



## Proposal

### Kentucky Transportation Cabinet

### Exor to Agile Assets Maintenance and PMS Interface

October 4, 2013

Submitted by:  
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Mr. Keith Dotson  
Kentucky Transportation Cabinet  
200 Mero Street  
Franklin, KY 40601

Subject: Exor to Agile Assets Maintenance and PMS Interface

Dear Mr. Dotson,

Based on ongoing discussions with Bentley Systems, Incorporated (Bentley) and the Kentucky Transportation Cabinet (KYTC), Bentley is pleased to provide this proposal to improve the integration between the KYTC's Exor highway database system and Agile Assets.

The creation of an Exor to Agile Assets data exchange interface will improve the quality of information held in the Agile Assets system and reduce the effort currently expended keeping the two systems coordinated.

We sincerely appreciate the opportunity to submit this proposal and look forward to a continued partnership with KYTC.

Sincerely,

Lori Ann Gronman  
Account Manager  
Bentley Systems Incorporated  
Office: (727) 771-5445

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## 1. Introduction

In May of 2012, Richard Ellis of Bentley Systems visited KYTC to review the current implementation of the Exor product, and to plan future improvements to it. During this visit it was identified that the creation of an Exor to Agile Assets data exchange interface offered a significant opportunity to improve the quality of information held in the Agile Assets system and reduce the effort currently expended keeping some aspects of the two systems coordinated. This will improve the quality of road information held by the state and reduce the cost of duplicated data entry.

KYTC and Bentley Systems have established a project to undertake the scope and requirements analysis, and to create a design for this interface. That analysis resulted in a Scope and Requirements document that has been agreed between Exor and KYTC.

A software design document has been created that defines software that meets the requirements identified. This Statement of Work covers the activities required to implement this design.

## 2. High Level Requirements

The Scope and Requirements document established that the main objective of this project was to create software that could replicate what KYTC currently does manually to update the Agile Assets System with road network information. This includes:

- Provision of a full list of routes
- Addition and removal of routes
- Updating route spatial representation
- Updating the location of 'Event' linear references and spatial locations
- Updating asset information

The interface will be flexible enough that if the asset information that will be shared between Exor and the Agile Assets system should change, these changes can be implemented by changes in the configuration without needing changes in the interface software.

The implementation of this software will prevent the addition of new maintenance events on roads that does not yet exist while allowing the addition of events located on roads that have only been added recently. This interface should allow both the Maintenance and the PMS systems (currently both implemented using software from Agile Assets) to have location of their business objects on the road network locations maintained without the need to make manual changes to the road network information held within the Agile Assets system.

### 3. Services to be Delivered

This section details the proposed consulting services needed to implement the project described above using Bentley's Exor software.

A task level work plan for the Bentley Exor implementation is described in this section. Bentley will use Work Breakdown Structure (WBS) codes to plan, monitor, and control the implementation activities involved in the Exor implementation project. At this manageable level of detail, each element will be assigned to an appropriate Exor project team member who is qualified for the development and delivery of each element's defined deliverables. WBS elements are used to periodically summarize progress details and issues to the Bentley Project Manager to support project level reporting, review, and planning activities.

**Please refer to the following design specification for this proposal:**

Exor to Agile Assets interface Design v 2.0.pdf

Exor to Agile Assets interface Scope and Requirements v 2.0.pdf

Exor to Agile Assets interface Specification v2.0 .pdf

#### 3.1 Road Network Information – List and Addition and Removal of Routes

The Exor system must provide a current version of the road network information so that the Agile Assets system can take a current set of network data to establish the two systems with an initial, common version of the road network, and to re-synchronize the network at any time in the future.

##### **Bentley Responsibility**

- Construct the route information tables

##### **KYTC Responsibility**

- Review and Approve views and tables upon completion

#### 3.2 Road Network Information - Route Spatial Representation

Every change in spatial representation of the route must be tracked so that changes in shape not normally treated as an edit are still captured and reported. For example, if a datum is 'reshaped' this is not tracked as a network change because it is considered data improvement or correction, not a physical change in location of the assets. The Agile Assets System still needs to be made aware of these changes.

