U.S. Department of Transportation

COMPLETE TRIP

ITS4US

California Association of Coordinated Transportation
Phase 1 Concept of Operations Webinar

July 20, 2021

Agenda

- **Purpose of this Webinar**
  - To share the Concept Development Activities from *CALACT* and its partners with the stakeholders of the project.

- **Webinar Content**
  - Complete Trip – ITS4US Deployment Program Overview, Bob Sheehan
  - Site Orientation & Key Challenges, Jacklyn Montgomery, CALACT
  - Deployment Concept Overview, Gillian Gillett, California State Department of Transportation
  - Operational Scenarios, Jacob Brett, Washington State Department of Transportation
  - Deployment Outcomes, Thomas Craig, Independent Consultant
  - Stakeholder Engagement Efforts, Sarah Hackett, Oregon State Department of Transportation
  - Stakeholder Q&A
  - How to Stay Connected, Bob Sheehan

- **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

Brief Program Overview

Bob Sheehan, ITS JPO/FHWA

Complete Trip - ITS4US Deployment Program

- A USDOT Multimodal Deployment effort, led by ITSJPO 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

Source: USDOT

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

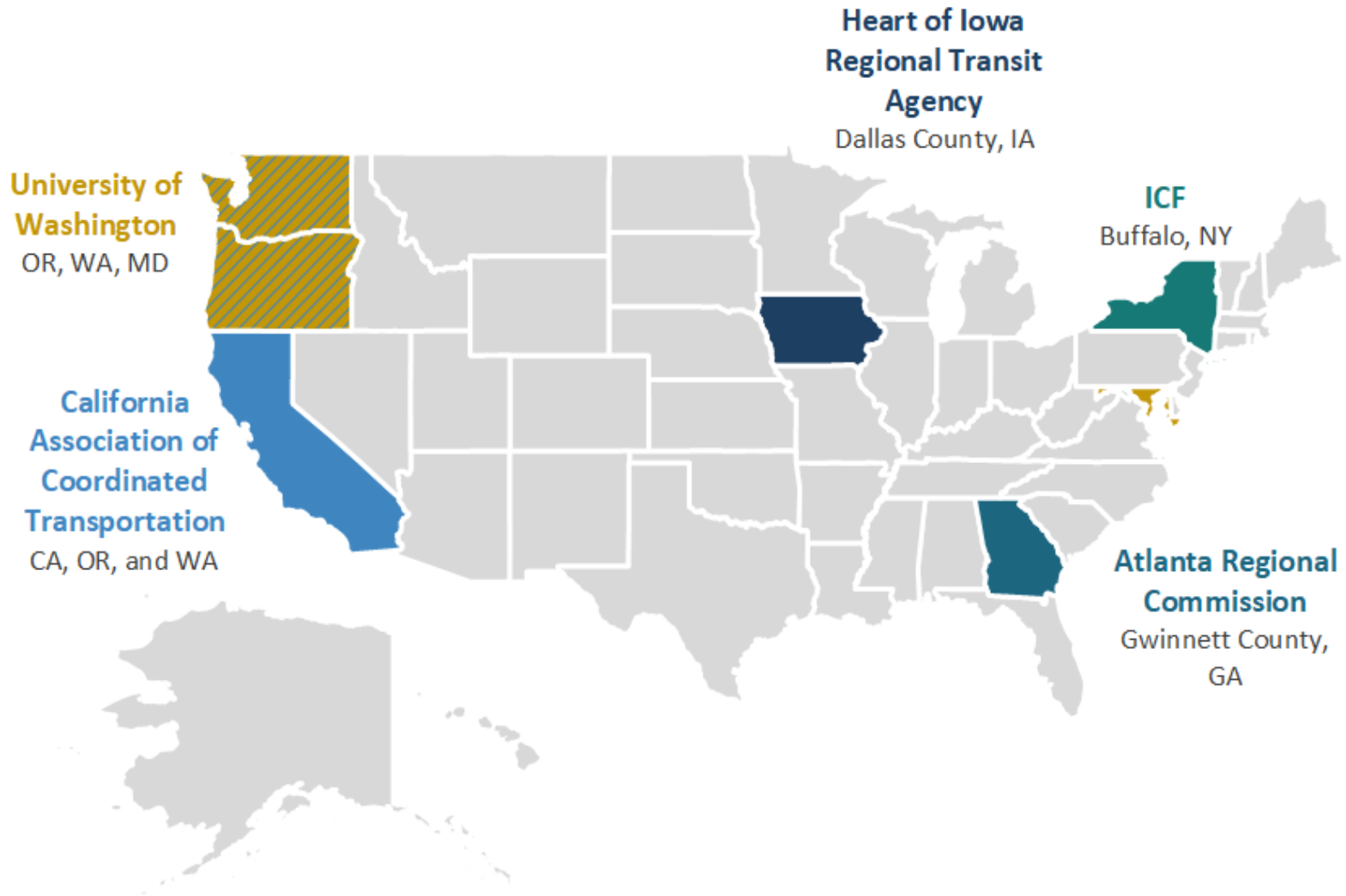
Identify needs and challenges by populations

