Mr. Gus Pego, P.E.
District Six Secretary
Florida Department of Transportation
1000 NW 111 Avenue
Miami, FL 33172-5800

Subject: TIGER V Public Interest Finding for FIU University City ITPA Project Scope

Attn: Mr. Harold A. Desdunes

Dear Mr. Pego:

We received your letter dated May 16, 2014 and the letter addressed to your office from the Florida International University (FIU) dated May 7, 2014, requesting the use of Force Account and Sole Source Contracting for the TIGER V University City Prosperity Project in the City of Sweetwater. The request is for the use of Force Account and Sole Source Contracting of IBM and Pirouette Software Consulting as part of the Informed Traveler Program & Application (ITPA) project component.

Based on the information provided and in accordance with 23 CFR 172.5 (3) (i), 23 CFR 635.204 (c), 23 CFR 635.411 (a) (2) and (3), the Federal Highway Administration (FHWA) accepts the Florida Department of Transportation and the Florida International University certifications that the contracting and procurement listed in the attachment are essential, beneficial and cost effective. FHWA finds the use of Force Account and Sole Source Contracting for the ITPA project component is in the public interest, and therefore approves the use of the proprietary devices and equipment as listed in the attachment for the referenced project. This approval does not extend to devices and equipment or projects other than those described in this letter. Also, the proposed proprietary products and sole source items are not authorized for use on other project components.

If you have any questions, please feel free to contact Jorge J. Rivera at Jorge.Rivera@dot.gov or (407) 867-6406.

Sincerely,

FOR: James Christian, P.E.
Division Administrator
May 16, 2014

Jorge Rivera, P.E.
District 6 Transportation Engineer
Federal Highway Administration
Florida Division
Orlando Satellite Office
George C. Young Federal Building & Courthouse
400 W. Washington Street, Room 4200
Orlando, FL 32801

Re: Public Interest Finding for FIU UniversityCity ITPA Project Scope

Dear Mr. Rivera:

The Florida Department of Transportation (FDOT) District Six received a letter from Florida International University (FIU) dated May 7th, 2014 requesting review and approval of the Public Interest Finding (PIF) for the Informed Traveler Program & Application (ITPA) component of the UniversityCity Prosperity Project. The ITPA component of the UniversityCity Prosperity Project calls for the use of FIU faculty and research staff labor, equipment, materials, and supplies furnished by FIU and used under their direct control (Force Account). The ITPA component also calls for sole source contracting and procurement of expert services provided by IBM and Pirouette Software Consulting pursuant to vendor contracts to support the ITPA efforts. The letter is attached for your review.

The FDOT has reviewed the PIF request and supporting documentation for use of Force Account and sole source contracting with IBM and Pirouette Software Consulting as part of the ITPA component of the UniversityCity Prosperity Project. We recognize the dire transportation needs that will be served by using a nationally recognized grouping of experts.

FDOT confirms that the request for use of Force Account and sole source contracting and procurement is strictly limited to the ITPA component of the overall UniversityCity Prosperity Project. Furthermore, FDOT will monitor these activities during the design and construction of the project.

We thank the FHWA for their review of this request and look forward to your concurrence concerning this request from Florida International University. Please feel free to contact me with any questions at Harold.Desdunes@dot.state.fl.us or 305-470-5464.

Sincerely,

Harold A. Desdunes, P.E.
District Six Director of Transportation Development

Enclosure
• 2014 05 07 FIU Letter to FDOT concerning Public Interest Finding for ITPA of UCPP
• ITPA Project Scope and Description

cc: Gus Pego, P.E. – FDOT District Six Secretary

www.dot.state.fl.us
May 7, 2014

Dear Mr. Desdunes:

Attached is a Public Interest Funding (PIF) that will need approval by FHWA Florida Division in order for FIU to proceed with the Informed Traveler Program and Applications (ITPA) work funded through the UniversityCity Prosperity Project--TIGER Award. The ITPA component of this award provides for $2,156,832 in TIGER federal funds as well as $212,004 in FIU match funding.

FHWA has requested submission through FDOT District 6 and I am requesting that you consider our PIF and, if acceptable, that you forward to FHWA for their approval as quickly as possible. In accordance with the UniversityCity Prosperity Project timeline, the scheduled completion for the PIF by FHWA is May 20, 2014.

