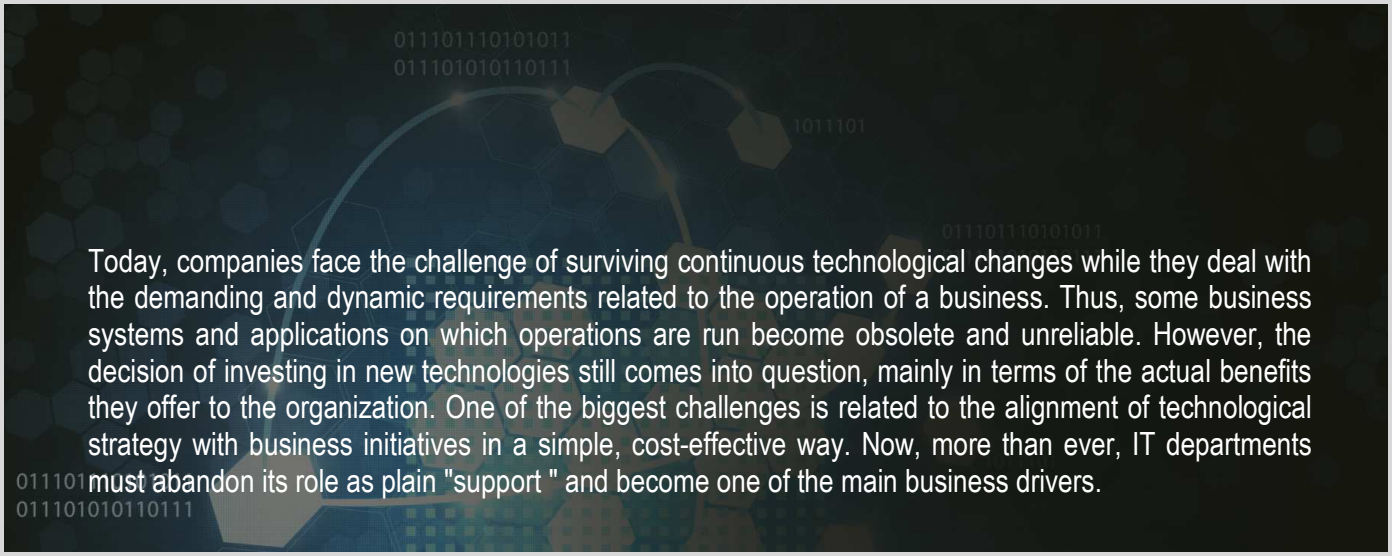
IDC# MX13096

IDC VENDOR SPOTLIGHT - Sponsored by GeneXus

Software Internal Development:

An Option for Optimizing Your Investment in IT

September 2013 • Claudia Medina



Today, companies face the challenge of surviving continuous technological changes while they deal with the demanding and dynamic requirements related to the operation of a business. Thus, some business systems and applications on which operations are run become obsolete and unreliable. However, the decision of investing in new technologies still comes into question, mainly in terms of the actual benefits they offer to the organization. One of the biggest challenges is related to the alignment of technological strategy with business initiatives in a simple, cost-effective way. Now, more than ever, IT departments must abandon its role as plain "support " and become one of the main business drivers.

Definitions

What exactly are the software development tools? In order to understand how they operate, it is important to know first the segmentation of the software market. The primary group is divided into three large blocks:

· **Applications software:** A set of programs and/or applications covering specific functions and/or needs. Some examples are: consumption, collaboration, content, business resource management, supply chain and operations and manufacturing, engineering, and commercial management applications.

· **Infrastructure software:** Programs that serve as base for the operation of other programs, such as networks and systems management, safety, storage, and operating systems

· **Development and implementation software:** Programs that mainly contribute to the creation of other programs, such as software for structuring and managing data; developing and implementing applications; analyzing tool quality and life cycle, servers and middleware, process integration and automation; and data access, analysis, and delivery

In the last category, development and implementation, we find the following types of applications:

· **Application development software:** This encompasses development tools and environments used by business developers and analysts to create "applications" that may be web-based, client/server developments, text- or mobile-based. This type of applications includes the development environment, tools, business standards, modeling, and systems architecture.

· **Software for analyzing tool quality and life cycle:** This type of software is a support complement for the application development category, since its main function entails performing unitary tests of practical functionality for applications developed to ensure software quality. It also includes tools designed to manage software revisions in order to achieve better control over changes and versions.

