The Business Transformation Framework and Enterprise Architecture Framework for Managers in Business Innovation The role of legacy processes in automated business environments

Antoine Trad, PhD
Institute of Business and Information Systems Transformation ManagementFrance

DamirKalpić, PhD
University of Zagreb Faculty of Electrical Engineering and Computing, Croatia

The business transformation project (BTP) of an e-business environmentneeds the optimal accounting automation strategy that depends on measurablefactors characterizing the progress of organizational transformation process.Since a few years, due to the everlasting financial crisis, the applied financial and accounting strategiesare reduced to basic rigid austerity. The result is thatane-business integration strategy that normally should be based on known standards, enterprise architecture, business engineering and multilevel interoperability, is restricted to blindfolded accounting operations. Major e-business transformation projects are brutally stopped by accountants that sometimes justify no-go decisions by a minor violation of fictive financial amounts. Most of such judgements are politically motivated, while highly regarded individuals' and teams'opinions are simply ignored. The most damaging fact is that the business environment loses its transformational momentum,what can negatively affect its business sustainability and leave it prone to the rigorous accounting austerity procedures. In this article the authors propose a set of managerial recommendations on how to avoid such blocking situations. Today many finance and accounting automation concepts exist and theyare very advanced.Such a concept can support the e-business transformation processof the traditional business environment through the automation of all financial operations and the related accounting processes. That also enables the underlying accounting subsystem to interact withthe local and global eco-systems. Transforming atraditional accounting subsystemand the related accountants' behavioursis animportant challenge, because very probably the accountant team(s)would generate a locked-in situation and resist the applied initiatives for major changes. An automated accountingsubsystem may provide the base for flexible financial services and functionsfor the future business environment, in order toignore the accounting human dependency.That makes these services robust and precise. This article's main aim is tosupport thee-business transformation managers or enterprise architects in managing frequent changes of e-business environments and the integration of automated accounting procedures. To achieve this goal, the authors offer e-business transformation managersor enterprise architectsa set ofmanagerial recommendations and an e-accounting automation pattern that could supporta high volume of accounting requests and support their respective maintenance and implementation costs. The proposed set ofe-business managerial recommendations that can be used by e-business and enterprise architects,supports a holistic view on delivering a global audit that links finance, accountancy, business engineering and the management of needed technology mechanisms, by proposing a generic accounting

microartefact. Managing of complex projects, like business transformations, demands that business transformation managersand their teams possess financial, technical and organizational skills to design a robust block-chain solutionsthat automate all the enterprises' financial and accounting activities. This approach must be defined in the initial project's phases and should be exposed to all the affected stakeholders, who are traditionally accustomed to be fed with summarized accounting reports.

Introduction

Enterprise or e-business architecture methodology is a standard methodology that links business requirements tothe business environment's organisational characteristics and maps them to the underlying e-technologies,which are based on business and financial services, like accounting [1]. Unfortunately, e-Business Transformation Managers (BTM) or project leaders in most cases overlook the possibility to implement an automated accounting set of related services for the future business e-system. This article's main aim is to warn prospective BTMsof the possible pitfalls that maybe encountered as confronting e-business or e-finance accounting challenges in the ongoing transition phases. In this article the authors offer a set of proven managerial and financial recommendations that would cover and support the transformation project'sfinancial accounting objectives. This articleis a part of a long series of articles related to business transformation projects (BTP) and Enterprise Architecture (EA) that deal with the various aspects of frequenttransformational changes. The implementation of such BTPs' Automated Accounting Pattern (AAP) requires the interaction of multiple business disciplines andfields of technology with the standardized methodologies. The authors have based their research on the main fact that only around 12% of business organisations successfully terminate innovation-related business transformations projects [2]. The successes of BTPs largely depends on the business environment's capacity toadapt to dynamic changes made tothe company'swhole interdependent structures. A BTP is not just a set of isolated human, technology or infrastructure changes, but it is the management of the capacity to adopt to the right agility strategy that is based on basic elements called microartefactsthat support the business organisation [3][4]. The applied research methodology is based on a literature review of credible sources like the Gartner Inc., a quantitative-qualitative mixed methodology and on a proof of concept that is used to prove the related hypotheses.

