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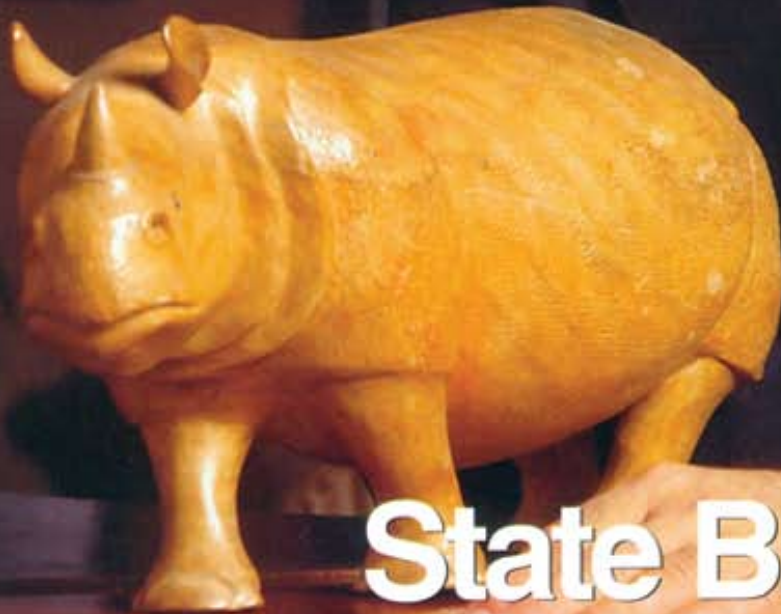
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# ISRO goes indigenous

**IGiS, an entirely Indian software developed by ISRO, could pose a threat to global players in the geospatial field**

Late last month, Indian Space Research Organisation (ISRO), in collaboration with Scanpoint Geomatics, a small Ahmedabad-based software company, launched an Indian GIS (geographical information system) software. "Unlike other imported off-the-shelf software of the same genre, it also combines the image processing capabilities," informs Ramesh Sojitra, MD, Scanpoint Geomatics. IGiS (Integrated Geographical and Image Processing Software) has been developed by ISRO and Scanpoint together.

The GIS software, which has wide-ranging applications both in government and industry (see chart), is used in analysing satellite data. With India regularly launching its own remote sensing satellites, the users of data generated by these satellites can heave a sigh of relief. "They will no longer have to depend on costly imported software that comes with strings attached," says A.K. Singh, VP in charge of defence business, Scanpoint.

This software has both civil as well as defence applications. In the two Iraq wars and in the ongoing Afghan war, GIS is said to have been used in analysing real time intelligence information sent by remote sensing satellites from the enemy side and directing UAVs (unmanned aerial vehicles) to enemy targets.

Hence, ISRO faced embargo from the US on import of this software after the first Pokhran nuclear test. It was lifted only when India began launching its own remote sensing satellites at the turn of the millennium. American companies lobbied with their government to lift the ban on exports of GIS to India. But access still comes with caveats. "Besides the imported software being proprietary, the access to source code is still denied," says Arun Dasgupta, director, Scanpoint. This means its users cannot develop it further for their own applications without vendors' assistance. This is

prohibitively costly.

In 2003-04, ISRO had an internal debate about whether to continue to import or to indigenise the GIS and image processing software in India itself. Its internal committee settled in favour of indigenisation, on the

finished products would have to be held jointly with it.

Some leading names like ESRI of the US with NIIT, Rolta with Integraph, ORG with CADCORP of the US, CADAC with PCI Geomatics of Canada, TCS with Mapinfo of the US, RMSI of the US with JT Maps of India and several others participated in the bid. Among them, Scanpoint Geomatics was the only one without any overseas partner.

Scanpoint had started its own R&D in geomatics in 2001 and developed its own software and a software



*Soni, Sojitra and Dasgupta: no longer dependent on imported software*

grounds that with its own IPR (International Property Rights), it would not be hemmed in by embargoes, issues like inadequate vendor support, restrictions on its further development, poor interoperability of imported software and non-standard data formats.

Finally, in 2004, the Space Application Centre at ISRO released an RFP (request for proposal) for indigenous development of GIS and image processing software, on desktop as well as mobile platforms. A total of 14 companies participated globally. ISRO allowed international companies with Indian partners to participate in bids, on the condition that the IPR of

development kit (SDK) to go with it. This was branded as SGL (Spatial Graphics Language) and the kit as SGL (SDK). This was customised for Ahmedabad Urban Development Authority and later for Bhuj Area Development Authority, after the earthquake, for urban planning purposes.

Scanpoint's own core engine being 100 per cent indigenous, and having both GIS and image processing capabilities, "eventually helped us in getting through the ISRO's technical evaluation process", avers Sojitra. In the final round, there were only Scanpoint, ORG and RMSI. However, Scanpoint's being the lowest bid, its

proposal was accepted. After four years of joint R&D with ISRO, it has emerged as a joint owner of IGIS with ISRO. Scanpoint will market the software and ISRO will get 10 per cent royalty from its sale.

This wasn't the first attempt by ISRO to develop GIS. After launching its first remote sensing satellite, IRS-1A in 1981, it had longed to go for its own GIS. In 1986, with the help of private companies – HCL and Speck Systems of Hyderabad – it developed a large satellite data processing system called ISRO Vision on Xenix Operating System, since Windows was nowhere on the horizon and MS DOS wasn't powerful enough. Being user-unfriendly, it didn't succeed commercially.

