University of Washington Tacoma
Urban Studies Master of Geospatial Technologies: International Open Data and Participatory Mapping Initiative
Initiative Strategic International Partnership Travel (SIPT) Award Narrative Report

The two overarching aims of this project and trip were as follows:

1. **To identify and establish opportunities for students in the new Masters of Geospatial Technologies to study abroad and/or complete capstone research projects in Cape Town; with an emphasis on open data and participatory mapping opportunities in Cape Town.**
2. **Test a digital mobile injury surveillance application**

To achieve these aims, Dr. Britta Ricker, a faculty member in the Urban Studies program at the University of Washington Tacoma (UWT) traveled to Cape Town, South Africa for the first time. Dr. Ricker was accompanied by Dr. Jonathan Cinnamon from the University of Exeter, Department of Geography who has traveled to Cape Town on several occasions for research purposes. Dr. Cinnamon has published a number of articles regarding injury surveillance in Cape Town and has collaborated on similar projects in the past with Dr. Ricker. Dr. Ricker and Dr. Cinnamon were in Cape Town from September 5-19, 2015.

Here I, Dr. Ricker, will describe how I attempted to achieve the two aims of this trip and project. I then conclude this narrative by sharing lessons learned which have informed my future research goals. It should be noted that I teach primarily in the Masters of Geospatial Technologies (MGST), I use open data in many of the lab assignments that I create for the MGST students. This influenced the goals of this research trip.

1. **To identify and establish opportunities for students in the new Masters of Geospatial Technologies to study abroad and/or complete capstone research projects in Cape Town; with an emphasis on open data and participatory mapping opportunities in Cape Town.**

Dr. Cinnamon and I were aware of a number of projects and local faculty members that we were interested in meeting and potentially collaborating with our faculty and students. We knew that once we were in Cape Town, we would learn of even more projects through these initial contacts. The actors we aimed to meet included: non-governmental organizations, government agencies, and University Professors.
Dr. Ricker and Dr. Cinnamon met with Dr. Julian Smit, an associate professor at the University of Cape Town (UCT) in the department of Geomatics on Tuesday Sept. 8 and again on Sept. 16. During these meetings we discussed possibilities for both collaborative research and about potential opportunities for UWT students to study at UCT. We spent the majority of the meeting discussing our individual research approaches and interests. We then discussed the goals of the Geomatics department at UCT and that of the UWT MGST to pinpoint potential overlaps. Through these discussions we were able to identify a number of potential capstone project ideas for UWT MGST students. These projects ranged from public and environmental health monitoring in informal settlements in and around Cape Town, to collecting primary data, to analyzing imagery using remote sensing techniques, with the opportunity for students to come to Cape Town for ground truthing and qualitative data collection to augment the automated analysis portion of their projects.

We also met with Mercy Brown-Luthango, a Research Officer for Africa Centre for Cities on September 15. The African Centre for Cities is housed in the Department of Geography at UCT. The Africa Centre for Cities is a global leader in urban studies and is working on a wide range of
urban research projects. With Ms. Brown-Luthango we discussed her research in informal settlements and public health in particular. Her research focuses on urban upgrading in Freedom Park and in Mitchells Plain, two townships in Cape Town. She told us about the early childhood development initiatives including childcare to provide children with role models and giving them exposure to their city through field trips to local attractions such as the waterfront and historical sites like the castle. Ms. Brown-Luthango also told us about physical urban development approaches called “blocking” that aims to redistribute slums in an effort to provide infrastructure hazard mitigation and to reduce density. You can read more about Ms. Brown-Luthango’s work here.

Regarding open data, we met with two different government employees, one who works at the municipal level for the city of Cape Town, and another at the provincial level, both were interested in open data and data analysis for informed decision making. On Weds. Sept 9 we met with Mr. Neil Horn, who is responsible for the city’s open data platform. Mr. Horn works in the City of Cape Town’s Development Information & GIS Department. Mr. Horn was kind enough to meet with us and share information about how Cape Town became the first city in Africa to share open data. As the World Design Capital in 2014, the Mayor of Cape Town was a prime advocate for the open data movement and this ensured that open data became possible in Cape Town. Mr. Horn clearly described the challenges and the successes associated with the process of opening their data. Mr. Horn expressed interest in learning about examples of how open data is utilized for social and environmental benefit, which in turn could provide more support for the release of open data. Dr. Cinnamon and I quickly recognized that this could be an area that we and our students could assist, this as a global unknown, not a local one regarding open data. As a result, Dr. Cinnamon and I have organized a paper session at the next Association of American Geographers in 2016 to discuss this issue further. In this call for papers we articulate the need to learn more about the outcomes and practice of open data. We plan to share all of the papers and findings with Mr. Horn.

