U.S. Department of Transportation

BUFFALO ACCESS IN AND AROUND BNMC

ITS4US

IT'S TRANSPORTATION FOR ALL OF US

Hybrid System Engineering Series – Buffalo All Access Approach

Purpose – Why are we Here

- **Purpose of this Webinar**
  - This webinar presents how the Buffalo All Access team navigated and faced the challenges of developing a multi-system, multimodal deployment while engaging with stakeholders and incorporating their needs and preferences.
  - Q&A

Agenda

- **Webinar Content**
  - Webinar Presenter Introductions
  - ITS4US Program Overview
    - Elina Zlotchenko, Intelligent Transportation Systems Joint Program Office
  - Buffalo All Access Program Overview
    - Robert Jones, Niagara Frontier Transportation Authority
  - Stakeholder Engagement and Community Collaboration
    - Jamie Hamann-Burney, Buffalo Niagara Medical Campus
  - ITS4US Buffalo – System Engineering Approach for a Complex System
    - Polly Okunieff, ICF
  - Q & A

Webinar Protocol

- **Webinar Protocol**
  - Please mute your phone during the entire webinar
  - You are welcome to ask questions via chatbox at the Q&A Section
  - The webinar recording and the presentation material will be posted on the ITS4US website

ITS4US Program Overview

Elina Zlotchenko

Intelligent Transportation Systems Joint Program Office

ITS4US Program Vision

- A USDOT Multimodal Deployment effort, led by ITS JPO and supported by OST, FHWA and FTA
- Supports multiple large-scale replicable deployments to address the challenges of planning and executing all segments of a complete trip

ITS4US
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Vision: Innovative and integrated complete trip deployments to support seamless travel for all users across all modes, regardless of location, income, or disability

Program Goals

Spur high-impact integrated Complete Trip deployments nationwide

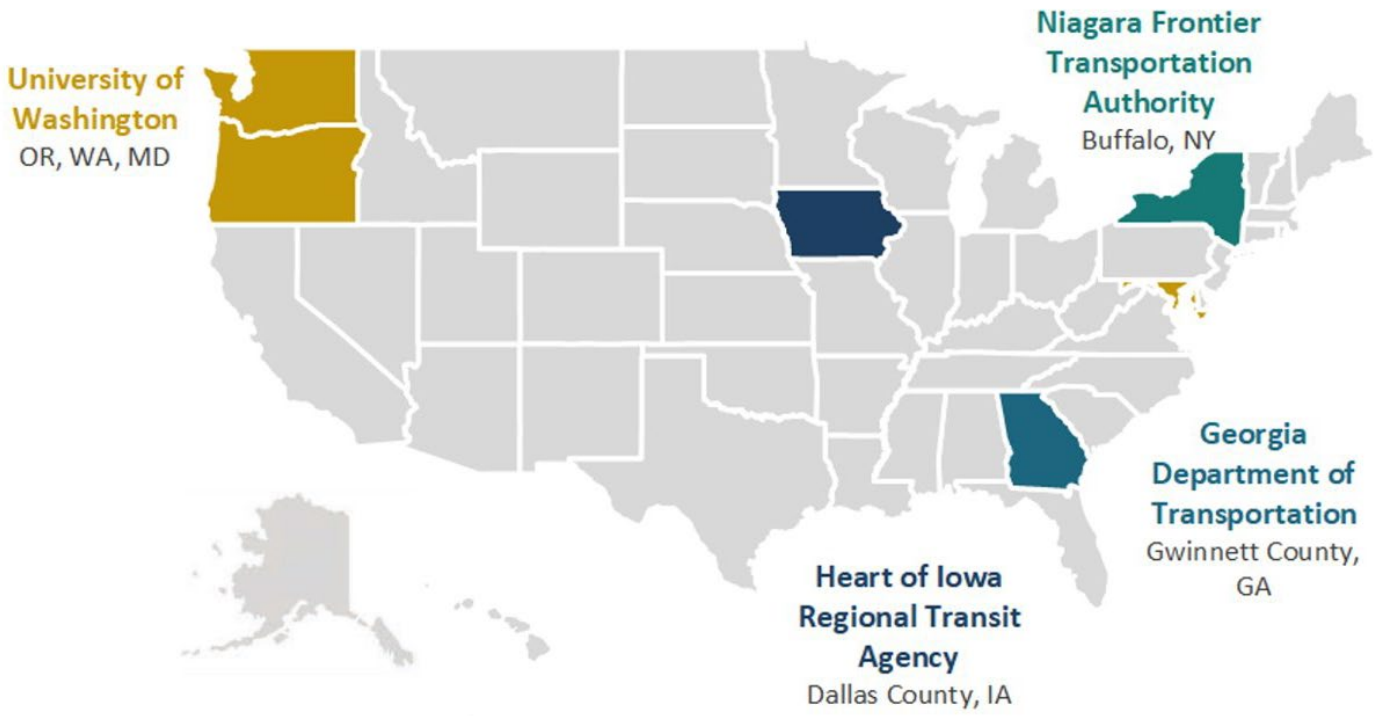
Identify needs and challenges by populations

