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Improving the Administrative and Technological Architecture of Social Security Institutions in America

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English - Or. English

I. Introduction

The goal of this paper is to underline the important relation between organizational design of a social security agency and the architecture of its information technology (IT), as well as to provide a starting point to develop an IT architecture plan. Certainly, several social security agencies in the Americas have done a superb job in adapting to new technologies and in transforming themselves. However, it is surprising to find other cases where the issue has not been consider with enough depth at a great cost. It can be said that even for the more sophisticated cases, great advances are being relatively recent, mainly coming from the mid-nineties.

Given the goal mentioned, we must put a boundary on the definition of architecture for the purposes of this document. In a broad sense, architecture includes all levels of hardware design, as well as the integration of hardware and software. Here, the concern is with the relation between the administrative organization of social security and the organization of its IT systems. Thus, we will not deal with engineering issues.

This document is not addressed to expert IT architects, and does not provide a technical manual on the development of an architecture plan. It is addressed to the large community of social security officials and other stakeholders who may or may not be experts in IT, but are related to the decisions by the agencies on organization and IT. It argues that the issue is very important, and in particular why the administrative organization of a social security agency today cannot be defined well separately from the IT architecture.

Sections II and III of this document describe general guidelines and the implications on the organizational structure of implementing an enterprise architecture. Section IV defines the EA and describes the benefits, the reasons and the process of developing EA plan. Much of the information incorporated in this section was taken from the Practical Guide to Federal Enterprise Architecture issued by the Federal CIO Council from the government of the United States. Section V describes two tool that have been of very high practical importance for the modernization of large agencies and public and private corporations: the Shared Services center and Enterprise Resource Planning. The more conceptual part IV and the case studies in section VI show the relevance of these tools. Section VI develops case studies of IT architecture development that have had important interaction with public agencies.

II. IT architecture for social insurance and society

Opinions on the future of social security are varied, and social events are forcing agencies to modernize. Perhaps initially the “crisis” was flagged by the “aging problem”, but through the nineties it became acknowledged that there are deeper

problems in the national social security systems: growth of the informal labor market, lack of confidence by the population on the future of the system, need of national agencies to modernize.

One key example of social change is the growth of new contractual forms of work. As mentioned in the 2005 Annual Social Security Report of the Americas (CISS 2004), labor markets across the world have generated large "informal sectors", defined by the lack of access to social insurance. This development is highly significant in the Latin American and Caribbean area (LAC), but even in many wealthier OECD countries the population has found ways to opt-out of the labor stories scripted in social security's legislation.[1]

Individuals have deviated in two generic forms from the traditional labor careers assumed in the social security laws. A large set of workers have decided that paying social security contributions is not worth the benefits received, but this can have contradictory meanings. Some believe that the benefits are of low quality (is the health service offered good enough to justify the payment?) or uncertain (will the system pay pensions several decades from today?). On the other hand, some workers find that the rules and administration of the system have loopholes (can I begin paying after I get sick?) and cracks (is user identification so badly managed that I will get full pension benefits even if I did not pay all the time?) that allow them to receive benefits even when contributions have not been paid in the past.

The lack of confidence in social security, the need to modernize the agencies and the increased impulse by the population to work outside the social protection system are interlinked. From a strategic point of view, this paper assumes that social security agencies can recover lost ground and achieve an epoch of renewed growth through the adoption of new information technologies that reduce their operation costs and radically improve the quality of service provided to citizens. This may not be enough to fully regain the trust of citizens, but the improvement in administration seems to be a necessary condition. At a tactical level, this paper focuses in one of the critical areas for the modernization of social security, namely information technologies, and within this sphere on the issue of the adoption by a social security agency of an "enterprise architecture" (EA).

The Encyclopedia Britannica defines "traditional" architecture as "the art and technique of designing and building, as distinguished from the skills associated with construction". For computer science, the concept of architecture is basically the same and it involves more than putting together hardware and software: it is required to solve utilitarian and cultural ends. The weight of these ends varies with the

[1] The 2005 report points out that while LAC countries usually have a large informal sector, Canada and the United States have the smallest informal sectors among OECD countries.

applications: in some cases the architecture of a system needs to strive for practical solutions, such as the “number crunchers” needed in accounting or to process the large monthly payroll for the retirees. In other cases, the architecture will be optimal if it provides a kinder and friendlier environment to users that demand interaction and patience, even if from a technical point of view the system could improve greatly its computational speed.

The balance between optimizing technical capabilities and the social environment in which systems operate has changed through the decades. Figure 1 is from Kit (2003), and it summarizes an “architecture story” that has been lived by many public and private corporations. Back in the sixties, large investments were made in mainframe-based computing. This was very useful to manage accounting, collections, social security numbers, files that contained the history of contributions of individuals, the large and growing payrolls of retirees and a few other processes. Mainframes were viewed as “titans” solving administrative problems of a size that was unthinkable in decades past, and making possible the national welfare state. In those years the electronic information system did not touch the vast majority of employees of social security agencies, and basically none of the beneficiaries. Social security agencies around the globe developed geographical networks of offices that received information from firms and employees, put it in paper and typed to “upload” the information to a mainframe computer. The agency would perform calculations with the information and would produce outputs useful to all interested parties, who would apply again to a regional office to receive the information and its associated consequences, such as a pension.

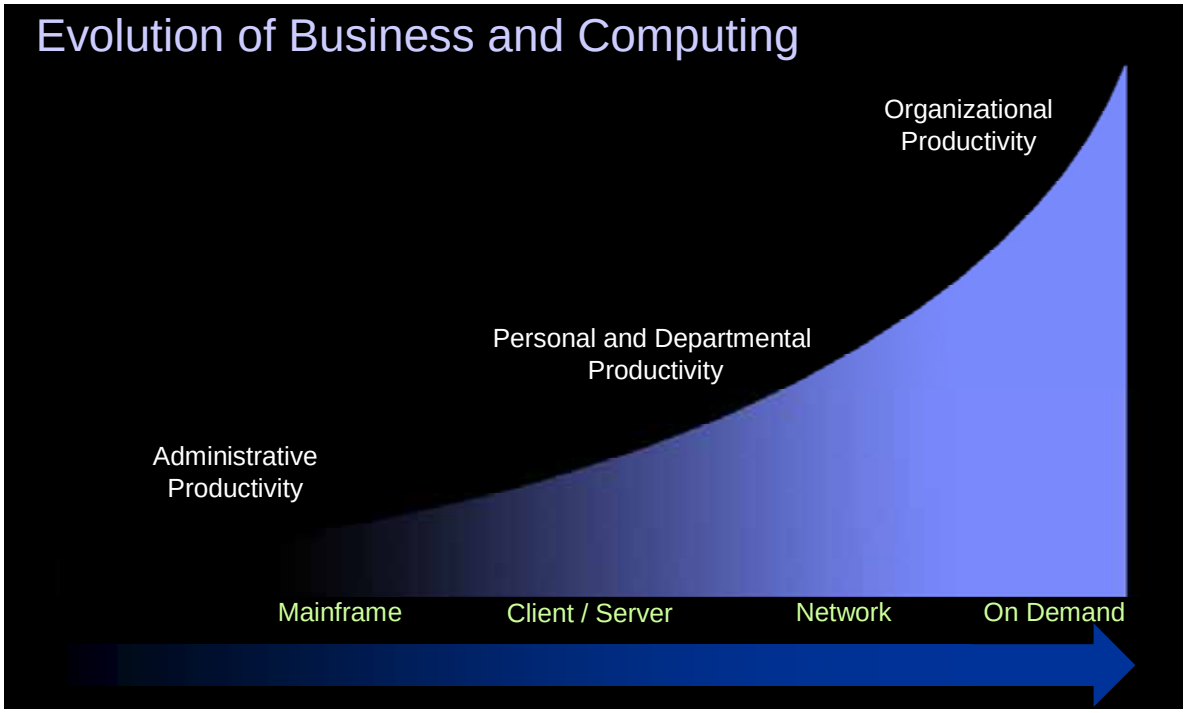
But the world moved on from the age of titans, to client-server architecture, networks and now apparently to “enterprise” architectures. The great driver of the mainframe-based architecture was the low average cost of transaction of a mainframe computer against any local option (such as the cashiers or accounting machines in the market in the sixties). But important technological advances took place unrelentingly to reduce the cost of computing at a local level, to transmit information across large distances, to store and share information, and to coordinate large networks.

