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Agency of Transportation

<http://vtrans.vermont.gov/>

January 25, 2016

Federal Highway Administration  
Matthew Hake, Division Administrator  
Federal Building - P.O. Box 568  
Montpelier, VT 05601

Subject: FFY 2016 STIC Incentive Application

Dear Mr. Hake,

This letter is to put forward a recommendation of a proposed STIC Incentive Program application for 2016. The VTrans STIC Committee solicited proposals and received several submissions. By consensus the Executive Council supported the attached proposals for the Incentive Program. The proposal for funding under FHWA's STIC Incentive Program includes:

- A centralized tool that incorporates data from many of the Agency's existing systems
- A mapping tool to present complex relationships based on location
- An intuitive interface that is simple but also incorporates intermediate level analysis capability

The purpose of the project is as follows:

- Provide non-GIS staff effective method to run complex analysis routines
- Replace on demand data preparation with constantly updated and available data for retrieval
- Centralize and reduce redundant tools and applications in the data management environment

The break down for the funding for the proposal is as follows:

- The cost to complete the projects is estimated at \$125,000 and will be administered by VTrans, the State Transportation Agency (STA).
- It is planned that the federal share will cover 80% of project costs (\$100,000).
- The STA is committed to providing the remaining 20% share (\$25,000).
- The project tasks, deliverables/activities, schedule, and cost are summarized in the attached proposal.

I would like to thank you and your staff for your assistance and look forward to implementing these important innovative initiatives.

Respectfully,

Kevin S. Marshia, P.E.  
Director/Chief Engineer

cc: Mike Lozier, VTrans Performance, Innovation and Excellence (PIE) Section Chief



# SK1

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## Opportunity

Pressure from our stakeholders is moving the Agency towards better stewardship of data to support the work we do as an Agency. At the Vermont Agency of Transportation, we have started to the transition to a true data based decision framework. Through this transition we have exposed an increasing amount of information to users through various tools and data sources. As we try to use the increasing amount of data that the Agency owns it has become increasing difficult to identify the authoritative source for data for different assets and processes. In addition, the landscape has become increasingly difficult for the user community to remain informed on the latest and best tools to support their needs. There is an opportunity to improve the integration of disparate data sources and existing tools into a framework that allows users to seamlessly find solutions to questions and make decisions by incorporating multiple data and tools.

## Project Purpose and Need

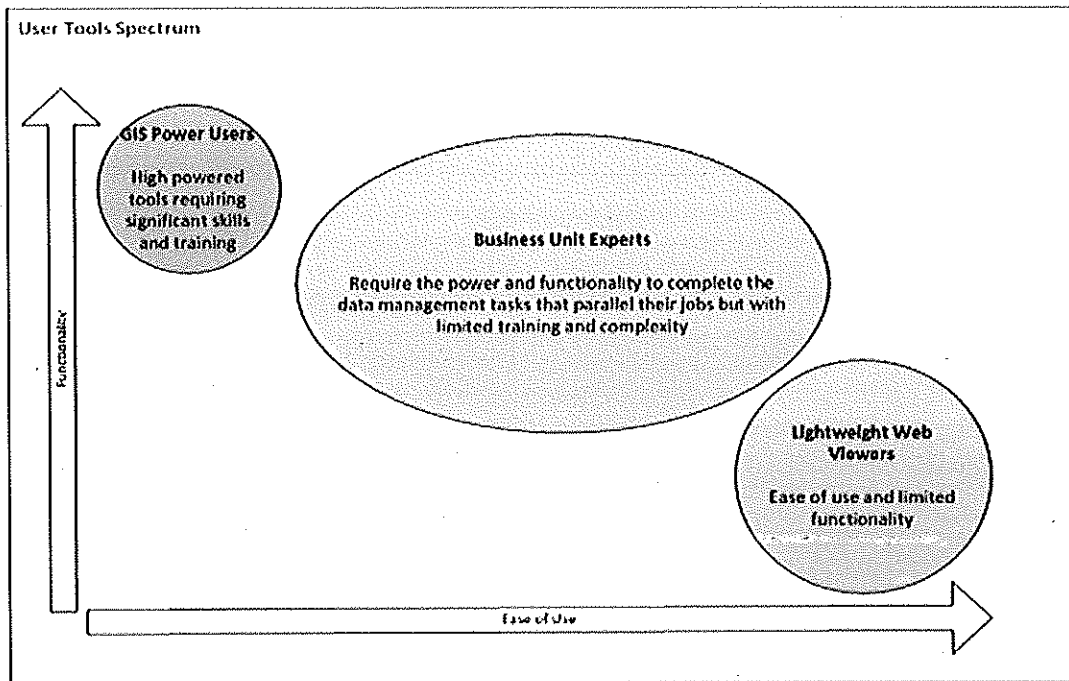
Across the various organizational units of the Agency, much of the information required to complete various aspects of work rely on the data and information of other organizational units. Information shared across these units often requires resources to generate the information in a usable format as well as resources to digest and relate that information to other sources of information. Therefore, the need for this project is as follows:

