

CityView, Bringing the Enterprise aLIVE

Abstract

Wellington City Council had difficulty accessing data from unrelated databases, quickly and efficiently. The solution was the development of an ESRI centred system, known to Council as "CityView." Honoured with a prestigious Bearing Point Innovation Award for world-class innovation and creativity within the New Zealand public sector, CityView's point of difference is data is extracted from disparate databases LIVE. CityView provides a single, integrated view of corporate information via the Web browser and combines both GIS and non-GIS data on property, rates, and infrastructure. ESRI technology forms a core component of the multi-tiered Java architecture sitting behind CityView. ESRI's ArcSDE is used to store and manage spatial data and ArcIMS to deliver requested information to the Enterprise Architecture Server cluster onto the intranet. Queries once requiring access to multiple specialized systems are now answered through a single query to CityView and achieved 20 times faster.

Background

Wellington City Council is the largest employer in Wellington. It encompasses:

- Approximately 1500 permanent staff and contract workers
- 164,000 residents
- 70,000 properties
- 66,000 ratepayers
- More than 30 business units
- A diverse range of services.

The size and diversity of the organisation provides a constant challenge to effective communication within the organisation.

At the start of 2002, a project team began to review and enhance the Council's information and information technology (IT) architecture. At the same time a separate project began to replace the Council's aging intranet geographic information system (GIS).

The two teams decided to pool resources from the projects and find a solution that could meet the objectives of these projects. They examined several options including off-the-shelf products and a wholly new infrastructure. The project team decided an in-house product would best meet the Council's diverse requirements.

CityView went live in November 2002. **CityView was developed in-house using existing resources from several business units.** The product met the requirements of the initial projects and delivered benefits over and above the initial project brief. We expect further benefits as we move towards more mobile communications and operations such as real-time information on portable data devices operating in the field.

Before using CityView please read this



Disclaimer

The use of any land or property information in CityView is entirely at the user's own risk and discretion. Knowledge Solutions does not give any warranty that any information contained is accurate. It does not accept any responsibility or liability for any action taken or omission made as a result of reading or reliance placed on the Council because of having used CityView.

- Do not use CityView for legal purposes
- CityView is a tool to help locate place-based information, but all information may be distorted or skewed
- Land and property data is complex. [Click here](#) for some of the checks you can make to ensure you're looking at the right property.
- The Core Property Team is happy to help if you need training or further clarification about a property. Send an email to [CPT](#) [Link](#) or phone 011 263 for assistance
- The Core Property Team can provide further interpretation on a property if required
- For interpretation of regulatory information contact Planning Consents & Licensing Business Unit on 011 384.

[Enter CityView username](#)

[Enter CityView password](#)



Target Customers

The target customers for CityView were Council staff and the business benefits for this group were immediate.

Success of CityView - Quantified Results

The following table outlines the quantified business results attained or predicted as a result of CityView.

Success Measure	Area	Results
Reduced Cost	Training	<ul style="list-style-type: none"> • Training to access information held on specialised systems has reduced from approximately five days (without CityView) per person to minimal training (one hour with CityView).
	System Licences	<ul style="list-style-type: none"> • The number of concurrent licenses had been reduced from 84 to 40 by June 2004. The previous cost of a license is over \$5,000 per annum.
	Support	<ul style="list-style-type: none"> • The number of GIS system users had been decreased from 325 to 80 by June 2004.
Customer Service	Reduced Query Times	<ul style="list-style-type: none"> • To resolve four queries related to a single property • it is estimated to take: <ul style="list-style-type: none"> ○ By telephone: 20 minutes ○ Expert system user: 10 minutes ○ CityView user: 30-60 seconds
Users	Use of CityView	<ul style="list-style-type: none"> • Availability of GIS land information increased from 325 users to 1,300

The Purpose, Scope and Nature of CityView

CityView was developed to improve how the Council uses, accesses and manages its information. We needed to integrate databases and specialised systems that manage property, financial, customer, regulatory and asset information – combining data from about 20 business units. The result is a snapshot of property information that may include an aerial photograph, property details such as size and land valuation, owner details and information on rates and water billing.

