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## **Time has come to change Brazilian banking platforms**

A hybrid solution – internally developed core applications connected, whenever feasible, to vendors' packages both supported by SOA - appears to be the next model for banking platform in Brazil

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## Note

This report aims to present how the Brazilian large banks are considering the decision to renew their banking platform. The author interviewed many bank managers, consultants, IT suppliers and IT experts. The report focus on the presentation and analysis of the opinions of the Brazilian bank decision makers on the subject. Forrester may have different views or opinions. Whenever it was felt as necessary to present an opposing view from Forrester, it was made in an explicit way.

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## Executive Summary

### **A hybrid solution – internally developed core applications connected, whenever feasible, to vendors’ packages both supported by SOA - appears to be the next model for banking platform in Brazil**

*Forrester uses a narrow definition of core banking that includes deposit, credits, loans as well as basic client data.*

IT executives from Brazilian retail banks report that, as companies grow in number of clients and in quantity of transactions per second, legacy systems are becoming bigger and bigger, and less and less reliable. As a consequence, systems maintenance is becoming excessively expensive, in particular the maintenance of the core banking applications, which is responsible for the relevant functions for a bank’s business, as well as comprehensive multi-channel functionality. The amount of unexpected downtime is getting the attention of top management which is becoming increasingly worried with the quality and the performance of current platforms and insecure about the systems ability to support the expected business growth. Even the IT executives from Brazilian retail banks are questioning whether the current banking platform will be able to continue supporting the accelerated company growth as well as the innovative ideas.

Also, competition for new clients and the improvement of the efficiency ratio (expenses divided by revenues) are key objectives of the banking business in Brazil. There is the conviction that the banking platform is a central element in improving banking competitiveness.

Therefore bank executives believe that banks in Brazil have reached a turning point. Not renewing the banking platform exposes their growth plans to higher risks than doing it.

Of course, nobody ignores that renewing the platform is a very big project with high costs and considerable risks. Bankers consider that the risks are becoming manageable and have been mitigated by applying Service Oriented Architecture (SOA) principles to new applications developed as well as by introducing more mature software packages also based on SOA technologies. Also costs are now manageable because they can adjust the rhythm of deployment of the new platform according to the availability of financial resources.

The deployment of SOA allows for the gradual renewal of the banking platform. When considering the best approach to renew the systems, bank managers and IT experts agree that the best way is to maintain and adjust the core systems and, whenever possible, to adopt vendor solutions (software packages) for the satellite applications. The decision to buy or to develop satellite applications is strongly influenced by the need for differentiation. Applications that would play a stronger competitive role when made different from competitors would hardly be implemented with software packages. This hybrid solution would allow extra time to consider the decision of deploying market solutions for the core system in the future.

Two renewal approaches are being practiced by the Brazilian banks. One is to do it under a single large project, as Banco Bradesco is doing. The second approach, being followed by Banco Itaú and the majority of the banks, is to adopt the SOA, create the basis for it, and start converting applications as they need renewal. Bottom line conclusion is that the renewal is on the way. Some banks are already doing it, others will start soon.

## Influencing Factors

Several factors impact the decision to renew or not the banking platform. Banks have different degrees of sensitivity to these factors and will react to them in different ways.

### ***Motivations for renewal are plenty***

Many important factors that would incentive the platform renewal were identified. The first one is the status of the legacy systems which are not considered to be satisfactory by any retail bank in Brazil. The quality of these old systems - degraded by the many changes applied over time – is getting below the modern requirements. The systems are becoming unstable, less reliable and not very well known. In some cases, the developers of these old systems have already retired from the banks and left incomplete documentation. Also, the costs for repairing and updating these legacy systems have become extremely high.

*In IT the term “legacy” has acquired the connotation of something old and deficient - Forrester prefer to use the word “vintage” when referring to something old in good state.*

Very special new business requirements do not appear to play a strong role in the decision process to change or not the banking platform. In general, banks cannot have a good enough picture of future needs to make very expensive decisions based on it. Banks executives know that the requirement for new product or new channels or new processes should be met quickly. Therefore agility and flexibility become strong requirement factors. What is also influencing the decision is the fact that the Service Oriented Architecture (SOA) appears to have won the hearts and minds of every bank CIO or IT architect. Implementing SOA would facilitate changes to the legacy systems, and create the opportunity to renew them. At this stage, however, banks appear to approach SOA more as an environment for software modules reuse and for structuring the software programs – still no real services orientation can be seen.

### ***Obstacles for renewal are also strong***

The most important factor that makes it difficult to decide to renew the banking platform is the high cost and the complexity of the change. Because the project is complex and the banking platform plays a very key role in running the business, the project is considered to be of high risk. Also consider that, in general, the decision is made by the Managing Board of the bank which is not familiar with the very technical aspects involved in this decision. So, they say, it is better to think twice before deciding to go ahead with the platform renewal.

Interesting to notice that another aspect that is making it difficult to decide to renew the platform is the good image the existing platforms have before the non experts. They argue that the legacy systems, or at least the core systems, have been delivering up to the needs for decades, and they may as well continue doing so for ten more years.

### ***Other Influencing Factors (in favor or against it)***

There are also some very subjective factors that are difficult to consider in a research, but they influence the decision. Among them are company internal politics, where interests of individuals or departments may not be aligned with corporate interests, the company culture and style, which might be conservative or daring, making the pendulum bounce to one side of the decision spectrum. Also external interests may influence the decision - consider that market analysts opinion and consulting advices are taken seriously by bank executives in Brasil.

***A big success may cause a domino effect***

If one considers that changing the banking platform may cause a rupture with the existing solution, one has to ask what could trigger the difficult decision to go ahead. Some catalytic aspects may play the role of accelerating the decision process. For instance, the definite perception that future company growth is blocked by limitations of the software applications what could trigger the decision.

Pressure from top managers, dissatisfied with the existing solution, or from overseas/headquarters making global decisions, may provoke a quick decision or block it.

Finally, the fact that some banks did or are doing the renewal could also make competitors seriously consider the possibility to renew their own platform. The Brazilian bank managers refer insistently to the fact that Banco Bradesco have announced they are renewing their systems, and Banco Santander, in Brazil, is in an advanced stage of renewal.

## Chapter 1

# Understanding the Decision Scenario

Brazilian banking industry belongs to a sector of the Brazilian Economy that has become one of the most profitable for many years. Brazilian banks learned how to survive and succeed in very unstable and inflationary times. Maybe because of this, the local banks have become the largest ones, much larger than the international giants, even though the local economy has admitted foreign banks presence for more than a decade.

The Brazilian Bank Association (Febraban) provides extensive information regarding the industry and its customer activities. It is a fact that the Brazilian society is not made of heavy bank service users, and that makes economies of scale the most important issue for reaching higher levels of productivity. Companies, as bank clients, may be an exception – they have learned how to deal with banks during inflationary times. Fortunately for the banks, interest rates have been very high (from 15%py to 25%py) for many years, and in consequence, the loan spread rates have, in a certain degree, become a compensation factor for the fast reduction of inflation rates. The arrival of the foreign banks to the Brazilian market hasn't changed that picture. They have bought second tier local banks, and they have remained the same.

Banks face some challenges, mainly gaining economies of scale either by consolidation (inorganic growth) or by lowering costs of operation in order to be able to serve a large amount of very low income customers. Both ways mean growing the client base. This game will sooner or later be played by the Brazilian giants (Caixa Econômica Federal, Banco do Brasil, Bradesco and Itaú). When that happens the medium sized banks (mostly foreign owned) will face difficult choices.

From 2005 the following data pictures the industry:

- 95 million (70.5 million in regular activity) of checking accounts,
- 27 million customers accessing Internet Banking Services,
- 71 million saving accounts,
- 68 million credit card accounts,
- R\$129 billion (equivalent to US\$ 47 billion) in credit card transaction.

As it can be expected, the quantity of banks in Brazil is not high. The banking industry has already consolidated into some large organizations. According to data from Relatório Bancário 2006, from the list of the 50 largest banks in Brazil, the 20% at the top of the list own 90% of the branches. (For more information on the Brazilian banking industry, please see chapter 5)

The banking branches are spread all over the country, and they are organized according to the size of the local market they serve. From full service branches to the small electronic ones, from bank owned branches to franchised ones, banking services are available in every small city of Brasil. The cost of this structure is extremely high if one takes into account the average small transaction ticket found in this market. In 2005 the Brazilian banking industry had:

- 18,000 regular city branches
- 10,000 small bank posts
- 27,000 electronic bank posts
- 70,000 banking correspondents (franchised)
- 124,000 all types of service points

## Findings

### ***Finding 1 – Banking platform includes the core and the satellite applications.***

Understanding what the core applications are for the Brazilian banks managers and experts is not simple. The views disagree in many details. But all agree that the core applications are the mission critical software that deals with high transaction volumes with high performance. The remaining modules or applications are considered the satellite applications. Therefore the legacy systems are the core systems and the satellite systems.

In a bank, what is considered core applications are those parts responsible for the very basic banking transactions in very high quantity. The core applications are the transaction powerhouse. They have to be powerful, fast and reliable. Some experts consider as core banking platforms the checking account, loan and credit processing capabilities, interfaces to the Internet and ATM channels, interfaces to general-ledger systems and the transaction authorizer. Others see the core systems in a much more strict way: all transactions must move through the core systems, which, at an absolute minimum, must remain up and responsive during business hours - increasingly, these systems are being asked to be running 24x7 to support Internet banking, global operations, and real time transactions via ATM, Internet, phone, and debit card.

**When referring to the banking platform, both the core applications and the satellite applications are included, together with the middleware and all the supporting software.**

Platform has a very broad meaning for Information Technology experts. Normally a software platform is the basis on the top of which applications function. For example, Dot.Net and Websphere are software platforms. When we say “banking platform” we are referring to a business platform, in that case, the business applications is part of the platform, together with the particular applications platform. Therefore, banking platform would consist of the banking core systems, the satellite applications and all the supporting software (basic and middleware).

### ***Finding 2 – Core applications are in good shape***

The Brazilian banking platform is becoming old. In some cases the satellite applications seem to be near exhaustion: they have become less reliable, very costly to maintain and to run and – even worse – making it very difficult to launch new products in a timely fashion, as required by the competitive environment. The vintage core applications seem to be in better shape: they have been carefully maintained for the last 30 to 40 years.

There is no calamity in the banking sector. Banks operate despite of some flaws. It means that the legacy systems are still performing their duties. The question is, of course, for how long they will continue to perform in this acceptable level and if they could do better and how much better it could be.

