Superpowered Projects:
Accelerating Regional Broadband Programs with Intelligent Tools

Nov 12 -14, 2025 – CRRBC Kelowna BC

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Agenda

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Increased Pressure, Rising Stakes

Project Efficiency & Execution
The Importance of Innovation

Innovation Review: Decades of Change

CAD Transitioning to GIS
Public Data Resources & Data Collection
GIS evolution – Broadband Specific Toolsets
Algorithmic Design

AI Today: Practical Applications

Breakdown the Buzz – AI Models
Project Management Support – Conversational Problem Solving
Data Scrub & Validation & The Address Problem
Data Extraction from static images
API & Integrations – Coding Support

AI Tomorrow: Upcoming Gamechangers

Intelligent Data Extraction – Google Maps to Design Through Automation
Satellite Imagery & LIDAR – Assessment & Assumptions
Active Project Management Assistant

Nov 12 -14, 2025 – CRRBC – Kelowna, BC

Jason McBeath

Design & Solution Manager, Broadband

Jason is a BICSI certified Outside Plant Designer (OSP) specializing in Fiber Optic Networks, with a focus on infrastructure durability and longevity in hostile climates. He is practiced in the full life cycle of projects, including strategic planning, conceptual development, estimation and budgeting, detailed design, permitting and planning, construction oversight, and quality management. He has led efforts to develop and implement preventative maintenance programs, emergency response programs, asset management systems, and underground locate programs. Jason has participated in projects of residential, commercial, and industrial fiber-to-the-premises builds (FTTP, FTTx) and continually exercises best-practises to plan, design, deploy and operate networks of many types and sizes.

Arcadis was founded in the Netherlands in 1888 and has grown into a global industry leader through innovation, the expansion of services and a series of strategic acquisitions.

Arcadis has been working in the field of intelligent systems for over 35 years – we have been involved as technical advisors, consultants, designers, project managers, systems integrators, and operators of fiber networks across various projects within the field of ICT/Telecommunication.

North America
6,500+ staff
160+ offices

UK
20+ Offices

Europe
60+ Offices

South America
5+ Offices

Middle East
10+ Offices

Asia Pacific
40+ Offices

Worldwide
36,000+ staff
30+ countries

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Intense Project Pressures

The heat is on – almost every project is facing intense pressure to execute.

Time is everything, today's projects need to execute more rapidly than ever before or risk cancellation or failure

GET IT PLANNED

GET IT PERMITTED

GET IT BUILT

GET IT OPERATING

Inaction in Action

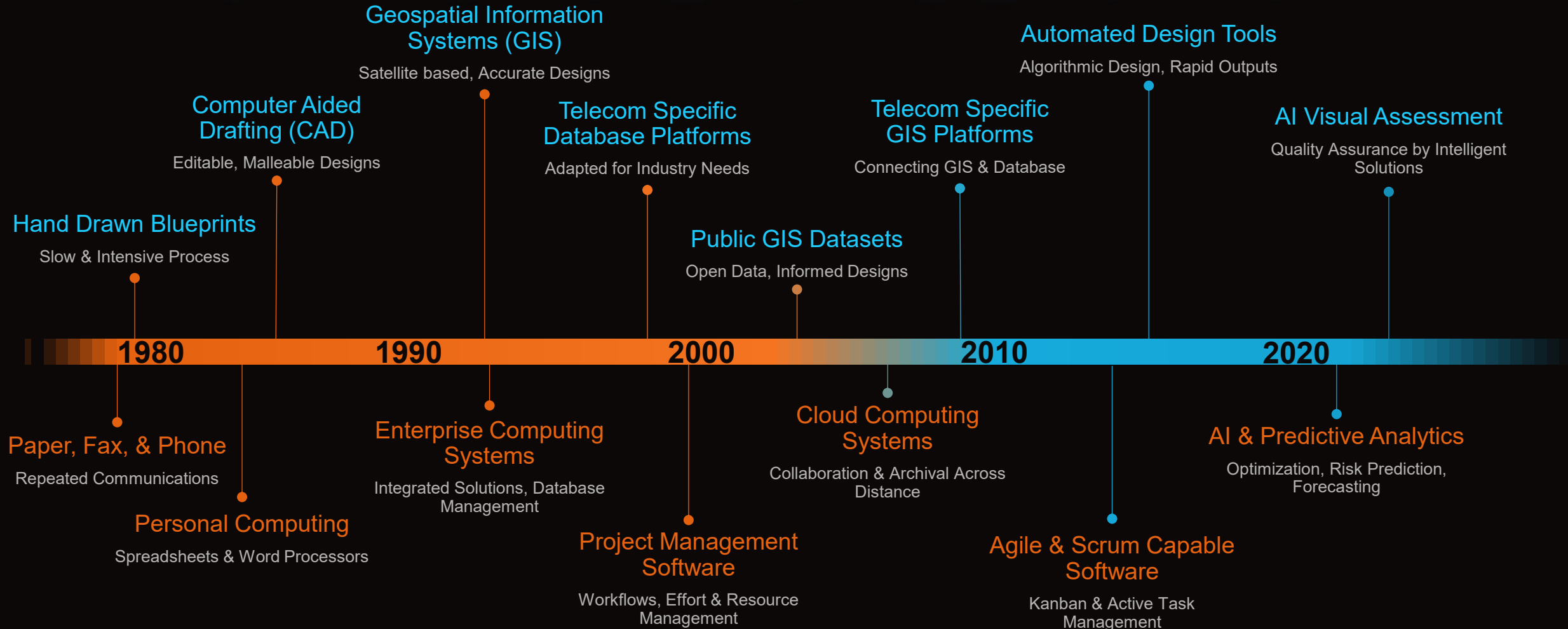The cost of indecision & delay can be substantial and often results in projects becoming unfeasible