CHALLENGE No. 1: Using Information

Information within the Council has become increasingly complex and difficult to navigate. As a result, Business Units seemed to be getting more isolated from each other. For instance, the only way to get a total package of information about a property was to request information from each Business Unit that held property information, or acquire the skills to access all the software that holds the data (which would entail extensive system training). This was time-consuming and, in many cases, frustrating for both the staff member and for the customer.

INNOVATION No. 1: Using Information

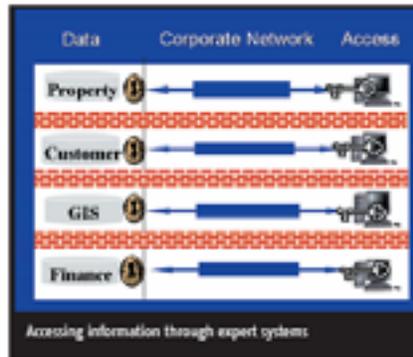
CityView provides a single integrated view of corporate information via the web browser. Customer service staff can now answer multiple queries relating to a property through a single query to CityView. This saves time for the Customer Service staff and reduces interruptions to the Business Unit experts. It is an integrated approach to delivering customer service.

“Without access to CityView, this process would take much longer, and significantly increase our response time in dealing with these sorts of enquiries.” (Specialist Property Advisor)

CHALLENGE No. 2: Accessing Information – lock and key

Only specialists could access information within our expert systems. They needed significant training to be able to retrieve and use the information effectively. These Business Unit specialists were acting as custodians or owners of the information and distributing or interpreting that information as they saw fit. This created a perception that the data belonged to them (“this is my information”).

On the one hand, technology and expert systems had functions that improved efficiency and information within Business Units. However, from an organisation perspective, the technology and systems were creating barriers between Business Units.



INNOVATION No. 2: Accessing Information – open door

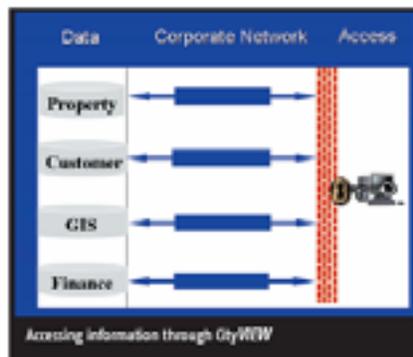
CityView makes relevant information available to users in an open environment.

This means that any user having access to CityView can retrieve and interpret information to satisfy their purpose.

The CityView interface is a simple web browser. Users have readily accepted this interface, which needs only minimal training as it is commonly used in many capacities these days (for instance, internet, windows).

If users spot a data error, they can send a request to fix the error straight away and so a much wider community can take ownership of the accuracy of the data. This has changed the perception to a group ownership (“this is our information”).

“The New Zealand Fire Service has been impressed on many occasions when I have downloaded information that is useful to any response.” (Rural Fire Officer)



CHALLENGE No. 3: Managing Information – an isolated view

Many Council Business Units had developed or purchased specialised (expert) systems to deal with the complexity of information at the Council. These systems were generally stand-alone and not integrated with other

applications. Individual units were focussing specifically on integrating the systems or information they controlled, leading to an isolated view of information (vertical integration).

INNOVATION No. 3: Managing Information – an integrated view

CityView sits over the top of a number of expert systems. It integrates systems from across the organisation (horizontal integration). It draws real-time information from all systems that are 'plugged in' to the application. It is web-enabled so the application can be viewed internally (via intranet) or externally (via internet).

Users can run a single query in relation to a property, and retrieve related information from across the organisation. One of the systems is a Geographic Information System that provides access to maps, photographs and other visual information. Text-based data overlays this providing an integrated view of a property. For example, a CityView snapshot may include an aerial photograph of the area, property details such as size and land valuation, owner details and information on rates and water billing.

"I find it very user friendly and easy to use. It has accurate information and is very quick and intuitive ... It helps me to talk to Encroachment clients and get accurate information on owners." (Credit Control Officer)

THE TECHNOLOGY: N-Tier

CityView is an application that extracts geographic (spatial) and text-based (relational) property data from live specialised systems (data repositories). These systems include Sybase, Informix (GEMS) and ESRI Spatial databases.

CityView uses open standards based on two key technologies:

- The Java enabled ESRI geographical information management product, and
- The Java J2EE n-tier open standards application development platform on the Sybase EAServer product.

The information displayed is sourced from the following disparate expert systems:

- ESRI ArcSDE – ArcSDE stores and manages spatial data in an Informix database management system. The information is accessed via ArcIMS an internet map publishing technology.
- Teamwork – An internally developed workflow management system using Power Builder and Sybase database
- Core Property System (CPS) – An internally developed relational property data management system using Power builder and Sybase database
- GEMS – A Local Government package software delivering rating and water management functions using an Informix database
- Cashiers – An internal cash receipting system running on VAX written in C and using Sybase database

The user interface for accessing all this information is the familiar web browser. This allows easy use by all Council staff with minimal training. The technology has been designed from the beginning to enable deployment of applications over the internet to the public and particularly the residents and rate payers of Wellington City.

Key Technologies

CityView is built using two key technology platforms. These are described below.

GIS Platform

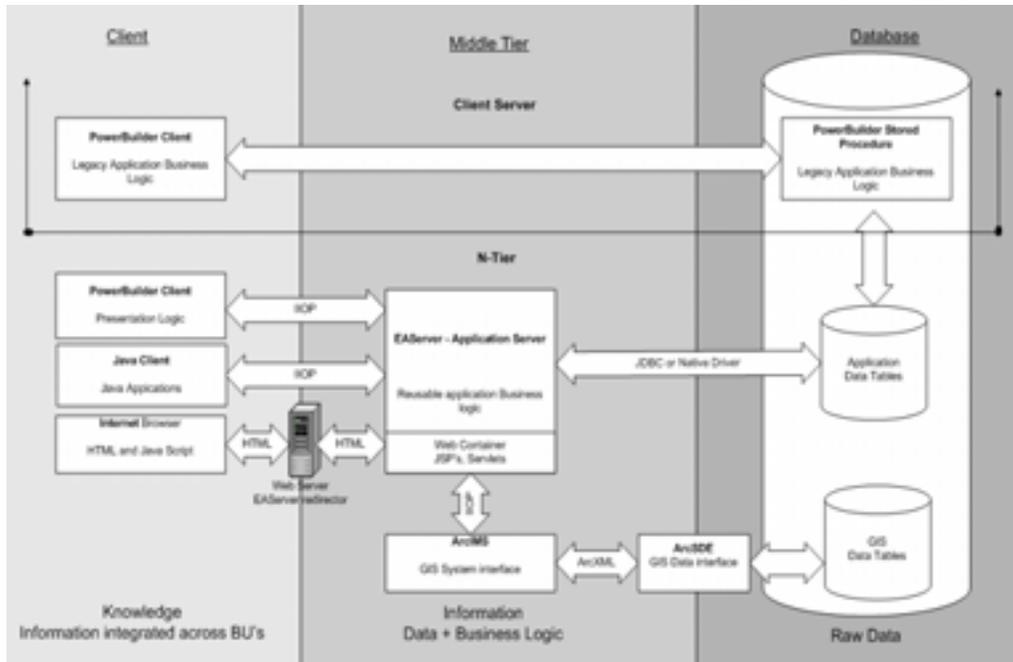
Distributing geographic information using internet protocols allows for real-time integration of data and access to information from multiple devices and locations. ArcIMS is the solution that provides a common platform for this exchange.

ArcIMS enables access to spatial data resources from a web browser and a standards-based Java Connector. It enables the exchange, integration, and analysis of data in new ways, to support more informed decision making.

Multi-tier (N-tier) Application Platform

The n-tier platform enables the delivery of applications based on open standards and with vendor independence. It also allows for the development of reusable business logic modules. CityView leverages all the benefits promised by the open standards approach including:

- Vendor independence
- Integration of disparate systems through standard interfaces
- Delivery to industry standard browser client
- Optimised for low internet client and network bandwidth specs
- The n-tier platform is run on the Sybase EAServer product. EAServer is a J2EE 1.3 certified application server.



