



2008 IIUG

Inform*i*x[®]

Conference

The **Power** Conference
for Inform*i*x[®] Professionals

Overland Park, Kansas, USA • April 27-30, 2008

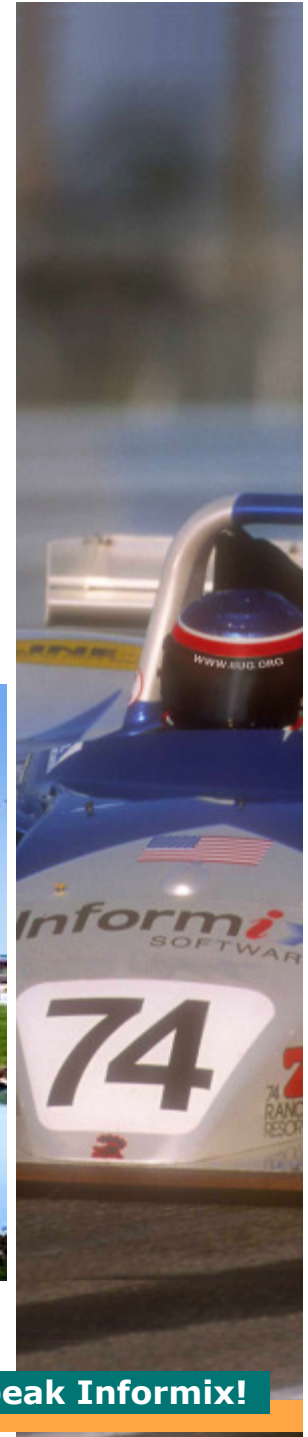
2008 International Informix Users Group Conference

April 27 - 30, 2008 - Overland Park, KS

(suburb of Kansas City and Lenexa home of the IBM Informix Development and Support Team)

- Six half day Educational Seminars - Sun April 27
- Four Tracks of Informix Sessions Mon - Wed April 28 - 30
- IBM Executives as Keynote speakers

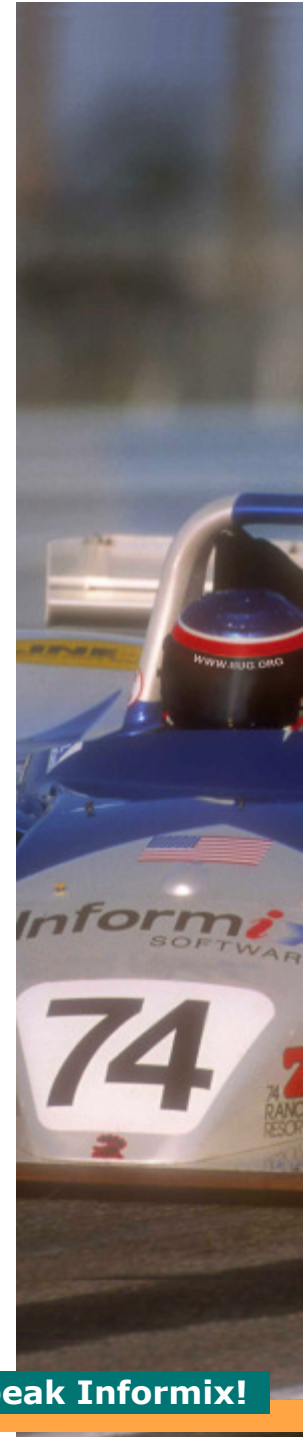
At the Marriot
Overland Park



Technical Sessions

Monday April 28 - Wednesday April 30

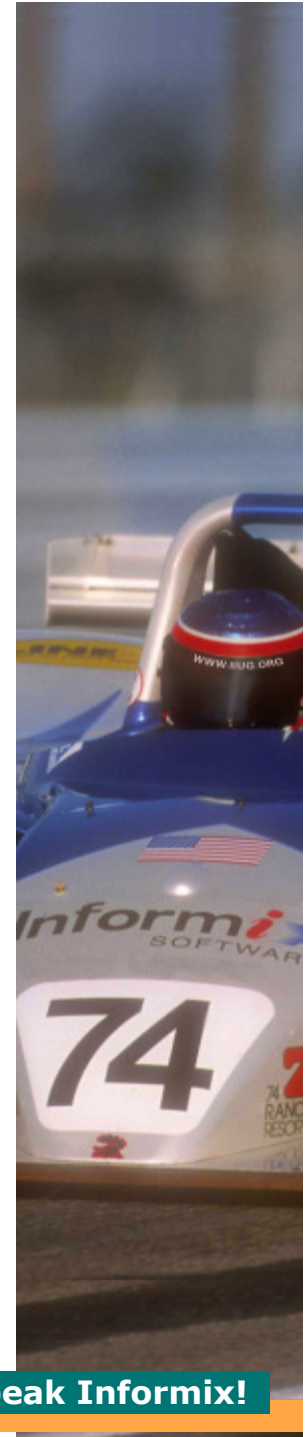
- Four full tracks over three full days of sessions
- Over 120 sessions were submitted and at least 50 will be presented from users and IBMers from around the world.



