Connected

Spring 2016

A Quarterly Newsletter for Connected Corridors Stakeholders

Update

The fall and winter months have been busy for the CC Pilot and for national transportation issues. In October, CA Assemblymember Jim Frazier visited UC Berkeley to learn about its various transportation institutes and projects including the CC Pilot (see page 3). In December, President Obama signed the FAST Act into law, marking the first long-term transportation bill passed by Congress in 10 years (see page 6). For the Pilot, both the CC Docs website and the CC website were updated (see page 5). In January, Connected Corridors was once again represented at the Transportation Research Board's annual conference held in Washington D.C., where Dr. Francois Dion presented the Connected Corridors program and the I-210 Pilot on behalf of Caltrans and the entire team. Lastly, Mr. Homar Noroozi became the new Interim Principal Engineer at Caltrans District 7. Noroozi will be leading the implementation of District 7's organizational realignment concurrent with the development and deployment of TSMO strategies and ITS technologies. Welcome to the team, Mr. Noroozi!

Requirements Draft Ready for Review

After more than 20 meetings with over 75 stakeholders, the first draft of the Connected Corridors High-Level System Requirements document ("Requirements") is now being reviewed. This crucial document defines what the system and all its components—including people, organizations, software, and hardware—must do. While a lengthy and ambitious process, well-developed requirements create a strong foundation for the next step in the Systems Engineering process, system design, and ultimately help ensure the long-term success of the pilot.

"I am extremely grateful for every person who took the time to meet with us and work on these requirements," said Samson Teshome, Corridor Manager for Caltrans District 7. "It's a new process for many of our stakeholders, but with full engagement of our partners, I know we are on the path to success." One unique attribute of the CC requirements document is the three levels of detail, making it usable for a range of audiences. The three formats are:

- Brief summaries: primarily written for upper management and for inclusion in informational presentations.
- Generic explanations: place each requirement in the context of how things are going to be done, such as who carries it out, the skill set needed, how success is measured, maintenance required, degree of automation, and relation to other requirements. There is no mention of specific agencies, local data sources, or other I-210 Pilot-specific information, making it easier to modify for future pilots or for other agencies to use as a boilerplate.
- Requirements tables for the I-210 Pilot: contain the most detail, including corridor specifics, stakeholder agencies, and particular systems.

By providing the requirements in these varying levels of detail, the team hopes to address the many different expectations, experiences, and communication preferences found among the people who have been involved in the requirements process over the last six months.

Two key items included in the document are performance metrics and institutional requirements. For performance metrics, each requirement has a specific metric with the level of performance (the metric value) necessary for that requirement to be considered functioning or successful. For example, for Incident Detection

there is a requirement to "Determine if Traffic Characteristics Are Outside of Normal Expectations." Stated more specifically, the requirement is that the system uses historical patterns and the existing corridor state to determine if traffic is within the normal variability for the specified date and time. The metric value for the percentage of time the results are expected to be accurate is 90% and this determination will be made by the Corridor Technical Manager and stakeholder traffic engineers.

The institutional requirements focus on organizations and people. In most of the stakeholder and expert interviews, these were identified as the requirements most affecting the success of an ICM effort. For the I-210 Pilot, they reinforce the importance of every individual involved in the project and the team's belief that active communication is the cornerstone of the Pilot.

The Requirements document has been organized in the following manner:

- Introduction and System Description provide an overview of the project (similar to what was in the Concept of Operations), mostly for readers who are not familiar with the project.

- The User Needs are identified next, as they form the basis for the Requirements.
- The Requirements Overview describes the process of developing the requirements, how they are organized, and brief summaries of them.
- The Generic and Specific Requirements, as described previously, come next.
- The Appendices contain operational flowcharts, a description of the "actors and stories" approach, and notes from the meetings with different groups and agencies that provided input to the requirements.

We encourage every stakeholder to take some time to review the requirements and make use of the varying levels of detail provided. A second round of comments will be accepted until April 8, with the goal of finalizing the document with stakeholders in May. Stakeholders are encouraged to login to the CC Docs site and download the Requirements document from the Document Library at: http://ccdocs.berkeley.edu/content/document-library.

For additional information or questions on the I-210 High-Level System Requirements, please contact Francois Dion at fdion@path.berkeley.edu.

