digitalAECOM

Achieving New Insights in Environmental Management and Infrastructure Planning

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digitalAECOM Solutions

1. InSite
2. PlanEngage
3. PipeInsights
4. AVReadi
in.site
A smarter approach to site evaluation
3 Modules | 3 Use Cases

Welcome.

inSite is a geo-planning tool designed to identify suitable sites for development based on a multi-criteria analysis process. The tool performs a screening analysis to identify suitable locations based on a scoring system, and operates on regional and local scales.

1. Explore Data
2. Screen Regional
3. Screen Local
Explore Data

“I just want to see the data.”

1. Select your region of interest
2. Select the variable you are interested in
3. View map and table
Screen Regional

Workflow:

"I have a region in mind and want to scan it for suitable locations."

a. Select your region or upload your own candidate points

b. Configure your screening criteria and weights

c. GO
“I have a region in mind and want to scan it for suitable locations.”

Select locations to compare and view infographics
"I have a region in mind and want to scan it for suitable locations."

Workflow:

1. **Select area of interest**
2. **Configure your screening criteria and weights**
3. **GO**

- Upload boundary shape
  - Upload geoJSON
- Or, draw on the map
- Or, drill down from previous step

Configure Criteria:

- Site Factors and Constraints
  - Parcel Size
  - Topography
  - Flood Plains
- Utility Infrastructure
- Risks

**a**

**b**

**c**
"I have a region in mind and want to scan it for suitable locations."

Select locations to compare and view infographics and StreetView.
Better communication, improved outcomes
CHALLENGE – NEPA Planning and Permitting

Traditional paper- and .pdf-based approach

With different systems and processes, preparation of material can be delayed in a linear workflow

1. Preparing reports involves huge amounts of information from different partner agencies to be collected and compiled which can be complex and time consuming.

2. Without a consistent approach submissions can be delayed while content is agreed and collated in a linear workflow.

3. Navigating the information and assessing content can result in delays especially if stakeholder organizations are understaffed.

Complex report material can increase review time and reduce engagement and inclusion

4. Reports are often presented as multiple printed documents or PDF’s that are difficult to disseminate.

5. Increased demand for public input can result in complex consultation programs but may not provide the inclusivity needed for quality engagement.

Managing the approvals process can become difficult to manage with ineffective communication

6. Resolving conflicts between different agencies and stakeholders can be convoluted and time consuming and may result in repeating the process.

7. Collecting and responding to feedback from different stakeholders and communication channels can be complex.

8. Public consultations can result in issues that need to be addressed delaying the approval process.
Average time for an EIS is currently 3.5 to 4 years

Deliver EISs in 2 Years with Cloud-Based, Interactive NEPA Documents
SOLUTION – NEPA Planning and Permitting with PlanEngage

Present information clearly and transparently to increase high-quality engagement

1. Cloud-based tools ensure a unified approach across different agencies that is versatile and quick to deploy.

2. Collaboration across agencies occurs in real-time using advanced features enabling information to be shared, verified, and combined more efficiently.

3. Digital workflows mean information is developed and verified for submission concurrently. Verifiable timelines for development are transparent and consistent.

4. Stakeholders get access to live information using an accessible and versatile digital platform—meeting the true spirit of community engagement requirements.

5. Stakeholders enjoy quick access to high-fidelity information with a level of detail that enables better informed decisions. In-person consultation events are more focused and tailored to community needs.

6. Information is accessible anywhere, instantly translatable to any language, and visually appealing across a variety of digital devices, enhancing inclusion and encouraging positive public engagement.

7. Stakeholders provide specific, direct feedback on project elements, and raise questions using intuitive tools, reducing confusion and among reviewers seeking to include community input in project design.

8. Issues and questions can be resolved in real-time with a multi-agency approach avoiding delays and reducing objections down the line.

9. Progress is monitored and tracked from initial concepts through to final decisions, providing a clear record of agency and community consultation.

Collaborate, prepare and update information in real-time using cloud based tools in less time.

Respond to conflicts quickly and speed up the approvals process.
Case study

The Federal Highway Administration and ADOT publish the first fully interactive digital transportation Environmental Impact Statement (EIS) in the U.S. with the help of PlanEngage™

"The interactive EIS was a first for ADOT [Arizona Department of Transportation] and the State of Arizona, and it was a huge accomplishment for the I-11 study team. It allowed ADOT and FHWA to explore a virtual method for public involvement while providing tools to help the public fully understand the final Tier 1 Environmental Impact Statement document. The success of the interactive EIS and the number of views it has received has clearly demonstrated its value to ADOT and the necessity to implement this kind of interactive tool for other studies."