It is apparent in the discussions on the modernization of public and private corporations that the change in technology has been faster than the ability of the corporations to adapt. The mainframe era led social security agencies to develop highly effective and detailed procedures to receive, process and store information, but not to interact with final users, to allow access from decentralized offices or to interact with other agencies, stakeholders (such as the Judiciary) or suppliers. This result is currently summarized in the view of those systems as “silos” that were very cost effective given the available technologies of the sixties, but that turned out to be inflexible to take full advantage of the new technological frontier.

Social security agencies were successful pioneers in the adoption of the mainframe-based technologies. Their processes were perhaps never the most sophisticated technically, but they were among the biggest applications in sheer size, and social security agencies gained enormously from building those silos.[2] Later, they have also faced challenges to transform their organization to the new technologies, and the histories of pain and large costs of evolution are common. For this reason, social security agencies profit strategically from thinking about their administrative and informational architecture. As said above, this exercise is not "technical" or "utilitarian", because society does not expect from social security the plain adoption of leading technologies, and it is likely that these will not produce a full solution. The exercise in each agency has to balance the technical issues with a range of social issues: the culture of the agency and of the country it serves, the need to interact with a complex set of stakeholders and bosses (Congress, the Chief Executive, boards, audit committees), the budgetary possibilities, and yet others.

[2] Social security has to respond to the legal mandates, and the size of the programs has meant that IT solutions have been required since the first years of the national programs. In the United States, after the enactment of social security 1935, there was a need to issue 3.5 million Employer Identification Numbers, and 35 million social security cards. According to Burlin (2004), "The weight of the paper records alone was so massive that there was no building in Washington, D.C. with floors strong enough to bear the weight, so the records had to be housed in an old Coca-Cola factory in Baltimore."[2]

Figure 1
Evolution of Business and Computing



Source: Kit (2003).

III. Reorganization and IT architecture

Many organizations have adopted technology to improve productivity, reduce costs, drive revenues, offer new capabilities to customers and suppliers, and maintain competitive parity. IT investments have meant to corporations significantly improved sales forecasting, rapid month-end closings, shortened supply chains, tightened inventories, and streamlined customer communication. These achievements are just a few of the results of the combination of hardware, software, and effort expended over the past two decades.

For social security organizations the adoption of new technological projects to their processes can have a substantial impact on the ability of the system to offer financial and other services mandated by legislation. The development of a strong and complete enterprise architecture can enable social security organizations to reduce costs, deliver better service and perform business activities while continuously improving internal efficiency and effectiveness.

In the Americas social security programs were designed 50 years ago or even more. Most of these programs began using IT systems in the sixties to automate routine tasks in order to achieve the same results faster, more accurately and at a lower administrative cost. As a result some of these programs have a wide variety of management and financial information, however much of these information is housed

in “legacy systems” that are not integrated, not easily accessible, and not user-friendly. Therefore data and reports are usually not available, except in written form or as attachments to electronic mail messages. The records, systems and databases use to capture and report crucial management information are aging and difficult to maintain. So these systems are not always responsive to changes in user needs.

The development of an EA can improve the quality, consistency and access to information used by managers and analysts to manage work and account for resources. This gives managers user-friendly access to more information that supports their need for analysis, monitoring customer service, resource allocation, and strategic decision. For some social security organizations the implementation of IT may require major organizational modifications involving the administration of their social security schemes. IT implementation, in its broadest sense, implies institutional reform to achieve cross-boundary integration, implement better controls over fraud and abuse, increase the capacity for innovation, improve transparency and accountability, promote economic development and democracy, simplify services, and provide better security for citizens.

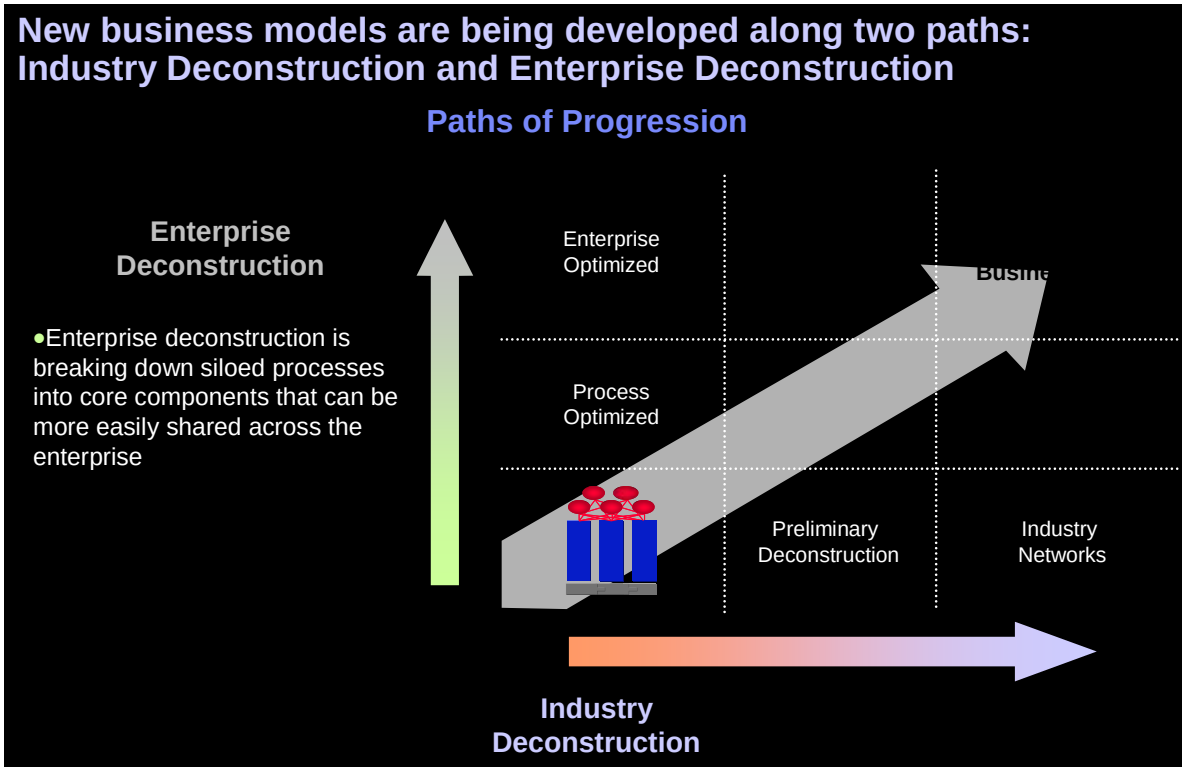
Despite the remarkable results observed in many organizations and derived from IT investment, this is an issue that requires been taken cautiously due to high failure rates of IT initiatives.[3] Social security organizations must learn to design their technology systems according to a plan that considers major processes, key decisions and approaches for managing business applications into the organization. The challenges for doing so are considerable. Transformation is hard. It takes strong and sustained leadership to reshape institutions.