The Importance of Innovation

"The best way to predict the future is to invent it."
— *Alan Kay*

In today's business environment, innovation isn't optional. Efficiency powers progress, but innovation fuels transformation. Together, they define the success of modern projects and organizations.

Innovation in Design & Engineering

Geospatial Information Systems (GIS)
Satellite based, Accurate Designs

Automated Design Tools
Algorithmic Design, Rapid Outputs

Computer Aided Drafting (CAD)
Editable, Malleable Designs

Telecom Specific Database Platforms
Adapted for Industry Needs

Telecom Specific GIS Platforms
Connecting GIS & Database

AI Visual Assessment
Quality Assurance by Intelligent Solutions

Hand Drawn Blueprints
Slow & Intensive Process

Public GIS Datasets
Open Data, Informed Designs

1980　　1990　　2000　　2010　　2020

Paper, Fax, & Phone
Repeated Communications

Enterprise Computing Systems
Integrated Solutions, Database Management

Cloud Computing Systems
Collaboration & Archival Across Distance

AI & Predictive Analytics
Optimization, Risk Prediction, Forecasting

Personal Computing
Spreadsheets & Word Processors

Project Management Software
Workflows, Effort & Resource Management

Agile & Scrum Capable Software
Kanban & Active Task Management

Innovation in Project Management

CAD Shift to Geospatial Systems (GIS)

- GIS allows Mass Data Analysis & Manipulation

- Geodata appeals to technical and non-technical team members alike

- CAD allows for "to scale" offsets and object drafting

- CAD requirements for permitting

- Publicly available data is commonly GIS formats

Public Availability of Data - GIS

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Widely Available Data across all levels of Government has changed how projects are planned.

Municipal

- Address Point
- Parcel / Title / Cadastral
- Right of Way & Land Use

Provincial

- Address Point
- Parcel / Title / Cadastral
- Right of Way & Land Use
- Utility
- Highway, Road, Rail
- Environment & Resource

First Nations & Federal

- ISED & National Broadband Map
- First Nation Data

Private

- Satellite
- Address
- Building Footprint
- Enhanced Address & Parcel
- Street View

Private Data Procurement May Carry Substantial Cost

Industry Specific Software
GIS Built for Broadband Challenges

Connectivity of Strands & Ports, Circuit Tracing & Network Equipment Mapping all expand the capability of the software and users.