The applied research methodology

The automated accounting pattern component

The Automated Accounting Pattern (AAP) draws its knowledge, architecture, design and framework implementation from the services based Financial Information and Communication Technology Systems (FICTS), built years ago and it has been reengineered because of the hyper evolution in web technologies, enterprise architecture and business organizational sciences[5]. The AAP promotes (e)financial engineering driven business environments that use references to various types of financial activities,like in this case accounting, which are conducted by using different types of avant-garde e-technologiesand Webservice technologies; where the most currentform of integration is based on block-chain automation [6]. The AAP can be applied to many BTPs and general accounting engineering subfields; and this component is the focus of this research phase. The AAP component is a part of the Financial management module (Fm); Fm is also a part of the Selection management, Architecture-modelling, Control-monitoring, Decision-making, Training management, Project management, and Finance management Framework

(SmAmCmDmTmPmFmF, for simplification in further text the term Environment will be used), that is the major support for BTP's activities; in fact the proposed very modest framework is a leader in this market [7][8].

(e)accounting and finance engineering fields

(e)accounting is a part of finance engineering fields where mathematical or statistical models can be used to solve complex accounting and financial problems; and the underlying technology supports the holistic automation aspects. Accounting as well as financial engineering is a set of fields that combine frameworks and specialized knowledge from: 1) computer science fields; 2) quantitative sciences and statistics; 3) qualitative heuristics; 4) micro and macroeconomics; 5) enterprise financial governance; 6) e-law; 7) internet related technologies; 8) real-time knowledge exchange with financial institutions; 9) accounting information system; and 10) many other applied mathematics fields. AAP based on financial engineering, can be used to manage and solve the BTPs' financial requirements, the arising problems and to develop financial services and products. Financial engineering is mostly referred to as quantitative analysis alone, which is erroneous and probably shows the limitations and the problems that we are facing in this field. This field is used by: 1) commercial banks; 2) investment banks; 4) private banks; 6) business companies; 7) insurance companies; 8) financial brokers; 9) Optimization of financial decisionsand many others.

The research process

The BTP's global research topic's and the final research question (hypothesis #1-1) is: "Which business transformation manager characteristics and which type of support should be assured in the implementation phase of a business transformation project?" The targeted business domain is any business environment that uses: 1) internet, automation and engineering technologies; and 2) frequent transformation iterations. For this phase of research the sub-question (hypothesis #1-2) is: "What is the impact of the automation of accounting on (e)enterprise architecture and business transformation projects?".

Critical Success Areas and Factors

Critical Success Area (CSA) is a category of Critical Success Factors (CSF) where in turn a CSF is a set of Key Performance Indicators (KPIs), where a KPI corresponds to a single requirement. CSFs for a BTP or a business environment are a limited number of business sub-areas in which values are satisfactory if ensuring successful competitive business performance. CSFs reflect performance areas that map to strategic goals and defined financial constraints. The BTP must select the right CSFs in order to survive and to prepare for competition. For that goal the BTP must find the Critical Success Areas (CSAs) that require constant and special care in real-time; in addition to that, it needs important attention from the business environment's executive management. Critical success factors for any business are the limited number of areas in which results, if they meet business goals, would ensure successful competitive performance for the organization. Therefore, CSFs reflect performance areas that must meet strategic goals and the defined accounting and financial constraints; if for the target business environment a sane business future is desired. Measurements are used to evaluate performance in each CSA, where CSFs can be internal and/or external; like for example: 1) budget gap analysis is an internal CSF; and 2) percent of market share is an external CSF. The *Environment's* method is to select the CSA category and the corresponding CSFs that are to be used to audit the enterprise architecture vision and strategic planning process. Once the initial set of CSFs has been identified, then the BTP has to use the decision- making module to verify the CSFs and to give them the right weightings. The BTP team should identify an initial set of CSFs to be used for the performance

measurement system. Hence CSFs are the most important mapping/relation between accounting information system, strategic planning, enterprise architecture vision and decision making system's performance measurement systems; that all defines the accounting pattern global strategy[13][14].