**Retail banks in Brazil have been changing and evolving the banking platforms for the last 40 years.**

The core systems of the larger banks are all in house developments. The Brazilian banking platform has some very peculiar aspects that have made it impossible for medium to large size banks to adopt international vendor solutions. International banking core systems packages just did not work in Brazil. No local software company was strong enough in the past to be able to take charge of the

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task, and in addition, until recently, computer systems for the banking industry in Brazil were considered to be strategic. No one would like to have a market solution shared with its competitors.

Brazilian banks have designed their systems 40 years ago and they have been changing them ever since. The systems have survived several crises: new programming languages, new data management methods, new operating systems, and new hardware architectures. Remember the changes imposed by the client server fever? Things like that have been happening for the last many years under different labels. [The cost of running the existing systems has reached a critical point - see note 1.3]. Because of this, the core systems of every reasonably sized bank in Brazil have been subject to changes made by bank employees or by third party software development companies (most of them small software companies). As a result all banks have very particular and different solutions.

**Even though the satellite systems would need some repair, the core systems, for the majority of the banks, are not so bad. In a scale from zero to ten, where ten means excellent and 5 means good enough but in need of repair, bank managers rate the core systems as 7.0 and the satellite systems as 5.9 (See note 1.8).**

The core systems of Brazilian retail banks have evolved for the last 40 years surviving changes in technology, platforms and business models. Because of its fundamental role in the company, the core systems got very special attention from the IT specialists and have become a set of very lean, fast, reliable and powerful modules. As if a Darwinian process perfected them. They process several million transactions per day and seldom crash.

VERY WELL BALANCED - There is a strong dependence and a very delicate balance between the software platform (in particular the ubiquitous IBM CICS) and the core modules. This balance has been perfected over the years. The number of transactions grew manifold and, the usage of the core systems under very different challenging situations allowed the platform engines to be adjusted to the core systems. To change the core systems would require a long and painful adjustment cycle.

### ***Finding 3 – The legacy systems are a matter of high concern for Brazilian banks.***

Among bank managers there is a widespread dissatisfaction with the performance of the legacy system. At the same time, some have a strong belief that the legacy system is still reliable and has the potential to continue to be useful.

The legacy system is the set of systems inherited from the past that went through many maintenance changes and updates. We follow here the view of many experts that the legacy systems are all systems in operation – at the moment they are installed, they become legacy. There is a more specific definition that states that legacy is “something transmitted by or received from an ancestor or predecessor or from the past” (Merriam-Webster) which suggests that to be legacy a system has to be old. We disagree with this concept.

**When considering the renewal of the banking platform banks managers make a clear distinction between the core systems and the satellite systems. They play very different roles in the bank.**

The core systems are perceived to be in good shape. They have been performing their duties for years and have evolved with the company. Complaints made by the bank managers, in general, address either a small portion of the core systems or the satellite systems as a whole. The legacy

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satellite systems according to the majority of the bank managers are unreliable, inefficient and very complex.

Therefore, legacy motivated renewal would choose to change first the satellite systems, which are in worse state than the core applications and impact less the business. Actually banks plan to first renew the applications that are weakening them. What Forrester has observed in Europe is that the reason why some banks start with the front-end, others with core banking and a third group with a business process approach is always about differentiation. The part that would make the company better than its competitors, in the opinion of its customers, would be the first to be converted to the new platform.

**The legacy satellite systems are in bad shape. But their update has been postponed reflecting the low priority they got when compared to the core systems.**

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The obsolescence of some of the existing satellite systems is very clear in the minds of the bank managers. They were originally planned for much less transaction volumes, and they were changed to accommodate larger volumes. Add to it the fact that the legacy has become obsolete - within its layers, built over the years, one can find old tools, dead programming languages and unsupported basic systems. This makes repairing it very difficult and expensive. [History has made the legacy systems very complex – see note 1.4]

The negative diagnosis goes further when considering that the legacy systems have become extremely complex, large, inefficient and full of unnecessary code. The systems have been repaired for almost 30 years, not always with good structuring and clear documentation. This aspect, in the opinion of experts, goes further than the systems, reaching the technical infrastructure - IT as a whole should be seen as big and inefficient... and obsolete.

**The State Owned Banks in Brazil say they will keep the legacy systems as they are, carefully converting them to a modern architecture and eliminating duplicities.**

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In the words of Banco-do-Brazil's CIO, at the "Relatório Bancário" September 2006 Summit in São Paulo:

*"We have re-designed the application architecture (SOA based) and we are now re-structuring the existing systems, trying to eliminate duplications. The new information architecture emphasizes reusability. After 5 years doing it, Banco do Brasil is now flexible to adopt any new software tools. Also, we have reduced by half the time to market for new applications." [IT managers admit they will keep the legacy systems longer – see notes 1.5 and 1.6]*

On the other hand the foreign retail banks show signs of concern regarding the state of the legacy systems. They feel their competitive capacity may have been affected by them. In particular Banco Santander in Brazil is renewing the platform (as a global initiative).

The private local banks also appear to be concerned and addressing some changes. Some of them acknowledge they are approaching a hard growth barrier, some don't. But they all recognize they need to address this issue.

***Finding 4 – Decision to completely change the banking platform is unlike.***

The decision to completely change banking platform is a very difficult one for a Brazilian bank to take. The risks, the extreme complexity and the large size of the task place every bank on the conservative side regarding this matter. The only exception would be the globally controlled organizations, where a complete change of the banking platforms could occur by corporate decision, from abroad.

One could argue that if there were a complete vendor solution for banking platforms which could be believed to be mature enough, the Brazilian retail banks would have considered renewing the core system as part of a complete renewal. But no Brazilian bank appears to believe in this alternative. They found that, so far, there is no package solution they trust would fit their needs for high volume of transactions and specific functionality – they say, on the other hand, it is a matter of time for a good solution to come from one of the most experienced vendors.

Developing a completely new banking platform from scratch would renew the core systems as part of the whole platform. But changing everything is a very unlikely movement because it is a difficult task, time consuming and would divert attention from running the business.

The conclusion is that most of the Brazilian retail banks do not plan to renew their core system. That change may come up later in the process of changing the platform and the satellite systems which are in bad shape. With a stable platform in place, it is possible that banks would consider fitting the existing core systems into it.

***Finding 5 – Future business needs will not impact the decision to renew the platform.***

It seems that the Brazilian retail banks executives consider that every identified future business need can be addressed by the existing platform. Therefore, the identified business needs are not a key concern when considering platform renewal. On the other hand, bank executives know that the banking industry has been in permanent progress, with a high pace of innovation. The problem is they do not know what type of innovation is going to be required in the future. In that sense, the future is, at the same time, certain (it will change for sure) and uncertain (not a clue on which change will occur). Therefore, banks have to be prepared and ready for the future when it comes. It means the platform has to provide agility and flexibility.

The financial service industry as a whole has been very innovative. Their primary good, money, has changed from real currency, physical money, to information in the digital media. Most of the services and operations have changed from human operated to totally automatic, almost lights off operation. It was a huge change in a short forty years period of time. The changes were not done by the banks alone. They were produced by an ecosystem of companies (consulting companies, technology companies, advisory services companies, etc.) that gravitates around the financial services industry.

**Lots of innovative opportunities can be spotted in banks plans. But banks do not appear to be willing to make it different from the way other banks do. Therefore, most of them wait to see if an idea is going to be used by others before adopting it.**

On the radar screen of the Brazilian banks it is possible to devise some very interesting new ideas. The future is, to some extent, mapped. In particular three problems appear to be common in the analysis some bank managers provide:

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- VERY LOW INCOME CLIENTS is the next frontier on the competitive landscape. When listening to bank managers, no revolutionary proposition can be found here. They believe this is more of the same thing they have done in the past. They need to reduce costs and operate in a more efficient way. Probably a far reaching solution for very low income clients would have to be completely new – but this probably will not be addressed before a pioneer institution lowers the cost bar.

- OUTSOURCING THE CLIENT FACING ACTIVITIES – Outsourcing has become an important aspect of the business model for banks. They started outsourcing some supporting activities in the past (security, concierge services, cleaning, etc). Later many back office activities were also outsourced. More recently, IT has been sent to external vendors, and commercial partnership, branches franchising, could be considered as a next outsourcing frontier. Again, this is not considered by the bank managers to be a special requirement for the banking platform because they believe they have resolved it for the “correspondente bancário” – and it may take some time for banks to learn if it is enough or they need very different systems to deal with the franchised branches.

- SOCIAL COMPUTING IMPOSES NEW REQUIREMENTS – the internet created an environment where communities have become autonomous and took the power from the existing institutions. Forrester has found that connected individuals trust more the opinion of friends and relatives than institutions or experts. They also have become less loyal to brands. Bank customers, in communities could make banks operate in different ways. But, as it appears today, Social Computing requirements are not an immediate issue for the bank managers in Brasil. This may change when the first bank shows up with new marketing proposition following these new trends.

As a consequence, new business opportunities do not play an important role when considering systems renewal in Brazil.

When discussing the future, on the top of mind of Brazilian bank executives one can find a single motivation: mobility. And mobility brings no new requirements for the existing platform.

**Bank managers find it difficult to predict the future movements from competitors, so they just wait and see. That behavior turns them from leaders and innovators to followers.**

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Bank IT executives appear not to ask themselves what the future will require. But they know very well they will have to come with answers to it when it happens. They know they have to be prepared, to be ready. It is part of the Brazilian banks culture to follow the leaders. Even the leaders, who switch places from time to time and from issue to issue, look behind to make sure they are being followed. If not they may change route, and in this sense, leaders also follow those that come behind. Therefore if there is an implicit requirement to be imposed to the platform it would be flexibility to cope with the unpredictable market behavior and agility to provide for fast realignment.

Actually, it is all about business needs. If one cannot predict business requirements, this does not mean one can ignore them. When the business cannot plan for tomorrow, the IT department of a bank should create a flexible and agile platform without forward looking for business requirements.

The conclusion is that banks in Brazil see the future needs in an acceptable compliance with the present requirements. [See note 1.1].

*According to a new Brazilian regulation, from the beginning of 2007 you should be able to change from one bank to the other with no cost and keeping all of your banking history. As what has happened with cell phones in US it can have no impact or as it has happened with the airline industry it can start a price war. Therefore, operating costs may become a n even bigger issue.*

***Finding 6 – Reasons to change the platform are many.***

It is unanimous: it is high time banks have to find solutions for the high operating costs, operations vulnerability, lack of flexibility and agility, and inadequate controls.

What is important is to reduce risks from the legacy systems imperfection, to reduce costs of maintenance and operation and to improve flexibility and agility. These are the key concerns when explaining why the investment in new platform is necessary. Add to these lists the new controls required by the regulatory authorities.

