

Plan-for-Gov[IT] - Planning for Governance of IT Method: use of the Techniques of “Text Retrieval” for mapping the expected support needs from IT Area to serve of the Corporation’s Core-Business expectations

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ABSTRACT

The IT - Information Technology, in accordance with the philosophy of the IT Governance (and also as defined by Authors listed as follows) requires its integration to the process of Strategic Planning of its Corporation, with the intention to align its actions with the Core-Business aiming at to reach the expected results by the IT Area.

The question is how the IT can, under a methodological and direct way, to know how to interpret the expectations expressed by the Strategic Planning (a component of the Corporative Governance), in actions that are addressed to its Area in a practical manner and with an adequate tool kit related to the Frameworks (Models) focused to the implementation of the IT Governance, for posterior creation of the necessary Effectiveness Indicators for monitoring about success level of the actions of IT in alignment with the Business.

The result of this work is the proposal of the Text Retrieval and its subsequent validation (as a plausible resource for actual use to try to help the Governance of IT in its primary task of assisting the Corporation Core-Business), which was named as Plan-for-Gov[IT] - Planning for Governance of IT Method, which can be automated by the use of resources of "word finding" in Word Processors or in another software products with also this purpose.

Keywords: IT Governance; IT Management; Strategic Planning; Frameworks (Models) of IT Governance; Text Retrieval, Keyword Search, Survey.

1. INTRODUCTION

The Rau's [27] approach defines Governance as a way for that Organizations can guarantee that Strategic Goals are defined, monitored and achieved and, according to this same Author, when Governance is applied to Information Technology (IT) this is called as IT Governance and it means how Top Managers interact and communicate with IT Leaders to ensure that investments in this sector contribute to the achievement - in an efficient and effective way - the targets set as evaluation criteria for Business Strategy.

In reference to the aspects between Corporate Strategy and the adequacy of IT to meet it, Grosvenor & Brown [13, p.5] argue that "...the biggest challenge for IT Management is to maintain alignment between the connection points of the Business with its own IT...", in other words, to focus its work operations in practical results in accordance to the planning of the Corporation.

Under the vision of Bergstein & Sviokla [4], IT is the essence of an Organization and the analysis of how the Board of Directors manages such an asset, perhaps the most critical, may be useful to consider the type of administrative attitude that CIO - Chiefs of Information Office should have before the Board, in an Organization that intensively uses IT in its Business.

The necessity of alignment with the objectives of the Organization is described by these Authors when they stated that IT can become viable as an integrant part of the productive machine, as much in its own activity as well as in its interaction with the Business, mainly

...serving the determinations and achievement of the objectives related with the Corporative Strategic Planning (which are based on quantification metrics to monitor results). This is due to the crucial importance for conducting Businesses, achieved by IT, in a scenario of strong competition faced by Organizations today.

2. PROBLEM STATEMENT

As a paradigm of IT Governance, presented as a "Puzzle" to be built and also to be resolved, Altino Moraes [20] establishes the following questions (graphically exposed in Annex A in the Appendix 1 with green color and italic format font for English terms/words translation).

According to this argument, by supplementing also that of other Authors, the basis work of the IT Governance is the Indicators Management (which, can be, to control Performance, Results, Quality and Effectiveness).

As an example, about the theory of Construction of Indicators, according Goethert & Hayes [11] on the goal of proposing a result measurement via Indicators, the main question is not what metrics should be used, but what information you want to retrieve and what data you need to know. To answer this questioning, the Authors conduct Workshops with Executives of Organizations through the GQ(I)M Methodology - Goal, Question, Indicator and Measurement.

In Annex A in the Appendix 2 is shown graphically the difference between the application of Types of indicators to assess compliance with targets set for the results that may add value to the business.

For answer the question rise in the Topic “**ABSTRACT**”, this work has the intention of assisting this process proposing (and using the “Text Retrieval” Techniques) a relationship of Keywords, that can be retrieved in resultant texts of the planning activity, with the identified Fields of Action (that are also defined in this work) of the Frameworks (Models), what, would assist the IT Governance to understand how to put in practice its activities (beyond the activities of monitoring its own Effectiveness Indicators) in order to support the Core-Business’ Organization needs. This proposal has the name of Plan-for-Gov[IT] - Planning for Governance of IT Method.