This allows for a very detailed digital recreation of the network, a **digital twin**

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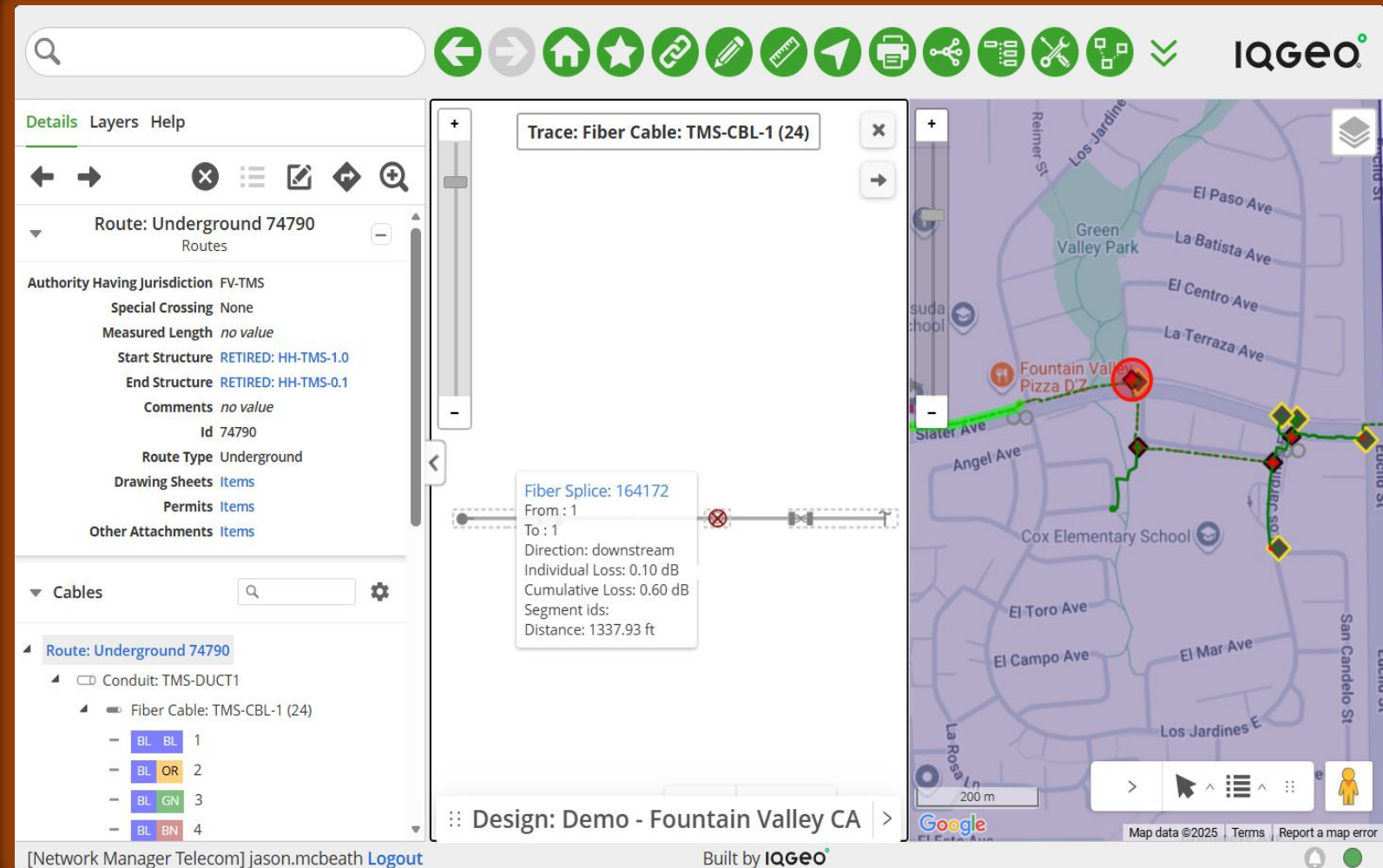
Industry Specific Software
Algorithmic Automated Design

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Software that uses user-defined rules and tests them repeatedly against the data model until it finds the right option.

Rapid Conceptual Designs which can be re-ran efficiently to explore options to produce early **budgetary figures**