Tutorials

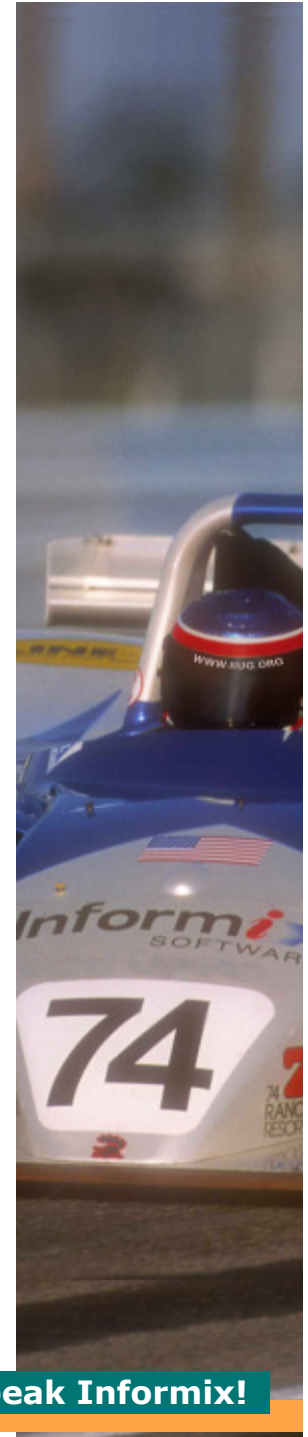
Sunday April 27, 2008

- At least six half day tutorials from the top Informix Experts in the World.
- Topics to be announced the end of the October 2007.
- You can learn more in one half day than in a three day class - Why? Cause these are the sources or the TOP experts in their field in the World!



Other Events

- Keynotes:
 - **Dr Arvind Krishna** - Vice President, Database Servers & IM Development Information Management, IBM Software Group
 - **Jerry Keese** - Director of IBM Informix WorldWide Development
 - **Bernie Spang** - Director of IBM Information Management WorldWide Marketing
- IIUG Annual General Meeting
- Free IBM Information Management Certification Testing to all attendees!
- Sunday night Reception in the Exhibit Hall
- Monday night - still in the planning stages but hopefully will be an event that will include all the local IBM Informix Development and Support Staff!!
- Tuesday night - off site party sponsored by Kazer Technologies (www.kazer.com)

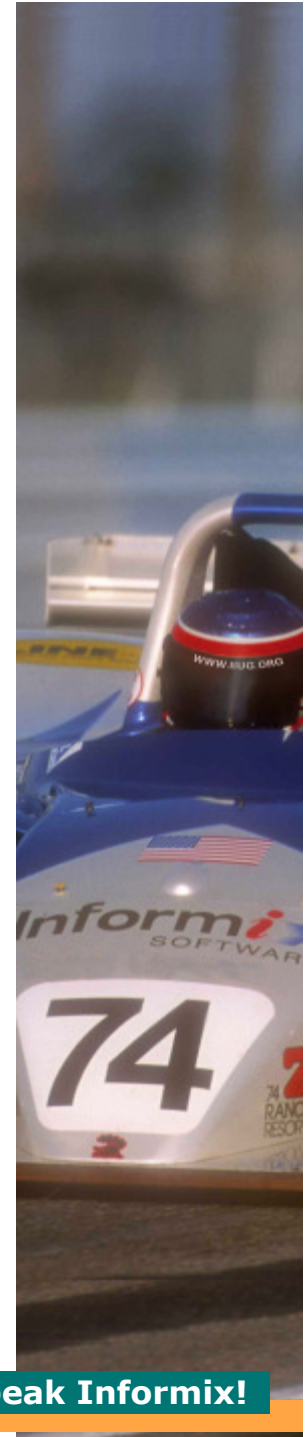


The Location

- **Marriott Overland Park, Kansas, USA**

- 10800 Metcalf Avenue Overland Park, Kansas 66210
- A Full Service Marriott (including an onsite Starbucks as you will need it)
- <http://www.marriott.com/hotels/travel/mciop-overland-park-marriott/>
- Walking distance to many retails shops and restaurants

• Room price \$129/night (\$99 for Saturday night prior if you come to the Tutorials!)



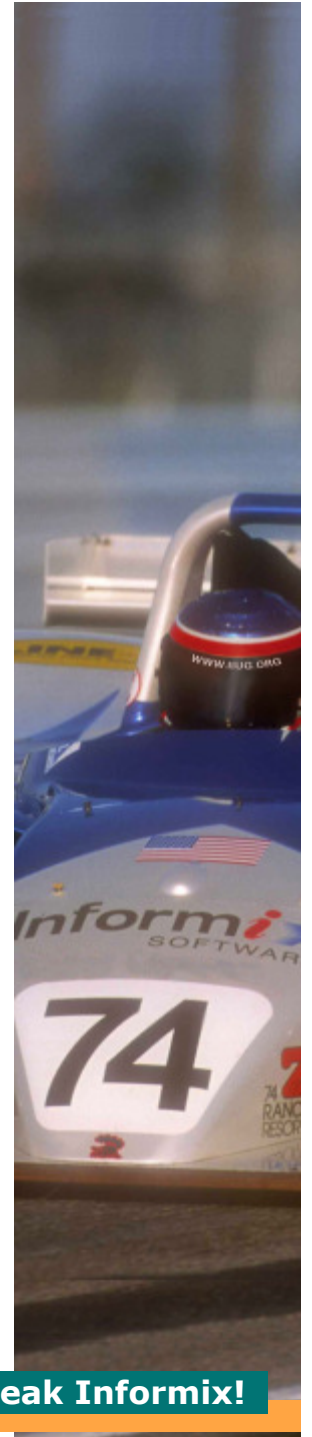
www.iiug.org

International Informix Users Group

We Speak Informix!

Exhibitors / Sponsors

- We have limited space for only 15 exhibitors and about 1/3 are already sold out!
- All IIUG Gold Sponsors will get a Exhibitor Discount.
- Exhibitors will not pay for any extras -
 - All Exhibitors get the table, chairs, electrical and wireless Internet included and two free full conference passes!
- Interested in Exhibiting - contact James Edmiston at james@questinfosys.com



Pricing..