Background, Challenges, and Adoption Challenges

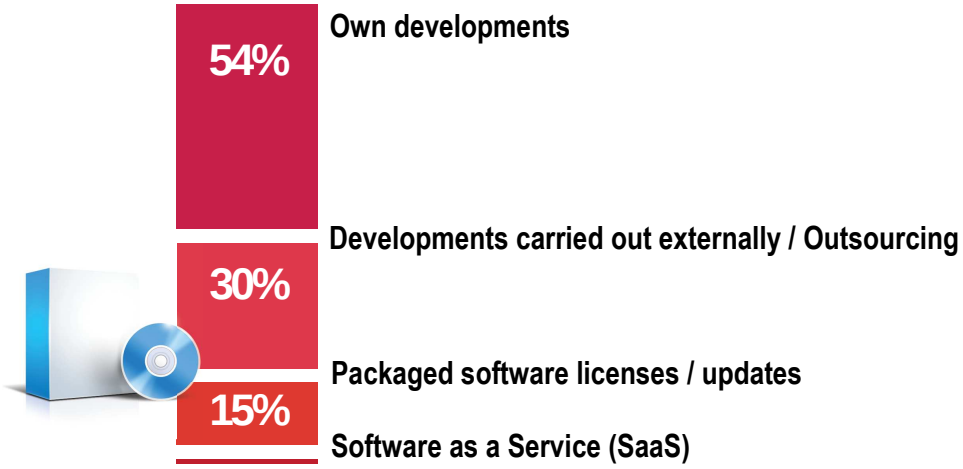
The current global macroeconomic perspective is not very favorable. This is why enterprises are concerned about speeding up and optimizing their operations with no direct impact on costs.
IT budgets are increasingly being cut back and diverted mostly to areas where technological changes and the different opportunities offered by phenomena such as social media, user mobility, and cloud computing are assimilated more quickly and efficiently.

It is critical to manage systems that concentrate information generated by day-to-day operations and serve as a base for adopting important decisions determining its course. Within this context, doubts arise as to which would be the best way to manage and update these systems and, above all, to ensure that they are highly functional when faced by evolving demands.

In a research study carried out by IDC in July 2013, CIOs from different companies were asked the investments in software solutions they intended to make in the next 12 months. Results show that majority of the executives surveyed intended to make an investment based on in-house developments while 30% said they prefer to outsource (see Figure 1).

Figure 1: Investment in Software

(Next 12 months in Latin America)

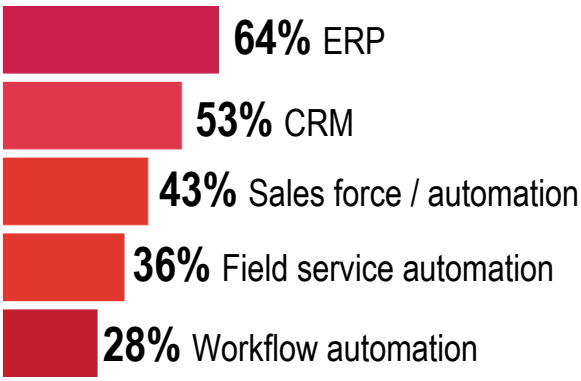


Source: IDC Latin America IT Investment Trends 1H2013

The development of mobile applications is an issue that has increased in importance; market complexity and specialization demand developing solutions differentiated by type of device and operating system, in addition to the fact that the bring your own device (BYOD) factor has contributed significantly to the development of applications aimed at improving the protection and confidentiality of information. According to data included in IDC's Latin America Investment Priorities: Wireless and Mobile Solutions 2013, approximately 22% of companies already have a mobile application strategy in operation; 15% are in the implementation stage; and 19% will have strategies underway within a period of 6 to18 months.

Figure 2: Most Used Applications Types

(in order of importance)



Source: IDC LA Investment Priorities: Wireless and Mobile Solutions 2013

(*) Note: Some of the applications such as ERP or CRM, are only partially executed in mobile devices

Before deciding on implementing a new IT system, questions are raised, mainly related to issues such as compatibility with legacy systems, platform migration, training and implementation costs, as well as the system's design and architecture. Perhaps the most common limiting factor is keeping business operations tied to current systems in the fear of losing information.

Many companies today could be operating in a more efficient way if they had automated solutions in place. In this respect, the problems limiting the operations of an IT strategist revolve around the following issues:

- **Fragmented processes and databases**. Information is decentralized and poorly homogenized; there is no knowledge repository and, therefore, its management must be carried out in an independent and separate manner. There is no process documentation.

- **Continuous technological evolution**. The creation of uniplatform developments limits system migrations and the free use of applications. Accelerated technological evolution represents a latent risk in the rapid obsolescence of IT systems thus created.