I am pleased to provide any additional information you may need for your submission of this request to FHWA. Please call or email me at your convenience if you have question.
Sincerely,

Kenneth A. Jessell Ph.D.
Senior Vice President for Finance & Administration and CFO

Attachment

cc: Jorge Rivera, Federal Highway Administration

Kenneth A. Jessell, Ph.D.
Senior Vice President and Chief Financial Officer
11200 SW 8th Street, PC 523
Miami, FL 33199
Phone: 305-348-2101
Fax: 305-348-3678
Email: kenneth.jessell@fiu.edu
May 7, 2014

Harold Desdunes
District Director of Transportation Development
Florida Department of Transportation, District 6
1000 NW 11th Avenue, Miami, 33172

RE: Public Interest Finding—UniversityCity Prosperity Project

Dear Mr. Desdunes:

Attached is a Public Interest Funding (PIF) that will need approval by FHWA Florida Division in order for FIU to proceed with the Informed Traveler Program and Applications (ITPA) work funded through the UniversityCity Prosperity Project--TIGER Award. The ITPA component of this award provides for $2,156,832 in TIGER federal funds as well as $212,004 in FIU match funding.

FHWA has requested submission through FDOT District 6 and I am requesting that you consider our PIF and, if acceptable, that you forward to FHWA for their approval as quickly as possible. In accordance with the UniversityCity Prosperity Project timeline, the scheduled completion for the PIF by FHWA is May 20, 2014.

I am pleased to provide any additional information you may need for your submission of this request to FHWA. Please call or email me at your convenience if you have question.

Sincerely,

Kenneth A. Jessell Ph.D.
Senior Vice President for Finance & Administration and CFO

Attachment

cc: Jorge Rivera, Federal Highway Administration
May 6, 2014

Mr. Jorge Rivera
District 6 Transportation Engineer
Federal Highway Administrator
Florida Division
George C. Young Federal Building & Courthouse
400 West Washington Street – Room 4200
Orlando, Florida 32801

Re: Public Interest Finding for FIU UniversityCity ITPA Project Scope

Dear Mr. Rivera:

Florida International University (FIU) requests Public Interest Finding approval for the design, construction, and deployment of the Informed Traveler Program & Application (ITPA) component of the UniversityCity Prosperity Project (UniversityCity) using faculty and research staff labor, equipment, materials, and supplies furnished by FIU and used under their direct control (Force Account). FIU also requests a Public Interest Finding for expert services provided by IBM and Pirouette Software Consulting (owned by renowned computation transportation expert Ouri Wolfson) pursuant to vendor contracts to support these ITPA efforts. UniversityCity improvements are to be funded through a TIGER Discretionary Grant (TIGER) made available through the UniversityCity TIGER Award Agreement arising from a June 3, 2013 UniversityCity TIGER proposal and a September 5, 2013 US DOT award announcement.

The TIGER grant proposal approved by U.S. DOT in 2013 was designed to meet the increasingly dire transportation needs of and public transit alternatives available to FIU and the City of Sweetwater (Sweetwater) as well as similar communities throughout South Florida and the nation. A new and computationally challenging transportation demand and traffic management project was described by FIU, which proposed, using its own faculty, research personnel and staff, to lead the effort to develop and deploy the ITPA with support from IBM and Pirouette Software Consulting (Ouri Wolfson). All personnel and vendors were selected to work on ITPA due to their specific and unique expertise, significant accomplishments in the subject matter, and a history of collaborations with the identified FIU personnel, centers, and institutions.

After a review of the information provided by the Federal Highway Administration (FHWA) Construction Program Guide webpage and the Contract Administration Core Curriculum Participants’ Manual and Reference Guide 2006, FIU believes that it is in the public interest to design, construct, and deploy the ITPA without using a competitive bid process. The UniversityCity proposal for TIGER Discretionary Grant funds dated June 3, 2013, stated that
ITPA, along with the intermodal and pedestrian-oriented transit access infrastructure improvements and the proposed new, rebuilt, repaired, and enhanced community transit vehicles, will help transform the FIU Maidique Campus and Sweetwater communities into:

- a complex of pedestrian-oriented, multimodal and intermodal improvements
- a healthy and educationally enriched urban built environment
- a high-density, vibrant urban community that helps to attract students and faculty to FIU, as well as global talent, businesses, and investors to Sweetwater

The unique, transformational, innovative, and integrated components of this project are well described in the stated grant objectives:

By using a specific arrangement of pedestrian-oriented improvements (attractive, wide, landscaped, and hardscaped sidewalks, boardwalks, shared-use paths and bridges, transit greenways, mixed-mode streets, and plazas), mixed-use development, student housing, important destinations (civic, academic and health), community transit, intermodal stations and transit stops, these UniversityCity components will leverage more frequent passage between both the Sweetwater and FIU segments of the UniversityCity community and facilitate greater use of the transit services they will share. More frequent transit use, intermodal transfers and safe pedestrian-oriented transit access will be further enhanced in this multimodal urban environment via an advanced and comprehensive electronic wayfinding system built for the first time in the United States that is defined by proposed Informed Traveler Program and Applications.