3. RESEARCH METHODOLOGY

After the exposition of the concepts of IT Governance, of Construction of Indicators and Techniques of Text Retrieval, was held a Bibliographical Research based in the literature of the Frameworks (Models) that can be applied by the IT Governance as support for its Management, and then selected the most disclosed (but others are also mentioned) for each one of the ten (10) Fields of Action (which are also defined in this article as one of its results) and that could be identified this way by the direction given to its use by the Institutes, Organizations and Associations that have created and still maintain them.

In the sequence, a Survey was conducted (during the entire year of 2011) with 320 (three hundred and twenty) Graduate Students - in the IT Area - in order to evaluate this work statements and its

proposal, and also, to validate the applicability (or not) of the Keywords proposed as initial idea (between Verbs and Nouns) to implement the Plan-for-Gov [IT] - Planning for Governance of IT Method in their Companies.

4. LITERATURE REVISION

4.1. Text Retrieval

The Text Retrieval Technique describes the use of Keywords (also called "reserved-words") to search for terms in free-texts that can, by consolidation, providing a unique understanding to the context in which these are.

The most used technique, by IT to identify classes and elements of a database, is proposed by Russell Abbott [1] in his article "Program Design by Informal English Descriptions" published in 1983 in the "Communication of the ACM" periodical. This paper argues that the objects of the database can be identified by parsing the grammatical text that describes the problem. Another Literature sample is the Attar article [3].

This technique will be applied, in the proposed Model presented in this work, to link the documents generated by the Strategic Planning with the actions that IT must implement to meet them. This will be done by the Proposal of the Keywords that should make this link of liaison with the Frameworks (Models) for IT Governance. The connection point will be the Fields of Action of IT those will be identified in the Frameworks (Models).

4.2. Frameworks (Models) for IT Governance

To put into practice their control activities of the IT environment, in order to exercise its governance, IT uses Frameworks (Models) that point to procedures and propose controls in various fields of its actions.

Following are presented (in Alphabetical Order) the Frameworks (Models) selected, from the various among those which were studied, and which were chosen among the most publicized and recognized by the IT Community. Others, also researched, are mentioned and referenced in the Bibliography of this work.

During this analysis, were identified in which fields of IT these would be applied, since have been identified 10 (ten) Fields of Action, according to direction given to its use by Institutes, Organizations and Associations that have created and still maintain them. These 10 (ten) Fields will be defined in the Topic **"4.3. Definition of the Fields of Action of IT"**.

4.2.1. CMMI©

This Framework (Model) was created and is still being maintained by SEI - Software Engineering Institute [29]. By the direction given to its use by this Entity, this Framework (Model) can be defined as DEVELOPMENT for the Field of Action of IT Governance. The Figure 1, presented after the Topic **"8. REFERENCES"**, shows its architecture. Others options, for this same Field of Action, are Brazilian MPS br [28] and ISO/IEC 15504 [15].

4.2.2. CobiT©

This Framework (Model) was created ITGI - IT Governance Institute [16] and is still being maintained by ISACA [14]. By the direction given to its use by this Entity, this Framework (Model) can be defined as MANAGEMENT for the Field of Action of IT Governance. It is referenced by Gartner Group in its "IT Governance Report" [10]. The Figure 2, presented after the Topic **"8. REFERENCES"**, shows its architecture. Other option, for this same Field of Action, is TOGAF [31].

4.2.3. ISO 17799©

This Framework (Model) was created and is still being maintained by British Standards Institute [6] under BS15000 scope. By the direction given to its use by this Entity, this Framework (Model) can be defined as SECURITY for the Field of Action of IT Governance. Other option, for this same Field of Action, is NIST 800-14 [22].

4.2.4. IT BSC© - Balance Score Card

This Framework (Model) was created and is still being maintained by Grembergen [12]. This work is based in another original work written by Kaplan & Norton [17], but also, including concerns about IT controls. By the direction given to its use by this Author, this Framework (Model) can be defined as PLANNING for the Field of Action of IT Governance. The Figure 3, presented after the Topic **"8. REFERENCES"**, shows its architecture.

4.2.5. ITIL©

This Framework (Model) was created and is still being maintained by ITGI - IT Governance Institute a branch of Office of Government Commerce [23]. It has 7 (seven) Books. By the direction given to its use by this Entity, this Framework (Model) can be defined as PRODUCTION for the Field of Action of IT Governance. The Figure 4, presented after the Topic **"8. REFERENCES"**, shows its architecture.