Figure 2 is from Kit (2003), and it says that to adapt towards new technologies, organizations are abandoning the process-silos, through the break down of processes into core components that can be more easily shared across the organization, and through finding specialization in the value chain. The need for an IT-EA plan should be clear if the message in this graph is adequately conveyed: (a) there are gains in productivity from developing more basic processes that can be shared across the agency, and (b) there are gains in productivity from specializing in process where the agency has advantages and contracting other with specialists. The IT-EA plan should provide an element to guide an agency in this direction, to optimize the balance between internal developments and purchases of services from third parties, to define

[3] The Standish Group, a technology research group and consultancy, which has performed periodic studies on the results of corporate IT initiatives since 1994, found that 53 percent of IT projects had overrun their schedules and budgets. Thirty one percent of IT projects were cancelled. The average time overrun on projects was 222 percent of the original estimate.

the combination of organizational change, expenditures in IT and definition of the more adequate technologies.

Figure 2



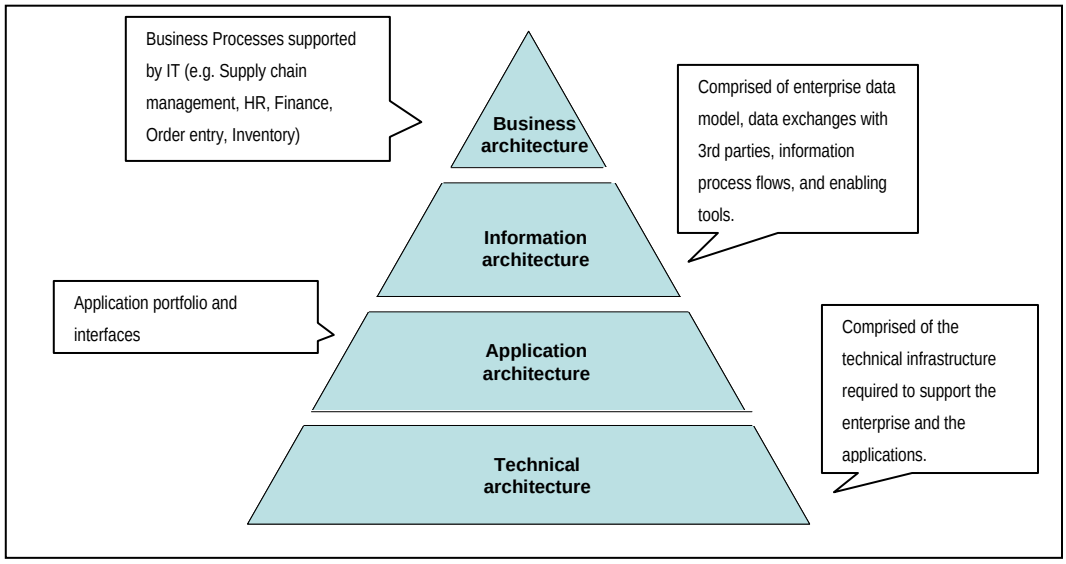
Source: Kit (2003).

IV. The Enterprise Architecture (EA)

An EA establishes de agency-wide roadmap to achieve the agency's mission through optimal performance of its core business processes within an efficient information technology environment. Enterprise Architecture can be defined as a strategic information asset base, which defines the business, the information necessary to operate the business, the technologies necessary to support the business operations, and the transitional processes necessary for implementing new technologies in response to the changing business needs.

An EA is based on a framework or structure that portrays the relationships among all the elements of the system, or activity. This architecture framework serves as a reference point to facilitate the efficient and effective coordination of common business processes, technology insertion, information flows, systems, and investment among organizations.

Figure 3
Enterprise Architecture Framework



Source: Baschab and Piot (2003).

Figure 3 highlights the four major components of an IT architecture framework: business, information, application, and technical architecture. Baschab and Piot (2003) describe these four components as follows:

Business architecture: Major business activities, functions, and their supporting processes. It further translates the business processes into enterprise business requirements that can be organized into functional groupings. These requirements are supported by information flows and package and custom applications.

Information architecture: Information flows, data entity relationships, and enabling tools dictated by the business processes and activities from the business architecture.

Applications architecture: Software programs that automate and support business processes; the functions of the applications; articulates the platform where the applications reside; details the set of applications that will support the business in the future; and displays the linkages between both internal applications and the company's applications and those of its vendors, suppliers, and users.

Technical architecture: The computing infrastructure (i.e. systems software, hardware, network) that supports the information and application architectures.

The enterprise architecture includes the manner in which the components are organized and integrated. It is important to consider that this architecture supports the company now and will continue doing so into the foreseeable future.

IV.1 Why develop and EA?

In general, enterprise architectures are essential for evolving information systems, developing new systems, and inserting emerging technologies that optimize their mission value.

There are five essential reasons for developing an EA which are the following:

- **Alignment**- ensuring the reality of the implemented enterprise is aligned with management's intent.
- **Integration**- realizing that the business rules are consistent across the organization, that the data and its use are immutable, interfaces and information flow are standardized, and the connectivity and interoperability are manage across the enterprise.
- **Change**- facilitating and managing change to any aspect of the enterprise.
- **Time-to-market**- reducing systems development, applications generation, modernization timeframes, and resource requirements.
- **Convergence** - striving toward a standard IT product portfolio.

IV.2 What are the primary benefits of using an EA?

The primary purpose of an EA is to inform, guide, and constrain the decisions for the enterprise, especially those related to IT investments. However, an EA offers tangible benefits to the enterprise and those responsible for evolving the EA. The EA can:

- Capture facts about the mission, functions, and business foundation in an understandable manner to promote better planning and decision making.
- Improve communication among the business organization and IT organizations within the enterprise through a standardized vocabulary.
- Provide architectural views that help communicate the complexity of large systems and facilitate management of extensive, complex environments.
- Focus on the strategic use of emerging technologies to better manage the enterprise's information and consistently insert those technologies into the enterprise.

- Improve consistency, accuracy, timeliness, integrity, quality, availability, access, and sharing of IT-managed information across the enterprise.
- Support the capital planning and investment control processes by providing a tool for assessment of benefits, impacts, and capital investment measurements and supporting analyses of alternatives, risks, and tradeoffs.
- Highlight opportunities for building greater quality and flexibility into applications without increasing cost.
- Achieve economies of scale by providing mechanisms for sharing services across the enterprise.
- Expedite integration of legacy, migration, and new systems.
- Ensure legal and regulatory compliance.

