U.S. Department of Transportation

ITS4US

IT'S TRANSPORTATION FOR ALL OF US

Task 2-D:
Comprehensive Installation and Comprehensive Acquisition Plans

Elina Zlotchenko

ITS4US Program Manager

ITS Joint Program Office

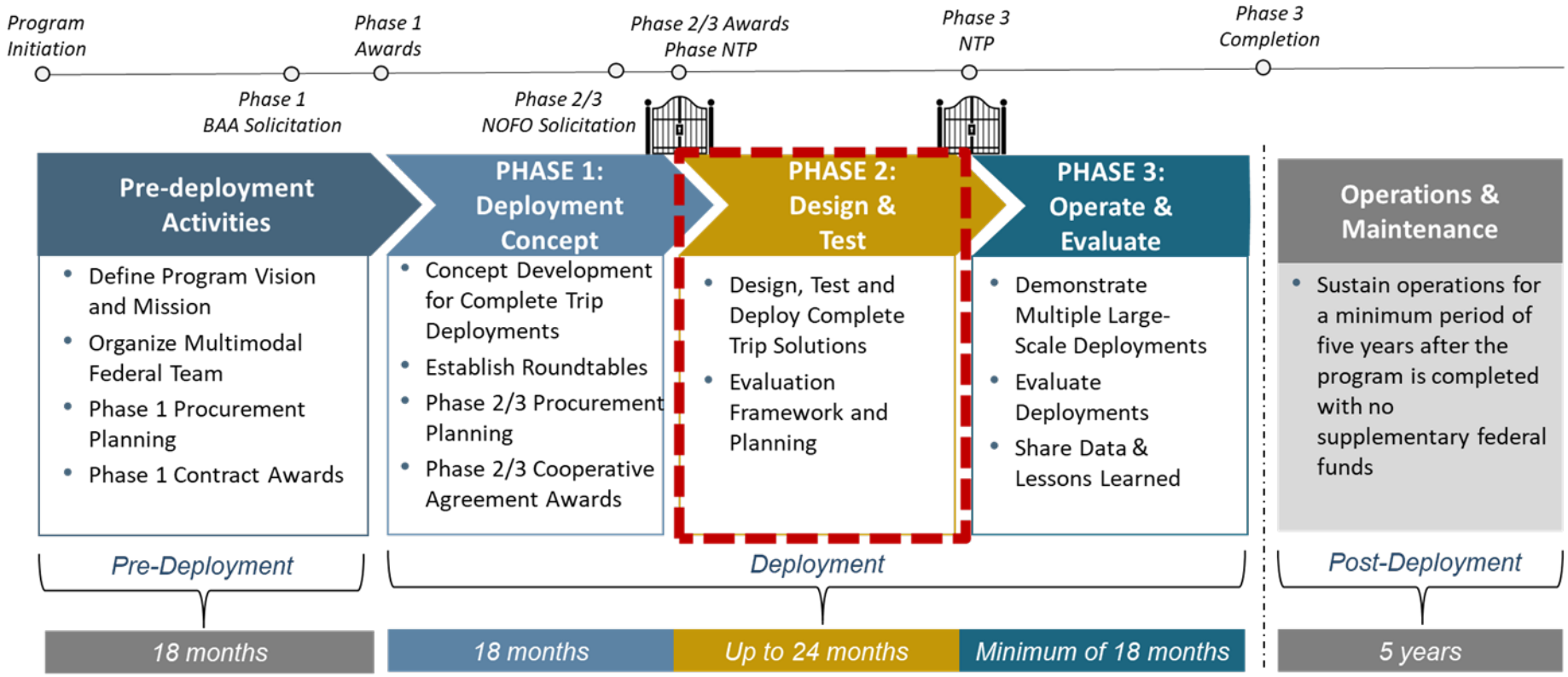
ITS4US Program Overview

- 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

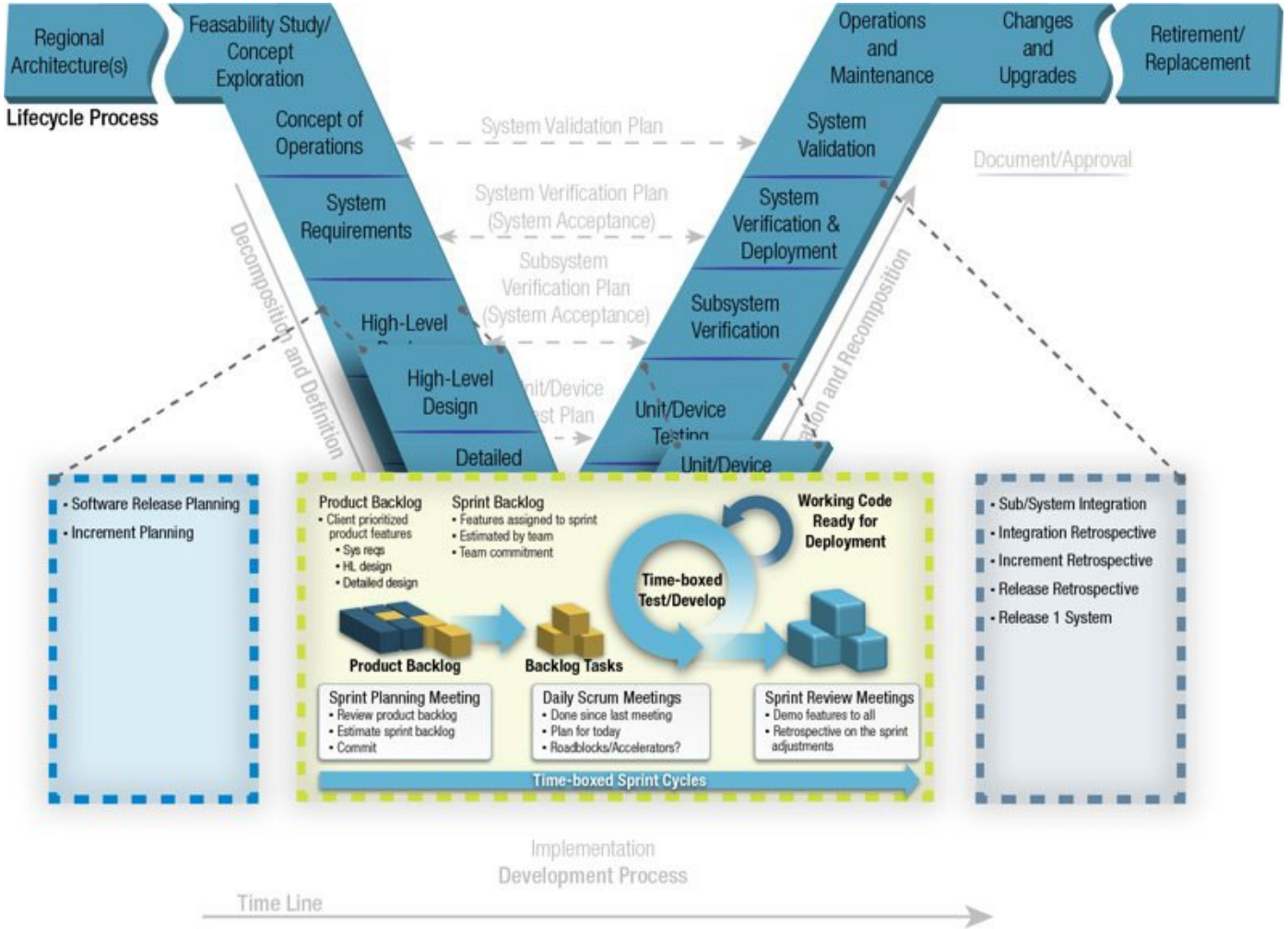
ITS4US
IT'S TRANSPORTATION FOR ALL OF US

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

Deployment Phases



Systems Engineering "Vee" Diagram



(Source: FHWA 2007 and modified by Noblis 2017)

Task 2-D:
Comprehensive Installation and Comprehensive Acquisition Plans

Deborah Curtis

Highway Research Engineer
FHWA-Office of Operations, Research, and Development

ITS4US Systems Engineering Subject Matter Expert

2-D Acquisition and Installation Planning

Task 2-D extends from Month 1 to Month 12. The key activity is the development of plans for the acquisition and installation of major systems for your deployments. Key documents are the Comprehensive Acquisition Plan (CAP) and Comprehensive Installation Plan (CIP). The objective of this tasks is to create these plans to ensure that the acquisition plan is well-documented and following an orderly, systemic process.

