Technological Evolution Arrives at the Base of Processes.

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Technological evolution has completed a development cycle within Brazilian companies, when online automation arrives at process bases. Solutions using the concept of radio-frequency, associated to software that intelligently creates middleware, are altering performance and risk standards in processes that have been manual thus far.

Looking back to the 1960s, we note that youths became qualified for the work market by taking touch typing courses on mechanical machines. Computers were sacred monsters kept far from daily life, restricted to large corporations or universities. Communication in companies was all written, by means of the so-called IC (internal communication). Among differing locations, the TELEX was used.

Ten years later, in the 1970s, the era of electric touch typing machines arose. IBM's super-powerful mainframes and the software specially developed for their operation had storage and processing capacities similar to those of a common household PC of today. Systems developed in DPCs (data processing centers) employed dozens of analysts, programmers and personnel specialized in processes and controls.

These were the so-called in-house developed systems. There were battalions of people developing and maintaining companies' production software. Communication occurred via e-mail, by means of dumb terminals and, between distant units, the FACSIMILE was used for sending and receiving documents.

In the 1980s, Brazil entered the microcomputer age, which became a global trend, especially boosted by companies like IBM, Apple and Microsoft.

Brazilian companies initiated telecommunication modernization processes. Satellite communication changed the way of exchanging information across long distances. Who doesn't remember the complications involved in operating decentralized plants? There were difficulties in unifying organizational structures and systems. The risk of paralyzing critical processes were expressive. Dial-up, to that point the only communication alternative in use, was characterized as an expensive and unstable technology.

As such, for a country of continental proportions like Brazil, there was no other alternative than to shift to satellite communication. In the 1990s, this solution became very popular, allowing business executives to adopt a range of localization strategies, according to the needs of markets, consumers and suppliers. Basically, it was possible to select the best strategy, focusing on the core business of different companies, as distance no longer represented a hurdle.

With this arose a new age of technological development with migration to unified platforms, by means of so-called ERP (Enterprise Resource Planning). Specific systems for processing accounting, tax, accounts payable, accounts receivable, inventory, among others, were supplanted. The difficulties in unifying databases, fragility in information unit, in operational management and control of companies were overcome. Control usually overseen by people shifted instead to processes. ERP systems, with integrated databases and processing, created a new path to generate information and support decision making, with greater quality and promptness.

Even corporate accounting acquired a new status, becoming a source for the analysis of performance and the information that steers management. The use of ERP also facilitated the creation of DWH (data warehouse) and so-called BI (business intelligence), a way of extracting intelligence from organizations' centralized databases.

Large information servers gained space with the evolution of microchips. The autonomy given to users allowed for a reduction in the size of hardware and an increase in the complexity of software. The modernization of computer networks accompanied this evolution. Currently, computing occurs via cloud (cloud computing), which permits sharing of the storage and processing power of computers and information servers by means of the Internet. Information can be shared and accessed from anywhere, at any time and, even without the installation of specific software, shared nowadays via cloud.

In this trajectory, descending from the clouds to the base, the time arrived for the base data of operations! The annotations of the processes of the so-called "factory floor"; or the controls and movements of the traditional warehouses; or, still, the processes for the maintenance or control of assets, among so many other basic processes that directly affect productivity and results, are the focus of this new wave of evolution.

It is noted that, although the base data is fundamental to correct, concise and agile information, in the majority of cases the processes use parallel tools, such as digital spreadsheets, lists, formulas on paper or, at most, solutions with terminal entering and integrated software. Processes coexist with risks in their daily collection, making operations fragile and inaccurate. Without statistics to gauge errors, the failures and resulting costs, it is impossible to calculate the exact dimension of this inefficiency.

Planning and budget models, regardless of their sophistication, are prone to these misgauged and unidentified failures, distorting and generating surprises in management.
Thus, it is precisely in the base of the operational processes that a new operation concept is being employed. It is characterized by spatial connectivity and immediate transmission of data taken from databases, without the need for transcription, typing or any other user action.

RFID, short for Radio-Frequency Identification, is a technology that uses radio-frequency to automatically identify, through the remote storage and recovery of data, using radio signals, with the use of transceivers, usually referred to as RFID tags. Information is transferred through these devices, while passing through an inducement field. Obviously, we are talking about an interconnected environment. A solution composed of integrated hardware and software for the specific purposes of each process. There is also the so-called "middleware", software that permits the integration of reading devices and tag antennas. Middleware permits detailed registration and analysis and online integration of ERP and BWI databases. Middleware is

fundamental in this evolution and is currently the leading challenge in its advance, as its stores process intelligence. Estimates show that this type of technology generated transactions worth three billion dollars in 2010, according to the Gartner Institute.

The advance in the use of these solutions is unstoppable within Brazilian companies. It is merely a question of time. But, even today, there is no turning back. As there are companies without ERP, for example, the use of technology will expand, little by little, conquering and triggering the comprehension and understanding, on an increasing scale, of business people and executives with regards to the exponential advantages of this conceptual change. The evolution of this technology is completing a cycle of technological development inside Brazilian companies, that, without doubt, will be fundamental to the management attaining an accurate picture of what goes on in organizations, in their most basic and critical processes.