World geospatial technology market

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1. Introduction

In the last edition of "Ekscentar" from December 2006, you had a chance to find out a bit more about some of the world leading world producers of geodetic instruments for land surveying. Regarding the fact that Faculty of Geodesy and Geoinformatics at the University of Zagreb besides land surveyors also raises future generations of geomatic engineers, this article brings you a review of current situations on the world geospatial technology market. Graphic representations shown in pictures 2, 3 and 4 present situation stats from the end of 2005 because collective financial report for 2006 has not been published yet, while the number figures presented in the text are actual statistic figures represented publicly by the companies themselves regarding the past year of 2006.

In current world of strong and constant informatization, a day spent without a computer is hardly imaginable. For us, geodetic experts, main interests are relied on those software programs and computer accessories that we use every day in out practice, that is, our field of interest. Large number of companies is involved in developing geosoftware, we had to choose just the top companies of geoinformatic technologies and solutions, companies that either analyze, store or display geospatial information and who distinguish themselves from other companies as with the revenue, so as with the number of consumers of their products. This article will briefly touch companies as: Autodesk (www.autodesk.com), ESRI (www.esri.com), Intergraph (www.intergraph.com), Bentley Systems (www.bentley.com) and MapInfo (www.mapinfo.com). Figure 2 which shows the share price flow of these companies with the exception of ESRI and Bentley Systems which do not release their financial information in public, their mutual relations stats are well presented. Analytical Survey (www.anlt.com) and Descartes Systems www.descartes.com) are not presented in this paper because their CAD/GIS applications are rarely used in our country.

Figure 1.

In the market sector of companies which are investing their effort primarily on the position and navigation combination, that is locations determination three companies are bouncing out of the average by producing the necessary equipment for GPS determination: Garmin (www.garmin.com), Thales (www.thalesgroup.com) and Trimble (www.trimble.com). The biggest amounts of money are currently rolling in this sector, so special attention will be brought upon these companies. At the moment the biggest battle is led in producing PND – Portable Navigation Devices that every luxurious car is equipped with. These devices are becoming widely spent goods so products of Garmin can be bought even in Konzum (the biggest retail store in Croatia) at very low prices. The prices of these devices have suffered a big fall from starting $1000 USD for a device down to half of this amount which is the market price today.

Further on, we will mention multinational companies which are joining the battle for geospatial technology market and representing spatially determined information in real time like: Oracle (www.oracle.com), Pitney Bowes (www.pb.com), SAP (www.sap.com), Microsoft (www.microsoft.com), GE (www.ge.com) and IBM (www.ibm.com).

The direction in which the market of geosolutions is streaming can be represented in a very funny way as it is shown in figure 1. A woman trusted blindly in satellite navigation (GPS) implemented in her car, which, according to her statement took her straight into a river.

2. Cad/gis companies and their products that can be found on an average geomatic engineer computer in Croatia

2.1 Autodesk

autodesk®

The first company in this revue is also the biggest name between CAD manufactu-

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res at the moment. The company was founded by John Walker in 1982. The company headquarters is located San Rafael, California. The company is put into Fortune 1000, as a part of the society of 1000 most successful companies in the USA by the financial magazine Fortune. The shares of Autodesk are available on the stock market at the price of $37,6 USD per share. The last year revenue of a Autodesk was $1,52 billion USD, from which $389,9 million USD was net income. The company gives job to 4 800 employees.

Biggest software products of Autodesk are packages like Map 3D, Land Desktop and Civil 3D which are built on mutual platform AutoCAD that made this company famous. The company already published AutoCAD 2008 which is already selling by the price of $4000 USD while above mentioned upgrades will cost you an additional $2000-$3000 USD. These are the prices announced online on Autodesk's web site.

2.2 ESRI

Jack Dangermond who is also the owner of the company established ESRI in 1969. The company headquarters is in Redlands, California, USA and the company represents the top of GIS software producers. The policy of the company is not to show the companies financial reports publicly, but to provide some basic information on to its customers during its yearly user's conference and so we come to a figure of $610 million USD income during 2006. The company employs 3100 people.

Main products of ESRI are ArcGIS, ArcView and ArcInfo.

2.3 Intergraph

You can often hear people in Intergraph presenting their company as the world leading provider of geospatial solutions. Several engineers from IBM founded the company in 1969, in 1980 company changes its name to Intergraph. The company headquarters is situated in Huntsville in the state of Alabama, USA. The company hires 3000 person all around the world and has approximately 60 industrial organizations that use their solutions in various fields of business, especially in geodesy. 2005 will be written in gold in the history of this company – company released information of an unbelievable income of $576 million USD and doubled its market value. In the beginning of 2006 company had been divided into two parts in order to increase productivity even more: Intergraph's Process, Power and Marine (PP&M) and Intergraph's Security, Government & Infrastructure (SG&I) department. The company became an acquisition of investing group led by Hellman & Friedman LLC (www.hf.com) and Texas Pacific Group (www.texaspacificgroup.com) in the September 2006.