- **Business dynamism**. Every company evolves and reacts to the dynamism of the market where it operates, which in a given moment may render the implemented systems obsolete and poorly functional.

- **Service quality**. The capacity to solve problems and the availability of help are very important when applications are critical. IT systems suppliers do not always have high service standards for these items.

- **Innovation**. Innovation processes must not be affected by IT infrastructure and established system limitations. Every company must have a continuous innovation process, which allows it to face market competition.nula.

These limitations cause unnecessarily higher costs and contribute to the poor preparation of the work team in assimilating new technologies and taking on tasks that involve greater responsibility. For these companies, it is a priority to automate and optimize all systems with the aim of providing functional information in real time to all users and company levels.

Investing in more intelligent and automated systems must not be deemed an expense. Rather, it should be seen as a long-term investment that will enable work environments to become more stable, to be capable of evolving alongside the changing needs of a business still aiming for success.

Many companies today could be operating in a more efficient way if they had automated solutions.

The 3rd Platform

When designing an IT strategy, incorporating key elements that maximize resources and information available in the company's environment must not be forgotten. IDC has identified a model based on four pillars (outlined in Figure 3):

- **Mobility.** In this element, we find the different devices (notebooks, netbooks, ultrabooks, media tablets, ereaders, and smartphones) and the applications developed specifically for them. Currently, it is possible to distinguish the clear function of each one (sending emails, consuming multimedia content, content generation, etc.) and their growing importance in the workplace.

- **Cloud services.** These are self-service standard solutions, offered through the network or Internet and characterized by the capacity of increasing and eliminating resources on demand. Among its main advantages are the availability and access to information.

- **Big data.** This encompasses IT architectures and technologies designed to efficiently extract value from large volumes of a great variety of data with high-speed discovery, capture, and analysis

Figure 3: The 3rd Platform

Source: IDC, 2013

- **Social.** "Social" companies are defined as organizations that apply emerging technologies such as Web 2.0, along with an organizational, cultural, and process change in order to improve business performance and operations in an increasingly connected economic environment.

Currently, many companies have already included one or several elements of this platform in their strategy, which has served as a starting point for the different industry solutions offered in the market today.

As companies tackled these four pillars for software development, they became faster and more efficient in responding to growing and changing market demands. It is worth mentioning that mobility helps companies respond to a trend driven by employees themselves, who use their personal devices to access company information and/or applications — a phenomenon known as "bring your own device."

Knowledge and Automation Management

In the last few years, some manufacturers have noticed the potential of combining dynamic integration technologies (such as in SOA, ESB, CEP, and other BPM technologies) that are capable of offering direct management of business processes. They have also included a data analysis factor in real time, facilitating the decision-making process based on actual information, especially through queries that are automated and available at any time.

The purpose of these converging functionality platforms is to integrate business and data processes in real time, mainly to transform the company based on database integration and automatic code generation, or software development based on the automatic management of knowledge.

The development of this type of automated applications also requires a mobility component that enables quick migration from one platform to another without significant losses in time and costs.

We must not forget that the key in operating this kind of technologies is based on suitable knowledge management: there is nothing more valuable to a company than being able to use or even reuse the knowledge and expertise gathered throughout its existence, and there is nothing better than doing so in an automated way and with intuitive capability.

Automation Advantages

Automated tools are very useful for global business management. Other tangible benefits include:

- **IT equipment focused on the business.** As management time for manual tools will be considerably reduced, IT staff may focus on producing and designing strategic content for business development.
- **Reduction of system update and migration costs.** Any change in business rules introduced will be reflected in all relevant areas, with no updating costs.
- **Technology and business strategy alignment.** Technology is just a business facilitator; therefore, it must adjust to its rules. Efforts must focus on new business opportunities.

At the time of choosing a supplier for this kind of services, the company must be sure of the goal it intends to reach, as well as carry out an inventory of the capacities and the information that it has in order to design the best strategy based on the company's needs.

There is nothing more valuable for a company than being able to use or even reuse the knowledge and expertise gathered throughout its existence, and there is nothing better than doing so in an automated way and with intuitive capability.

Supplier Profile

GeneXus is a system development tool used globally by over 100,000 developers in more than 8,500 companies.

Developed in Uruguay at Artech's laboratories, GeneXus is a pioneer in the development and automatic maintenance of critical applications, which are capable of surviving and adapting to the dynamic evolution of business and technology.

The peculiarity of this tool lies in the development of software applications based on the management and use of business knowledge by the different organizational users. Combined with the modeling of everyday operative processes and the particular needs of each company, this allows an automatic and customized generation of the databases and programs needed.

