JOINT FLORIDA
Model Task Force & Transportation
Data and Analytics Workshop

FTO FORECASTING & TRENDS OFFICE
FDOT TDA TRANSPORTATION DATA & ANALYTICS

Integrated Roadway Asset Identification System (IRAIS)

The facts about the next-gen LRS and Road Inventory System

Topics for Discussion

- Defining IRAIS
  - What it is (and what it is not)
- Knowledge Of & Interest In IRAIS
  - An analysis of your survey responses
- IRAIS Within the FDOT Enterprise
  - How it fits with other systems
- Benefits of IRAIS
  - COTS software, refined data model & processes, current tasks
- Next Steps for IRAIS
  - Schedule, upcoming activities, how to remain involved

IRAIS Defined

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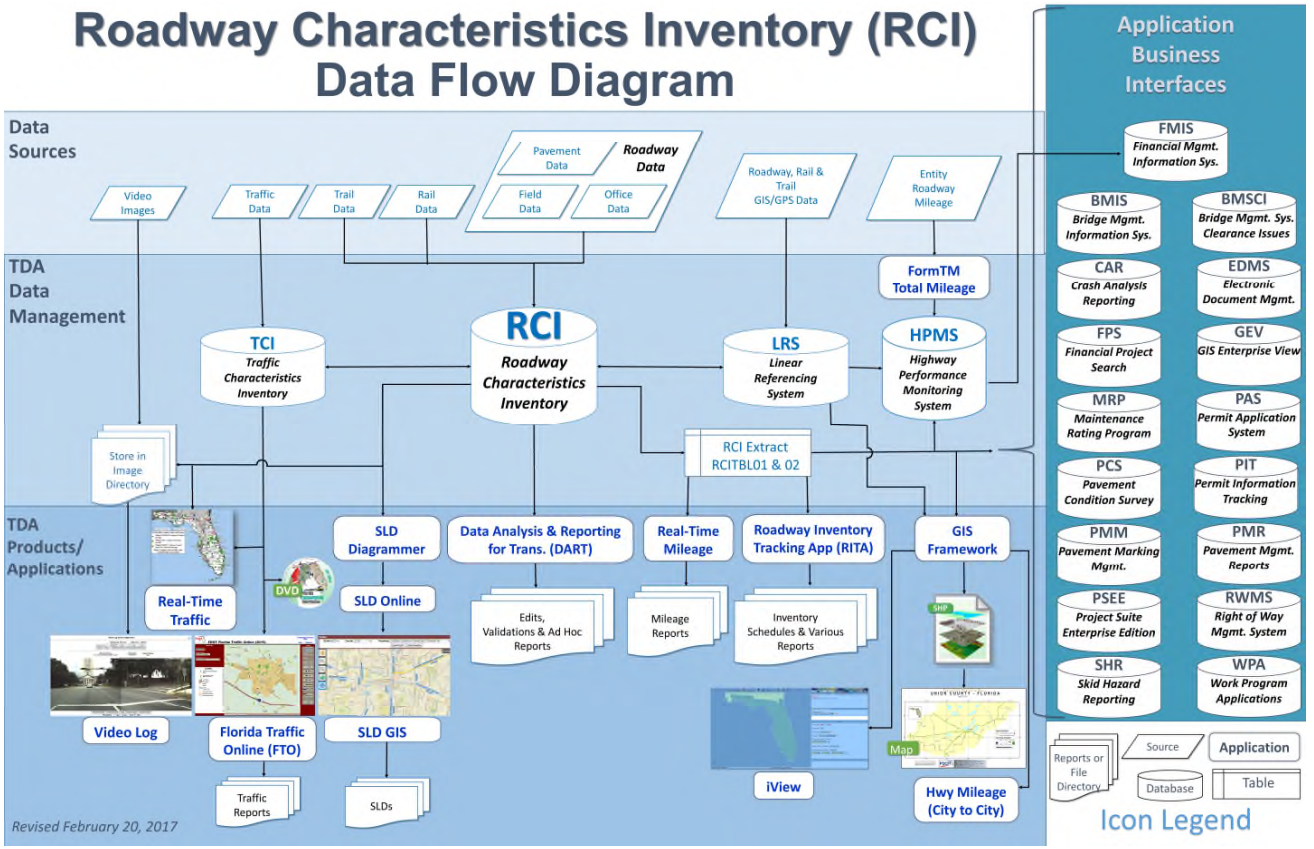
IRAIS Project Business Case

FDOT desires to improve business functions, increase processing efficiency, enable GIS data management workflows and provide reliable, accurate and consistent delivery of information to support data driven decision-making of FDOT's roadway data and assets.

In order to become technologically capable, scalable, functionally efficient, and to continue to meet state and federal reporting and accountability requirements, the Florida Department of Transportation (FDOT) requires replacement of the Roadway Characteristics Inventory (RCI) and its related systems that function as a roadway and asset database information tracking system. RCI is considered an enterprise business system and a core platform.

https://fldot.sharepoint.com/sites/FDOT-OIS/Projects/externalprojects/IRAIS/SitePages/Home.aspx

Defining IRAIS



Defining IRAIS Business Risks

- More location data needs required of a
  collection methods
- Increased data collection needs increas
- Legacy architecture technology and hig
- High integration of legacy system with
- Faster data access requirements
- Multiple systems of truth and accuracy
- Inconsistent data collection standards b
- Complex learning curve and understand
- Agency-wide workforce communicatio
  turnover

Defining IRAIS

- IRAIS supports the incremental replacement of the RCI program, existing LRS compilation procedures, related technical architecture, and applicable business processes.

- IRAIS includes the implementation of Esri Roads & Highways as a configurable COTS product to support LRS and road inventory data maintenance.