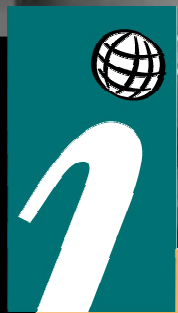
- Full Conference price of only \$449 for the three days if you register prior to December 27, 2007
- Tutorials
 - Half Day (one tutorial) for \$125 or
 - Full Day (two tutorials) for \$200
- Registration to be open in the mid Fall of 2007. Please watch the *Insider* or the IIUG web site (www.iiug.org) or your IIUG e-mails for more information
- Since Kansas City is “Mid-Continent” it is a very reasonably priced and convenient airport to fly into



See you in Overland Park!

April 27 - 30, 2008

Watch the IIUG Web site (www.iiug.org) and the IIUG *Insider* Monthly Newsletter for more information



International
Informix
Users Group

www.iiug.org

Current as of June 28, 2008

Contents

- The increasing importance of location information
- IDS capabilities for location services
- The IDS Web Services interface for location information
- Demonstrating how IDS can leverage location information



Why Location Services?

To identify and add context for:

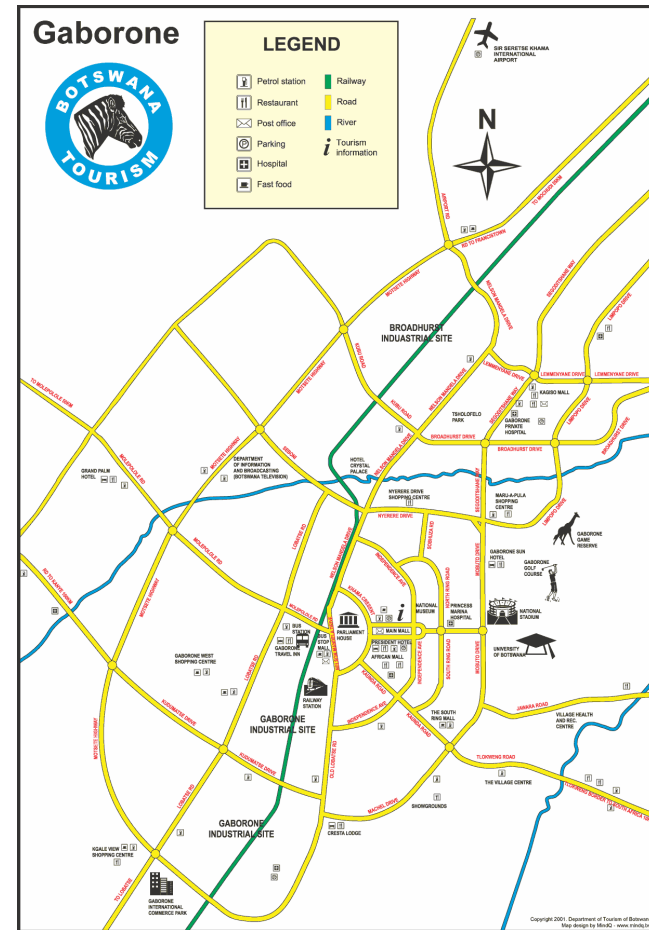
- User location (current or anticipated)
- Time (now, future)
- User preferences
- What relevant services are available in user's proximity



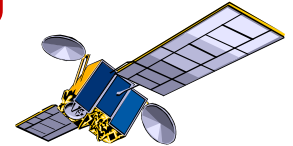
Examples of Location Services

- Directory Service (eg: Spatial Yellow Pages)
- Gateway Service
- Location Utility Service
- Presentation Service
- Route Service

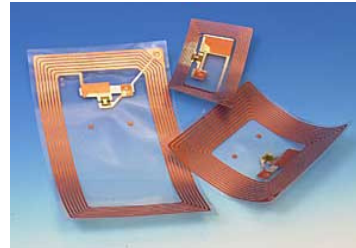
Source: Open Geospatial Consortium
2005



Real World Web Identifying, Sensing, Communicating



Location
GPS, Galileo



Imaging & Object Identification
1D and 2D bar codes, RFID tags



POS scanner
Reads phone
screen



MEMS

Direction,
acceleration



Wireless Networks

WiFi, Bluetooth, Zigbee



Lookup services

People, products, bar codes...

Sensor Networks

Temperature, chemicals..





Applications for the Real World Web

Smart Objects and Packaging

Know identity, location, owner, history, safety, environment ...

Remote Sensing

Tracking, control, compliance monitoring, healthcare

Machine to Machine

Local distributed decisions and actions

Behavior-based Pricing Models

Usage, risk



NOMAD FOR COMMERCIAL, INDUSTRIAL AND AUTOMOTIVE APPLICATIONS

Augmented Reality

Context-based information at point of decision/action

Sociable Products

Recognize owner, sensitive to context

Unifying Digital and Physical Worlds

Act.Right.Now.



Sensor Web - Integration of Technologies

- Need for real-time location data, anywhere, anytime
- Wal-Mart mandated use of RFID technology for its suppliers for inventory management – currently a passive inventory monitoring system to record a palette of product
- Greater demand to know location at any given time, e.g. anticipated time of arrival at destinations
- Merge with other remote sensors in roadway networks, GPS/cellular with real-time traffic control systems to produce a “sensor web”