“The challenges for IT are: to support business, to reduce costs, to answer to regulators with agility, flexibility and quality.” [heard from a Senior Manager of Caixa Econômica Federal, September, 2006]. The basic requirement for a new platform, according to bank managers and industry experts are the following (as they appeared in the majority of the analysis provided by the professionals of the field in Brasil):

- OPERATING COSTS REDUCTION - Business areas emphasize the need for IT solutions that reduce costs (IT costs and transaction costs). [75% of the budget goes to running the operation - See note 1.2].
- EFFICIENCY RATIO IMPROVEMENT - In many banks, processes have already been improved to reduce costs. New improvements would require different platforms.
- FLEXIBILITY AND AGILITY - Everybody says the competition happens on new functionalities of existing products. Banks need to reduce the time to market to launch new products.
- CONTROLS – modern requirements: Basil II (the New Accord) and Sarbanes Oxley Act.

***Finding 7 – High costs and high risks delay the decision to change the platform***

The most important factor that holds banks from changing the banking platform is the perception of high risk involved in this change. Bank managers believe that one should take a chance to change a very complex system that plays a critical role only if the change is unavoidable. The second blocker is the high cost of changing the platform.

Managers that have to decide to change the platform must understand the nature of the risks involved. More than that, risk factors can and should be measured. The perception of risk is always an emotional force that may set us apart from reason. The better the manager understands the nature of his/her perception of risk the better the decision will be.

**The perceived risks may vary between two extremes.**

Some fear the possibility that the new system would not solve the problem, which could end up becoming worse than before. More pessimistic is the fear that a complete disaster may occur. As mitigation for these fears, IT managers remember they have done similar tasks in the past. And they have succeeded. Also, the wealthiest companies count on experienced consulting companies to help them. One cannot ignore that top management, in many cases, is strongly influenced by consulting

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companies. It was found that the perception of risks involved in the platform renewal makes the complete renewal impossible to consider.

### **The complete change of the banking platform is a very expensive project.**

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Two aspects here act as blockers to the change. The first is the availability of money for it. Consider that Bradesco has allocated close to six hundred million dollars for the TI-Melhorias project. Even a partial renewal, for a smaller bank, would run at the hundred million dollars figure. It is big money. The second blocker is the problem of balancing the investment against other business alternatives: to renew or to invest in acquiring more customers? to renew or to open new branches?

The costs of renewing the systems are directly connected to the extension of the renewal. Renewal can be graded – it can be extensive or small. The renewal that would make a difference for a bank cannot be small and would have a dimension where the costs are certainly not small. Large amounts of money need careful and competent justification before they are approved to be spent.

### **Formal approval is also a problem.**

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A formal approval of a large investment normally goes to the top, to the board of the organization, and requires the preparation of a detailed business case. Regularly a business case forces everything to be converted into cold numbers. But the discussion of renewing or not the systems is, in large extension, a strategic matter. To translate strategic vision into numbers is always difficult - not everything here is financial – and it makes the reasoning appear to be full of guessing. Quoting an executive of a large bank:

*“Strategic thing is strategic. It remains in the realm of faith, dreams or of artia gratia artia. It is not business calculation. It is guess work.”*

Another aspect that may act as a blocker is the fact that a formal business case would require the business area managers to be co-responsible for the decision. In most of the cases the business executives are so distant from IT matters they don't even understand the complex web of concepts involved in the subject.

### **Banks are strongly influenced by suppliers and by consulting companies. But banks know that their suppliers' advices are not always unbiased. This is provoking a freezing effect on bank executive's decision making.**

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In November 2005, at conference in São Paulo, organized by “Relatório Bancário”, a newsletter company that focuses on the banking industry, the representative of a very traditional software supplier that will be negatively impacted if banks in Brazil change their existing platform, challenged the bank managers:

*“The operating risks of a change on the platform are too big. Those that choose not to change will be better off in the future. They will continue to be happily serving their clients at affordable costs.”*

The difficult balance between fear for doing it and not succeeding, and the apprehension for not doing it and being charged for that later in the future, can be seen in the market; and the biased influence (from vendors that benefit from the renewal and those that benefit from not renewing) makes things even worse. These aspects uphold the executives of retail banks and prevent them from doing careful and extensive analysis of the real state of the legacy systems. To wait and see appears to be the choice of many managers in this situation.

**Finding 8 – Service Oriented Architecture is consensus between banks in Brazil**

Every Brazilian bank is considering adopting SOA architecture or is already implementing it. And every other bank knows it. This is probably the guarantee that no bank will dare to do it different. The good news is that SOA shows good potential to address many of the problems banks (Joyce: now are facing) and allows implementation levels. The bad news is that they have a superficial grasp of the concepts and challenges of a SOA.

Wikipedia presents a very clear definition of what SOA is that can be safely used in this context:

*“In computing, the term service-oriented architecture (SOA) expresses a perspective of software architecture that defines the use of loosely coupled software services to support the requirements of the business processes and software users. In a SOA environment, resources on a network are made available as independent services that can be accessed without knowledge of their underlying platform implementation.”*

Service Oriented Architecture is a mind set, a development and construction approach rather than a concrete set of routines. Maybe what could make the systems be better built and better organized is the discipline SOA imposes to the company that would really adopt it.

**The list of benefits SOA offers is big and many of them address important needs of the banking industry. In particular SOA offers agility to launch new products, cheaper systems maintenance and reduced operating risks.**

*According to Forrester, Service-oriented architecture (SOA) is a style of design, deployment, and management of software infrastructure and applications to create a more flexible digital embodiment of your business.*

SOA ALLOWS FOR SIMPLER AND CHEAPER APPLICATION MAINTENANCE. Standardization is natural to the SOA approach. It means less duplication of code and provides a clear location for the business functions. This results in simpler and cheaper maintenance.

SOA PROVIDES REDUCED TIME TO MARKET AND LOWER COST FOR NEW PRODUCT CREATION - Banks must launch new applications faster than ever. SOA allows for a certain degree of standardization which makes the development of a new application faster, cheaper and easier. The reuse of business service applications does the trick. [Deliver new functionality that reuses services from many existing applications – see note 1.9]

SOA FACILITATES THE MIGRATION PROCESS - Banks that are in the process to migrate to SOA say they are adapting the good applications to it in order to make them fit the new scheme. The applications that are in bad shape will be either developed or bought as a package. As a very widespread architecture paradigm, SOA makes it easier to adopt vendors' solutions.

SOA REDUCES OPERATIONAL RISKS. Simpler maintenance, very well structured applications and no duplication of code minimizes uncertainty and reduces risks.

SOA MAKES IT EASIER TO INNOVATE. Because of its potential to redefine how businesses collaborate with customers and suppliers, SOA will enable every company to make innovation alliances. [See note 1.11].

Forrester consider that all in all, the previous five SOA paragraphs may be a little bit hyped and should not be taken without considering the complete scenario for SOA adoption. For example, yes SOA will provide lower cost but you have to pay for this upfront. Yes SOA will provide for reduced time to market, but you have to have trained people and processes to guarantee it.

**It is not clear if IT managers realize that SOA requires a great deal of discipline to convert to it and to sustain the architecture. Most of the positive aspects of SOA are the result of this discipline.**

Adopting SOA has strong impact in company governance. Who controls what under this architecture is important. The enterprise architect must be empowered if SOA adoption is to succeed. Also, business areas must share with the architects the task of choosing new vendor applications. When considering governance, it is necessary to include three leading players in permanent cooperation: the architects, the service suppliers and the service consumers.

Secondly follows the need for implementing an organization and very straightforward processes to manage the Service Oriented Architecture. If not well defined and implemented, the bureaucracy involved would consume the agility gains. This is a very complex task to execute and the resulting environment is very difficult to keep under the stereotypical Brazilian culture.

The good news is that SOA allows for light implementation. The depth of adoption of SOA architecture is an enterprise option. A light implementation would employ low granularity service modules (big modules). In this case a complete application could be connected to a banking backbone as if it were a single service. This light implementation of SOA can be taken as an initial step, and the company would go deeper with it as they gain experience and confidence.

**Every single bank in Brazil says they have already started implementing the Service Oriented Architecture. They strongly believe that the new architecture will either help them renew the systems or extend the life of existing legacy applications.**

It is a very good practice to become suspicious whenever facing a consensual view. What can be recommended is to ask:

- Are people ready for this? Do they have the discipline?
- Is SOA architecture mature enough to deliver the speed and the volumes needed by large organizations?

Some IT managers are asking these same questions, at the same time they feel they cannot wait implementing something in this direction. Hope is what is taking them to follow the crowd. This appears to be a trace of Brazilian bank culture – not being different from the competitors.

***Finding 9 – Bad reminiscences are still on the way.***

Former attempts to change core systems still influence bank executives. Because many of these attempts were unsuccessful, banks in Brasil are very cautious when discussing renewing the core applications. To change the complete platform is still a more difficult decision than that. The consequence is banks would choose to renew systems through small steps whenever possible.

It is undeniable that bankers have very deeply changed the companies through out the last four or five decades. Change is in the blood stream of bank managers. But some areas are sacred and touching them would require very good and unquestionable reasons. The core applications are among these sacred spots.

## Time has come to change Brazilian banking platform

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**One very important aspect is that old experiences made bank managers confident about their skills and, at the same time, suspicious of new concepts and of deviating from the existing and satisfactory position.**

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Some bank managers remember that larger reforms have occurred in the past. And they believe that the legacy application is still working properly because of these reforms. Examples of these cleaning up projects would be: the year 2K project and the recent e-commerce adoption. [E-commerce forced legacy application to change – see note 1.10]

Some cases are remembered as examples of the fact that IT managers should resist the attempt to follow a very different road than the path of perfecting the platform and the applications. They all mention the case of downsizing, when many believed the mainframes were dead. Regarding using SOA as the basis for incrementally switching to a new platform with the potential to answer to the present needs, one key question arises within the expert circle: is it possible to get to the future requirements of volumes, costs and quality through incremental changes?

**Within the small circle of IT managers and IT experts, lots of stories are exchanged. No matter if they are true or not, these cases influence the decision making. The tales were heard in informal conversations and were not supplied by the companies involved.**

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Pro-Vida - in the early 90's a large bank, from São Paulo, made an attempt to change the core systems (ProVida solution, a Norwegian platform). At the time, Hogan and Systematics solutions were considered. It is said that when the project started the bank managers found flaws on its planning and some hidden costs started to show. This made them stop the project in early phases.

Hogan – in the early 90's, a bank from the Northeast region, decided to change the banking platform to a vendor solution. Hogan was the chosen platform. It is believed that they spent a huge amount of money before giving up and aborting the project. Interesting: the IT team from that bank did it everything by themselves, without hiring help from consultants or IT companies.

Client Server – Also in the early 90's a bank from Paraná, went deeply into the client server solution. It is said that they tried to get rid of their mainframes and switch to HP servers. No packages were chosen and the solution started to be internally developed (C++ and Encina were adopted) with the help of some consulting and technology companies. It was a pioneer project in the sense that it was decided to outsource the software coding to India. Checking Account system would be the first module to be deployed. Unfortunately the bank went bankrupt and it was sold before the project could show any result and everything was aborted.