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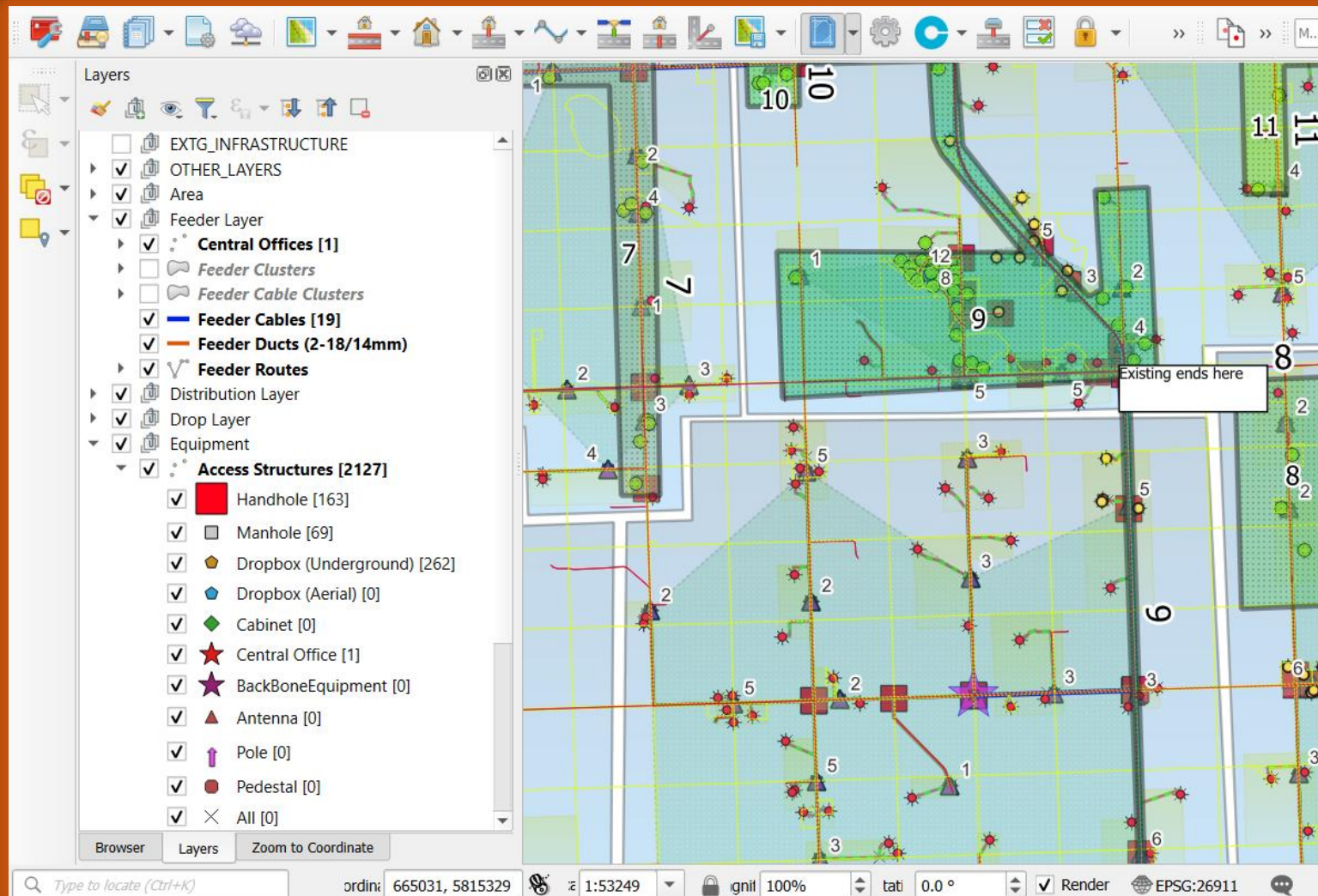
Enter Artificial Intelligence (AI)

Quick Recap of most common AI Models

- **Large Language Models (LLM)** — a type of artificial intelligence trained to understand and generate human-like text based on patterns in vast amounts of data.

- **Agentic AI** — a type of artificial intelligence designed to autonomously plan, decide, and act toward achieving complex goals by breaking them into smaller tasks, executing them in sequence or in parallel, and adapting based on feedback or changing conditions.

**Early agentic models are available now
Wide adoption expected in 2026 & 2027**

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Ideas are Compounding Exponentially
AI tools have changed what individuals can produce.