In the long list of products Geomedia is with no doubt the greatest achievement of this company and is available at the price of approximately $10 000 USD. Everyone who has an intention to do something with GIS as a profession will meet with this software for sure.

2.4 Bentley Systems

Bentley Systems' headquarters is in Exton, Pennsylvania where the company was founded in 1983. Keith and Barry Bentley founded the company and Craig Bentley is the head of the company today. This is a typical example of a family business that turned into an important name in the market of CAD and GIS technology software and stands shoulder to shoulder with Autodesk, ESRI and Intergraph. As well as ESRI, company doesn't bring its financial reports to the public, but in early 2006 they reported an income of $304 million USD for 2004. Bentley's has around 1800 employees in about 40 departments in the world.

For us, the company's most interesting product is MicroStation. It is also the most famous product that represents a platform on which Bentley as well as other companies in the world develop their even more specialized solutions for further use.

2.5 Mapinfo

The company was founded over two decades ago in 1986, to be more precise with the Troy in New York as headquarters. Based on the data from 2005, company made an income of 165,5 million USD of income and employed around 900 people in that same year in about 20 offices around the world. The biggest

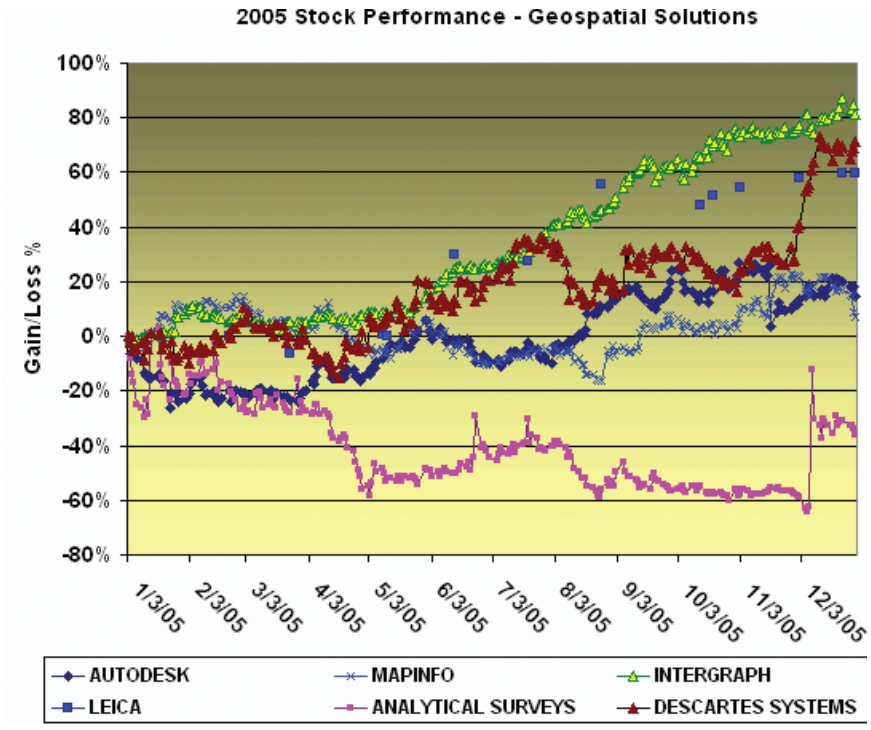

Figure 2.

part of the company's income comes from cooperation with software giants like Microsoft and Oracle to which MapInfo makes easier to develop spatial databases. All the company's departments are in a way related to spatial information market while earlier mentioned companies have divisions in mechanical design and other engineering support solutions.

The main products in their solution suite are: MapInfo Professional and MapXtreme. There has been a rumor for a quite long time that MapInfo is in crisis and that acquisition by Pitney Bowes had already been arranged in March of this year.

2.6 Leica Geosystems

Although it conceptually doesn't belong to the group of already mentioned software producers, most of the manufacturers of geodetic equipment for land surveying also produces software support for their products. With the income made by selling software solutions along with Trimble (www.trimble.com), Leica Geosystems (www.leica-geosystems.com) is mentioned in this review with a reason. In 2005 its market value was increased for 62%. The stock was bid up thanks to the battle for acquisition between Swedish company Hexagon (www.hexagon.se) and Danaher (www.danahermotion.com), located in Washington. Something similar happened last year in Croatia. There was a struggle over Pliva, between an American company- Barr, and Actavis from Iceland. This struggle led to increasing of share prices of Croatia's biggest pharmaceutical company. Finally, Leica Geosystems was acquired by Swedish corporation which made an offer of over 925 million USD offered by an American company.

