



## Project Summary

**Organization:**  
Port of Helsinki

**Solution:**  
Government

**Location:**  
Helsinki, Finland

### Project Objective:

- Develop an integrated, real-time maintenance system for adding, editing, and archiving documents and maintenance information
- Provide both maintenance contractors and port personnel access to accurate, up-to-date maintenance information for harbor infrastructure
- Implement a map-based interface to make the system easy to learn and use, and to enable faster information searches

### Products Used:

Bentley Geo Web Publisher®, Bentley Map®, and ProjectWise®

## Fast Facts

- The maintenance system provides access to approximately 11,500 documents, maintenance schedules, and maintenance histories for about 80 structures, buildings, and systems, for 70 users and 14 companies.
- Built with consulting and project management services from Bentley Systems Finland, and in cooperation with Buildercom, the maintenance system integrates the best available individual solutions into single system

## ROI

- Easy access to all maintenance information enables faster response and fewer delays, improving maintenance service and lowering maintenance costs

# Port of Helsinki's Maintenance System Inspires Productivity Increase and Return on Information

Bentley Attains Secure Access to Accurate, Up-to-date Information about the Vuosaari Harbor Infrastructure and Systems

## Integrated Maintenance System for Vuosaari Harbor

One of the largest new infrastructure projects recently constructed in Finland is the Vuosaari Harbor, the result of a massive EUR 682 million (USD 850 million) investment by the Port of Helsinki. Opened in 2008, the harbor modernized the Port's cargo facilities, specializing in unitized cargo traffic, containers, and roll-on/roll-off traffic. To ensure smooth and efficient port operations, the Port of Helsinki implemented the Vuosaari Harbor Maintenance System, which uses Bentley Map, Bentley's ProjectWise Integration Server, Bentley Geo Web Publisher, and Buildercom's FacilityInfo for maintenance information.

The EUR 550,000 (USD 700,000) maintenance system provides access to approximately 11,500 documents, maintenance schedules, and maintenance histories for about 80 structures, buildings, and systems for 70 users and 14 companies. The system has been instrumental in the smooth and efficient running of port operations, and its use has increased productivity and return on information.

## The Port of Helsinki

The Port of Helsinki is the most important general purpose port in Finland and has established itself as one of the leading container ports and busiest passenger ports in the Baltic Sea area. Revenue in 2011 was EUR 86.5 million, which equates to EUR 458,000 per employee. It handles about 150 weekly departures, and in 2011, 11.2 million tons of cargo went through the port, including 10.2 million tons of unitized cargo and 10.3 million passengers.

## Clear Need for an Integrated System

In addition to its yards, quays, ramps, and buildings, Vuosaari Harbor embodies complex systems for potable water and wastewater, power distribution, lighting, crane and railroad tracks, access control,

surveillance, and telecommunications. The challenge for Port of Helsinki IT department and manager Esa Salonen, was to ensure that the IT systems enabled the cost-effective, efficient maintenance for all these components, were in place when the new harbor opened.

Maintenance of the harbor had been outsourced to eight different companies, each with a different information system. These organizations also had their own standards, information security policies, and versions of the data, to some extent. Thus there was a clear need for an integrated maintenance system to provide all participants in the maintenance process with secure and controlled access to accurate, up-to-date, and unambiguous information about the harbor infrastructure and systems.

To meet this need, the Vuosaari Harbor Maintenance System needed a system that would enable users to add and edit documents and update the maintenance information. The system also needed to handle document archiving, and have a map-based interface, to make it easy to learn while enabling quicker and more convenient searches.

## Integrating the Best Solutions

The IT department reviewed several solutions but did not find one that met all its exacting requirements. Creating a customized IT system was not practical as it would be a



Map-based interface of the maintenance system.

*"All the information is in one place; our place and it's under our control, to our specification and to our standards. Everyone uses the same information, and when a change is made, everyone sees it. Users can view correct and secure information online."*

– Esa Salonen,  
IT manager, Port of Helsinki

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time consuming and expensive project, so the Port selected the best individual solution for each application and integrated them into a single system.