4.2.6. PMBoK©

This Framework (Model) was created and is still being maintained by PMI [26]. By the direction given to its use by this Entity, this Framework (Model) can be defined as DESIGN for the Field of Action of IT Governance. Other option, for this same Field of Action, is PRINCE II [25].

4.2.7. SAS 70©

This Framework (Model) was created and is still being maintained by AICPA [2]. By the direction given to its use by this Entity, this Framework (Model) can be defined as AUDITING for the Field of Action of IT Governance. Other option, for this same Field of Action, is COCOMO [7].

4.2.8. Six Sigma©

This Framework (Model) was created by Motorola [21], based in Deming [9] studies, and was later improved by 3 (three) Authors, which are, Pande, Neuman and Cavanagh [24]. By the direction given to its use by these Authors, this Framework (Model) can be defined as QUALITY for the Field of Action of IT Governance.

4.2.9. SOX

This Framework (Model) was created by 2 (two) Senators from US Republican and Democrat Party, is also known as Sarbanes-Oxley or Sarbox and was normalized by COSO [8]. By the direction given to its use by these Authors, this Framework (Model) can be defined as COMPLIANCE for the Field of Action of IT Governance. The Figure 5, presented after the Topic **"8. REFERENCES"**, shows its architecture. Others options, for this same Field of Action, are Basel II [5] and Solvência II [30].

4.2.10. TMMI©

This Framework (Model) was created and is still being maintained by 3 (three) Authors, which are, Liebman, Paes and Menezes [19]. By the direction given to its use by these Authors, this Framework (Model) can be defined as TESTING for the Field of Action of IT Governance. The Figure 6, presented after the Topic **"8. REFERENCES"**, shows its architecture. Other option, for this same Field of Action, is Krause [18].

4.3. Definition of the Fields of Action of IT

The 10 (ten) Fields of Action identified according to direction

given to its use by Institutes, Organizations and Associations that have created and still maintain them, were (in Alphabetical Order): AUDITING, COMPLIANCE, DESIGN, DEVELOPMENT, MANAGEMENT, PLANNING, PRODUCTION, QUALITY, SECURITY e TESTING.

In Table 1 the acronyms, for the 10 (ten) Fields of Action listed in the preceding paragraph, were also defined (along with colors that are added below in order to better understanding) to facilitate the classification of them under the Plan-for-Gov [IT] - Planning for Governance of IT Method proposed by this work.

Table 1 - Definition of the Fields of Action of IT

AD - AUDITING	Orange
CN - COMPLIANCE	Green
DG - DESIGN	Yellow
DV - DEVELOPMENT	Cyan
MG - MANAGEMENT	Light Green
PL - PLANNING	Olive
PR - PRODUCTION	Red
QL - QUALITY	Brown
SC - SECURITY	Blue
TS - TESTING	Purple

5. PLAN-FOR-GOV[IT] PRESENTATION

The Plan-for-Gov[IT] - Planning for Governance of IT Method proposes the use of the "Text Retrieval" Techniques, in resultant texts of the planning activity, for the Keywords selection that can drive activities for the 10 (ten) Fields of Action identified in the Frameworks (Models), what means to say that, the 10 (ten) Fields of Action are the link (and are in the middle of the connection) among the Keywords and the Frameworks (Models) defined to be applied.

After this step, already with the identified Field of Action, the Framework (Model) that could be better adjust for support this activity, would be placed operational (with the creation, and posterior monitoring, of KPI - Key Performance Indicators) with the objective to help the auditing of the IT Governance tasks.

In Annex A in the Appendix 3, there is a Figure that presents graphically the relationship among the Keywords, the 10 (ten) Fields of Action of the Frameworks (Models) and also the 10 (ten) Frameworks (Models) select in this study.

6. SURVEY EXECUTION

This universe of 320 (three hundred and twenty) Graduate Students - in the IT Area - was asked whether the below Words (divided in Verbs and Nouns) could point to one (or more than one) of the Fields of Action that were identified in the Frameworks (Models) analysis done in the selected Frameworks (Models) in the Topic "LITERATURE REVISION" of this paper (those were also shown to them).