Internal Development – In the late 90,s, a medium sized bank hired Accenture with the mission to help them change their core systems. It was internally developed and no software package was chosen. This is a case of success, and it is believed that the reason for it was the strict control of business requirement the project leadership had – minimal specification (Pareto rule was the name of the game). The phase one was completed in two years, deploying the following applications: checking account, investment funds and 'compensation". On the second year the loan application was functional. The experience is reported as very positive. They started to grow (200 new branches in the first two years) until the bank was sold a larger Brazilian bank and the banking platform was abandoned.

In recent years BANCO SANTANDER and BANK BOSTON, both in São Paulo, went through very ambitious projects. Independently both banks choose the Accenture's Altamira framework (in different versions - in the US Alnova is a derivative from Altamira) and deployed it as their banking platform. It is reported that both projects were successful, and went according to their plans.

***Finding 10 – Bradesco’s projects may provoke a collective renewal movement.***

When questioning Brazilian retail banks’ managers and IT experts if they could envisage any triggering factor that would speed up the platform renewal of Brazilian banks, the most common answer was: “if the project TI-Melhorias of Banco Bradesco starts showing positive results, then every other bank will jump into the platform renewal project”. And it makes sense.

Because of the size and innovation leadership of Banco Bradesco in the Brazilian Banking Industry, the project to improve banking platforms as a whole was intensively reported by the press and is in the mind of every Brazilian professional on the IT and banking field. In one year or two it will show the first results. For good or for bad the influence on the movement of other banks will be decisive.

## Chapter 2

# Bradesco and Itaú systems: two different approaches in the past and two different approaches now

Because of their influence in the banking industry in Brazil, we have chosen to provide some details regarding the plans and course of action for two of the largest privately owned banks in Brazil.

### Project 'TI-Melhorias' of Banco Bradesco, São Paulo.

Bradesco has announced it will renew its banking platform in a six year program. The 28 project lines are being conducted in parallel. They have made it clear that they are changing the complete platform, core systems included. SOA is the chosen architecture. Late in 2007, a very core application of the bank platform, the Current Account Module the will be switched to a renewed one.

#### **Introduction**

The Bradesco project aiming to renew everything in IT, banking platform included, is called “*TI-Melhorias*”, meaning IT improvements. The project has become a landmark in the Brazilian banking industry even before showing any results. The project started in 2003 and phase one should go, at least, until 2009. The budget is the equivalent of US\$ 560 million (R\$ 1.2 billion in the Brazilian currency, Reais). This project has the potential to be a trigger for the other banks to decide for renewing their systems platform.

#### **History (\*)**

Created in 1943, Banco Bradesco to be the largest privately owned bank in Brazil. It is part of a corporate bank-insurance company. In 2005 the company achieved the following numbers: 75 billion Reais in deposits, total assets of 209 billion Reais, net income of 5.5 billion Reais and a workforce of 74 thousand employees. Bradesco has a total of 16.5 million checking account customers and 35.1 million savings account holders. Customers are served by a network of 5.372 branches and 23.036 ATMs. Bradesco also operates, in partnership with the Brazilian Post Office, the “Banco Postal”, with 5.5 thousand branches in most Brazilian cities. [END OF PARAGRAPH NOTE: (1) Data extracted from Bradesco 2005 Annual Report and from “Anuário Brasileiro de Bancos, 2006”, by Relatório Bancário. (2) Real is the Brazilian currency, worth in December 2005]

Bradesco has been a pioneer in several important moments of the banking industry. The first computer bought in Brazil (an IBM 1401, in 1962), the first ATM in Brazil in the 70's, the first bank by computer in early 80's, the first Internet banking in 1996, and recently, the first totally wireless bank branch.

### ***TI-Melhorias***

Project started in 2003 with 28 project lines organized in five big activities: process, application, operating environment, IT organization and IT infrastructure. The project objective is to review and renew everything in IT, from processes, to systems and infrastructure, to organization and governance. Bradesco official says: "The project objective is to elevate Bradesco's technology to the state of the art level" [see note 2.1]. *TI-Melhorias* is led by CPM, an IT company partly owned (49%) by Bradesco. CPM started with a detailed diagnosis of everything, pinpointing the deficiencies, duplications and interrelationships. The project plan addresses first, the aspects which showed to be demanding attention.

One key aspect of *TI-Melhorias* is the deployment of SOA. Bradesco acknowledges that this is, strategically, the most important aspect of the program. [See note 2.2].

### ***Decision Drivers***

The drivers for the decision to go ahead with the project were the high systems maintenance costs and the fact that the legacy applications were created very long ago and needed some technology revamp. Agility to launch new products was another need addressed by the project. Also, the confidence that the existing IT resources would support company ambitious growth plans was diminishing.

The decision to go ahead is reported to have been made by the President of the company, Mr. Marcio Cypriano, and was both strategic and economic. Mr. Cypriano has kept full attention to the project since it started, four years ago.

Bradesco's officials were not fully satisfied with the legacy systems. Each satellite application had become too vertical - they did everything they needed, with a reduced sharing between different applications. The code duplication was a big concern. According to a very experienced Brazilian consulting company, code duplication is a problem that has affected every bank in Brasil.

Also, business areas were demanding agility and flexibility. Time to launch new products or to change existing ones had to be reduced. Also, application development needed to be less expensive. Adding to it, Bradesco's increasingly stronger security requirements demanded for a complete revision of the contingency solution. A complete duplication of the sites (with 100% backing up computers) was needed. New controls in accordance with Basel II and Sarbanes Oxley had to be implemented.

They realized that the time to completely rebuild IT had arrived. According to the Bradesco Executive, responsible for the project, "the largest IT project ever in Bradesco's history" began with the objective of reducing application development time and costs, increasing systems efficacy, safety, flexibility and making everything scalable.

It should facilitate the growth of the bank and not difficult it.

### ***Project Organization and Governance***

During the project, daily operation continued to be based on the old platform. The *TI-Melhorias* phase one project lines runs in parallel with the processing of regular activities and the updating of the legacy solutions - which brings a big coordination problem. Before they start substituting applications, from old architecture to the new one, they do updating in both systems.

Project managers always consider vendors' solution before deciding for internal development. They acknowledge the vendors' software has become mature and in many case they have adopted them. SAP, for instance, will run the General Ledger application. The Current Account system, on the other hand, found no feasible alternative in the market and they decided to develop it internally. The new Current Account system should go live by the end of 2007.

The project team has 800 software professionals, 500 from CPM and 300 from Bradesco.

*TI-Melhorias* is run by a project office shared by a top level executive of CPM and by top managers of Bradesco. Each of the 28 project lines has its own management which reports to Bradesco's IT managers once a week. Monthly everything is reported to Bradesco's Vice President responsible for the project. Bradesco's board of directors is also informed of the project progress on monthly basis.

### **Itaú continues its regular pace of application renewal as they show signs of approaching bottleneck situation.**

Itaú managers are very proud of their systems. Very long ago, they have decided to run their system centrally, despite the deficiencies of telecommunication services in Brazil at the time. This model survived even the downsizing and decentralization fever of the nineties. Very well structured applications went through systematic updates and renewal following that basic architecture ever since. And they continue doing so, now trying some level of SOA implementation. If promises are fulfilled they may eventually switch completely to this new architecture.

Depending on the criteria Itaú is the second or the first largest private bank in Brasil, sharing the pole position with Bradesco. After the merge with Bank Boston Brazil, Itaú became bigger than Bradesco in total assets.

#### ***History (\*)***

Created in 1945, Banco Itaú is considered the second largest privately owned bank in Brazil. Grupo Itaú is a large financial and industrial enterprise. In 2005 the bank achieved the following numbers: 50 billion of Reais in deposits, total assets of 151 billion Reais, net income of 5.2 billion and a workforce of 51 thousand employees. Banco Itaú has a total of more than 15 million checking account customers and 8 million savings account holders. Customers are served by a network of 3.174 branches and 22.023 ATMs. Itaú spend 1.2 billion Reais in Information Technology. [END OF PARAGRAPH NOTE: (1) Data extracted from Itaú 2005 Annual Report and from "Anuário Brasileiro de Bancos, 2006", by Relatório Bancário. (2) Real is the Brazilian currency, worth in December 2005]

#### ***Itaú systems short history***

In the early 1970's Itaú started building their SNA vision for their banking platforms. At the end of that decade, Itaú did what their IT executives acknowledge to be the very key decision to the success of their systems: they decided to organize the systems to run from central computers. The branches would somewhat like thin clients of robust central systems. If connection from branches to central offices went down the branches would go down. That is why they have invested heavily in telecommunications, and the communication lines hardly were down. Later, when regular telecommunication systems improved, Itaú was ready to harvest from its IT architecture.

## Time has come to change Brazilian banking platform

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A second decision they made at the time also contributed to its systems reputation of being unique. They decided to develop their own mainframe transaction server instead of licensing IBM transaction server, CICS, that had been launched ten years prior to that decision. This was a daring decision and placed in the hands of the bank managers the control of that very critical software component, but, at the same time, it gave to the IT area of the bank the responsibility to maintain and keep this very complex (and critical) system updated to face all changes the IBM mainframe environment went through since then. Itaú's transaction server – the GRBE - still runs today, at the heart of their banking platforms, dealing with an unimaginably large number of transactions per second.

During the following years, banco Itaú went through many changes. They grew immensely, they acquired many banks, and that architecture, which they called *Banco Eletrônico* (Electronic Bank), survived. During the eighties they created a front end for the Branches operation – the customer manager desktop – which was a land mark.

Brazilian IT experts recognize that Itaú has had the discipline to maintain the architecture in place, renewing and upgrading applications as they showed the first signs of stress. If you add to it the fact that they have invested a lot in IT infrastructure, they appear to have been able to keep the legacy systems in a satisfactory status.

### **Today**

With the advent of collaboration, online client operation, many new products and new channels, the environment became extremely complex. Itaú systems do not appear to be in bad shape, but Itaú grew up with the ambition of having good IT resources. Business areas rely on technology, and probably would find it harder to meet their business goals if they had a worse IT.

Many professionals in the IT field in Brazil agree with the assumption that Itaú will accelerate its rate of renewing the systems, to meet the modern requirement for IT excellence: business governance, open architecture, flexibility, agility, security, vendor's solutions and software development outsourcing under very rigorous SLA.

Itaú managers report a rather large application being deployed at the end of 2006 – a system they call Treasury Operations Risk Control. The project was done during the last two years, under a partnership with Microsoft, structured under SOA principles. It is reported to be a very sophisticated software program, organized with hundreds of service modules ready to be shared. "The throughput is fantastic", they report. Mortgage application is also being developed under the same set of principles. "If the Services Oriented Architecture confirms its promises we will stick to it", they say. And if discipline is needed, Itaú has proven they have plenty of it.

