Edition No.1

COMPANY PAPERS

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Make it Happen

Why is it that some people reach success and others do not? Why some people do manage to turn their ideas and vision into reality? ... And: *Why it is never easy to answer these questions?*

We have been debating this subject each year when planning our business strategies. In the end, the conclusion seems pretty obvious: some people ***take action*** while the others do not. When you have an idea, you'd better *share* it, *find* solutions and *raise* resources to deliver and reinvest. Software development industry is here for you, more than ever! With these thoughts in our mind we made this report happen.

"Company Papers" is a project designed to communicate, to all our stakeholders, information about specific market conditions and capabilities. We engage ourselves to share active knowledge and some of our thinking points. Local software development market structure, particular trends and events, news about our company, various industry insights and dilemmatic subjects will cover our discussion table.

We encourage forward-thinking and we will raise the game in order to be part of the *change* that IT&C industries are leading. Romania, and Cluj-Napoca implicitly, is continuously defining its' place in the global IT&C market.

The odds are favorable**, just make it happen!**

Codespring Team.

Cluj-Napoca Software Development Market Overview

Cluj-Napoca, located in Transylvania (Romania), has been identified among the cities which are rapidly emerging as leading IT&C centers. This city has continuously provided valuable human capital, due to its elitist institutions in education and scientific research. Currently, Cluj-Napoca holds the pole position for hardware production in Romania and is ranked 3rd in the software development and IT services sector. The dynamics of the local software development market show intriguing growth, in spite of the national industry's decreasing indicators. What is happening in Cluj-Napoca?

Cluj-Napoca IT&C Market Structure

According to A.T. Kearney's "Global Services Location Index" 2009, Romania is ranked 3rd in Europe and 19th in the world, named the "new offshoring star in Europe". The Frost & Sullivan's "EMS Provider Regional Migration Opportunities" 2009 Report places Romania as one of the favorite destinations for near-shore EMS production. In such context, in spite of the overwhelming IT&C volumes generated in Bucharest (capital of Romania), Cluj-Napoca contributed to these ratings by delivering the leading hardware production centers in Romania and by hosting some of the fastest growing software development companies in South-Eastern Europe.

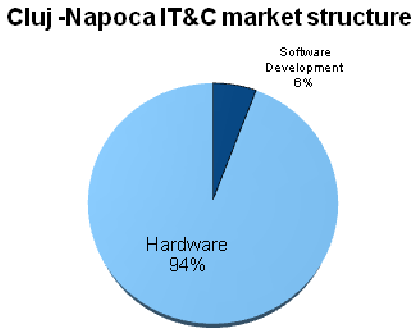

Fig.1: Cluj-Napoca It&C market structure
Source: private research based on official data

In spite of the recession registered in national industry figures, the software development companies subject of this research (in this case "client oriented software development" companies) continued their increasing trend in total turnover (by 23%) and total profits, as you can see the trend lines below.

While Romania's IT&C market was dominated by the Telecom sector (53% of total volume), Cluj-Napoca (and surroundings) distributes its' market shares between **hardware production** (30,5% of national volume, 1st rank/2008) and **software development** and IT services (6.3% of national volume, 3rd rank/2008). In 2009, both sectors registered considerable growth: 129% (hardware- generated by consolidation of new investments) and 23% (software development).

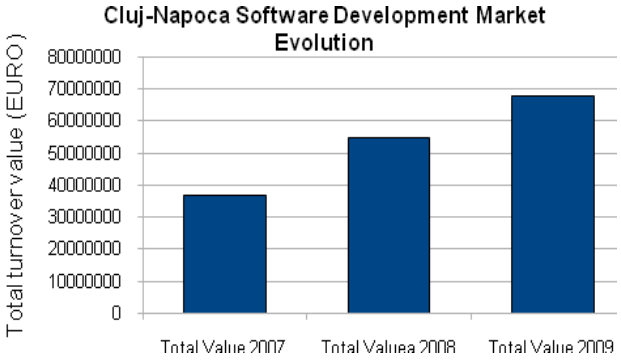

Fig. 2: Cluj-Napoca Software Development Market Evolution
Source: private research based on official data