Deliverables

1. Comprehensive Acquisition Plan (CAP)
2. Comprehensive Installation Plan (CIP)

2-D Deliverables

- Draft, Revised, & Final CAP
  - The plan will identify the type and number of devices, equipment, and software-based capabilities to be acquired
  - The CAP will also provide an overview of proposed acquisition approach that includes:
    - Assessment of time-to-procure in relation to overall deployment schedule
    - A plan to equitably engage and inform prospective vendors over time
  - The DOT understands that there could be substantially different acquisition timelines among the sites.

- Draft, Revised, & Final CIP
  - The CIP will incorporate the CAP by further identifying the types and number of equipment required to be configured and installed.
  - The plan will provide overview of:
    - Supplier base and procurement method(s)
    - A high-level plan for inventory and configuration management
    - A high-level initial installation schedule
    - High-level installation plan(s)

2-D Key Activities - Acquisition

- **Identifying how services, devices and software will be acquired**
  - Common procurement methods include:
    - Commercial off the Shelf – Just buy devices, software that is ready to go with little to no modification
    - Competitive procurement – Release a request for proposal (RFP) and evaluate responses to find the best provider
    - In Project Development – The project team develops the system component itself
  - Some system elements may require combinations of the above procurement methods
- **Identify procurement and delivery timelines**
  - When looking at the overall system development effort, note when certain elements need to be delivered to ensure the appropriate procurement method can deliver that element at the right time

2-D Key Activities - Installation and Configuration

- **Hardware Installations**
  - Install various devices based on supplier recommended procedures as well as vehicle model type
- **Infrastructure Installations**
  - Installation of roadside (e.g., RSUs) and back office (e.g., servers) infrastructure
  - Integration of new infrastructure with existing systems
- **Software Installations**
  - Work with the developer
  - Follow configurations lessons learned

2-D Challenges and Possible Strategies

- **Procurement Delay**
  - Issue: Delay in procurement of essential enabling technologies.
  - Possible Strategy: Engage other potential vendors and follow mitigation protocols outlined in the ICDTP.

- **Vendor Commitment**
  - Issue: Vendor backs out from commitment
  - Possible Strategy: To reduce risk, either select more than one supplier during the acquisition phase or not which vendors could feasibly provide the desired solution if the prime vendor were to fail to deliver.

Lessons Learned

- Start early
  - Conduct vendor research and engage vendors early in phase 2
- Supplier Relations
  - Utilize RFPs to scrutinize and select the best suppliers
  - Utilize multi-vendor outsourcing and source suppliers early to create a collaborative environment
- Installation of equipment
  - Utilize professionals where possible for installations
  - Document and perform calibration procedures for all technologies
  - Check pre-existing hardware for potential interference
- Configuration
  - Document configuration settings thoroughly
  - Maintain and update configuration documentation

Relationship between SE Tasks

- Phase 2 SE activities build on the SE activities in Phase 1, adding more technical detail and refining user needs and requirements as appropriate
  - Traceability between the User Needs, Requirements, System Design and Testing is very important in Phase 2
- Phase 2 activities, whether traditional waterfall processes or Agile, become more connected and interrelated
  - Acquisition plans may be heavily reliant on system requirements to drive procurement efforts
  - Installation plans will be driven by requirements and system design
  - A logical test program that builds from lower-level Unit/Component tests, to integration testing to full system testing will be verifying system requirements, validating user needs and demonstrating that the system is ready to enter operations
- Phase 2 activities can move very quickly and the USDOT SE Team is always available to help with any questions and concerns that arise during any of the Phase 2 SE activities

References for SE Session

- Phase 1 Connected vehicle pilot deployment program phase 1 : lessons learned : final report. (bts.gov)
- Phase 2 Connected Vehicle Pilot Deployment Program: Driving Towards Deployment: Lessons Learned From the Design/Build/Test Phase (bts.gov)
- Architecture Reference for Cooperative and Intelligent Transportation
- https://www.its.dot.gov/pilots/thea_obu.htm
- https://www.its.dot.gov/press/2018/nycdot_airsupport.htm
- https://www.its.dot.gov/pilots/disparate_systems.htm

ITS4US Contact Information

Elina Zlotchenko
Program Manager, ITS JPO
Elina.Zlotchenko@dot.gov

Visit the ITS4US Deployment Program Website:

https://its.dot.gov/its4us/

ITS4US Deployment Program Video

https://youtu.be/pztl1lRyXAc