Itaú also shows that they are not against vendor's solutions – a very strong statement for a company that has its own substitute for IBM's CICS. They report they have been using software packages in many solutions outside the core systems. They have also chosen SAP to be a kind of preferred supplier, and tried their solution with an operations application – a solution for the difficult problem of deciding the correct policy to move currency to ATMs and branches.

### **IT Governance**

Itaú has a long history of allowing the business areas to govern IT. Business managers have a strong voice on IT matters. The result has been a fairly good alignment between IT and business. The question, however, is to consider to what extent would business executives understand SOA impacts and costs to really decide to go for it. Particularly if one takes into account that some of the cost reduction attained with SOA is paid in advance at the beginning of the project.

## Chapter 3

### Key Conclusions

Banks are followers by nature. Even the leaders are followers – they progress only when their competitor is progressing into the same direction. The followers follow the leaders, and the leaders wait to see the reaction of the followers to progress one step further.

When something shows up in the plan of all banks this thing is probably going to happen because it gets “the collective force”. No bank would dare not to do the same that every other bank is doing. This has been happening for the last fifty years and probably will continue to happen.

The decision scenario previously discussed in this report leaves no room for a different conclusion as it follows.

#### **Key Conclusion 1 - Time has come to renew the banking platform.**

Banks in Brazil have reached a turning point. The balance of forces from the factors that influence this decision has been shifting to the pro-renewal direction. Banks are becoming more willing to consider a large renewal project, one strong reason being the fact that each one perceives this intention in every other bank. Service Oriented Architecture strengthens that point of view as it brings an affordable possibility of organizing the renewal project. Under SOA, vendor solutions become feasible alternatives for banks. It appears that time has arrived for Brazilian retail banks to renew their banking platform.

SOA has conquered the hearts and minds of every Brazilian retail bank. The conclusion is that, in different speeds and at different depths of changes, every Brazilian bank will proceed deploying a Service Oriented Platform. As a consequence the applications will have to be adapted to fit the new architecture. The bad application will be changed by new ones. With the SOA approach it is possible now to consider deploying applications from vendors, which have been improving for the last couple of years. Because of its high impact to the organization and its high complexity, the core applications will probably be the last ones to be changed. Of course there is a much simpler way to start gaining experience which would be to adopt SOA concepts to the supporting function application, such as the company administrative processes – banking payroll and purchase system are examples.

The changes have already started in the majority of the Brazilian retail banks. The difference amongst the banks will set the time frame of the renewal and the depth of the changes. This was also investigated. [The only way out of this mess is permanent and fundamental change – see note 3.1]

#### **Key Conclusion 2 - State owned banks will go last.**

Foreigner banks have the highest propensity to change the banking platforms platform. Private local banks follow close. State owned banks appear to show indifference.

The propensity of a bank to change its platform is of course a function of the balance of forces between the driving factors and the blocking factors. Propensity has to do with the willingness to change when an alternative is offered.

## Time has come to change Brazilian banking platform

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**Propensity to renew will be higher for banks with high dissatisfaction with the legacy system and with the belief that agility is needed for competing in modern times.**

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The propensity to renew the platform will be higher for the banks that are more sensitive to the drivers for renewal. High propensity, therefore, will be found on those banks that are convinced that the legacy systems need to be changed (because of low reliability and high costs to maintain), also the propensity will be stronger if the organization believes that agility to launch new products is a critical success factor.

The belief that the legacy systems need to be changed will be impacted by the perceived weakness of the legacy systems shown by non-programmed interruptions that affects customer satisfaction, reduced business growth capacity due to limitations of the legacy systems and high costs of repairing or updating the existing applications.

The conviction that agility to launch new products is a central issue is the consequence of the organization business model. Customers compare banks and value those that keep up to date with product offerings. To lag behind in this aspect is not good for banking business. Therefore the agility to launch new products is a key success factor. Even though Brazilian banks are followers by nature, some believe they have to take the leadership from time to time, others accept the permanent follower role, but never being too late to catch up. The follower / leader nature of the organization in conjunction with the belief that the competition based on new products is a key success factor increases the propensity to change the platform. It is important here to consider that the belief that the IT platform is responsible for delivering agility is unanimity among IT experts.

**Propensity to renew will be higher for those banks that can face the costs and feel they can manage the risks.**

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The capacity a bank has to overcome blockers to platform renewal deeply impacts the renewal propensity they show. Two aspects have been considered here. Propensity will be higher for those banks that (1) believe they have the capacity to face (to invest on) the costs of platform renewal and (2) believe they have the capacity to manage the perceived risks of renewing the platform.

The capacity to face (to invest on) the costs of platform renewal can be decomposed in many parts: costs of implementing the changes, direct costs of the new systems, costs of personnel involved in the project, costs of business delay (due to the fact that resources are allocated to building the new platform). Also, the capacity to face the costs would depend on having the money to spend and having the power to allocate the money to the renewal project.

The capacity to face (to manage) risks of deploying a new platform depends on several very subjective aspects. First is the natural risk of changing a critical system, second is the vulnerability before technical choices that may reveal to be wrong ones in the future. Also bad choices can lead to project failure as have been the case in previous experiences. But, having had some positive experience in large changes (previous merge, for instance) would reduce the feeling of risk.

**Plotting the propensity of the clusters of banks lead us to conclude that State owned banks will be the last ones to renew their platform.**

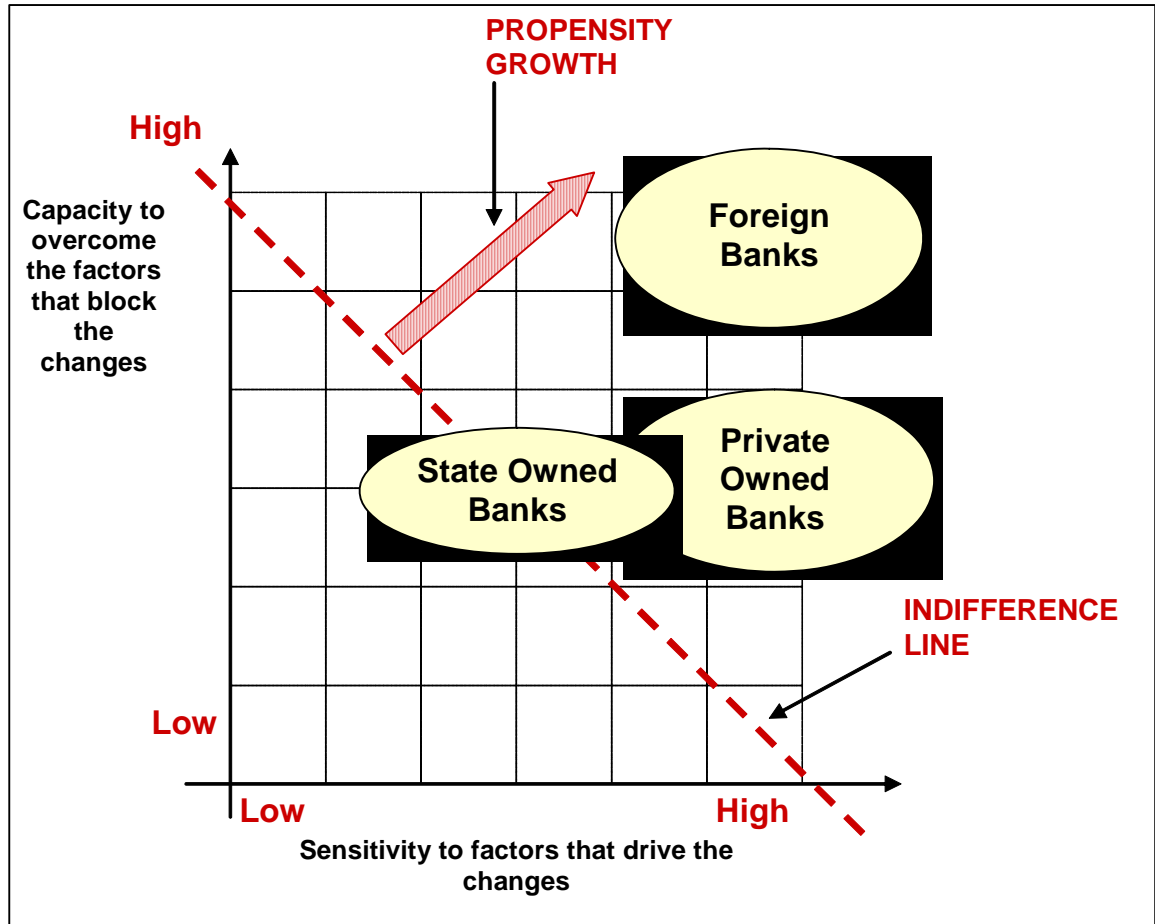
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The many aspects that interfere with the retail banks propensity to renew the platform were mapped and compared. The conclusion can be seen in the figure presented below.

It is important to highlight a disclaimer: The propensity of Foreign Banks is also impacted by the fact that every global organization present in Brazil faces the burden of carrying the extra risks and higher

## Time has come to change Brazilian banking platform

volatility of being in an emerging economy (from Basel II point of view). The question they face is whether to sell or not their investments in Latin America. What is keeping them from doing it is the fact that, in Brazil, bank profits are very high. This dilemma impacts the decision of investing or not in renewing the banking platform. As it is a very subjective aspect, it could not be considered in this report.



This picture shows that foreign banks, as a group, are more inclined to renew the banking platform. On the other extreme, the state owned banks, as a group, appear to be in a situation where the forces are in equilibrium; they lay on the indifference line – meaning that they will change their platform following the crowd. Local private owned banks are in between – probably closer to the international banks.

It is important to stress that this figure represents a generic model. It does not apply to a particular company – but shows some general characteristics of each company archetype. It means that this should be considered as a base line from which the particularities of each Brazilian bank could be understood.

### Key Conclusion 3

Watching at each particular bank is a more difficult task. A single company has its particular movements and decision styles which is hardly understood even to those that are part of the company. Therefore it is close to impossible for an outsider to try suggesting any trends. What can be done is try to investigate and estimate, within each cluster, the banks that should have higher propensity to renew their platform. The higher the propensity, the sooner they will act and deeper the project will be.

When considering the propensity to renew their platforms (core systems included), retail banks in Brazil are grouped in two sets: the ones that have decided to have a single large renewal project, those that are convinced that complete renewal is necessary and decided to do it piece by piece.

The platform change is not an event. Instead, it is a long standing action that may take several years. The change is necessarily gradual, piece by piece. Therefore it is impossible to determine the exact moment when the renewal happens.