The public interest will be served because a nationally recognized grouping of experts, with deep knowledge of computing sciences useful to the ITPA design, development and deployment, have been organized into a team to achieve the UniversityCity objectives. These unique skillsets include ITS programming and software, including those directed at smarter transit and parking solutions; computational transportation and related sciences; development of software code and algorithms for complex data-intensive applications; the integration of high-resolution imagery and mapping with GIS applications software; and the integration of internationally and nationally sourced technologies and platforms.

Such results cannot be achieved without a careful rethinking of the built, natural and electronic environment. This creates a situation in which the rights and responsibilities of the community at large are so affected as to require a special course of action. FIU, therefore, asserts the Public Interest Finding (PIF) to support the use of a force account and the selection of the two companies noted above which will provide expert advice regarding ITPA development and deployment pursuant to a contract for services to each of the companies entered into without competitive bidding.

FIU asks FHWA to accept this special course of action to use a force account and select such vendors as cost effective due the following method: these companies were key participants in the team effort to submit the TIGER/UniversityCity proposal dated June 3, 2013 and have been organized to develop the ITPA Work Plan and Rule 940 documentation pursuant to the Miami-
Dade Expressway Authority (MDX) Task Authorization for such activities that began February 10, 2014. This Authorization is attached for your review and consideration. All FIU personnel and the two proposed companies have agreed to continue to explore cost effective negotiated terms to develop and deploy ITPA through the Work Plan efforts now underway and further approvals with FHWA as anticipated by the May 2014 TIGER Award agreement.

To assist in your review of FIU’s request for a Public Interest Finding, I am enclosing as Exhibit A the Project Scope and Description, Key Force Account Personnel, and External Consultants, and as Exhibit B the identification of the senior personnel and their roles, the estimated federal costs and match funds, and the duration of assignments that support the need for services and cost effectiveness of the force account and the two vendor contracts as referenced herein; all selected as being required for a successful conclusion of the University efforts.

FIU will provide any additional information you need to complete a review of our request. As the proposed TIGER Award Agreement Recipient, FIU requests that FHWA, through the Florida Division offices, accept this Public Interest Finding.

Sincerely,

[Signature]

Kenneth A. Jessell, Ph.D.
Senior Vice President and Chief Financial Officer

cc: Naphtali Rishe
    Tom Gustafson
    Robert Gutierrez

Attachments: Exhibit A
             Exhibit B
             MDX’s Task Authorization for ITPA Work Plan
EXHIBIT A

Project Scope and Description

The ITPA will guide:

- A fleet of FIU CATS vehicles, Sweetwater Trolley and circulator buses, and intermittently Engineer-on-Wheels vehicles that provide community transit and a feeder bus service to express buses that stop at AIMS facilities
- The Golden Panther Express buses operating between two FIU campuses (Maidique Campus and Biscayne Bay Campus) to serve the needs of FIU students, faculty and staff who become ITPA users, so that the one-hour transit between Maidique Campus and BBC can be predictably reduced to integrate with the broader Miami-Dade mass-transit network
- Car driving ITPA users through a novel parking way-finding system to either FIU smart parking garages and, when built, Sweetwater smart parking as part of City Hall Intelligent Plaza and Parking Area (CHIPPA) development so they can very efficiently find available parking without delays and without creating traffic congestion within campus and throughout the City of Sweetwater

To this end, ITPA will collect, store and analyze geospatial traffic multimodal data through road and other sensors, GPS signals, ITS, and smartphone applications which will adapt bus routes, schedules and stops; providing ITPA customers and bus drivers with navigation guidance for their best transit trip and parking options in response to real-time or predicted conditions and needs. The ITPA model is intended to serve as a case-example, replicable throughout the nation and scalable at the regional and national levels. It is intended to be state-of-the-art and unique due to its innovative nature and capacity to provide large-scale transportation demand and system management.