Develop and deploy mobility solutions that meet user needs

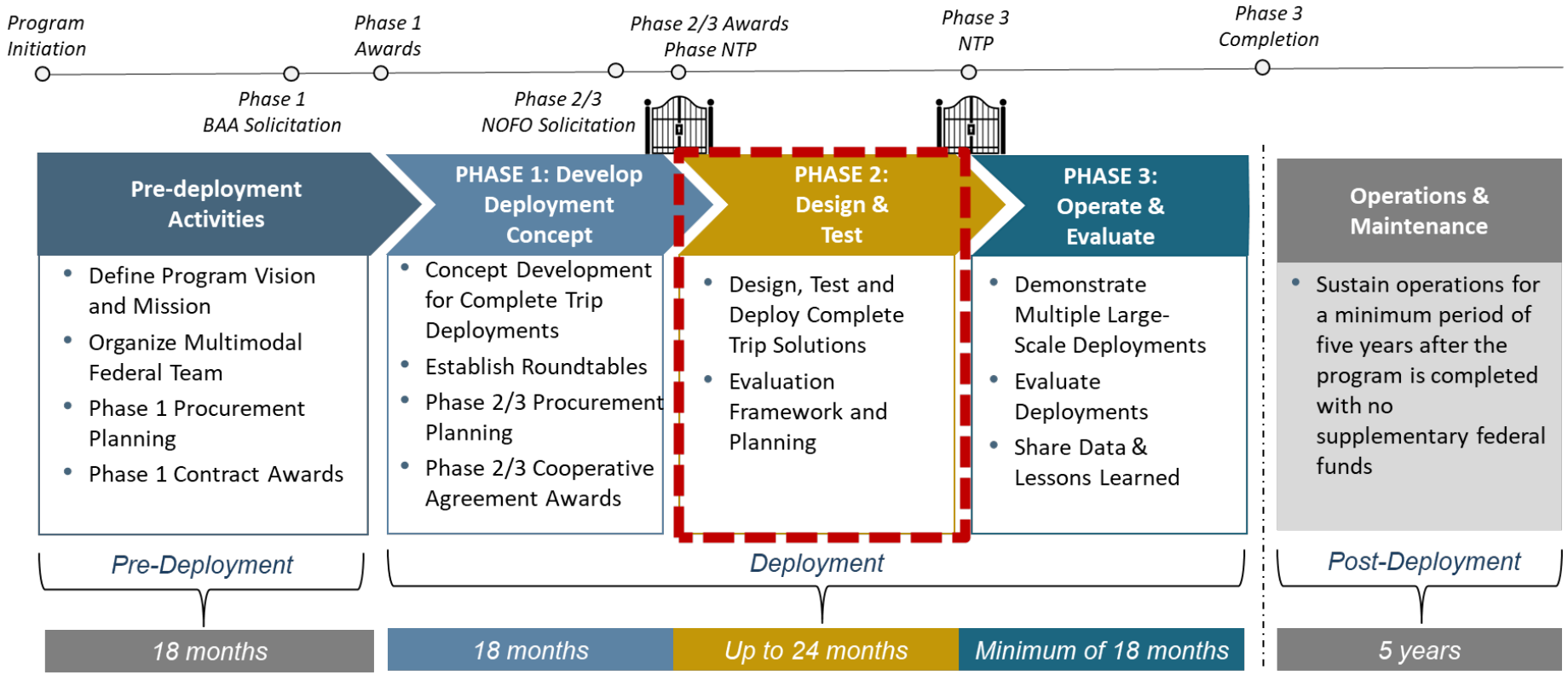
Measure impact of integrated deployments

Identify replicable solutions and disseminate lessons learned

ITS4US Deployment Sites



Deployment Phases



ITS4US Program Fundamental Elements

- Site deployments will be real-world environment **deployments**
- Serve as replicable models and remain in operation
- There are **multiple** site deployments
- Unique solutions to address critical, local challenges
- Deployments are expected to be both **large-scale and multi-modal**
- **Large-scale** implies deployments will have measurable impact
- Sites will deploy **multiple technologies and modes**