IV.3 The Enterprise Architecture Process

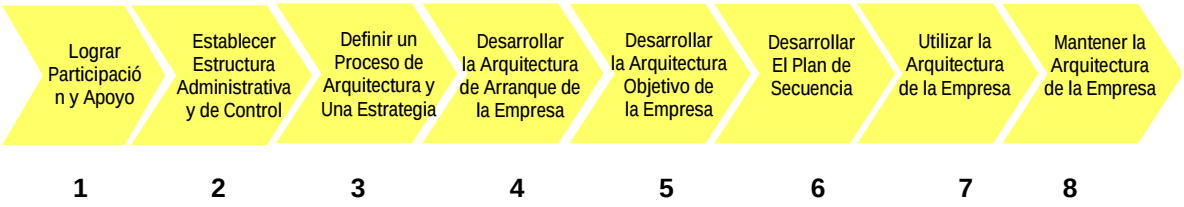
Public officials at different levels of agencies are sometimes wary of large IT projects, or of programs that promise large returns after similarly large reorganization efforts. Certainly, technological change has been very fast. Next to the success stories, the formal literature and the folklore are filled with cases of large failures in organizations that embarked in reform projects, with similarly substantial cost to the careers of the individuals involved. As quoted in the IRS' case study presented below, perhaps for many large public organizations there is not a low risk scenario. When the lag in modernizing the agency becomes too large, an effort to bring the administration to an acceptable standard may be inherently complex. On the other hand, the good news is that during the late nineties the practice of IT for enterprise management matured in important ways. The providers have become more oriented towards improving the experience of users, the cost of deployment has fallen radically, and the accumulated knowledge by software vendors, consultants and public officials provides a much improved base to deal with the process of change.

The evolution of an IT-architecture can follow an ordered process and serve as a foundation for social security agencies of all sizes, regardless of their state in the curve of modernization. Even for the United States (presumably the world leader in IT industries), the main efforts to define an IT-EA for the public sector in general date from the second part of the nineties, and are still being developed. Thus, most social security agencies are likely to have a benefit from developing an IT-EA. It would be a mistake to think that an agency can be too small or lagging too much in adopting new IT, or may not have a budget in the mid-term to be concerned about this issue. It is a sure thing that all social insurance agencies will be spending resources in PCs, new mainframes, telecommunications networks, web pages, and other tools. And it is important to understand that a good IT-EA can be the defining factor in bringing those investments into an ordered and manageable fashion. The plan can be a key for the

communication between non-IT decision makers and officials in general, and the IT offices in agencies, which are often beleaguered by incompatible demands.

As a prerequisite to the development of enterprise architecture, each agency should establish the need to develop an EA and formulate a strategy that includes the definition of a vision, objectives, and principles. Figure 4 shows a representation of the EA process.

Figure 4
The Enterprise Architecture Process



Source: A Practical Guide to Federal Enterprise Architecture, CIO (2001).

The first two stages in the EA process are to establish buy-in and support and create an architectural team within the organization. As part of stages III, IV and V, the architectural team implements the process to build both the baseline and target EAs. These architectures consist on the set of products that portray the existing (baseline) and future (target) enterprise. The baseline architecture describes the current business practices, and technical infrastructure, commonly referred to as the "As-Is" architecture. The target-architecture describes the future or end-state enterprise, generally capture in the organization's strategic thinking and plans, commonly referred to as the "To-Be" architecture. In the stage VI, the architecture team also generates a sequencing plan for the transition of systems, applications, and associated business practices predicated upon a detailed gap analysis. In the stage VII, the architecture is employed in the capital planning and investment control (CPIC) and the enterprise engineering and program management processes via prioritized, incremental projects and the insertion of emerging new technologies. Finally, in the stage VIII the architectures are maintained through a continuous modification to reflect the agency's current baseline and target business practices, organizational goals, visions, technology, and infrastructure.

It is important to note that the EA process is an ongoing effort; when the team has successfully migrated to the target-architecture, changing business requirements and newly available technologies will most often dictate that a new target-architecture be defined and the migration begin again. So architectures continuously change and require transition.

V. Two Important Tools

V.1 What is a shared services center?

According the 2003 Shared Service Survey by Deloitte (2003), a “shared services center is a business unit that performs administrative transactions for numerous divisions or subsidiaries of the same company, rather than having those transactions conducted in every division or subsidiary.” Figure V.1.1, from the same source, provides a general example of reorganization after a shared services center concept is adopted. The case studies below show that creating or not a shared services center is of great importance to define the organizational and IT architecture of an agency.

Confirming the decrease in risk in IT and reorganization projects observed since the nineties, 95 percent of corporations that have developed a shared services center consider it successful, and the rates of return are very large.

Shared services centers are better to perform standardized tasks, and the early applications concentrated in finance. For social security agencies, this means that the functions of accounting, treasury, registration of employers and beneficiaries, collections and audits, are strong candidates to move to this concept. On the other hand, over the years, as the concept has proven its worth and organizations have proven capable or reorganizing and standardizing, they have added other important core processes. For example, in human resources management, the selection of specialized personnel may be done better by the specialized areas, but the processing of payrolls can be shared. In a social insurance environment, it is clear that programs such as health insurance, child care and pensions often have developed their own data bases and procedures to acknowledge beneficiaries, and they can all improve through a shared strategy.

Figure V.1.1

Process Area	% of Respondents
Financial	89
Human Resources	70
Supply Chain	53
Administrative Functions	44
Technology	42

Source: Deloitte Research.

In practice, the success of a shared services center depends upon the solution of "human issues", because usually, there are significant changes in the way things are done and in the internal relations: (a) many individuals are faced with a substantial change in procedures, while they may see that the old procedures have been effective for a long time, which require training, alignment of views and working continuously on the internal communications; (b) service level agreements (SLA) between the shared services center and internal users are required, and while SLAs are considered

important, it has not always been easy to develop them; (c) unhappiness of internal customers leads sometimes to lack of cooperation, and the shared services chief officer has a key role to play in promoting the function and balancing the interests of the different areas.

To conclude, it can be stressed that the shared service center concept has matured. For large organizations, it is likely to become an increasingly common component of the flowchart. It has proven to be a tool that produces large value, and the accumulated experience makes it a less risky strategy than in the nineties. It is also a component of the organizational chart that fits well into a modern IT-EA.

V.2 What is an ERP?

During the first part of the nineties, the software market witnessed the arrival of several technological advances that increased their value exponentially: microprocessor capacity, e-mail, internet, fiber optics. Most of these advances were known before, some of them several decades before, but towards the mid-nineties their ability to interact to support the productive capacity of organizations grew dramatically.