The ITPA will be a novel and unique architecture; a multi-functional data acquisition and analysis system coupled to a broadcasting secure layer that services users and personnel through mobile or tablet applications and webpages. The system will require a dedicated center for real-time traffic data collection and processing, a center for creating, integrating and analyzing databases, especially geo-located traffic data, and a secure middleware layer to communicate with and develop mobile, tablet apps and webpages. As is the case for any public service architecture, it must be extremely robust and reliable, rapidly scalable and fail-safe.

Key Force Account Personnel:

The technical work will be performed under the auspices of the National Science Foundation’s Industry-University Cooperative Research Center for Advanced Knowledge Enablement at FIU (I/UCRC-CAKE) at the direction of Naphtali Rishe. See http://cake.fiu.edu/. With additional support by Lehman Center for Transportation Research (LCTR) personnel, I/UCRC-CAKE will undertake services as identified in the ITPA scope of work to be approved by the FHWA based on TIGER Award Agreement. I/UCRC-CAKE will draw upon expertise from the FIU technical
centers, personnel and vendors as described below and with the personnel and vendors as described in Exhibit B.

- The High Performance Database Research Center (HPDRC), directed by Dr. Naphtali Rishe, will perform design and development of ITPA. The HPDRC has been awarded over $45M in grants under Rishe’s direction and is a top-of-the-field center for data acquisition, mash-up, processing and analysis. It hosts a range of innovative, large-scale and computing-intensive projects. This center will host the ITS architecture and be the central pillar for data integration, analytics and data source acquisition and broadcasting to ITS equipment, personnel and users.

- FIU’s Integrated Intelligent Transportation Systems (IITS) Laboratory, led by Dr. Mohammed Hadi. Operating within the structure of LCTR, IITS has a real-time communication capability for sharing video and information with traffic management centers and a fruitful history of service to public transportation agencies in Florida. Dr. Hadi will help to develop transportation system management components of ITPA, utilizing a decision support platform developed through these efforts including use of the platform already developed at the IITS Laboratory. Dr. Hadi and IITS personnel will provide real-time multi-modal traffic data, traffic analysis and real-time sensor equipment monitoring and operations to the ITPA. He will help coordinate the ITPA with the regional ITS network. Dr. Fabian Cevallos and personnel from the LCTR Transit group will assist with the transit elements of the ITPA. Dr. Hadi, Dr. Cevallos and the IITS/Transit Group personnel will help to see that the ITPA coordinates with the regional ITS network. For further information regarding LCTR and its University Transportation Center activities see [http://lctr.eng.fiu.edu/ITS_Lab.htm](http://lctr.eng.fiu.edu/ITS_Lab.htm) and [http://lctr.eng.fiu.edu/](http://lctr.eng.fiu.edu/).

**External Consultants:**

Two vendor agreements will be negotiated after the Work Plan is completed on June 2, 2014:

- Pirouette Software Consulting’s Principal is Professor Ouri Wolfson of the University of Illinois at Chicago. He will give expert advice to faculty and guide research staff on database systems, distributed systems, and mobile/pervasive computing relating to parking systems and otherwise provide advice, instruction, and evaluation as to products and solutions. Ouri Wolfson authored over 200 publications, and holds seven patents. He is a Fellow of the Association of Computing Machinery, a Fellow of the American Association for the Advancement of Science (AAAS), a Fellow of The Institute of Electrical and Electronics Engineers (IEEE). He has authored four award winning papers, and served as a Distinguished Lecturer for the Association of Computing Machinery during 2001-2003. For more information on his profile see [http://www.cs.uic.edu/~wolfson/](http://www.cs.uic.edu/~wolfson/).

- International Business Machines Corporation (IBM) will leverage unique world-wide experience in Smarter City projects to guide FIU faculty/researchers with all aspects of design, development and deployment of the ITPA system. IBM has been a close
collaborator in the initial design of ITPA and during the current ITPA planning phase to be completed on June 2nd. As an I/UCRC-CAKE member, IBM will work closely and extensively with FIU’s I/UCRC-CAKE to develop the ITPA. IBM’s cost-effectives derives from a proven track-record in development and deployment of extremely robust and reliable, scalable and fail-safe public ITS architectures and the fact that it provides a unique mix of products, technologies and experience focused on the subject matter rarely found in one vendor. Additionally to the aforementioned, IBM will provide: Mobile First Reference Architecture content docs for customization and reuse; IBM Reference Architecture for SAP content docs for customization and reuse; demo sources of Notification, Mobile, BPM and applicable existing demos; guidance as to design based on IBM capabilities; and, software for ITPA development through University Program or on-line at no charge. The project will be using IBM's world class innovation and experience in the development smart transportation systems. FIU will be tapping into the IBM's transportation experts and technology, including IBM's emerging cognitive technology. See http://www.ibm.com/smarterplanet/us/en/smarter_cities/overview/
Exhibit B

