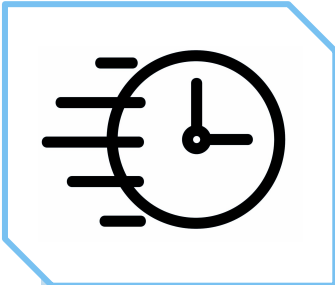
RESHORING INVESTMENT

A background image of a yellow industrial robot arm welding a metal plate in a factory setting, with sparks flying from the welding point.

robots cannot
SEE - THINK - ADAPT



**Robots Gain
Human-like Metal
Fabrication Skills**



**Rapid Workflow:
Scan-to-Path
Automation**





$\geq 98\%$

weld quality pass rate

$\geq 30\%$

cycle time reduction

≤ 2 MINUTES

welding path generation





Blueprint for Alberta’s Manufacturing Competitiveness

3-6 FTE

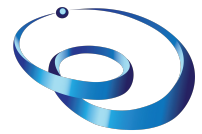
Created from project

\$1.2-\$2M

ARR Potential

20-35%

Capacity uplift



**Let’s get to work and make Alberta the leader
in North America for high-mix robotic welding**



Edmonton, AB



+1 (587) 974 - 6911



info@elementiam.ca



www.elementiam.ca



Zoe Mintram

Lead Generation Associate at Elementiam

May 27 – Glenn Matich & Roddy Handa, Holo Blok

- Video 1 - <https://www.youtube.com/watch?v=sU41OKHWVyl&t=3s>
- Video 2 - <https://www.youtube.com/watch?v=X29z6kzbD5c&t=42s>

Building Success Through BIM: It all starts with the data!



Roddy Handa
ceo, Problem Solver



Glenn Matich
President





Willow Square Continuing Care Centre

Fort McMurray
144 bed







- ⑤ Terminal Re Heat Water Supply Isolation for West Shaft (TRHWS)
- ⑥ Terminal Re Heat Water Return Isolation for West Shaft (TRHWR)
- ⑦ Steam Isolation for Fan Room 1 & West shaft
- ⑧ Chilled Water Supply Isolation for West Side of Building (CHWS)
- ⑨ Chilled Water Return Isolation for West Side of Building (CHWR)
- ⑩ Chilled Water Return Isolation for Room 1 (GLYS)
- ⑪ Chilled Water Return Isolation for Room 1 (GLYR) Balancing Valve
- ⑫ Terminal Re Heat Water Return Isolation for West Side of Building (TRHWR) Balancing Valve
- ⑬ Terminal Re Heat Water Supply Isolation for West Side of Building (TRHWS)
- ⑭ Hot Water Supply Isolation for West Side of Building (HWS)
- ⑮ Hot Water Return Isolation for West Side of Building (HWR)
- ⑯ Steam Isolation South East Building
- ⑰ Steam Isolation for North East Shaft

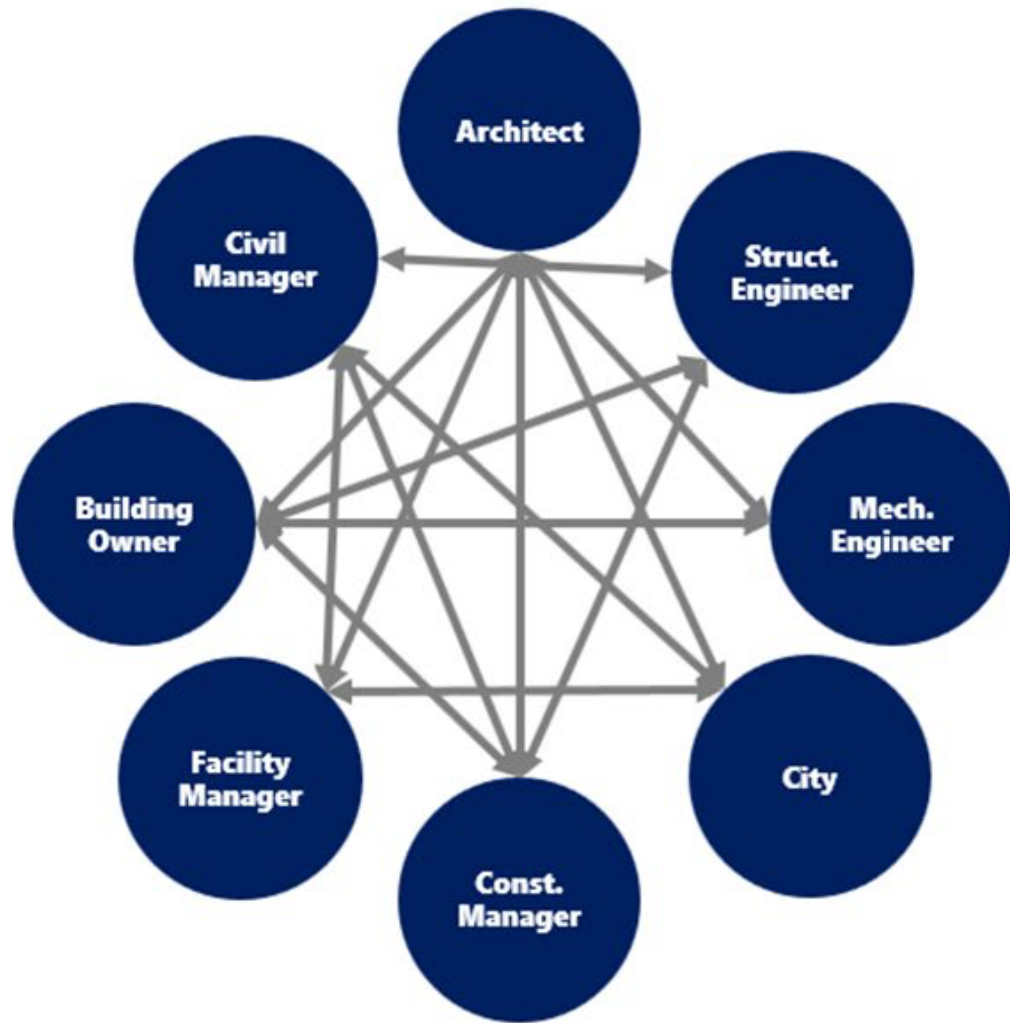
NOT USABLE

Handwritten

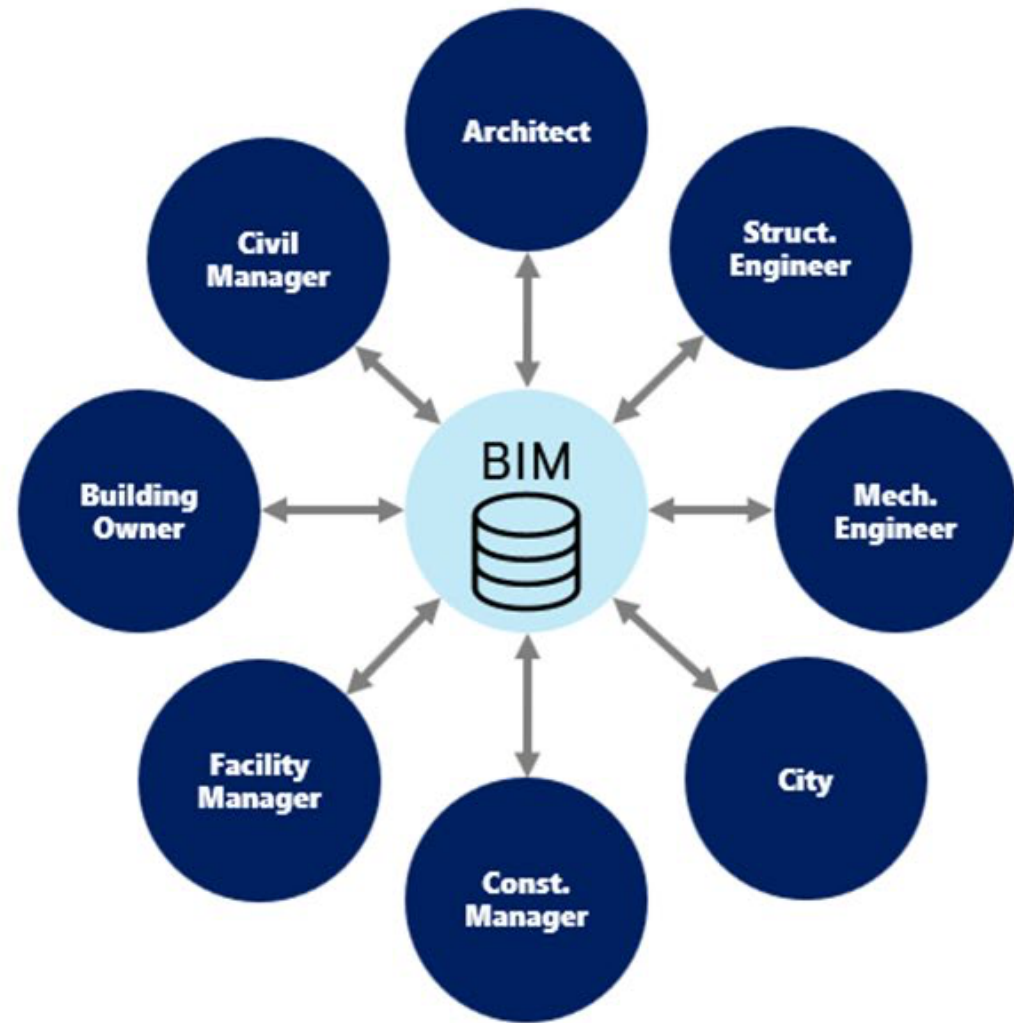
Scanned

Not Searchable

Traditional Information Exchange



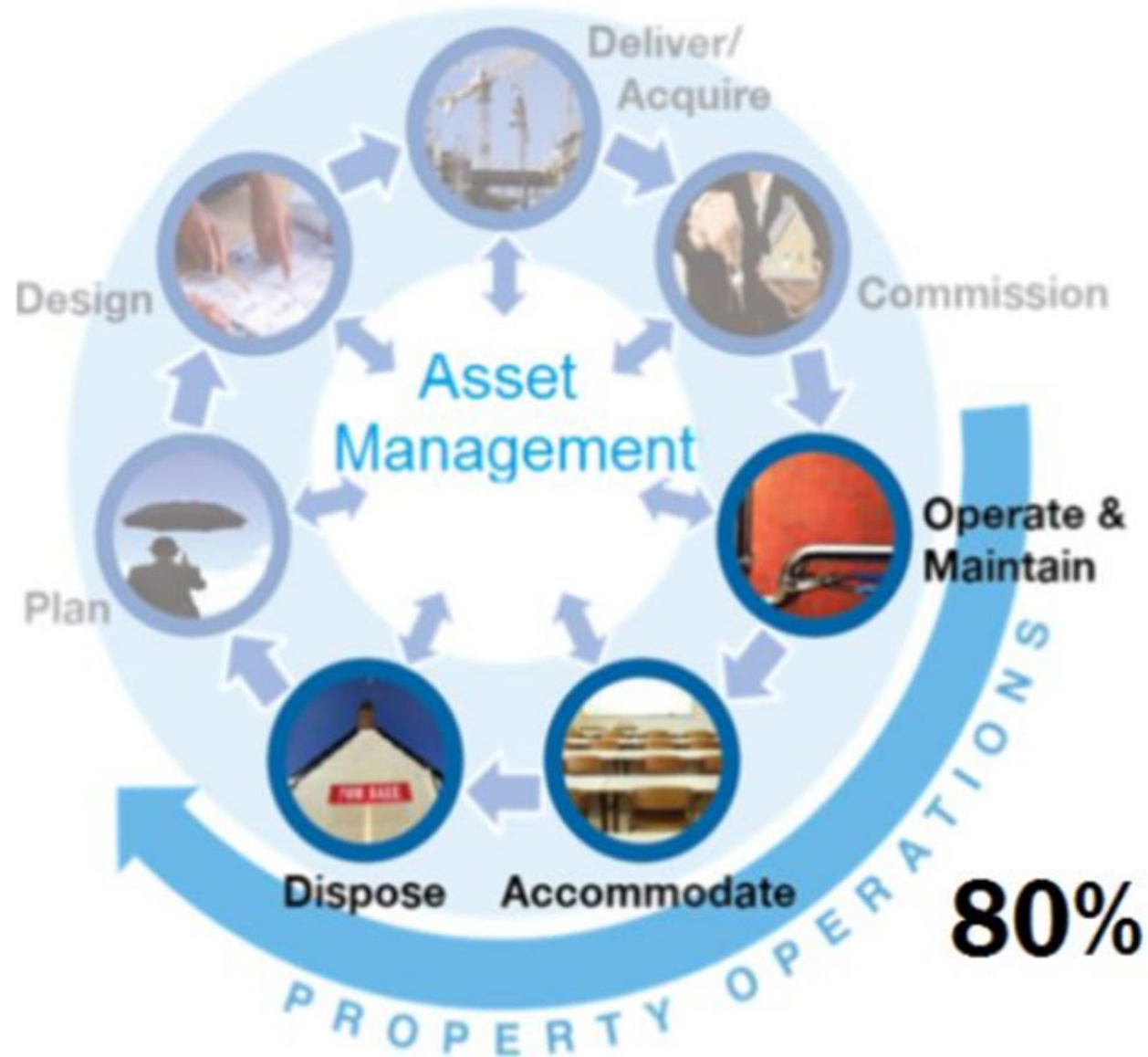
Information Exchange with BIM



Lifecycle Approach

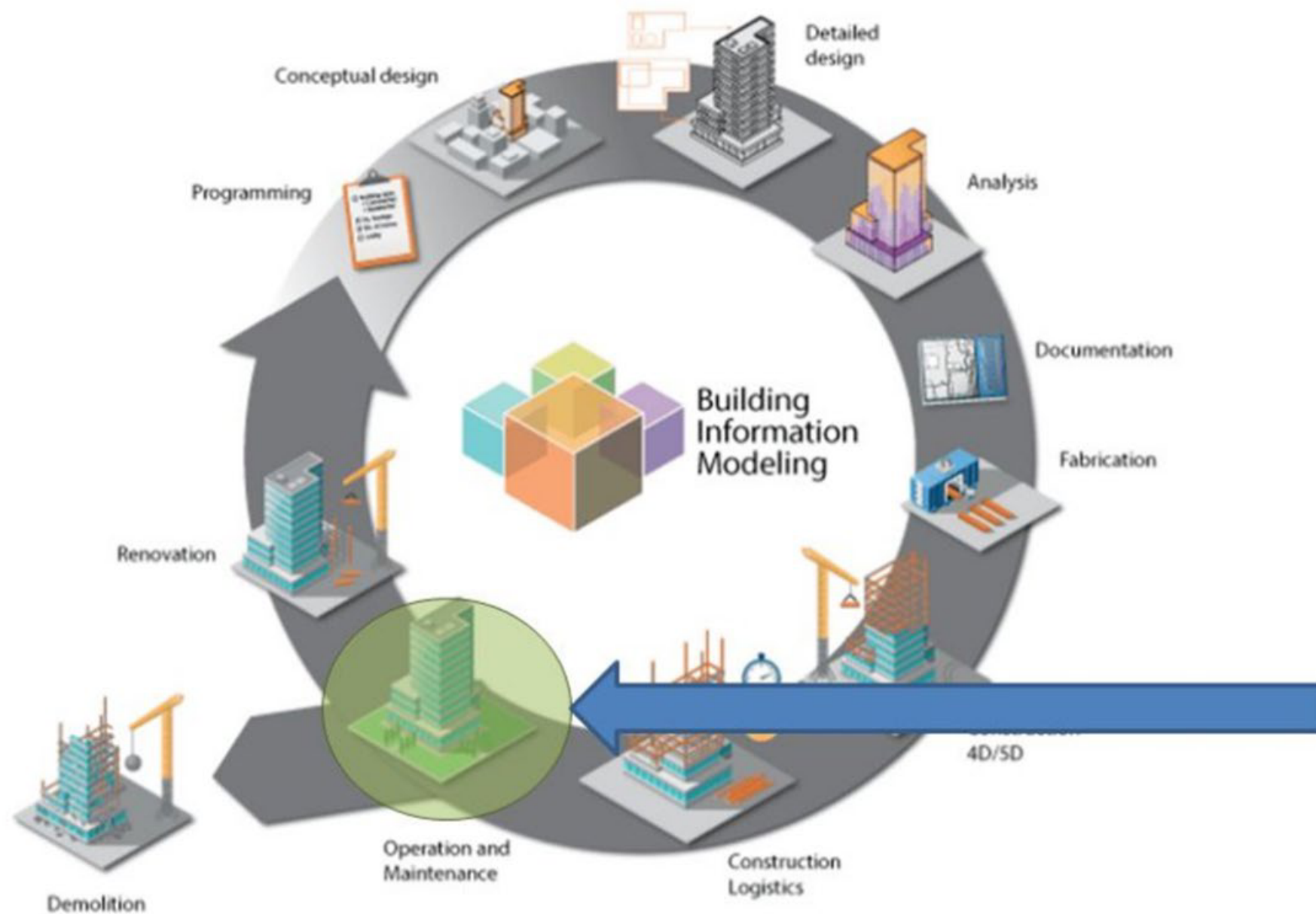


Lifecycle Approach



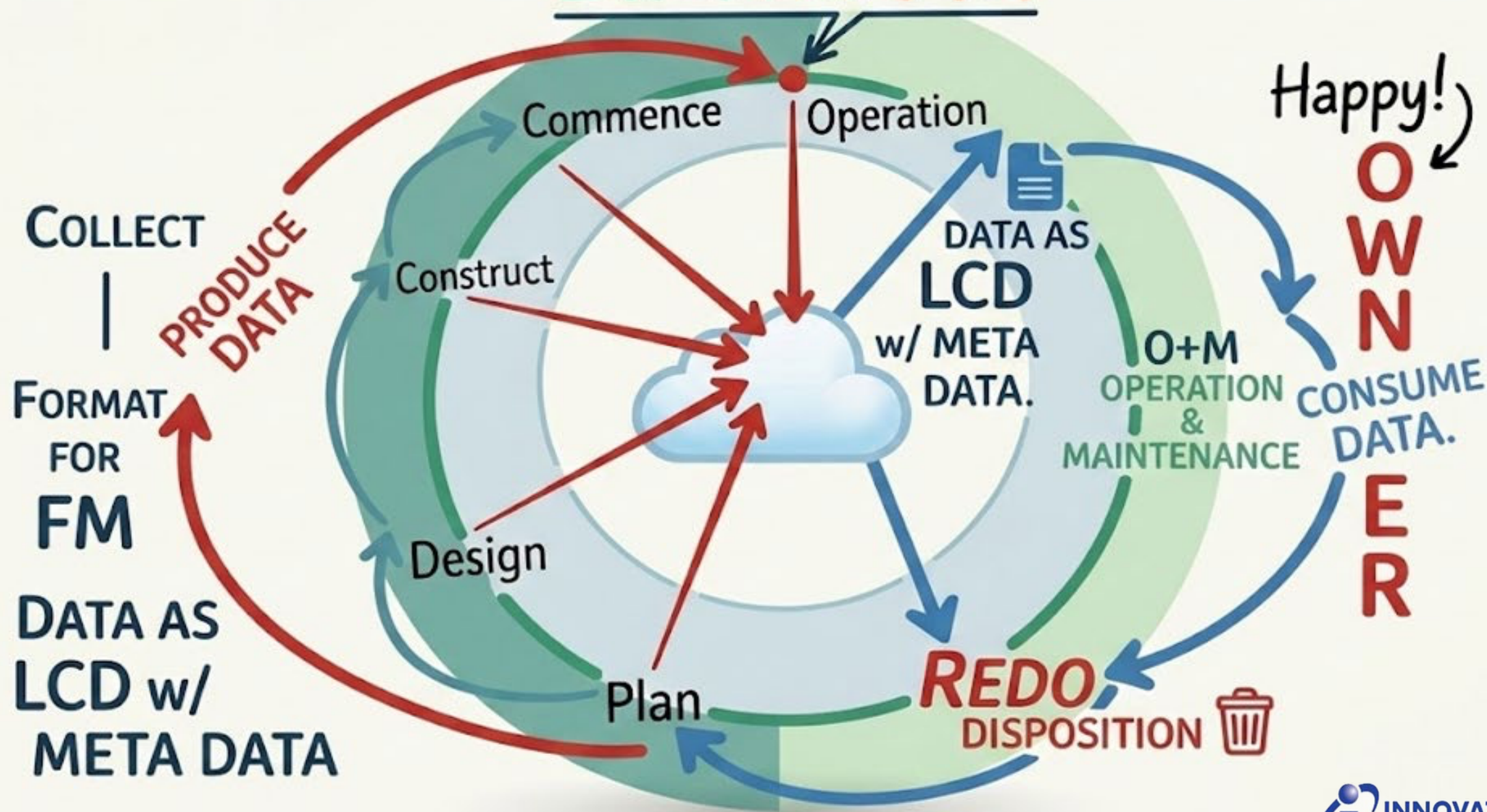
Lifecycle Approach





80% of
lifecycle
cost

BIM FOR FM







problem solved

What barriers are preventing this from happening?

- Higher upfront costs
- Technology feels complicated or out of reach
- Human error
- Disconnected handover process (loss of opportunity)
- Lack of awareness (owners don't know what to ask for)

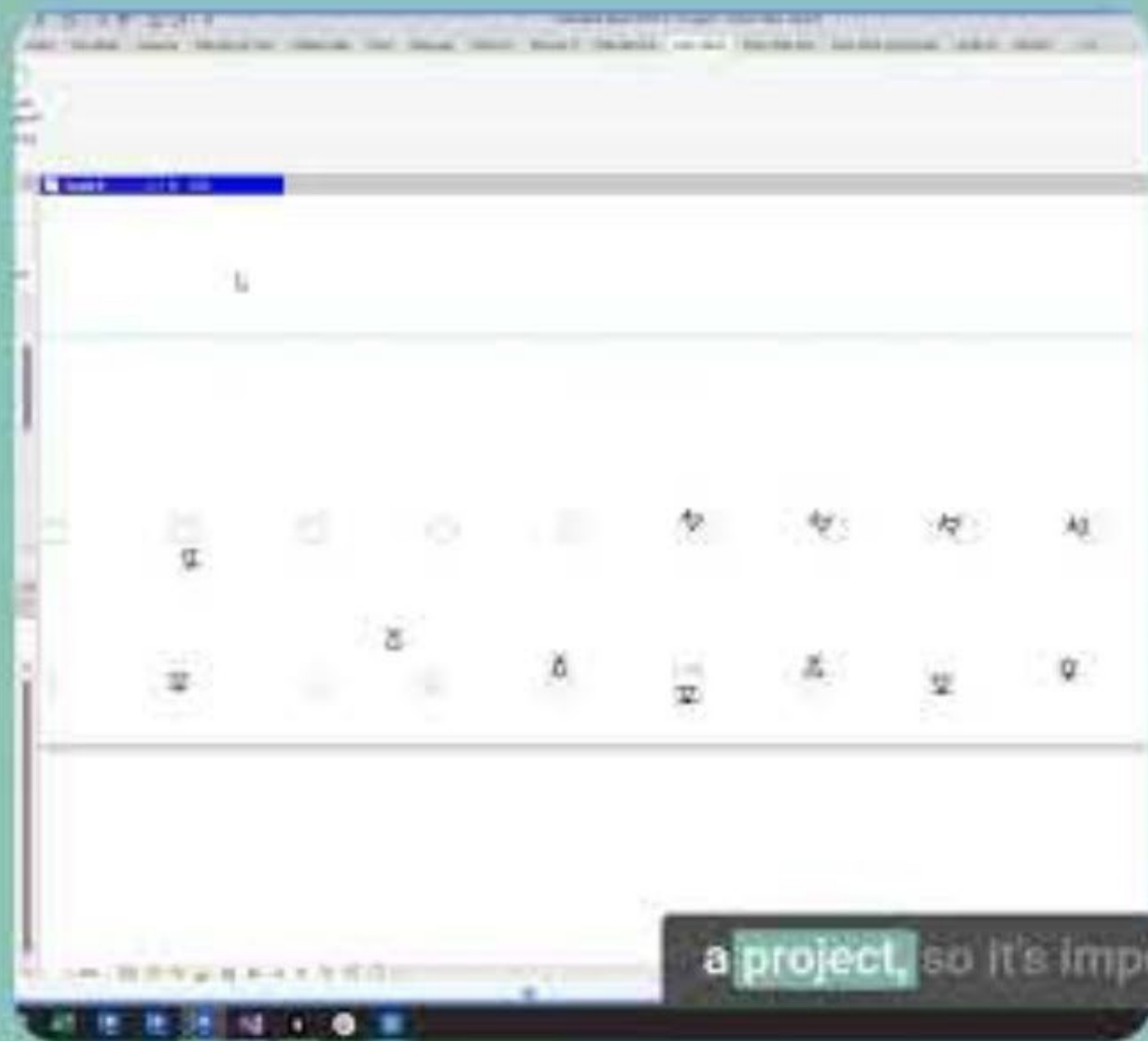
Lessons we've learned along the way

- Eliminate the monotonous tasks
- Simplify the data alignment and aggregation process
- Make participation easy for everyone
- Make boutique solutions that can be easily customized

3D - Jonathan Thachenberg		Duct Size Schedule	Pipe Size Schedule
		10.0	
		20.0	
		32.0	
		40.0	
		50.0	
		63.5	
		80.0	
		90.0	
		100.0	
		Plumbing - Domestic Cold Water - Softened	
		15.0	
		20.0	
		Plumbing - Domestic Hot Water	
		10.0	
		15.0	
		20.0	
		25.0	
		32.0	
		40.0	
		50.0	
		63.5	
		Plumbing - Domestic Hot Water Recirc.	
		15.0	
		20.0	
		25.0	
		32.0	
		40.0	
		50.0	
		Plumbing - Drain	
		40.0	
		50.0	
		60.0	
		80.0	
		100.0	
		Plumbing - Laundry	
		150.0	
		Plumbing - Sanitary Drain	
		75.0	



are all metric rounded sizes



a project, so it's important





QUESTIONS?





May 27 – Paul Stocco, Brownlee LLP



Integrated Project Delivery

Building Better Projects Through Collaboration

May 27 and 28, 2026: CIC Forum

Presented by



BROWNLEE LLP
Barristers & Solicitors

Paul V. Stocco

Education

- 1986, University of Toronto, B.A.
- 1989, LLB, Osgoode Hall Law School
- 1991 Law Society of Upper Canada
- 2000 Law Society of Alberta

Paul practices construction litigation and procurement - representing owners, general contractors and sub-contractors at all levels of Court in Alberta and Ontario including the Supreme Court of Canada. His practice also involves drafting procurement documents, construction management, consulting, design build, integrated project delivery, building information modelling, lump sum, and public-private partnership (P3) contracts.



BROWNLEE LLP
Barristers & Solicitors

Table of Contents

Integrated Project Delivery Model (“IPD”)

*From Paper Plans to BIM: Addressing Design
Gaps and On-Site Conflicts*

Lean Construction Principles

*Essential IPD contract principles and
Actual IPD projects*

BC Housing Case Studies

*Applicability of IPD to broader construction
projects*

Key Takeaways

*Implementing IPD and Lean Construction to increase
Productivity of Project Sites and Collaboration*

Integrated Project Delivery (IPD)

IPD aligns the project team goals and provides an effective collaboration mechanism among them to achieve overall project goals efficiently.



Integrated Project Delivery (IPD)

Five Factors



Early involvement of key participants



Shared risk and reward based on project outcome



Joint project control



Reduced liability exposure



Jointly developed and validated targets



01.

Integrated Project Delivery (IPD)

Processes

Building
Information
Modelling
(BIM)

Teams can collaborate on the design, construction and ongoing management of an asset

Pull Planning

Creates increased reliability and efficiency of workflow

The “Big
Room”

Allows teams to discuss project-wide concerns like budgets, hot topics, or global changes



02.

Lean Construction

Construction Industry Institute (CII):

“The continuous process of eliminating waste, meeting or exceeding all customer requirements, focusing on the entire value stream, and pursuing perfection in the execution of a constructed project.”



03.

BC Housing IPD Case Studies

BC Housing Research Centre, “Strategies for Collaborative Construction: Integrated Project Delivery Case Studies”

PriMed Mosaic Centre

Key IPD features

- ✓ Early involvement of key participants
- ✓ Shared risk/reward
- ✓ Joint project control
- ✓ Reduced liability exposure
- ✓ Jointly developed & validated targets

St. Jerome's University Campus Renewal

Key IPD features

- ✓ Early involvement of key participants
- ✓ Shared risk/reward
- ✓ Joint project control
- ✓ Reduced liability exposure
- ✓ Jointly developed & validated targets

UBC Brock Commons Tallwood House

Key IPD features

- ✓ Early involvement of key participants
- ✓ Joint project control
- ✓ Jointly developed & validated targets

Jacobson Hall, Trinity Western University

Key IPD features

- ✓ Early involvement of key participants
- ✓ Joint project control
- ✓ Jointly developed & validated targets



04. Key Features of IPD & Lessons Learned



Setting clear project goals and objectives



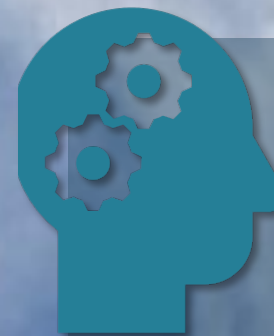
Owner's involvement



Early project team involvement and effective collaboration



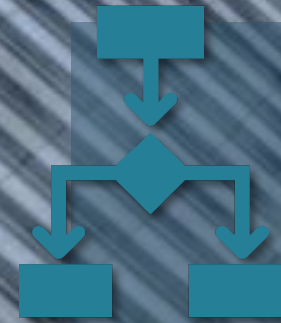
Efficient project team setup



Be open about risks – and manage as a team



04. Key Features of IPD & Lessons Learned



Set the
decision-making
structure



Align team incentives
with project goals



Maximise digital tools,
process aids &
innovative technology



Prefabrication



Lean *Everything*



QUESTIONS?

pstocco@brownleelaw.com

(780)497-4884



BROWNLEE LLP
Barristers & Solicitors



May 27 – Mark Hoosein, ASCA

Built by People

Reframing Safety as an Innovation Catalyst

Construction Innovation Centre (CIC) Forum 2026



Built by People

The order of these words is the secret.

Powered by Technology

Construction does not have an innovation problem.

It has an adoption problem.

The bottleneck is the human system that the technology lands on.



The Productivity Gap

Same available technology.
Seven times slower.

+90%
Manufacturing

+10%
Construction

The Knowledge Drain

43,400

Construction worker retirements over the next decade. 21% of the current workforce walking off the job site.

BuildForce Canada, Alberta 2025 to 2034 outlook.



Two-thirds of the workforce report concerns about psychological health and safety. Mental health is a workforce risk, not a side conversation.



The Scale of the System

255,000

Alberta construction workers.
One in every ten jobs in this
province.

**You cannot digitize
your way out of a
human-system gap.**

Technology lands on the exact same culture that
produced these numbers in the first place.

Reframing the Baseline

Safety $\neq$
~~Compliance~~



Safety =
Capability

High-reliability organizations treat safety as the core capability required to surface hazards, learn faster, and adopt change.

Safety is the Operating System

Safety is not the brake on innovation. It is the condition that helps innovation hold onto real job sites.



Independent UBC
Evaluation. Comparing
COR-certified firms in
Alberta against matched
non-certified firms.

12% to 14%

Greater reduction in lost-time injury rates.
Lower audit scores directly correlate to
higher injury rates.

McLeod CB and Macpherson RA, American Journal of Industrial Medicine, December 2024.

Research into Practice: COR Modernization



**UBC Research
proves the model.**

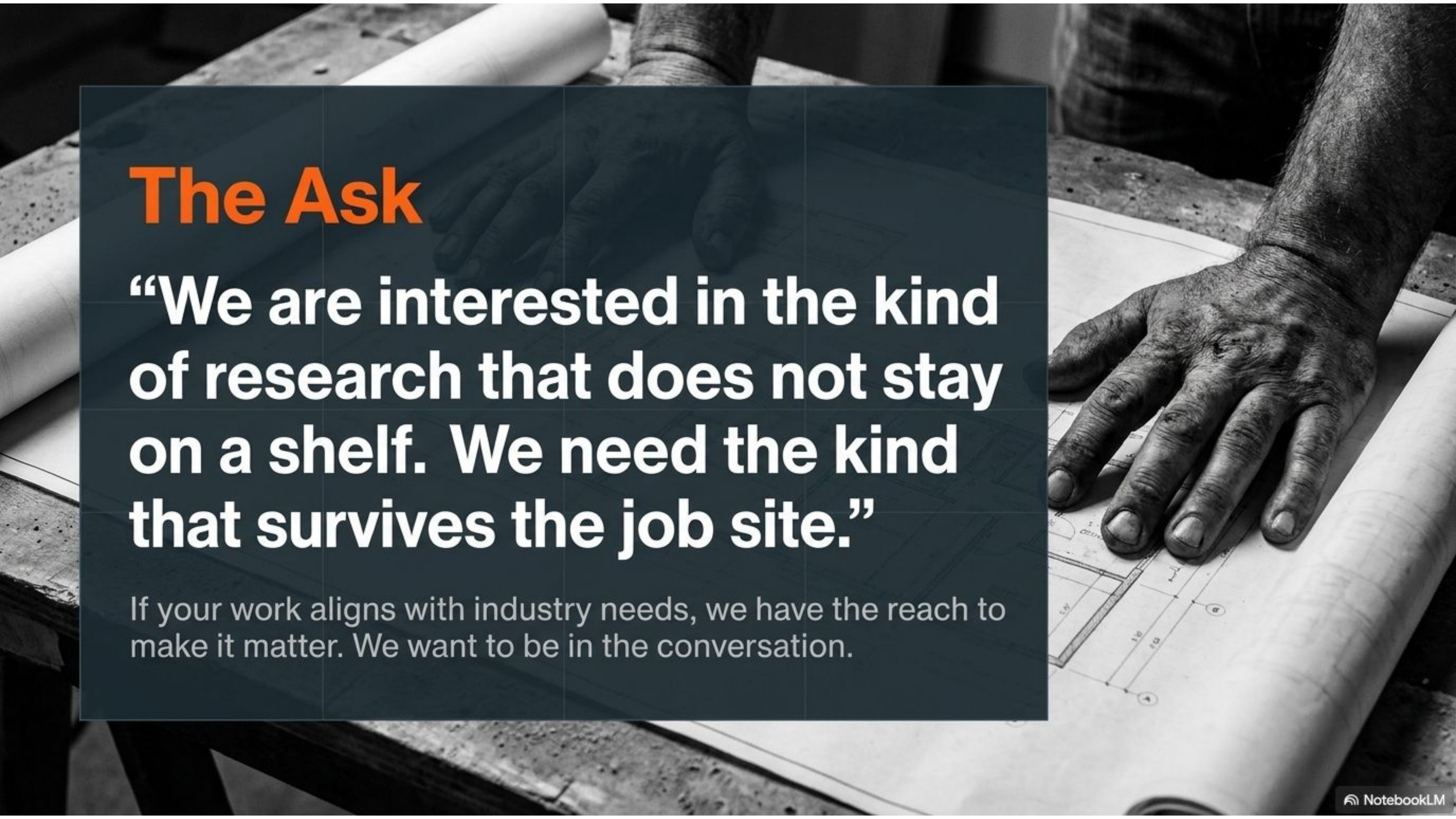


ACSA certifies ~5,500 construction employers. Alberta-specific applied research extends the evidence base to refine measurable safety value.