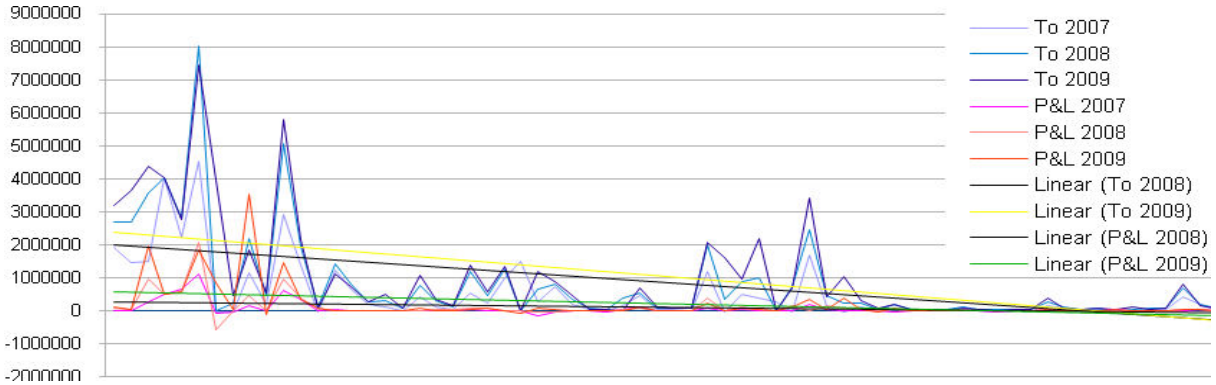

Fig. 3: Cluj-Napoca Software Development 2007 - 2009 Market Indicators / *Source: private research based on official data*

Part of this growth can be explained through the new direct investments, the mergers and acquisitions that have occurred on the local and regional market.

Foreign Investors Lead Local Software Development Market

In order to understand the specificity of this market, we have proceeded to an in-depth analysis of the investors acting on this market. As you can see in the dedicated chart, Romanian entrepreneurs have constantly chosen to invest capital in software development. In 2008, foreign investors have raised the game.

Germany: constantly leading foreign investments on the Cluj-Napoca Software Development market. Holding **30%** of the total market (in net turnover) German companies appreciate the technical skills, the cultural proximity and the great labor pool of Cluj.

The new market share structure reveals that 74% of the total turnover is being produced by companies benefiting from foreign capital : Germany (30%), UK (22%), USA (15%) and the Netherlands (15%) are the major investors; following: Austria (5%), Finland (4%), France and Sweden (3% each), Denmark and Switzerland (2% each), ending with Australia (1%) and Italy (0,5%).

Elite Labor Pool Benefiting of Government Support

The City of 306.000,00 inhabitants (2009 est.), supplemented by av. 100.000,00 incoming students / year hosts 10 universities. Two of them are ranked as elite universities in the country and abroad, each having an Information Technology and Computer Science Faculty. Currently, + 5.000,00 software engineers are active on the work force market and a total of 600 graduates in IT&C are available each year. Ranked with a HIGH H.D.I. (Human Development Index), great linguistic skills and many professionals, Cluj-Napoca is not onlya hub for software development offshoring and nearshoring but also for other BPOs (business process outsourcing).

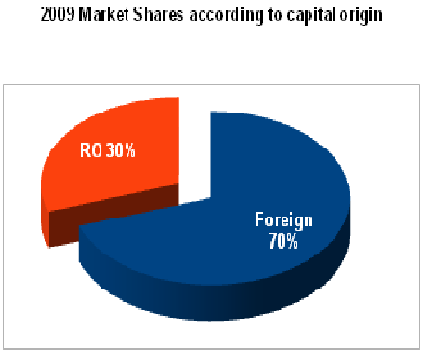

Fig. 4: Cluj-Napoca Software Development Market Shares according to capital origin
Source: private research based on official data