Requirements Breakdown
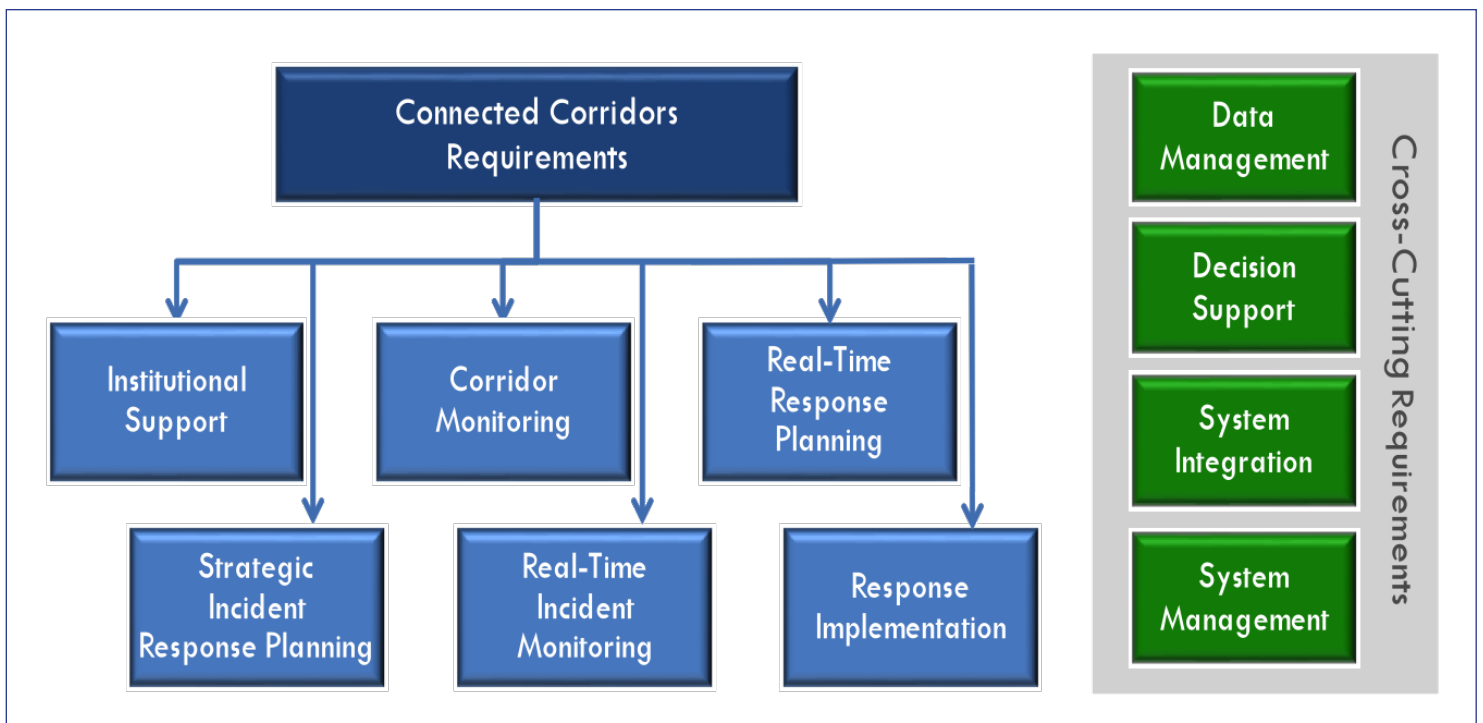
Each area includes arterials, freeway, and transit

Assemblymember Frazier Visits Connected Corridors Team

Last October, State Assemblymember Jim Frazier (D – Oakley) took a tour of UC Berkeley and met with University leaders to discuss programs and research opportunities. Frazier currently serves as Chair of the Assembly Transportation Committee and has long been an advocate of highway safety and transportation infrastructure improvements. As a local government official, Frazier delivered $83,000,000 for Highway 4 Bypass improvements, served as Chair of TRANSPLAN and the State Route 4 Bypass Authority, and was a member of the E-BART Advisory Committee. Frazier's continued priorities include increased funding to California's transportation infrastructure, helping increase access to services for Veterans, maintaining funds for local public safety, and encouraging job creation.

Institute of Transportation Studies (ITS) Director Alexandre Bayen, College of Engineering Dean S. Shankar Sastry, Chief Consultant for the Assembly Transportation Committee Janet Dawson, Contra Costa Transportation Authority Executive Director Randell Iwasaki, and PATH Co-Director Tom West joined Frazier as he met with PATH managers to learn about the Connected Corridors program.