A common database structure was required to support the secure exchange of information among the software and systems. Web services were chosen to enable communications across the Port's internal network, and by the maintenance companies through the Internet. With a map-based interface, users would be able to quickly select a location and retrieve all the relevant information, without needing to know the system's file structures.

### Bentley Through and Through

The solution the Port of Helsinki used comprised Bentley's ProjectWise system of collaboration servers and services, and FacilityInfo, the Internet-based toolkit for the design and control of maintenance information from Finland-based Buildercom Oy. Bentley Geo Web Publisher was also chosen for the map-based user interface, and Bentley Map was used for map creation. Bentley Systems Finland provided consulting and project management services and carried out the integration in cooperation with Buildercom.

### Implementation and Lessons Learned

The first phase, logical integration, involved the creation of the common database structure to combine the different systems. The subsequent integration phase was more challenging and took 18 months to complete. It involved defining a common coding system for all products and selecting a safe and secure method to exchange information between software components. Once the web service method had been implemented for all these components, building the information exchange was fairly simple.

The Port of Helsinki set up a document bank for the design and construction phase of the project but obtaining the appropriate documents for the maintenance system from a number of the contractors was difficult, especially for those contracts that had expired.

As a result, the Port of Helsinki now establishes a clear document management plan at the outset of any project. Such a plan must support the ongoing needs of the project phases throughout the entire lifecycle of the project, mandating that all data providers supply the information in a precisely specified digital format to a well-defined timetable.

Bentley products and services enabled the consolidation of

real time documentation, maintenance history, and maintenance schedules into one system that currently manages over 11,500 documents for about 80 different structures, buildings, and systems. Approximately 70 users, including personnel from maintenance and the harbor, access the system daily. The maintenance companies can easily access all the documents they need, and can update documents when needed. Harbor personnel can see in real time how the relevant maintenance tasks are being carried out.

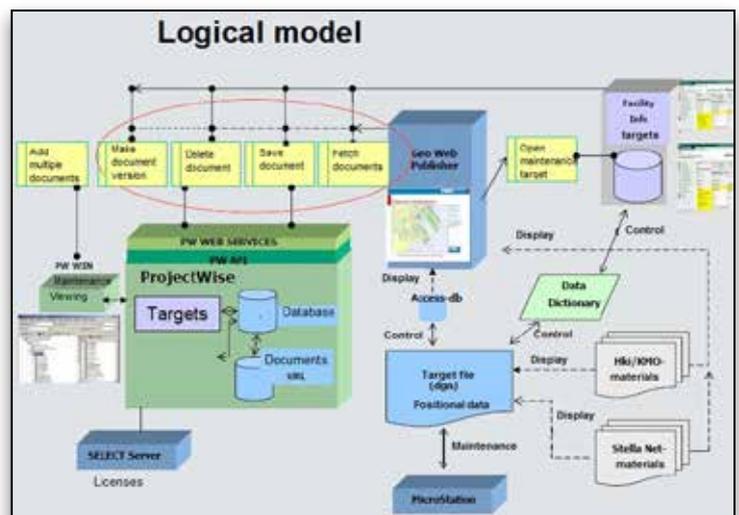
### Accuracy, Efficiency, Security, and Control

According to Salonen, "All the information is in one place; our place and it's under our control, to our specification and to our standards. Everyone uses the same information, and when a change is made, everyone sees it. Users can view correct and secure information online."

Further benefits include the ability of maintenance companies to view information instantly, online, which saves the maintenance companies time and reduces phone and email request for documents the Port of Helsinki IT department receives. In addition, maintenance companies no longer need to acquire and support their own systems to work with the Port of Helsinki.

The Port of Helsinki has gained productivity and a return on information that is in effect the intellectual capital of Vuosaari Harbor. The maintenance system enables improved maintenance for the harbor service as all data is accurate, up to date, unambiguous, and authoritative, which means faster response, fewer delays and reduced downtime, all at lower cost. The maintenance system also ensures that when maintenance contracts expire, the correct information is available to new contractors.

Work on the maintenance IT project started in January 2006 and was completed in November 2008 when the harbor opened. The Port of Helsinki now has an integrated, secure, map-based system for all assets and equipment information.



Integration of the selected systems.