Develop and deploy mobility solutions that meet user needs

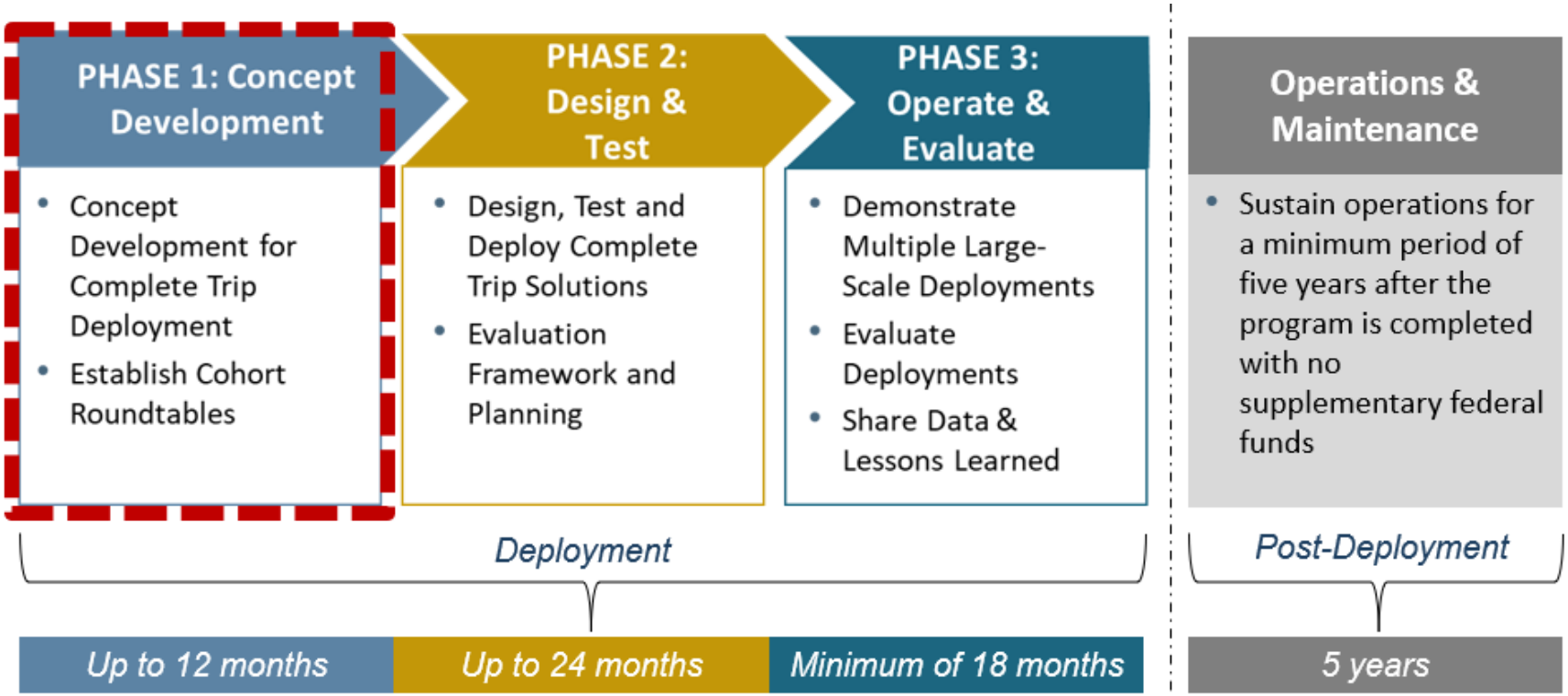
Measure impact of integrated deployments

Identify replicable solutions and disseminate lessons learned

Complete Trip Phase 1 Awardees



Deployment Phases



Site Orientation & Key Challenges

Jacklyn Cuddy, CALACT
Project Management Lead

Presenters (Project Management Team)

Source: Jacklyn Cuddy

Jacklyn Cuddy
CALACT
Executive Director
Project Management (PML)

Source: Thomas Craig

Thomas Craig
Independent Consultant
System Development Lead (SDL)

Source: Gillian Gillett

Gillian Gillett
Caltrans
Program Manager
Concept Development Lead (CDL)

Sarah Hackett
ODOT representative

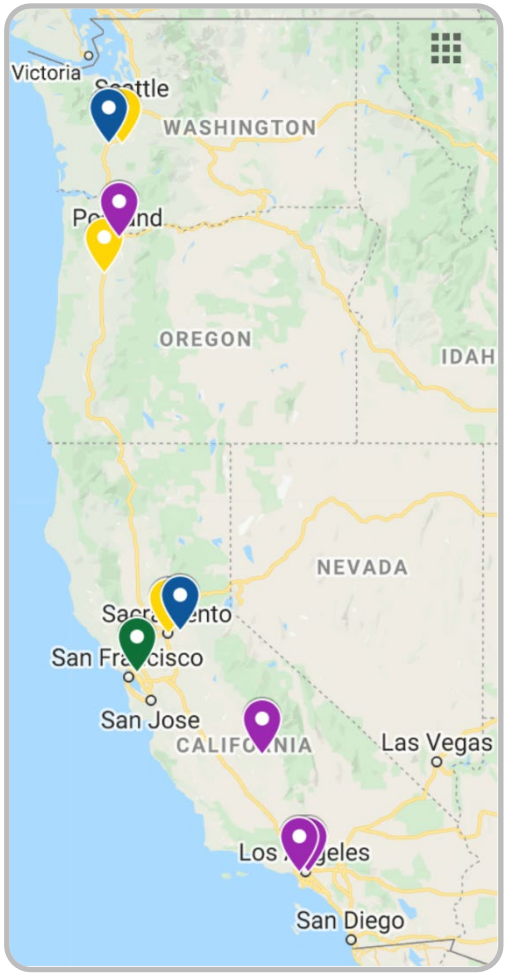
Jacob Brett
WSDOT representative

Project Overview

A coordinated effort to

- *improve the user experience and cost efficiency of demand-responsive and fixed-route transit for underserved riders, and*
- *foster a market in which riders can easily plan, book, and pay for trips throughout Washington, Oregon, and California.*