One more attempt was made with Pegasus Software Systems of Bangalore and Era Software Systems of Hyderabad. It resulted in ISRO GIS, in 1988. This operated on both Xenix and Unix initially and later on Windows Version 3.0. It too failed "as the concerned companies were poor on services", says an ISRO official. Nonetheless, Era managed to sell a modified version of it, Market Map, to HLL for consumer mapping.

Against this background, when research started, the biggest challenge before Scanpoint and ISRO was to bring out software that was user-friendly. Then, as now, there were two separate proprietary software (GIS and IP: image processing) in use for geospatial applications. For users, this meant licensing two costly proprietary software, with no independent rights for their development.

Since ISRO's aim was to develop a complete package with advance modules built into single software, the challenge before ISRO and Scanpoint was how to combine seamlessly the functionalities of the two separate software into one. This required both GIS and IP to work on a common platform. "We decided to adopt OGC (Open Geospatial Consortium) compliant data model for geographical information data and Geotiff (open format) for satellite data", says S.K. Pathan, project director NRDB and head GIDD, Space Application Centre, ISRO.

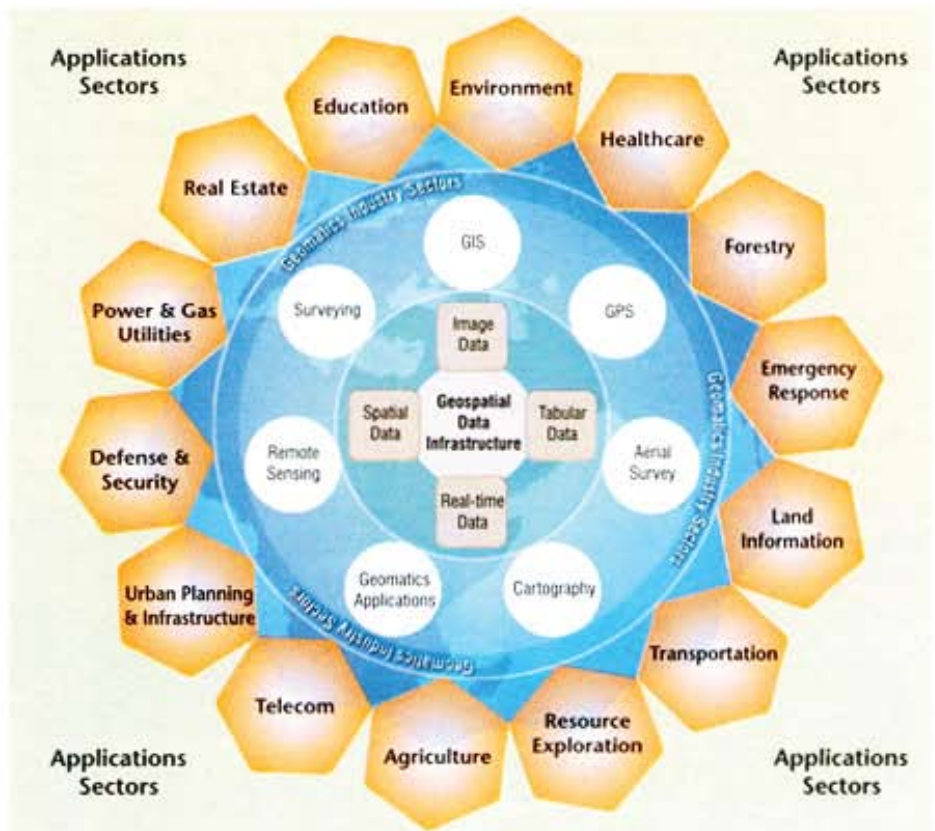
A fusion of GIS with image processing was achieved in a single software,

IGIS. Scanpoint's contribution was its domain experience in graphics and image processing; ISRO's was its experience in system design, module testing and validation. IGIS is an outcome of four years of development and testing by the Inter Centre Committee of ISRO scientists and Scanpoint. "It has also been tested by all the departments of ISRO's space affiliates," says Chirag Soni, director (R&D), Scanpoint.

The software operates on Windows and its core engine has the capability to operate on any operating system.

academic institutions offering this subject or a full-fledged degree course in it, semi-government institutions and state and Central PSUs like GSPC, Narbada Nigam, GAIL, etc. GIS has been most effectively employed in urban planning, network analysis and planning in telecom, power transmission and distribution, gas distribution, etc.

So, how big is the market for this product? "It is anybody's guess, GIS companies are closed doors when it comes to sharing information," says Prakash Menon, marketing head, ESRI



Users can develop extra functions or customise it as per their needs using any object-oriented programming language. In fact, Scanpoint provides a software development kit along with IGIS. However, IGIS covers over 90 per cent of the applications, which are otherwise provided by standalone proprietary IP and GIS vendors.

All commercial software of this nature does not have modules to open Indian remote sensing satellite (IRS) data. IRS, in contrast, has the capability to open both the IRS as well as foreign satellite data. Its clientele would consist of states' remote sensing centres,

(a US company that pioneered GIS software). R.S. Rathi, director operations, Rolta India, refused to share any information with *Business India*. However, a survey released in April 2008 by *Indian Geospatial Magazine* put the geospatial market size at Rs683 crore. In contrast, Rolta India alone, in its audited report for the year ended June 2009, reported a Rs619.55 crore turnover for this segment. Some say the market for this business could grow eightfold. Globally, ESRI has a presence in 200 countries. Only time will tell how much share of this pie IGIS captures.

• SHRIKANT MODAK