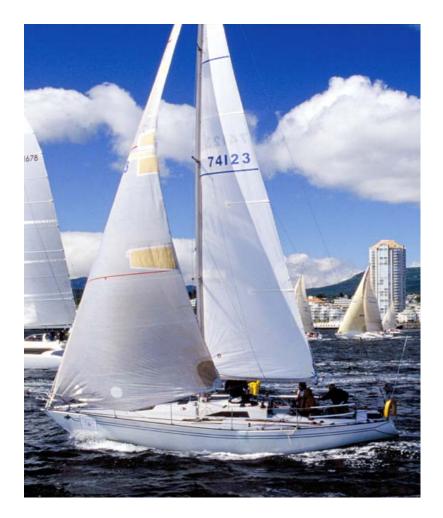


# Neogeography & Nanaimo

Leveraging Google and Open Source Spatial Technologies for Local Government

#### Nanaimo

▷ Nanaimo is a mid-sized community on the east coast of Vancouver Island ➢ About 80,000 residents ▷ City employs between 500 and 700 people ▷ Fifteen I.T. staff including managers





 City of Nanaimo has a philosophy of using the best tool for the job while remaining fiscally responsible
 Depending on user requirements, we have chosen to deploy technologies from Microsoft, Autodesk, ESRI, Google, OSGeo, and other sources

This kind of mixed environment requires continuous integration, adoption of open specifications and standards, and endless creativity



#### ▷ Creative integrations at the City of Nanaimo

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- Spatial Access Framework
  - Fire daily calls using GeoRSS, Google Maps
  - eNotifier uptake analysis
- Open Source Web Mapping
  - Cemetery Map
  - NanaimoMap
- Making Google Earth Useful
  - Internal deployment/usage of Google Earth
  - earth.nanaimo.ca

### **Integration Menu**

#### ► Hard or Easy?

- Hard integration hooks into underlying data store
- Easy integration is only possible with an open data API

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- Spatial data integration into business applications can leverage several open data formats and APIs
  - GML/WFS
  - GeoRSS/AtomPub
  - KML/gData
  - GeoJSON

#### **Spatial Access Framework**

#### ► Easy by Default

- New applications are built using web services
- First "exposure" of data requires effort, but additional integrations are simple

#### ➢ Consistent Access

- By using a common framework, we only have to connect the dots between the source format and the outputs
- Applications that can access one source can easily access others as they are brought online
- ➢Allows unforeseen integrations

### Fire & Rescue Daily Calls

- $\approx$  Project originally created in 2001.
- ➢ Used for posting fire and rescue incidents on our website for local media and residents.
- $\approx$  Simple ASP solution to show fire 911 calls by day.
- Residents could signup for email notifications of incidents.
- № 911 operators had to manually add and update new incidents to the website.

# FDC Problems

▷ Due to the manual entry requirement it was hard to add new incidents and update existing ones

- $\operatorname{\ensuremath{\bowtie}}$  No visualization for the users of the site
- ▷ Email notification was problematic
- Didn't allow for easy integration with other applications or services
- Didn't comply with new city direction of using ASP.NET for web applications



### Create a new solution using ASP.NET, GeoRSS

- Integrated with Google Maps as the front end
  Ability to view historical data and generate
  reports
- ➢ More robust subscription mechanism



- City recently implemented citizen emergency notification program
- Users sign up to receive phone and email notifications of emergency events
- City manages enrollment application, and uses third-party service provider to perform notifications

# eNotifier Problem

### ► Need to market to citizens:

- Radio
- Newspapers
- Inserts into utility and tax bills
- Word of mouth

Spatial and temporal analysis would allow measurement of marketing efforts





 Plugging the notification database into the spatial access framework allowed ongoing analysis of uptake
 DEMO <u>eNotifier Analysis</u>

# **Open Source Web Mapping**

 Web mapping has become commoditized
 Adopting and promoting open source and open standards leads to more sustainable solutions

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Open source allows for earlier adoption of new web technologies, and typically has better support for geospatial standards



➢City of Nanaimo maintains four cemeteries

- Recent project data-entered all of the records into a SQL Server database
- Engineering has worked to georeference all of the plots
- ➢ Needed a solution for public and staff to locate plots on a map

### **Cemetery Map Solution**

 Pilot project to determine viability of migrating from MapGuide 6.5 to MapGuide Open Source
 Technically relatively simple (paid consultant to develop HTML/CSS/JS application)
 Organizationally difficult to bring together four departments (I.T., Engineering, Finance, Public

CITY OF NANAIMO

Works)

► DEMO <u>Cemetery App</u>





► MapGuide 6.5 deprecated

Coogle Maps & co has changed user expectations, we can no longer deliver "expert" GIS interfaces by default.

Can no longer develop just for Internet Explorer

#### NanaimoMap Process

Worked with DM Solutions group to build new flexible development framework for MapGuide Open Source

- In process of re-implementing deep integrations from old Nanaimo CityMap
- ➢ Considerable additional functionality
- ▷ DEMO <u>NanaimoMap</u> (pre-alpha)





► Mowing Management

- Field data capture
- Uses open source FDO to sync with Oracle
- DEMO <u>Mowing App</u>
- ► Parks and Trails
  - Integrating MapGuide maps into business application



#### ▷ On its own, Google Earth is cool...

- First thing everyone does is look at their house; many people spend hours sightseeing
- ➢ How to transition from this "coolness" into a useful business tool?
  - Data!
  - Web integration



➢ Providing data to Google:

- Extended reach
- Solid base for distributed geospatial data.
- Disaster response
- ► Using internally:
  - Free and easy 3-D visualization without server components
  - Simple to publish KML: low cost, high benefit



➢ Our first foray into publishing data in KML format for Google Earth users

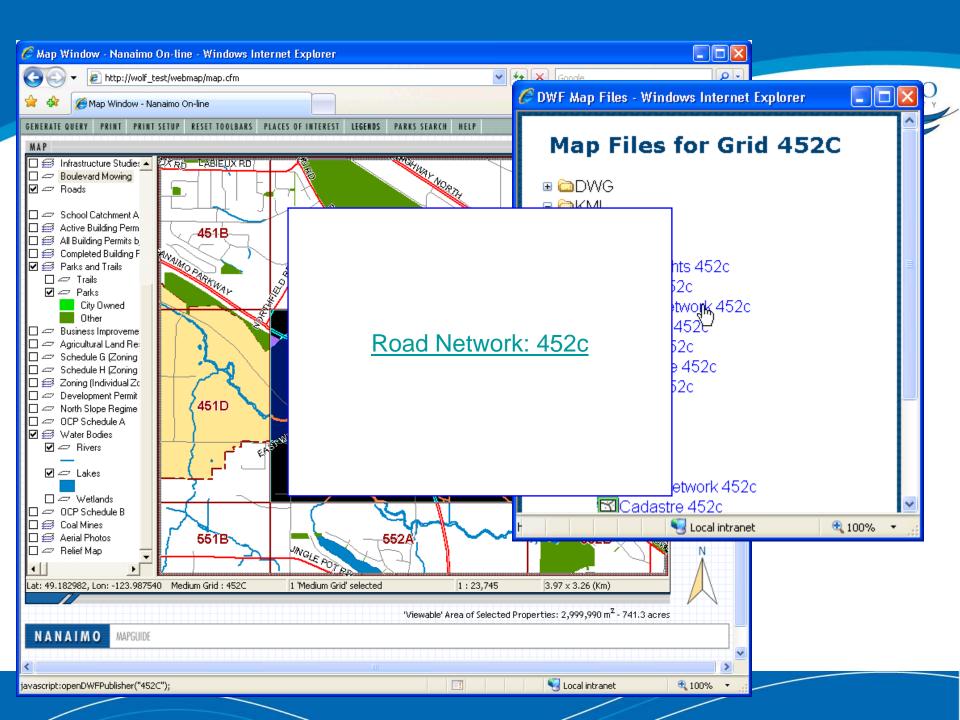
#### $\sim$ Three simple layers for now:

- Master (parks, lakes, parcels, city boundary)
- Virtually Downtown (3-D buildings, panoramas)
- Businesses from current business license database, organized by NAICS category
- ▷ DEMO <u>http://earth.nanaimo.ca/</u>

# Static KML publishing

➢ Finalizing MSI install of Google Earth 4.2 (free) for corporate distribution

- ➢ Making KML data (and SHP, SDF, DWG, DWF, etc) available to internal users from internal MapGuide implementation
- ➢ Intend to make some of this data available on public website (at no cost)
- ₽ DEMO



# Ad-hoc visualisation

 The majority of proprietary and open source geospatial applications support KML output
 There are many tools that allow KML creation outside of traditional GIS environment
 4-D representation of data particularly powerful
 DEMO

- Manager Tracker
- <u>Alternate Walkway Plan</u>

# Bringing it Together

*▶* Building a platform for integration  $\sim$  Creating applications that integrate business data in a geospatial context ► Making data available to allow users to perform their own integrations and ad-hoc analysis