Mr. Horn was kind enough to introduce us to Adyi Ayal, the director of Code for South Africa (Code4SA), who is a strong proponent of open data. Mr. Ayal kindly invited us to attend their weekly Friday lunch party on Friday September 11th. During this social event, Mr. Ayal described the history, the mandate and the wide range of projects led by Code4SA. This meeting was both informative and inspirational. The aim of Code4SA is to connect people with data, particularly government data. They reach out to communities to help them access and analyze data in an effort to encourage discourse and support transparency in governance. Mr. Ayal clearly described the challenges with open data, many were challenges we

![Figure 3](https://example.com/image3.png)
face in North America as well, i.e. that not everyone is digitally literate, yet these are the populations that could most use open data to advocate for their rights and their needs. While Mr. Ayal identifies as a programmer, he acknowledges that names such as “hack-a-thon” and “coding” can be exclusionary and dissuade people from attending workshops where they could learn to interact with open data. For this reason, he does not use these terms when inviting the public to learn to work with open data. Instead they use terms like “Easter Egg Hunts” He shared this link to this video about their Easter Egg event. He shared many ideas that could be replicated here in Tacoma and in other parts of the global north, to reach out to communities that might not otherwise engage with open data. While I had originally intended to talk to Mr. Ayal about opportunities for our students, I learned far more from him, and aim to implement some of his ideas in the classroom, in research and in the community.

After speaking with Mr. Ayal, we then met with Julia Renouprez, a data wrangler for Code4SA. The aim of this meeting was to learn more about their geospatial data practices. We traded information about techniques and skills. We discussed possibilities for our students to come to Cape Town next summer to host a participatory mapping workshop to share skills with community members and others at Code4SA as it appears that we teach different skills than those that are used in the agency at present.

On September 18, Dr. Cinnamon and I also met with Mr. Hector Eliot, Head of Ministry Transport and Public Works for the Western Cape. Mr. Eliot was particularly interested in speaking with us about road and pedestrian hazards. This meeting sparked an ongoing conversation about bringing attention to the epidemic of road hazards and injury caused by collisions. Hector is eager to share data and use it as a communication mechanism. He told us of public outreach efforts and discussed opportunities for our students to create interactive geovisualizations to help communicate important public safety issues in a way that is meaningful in Cape Town. Mr. Eliot showed us examples of geovisualizations he has commissioned to be constructed to show the public and policy makers alike the extent of the problem of road safety. Mr. Eliot has been working with insurance agencies for data monitoring, and has funded billboard and other social media campaigns to communicate the epidemic of injuries related to road safety. He communicated to us that this is a huge social and perceptual challenge that people do not clearly see the risk of unsafe driving. More research needs to be done in terms of communicating this risk.
2. Test an injury surveillance application

The original purpose of this trip was to test the feasibility of implementing a low budget technological intervention to improve injury data collection efforts for injury surveillance purposes. Using a crowdsourcing approach, this project was to implement a citizen-based data collection tool designed to collect information about where injuries have occurred and perceptions of safety in specific locations. While planning for this trip and preparing the mobile application to be tested, a number of concerns were raised by potential collaborators and other scholars with whom I discussed the ideas associated with the mobile application I was developing. The problem was that I am an outsider, imposing a technological intervention that may not be an appropriate fit for a community I have never met. While I understand the challenges they face by reading scholarly articles and interacting with physicians and community officials who wish to help them, I do not understand their reality fully. When discussing these concerns and ideas regarding research and student projects with colleagues in Urban Studies at UWT, my colleague Dr. Yonn Dierwechter, who has extensive professional experience in Cape Town, directed me to the work of the NGO Violence Prevention through Urban Upgrading (VPUU) in Cape Town.

The objective of the VPUU is to reduce crime rates and improve socioeconomic conditions in four “safe node” regions. VPUU aims to aid in the facilitation of the development of individualized violence reducing interventions in partnership with the communities to improve safety and daily life of the residents. VPUU is an NGO that is partially funded by the city of Cape Town. On September 9, Dr. Cinnamon and I met with Mr. Don Shay a Project Manager at VPUU and Mr. Chris Berens VPUU’s Knowledge Management and Geographic Information Systems (GIS) specialist. During this meeting Mr. Berens told us much about the different projects led by VPUU. We learned much about the challenges facing the communities as well as the strategies VPUU is taking to attack these challenges.
One project of particular interest, was related to land tenure in informal settlements, which is a big issue globally. VPUU is training the communities to use open source GIS called QGIS to document property ownership (See figures 5 and 6). The community members get paid a daily stipend and are provided with childcare for the hours they work. Mr. Berens is training community members to use the GIS, keep it up to date and then produce maps for the communities to keep an up-to-date inventory of who is living where to enable the transfer of ownership of structures on land. The GIS analysts are then able to print out an official document for the land dwellers to show that they in fact live on their parcel (See figure 6 and 7). Mr. Berens has come up with an innovative way of geocoding the informal settlements. Each roof top is traced and given a unique identification
number. Each rooftop is then in a spatial database, community members then enter the name and number of people living in that dwelling. This can be linked to other data as well.