*The project will **support agencies** around the 3 state region by helping them **select interoperable software vendors** which publish open data.*



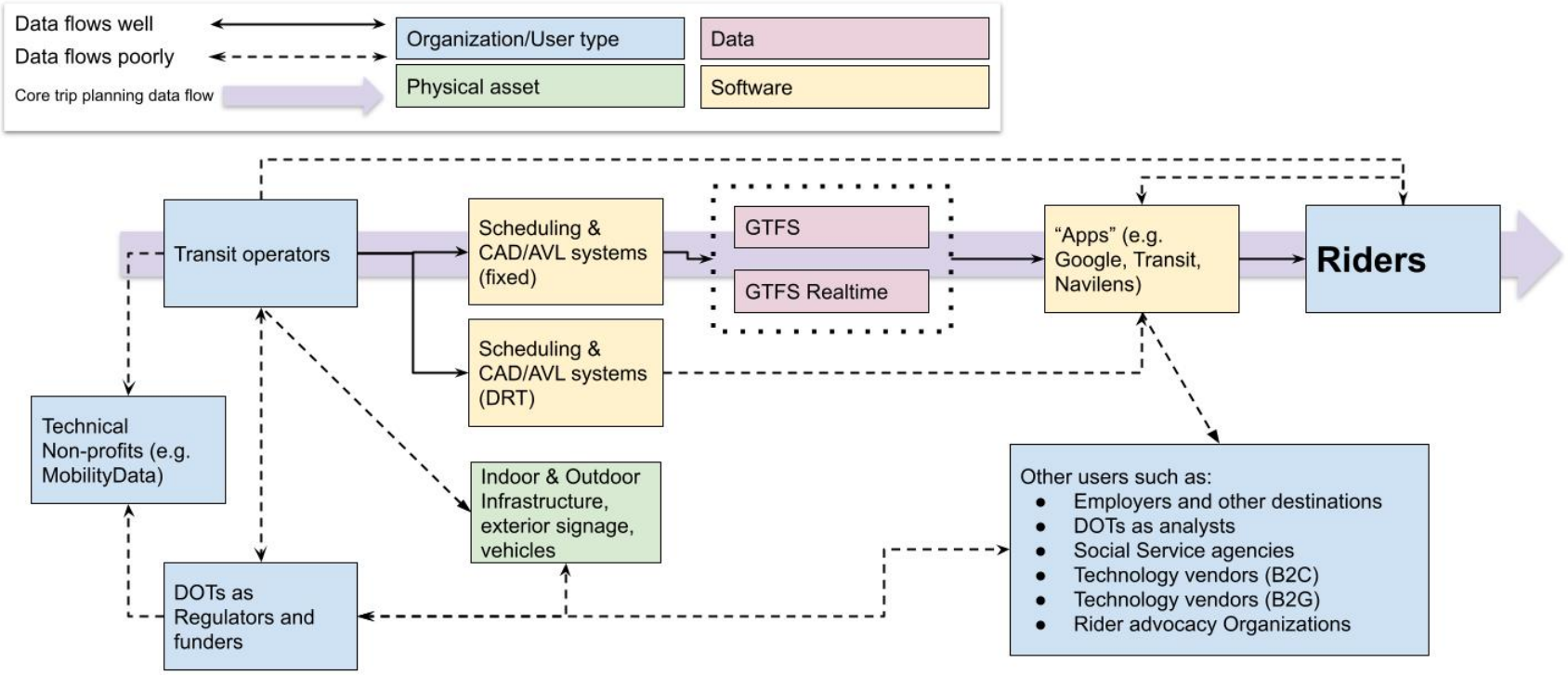
Source: Google Maps, Trillium

Team overview

CALACT (Transit Association)
California PATH (Academic)
Caltrans (DOT)
Washington State DOT
Oregon DOT
Google (Private technology firm)
Transit (Private technology firm)
MobilityData (Non profit standards body)
NaviLens (Private technology firm)
Trillium (Private technology firm)
Compiler LA (Private technology firm)
Washington State Transit Association
Tamika Butler Consulting
Mark Wall Associates
Estolano Advisors

Source: Aggregation by CALACT, logos by partners on left of slide

Current System



Source: CALACT

Current System - Challenges

Riders and all other users face challenges in the current system:

- Transit data deficiencies
  - Pathways and vehicle information related to wayfinding and accessibility
  - Lack of digitized demand response transit service information
  - Metadata regarding services and cosmetic information often missing
  - Translation and text-to-speech information not provided
  - Limited fare information especially for eligibility-restricted reduced fares
- Market deficiencies
  - Wealthier and larger agencies are able to procure better systems
  - Smaller agencies and underserved riders don't have access to technical support
- Trip planning deficiencies
  - Interfaces not designed with accessibility to riders with disabilities or riders with limited English proficiency prioritized
  - Riders of demand response services and riders who need complete and accurate transit data aren't well served
  - Non-rider users don't have easy points of access for information about the transportation network

Deployment Concept Overview

Gillian Gillett, Caltrans
Concept Development Lead

Deployment Concept Notes

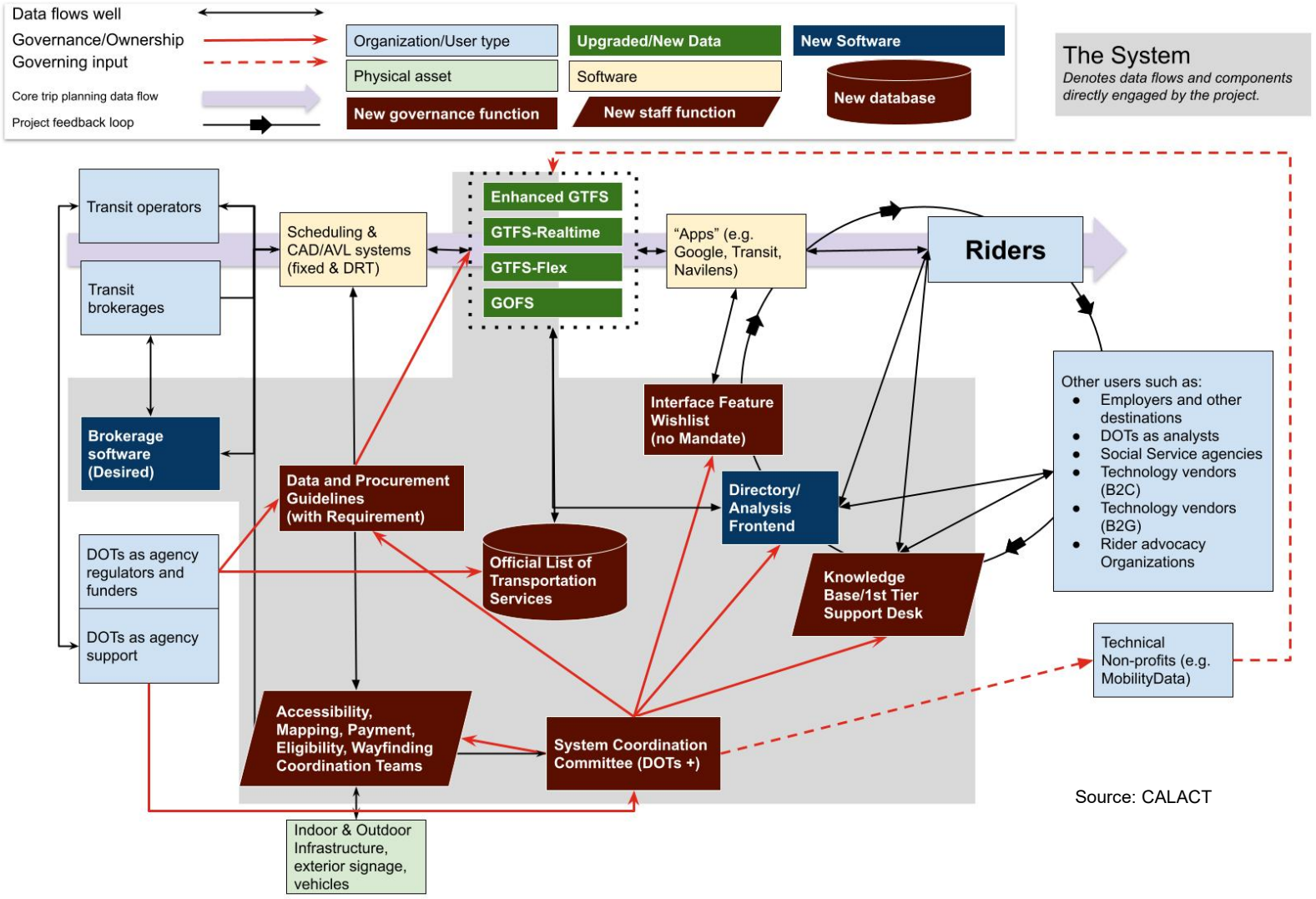
Our tri-state ITS4US program plans to

- Ensure there exists easily retrievable GTFS data for all transit operators
- Promote the adoption of accessibility-focused extensions such as
  - GTFS Pathways
  - GTFS TextToSpeech
  - GTFS Vehicles
  - GTFS Realtime
  - GTFS Fares
  - GTFS Flex
  - “GOFS”

Our proposed approach is to

- Adopt a common regulatory framework for data publication expectations
- Develop shared tools that solve typical pain points in the current system
- Share all resources developed and be willing to partner with other states

