

Enterprise Grid Computing



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Jim Farley, Principle Product Manager, Location and Spatial Technologies, Oracle Corporation shares his views about Oracle 10g, which was launched in September, 2003. He also throws light on Oracle's partnership with PCI Geomatics

? Please tell us in detail about the unique features of Oracle 10g and how useful it will be for the entire geomatics community?

First of all, Oracle 10g is the only major database system that natively supports location and spatial analysis. Oracle 10g is a completely integrated, high performance location-enabled platform with a full range of infrastructure features at no additional cost, including support for vector data and analysis operations, all in a secure, highly available environment accessible via the ubiquitous SQL standard. Additional features such as support for raster data, management of network data and persistent topology in the database, and the capacity to perform geocoding and develop routing solutions are also available in the Oracle10g Spatial option. It is important to stress that Oracle 10g represents the continuing evolution of a location-based platform that has been growing and maturing for nearly ten years.

Beginning with Oracle 9i, which was released in early 2001, every single database sold by Oracle has been location-enabled with the capacity to store, index and manipulate basic geometries such as points, lines and polygons. IDC has noted on numerous occasions that by providing this infrastructure, Oracle has had a fundamental impact on the location market in general. By ensuring that location capabilities are ubiquitous in the Oracle

installed base, Oracle helps to extend the visibility and reach of location-enabled tools across enterprise business. Perhaps more importantly, the ubiquity and the ready availability of location capabilities in each and every Oracle database (standard or enterprise edition) significantly eases the integration efforts required to extend existing applications using the location-based infrastructure provided in the database.

It is because of this capacity to extend an enterprises control over its information without imposing additional organizational costs that we see 10g being a business enabler that will extend the use of location technologies. For the geomatics community, Oracle10g delivers all of the leading edge advances of 21st Century information technology science to geoscience. It represents the first true unification of the IT infrastructure with a platform for GIS.

For instance, nearly every organization has addresses of customers, suppliers, partners, etc. in their application databases. In most cases these data are not used in any true location-based application, because the act of integrating business applications with location analysis or GIS tools is costly and complex. With Oracle 10g, the database provides geocoding and spatial operations through standard SQL, so the address data can be mapped, can be queried based on proxim-

ity, distance or other spatial relationships, or can be geocoded. Address information can be used as the basis for more complex applications such as routing in supply chain models or business intelligence analysis.

Oracle's Java development tools, JDeveloper, and our Application Server 10g include a component -- Oracle MapViewer -- that visualizes these data and the relationships between. It is because of this capacity to extend an enterprises control over its information without imposing additional organizational "costs" that we see 10g being a business enabler that will extend the use of location technologies as well as act as a proficient tool for the geomatics community.

? Tell us something about the "g" in Oracle 10g. What does it signify?

The 'g' in Oracle 10g refers to the Grid. Understand that this is not the notion of an unbounded, unstructured Grid that was popularized by academia and the scientific community. The 'g' in Oracle 10g represents Enterprise Grid computing. In this context the Grid represents the computing and IT resources that are bounded by any given Enterprise. The objective of Oracle 10g is to improve manageability and overall responsiveness while reducing costs through the use of commodity

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Partnering in progress



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Arnold Hougham, Vice President, Sales and Product Marketing, PCI Geomatics shares his views about Oracle 10g and PCI's partnership with Oracle. He also provides some insights into the changing market scenario of imagery products in the Asian region

? What is your perception of Oracle 10g?

With Oracle 10g, every database is "spatially" enabled, allowing enterprise users to create, store and access spatial information such as points lines and areas in the database. As far as I know, the fact that this is a default characteristic of the database, is unique to Oracle. This is supported, of course, by spatial queries.

While this is extremely important, of greater significance to PCI Geomatics and our customers is imagery. As you may know, while our products embrace all important spatial information types, PCI Geomatics special expertise lies in the ingestion, spatial geocoding, and extraction of information from geographic images such as those acquired from space satellites and aircraft. So, the fact that Oracle 10g now supports imagery as a spatial entity in the database is of great importance to the entire geomatics community.

We are seeing an explosion in the types of geographic images available to operational users of geographic information. The increase in the availability of remotely sensed images, which was predicted years ago, is now happening. The best-known examples of these are the images available from the US high-resolution data vendors Digital Globe, Space Imaging, and OrbImage. Governments such as the Indian government are also in

the game, of course. The recent launch of India's ResourceSat late in 2003 is one such example. The plethora of image data of a type appropriate for solving real world problems will mean that the use of imagery will become commonplace, at least in the government. Oracle, in the release of Oracle 10g, has provided a critical piece of IT infrastructure necessary for this to occur.

? Please explain in detail about your partnership with Oracle in general and in context with Oracle 10g.

Our relationship with Oracle began more than 5 years ago through our mutual interest in the promotion of open standards and specifications via our general philosophy of open architecture software, and specifically via the Open GIS Consortium. It's our belief that open standards encourage multiple vendor participation in the geomatics marketplace, which only benefits organizations using geographic information. Of course we're pleased that when Oracle went looking for an advisor on customers' requirements related to remotely sensed images, they chose us. We helped during their product specification phase in an informal way. As Oracle neared product release, they established a formal beta testing programme, and PCI Geomatics was invited to participate. Some people at Oracle have referred to PCI Geomatics as

Oracle's "go to market partner" in the area of remote sensing.