In addition to an overview of Connected Corridors and other UC Berkeley transportation research initiatives, staff provided Frazier and his team information on what the future of transportation might look like: robotics, the 'Internet of Things,' virtual and augmented reality, and how changing culture, demographics, and technologies might impact transportation, as well as the need for quality data and intelligence to support decision-making. Following the meeting with Frazier, the Connected Corridors program was discussed in more detail with Chief Consultant Dawson over lunch. Dawson was impressed with the positive cultural changes happening at Caltrans Headquarters and through the District 7 reorganization. Both Dawson and Frazier were interested to learn about the program's funding and how they could assist the team in the future.

An informational hearing with the entire Transportation Committee is being discussed because of this initial contact. "I applaud UC Berkeley for their contribution to the success of the Connected Corridors program," said Assemblymember Frazier. "The Committee will benefit from hearing more about the program, the partnerships strengthened through the Pilot, and Caltrans' progress carrying out their new mission and vision for the benefit of all Californians."

Thank you to Assemblymember Frazier and Ms. Dawson for making the time to visit.

From left to right: ITS Director Alexandre Bayen, College of Engineering Dean S. Shankar Sastry, Assemblymember Jim Frazier, CCTA Executive Director Randell Iwasaki, and PATH Co-Director Tom West

First Responders and Public Safety Personnel Important to CC Pilot

First responders and public safety personnel have a clear and important role in the corridor. From enforcing traffic laws to treating and transporting victims of auto accidents, their top priority is the health and safety of the general public. Their unique understanding and ability to manage incidents in the I-210 corridor makes their input invaluable to the Connected Corridors Pilot.

Guidance from public safety personnel and first responders is critical to achieving numerous goals and objectives of the I-210 Pilot as stated in the Concept of Operations. These include:

- Enhancing the coordination of activities between first responders, traffic management agencies, and transit agencies to minimize impacts on system operations
- Improving the rerouting of vehicles and travelers around incidents
- Improving incident notification for first responders, network operations, travelers and fleet operators
- Reducing the impacts of incidents and events on network operations
- Reducing collision rates (including secondary incidents) and the severity of collisions

"Having worked with the CHP and other first responders for many years, I know first-hand how important they are to stabilizing a scene and making sure the public is safe," says Caltrans Project Director Sam Esquenazi. "Anything we can do as a part of the Pilot to ensure we are

July 21st crash on I-210, courtesy of Pasadena Now

communicating clearly and working in a coordinated manner will only help to increase corridor mobility and help us accomplish our stated objectives."

Since the project's initiation, first responders and public safety agencies have been viewed and engaged as stakeholders. Meetings were held with this group to discuss the user needs in 2014, and the requirements in 2015. Their input is crucial to developing a successful integrated corridor management system.

Improved communication was a common theme during requirements meetings with the public safety and first responder group, as with other stakeholders. Discussions included how to relay information to which agencies, and how to develop/refine current communication channels. Additionally, the agencies provided information on their existing incident management practices and policies. It is important to note that the Pilot will not change how a scene is managed by first responders; it will only impact

how vehicles are diverted around an incident and work to enhance partnerships among the involved agencies. These diversion plans will be developed through consensus of all Pilot stakeholders including public safety and first responder agencies.

"We appreciate and look forward to receiving additional input from first responders, public safety personnel and all of our Pilot stakeholders as we continue to build consensus among all parties," adds Esquenazi. "The commitment and effort of our stakeholders is what sets us apart and will ultimately be a determining factor in the Pilot's success."

Connected Corridor Websites Updated

Over the last few months, the Connected Corridors team has been busy reworking and reorganizing the general Connected Corridors website at www.connected-corridors.berkeley.edu and the I-210 Pilot website at www.ccdocs.berkeley.edu. Both sites have a revised layout and new and updated content, and the Pilot site has additional content available for the general public.

CONNECTED CORRIDORS OVERVIEW

The general Connected Corridors website introduces the program and provides visitors with basic information about Integrated Corridor Management (ICM), news updates on topics related to Connected Corridors, and the people and stakeholders working on the I-210 Pilot effort. The site has now been updated with additional information on the components of ICM projects and the Caltrans District 7 reorganization. The Connected stakeholder newsletters are also available.