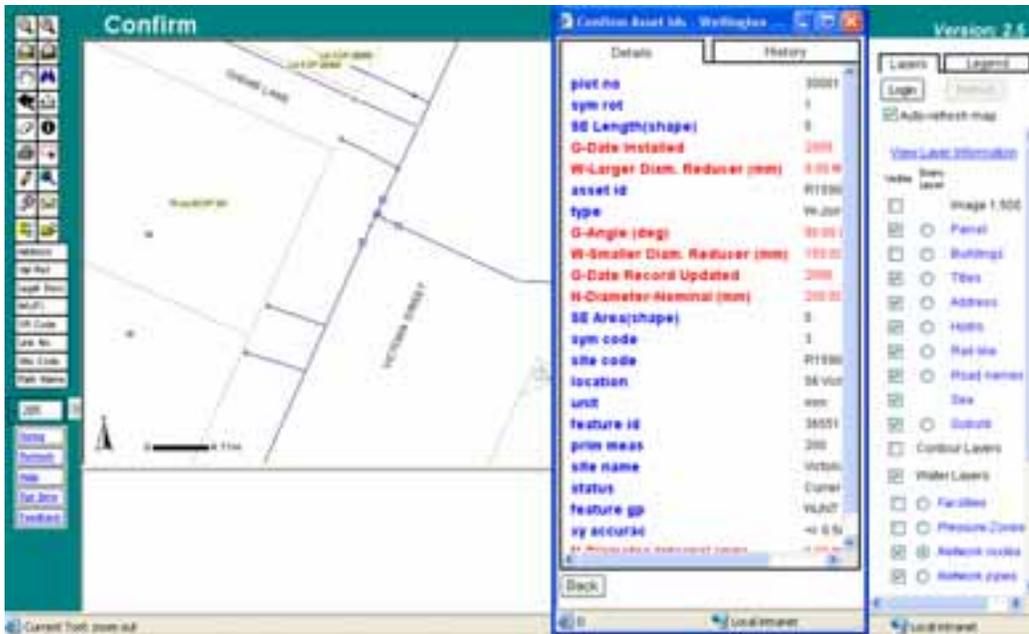
THE MODULES

As Wellington City Council's understanding of the N-Tier technology has increased multiple modules of CityView have become available. Each module is an adjunct or building block on the base application.

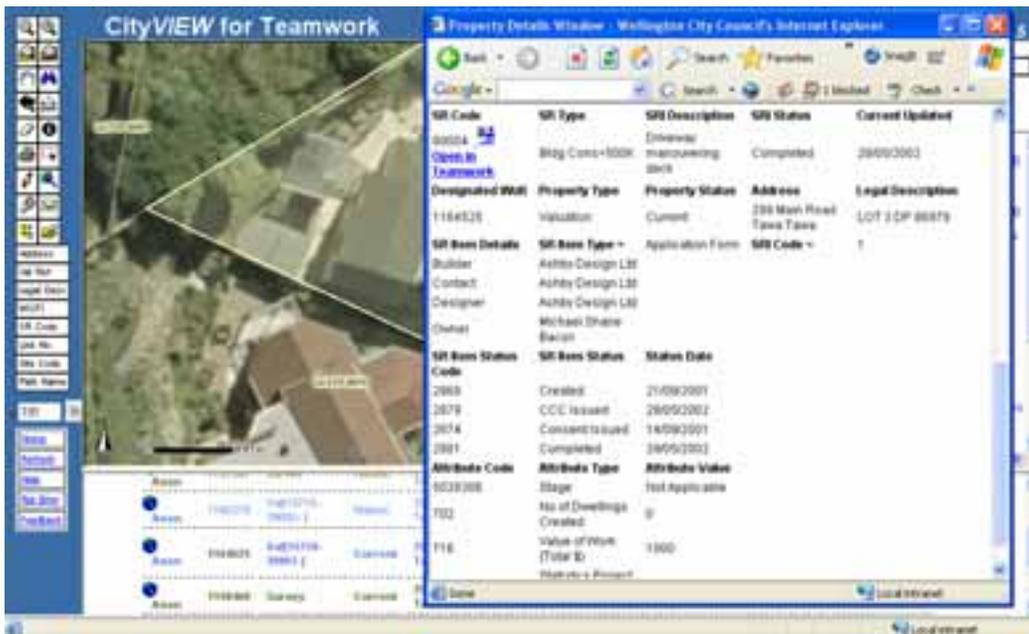
The different modules are:

- CityView
- CityView Confirm
- CityView Teamwork
- Active Projects and Events (APE)
- RatesView

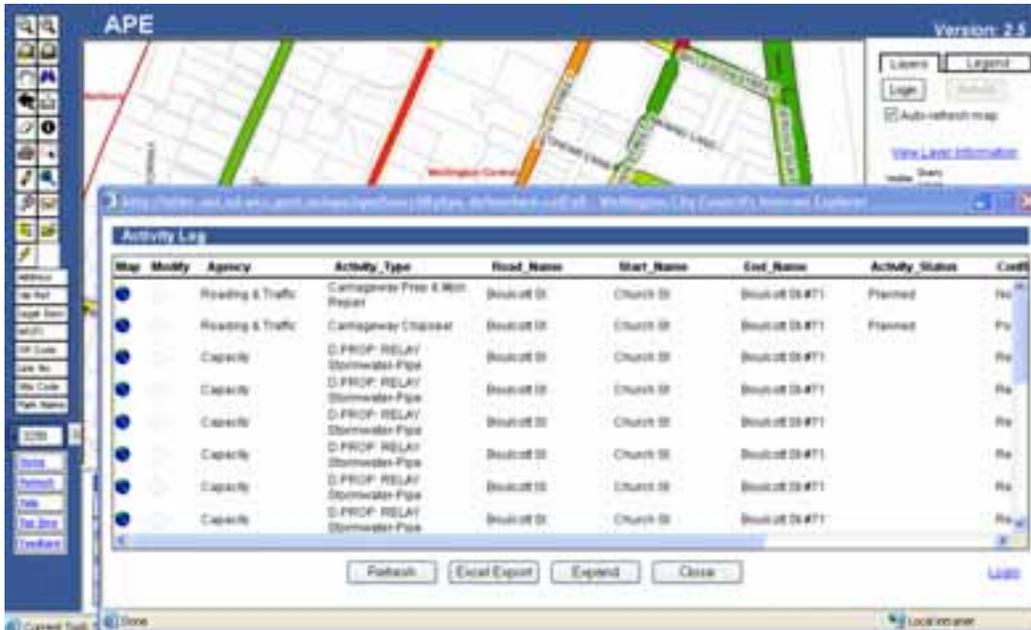
The CityView Confirm module adds the ability for the customer to obtain more detailed technical information about sewer, stormwater, and water assets (see following diagram)



CityView Teamwork the ability for the customer to obtain more detailed technical information about Building Consents, Resource Consents, and Liquor Licences, Public Health Licences (see following diagram).



Active Projects and Events (APE) allows the customer to view Roading and Traffic Jobs in conjunction with Water and Drainage works and identify times or areas of conflict. This module is a tool to enhance communication and ensure that Wellington City Council is less likely to be caught in the embarrassing situation where a road way is dug up repeatedly by council contracts especially directly after a roadway section has been sealed (see following diagram).



RatesView gives the customer the added ability to obtain more detailed technical information about rates (Local Government taxes – including property taxes, water and sewer taxes, and rubbish collection taxes) information (see following diagram).



Improving Competence

CityView has improved capability at the Council in a variety of ways:

Integrated thinking

New systems can and have been 'plugged in' to CityView quickly and at comparatively less expense than into other developments. This increases developer productivity and supports the drive for an integrated view of the organisation.

Greater access to more accurate information

CityView has enabled a greater number of staff to access more information with a familiar interface. The information contained in the systems becomes more accurate as a result of the larger user-base and error identification process.

Improved customer service

CityView has changed the focus of the process from 'how do I get this piece of information?' to 'What do I want to know?' It removes the need for every user to be specifically trained and educated to use each system. Instead it provides a user friendly, generic 'tool-set' that delivers the right information in the right place at the right time. Queries can be answered quicker and more accurately.

Conclusion

CityView has become an invaluable tool for the staff at Wellington City Council. It has been honoured with a prestigious Bearing Point Innovation Award for world-class innovation and creativity within the New Zealand public sector. CityView provides a single, integrated view of corporate information via the Web browser combining both GIS and non-GIS data on property, rates, and infrastructure from disparate databases LIVE. A multi-tiered Java architecture sits behind CityView with ESRI technology forming a core component of the architecture. All spatial data utilised by CityView is stored and managed through ESRI ArcSDE and ArcIMS is used to deliver requested information to the Enterprise Architecture Server cluster onto the intranet. Queries are now answerable through a single query to CityView rather than multiple queries to multiple specialised systems within a drastically reduced timeframe, in some cases 20 times faster.

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