- A centralized tool that incorporates data from many of the Agency's existing systems
- A mapping tool to present complex relationships based on location
- An intuitive interface that is simple but also incorporates intermediate level analysis capability

The purpose of the project is as follows:

- Provide non-GIS staff effective method to run complex analysis routines
- Replace on demand data preparation with constantly updated and available data for retrieval
- Centralize and reduce redundant tools and applications in the data management environment

Traditionally in support of Agency work, data needs have required a request and retrieval process. Non GIS users have identified the need to perform routine but complex spatial analyses currently available only to GIS power users and requiring significant training and experience. In contrast, recently developed lightweight web mapping products that have deployed are easy to use and consume for general users but have limited functionality. A gap has been identified between these two functional areas exhibited in the in the following diagram. As the Agency increases the dependence on data and there is stronger emphasis on overall data quality, this framework migrates to a more efficient publish and self-service model for data needs.



## Objective

This proposal is for the development of a mapping framework that will serve as the window for the integration of various sources and tools at a level that will allow Agency users to easily access and retrieve data in a way that is relevant to their own workflows. Similar to the development of the public facing VTransparency site, this project will utilize the following development methods:

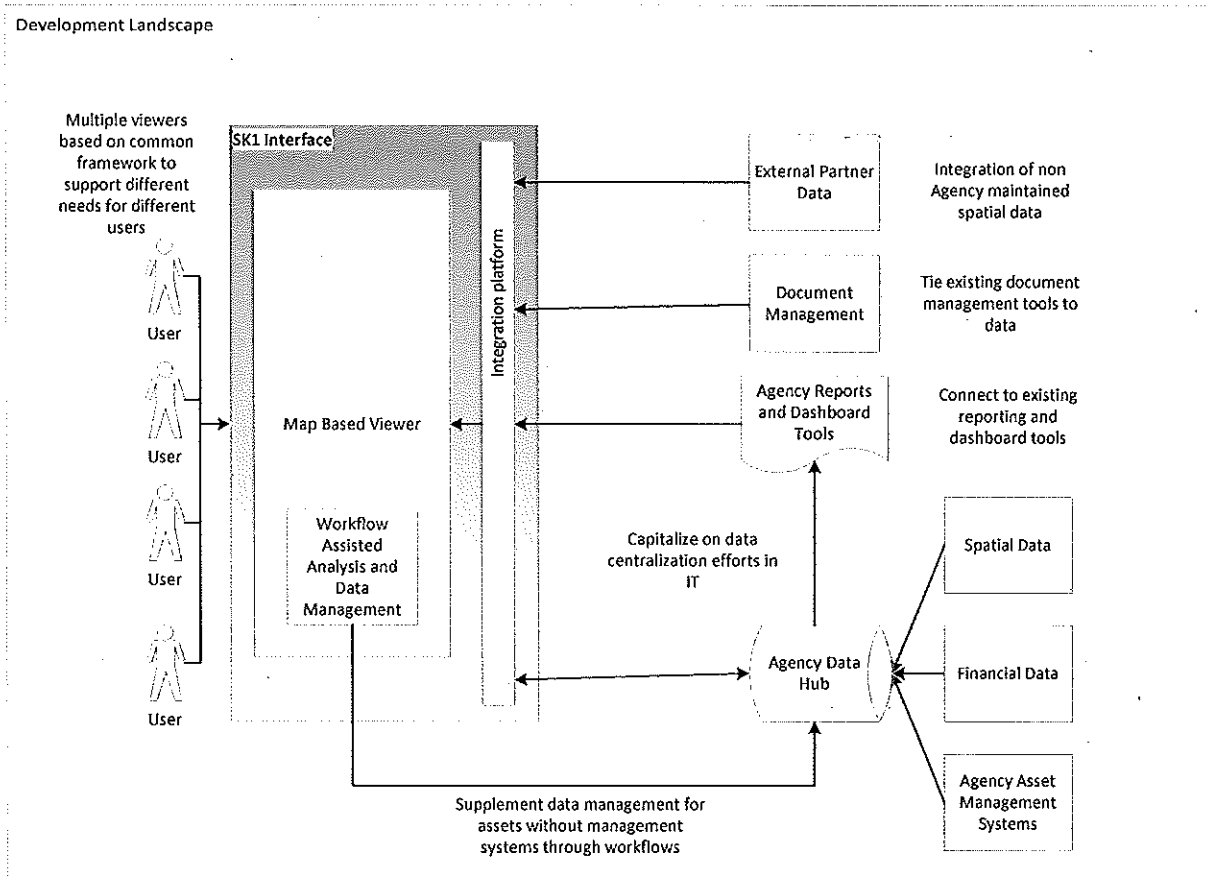
- Repackage and central service of Agency datasets
- Identification of user segments, user needs and data perspectives
- Identification and integration of data from source data applications
- Focus on sustainable integration and automation techniques
- Utilize existing and future work by internal staff and third parties

## Project Scope

Like many information technology projects, the initial investment in this project is based on assumptions on the resource need and capabilities of the tools involved as well as perceived benefit to the business units of the Agency. Though the greater project intent is to provide useful and sustainable tools to all business units in the Agency, this initial project will identify the 3 business units perceived to have the greatest benefit to cost for tool development. Functionally, the project will focus on the presentation of relevant Agency data in a viewable format expanding to additional functionality only if time and resources are available

## Development Landscape

As shown in the following diagram, the design of the SK system will package the ongoing work of the Agency's Enterprise Data Hub, existing document storage tools and the data of external partners. The design will use an existing commercial of the shelf (COTS) system to integrate these data sources and present them to the users. Based on the needs of the individual user groups, the maps and data sources will be presented in a relevant perspective.



## Potential Example Projects

Though the actual needs have not yet been developed, these examples provide insight for the types of tools that could be developed. *These are just examples:*

- Maintenance Work – a mapping tool could be used to identify areas/assets that required maintenance in the upcoming season. The areas could be selected through the map and integrated with the maintenance management system as work requests.
- Sign Work orders – all existing and historic projects could be viewed for sections of highway across the state showing completed and open work in conjunction with upcoming capital

projects. New work orders could be developed within the tool to facilitate the transfer of information to sign crews

- Bridge Inspection – integration with Bridge Inspection system could provide a tool for bridge inspectors to track their work identify remaining workload and timing with construction activities
- Capital Projects – Project managers or scoping units could utilize the tool to understand other planned work in a certain location to identify potential conflicts and opportunities.

## Project Tasks

<i>Task</i>	<i>Description</i>	<i>Agency Staff</i>	<i>Consultant</i>
1	Identify initial top 3 user groups and requirements	\$ 5,000	
2	Develop and test development framework	\$ 20,000	
3	Investigate existing datasets and data sources	\$ 10,000	
4	Develop centralized mapping tool	\$ 20,000	\$ 30,000
5	Support training for Agency Staff	\$ 5,000	\$ 10,000
6	Identify and explore workflow processes	\$ 5,000	\$ 10,000
7	Rollout tools to user community	\$ 10,000	
	<b>TOTAL</b>	<b>\$ 75,000</b>	<b>\$ 50,000</b>

## Project Deliverables

At the conclusion of the project the VTrans will provide the following:

- Project Report - including user group identification, user need identification, organizational learning, initial user feedback results.
- Project Presentation – background of user needs, existing tools/datasets, pre project gap analysis, demonstration of the developed tools, shortcomings and future plans.