Verbs: To Administer; To Administrate; To Auditing; To Build; To Componentize; To Control; To Cost; To Define; To Design; To Development; To Enhance; To Estimate; To Evaluate; To Implement; To Improve; To Institute; To Manage; To Measure; To Normalize; To Plan; To Processing; To Product; To Prospect; To Raise; To Record; To Rule; To Run; To Schedule; To Support; To Systematize; To Test

Nouns: Adjusting; Administration; Application; Auditing; Component; Componentization; Compliance; Contingency; Control; Coordination; Cost; Deadline; Definition; Design; Development; Directives; Enhancement; Evaluation; Expectation; Goals; Indicators; Legislation; Management; Method; Methodology; Metrics; Mission; Performance; Planning; Procedure; Proceduring; Processes; Production; Productivity;

Prospection; Quality; Recording; Rules; Regulation; Result; Schedule; Scope; Security; Solution; Strategic; Support; Survey; Systems; Tasks; Time; Tests; Values.

After the tabulation, the results are shown in a table in Annex A in the Appendix 4, where the Verbs and Nouns chosen by the Graduate Students in the Survey done are presented (Keywords). Also, in this Table, were included a new column to define which Framework (Model), suggested by this paper, can be used to implement the IT Governance auditing and controlling activities.

To put in practice the Plan-for-Gov[IT] - Planning for Governance of IT Method, this work proposes the Formulary in Annex B. Using this one and also the Keywords, which can be revised in future works, and Frameworks (Models) referenced in the Table above (in Annex A in the Appendix 4), it is possible to record the job done (in the Strategic Documents connected to an already existent Project or driving to an opening of new one), to support the tasks execution and future revisions about the procedures.

7. CONCLUSIONS

By the supervised manner with that this work was built (assembly and survey), it is possible to conclude that the proposal presented can be useful, by the more methodological way of treatment regarding to the integration of the IT Governance with the processes of Strategic Planning, assisting a first and initial approach, for posterior development of the tasks of this Area.

Despite of this Proposal points to some initial Frameworks (Models) suggestions, the application of the Plan-for-Gov[IT] - Planning for Governance of IT Method could be kept even that others Frameworks (Models) are defined or exist more than 1 (one) for each Field of Action, by the reason of the connection with the planning directives are done by these Fields of Action and its Keywords (which, in this Proposal, are kept constants).

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Figure 1 - Capability Maturity Model for Software Integrate [29]

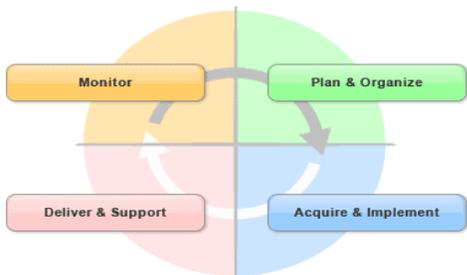


Figure 2 - Control Objectives for Information and Related Technology [16]

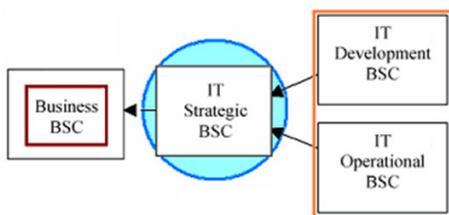


Figure 3 - Grembergen's IT BSC - Balance Score Card [12]

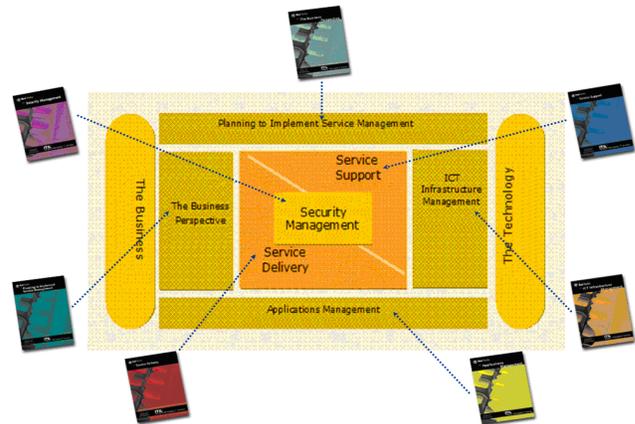


Figure 4 - ITIL: IT Infrastructure Library (adapted from [23])



Figure 5 - Sarbanes-Oxley Law [8]