- Ideas are converting to reality faster than ever
- The time between idea and production is shrinking
- Subject Matter Experts are producing more
- Automation is handling repetitive and simple tasks
- Analytics and forecasting occur more often
- Data driven insights are driving better decisions

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Caution - AI is far from Perfect

Inaccuracies are constant, AI does not currently produce deliverable content

- Scrutinize Every Output
- Treat AI like a helpful employee, *but one that loves to lie and might be stealing office supplies*
- Develop process to use the tools properly and stick with them

It's time to use AI Tools, but use them wisely

Inaction in Action

The cost of indecision & delay can be substantial and often results in projects becoming unfeasible

AI in Project Management

- Automate meeting notes, status reports, and email drafts
- Summarize project updates, risks, and team performance trends
- Translate technical language for stakeholders and global teams
- Generate agendas, action items, and follow-up tasks
- Search and summarize project documentation or policies
- Support onboarding with AI-generated guides and FAQs
- Integration with tools like Microsoft Copilot, Jira, Notion, and Trello

Enable natural language interaction with project data and tools

Integrating Systems using API's
Coding API's using AI tools

- Extend capabilities of coders by increasing efficiency
- Code quickly, troubleshoot errors, simplify code
- Integrations can occur earlier in project lifecycle

Evolving Data & Evolving Tools

Consolidation to Single Source of Truth

Data Type Quality (vertical axis)

Non-Interactive Data

Pictures/ Scans of Drawings	PDF Drawing
Hand-Drawn Drawings	Test Records
Hand-Written Notes	Field Photos
Anecdotal/ Verbal Information	Field Markups/ As-Builts

Interactive Data

Spreadsheets		GIS Format (GPKG)
Logical Diagram Files		GIS Format (SHP)
Digital Graphics	CAD Format DWG	Google Map Format (KML)

Relational Interactive Data

OSS/BSS Database Records	Asset Database Records

Data Functionality, Serviceability and Useability

AI Tools – Practical Use

Data Type Quality

Field Data Collection

Non-Interactive Data

Visual Data Extraction

Verbal to Data Conversion

Database Validation & Cleanup

Interactive Data

Pictures/ Scans of Drawings	PDF Drawing
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Spreadsheets		GIS Format (GPKG)
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Relational Interactive Data

| OSS/BSS Database Records | Asset Database Records |

Data Functionality, Serviceability and Useability

The Address Problem

- Address Data is complex and full of errors, no matter the data source.

- Different project stages require different things from address datasets

- Correlation & Reconciliation of Addresses is difficult and has to occur often

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I. **Find the best quality data set for addresses**