Accounting pattern global strategy

Today most business companies haveintegrated their financial audit, governance, control and monitoring procedures, these facts support the AAP's automated integration concept asthe crucial strategic goal for thetransformed business environment[19]; where the BTM presents this concept in front of the company's steering committees to get the needed go signal. The BTMshould also consider themanagement of changes in all finance and legal fields,where the AAP's automation will reduce the number of intermediariesand is based on the antifragility approach that promotes extreme flexibilityand acts as a change enabler [20].To introducethis concept to a less informed reader, it might be appropriate to cite literally the description from [32]:"Antifragility is beyond resilience or robustness. The resilient resists shocks and stays the same; the antifragile gets better. This property is behind everything that has changed with time: evolution, culture, ideas, revolutions, political systems, technological innovation, cultural and economic success, corporate survival, good recipes (say, chicken soup or steak tartare with a drop of cognac), the rise of cities, cultures, legal systems, equatorial forests, bacterial resistance … even our own existence as a species on this planet".

Extreme flexibility

Extreme or intelligent flexibility can be achieved by the application of aholistic antifragility concept that is much more than just stability and hard rock robustness. Monolithicaccounting systems are resistant to heavy shocks and are at the same time very monolithicso that they resist to any type of change. The aimed antifragileaccounting systems are transformed and built to be easily changed and that can absorb hard rocked blows. This capacity is the fundament of flexible accounting systems and other financial systems that face frequent changesthat are the reality in complex transformation projects. Antifragility as an approach defines the limits between the BTP's human factor or team and the final transformed accounting system. An antifragility concept can help in having a holistic and broad guide to non-predictive decision making operations under uncertainty due to various factors like accounting, business, politics, etc… This explains the difficulty of estimating the risks of a consequential and rare problem that could be fatal to the BTP. This current research cluster proposes an efficient approach to prediction, proactive AAP management; that are the basic structures of automated accounting procedures. The *Environment's*AAP must evaluate the risks through the use of the integrated decision module and tractable events; and not just pretend to have the capability of forecasting areporting that could cause that the BTM and the executive management have an erroneous vision of the BTP's status [21][22].

Global (e)accounting strategy

(e)accounting is a business engineering field that combines management sciences, business administration, (e)law and accounting with information technologies and engineering[23]. An important part of (e)accounting provides accounting services over the world-wideweb. The BTP's AAP can help banks and financial institutions reshape their e-accounting program to avoid pitfalls, like during the 2008 financial crisis, where the strategy focus was on geographical reach, redefining global initiatives and reorganizing the trade services and prioritizing a customer-centric approach. Citibank restructured its activity centres and redefined its global strategy to assist customers in solving financial problems. Citibank's BTP was very quick and the landscape for treasury and trade services was deeply modified to rise

again after the financial crisis. Multi-functional banking which is a form of block-chaining based on an Accounting Information System (AIS) [10][11], enabled low cost and efficient financial operations. Citibank was the first financial institution to finalize an AIS and that had a significant impact on the banking business model that is based on factors[24][25].

Proposed automated (e)accountingpattern

The AAPis a generic pattern and can be applied to many BTPs and in any general financial engineering field; and is a part of the Financial management module (Fm); In this article the authors propose a set of AAP managerial recommendations and a reusable real world module [7][8]. The *Environment's*AAP component is managed by The Open Group's Architecture Framework's architecture development method's phases, where each accountingmicroartefact circulates through all its phases. The accounting microartefacts contain their private set of Critical Success Factors [13][26]. A well designed AAP component architecture must define: 1) the BTP's accountancy objective(s) and constraints; 2) the underlined technology patterns and auxiliary accountancy frameworks to be used in the BTP's implementation phase; 3) the BTP accountancy specialist(s) profiles, roles and responsibilities; 4) the processes to be established to achieve the financial and accountancy objective(s); 5) the expected BTP's financial outcomes; 6) the set of possible accountancy issues' types that can arise; 7) a loosely coupled concept and is a part of the control and monitoring system; and 8) an automated (e)law component [27].

