VOTERS Management And Prognosis (MAP) Control Center.

The core of the VOTERS control center will be a GIS-managed geospatial database, which will be automatically populated with incoming data collected by the VOTERS vehicles. Communication from each VOTER to the MAP is handled via an on-board wireless connection to the internet. The system architecture which is currently in the prototype stage is shown below. The MAP will automatically post-process data as needed and conduct statistical network level analysis of road-way and bridge-deck surface and subsurface conditions to support decision-making.

The MAP Infrastructure will be based on ESRI’s ArcGIS Server technology. This allows for the storage, analysis, and integration of 2D and 3D data layers containing raw and/or processed information along with raster data.

ArcGIS Server ‘publishes’ data as a series of services that can be consumed by web applications (such those planned with the Flex/Java API) delivering a rich user experience. This means that the services (and the data they are publishing) could be consumed by other web applications, by ESRI’s ArcGIS Desktop (for advanced spatial analysis), by compatible mobile devices such as Blackberry/PDA, or by other mapping applications such as Google Earth or Microsoft’s Virtual Earth. ArcGIS server has a native support for CAD drawings, making the creation of drawings that engineers or maintenance personnel is familiar with straightforward.

Decision making systems will be based on interactions with members of the Massachusetts Highway Department and service providers such as our collaborator, Infrasense. Northeastern University through existing NSF funded research and trainee projects engages experts in public policy and political science in the evaluation of societal impacts of technological advances. These existing experiences will be leveraged to ensure that the technology domain experts have access to experts in policy and political analysis as VOTERS decision making algorithms are calibrated.