II. **Create your project specific address datasets**

    I. Concept Design & Budgeting

    II. Public Outreach & Marketing

    III. Operations & Service Delivery

III. Create a unique ID

IV. Integrate Tables

V. Manually Reconcile

Integrate AI Model between Data Tables to Run Validation
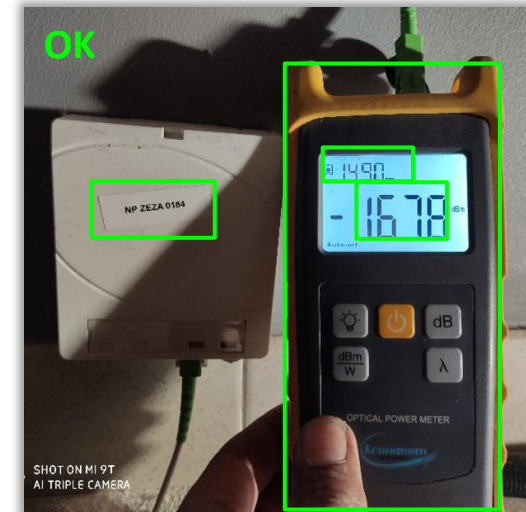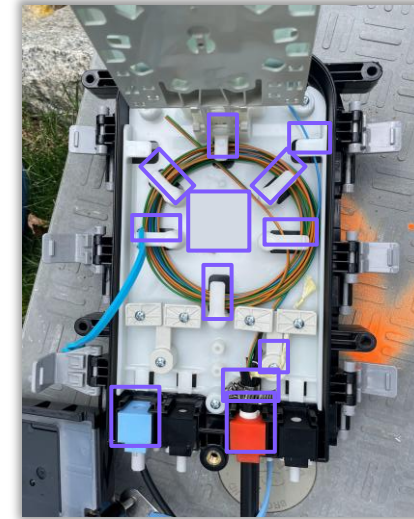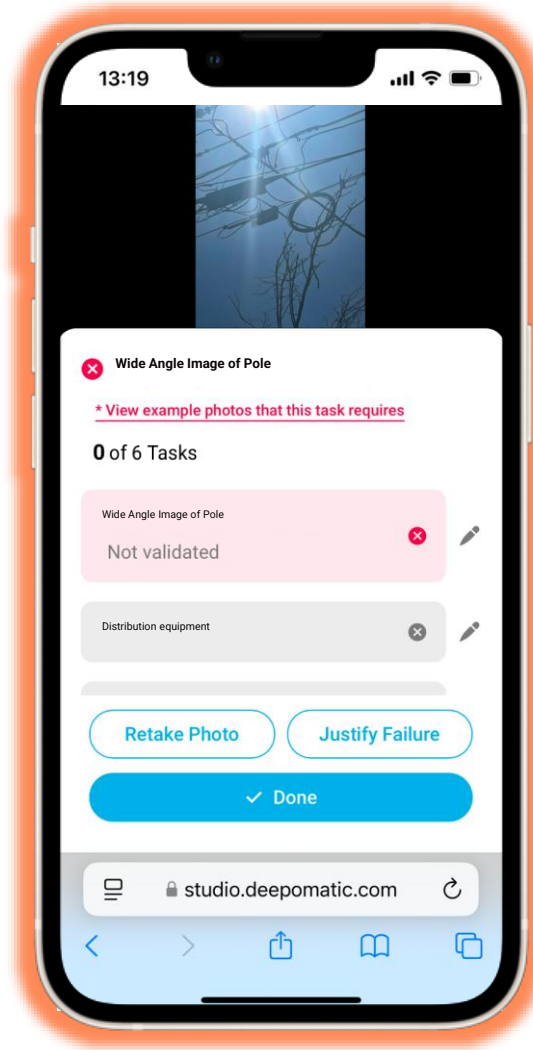
Gamechangers on the Horizon
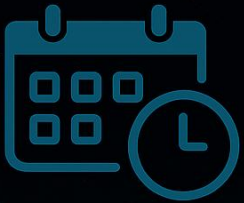## Upcoming Innovation in Telecom AI
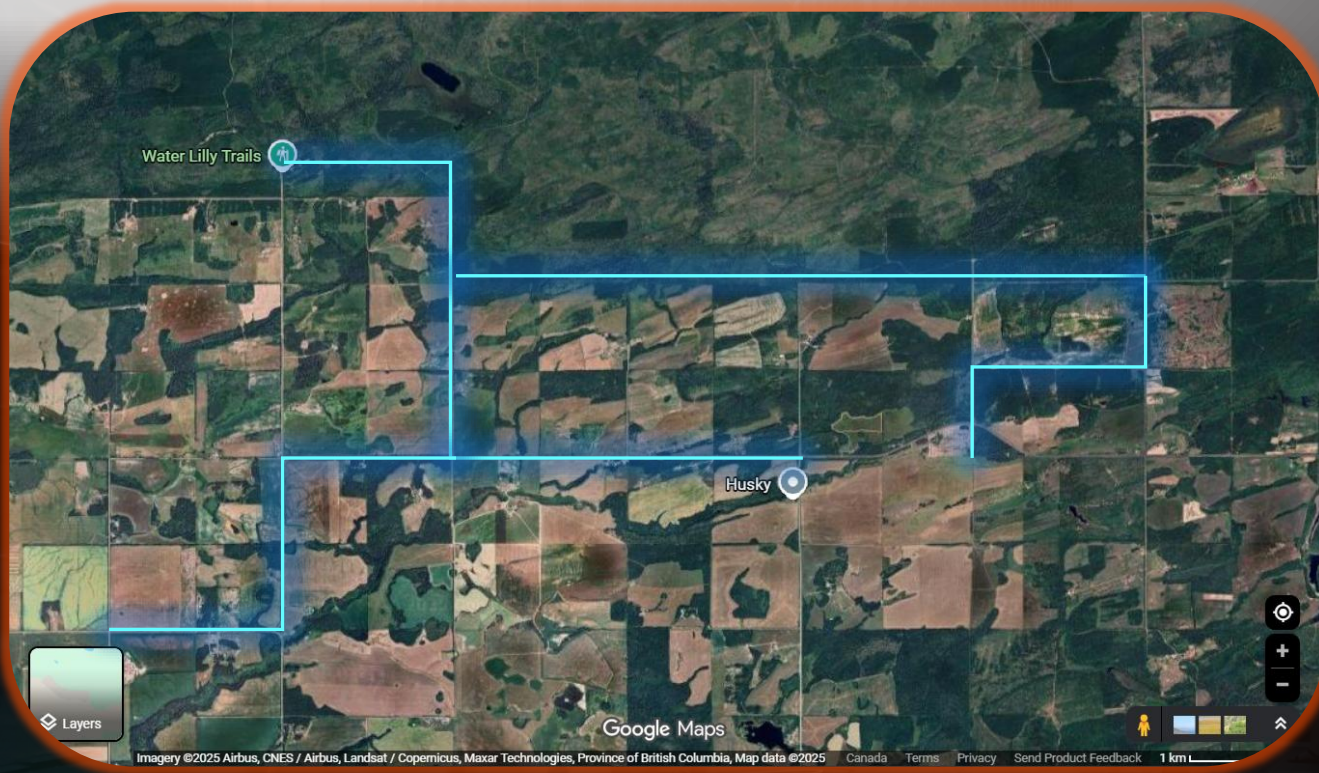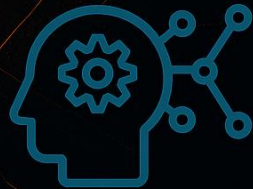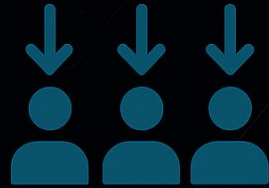
Intelligent Design
Moving Past Algorithmic Design