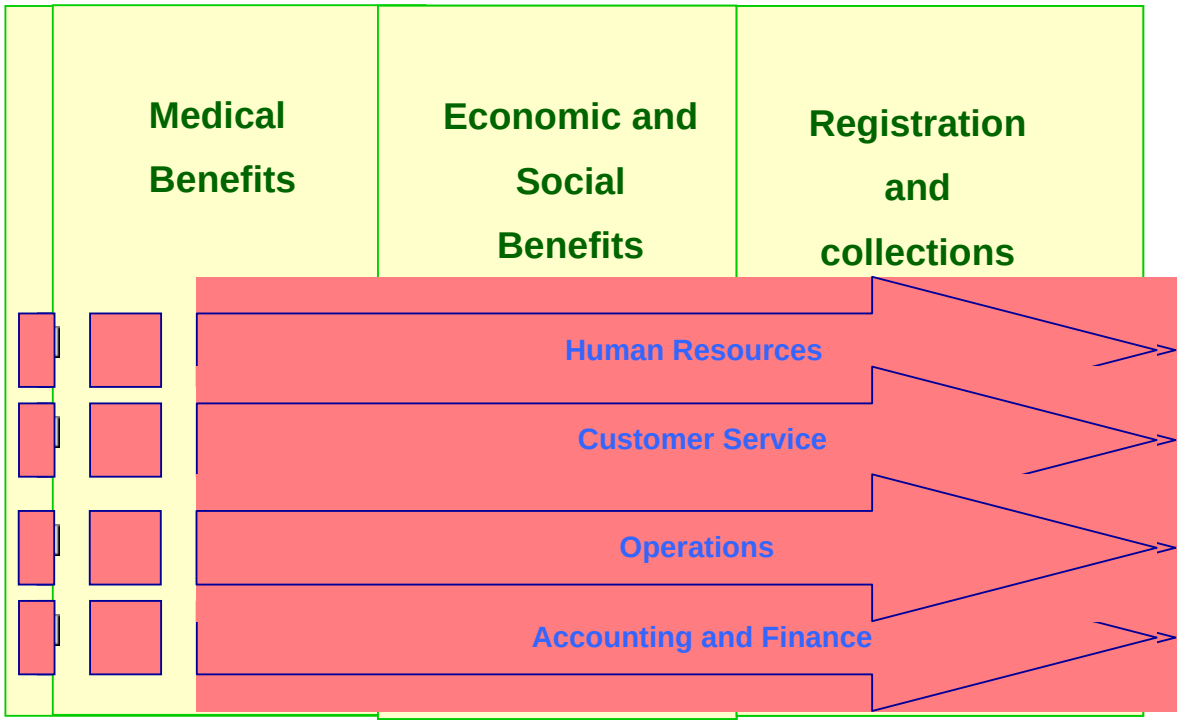
The ERP systems have been a main vehicle to take these advances to the large organizations. They have allowed the integration of processes across companies. Among the practices that have grown in use and value are the next: “seamlessly”, just-in-time, zero-inventory, internet portals and call centers.

Some of the things an ERP does are the following:

- Standardization of processes according to best practices
- Purely internet based:
  i. Software does not reside in PCs.
  ii. Access on line from any machine.
  iii. A single data base.
- The ERP systems are becoming more general and require less customization for each company.
- Software vendors have moved closer to the clients (although consultants are still needed for implementation).
- Applications are highly scalable.
- Multi-language and multi-currency automatically.
- Inter-operability of software providers. The market has consolidated and there are two very large players, with many complementary suppliers. With less smaller and specialized providers, solutions are becoming more integral.
- Analysis tools and embodied in the operations inseparably.

An ERP suite usually is defined by four large sets of modules. This can change slightly across vendors and applications, but in general a deployment of an ERP will focus on one to four of the following: Human Resources, Customer Service, Operations and Accounting and Finance. With a modern IT-EA architecture, these applications cut across all of the old “process silos” and benefit all parts of an organization. For example, a social security agency may use ERP process to pay accounts to suppliers but also to beneficiaries (e. g. retirees). Quite likely, in the last example, the pension area and the procurement area will have additional core process that will differ among them, but it is very important that they will share the same basic process defining how the agency makes a payment. In the IMSS case, this has meant that all operating areas that pay must have an account payable for each payment. Under the legacy system, this was not so. For example, the pension payroll did not enter the financial system directly, but only as a line in the budget. Under the new system, all liabilities generate an account payable. Figure V.2.1 illustrates this concept for a social security agency that integrates several programs. This level of integration has become less common since the pension reforms of the nineties, that separated pension programs from health programs in several countries (e. g. Colombia and Peru), but is still valid in several others (e. g. Panama, Mexico). Even when the programs are administered by different agencies, it is likely that the IT architecture of the whole social protection system will profit from the ability to share data bases and processes (for example, for collections and eligibility purposes).

Figure V.2.1
Example of an ERP Application for an Integrated Social Security Agency



Source: Own elaboration.

VI. Case Studies

This section relates case studies of organizational change and IT investments that illustrate the importance of the relation between administrative organization and IT architecture. The first two subsections (in this draft) deal with cases of large investments in public agencies, and the last two subsections describe two concepts (or tools) that have been important in the transformation of organizations since the nineties.

VI.1 The IRS

Many social security agencies in the Americas are also collection agencies of the social security taxes. In other cases, the national tax authorities are in charge of collecting these contributions. In any case, IT have had a large impact on the way social security and other taxes are collected, and on the way information on collections affects other process of social insurance, such as the calculation of benefits, the determination of eligibility for health services and disability benefits, the control of social security numbers, the budgeting of agencies and decentralized operatives (such as hospitals) among others.

One of the largest and most interesting challenges of IT-EA transformation has been faced by the Internal Revenue Service (IRS) of the United States. This is not a

social security agency, but a tax collection agency. As such, it is in charge of administering a wider set of taxes than a social security agency, and some of these taxes have a more complex structure than the payroll tax. On the other hand, the IRS has faced a long modernization project that has taken it through a long path of change, and it has encountered problems that almost any large public agency that provides service to many customers is likely to face. This is a good case also because the IRS has been considered a very well managed organization, a reputation that has been at times questioned during the last two decades, mainly in relation to its ability to adapt to new technologies.

During the period 1990-96, the IRS followed the initiative known as the Tax Systems Modernization (TSM). The history of the TSM shows clearly that technology and administration have to be defined and worked out simultaneously. After the TSM episode the IRS renewed its modernization plans, now recognizing that “there is no low risk plan for the IRS. Therefore, it is essential to identify and manage the risks by confronting them, and honestly communicating what the IRS is doing and why” (Commissioner Rossotti, IRS 2000). While the IRS and the experts believe that the full effects of the reform are yet to be evaluated, in the opinion of Paul C. Light “the Internal Revenue Service is in the midst of one of the greatest turnarounds in modern bureaucratic history.”

One of the main lessons for the IRS was the need to redefine its administrative “architecture” to be able to tackle the risky technological projects. Graphs VI.1.1 and VI.1.2 show the organization of the IRS before and after the IRS Restructuring and Reform Act of July 1998.

Figure VI.1.1 IRS Organization 1998 (Simplified)

