LIZARDTECH

Massive High-resolution Digital Content

LizardTech delivers wavelet-based imaging software for managing and distributing massive high-resolution digital content such as aerial photography and satellite imagery and scanned colour documents. Main products include GeoExpress with MrSID Document Express with DjVu and Express Server.

LizardTech was founded in 1992 in Santa Fe, New Mexico (hence the reptile in the name and logo) by a few researchers, developers and entrepreneurs working together on wavelet-based imaging at Los Alamos National Laboratory (LANL). The privately owned company moved to Seattleâ€™s historic Pioneer Square district in the late 1990s, where it settled down in a classic century-old building. In 2003 the company was purchased by Celartem Technology, a publicly traded Japanese company focused on imaging technologies and products, and merged in 2005 with its other US company, Extensis, based in Portland, Oregon. Besides the Seattle and Portland locations, there are offices in New York and London, and several remote employees located throughout the US.

Commercialisation
Our mission is to provide the correct tools for our customers, partners and resellers and to guide them in applying these tools in the management, distribution and accessing of large, complex digital colour content. Our vision is to commercialise technologies incubated in the government sector. We acquired the exclusive license to the MrSID dynamic imaging technology from LANL, where it was initially developed for government applications. In subsequent years we succeeded in making the MrSID format the de facto standard for satellite and aerial imagery. In 2001 we brought a similar commercialising focus to the DjVu technology developed at AT&T Labs for digital document images.

Product and Revenue
Today our software product lines are:

- GeoExpress with MrSID
- Document Express with DjVu; the code for viewing DjVu documents is open source
- Express Server, a server add-on that takes advantage of the properties in wavelet-based file formats for efficient network distribution of content.

We embrace standards such as JPEG 2000 and Geography Mark-up Language (GML). Document Express software handles high-volume conversion of scanned or digitally created documents into the DjVu format. Document Express customers include publishers, libraries and state archives. Any organisation that needs to create and distribute exact digital replicas of printed colour documents in their original visual format and with searchable, extractable text can benefit from Document Express. We expect double-digit growth for the 2005-06 fiscal year. More than 65% of our revenue comes from the geospatial market, which encompasses state and local governments (mainly North American cities and counties) and federal agencies such as the Department of Defense, the US Geological Survey (USGS) and the Department of Agriculture. These organisations use GeoExpress to convert large sets of aerial or satellite imagery into MrSID format, which is natively supported in many GIS applications used for such purposes as scientific research and analysis or the administration of roads, utilities or other infrastructure.

Company Culture
Our workforce of about thirty people includes a public relations and marketing team, sales and support personnel, and an engineering department. The structure and organisation tend toward the horizontal; the atmosphere is one of co-operation, collaboration and flexibility, where creativity flows freely. The management supports and listens to ideas and contributions coming from all levels, across the board, making for a very enjoyable working environment. Open communication is
encouraged and all departments work closely together to create a very smooth and honest ambience. Since the merger with Extensis, whereby LizardTech CEO, Carlos Domingo, became CEO of the new entity, LizardTech has benefited from the administrative, human resource, marketing and finance departments of Extensis, which was the larger of the two companies.

Overseas Markets
Working with large, high-resolution image datasets and high volumes of colour documents is not restricted to organisations within the US. In 1997 the autonomous government of Catalonia in north-east Spain, established the Institut CartogrÃ fic de Catalunya (ICC) (Cartographic Institute of Cata-lonia) as a public agency. Its mandate is to lay the technical groundwork for development of cartographic information in various government agencies and to carry out mapping and development projects requested by public and private

institutions both within Spain and around the world. ICC delivers its data in MrSID format and recently implemented Express Server to make its imagery available to users at high speed and high resolution. This is just one example of the way government agencies internationally are benefiting from our technologies and products.
Document imaging is a multi-billion dollar industry with global reach. Swedenâ€™s National Land Survey in GÃ¤vle is nearing completion of a several-year project in which the agency used Document Express to make 50 million documents relating to Swedenâ€™s geographic history available online in DjVu format. In addition to developing overseas markets, the LizardTech is active in projects around the world that affect imaging. The company sits on the Technical Committee of the Open Geospatial Consortium (OGC) and chairs the working group that is extending the capabilities of GML and JPEG 2000 to geospatial applications to drive cross-platform interoperability and rapid internet distribution of geospatial imagery.

Future Focus
In the near term, the focus will differ for each technology and product line. For Document Express we want to attract the attention of markets for which DjVu technology will be most beneficial. For example, in September 2005 The New Yorker released a DVD collection called The Complete New Yorker containing all its eighty yearsâ€™ worth of published magazine editions, in DjVu format. In the same month, Seattle Weekly became the first US newspaper to offer its published edition online as a DjVu document, every page viewable in its original layout and context. On the geospatial side, LizardTech continues to transform the GeoExpress product line from a simple compression tool into an image management toolset that adds value to geospatial image data. The ICC implementation is a good indicator of the direction in which LizardTech is headed. This involves the development of an implementation of the JPEG 2000 standard, the shaping of the â€˜spatial Webâ€™ or â€˜Geo-Webâ€™ through the XML language GML (Geography Mark-Up Language), and moving â€˜upstreamâ€™ in the information chain through integration into database architectures such as Oracle Spatial 10g GeoRaster.
The companyâ€™s long-term geospatial strategy is focused on industry trends and new technologies for geospatial image transmission and storage. The increase in geospatial imagery enables professionals now to buy high-resolution imagery of a particular US county through the USDA NAIP (National Agriculture Imagery Program) initiative. However, the general public also benefits from the increase of geospatial imagery, as evidenced by the unveiling of Google Maps and MSN Virtual Earth. More and more GIS applications support open standards and OGC (Open Geospatial Consortium) Web Services: a means of giving GIS applications integrated, more efficient access to image databases. At the same time, the wavelet-based image compression pioneered by LizardTech is becoming increasingly popular. Finally, there is a trend toward the restructuring of image databases from single repositories to loosely federated datasets distributed across the internet.

Conclusions
The price of storage is going down and internet connectivity speeds are increasing. On the other hand, both the amount and complexity of the digital content now being created and used is growing even faster. The resulting difficulties prospectively facing organisations induce a need for the software and solutions LizardTech will continue to offer.