3. Location determination

3.1 Garmin

Garmin is a very young company, founded in 1989 with the headquarters in Olatheu in Kansas, USA. Garmin follows constant raise of share price which value is somewhere around 54 USD, and the market price of this giant reaches an unbelievabe number of 11,7 billion USD. Just last year revenue was 1,77 billion USD and 514 million USD of that amount was net income. Garmin is putting all of his effort in a merciless battle for taking over this sector of business and they are investing great amounts of money to promote their products by TV ads so they signed a valuable contract with a professional basketball star Yao Ming. Their main motto "We'll take you there" is becoming more and more recognizable in the modern world.

3.2 Trimble

A lot was written about Tribmle in the last edition of "Ekscentar". The company was founded in 1978 in Sunnyvale, California. Their shares are available on the stock at the price of 26,84 USD per share and company's market value is estimated to nearly 3 billion USD. Regarding this sector, Trimble compared to Garmin doesn't mark such good results. It established Trimble Outdoors in response to a growing market for portable and recreational devices that employ GPS, but definitely stayed clear of the PND – Personal Navigation Device space in front of Garmin as it is shown in figure 3. Nevertheless, Trimble is making a slight improvement and its greatest hopes rely on the GIS technology and fieldwork with GPS instruments for precise geodetic tasks and not only navigation purposes. In October 2005 Trimble took over Mobile Tech Solutions Company (www.mtscanada.net) and not long after that, Advanced Public Safety (www.aps.com), company involved in hand devices for public safety used by police in narcotics and other prohibited assets investigations.

3.3 Thales

Thales Group is a large multinational company founded in 2000 in the town of Neuilly sur Seine in France. Thales Group shares are traded on French exchange by the price of 57,18 USD per share. The market value of the company is estimated to 11,27 billion USD. The company is engaged in everything from avionics and air defense systems to banking, homeland security and navigation. The company has around 55 000 employees and has annual revenues in excess of 12 billion USD and 466,2 million USD of net income.

4. Multinational companies that have a significant impact on the sector of geospatial technology

4.1 Oracle

Oracle was established in 1977 with headquarters in Redwood Shores in the state of California, USA. The company has around 56 000 employees and its market value is around 94 billion USD. Only in the past year Oracle made an income of 14,38 billion USD from which 3,381 is net income. In the past two years Oracle continued to add functionality to Oracle Spatial, now a dominant leader in providing the ability to manage geospatial information directly within a relational and object oriented database. Geospatial technology is very much connected with database, display of spatial information is not possible without a previously made database containing all objects together with their attributes of some required area. The motto of the company "Information driven" says everything, especially since Oracle had successfully implemented XML scheme as a defined object in his record that automatically means implementation of GML, (www.opengis.net/gml/).

4.2 Pitney Bowes

Also a big name between multinational companies in this sector, founded in 1902 in Chicago, USA