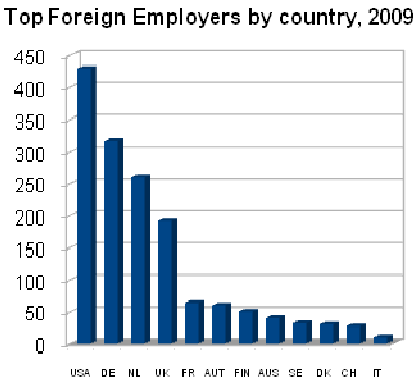

Fig. 5: Top Foreign Employers on Cluj-Napoca Software Development Market, in 2009
Source: private research based on official data

Recruitment did not stop in 2009. On the contrary, on our panel of corporate employees (av. 50% of the total active software engineers) an increase of 0,04 % has occurred.

Top employer: USA. Seaming to follow the idea of turning Romania into the "Silicon Valley of Europe", USA technology companies relocate part of their software development activities to Cluj-Napoca. Great work attitude, flexibility and fast learning skills are amongst the most valuable assets. Lack of Income Tax for software engineers is also a big benefit for all parties.

Attractive Profit Margins

Speaking in profits, Cluj-Napoca may be again your "ace in the sleeve". While consolidated gross profits on the industry have fallen by 14% at national scale, software development sector maintained its ascending trend, but in a more moderate pace. Foreign capital companies registered a profit rate of 20% in 2009, while Romanian capital companies dropped to a rate of 9% profit margin.*(D.C.)*

Color Management

How Did IT Accelerate Color Management?

Broad customer base for high-quality color demanded a solution for color consistency. Achieving the right color resulted in a never-ending development process, consuming time and resources. The solution: introducing color management, a process where the color characteristics for every device in the imaging chain is known precisely and utilized to better predict and control color reproduction.

Why Color Matters?

Several industries demonstrate that color consistency standards are pivotal in marketing & sales and in shaping brand identity.

Colors that sell are a crucial commercial tool for the automotive, textile & apparel, paint & coating, printing & publishing, digital imaging, food, fashion and many other industries. Because most end users can't precisely articulate their preferences, understanding of what is required at the technical level to reproduce consistent color on a day-to-day basis is a challenge.

When purchasing a product:

- 92.6% **regarded visual factors as most important;**

  [Research concluded at Seoul International Color Expo]

- 84.7% **considers color as being decisive** compared **to other choice influencing factors;**

  [www.koreatimes.co.kr]

- 73% **of purchase decisions are taken in-store;**

  [Research by Henley Centre]

- **color increases brand recognition by** 80%**;**

  [University of Loyola, Maryland study]

How Can Color Be Reproduced?

As color is a result of interactions between light sources, physical objects, and the human visual system, color management challenge begins with modeling the complex and variable nature of these physical and psychological effects.

Reproducing color is constrained by differences between capabilities and closed-source technologies in devices, device drivers, applications, operating systems, and networks. In fact, until color proliferated in the consumer electronics market, this was the interior problem of the high-end printing and publishing industries.

To obtain predictable color reproduction **a set of software packages**, color comparison applications and spectrophotometers need to efficiently interact. Computers perform color management based on personalized table, or "color profile," for every device which associates each number with a measured color.

The process is simple: when the computer communicates colors with another device, it does not merely send numbers, but also specifies how those numbers are intended to appear. **Color-managed software** can then take this profile into account and adjust the numbers sent to the device accordingly.

These profiles have to be presented in a standardized way to be read by all programs. The **International Color Consortium** (ICC) was established in 1993 to create an open, **standardized color management system** which is now used in most computers.

This system determined three **key concepts**: color profiles, color spaces, and translation between color spaces. A color space relates numbers to actual colors and contains all realizable color combinations. Upon color reproduction on another device, color spaces can show whether you will be able to retain shadow/highlight detail, color saturation, and by how much either will be compromised.

How Did Software Development Change Color Management?

The two principle color management techniques are colorimetry and spectrophotometry.

Colorimetry quantifies color by measuring three primary color components of light seen by the human eye, specifically, red, green and blue.

