Use of Commercial Imagery in Microsoft® Virtual Earth™

JACIE Civil Commercial Imagery Workshop
Washington, DC
20 March 2007

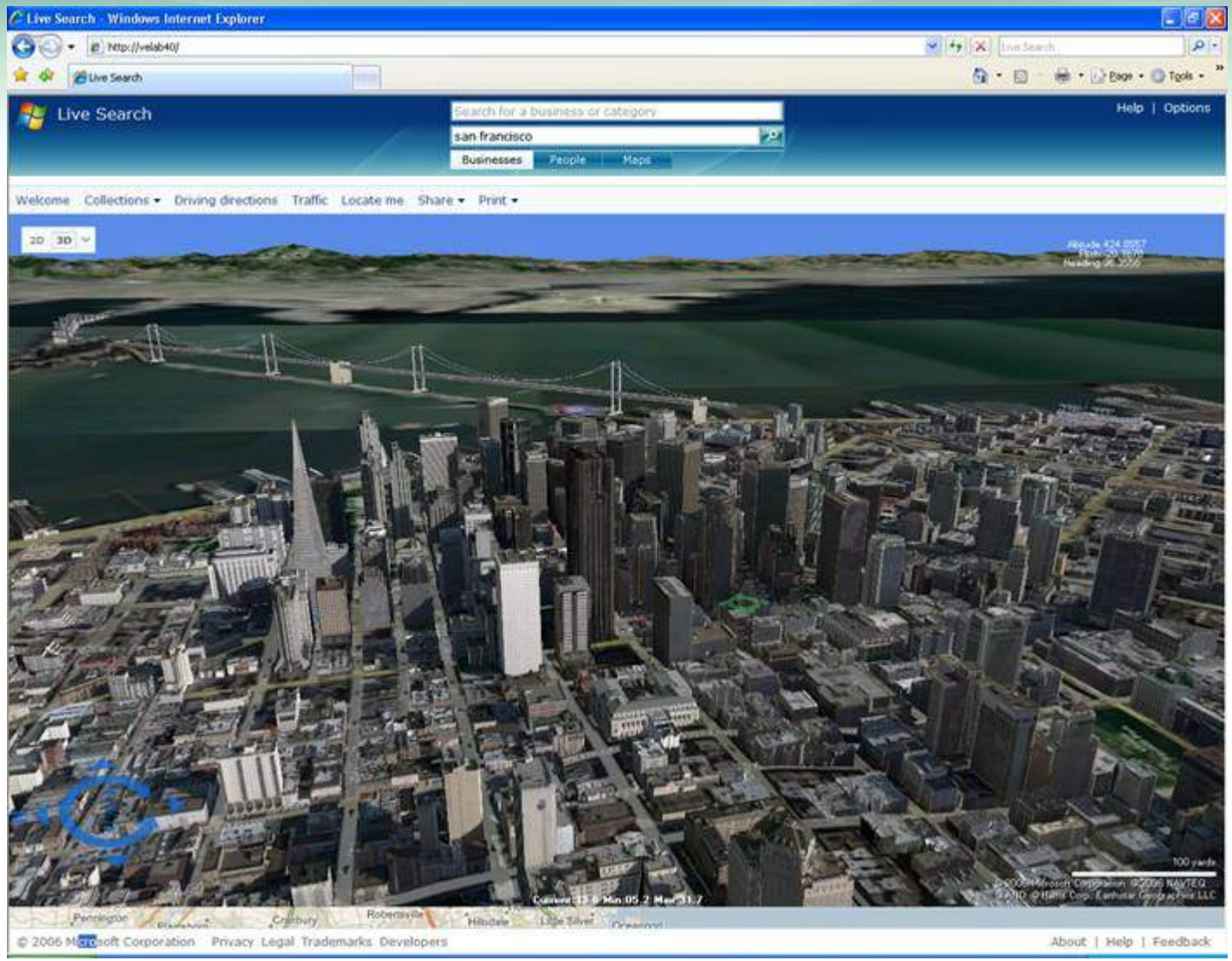
William B. Gail
Robert Roy

Microsoft Corporation

Windows Live

Introducing the 3D Internet

A New "World" of Information and Visualization



The Changing Search Paradigm

A New "World" of Geospatial Search

Today's Platform Technology

Web Browser

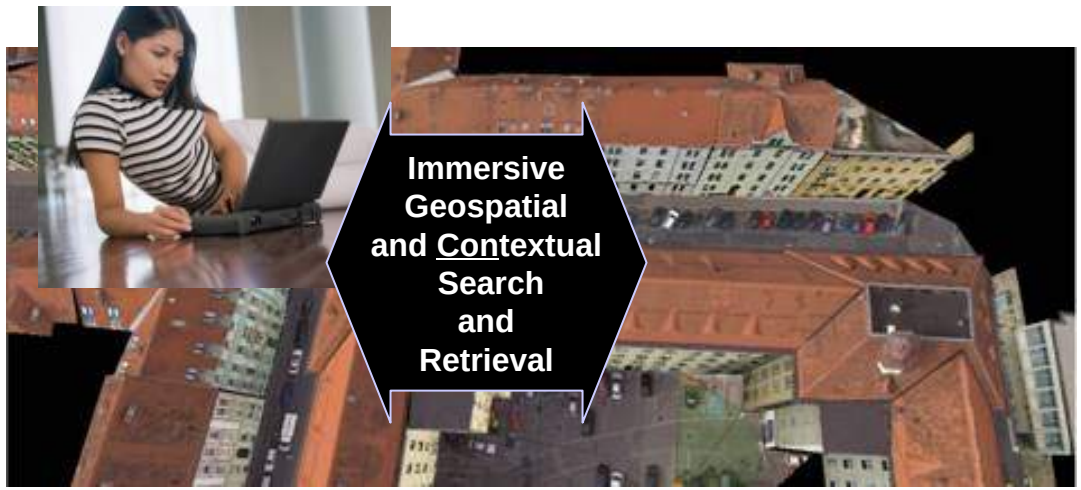
"Bring the Information to Me"

Textual Search and Retrieval

Tomorrow's Platform Technology

Web Browser
Geospatial Engine

"Take Me to the Information"



Immersive Geospatial and Contextual Search and Retrieval

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Search is at best 5% solved – we're not even in the double digits of its potential.

John Battelle
The Search

Leveraging the Change

Increased Demand for Imagery - and Resources !

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Consumers & Business Enterprises

now in the hundreds of millions

current local search market is $60 billion

Earth Information

Government

Commercial

SUPPLY AND DEMAND

Decision Makers

GIS Specialists and Earth Scientists

Windows Live

Cover the **World** with the **Best Visuals**

"One of the things we are doing is taking all the photographs of the world from satellites, planes, cell phones and people driving around and stitching those all together to create what we call Virtual Earth so that you can see what it's like if you want to drive some place, see what a place looks like. That's a huge project. With all sorts of scales and costing a lot and representing a huge bet that we can only do because we're a large company."

Bill Gates, Chairman, Microsoft

Global Satellite Imagery

Main Use

- Provide low resolution imagery backdrop for all landmasses

Coverage Areas

- Global, except polar regions

Specs

- Low res: 1 km pixel for top zoom levels
- Medium res: 15 meter or better

Sources

- Commercial off the shelf (COTS)
- Public domain
- Government agencies

VE Market – Nationwide Ortho

Main Use

- Provide imagery backdrop for an entire country

Coverage Areas

- Goal: all VE markets

Specs

- 1 m+ in urbanized areas
- 2 m+ rural areas
- Countrywide coverage (where feasible)
- Less than 5 years old

Sources

- Commercial off the shelf
- Public domain
- Government agencies

Metro Area Orthos

Main Use

- “Fresher” & higher resolution imagery in dense urban areas
- High value to business users like Real Estate

Coverage Areas

- Including suburbs and X-urbs of all major metro areas

Specs

- 30 cm or better
- Minimal building lean or true-ortho
- Refresh rate depends on rate of change for the area

Sources

- In-house production (Microsoft Boulder)
- Commercial partners
- Public domain

Birdseye (oblique) Imagery

Main Use

- Provide multiple looks at high resolution
- Important for markets like real estate
- Armchair tourism

Coverage Areas

- US: by county, 80% population
- Europe: by city/region, plan 80% population

Specs

- 15 cm at 45 degrees
- 4 looks in all urbanized areas

Sources

- Pictometry and their (international) license holders

Wonders of the World

Main Use

- Imagery for high-interest areas outside VE markets

Coverage Areas

- Wonders of the World (biggest, oldest, highest, …)
- Themes: Olympic venues, F1 race tracks, world heritage, …

Specs

- 1 meter or better resolution
- As fresh as possible

Sources

- GeoEye: Ikonos satellite

Digital Elevation Models

Main Use

- Terrain for 3D
- Hill-shading for road maps
- Pushpin location in Birdseye images

Coverage Areas

- Global (enhanced SRTM)
- National: US, UK, Italy, Japan, France, others
- Local high interest areas (“wonders-of-the-world”)

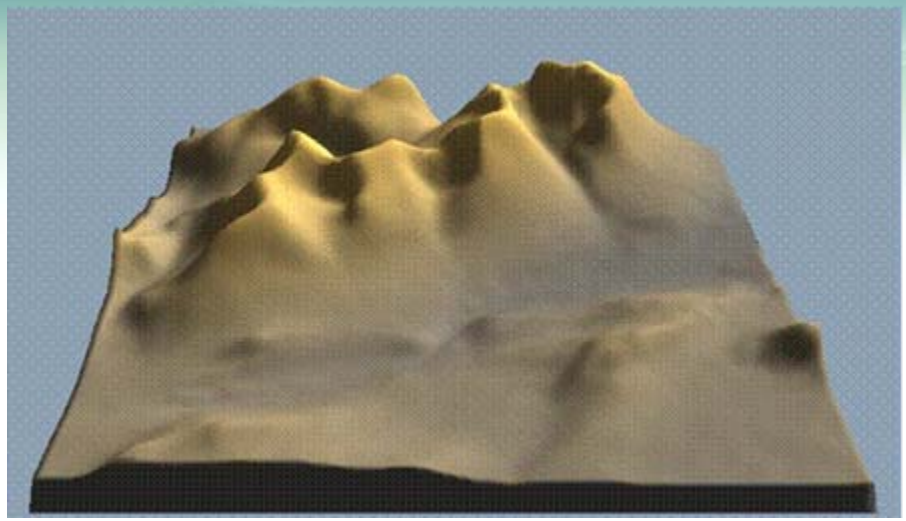
Specs

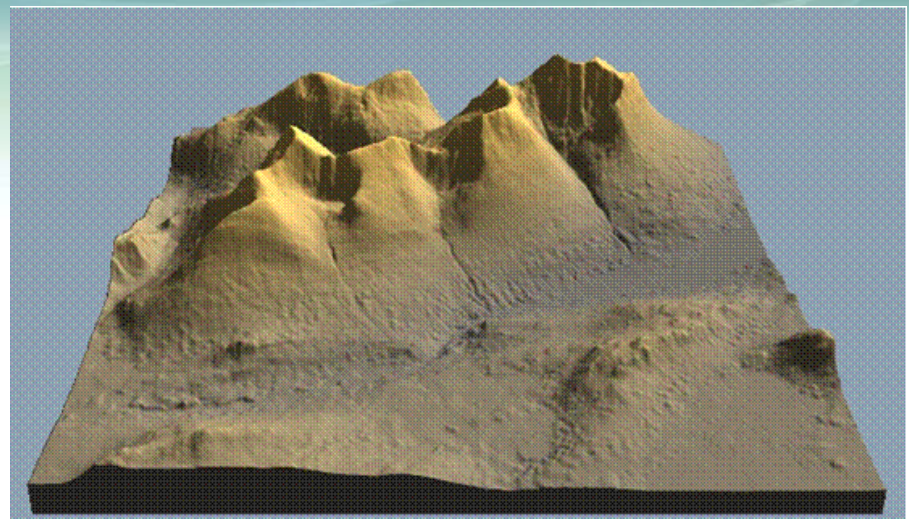
- Global: 90 meter or better resolution
- National: 30 m or better
- Local: 10 m or better

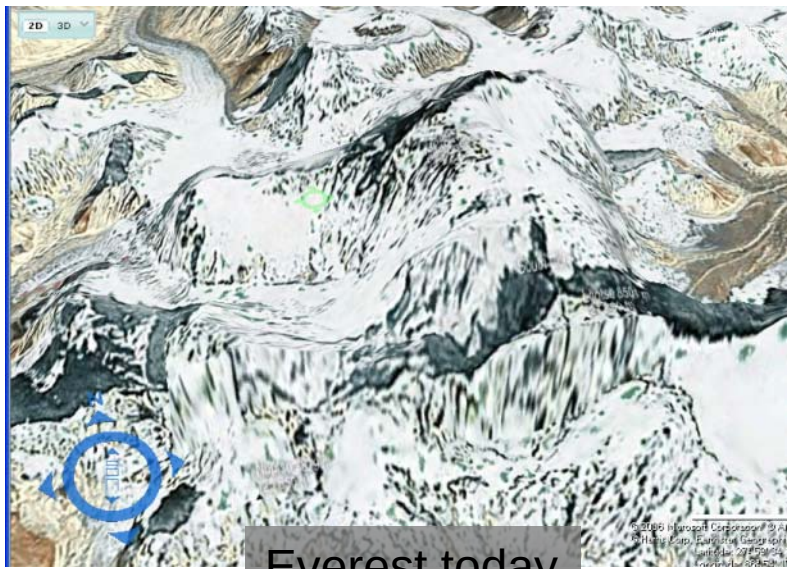
Sources

- Commercial off the shelf
- Public domain
- Government agencies
- Microsoft modifications

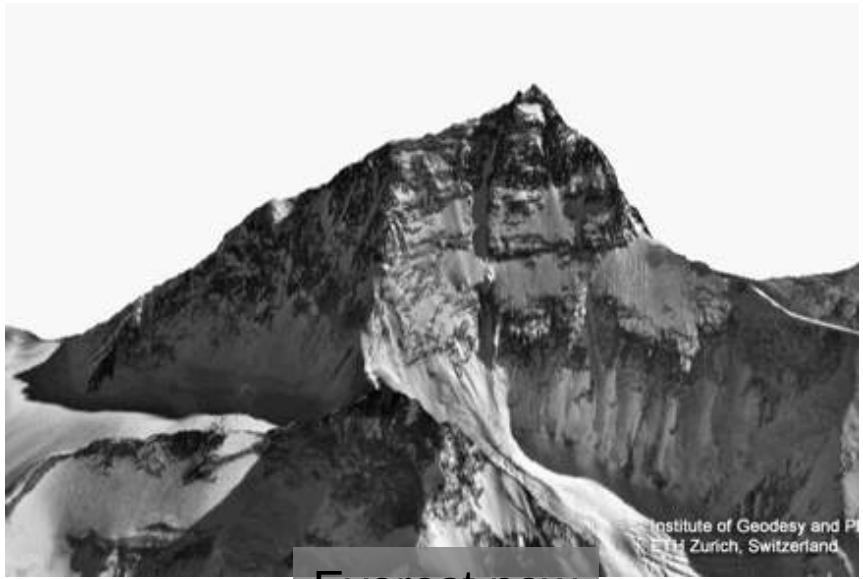
A case for better DEM





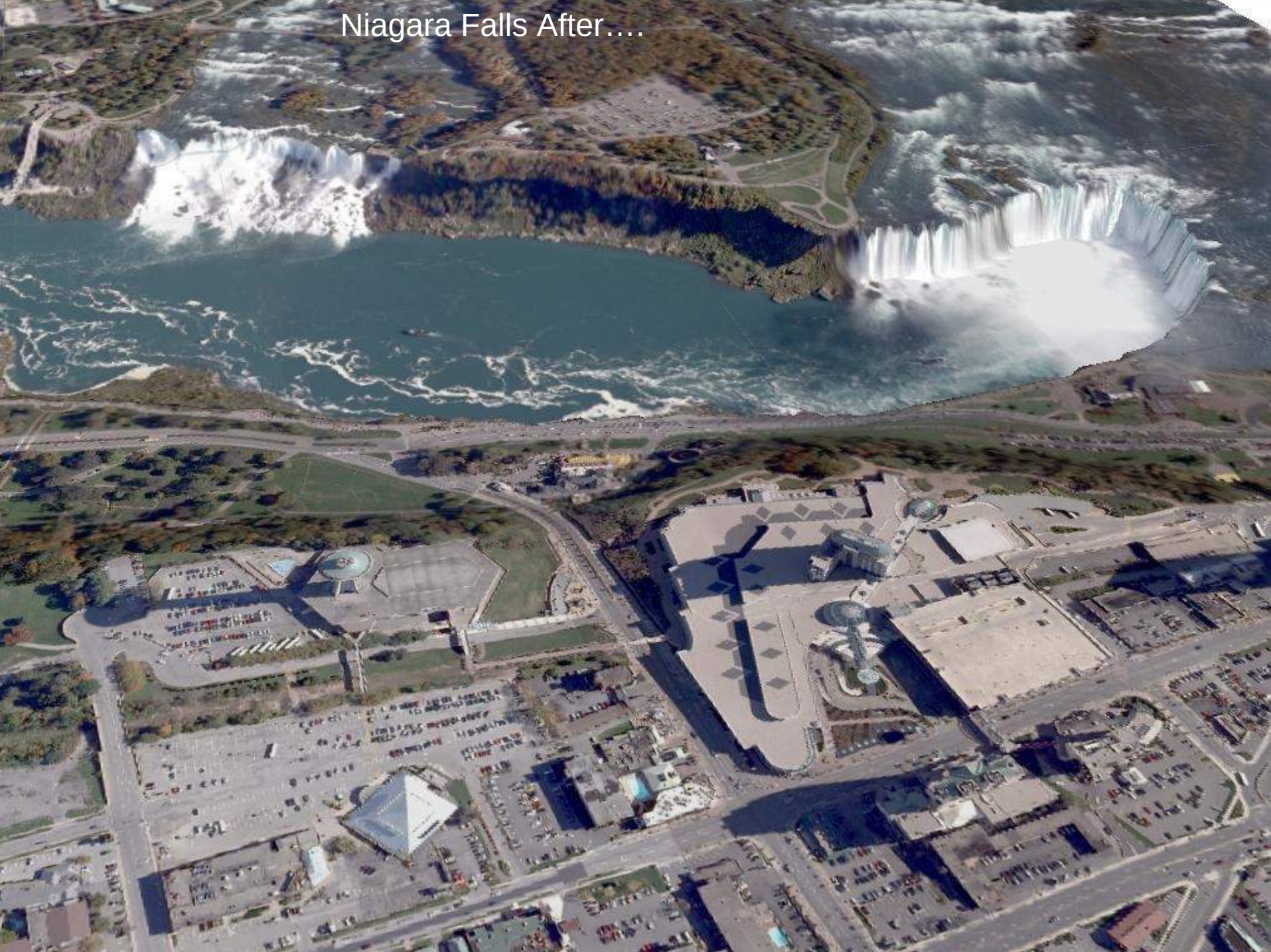


Everest today



Everest new


2D 3D
Niagara Falls Before….
N
Microsoft Virtual Earth™
100 yards
© 2006 Microsoft Corporation Image courtesy of USGS


Niagara Falls After….

3D City Models

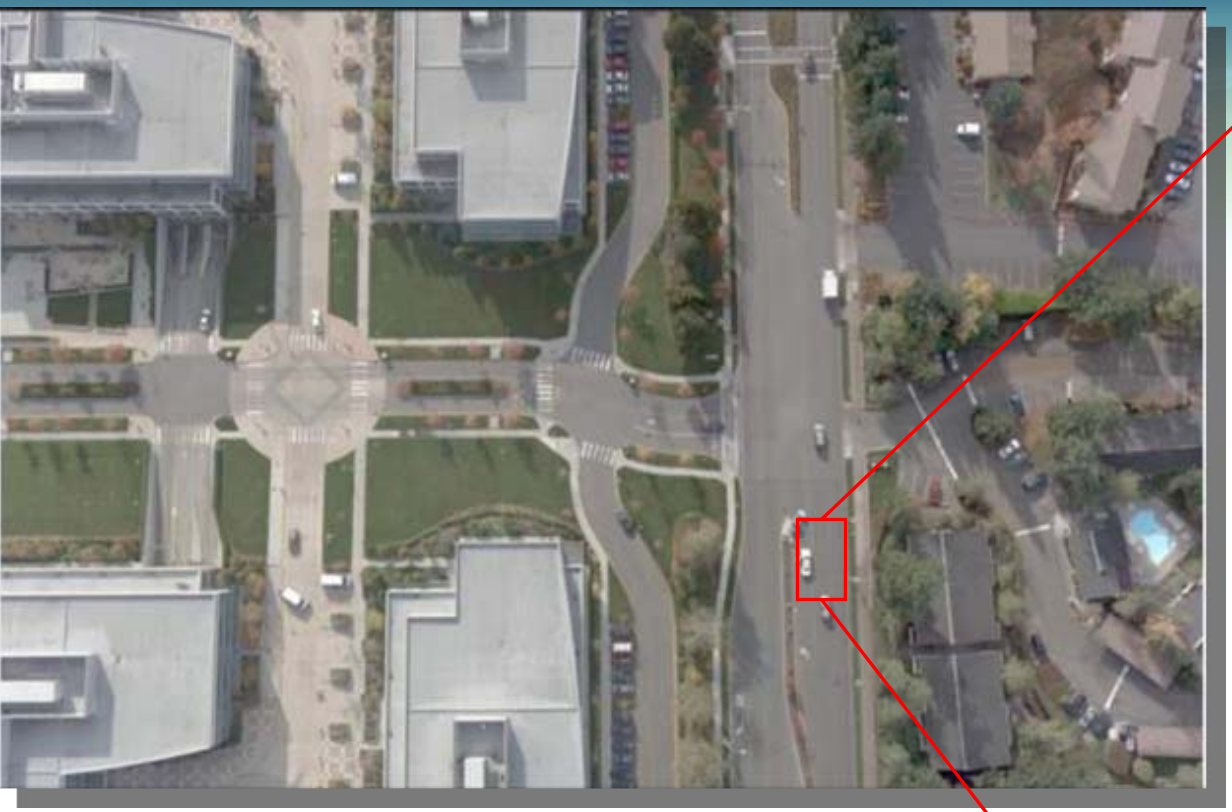
Windows Live

Source

- Created by Microsoft from UltraCam imagery

UltraCam Imagery

Windows Live



Main Use

- 3D models
- Urban orthos

Coverage Areas

- All 3D cities

Specs

- 15 cm

Sources

- Aerial survey firms with UltraCam

VE Market – Streetside Imagery

Main Use

- Current: technology preview website
- Future: higher detail at street level in 3D models

Coverage Areas

- 3D cities only

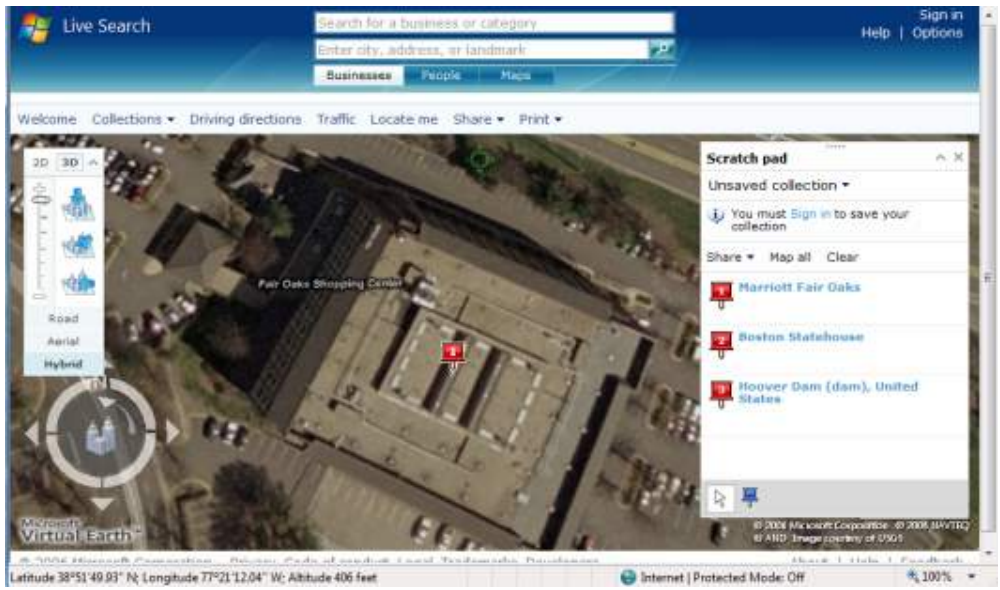
Specs

- Variable

Sources

- Multiple sources

DEMO


Live Search
Search for a business or category
Enter city, address, or landmark
Businesses
People
Maps
Sign in
Help | Options
Welcome
Collections
Driving directions
Traffic
Locate me
Share
Print
2D
3D
Road
Aerial
Hybrid
Scratch pad
Unsaved collection
You must Sign in to save your collection
Share
Map all
Clear
Marriott Fair Oaks
Boston Statehouse
Hoover Dam (dam), United States
Latitude 38°51'49.93" N; Longitude 77°21'12.04" W; Altitude 406 feet
Internet | Protected Mode: Off
100%

Windows Live

THE END