## Program Objective

It is increasingly being recognized that the current U.S. practice of information transfer during the bridge planning / design / fabrication / construction / operation / maintenance processes involve: repeated manual transcription of data that is error-prone; time-consuming approvals (e.g. of shop drawings); and a lack of standardized formats that hinder electronic information transfer. It is also recognized that without such standards, electronic information exchange is cumbersome at best, and often not possible.

To address this challenge, FHWA developed a program to explore the promise of parametric 3D bridge information modeling (BrIM) as a technology that will enable acceleration of the bridge design and delivery, as well as enhance life cycle management. It intends to articulate aspects of the envisioned accelerated bridge delivery process and to provide an insight into the current technologies that are available to streamline the process of bridge planning, design, management, and operations.

While this program's objective is achievable in the long run, the FHWA recognizes that this program requires a well-considered phased approach. To attain success, the integrated system needs to be accepted by several stakeholders and most importantly the owners (State Departments of Transportation (DOT)).

Phase I of the program is intended to demonstrate the viability of integrated bridge project delivery and life cycle management. Conceptual development will lead to presentations of a prototype integrated system that illustrates the data exchanges and applications throughout a bridges life cycle.

## Topics:

- Introduction to Project & Bridge Information Modeling
- Potential Benefits from Integrated Approach
- Case Study Bridge
- Suitable Commercially Available Software
- Demonstrations with Application of Linkage Software:

  Steel Design Example

  Concrete Design

  Construction

  Operations

  Management
- Demonstration with Examples of Market Ready Production Software for Bridges
- ODOT's Direction on Integration & Automation

# Integrated Bridge Project Delivery & Life Cycle Management Workshop

Sponsored by FHWY and ODOT

Two Day Event

**February 8th and 9th, 2011**

8:00 am to 5:00 pm

***Chemeketa Community College***
***NW Viticulture Center***

215 Doaks Ferry Road NW
Salem, Oregon

## Cost:

$85 (includes lunches both days)

## Register at:

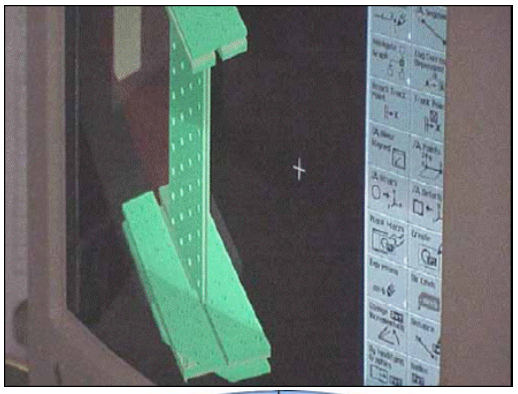
http://www.surveymonkey.com/s/TNWJ2P9

## Or Contact:

**Lorrie Schaefer**, Senior Training Consultant
Human Resources
Oregon Department of Transportation
Telephone: 503-378-5224
FAX: 503-378-3481
Lorrie.L.Schaefer@ODOT.state.or.us

## Fabrication & Manufacturing Support

Fabrication detailing is built upon the 3D model for review and approval. Any changes required for the detailing are integrated into the overall model where checks are carried out for spatial conflicts. Bill of materials required for fabrication can be exported from the 3D model, as well as the data required for CNC shop fabrication equipment, for processes such as rebar cutting and bending, steel cutting and welding, and concrete batching and mixing.