Bridging the Gap

We don't build the tools. We translate the science into systems that 59,000 Alberta employers can actually use.





The Ask

“We are interested in the kind of research that does not stay on a shelf. We need the kind that survives the job site.”

If your work aligns with industry needs, we have the reach to make it matter. We want to be in the conversation.

Technology builds nothing. People do.

Technology gives them better tools and better protection. The industry that puts those in the right order owns the next decade.

Safety helps us get the order right.

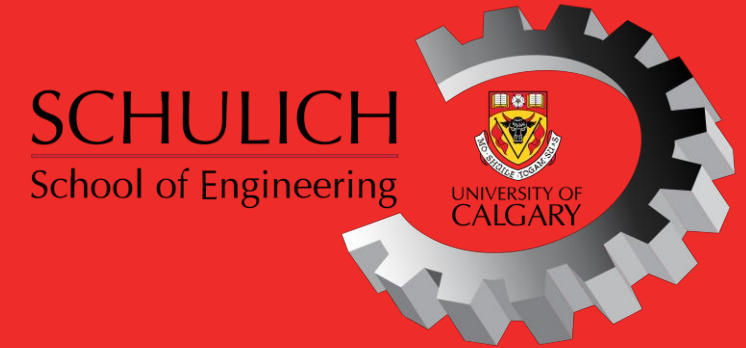
May 27 – Pouya Zangeneh, University of Calgary

Workforce Gap

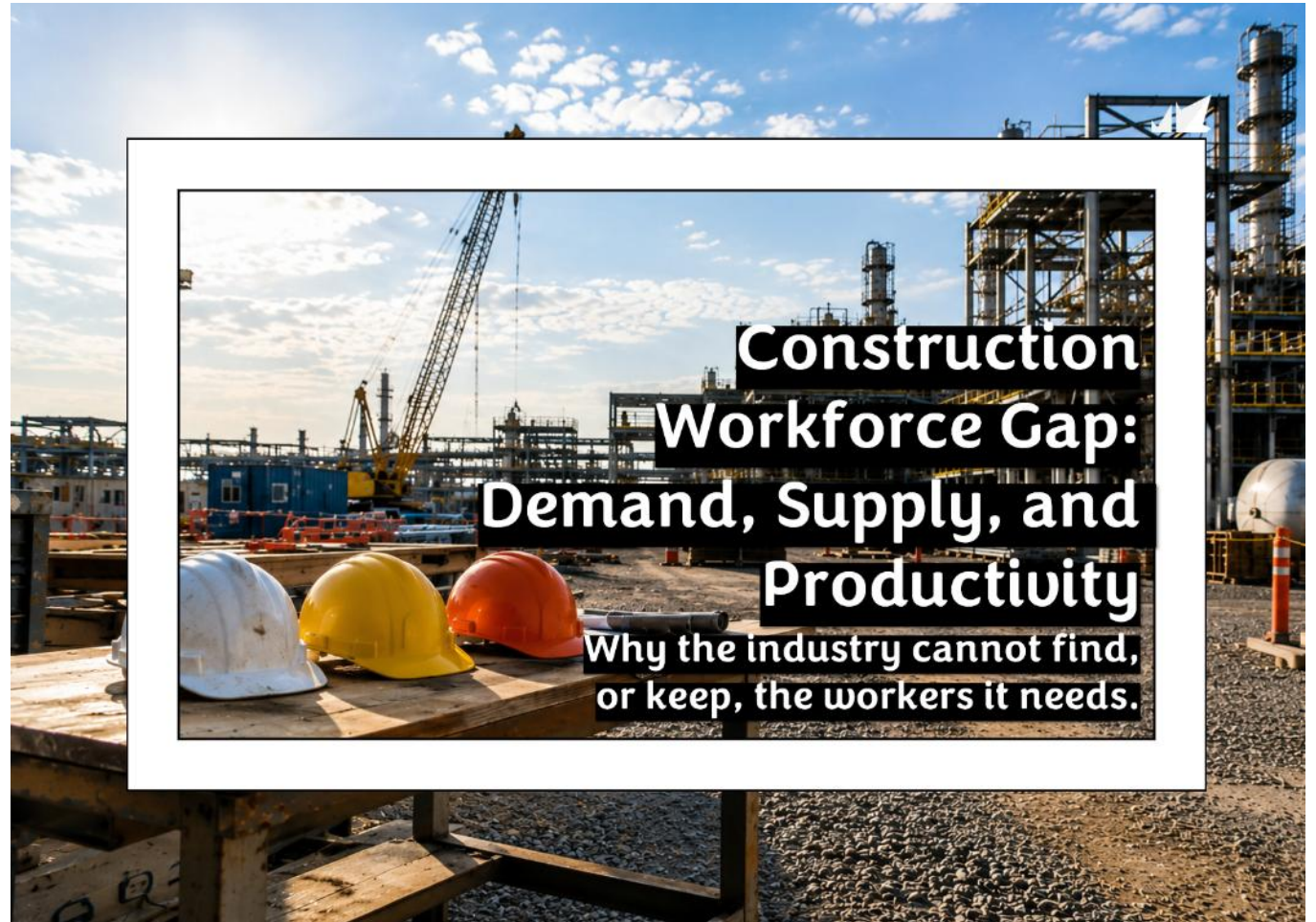
Demand, Supply, and Productivity

Pouya Zangeneh, PhD, PEng,
Endowed Chair in Engineering Project Management

2026-05-27



Read the Article



<https://epmresearch.com/p/construction-workforce-gap>

EPM Endowed Chair

Pouya Zangeneh

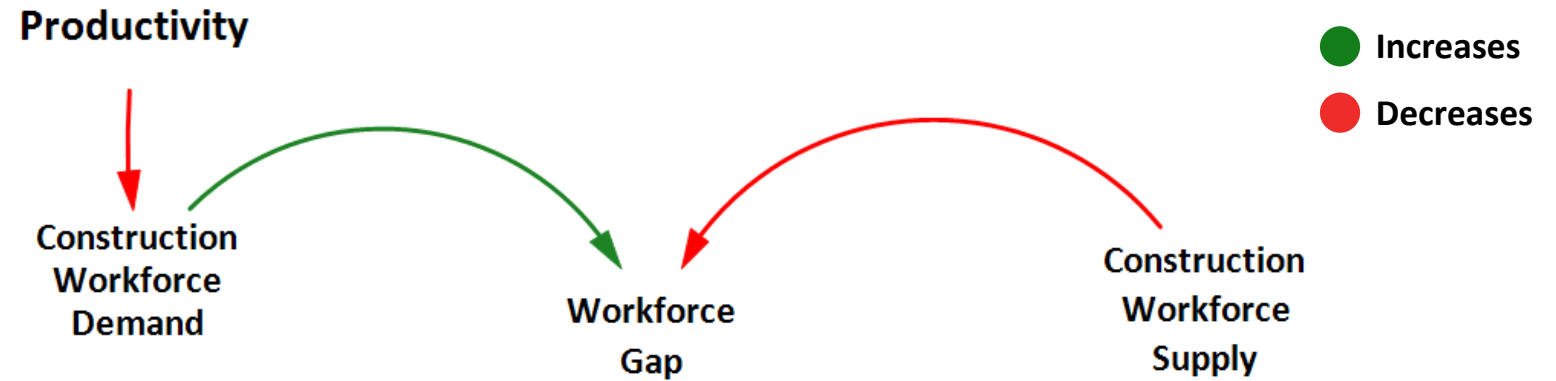
- PhD University of Toronto, 2021
- Professional Engineer, 2014
- MSc University of Calgary, 2011
- BSc University of Tehran, 2007

<https://profiles.ucalgary.ca/pouya-zangeneh>

- ✓ Assistant Professor and the Endowed Chair in Engineering Project Management at the Schulich School of Engineering, University of Calgary.
- ✓ Over 12 years in the industry experience before joining academia
 - Concrete Casting for Railway Subgrade and Tunneling (1 year)
 - Structural Design, Steel and Reinforced Concrete (1 year)
 - Thermal Mechanical, Finite Element Analysis Design (2 years)
 - Structural Dynamics and Seismic Design and Random Vibration (2 years)
 - **Risk Modelling for Projects, Project Financing, Project Information Systems (5 years/PhD)**
 - **Risk Analytics and Resilience for Projects and Operations (2 years)**



Problem



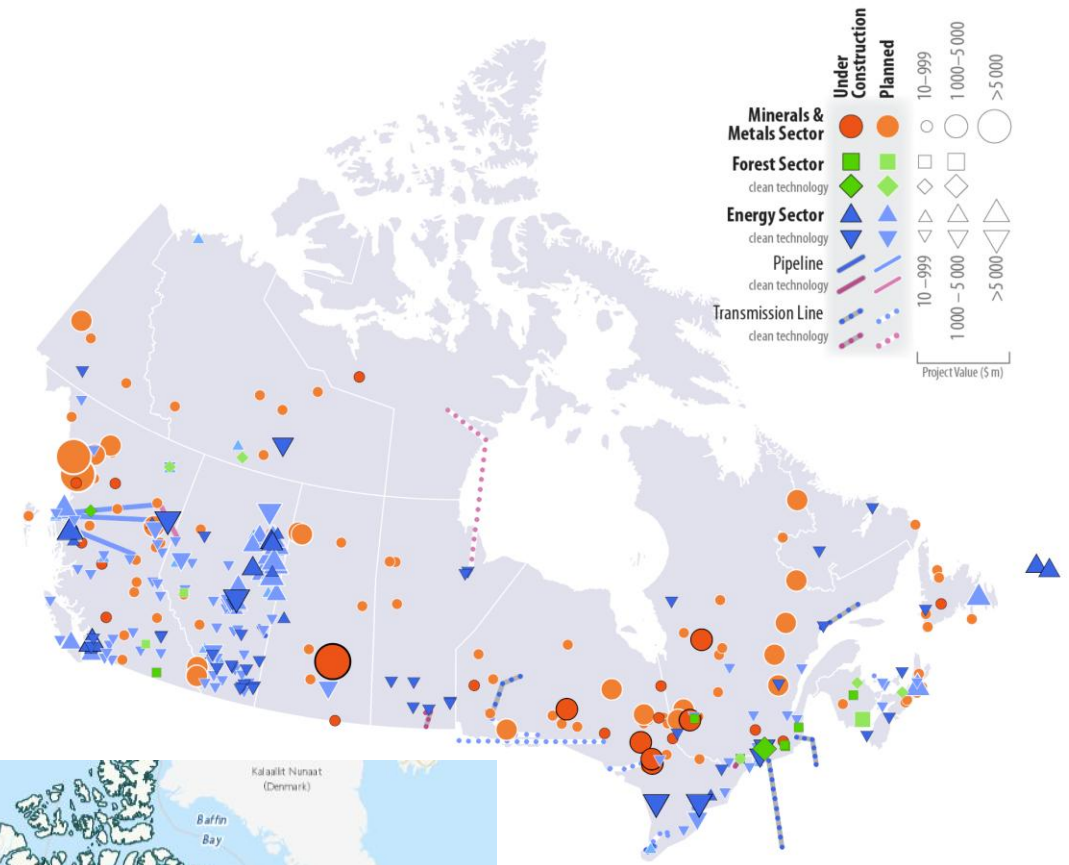
- **BuildForce Canada** projects that 270,000 retirements and rising project demand will require 380,500 new workers by 2034; even with 272,200 expected young entrants, a skilled labour shortfall of 108,300 is anticipated [\[1\]](#).
- **RBC** estimates that over 500,000 additional construction workers are needed by 2030 to meet housing and infrastructure needs in Canada alone [\[2\]](#).

Part of the problem

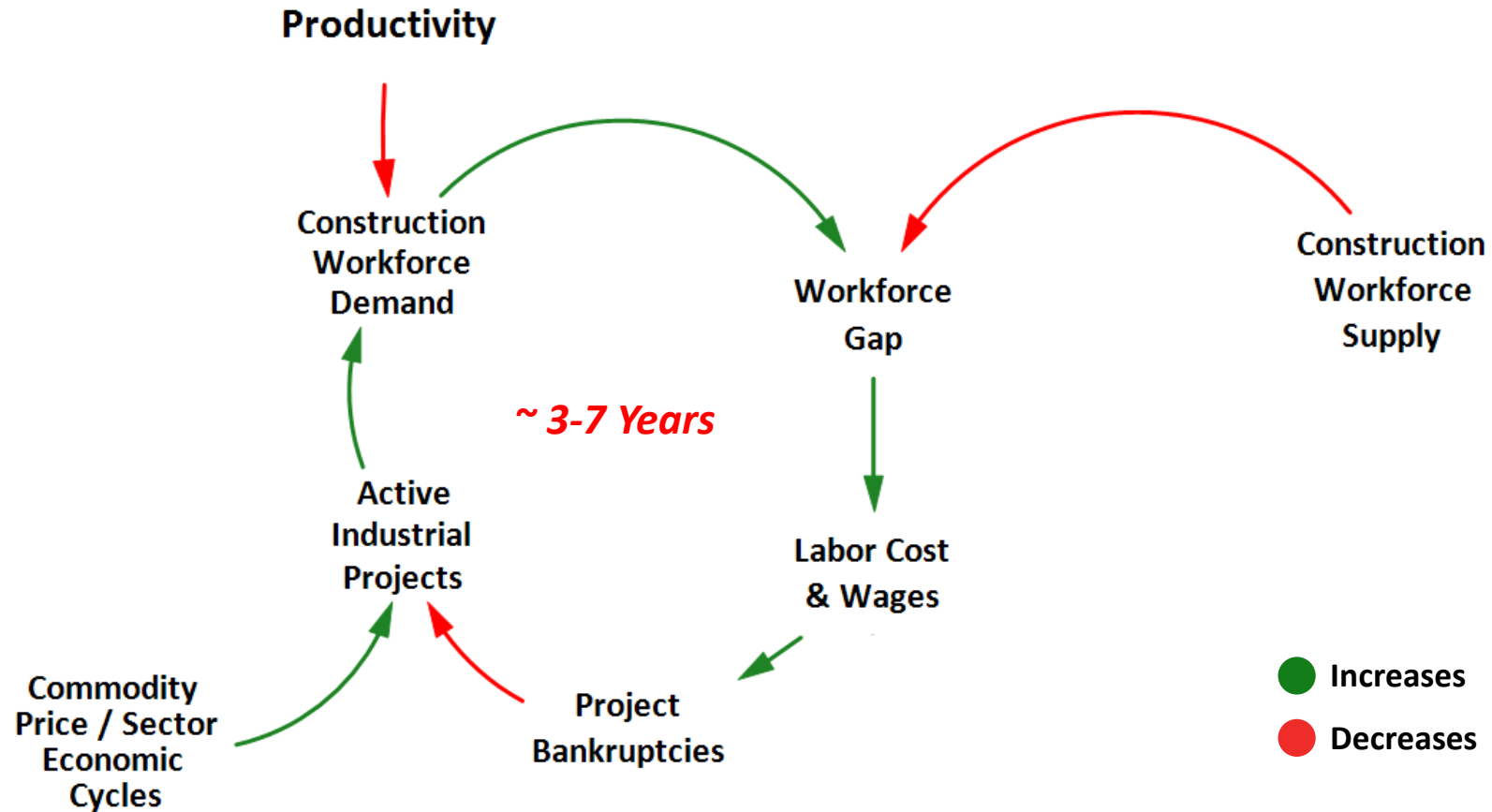
Canada Major Projects

As of 2024

- Canada has 504 major natural resource projects planned or under construction, worth \$632.6B.
- The largest sector is energy: 340 projects, worth \$510.0B
- Mining includes 138 projects, worth \$117.1B.
- As 2026, Major Projects office announced 17 projects across Canada



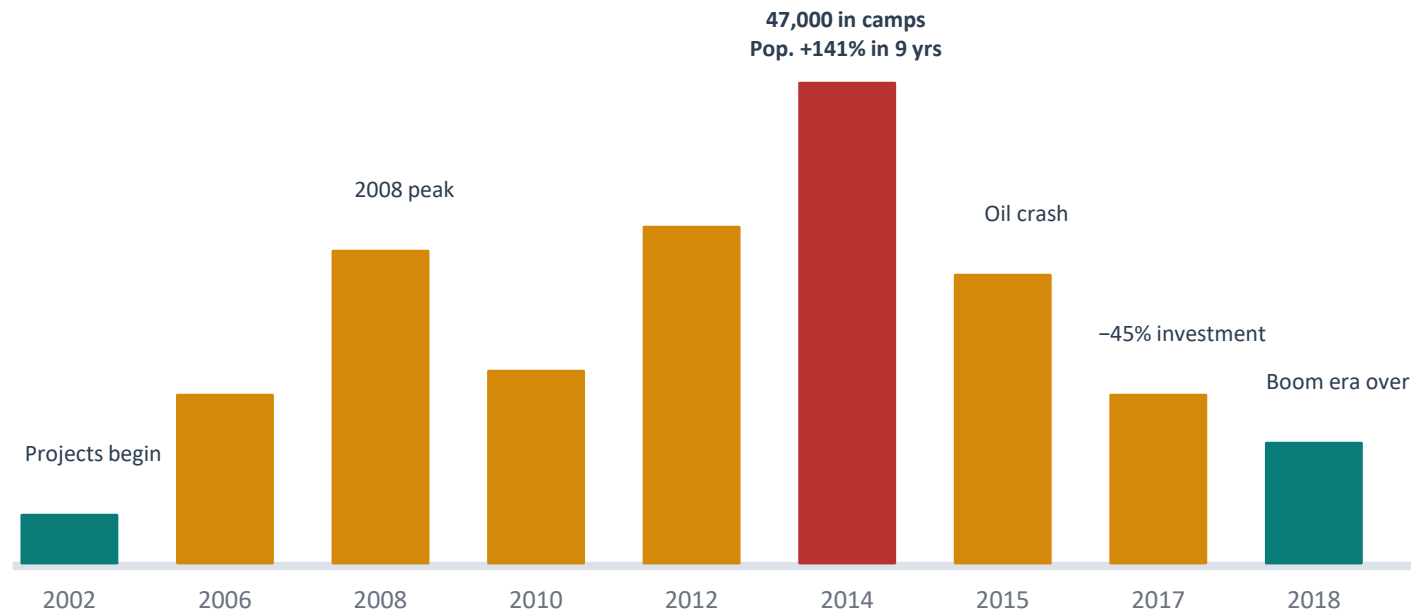
Problem



- Firms are competitors and do not share pipeline information. Information Asymmetry.
- When oil prices rise, or major infrastructure spending is announced, every firm independently reads the same signal and activates shelved projects simultaneously.

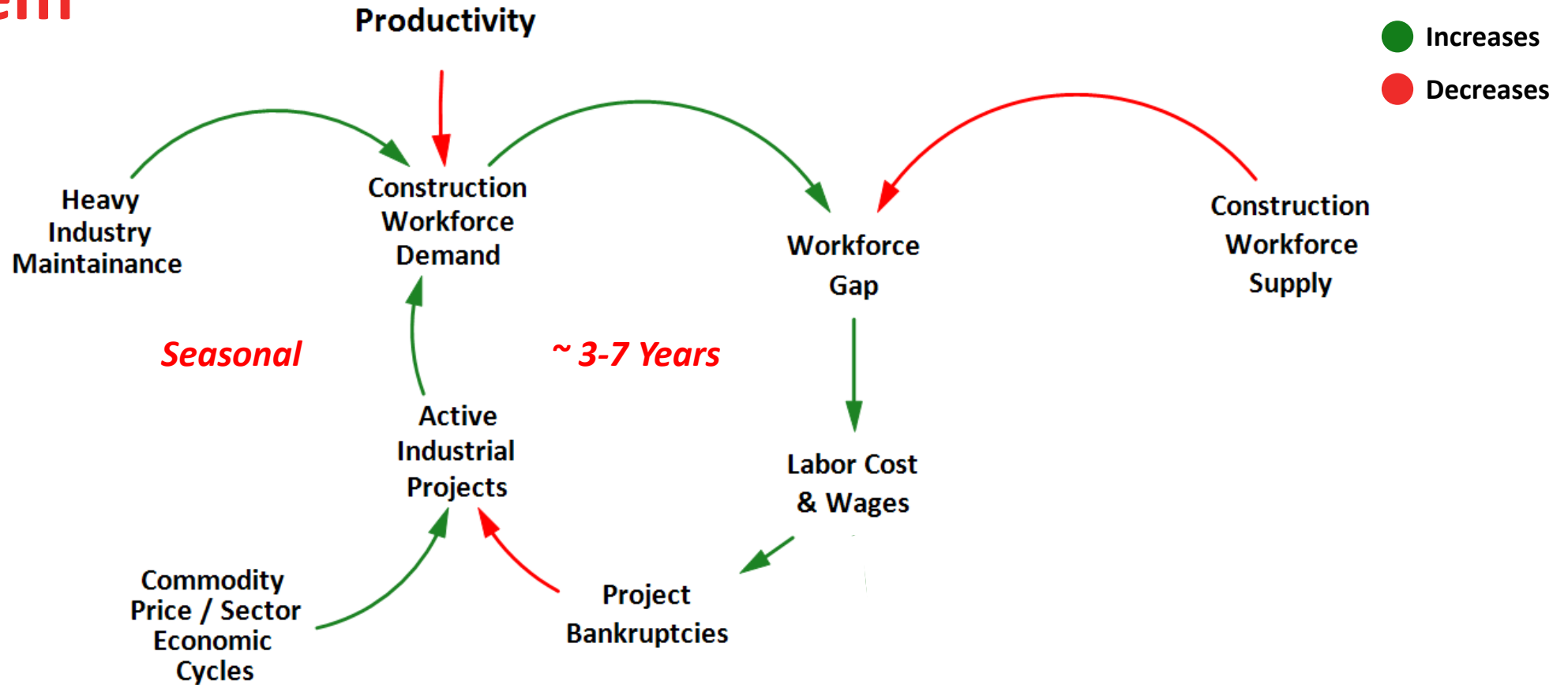
Fort McMurray Oil Sands Construction

- 47,000 people in work camps at 2014 peak
- Investment fell 45% by 2017
- 20,000+ jobs lost in oil & gas sector



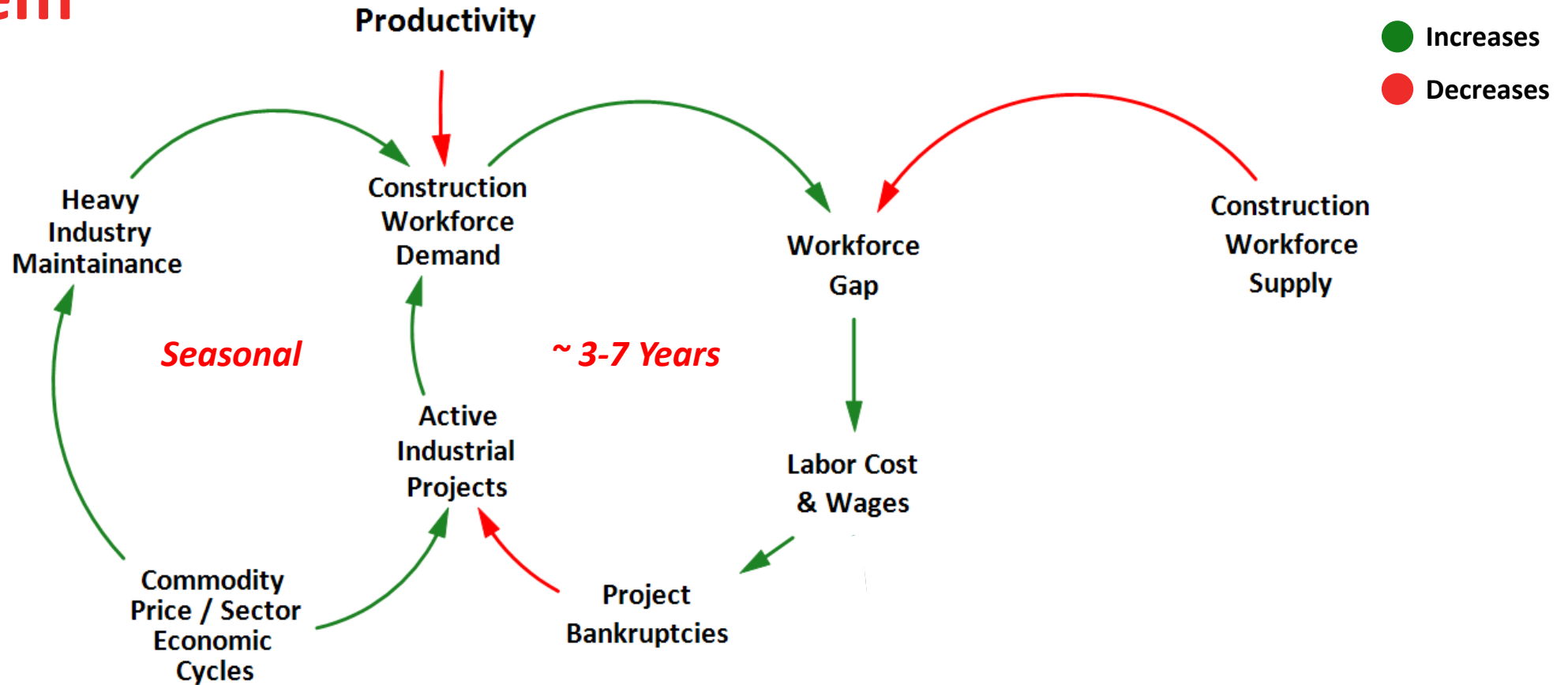
Sources: CBC News, "The great oilsands era is over" (2018); IHS oilsands investment data; Statistics Canada employment data

Problem



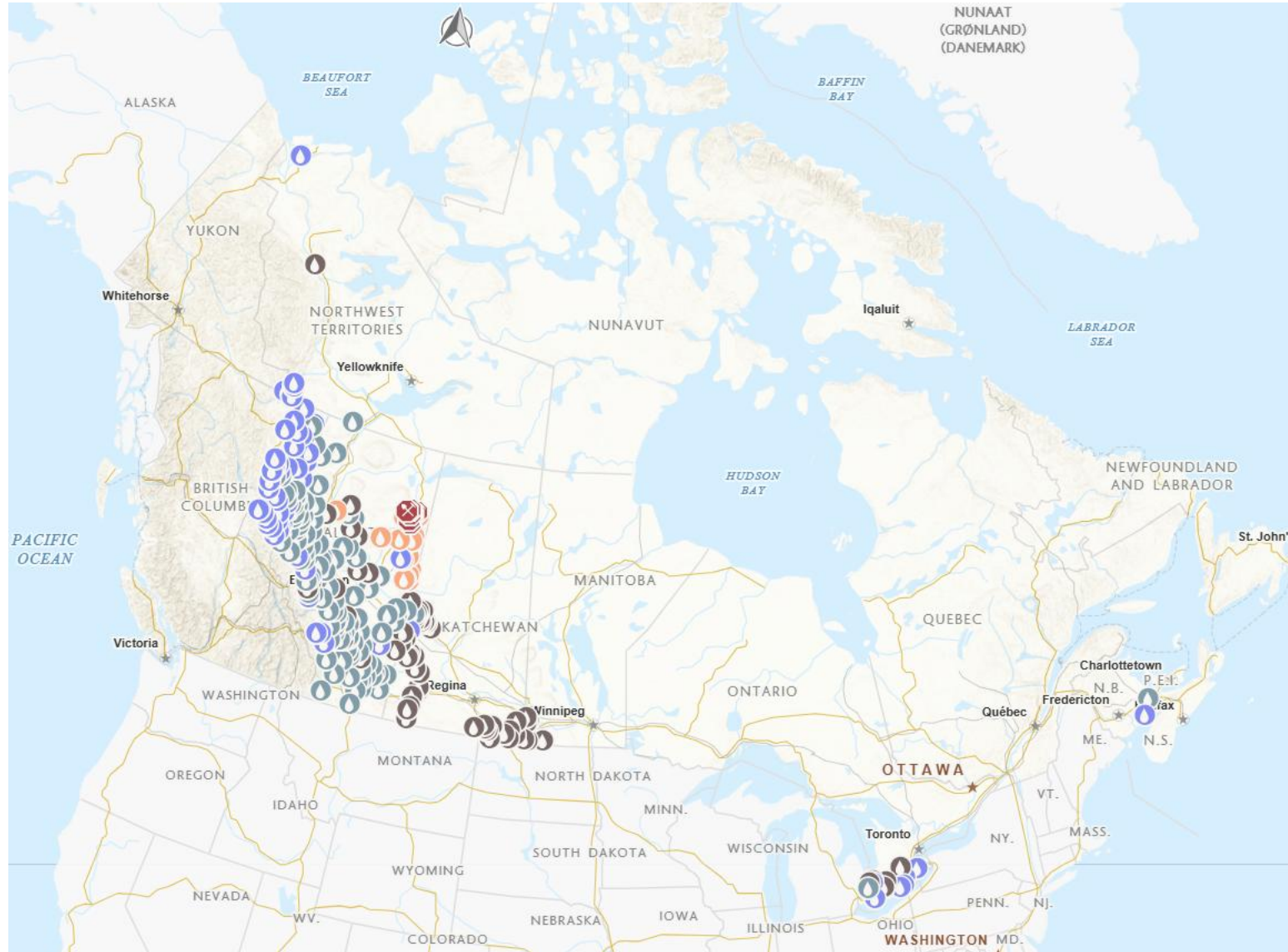
- Weather windows in northern Canada concentrate Shutdown, Turnaround, and Outage events, or STOs into spring and fall.
- Alberta, 2025 turnaround season: the annual maintenance cycle coincided with Dow's \$8.9 billion chemical plant and Air Products' \$1.6 billion hydrogen facility creating an acute crunch for pipefitters, crane operators, and scaffolders [10].

Problem

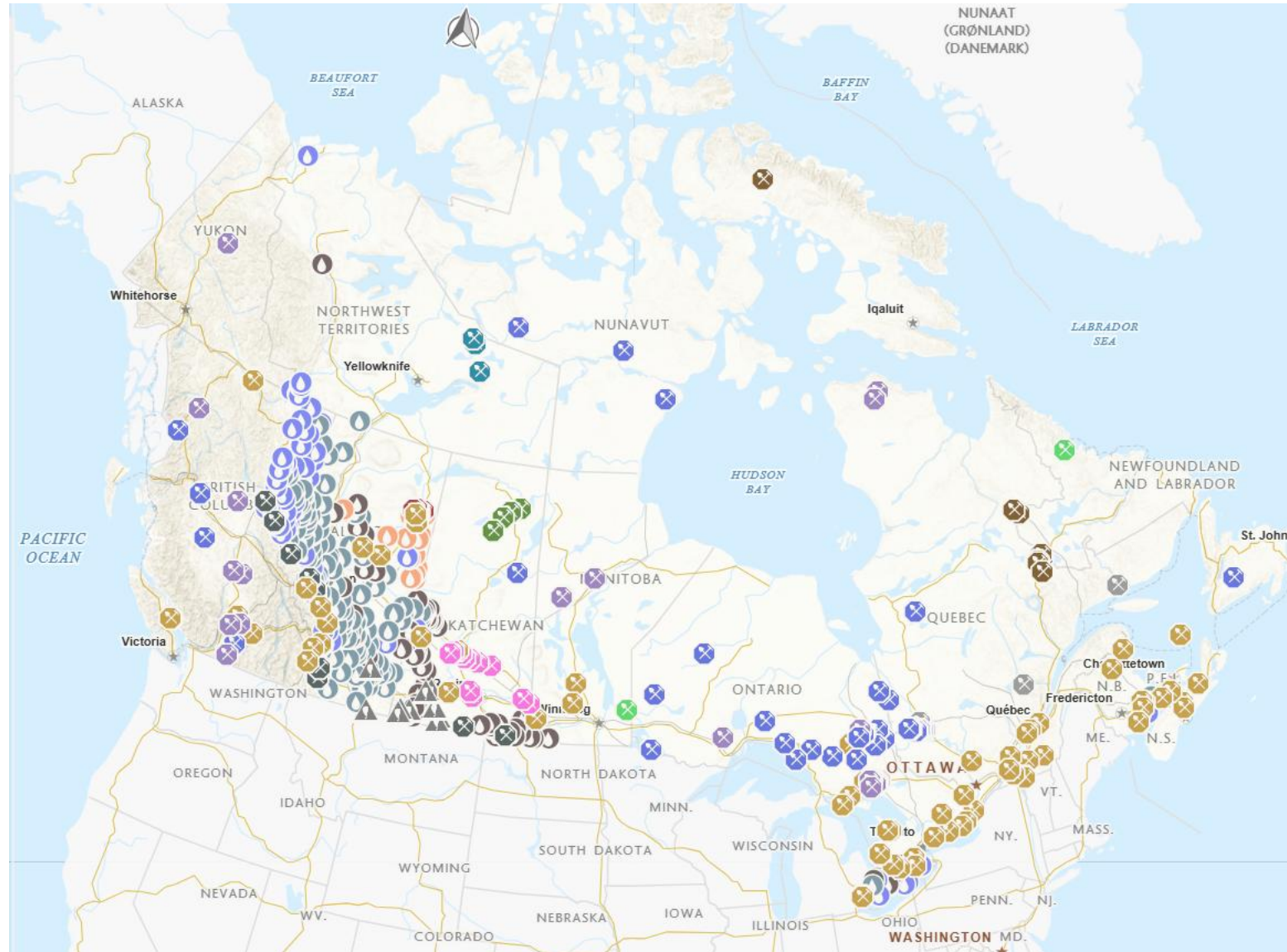


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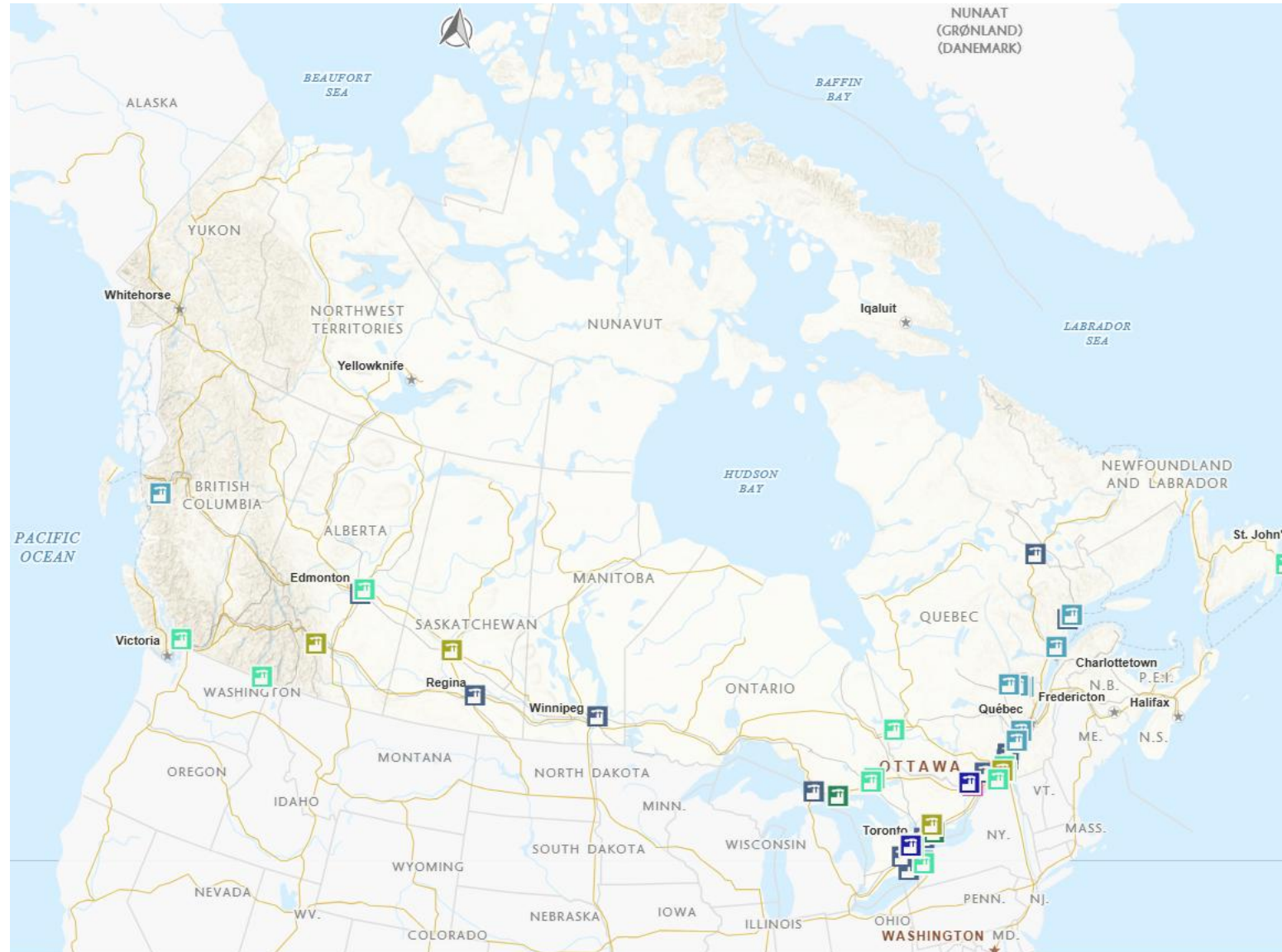
Oil and Gas Production