Codespring expertise in color management:

Client profile:
Datacolor Inc.,

a global leader in color management solutions and color communication technology

Technical competences in the process:

- **software development** for spectrophotometer driver
- software applications for **paint calibration** for retail
- software solutions for **paint communication** for the automobile industry
- **full life-cycle software testing** with Mercury Quality Center

Spectrophotometry is a precise and accurate technique for the measurement, formulation and quality control of desired colors: it measures the spectral reflectance or transmittance of an object across the full spectrum of human visible light wavelengths, 400 nm to 700 nm (nanometers), enabling precise specification of any desired color.

Software applications used in colorimetry and spectrophotometry **made** the essential processes with **color** – measurement, matching, formulating, quality control – **easily reproducible.** In addition to this, software solutions in color management have assured shorter lead time, have cut production costs by reducing the amount of dye utilized and significantly reduced manufacturing pollutants by discarding dyes that don't match specifications.

As a conclusion, getting involved with the set of software packages and procedures called color management:

- will result in efficient manufacturing costs;
- will boost sales in general;
- will stimulate online retail.

As software applications calibrating the monitor enable users to see the virtual color result of their print product, they may be more willing to do their shopping online, since the image they see better reflects the actual appearance of the product.*(T.S.)*

Drive Your Way With iSpeedCam

Thousands of happy iPhone users have purchased iSpeedCam from the Apple Store to accelerate safely throughout their daily journeys. The on-hand software solution takes necessary security measures to avoid speed tickets. A few reasons that made iPhone drivers purchase this application: it alerts for most Traffic Cameras, gives access to a worldwide camera database, and enables graphical GPS tracking, reading metric and imperial unit systems and you can integrate it with Google maps.

What is iSpeedCam?

iSppedCam is a traffic safety camera warning system designed for iPhone users. The Codespring solution was launched in 2009 to protect drivers from costly speeding tickets and to improve careless and inattentive driving habits. The application offers to be your copilot, producing audible and visual warnings each time you approach a speed camera while driving your car. The display indicates the permitted speed limit, your actual speed and the distance between your car and the registering camera.

What Features Recommend iSpeedCam?

Alerts for most traffic cameras, detecting fixed speed cameras, like Gatso, Truvelo, Monitron and others, traffic lights where a traffic safety camera is present; locations where Safety Partnership camera vans and police regularly check your speed and section cameras that measure your average speed over a section of the road, by registering your entry and exit time.

Gives access to a world-wide camera database. Should you think local or global, the speed trap database of the iSpeedCam will make your journey more convenient and memorable: it covers the European Countries, UK, USA, Canada, Mexico, Australia, New Zealand, India, and some other Asian and African Countries.

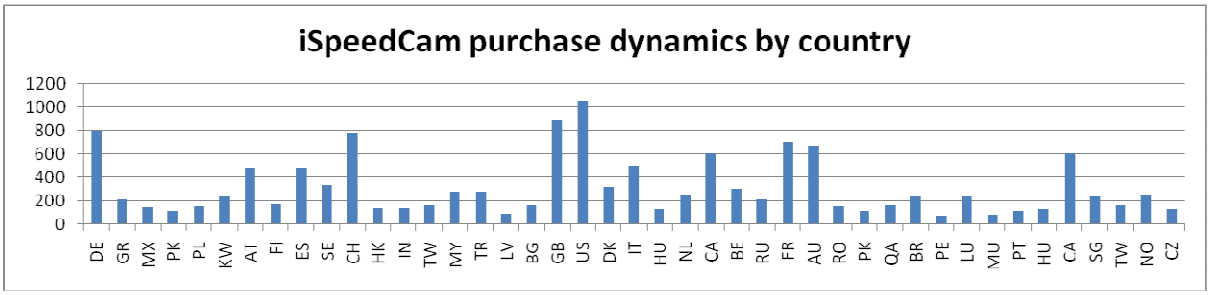

Fig. 1: iSpeedCam purchase dynamics by country/ *Source: Apple Store Statistics*

Lets you edit the camera database. Tailoring your camera database is one touch away. You can disable unwanted cameras or add new ones.

