Project title: Cross-border rail infrastructure assessment in El Paso del Norte Region
A pilot project of the PdN interdisciplinary research platform

1. Team members

<table>
<thead>
<tr>
<th>Team member</th>
<th>Name</th>
<th>Department/Center/University</th>
<th>Contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI</td>
<td>Patrick Schaefer – J.D., LL.M. Executive Director</td>
<td>College of Business Administration Hunt Institute for Global Competitiveness UTEP</td>
<td>Provide guidance and direction throughout the project and conduct economic impact and legal analysis.</td>
</tr>
<tr>
<td></td>
<td>Ana P. Rodriguez – M.A. Program Manager and Research Assistant</td>
<td>College of Business Administration Hunt Institute for Global Competitiveness UTEP</td>
<td>Coordinate meetings, working groups and maintain active communication among researchers. Assist with data collection and conduct socio-economic analysis.</td>
</tr>
<tr>
<td></td>
<td>Thomas Fullerton – Ph.D Professor &amp; Director</td>
<td>College of Business Administration Border Region Modeling Project (BRMP) UTEP</td>
<td>Provide substantial data sets in the area of rail infrastructure and contribute to data analysis and modeling.</td>
</tr>
<tr>
<td></td>
<td>Josiah Heyman – Ph.D Professor &amp; Director</td>
<td>College of Liberal Arts Center of Inter-American and border Studies UTEP</td>
<td>Contribute to characterization of border inspections processes (mobility/security trade-offs); characterization of normal flows and extreme event scenarios.</td>
</tr>
<tr>
<td></td>
<td>Joao Faria – Ph.D Professor</td>
<td>College of Liberal Arts Master of Public Administration Certificate in Urban and Regional Planning UTEP</td>
<td>Contribute to the geopolitical analysis of the cross-border rail system and search for expansion alternatives.</td>
</tr>
<tr>
<td></td>
<td>William Hargrove – Ph.D Professor &amp; Director</td>
<td>Office of Research and Sponsored Projects Center for Environmental Resource Management UTEP</td>
<td>Conduct environmental assessments of the rail infrastructure currently implemented and future projects.</td>
</tr>
<tr>
<td></td>
<td>Kelvin Cheu – Ph.D Professor &amp; Director</td>
<td>College of Engineering Border intermodal getaway transportation laboratory UTEP</td>
<td>Contribute to the research on regional transportation planning, traffic operations, logistics, security and rail-truck interface.</td>
</tr>
<tr>
<td></td>
<td>Soheil Nazarian – Ph.D Professor &amp; Director</td>
<td>College of Engineering Center for Transportation and infrastructure systems (CTIS) UTEP</td>
<td>Provide input regarding alternative materials and design of innovative rail infrastructure.</td>
</tr>
<tr>
<td></td>
<td>Lucio Lanucara – J.D., LL.M Professor and International Transport Consultant</td>
<td>School of Law, School of Management UNM (Albuquerque, NM)</td>
<td>Contribute to the legal analysis of rail regulations at the federal (U.S/Mex) and state levels (NM, TX, CHI)</td>
</tr>
<tr>
<td></td>
<td>Salvador Barragan - M.A. Program Coordinator</td>
<td>Instituto Municipal de Investigación y Planeación - IMIP (Ciudad Juarez, México)</td>
<td>Provide substantial data in the area of rail infrastructure and mobility in Chihuahua and contribute to the analysis of rail infrastructure management in Ciudad Juarez</td>
</tr>
</tbody>
</table>
2. Project Overview

**Description**

This project aims to fill a gap in research about rail transportation infrastructure in the Paso del Norte (PdN) region and provide crucial information to key regional stakeholders across the public-private divide. The PdN region - composed by West Texas, Southern New Mexico and Northern Chihuahua (see Map 1) - currently lacks a coordinated cross-border rail infrastructure plan, which constitutes a key element for the region’s economic development and global competitiveness. Given the region’s economic dependency on the rail transportation and due to the increasing cross-border trade, a comprehensive and accessible rail transportation system constitutes an essential element to strengthen the local economy and to facilitate mobility within the cross-border region.

Trains passing by the only railroad connecting El Paso and Ciudad Juárez are allowed to be operated only during night times. This limits the capacity of the international crossing to approximately 10 trains per day. As a result, rail customers will have to divert traffic to other crossings once capacity is reached, which results in reduced competitiveness of the El Paso - Ciudad Juárez area and raises costs to shippers and receivers in Mexico. Union Pacific (UP) recently completed the Intermodal Ramp in Santa Teresa, New Mexico. This mega project is expected to alleviate the congestion in Ciudad Juarez by re-routing the rail lines to Jerónimo, Chihuahua. Similar developments are needed and likely to occur in the near future and this creates a need for preliminary engineering, environmental and socio-economic studies to minimize the adverse effects of the rail expansion.