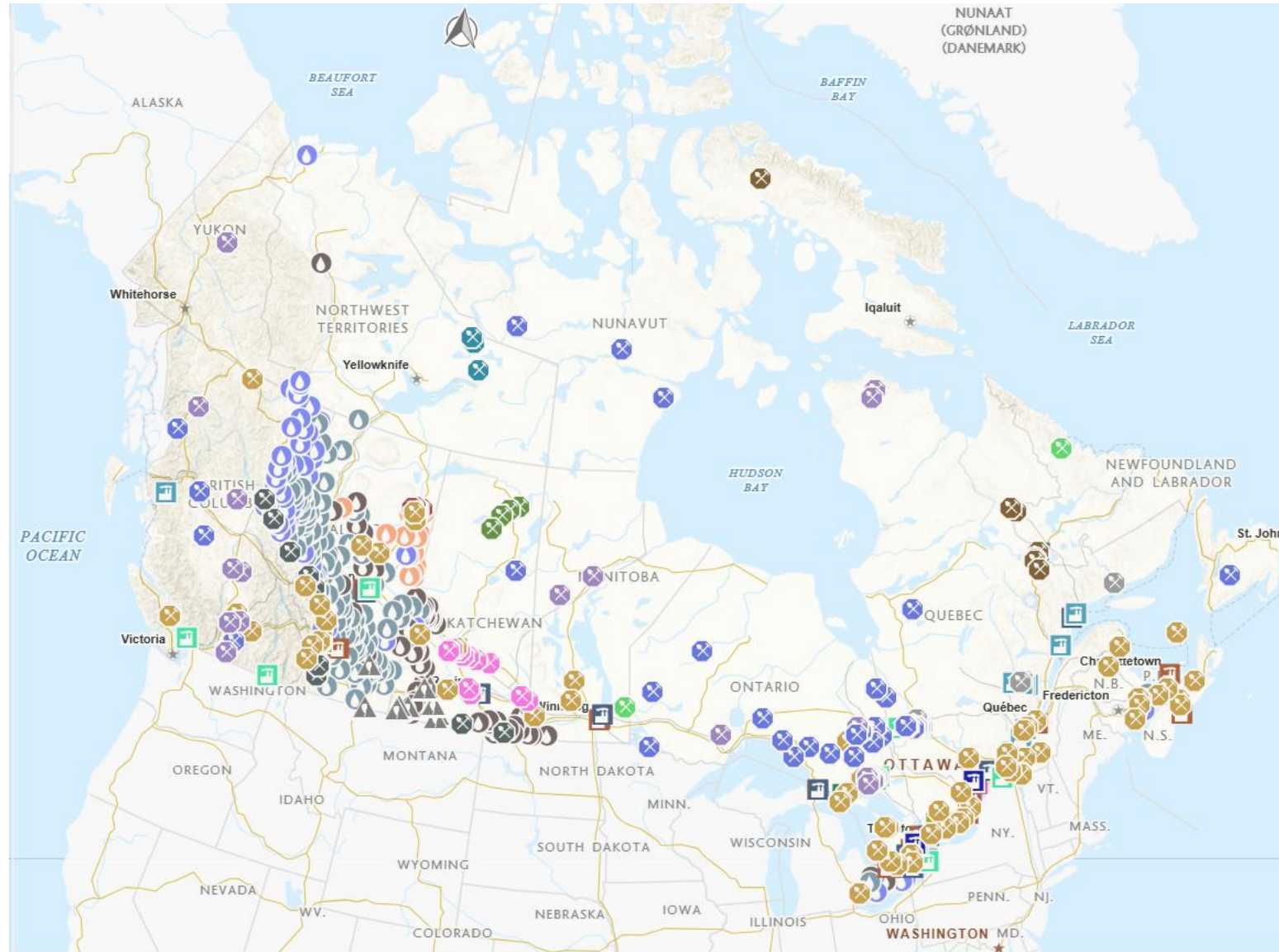
Oil and Gas & Mining



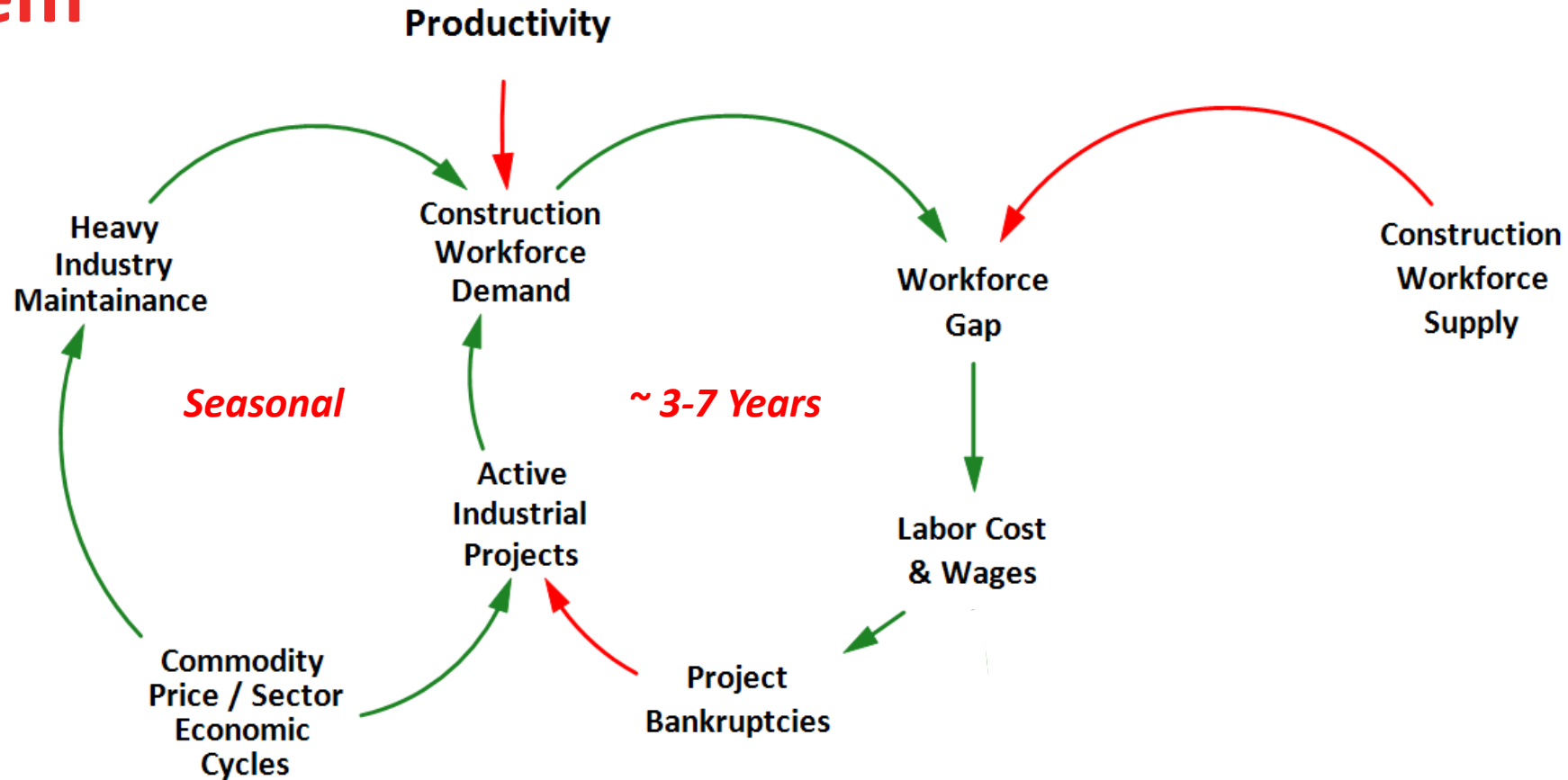
Refineries and Smelters



Everything!

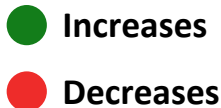


Problem



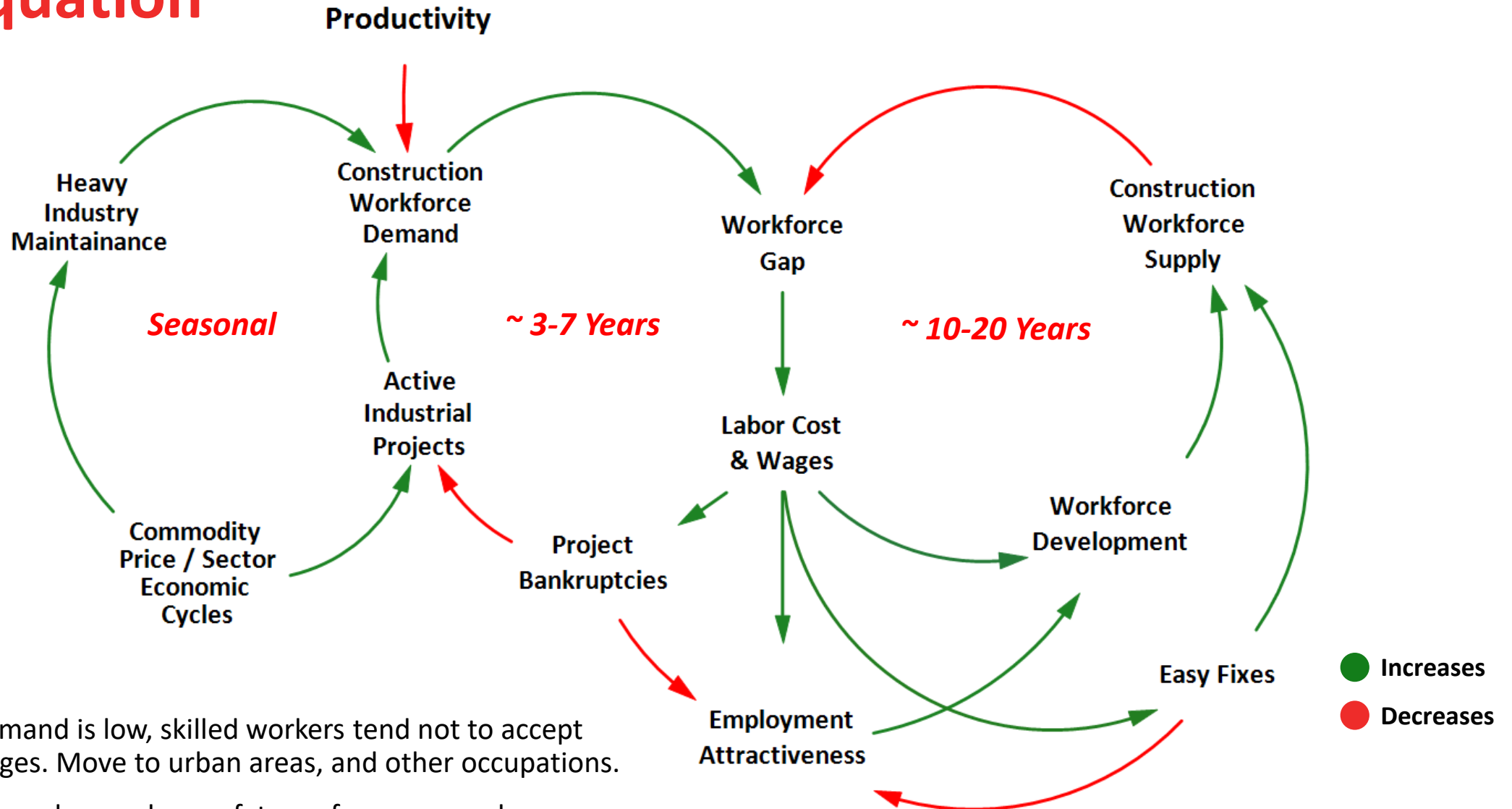
- Unlike ordinary project work, annual shutdowns and critical maintenance create a short-term inelastic demand for skilled trades.
- Because the work is time-bound and operationally critical, firms often respond to shortages by paying wage premiums rather than reducing labour demand.

● Increases
● Decreases



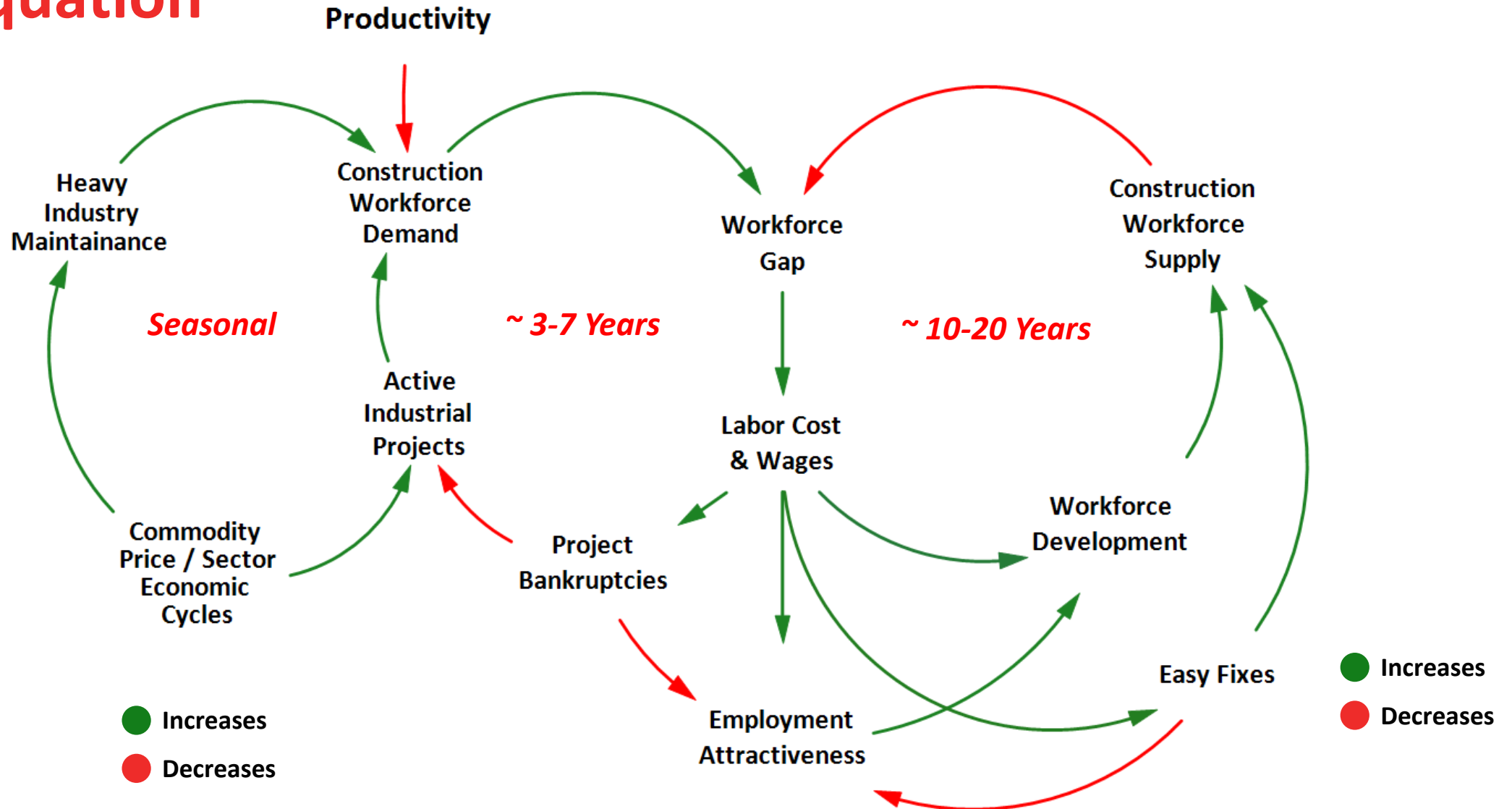
- 
- UNIVERSITY OF
CALGARY

The Equation

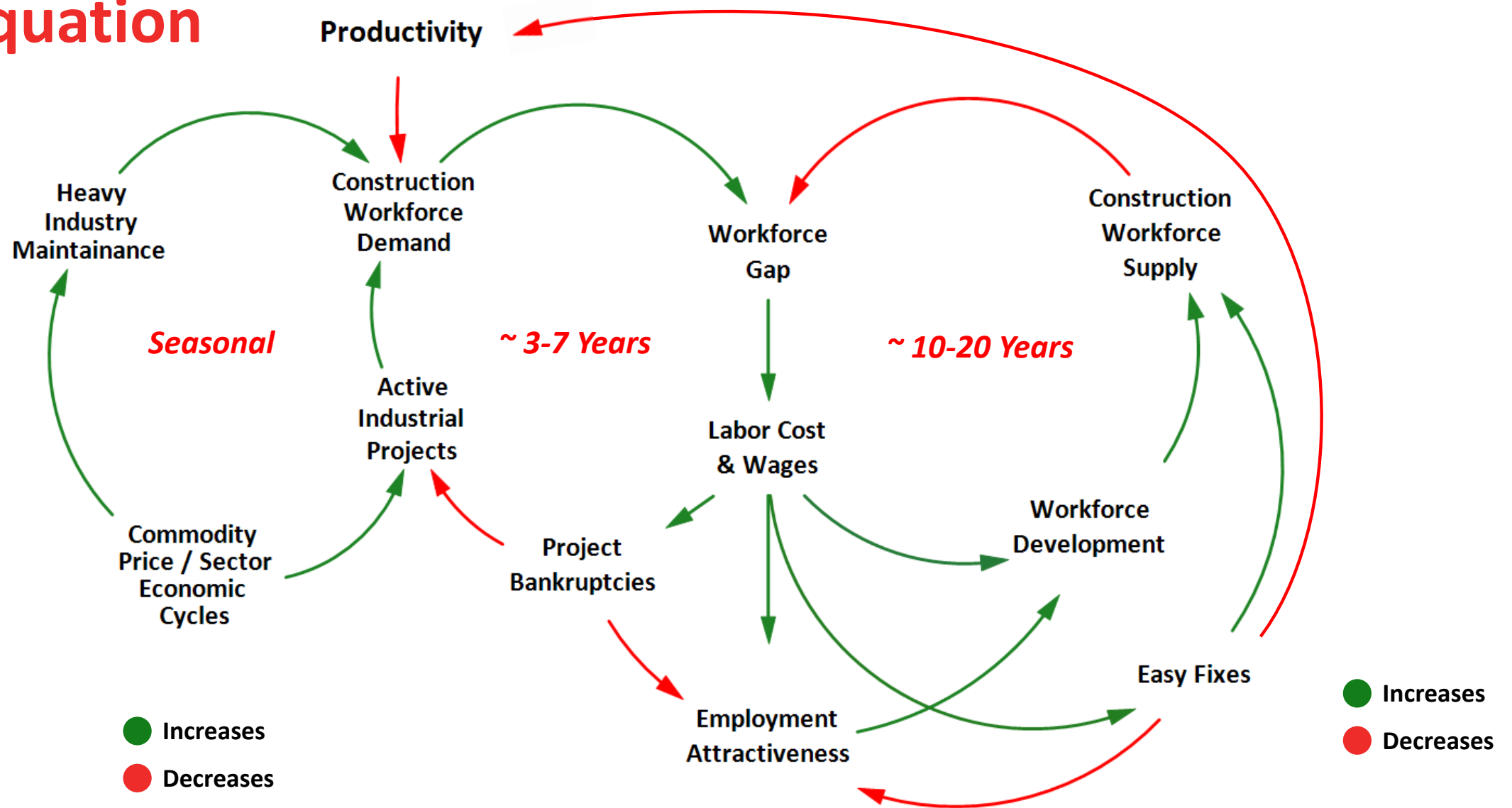


- When demand is low, skilled workers tend not to accept lower wages. Move to urban areas, and other occupations.
- Unskilled workers reduce safety performance and productivity.

The Equation

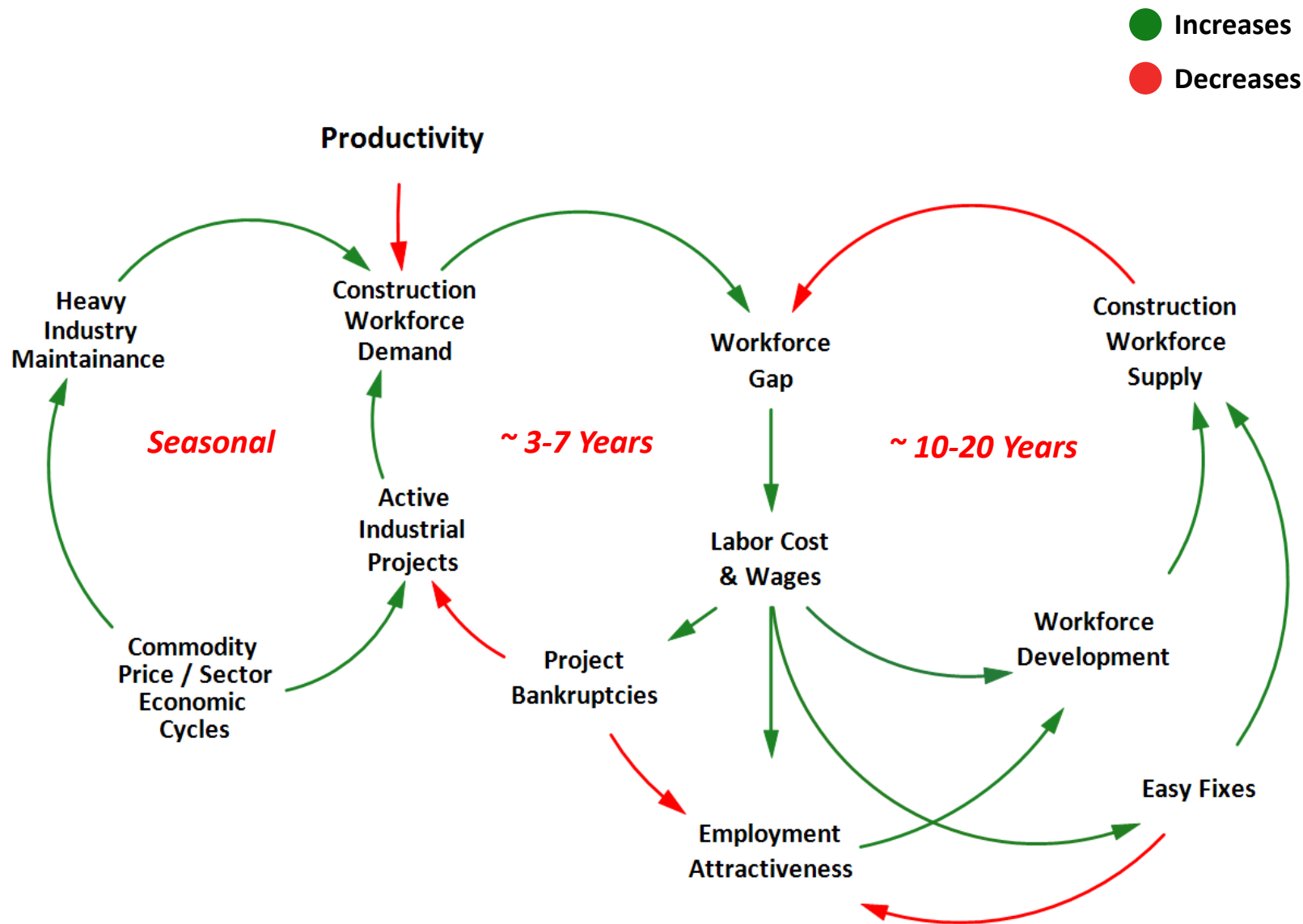


The Equation



Other Factors

- Apprenticeship
- Diversity
- Other construction sectors
 - Infrastructure
 - Housing
- Transdisciplinary



Another Gap Inside the Workforce Gap

- Economists, project managers, and tradespeople define productivity very differently.
- Dollar-to-job-equivalent forecasts look adequate nationally and fail locally.
- Policy is written by analysts, projects planned by engineers, work done by tradespeople.
- A completion rate, a schedule variance, and a worker who quit are describing the same system in incomparable numbers.



The image features a dramatic silhouette of a construction site at sunset. Several large tower cranes are visible, their lattice structures and cables creating a complex web against the bright, orange-hued sky. The sun is low on the horizon, casting a warm glow and creating a lens flare effect. In the foreground, the dark silhouettes of industrial structures, including pipes and scaffolding, are visible. A white rectangular box is superimposed over the center of the image, containing the text "Thank you!".

Thank you!



May 27 – Joseph Marchand, University of Alberta

Large Construction Projects on Local Labor Markets: A (Very Preliminary) First Look at the Canadian Data

Luke Harold and Joseph Marchand

Alberta Centre for Labour Market Research
Department of Economics
University of Alberta

Construction Innovation Centre, CIC Forum 2026

Workforce Gap: Demand, Supply, Productivity
May 27th, 2026, 10:30 am - 12:00 pm

Large Construction Projects - Building Canada Act

- Building Canada Act, [Bill C-5 Part 2](#), will seemingly allow Canada to build things in our national interest, with streamlined project development and accelerated investment.
- Along with Bill C-5, Canada's [National Electricity Strategy](#) has targeted a doubling of Canada's electricity generation by 2050, at an estimated cost of \$1 trillion (\$1,000,000,000,000).
- And, of course, there is the Canada-Alberta [Memorandum of Understanding](#) (MOU) to build new pipelines, carbon capture projects, also expanding electricity generation, all in Alberta.

Large Construction Projects - Major Projects Office

- The **Major Projects Office** (MPO) was opened in September 2025, with the goal to fast track these nation building projects.
- **Seventeen** projects have now been referred to the MPO for further review: **five** in electricity, **five** in mining, **three** in energy, **three** in transportation, and **one** in industrial.
- But, despite the Major Projects Office being located in Calgary, **none** of these proposed projects are in Alberta. That said, **one** of the seven transformative strategies are (it's Pathways Plus).

Large Construction Projects - Major Projects Office



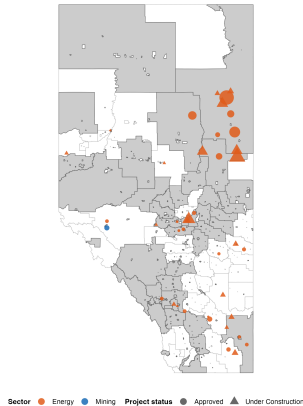
Large Construction Projects - Our Major Projects

- The major projects that we use in our study come from [Natural Resources Canada](#) (NRCan) and are mainly comprised of energy and mining projects, costing at least \$10 million.
- From 2016 to 2025, [1,269 unique major construction projects](#) are tracked, with more projects planned or under construction from 2026 to 2035, totaling \$637 billion in planned investment.
- Although these planned major projects are [nationwide](#), we show these future construction projects only for the province of [Alberta](#), in order to prove that we build things here too.

Large Construction Projects - Our Major Projects

Alberta Energy & Mining Major Projects 2025-2035

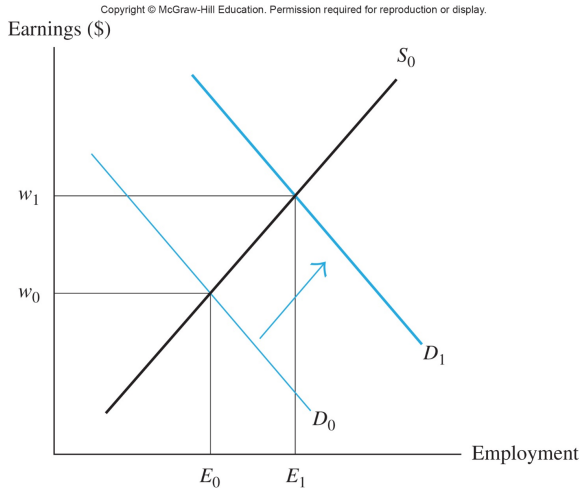
Approved and under-construction projects; size representing project cost



Local Labor Market Impacts - Theory and Example

- What does constructing things mean for local labor markets?
- When **something is built** within a local labor market, this would act like a **labor demand shock** in the **direct industry** for which that thing is built, raising its **earnings** and **employment**.
- Using the example of **casino openings** across Canada, with **forty-nine new casinos** built from 1991 to 2005, **Humphreys and Marchand (2013)** measured the local labor market effects on the **gambling sector and its spillovers** into other industries.
- While employment and earnings in gambling **roughly doubled**, only accommodation, food, and beverage services spilled over. For every gambling job created, **one to two jobs** were created.

Local Labor Market Impacts - Theory and Example



Local Labor Market Impacts - Our Current Approach

- Our current approach goes beyond direct or indirect industries.
- In the [previous literature](#), most studies focused on what happens to the labor markets of [direct](#) and [indirect](#) industries [after the thing is built](#) (i.e., casino openings), rather than focus on the construction industry while building it. Up to now, I have only treated [construction](#) as an [indirect](#) industry.
- For every [ten energy extraction jobs](#) created during an energy boom, roughly [three construction jobs](#), two retail trade jobs, and over four service jobs were created ([Marchand, 2012](#)).
- Our current study remedies this by focusing on [construction](#)!

Local Labor Market Impacts - Our Current Approach

- Therefore, two linkages are explored here rather than one.
- First, we measure what is happening to the **construction industry** in the local labor markets where our large projects are being built, while they are **still under construction**.
- Second, after these large projects are built, we measure what is happening in the **direct industry** for which the large project was built, and determine the **construction-direct job multiplier**.
- Third, as the direct industry is stimulated by the large project, we measure any spillovers into **indirect industries** that might also be locally stimulated, and the **direct-indirect job multiplier**.

Local Labor Market Impacts - Our Current Approach

- Our measurement differs from the input-output approach.
- While the **input-output approach** is typically the first one taken when measuring the local labor market effects of construction projects, it has issues and limitations (**Marchand and Weber, 2018**), including the **plus one problem** and **over estimation**.
- Our **estimation approach** is instead a mixture of **generalized difference-in-difference**, where shocks are in multiple places at multiple times, and **instrumented job multipliers**, where a causal link is provided in order to create a “**one way street**”.

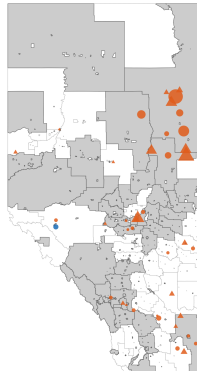
Local Labor Market Impacts - Our Vicinity Data

- Our data are job advertisements from Vicinity (Signal49).
- The data we use are over 24 million job advertisements across Canada from 2018 to 2025. In our case, these job ads are a good representation of the local labor demand of firms in an industry.
- These data contain information on job title, employer, location, date posted, occupation (NOC), and industry (NAICS).
- The location areas available in the Vicinity data can be quite large (gray areas in map), containing multiple large projects.

Local Labor Market Impacts - Our Vicinity Data

Alberta Energy & Mining Major Projects 2025-2035

Approved and under-construction projects; size representing project cost



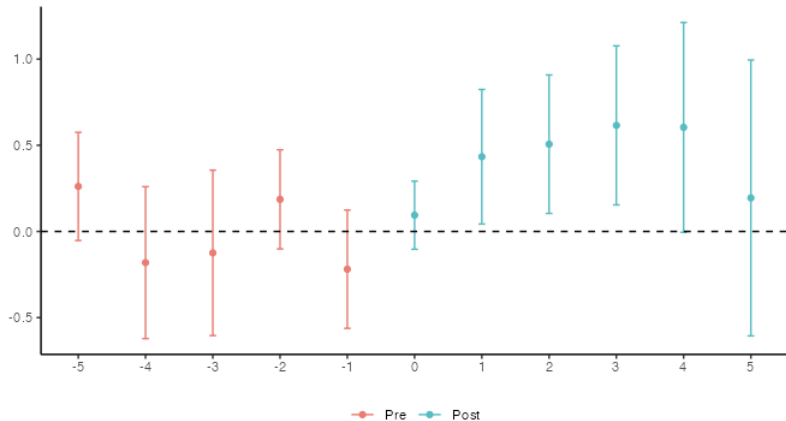
Sector ● Energy ● Mining Project status ● Approved ▲ Under Construction

Our Finding and Questions - Our Event Study

- **Core Idea:** Compares the change in outcomes over time between a treated group and an untreated comparison group
 - Under the parallel trends assumption, the untreated group captures what would have happened to the treated group in the absence of treatment
- **Staggered Adoption:** Units adopt treatment at different points in time, defining “groups” by when they are first treated
 - Once treated, units remain treated — allowing the comparison group to consist of either never-treated or not-yet-treated units
- **Event Study:** Traces how treatment effects evolve before and after adoption, plotting estimates across event-time
 - Pre-treatment estimates should be zero, serving as a test of the parallel trends assumption
 - Post-treatment estimates reveal whether effects grow, shrink, or persist over time

Our Finding and Questions - Our Event Study

Average Effect by Length of Exposure



Our Finding and Questions - Our Questions

- Our preliminary event study for the construction industry shows that once a major project begins its “under construction” phase, construction employment is stimulated for at least the next three years.
- This leads us to ask you several related questions:
 - Do you believe our preliminary result?
 - Do you agree with our approach?
 - What would you like to see us do?

Our Finding and Questions - Our Resources



Marchand, J., Weber, J. 2018. "Local Labor Markets and Natural Resources: A Synthesis of the Literature."
Journal of Economic Surveys, 32(2), 469-490.



Humphreys, B., Marchand, J. 2013. "New Casinos and Local Labor Markets: Evidence from Canada."
Labour Economics, 24, 151-160.