The main characteristics of this tool are:

Extensibility. It enables more active community participation, as it allows integrating historical knowledge and linking developments to their applications, as well as extending its capabilities through programs created for specific purposes.

Integration. The capacity to "integrate" the work of all the members of the team at the corporate level is one of its main qualities. This tool offers the possibility of setting a high standard for collaboration in processes such as documentation and developer knowledge.

Multiplatform. Since it does not use proprietary languages, GeneXus generates programs in standard market languages. This offers some advantages for the client such as greater program efficiency and availability of free use. This tool generates 100% of the source code and does not have a runtime.

Intelligent maintenance. Every time an object is modified, its description automatically follows; the change is replicated across the entire system structure. The migration of structures and platforms is friendly and automatic, and problem-free.

Usability. The development environment for this application is focused on meeting the developer's needs. It has a developer-friendly environment based on the association of objects that look familiar to the user and are intended to model business reality. The reuse of objects and codes is not a problem for this tool, since they may be used directly; they may also be adapted to the specific needs of the user.

Teamwork. This tool offers teamwork capability, designed for distributing and consolidating knowledge in such a way that individual work is possible. When developers work "offline" on the tool, the system prepares to carry out an impact analysis before consolidating the work performed by all the members of the team. Thus, once the information has been reviewed and approved by the leader, it will be automatically consolidated, with operational assurance. In the event that the team members work "online," the GeneXus model operates simultaneously with several analysts, defining any object independently (procedures, reports, work panels, web panels, etc.).

Benefits for Organizations

- **Productivity increase.** Processes automation allows programmers and IT staff members to make the most out of their skills and focus on critical business activities and processes that contribute greater value to the company. One of the main benefits of automation is that users have access anytime to a universal information repository updated in real time.
- **Cost reduction.** Since this is a system capable of updating automatically and globally at every level, it allows for training and development savings; in the long term, a reduction of costs derived from a system update or migration will also be beneficial.
- **Reduction of "time to market."** This system also allows for "time" savings, since user requirements may be validated from the design stage through 100% functional models. It also offers the possibility of adding new functionalities as business needs and rules evolve. It is an intuitive and flexible tool that may be adapted to the client's technological needs.
- **Use of current infrastructure.** It allows a simple and functional integration of new applications with company legacy systems. As it is a development based on the sheer management of knowledge, it does not depend on available platforms, architectures, and technologies.

Solution portfolio

GeneXus' portfolio comprises a complete suite of work tool solutions set forth in Figure 4.