Senior management and their roles, federal costs and match funds, duration of assignments

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Role</th>
<th>Federal Cost</th>
<th>FIU Cost</th>
<th>Total Cost</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenneth Jessell</td>
<td>FIU CFO, Institutional Lead, Full-time FIU employee</td>
<td>Oversee the budget and construction efforts. Dr. Jessell has significant administrative skills; he can call upon resources throughout the University to see that FIU obligations are met. See <a href="http://cake.fiu.edu/TIGER2013/bio/Jessell.pdf">http://cake.fiu.edu/TIGER2013/bio/Jessell.pdf</a>.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Project Duration</td>
</tr>
<tr>
<td>Naphtali Rishe</td>
<td>PI for the ITPA Component Full-time FIU employee</td>
<td>Oversee the design, development, and deployment of ITPA consistent the intent of the UniversityCity proposal for TIGER Discretionary Grant funds dated June 3, 2014 and UniversityCity TIGER Award Agreement expected to be finalized in May/June 2014 and consistent with his role in development of many sophisticated transportation and mapping programs and systems. See the Lineage section on the UniversityCity website at <a href="http://cake.fiu.edu/TIGER2013/">http://cake.fiu.edu/TIGER2013/</a> and Dr. Rishe’s resume at <a href="http://cake.fiu.edu/TIGER2013/bio/Rishe.pdf">http://cake.fiu.edu/TIGER2013/bio/Rishe.pdf</a>.</td>
<td>$160,305</td>
<td>0</td>
<td>$160,305</td>
<td>1.5 months (240 hours) per year of this effort over a three year term</td>
</tr>
<tr>
<td>Name</td>
<td>Role</td>
<td>Responsibilities</td>
<td>Hours</td>
<td>Rate</td>
<td>Total</td>
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<tr>
<td>Tom Gustafson</td>
<td>Lead Facilitator, Office of Finance &amp; Administration, Director, Research Programs, FIU full-time employee</td>
<td>Advise PI as to inter-institutional and transdisciplinary issues that link UniversityCity components into a single instrument for transformative change; integrating improvements to the built, natural and electronic environment. As the recognized thought leader for UniversityCity, Mr. Gustafson not only contributes much of the original thinking necessary for such a project, but offers interpersonal, inter-institutional, and persuasive skills to help in overall project coordination and team building. See <a href="http://cake.fiu.edu/TIGER2013/bio/Gustafson.pdf">http://cake.fiu.edu/TIGER2013/bio/Gustafson.pdf</a>.</td>
<td>80 hours</td>
<td>$48,183</td>
<td>$48,183</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5 months (80 hours) on year 1 of this effort; 1 month per year (160 hours) in 2nd and 3rd years, respectively</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mohammed Hadi</td>
<td>Co-PI, Full-time FIU employee</td>
<td>Advise PI as to design, development, deployment, and operations of the ITPA as well as transportation system management and provide available IITS traffic data and assist in the development of data collection strategies and expertise as to Intelligent Transportation Systems (ITS) and in real- and near-real-time transportation data, and utilizing data combined with modeling for decision support of transportation system management and operations. See <a href="http://cake.fiu.edu/TIGER2013/bio/Hadi.pdf">http://cake.fiu.edu/TIGER2013/bio/Hadi.pdf</a>.</td>
<td>256 hours</td>
<td>$150,138</td>
<td>$150,138</td>
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<td></td>
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<td>1.13 academic year months (181 hours) and 1.6 summer months (256 hours) per year of this effort over a three year term</td>
<td></td>