Marchand, J. 2012. "Local Labor Market Impacts of Energy Boom-Bust-Boom in Western Canada."
Journal of Urban Economics, 71(1), 165-174.

Our Finding and Questions - Our Resources



(<https://www.admr.ca/>)

May 28 – Dariusz Mrugala & Dustin Olsen, PCL

Right Sizing Progress Tracking Solutions



Dustin Olsen

Dariusz Mrugala

WHERE WE WORK

9.5K+

EMPLOYEES

30+

MAJOR CENTERS ACROSS
NORTH AMERICA

16+

FULL SERVICE
CANADIAN OFFICES





SPECIAL PROJECTS



CIVIL PROJECTS



MAJOR PROJECTS

▶ **\$10K - \$1B+**

Project values in Edmonton

From skyscrapers and iconic venues to tenant fit-outs and critical infrastructure, the Edmonton Buildings & Civil office brings the right teams together to deliver innovative, sustainable solutions for complex construction challenges.



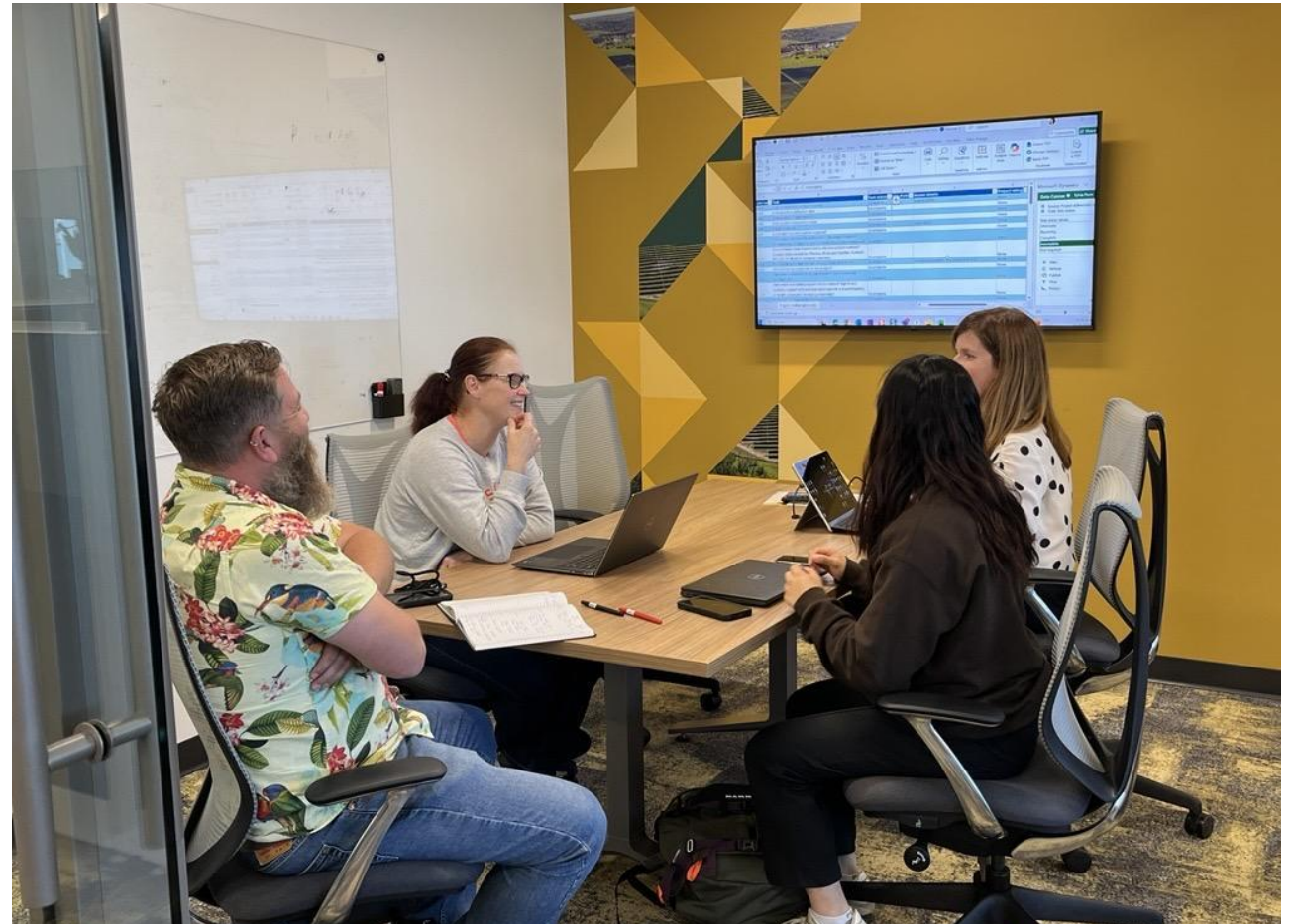
**Edmonton
Buildings & Civil**

PCL & Technology



Technology Right Start Meetings

- › Strengthen and support teams at start-up
- › Standardize execution
- › Aide those not knowing what they don't know



A decorative graphic consisting of a red 'X' shape formed by two intersecting lines, located on the left side of the slide.

Considerations When Right Sizing Progress Tracking

- Project Requirements
- Team & Resources
- Execution Alignment
- Communication & Impact

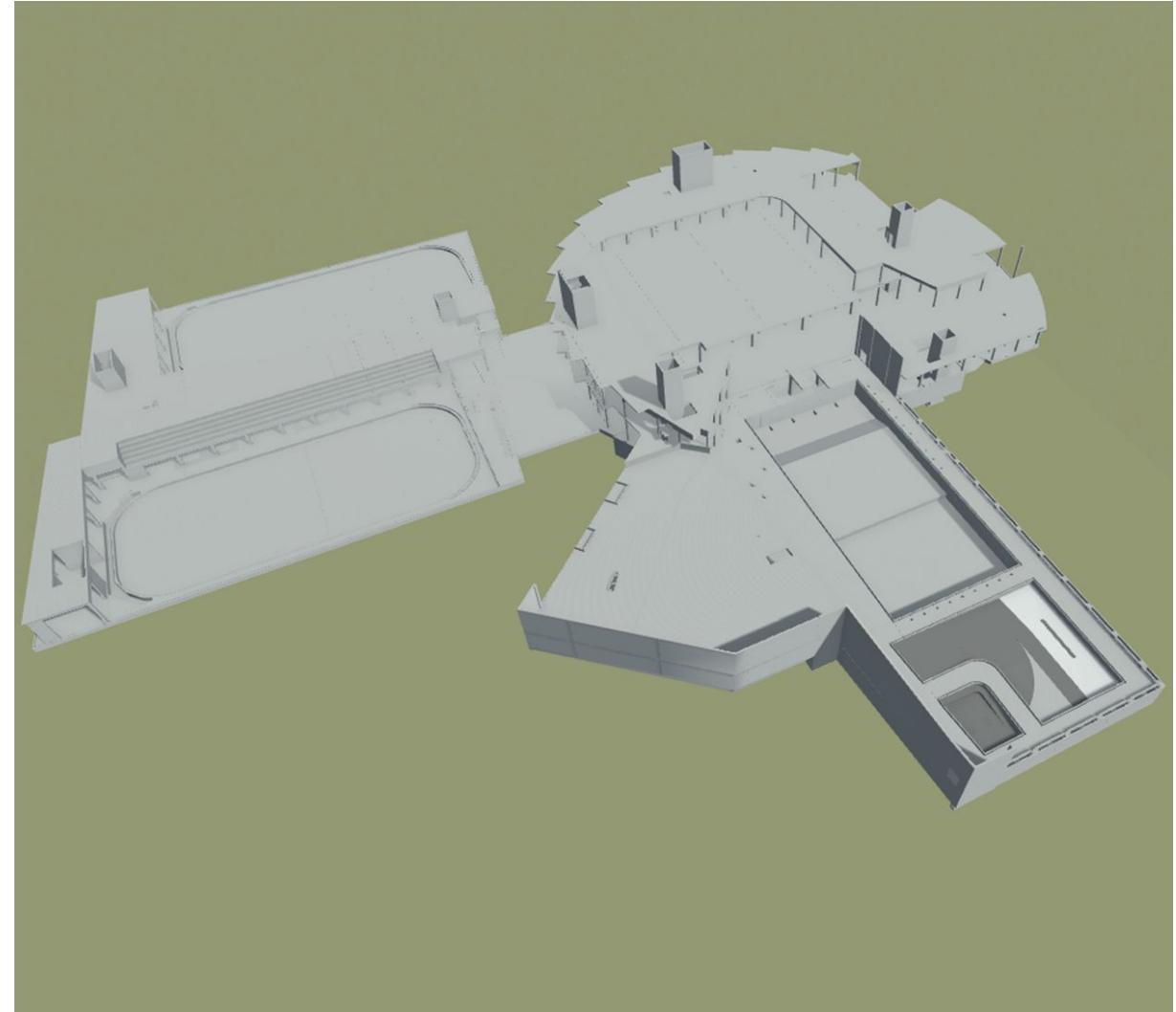
Lewis Farms Facility and Park Project



Concrete Scope Tracking

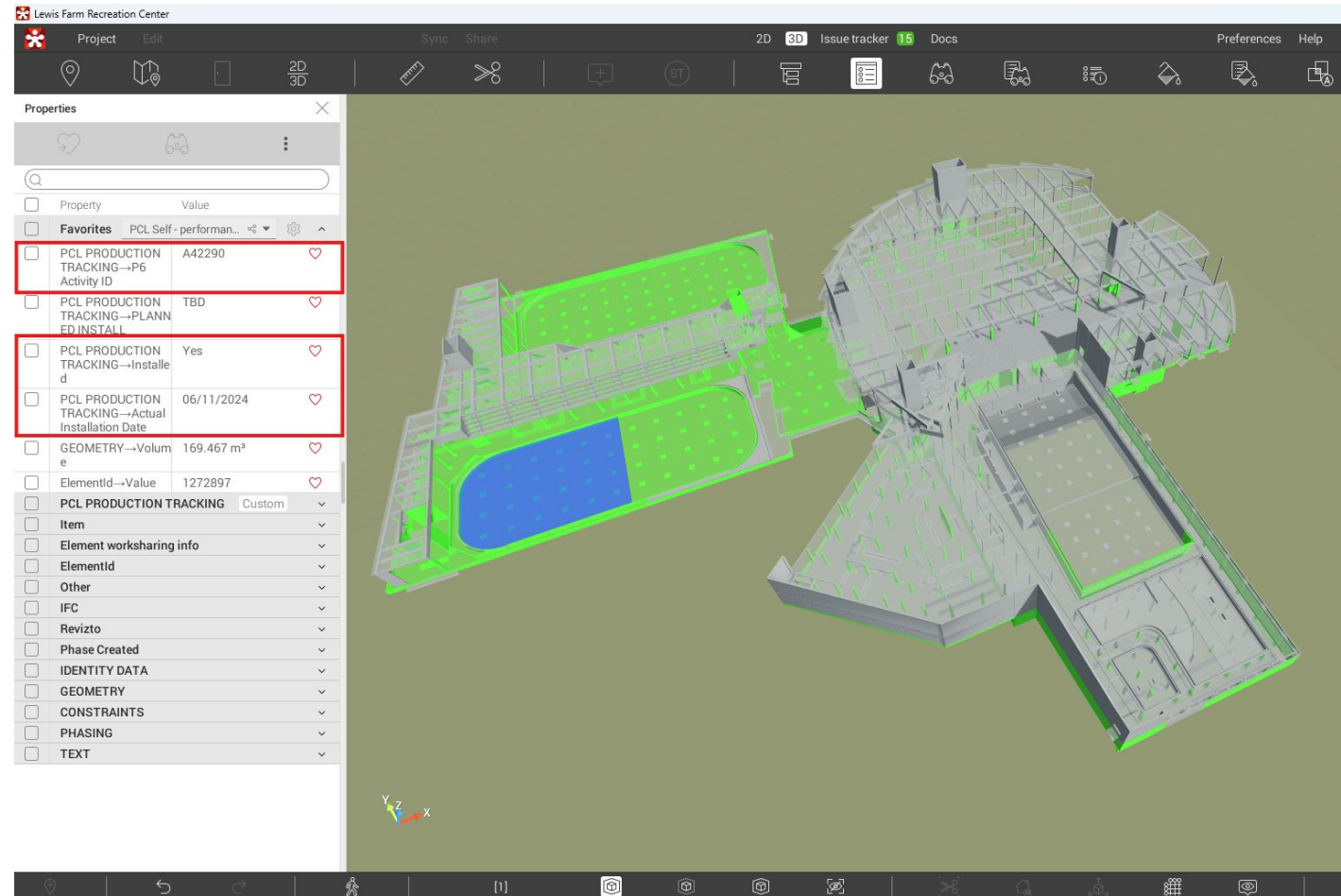
Why we track concrete progress:

- › Major and complex scope
- › Critical path control
- › Resources management
- › Self performed work

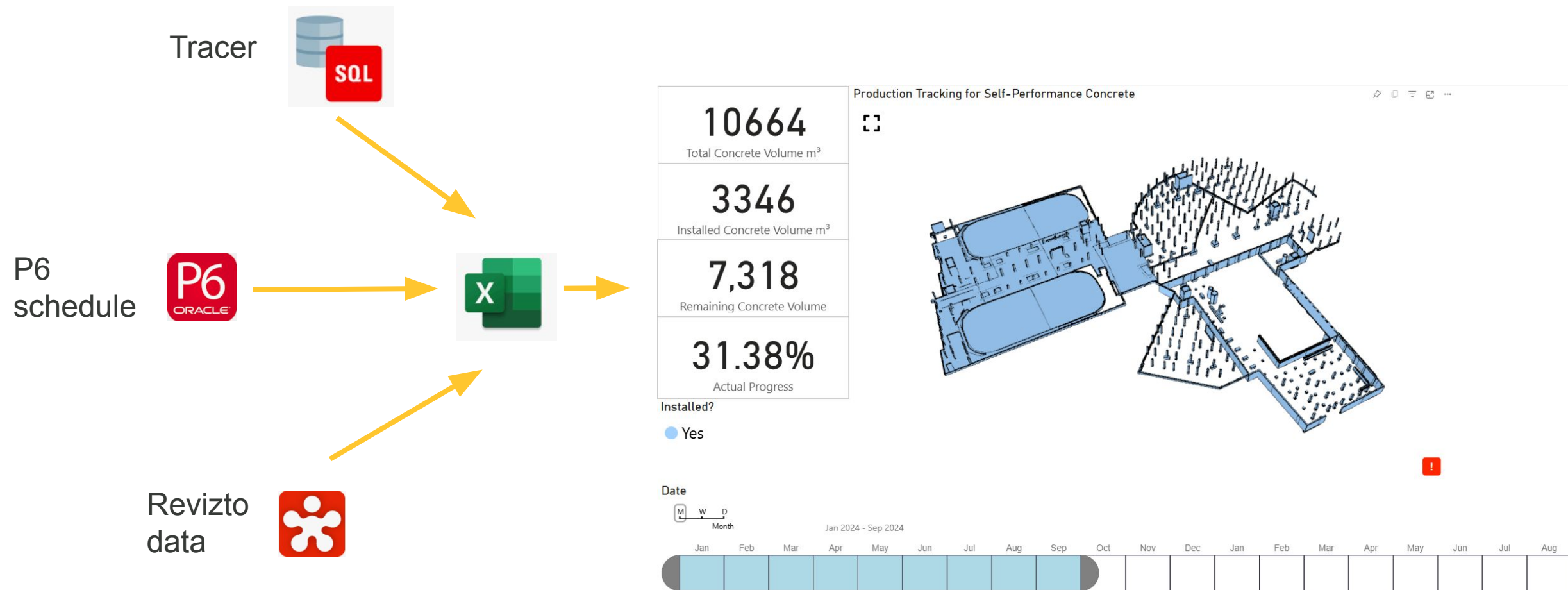


The Right Fit

- › Visually distinguish installed vs. not installed elements
- › Instantly understand progress by location and area
- › Link model elements to schedule activities and actual install dates



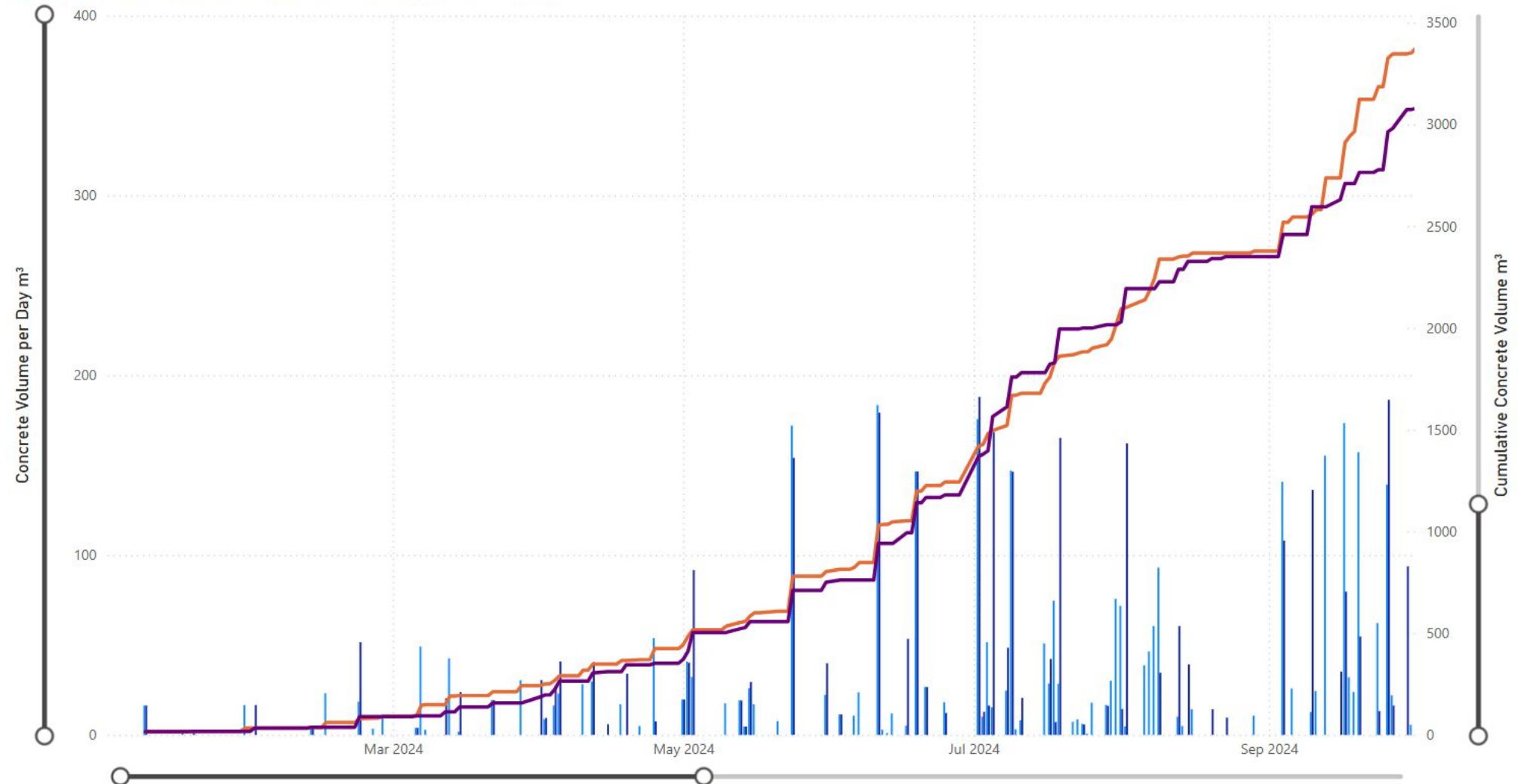
Real-Time Visualization Tool for Production Tracking



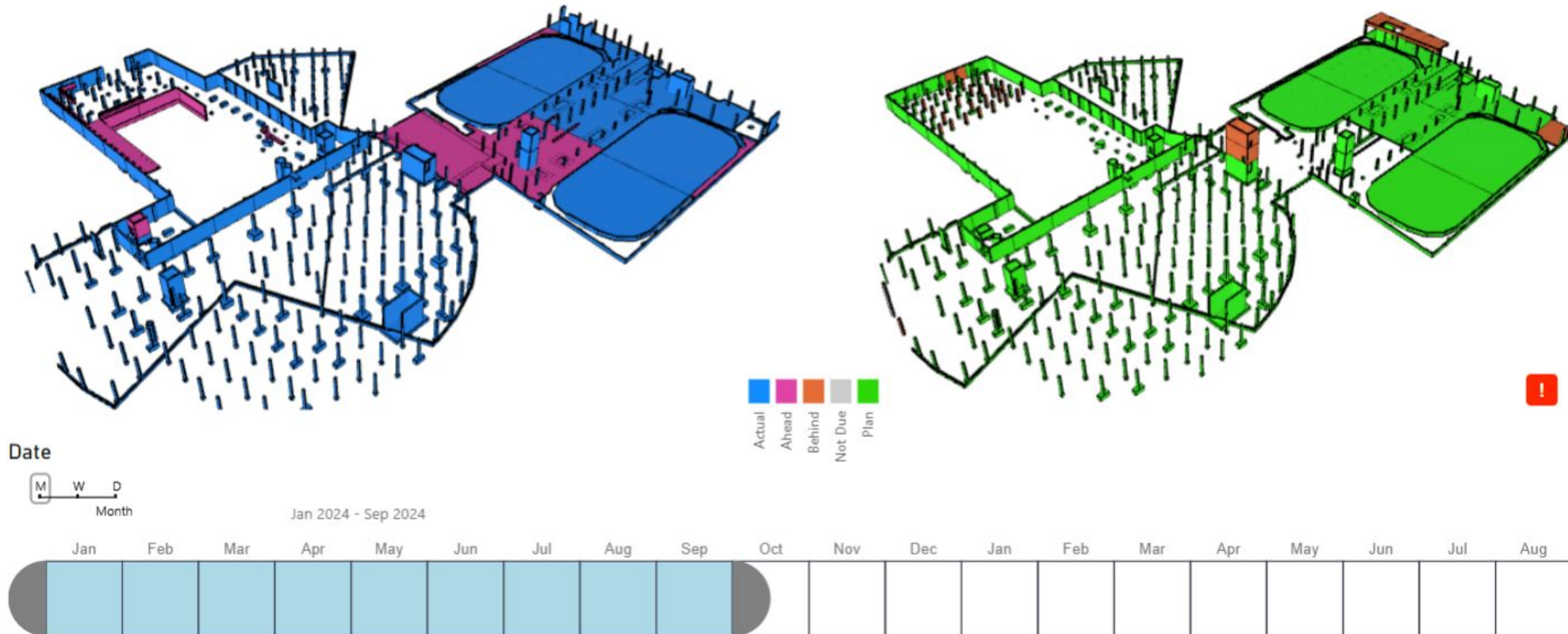
Real-Time Visualization Tool for Production Tracking

Actual per Day, Planned per Day, Actual Cumulative and Planned Cumulative by Date

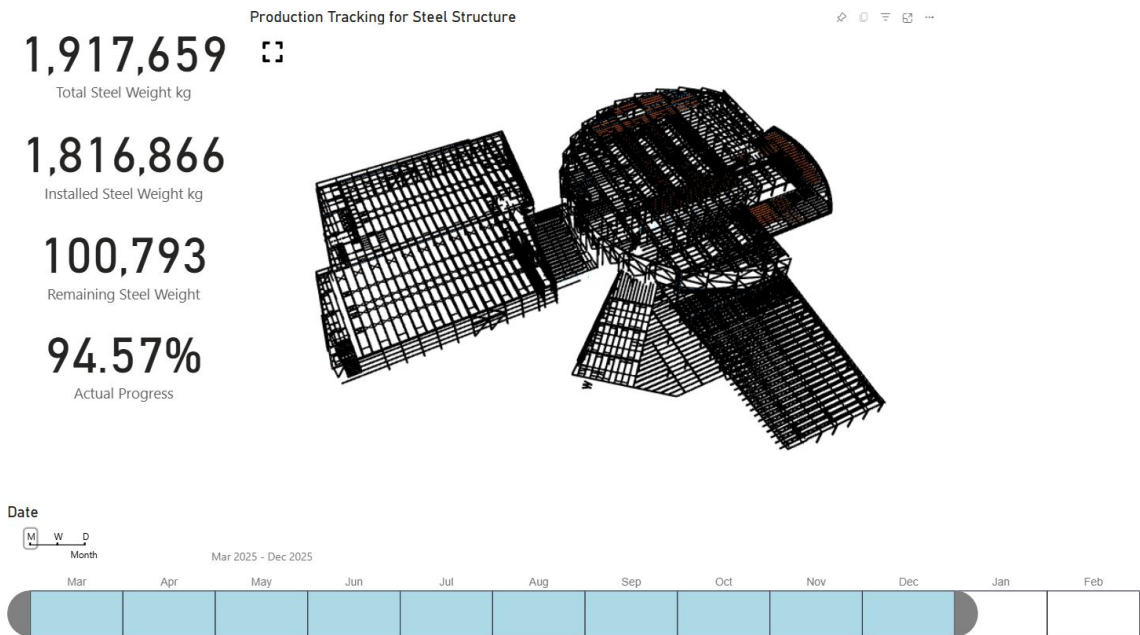
● Actual per Day ● Planned per Day ● Actual Cumulative ● Planned Cumulative



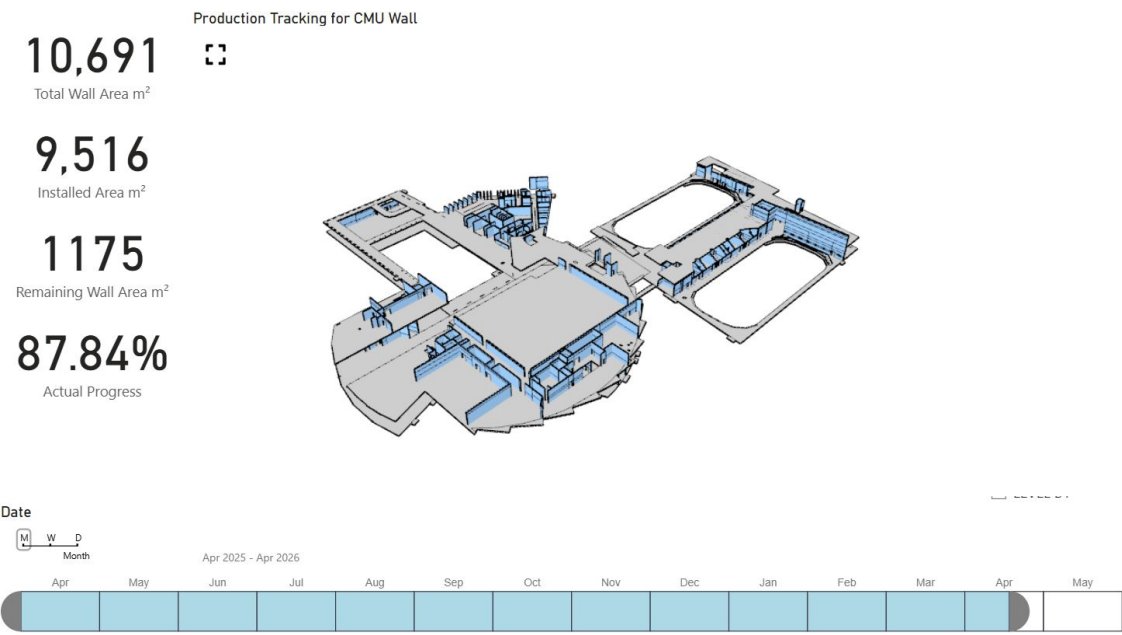
Plan Progress



Real-Time Visualization Tool for Production Tracking

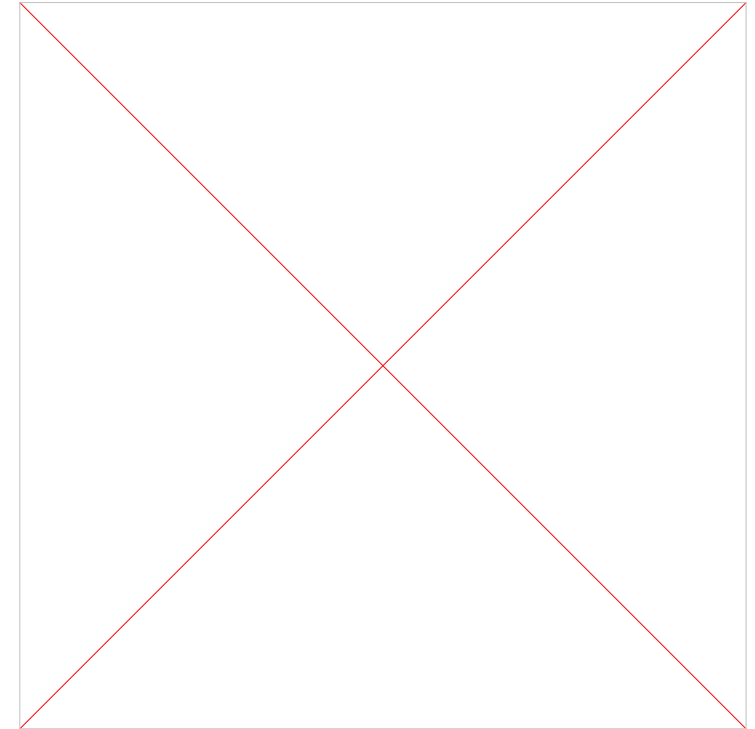


Steel



CMU

Coast Plaza Hotel



Coast Plaza Hotel

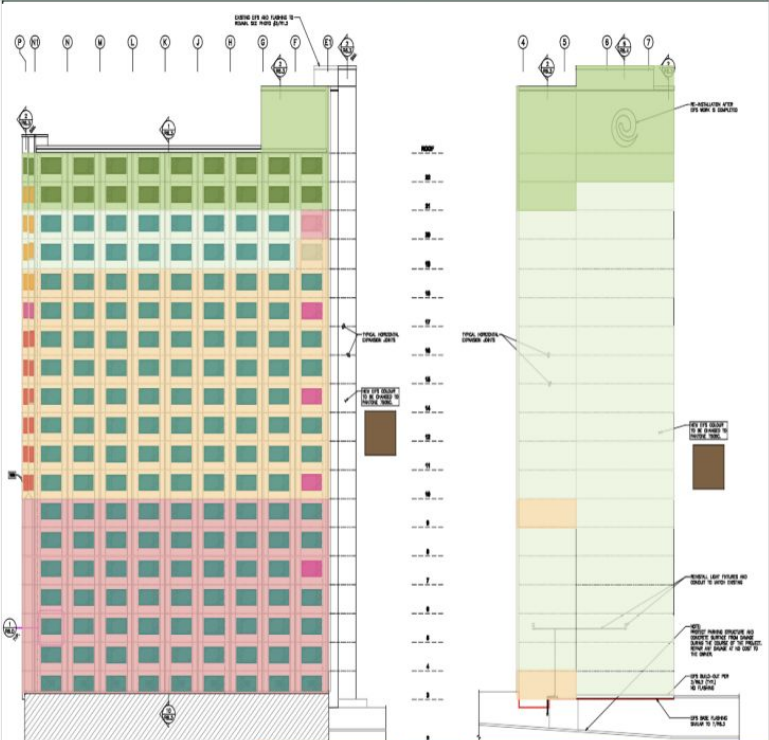


The Right Size

Coast Edmonton Plaza Hotel Envelope

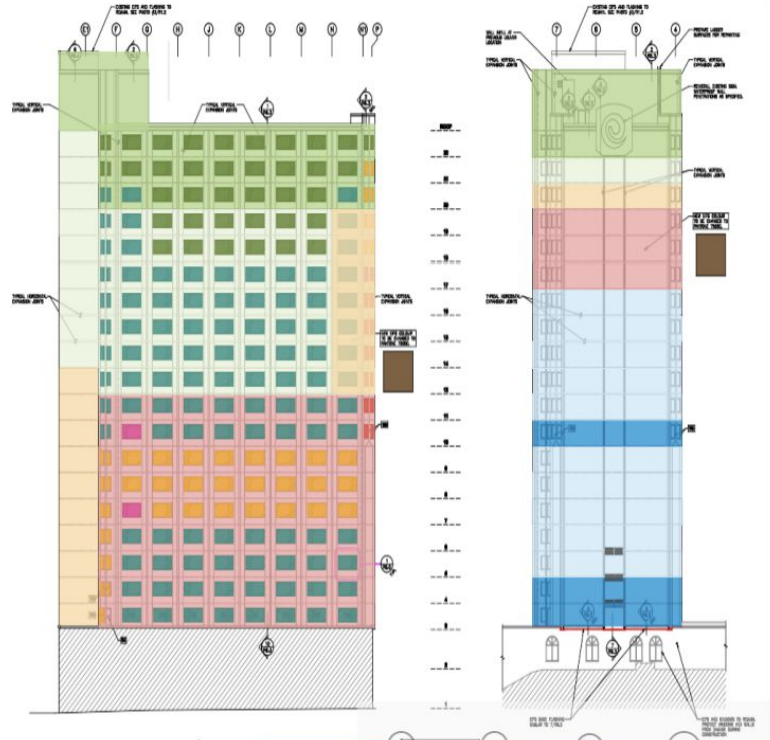
PCL Construction Management Inc.
Project 0520586

Level Progress



Level Status Legend	Work Not Started	Scaffold Tagged-in	Demoed	Sheathing	AVB	Insulation	EIFS
Window Status Legend	Work Not Started	Demoed	Backing	Framing Installed	Glazing Installed	Flashing Installed	

Window Progress



Level Status Legend	Work Not Started	Scaffold Tagged-in	Demoed	Sheathing	AVB	Insulation	EIFS
Window Status Legend	Work Not Started	Demoed	Backing	Framing Installed	Glazing Installed	Flashing Installed	

Technology Enables Outcomes

- › Better communication and comprehension
- › 3D is awesome but 2D can still work
- › Hard data = easier conversations
- › Proactive vs reactive
- › Alignment on quality
- › Trade buy-in + motivator to plan ahead

Final Thoughts

- › Scalability
- › Communication
- › Listening. Problem Solving. Adapting.
- › Grow Together



Thank you

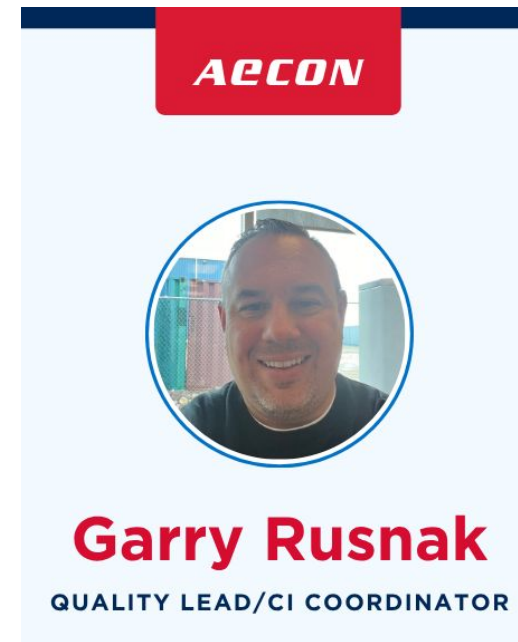
**May 28 – Garry Rusnak & Parastoo Eivazi,
AECON**

Aecon WasteWalk Program

Lean Gemba Walk & AI-Enabled
Continuous Improvement at Scale

Construction Innovation Conference
2026

AECON



The Construction Industry's Productivity

While every major sector has surged ahead, construction remains stagnant

+90%

Manufacturing

Cumulative productivity growth, 2000–2022

+50%

Total World Economy

Cumulative productivity growth, 2000–2022

Up to +1,500%

U.S. Manufacturing, Retail & Agriculture

Productivity growth since 1945

Only +10%

Construction

Global cumulative growth, 2000–2022 — just 1/5 the rate of the total economy

In the U.S., construction labor productivity fell 30% from 1970–2020, while overall U.S. economic productivity doubled. — Federal Reserve Bank of Richmond, 2025

References

- [1] McKinsey Global Institute, “Reinventing Construction: A Route to Higher Productivity” (2017)
- [2] McKinsey & Company, “Construction Productivity: A Path to Growth” (2024)
- [3] Federal Reserve Bank of Richmond, “Five Decades of Decline: U.S. Construction Sector Productivity” (Aug 2025)
- [4] Goldman Sachs Research, “Productivity Stagnation in the Construction Industry: An International Perspective” (Feb 2026)
- [5] U.S. Bureau of Labor Statistics, “Construction Labor Productivity” (Sep 2025)

Productivity to the Gemba: See the Work, Find the Waste



Current State

- Many productivity challenges are hidden within day-to-day work and are not clearly visible
- Improving productivity requires visibility into real work — at the Gemba (where the work happens).