Additionally, VPUU had already built a mobile application in an effort to easily collect data in their “safe node” areas. It is hoped that they can then easily analyze and share data with stakeholders. You can see a demo of the app here. Their application is comprehensive in that it is for data collection of infrastructural issues, as well as issues of safety perceptions and a vessel for entering data about injury and violence. All of these data are shared with the local government in real time so that they
can provide services to the community in real time. On September 17, we were invited to participate

in data entry in-situ. The first stop was Monwabisi Park in Khayalitsha and the second stop was Lotus Park.
See figure 7 to see a VPUU volunteer from the community training Dr. Cinnamon on how to use the mobile data collection application.

With the mobile data collection application, VPUU volunteers are asked to monitor if taps and toilets are working on a daily basis. This data is then pushed to the local government to monitor. The goal being that the city of Cape Town can then send crews to fix toilets and taps when need be, and if not, it is all documented. The mobile application also has the ability for the data center to collect data about crime, and perceptions of safety. This application is being implemented and tested now by the community members.
Figure 6 Dr. Cinnamon Entering data into the mobile phone regarding functioning toilet facilities.

Coincidently, Dr. Richard Matzopoulous, who is a specialist Scientist at the Medical Research Council’s Burden of Disease Research Unit and an Honorary Research Associate at the University of Cape Town’s School of Public Health and Family Medicine, and its Centre for Occupational and Environmental Health, where he co-ordinates its Violence and Injury Research programme also works with VPUU. Dr. Matzopoulous has done much work with Dr. Cinnamon in terms of injury

Figure 7 Public toilets that are in need of repair. This information was input into the mobile data collection application by community volunteers.
data collection and mapping, and we have all co-authored a paper together in the past. We met to discuss future collaborative research opportunities. Dr. Matzopoulous has been tasked with evaluating the VPUU efforts in a variety of ways. We met with Dr. Matzopoulous on Sept. 16 to discuss his role within VPUU and other projects as well. We discussed future research collaboration opportunities related to public and environmental health in informal settlements.

**Summary**

During the time spent in Cape Town, South Africa several meaningful and promising connections were established. These connections were made at the community, municipal, provincial levels as well as with University collaborators and NGOs. All of those we met with are interested in establishing relationships and potential student collaborations. Unique relationships and connections between these agencies were also revealed (See figure 9 for initial schematic of these relationships). It is hoped that Dr. Cinnamon and I will be able to write a publication illuminating these valuable linkages between agencies and open data. While we had planned to work with each of the agencies we met with, we learned news ways in which they were linked and they were related to each other. We are curious to learn if similar relationships exist in other places.

![Figure 8](image.png)

*Figure 8 Illuminating the relationship between those who we met with during our time in Cape Town and their relationship with each other and with open data.*

Additionally, in future research we hope to host open data workshops similar to those hosted by Code4SA in Tacoma. We hope to implement what was learned in the Cape Town context to see if similar strategies could be successful at home. Finally, many of the project ideas that were discussed during meetings, are starting to take shape.
Dr. Ricker would like to express her tremendous gratitude to the Office of Global Affairs for the funding to complete this project. She would also like to thank Dr. Cinnamon for traveling with her, and sharing his expertise and his professional network. This trip will be the beginning of meaningful research in South Africa by UWT students and professors because of the connections that were established and strengthened.

Table 1 Meeting Information

<table>
<thead>
<tr>
<th>Person in Meeting</th>
<th>Title</th>
<th>Date and Time</th>
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<tbody>
<tr>
<td>Neil Hoorn</td>
<td>Open Data Project Manager City of Cape Town</td>
<td>10 am Sept. 9, 2015</td>
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<tr>
<td>Don Shay</td>
<td>Violence Prevention through Urban Upgrade (VPUU) – Project Manager</td>
<td>Sept. 9 and Sept 14</td>
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<tr>
<td>Chris Berens</td>
<td>VPUU Knowledge Management - GISc Mapping</td>
<td>1pm Sept. 9, 2015 And Sept 17</td>
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<tr>
<td>Adi Ayal</td>
<td>Director for Code for South Africa</td>
<td>September 11, 2015</td>
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<tr>
<td>Dr. Mercy Brown-Luthango</td>
<td>Research Officer for Africa Centre Cities</td>
<td>Sept. 15</td>
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<tr>
<td>Dr. Julian Smit</td>
<td>Associate Professor of Geomatics</td>
<td>Sept. 8 + 16</td>
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<tr>
<td>Hector Eliot</td>
<td>Head of Ministry: Transport and Public Works at the Western Cape</td>
<td>Sept. 18</td>
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<tr>
<td>Dr. Richard Matzopoulos</td>
<td>Specialist Scientist at the Medical Research Council’s Burden of Disease Research Unit and an Honorary Research Associate at the University of Cape Town’s School of Public Health and Family Medicine, and its Centre for Occupational and Environmental Health</td>
<td>Weds. Sept. 16</td>
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