Provides graphical GPS tracking. You can easily follow the displays that outline your current track and calculate statistics regarding your track distance, its total time, maximum speed and many other information you are curious about. These tracks are recorded, saved and stored in the iSpeedCam's database, so you are able to review them later.

Why Choose iSpeedCam?

Photo enforcement systems will surely catch your car in snapshots as the laser radar detectors are set to alert you too late about their presence. By launching iSpeedCam on your iPhone you can avoid costly speeding tickets, keep your attention focused and improve careless and inattentive driving habits. iSpeedCam is your trustworthy driving companion. So, simply sit back and enjoy your way with iSpeedCam.*(T.S.)*

Will Industrial Applications Go Mobile?

Smartphones silently enter the realm of laptops and minicomputers. Having in mind that mobile phones are 100% a consumer device, a vividly debated question is whereas Smartphones can and will enter the enterprise and above all, the factory plant (?).

Best Use of a Smartphone in the Enterprise: Solving Problems

Did you ever think that most used devices are the answer to a "problem"? In the case of "mobile phones" the "problem" was that of "communicating". Nowadays Smartphones help us communicate, organize, simplify and entertain our day to day life. Why shouldn't they help us be more effective in our work? Solving problems in the field seems to be the most attractive function that a Smartphone should address. Retrieving-gathering information, tracking, measuring parameters, calibrating instruments - are just a few of the problems that need a field-oriented solution.

The Mobile Work Force

Following sales force, technical consultants and physicians are next to implement usage of specific applications on their Smartphones. Instead of carrying around powerful laptops and minicomputers, the new customized application on the mobile phone might do the job as well, allowing the carrier maximum mobility and hands-on attitude. One would say that in a production environment a mobile phone could not possibly handle the job. However, research is out for developing ruggedized devices which prove to be reliable and shock resistant.

Shifting to the Employee-Owned Devices

Allowing employees to choose their mobile device is natural and cost effective. Total Cost of Ownership is lowering, yet all these devices enter the corporate firewall. Four main Operating Systems dominate the mobile devices manufacturing: BlackBerry, iPhone, Symbian, Windows Mobile and there is the fifth newest contender- Android. Surely the IT will find them all on the enterprise radar. Assuring configuration, connectivity, training and secure integration into the enterprise platform will need ongoing device management, security and application deployment.

Opportunities and Constraints

According to our mini-interview with Mr. Szelyes Levente – CEO, Codespring, we have discovered as many favorable conditions as many constraints in placing the Smartphone in the factory plant. *"Often technical and technological innovations are delayed because the solution is approached from the antipodal point ",* he declared and continued: *"…However, miniaturization and mobility are powerful trends. I think that Smartphones have a good chance in the industrial site."* Android system can be developed to carry industrial applications on Smartphones; there are already recent pilot-projects.

In terms of constraints, we have listed three main categories: physical, technological and security constraints. Depending on the industry, the Smartphone should be "equipped" accordingly (e.g. bar code readers, measurement tools, etc), lengthen their autonomy time, ruggedize for hazardous environments and avoid being accessorized with a "tool kit". Technologically, we should think of increasing processing speed, memory capacity and of solving incompatibility issue. Security is a constant point to approach when having non-territorially regulated access to information. Any coin has two sides (!).

In the end, our thinking point remains open to discussion. Yet, we keep an eye on G.B. Shaw's statement: "*Progress is impossible without change, and those who cannot change their minds cannot change anything."(D.C.)*

Investing in the Future: Smartphones

Among young people in Transylvania 75% of smartphone users are male, 20% of them change their mobile phone once a year, and Nokia is ranked 1st in the top of smartphone brands – according to a research concluded in June by a small group of students attending Babeş-Bolyai University, Cluj-Napoca, in partnership with Codespring.