Productivity to the Gemba: See the Work, Find the Waste



Gemba Walk mindset:

- Go to where work happens to understand actual conditions and workflows. (general Lean concept; no internal citation)

Respect for people:

Talk with the people doing the work to learn what's getting in their way

Why it matters:

- Many inefficiencies are hidden in day-to-day execution and are easiest to see through direct observation.

Next step:

- Apply a structured lens to what we see — this is where WasteWalk comes in (a structured Gemba Walk focused on waste).

Productivity to the Gemba: See the Work, Find the Waste

WasteWalk

Structured Gemba Walk

Gemba Walk mindset

Respect for people

Why it matters

Next step

Eight Wastes lens



Action tracking

Set Objectives

Observe Waste

Engage Team

Debrief & Action

Eight Waste Type



Defects

Mistakes that require additional time, resources, or money to fix.

Possible Causes: Process adherence, lack of training, and design issues.



Overproduction

Making something before it is truly needed.

Possible Causes: Planning, material supply, or process standards.



Waiting

When people, equipment, or materials wait for other processes or people to finish.

Possible Causes: Imbalance of resources, planning issues, quality deviation, supply, or transportation.



Non-Utilized Talent

Neglecting to seek ideas or leverage skills from all talent resources available.

Possible Causes: Not asking for input or not involving subject matter experts.



Transportation

Unnecessary movement of work, materials, or equipment.

Possible Causes: Material supply, site layout, or organization.



Inventory

Excess raw material, work in progress, or finished products beyond what is needed to maintain flow.

Possible Causes: Material supply, transportation, or planning issues.



Motion

Unnecessary movement of people.

Possible Causes: Process standards, site layout, or organization.



Extra-Processing

Unnecessary or extra steps in a process that do not add value.

Possible Causes: Quality deviations, planning issues, material supply, or process standards.

Productivity to the Gemba: See the Work, Find the Waste

WasteWalk

Structured Gemba Walk

Gemba Walk mindset:

- Go to where work happens to understand actual conditions and workflows. (general Lean concept; no internal citation)

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Eight Wastes lens



Action tracking

Set Objectives

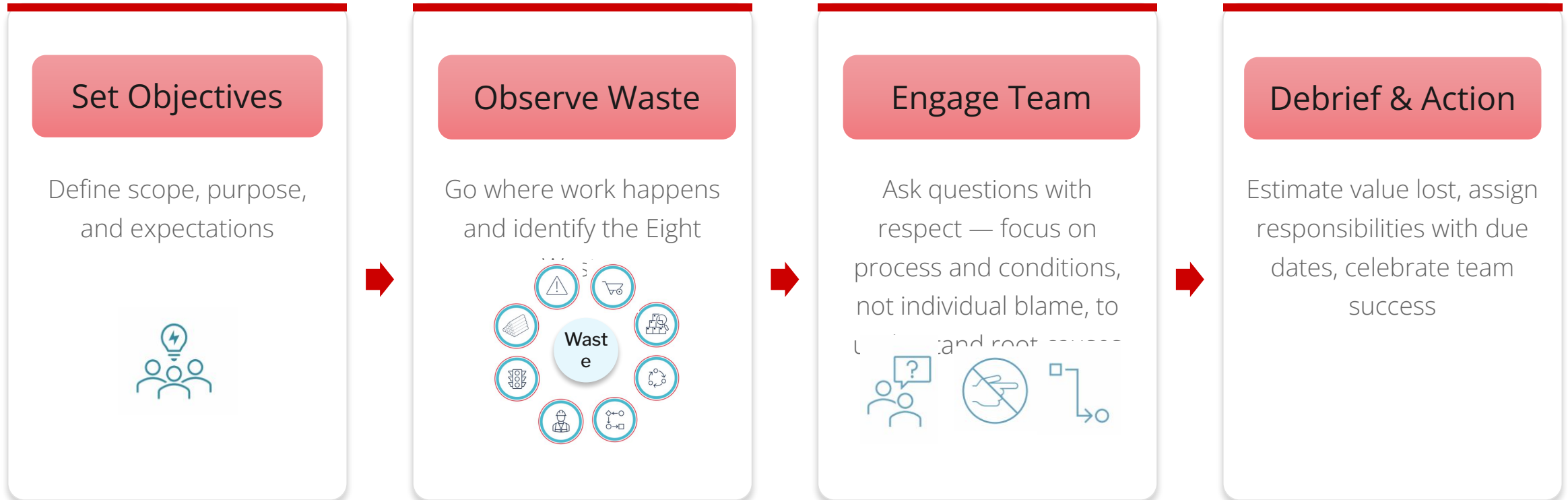
Observe Waste

Engage Team

Debrief & Action

WasteWalk Lifecycle

A four-step continuous improvement process

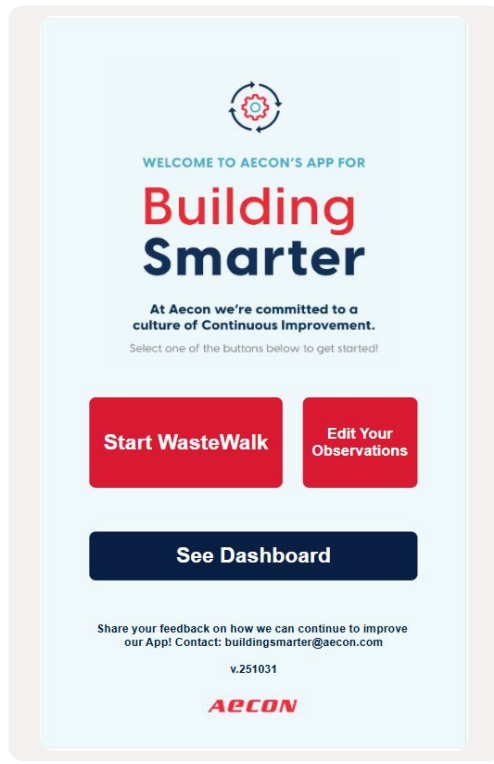


Digital WasteWalk Intake:

Enabled by Microsoft Tools



Mobile App Capture



SharePoint Intake

Walk Date: 12/31/2001

Sector (Aecon): Find items

Sector Operations: Find items

Project-Yard: Find items

Operations OR Department: Find items

Area/Scope: Find items

Facilitators: Find items

Observation: Workers waiting 20 min for crane due to scheduling overlap between trades.

Waste Type: Waiting

Action: Action: Implement staggered crane scheduling

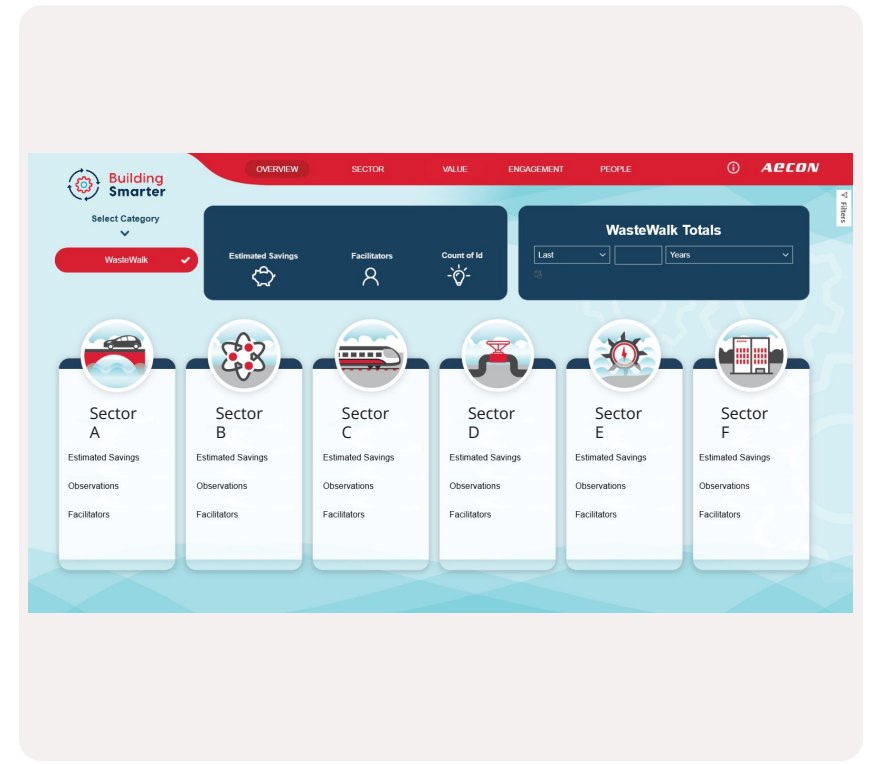
Responsible Persons: Find items

Estimated Value: 0

Due Date: Actual Net Savings



Centralized Dashboard



Where AI Supports the WasteWalk Process

Enabled by Microsoft Tools

With a structured digital process in place, artificial intelligence is introduced at key stages of the WasteWalk workflow to enhance both data quality and data utilization.

AI Coach

- Improves data quality at the point of entry through real-time guidance
- Enables clearer, more structured, and consistent observations
- Maintains ease of use without adding administrative burden

AI Analysis

- Transforms captured data into structured insights
- Categorizes observations at scale
- Identifies patterns and improvement opportunities
- Enables data-driven continuous improvement

AI Analysis: Two Implementation Phases

AI Analysis

AI-Driven Batch Categorization

- Export WasteWalk data from tracker
- Analyze observations and actions using AI agent
- Apply contextual understanding to assign categories
- Generate structured output for dashboards and reporting

Real-Time Automated Categorization

- Automatically triggered when a WasteWalk record is submitted
- AI analyzes observations and actions and assigns categories in real time
- Updates the database instantly, enabling immediate visibility and analysis

AI-Driven Batch Categorization

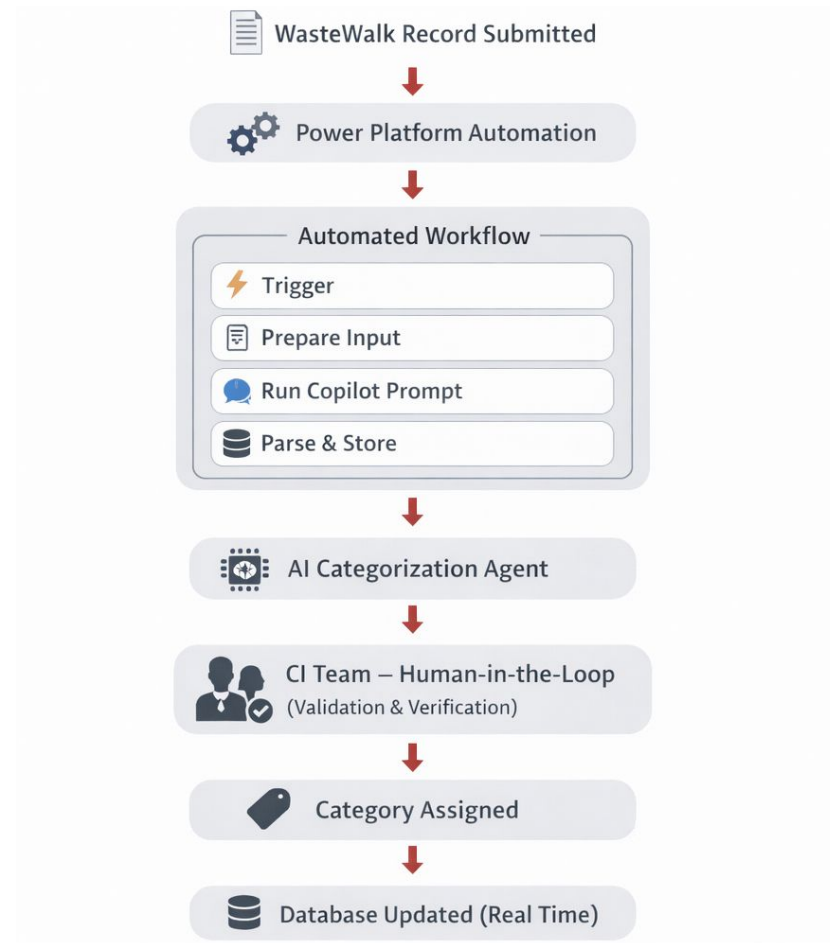


Clear backlog, validate logic, prove value

AI Analysis: Two Implementation Phases



Real-Time Automated Categorization



Key Takeaways from the WasteWalk Transformation

Impact

- Established a structured, Gemba-based approach to identify and address waste
- Enabled scalable data capture and consistent tracking across projects
- Reduced manual effort in data processing through automation
- Improved visibility of trends and recurring issues through categorized data and dashboards

Lessons Learned

- Data quality at the point of entry is critical for meaningful analysis
- Contextual understanding (not keyword matching) improves categorization accuracy
- Automation is essential to scale analysis across large volumes of data
- Combining people-driven processes with digital and AI tools strengthens continuous improvement



Thank you!

Happy to connect and share more.



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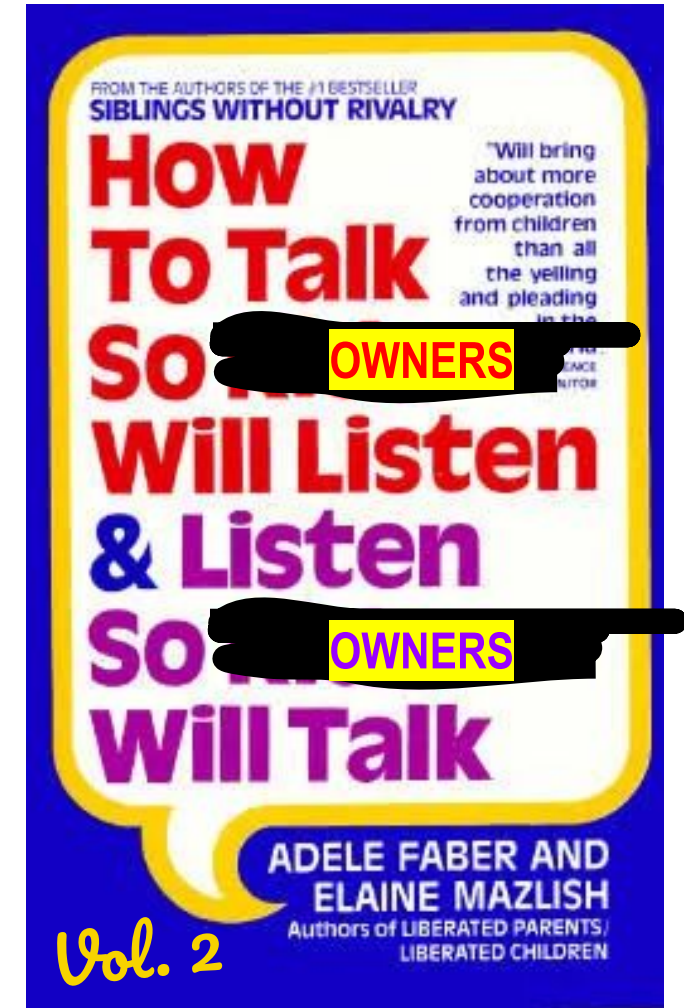
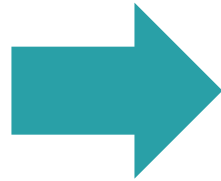
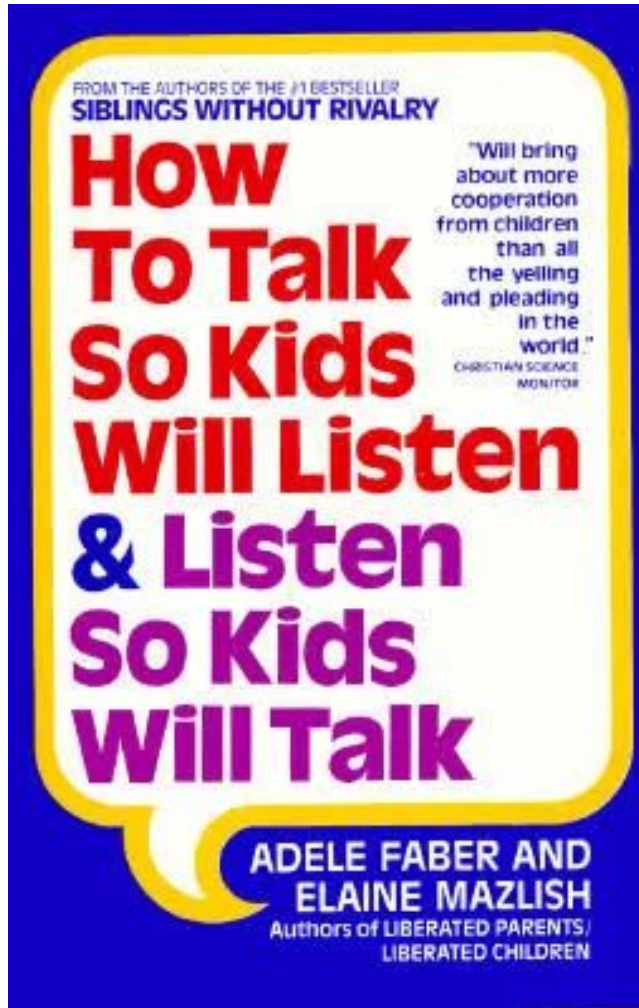


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May 28 – Jeff King, SMA Consulting Ltd.

May 28, 2026

Lessons Shared: The Role of Effective Communication in Robust Project Delivery



Note: These are sadly not real books.

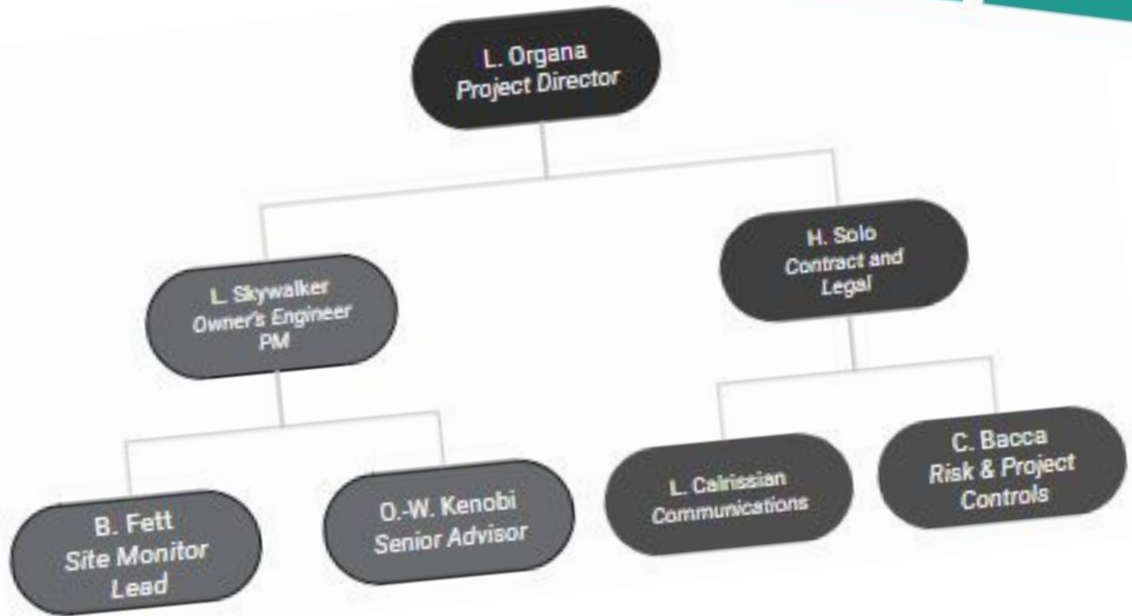
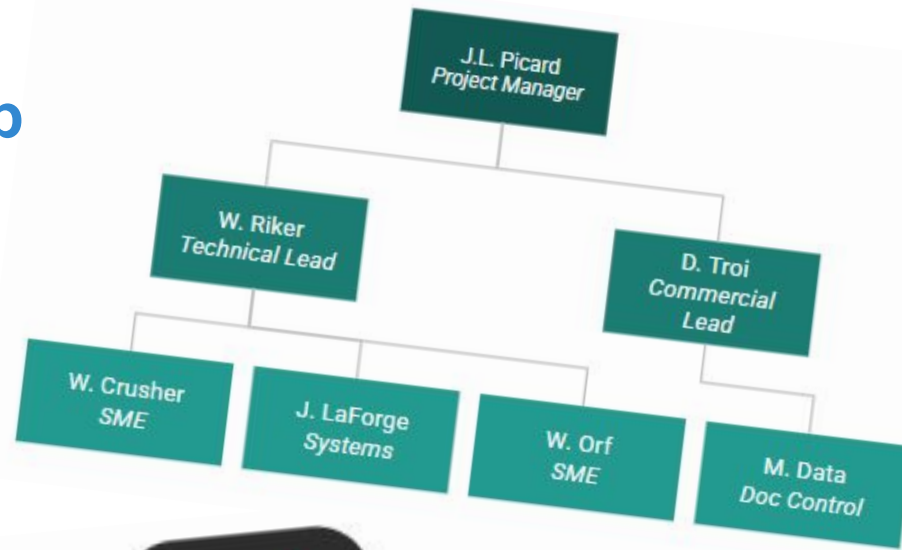
*Misalignment breeds resentment.
And resentment can make
projects really hard to work on.*

*(And it can seriously jeopardize
project success!)*

Misalignment #1: The Vital Importance of Knowing Who's Who



The Gap



When **roles & responsibilities & communication channels** aren't clear:

- Teams are surprised that expectations don't match reality.
- All issues get sent to the same person.
- What counts as "official" direction from the Owner isn't clear.
- Scope isn't clear.

Lessons Shared

Role	ST Co.	SW City
Project Director	J.-L. Picard	L. Organa
Contract	D. Troi	H. Solo
Construction Mgmt	W. Riker	L. Skywalker (OE)

- Zipper Plans
- Shared Issue Resolution Ladders
 - Make sure the zipper and IRL is maintained and circulated
 - Include a regular check-in on meeting agendas
- RACI (Responsible / Accountable / Informed / Consulted)
- Agreement about formal vs informal communication channels
- Breakfast check-ins between key team members

Owner Team	Contractor Team	Issues
Project Director	Project Manager	- High/critical risk w cost - Political implications - Involves Darth Vader
OE PM / Contract & Legal	Construction / Commercial	- Commercial impacts - Impacts to major milestones / completion - Significant contract uncertainty
Managers / SMEs	Line Managers / Quality Manager	- Related to quality - Impacts to schedule, but not major milestones / completion - Contract issue can be resolved within 2 weeks

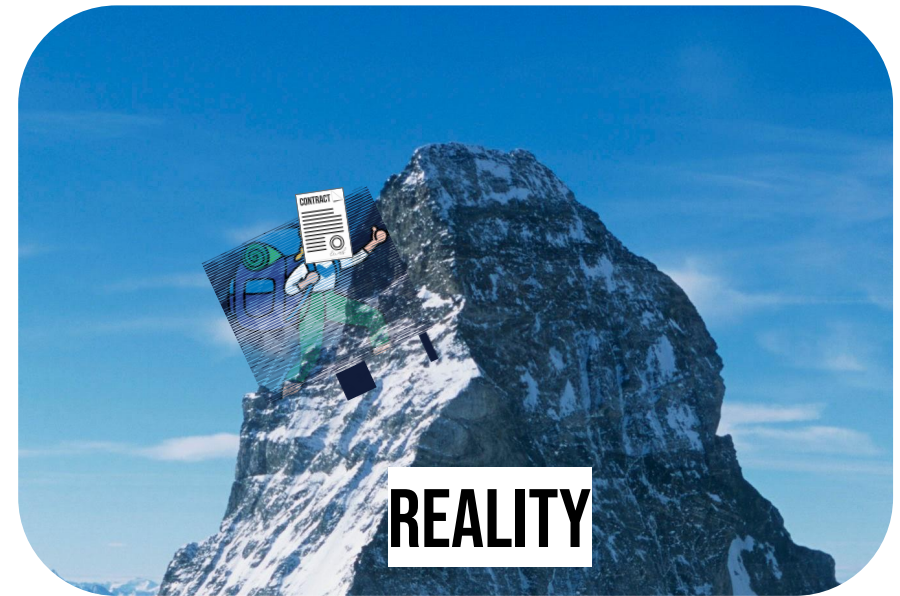




Misalignment #2: How Do You Solve a Problem Like a Contract?



The Gap



Lessons Shared

- ~~R.T.F.C.~~ R.R.T.F.F.F.C.
- Use the existing change mechanisms.
- Don't make *change* the default. Contracts are rarely foolproof, but introducing change regularly introduces significant instability and uncertainty into a project.
- Don't make *no change* the default. Contracts are rarely foolproof and wearing blinders to this can also jeopardize project success.
- Find ways to draw attention to critical items in the contract to help the Contractor see the things you see. Everything is important, but context helps.

Misalignment #3:
Oh, Oh... Things Just Went Wrong



The Gap



Contractor:

- Organize.
- Solve.
- Present solution.
- Avoid delay.



Owner

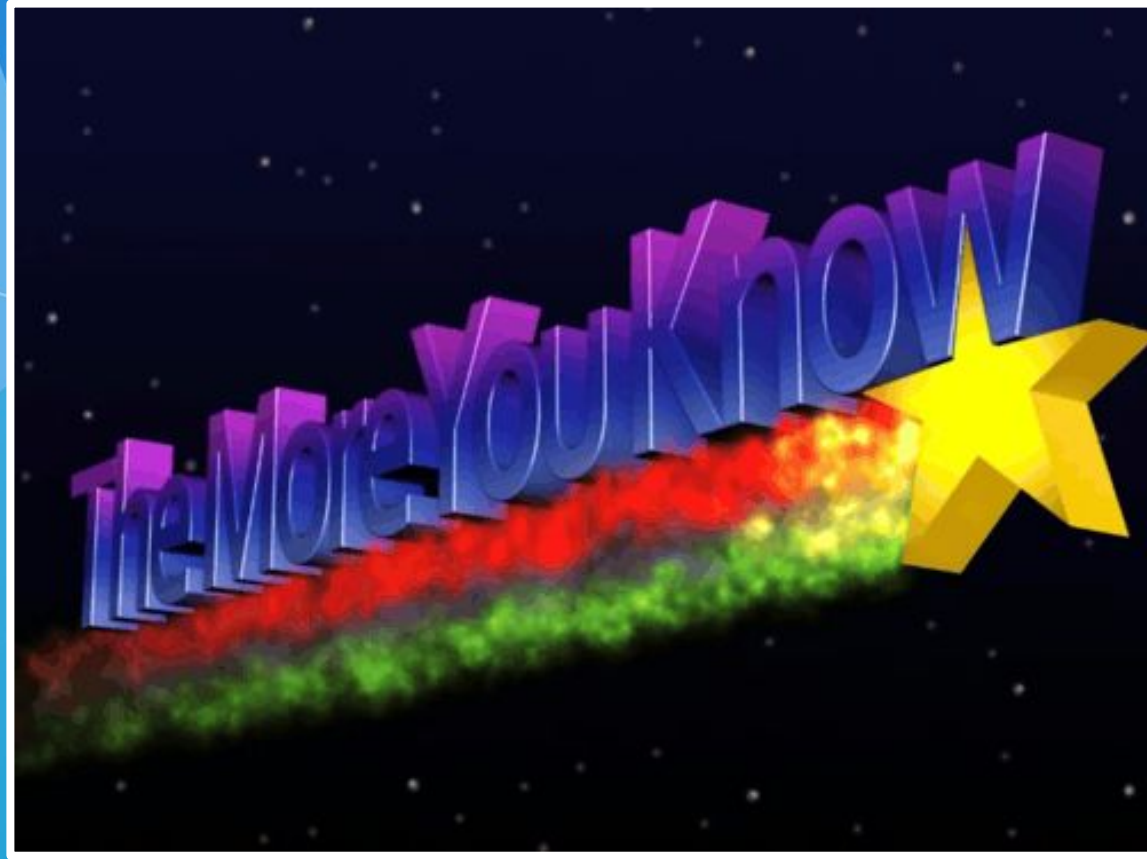
- Big picture.
- How does this affect the whole?
- Who needs to review?
- What are the alternatives?

Lessons Shared

- A joint commitment to project success means that it's in our interest to see risk mitigated, even if we don't technically "hold" the risk
 - What does the Owner actually need to make a decision?
 - Are there other options?
 - More context can lead us back to alignment.
- 



Building a Lessons Learned Culture



What is a Lessons Learned Culture?

- Have a register – and make sure someone owns it and is maintaining it.
- Build lessons-*capturing* habits into your projects.
- Build lessons-*sharing* habits into your projects and organizations.
 - Use habit stacking (link the new habit of sharing lessons to existing PM habits)
- Find ways to make it fun.



Get in Touch

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**May 28 – Vicente Gonzalez-Moret, University of
Alberta**

STRATEGIC PROJECTS INSIGHT CENTRE IN ENGINEERING (SPICE)

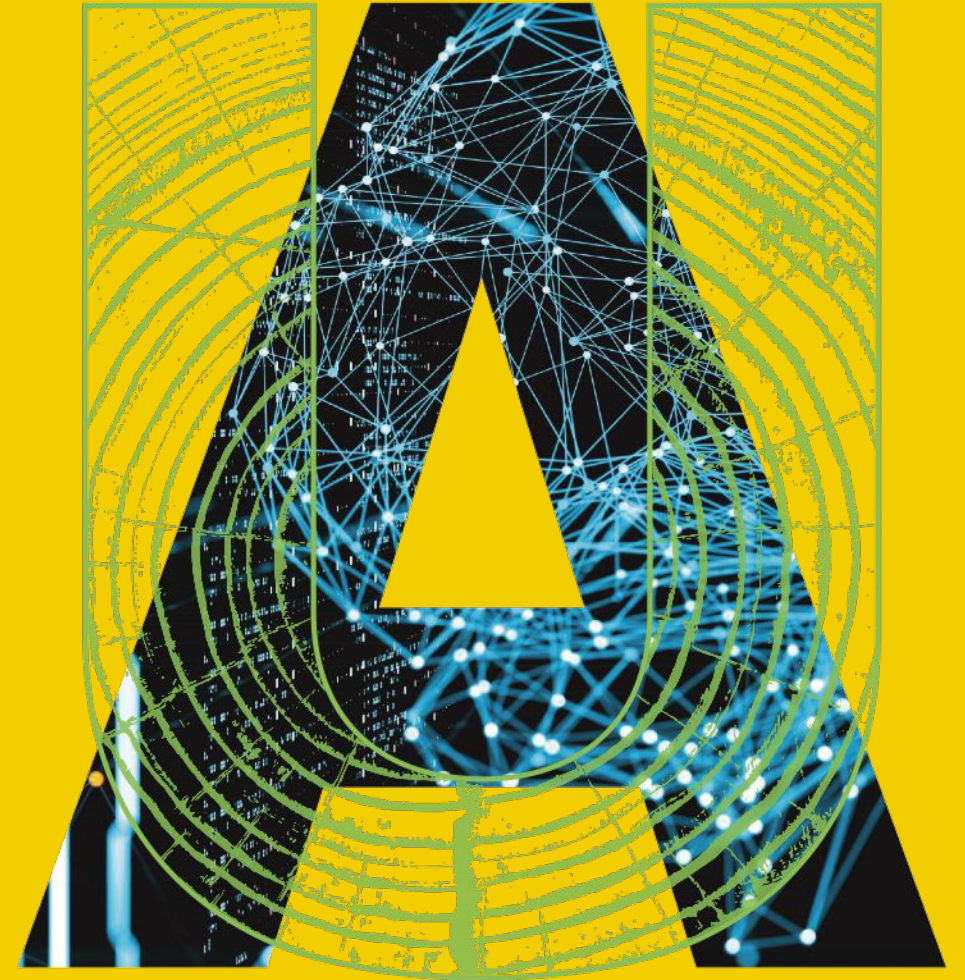
VICENTE A. GONZALEZ, PHD, M.CSCE, M.ASCE
Hal Kvisle Professor in Engineering Project Management
Tier 1 Canada Research Chair in Digital Lean Construction

Infrastructure and Human Tech (IHT) Lab

Hole School of Construction Engineering
Department of Civil and Environmental Engineering
Faculty of Engineering



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CONTENT

- Genesis of SPICE
- What is SPICE?
- How it works
- Who SPICE will partner with
- Team Structure
- The Hal Kvisle Professorship
- Sharing Knowledge
- The Road Ahead – Year 1 Priorities



Genesis of SPICE

Genesis of SPICE

Problem Category	Projects Affected out of 15
Optimism bias / strategic mis-estimation	10
Contractor underperformance / productivity	8
Indigenous consultation / rights litigation	6
Owner–contractor disputes / litigation	6
Geotechnical / unforeseen ground conditions	5
Quality defects / rework	5
Political interference / weak governance	4
Software / systems-commissioning failures	4
Labour shortages / strikes	4
Regulatory / permitting delays	4

- Fifteen mega projects studied across Canada since 2010.
- Different sectors: Infrastructure, Mining, Energy, Healthcare.
- The aggregate **cost overrun** across these 15 projects **exceeds CAD \$60 billion**.
- **Up to 6 years delays**, with an **average schedule slippage is 24 months**.

Genesis of SPICE

“Major projects repeatedly face the same hurdles. We need a dedicated place to study why — and learn.”

— Hal Kvisle & Dean of Engineering, University of Alberta

- Mega-projects often fail for the same reasons

- We rarely conduct structured post-project reviews

- A neutral, university-based centre can fill this gap

What is SPICE

Lesson Number 1

MISSION

Transform how we understand, manage, and govern large-scale engineering projects through independent research, knowledge sharing, and cross-sector collaboration.

Learn

Study successes & failures of mega-projects

Research

Independent, evidence-based case studies

Partner

Governments, Indigenous orgs, industry, academia

Share

Forums, open platforms, capstone projects

"Canada's megaproject failures are not mysteries. They are patterns — and patterns are to be discovered, understood and broken. SPICE exists to do exactly that."