(e)accounting and (e)business law relationship

The vast majority of (e)business enterprises express the importance of concluding a valid financial plan and a robust business contracting framework to avoid possible legal problems and financial risks. The facts from the previous section are very important and they should be treated with caution because some (e)business enterprises cannot precisely identify the type of financial problem that they have encountered. That is why the block-chain automation of AAP is a major CSF. The AAP's integration should become the enterprise's strategic objective and it should be treated in its strategic vision using communication and documentation standards [28][29].

Anti-locked-in strategy

The BTM, or the enterprise architect(s), sets up a proof of concept to verify a template, based on atomic financial building blocks. These financial building blocks contain AAP trace, control and monitoring mechanisms. The AAP requires a holistic approach that must be supported by a global financial engineering environment. The business environment must avoid a locked-in situation when applying standards and a unique tool, like all-in-one tools. Such tools request frequent commercial product upgrades that adds to complexity of the implementation and maintenance phases. Tool's needed features are delayed or never finished, what can provoke failure to deliver fundamental BTP modules. These all-in-one tools vary significantly from the defined standards; and if a change is to be done to the (e)system's reintegration, it is often incurring very high costs and BTP risks [30][34][35].

Transparency and black swans

In [32] can be found the definition of the so called Black Swan problem; it is the impossibility of calculating the risks of consequential rare events and predicting their occurrence.The Swiss accountancy phenomena which defines a complex locked-in legal, financial and accounting national mentality or system that blurs financial flows and disables any type of transparency.Foreign business environments can be easily slip in a complex locked-in situation and should be avoided. Shy steps have been taken to improve the transparency of howSwitzerland'sfinancial institutions should work. However there a lot to

be done to fulfilvarious commitments on transparencyconditions that Switzerland has committeditself to respect; like for example the ones defined bythe international standards on transparency and exchange of information for taxpurposes. However, some credible sources like the Global Forum on Transparency and Exchange of Informationfor Tax Purposes peer review in 2011, has identified important deficiencies in the legal foundations for transparency and corruption in Switzerland, especiallyin relation with effectiveexchange of information[38][39].

Accounting pattern global strategy critical success factors
This section's set of filtered CSFs, KPIs and their weightings are:

Critical Success Factors	KPIs	Weightings
CSF_AccountingPatternStrategy_TheEnvironmentSetup	Stable	From 1 to 10. **10 Selected**
CSF_AccountingPatternStrategy_SettingupGlobakStrategy	Set&Ready	From 1 to 10. **07 Selected**
CSF_AccountingPatternStrategy_AntiLockedinConcept	Controlled	From 1 to 10. **10 Selected**
CSF_AccountingPatternStrategy_AutomatedProcessIntegration	Ongoing	From 1 to 10. **04 Selected**

Table 1. The accounting pattern global strategy critical success factors

Accounting pattern underlying technology management
The industry needs a multimodal (e)finance and a related accounting model that minimizes the dependencies between various business partners; where (e)finance and a related accounting model's connections are established between the consumer and the end business environment with minimal risks [16]. An important CSF that can be integrated in the BTP is the cost of ratio before and after the BTP completion. To calculate costs related to (e)finance and accounting operations, there is the need to add-up the total cost of providing financial and accounting services, and to divide it by the total number of successfully executed financial (e)transactions [17]. BTPs' (e)finances' outcomes should be controlled in real-time and routine accounting reports must be delivered to the BTM and to the business enterprise's executive management. Automated accounting impact on BTPs depends on the architecture and on the optimal mapping system. The mapping system maps various business activities to the Accounting Information System (AIS) [18].

The accounting information system and its integration
The AIS is an information system structure that is used by finance and accountancy specialists to collect, manage, process and report the business environments financial informationin order to be accessible to the types of professionals including the chief financial officers, financial auditors and tax agencies. Specialized accountants work with AIS modules that are presented in, to offer accuracy to all financial transactions and bookkeeping operations. The evolution of accountancy and business engineering forces various industries to implement AAP like mechanisms into their business transformation frameworks. Such frameworks must incorporate (e)finances and accounting legal collaboration with: 1)

international; 2) national; 3) electronic; and 4) local-regional laws, audit, governance frameworks and rules. Added to international and national laws there are legal frameworks, conventions, treaties and directives to be integrated to support the transformed business environment.

