

# Artificial Intelligence in Environmental Projects

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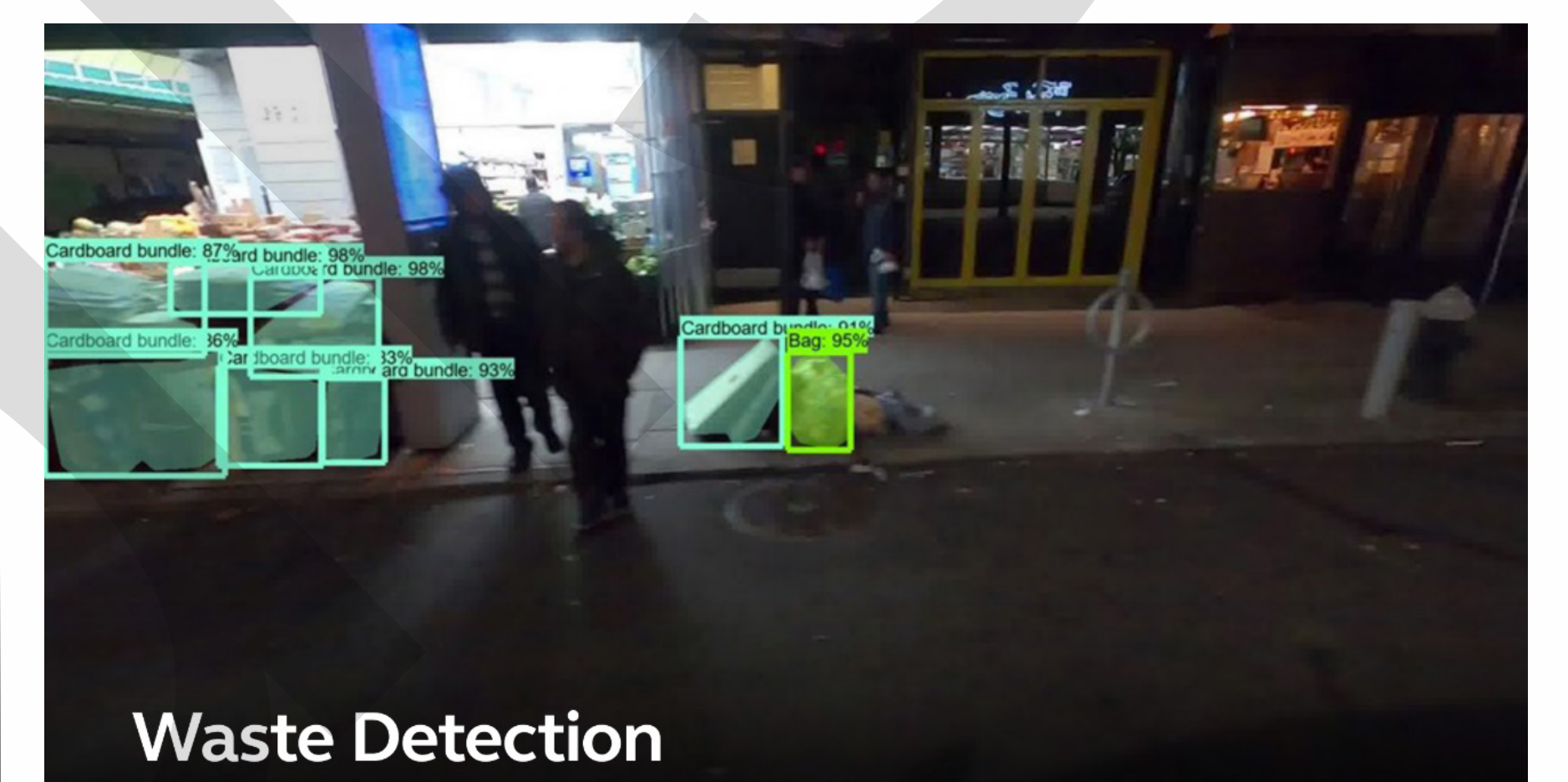
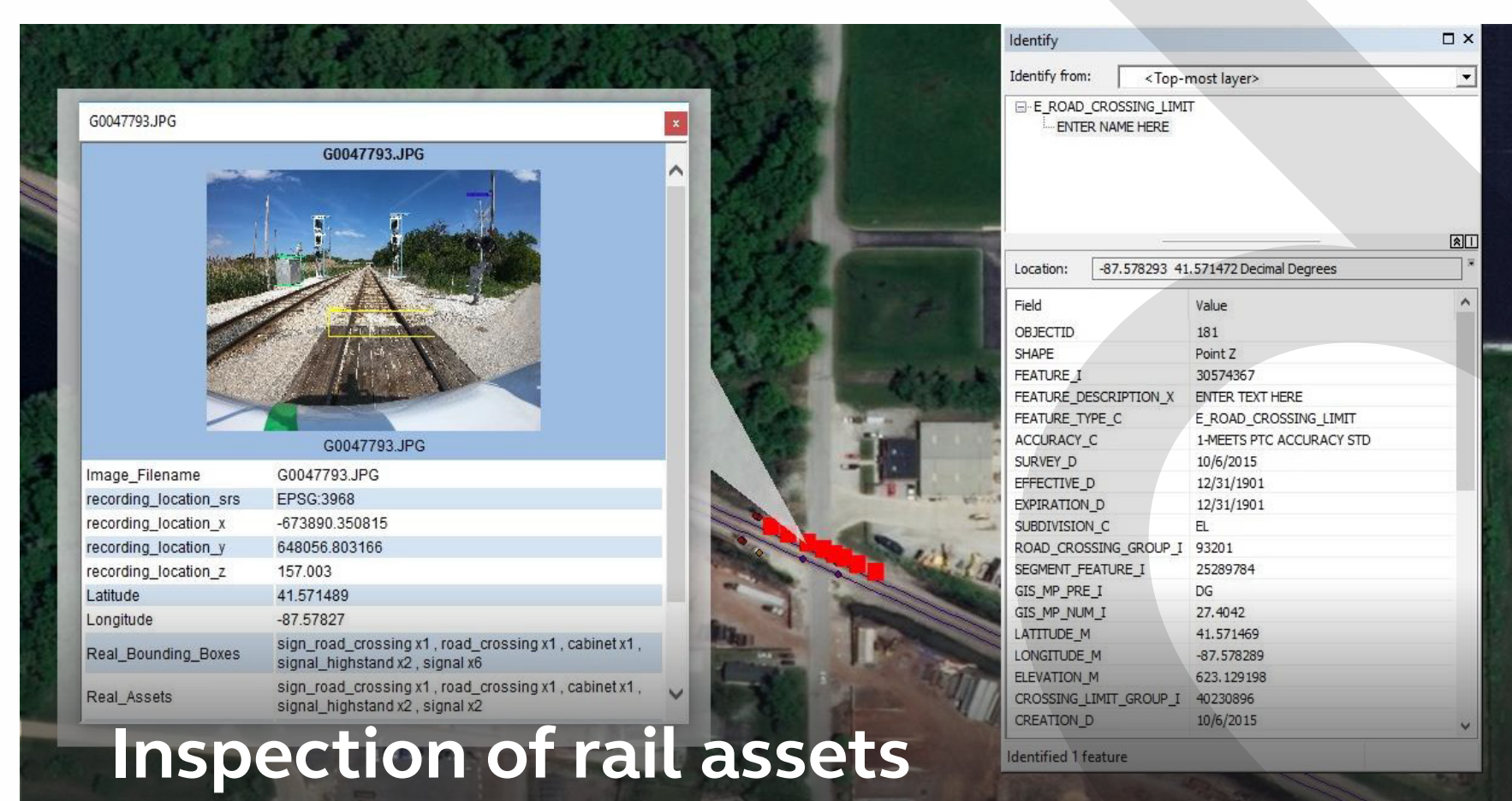
## Introduction