Market Opportunity for Growth

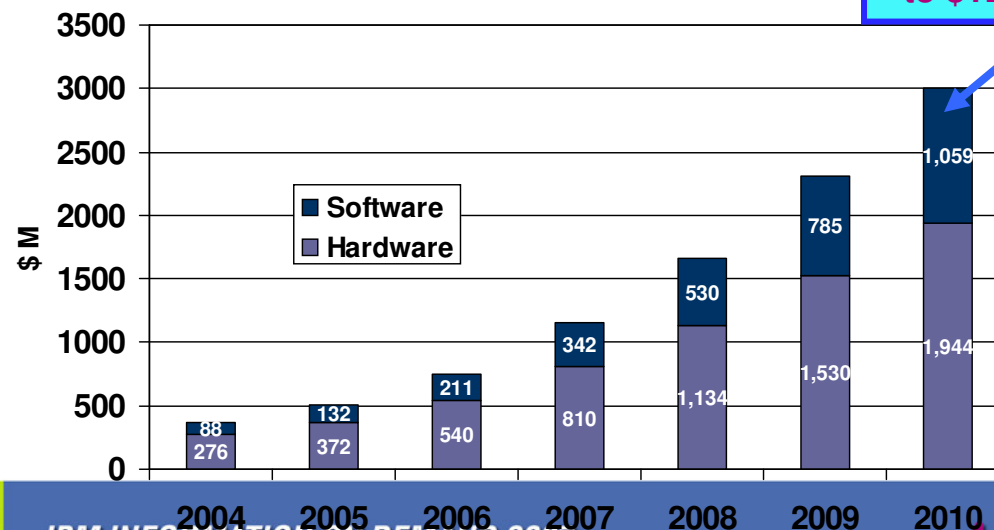
Location Services

- More than RFID
- Frost & Sullivan predict mobile communications industry will grow from \$92M in 2004 to \$600M in 2008
- Gartner identifies it as a Digital Business Macro Trend
- Part of Web Services of the 21st Century



Global RFID Market Opportunity

Software to grow to \$1B by 2010



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LBS / RFID Applications Examples



- Inventory control, and optimization in manufacturing, shipping, distribution, and retail
- Transporting planning and procurement
- Trucking/shipping/delivery
 - Tracking not only products/packages, but trucks and drivers too
 - Fencing applications
- Security and surveillance - both governmental & commercial
- Pharmaceuticals
 - Target business opportunity with RFIDIC Solution
- Call & Dispatcher Center Applications
 - Dispatch & route management, logistics management, scheduling services
 - Scheduling optimization management



IDS Delivers Powerful Location Services Capabilities

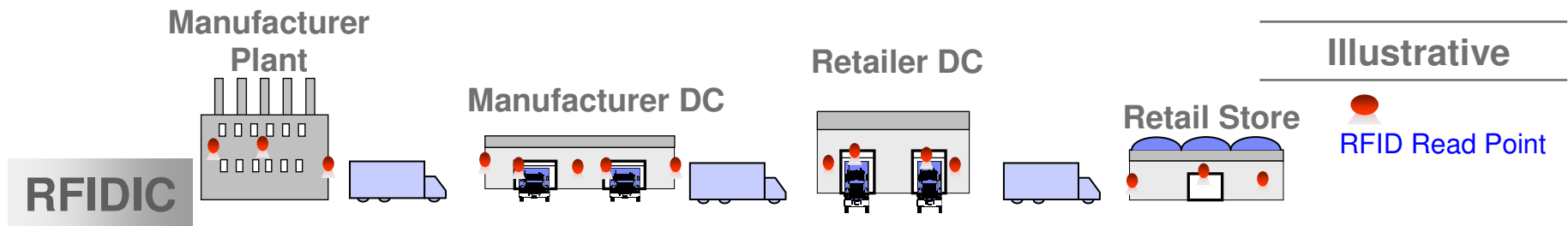
- Web Feature Service
- 2 dimensional data (Spatial)
- 4 dimensional data – space + elevation + time (Geodetic)
- Data Streaming (Time-Series)
- Developers Kit (DBDK)
- RFID Capabilities (via WebSphere EPCIS)



Location Services with IDS



- Ability for real-time location tracking, sensing, and communicating fuels new class of services to add business value
- Mobile devices with network connectivity and RFID leading the way
- Broad spectrum of emerging Real World Web applications



WebSphere RFID Information Center (RFIDIC)

- End-to-End middleware solution for RFID tracking (now available)
- Leveraging IDS capabilities, including spatial – IDS embedded

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Location Services Real World Applications Now

■ Government

- Bureau of Land Management, Morocco
- Environment sites - Australia & New Zealand
- City of San Francisco
- Parcel maps, crime statistics & mapping – hot spot highlight

■ Utilities, Water, and Power

- IBM's biggest non-military customers, some in Latin America
- Sector that is willing to spend money, lucrative ROI
- Asset management, power grid/network monitoring, gas line leaks

■ Telco

- Orange (1) signal strength map throughout UK, based on field report and coverage map
- (2) customer support, mapping customer complaints about signal strength
- Sprint local service
 - Enables distribution of mapping info so departments can cooperate with
 - IBM's largest commercial account
 - WFM work force management with MapInfo
- Sprint's family locator cell phones
- Sprint/Verizon package tracking via cell phones
- 911 location mapping for VOIP
- ESRI & Italian phone company
 - determine where the call came in, where service is available



Location Services Real World Applications Now

- Retail, Manufacturing, Distribution, & Shipping
 - Walmart RFID mandate with suppliers
 - Inventory management, control, optimization
 - Shipping and tracking, real time information anywhere, anytime



Upcoming Location Services Applications

Mobile communications - automatic location services

- Using GPS enabled cell phones
 - Declare interest in certain things, nearest store/shop
 - Look for nearest service center, retail outlet
 - Send all kinds of things, map, coupons, address, number
 - Museums while traveling
 - Automatically know where you are
 - Get info on request like on a computer
 - Nearby business can send promo's
- Health services
 - Doctor's can monitor patients remotely
 - Hospitals can track patients, drugs
- Car insurance
 - Determine risks based on locations visited



IBM Informix Spatial DataBlade

- OpenGIS standard spatial types and functions
 - Certified compliant with OpenGIS Simple Features Specification
 - Geometric data types: Vector Features
 - ST_Point, ST_Linestring, ST_Polygon, ST_Geometry, etc.
 - Spatial functions
 - ST_Distance, ST_Intersects, ST_Within, etc.
 - Standard Data representations
 - Well-Known Binary, Well-Known Text, ESRI Shape, OGC GML
- Tailored to ESRI's ArcSDE 9.x (spatial database gateway)
 - Additional functions, support for annotation, SDE format, etc.