Buffalo All Access Program Overview

Robert Jones, AICP

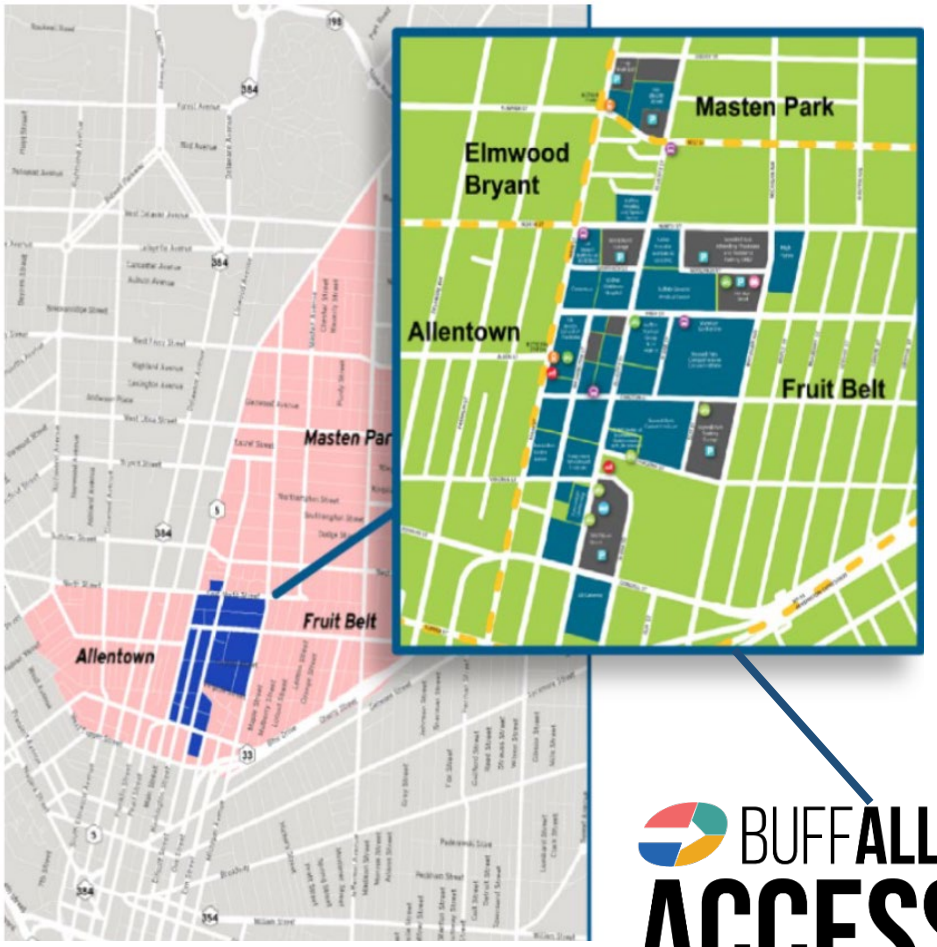
Buffalo All Access

Concept Deployment Lead

Deputy Director, Public Transit, NFTA

Buffalo All Access Factsheet

- **Where:** Deployment area in and around the Buffalo Niagara Medical Campus.
- **Why there**: 200+ companies, 16,000+ employees/students, 1.5+ million visitors per year.
- **What**: Deployment of new and advanced technologies to address existing mobility and accessibility challenges.
- **Innovation:** Factors in travelers' preferences and accessibility-related needs for comprehensive trip planning.



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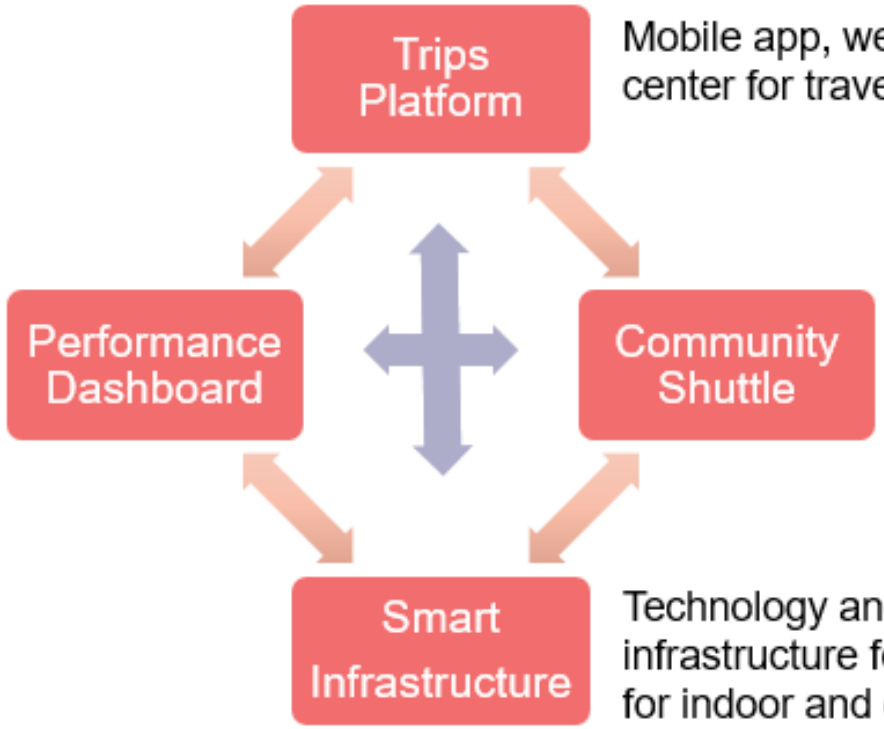
Buffalo All Access System Overview



Mobile app, website, and call center for travelers to plan trips.

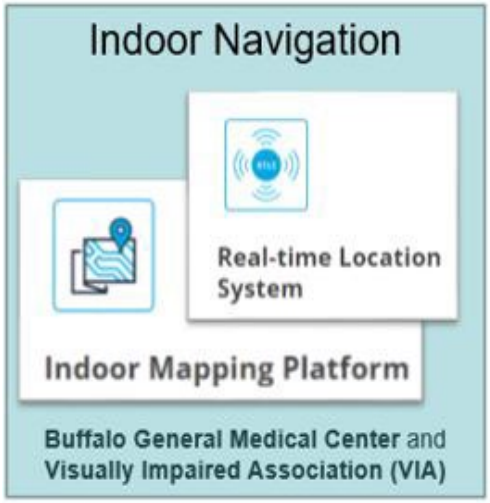
Measures and presents the performance of the system.

Shuttle system providing scheduled and on-demand connections to Metro Rail, BNMC, and surrounding neighborhoods.

Technology and supporting infrastructure for wayfinding for indoor and outdoor orientation, navigation and destination confirmation.