- **I** - Incremental replacement of RCI
- **R** - Refactoring of existing workflows and business processes
- **A** - Architecture redesign of roadway data model for more potential data inclusion
- **I** - Integration with existing systems and provision of data products to utilize data in innovative ways
- **S** - System of record for all LRS and core road inventory information, and system of reference for location of other roadway data and assets (e.g., crashes, traffic, projects, etc.)

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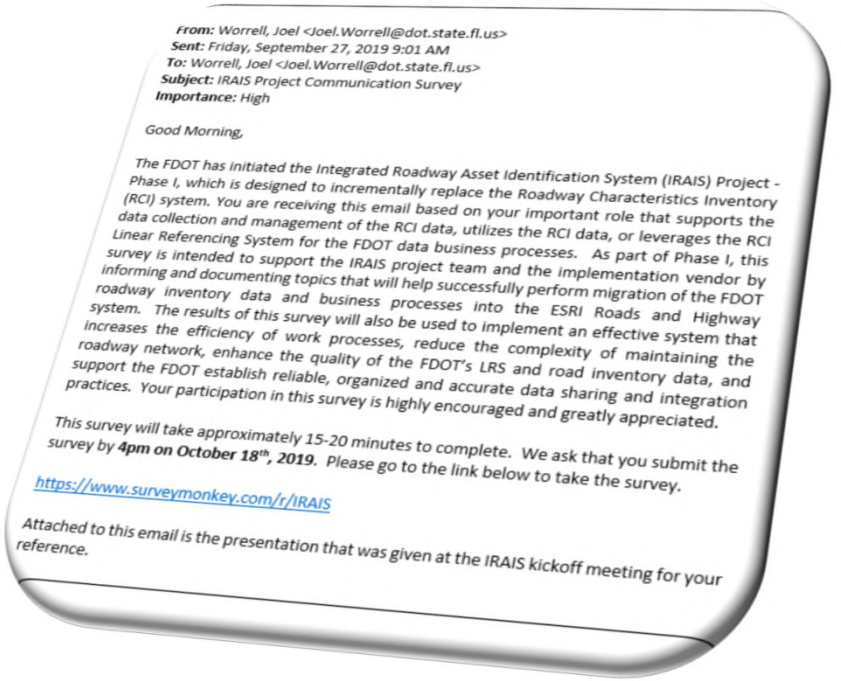
What IRAIS is and what it is *not*

- **IS**
  - System for data maintenance
  - System for location referencing
  - Transactional database
  - Configurable COTS software
  - New roadway data model
  - Enhanced workflows & processes
- **IS *NOT***
  - System for data collection
  - System for standardized reporting
  - Publication database
  - Custom application
  - Retrofit into existing dataset
  - Business as usual

Knowledge Of & Interest In IRAIS

Survey Questions

- In the Fall, a survey was conducted to solicit stakeholder thoughts, ideas, and questions about IRAIS
- Focus of the survey was on the RCI and LRS data and corresponding business processes to maintain the data
- An effort was made to identify a selection of users who collect, maintain, analyze, and make decisions with RCI and LRS data
- Survey was made available via Survey Monkey



From: Worrell, Joel <Joel.Worrell@dot.state.fl.us>
Sent: Friday, September 27, 2019 9:01 AM
To: Worrell, Joel <Joel.Worrell@dot.state.fl.us>
Subject: IRAIS Project Communication Survey
Importance: High

Good Morning,

The FDOT has initiated the Integrated Roadway Asset Identification System (IRAIS) Project - Phase I, which is designed to incrementally replace the Roadway Characteristics Inventory (RCI) system. You are receiving this email based on your important role that supports the data collection and management of the RCI data, utilizes the RCI data, or leverages the RCI Linear Referencing System for the FDOT data business processes. As part of Phase I, this survey is intended to support the IRAIS project team and the implementation vendor by informing and documenting topics that will help successfully perform migration of the FDOT roadway inventory data and business processes into the ESRI Roads and Highway system. The results of this survey will also be used to implement an effective system that increases the efficiency of work processes, reduce the complexity of maintaining the roadway network, enhance the quality of the FDOT's LRS and road inventory data, and support the FDOT establish reliable, organized and accurate data sharing and integration practices. Your participation in this survey is highly encouraged and greatly appreciated.

This survey will take approximately 15-20 minutes to complete. We ask that you submit the survey by **4pm on October 18th, 2019**. Please go to the link below to take the survey.

https://www.surveymonkey.com/r/IRAIS

Attached to this email is the presentation that was given at the IRAIS kickoff meeting for your reference.

Survey Results – The Numbers

180 Survey Recipients
120 Survey Responses

4 Out Of **5** Respondents were FDOT employees

About 9 out of 10 respondents recognize that IRAIS business process changes may be beneficial

75% Of respondents acknowledge that a change in how the route **milepoints are calculated** may significantly impact their work

***90%** of respondents realize persisting a historical log of LRS & RCI edits would benefit business processes*

3/5 Respondents would like to be regularly or heavily **engaged with IRAIS**

Project Themes & Questions

- Stakeholders have shown a substantial interest in the IRAIS project
- Stakeholder interest is evident from both an enterprise system perspective and an end-user data input viewpoint
- Additional communication with stakeholders is needed to maintain their interest and solicit their continued support of the project
- Efforts to communicate information and help address and/or resolve stakeholder questions should continue

- What communication mechanisms are available to provide updates to stakeholders with the correct amount of information?
- What types of data reporting / data querying / data analysis / data visualization tools are needed?
- When should the project communicate any potential changes to the Roadway ID and milepoint determinations with other enterprise systems?
- How best to engage stakeholders to demonstrate the usability and the user interface of R&H?