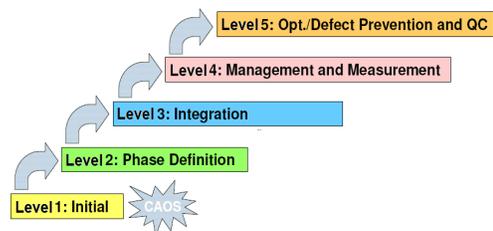
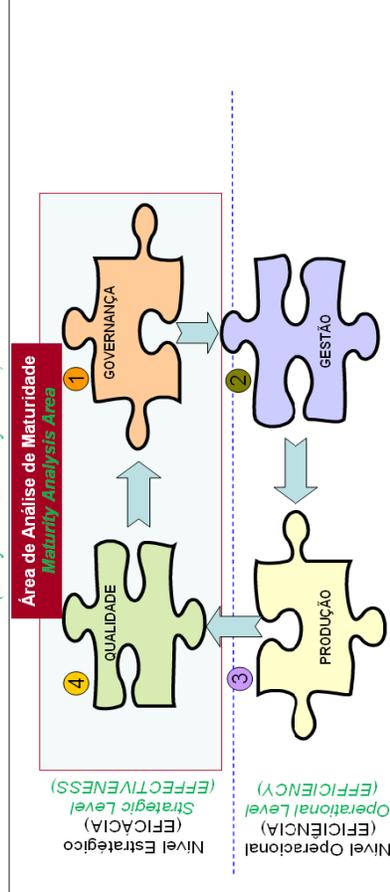


Figure 6 - TMM - Test Maturity Model (adapted from [19])

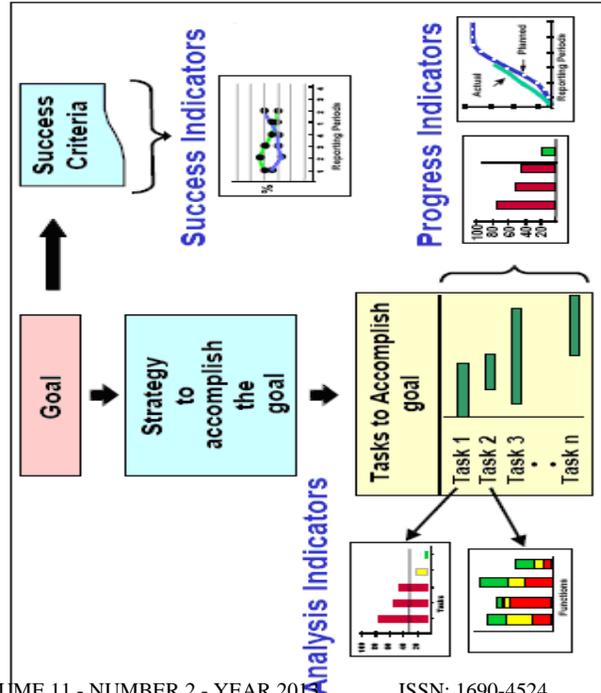


M2A3-GovTI- Modelo de Maturidade para Análise do Alinhamento das Atividades relacionadas à Governança da TI
 M2A3-GovTI- *Maturity Model for Analysis of Alignment Activities related to Governance of Technology of Information*
 "QUEBRA-CABECA" DO PROCESSO DE GOVERNANÇA
 "PUZZLE" OF THE PROCESS OF GOVERNANCE
 (Ciclo de Vida do Controle da Eficácia) (Lifecycle of Effectivity Control)