IBM Informix Geodetic DataBlade

- Latitude-longitude ('geodetic') coordinates, ellipsoidal datum
- Uniform accuracy and resolution around the globe ("world to cm")
- No scale singularities and map edges
- Integrated time and floating-point dimensions for single-index searches
 - UNIQUE: true spatiotemporal data management
- Powerful index for high performance
 - R-tree in up to five dimensions
- Unique to IBM





Web Feature Service Datablade

Act.Right.Now.



Introduction

- The Web Feature Service (WFS) allows a client to retrieve and update geospatial data from multiple Web Feature Service instances.
- A WFS allows uniform access to features stored on a server:
 - query a dataset and retrieve the features
 - find the feature definition (feature's property names and types)
 - add features to dataset
 - delete feature from a dataset
 - update feature in a dataset
 - lock features to prevent modification (optional – not in this implementation)



Why Use A WFS?

- Provides a generic way to access raw geographic data over the web.
- While a Web Mapping Service (WMS) returns map images a client, a WFS returns features related to a location. Eg.
 - Which lakes are within a particular district?
 - Which rare species sightings occur outside of protected areas?
 - Which hospitals are located in Tokyo and are less than 97% full?
 - Which intersection/street is closest to my GPS location?
- Greater transparency and openness in mapping applications.
- Interoperability with WFS from different vendors.



Why WFS?

- Standard is gaining acceptance
- Higher level of abstraction for geographic “Information on Demand”
 - Support all GIS/mapping tools
 - No need to port to our particular flavor of SQL
- Makes Geodetic DataBlade accessible
 - No commercial tools support its SQL directly
 - Making SQL more standard would negate its uniqueness
 - Round-earth treatment
 - Integrated time dimension
- Even organizations that own GIS software want to set up additional, simple map data sharing and services without high license costs
 - Often looking for open-source solutions
 - WFS is a database-like mechanism: no maps, just features



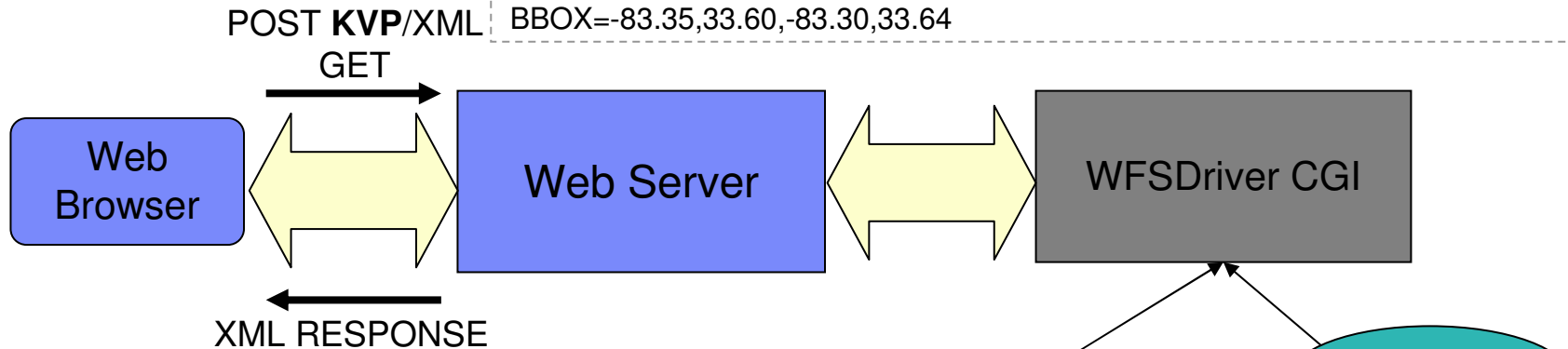
IBM Web Feature Service (WFS) Datablade Module

- Supports web-based geographical programs using data stored in IDS using the Spatial or Geodetic Datablade modules
- Encodes geographical features in Geographical Markup Language (GML) 3.1.1 or 2.1.2 specification
- Based on the Transactional WFS 1.1 (WFS-T) specification from the Open Geospatial Consortium (OGC)
- Uses HTTP GET or POST methods encoded as key-value-pairs (KVP) or XML for requests and responses.
- Requires Spatial or Geodetic Datablade modules to be installed and registered in the same database as WFS Datablade module