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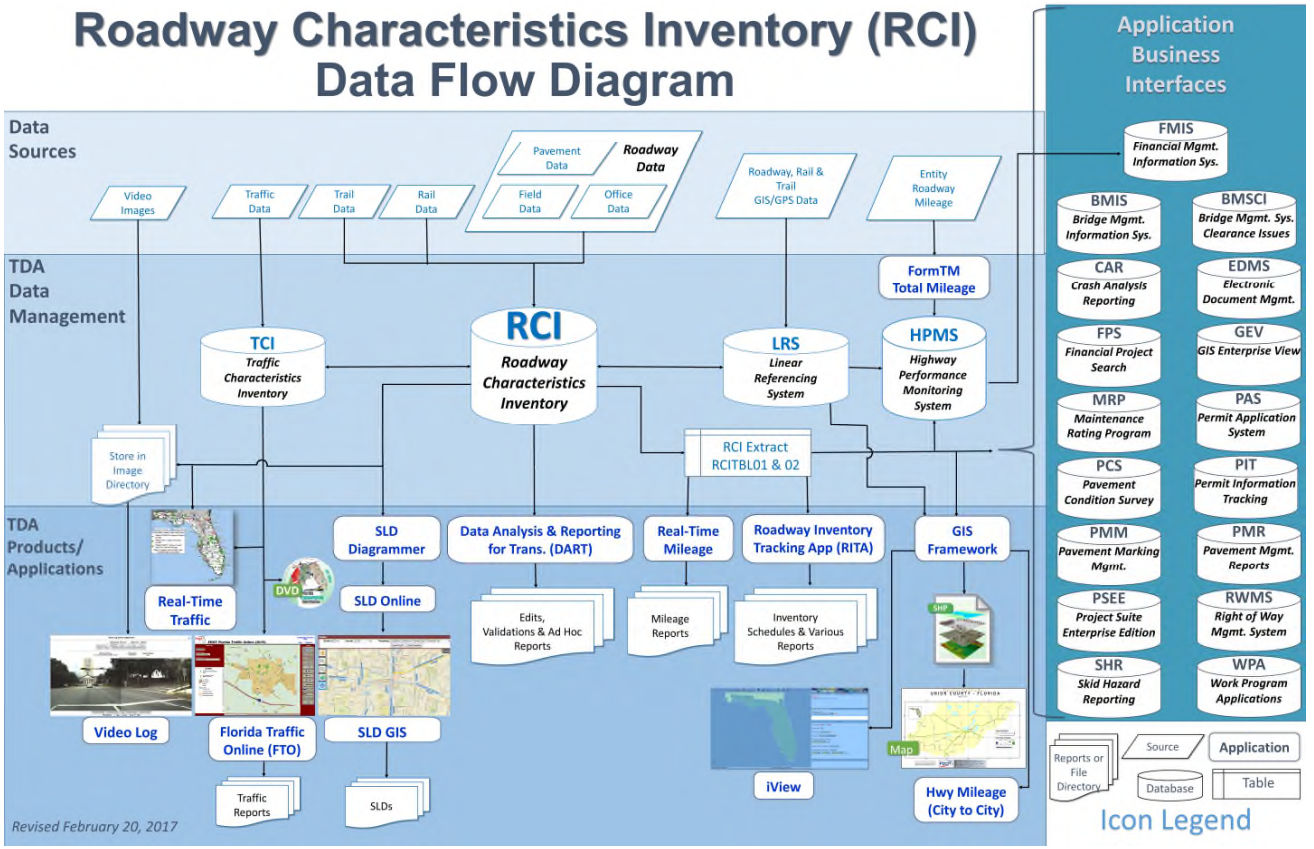
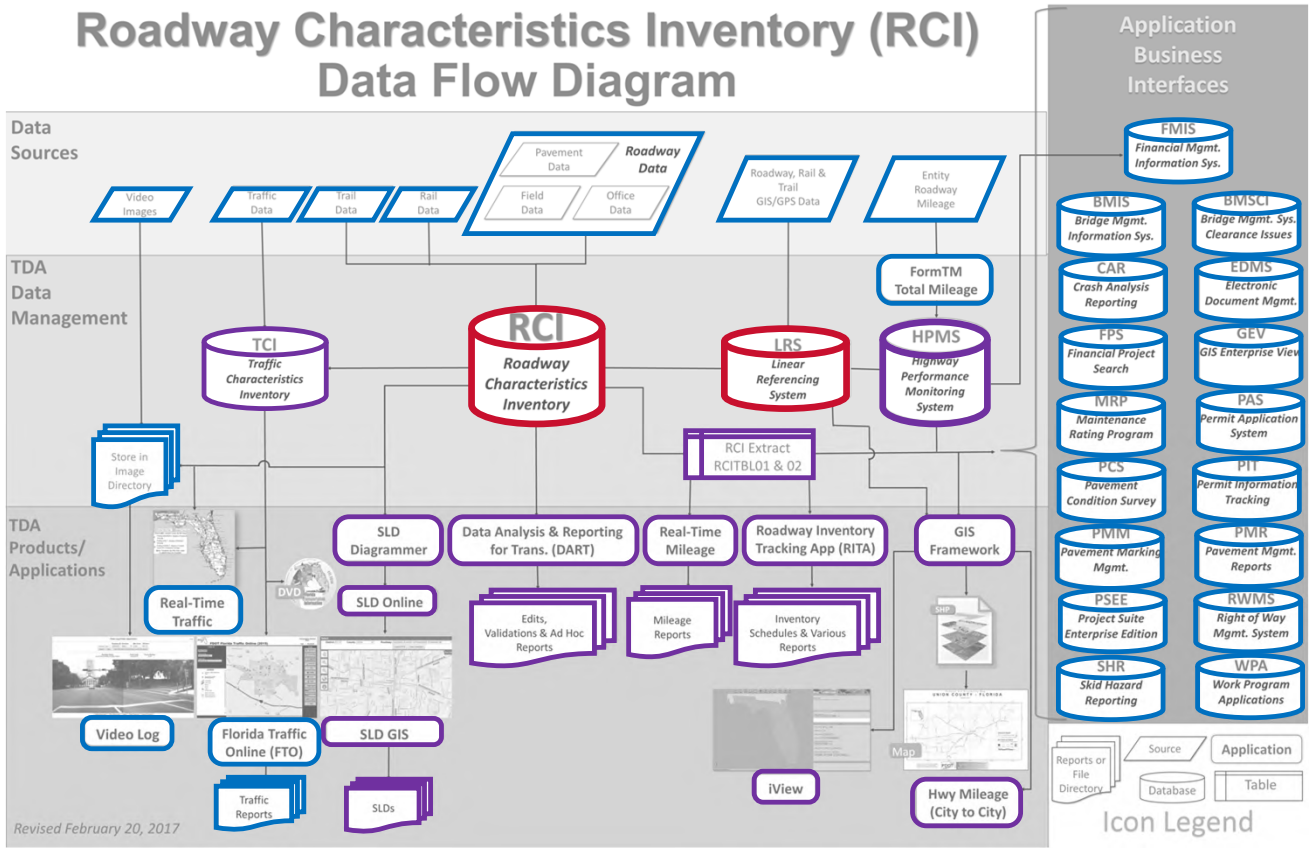
IRAIS Within the FDOT Enterprise