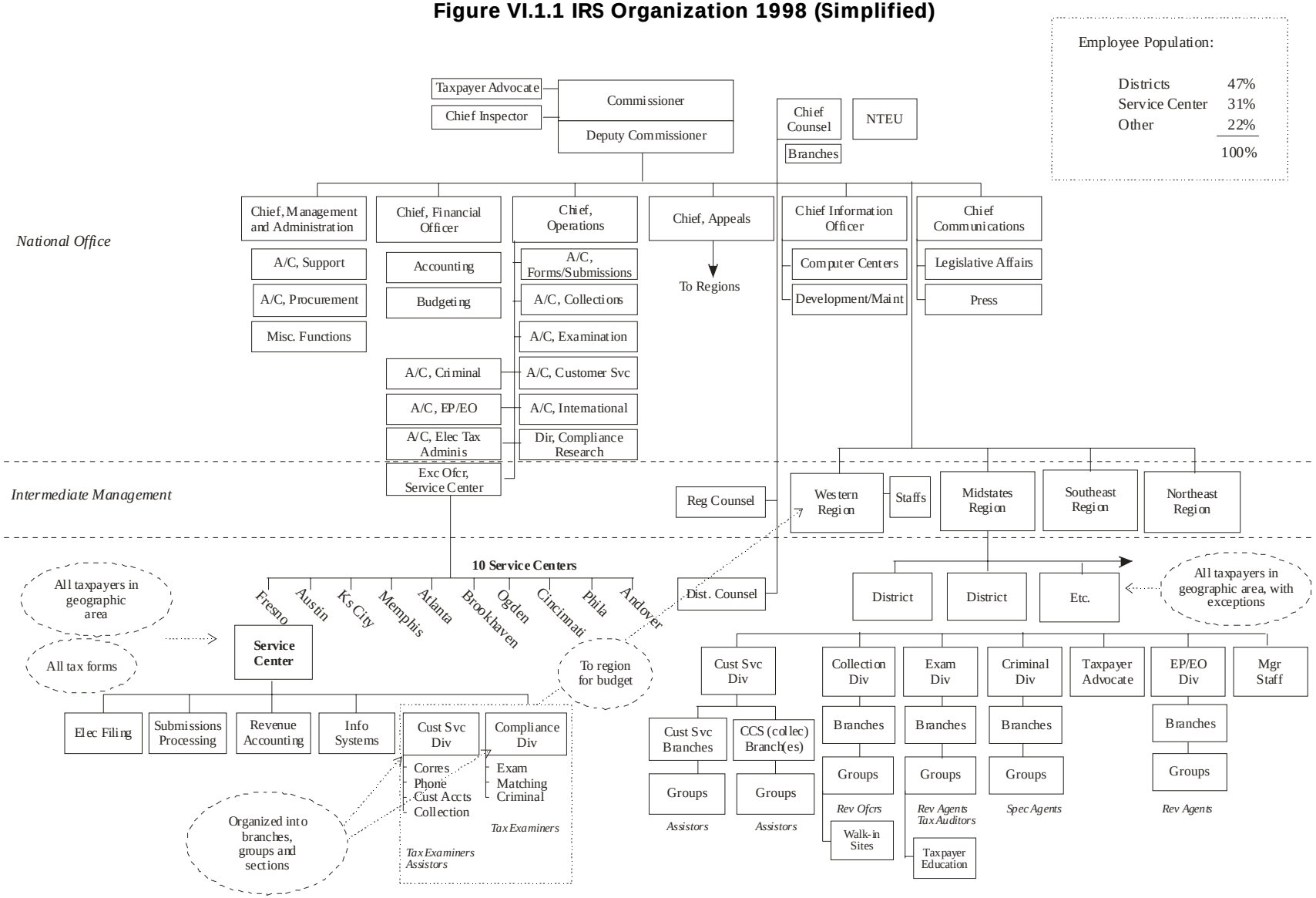


Figure VI.1.2

Internal Revenue Service
Future Organization

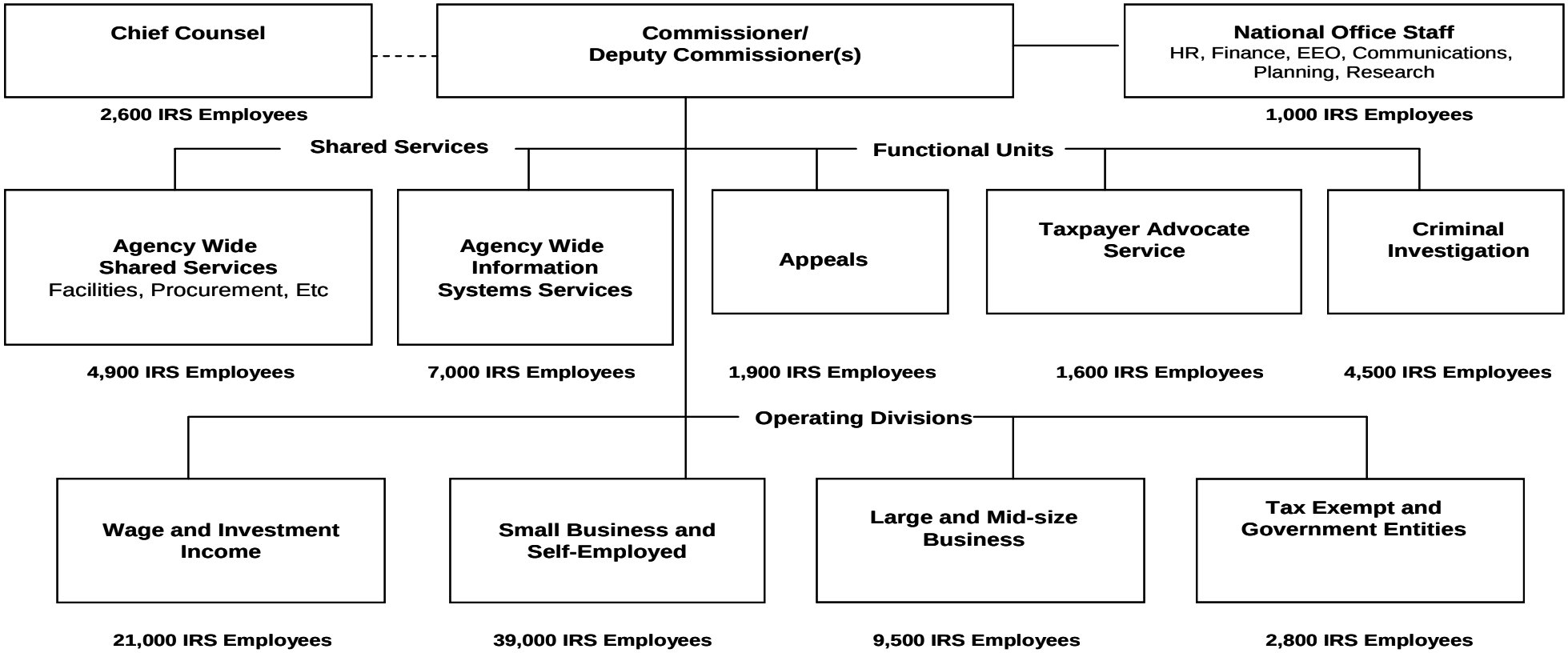


Figure VI.1.1, showing the old IRS administrative organization, resembles the flowcharts of many social insurance national agencies: a central office, regional offices, local service centers. In terms of the discussion in this paper, Graph A1 describes the "IRS' silos". Figure VI.1.2 shows the organization after the 1998 reform. As is clear even visually, the flattening of the IRS organizational structure has been a main part of the reform. The variety of field offices existed within a heavy hierarchy with silos going built from the central offices to the field offices, yet incapable of adopting new technologies in an orderly fashion. Local systems often could not talk with each other, and controls were lax (for example, the agency was not capable to account for its personal computers timely, making it impossible to control losses and thefts, Light 2002).

The move to a flatter organization has become a mantra in the literature on organizational modernization, and here the IRS case provides a nice example of a move to a customer oriented organization. The IRS created four divisions oriented towards the type of client, instead of the old organization based on the chapters of the law. It also introduced the concept of shared services center, which has been developed extensively in private corporations at a national and at the global levels, but has been difficult to seed in the public sector due to the more hierarchical orientation of organizations. This corporate reorganization is highly supportive of a "deconstruction" process, as Kit (2003) philosophically calls the activity of decomposing the old process silos into core process to adopt faster and more effectively the new technologies. According to Commissioner Rosetti, the matrix system with nine service centers and 45 district offices meant that there was a mini-IRS with its own computer center (this is contained in an interview by Bozeman 2002). Rosetti believes that the most important achievement of reorganization was to put a foundation for IT success. The three building blocks of the IRS enterprise/wide technologies are: the upgrade of the phone system to expand phone filing capabilities, the three security portals for the three main business lines, and the Customer Accounts Data Entry. Additionally, there are targeted programs (such as electronic filing and electronic signatures) and upgrading of legacy systems.

The IRS began to work with a planning portfolio that allows standard platforms and mainframes, standard PCs, and a security system that provides protection across portals. This requires having the same software, security and platform. It is believed that having moved to an enterprise system allows to adopt changes in months that before would have taken seven or eight years (for example, to do corporate audits). The IRS now has a fully documented enterprise architecture (version 2.0 was available early in 2002).

The goal of providing the IRS with an improved ability to perform long term projects was supported in the 1998 reform with a five-year term of office for the

Commissioner. Before, Commissioners served according to the wishes of the President. Social security laws in LAC usually do not provide a fixed term to chairpersons or director generals of the agencies, and this is a point that may be useful to consider. For example, the Guatemalan Social Security Institute had 10 General Managers between 2000 and 2003, and in the 2000 election year, the Mexican Social Security Institute had three Director Generals.[4]

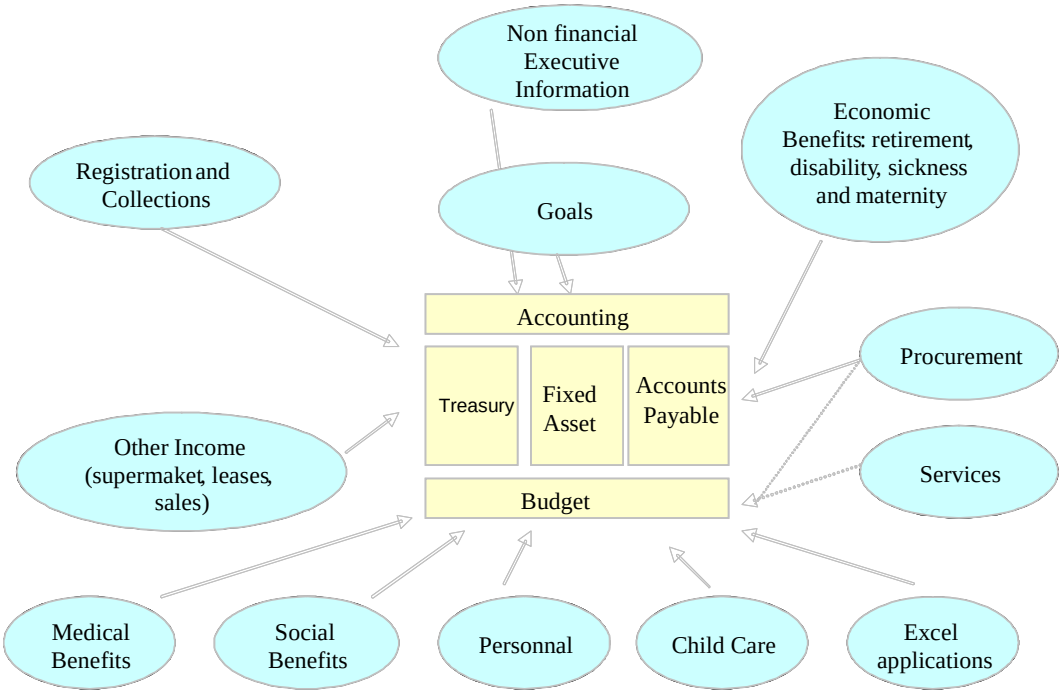
VI.2 The case of IMSS

The Mexican Social Security Institute launched and ERP initiative for finance in 2001, and by 2005 it is working with a modern IT-EA, but only for finance. From the point of view of an ERP project, it might have been more appropriate to approach the modernization through the customer service or operations processes. On the other hand, the advances can facilitate the movement towards a shared services concept. Notwithstanding the advantages of achieving the modernization of accounting, treasury, accounts payable, executive information systems, fixed assets management and other functions, the lack of development in other areas puts limits on the potential for growth.

The limits of the approach to modernize only part of the system are shown in Figure VI.2.1. The mid-point shows the financial functions that have been modernized, while the ellipses in the periphery show the main substantive processes that have kept legacy systems. This means that the darker center will operate under a modern environment, and while that is of benefit to the whole organization, there is an imbalance in the production of information in terms of opportunity and reliability. For example, the tax-collection function was not part of the project, which means that the management of accounts receivable remains under a legacy system, but the collections areas can access information on operating budgets of field offices under a more modern environment. Similarly, the areas in charge of managing the pension programs have improved access to operating budgets of field offices and to accounting information on the pension programs, but the information on individual payments or individual disability cases remains under old systems.

[4] http://www.igssgt.org/htmltonuke.php?filnavn=gerentes.htm. February 2, 2005.

Figure VI.2.1



Source: Own elaboration.

A natural question is whether IMSS will develop an IT-EA architecture plan to apply a structured development to the rest of the system. Following the basic format of the ERP suites, this could mean defining master plans for customer service, operations and human resources. Given the existing ERP investments for finance, IMSS could expect to target a full ERP development by the end of the decade, and an IT-EA plan would be most useful to accommodate the needs for investments to support those developments.

The IMSS project was substantial in size. Being the largest employer in Mexico, IMSS has over 360 thousand personnel, and even when the project was restricted to financial processes, it has required approximately 2,200 software licenses.[5] Among others, this includes more than 1,000 first level medical clinics, 133 field offices for tax collections and registration, 260 hospitals, 141 child care centers, central offices, regional and delegacies.

Another limitation of the IMSS project is that no advances were made towards the deployment of a shared services center. As was seen in the IRS case, the shared

