

## BIM Master Planning for 72 Million Square Feet

John Roach  
Foundation for California Community Colleges  
Executive Director

Kimon Onuma, FAIA  
Onuma, Inc  
President and Founder

Rob Barthelman, AIA  
STV | vbn  
Vice President

Owners are awash in data about their buildings, and the volume of facilities data continues to grow. More and more, specialists throughout organizations need specific pieces of information to solve a growing list of facility requests. In addition, with the proliferation of mobile data services, these specialists and facilities tenants have increasing expectations of immediate online access to this information. Traditionally, the data these people use would exist in separate files and data systems. While a single user rarely needs more than a sliver of information of an entire building or campus, the continued use of data in disconnected silos interferes with maintaining consistently updated information, leads to duplication of efforts, and undermines the ability to provide online access to data.

The California Community College (CCC) System has overcome this dilemma by connecting complimentary data in the cloud to address facilities information needs across the entire lifecycle, starting with facilities master planning and continuing through facilities management.

Three integrated data systems form the web-based core solution: the Facilities Utilization, Space Inventory Options Net (FUSION) System; the CCC Geographic Information System (GIS) Collaborative; and the browser-based building information modeling (BIM) platform, Onuma System (Figure 1).

FUSION is a system that standardizes and streamlines the management of college facilities by providing clear, comprehensive information that can be used to justify requests for funding and build a foundation for capital renewal programs. It is a web-based application used by all 72 Community College districts to submit, plan, review, approve, and track facility information to the room level. Key companions to FUSION include the Facility Condition Assessment program and the Architectural Drawings Database.

The CCC GIS Collaborative enables users to combine different data sources with a standard set of system maps. It is a useful tool for district researchers, chief business officials, planners, and facilities managers. The system allows users to visualize community demographics, campus master planning, facilities planning, emergency preparedness planning, trustee boundaries and redistricting, bond campaign planning, campus energy conservation planning, resource needs, enrollment trends, and workforce assessment.

Using the cloud-based BIM features of the Onuma System, entire campuses or single rooms can be viewed as two- or three-dimensional building models that link to data from FUSION and mapping layers from GIS. This dynamic, integrated view allows for faster pattern recognition, better decision making, and better accounting of facilities and assets. The BIM data can be exported to the most common formats for architects, contractors and builders, and this cross-platform compatibility also allows for adopting building models for facilities maintenance once construction is complete. Project proposals and predesign plans can be produced locally and cost effectively, and the associated data can be easily aggregated in reports.

Together, FUSION, the CCC GIS Collaborative, and Onuma System not only form this core system, they also form the hub of a collaboration platform that is available for potential partners to join. Early successes in such partnerships emerged in three distinct lifecycle areas: Assessment and Master Planning, Space Inventory and Room Use Reporting and Facilities Management. Several colleges have implemented these tools and their data is presented in live demonstrations. In addition, a training site is available to allow real-time audience participation using mobile devices and personal computers to track facility condition, energy data, building controls, room scheduling and work orders.

The response from college district owners demonstrates the value of being able to better manage the deluge of facility data and to help users quickly find the specific information they need in a simple and intuitive way.

As the demand for accurate data from many systems increases, it becomes apparent that no single software can deliver everything that is needed for facility management. The only scalable and logical solution is a service oriented, cloud based, modular approach using open standards as demonstrated in the FUSION CCGIS Onuma System. Future modules can plug in to the system to expand the facility needs of the California Community Colleges.

For More Information about these systems, please visit:

- <http://www.foundationccc.org/WhatWeDo/FUSION/tabid/76/Default.aspx>
- <http://cccgis.org>
- <http://onuma.com/FUSION>

Open Standards Used:

Building Information Modeling: IFC – Industry Foundation Classes  
Facility Management and BIM: COBie – Construction Operation Building Information Exchange  
GIS: OGC – Open Geospatial Consortium  
Internet Standards: W3C, Web Services, Rest, SOAP, XML

Figure 1. Together, FUSION, the CCC GIS Collaborative and Onuma System form the core of a collaboration platform allowing for participation by many partners.