RCI Existing Data Flow Diagram

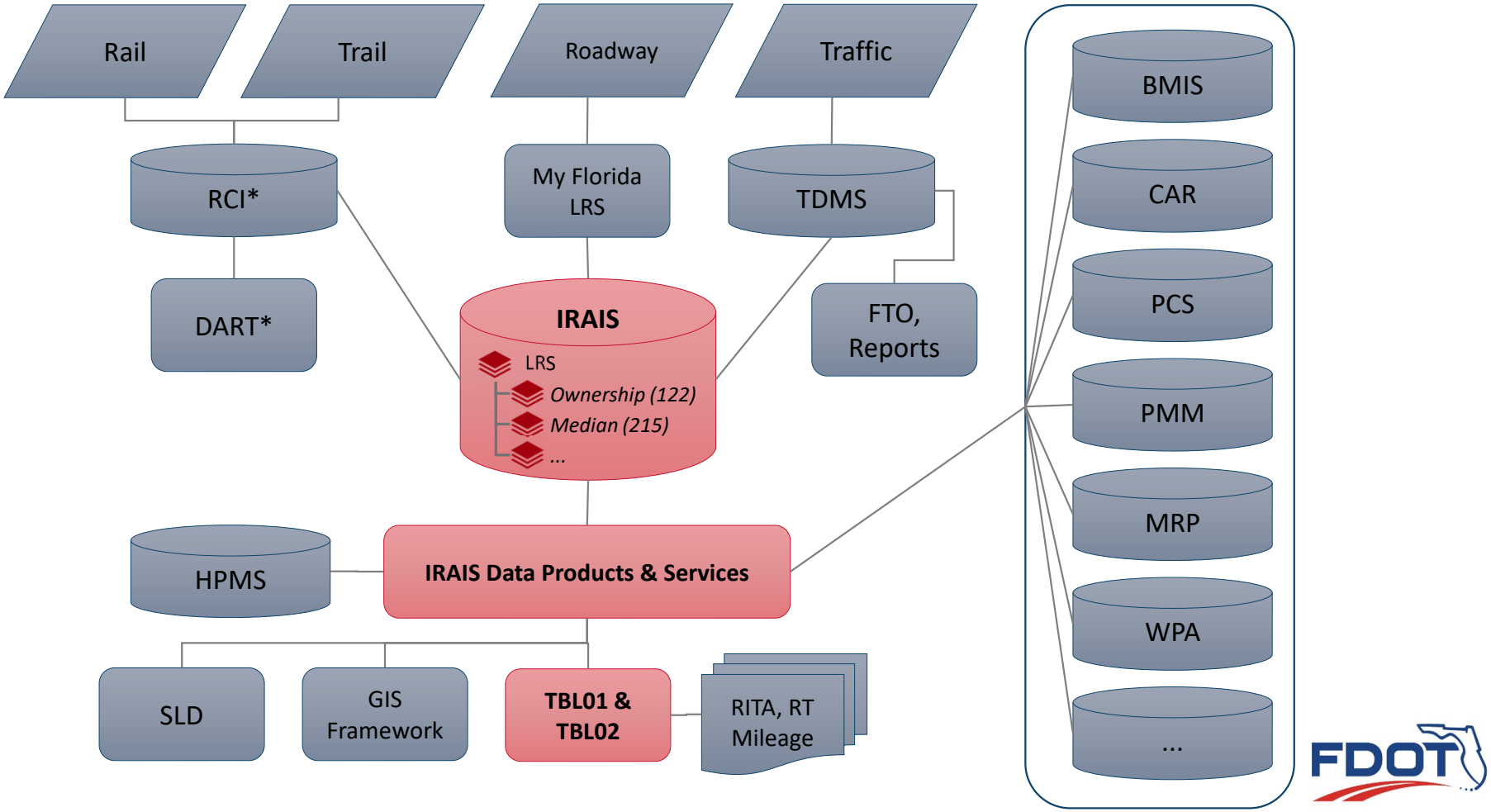


IRAIS Impacts on RCI Data Flow

- **Primary Impact**
- **Secondary Impact**
- **Tertiary Impact**



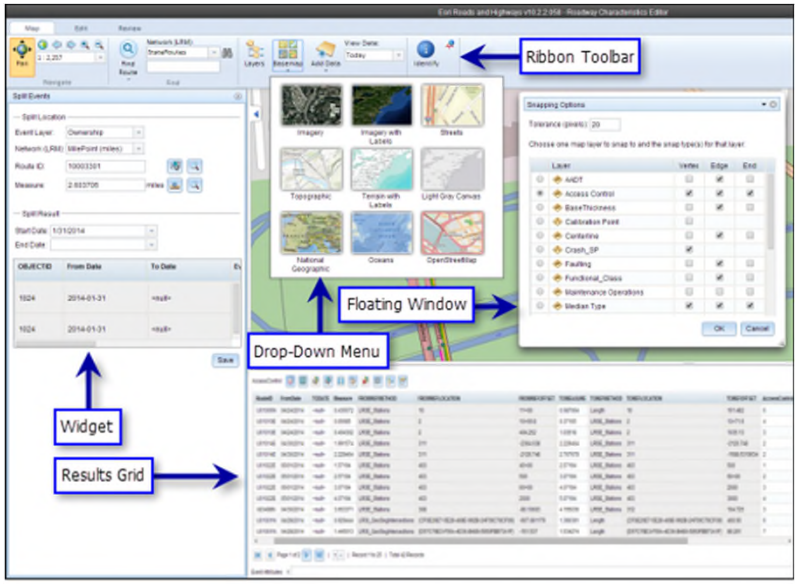