How it will work



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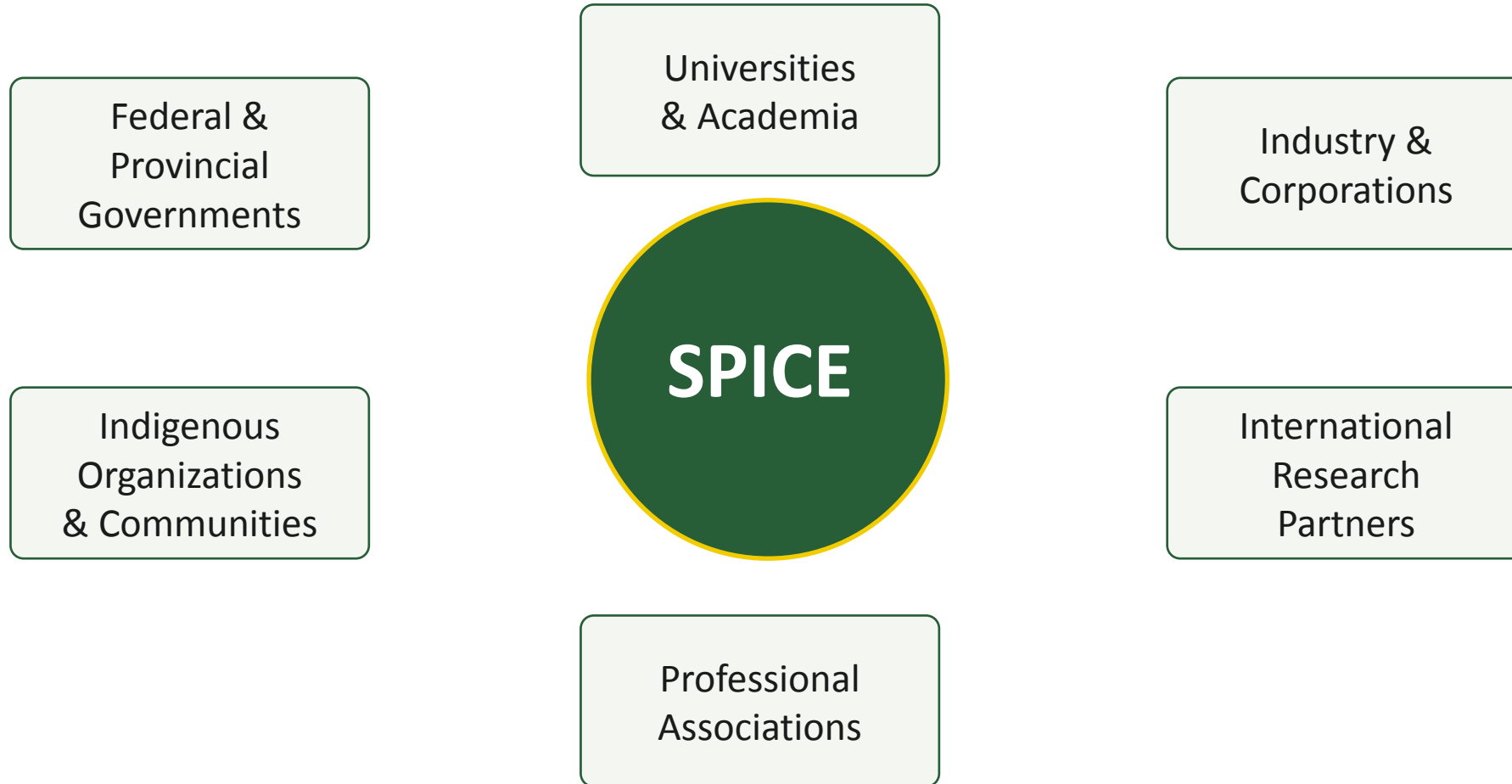
How it will work



Engineering · Business · Law · Indigenous Studies · Public Policy

Who SPICE will partner with

Who SPICE will partner with



Team Structure

Who SPICE will partner with



The Hal Kvisle Professorship in Engineering Project Management



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The Hal Kvisle Professorship in Engineering Project Management

THE ROLE

- Director of SPICE
- Named professorship, Hole School of Construction Engineering
- Sits at the Advisory Board

Advisory Board

- Dean of Engineering (member)
- Several industry, government & community leaders
- Elected chair from among members
- Consensus-based decision making

Mandate: Advise on teaching, research focus, industry needs, and promote SPICE outcomes across government, industry, and communities.

Sharing Knowledge

Shared Knowledge



Annual Lessons Learned Forum

Bringing together industry, government, and academia to reflect on major project experiences



Public Knowledge Platform

Accessible repository of case studies, research findings, and best practices



Education Integration

Post-project reviews embedded in capstone projects and graduate courses

The Road Ahead – Year 1 Priorities

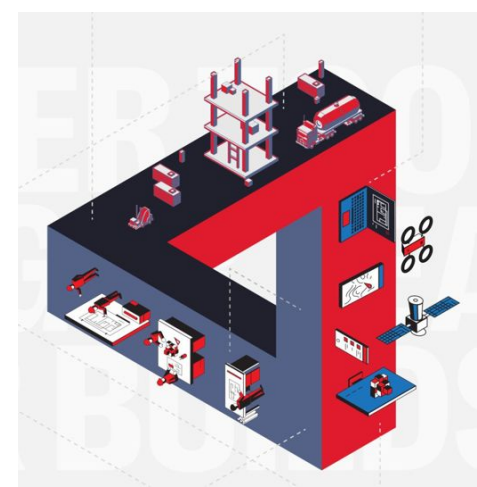
The Road Ahead – Year 1 Priorities



Thanks...
Questions?



May 28 – Lianne Lefsrud, University of Alberta



Resilient by Design: to improve the Sustainability, Productivity, and Safety of Canada's Construction Industry

Dr. Lianne M. Lefsrud, Professor and Risk, Innovation and Sustainability Chair (RISC)
with students' and collaborators' research*_*_*_*_*

Innovation in Construction Forum: Built by People, Powered by Technology
May 2026

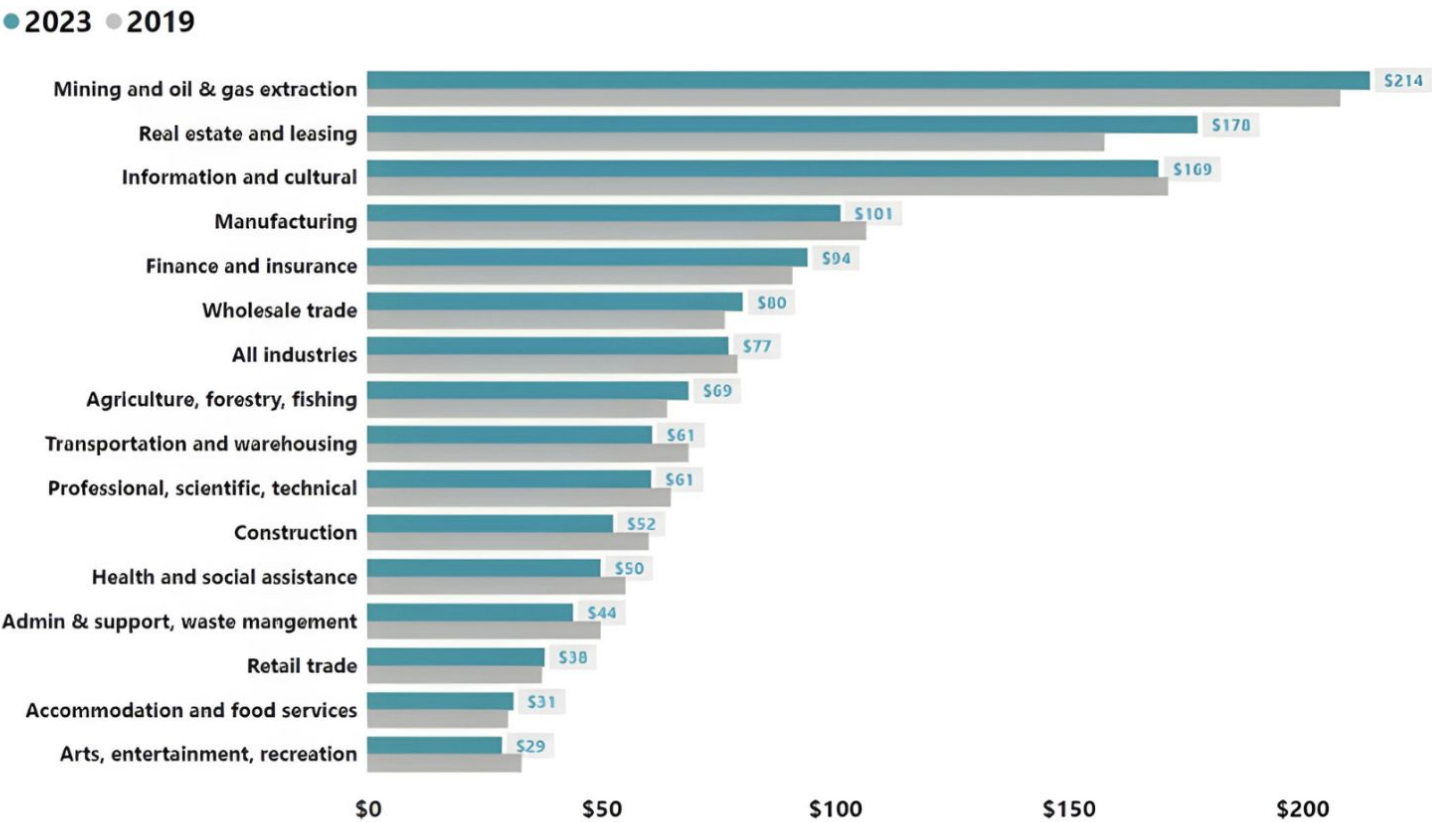


First some sobering statistics....

Productivity in construction has declined

Productivity in Canada's and Alberta's construction industry (\$ economic value generated per hour worked) has declined over the past decade.

Alberta labour productivity across industries

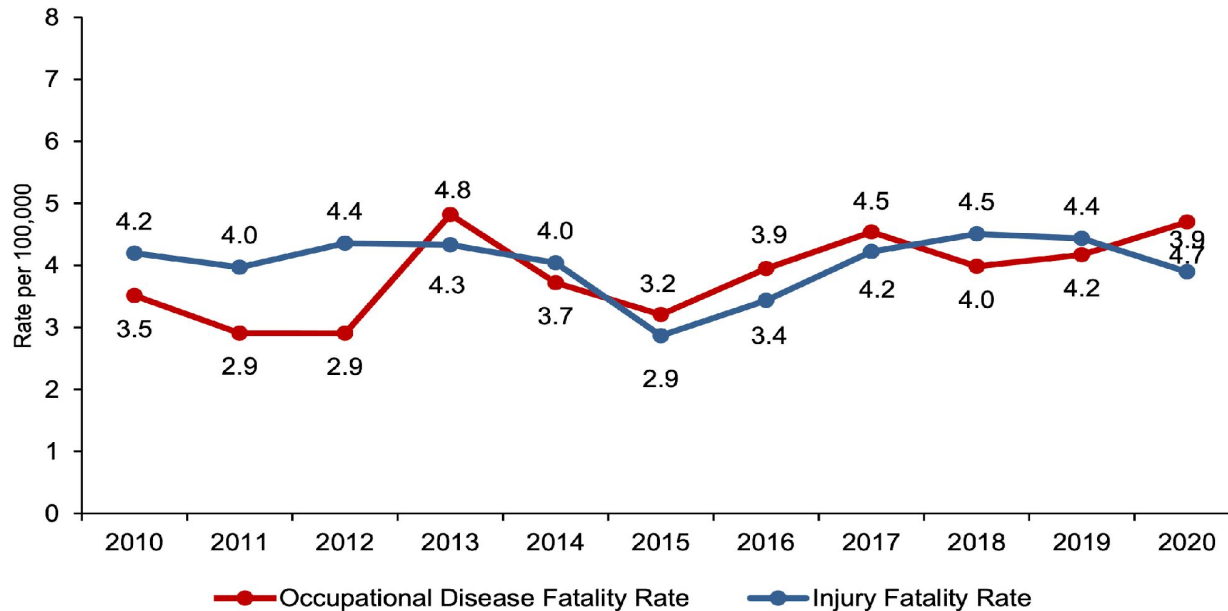


Source: Statistics Canada, Table 36-10-0480-01



Serious injuries and fatalities (SIFs) rates have flatlined

- Many industries have been hyper-focused on reducing incidents. We have done a great job of reducing total recordable injuries. In 2023, as compared to the provincial average (2.50 per 100 person-years) construction injuries were lower (2.28 per 100 person-years)
- However, the more serious injuries and fatalities have more complex causes. Progress on these has been slower.



In 2023, Alberta's average fatality rate was 5.3 per 100,000 person-years.

Construction and construction trade services was 12.27 per 100,000 person-years





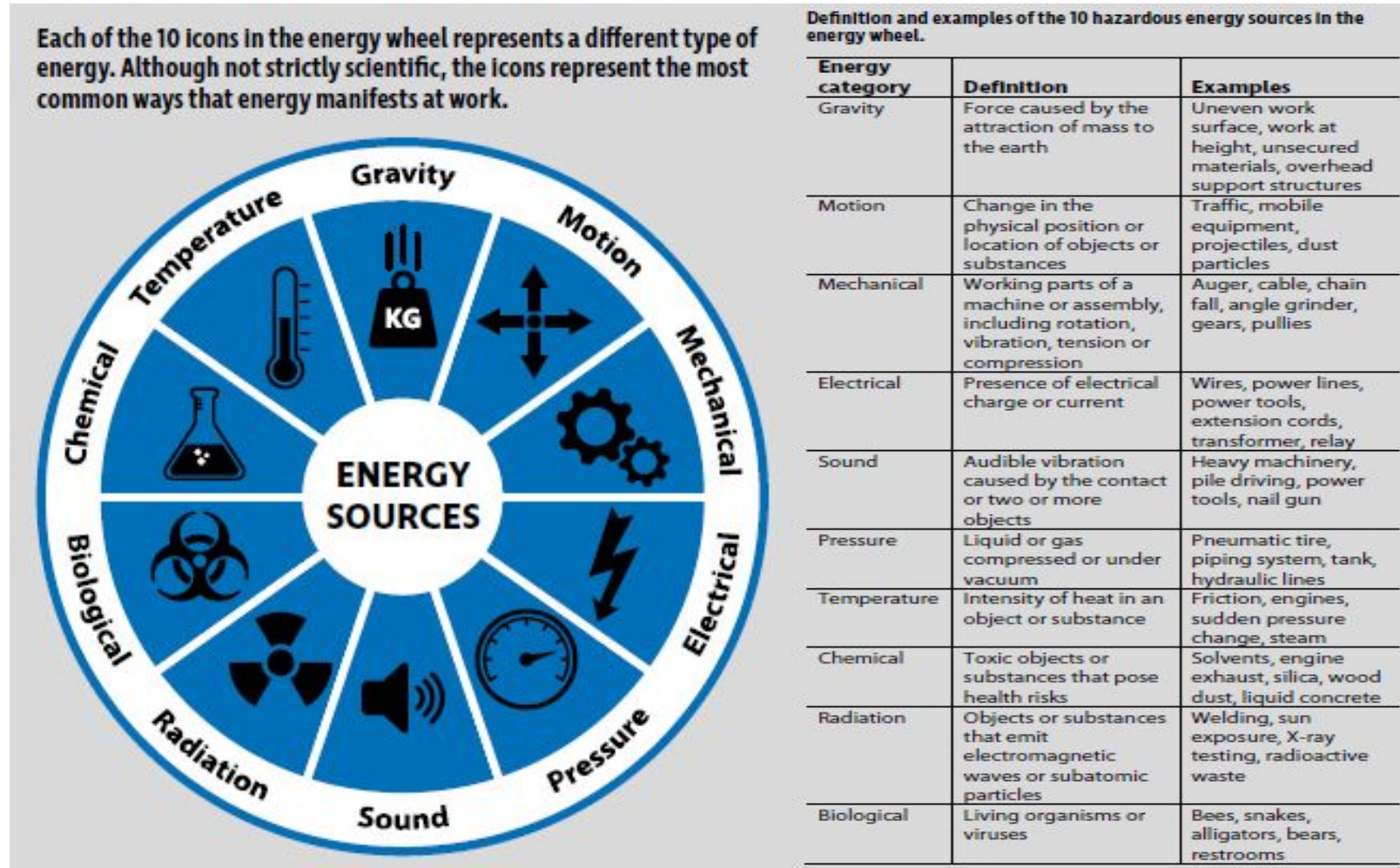
**To address stagnant productivity and flatlining fatality rates,
Canada's construction industry must stop treating safety and
efficiency as competing priorities...**

- 1) Eliminate hazards and embed engineering controls using Prevention through Design (PtD) principles
- 2) Use competency management to continuously develop and verify workers' skills
- 3) Use data analytics as decision support systems to identify blind spots and tradeoffs



1) Eliminate high-energy hazards

- Inadequate hazard recognition is associated with about HALF of loss incidents
- Too often dismissed as complacency during investigations
- Hazards with low cognitive effort usually easily identified e.g. gravity, motion, sharp edges.
- Hazards with higher cognitive effort are often missed e.g. mechanical, pressure, chemical
- Energy wheel helps workers better identify high-energy hazards



LIFE-SAVING RULES (like IOGP)

tie energy sources to
tasks and
to critical controls

Bypassing Safety Controls

Obtain authorisation before overriding or disabling safety controls



- I understand and use safety-critical equipment and procedures which apply to my task
- I obtain authorisation before:
 - disabling or overriding safety equipment
 - deviating from procedures
 - crossing a barrier

Confined Space

Obtain authorisation before entering a confined space



- I confirm energy sources are isolated
- I confirm the atmosphere has been tested and is monitored
- I check and use my breathing apparatus when required
- I confirm there is an attendant standing by
- I confirm a rescue plan is in place
- I obtain authorisation to enter

Driving

Follow safe driving rules



- I always wear a seatbelt
- I do not exceed the speed limit, and reduce my speed for road conditions
- I do not use phones or operate devices while driving
- I am fit, rested and fully alert while driving
- I follow journey management requirements

Energy Isolation

Verify isolation and zero energy before work begins



- I have identified all energy sources
- I confirm that hazardous energy sources have been isolated, locked, and tagged
- I have checked there is zero energy and tested for residual or stored energy

Hot Work

Control flammables and ignition sources



- I identify and control ignition sources
- Before starting any hot work:
 - I confirm flammable material has been removed or isolated
 - I obtain authorisation
- Before starting hot work in a hazardous area I confirm:
 - a gas test has been completed
 - gas will be monitored continually

Line of Fire

Keep yourself and others out of the line of fire



- I position myself to avoid:
 - moving objects
 - vehicles
 - pressure releases
 - dropped objects
- I establish and obey barriers and exclusion zones
- I take action to secure loose objects and report potential dropped objects

Safe Mechanical Lifting

Plan lifting operations and control the area



- I confirm that the equipment and load have been inspected and are fit for purpose
- I only operate equipment that I am qualified to use
- I establish and obey barriers and exclusion zones
- I never walk under a suspended load

Work Authorisation

Work with a valid permit when required



- I have confirmed if a permit is required
- I am authorised to perform the work
- I understand the permit
- I have confirmed that hazards are controlled and it is safe to start
- I stop and reassess if conditions change

Working at Height

Protect yourself against a fall when working at height



- I inspect my fall protection equipment before use
- I secure tools and work materials to prevent dropped objects
- I tie off 100% to approved anchor points while outside a protected area

But these are all
administrative/
procedural

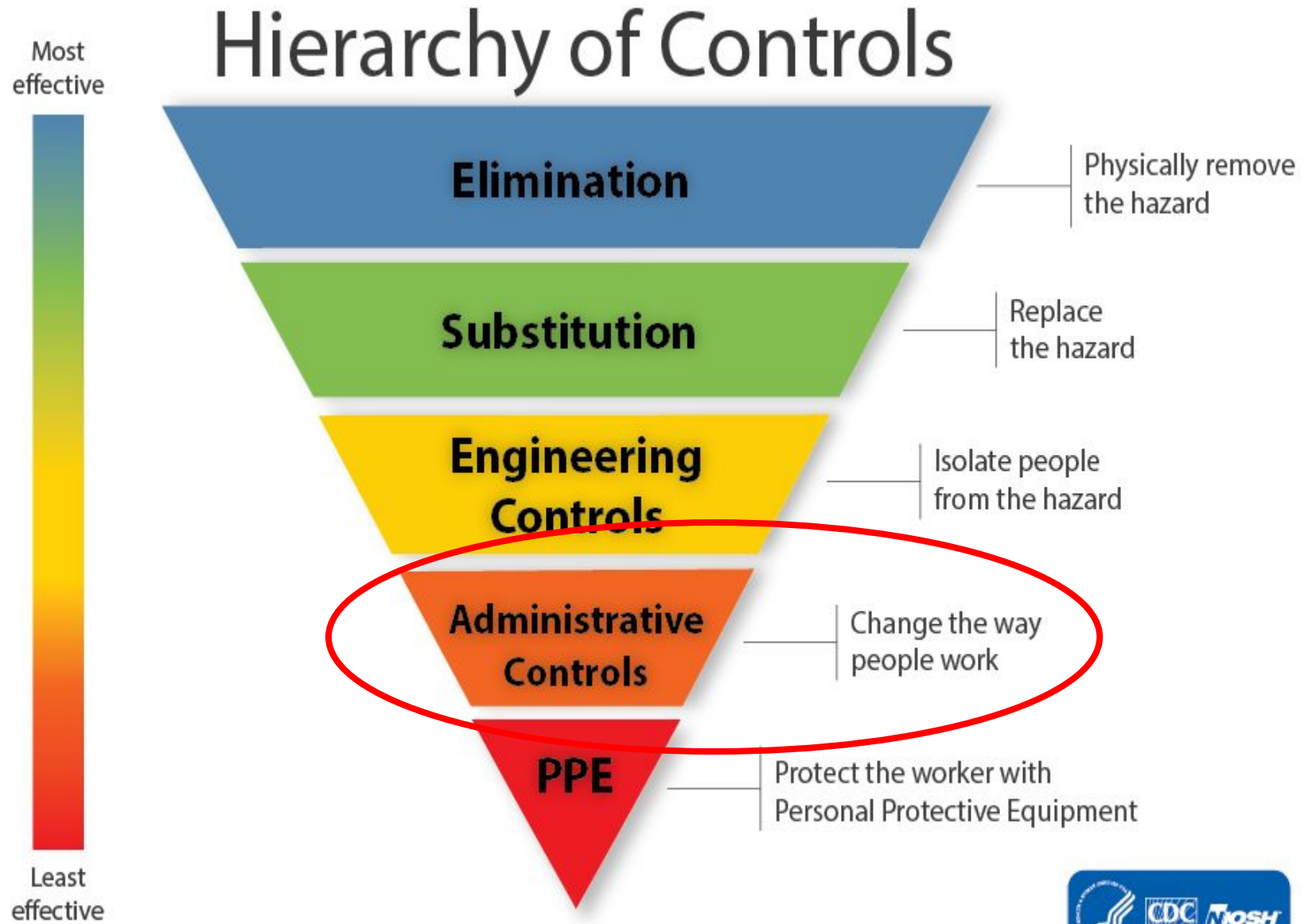
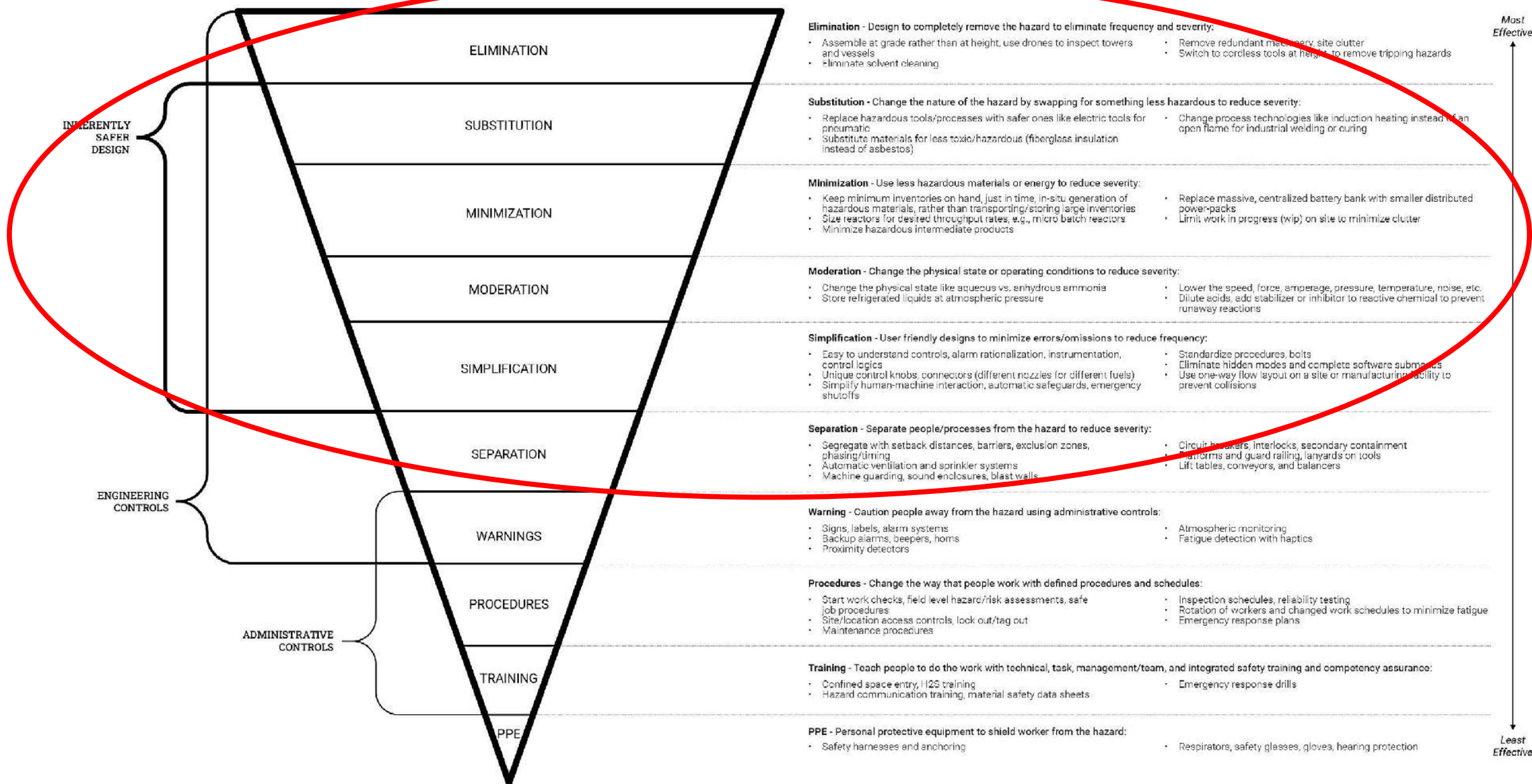


Image by NIOSH



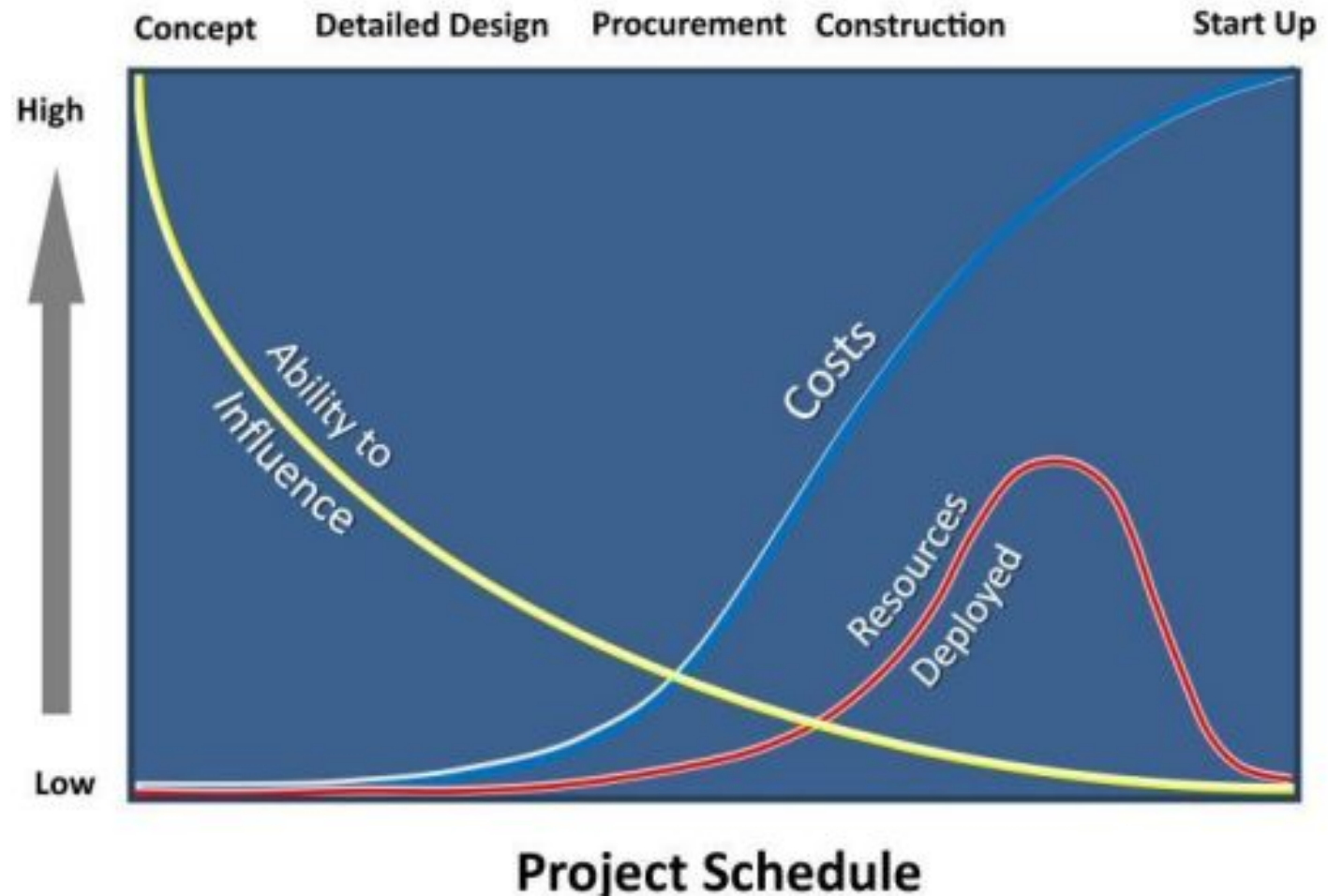
Eliminate hazards, reduce severity, and frequency with PtD and Inherently Safer Design (ISD)



Planning and design give the greatest leverage

Ability to influence key project goals is greatest early in the project schedule during planning and design (Toole, 2018; Szymberski, 1997)

There are many complementarities between PtD and Integrated Project Delivery*



Toole, M., Prevention through Design: The Triple Bottom Line in Capital Projects, <https://www.nspe.org/sites/default/files/resources/pdfs/education/seminars/18/PreventionthroughDesignPresentation.pdf>

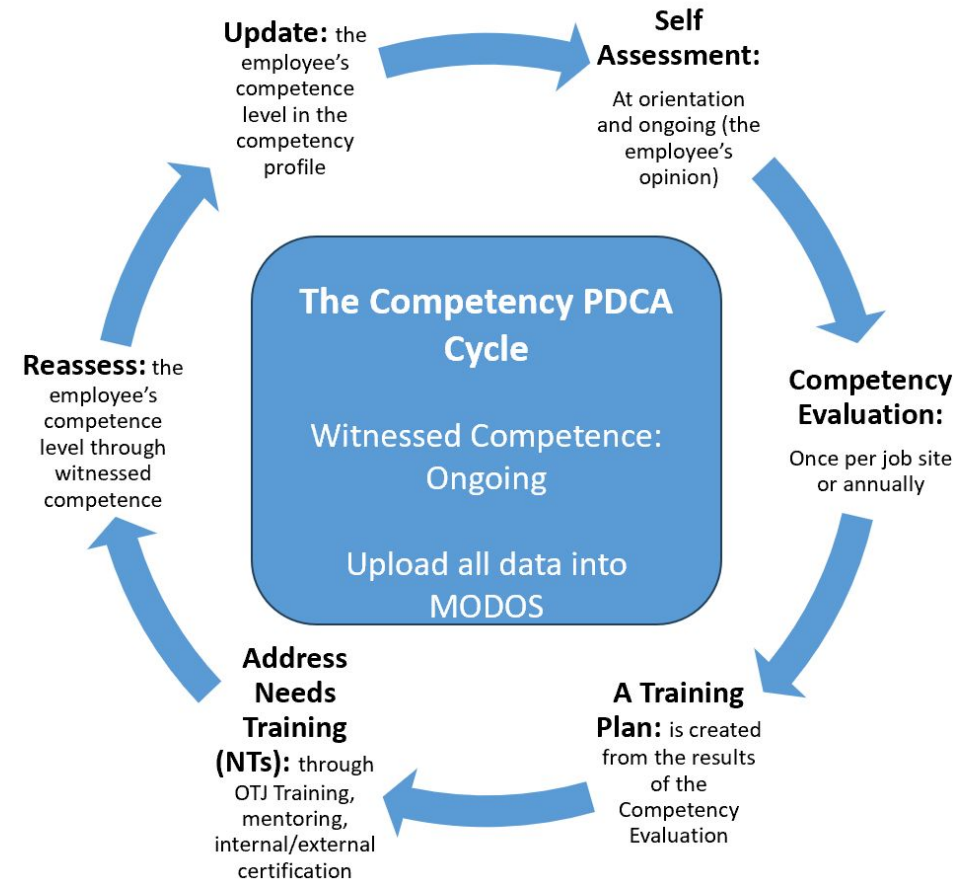
Szymberski, R. T. (1997). Construction project safety planning. *Tappi Journal*, 80(11), 69-74.