Artificial Intelligence (AI) holds significant promise for improving efficiency and creativity in addressing complex challenges of our industry. Arcadis emphasizes a cautious and innovative approach, integrating AI within a robust framework to ensure responsible and impactful outcomes.

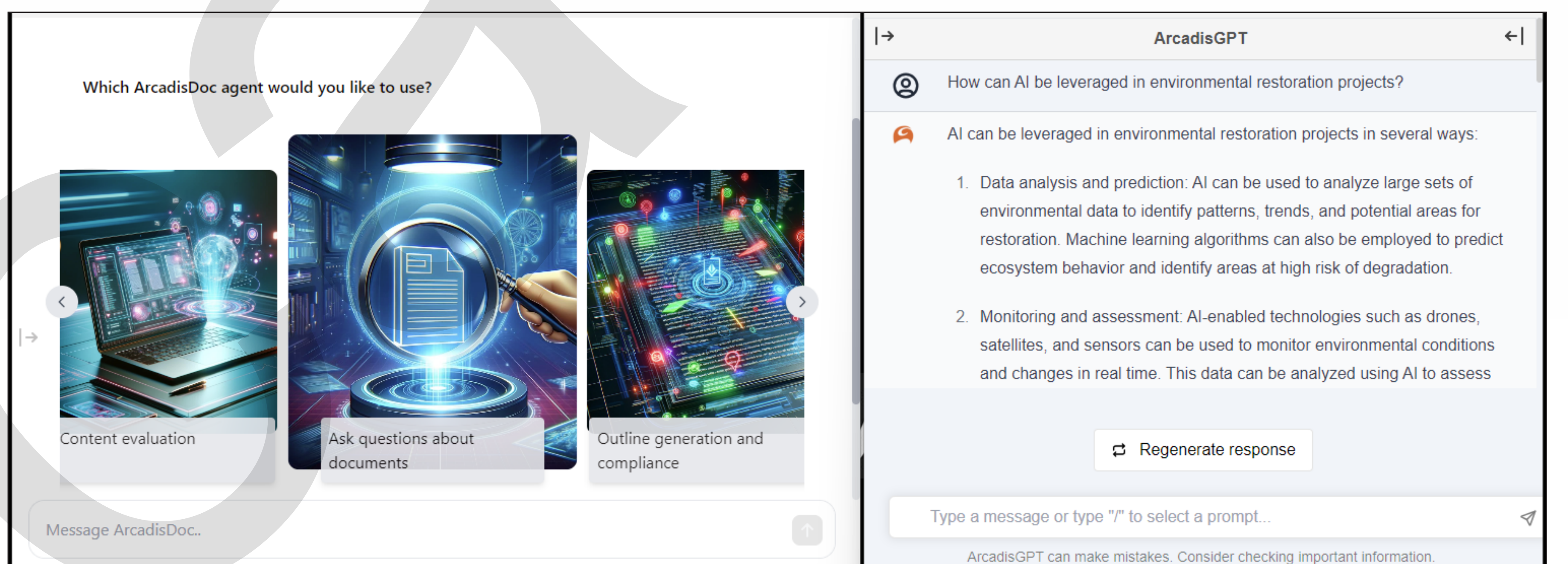
Embracing AI technologies and responsible usage aligns with Arcadis' proactive stance, positioning the organization to deliver enhanced value to clients and drive increased efficiency and creativity in all our projects.

## Terminologies

- **AI (Artificial Intelligence):** Systems that simulate human intelligence, executing tasks with algorithms and data.
- **ML (Machine Learning):** Training computers to learn from data for decision-making without being explicitly programmed.
- **Predictive AI:** Analyzes past data to forecast future events or behaviors using machine learning.
- **Computer Vision:** Processes and interprets visual data from images or videos to extract information.
- **LLMs (Large Language Models):** Deep learning models trained on extensive text data to produce human-like text responses.
- **Generative AI:** Uses neural networks to create new, original content by recognizing data patterns.
- **Responsible AI:** Arcadis is committed to developing, deploying, and using solutions leveraging AI responsibly. This involves ethical, transparent, and fair development and use of AI to ensure safety and alignment with human values.



**Arcadis' Intelligent Asset Insights (IAI)** uses computer vision to detect, inspect and classify objects. Potential use cases in environmental projects are, amongst others: Drone or satellite imagery analysis, Site safety inspections



**ArcadisDoc and ArcadisGPT** are applications to create content and analyze documents using Generative AI

## Looking ahead: Arcadis and AI in the environmental space

- **Emphasis on leveraging strengths, digital innovation, and expertise**
- **Short-term goals:**
  - Improve efficiency in remediation design, safety, and compliance
  - Enhance access to historical data
  - Develop image processing capabilities for hazard recognition and risk management
- **Long-term vision:**
  - Create foundational elements for remediation system design and hazard reduction
  - Provide remediation solution suggestions
  - Develop financial planning and portfolio management tools
  - Utilize AI across the entire project lifecycle of restoration projects:
    - Analyze historical data for contamination trends
    - Create detailed site models integrating diverse data sources
    - Identify data gaps for prioritization
    - Generate investigation proposals based on risk and data assessment
    - Automate investigation execution with real-time data analysis
    - Adapt models with real-time data for accurate representation
    - Propose optimal restoration strategies through simulation
    - Assist in remediation activity execution and monitoring for optimization
    - Evaluate outcomes and generate comprehensive reports
- **Challenges to address:**
  - Lack of high-quality guidance and information for AI training
  - Difficulty in differentiating between credible and outdated sources
  - Misalignment of interpolated information with professional judgment
  - Need for professional interpretation to understand site variations



### Content Creation

- Summarize regulatory changes
- Executive summary

### Data Generation

- Create schedule changes
- Monthly progress reports

### Strategy Generation

- End state strategy
- Remedial technology selection



### Technical Enablement

- Write code and program
- Enable people to do these things faster

### Learning & Development

- Explain concepts at varying levels of complexity or simplicity

### Identify Trends & Comparisons

- Evaluate system performance
- Anticipate site closure

## Did you Know?

Gartner forecasts that **95% of workers** will be using AI for task completion by 2024, AI will generate **efficiency gains of 40%** and can exceed human capabilities on specific tasks.

World Economic Forum anticipates an **increase of 13%** in total employment opportunities.