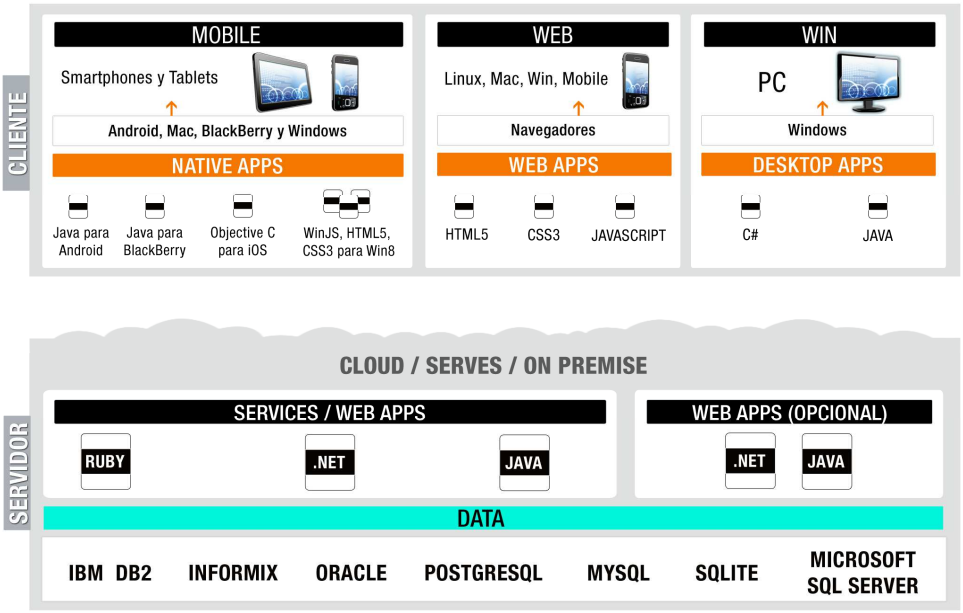
Figure 4: GeneXus Work Tools

GXflow	GeneXus Server	GXtest
Business Process Management Workflow tool that allows modeling, automating, managing, and optimizing business processes.	**Collaboration and versioning** Tool that allows coordinating teamwork of teams gathered in one or several locations, distributes the different tasks, shares knowledge bases, and backs up information.	**Testing and quality control** Tool for carrying out system tests that allows automating functional tests from the early development stages.
Principales características		
* **Technological independence** * **Automatic** * **Optimization** * **Immediacy** * **Simplicity** * **Multiple integration** * **Interoperability**	* Automation * Accessibility * Projects control * Reliable * Autonomy * Various procurement plans	* Technological independence * Adaptable * Agile * Friendly interface
GXquery	**Gxportal**	
Report and analysis Report tool based on a "Drag & drop" system of filters and variables for the end user	**Corporate websites** It allows designing pages, creating user communities and updating contents through a WEB interface.	
Principales características		
* Visual and friendly interface * Variety of graphic components * Availability * Flexibility in the creation of control and query panels	* SaaS mode * On-premise mode * WEB interface * Centralized management * Agile and friendly interface	

Source: GeneXus, 2013

Technologies supported for its implementation are shown in Figure 5.

Figure 5: GeneXus Supported Technologies



Note: Furthermore, GeneXus supports and generates applications in legacy languages such as COBOL, RPG, and Visual Fox Pro.
Source: GeneXus, 2013

Throughout two decades, GeneXus has evolved with technology, seeking to add new functionalities and contents into its development platform. In its latest version, it included the possibility of developing native applications in the main mobile platforms, helping in the development process by hiding the complexity of the environment.

GeneXus' clients enjoy the benefits of creating and including critical applications that may be easily adapted to changes arising from the natural evolution of a business. Its sheer management of knowledge allows using a company's know-how without its core activity, or the industry to which it belongs, being an obstacle for development. Sixty-five percent of GeneXus' income comes from its corporate clients, while the remaining 35% is generated by small and medium-sized enterprises. Some of its main international clients are Toyota, DHL, Mitsubishi, Sony Computer Entertainment, HSBC, and Scotiabank; in Mexico, it provides services to organizations such as Ferrovalle, TV Azteca, Marina de México, Secretaría de Finanzas del Estado de Guerrero (SEFINA), Secretaría de la Defensa Nacional (SEDENA), Banorte, Grupo Salinas, and Pemex, among others.

GeneXus' Strengths and Challenges

The flexibility and automation offered by GeneXus grants a series of advantages to companies, most notably the 100% assimilation of a business operation model, which turns it into an ad hoc system capable of evolving according to the company changes and demands. GeneXus is a friendly and intuitive system that requires a short training period: all you need for it to operate is the staff to have basic knowledge on relational and logical databases.

In these times, debates related to the optimization of organizational IT budgets are a good opportunity for GeneXus — software development is one of the critical issues for a company. Deciding to invest or not in this category is itself a complex issue given the options existing in the market. However, once the user understands the production capacity offered by this type of tools, the concept of investment will become clearer. Perhaps one of the most important challenges that remain is raising user awareness on the advantages offered by in-house development versus options such as outsourcing or traditional development systems. In this context, we must specifically highlight the advantages of automation (from the early stages of design to application documentation), systems migration in consideration of the maximization of current resources, and the final impact on costs and time resulting from the dynamism of a technology-driven business.

Conclusions

The paradigm in which information technologies are seen as just an area of support for the company has been overcome. In this digital age, functions developed by the IT department must be fully aligned with the strategic goals of the business, in such a way that they become a significant driver in the successful development of the company.

IT systems on which company operations are supported play a very important part in the decision-making process; therefore, particular attention must be given to their architecture, design, and functionality, regardless of the fact that they were provided by a third party or that they were internally developed by the company. These systems must be capable of meeting the demand for information of different users and be flexible enough to incorporate the changes generated by updating technologies and business evolution.

After all, it is fundamental to consider the availability of systems and applications through IT mobile platforms, as this is an aspect that becomes increasingly important in the business field since it can bring about important benefits, such as an increase in productivity and process efficiency, a reduction of time, and access to information at any time. Due to this development, two out of every ten companies in Latin America now hire over half of their staff as "mobile employees"; the BYOD phenomenon is also becoming more common in organizations.

Due to the impact of the different issues analyzed herein, it is very important that companies carry out their software developments taking into account market trends.

IDC Mexico: Manuel Ávila Camacho #32, int. 1102, piso 11, Col. Lomas de Chapultepec, Mexico, D.F. Telephone +52 55 5010-1400, http://mx.idclatin.com.