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<td></td>
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<tr>
<td>Name</td>
<td>Role</td>
<td>Description</td>
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<td>Total</td>
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<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Fabian Cevallos</td>
<td>Co-Pi, Full-time FIU employee</td>
<td>Advise PI for design, development, deployment, and operations of the ITPA for transit and provide expertise in transit technologies, operations, transit systems, assist in development of data collection strategies and ITS application to transit systems, including Advanced Public Transportation Systems (APTS) such as Automatic Vehicle Location (AVL) systems, Automatic Passenger Counters (APCs), Real-Time Information Systems, and Central Transit Management Systems. See <a href="http://letr.eng.fiu.edu/PeoplePic/fcevallos-CV.pdf">http://letr.eng.fiu.edu/PeoplePic/fcevallos-CV.pdf</a>.</td>
<td></td>
<td>$92,790</td>
<td>$92,790</td>
<td>2 months (324 hours) per year of this effort over a three year term</td>
</tr>
<tr>
<td>Marcos Jimenez Beleaguer</td>
<td>Co-PI, ITPA Project Manager and Senior data scientist</td>
<td>Assist Naphtali Rishe as ITPA PI in all ITPA matters including the management and administration of the grant, coordination with Co-PIs as to work progress, and development with Tom Gustafson as to strategies for transdisciplinary and inter-institutional efforts. See <a href="http://cake.fiu.edu/TIGER2013/Jimenez.Beleaguer.Marcos/20140504201.MarcosJimenez.CV.pdf">http://cake.fiu.edu/TIGER2013/Jimenez.Beleaguer.Marcos/20140504201.MarcosJimenez.CV.pdf</a>.</td>
<td></td>
<td>$280,362</td>
<td>$280,362</td>
<td>10.2 months (1,768 hours) per year over a three year term</td>
</tr>
<tr>
<td>Pirouette Software</td>
<td>Independent Consultant</td>
<td>Expertise in database systems, distributed systems, mobile/pervasive computing for parking systems, and computational transportation science. See <a href="http://www.cs.uic.edu/~wolfson/">http://www.cs.uic.edu/~wolfson/</a>.</td>
<td></td>
<td>$18,923</td>
<td>$18,923</td>
<td>Project Duration</td>
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<tr>
<td>IBM</td>
<td>Independent Consultant</td>
<td>Consulting, professional services, and IBM technology to assist FIU with all aspects of design, development, and deployment of the ITPA. For a detailed description see <a href="http://www.ibm.com/us/en/">http://www.ibm.com/us/en/</a></td>
<td>$508,000</td>
<td>0</td>
<td>$508,000</td>
<td>Project Duration</td>
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</tr>
<tr>
<td>Software developers &amp; technical experts</td>
<td>Full-time FIU Employees</td>
<td>Nagarajan Prabakar, Jong-Hoon Kim, S.S. Iyengar, Martha, Gutierrez, Scott Graham, Ming Zhao, Mingjin Zhang, Chaklader Asfak Arefe, Oliver Ullrich, Yan Xiao, Tao Wang, Kaiyu Lui, Thalia Pickering, and other professional, faculty, researchers and graduate students.</td>
<td>$498,131</td>
<td>$212,004</td>
<td>$710,135</td>
<td>Project Duration</td>
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<td>Software, licenses, equipment and databases</td>
<td>Various software components to meet the ITPA functional requirements, data acquisition systems, equipment, databases and software licenses</td>
<td>$400,000</td>
<td>0</td>
<td>$400,000</td>
<td>Project Duration</td>
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<td>TOTAL</td>
<td></td>
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<td>$2,156,832</td>
<td>$212,004</td>
<td>$2,368,836</td>
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**TASK AUTHORIZATION**