- **Normal Language Instruction**
- **Intelligence Driven Design instead of testing options until they work**
- **Accurate Budgeting**
- **Closer to Detailed Design Faster**

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Woven Services

Woven seeks to provide specific or a comprehensive suite of services for any subscriber, service provider, network owner, or network operator to facilitate all aspects of network development. Services include consultation on strategy and infrastructure assessment, business case development, design and program management in addition to providing complete control of all network management and administration.
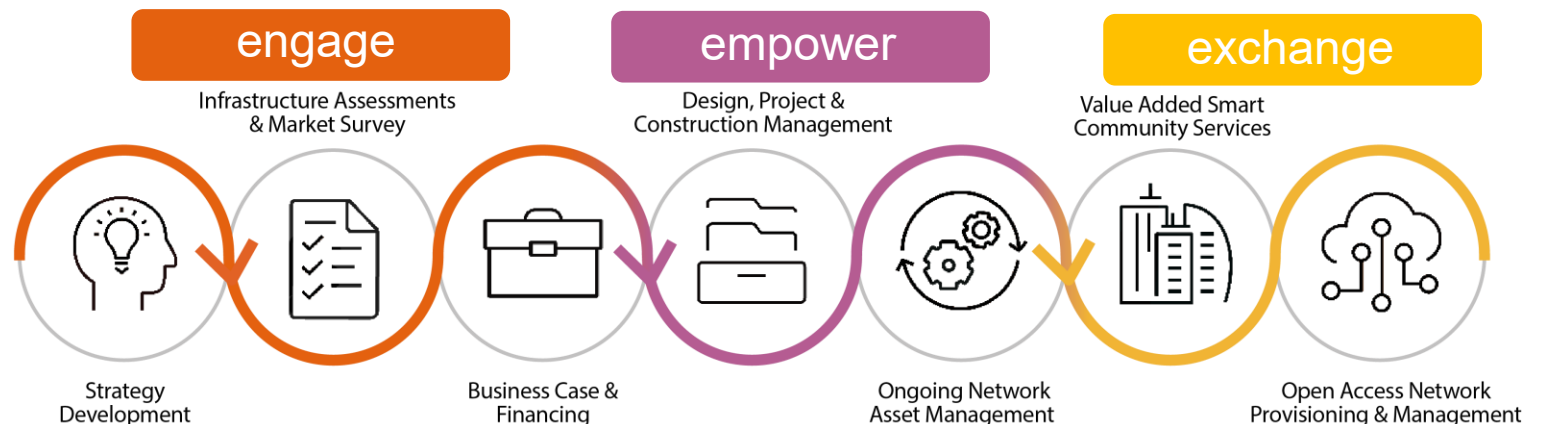
engage is the communication, marketing, digital education, and community consultation designed to drive and assess network demand.

empower is a complete asset management solution which begins at the construction phase and empowers network operators by allowing complete control of network facilitation and administration.

exchange is the customer marketplace, workflow engine, and meet-me-point for networks and service providers.

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engage
Infrastructure Assessments & Market Survey

empower
Design, Project & Construction Management

exchange
Value Added Smart Community Services

Strategy Development

Business Case & Financing

Ongoing Network Asset Management

Open Access Network Provisioning & Management