All of this will benefit the users in two major ways. First, because Oracle solicited and accepted PCI Geomatics' expertise during the product specification phase, we feel that the geographic image-enabled aspects of Oracle 10g will be what the market needs. For example, this means handling projection information properly, and giving the user the capability to handle images from such vendors as Digital Globe and Space Imaging in the way in which they intend. Second, it means that when Oracle 10g is released by Oracle, that customers will have a geomatics software choice that already supports Oracle 10g. Normally it takes vendors such as PCI Geomatics several months or even years to embrace revolutionary technologies such as Oracle 10g. In this case, Geomatica 9, which is already in release, supports it.

? In what ways will Oracle 10g be utilized by PCI Geomatics?

Well, I think that the real question is "how will PCI Geomatics' customers utilize Oracle 10g, as supported by PCI's Geomatica software?". It's not us that take advantage of this unique combination, it's our mutual clients.

In a simple way, clients using both Geomatica 9 and Oracle 10g together will be able to obtain remote sensing

images from a host of sources, load them into Oracle, and then access them for any application that depends on remotely sensed images, such as forestry, geology, municipal mapping, national security, and others.

But of course there's more to it than that. First, the digital integrity of the original data is preserved. Second, the spatial characteristics of the data are preserved. This includes any pre-processing steps, such as orthorectification, creation of mosaics, land use/land cover classifications, elevation model extraction, and combining colour and black and white information, something we call pan-sharpening. These are all value added products on top of the data products available from the data vendors and distributors. They are all possible with PCI products.

So, now there are images in the data-

base at a variety of resolutions, areas of coverage and type, perhaps multi-spectral, hyperspectral, black and white, or maybe radar images. Perhaps there are images from multiple dates, spanning years. Users can then run a spatial and/or non-spatial query to get the images needed for an application. For example, a client may wish to "find all of the images less than 2 years old, within 10 km of the multi-lane highway between Mumbai and Pune, classify the images (perhaps occupied vs. non-occupied), and use the elevation model and soils information (coming from other GIS layers in the database) to create a rockfall hazards map". The result could then be used to make a map for engineering decision makers. Perhaps the map would be served over the internet.

All of the steps I described above would be possible with the combination of Geomatica and Oracle I0g.

? How do you see the present market for geomatics products in India and how do you perceive the future?

PCI and other software vendors have been in the Indian market for decades now. India is a leader in the launching of satellites for acquiring imagery. We enjoy almost as much success in India as we do in our home market of Canada. The future looks bright for geomatics in India. Not only does India have its own remote sensing satellites, but the geospatial data infrastructure needed to support economic development in agriculture, for example, seems to be moving in the right direction. Solutions such as those afforded by the combination of Oracle, which provides a key infrastructure component, and Geomatica, which provides Oracle loading, access, and imagery-centric geomatics applications will only serve to accelerate this progress. ■

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computing components such as blade technologies (single board, low cost computers that can be configured in rack storage achieve highly scalable computing environment). Efficiency is further enhanced via improved use of critical IT resources (e.g. fixed storage, CPU's etc.) that is achieved because the I0g infrastructure supports on-demand allocation of these critical resources to the tasks across the Grid that need the most while supporting features such as Automatic Storage Management that help DBA resource scale more effectively. Ultimately the g in Oracle I0g is about working smarter, not harder, across the enterprise IT infrastructure.

? What are your views on the interoperability characteristics of Oracle I0g?

The SQL language, internet standards, and the Linux OS are just a few of the widely known initiatives that Oracle supports and helps to drive. Oracle, as a founding member of the OpenGIS

Consortium, commits significant resources at the technical, management and board levels to help bring the kind of leadership we have demonstrated in communities such as SQL to bear in the geospatial domain.

? What type of market do you see in the APAC region and India in particular?

Clearly the most dynamic economic and technological growth and expansion is occurring in these two major geographic regions and all indications suggest that this is a trend that will continue for the foreseeable future. Because of this we see these geographies as key markets. Given the broad-based adoption and use of satellite-based remotely sensed imagery and wireless technology we see a particularly strong market for geospatial technologies over time.

? Please tell us in detail about the partnership with PCI Geomatics in general and in the context of I0g?

First let me say that we see the by-prod-

uct of our partnership with PCI Geomatics benefiting many communities and sectors ranging from utilities, land management, natural resource management and agriculture to transportation and defence and security in addition to the natural scientific benefits associated with the broader use and collaborative investigation using satellite imagery. The partnership itself is a collaboration based on appreciation of one another's technology. PCI Geomatics recognized the benefit of using proven database technology to manage the image-based data derived from satellite and airborne platforms. As such they became a very early adopter of our I0g GeoRaster data type. GeoRaster enables images to be stored, indexed and manipulated in a general sense as a new, native type in the database. For our part we immediately recognized the benefit of partnering with an established, successful vendor in the image processing space - one that not only provided a broad range of robust tools, but one that recognized that natural synergy could exist. ■