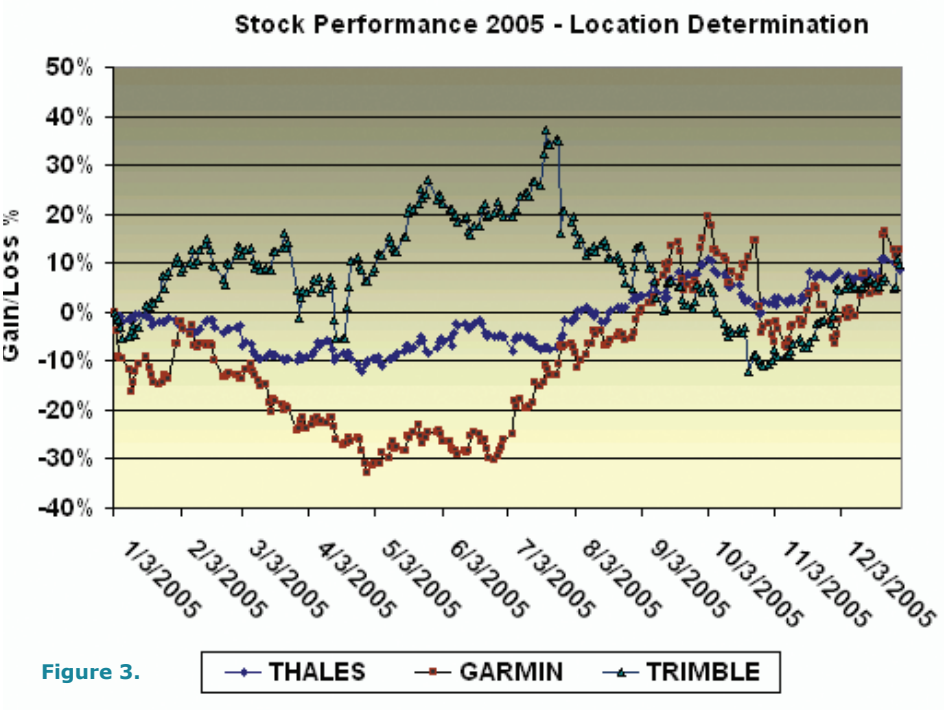

Figure 3.

under the name Pitney Postal Machine Company and in 1920 changes its name to Pitney Bowes. The company primarily signs her name with business of postal technology and shipments, sending and receiving postal evidence and their spatial control in every moment. The company headquarters is in Stamford, Connecticut in USA. The company has around 34 000 employees and makes 5,5 billion USD a year. Share price is around 45 USD per share. In the beginning of 2006 the company announced a deal with Microsoft to embed their Geostan (geocoding technology of choice in applications where location is critical) product into MapPoint Web Services and Microsoft Live Local for address standardization and matching.

4.3 SAP

SAP is a German company situated in Walford, Germany, founded in 1972. by five ex IBM engineers in Manheim, Germany. The company made 12,2 billion USD income in 2006 and currently hires around 40 000 people. SAP is a purely software company whose shares on stock are reaching the price of 45 USD per share. SAP launched a geospatial group within the company in 2005. The company made a big improvement on this field and already presents an important name in implementing GIS. SAP seems to be putting greater emphasis on location technology. A strategic partner of ESRI's for many years, SAP is in battle with Oracle in the business intelligence market sector. Company's successful politics is reflecting on their share price on the stock marker as can be seen in the figure 4.

4.4 Microsoft

Almost everything about this company is very well known. For those who don't know it yet , the company was founded in 1972 by Bill Gates and Paul Allen. The company's headquarters is in Albuquerque, New Mexico in USA. The fact that the company makes 44,2 billion USD revenue, 12,6 billion of net income explains why Bill Gates is year after year on the top of Forbes' list of the richest men in the world. Microsoft is a company too experienced to drop the opportunity to join the fight for their piece of cake on the world geospatial market. Microsoft continues a major push into mobile and web-based mapping. The launch of Virtual Earth (virtualearth.spaces.live.com), later renamed Live Local (maps.live.com), is a competitor to Google Earth (earth.google.com). The big announcements in spring and summer 2005 between the two companies continued in 2006 as each tried to build communities of users who share location-based information via their web platform. Both are looking to "democratize" local information to be shared among its base of mobile users and raise the awareness of the social aspects of interactive communication through its web mapping portals. As an example of the ongoing competitive battle in which these two companies are engaged, Microsoft announced last year that it had acquired GeoTango (www.geotango.com), accompany that offers 3-D visualization capabilities. In May 2006 Microsoft bought Vexcel (www.vexcel.com), the leading international photogrammetry and remote sensing company, not to produce photogrammetric cameras, but because they realized the importance of spatially determined information in modern world and on their way in taking over this market Microsoft wants to have all the best producers on its side.

4.5 GE (General Electric)

GE is one of the oldest and best known multinational companies. A famous inventor Thomas Alva Edison who cooperated with Croatia's Nikola Tesla, founded GE in 1878. Revenues of GE go to remarkably high 163 billions USD, 20,8 billions USD of that amount is net income. Of course, only a small part of this amount is made on the global geospatial technology market. GE continues to focus on the utility sector and released new product enhancements for their Smallworld suite in 2005. The suite mentioned was developed in Cambridge in 1999. In December 2005, the company announced the availability of its Smallworld Analysis and Optimization*4 (A&O) product for information-service designed market.

4.6 IBM

Another multinational company that engages in the battle for this market of geospatial technology, also one of the oldest companies that in its original form dates from 1888, in 1924 gets this name. The company headquarters is located in Armonik in the state of New York, USA. Annual revenues of the company go to 91,4 billion USD, 9,4 billion USD of net income. IBM hopes to leave a big impact on spatial-time analysis systems. IBM today offers an spatial analytic access from the development and tooling environments of WebSphere and Rational, respectively, as well as location-based services implementation in WebSphere, implementing OpenLS standard, for extending the information on demand infrastructure to mobile devices (WebSphere Everyplace Access).