IRAIS System & Integration *(simplified)*



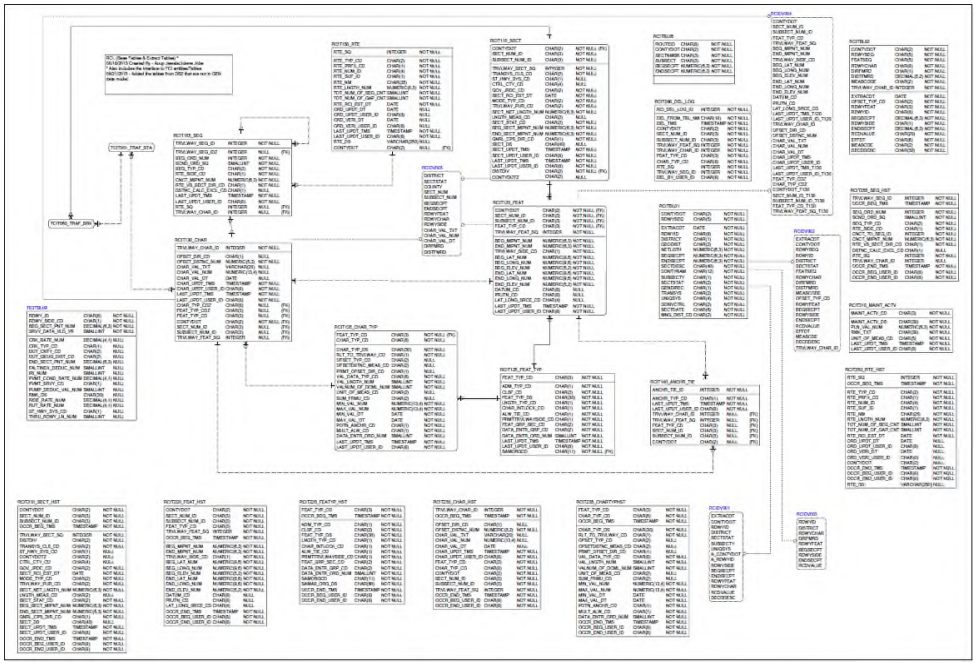
Benefits of IRAIS

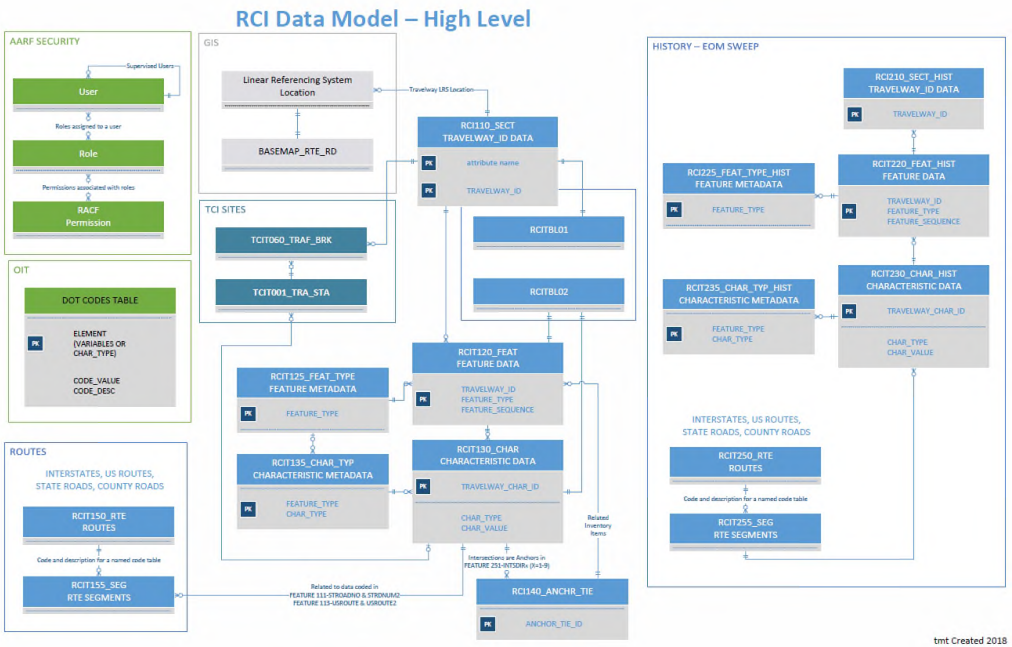
Software Benefits: Esri Roads & Highways

- Rds & Hwys is a COTS solution that maintains routes and road inventory data in a **synchronized** manner
- **Rule-based logic** establishes the relationship between LRS and RCI data updates as edits occur
- Generate new routes, update existing routes with desktop-based tools built as an **ArcGIS Desktop extension**
- Create, edit, and manage business data via an **intuitive web-based interface** without the need for additional software
- Visualize and analyze LRS and roadway data with **built-in quality control tools** and processes

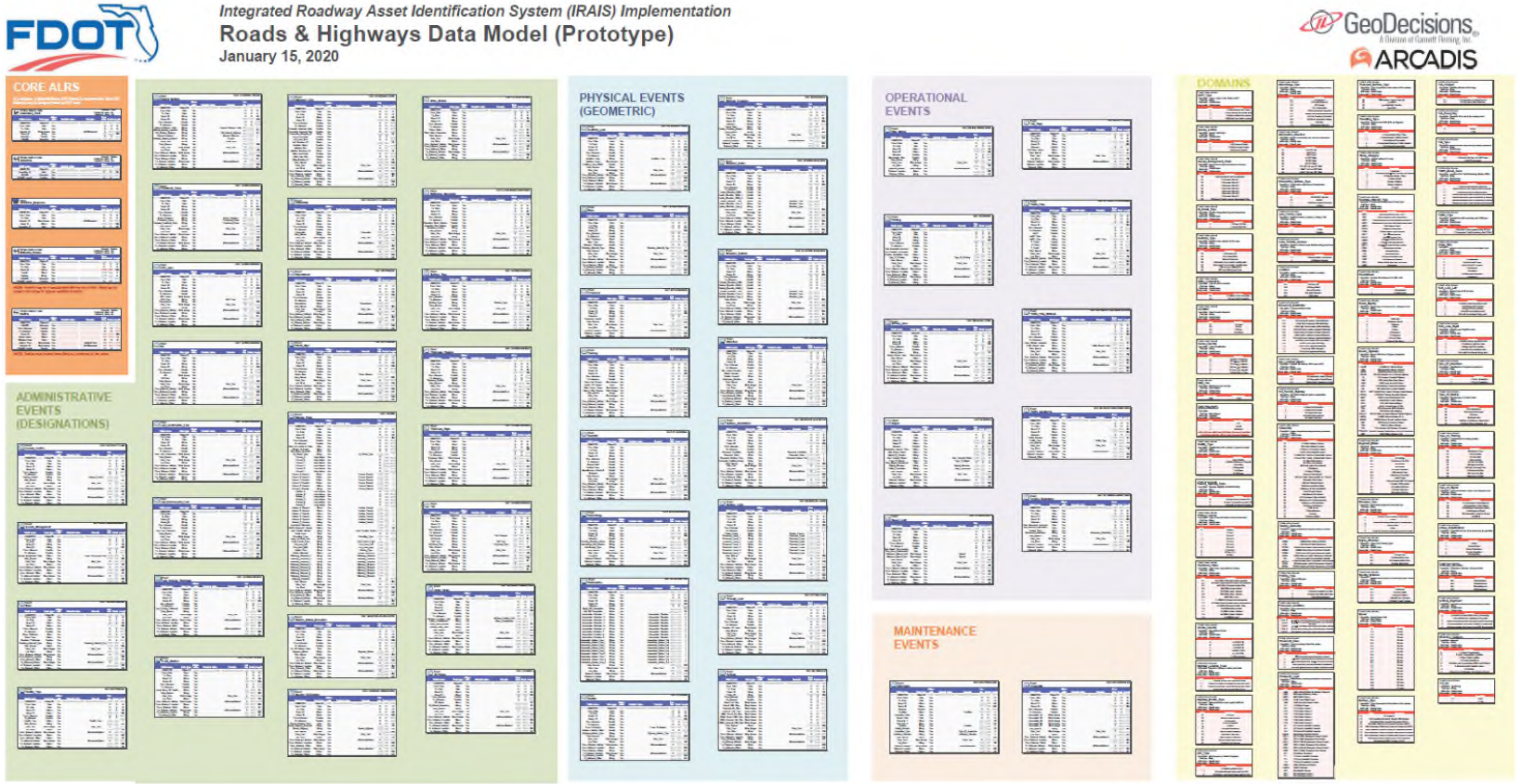


Data Model: Existing RCI



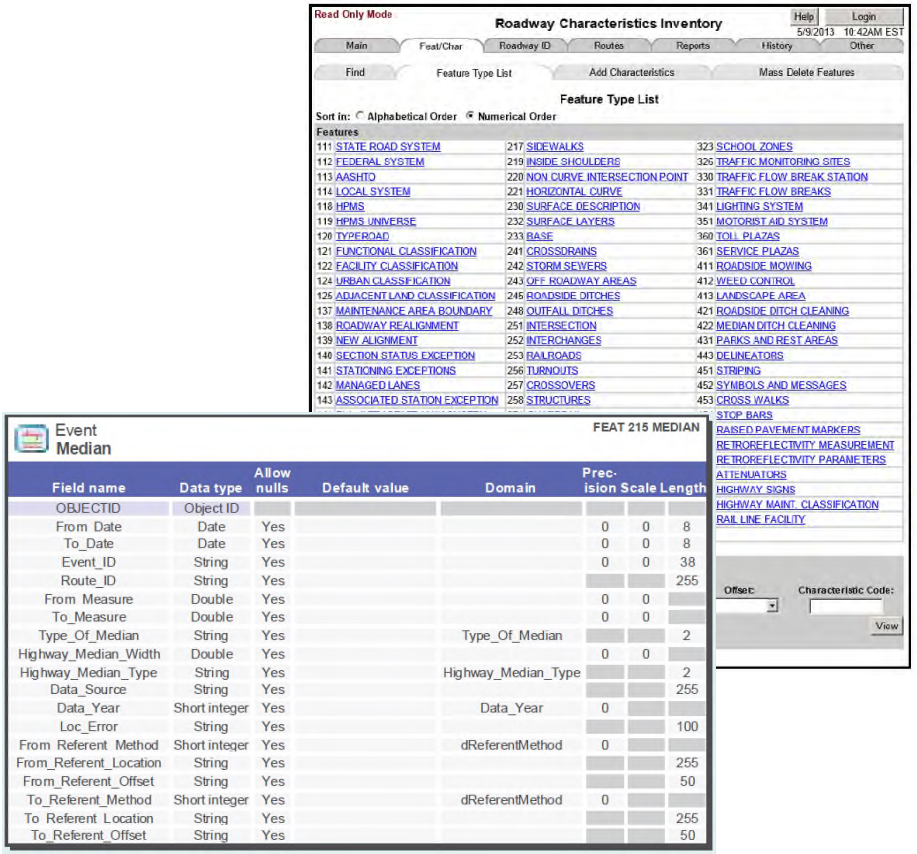


Data Model Benefits: IRAIS Data Model (*draft prototype*)



Data Model Benefits: Events

- Events can be a Point or Line
- **Features and Characteristics** can be split and joined in new and different combinations as **Events with Attributes**
- Ability to mix different events together in **attribute sets** to streamline editing
- Routes all events have built-in **temporality**, enabling users to see what the data looked like ‘yesterday’
- Capability to have **business-specific Event Editor** instances to simplify data maintenance processes

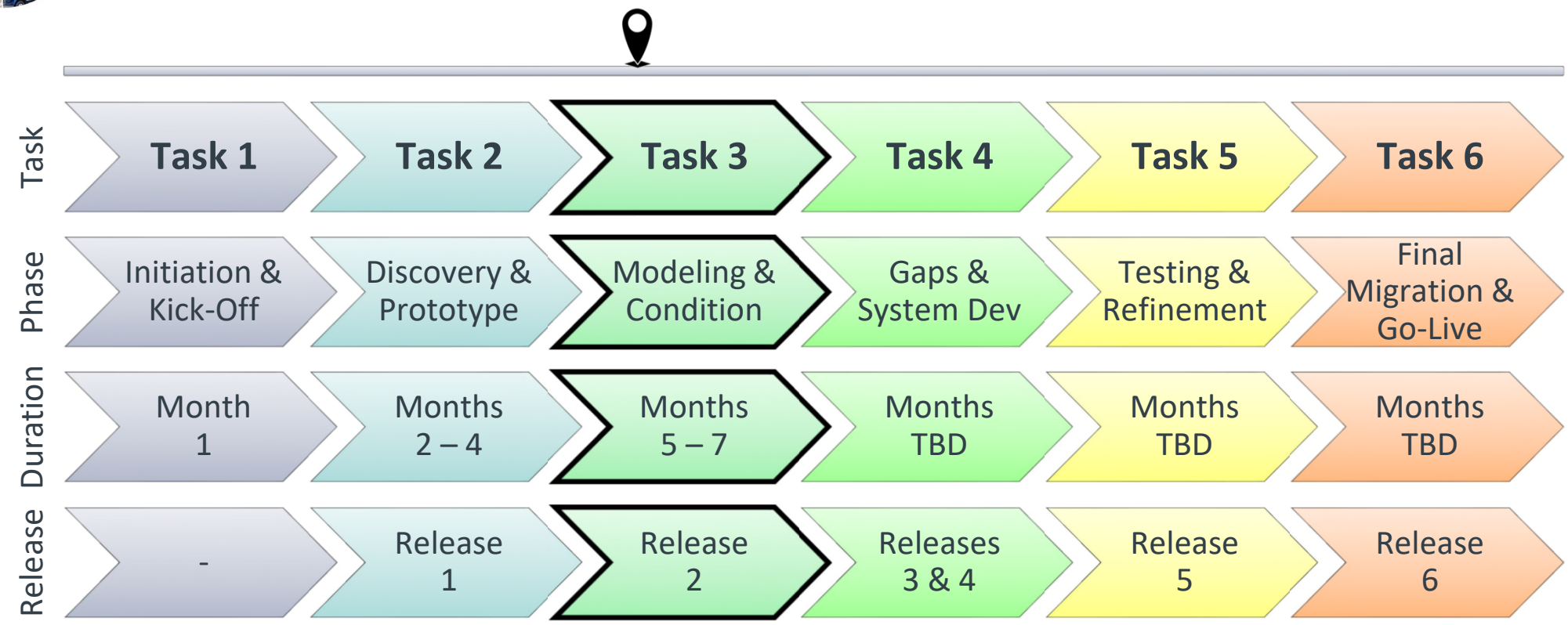


IRAIS Current Tasks

- Updating data model based upon feedback from workshop and prototype
- Compiling LRS and road inventory data quality results
- Reviewing how route measures will be determined
- Investigating options for a ‘route ID’, which is separate from a ‘roadway ID’
- Building initial workflows
- Identifying internal vs. external events
- Discussing considerations for intersections

Next Steps For IRAIS

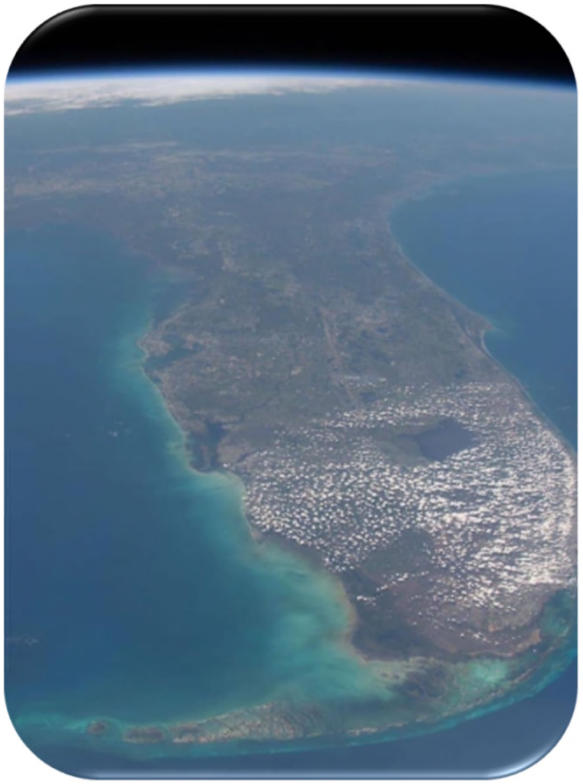
IRAIS Schedule



In the process of determining remaining schedule

IRAIS Upcoming Tasks

- Forecast upcoming phases
- Iterate through versions of the data model
- Conduct data migrations into new model
- Identify data validation discrepancies
- Refine workflows for editing scenarios
- Build integration points & data products
- Hold knowledge transfer & training sessions
- Document, document, document



Your Questions & Thoughts…

Thank You!

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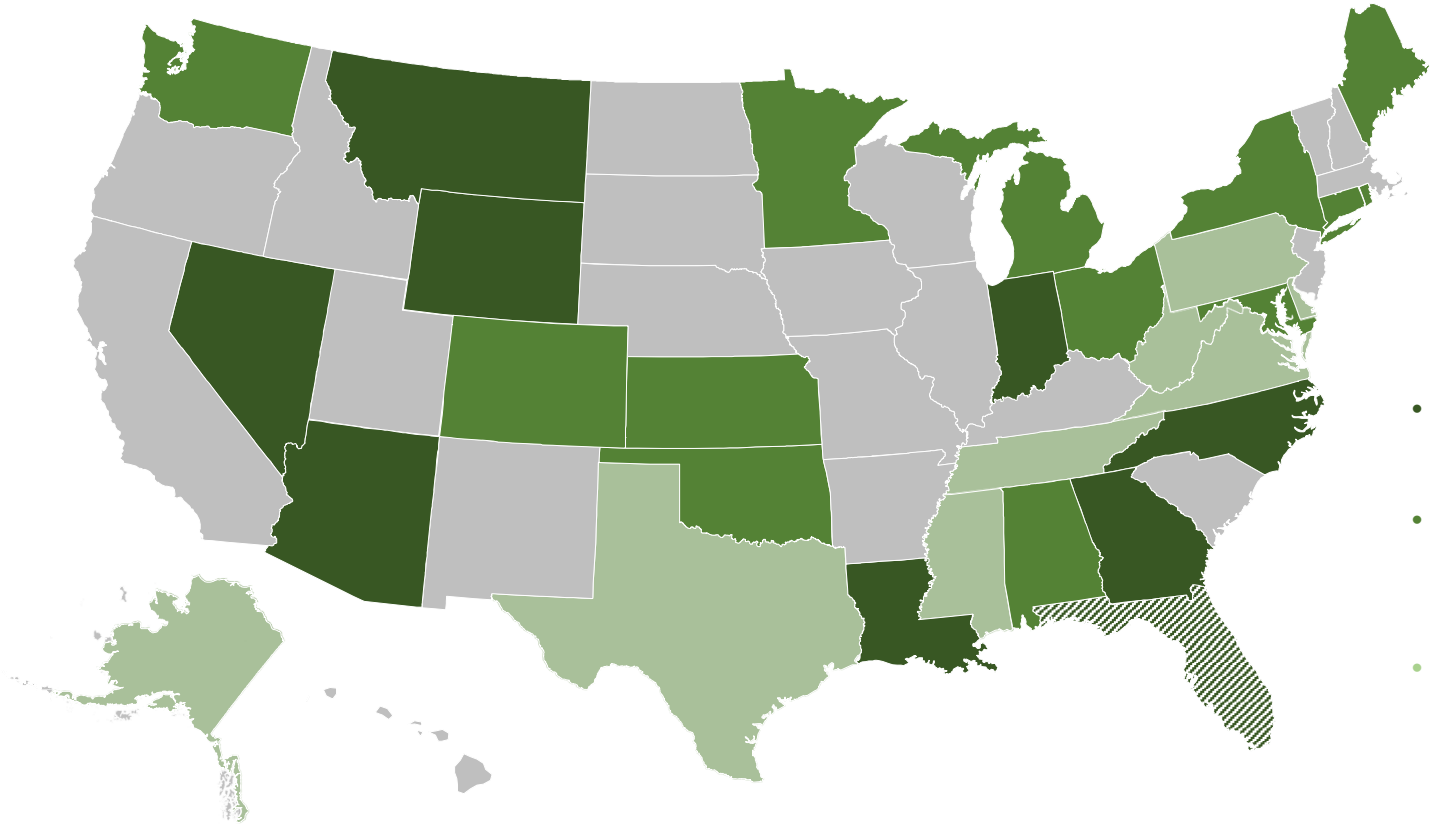
Roads & Highways, LRS, GIS experience at DOT's

GeoDecisions

ARCADIS



- **Prime R&H Implementations**
- **Project Team R&H Implementation Experience**
- **Project Team DOT IT/GIS/LRS Related Experience**

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A Flexible and Iterative Approach