I-210 PILOT WEBSITE

The I-210 Pilot website (previously known as CCDocs) provides more detailed information on the systems engineering process and how the Connected Corridors team is developing the Pilot system, as well as an extensive document library with previously approved planning documents, modeling and simulation examples, and CC presentations. Transportation professionals interested in learning about how to begin an ICM program can find a wealth of information on this site, specifically under the "Planning the System" menu. The Pilot site still has a password-protected section where draft documents
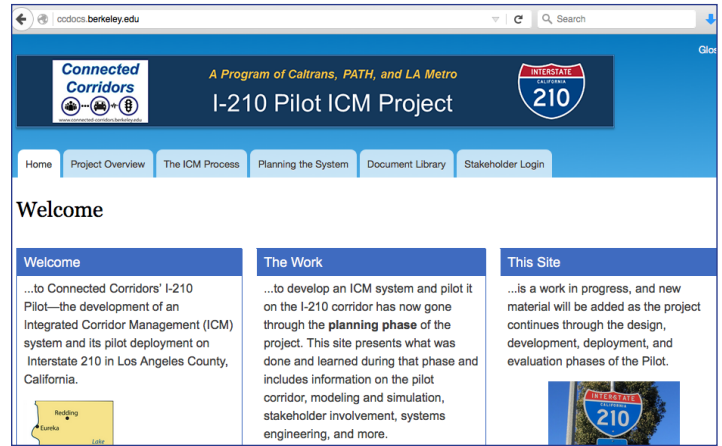
Newly Redesigned I-210 Pilot Website Homepage

can be reviewed by stakeholders only. As documents are finalized, they are then made available to the general public. More material will continue to be added to the site as the project progresses from planning to design to implementation.

Both websites are an important part of communicating our process to other agencies, as well as keeping stakeholders engaged throughout the Pilot. We encourage all stakeholders to peruse the websites and share them with co-workers, local politicians, and industry partners to promote the Connected Corridors program and the ongoing work the team is accomplishing.

We also welcome your feedback. Comments and suggestions can be submitted to Lisa Hammon at lisahammon@berkeley.edu.

Five-year Surface Transportation Bill Finally Signed

Article information courtesy of the Intelligent Transportation Society of America

Fixing America's Surface Transportation (FAST) Act, a five-year, $305 billion surface transportation reauthorization bill, was signed into law by President Obama on December 4, 2015. The bill reforms and strengthens transportation programs, refocuses on national priorities, provides long-term certainty and more flexibility for states and local governments, streamlines project approval processes, and maintains a strong commitment to safety.

10 FAST Act Provisions to encourage innovation and accelerate the research and deployment of Intelligent Transportation Systems (ITS) we want you to know about:

1. $100 million per year for Intelligent Transportation Systems (ITS) research, with an expanded role to enhance the national freight system and assist in developing cybersecurity standards to help prevent hacking, spoofing, and disruption of connected and automated transportation vehicles.

2. Creation of a new $60 million per year Advanced Transportation and Congestion Management Technologies Deployment Program to provide competitive grants to develop model deployment sites for large scale installation and operation of advanced transportation technologies to improve safety, efficiency, system performance, and infrastructure return on investment.

3. $15 – 20 million per year to establish a Surface Transportation System Funding Alternatives Program to provide grants to states to demonstrate user-based alternative revenue mechanisms to maintain the long-term solvency of the Highway Trust Fund.

4. Funding eligibility for ITS projects within core highway formula programs including the revised Surface Transportation Block Grant Program which specifies eligibility for infrastructure-based ITS capital improvements, operational improvements, capital and operating costs for traffic monitoring, management, and control facilities and programs, development and implementation of State asset management plans and performance-based management programs, highway and transit research and technology transfer programs, projects designed to support congestion pricing including electronic toll collection and travel demand management, and state offices to support eligible public private partnerships (PPP).

5. Explicit funding eligibility for installation of V2I communication equipment within all major highway formula programs including the National Highway Performance Program (NHPP), Surface Transportation Block Grant Program (STP), Highway Safety Improvement Program (HSIP), and Congestion Mitigation and Air Quality (CMAQ) Improvement program.

6. $72.5 – $77.5 million per year for the University Transportation Centers (UTC) program, including selection of at least one Regional UTC focused on comprehensive transportation safety, congestion, connected vehicles, connected infrastructure, and autonomous vehicles.