5. Future

In an average city the number of precise geodetic instruments sold in one day, like total stations or two-frequent GPS receivers is nothing compared to the amount of sold navigation devices based on GPS technology with the right GIS surfaces that are implemented in an ordinary car. Navigation devices are becoming widely spent goods. It is obvious that the profit is in this sector of business and all of the big companies are focusing more and more in this direction toward geospatial management which is most visible on the example of market race between giants like Microsoft and Google, that is MS Live Local vs. Google Earth. New generations of cell-phones will regularly have GPS navigation segments implemented , just like most of them have a camera of Bluetooth implemented nowadays. Estimation is that business with PND (Portable Navigation Devices) is growing at 100% annually in the USA and 185% annually in Europe. The display of path on a digital surface is not news today, but the next big step is real-time data and information: real-time gasoline prices, real-time traffic, and real-time weather. The upcoming challenge for these companies is making applications for real-time display and services. They have to work very hard to turn their rich databases into a dynamic base of information (Galic, 2006) that the consumer will really want.

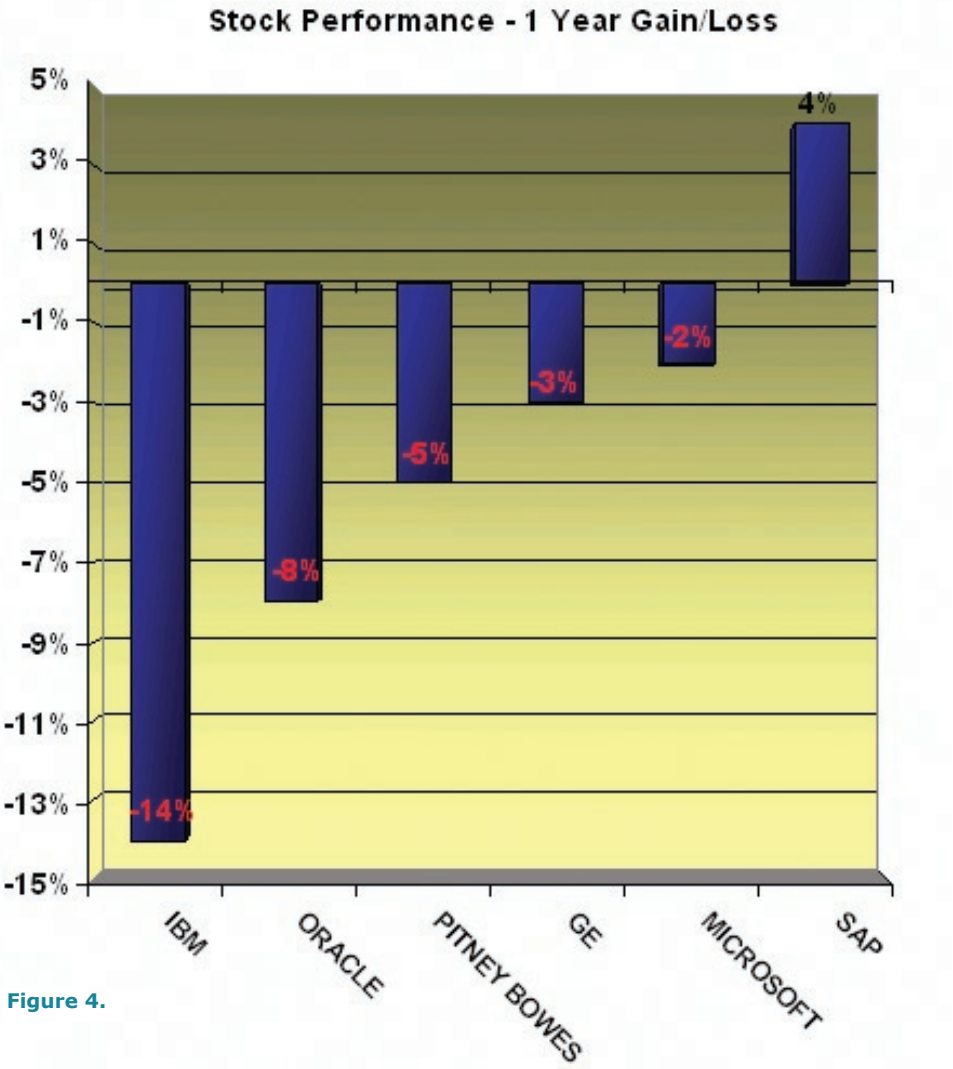

Figure 4.

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Figure 5. Garmin Nuvi 350 Pocket Vehicle GPS Navigator and Personal Travel