Accounting pattern underlying architecture and infrastructure critical success factors
This section's set of filtered CSFs, KPIs and their weightings are:

Critical Success Factors	KPIs	Weightings
CSF_AccountingPatternTechMng_MappingOrientedSystem	Installed	From 1 to 10. **08 Selected**
CSF_AccountingPatternTechMng_AccountingInformationSystem	Integrated	From 1 to 10. **07 Selected**
CSF_AccountingPatternTechMng_FinanceLegalIntegration	Activated	From 1 to 10. **04 Selected**

Table 2. The accounting pattern architecture and infrastructure critical success factors

Accounting system architecture and infrastructure
Global or holistic business agility is achieved by combining various agility methodologies to be used in various levels of the BTP to unbundle the existing business environment. Using a bottom-up approach, the BTM can achieve the optimal business agility concept that can handle the local, national and international financial engineering risk, accounting requirements and legal constraints including their consequences needed for the unbundling process [36].

The unbundling process
Antifragility based unbundling is a lot more than simple robustness gains, where robust business systems might not be resistant to sudden problems. The antifragile unbundling of a financial system makes it ready to be easily changed and monitored. This feature makes the whole structure of AISs flexible and changeable where many of their processes need to be frequently modified during a complex BTP, like for example: continuous financial system evolution, innovating technologies, expanding financial industries, economic success, corporate survival, legal systems, various types of reporting etc. Antifragility as a basic structure that defines the limits between the BTP's human factor or team and the final transformed AIS. An antifragility concept can help in having a holistic and broad guide to non-predictive decision making operations. This current research cluster proposes an efficient approach to: 1) prediction; 2) proactive risk management; and 3) financial flow control; that are the basic structures of business and agile organizational engineering [32][37].

Accounting and the role of standards
The *Environment* research project uses existing business, organizational technology, accounting and financial engineering standards [42][43][44]. The advance of informatione-technologies, such as the service oriented architecture and business process management

standards, have caused financial engineering related fields to become more receptive to development that includes block-chain automation and integration with various global business environments and standards. These standards include financial engineering risk management and legal frameworks. Standardized BTPs should be transparent about their financial solutions. Regardless of the engineering component, the executive management understands the need for agility and the integration of AAP mechanisms. The *Environment's*AAP component helps in establishing a unique accounting and financial assertion architecture that must be defined in the BTP's vision phase, where the assertion of the financial engineering should be integrated into the *Environment* using CSAs and CSFs.

Automated accounting service's granularity

BTP's architecture is based on accounting and financial services and their choreography and the main issue would be: How granular should be the BTP's accounting and financial services and which types of atomic services should such a subsystem contain? These services include: 1) accounting data management; 2) accounting application interfacing; 3) accounting services' governance; and 4) control and monitoring of accounting service calls. From the BTP enterprise architecture's point of view, anaccounting service can have a well-defined size that depends mainly on its financial functionality and loose coupling bindings. This loose coupling binding strategy is defined by the BTM or delegated to the enterprise architect(s) and it forms a vision on how accounting processes and financial services are classified. These accounting processes and financial services are classified into specialized repositories [45]. A line of financial services is a set of similar financial processes' calls and services that should be classified in a corresponding category in the BTP's repository. In order to have a feasible unbundling group, the BTP team must integrate existing financial services control and governance frameworks [46]. Service oriented architecture governance framework manages the life cycle of the BTP's accounting and financial services, starting with their inception going through modelling, assembly, deployment, management [47]. The *Environment* contains the concept of a group of financial service elements that execute identical finance related actions, starting with their architecture to their eradication [44][48].