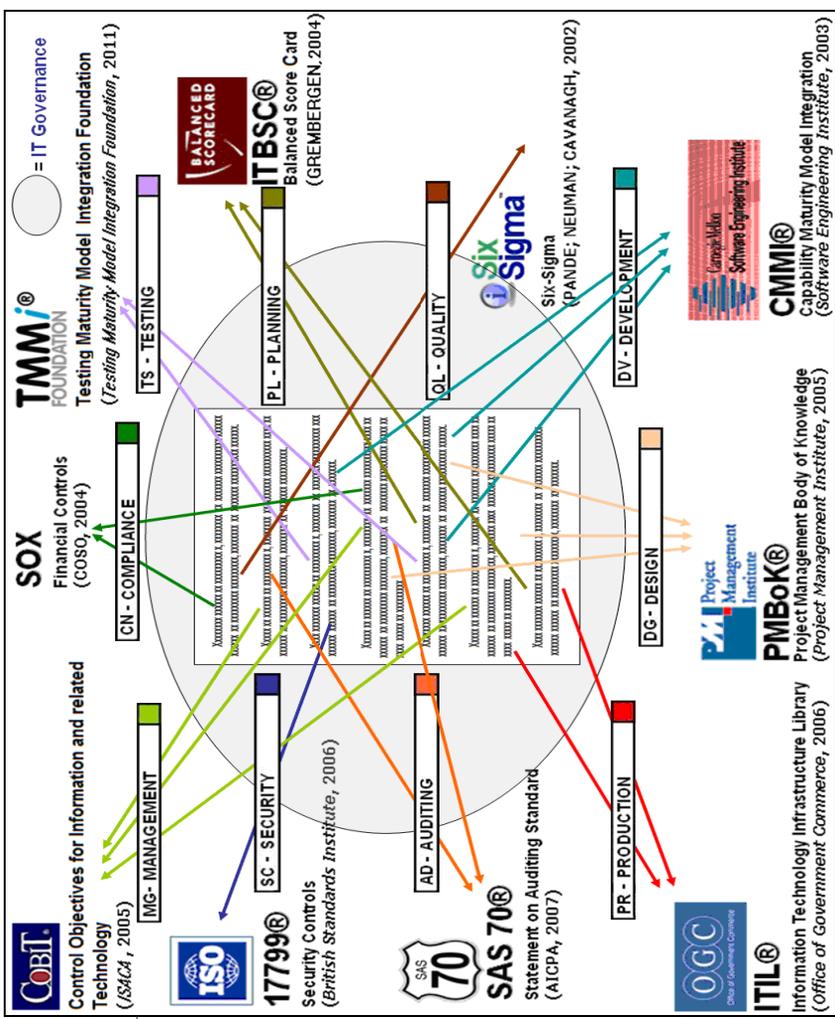


- 1 **GOVERNANÇA** } Estabelecer os Indicadores de Resultado capazes de medir o Desempenho das Atividades.
 To establish the Result Indicators capable of measuring the Performance of Activities.
 - 2 **GESTÃO** } Capturar os Indicadores de Resultado para o monitoramento do Desempenho das Atividades.
 To capture the Result Indicators for monitoring the Performance of Activities.
 - 3 **PRODUÇÃO** } Produzir os serviços e registrar o Desempenho das Atividades na execução dos processos.
 To produce the services and to record the Performance of Activities in the execution of processes.
 Revers distorções apresentadas entre os valores Projetados X Medidos e propor adequações.
 To review distortions presented between the Designed X Measured values and propose adjustments.
 - 4 **QUALIDADE** } DESAFIO: Definir a integração de processamento das 4 (quatro) etapas do Ciclo (temporalidade, duração e produtos) e a sequência mais prática de execução entre essas mesmas 4 (quatro) etapas do Ciclo para cada caso real encontrado no campo de aplicação.
- CHALLENGE:** Define the integration processing of the 4 (four) stages of the Cycle (timing, duration and products) and the more practical implementation sequence of these same 4 (four) stages of the Cycle for each real case found in the field of application.

Appendix 1 - IT Governance Puzzle of M2A3-GovTI Method [20]



Appendix 2 - Indicators Application Process Flow (adapted from [11])



Appendix 3 - Graphic of the Relationship: Keywords X Fields of Action X Frameworks