A very senior director of a large bank, regarding this study, argued: "What is the difference between a company that has a project to renew the platform, follow its plan and complete the renewal in ten years from another that would go on renewing each part of the system, driven by the need to update the applications, and complete the same job in ten years?"

The difference is the decision. Regarding the platform renewal issue, a company can either decide to do it and prepare a plan (it would be a long term plan), allocate money and proceed; or it can choose a new architecture, prepare the basis for it, and define that every new application would have to be implemented under the standards of this new architecture – and the renewal would go on, driven by the natural updating of each application.

When one considers this, the banks can be categorized in three groups:

**Group 1 – Banks that have decided to completely renew the banking platform through a unified project: BANCO SANTANDER and BANCO BRADESCO.**

Both companies listed here have already announced their decision to renew the platform. Santander is in the process of installing the ALTAIR platform (ex-Altamira, Alnova in US) as a global decision. Question here is whether the SOA wave will make them switch to the new architecture in the future. Bradesco has its *IT-Melhorias* project.

**Group 2 – Banks that decided (or are about to) to switch to SOA and will renew their applications as they show the need for it, with budgets allocated application by application: BANCO REAL, UNIBANCO, BANCO ITAÚ, BANCO DO BRASIL and CAIXA ECONOMICA FEDERAL.**

In general these banks have (or are about to) decided to switch to SOA and shall start renewing each application, through the regular maintenance process, under the new set of architectural principles. Budget will be allocated on per application as required. Later in the process, probably, they will decide to have a specific project to finish the renewal, including the core systems as well. Banco do Brasil and Caixa Econômica Federal may not have strong reasons to be in the leading crowd and would proceed after the others.

## Key Conclusion 4

A hybrid solution is more likely to be adopted by the retail banks in Brasil. Vendor solutions may serve the small traffic application (the satellite systems) and internally developed will continue on the main venues (the core systems).

The depth and the rate of adoption of SOA architecture is an option. A company can choose to implement SOA in different doses: from a *light version* (low granularity, partial implementation) to a *canonic version* (high granularity, deep services management process). Most of the implementation cases in Brazil appear to be light.

### **It is a matter of time, until vendor solutions become popular in Brazilian Banks.**

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In Brasil, retail banks have considered three alternatives for vendors' solutions: SAP for banking, Oracle's I-Flex and Altamira.

It is the opinion of the Brazilian IT specialists that software packages are not ready to deliver volume and functionality needed in every part of the banking platform. But they also agree that it is only matter of time until the vendors make their products fit the requirements of the retail banks – at least in a degree where specific adaptation become feasible. Because of this belief, many organizations are adopting software packages for some minor lateral functions. They understand they have to get some experience with them.

It is important to mention that banks in Europe and in US have been increasingly adopting vendors' solutions for their key applications. In this aspect, Brazilian banks lag behind, not only because banks in Brazil are universal (all types of products to all types of clients) and, as a consequence, extremely complex, but also because international vendors were late in bringing these solutions to the Brazilian market. Vendors are not very experienced with Brazilian banks and Brazilian banks are not very experienced with vendors' solutions.

### **There are movements in the market that may influence banks to adopt vendor solutions.**

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Bradesco and Itaú have reported to have been using SAP platform for supporting functions. Certainly they are experimenting with the new platform. If it answers to their demands they probably will adopt it further down to banking processing. [For Bradesco, see note 3.2, for Itaú see note 3.3].

International banks have strong influence in the Brazilian banking industry. It has also been reported that the American banks will start adopting software from vendors for their core systems. This may result in increasing the belief that ERPs are becoming ready for the banking market.

### **The perception of bottleneck in the vendor solutions is blocking the adoption software packages by banks in Brazil.**

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Software from vendors is normally structured and organized in a way to give high importance to flexibility and agility. The consequence is that the parts become small and loosely coupled. This brings a degree of inefficiency in terms of processing time and resource consumption. The conclusion many IT managers of the retail banks are taking is that software packages are probably good for some low demanding satellite functions, provided they are heavily adapted by each organization. The core systems, where the high volume of transactions happens, appear to be untouched by the vendors, at least for some time and allowing exceptions (as Santander has been showing).

*Forrester has been reporting many cases of adoption of vendor application packages, structured under SOA model, dealing with very high transaction throughput. Cases can be found in Europe, North America, and even in China and India.*

## Time has come to change Brazilian banking platform

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A second resisting factor for adopting packages is that bank managers, in general, do not want to become very dependent of vendors at the core application level. A very experienced consultant, from one of the big consulting companies, had very strong opinions to that respect:

*“Brazilian banks dislike standardized solutions. They do not want to become pray of unique vendors. With SOA it is possible to adopt vendors’ solution without being exclusively dependent on any particular supplier. SOA brings flexibility, possibility of choices.”*

**The envisioned solution should be a hybrid one: in house solution for the core applications and vendor solutions for the satellite application sphere when feasible.**

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A unique package from vendors cannot be considered as a solution for the new platform. Also the complete internal development is discarded because of the costs and the belief that a vendor solution can become useful if correctly integrated to the platform.

This will make bank managers take a Salomon style decision: a hybrid solution. The widespread belief that package solutions cannot deal with very high transaction volumes, would direct the choice for internal development where high transactions volume is a requirement. Everything else would be good candidates for adopting vendor solutions that would fit into the architecture. [Platform must be designed to integrate “foreign” banking software applications – see note 3.4]. The envisioned solution, therefore, should be hybrid:

- Internally developed modules (services) whenever high volumes are required.
- Adjusted software packages from vendors on less demanding product function (where there is a need for agility).

There is also the possibility that in the future there will exist an ecosystem of banking components around the SOA based Banking Platform. This will be a much better world because it will allow for much better autonomy and control from the banks executives. It will be possible to adopt vendor components in association with internally developed SOA components. [Vendors need to agree on standards for all business services ecosystems – see note 3.5].

## Chapter 4

# Recommended Practices

The practices that are listed as follows were suggested by the experts interviewed for this project. Suggestions were given by bank managers, consultants or technology companies executives that have experience in big systems changes. In many cases Forrester Research has suggested similar practices, which are also presented in this text.

### **1. Plan big, act piece by piece**

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When considering the need to renew the platform, start with a detailed and complete diagnostic of the existing systems. Use automatic tools for that. Then start planning by the global picture drilling down when necessary. Choose to focus first at the most problematic systems and define a path to follow through the complete change. Make a list of the fundamental, important and nice-to-have requirements. [Forrester recommends making this decision in three steps – see note 4.1]

In short, the way most bank managers think of renewing the platform is in four steps (very large steps):

- Start by assessing the business needs
- Then define the architecture and build the new platform
- Adapt and improve the core systems!
- Then substitute the most problematic applications

When planning the new architecture, balance online and batch processing.

- Banks see the need to balance online and batch so to reduce stupid duplications of processing.
- They also see the need of having the intra-day checking account position in a work data base – to be redone during the night.
- To balance between these two aspects does not mean to eliminate all duplications.

Manage the progress, correcting plans when needed. For that it is mandatory to adopt a measurement model to follow progress and quality – do not rely on guessing. One important word or caution from IBM: the successful SOA implementation “requires hands-on experience and focused dedication”. [See note 4.5]

### **2. Before you start the project, review the decision drivers**

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An experienced IT company says to its clients that the first step in determining how to smoothly implement SOA is to assess they current IT environment to help ensure that the project will meet the company business goals.

Looking further than the driving factors, address some new important issues. [To make all these decisions better informed, a number of issues need to be assessed – see note 4.3].

## Time has come to change Brazilian banking platform

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The project decision was made in answer to urgent and strategic needs. Once the decision is made, it is important to consider other needs, probably not so urgent, not so vital. Consider those aspects that would increase the competitive capacity without large investments.

- Analyze competitors. See what they have and what they are doing.
- Discuss with the business area to consider the future business needs – avoid having to include these requirements after the long project being started. On the other hand, freezing a system for a long time should not be considered a good practice. Banking platform renewal is shooting at a moving target – due to the dynamics of the business and the length of the project. This means that planning and change management processes need to be established to incorporate changing or new business requirements.
- Decide on the right sourcing options, not only for the project but also for the future. Could any part be outsourced?
- During the project, and especially during the migration, the business areas will suffer (very small available resources, systems freeze). Negotiate with them what exceptions to be made. [See note 4.6]
- Do not think only in terms of systems and applications. Consider the infrastructure.

Business requirements for the future can impact the definition of details of the banking platform. Interviewees from this study mentioned three ideas in several occasions:

- Consider the opportunity to switch to browser based banking automation front end.
- Extend the availability to 24x7 operations; implement near real time processing [reduce the need for batch processing or shadow databases]. Important not to forget that batch processing will always be necessary – the question is the balance between real time and batching processing. [see note 4.4]
- Reorganize the systems to become multi-company structure – this is important in mergers and if considering flexible solutions for “correspondente bancario” or franchising branches.

### 3. Very Strict Project Management is mandatory

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Management is important to every project. When considering a very critical, long and complex project, management becomes mandatory. In particular, to run such a project, it should be adopted an existing project management frame work. Avoid inventing the wheel or being humble with this issue. Some suggestions:

- Top Management has to be on board.
- CEO and all business area directors should be involved. They should be part of the project management structure and follow the project up at least once a month.
- Everybody in the company should be informed. The project should invest on information to every one in the organization. It should be seen as the company project – not an IT project.
- Success depends on controlling the project key aspects. Severity on controlling the key aspects is mandatory for the success of the program.
- “*We have to.*” – answer of a project manager to the question if they feel they would succeed.

Finally, after implementation, companies must ensure that the systems are meeting their business goals. [See note 4.7]

#### **4. When choosing the technology for the new platform consider the future obsolescence**

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Remember that the system that is being developed now will be a legacy tomorrow. [Think you don't have legacy systems? - see note 4.2]. The life span of a system is reduced when the technical resources used to build it (languages, structure, libraries, human resources, etc) becomes obsolete.

In order to reduce premature obsolescence, some experts in the field say that one should rely on the resources that have survived for a long period of time. The survivors are as Darwinian old species, very resistant to changes. Many proved and long standing tools and systems like COBOL, DB2, etc should be considered. The probability of short life for these objects is very low. They have resisted many generations and have adapted to new times. "Base your choices on proven models (platforms) to reduce the risks of rapid obsolescence" said an expert from one of the big five consulting companies.

Future obsolescence  
Complementary argument from Forrester

If you are not sure that it is possible to rely on the long standing resources, plan for the latest technology. Platform renewal is a very long project (experience shows it may take from 5 to 10 years to complete). That is why one should consider the latest technology and design paradigms when deciding on or deciding a new banking platform. Failing to do so means that the new platform will be based on legacy — and possibly obsolete - technology at the end of a multiyear period of gradual migration. [See details in "Vintage Banking Platforms Need Renewal", J. Hoppermann, Forrester Research, Dec 2004]

## Appendix A: Definitions

### Definition - Project Think Tank

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An informal group of experts, was formed to act as a sounding board for the present research key ideas. They have contributed to this report, by discussing with the author the ideas that were found to be significant for the subject under analysis. Their contribution for the author to understand what is happening in the Brazilian banking industry was outstanding. It is important to make it clear that the members of this group did not necessarily agree with what is written here. The final writing of the report was not reviewed by them.

#### **Members**

- Edson Fregni, coordination
- Roberto Biagi, CEO of Upaid
- Dorival Dourado, CIO Serasa
- Mario Magalhaes, Chief Architect Unibanco
- Gustavo Roxo, CIO ABN AMRO/Real
- Marco Antonio Nordi, CIO Bank Boston

#### **Meetings**

- First meeting held on August, 17th.
- Second meeting on October, 5th.
- Third meeting on November, November 13th.

### Definition - Research Basic Question

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Will the Brazilian Financial Institutions, in the foreseeable future, change their Banking platforms? By what? How?

### Definition - Systems Concepts (not standard definitions)

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ARCHITECTURE is the fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution. [ANSI/IEEE Std 1471-2000]. [See note 5.1]

ENTERPRISE is any collection of organizations that has a common set of goals and/or a single bottom line.

COMPUTER SYSTEM ARCHITECTURE is the discipline that defines the conceptual structure and functional behavior of a computer system, determining the overall organization, the attributes of the component parts, and how these parts are combined.

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TECHNICAL ARCHITECTURE refers to the structured process of designing and building software architecture, with focus on interaction with software and hardware developers. Technical Architecture is the structured process of designing and building IT hardware and software infrastructure usually at enterprise level. Issues such as Server Hardware, Network, Storage, Backup, Resilience and Availability are all within the remit of the hardware Technical Architect. [Wikipedia, October 2006]

APPLICATION ARCHITECTURE is the structure of software components in a system. An application's architecture is made up of its components and their relationships. Specified on the basis of business requirements, it defines the interaction between application software, databases, and middleware systems in terms of functional coverage.

COMPUTER SYSTEM PLATFORM - In computing, a platform describes some sort of framework, either in hardware or software, which allows software to run. Typical platforms include a computer's architecture, operating system, or programming languages and their runtime libraries. [Wikipedia, Oct 2006] We can find several examples in the market. Typically, a system platform is a composition of some market standards:

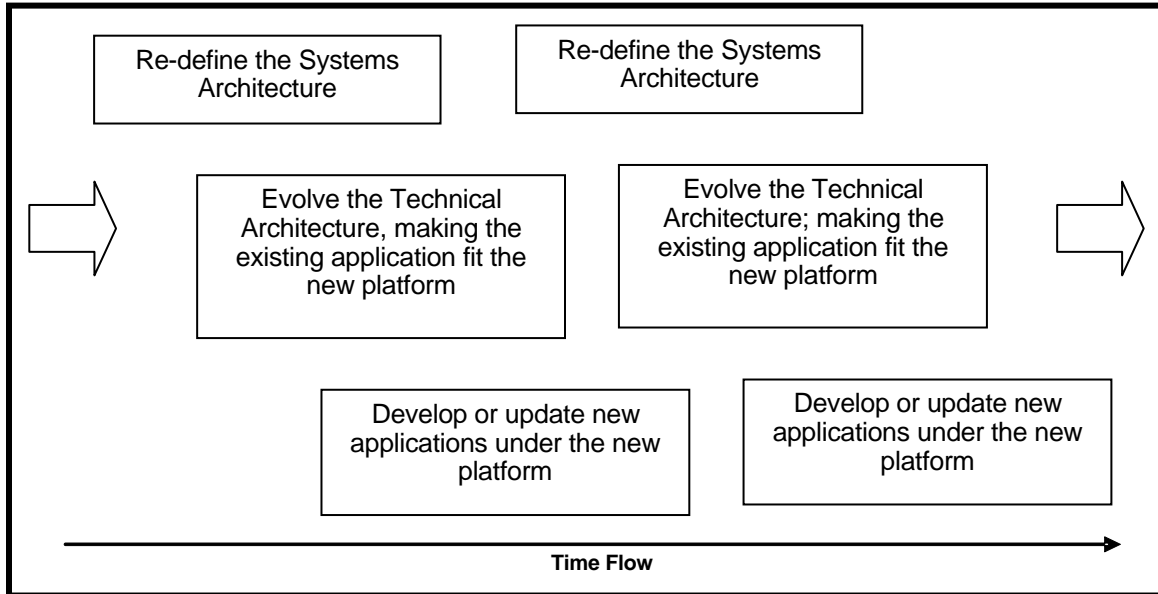
- Linux, Java
- Microsoft's Dot.net, SQL server
- IBM's Websphere, DB2

CORE SYSTEMS are application systems or application modules responsible for the core business operation. The core business of an organization is an idealized construct intended to express that organization's "main" or "essential" activity.

BANKING CORE SYSTEMS - In a bank, what is considered the core applications are those parts responsible for the very basic banking transactions in very high quantity. The core applications are the transaction powerhouse. They have to be powerful, fast and reliable. Some experts consider as core banking platforms the checking account, loan and credit processing capabilities, interfaces to the Internet and ATM channels, interfaces to general-ledger systems and with the transaction authorizer. Others see the core systems in a much strict way: All transactions must move through the core systems, which, at an absolute minimum, must remain up and responsive during business hours - increasingly, these systems are being asked to be running 24x7 to support Internet banking, global operations, and real time transactions via ATM, Internet, phone, and debit card.

## Definition - The mechanism of renewing the Banking Platforms

The extension of the renewal depends on how different is the new application architecture and the number of applications that need to be renewed. If one changes the core systems it is a very deep renewal. The renewal process is a cyclic activity in permanent repetition:



## Definition - Financial institution focused by this report

This report looks at the financial services companies in three groups:

1. Retail Banks (large size, all of them are in fact universal banks) – multi-million transactions, operating from Monday to Friday, banking hours.
2. Product Specialist Financial Institution (medium size, focused on a small set of banking products).
3. Bulk (small size, local, community wide).

It was decided to focus the research on the first group, the Retail Banks, which was sub-divided in three clusters, by the nature of the decision process:

Cluster 1 – State Owned Banks:

- Banco do Brasil
- Caixa Econômica Federal
- Nossa Caixa - SP

Cluster 2 – Privately Owned Banks:

- Itaú
- Bradesco
- Unibanco (very different from others)

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Cluster 3 – Foreign Owned Banks:

- ABN AMRO Real
- Santander Banespa (have recently renewed the systems)
- HSBC

These are the eight largest banks in Brazil. According to the Brazilian Central Bank, the rank they present, according to their assets in Billion Reais (one American Dollar is equivalent to 2.1 Reais), in September 2006 is:

1.	Banco do Brasil	281.6
2.	Banco Itaú	201.3
3.	Caixa Econômica Federal	199.2
4.	Banco Bradesco	195.7
5.	Unibanco	96.8
6.	ABN AMRO - Real	88.8
7.	Santander Banespa	86.9
8.	HSBC	55.8

## Appendix B: About the Author



### **Edson Fregni**

Professor of the Escola Politécnica of São Paulo (since 1971), author of several published books on Information Technology, Graduated as Electronic Engineer at Escola Politécnica, with a Master Degree in Electronic Engineering and a PHD on Computer Engineering from University of São Paulo and post graduation at the University of Stanford, California (from 1972 to 1974).

Brings computer design and manufacturing, and consulting experiences, having founded and being the leading manager of Scopus Tecnologia S.A. (1975-1990) and Spectrum Engenharia (1989-1997). For nine years was Executive director of Banco Real ABN AMRO in Brazil, responsible for the Information Technology and for the electronic channels of the bank.

Received some awards like “Engineering Leadership Recognition” offered by the IEEE – Institute of Electrical and Electronics Engineers (New York, 1990) and “Engineer of the Year”, (1983) of the São Paulo Engineering Institute.

Today, Edson Fregni is the managing director of eFregni Consultoria, a consulting company in São Paulo, focusing on Information Technology Management and Innovation. E-Fregni Consultoria has Forrester Research, Inc. as a Key Partner.

## Appendix C: Notes

### Notes to chapter 1

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#### Note 1.1

“One of the major drivers of banking platform renewal — besides cost management — is better and more timely support of current and envisioned functional requirements.” [Vintage Banking Platforms Need Renewal, J. Hoppermann, Forrester Research, Dec 2004]

#### Note 1.2

“Existing systems cost too much, leaving too little money for new business projects. The total cost of keeping existing applications enhanced, up to date, and running consumes a disproportionate share of the budget. Forrester’s Business Technographics® research shows that North American and European enterprises spend 75% of their software budgets on ongoing operations and maintenance, leaving just 25% for new investments. That is not enough funding for projects that can increase revenue and leverage new business opportunities. The lack of application knowledge is a primary factor in the excessive maintenance costs.” [“Got Legacy? Four Fates Await your Applications” by Phil Murphy / Forrester Research, January 2006]

#### Note 1.3

“The approach of dismissing legacy applications as things that will some day be replaced has failed — it can’t continue because the cost of keeping existing systems running has reached a crisis point.” [“Got Legacy? Four Fates Await your applications” by Phil Murphy / Forrester Research, January 2006]

#### Note 1.4

Technology history created a high degree of complexity. [In Europe] the former IT services companies maintained largely independent development centers. [Renewal Case Study: Drivers by J. Hoppermann, Forrester Research, March 2005]

#### Note 1.5

“IT managers admit they will keep legacy applications longer. Managers are finally admitting that they will keep applications much longer than previously imagined. What is good about that? The decision is made, and managers know that the flip-flops are over. There is no one-size-fits-all solution, and moving everything to a unified platform flies in the face of the underlying principles of SOA.4 It is time to take stock, evaluate what is worth keeping, and craft the missing pieces.” [“Got Legacy? Four Fates Await your applications” by Phil Murphy / Forrester Research, January 2006]

#### Note 1.6

“Several recent trends indicate that IT organizations are ready for a break with the past. Service-oriented architecture (SOA) is a viable “future state” target, and IT managers are now admitting that they will keep some legacy applications much longer.” [“Got Legacy? Four Fates Await your applications” by Phil Murphy / Forrester Research, January 2006]

#### Note 1.7

“Service orientation has the potential to create value by enabling greater business flexibility and responsiveness to change. SOA will provide a sound foundation for many, though not all, next-generation requirements. Multichannel architecture implementation, for example, will be more straightforward than today — once all back-end systems and channels are able to speak the “service language.” [...] There is life after SOA. Requirements like customer centricity, platform agility, and multichannel persistence — the foundation of true cross-channel capability — also demonstrate that SOA will not solve all of the questions of next-generation banking platform

design. Many issues need to be addressed on both the technology and business levels. One such challenge is defining service-oriented interfaces and business services — they are the essential building blocks of platform agility and the key to an easier cross-platform deployment of customer centricity. There is still a way to go.” [Vintage Banking Platforms Need Renewal, J. Hoppermann, Forrester Research, Dec 2004]

### **Note 1.8**

A questionnaire was sent to bank managers that attended to a pre-announcement of the results of this reports asking them their opinion about the state of the core systems and the satellite systems. They were requested to grade their opinion is a scale from zero to ten. Zero meant system in operation, doing the very basic, where improvements would be recommended. Ten is the very best solution. The answers were weighted by their own opinion regarding how sure they were of their answers. The result was that bank managers when compared to IT experts (from consulting companies and IT Suppliers) find the core systems to be in better shape than the satellite systems (7.0 to 5.9) while the IT experts have the opinion that the core systems are slightly worse than the satellite systems (5.9 to 6.2). Interesting to point that, when compared with IT experts from consulting companies and IT suppliers, bank managers have better opinion regarding the state of the existing core systems. The questionnaire was answered by 27 professionals.

