

CSCE 487

Team 4

Back-end Development

Kaylei Burke		Trevor Daniels
Peter Schlette		Aaron Whitmore

Why have a server?

- Mobile devices have notable limitations
 - Path computations are processor-intensive
 - Processor load drains battery rapidly
 - Processors are less powerful than those in wired devices
- Lack of a central server would necessitate three independent implementations
 - Three times the effort to develop
 - Three different sets of bugs
- Easy to extend functionality to new platforms -- e.g. new smartphone OS, web, etc.

Architecture

- Uses MVC pattern in the Play framework
 - Divide routes, bus stops, waypoints, etc. into separate models and respective controllers
 - View used for displaying XML, JSON

Development practices

- Distributed version control with Git
 - Trevor takes ownership of repo issues
- Agile development
 - Weekly meetings
 - Rapid changes to meet client needs
 - Limited testing in favor of new features
- Play framework
 - Previous environments presented large hurdles
 - Greatly aided by Paul's experience (and patience)
 - Documentation sometimes frustrating

DAPHNE

- Two servers -- Daphne1 and Daphne2
- One server as a backup
- Issues with server database not storing data from bus tracker (used for optimum route algorithm)
 - Made it so we had to "teleport" for a while

Risks

- Maintenance and development of Daphne will change hands
 - Thoroughly commented code and MVC framework will ease transition
 - Bug reports can still be filed and managed via JIRA
- Reliance on external services
 - Google quotas have been an issue, but pending non-profit status should ease this
 - Soon to have more reliable access to StarTran data
- CSE server stability
 - Daphne can be hosted on a more stable server before the BusLinc apps are rolled out community-wide

Accomplishments

- Optimum bus route algorithm
 - Added bus route waypoints to this
 - Fixed problems with waypoints
 - Displays waypoints from start bus stop to end bus stop
 - Waypoint sectors
- ETA
- Fixed static schedule data
- Bounding box around Lincoln
- Fixed problems with Daphne not storing bus tracker information in database

In conclusion

- Daphne provides a valuable service to the mobile teams, who will be providing a valuable service to the community
- A great learning experience
 - Software engineering practices, from requirements finding to deployment
 - New technologies
- Daphne will continue to be maintained and improved by developers this summer and perhaps into the future
- Special thanks to Paul Bennett for his early mornings, experience, and patience!

Questions?