7. A directive that federal transportation research planning be multimodal whenever possible and coordinated by the Secretary's office to prevent
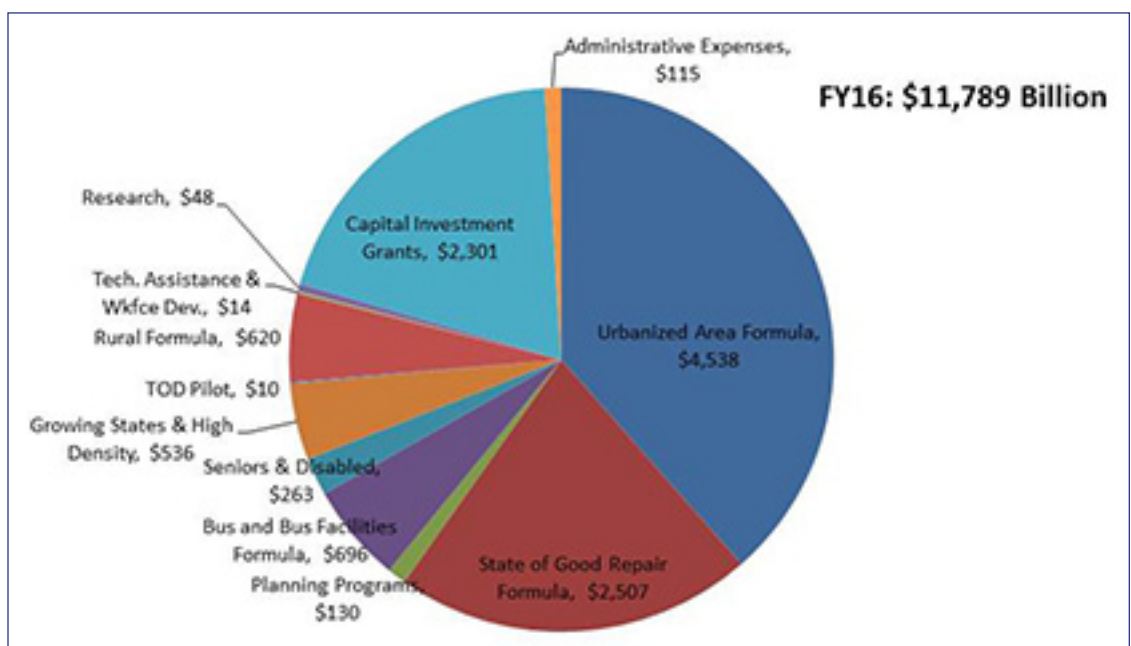
FAST ACT Authorized Funding, Courtesy of Federal Transit Administration

duplication of effort and identify opportunities to apply research across modes, which will include submission of annual modal research plans, publication of a comprehensive database of U.S. DOT research projects, and development of a Transportation Research and Development 5-Year Strategic Plan to guide future research activities.

8. Traffic congestion research to accelerate the adoption of transportation management systems that allow traffic to flow in the safest and most efficient manner possible while alleviating current and future traffic congestion.

9. Establishment of a Performance Management Data Support program to develop, use, and maintain data sets and data analysis tools to assist states and metropolitan planning organizations in carrying out performance management analyses, including collection and distribution of vehicle probe data; collection of household travel data; enhancement of existing data collection and analysis tools to accommodate performance measures, targets, and related data to better understand trip origin and destination, trip time, and mode; improved performance predictions and travel models; and evaluation of the effects of project investments on performance.

10. Continuation of FHWA's Every Day Counts initiative to work with States, local agencies, and industry stakeholders to identify and deploy proven innovative practices and products that accelerate innovation deployment, shorten the project delivery process, improve environmental sustainability, enhance roadway safety, and reduce congestion.

Additional information on the FAST Act can be found at: http://www.itsa.org/advocacy/fast-act, http://fast.transportation.org/Pages/default.aspx, and https://www.transportation.gov/fastact/.

Contacts

If you have questions about the status of the I-210 Pilot or any of the information discussed in this newsletter, please do not hesitate to contact us.

Sam Esquenazi
Caltrans District 7
323.259.1764
sam.esquenazi@dot.ca.gov

Lisa Hammon
Connected Corridors/PATH
510.642.5923
lisahammon@berkeley.edu

Ed Alegre
LA Metro
213.922.7902
alegree@metro.net

About

Connected Corridors is a collaborative effort to research, develop, test, and deploy a framework for corridor transportation system management in California. Our aim is to fundamentally change the way the state manages its transportation challenges for years to come. Starting with a pilot on Interstate 210 in the San Gabriel Valley, the Connected Corridors program will expand to multiple corridors throughout California over the next ten years. As an Integrated Corridor Management (ICM) program, Connected Corridors looks at the entire multi-modal transportation network and all opportunities to move people and goods in the most efficient manner possible.

CONNECTED is a quarterly newsletter with updates and stories about the Connected Corridors program. For more information on the program or the newsletter, please visit our website at connected-corridors.berkeley.edu.