Buffalo All Access – NEW Services

Source: Redyref

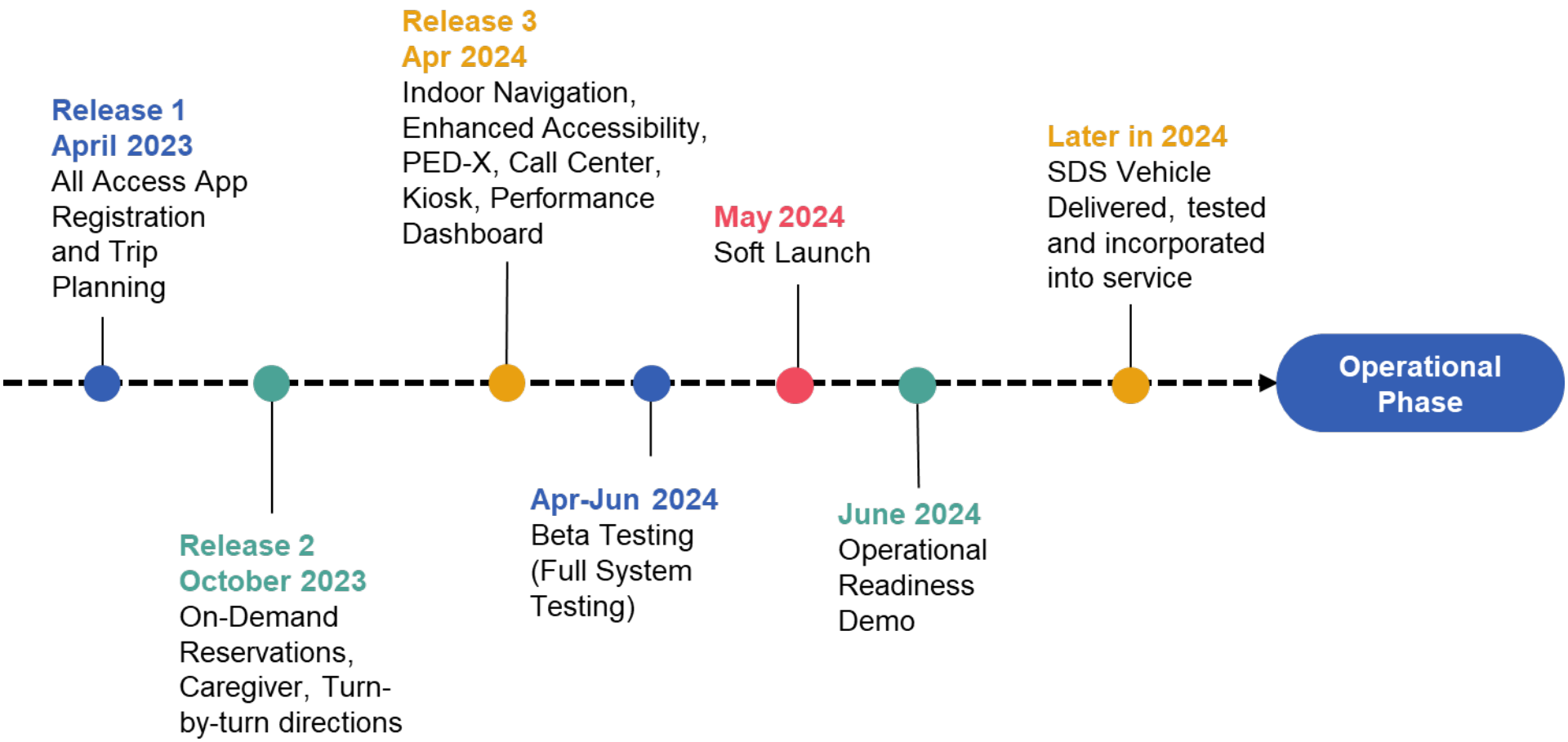


Source: CxApp

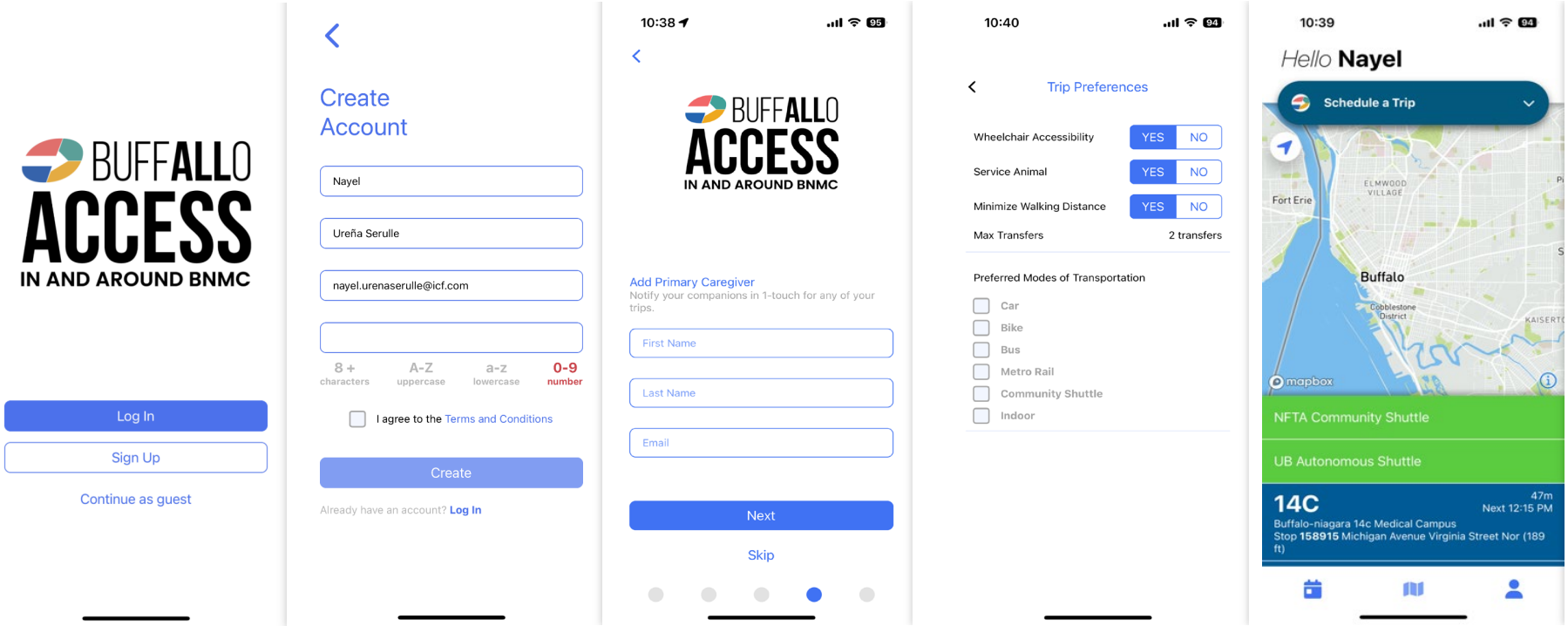
Source: Miovision

Source: ADASTEC and Vicinity Motors

Buffalo All Access Deployment Schedule



Buffalo All Access App Platform (App & Web)



Buffalo All Access – Fully Deployed

Participants

- 100 participants during Phase 2.
- 300-500 participants in Phase 3.