### **Note 1.9**

In developing Service Oriented Architecture strategy, a primary concern is how to protect existing application investments while enabling real improvements in adaptability. An increasingly popular approach is to deliver new functionality that reuses services from many existing applications and sources, so called Composite Applications.” [CBDI Service Oriented Architecture Practice Portal,2004]

### **Note 1.10**

“eBusiness forced more legacy application changes. [...] The second-generation Web sites were transactional — they hosted storefronts or other business transactions.[...] To launch the second generation of their sites, the companies were forced to make significant investments in integration technology to enable the storefronts to trigger legacy transactions running on the back-end systems.” [“Got Legacy? Four Fates Await your applications” by Phil Murphy / Forrester Research, January 2006]

### **Note 1.11**

“It might seem natural for business executives to dismiss discussions of software design, but service-oriented architecture (SOA) is a high potential innovation worthy of business executive’s attention. Like the Internet, SOA has the potential to fundamentally alter how businesses collaborate and compete. And ready or not, it will change the industry” [Changing the way industries work, IBM Corporation – Application Innovation Services]

## **Notes to chapter 2**

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### **Note 2.1**

“Banco Bradesco decided for implementing the “*TI-Melhorias*”, an ambitious project that foresees the revitalization of all systems segments, from processes, applications, operating systems and technologies to infrastructure. The objective is to elevate Bradesco’s technology – which brings the tradition weight of being high quality, efficient and modern – to the ‘state of the art’ position.” [Laércio Cezar, Executive VP of Bradesco – CIO Magazine Brazil, September 21st, 2006].

### **Note 2.2**

“[*TI-Melhorias*] has presently 30 big projects going on. The most important, considered the soul of them all, is the implementation of a new systems architecture. It means to recode all legacy system

under the concept of service oriented architecture (SOA), fruit of a intense debate between all business segment of Bradesco's organization. This change represents a model which is agile and flexible, which allows us to follow the business dynamics very reduced "time-to-market." [Laércio Cezar, Executive VP of Bradesco – CIO Magazine Brazil, September 21st, 2006].

### **Note 2.3**

"From the 26 projects of *TI-Melhorias*, the most important one is the New Systems Architecture, that aims to re-write all applications of Bradesco, baseda on the specifications from the business areas, but under the horizontal approach. That means, every application, from the different areas, built during the last 40 years – not only at Bradesco, but also in every single large bank in Brazil – was built under the vertical approach. One example: the first system built by banks was the Deposit Account, where it was necessary to create every management and general ledger controls, to design the statements, to generate the required information for Central Bank, etc. Later, the same was done for the loans systems, for insurance, and every other application. They were built under the vertical approach. [The new horizontal approach is based in smaller programs (the services) shared by the applications]." [Executivos Financeiros Magazine, June 2006]

## Notes to chapter 3

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### **Note 3.1**

"It has taken IT a decade or more to get into this situation, and it unsuccessfully tried the easy way out several times. The only way out of this mess is permanent and fundamental change. (1) Manage itself more efficiently. IT managers are blind to much of the activity in IT, so how can they manage resource consumption that they can't see? They can't align costs to the business, analyze performance data, or determine why its costs are so high. (2) Admit its shortcomings to the business. Funding for self-improvement won't come easily, but business managers know that IT managers need information to manage effectively. The adage "You cannot manage what you do not measure" is taught to every first-year management student. (3) Craft a plan to move forward that addresses business and IT issues. With the desire for improvement and the understanding of what is needed, it will be simple enough to craft a plan to organize IT to run more efficiently and communicate activity and expenses more effectively." ["Got Legacy? Four Fates Await your applications" by Phil Murphy / Forrester Research, January 2006]

### **Note 3.2**

"With the objective of giving adequate support to the work, increasing the company's management capacity, Bradesco has adopted a modern concept of organizational process integration, using the SAP Integrated Management System, the mySAP Business Suite solution." [Bradesco Annual Statement, December 2005]

### **Note 3.3**

"With a novel application of SAP supply chain management software, Itaú, one of Brazil's leading banks has discovered a more efficient way to cash to its branches and automatic teller machines (ATMs) around the country." [SAP Annual Report, 2005]

### **Note 3.4**

"Next-generation requirements include: customer centricity; process orientation; regulatory adaptability; parameterization; multi-channel capability; security; near-time capability; and platform agility. Platform must be designed to integrate "foreign" banking software applications — third-party applications and homegrown systems — that will be used on a module-by-module basis with varying levels of granularity and provide interfaces to other systems." [Vintage Banking Platforms Need Renewal, J. Hoppermann, Forrester Research, Dec 2004]

### Note 3.5

**Cooperative ecosystems:** Global banking platforms, such as those of i-flex solutions, Fidelity Information Services, Fiserv, Infosys Technologies, SAP, and TEMENOS, as well as application infrastructure vendors like BEA, IBM, and Sun, are the most likely candidates to drive and manage business services ecosystems for banking. They will need to cooperate such that business services interfaces originating in one business service ecosystem can be used in other ecosystems — without significant change: They either need to agree on standards for all business services ecosystems or on transformation rules. While this is probably a very positive scenario for banks — as well as any other user company that could use an industry-specific business services ecosystem — it would make business services interchangeable and give vendors less control of their own ecosystems. It remains to be seen whether market forces will drive vendors toward acceptance and how they will handle this challenge: Ecosystem-neutral standards driven by a neutral standardization body may be one of the more promising approaches — if a sufficient number of ecosystems and vendors support it. [The Next-Generation Banking Platform, Agility For Cross-Divisional And Cross-Bank Business Processes, by Jost Hoppermann – Forrester Research, Inc – May 31, 2006]

## Notes to chapter 4

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### Note 4.1

“IT must change the way it works with the business and embrace the newly available tools and techniques. Admitting the mistakes of the past, in the context of the opportunities and threats of the present, will help leaders clear the air, while crafting a path into the future that all affected parties can accept and support.

(1) Inventory, then analyze

- Start with an inventory.
- Zero in on the areas that cause the most pain.
- Collect inventory data using automated discovery.
- Make it continuous.

(2) Evaluate applications

- Add metrics to increase the value of the inventory information.
- Assemble views of the information.
- Survey stakeholders.

(3) Choose a fate

- Leave it as it is.
- Modernize it.
- Replace it.
- Retire it.

[“Got Legacy? Four Fates Await your applications”, Phil Murphy/Forrester, January 2006]

### Note 4.2

“Think you don’t have legacy systems? If you have applications that are more than three years old, then you have legacy applications. Applications written three or more years ago using HTML, XML, Perl, C#, and Java qualify as legacy applications because they share so many attributes with their older siblings — the original authors are gone, they were poorly documented, and as a result, they are now poorly understood, so nobody wants to work on them. Virtually every organization has legacy applications of some form, but the volume of legacy and its corresponding effect on the

organization governs what firms do about it.” [“Got Legacy? Four Fates Await your applications” by Phil Murphy / Forrester Research, January 2006]

### **Note 4.3**

Decide on the right sourcing options, have a vision of a future functional map, and deploy sound planning methodology. To make all these decisions better informed, a number of issues need to be assessed.

- What kind of overall business environment will the new banking platform need to support at the beginning, middle, and end of a multiyear migration phase?
- Do any of the more strategic business requirements include a political factor making top management influence, decisions, and guidance mandatory — maybe even on a relatively detailed functional level?
- Compare the functionality and architecture of the existing banking platform with the consolidated business needs of the bank and its partners. What key deltas exist today?
- What are today’s most crucial obstacles challenging application development and migration? What is the best way to eliminate or to work around them?
- Which architecture requirements are mandatory to cope with key business issues in the long term?
- Which of the defined technology and architecture requirements are mandatory — and which are nice to have? Can any of them easily be implemented at a later time — or not at all?

[Large Scale Banking Platform Renewal Case Study: Drivers, by J. Hoppermann, Forrester Research, March 2005]

### **Note 4.4**

“To reduce batch processing is not an important issue when renewing a platform. Batch processing will always be needed because there are many processes to be run at the change of a day (positions accrual, interbanking checking balance, etc). Batch processing helps to distribute MIPS usage.” [opinion of a consultant from one of the BigFive]

### **Note 4.5**

“Companies need to know exactly how an SOA and Web services can support their business goals. Whether they intend to implement one small project or an enterprise-wide transformation, the organization will require a comprehensive development and implementation plan. And to help ensure that implementation, transition and deployment processes go smoothly, companies must gather and nurture deep SOA and Web services expertise. Creating, implementing and deploying a security-rich SOA and Web services environment in an incremental, self-funding manner requires hands-on experience and focused dedication.” [SOA Overview Data Sheet, IBM Corporation]

### **Note 4.6**

“Though typically implemented in an incremental manner, companies often find that without the right expertise, the SOA implementation process can run counter to business objectives by overusing critical staff resources or restricting the use of business processes and technologies.” [SOA Overview Data Sheet, IBM Corporation]

### **Note 4.7**

“After implementing SOA and Web services solutions, companies must ensure that the systems are meeting their business goals and their customers’ requirements. They need ways to track usage and transactions, as well as to monitor service level agreements.” [SOA Overview Data Sheet, IBM Corporation]

## Notes to chapter 5

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### **Note 5.1**

An architecture description is a formal description of an information system, organized in a way that supports reasoning about the structural properties of the system. It defines the components or building blocks that make up the overall information system, and provides a plan from which products can be procured, and systems developed, that will work together to implement the overall system. It thus enables you to manage your overall IT investment in a way that meets the needs of your business. [The Open Group Architecture Framework, [www.togaf.com](http://www.togaf.com)].