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492 WEEKLY REPORT 7    Date: 2/21/17 - 2/27/17

*Group number: 01*

*Visualization of Earth Modeling System (Project 1)*

*Prof. Johnny Wong (Advisor) & Prof. Chaoqun Lu (Client)*

*Team Members/Role:*

*Kellen Johnson – Team Communication Leader*

*Anish Kunduru – Team Leader*

*Julio Salinas – Team Concept Holder*

*Eli Devine – Team Webmaster*

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○ **Weekly Summary**

Automation is complete. GUI is complete, pending integration with a server (requires some hand configuration and routing issues for socket streams/SSL – it is currently functioning on localhost). Team members met several times for paired programming. Other than that, what's left to do is generation of template symbology for the automated scrips and dynamic loading of maps.

○ **Past week accomplishments**

- Anish Kunduru: Kept in touch with Dr. Lu to ensure we have all the information we need. Bug testing on GUI. Creation of uploading ASCII functionality to integrate with parser. Laid out baseplate for dynamic loading of maps in JS using the existing functionality in the daemon.
- Kellen Johnson: Resolved the issue for being prompted by server on every publishing attempt. The self signed certificate is not the same as localhost's path. Additionally, created scripts that allow for stopping of all services and modifying publishing

parameters of existing services. These publishing parameters ensure that map services will not strain our server by limiting end-user power. Additionally, created several maps and worked on map templates for client. Worked with client to find a solution to distortion caused by 2D to 3D plot conversion. Worked with Eli and Julio in an attempt to get the dynamic maps loaded.

- Eli Devine: Worked on dynamically loading maps based on a drop down condition of existing maps. The user will be able to select the region, compound, year, and month for their selection.
- Eli Devine: Worked on dynamically loading maps based on a drop down condition of existing maps. The user will be able to select the region, compound, year, and month for their selection.
- Julio Salinas: Worked with Eli and Kellen on dynamically loading maps based on a drop down condition of existing maps.

○ **Pending issues**

- Anish Kunduru: We need to ensure we have all the template legends from Dr. Lu. I'll expand on this in the extended discussion section.

○ **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Kellen Johnson	Successful DataSource swapping. Attempts at automatically stopping services.	18	155
Anish Kunduru	Finished GUI, added more functionality to daemon. Helping with dynamic loading of webpages.	23	177
Eli Devine	Work on dynamically loaded maps based on conditions given from the user.	13	82
Julio Salinas	Research javascript for dynamically loading dropdown values on html file	11	88

○ **Comments and extended discussion**

- Anish Kunduru: The code is dynamic, so we can support an unlimited number of regions and compounds, but the template symbology needs to be manually generated for each compound due to limitations with ESRI's API. Additionally, a reference scale needs to be determined for each new region, based on the amortized sparseness of the data, to prevent graphical glitches. *Note for future improvements:* The graphical abnormalities stem from the fact that we are plotting data in a vector space like simple XY data. Additionally, some swaths of the globe will have more NO\_DATA values than others. This can mean that each XY point can represent a different land area. One solution would be to plot additional points to create a more dense matrix, since we are ultimately plotting data as lat, long, value (points need not be equidistant), but this could cause inaccurate data to be displayed. Another solution would be to merge adjacent cells together. We tried to do this a couple weeks back, but this requires another ESRI product called ArcPro, and we didn't want to switch systems this late in the semester. A bandaid solution might be to apply some kind of Gaussian filter to the image, but this would certainly cause a significant increase in server load, as the smoothing kernel is CPU bound. Until ESRI supports geoprocessing using graphics cards, the best bet would be manipulating the data to emulate the desired result.

○ **Plan for coming week**

- Anish Kunduru: Chase down any remaining bugs, get the system fully running, overview with client to ensure she's happy.
- Kellen Johnson: fully integrate Python scripts into the Java daemon, and work with Anish on testing the GUI. Followup with Eli and Julio for generating a dynamic selection tool for the end-user experience.
- Eli Devine: Finalize all dynamic loading and pulling of maps for the user to browse and see specific projects.
- Julio Salinas: Keep working on generating the dynamic selection tool for the end-user experience.

○ **Summary of weekly advisor meeting**

N/A; this week.