Indoor Navigation

- Around 100 beacons installed in VIA.
- Full integration with Buffalo General Medical Center.

Offline Support

- 2 kiosks installed, within Buffalo General and a metro station.
- A call center, operated by VIA.

Intersections

- Two intersections equipped with auto-request technology.

Vehicles

- 1 Self Driving Shuttle
- 1-2 Human Driven Shuttles (for on-demand service)

Platforms

- Fully integrated Web and Mobile App Complete Trip Planning tool.
- Outward facing Performance Dashboard.

ITS4US Buffalo – Community Engagement

Jamie Hamann-Burney

Project Delivery Lead

Chief Strategy Officer, Buffalo Niagara Medical Campus, Inc.

The Power of Partnership

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BNMC

University at Buffalo

NFTA-METRO

What is BNMC?

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BNMC

- BNMC brings people together to create positive social and economic impact within our community.
- We manage the premier innovation district and economic engine of WNY, the Buffalo Niagara Medical Campus.
- We are helping build an Innovation Ecosystem that focuses on breaking down barriers to a higher quality of life for all in our region.
- We work to advance safe, affordable, accessible, and equitable transportation options for our constituents.
- Sustainability and health and well-being for everyone is at the heart of all we do.

BNMC Structure

Our Board Membership is Comprised of Representatives From:

- Roswell Park Comprehensive Cancer Center
- Visually Impaired Advancement (VIA) WNY
- Buffalo Medical Group
- University at Buffalo
- Mayor of Buffalo
- Buffalo Hearing and Speech Center
- Best Self Behavioral Health
- Kaleida Health
- County of Erie
- Ross Eye Institute
- Connect Life
- Hauptman-Woodward
- Allentown
- Fruit Belt Neighborhood

BNMC Committees

BNMC has Formed Multiple Collaborative Committees as Part of its Operations.

- Transportation
- Communications and marketing
- Public Safety
- Neighborhood and Government Affairs
- District Planning

NFTA Advisory Committees

NFTA Committees Help Guide Public Transit Decisions

- Citizen's Advisory Committee
- Accessibility Advisory Committee

NFTA-METRO CITIZENS ADVISORY COMMITTEE

UB's Role in Community Engagement

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University at Buffalo
Center for Inclusive Design and Environmental Access
School of Architecture and Planning

- Expertise and partnerships focused on equity in design for underrepresented groups

University at Buffalo
School of Engineering and Applied Sciences

- Expertise and partnerships in transportation system engineering
- Student engagement

University at Buffalo

- Institutional Review Board
- Ensures the welfare and safety of participants

Engaged Stakeholders

Our Partnerships Provide Access to a Large and Diverse Stakeholder Group for Buffalo ALL Access

AARP New York
Age Friendly Erie County
Allentown Association
Aspire of WNY
Buffalo Center for Health Equity
Buffalo Hearing & Speech Center
Center for Self-Advocacy
City of Buffalo Department of Public Works
City of Buffalo Office of Strategic Planning
Deaf Action Center
Erie County Senior Services
Fruit Belt Coalition
Fruit Belt Community Land Trust
GObike Buffalo
Heart of the City Neighborhoods
Kaleida Health
LISC NY
National Federation of the Blind, Buffalo Chapter
NFTA Accessibility Advisory Committee
NFTA Citizens Advisory Committee
NITTEC
Northeast ADA Center
NYS DMV
NYS DOT
People Centered Services
Population Health Collaborative
Roswell Park Comprehensive Cancer Center
Self-Advocacy Association of NYS
University at Buffalo Capital Planning
University at Buffalo IDEA Center
University at Buffalo Parking & Transportation
VIA (formerly Olmsted Center for Sight)
WNY Independent Living

Stakeholder Engagement Activities

Stakeholder Group Engagement Helped Drive Project Decisions

- Ongoing meetings with Stakeholder Groups
- Ongoing engagement with BNMC and NFTA Committees
- System Engineering Walkthroughs
- Agile Demos and Review Meetings
- Creation of Outreach & Engagement Team for Deployment

Stakeholder Involvement in Deployment

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VIA	BHSC	Kaleida Health	Heart of the City Neighbor-hoods	Fruit Belt Coalition
• Indoor navigation site • Project call center • Outreach and engagement • Beta testing	• Outreach and engagement • Beta testing	• Indoor navigation site • Kiosk Site • Outreach and engagement • Beta testing	• Outreach and engagement • Beta testing	• Outreach and engagement • Beta testing

ITS4US Buffalo – Hybrid Development

Polly Okunieff

System Engineering Lead

Sr. Transportation Engineer, ICF

Acquisition & Development Approaches

- Development
  - All Access App (and integration elements)
  - Performance Measurement Dashboard
  - Interface / Integration Elements

  ← Agile Approach

- Turnkey System (build, operate, maintain)
  - Self Driving Shuttle

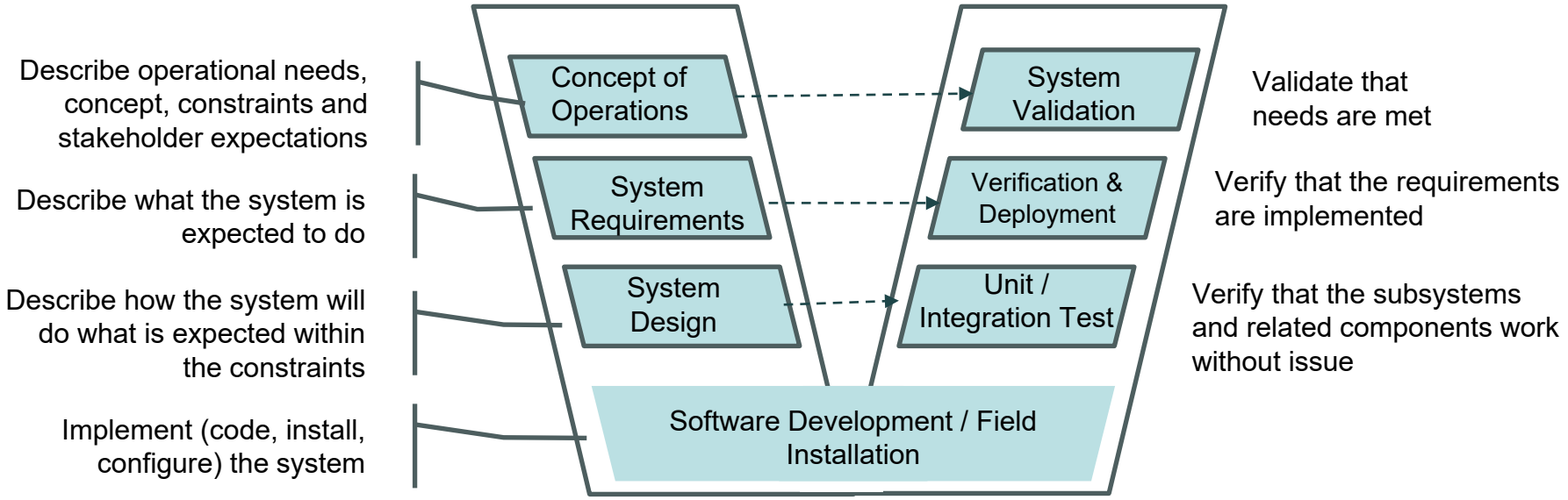
  ← Performance Testing

- Off-the-shelf Components Integrated with All Access App (CTP)
  - Pedestrian Crossing Request (part of NFTA team)
    - Set-up and provide tools to monitor (SaaS)
    - Equipment for 2 intersections
  - Indoor Navigation System (sole source*)
    - Set-up, Software Development Kit (SDK), maintenance tools
    - 20 Beacons for VIA deployment (equipment)
  - Transportation Information Hub (competitive bid)
    - Set-up, maintain (SaaS)
    - 2 Kiosks (devices)

  ← Component and System Integration

* Beacons were already deployed at 2nd All Access site – Buffalo General Medical Center

System Engineering (SE)

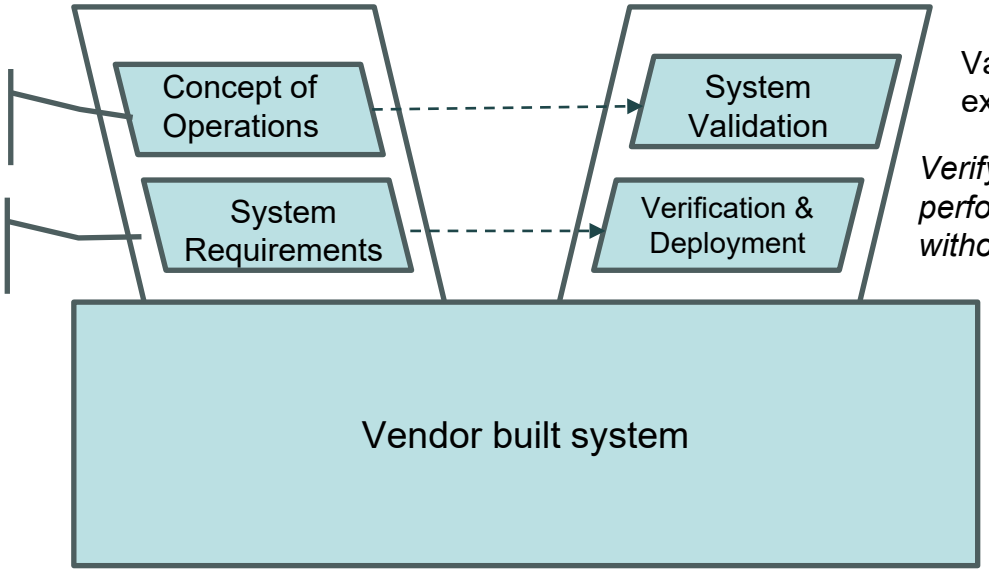


The “Vee” Diagram

Turn-key System Process

Describe operational needs, concept, constraints and stakeholder expectations

Describe what the system is expected to do



Validate that needs and expectations are met

Verify system operates within performance specifications without fault or omission

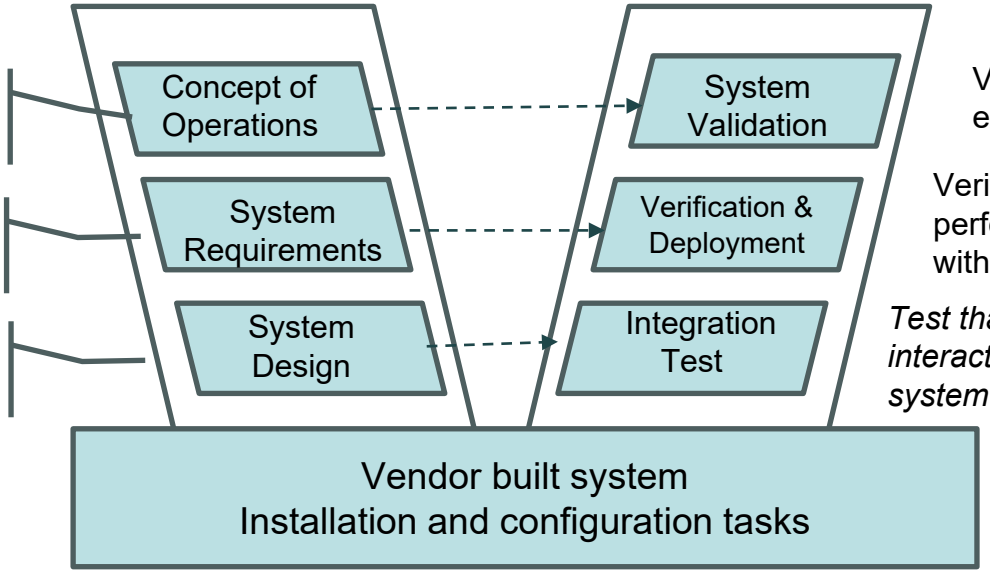
The “Vee” Diagram

Component and System Integration

Describe operational needs, concept, constraints and stakeholder expectations

Describe what the system is expected to do

Describe how the component interacts (via interface) with the System



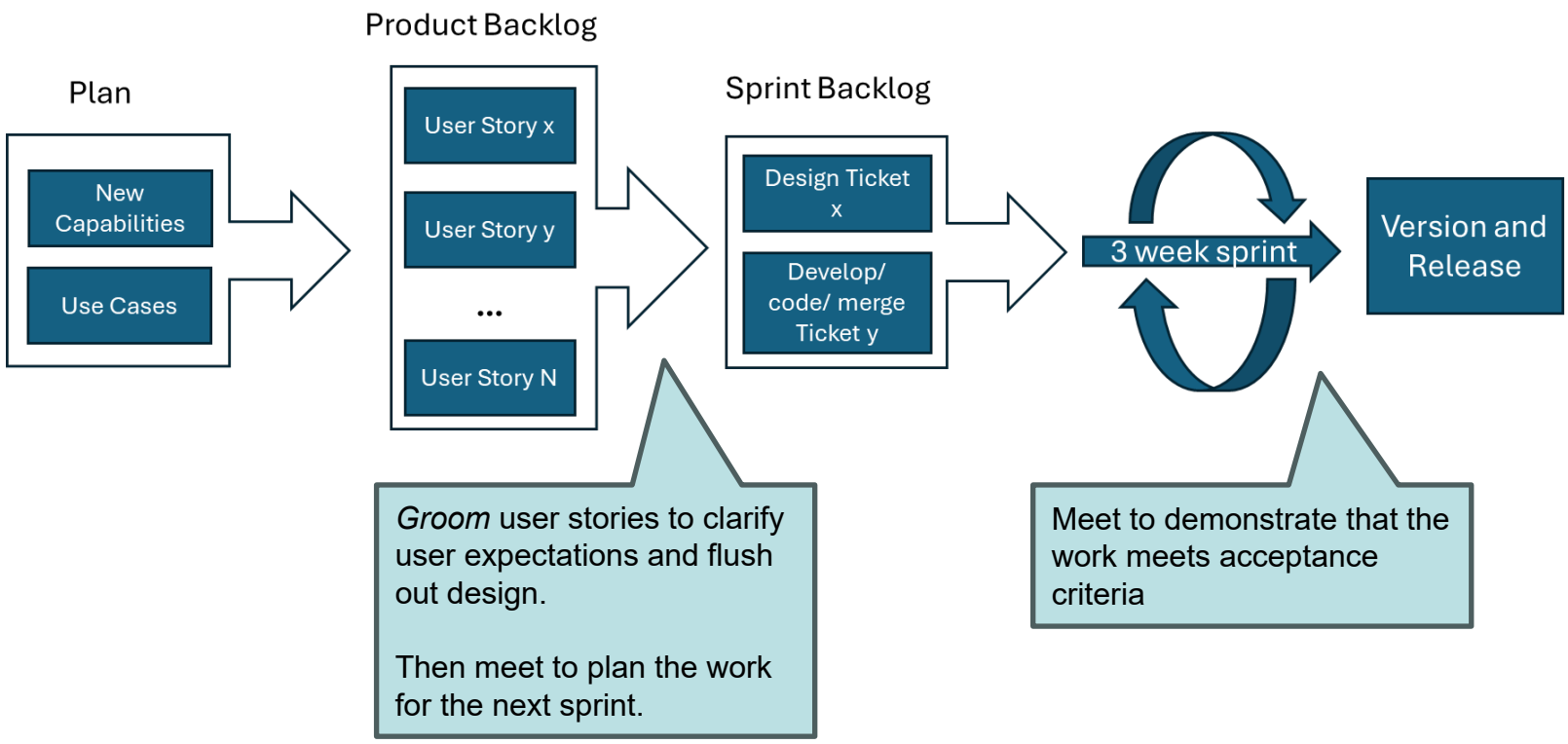
Validate that needs and expectations are met

Verify system operates within performance specifications without fault or omission

Test that the component interacts correctly with the system

The “Vee” Diagram

Typical Agile Approach

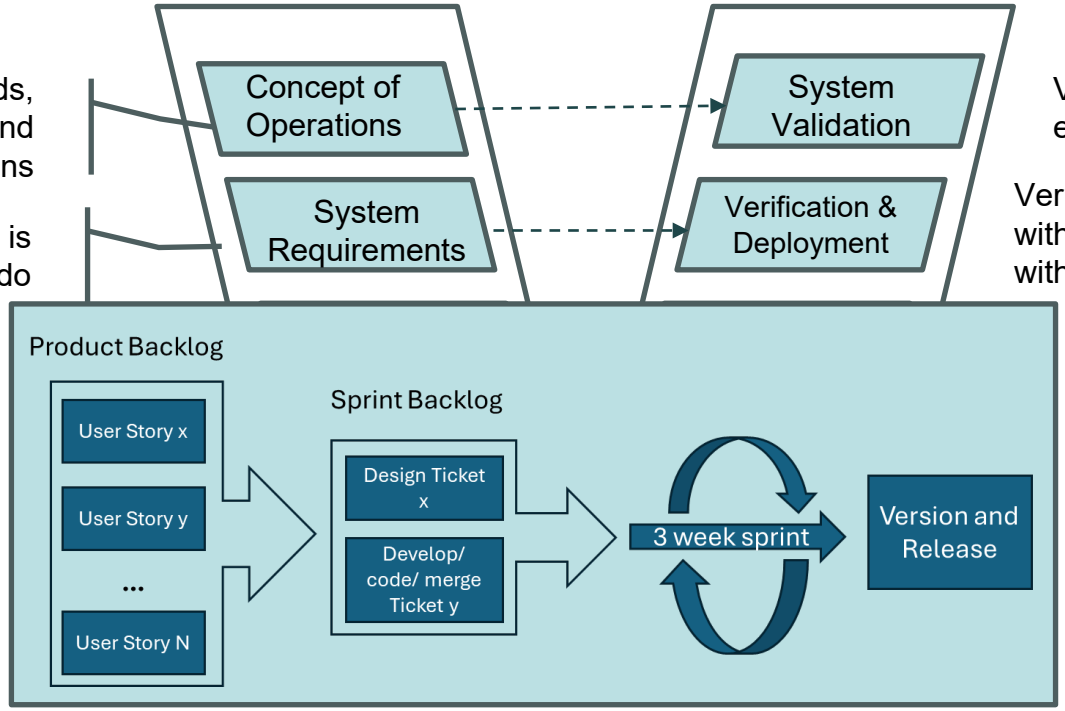


Hybrid SE / Agile Approach

Plan

Describe operational needs, concept, constraints and stakeholder expectations

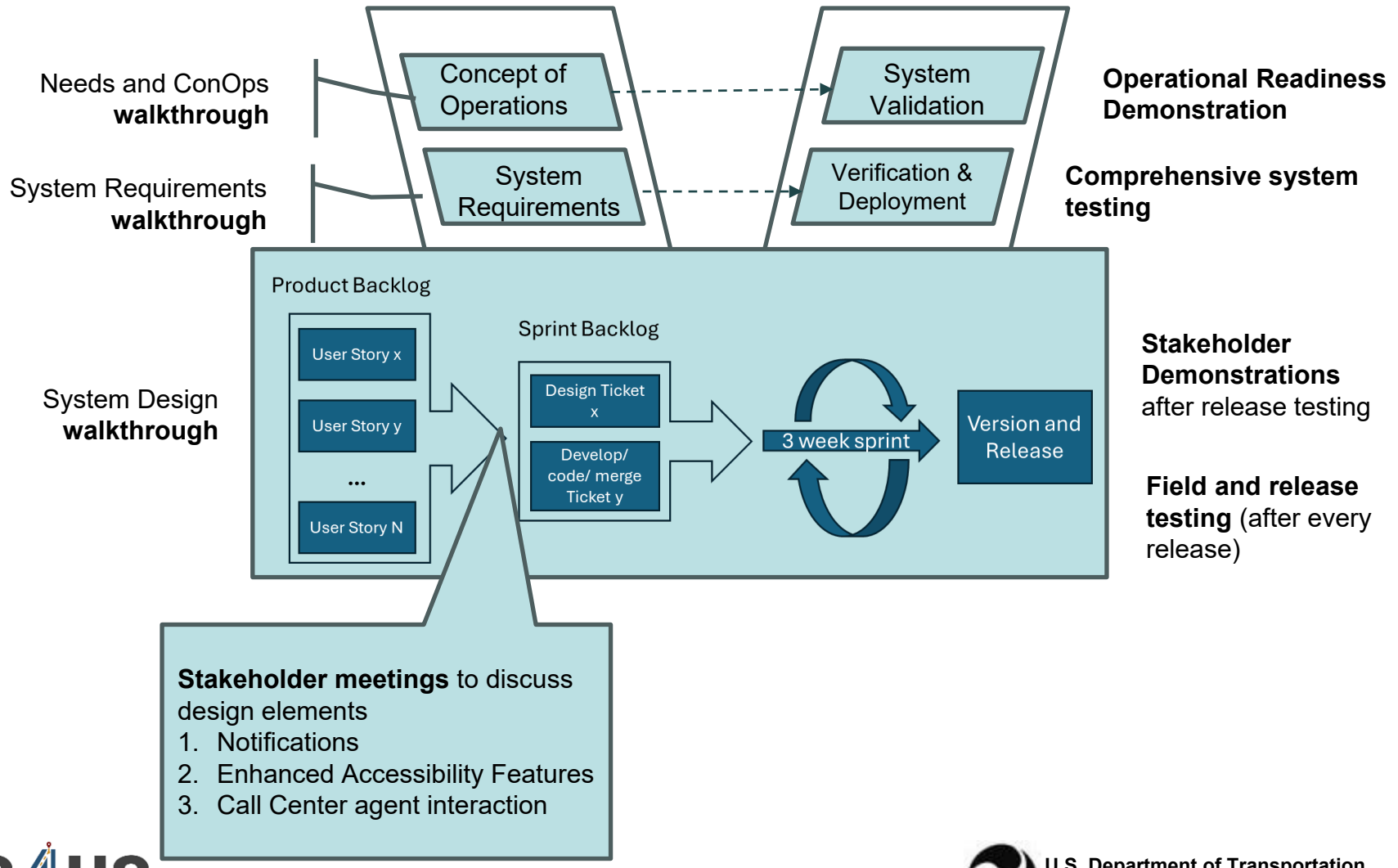
Describe what the system is expected to do



Validate that needs and expectations are met

Verify system operates within without fault or omission, esp. with integration components

Stakeholder Engagement in Hybrid Model



Q&A

- Facilitator: Carlos Alban, ITS America

Stay Connected

For more information please contact:

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Visit the Complete Trip - ITS4US Deployment Program Website and FAQs:
https://its.dot.gov/its4us/
https://www.its.dot.gov/its4us/its4us_faq.htm

THANK YOU

Visit **bnmc.org/allaccess** to learn more!

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