Appendix 4 - Table of Keywords (Verbs and Nouns) after Survey's tabulation

Field of Action	Nouns	Verbs	Framework
AD - AUDITING	Auditing; Control; Cost; Directives; Indicators; Legislation; Management; Mission; Recording; Regulations; Strategic; Values.	To Administer; To Administrate; To Audit; To Audit; To Record; To Record; To Support; To Build; To Measure; To Normalize; To Prospect; To Rule.	SAS 70€
CN - COMPLIANCE	Compliance; Control; Directives; Indicators; Legislation; Planning; Recording; Regulations; Strategic.	To Administer; To Administrate; To Audit; To Audit; To Record; To Record; To Support; To Build; To Measure; To Normalize; To Prospect; To Rule.	SOX€
DG - DESIGN	Adjusting; Application; Component; Componentization; Definition; Development; Enhancement; Method; Methodology; Solution; Support; Survey; Systems.	To Build; To Cost; To Define; To Design; To Develop; To Estimate; To Implement; To Institute; To Manage; To Plan; To Run; To Schedule; To Systematize.	PAIBOK€
DY - DEVELOPMENT	Administration; Control; Goals; Indicators; Management; Metrics; Procurement; Strategic.	To Administer; To Control; To Enhance; To Evaluate; To Support; To Systematize; To Plan; To Rule; To Support; To Systematize.	CMMI€
MG - MANAGEMENT	Control; Cost; Expectations; Goals; Mission; Planning; Prospection; Result; Strategic; Values.	To Administer; To Control; To Enhance; To Evaluate; To Support; To Systematize; To Plan; To Rule; To Support; To Systematize.	CoBIT€
PL - PLANNING	Application; Contingency; Evaluation; Performance; Procedure; Procurement; Processes; Production; Method; Methodology; Support; Systems.	To Administer; To Control; To Enhance; To Evaluate; To Support; To Systematize; To Plan; To Rule; To Support; To Systematize.	IT BSC€
PR - PRODUCTION	Adjusting; Control; Directives; Enhancement; Evaluation; Indicators; Metrics; Performance; Processes; Productivity; Quality; Rules; Result.	To Administer; To Control; To Enhance; To Evaluate; To Support; To Systematize; To Plan; To Rule; To Support; To Systematize.	ITIL€
QL - QUALITY	Application; Auditing; Methodology; Procedure; Processes; Security; Solution; Systems.	To Administer; To Control; To Enhance; To Evaluate; To Support; To Systematize; To Plan; To Rule; To Support; To Systematize.	Six-Sigma€
SC - SECURITY	Adjusting; Application; Control; Definition; Enhancement; Method; Procurement; Rules; Schedule; Tests.	To Administer; To Control; To Enhance; To Evaluate; To Support; To Systematize; To Plan; To Rule; To Support; To Systematize.	ISO 17799€
TS - TESTING	Schedule; Tests.	To Administer; To Control; To Enhance; To Evaluate; To Support; To Systematize; To Plan; To Rule; To Support; To Systematize.	TMMI€

Plan-For-Gov[IT]

INSTRUCTIONS: In the text created in the Strategic Planning reports prepared by the Corporation, mark which of the following Keywords (Verbs and Nouns) were found and will define the IT Area of Action to be considered.

Source-Document: Target-Project:

	AD	CN	DG	DV	MG	PL	PR	QL	SC	TS
01										
02										
03										
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- VERBS**
- To Administer
 - To Administrate
 - To Auditing
 - To Build
 - To Componentize
 - To Control
 - To Cost
 - To Define
 - To Design
 - To Development
 - To Enhance
 - To Estimate
 - To Evaluate
 - To Implement
 - To Improve
 - To Institute
 - To Manage
 - To Measure
 - To Normalize
 - To Plan
 - To Processing
 - To Product
 - To Prospect
 - To Raise
 - To Record
 - To Rule
 - To Run
 - To Schedule
 - To Support
 - To Systematize
 - To Test

- NOUNS**
- Adjusting
 - Administration
 - Application
 - Auditing
 - Component
 - Componentization
 - Compliance
 - Contingency
 - Control
 - Coordination
 - Cost
 - Deadline
 - Definition
 - Design
 - Development
 - Directives
 - Enhancement
 - Evaluation
 - Expectations
 - Goals
 - Indicators
 - Legislation
 - Management
 - Method
 - Methodology
 - Metrics
 - Mission
 - Performance
 - Planning
 - Procedure
 - Proceduring
 - Processes
 - Production
 - Productivity
 - Prospection
 - Quality
 - Recording
 - Rules
 - Regulation
 - Result
 - Schedule
 - Scope
 - Security
 - Solution
 - Strategic
 - Support
 - Survey
 - Systems
 - Tasks
 - Time
 - Tests
 - Values

Field of Action	Framework
AD - AUDITING	SAS 70
CN - COMPLIANCE	SOX
DG - DESIGN	PMBoK®
DV - DEVELOPMENT	CMMI®
MG - MANAGEMENT	CobIT®
PL - PLANNING	IT BSC®
PR - PRODUCTION	ITIL®
QL - QUALITY	Six Sigma®
SC - SECURITY	ISO 17799®
TS - TESTING	TMMi

Remarks: