INDIANAPOLIS ITS ARCHITECTURE UPDATE

ITS ARCHITECTURE STAKEHOLDER WORKSHOP REPORT

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Prepared for the Indianapolis Metropolitan Planning Organization

Prepared by Iteris, Inc.

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1.0   INTRODUCTION

The Indianapolis Regional Intelligent Transportation Systems (ITS) Architecture Stakeholder Workshop was conducted on May 4, 2023 to gather stakeholder inputs to inform the update of the Indianapolis Regional ITS Architecture. The workshop was conducted in a classroom on the Indiana University-Purdue University Indianapolis (IUPUI) campus in Indianapolis, IN. This report summarizes the workshop event and stakeholder inputs.

2.0   STAKEHOLDER WORKSHOP SUMMARY

The Indianapolis Regional ITS Architecture Stakeholder Workshop was initiated with an introduction from Andrew Magee, the Indianapolis Metropolitan Planning Organization (IMPO) Architecture Update Project Manager. A list of stakeholders in attendance is provided in Appendix A.

Cliff Heise, the Iteris Architecture Team project manager, presented workshop materials to establish a common understanding among workshop attendees about ITS and architecture, structured as follows:

- Workshop Objectives
- What is ITS?
- ITS Architecture Introduction
- Indianapolis ITS Architecture Update Project
- Architecture Update Discussion/ Information to Include
- Next Steps

To support participation and information gathering from stakeholders, a mobile device polling service was employed. The following set of polling questions were asked of the stakeholders at specific points in the presentation.

- What transportation and connectivity issues do you see in the region?
- What could be causing transportation and connectivity issues?
- What does the ITS architecture mean to you?
- What transportation challenges do you see in the region?
- What ITS system interconnectivity challenges do you see from your organization's perspective?
- How do the challenges identified impact your organization?

Philip Roth of American Structurepoint and MaCie' Moore of Engaging Solutions used the polling results to facilitate further stakeholder discussion and information gathering. In addition to the information gathered directly from stakeholders at the workshop, an ITS Architecture Assessment Report and Stakeholder Workbook was distributed to stakeholders to facilitate content revisions for architecture elements, services, and projects. Stakeholders were asked to

provide their stakeholder workbook revisions within two weeks of the workshop to support architecture update.

Overall, the stakeholders' views on ITS and architecture from the workshop are summarized as:

- Positive Perception of ITS: The stakeholders generally viewed ITS as a valuable tool for addressing transportation issues and addressing various challenges. They recognized ITS as a means to enhance efficiency, coordination, and effectiveness in transportation systems.
- Importance of Data: The stakeholders emphasized the significance of data in ITS architecture. They highlighted the need for accurate and comprehensive data sharing between agencies, as well as the challenges associated with data integration, licensing costs, and security threats. They also acknowledged the potential of data-driven solutions and the value of real-time updates and information for travelers.
- Collaboration and Partnerships: The stakeholders stressed the importance of collaboration, partnerships, and interagency coordination. They expressed the need for better communication and understanding among organizations to overcome challenges and develop creative solutions. The idea of mutually beneficial partnerships and leveraging resources was highlighted.
- Funding and Resource Constraints: Funding limitations and resource constraints emerged as significant challenges. The stakeholders expressed concerns about the lack of funding for traditional solutions, the siloed nature of funds, and the impact of cost limitations on the scope and implementation of ITS projects. Staffing, approvals, and bureaucratic hurdles were also mentioned as obstacles.
- Infrastructure and Maintenance: The region's aging infrastructure, including pavement and traffic infrastructure, was recognized as a challenge. The lack of sidewalks, maintenance issues, and the potential negative impact on travelers were identified. The need for coordination in maintenance, inventories of roadway conditions, and the integration of ITS systems into capital improvement plans were highlighted.
- Adoption of New Technology: The stakeholders noted the importance of adopting new technologies but expressed concerns about slow adoption rates. They highlighted the resistance from private entities to share data and the challenges of staying updated with technological advancements.

3.0   KEY POINTS FROM WORKSHOP

The following key points from stakeholders were gathered during workshop polling exercises and discussion. Detailed notes recorded from the workshop are provided in Appendix B.

Transportation and connectivity issues are:

- Limited White River crossings.
- Downtown Indianapolis arterials are confusing to drivers and congestion is a deterrent to downtown travel.
- Cross-County transport and Paratransit limitations.

Transportation and connectivity issue causes are:

- Lack of system interoperability/coordination among various arterial operations.
- Lack of funding for traditional transportation solutions but ITS solutions could be more cost effective.
- Lack of multimodal options in the region.
- Short- and long-term construction projects disrupt traffic flow and short-term construction information is often not made available on traveler information systems.

Stakeholders view ITS Architecture as:

- Representing partnership opportunities.
- Representation of what ITS has been implemented and what is planned.
- Broader picture of ITS in the region.
- Enabling coordination across agencies and organizations for planning and operations.
- Common platform from which stakeholders can address regional problems.

Transportation challenges in the region are:

- Age and condition of the transportation infrastructure.
- Difficult access to multimodal transportation options.
- Statehouse restrictions on automated enforcement solutions.
- Transportation safety and increases in crashes.
- Stakeholders were asked how ITS can address these challenges.
    - Improved traveler information.
    - Infrastructure issue reporting systems and maintenance/asset management systems.
    - Capital Improvement Plan coordination.

ITS system interconnectivity organizational challenges are:

- Organizational structure where ITS programs report under IT department.
- Staff turn-over creates voids in organizational knowledge of ITS.

ITS challenge impacts on organizations are:

- Funding restrictions.
- Information sharing about ITS projects and plans.
- Project implementation delays.
- Staff capability limitations and funding.
- Lack of funding coordination and application to maximize benefit of project implementation.
- Slow adoption of new technology.

The inputs gathered provide guidance to the architecture update to support:

- Agency system operation coordination.
- Improved traveler information.
- Multimodal access improvements and operational integration.
- Construction activity coordination with traffic operations and traveler information.
- ITS solution and architecture support for ITS project planning and funding justification.
- ITS and architecture use and stakeholder education.

APPENDIX B: WORKSHOP NOTES

The following detailed notes were recorded during the stakeholder workshop. The discussions were prompted by participant questions, participant polling survey interaction, or moderated discussion.

- **What transportation and connectivity issues do you see in the region?**
  - o Stakeholders were asked to identify transportation and connectivity issues using a device polling application. The results of the polling were as follows:

    - Signals.
    - Traffic light choke points.
    - Driver confusion.
    - Lack of sidewalks.
    - Too much volume on the roadways.
    - Lack of integrated fare payment.
    - Physical barriers (water).
    - Events.
    - Parking is too cheap.
    - Lack of transit service.
    - Crashes.
    - Detailed information on way-finding apps.
    - Not knowing what other agencies are doing.
    - Lack of complete grid system (arterial, collector, local).
    - Uncoordinated signals.
    - No car available.
    - Lack of cross-country transit.
    - Congestion.
    - Expansion of major intersections driving exit and on ramps further away from main thoroughfares.
    - Lack of easily accessible transportation information.

  - o Attendees were asked to contribute further discussion on transportation and connectivity issues in the region based on the polling results.
  - o I-69: White river goes straight through the region. Downtown has bridges that go over most of the river but on the north and south sides there are 2-mile stretches where you can't cross the river.
  - o Downtown area
    - ▪ The sentiment is that people don't want to go downtown on weekends because driving there could be frustrating due to hassle and congestion; difficult to get around because of congestion.
      - This could be mitigated if there was improved ITS infrastructure to give real-time updates on closures, congestion, etc.
    - ▪ Confusing one-way streets; easy to get lost.
  - o Cross-county transport
    - ▪ Paratransit or community transport providers get grant funding but that grant funding is specific (e.g., grant funding for Marion County has limits

on the number of clients). If a veteran that lives in Hamilton County needs to get to the Veterans Administration (VA) in Marion County to be able to receive services, the only solution is to meet at the county line to transfer between county services which is a hassle and takes a lot of time.
- Institutional challenges.

- **What could be causing transportation and connectivity issues?**

  - No interoperability between systems.
    - There are lots of roundabouts, and because of this, there are fewer signalized intersections. Queuing information is no longer available to communicate with other jurisdictions.
    - Continuous streams of traffic from roundabouts flow into signalized intersections at jurisdictional borders. The signalized intersections would benefit from knowing the volume of traffic coming from one network to another.
    - Interagency coordination is needed.
  - Lack of funding
    - We can push ITS as a creative solution for lack of funding for traditional solutions.
    - Traditional thinking: given a large backup at a traffic light, over the years two turn lanes, a through lane, etc. would be added, but maybe the fundamental issue is the lack of a smart signal or ITS integration in general. Funding may not be available to add more lanes, but maybe there's a way to show that "for this lower dollar amount", if all these signals are coordinated, that could solve the issue.
  - Lack of multimodal options
    - There aren't enough options for people to travel and they're all overloading the network at the same time with one mode of travel.
  - Construction
    - Long-term construction events disrupt travel.
    - Pop-up construction projects are often not communicated to travelers through traveler information systems in a timely manner leading to 2-hour backups and backups on side streets.
    - Construction can be based on the type of funding.

- **What does the ITS architecture mean to you?**

  - Stakeholders were asked to describe the ITS Architecture using a device polling application. The results of the polling were as follows:

- Data.
- Planning.
- Connected.
- Federally required.
- Less work on early coordination.
- Different funding sources.
- An in-depth way to plan out an ITS system.
- Framework for efficient and effective movement.
- Organized planning and information.
- The best way to ensure the best system for the public.

- A framework to facilitate integration of intelligent transportation systems across an area.
- Finding the gaps between where we are vs where we want to be in terms of systems and interoperability.
- Coordination of devices, vehicles, and generated information to help coordinate traffic management and projects to support transportation system use and development.

- o Attendees were asked to contribute further discussion on ITS Architecture based on the polling results.
  - o Partnerships
    - Understanding what has been deployed by organizations in the region that might not be obvious.
    - Understanding how we can be mutually beneficial (come to the table and see how we can get to creative solutions rather than being at odds with each other).
  - o Improved efficiency
    - Knowing what the right hand and the left hand are doing.
    - Identification of ways to partner and leverage resources in a mutually beneficial manner.
    - Understanding what the big picture is and how multiple agencies can fit into that picture.
    - Saving time and resources by enabling efficient communication and coordination between agencies.
  - o The 10,000-foot overview of traffic data exchanges and management.
    - If you are trying to get to a solution to a problem, you can use RAD-IT to easily identify gaps by looking at things at a higher level.
  - o Helps agencies solve problems together.
    - MPO does not own any facilities or operate any systems but they enable and assist those systems and fund some of the systems. It's about coordination and making sure everyone is on the same page and making sure they know what's possible rather than solving immediate network

issues. Want to make sure everyone is operating together and they're providing access to funds.
- o An in-depth way to plan out an ITS system.
    - ▪ Very specific details about a region and its projects.
- o Transportation IT coordination plan. Better travel for all!
- o Systems that communicate information for coordination and public information.
- o Helps solve issues with technology instead of expansion.
- o It's a map of agencies and processes to make the communication process easier.
- o Behind the scenes management system.

- **What transportation challenges do you see in the region?**

    - o Stakeholders were asked to identify transportation challenges in the region using a device polling application. The results of the polling were as follows:

    - Lack of sidewalks.
    - Post pandemic work habits.
    - Data sharing.
    - Signals not coordinated.
    - Lack of multi modal options.
    - The age of infrastructure.
    - Isolation due to changes in available services (medical, grocery, social).
    - Coordinated maintenance of traffic across agencies.
    - Funds siloed.
    - Development spreads out travel needs.
    - Use and identification of designated freight routes.
    - Reduction in number of Single Occupancy Vehicles (SOV) trips.

    - o Attendees were asked to contribute further discussion on transportation challenges in the region based on the polling results.
    - o Age of pavement and other traffic infrastructure
        - ▪ There are communities with no sidewalks.
        - ▪ People aren't able to safely get to a bus stop.
        - ▪ If you're in a wheelchair, it's very difficult to get through sidewalks with poles right in the middle of the pavement.
        - ▪ Funding complications (maximum request of $1,000,000).
        - ▪ Infrastructure falling apart, could be a huge calamity at some point (no staggering of maintenance).
    - o The attendees were asked how ITS might be able to address these challenges.
        - ▪ Apps (Request Indy or Mayor's Action Center) to report failing infrastructure (pedestrian signals not working, potholes on X road, etc.)
        - ▪ Coordination of where detours are going and if those closures interact with other regions.
        - ▪ Mitigation component.

- There are inventories available that we could make better use of (i.e., for the MPO they had a pedestrian plan where they drew a line on a map everywhere a sidewalk existed from scanning aerials for certain roadway classifications. This allowed them to identify all the places where sidewalks shouldn't exist or where they are missing).
            - Keep inventories of roadway and pavement conditions.
            - Take note of how many trips are going through an area that does/ doesn't have X facilities.
            - Understanding how to coordinate Capital Improvement Plans (CIP).
    - o Statehouse
        - Restrictions from statehouse on doing automated enforcements (affecting safety).
            - Automated systems led to an uptake in arrests.
    - o Safety
        - Increase of crashes (trending upwards)
        - Lack of enforcement (truckdrivers and regular drivers driving recklessly, not providing 3-foot space for bicyclists)

- **What ITS system interconnectivity challenges do you see from your organization's perspective?**

    - o Stakeholders were asked to identify ITS system interconnectivity challenges using a device polling application. The results of the polling were as follows:

- Staff time.
- Linking technology/data investment with improvements.
- Sharing data between agencies (contractual limitations).
- Establishing new partnerships.
- Data licensing cost.
- Data systems across different companies that don't integrate well.
- Data device costs.
- Ongoing maintenance cost management and expertise.
- Need the data.
- Security threats and vulnerability.
- Resistance from private entities to share data.
- Data size.
- Staff capacity.
- Communication Standards.
- Data Lake / Information Storage / Public Data Portal.

- o Attendees were asked to contribute further discussion on interconnectivity challenges in the region based on the polling results.
  - o Staff capabilities
    - ▪ Many agencies are moving their ITS into their IT department.
    - ▪ Staff Turnover.

- **How do the challenges identified impact your organization?**

  - o Cost limits scope.
    - ▪ Can't afford to query data all of the time so things move slowly.
  - o Learning to share.
    - ▪ If we don't know what other agencies have or what they're doing, how can we work together or around the issue?
  - o Delays in implementation.
    - ▪ Difficulty coordinating between agencies leads to delayed implementation.
    - ▪ There is a lot of data that is not being shared or disseminated quickly.
  - o Could result in a less-impactful implementation.
    - ▪ Lots of bridges are coming to the end of their life and maintenance has not been consistent. This will start to have a negative impact on travelers during replacement.
  - o Staffing / funding / approvals.
    - ▪ One third of the budget is spent on collecting data.
  - o Increased or re-directed staff time.
  - o Not getting accurate picture of what's really going on.
  - o Ability to provide funds to agencies for the solutions.
  - o Duplicative spending / effort.
  - o Slower to adopt new technology.