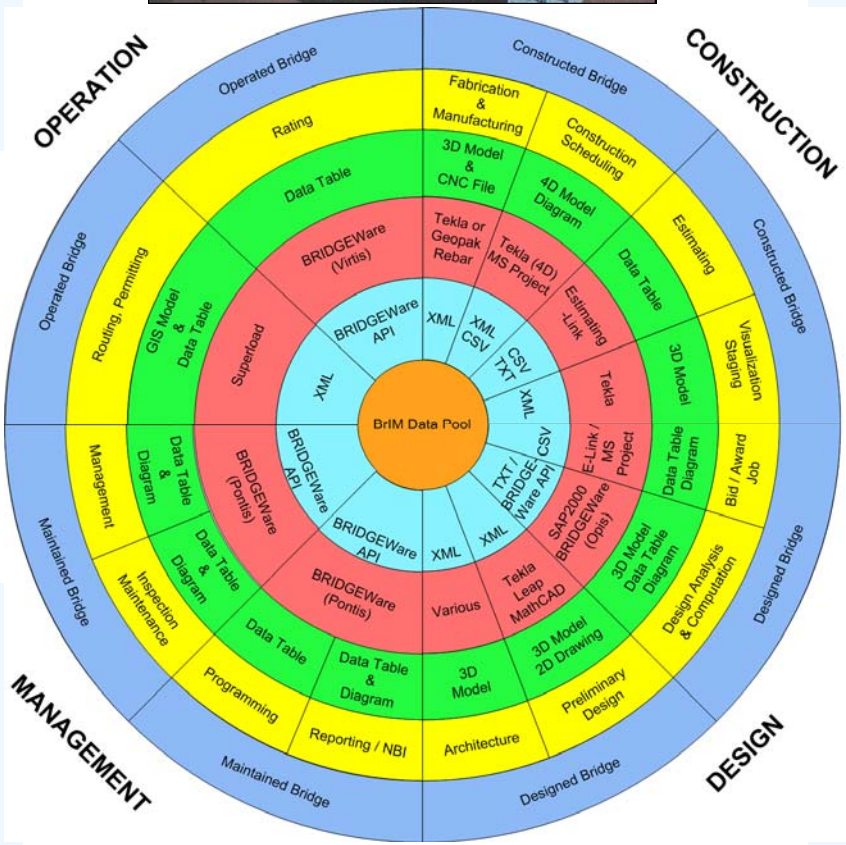


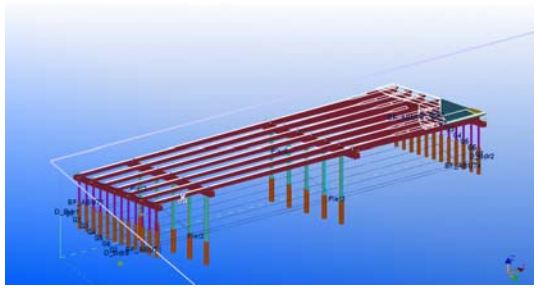
## Operations & Management

AASHTOWare Database (Virtis and Pontis) Interface (API) will facilitate linking of operational, maintenance and life cycle management functions. These include: Bridge Inspection, Reporting (NBI), Rating, Posting, Permits, Invoicing, Maintenance, Planning and Programming.

## Early Design Support

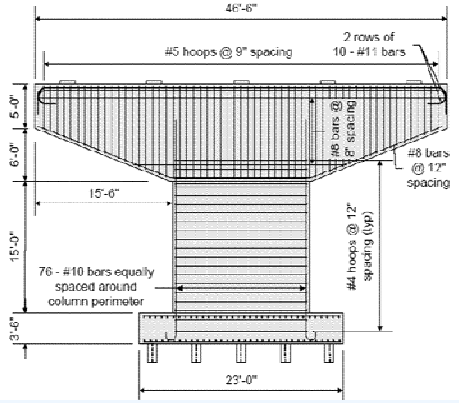
Data integrity originates at the onset of design with single point data entry throughout the project life maintaining continuity and accuracy, initiating with survey, and the establishment of the horizontal and vertical alignment in a BrIM 3D model. All design, construction, operations, and management of the bridge then progresses with information exchanges between the model and processes throughout the life cycle of the bridge. Data exchanges throughout the life cycle may take place within various software packages or the through use of XML or standardized APIs.



## Construction Support

The model and data established during the design is carried forward to construction and data therein is utilized for estimating, scheduling, ordering, and visualization of staging. Throughout the construction process, changes due to field conditions or value engineering are entered, updating the model on a continuous basis, thereby sharing this data with all that are involved and taking advantage of a system of checks inherent to BrIM. At the completion of construction, all "as-built" information is readily linked for operations and management.




## Detailed Design

Support All information/data from the Early Design Phase is carried forward. The 3D model is further developed as all of the design elements necessary for a completed bridge design are added and integrated. Revisions and refinements to the design are part of an integrated system that readily enables the identification of their effects upon other project elements. Extraction of 2D views from the 3D model enables the viewing and printing of familiar 2D plans, as well as the preparation of the bid package, including all specifications and estimates of quantities.