WFS Implementation

```
http://wfs.somegeo.net:8080/gatgr/wfsdriver.exe?SERVICE=WFS&VERSION=1.1
.&REQUEST=GetFeature&TYPENAME=galandpolys&MAXFEATURES=300&
BBOX=-83.35,33.60,-83.30,33.64
```



```

- <gml:PolygonMember>
- <gml:Polygon srsName="EPSG:4326" srsDimension="2">
- <gml:exterior>
- <gml:LinearRing>
  <gml:posList dimension="2">-83.3469050324 33.611091069 -
83.3471189385 33.6112560249 -83.3476280554 33.6111180588 -
83.3482509985 33.6112139478 -83.3484809979 33.6114330507 -
83.3484979293 33.6117079772 -83.3481380104 33.6120110668 -
83.3478429674 33.6123689741 -83.347976072 33.6128080182 -
83.3482230029 33.6134539277 -83.348190984 33.6138389923 -
83.3481750584 33.614237971 -83.3483559399 33.614319946 -
83.3488809823 33.614401921 -83.3491109818 33.6146079482 -
83.349260012 33.614910032 -83.3498680353 33.6152939232 -
83.3499999665 33.6156789878 -83.3501479909 33.6160499709 -
83.350115972 33.6164620253 -83.3505769767 33.616929065 -
83.3506700159 33.6173429634 -83.3505779825 33.6175749745 -
83.350020083 33.6176990266 -83.3497739903 33.6178510744 -
83.3497909218 33.6180299442 -83.3500049956 33.6181260008 -
83.3505459637 33.6179600391 -83.350889957 33.6179050538 -
83.3511370555 33.6180420141 -83.3511209623 33.6183169406 -
83.3507930622 33.6185370494 -83.3501040697 33.618716925 -
83.3499240264 33.6189640235 -83.349826964 33.6193100285 -
83.349864012 33.6196409461 -83.3502929978 33.6198060696 -
83.3506210655 33.6197490726 -83.3507679165 33.6196800057 -
83.3509020269 33.6198719513 -83.3510689945 33.6200920601 -
83.3512659692 33.6200640646 -83.3515090444 33.6198149544 -
83.351687076 33.6196910699 -83.3519340069 33.6197049838 -
83.3523980291 33.6200070676 -83.3528260091 33.6201170382 -
83.3531079764 33.6202809882 -83.3531949805 33.6205289249 -
83.3530040407 33.6208459285 -83.3526810022 33.6210799513 -
    
```

```

[...]
```

```

<map path=/gatgr>
database gatgr
user informix
password
28d7[...]4662
password_key tiger21
</map>
[...]
```

galandpolys		
Gist_id	...	geom
26	...	Multipolygon(((...
27	...	Multipolygon(((...

Some Terminology

- Namespace -> Database
- Feature Type -> Table
- Feature -> Row
- Feature ID -> Primary key



Feature Identifiers

- All features must be uniquely identified.
- Features usually take the form *Feature.ObjectID* where *Feature* is a feature class or table, and *ObjectID* is a unique identifier (usually a primary key) for that class or table.
- Eg. Customer number 101 in the *customer* table is referenced with the feature ID of *customer.101*.
- This must be a single column primary key. Composite keys are not supported.



Transactional WFS (WFS-T)

- Basic WFS (Read-only WFS)
 - GetCapabilities
 - Retrieve description of capabilities of WFS
 - DescribeFeatureType
 - Request descriptions of features types from WFS
 - GetFeature
 - Retrieve features from WFS
- WFS-T
 - Transaction
 - Create, Delete, Update
 - Native (not supported in this release)
 - LockFeature
 - Optional. Process lock requests on one or more instances of a feature type.
Not currently supported by WFS Datablade Module



WFS-T Transactions

- Transaction operations include insert, update and delete operations on web-accessible feature instances.
- A transaction operation can contain multiple insert, update and delete elements.
- Upon transaction completion, WFS generates an XML response document which indicates the completion status.



GetCapabilities Request

- Used to request a capabilities document from a WFS
- Request can be encoded in XML or KVP
- Example using HTTP GET method:

```
http://ajcsystem.homeunix.net/geoevents/wfsdriver?SERVICE=WFS&VERSION=1.1.0&REQUEST=GetCapabilities
```

- Example using XML:

```
<?xml version="1.0" ?>  
<wfs:GetCapabilities  
  service="WFS"  
  xmlns:wfs="http://www.opengis.net/wfs"  
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
  xsi:schemaLocation=http://www.opengis.net/wfs ../wfs/1.1.0/WFS.xsd>  
</wfs:GetCapabilities>
```



GetCapabilities Request

- Sample response document:

```
- <wfs:WFS_Capabilities xsi:schemaLocation="http://www.opengis.net/wfs ../wfs/1.1.0/WFS.xsd" version="1.1.0" updateSequence="0">
- <ows:ServiceIdentification>
  <ows:ServiceType>WFS</ows:ServiceType>
  <ows:ServiceTypeVersion>1.1.0</ows:ServiceTypeVersion>
  <ows:Title>IBM Informix Web Feature Service</ows:Title>
- <ows:Abstract>
  This is a test abstract value for the IBM Informix WFS Database
</ows:Abstract>
  <ows:Fees>None</ows:Fees>
  <ows:AccessConstraints>None</ows:AccessConstraints>
</ows:ServiceIdentification>
+ <ows:OperationsMetadata></ows:OperationsMetadata>
+ <wfs:SupportsGMLObjectTypeList></wfs:SupportsGMLObjectTypeList>
+ <ogc:Filter_Capabilities></ogc:Filter_Capabilities>
</wfs:WFS_Capabilities>
```



DescribeFeatureType Request

- Used to request a schema description of features types from WFS
- Can contain zero or more TypeName elements that correspond to the names of the feature types to be described
- Request can be encoded in XML or KVP
- Example using HTTP GET:

[http://ajcsystem.homeunix.net/geoevents/wfsdriver?SERVICE=WFS
&VERSION=1.1.0&REQUEST=DescribeFeatureType](http://ajcsystem.homeunix.net/geoevents/wfsdriver?SERVICE=WFS&VERSION=1.1.0&REQUEST=DescribeFeatureType)



DescribeFeatureType Request

- Example using XML:

```
<?xml version="1.0" ?>
<wfs:DescribeFeatureType
  version="1.1.0"
  service="WFS"
  xmlns:wfs_demo="http://ajcsystem.homeunix.net/geoevents"
  xmlns:wfs="http://www.opengis.net/wfs"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.opengis.net/wfs
  ../wfs/1.1.0/WFS.xsd">
  <wfs:TypeName>quakes</wfs:TypeName>
</wfs:DescribeFeatureType>
```