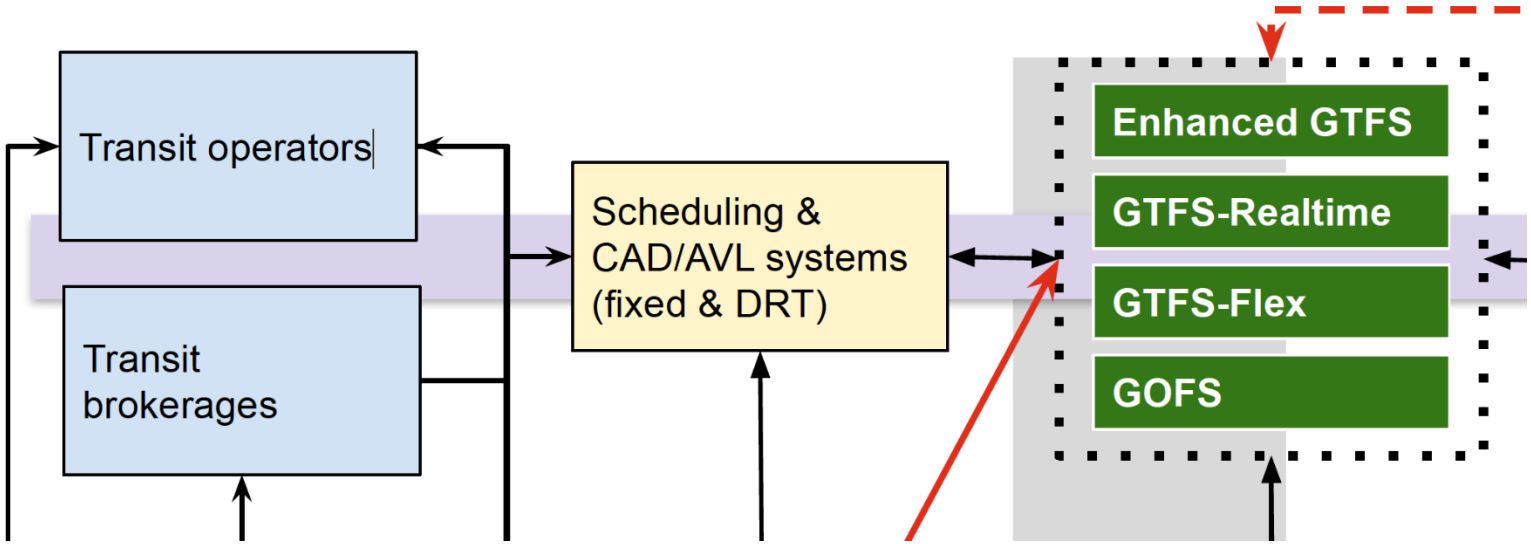
Proposed System



Source: CALACT

Transit Data Enhancements

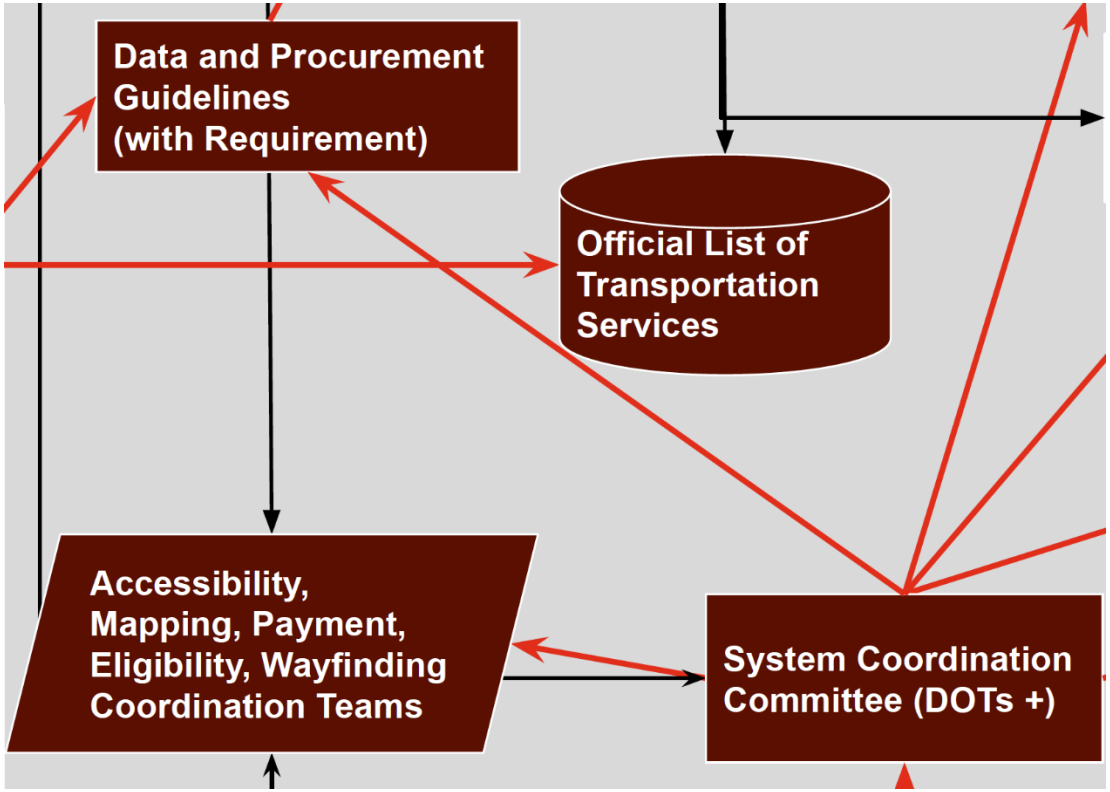
- Enhanced GTFS
- GTFS Realtime
- GTFS-Flex
- GOFS



Source: CALACT

Governance processes

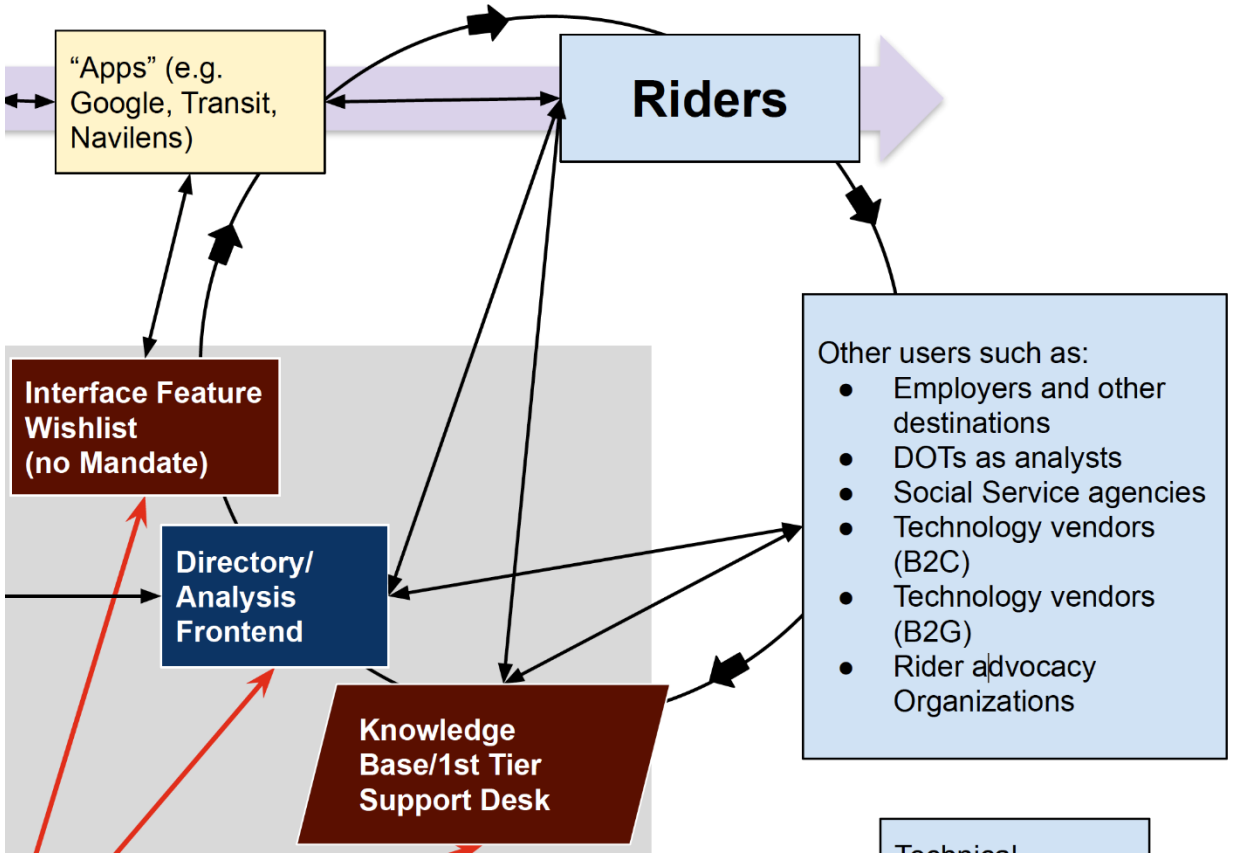
- Data and Procurement Guidelines (with Requirement)
- System Coordination Committee
- Official List of Transportation Services
- Accessibility, Mapping, Payment, Eligibility, and Wayfinding Coordination



Source: CALACT

Tools and services

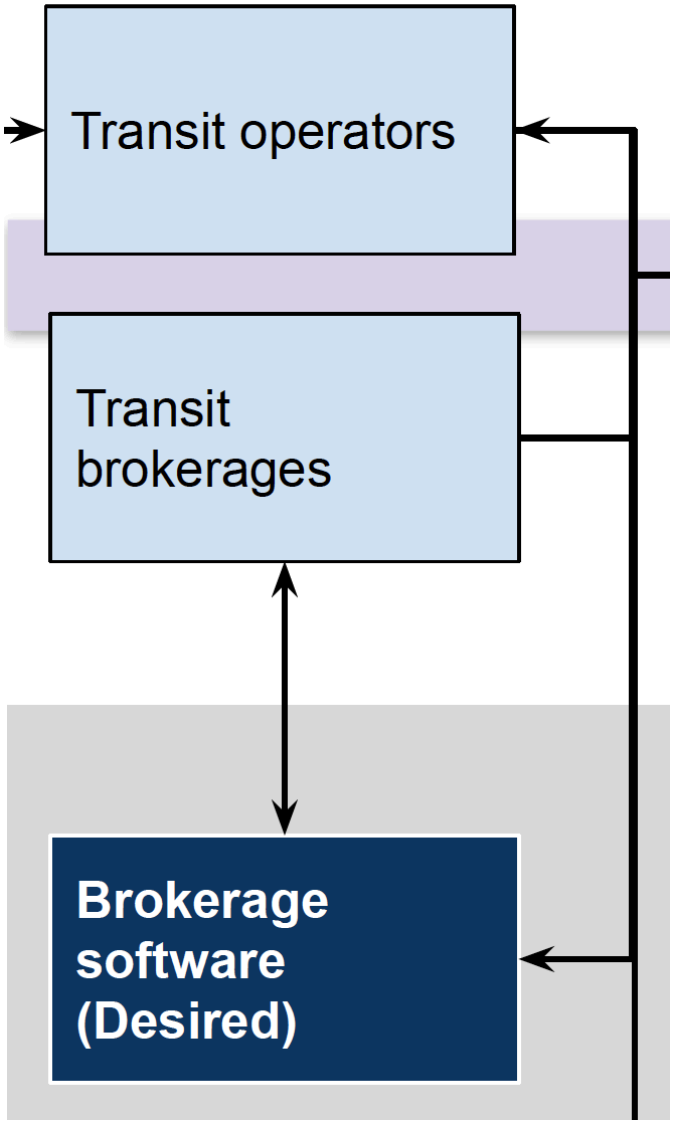
- Directory/Analysis Frontend
- Knowledge Base/1st Tier Support
- Interface Feature Wishlist



Source: CALACT

Brokerages

- Brokerages are a *desired* function of the system.



Source: CALACT

Key desired outcomes

- Adoption of GTFS and extensions by operator software providers
- Adoption of GTFS and extensions by rider software providers
- Organized approach to data publication and distribution
- New tools and services that make it easy for anyone to understand and use transit data in a coordinated and efficient way

Operational Scenarios

Jacob Brett, WSDOT lead

Operational scenario example 1

Individual with a mobility disability who uses a mobility device is looking for a demand response service for the first time.

1. Trip planning apps ingest and model non-fixed-route services from datasets provided by an agency, DOT, non-profit, or vendor acting on behalf of one of these.
2. The data the app consumes and publishes includes information on who the service is for (ie eligibility restrictions).
3. The individual accesses the trip planning app, to which they have provided user profile information (use and type of mobility device).
4. The user searches for a trip between the start and end points.
5. The app accesses ingested datasets and checks user profile and trip parameters against them. The app returns a possible trip that matches the user's needs, as well as information about the agency providing the trip, such as name and contact information.

Operational scenario example 1, continued

6. The app identifies and presents a demand response service and a trip that could serve the rider's needs. The user is also presented with a "book now" button, which deep links to a booking application or webpage.
7. The user clicks on the book now button to proceed with the booking process through an agency-maintained application.
8. The user is served by the demand response service following the parameters of the trip they booked with the agency originally discovered through the trip planning application.

"Alternate flows"

6a. The app could also provide live vehicle/trip availability through an API transmitting real-time vehicle or dispatch data from the agency.

8a. When the vehicle has not arrived at the expected time, the rider texts, calls, or checks the mobile/web application to learn that the vehicle is still on route but delayed.

Operational scenario example 2

A rider with a vision disability boards a demand responsive vehicle on a busy street and knows the right vehicle to board because the mobile application directs them to it in a line of vehicles.

1. The rider with a vision disability has booked a trip through a mobile application for a demand-responsive service, with an origin location on a busy urban street.
2. The mobile application confirms the vehicle is en route to the pickup location and provides a push notification to the rider's mobile phone identifying the expected time until pickup.
3. The vehicle arrives and parks along a sidewalk with other vehicles both in front of and behind it.
4. The rider receives a notification that the vehicle has arrived and raises their phone to see the line of cars.
5. The phone identifies the digital code placed near the front of the vehicle through its camera and directs the rider towards the vehicle through audio indications of direction.
6. The rider announces to the driver that they are ready for their ride.

Operational scenario example 3

A small demand response operator is transitioning to a new scheduling system.

1. Transit operator reviews state guidelines indicating the requirements of the scheduling software they want to purchase.
2. Transit operator contacts state DOT for technical assistance and receives a proposed scope of work to include in an RFP, as well as a list of vendors that are known to meet the guidelines.
3. Transit operator publishes an RFP including the proposed scope of work and receives multiple responses within budget.
4. Software vendor and DOT supports the transit operator through implementation, and helps the operator integrate the published data from their system into the state data system.
5. Software vendor and DOT are both able to use their standard data quality assurance processes to confirm that the agency is successfully publishing GTFS data as required.

”Alternate Flow”

3a. State DOT could use a group purchase arrangement allowing the operator to forgo an RFP and purchase directly from a list of vendors at pre-negotiated prices.

Operational scenario example 4

A vendor is calculating the potential return on investment from building a new software product for the transit market

1. Vendor queries the directory/analysis frontend for the number of agencies, vehicles, and or bus stops within the region depending on the exact technology being planned for.
2. Vendor performs worst case/best case analysis on an expansion plan for their product sales and compares expected revenue and expenses to planned investment.

Deployment outcomes

Thomas Craig, Independent Consultant
System Development Lead

New system capabilities

- Changes for riders
  - Demand responsive transit and accessibility features
- Changes for other end users
  - Easy access to information about service network
- Changes for regulators
  - Organized records regarding operators
  - Standardized data for service analysis
- Changes for operators
  - Standardized outputs of scheduling software
- Changes for vendors
  - Clearer communication and expectation setting

New system responsibilities

- Responsibilities for DOTs
  - Maintenance of Official List of Services
  - Participation in System Coordination Committee
  - Technical support to operators regarding guidelines
- Responsibilities for operators
  - Use new features of scheduling software
- Responsibilities for B2G vendors
  - Develop export features for DRT and accessibility
- Responsibilities for B2C developers
  - Adopt proposed features from the wishlist

New system advantages and limitations

- Advantages
  - Increased efficiency
  - Coordination of currently overlapping efforts
  - Avoids investing too extensively in new, risky software
- Limitations
  - Only works if we work together
  - Ongoing maintenance of intergovernmental coordination

Other solutions we considered

- Developing demand-responsive scheduling software
- Requiring the brokerage software
- Customer service vs. first tier support desk
- Eligibility and payments technology investments

Measuring performance

- Is there more GTFS data published, which complies with the accessibility-focused enhancements fostered by this project?
- Are users able to successfully answer their questions regarding transit services by using the tools and resources provided by the project?
- Do third-party application developers implement the accessibility features suggested by the project?
- Data sources:
  - Directory/Analysis frontend and 1st tier support desk
  - Agency and vendor partnerships

Stakeholder Engagement Summary

Sarah Hackett, ODOT lead

Overview of principles and process

- Principles
  - Actual users from underserved groups should review user needs
  - User needs should be prioritized by team members with technical expertise
  - Involve key stakeholders who both are users and have technical expertise
- Process
  - Interview
  - Prioritize
  - Finalize

Who to involve

- Stakeholder ’committee’ chairpersons
  - Five targeted committees
  - Engaged as consultants, paid hourly or fixed-fee
  - Experience in transit, some familiarity with related technology
  - Close connections with end-users
- Stakeholders
  - Included through organizations, personal relationships, and generic outreach
  - 30 stakeholder interviews - mostly riders, some agency staff and advocates

Interviews

- Process
  - 45 to 60 minute interviews
  - 1 to 3 stakeholders in each interview
  - Generally guided by 2 partners and 1 stakeholder chairperson
  - 8 open-ended questions
- Outcomes
  - Added 90 new user needs
  - Extensive overlap among underserved rider groups

Discussion and prioritization

- ~110 user needs
  - 70 needs from rider perspective, 40 from other user perspectives (operators, app developers, regulators, technology vendors)
  - 12 project partners + stakeholder chairpersons reviewed all needs
  - Assigned “feasibility” and “impact” scores
  - Each partner identified 5 ”top” and “bottom” needs
  - Tabulated combined scores
  - Finalized by Project Leadership Committee

Prioritization results

- 20 needs proposed for removal
- Other ~90 needs ranked by System Development Lead
  - Required (The system *must*)
  - Desired (The system *should*)
  - Optional (The system *may*)
- Project Leadership Committee reviewed and suggested changes to language or ranking

ConOps Walkthrough

- 3 weeks after initial ConOps delivered to USDOT
- 3 day event, 3.5 hours each day
- ~20 participants each day – project partners, key stakeholders, USDOT staff
- Reviewed each user need in context of a relevant underserved group(s)
- Identified comments needing follow up
- System Development Lead prepared final suggested changes for participant review
- Many language changes, 10 new or revived user needs

Final list of user needs

- By priority
  - Required – 25
  - Desired – 36
  - Optional – 33
- By user group

Riders – 65

Transit operators – 13

App developers – 2

Regulators – 5

Technology vendors – 2

Common across multiple groups – 7

Final list of *required* needs

- RID-01 - Discover DR
- RID-01-1 - Book in advance
- RID-01-4 - DR wait time
- RID-02 - Various trips
- RID-03 - Eligibility process
- RID-04 - Hear text annunciation
- RID-04-1 - Audio option
- RID-13 - App guidance
- RID-14 - Cost of service
- RID-14-1 - Standard payment media
- RID-15 - Customer service
- RID-17 - No internet
- RID-19 - Device accessible
- RID-19-1 - Space for mobility device
- RID-19-2 - Pathways in advance
- RID-20-1 - Preferred language
- RID-20-2 - Plain language
- RID-20-3 - Visual or text
- OP-01 - Integrated trip planning
- OP-02 - Booking through rider apps
- OP-03 - Tech sophistication not required
- OP-04 - Phone reservations
- MUL-01 - See full network
- MUL-02 - Clear governance
- MUL-03 - Contact information

Examples of final user needs

- ”Required” needs:
  - Discover DR: “The rider needs to discover and book demand responsive trips within online/mobile trip planners so that these services are as easily accessed as fixed-route services.” *RID-01*
  - Device accessible: “The rider needs to be able to know whether each part of their trip is accessible to mobility devices and bikes so they can plan for a safe and multimodal trip.” *RID-19*
  - See full network: “All users need to see list and map interfaces of agencies, routes, stops, and transit connections within a region to fully understand and access the transit network.” *MUL-01*

Stakeholder Q&A

- Please keep your phone muted
- Please use chat box to ask questions
- Questions will be answered in the order in which they were received

Stay Connected

For more information please contact:

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