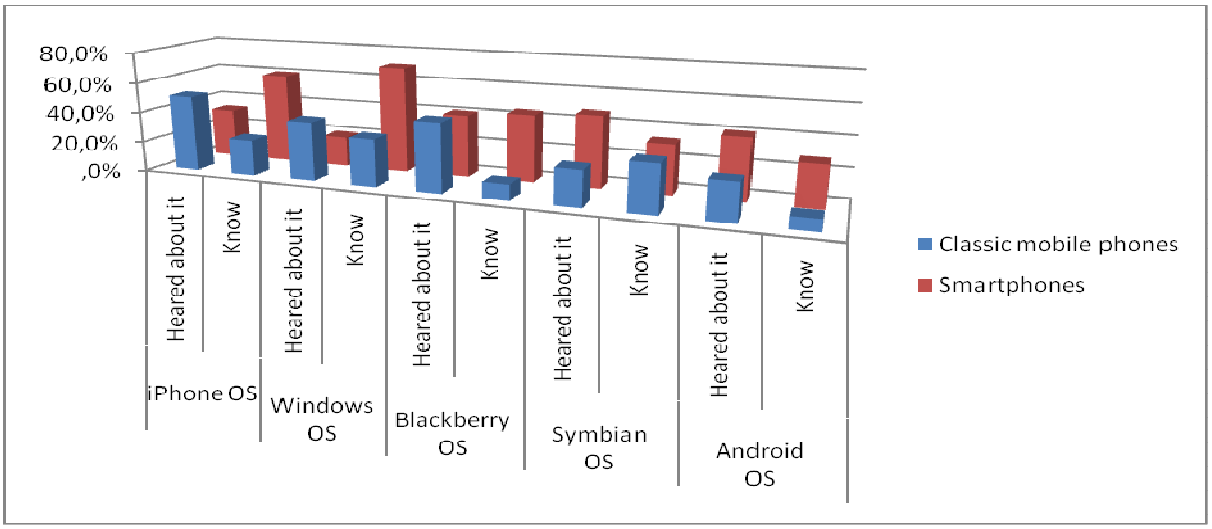

Figure 1: Knowledge rate of operating systems
Source: Scientific Research held by UBB - FSEGA students under the European POSDRU program, 2010

Smartphone owners offer more money for acquiring mobile phones: 39,3% would spend between EURO 70 and Euro 145 per device, 24% would spend even more, between EURO 145 and EURO 240, while 19,3% would actually give EURO 145 – EURO 357. Lower market value results for classic mobile phones, 35% of total respondents would spend an average of EURO 25 – EURO 70 per device, 34,5% would give between EURO 70 and EURO 145, while another 12,1% would spend less than EURO 3 and EURO 24. Smartphones are being replaced more often than classic mobile phones. 51% of total respondents own a Nokia mobile phone, 14% – Sony Ericsson, 12% – Samsung, 6% -LG, whilst iPhone, Blackberry, HTC and Motorola brands are preferred, each by a 3 % segment of total respondents (in sum of 12% from the questionnaire panel).

The research was part of the European POSDRU program, developed within Babeş-Bolyai University, The Faculty of Business Administration and Economics, major in Marketing along with the direct contribution and support of Codespring mobile specialists. The project's major goal was to ensure the professional setting for internship.

6-11 June in Germany: Codespring Business Log

Codespring took part in the Economic Mission in Germany launched by ARIES - the Romanian Association for Software and Electronics Industry and sponsored by the Ministry for Small and Medium Size Enterprises, Trade and Business Environment. Locations: Stuttgart, Bonn, Aachen.

Together with fifteen Romanian software industry representatives, Codespring has met its counterparts from the Frauenhofer Institute for Manufacturing, Engineering and Automation, Aachen Chamber for Industry and Commerce and local software vendors. All participants have regarded the event as a fruitful interactive matchmaking session. As a result of the undertaken business trip Codespring has established prospective partnerships for outsourcing projects.

Reg. No. J12/1330/2005
VAT No. RO 17459688
RO-400375, Cluj-Napoca, Deva Str. No. 1-7
Phone: +40 364 113 110
Fax: +40 364 113 111
E-mail: office@codespring.ro
Web: www codespring.ro

Edition prepared by:
Tünde Székely – PR Specialist (Codespring);
Diana Ciorba – Marketing Consultant (Elf'st);
Dénes Csáki – Senior Graphic Designer

www.codespring.ro