Accounting services' architecture

The specialized business services' or financial services' architecture that is managed by the AAP module interfaces various other BTP components by using the one-to-one mapping concept. This concept helps in achieving the assertion of: 1) the business environment's internal and global accounting and financial engineering model concept; 2) sets up a synchronized real-time monitoring and integration actions; 3) financial (e)transactions tracing and logging; 4) the modularity and reusability of previous monolithic business environments' financial resources and of performing gap analysis; and 5) the dynamic change of actual requirements [15].The proposed atomic financial services' management approach supports well managed unbundling of the monolithic business environment by splitting it into classified sets of business and financial services [45]. The outcome of the unbundling process is a registry of state-full atomic accounting and finance services that can be asserted, controlled and monitored in real-time. In order to manage the agile and autonomic BTP's complexity in its implementation phase, an adequate assertion concept must be integrated in the architecture [45]. Such anAAP concept is enabled by the development of an iterative model that can map all the BTPs financial microartefacts in a traced one-to-one manner by applying The Open Group's Architecture Framework's (TOGAF) architecture development method to assist in the establishment of the one-to-one mapping concept [50].

A unified control and logging subsystem

Generalized internet and information technology platforms are no more dedicated to one specific accounting or financial subsystem that may permit costs reduction and improve the platforms performance, reliability and financial security, where these accounting activities should be controlled and monitored in real-time. A Unified Logging Subsystem (ULS) must be specifically designed to support anAAP module. Log servers exist and they are powerful logging and monitoring subsystems that support accounting and financial subsystems to view, sort, and tune logs. ULSs can be designed to analyse, collect and store AAP data from various accounting and financial microartefacts. ULSs provide BTP teams with views into the financial data related to the BTPs evolution and AAP's statuses. ULSs also allow the BTMs to manage the standard accounting information technology logs and financial application data [56].

Decision trace store and logs

The AAP's decision log has an important role, where this log is based on various subsystems' inputs that are in fact the outputs from various validation processes. Possible information returns: 1) accounting and financial process' mechanisms feedback; 2) accounting information technology components feedbacks; 3) audit and fraud feedbacks; 4) accounting and financial previsions; and 5) BTP and/or enterprise architecture capability feedbacks. The AAPs are linked to the *Environment's* critical success factors and if they were violated, the AAP module generates a log message to inform about the violation status. Depending on the level of the warning, the AAP can eventually demand the BTP's accounting and finance team support. If the support team signals a problem to be solved, then the neural networks decision making system is activated.

Neural networks oriented system

The *Environment's* Decision making (Dm) module is conceptually based on a mixed method combining Action Research (AR), tree heuristics and directed quantitative analysis. The authors believe that qualitative and quantitative methods can be united in a single method. AR is applied in education research and this fact supports the BTP's capability to build finance and business intelligence microartefacts in a continuous learning process. This process inspects and learns from configurable intelligent accounting and financial microartefacts that are found in the decision-making subsystem. The decision-making subsystem is generic and can be applied to any financial field and is considered to be easily adaptable; where its basic neural networks algorithm is based on: 1) Neural Networks and Enterprise Architecture's (NNEA) concept; and 2) Agnostic Implementation Environment (AIE). These components are all parts of the decision-making module and they all support the transformation process by building specialized accounting and finance microartefacts, where these microartefacts are instances of building blocks.

The accounting and finance microartefact

The accounting and finance microartefact concept is implemented by using an iterative implementation model in which it can be mapped to all the BTPs artefacts in a sequential one-to-one mapping concept. Such anAAPmicroartefact is an instance of a building block that can interact with other BTPs microartefacts in a traced and synchronized manner applying TOGAF's architecture development method to assist in the grouping of the needed services. The BTP can adopt a strategy mimicking neural networks, in order to gain immense computational capabilities to overcome the traditional silo-like computer science approach that is very dominant in the financial domain.