Despite the importance of rail infrastructure for the development of the PdN, there is a paucity of research in this area. Considering the exponential increase of trade volumes, there will be higher demand for more and better rail infrastructure in the next decades. For this reason, it is important to strengthen planning activities and to begin exploring this topic from an interdisciplinary point of view. Implementing and contrasting innovative models and research methods provided by relevant academic fields such as law and economics, engineering, natural resource management, border management (security), urban and regional planning, will provide the necessary elements to build a comprehensive dataset and analytic framework that will enable researchers to assess the current state of rail infrastructure in the region (see figure 1).

Composed by members of three UTEP Colleges (College of Business Administration, College of Liberal Arts and College of Engineering) and two external members from New Mexico and Chihuahua (the University of New Mexico and the Instituto Municipal de Investigación y Planeación), the PdN interdisciplinary research platform will be an unprecedented example of academic cooperation in the cross-border region. The establishment of such platform will be a perfect setting to begin exploring the current capacity of the regional rail infrastructure, and assess the constraints and opportunities for future railroad expansion. The aim of the PdN interdisciplinary research platform is to conduct a rail infrastructure pilot project that will generate the preliminary research results needed to submit a competitive set of proposals to capture extramural funding opportunities.

**Significance of the Proposal**

Conducting a cross-border rail infrastructure assessment in PdN Region, will enable the researchers of the platform to work in an interdisciplinary environment where they will have the opportunity to exchange different methods, techniques, tools and concepts, and to propose initiatives and solutions to better address

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1 Texas Department of Transportation (2011b)
2 Ornelas (2014)
3 OECD (2010)
the rail infrastructure implementation. The possibility to interact with other regional institutions in Chihuahua and New Mexico, will open the door for a better understanding of the three jurisdictions' approach and management of rail infrastructure.

The establishment of an interdisciplinary research platform focused on rail infrastructure will be a key vehicle to advancing regional economic development. It will create an unprecedented space for debate and discussion, not only among researchers across the region, but also among key stakeholders (corporations) involved in the rail industry (carriers, shippers and receivers) in order to combine experiences and find effective alternatives that contribute to the sustainable economic of PdN region.

**Objectives**

*Interdisciplinary research platform*

1. Secure extramural funding from international, federal and state grants, as well as corporate sponsored research agreements.
2. Support, employ and develop UTEP graduate students.
3. Integrate platform members across disciplines by organizing periodic working meetings (once a month) and by maintaining an active communication exchange (via e-mail, video-conferences).
4. Coordinate at the least two interdisciplinary working groups in order to exchange specialized knowledge and research methods.
5. Serve as a meeting point for academic-corporate research interactions (UP, BNSF, Ferromex).
6. Bring together stakeholders associated with the field of rail infrastructure from the private (shippers, receivers) and the public sectors (federal, state and local governmental organizations) in U.S. and Mexico, to stimulate the discussion.
7. Organize field works in order to meet external partners (IMIP, UNM) and coordinate extramural activities for data gathering.

*Pilot Project: Cross-border rail infrastructure assessment in El Paso del Norte Region*

1. Gather and systematize relevant data of the existing rail system in the region.
2. Identify innovative research based on new transportation technologies.
3. Recommend methods and procedures in order to analyze current and future transportation infrastructure needs.
4. Analyze ways to improve international rail accessibility as well as inner connectivity.
5. Find sustainable ways to eliminate bottlenecks in the cross-border rail transport network.
6. Provide alternatives for the modernization of the existing rail infrastructure.
7. Contribute to the development of efficient and environmentally friendly rail transportation systems not only for goods but also for passengers.
8. Assess the economic impact of existing rail transport systems in the region.
9. Ensure continued dialogue and coordination on future rail infrastructure plans with regional stakeholders.
10. Explore creatively solutions and issues developed in other contexts nationally and internationally (for instance considering the long established rail transport policy in the European Union).

3. **Proposed Preliminary Studies**

Conducting a cross-border rail infrastructure assessment in PdN region, requires both quantitative and qualitative measurements and analysis. Researchers of the interdisciplinary platform currently have some quantitative data sets in their areas of expertise that will be shared and organized. This will form the
preliminary quantitative data repository in the area of rail infrastructure. Additional data will be gathered from governmental databases (at the federal and state level) in Mexico and the U.S., and by using questionnaires to collect standardized data among the local community. In regards to the qualitative data, researchers will conduct semi-structured interviews with regional stakeholders, specifically carriers, shippers and receivers, as well as the communities located nearby the railroads and intermodal facilities. Observation trips will also be organized to assess the state of the rail infrastructure and the sites for future expansion such as Jerónimo, Chihuahua. All of this information will provide the empirical basis for a preliminary report on the state of the railroad infrastructure in the PdN region.

4. Team Accomplishments

Considering that the PdN interdisciplinary research platform is an emerging initiative, the team has not achieved any joint accomplishment. However, the discussions and coordination regarding the pilot project on rail infrastructure, and the establishment of the PdN interdisciplinary research platform are our main achievement so far. The platform is composed mostly by UTEP faculty and staff members, who have valuable experience in receiving several internal and external research grants and have received recognition from the Office of Research and Sponsored Projects (ORSP) for their outstanding performance in securing extramural funding. Likewise, external partners have broad experience of working for the public sector (i.e. Italian State railways) and getting extramural funding from international organizations (Inter-American Development Bank).