* Draft NSERC Alliance Grant research proposal "A Decision-Support System for Integrating Safety, Sustainability, and Constructability in Early-Stage Building Design under Collaborative Project Delivery Frameworks"

2) Competency management to continuously develop/verify workers' skills

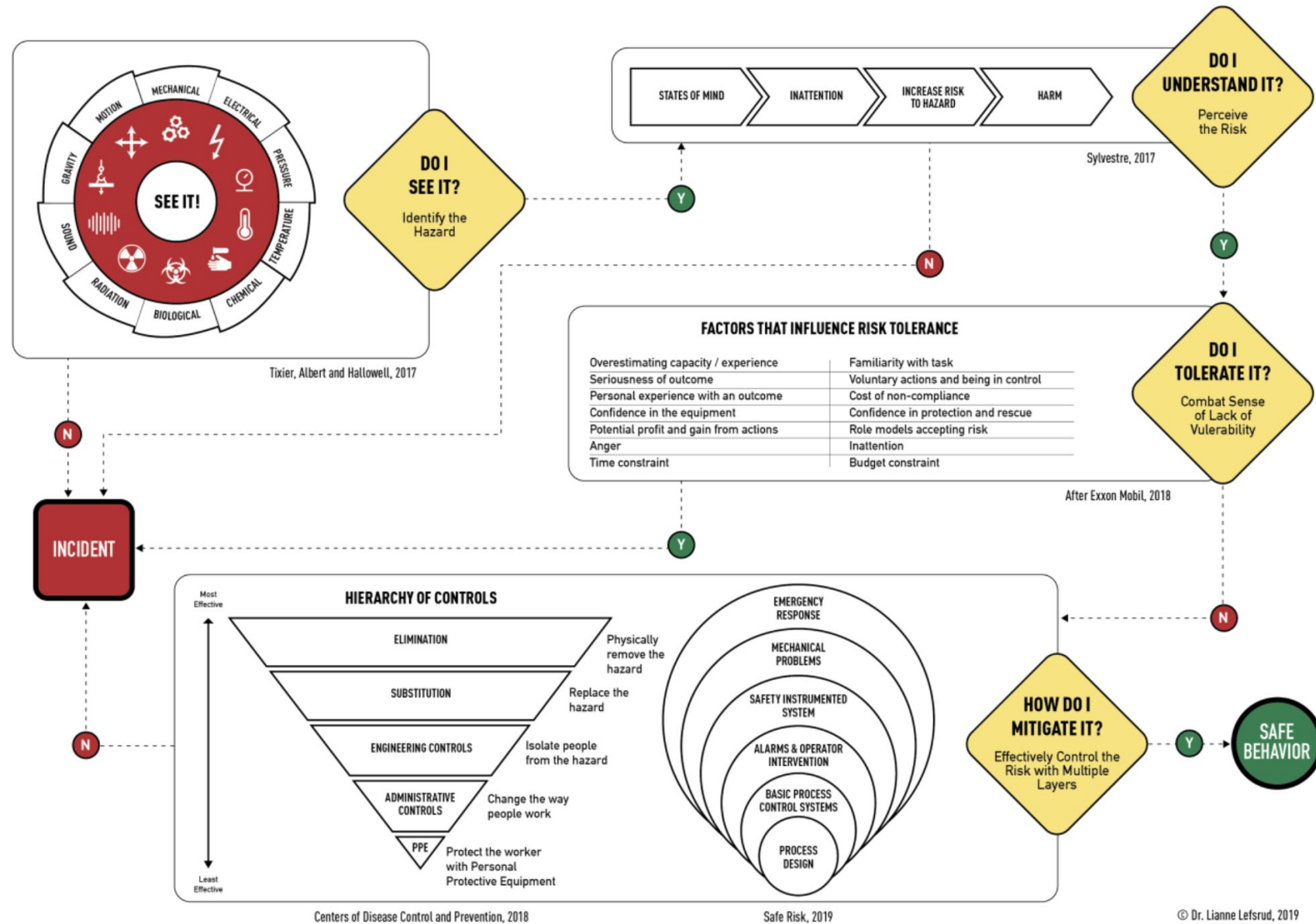
With labour shortages, high turnover, and changing subcontractors, less-experienced workers are being pushed into high-risk environments. A competency management system:**

- tracks on-the-job training, practical evaluations, and ensures fatigued or unready workers are assigned to lower-risk tasks
- supports labour mobility and reduces labour shortages
- reduces mistakes; “re-work”—demolishing and rebuilding sub-standard work—is one of the single biggest drags on Canadian construction productivity
- optimally matches crews to tasks based on verified competencies to keep projects moving



3) Use data analytics to identify blind spots

- Compare hazards to SIF_{p+a} to identify 'near miss' zones/tasks to redesign site layout and schedule (Charuvil Elizabeth et al.)
- Proximity alerts to prevent line-of-fire
- Wearables to track workers' fatigue
- Schedule/budget performance to predict rushing/shortcutting
- Check efficacy of controls across contractors***



Charuvil Elizabeth, R. M., Sattari, F., Lefsrud, L., & Gue, B. (2025). Reducing serious injuries and fatalities in industrial construction-application of machine learning to analyze emotional intelligence and psychosocial factors. *International Journal of Construction Management*, 25(12), 1404-1414. <https://doi.org/10.1080/15623599.2024.2417629>

Elizabeth, R. M. C., Sattari, F., Lefsrud, L., & Gue, B. (2025). Visualizing what's missing: Using deep learning and Bow-Tie diagrams to identify and visualize missing leading indicators in industrial construction. *Journal of Safety Research*, 93, 1-11. <https://doi.org/10.1016/j.isr.2025.02.007>

***Draft NSERC Alliance Grant research proposal "Improving implementation and alignment of critical controls in owners, contractors, and subcontractors"

3) ... and hidden bottlenecks

within throughput, Work in Progress (WIP), cycle times, wait times****

- development and building permit delays
- equipment idle times
- supply chain delays
- labour shortages
- workflow friction



<https://www.invensislearning.com/blog/what-is-bottleneck-project-management/>

**** Draft NSERC Alliance Grant research proposal "Improving the sustainability of housing by debottlenecking residential construction"

To create a more sustainable, productive, and safe construction industry!



- Improved constructability
- Fewer resources used
- Lowered emissions
- Less damage
- Fewer liabilities

- Greater job satisfaction
- Lower turnover
- Less absenteeism
- Fewer accidents
- Lower medical costs
- Lower insurance costs

- Lower legal costs
- Higher productivity
- Higher efficiencies
- Higher quality
- Better company image
- Greater innovation capacity
- Higher market capitalization

Thank You!

And questions about these projects *_*****?

Dr. Lianne M. Lefsrud, Professor and Risk, Innovation and Sustainability Chair (RISC)
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May 28 – Xinming Li, University of Alberta

SYSTEMATIC PHYSICAL DEMAND ANALYSIS AND RISK ASSESSMENT IN THE WORKPLACE

Xinming Li, Ph.D. P.Eng.

Associate Professor

Department of Mechanical Engineering

University of Alberta



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Occupational Ergonomics Research Lab
Department of Mechanical Engineering

About me



Xinming Li, Ph.D, P.Eng.

- **Associate Professor,**
 - **Faculty of Engineering - Mechanical Engineering Dept**
- **Director of Occupational Ergonomics Research Lab**
- **Chair, Canadian Society of Civil Engineering (CSCE) - Construction Division**



ergoresearchlab.com

Research Directions

- ✓ Physical Demand Analysis
- ✓ Ergonomics, Human Factors
- ✓ 3D Visualization and Simulation
- ✓ Physiological Measurements
- ✓ Motion Capture, Eye-tracking
- ✓ Bio-signal Processing
- ✓ Computer Vision, Deep Learning
- ✓ Virtual Reality/Augmented Reality
etc.

Main Objective:

To improve occupational operations by assessing ergonomic risks and investigating appropriate corrective actions to ensure operators health and safety, increase workplace productivity, and reduce costs.



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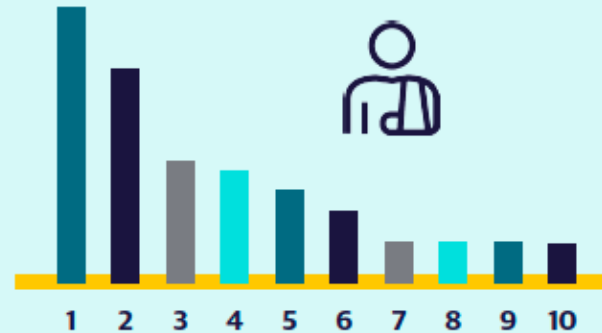
Occupational Ergonomics Research Lab
Department of Mechanical Engineering

2026-06-03

Why ergonomics?

Total cost of the most disabling workplace injuries:
\$59.59 billion

Cost of top 10 most disabling workplace injuries:
\$52.93 billion

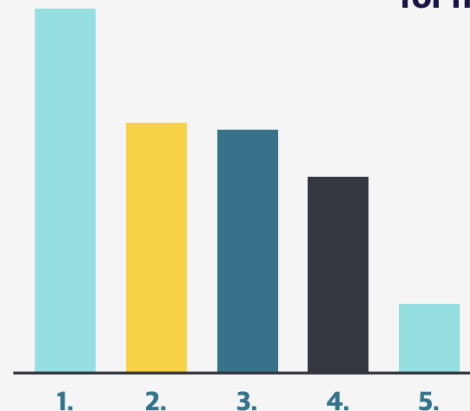


	Cost billions	Percent total	
1.	\$13.98	23.5%	Overexertion involving outside sources (Handling objects)
2.	\$10.84	18.2%	Falls on same level
3.	\$6.12	10.3%	Struck by object or equipment (Being hit by objects)
4.	\$5.71	9.6%	Falls to lower level
5.	\$4.69	7.9%	Other exertions or bodily reactions
6.	\$3.56	6.0%	Roadway incidents involving motorized land vehicle (Vehicle crashes)*
7.	\$2.06	3.5%	Slip or trip without fall
8.	\$2.05	3.4%	Repetitive motions involving microtasks
9.	\$2.00	3.4%	Struck against object or equipment (Colliding with objects)
10.	\$1.92	3.2%	Caught in or compressed by equipment or objects (Running equipment or machines)

Serious, non-fatal injuries cost **\$189.81 million a week** in the construction industry

Looking for more comprehensive safety information?

Total workers compensation direct costs for non-fatal claims with more than five days away from work



	Cost Billions	Percent total	
1.	\$2.5	25.29%	Falls to lower level
2.	\$1.72	17.41%	Struck by object or equipment
3.	\$1.67	16.93%	Overexertion involving outside sources
4.	\$1.35	13.64%	Falls on same level
5.	\$0.47	4.78%	Slip or trip without fall



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Occupational Ergonomics Research Lab
Department of Mechanical Engineering

Physical Demand Analysis (PDA)

- A systematic procedure to quantify, and evaluate all of the physical and environmental demand components of all essential and non-essential tasks of a job *(OHCOW, 2026)*.

Why:

- Documentation and evaluation of tasks
- Communication with workers
- Risk identification and assessment
- Determine proactive measures to mitigate potential risks
- Provide details on job demands to workers compensation board (WCB)

Contents:

- Force, Posture, Sensory, Environment

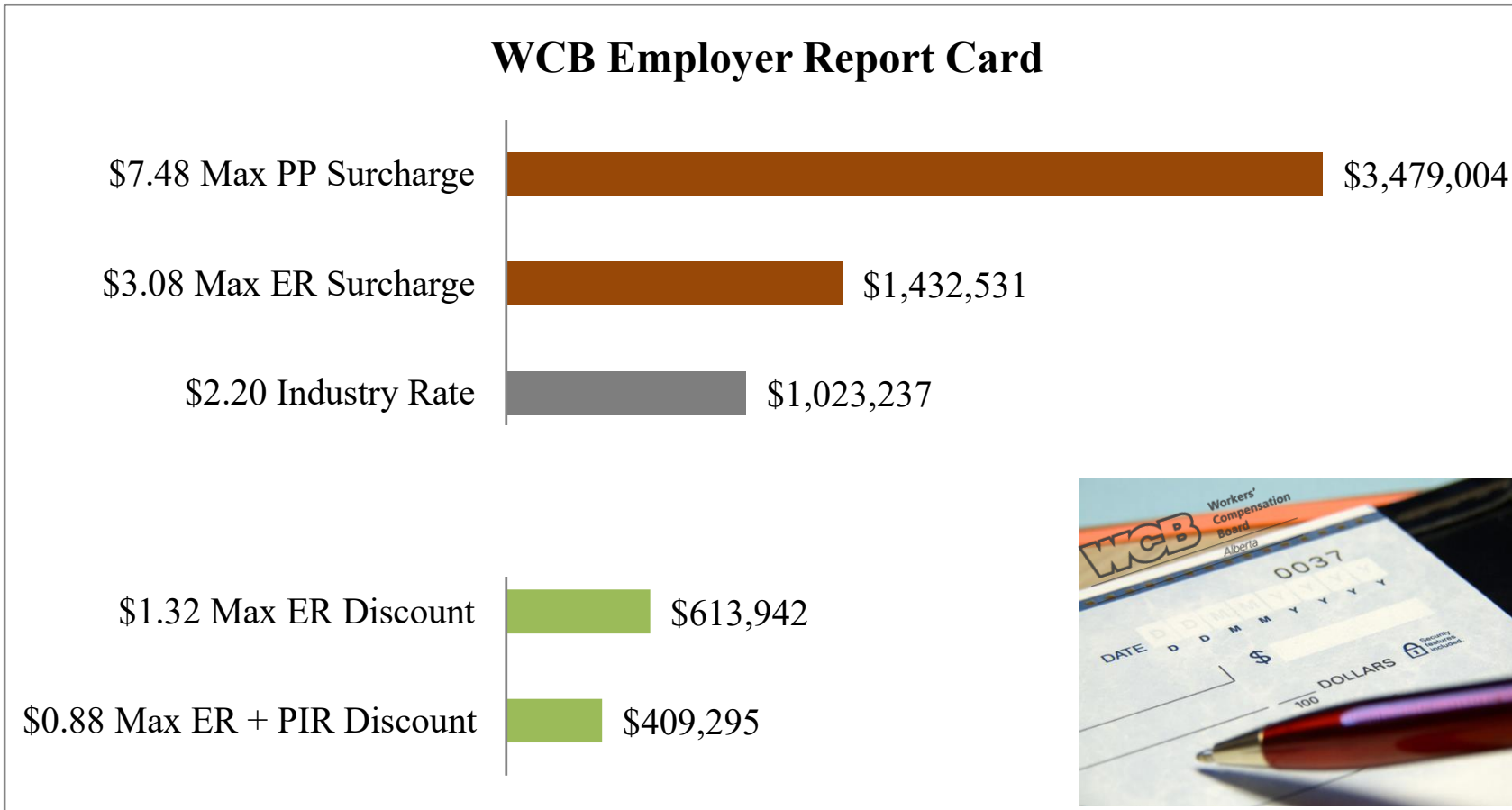


Now, it's more ergonomic.



Workers Compensation Board (WCB) Premium

Performance Impact on Premium – Sample

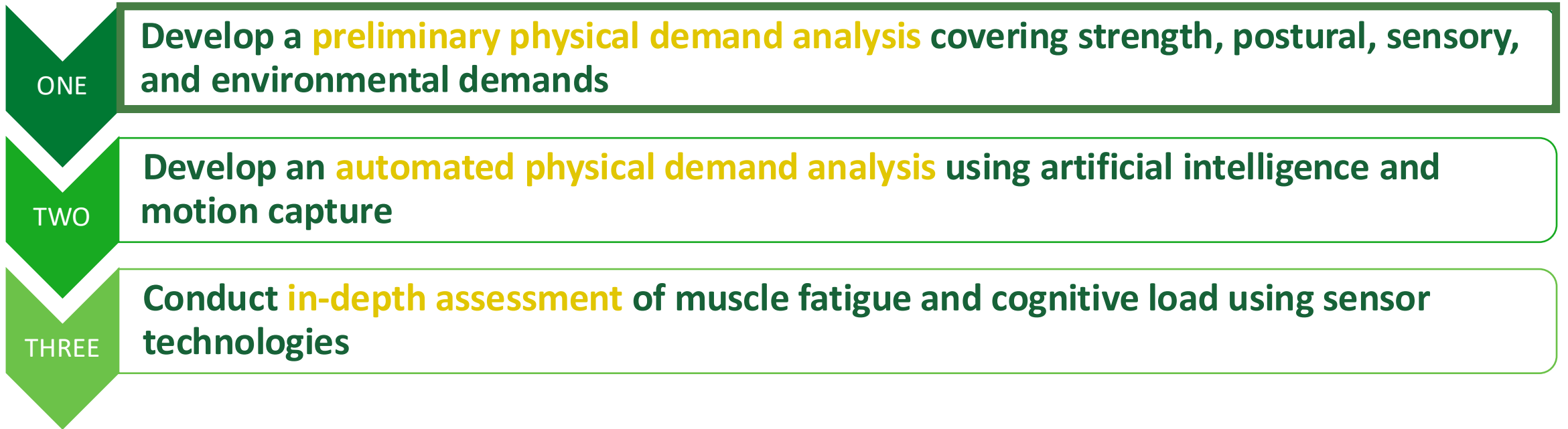


Alberta Sample
PP: poor performance
ER: experience rating
PIR: partner in injury reduction



Systematic Physical Demand Analysis and Risk Assessment in the Workplace

- To systematically assess job demands to reduce musculoskeletal disorders and associated compensation costs.



Phase One: Preliminary Physical Demand Analysis

Preliminary physical demand analysis

PHYSICAL DEMANDS ANALYSIS

Claim Number:

Body Posture Frequency

ACTIVITY	COMMENTS (Description of the activity, handled objects, coupling)	FREQUENCY OF WORKDAY				
		Not Required (0% of shift)	Rare (1–5% of shift)	Occasional (6–33% of shift)	Frequent (34–66% of shift)	Constant (67–100% of shift)
Mobility					(by checking “X”)	
Walking	(terrain/surface)		X			
Standing	(flooring/surfaces)			X		
Sitting/Driving	(type of seat/chair)					
Climbing						
☐ stair						
☐ ladder						
Other Climbing	(stools, etc.)					
Crouching/Squatting						
Kneeling/Crawling						
Back			(by indicating Magnitude and Amplitude, °)			
Forward Bending				20°		
Backward Bending			10°			
Twist/Trunk Rotation						
Shoulder			(by indicating Magnitude and Amplitude, °)			
Above Shoulder Reaching						
Forward Shoulder Reaching						
Below Shoulder Reaching						
Sideways Shoulder Reaching						
Behind Shoulder Reaching						
Neck			(by indicating Magnitude and Amplitude, °)			
Forward Bending						
Backward Bending						
Twist/Tilt						
Elbow			(by indicating Magnitude and Amplitude, °)			
Flex/Extend						
Wrist			(by indicating Magnitude and Amplitude, °)			
Flex/Extend						
Bending	(across the midline)					
Rotate						
Ankle			(by indicating Magnitude and Amplitude, °)			
Flex/Extend						
Rotate						

Sensory Demands

ACTIVITY	COMMENTS (Description of the activity, handled objects, coupling)	FREQUENCY OF WORKDAY (by checking "X")				
		Not Required (0% of shift)	Rare (1–5% of shift)	Occasional (6–33% of shift)	Frequent (34–66% of shift)	Constant (67–100% of shift)
Hearing/Speech			X			
Sound discrimination		X				
Vision: near/far						
Colour Vision						

Environmental conditions: (e.g., indoor/outdoor, noise, cold, heat, chemical exposure, confined spaces, heights, possible violence, moving equipment)

List most frequently handled tools, equipment, and materials:
(e.g., vibration, pneumatic, tool belt, manual or power tools, shop or office equipment, materials/products, etc.)

List safety equipment: (e.g., safety glasses, safety boots, hearing protection, Gloves, etc.)

Basic Ergonomic Risks Identified

Risk	Modified Work for Consideration
1.	
2.	

Printed Name: _____ Date: _____
Signature: _____

Job Title: _____ Hours per shift: _____
Shifts per week/shift rotation: _____ Breaks: _____
Company Name: _____ Employer Contact: _____ Telephone Number: _____
Overtime Policy if applicable: _____

Job Overview: (e.g., list primary job duties)

Responsible for

Job Skills & Training:

Job Primary Tasks with Durations:

- 1.
- 2.

Strength Demands of Job

ACTIVITY	COMMENTS (Description of handled objects, coupling)	FORCE/LOAD (lb)		FREQUENCY	MOVING DISTANCE (m)
		Avg.	Max.		
Lifting					
Low Level Lifting		15	20	R	8
Waist Level Lifting		30	35	F	8
Above Shoulder Lifting		-	-	N	-
Carrying					
Front Carry					
Side Carry – Right Hand					
Side Carry – Left Hand					
On Shoulder					
Pushing/Pulling					
Pushing (tools/objects)					
Pulling (tools/objects)					
Grasping & Pinching					
Hand Use					
Dominant					
Non-Dominant					
Forceful Gripping					
Dominant					
Non-Dominant					

N: Not Required (0% of shift), R: Rare (1–5% of shift), O: Occasional (6–33% of shift), F: Frequent (34–66% of shift), C: Constant (67–100% of shift)



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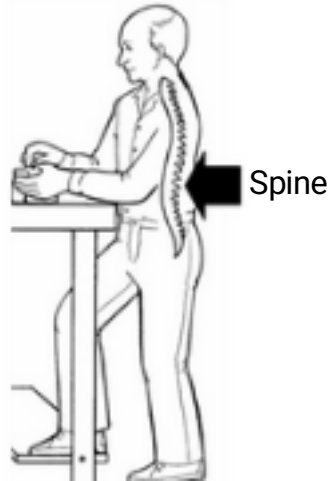


Occupational Ergonomics Research Lab
Department of Mechanical Engineering

Li, X. *, Gül, M., and Al-Hussein, M. (2019). "An improved physical demand analysis framework based on ergonomic risk assessment tools for the manufacturing industry." *International Journal of Industrial Ergonomics*, 70, 58–69.

Phase One: Preliminary Physical Demand Analysis

1. Static Whole Body Posture



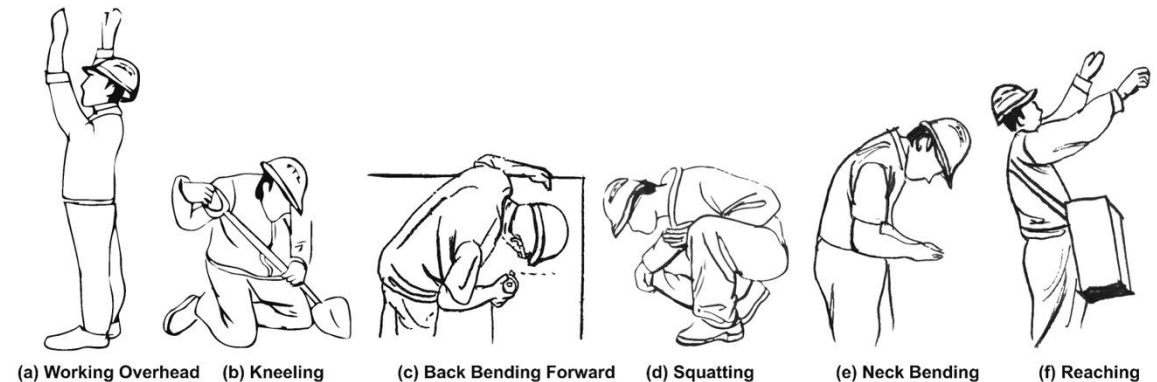
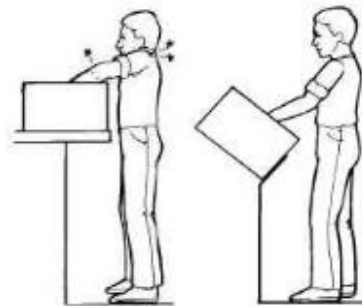
2. Sensory Problems



3. Manual Material Handling



4. Awkward Body Posture



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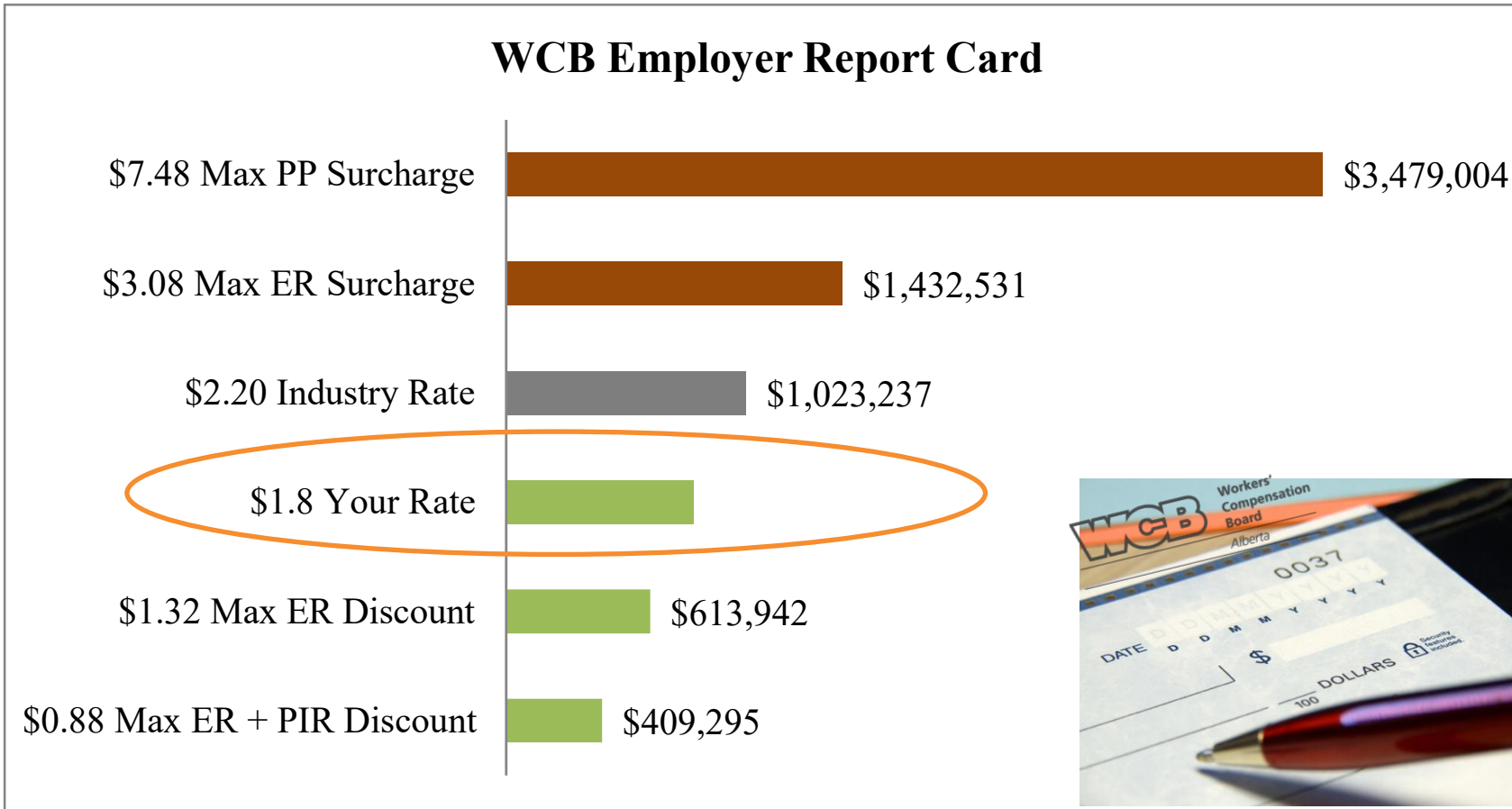


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Phase One: Preliminary Physical Demand Analysis

Performance Impact on Premium – Sample



Safety or
Ergonomics
does NOT
cost;
It PAYS!

Alberta Sample
PP: poor performance
ER: experience rating
PIR: partner in injury reduction



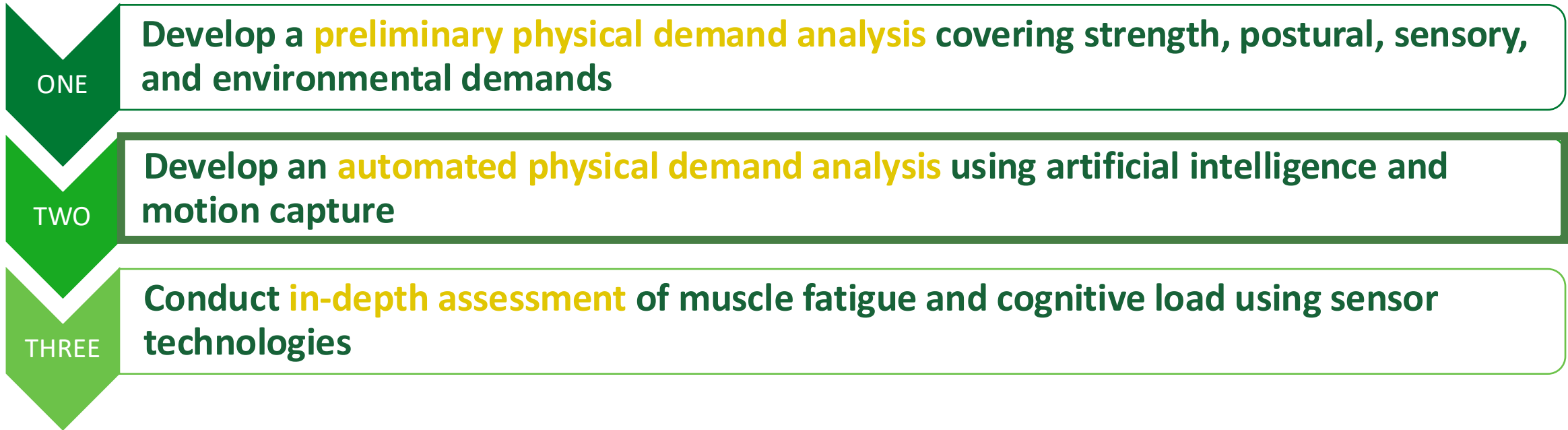
Industry Benefits of PDA

- Streamlined and user-friendly job demand information for healthcare professionals and WCB
- Improved identification and prioritization of safety and ergonomic risks
- Supported hiring, training, job matching, and modified duty planning
- Enhanced return-to-work programs through better understanding of job tasks
- Enabled development of education, stretching, and injury prevention programs



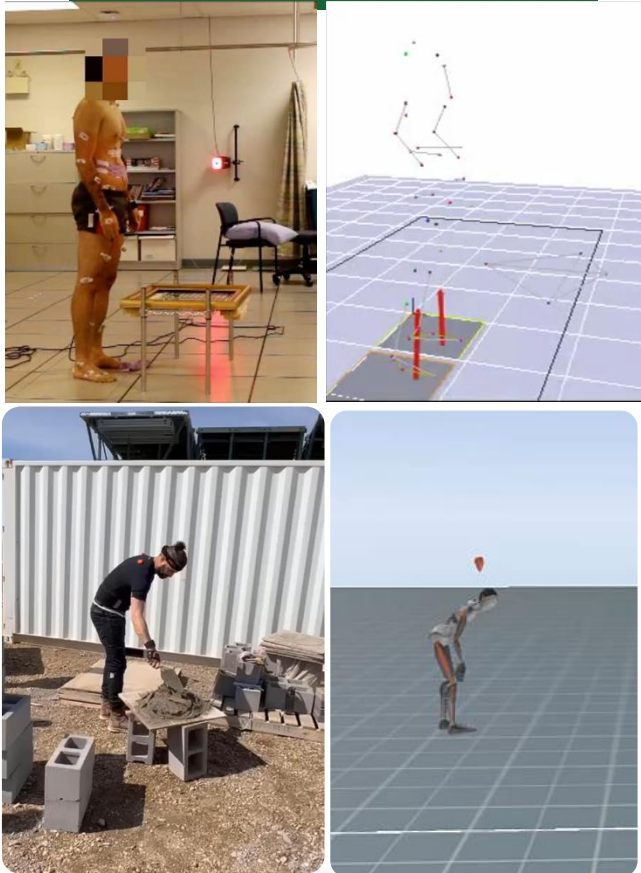
Systematic Physical Demand Analysis and Risk Assessment in the Workplace

- To systematically assess job demands to reduce musculoskeletal disorders and associated compensation costs.

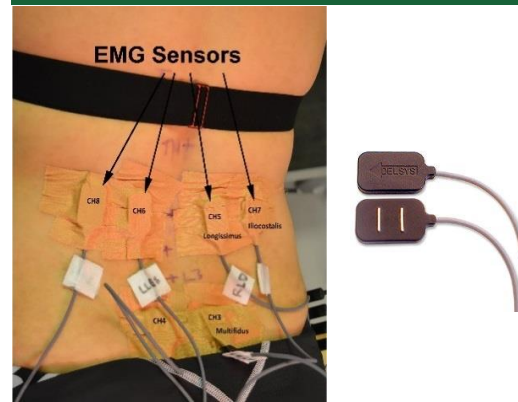


Advanced facilities in our lab

Motion Capture



sEMG



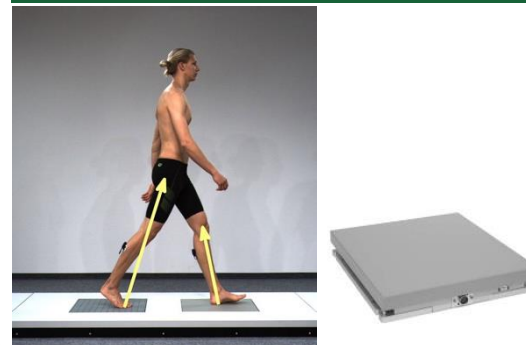
Eye-Tracking & EEG



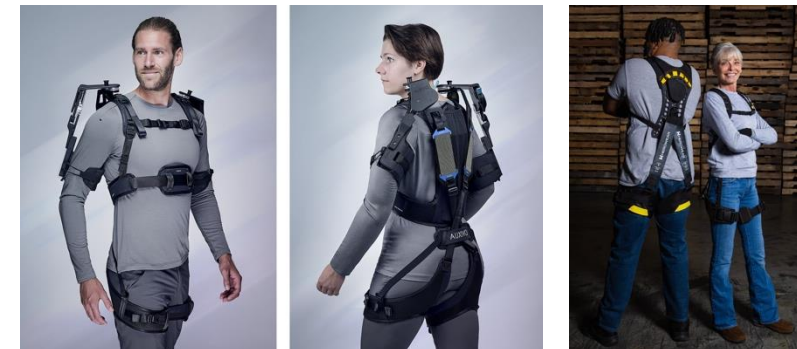
Bio - Sensors



Force Plates



Exoskeleton



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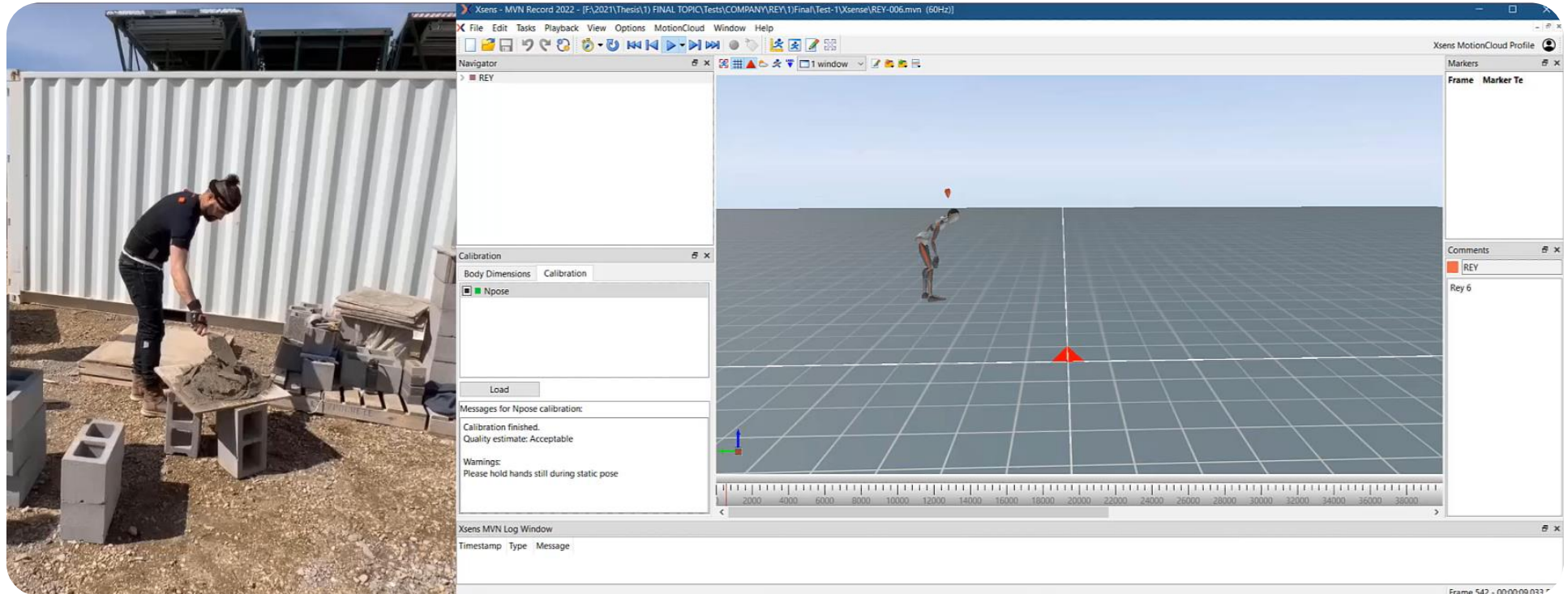
2026-06-03

Phase Two: Automated Physical Demand Analysis

Sensor based

Step 1:

17 inertial measurement units (IMUs) are attached to capture real-time joint angles and segment positions.