**FLORIDA INTERNATIONAL UNIVERSITY**

**BOARD OF TRUSTEES (FIU)**

**TASK AUTHORIZATION NO:** MDX-14-12-FY14-TA-01

**PROCUREMENT/CONTRACT NO:** MDX-14-12

**DATE PREPARED:** 18-Dec-13

**TASK DESCRIPTION:** Informed Traveler Program & Applications (ITPA) Work Plan Development of the ITPA

**NOT TO EXCEED AMOUNT:** $ 265,261.00

**COMPENSATION TYPE:** Limited Amount

**START DATE:** 10 - Feb -14

**REVISION DATE:**

**END DATE:** 02 - Jun -14

**BILL TO:** Juan Toledo, P.E.

**COMPENSATION TYPE:** Limited Amount

**COMPENSATION TYPE:** Limited Amount

**TA Section**

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<td>10030005 55500</td>
<td>See Attached Scope of Work</td>
<td>$ 265,261.00</td>
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**Justifications for Revised TA**

**Approval/Acceptance of Task Authorization Issuance**

This Task Authorization is issued pursuant to the above noted Contract by and between MDX and the Consultant, inclusive of any Supplemental Agreement(s).

The Consultant has reviewed this Task Authorization (TA) and, by its execution, acknowledges and certifies that this TA is being issued pursuant to the requirements of the above noted Contract. MDX reserves the right to withhold from and/or deny payment to the Consultant if this TA and/or the resulting invoice do not comply with the requirements of the Contract. Upon receipt of a fully executed TA, the Consultant is authorized to begin the Service(s) authorized herein.

**Date:** 2/3/14

**GEC Project Manager (if applicable):** N/A

**FIU Authorized Representative:** Robert M. Gutierrez, M.S., Director Division of Research

**MDX Authorized Representative:** Juan Toledo, P.E., Deputy Executive Director/Director of Engineering

**Approval/Certification of Task Authorization Completion, Voided, or Cancelled**

Both the Consultant and MDX confirms that the Service(s) authorized herein have been either completed in conformance with the Contract and the requirements of this TA, Voided, or Cancelled.

**FINAL TASK AUTHORIZATION**

<table>
<thead>
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<th>Completed</th>
<th>*Voided</th>
<th>*Cancelled</th>
<th>*Justification</th>
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</table>

**Date:** 2/3/14

**GEC Project Manager (if applicable):** N/A

**FIU Authorized Representative:** Robert M. Gutierrez, M.S., Director Division of Research

**MDX Authorized Representative:** Juan Toledo, P.E., Deputy Executive Director/Director of Engineering
Scope of Work
Informed Traveler Program & Applications (ITPA)
Work Plan Development of First Phase of the ITPA

Background
The University City Prosperity Project has been awarded a FY2013 TIGER Discretionary Grant to address transportation mobility and safety problems facing Miami-Dade County and the Southeast Florida Region. One of the major components of this project is the development of a first phase of the Informed Traveler Program and Applications (ITPA). ITPA will provide personalized, timely information and advice regarding the most efficient and cost effective travel paths for consumers – in advance of their travel decision points. This would include easy to access and use of information needed to avoid congestion, construction or accident delays and to otherwise optimize each trip; whether and how to use transit or other modes, delay the start of a trip, take an alternate route, and act on secondary destination suggestions, to easily park, and to encourage remote parking with completion of the trip via transit.

The program’s software will be predictive in nature, allowing users to make better travel decisions before they decide whether or not to get in their private vehicles. ITPA will evaluate historical and real-time information about events, traffic performance measures, emergency service calls, transit service measures, weather, construction, special events, and other information. It will offer faster and reliable parking on the street and in smart garages as a major time saver. ITPA users will be able to query the system about multiple travel options (and their costs and benefits) before they begin their trip. Travel plans will be adjustable during the trip to account for delays. Using advanced information technology platforms, intelligent transportation systems, and smartphone-based software, ITPA will provide significant benefits to the traveling public.

ITPA will be developed in four phases (transit/smart parking use; initial automotive traveler use; localized robust ITPA deployment and use; and, regional robust ITPA deployment and use) using expertise available at FIU through the Lehman Center for Transportation Research (LCTR) and the National Science Foundation’s FIU-FAU-Dubna Industry/University Cooperative Research Center for Advanced Knowledge Enablement (I/UCRC-CAKE) as well as at IBM. Further support will be available from experts as to StreetSmart parking technology from Pirouette Inc., sub-centimeter aerial imagery from ALTA Pix Inc.’s balloon platforms, and elsewhere.

The development of this system will be based on an initial architecture prepared for the TIGER Discretionary Grant. This scope of work is for Phase 0, which involves the development of the work plan of the ITPA system including the development of system requirements and architecture. Phase 0 will be conducted using MDX funds to produce the ITPA work plan by accomplishing Tasks 1, 2, 3, as described in Tasks 1, 2, and 3 of this scope of work. These three tasks funded by MDX will have to be completed to begin Phase 1 of the ITPA, which will be funded by the Tiger Grant. The total amount allocated to the Phase 1 of the ITPA is $2,241,836 ($2,029,832 from USDOT and $212,004 from FIU). The spending of this amount on various ITPA components will be defined the work plan, developed in Phase 0 utilizing MDX funds according to the MDX and other stakeholder requirements.
The TIGER funds allocated for the Phase 1 of the ITPA will be for the purpose of delivering platform to support:

- FIU transit and passenger movements between the FIU's Modesto A. Maidique Campus (Maidique Campus), the Biscayne Bay Campus and the Engineering Center with the potential for an additional stop at either the Miami Intermodal Center, Metrorail's Palmetto Station and the Golden Glades Interchange multimodal facilities
- Smart parking in FIU Maidique Campus locations, certain Sweetwater locations, and certain remote locations connected to FIU by express transit.
- ITS, traffic signalization and other improvements to reduce any traffic delays along US 41 and SW/NW 107th Avenue as FIU express transit vehicles approach the Advanced Intermodal and Multimodal Stations (AIMS) at Parking Garage 6 (PG6)

As indicated above, Phase 1 (with a total budget of $2,241,836) will focus on smart parking and smart transit implementations. It is expected that these ITPA transit and parking implementations will increase transit use by FIU students and Sweetwater residents including increasing their use of the SR 836 express bus to the MIC, and additional destinations via Miami airport, Amtrak, Metrorail, and Metrobus. This is expected to reduce the congestion on SR 836.

The impacts of Phase 1 including the impacts on transit use, strategic parking patterns, and diversion (in time, mode, and route) will be examined and presented to the project stakeholders. After Phase 1 impacts are validated to produce the desired impacts, Phase 2 will begin utilizing future funding sources. Phase 2 will involve the delivery of ITPA enhancements that is focused on 20,000 cars that would typically use SR 836, SR 112, and I-95, and the Homestead Extension of the Florida Turnpike.

Goal and Objectives
The goal of this proposed scope is to provide additional details for the USDOT TIGER Grant Award (approximately $2,368,836 will be allocated to ITPA) and an initial architecture prepared for the TIGER Discretionary Grant. The specific objectives are:

- Define the functions provided by the system
- Define architecture for functions in scope, non-functional requirements, data/systems integration, and joint release plan
- Define roles, responsibilities, and governance
- Identify budget requirements

Task Authorization: ITPA Work Plan
In the tasks of this Work Plan task authorization will be undertaken based on stakeholder inputs to ensure that requirements with the implementation of the system are provided. These efforts will employ standard project management best practices to provide research, analysis and documentation regarding the requirements and planning for the ITPA project. It is anticipated that the IBM platform will be used for mobile, integration and algorithm development. This platform will communicate with the off-line and on-line data integration and decision support tools (RISDS and ITSDCAP) developed by LCTR for the Florida Department of Transportation to receive data from these tools and to allow these
tools to utilize the predictive travel time for other regional applications. TerraFly operated by I/UCRC-CAKE is anticipated to be the main platform for traveler route/mode assignment and will also communicate and integrate closely with the LCTR through the IBM platform.

**Task 1 - Review of Data, Systems and Technologies:** This task will include review and assessment of existing data, systems and tools and will include physical or electronic meetings attended by all project participants. In addition, the project team will conduct extensive technology review of products related to the project tasks.

This task will also involve a collaborative effort between FIU and IBM and will require selected management, administrative, technical and subject matter experts from both parties to participate in meetings. It will employ a review methodology that evaluates a set of capabilities, both common and specific, as well as examining technologies and systems with the intent of building a plan that will deliver innovative travel solutions that will fit within the Phase 1 budget and future phases of the project. In addition, this task will involve reviewing mechanisms and facilities for development, testing and hosting environments.

Prior to the start of and in preparation for the meetings, the participating team members will be identified, capability areas will be selected, pre-meeting reading documentation will be reviewed and initial findings captured.

Issues to be reviewed in the meetings will include assessing existing and new capabilities against the four major functional areas of the proposed solution:

- Parking
- Real-time Situational Awareness
- Travel Suggestions and Options
- Transit Routing Instructions and Guidance

The meetings will be driven by a detailed agenda. The approach will employ a repeatable proven methodology that involves review, analysis, and the creation of findings that will be scored and used to facilitate selection of the scope. The team will produce an actionable set of recommendations aligned with the capabilities for implementation for this initial phase.

Proposed deliverables from the sessions will include findings, scorings and recommendations with the intent to guide budget allocations.

**Task 2 – Development of System Requirements and Design:** This task will include the documentation of functional and non-functional requirements, architecture overview, use cases, joint release plan and estimated budget for Phase 1.

**Task 3 - Production of Final Report:** This task will produce a final report that documents all the activities and results of the project.
**Budget and Schedule**

The work as summarized above is estimated to cost $265,261. The principal investigator for this project will be Dr. Mohammed Hadi, PE (LCTR at FIU) Dr. Naphtali Rishe (I/UCRC-CAKE at FIU) will serve as a Co-PI. Below is project budget estimate (including fringe benefits and indirect cost).

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**Time Schedule**

2/10/2014 to 3/10/2014

3/11/2014 to 5/5/2015

5/6/2014 to 6/2/2014