The establishment of the interdisciplinary research platform at UTEP is a unique opportunity to pool expertise and build strong partnerships through the exchange of complementary innovation and theoretical contributions with other Higher Education institutions in the region.

5. IDR team coalescence

Working Groups

Platform researchers will be divided into two working groups. Each group will be composed of researchers from COBA, COLA and COEN to integrate the different disciplines involved. A group coordinator will be elected to be the porte-parole of its group and to facilitate the communication with the PI.

Working areas

There will be two main working areas within each working group according to the areas of expertise of the researchers:

<table>
<thead>
<tr>
<th>WG #1. Technical</th>
<th>WG #2. Socio-Economic-Legal</th>
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</thead>
<tbody>
<tr>
<td>1) Rail infrastructure technical analysis</td>
<td>1) Socio-Economic Impact</td>
</tr>
<tr>
<td>2) Environmental analysis</td>
<td>2) Comparative legal Study</td>
</tr>
<tr>
<td>3) Rail infrastructure management (security/mobility)</td>
<td>3) Geopolitical perspective</td>
</tr>
</tbody>
</table>

Graduate Students

Each group will be assigned one graduate and one Ph.D student to assist the group’s research activities. Each graduate student will have a supervisor. The working hours will be assigned by the group coordinator.
**Schedule**

A sixteen-month joint calendar starting from 10/06/14, will be created in order to coordinate the working group meetings dates and times, as well as to coordinate the availability of the platform researchers and external partners.

It is required that each faculty and staff members work for the project a minimum of 2 hours per week (8 hours per month) and attend the working group meetings once a month.

Coordinated field trips for observation and data gathering purposes, will be organized according to the research needs.

During the term of the award, at least two general meetings will be held with regional stakeholders, especially with rail carriers and shippers, in order to ensure their involvement and participation in the platform’s research activities.

**Results and findings**

Research results will be summarized in a comprehensive *cross-border rail infrastructure assessment report* that will be disseminated to regional and national audiences, aiming to assist local communities in making decisions that promote long-term sustainability, including economic prosperity and social well-being. Likewise, a presentations to UTEP members (ORSP-supported events), local, state and federal stakeholders will be organized.

6. **Funding plans**

Considering the valuable experience of most faculty members in securing research grants, the interdisciplinary platform will be in the capacity to apply to several funding sources at the state, federal and international levels including:

**State**

Texas Department of Transportation - *Regionally Coordinated Transportation Planning*

New Mexico Department of Transportation

**Federal**

U.S. Department of transportation – *Federal Railroad Administration*

U.S. Department of State - *Open Requests for Grant Proposals (RFGPs)*

U.S. Department of Homeland Security - *Transportation Security Administration Grant Programs*

**International**

Inter-American Development Bank

Organization for Economic Co-operation and Development
7. References


5. **Fullerton, T.** (2014) “Freight transportation Costs and the Thickening of the U.S. – Mexico Border,


10. **American society of civil engineers** (2005), “The state of New Mexico Infrastructure, report card”

    https://www.fra.dot.gov/Page/P0522

    http://www.elpasompo.org/Rail/RailTransitStudy.pdf

13. **Texas Department of Transportation** (2011a), “Texas-Mexico International Bridges and Border Crossings (existing and proposed)”.  

8. Funding request (Budget justification)

Term of the Award of up to $20,000, is sixteen months starting from 09/01/14

Graduate students x4

- 2 graduate assistants (Master and Ph.D) could be hired in each working group to offer support to the research activities carried out by the members of the platform.

<table>
<thead>
<tr>
<th>Student</th>
<th>Working hours</th>
<th>Hour rate</th>
<th>Monthly rate</th>
<th>Yearly rate</th>
<th>X2 students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate</td>
<td>4h per week</td>
<td>$17.6</td>
<td>$281.6</td>
<td>$3,379.2</td>
<td>$6,758.4</td>
</tr>
<tr>
<td>Ph.D</td>
<td>4h per week</td>
<td>$22</td>
<td>$352</td>
<td>$4,224</td>
<td>$8,448</td>
</tr>
</tbody>
</table>

$15,206.4

Supplies and software purchase

$0

Funding travel for data collection

Organize at least four field trips across PdN Region to gather data
- Conduct interviews to regional stakeholders, specifically carriers, shippers and receivers, as well as the communities located nearby the railroads and intermodal facilities.
- Organize observation trips to assess the state of the rail infrastructure and the sites for future expansion.

Support collaboration with partners outside UTEP & Stakeholders

- Meet the external platform partners in Ciudad Juarez (IMIP) and Albuquerque (UNM) when needed.
- Meet stakeholders associated with the field of rail infrastructure from the private and the public sectors.

$1,793.6

TOTAL

$20,000

4 Most meetings will take place within the PdN region. Therefore researchers will travel by car and will request a mileage reimbursement.
The PdN interdisciplinary research platform will conduct the rail infrastructure pilot project based on the geographic area depicted in this map.
Figure 2. Interdisciplinary research platform work flow