The accounting system architecture and infrastructure critical success factors
This section's (CSA: AccountingSystemArchInf) set of filtered CSFs, KPIs and their weightings are:

Critical Success Factors	KPIs	Weightings
CSF_AccountingSystemArchInf_UnbundlingProcessStatus	Started	From 1 to 10. **10 Selected**
CSF_AccountingSystemArchInf_HolisticAgileView	Established	From 1 to 10. **05 Selected**
CSF_AccountingSystemArchInf_RoleOfStandards	Partial	From 1 to 10. **07 Selected**
CSF_AccountingSystemArchInf_AutomatedServiceGranularity	Unsufficeient	From 1 to 10. **04 Selected**
CSF_AccountingSystemArchInf_LoggingSystem	Unified	From 1 to 10. **09 Selected**
CSF_AccountingSystemArchInf_AutomatedServiceLifeCycle	DevOps	From 1 to 10. **08 Selected**
CSF_AccountingSystemArchInf_ADM	TOGAF	From 1 to 10. **09 Selected**

Table 3. The accounting system architecture and infrastructure factors and indicators

Proof of concept
The proof of concept was built using the *Environment* that has been built using the Microsoft Visual Studio .NET development environment; the proof of concept is based on the CSFs' and KPI indicators binding to a requirement,where the AAP was prototyped using Sparxsystem's Enterprise Architect environment [19]. AAP uses atomic services that make calls to the AAP microartefacts. The reasoning model represents the relations between the accounting requirement, microartefacts or building block and the ADM [20].

Critical success areas, factors and indicators setup
The initial values have been presented in this article in tables 1 to 3. Critical success factors' indicators bind requirements to various legal acts, frameworks, standards, rules and service agreements; they can be selected from the *Environment's* widget.As shown in Figure 1, the factors and indicators are stored in an XML file where the link CSA, CSF, KPI and requirements are presented.In Figure 1 the REQ_ID refers to a special section of the requirements XML document that contains also the needed information on actions and constraints to solve the problem.

```
<REQS>
      <Set>EngineeringStrategyApplication</Set>
      <REQ  ID="DefiningGlobalStrategy_001">
            <name>DefiningGlobalStrategy</name>
            <Problems>
                  <Problem>Unexistant</Problem>
                        <Action>Setup</Action>
                        <Action>Ignore</Action>
                        <Action>Audit</Action>

            </Problems>
      </REQ>
```

Figure 1.Requirements and actions mapping

Solution providing

The decision-making system provides that the environment must define a setup phase if the budget permits, otherwise just ignore this phase.

Conclusion and managerial recommendations

The AAP component's holistic integration is an important factor for the financial engineering environment's evolution and stability. Many industries have been implementing AAP like local solutions to respond to probable accounting, risk and legal problems and challenges in production. This research phase is part of a series of publications related to the business transformation projects and architectures. This research is based on mixed action research model; where critical success factors and areas are offered to help BTP architects to decrease the chances of failure. The most important managerial recommendation that was generated by the previous research phases was that the business transformation manager must be an architect of adaptive business system. In this research phase and article, the main issue is how to integrate the AAP's component in a BTP. The resources discovered in literature review and the *Environment's* proof of concept proved the feasibility of this research's phase and defined a related set of recommendations on how to implement an AAP component. The authors present the Environment's AAP list of managerial, architecture and technical recommendations that are sorted by their importance:

- The proof of concept: proved the research project's feasibility by implementing the defined pattern.
- The BTM must deploy an accountingmicroartefact based strategy and an anti-locked-in approach: The AAP component must be designed by the BTP team and its implementation must be set as the company's strategic goal.
- To design and implement an adequate AAP component: for business transformation project, there is a need to implement a decision system that can be easily integrated with any framework or tool.
- Accounting intelligence, decision making module and critical success factors: The decision-making module uses the BTP's logging system's database.
- Implement a global financial subsystem's approach for the control of financial transactions similar to the AAP component via the use of microartefacts.
- Implement Critical Success Areas (CSA) that is a category of Critical Success Factors (CSF) strategy where in turn a CSF is a set of Key Performance Indicators (KPI), one KPI corresponds to a single accounting requirement.
- Application of the antifragility concept can help in having a holistic and broad guide to non-predictive decision making operations under uncertainty.
- AnAAP-like component must be implemented in-house to interface it with the *Environment's* decision making module and logs.

- Proactively try to avoid Black Swan phenomena.
- The business environment must choose a currency strategy to be used in its financial (e)transactions.

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