GetFeature Request

- Used to retrieve features from WFS
- Contains one or more Query elements
- Use optional maxFeatures element to limit the number of features returned
- Request can be encoded in XML or KVP
- Example query that returns all properties of all instances of type quakes in a bounding box:

```
http://ajcsystem.homeunix.net/geoevents/wfsdriver?SERVICE=WFS&VERSION=1.1.0&REQUEST=GetFeature&TypeName=quakes&BBOX=31.5,-84.7,35.0,-80.75
```



GetFeature Request

- XML Example:

```
<?xml version="1.0" ?>
<wfs:GetFeature
  version="1.1.0"
  service="WFS"
  xmlns:geoevents="http://ajcsystem.homeunix.net/geoevents"
  xmlns:wfs="http://www.opengis.net/wfs"
  xmlns:ogc="http://www.opengis.net/ogc"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.opengis.net/wfs
  ../wfs/1.1.0/WFS.xsd">
  <wfs:Query typeName="quakes">
    <ogc:Filter>
      <ogc:FeatureId fid="quakes.1275490"/>
    </ogc:Filter>
  </wfs:Query>
</wfs:GetFeature>
```



GetFeature Request

- Supported OGC CQL Filter clauses:
 - PropertyIsLessThan, PropertyIsGreaterThan, PropertyIsLessThanOrEqualTo, PropertyIsGreaterThanOrEqualTo, PropertyIsEqualTo, PropertyIsNotEqualTo, PropertyIsLike, PropertyIsBetween, PropertyIsNull
- Supported OGC CQL operations for Spatial:
 - BBOX, Equals, Disjoint, Intersects, Touches, Crosses, Within, Overlaps, Beyond, DWithin
- Supported OGC CQL operations for Geodetic:
 - BBOX, Equals, Disjoint, Intersects, Within, Overlaps, Beyond, DWithin



Sample Distance query in WFS (Spatial)

```
http://ajcssystem.homeunix.net/gatgr/wfsdriver.exe?SERVICE=WFS&VERSION=1.1.0&REQUEST=GetFeature&TYPENAME=airports&FILTER=(  
<Filter xmlns="http://www.opengis.net/ogc"  
  xmlns:ogc="http://www.opengis.net/ogc"  
  xmlns:gml="http://www.opengis.net/gml"  
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
  xsi:schemaLocation="http://www.opengis.net/ogc ../filter/1.1.0/filter.xsd  
  http://www.opengis.net/gml  
  ../gml/3.1.1/base/gml.xsd"><DWithin><PropertyName>airports/locn</  
  PropertyName><gml:Point><gml:pos>-84.407  
  33.764</gml:pos></gml:Point><Distance  
  units=%27km%27>50</Distance></DWithin></Filter>)
```



Equivalent Spatial SQL Query

- SELECT airports.faa_id,airports.city AS city,airports.state AS state,airports.name AS name,ST_AsGML(airports.locn) AS locn,airports.elev AS elev,airports.mag_var AS mag_var,airports.runways AS runways,airports.length AS length FROM airports WHERE ST_Intersects (airports.locn,ST_Buffer(ST_GeomFromGML('<gml:Point xmlns:gml="http://www.opengis.net/gml"><gml:pos>-84.407 33.764</gml:pos></gml:Point>',4) ,0.539838))



Transaction Request

- Used to describe data transformation operations to be applied to WFS instances
- Transaction operations:
 - Insert
 - Update
 - Delete



Setting Up WFS

1. Install IDS, Version 11 or higher.
2. Install Informix Client SDK version 3 or higher.
3. Install the companion blade, which works with WFS,
i.e. Spatial DataBlade 8.21.xC1 or Geodetic 3.12.xC1
4. Create a database with logging enabled.
5. Create an sbspace with a size of at least 50 megabytes.
6. Register the WFS DataBlade module in your database.
7. Register the companion blade in the same database as the WFS
DataBlade.
8. Run wfssetup
`$INFORMIXDIR/extend/wfs.1.00.xC1/wfsdriver/wfssetup`
9. Configure the web server to include a mapping to the CGI path.
Eg. Apache web server
`ScriptAlias /mydb "/local0/webserver/mydb/`



Setting up WFS (cont'd)

10. Declare your table in `sde.geometry_columns`
11. Register your table (feature) via `WFSRegister()`.
12. Verify connectivity by using a `GetCapabilities` request from your web browser.



WFS Datablade Module Security

- Web server handles secure access to the WFSDriver CGI program.
- User ID and password stored in wfs.cnf file.
- Use WFSpwcrypt to generate encrypted passwords for users.