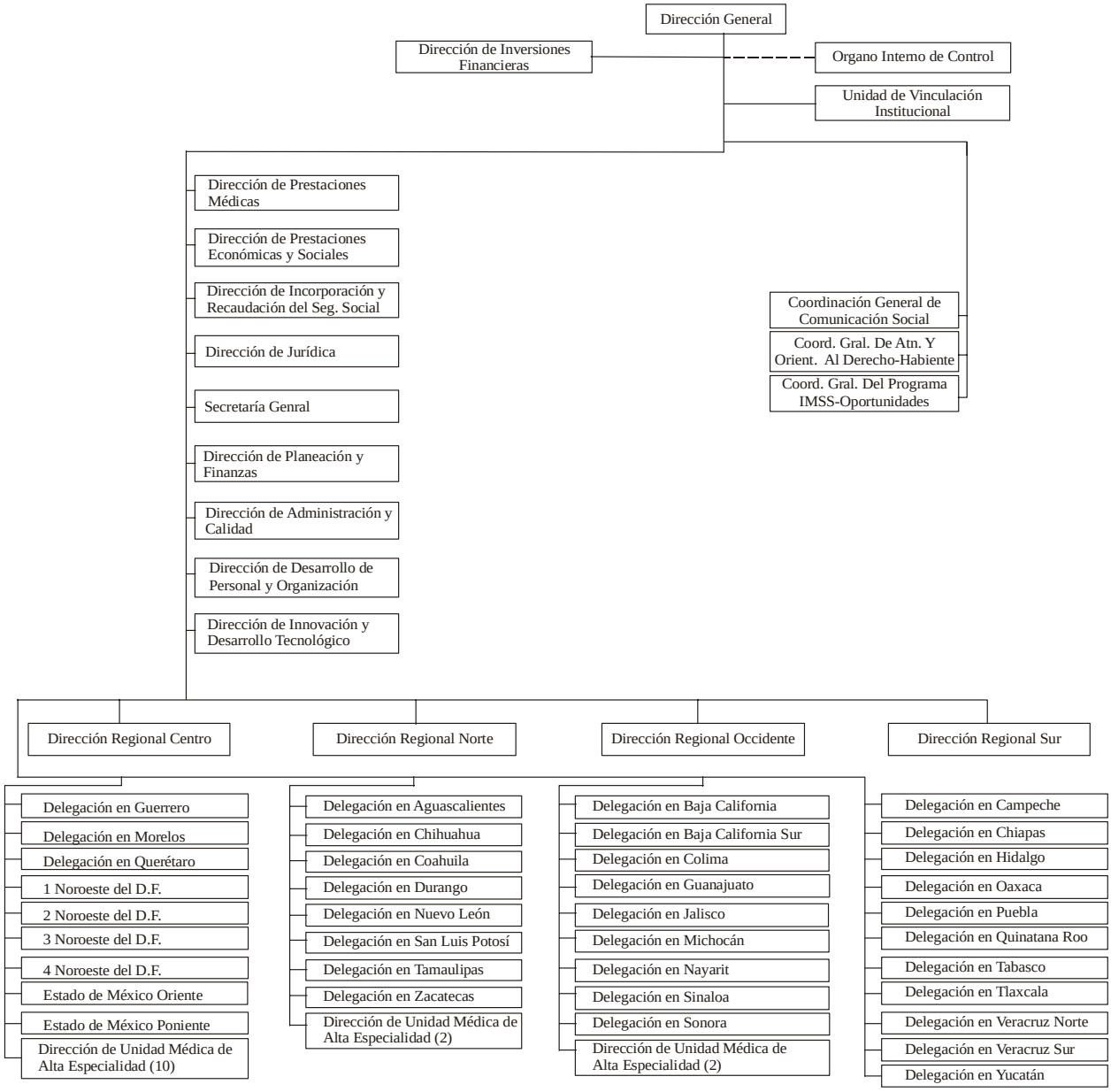
[5] The actual number of licenses depends on the sales strategy of the vendor. Sometimes a license for each machine is required, while in other cases a single corporate license is paid. The number mentioned can be interpreted roughly as the number of line users.

services center is key to redefine the flowchart of the organization. Figure B.2 shows the flowchart of IMSS in 2005. It is similar to the IRS chart of 1998, with the regional and delegacy offices being a mini-IMSS, the central offices keeping a strong involvement in the operation, and lack of organizational specialization.

The organization of IMSS is an example of a silo-based configuration, and it is likely that some reorganization will be needed before a full ERP system can be implemented (or any IT solution with a general impact). The IMSS has tried to navigate the complexities of coordinating the silos through committees, and by 2000 an estimate showed that there were 375 of these, although the precise number was unknown. Of these, 159 were operating at the central level and 216 in regional and delegacy (state level) offices. Committees dealt mainly with operative issues, and in few cases were engaged in strategic matters. The time requirements imposed on officials meant that most of the committees met sporadically, and some of them never met.

It was estimated that 38 percent of the committees were integrated to processes that could or should be part of a shared-services centre, and 49 percent were part of single processes and should be solved within an area. This multiplicity is a consequence of the difficulties found to coordinate the silo-processes. For example, the four groups of modules in an ERP (human resources, operations, accounting and finance and customer service) perform functions needed by all the silos. Historically, each silo developed the functions internally, and touched others only at the border. However, the new IT impose the need of sharing core processes, if the full advantages of cost reduction and quality of service are to be achieved.

Figure VI.2.2
Flowchart of IMSS, 2005



Source: IMSS (2004).

VI.3 How is the SSA implementing the Federal Enterprise Architecture Program?

This paper has borrowed from the United States program that is developing government-wide architecture principles. The FEA was commissioned on February 6, 2002 to "define and align Federal business functions and supporting IT via a set of common models, identify opportunities to re-use and re-deploy IT assets across the Federal government, and improve effectiveness of IT spending to help yield substantial cost savings and improve service delivery for citizens" (Office of Management and Budget 2004). Thus, it is interesting to describe how the Social Security Administration of the United States is adapting to the program.

VI.4 The National Social Security Administration of Argentina

The National Administration for Social Security of Argentina (ANSES) was created in 1994 to consolidate basic functions of collection, pension management and others. Argentina has a history of a decentralized social security system. The Argentinean National Social Provisional System was reformed in July 1994 (Act 24.241). The transformation had begun in 1990, when the Act 23.769 established the National Social Provision Institute (INPS) with the goal of unifying the administration of the National Social Provisional System. This agency was soon replaced by ANSES through the Decrees 2284/91 and 2741/91.

ANSES is a decentralized agency of the Ministry of Labor, Employment and Human Resources Development. It is in charge of managing the national funds for national retirement, subsidies and family allowances. In February of 1992 Argentina defined a "Single Social Security Contribution", and since the same date ANSES is also in charge of managing the National Employment Fund, which finances the employment and unemployment programs. During the same year ANSES merged several separate agencies, including the INPS, the national funds for Industry, Trade and Civilian Activities, State and Public Services, and Autonomous, as well as the Funds for Family Allowances for Industry (CASFPI), Employees of Commerce (CASFEC) and Port Stevedores (CASFPIMAR).

ANSES began operations also as a collection agency, but soon, by 1993, it was decided that the collection was to be made by the national General Directorate for Taxation (*Dirección General Impositiva*). Thus, ANSES keeps the data bases needed to manage the social insurance programs, but the "cashier" in managed by the national government.

The reform of the nineties also included the creation of an individual capitalization system, which implies that the data bases and the structure of financial flows and information also has to serve the network of private fund managers, known

in Argentina as Fund Managers of Retirement (*Administradoras de Fondos de Jubilación y Pensión, AFJP*).

VI.5 The Operating Systems of the Individual Accounts Programs for Pensions

The reform of social security to introduce individual retirement accounts began in Latin America and has extended to Eastern Europe and the United Kingdom, and currently, there are proposals in the United States to move in that direction. The public debate and research has focused on actuarial and financial issues, as well as on the incentives for work and savings under alternative regimes. However, over the years, it has become clear that the management of the individual accounts is by itself a key policy issue, because it affects the level of commissions in a significant way. The regulation to the interconnections of social security agencies, fund managers, banks and other agents in the system affects the efficiency and quality of the individual account system.

The previous section presented the case of the Argentinean reform, and the creation of ANSES. In very general terms, it can be said that Argentina opted for an architecture more similar to the one applied in the United States, with a Social Security Administration in charge of keeping records for the program but using a national tax authority for collections. Chile, the pioneer in the reform of social security, has a decentralized system for collections, while Mexico has a centralized system with collections also made by the social security agency. The initial outline of the plans to reform the American system includes provisions that clearly have this problem in mind. This section will describe the main process involved to define the “operating system” of an individual account pension program. It will outline the main differences across the national solutions, and will draw basic lessons of design that can be useful to reduce the costs of operation.

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