Steven Olmsted, Arizona Department of Transportation Program Delivery Manager

- WHY PLANENGAGE
  Rather than producing their usual PDF output for the Interstate 1-11 project Tier 1 Environmental Impact Statement (EIS), Arizona DOT used the PlanEngage platform to produce a digital and interactive online format that proved a game-changer for accessibility, providing easy access for all stakeholders from any device and at any time. Community members could clearly understand how the project would impact them by using intuitive tools like interactive maps where users could change views and toggle between GIS layers to view the information that was most relevant to them.

- THE RESULT
  The Federal Highway Administration and Arizona DOT published the first fully interactive transportation Environmental Impact Statement (EIS) in the U.S. Regulatory agencies and the local community were able to gain deeper project understanding, demonstrated by 3,000 views of the digital EIS. The PlanEngage platform facilitated a broader, more inclusive audience than a traditional EIS. Arizona DOT also set the bar for industry transformation and was recognized by the Environmental Business Journal as an award recipient for the 1st U.S. Digital Interactive Tier-1 Environmental Impact Statement (EIS).
Improve the speed and accuracy of sewer inspection programs
CHALLENGE – condition assessment of subsurface pipe networks and CIP development

Reviewing and evaluating CCTV data for thousands of miles of pipe is time-consuming and inefficient
SOLUTION – Consistent, accurate, streamlined condition assessment and rehabilitation planning with PipeInsights

Improves accuracy, speed and efficiency of sewer inspection programs

Artificial Intelligence (AI) for:

- Validation: assesses accuracy of coding
- Detection: uncoded pipe or missed codes

GIS-enabled cloud-based service on Azure

- Store inspections and access them anywhere
- Quickly view inspection history and diagnose problems
- GIS interface to quickly locate inspections
- No software to install or maintain

Implements a GIS-enabled cloud-based service on Azure with a seamless solution for engineering and construction professionals.
AV-Readi™
Process and Tool Overview
Automated Bus Consortium (ABC)

- AECOM-developed
- Participation by 22 transit agencies
- First-ever ADS performance specification
- RFP released Jan 2022
Example AV-Readi™ Results

Index Score: 3.51/10 (Low-Medium)

Complexity Distribution by Length
Dedicated Lane Scenario Results Using AV-Readi™

Existing

Dedicated Lane Scenario
AV-Readi™ ~6,000 Miles Analyzed

Roadways Analyzed
- Highways
- Rural
- Urban
- Suburban
- Campuses
- Airports

Complexity Maps
AV-Readi GIS Methodology and Automation

GIS Concepts
Network Analysis
LRS Polyline Segmentation
LRS Point Segmentation
AV-Readi Dashboard

AV-Readi Complexity Evaluation
Scenario Based Modifications
Vendor Specific ODD Descriptions
Vendor Specific Complexity Values
AV-Readi™ Roadway Complexity Evaluation

Scenario-based Modifications
- Identify Roadway Network
  - Import
  - Segment
  - Intersection Type and Movement
  - Merges
  - Dedicated Lane

Vendor-specific ODD Descriptions
- Assign Primary Behaviors
  - Straight Travel
  - Speed
  - Density
  - Ambiguous Rules
  - Weather
  - Vulnerable Road Users

Vendor-specific Difficulty Values
- Apply Complexity Modifiers
  - Scale 1-10
  - Low
  - Medium
  - Medium-high
  - High

Calculate Index Score (0-10)
- Present Results
  - Geospatial Dashboard

Delivering a better world
AV-Readi Network Analysis

Network Analysis Route
AECOM AGOL hosted by ESRI
Route – Shortest Distance
Stops – Used to create route provided by the client

LRS Lane Specific Result
Single LRS Route
Single LRS Route Result = AV Readi Input
Route to be Segmented
AV-Readi Polyline Segmentation Automation

Raw Data
Roadway Inventory from DOT
Attribution Field – Highway Name
Highway Name – Inverse Query – Cross St

This example:
TxDOT Roadway Inventory
Attribution Field = HWY
HWY = US0281

Inverse Highway Query
AV-Readi Polyline Segmentation Automation

- Buffer Analysis – Cross Streets
- Clip Analysis – Main Route
- Erase Analysis – Main Route
- Append Segmentation Results – Complexity Evaluations and Algorithms Proceed
AV-Readi Point Location Automation – Bus Stop Example

1. XY Table To Point
2. Snap Analysis
3. Locate Feature Along Route - LRS
4. Update Cursor – Adjust M Values
5. Make Route Event Layer - LRS
6. Split Line at Point – Select by Location
AV-Readi™ Dashboard Demo
THANK YOU
Kristi Teykl and Corby Schaub