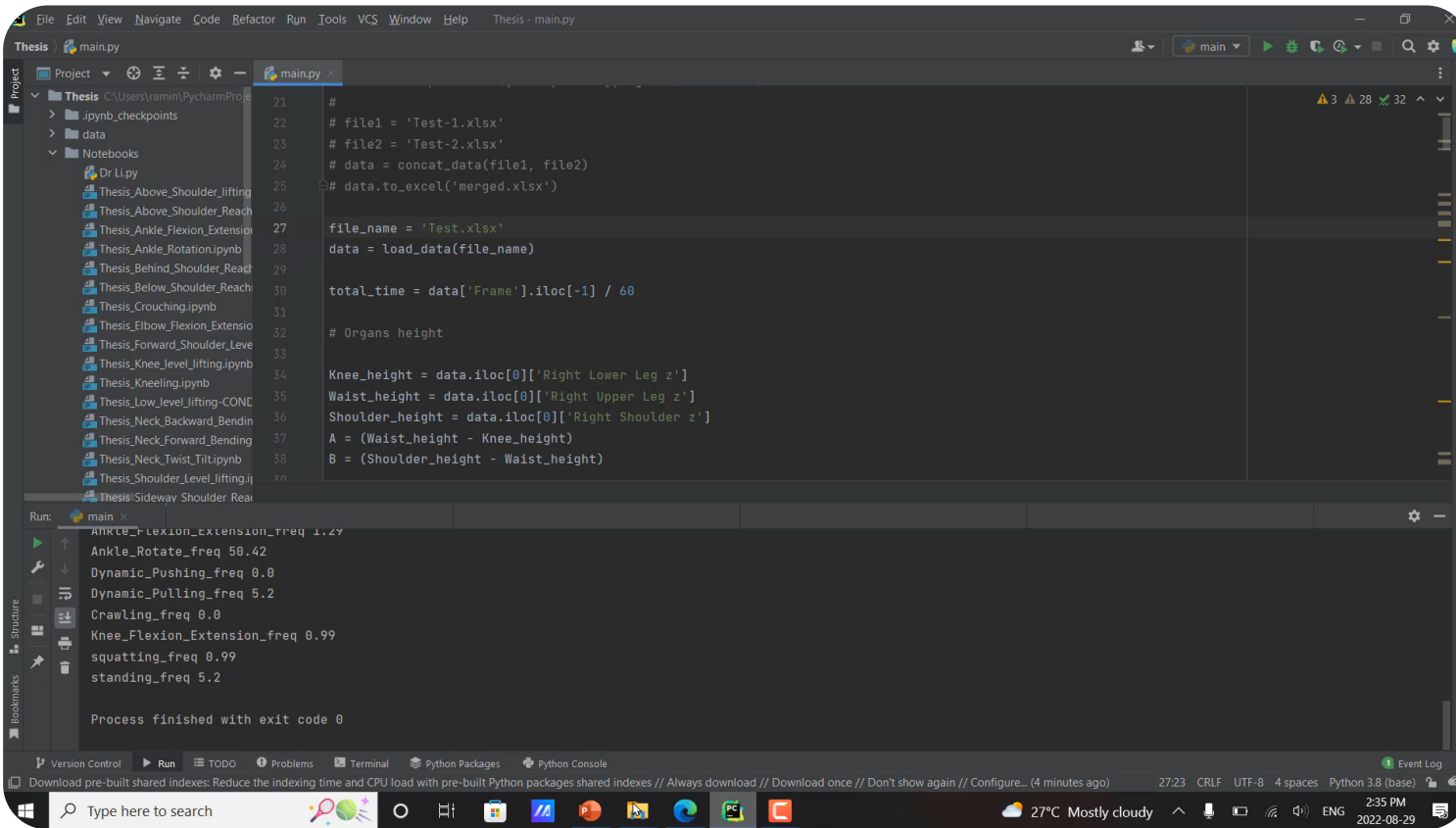


Phase Two: Automated Physical Demand Analysis

Automated physical demand analysis 体能需求分析自动化

Sensor based

Step 2: Automatically populate the posture-based PDA document



```
# file1 = 'Test-1.xlsx'
# file2 = 'Test-2.xlsx'
# data = concat_data(file1, file2)
# data.to_excel('merged.xlsx')

file_name = 'Test.xlsx'
data = load_data(file_name)

total_time = data['Frame'].iloc[-1] / 60

# Organs height

Knee_height = data.iloc[0]['Right Lower Leg z']
Waist_height = data.iloc[0]['Right Upper Leg z']
Shoulder_height = data.iloc[0]['Right Shoulder z']
A = (Waist_height - Knee_height)
B = (Shoulder_height - Waist_height)
```



Manual Handling Tasks	Description	Frequency of workday/Shift				
		Not Required	Rare (2-5%)	Occasional (6-33%)	Frequent (34-66%)	Constant (67-100%)
Lifting						
Low level lifting				18.66		
Knee Level Lifting				27.81		↕
Waist Level Lifting			2.45			
Shoulder Level Lifting	0.12					
Above Shoulder Lifting	0					
Carrying						
Front Carry				12.86		
Side Carry			2.9			
Side Carry-Right Hand	1.17					
Side Carry-Left Hand			2.21			
On Shoulder Carry	0					
Pushing/Pulling						
Stationary Pushing		0.03				
Stationary Pulling					49.43	
Dynamic Pushing		0				
Dynamic Pulling				5.2		
Positional Tasks	Description	Frequency of workday/Shift				
		Not Required	Rare (1-5%)	Occasional (6-33%)	Frequent (34-66%)	Constant (67-100%)
Mobility						
Sitting/Driving		1.53				
Standing				5.2		
Walking				6.76		↕
Climbing-Stairs		1.38				
Climbing-Ladders		0.12				
Climbing-Stools, etc.		1.56				
Crouching		0				
Squatting		0.99				
Kneeling		0				
Crawling		0				
Back						
Forward Bending						90.82
Trunk Rotation			3.08			
Backward Bending		0.12				
Shoulder						
Below Shoulder Level Reaching					33.34	
Forward Shoulder Level Reaching					59.42	
Above Shoulder Level Reaching					58.58	
Sideway Shoulder Reaching				9.45		↕
Behind Shoulder Reaching		0				
Neck						
Forward Bending				8.7		
Backward Bending			4.58			
Twist/Tilt					57.12	
Elbow						
Flexion/Extension						93.84
Wrist						
Flexion/Extension						82.03
Bending						88.13
Rotate				17.37		
Ankle						
Flexion/Extension		1.29				
Rotate					50.42	

Not Required (0% of shift), R: Rare (1-5% of shift), O: Occasional (6-33% of shift), F: Frequent (34-66% of shift), C: Constant (67-100% of shift)

Not Required (0% of shift), R: Rare (1-5% of shift), O: Occasional (6-33% of shift), F: Frequent (34-66% of shift), C: Constant (67-100% of shift)



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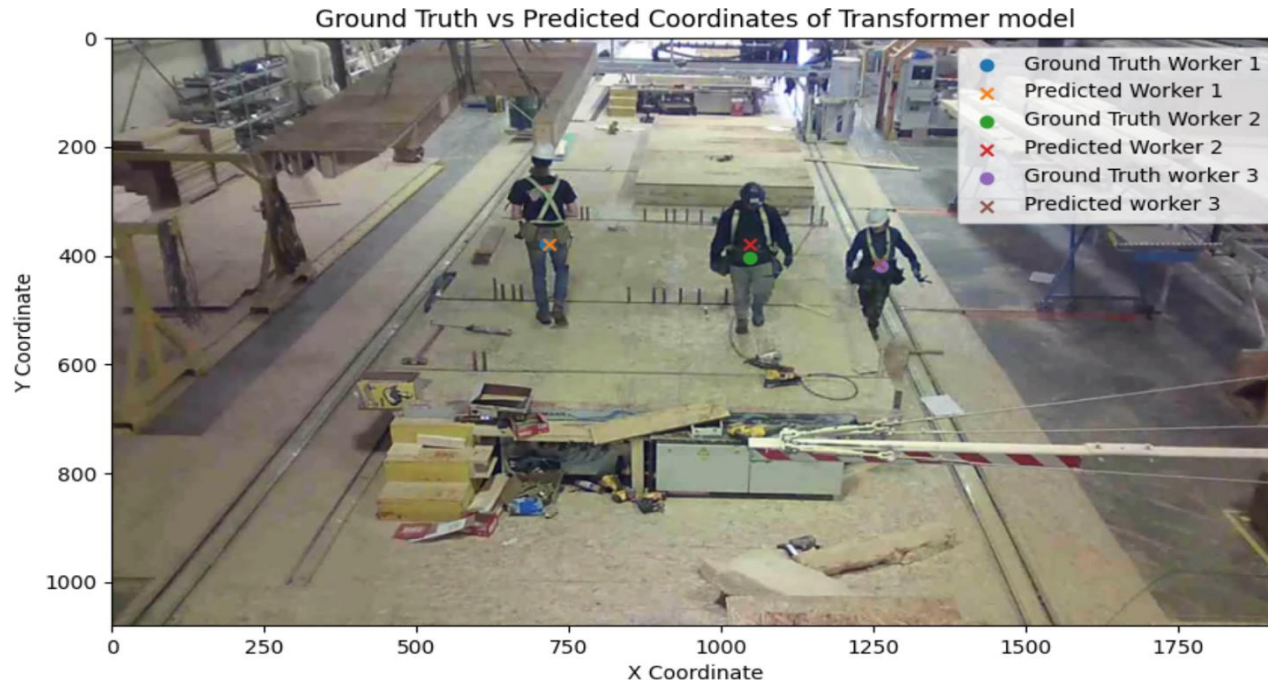
Occupational Ergonomics Research Lab
Department of Mechanical Engineering

Aliasgari, R., Chao, F., Li, X., Golabchi, A. and Hamzeh, F. (2024) "MOCAP and AI-based Automated Physical Demand Analysis for Workplace Safety" *Journal of Construction Engineering and Management*. 150, 7.

Phase Two: Automated Physical Demand Analysis

Computer Vision based

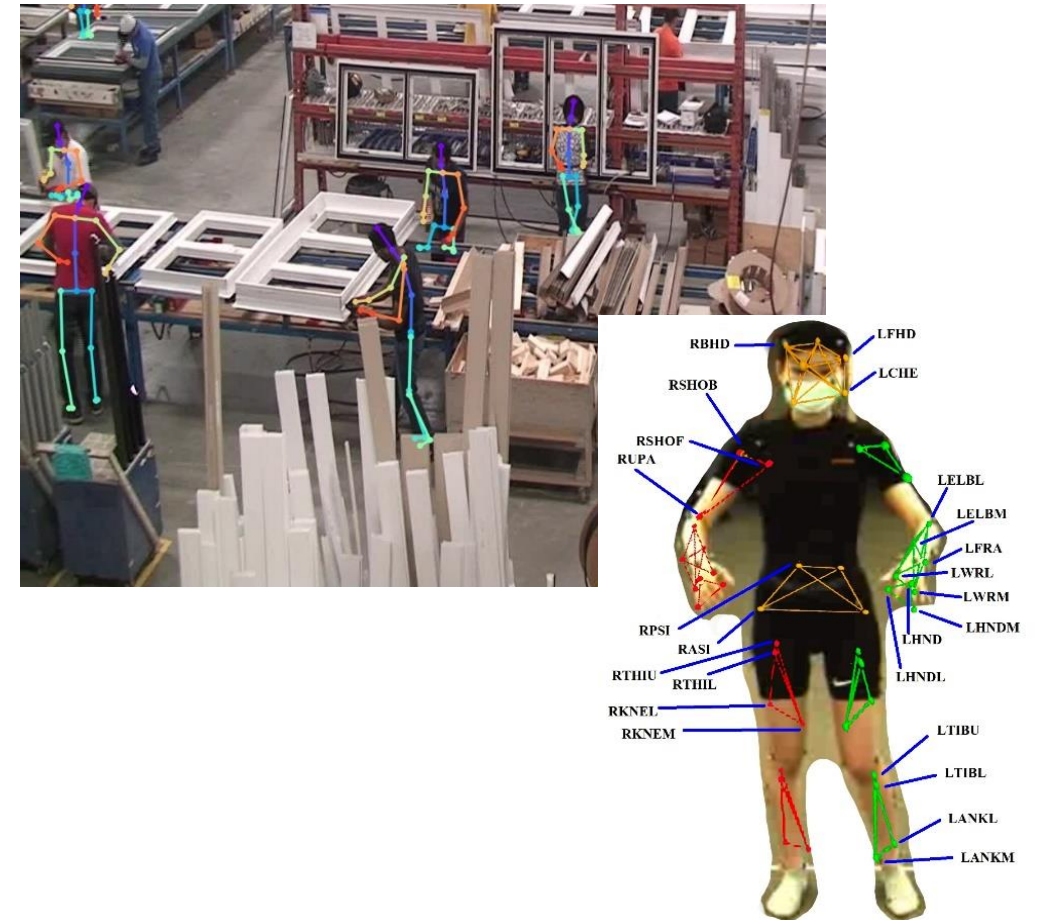
Movement Detection



Al-Duais, M, Li, X. and Mei, Q. (2026) "TrajGATFormer: A Graph-Based Transformer Approach for Worker and Obstacle Trajectory Prediction in Off-site Construction Environments" *Advanced Engineering Informatics* 73 (2026) 104583

Yang, Q.; Mei, Q.; Fan, C.; Ma, M.; Li, X. (2023) "Environment-Aware Worker Trajectory Prediction Using Surveillance Camera in Modular Construction Facilities" *Buildings*, 13, 1502. <https://doi.org/10.3390/buildings13061502>

Motion and Joint Detection



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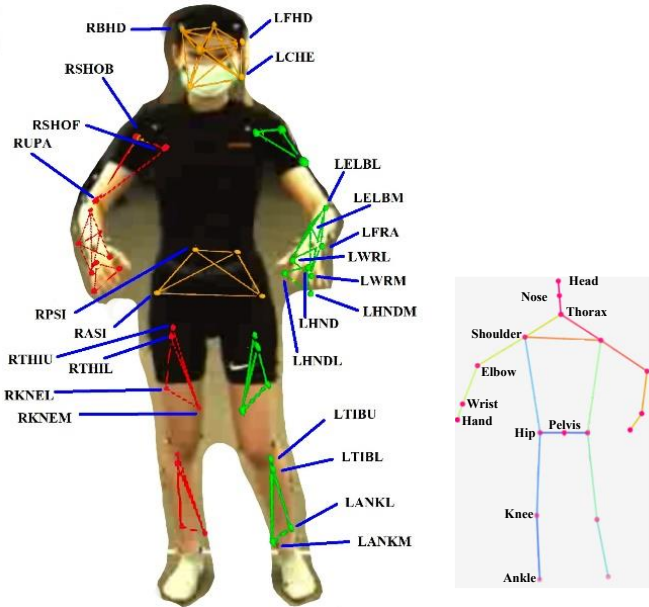
2026-06-03

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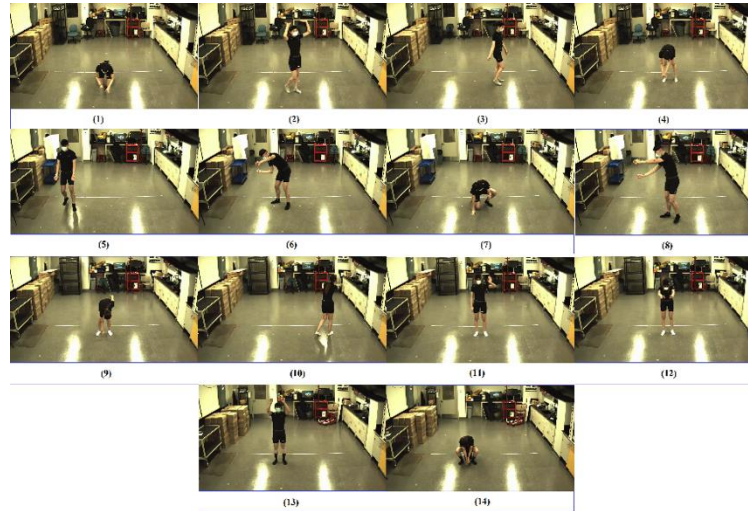
Phase Two: Automated Physical Demand Analysis

Automated physical demand analysis 体能需求分析自动化

Computer Vision based



- The development of a comprehensive 3D human pose estimation **dataset** with around 0.5 million frames designed explicitly for construction activities.



- The development of a **biomechanical skeletal model** specifically for collecting 3D motion capture data on construction activities.

Construction Activity	Description
1	kneeling and working
2	carrying heavy objects over the worker's head
3	dragging
4	bending over and working with a power drill
5	holding and moving heavy objects with both hands
6	installing windows
7	kneeling on one knee and nailing nails
8	dragging and backing up
9	bending and grabbing an object on the ground
10	pushing forward
11	pushing objects above the worker's shoulders
12	extending arms on a ladder
13	reaching above the worker's head
14	sitting with trunk bending

Phase Two: Automated Physical Demand Analysis

AI - based

ErgoGPT – a Visual Query System for the Ergonomic Risk Assessment

What other models can provide:

[caption] Describe the workers and their postures in the image and tell me if they are exposed to ergonomic risks due to their postures?



A worker is leaning over a structure to perform work on it.



What our developed model can provide:

[caption] Describe the workers and their postures in the image and tell me if they are exposed to ergonomic risks due to their postures?



The image shows a worker in a blue hoodie working on a fence. The worker's job duty requires a lot of physical activities. The worker is in a forward head posture and it is an ergonomic risk. The fence over the worker's head needs to be secured because it might fall on the worker and it is a safety hazard.



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Occupational Ergonomics Research Lab
Department of Mechanical Engineering

Fan, C., Mei, Q. and Li, X. (under review). "ErgoChat: a Visual Query System for the Ergonomic Risk Identification of Construction Workers" *Applied Ergonomics*

Phase Two: Automated Physical Demand Analysis

AI - based

A video tape of a job



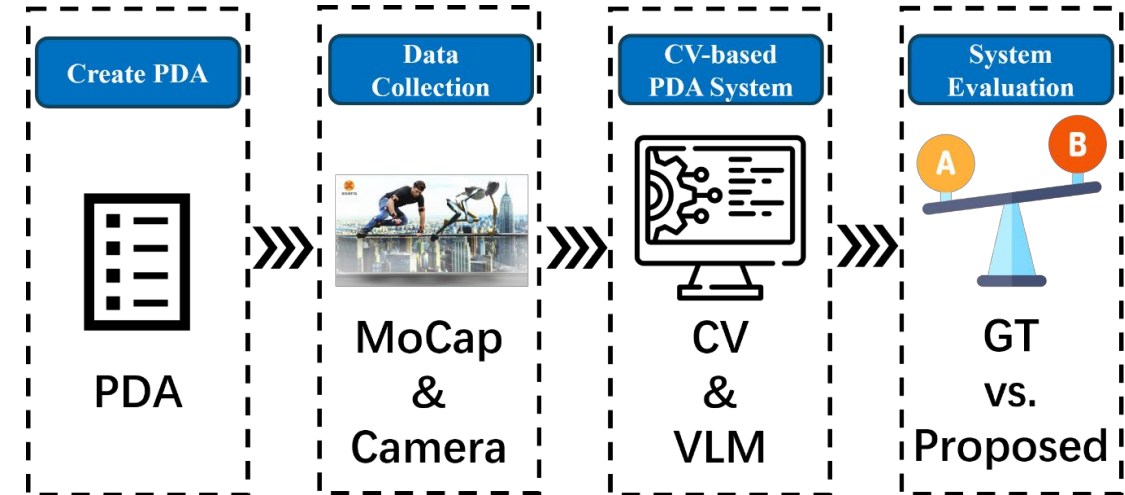
Positional Tasks	Description of activity	Frequency of workday/shift				
		Not Required	Rare 1-5%	Occasional 6-33%	Frequent 34-66%	Constant 67-100%
Sitting						
Forward Bending						
Trunk Rotation						
Standing						
Walking						
Climbing						
Low Level Activity (Crouching)						
Low Level Activity (Squatting)						
Low Level Activity (Kneeling)						
Above Shoulder Level Reaching						
Below Shoulder Level Reaching						

Manual Handling Tasks	Description of objects handled	Check appropriate frequency				
		Not Required	Rare 1-5%	Occasional 6-33%	Frequent 34-66%	Constant 67-100%
Low Level Lifting						
Knee Level Lifting						
Waist Level Lifting						
Shoulder Level Lifting						
Above Shoulder Lifting						
Front Carry						
Side Carry						
Shoulder Carry						
Pushing						
Pulling						

List Most Frequently Handled Materials:		List Most Frequently Handled Tools and Equipment:	

Primary Job Duties: (What are the essential job functions?)	

Ergonomic Risks:			
Risk	Reason	REBA (1-14)	RULA (1-14)

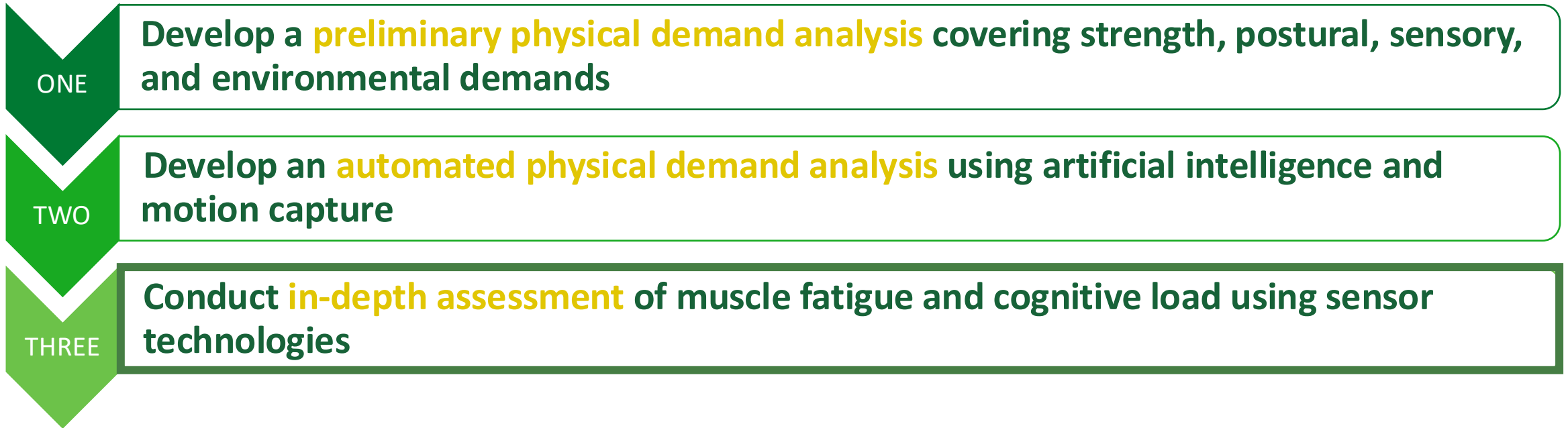


- VLM: Qwen2.5-VL-7B-Instruct
- Frequently handled materials and tools
- Job duties
- Ergonomic risks and reasons

- CV: Deep learning with ResNet50
- **Rapid Entire Body/Upper Limb Assessment Risk Scores**

Systematic Physical Demand Analysis and Risk Assessment in the Workplace

- To systematically assess job demands to reduce musculoskeletal disorders and associated compensation costs.



Phase Three: Further In-depth Assessments

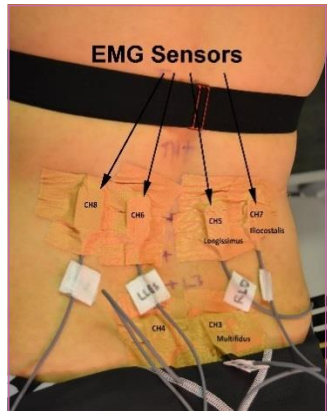
- Muscle Fatigue Evaluation

➤ **Low Back Pain (LBP):**

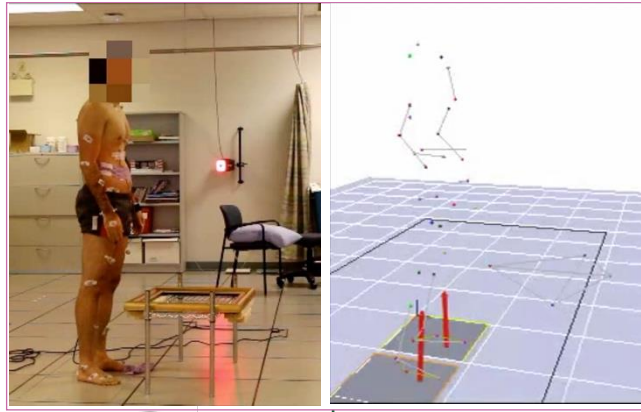
- LBP is a major issue. Back-related complaints have historically been costly.

➤ **Methodology:**

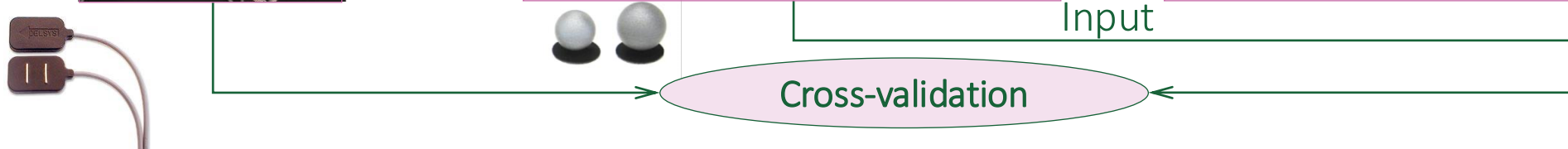
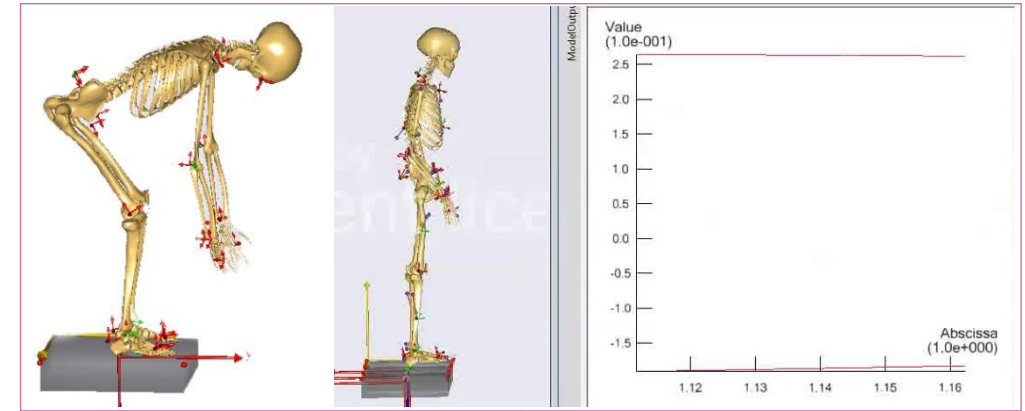
1.sEMG data



2.Motion capture system



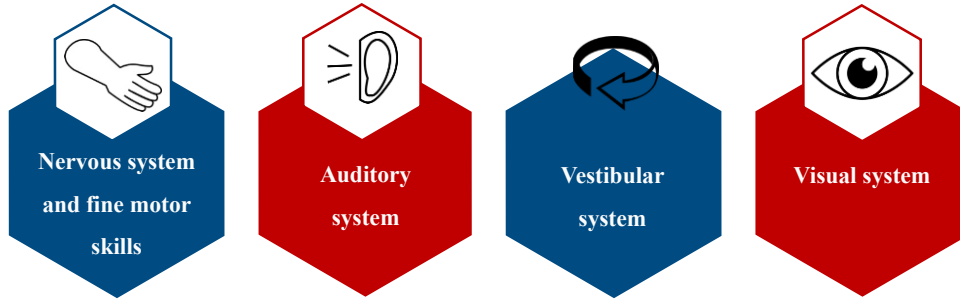
3.Human body model



Assess muscle fatigue and muscle force due to repetitive manual lifting tasks.

Phase Three: Further In-depth Assessments

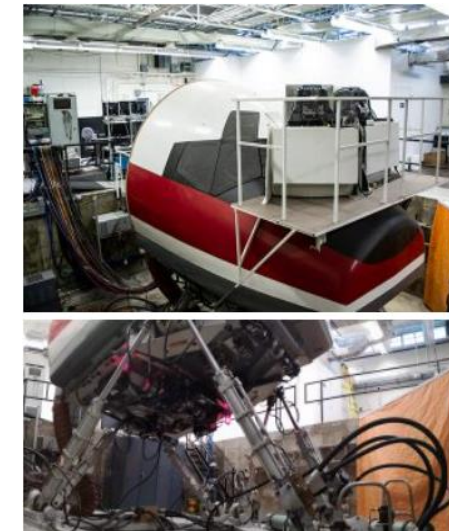
- Cognitive Load Assessment



UofA, Robotics Rehabilitation Lab



UofT, Vehicle Simulation Lab



Systematic Physical Demand Analysis and Risk Assessment in the Workplace



Safety or
Ergonomics
does NOT
cost;
It PAYS!



Our Team



Chao Fan
PhD Candidate



Yuzhang Li
PhD Graduate



Mohamed Assaf
PhD Candidate



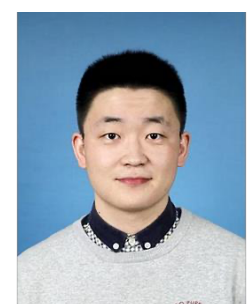
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Zhihao Wei
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Mohammad Alothman
PhD Student



Yusen Jiao
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Xiaoying Zhang
PhD Student



Leyi Zhou
MSc Student



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Associate Professor

Department of Mechanical Engineering



[*ergoresearchlab.com*](http://ergoresearchlab.com)

May 28 – Brad Smid, Alberta Infrastructure



Innovation in Public Infrastructure

An Owner's Perspective

Brad Smid, Assistant Deputy Minister

Strategic Partnerships & Learning Facilities

Alberta Infrastructure

CIC Forum | Edmonton

May 28, 2026

Alberta

Alberta Infrastructure's Role



Ensuring infrastructure supports Albertans



Optimizing functionality and durability



Minimizing costs while ensuring quality



Exploring new approaches



How We View Innovation

- Shift to outcome-based performance
- Exploring innovative design options
- Lessons learned
- Optimizing, integrating, and improving solutions



LEED Changes

- New capital projects no longer require LEED certification
- Projects will follow the National Energy Code of Canada for Buildings (NECB) 2020 Tier 1
- Projects already in design or construction may evaluate LEED-related elements on a case-by-case basis

Technical Design Requirements Review

- Six-month review
- Updated TDR will be published on the Infrastructure Technical Resource website

The TDR: A Living Document



TDR largely performance-based



Enables flexibility for innovation



Updated regularly



Supports continuous improvement through lessons learned



Provides consistent requirements

Technical Design
Requirements for
Alberta Infrastructure
Facilities

Version 8

March 2025

Alberta Infrastructure

Alberta



Opportunities for Innovation

- ▶ Early and regular engagement
- ▶ Procurement process improvements and updated contract templates
- ▶ Emerging digital technologies, including AI
- ▶ Engagement and collaboration with organizations like the CIC and industry partners

Red Deer Regional Hospital (RDRH)

- RDRH is exploring prefabricated interior wall partitions
- An estimated 80% of interior wall partitions will be prefabricated off-site
- Off-site manufacturing enables parallel construction, compressing timelines

Key Benefits

- ✓ Schedule acceleration
- ✓ Improved infection control
- ✓ Reduced on-site labour
- ✓ Future reconfiguration without demolition
- ✓ Integrated MEP for faster wall close-up and easier maintenance



Innovation in Action: Precast in Schools

- Increasing use of precast concrete in schools
- Over 15 current and recent school projects using precast wall panels
- Enables faster construction timelines, improved quality control, and reduced on-site labour
- Potential to expand precast applications further



Partnership Innovation: Glenridding School



- School jurisdictions are encouraged to pursue capital funding partnerships
- The new Glenridding (gr. 7–12) school integrates a municipal recreation centre facility through partnership

Barriers: Compliance Frameworks



Public infrastructure operates under strict trade agreements, legislation, and procurement frameworks to ensure fairness and transparency



These requirements can limit flexibility, slow decision-making, and make it harder to test new approaches



Innovation must work within compliance frameworks, not outside them



The Alberta / Canada regulatory environment and pace of legislative change present additional challenges

Barriers: Risk and Complexity



As stewards of public funds and public safety, we take a conservative approach to risk



Innovation requires shared risk and trust, but public-sector decisions must remain defensible and accountable



Proven ideas migrate from simpler projects to more complex ones



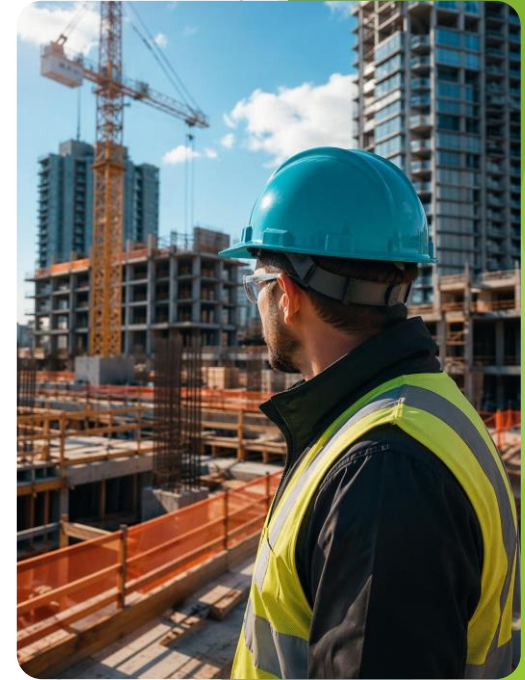
Funding is not always sufficient, readily available, or flexible



Product availability in Alberta

Moving Forward

- ▶ Innovation must clearly support core outcomes
- ▶ Need new construction and delivery methods that can scale beyond pilots
- ▶ Better understanding of options for specific project types in the Alberta market
- ▶ Identifying potential innovations earlier
- ▶ Broad public stakeholder support
- ▶ Minister's Infrastructure Awards



A Call to Collaborate



Innovation in public infrastructure is not about chasing the newest idea...

It's about working together to find solutions that deliver better outcomes for Albertans.

Questions?