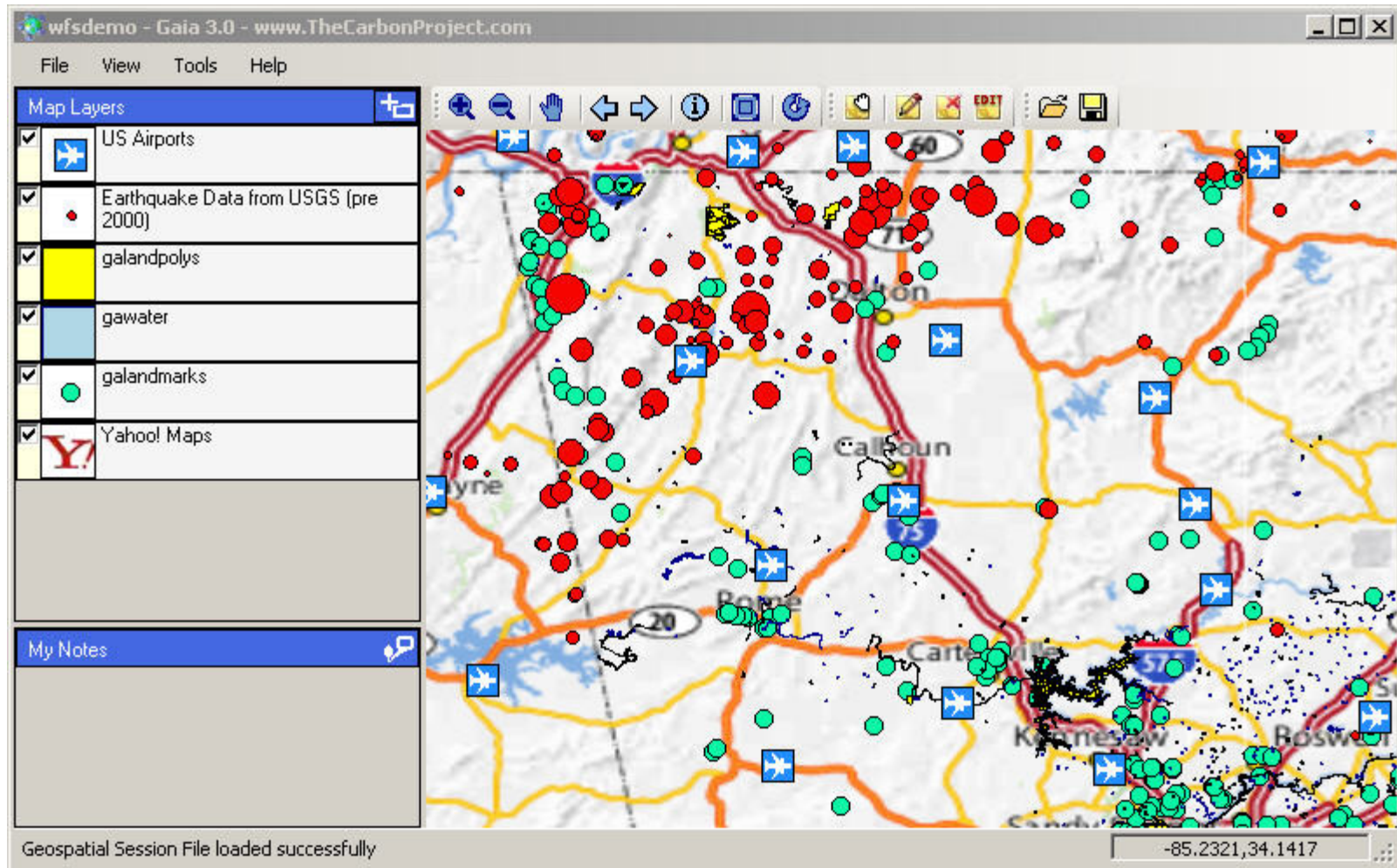


Using a GIS Map Client with WFS

- Add a new WFS “layer” by specifying the URL for the GetCapabilities request
- Select the typename that is associated with that layer
- Add any additional attributes
 - Maximum features
 - Spatial bounding box



A WFS Client example



Three Example WFS Applications

- Traditional GIS
 - Gaia, ESRI ArcGIS Viewer
- Location based service
 - Mobile Restaurant Rater
- RFID
 - Fencing application



Mobile Restaurant Rater

- Use a GetFeature request to locate the type of restaurant based on current location and desired search radius
- GetFeature returns name, address ordered by rating
- After your meal, use a Transaction operation to upload your rating and comments



MobileRater GetFeature Request

```
<xml version='1.0'>
<GetFeature
  xmlns=http://mobilerate.com/restaurants
  service="WFS"
  version="1.1.0" >
  <Query typeName="nationrest">
    <ogc:PropertyName>nationrest.name</ogc:PropertyName>
    <ogc:PropertyName>nationrest.address</ogc:PropertyName>
    <ogc:PropertyName>nationrest.rating</ogc:PropertyName>
    <ogc:Filter>
      <And>
        <DWithin>
          <ogc:PropertyName>nationrest.location</ogc:PropertyName>
          <gml:Point>-84.35 31.5467</gml:Point>
          <Distance units='mi'>1</Distance>
        </DWithin>
        <PropertyIsEqualTo>
          <PropertyName>nationrest.resttype</PropertyName>
          <Literal>Italian</Literal>
        </PropertyIsEqualTo>
      </And>
    </ogc:Filter>
    <ogc:SortBy>
      <ogc:SortProperty>
        <ogc:PropertyName>nationrest.rating</ogc:PropertyName>
        <ogc:SortOrder>DESC</ogc:SortOrder>
      </ogc:SortProperty>
    </ogc:SortBy>
  </Query>
</GetFeature>
```



MobileRater Insert Transaction

```
<?xml version='1.0' ?>
<wfs:Transaction
  version="1.1.0"
  service="WFS"
  xmlns=http://mobilerate.com/restaurants
  <wfs:Insert idgen="GenerateNew"
    <ratings>
      <id/>
      <restaurant_id>43546</restaurant_id>
      <foodquality>3</foodquality>
      <servicequality>3</servicequality>
      <comments>Lasagna is great</comments>
      <visit_time>2007-09-07T19:35:00</visit_time>
    </ratings>
  </wfs:Insert>
</wfs:Transaction>
```



RFID Fencing Application

- Scenario:
 - Containers equipped with GPS RFID tags
 - Want to know if containers are removed during shipping (piracy)
 - Want to know if containers leave port area



Possible RFID Fencing Solution with WFS

- Use GetFeature request with Beyond operator to check track against proposed course by shipper or outside the ports boundaries
 - Can return either a simple count or the actual location of the tags that are out of the specified area



Additional Information on WFS

- Open Geospatial Consortium (OGC)
<http://www.opengeospatial.org/>
- OGC Web Feature Service Specification
<http://www.opengeospatial.org/standards/wfs>
- Geographical Markup Language (GML) Encoding Specification
<http://www.opengeospatial.org/standards/gml>





Questions?

Act.Right.Now.