##### **Bentley Responsibility**

- construct a route spatial representation tables

##### **KYTC Responsibility**

- Review and Approve upon completion

### 3.3 Event Information - Updating the Location of 'Event' Linear References

The Agile Assets System needs to know if any of the location of objects stored in the Agile Assets System has changed due to a network operation on the road network. To communicate this, the Agile Assets System will publish a set of historic network locations and a date of those locations. EXOR will respond with the current route locations for those objects.

#### **Bentley Responsibility**

- Construct a process to generate the required event data

#### **KYTC Responsibility**

- Review and Approve upon completion

### 3.4 Updating Asset Information

Asset information must be communicated from Exor to the Agile Assets system.

#### **Bentley Responsibility**

- Create Processes where the asset information will be communicated to Agile Assets

#### **KYTC Responsibility**

- Review and Approve upon completion

### 3.5 Report Processing

A report is required so that staff can review what road network changes have occurred and check that the appropriate changes have been applied. KYTC also needs to be able to issue length change notices to various parts of the organization so that other systems can be manually updated. This report needs to list all changes to the length of Routes caused by network edits that add or remove datum from the network.

#### **Bentley Responsibility**

- Develop Report processing as described in Reporting section of Interface Design Document.

#### **KYTC Responsibility**

- Review and Approve upon completion

### 3.6 Schedule

The estimated time to complete the Agile Asset Interface work is approximately 8 weeks.

Note: any additional testing and roll-out support that may be needed will add some time to this estimate.

### 3.7 Staffing

The proposed implementation team will consist of the following Bentley consultants:

- Project Manager
- Lead Consultant
- Software Consultant(s)

#### **Project Manager**

The Project Manager will provide a single point of contact and will be responsible for coordinating all work.

#### **Lead Consultant**

The Lead Consultant will be responsible for data modeling and high level network load requirements.

#### **Software Consultant(s)**

The Software Consultant(s) will be responsible for generating the processes that are used to load the network data into the system and providing necessary support to KYTC during implementation.

### 3.8 Acceptance Criteria

The following acceptance criteria are proposed for the Agile Asset Interface:

- KYTC can use the interface to exchange Exor information in the tables that will be accessed by Agile Assets.
- KYTC can run the Network Change report and verify it records changes to the network correctly.

### 3.9 Technical Assumptions

The Exor implementation approach is based on a number of assumptions. These are documented in the work plan above. A number of overarching assumptions are listed in this section.

KYTC will provide resources to implement the Agile Asset Interface. Specifically KYTC will take responsibility for:

- Interpreting existing data models and making decisions about logical representation of data objects in the new database.
- Extracting data from existing databases (GIS) to be loaded into the new database.

These assumptions are expressions of the need for KYTC to take ownership of the solution being provided.

## 4. Pricing

Bentley will provide an estimated 330 hours of consulting and project management services on a Time and Material basis. Rates and estimated hours are as follows:

Resource Classification	Estimated Hours	Standard Hourly Rate	Discounted Hourly Rate
Project Manager – 3	48	\$281.25	\$220.00
Consultant - 3	262	\$250.00	\$190.00
Senior Consultant - 3	20	\$281.25	\$220.00

Prices shown are in USD. In addition to the above fees, travel and accommodation expenses will be billed at cost. Bentley expects no travel to be required for this effort.

Should additional hours be required to complete the Scope of Services, Bentley will submit a Change Request, but will do no further work unless/until the additional Services are approved.

Bentley will invoice monthly for work completed in the previous month plus expenses.

Total Project Pricing	
Consulting Services Subtotal	\$64,740
Estimated Expenses Subtotal	\$0
Project Total including estimated expenses	\$64,740

Bentley estimates the services defined above, including the necessary project management activities can be completed on a Time and Material basis of **\$64,740**.



## 5. Terms and Conditions

Bentley proposes to perform the work described in this proposal under the terms and conditions of the existing KYTC SELECT Program Agreement 10365375 (collectively hereafter, the “Agreement”) by and between Bentley and the Kentucky Transportation Cabinet (“Subscriber”).

Additionally:

- Pricing, terms, and conditions of this proposal are valid for sixty (60) days from the submittal date of this document.
- Should you wish to proceed with this project; an invoice will be generated and submitted for deduction of the remaining eCredits at the end of the project. Further, since KYTC will be utilizing previously purchased eCredits for this engagement we only require a signature at end of this document which will constitute a notice to proceed.
- Bentley will invoice as follows:
  - Consulting services shall be invoiced monthly based on work completed in the previous month.
- No Services warranty or maintenance is implied.
- To keep scheduled project dates, Bentley must schedule resources, book travel, etc. If Subscriber reschedules services and notification of a schedule change is received less than two full calendar weeks before the originally scheduled date, Bentley reserves the right to charge, and Subscriber agrees to pay, a rescheduling/cancellation fee of \$500 per scheduled person day plus any non-refundable reasonable expenses resulting from such changes will be charged. To minimize any such charges, please advise Bentley of any changes as soon as possible.
- The parties agree that if there are any additional or different terms or conditions appearing on any purchase order(s) issued to Bentley by your organization after the date of this proposal, any such additional or different purchase order terms or conditions shall not apply to the products and services described in this proposal, even if Bentley executes the purchase order and/or even if Bentley processes the order. For any of your organization’s additional or different terms or conditions to be binding on the parties (whether appearing on a purchase order or otherwise), the parties agree to implement any such additional or different terms or conditions via a separate written agreement only; otherwise no such terms and conditions shall apply to the project described in this proposal. In any event, the parties agree that at all times the applicable current Agreement, as well as the terms and conditions of this proposal, shall always take precedence over any and all other documents that may pertain to this transaction, specifically including, without limitation, any terms and conditions accompanying your organization’s purchase order(s), whether accepted by Bentley or not in accordance with this paragraph.
- The scope of services in this proposal is based upon information provided by Subscriber. Circumstances not contained in this information, or otherwise unknown to Bentley, may require an addition to the proposed scope of services. Moreover, any additional work that you may engage Bentley to execute will be subject to either a separate proposal or change control, and pricing where any discounts offered herein may not be available irrespective of whether it is completely new work or related to works delivered on the basis of this proposal.

- Once you have accepted this proposal, Bentley will commence work in accordance with this proposal. If after commencement of the work described in this proposal, however, Subscriber properly opts to terminate the project in accordance with the Agreement, Subscriber will still be invoiced by Bentley for the following:
  - All remaining time that Bentley has worked on the project that has not yet been invoiced.
  - Any and all non-refundable costs for which Bentley may be liable.

**Signed and Accepted:**Company Name: Kentucky Transportation Cabinet

Signature: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Proposal Title: \_\_\_\_\_

Date: \_\_\_\_\_

## About Bentley

Bentley is the global leader dedicated to providing comprehensive software solutions for sustaining infrastructure. Architects, engineers, constructors, and owner-operators are indispensable in improving our world and our quality of life; the company's mission is to improve the performance of their projects and of the assets they design, build, and operate. Bentley sustains the infrastructure professions by helping to leverage information technology, learning, best practices, and global collaboration – and by promoting careers devoted to this crucial work.

Founded in 1984, Bentley has more than 2,800 colleagues, offices in more than 50 countries, annual revenues surpassing \$500 million, and since 1993, has invested more than \$1 billion in research, development, and acquisitions. Nearly 90 percent of the Engineering News-Record Top Design Firms are Bentley subscribers, and a 2008 Daratech study ranked Bentley as the world's #2 provider of geospatial software solutions.

For more information, visit [www.bentley.com](http://www.bentley.com) or call 1-800-BENTLEY.

## Contact Bentley

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