The business transformation and enterprise architecture framework
The London Interbank offered rate crisis - the model

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Abstract
Financial budgeting and credit controls of a business company, regional body, government, or geopolitical entity is a set of interrelated activities that touch various domains like financial engineering, geopolitical influence, governance and legal conformance. Complex transformation projects and their enterprise architecture subproject(s) must be coherent with the entity’s business and financial strategic planning goals; where the main strategic goal is to minimize the financial risk. Financial budgeting and credit control are the fuel of the entity’s sustainable business growth and its integration in local, regional and global economies. Budgeting and credit control depend on the enterprise’s capacities to acquire flexible credits and to pay-back the borrowed amount of money increased for corresponding interests, within the defined time frame. Budgeting and crediting schemes can be supported by financial engineering-related risk and legal controls, which are necessary and are even fundamental for short-term, mid-term and long-term financial strategy to insure business longevity. In the last decade, the world witnessed unprecedented financial crisis that was probably the one of the of the worst crises that the financial world has faced. Some would argue that the '29 crisis was one that had marked the human history. In fact, the scope is today different because the volume of money and the financial interconnections are far greater today. Today it is important to understand what went wrong in the 2007-2008 financial crash or to verify if this financial crisis was predictable, in order to design a robust budget and avoid toxic financial logic. Finance related risk and legal standards alone are not sufficient and cannot be the only barrier. The enterprise must build a financial strategy that predicts its budgeting and crediting processes; and above all it should apply cleansing of any toxic or corrupt financial interaction with financial bodies. Many crediting forms and models exist. In this article the authors analyse the intercontinental exchange-based credits, or simply the London Interbank Offered Rate, known as the LIBOR that serves as the first phase for calculating interest rates on various loans and financial products throughout the world (SNB, 2017).

Introduction
The defined financial strategy must verify the credibility of credit suppliers and check the possibility for conflict of interest in the crediting body. Erroneous budgeting and credit management definitely would damage any business transformation project or enterprise architecture project. That may disable the traditional business environments for being a part of the global economy and to compete with its peers. An important factor in frequent business transformation projects’ changes and iterations are the roles of the national finance control bodies, business transformation managers, finance analysts and enterprise architects who should be supported by the optimal business transformation framework that includes a strategy model of global budgeting and credit management that are based on LIBOR that has been dropping sharply for a long time since begin of 2009; as shown in Figure 1(Kshitij, 2017).
Normally, money transactions are executed by one party and are based on a floating rate of interest, like the London Inter Bank Offered Rate (LIBOR) or the Securities Industry and Financial Markets Association (SIFMA) municipal swap, while money transactions are made under fixed interest rates, which in most cases are based on U.S. Treasury bonds (California Debt and Investment Advisory Commission, 2007). This research topic will try to show the reasons for the LIBOR crisis and uses a well-defined research process and framework. Analysing of Figures 1. and 2. Shows that they are closely dependant and that is the focus of this research article that comes with an associated article: “The Business Transformation and Enterprise Architecture Framework-The London Inter Bank Offered Rate Crisis - The Proof of Concept”, prove this article’s research question.

The Research Process and the Framework

Transformation and enterprise architecture research

The Budgeting and Credit Management Component (BCMC) is a part of the Decision making module (Dm) that in turn is a part of the Institute of Business and Information Systems Transformation Management’s (IBISTM) framework, consisting of the following modules: 1) Selection management; 2) Architecture-modelling; 3) Control-monitoring, 4) Decision-making; 5) Training management; 6) Project management; and 7) Geopolitical management (or Sm Am Cm Dm Tm Pm GmF, for simplification in further text the term Environment will be used) (Trad, 2013a; Trad, 2013b), that supports Business Transformation Project’s (BTP) and enterprise architecture activities. The global research question (hypothesis #1) is: “Which architecture transformation pattern should support the implementation phase of a company’s business and architecture transformation project?” (Trad, 2013a; Trad, 2013b). And this phase’s current research questions are: “Which global credit management control is optimal for a competitive business company?” and “What are the reasons for the LIBOR crisis?” Global Budgeting and Credit
This global budgeting and credit management strategy model should be also capable of supporting the business environment’s long-term financial engineering risk management, legal control and enable the integration into a complex block-chain globalized environment, including multiple desynchronized cash-in/cash-out processes. To achieve this global budgeting and credit management based strategy, critical success areas and critical success factors must be applied to evaluate possible pitfalls and risks, to audit, assert, govern, automate, trace, monitor and control the business transformation project’s financial budget and open credits. The business transformation project or an enterprise’s architecture project critical success factors can be configured to manage the complexities in dealing with asynchronous global budgeting requests and credit management requirements. Transformed business environments’ global budgeting and credit management strategy model have to support built-in automated block-chain controls capable of recognizing budget slippages, fraud, black swan effects (Taleb, 2007), bad investments, business transformation project budget slips, loss of (e)transactions, illegal activities and tax evasions. In this article, the authors try to show the origins of the latest stormy financial crisis and link its origins to intentional London Inter-Bank Offered Rate (LIBOR) manipulation that resulted in a worldwide subprime financial earthquake and its background(s).

The Financial Background

Global Financial Strategy and Global Business

Global Business is a business engineering field that combines management sciences, business administration, finance, accounting, (e)law and economics with information technologies and engineering (Wikipedia, 2015; Universität St. Gallen, 2015). An important part of global business provides financial services or (e) finance over the web. BTP can help banks and financial institutions reshape their e-business program, 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 stand up again after the financial crisis. Multi-functional-banking which is a form of block-chaining based on web technologies, enabled low cost and efficient financial operations. Citibank was the first financial institution to finalize a BTP and that had a significant impact on the Banking Business Model (Farhoomand & Lentini, 2008). The strategy should include dynamic and synchronized financial block-chains.

The role of synchronized block-chains

A financial block-chain is the term used for a financial transaction technology that permits business partners, who don’t know each other, to commit trustful financial operations and to share the logging records of all financial (e) transactions, in a transparent manner. This sharing of logging records is virtual and is distributed to all users on the internet who use their work stations to execute (e)transactions and this fact obsoletes the need for adding a third party to manage block-chains. These block-chains intermediaries are abundant and cause various types of problems and loss of money. Besides the Bitcoin block-chain there are many block-chains supporters that have emerged in the recent decade. The desynchronization of such a chain may cause devastating effects like the ones in the years 2007 and 2008. The managed volume of money and the damage

Paula Ramada, who honoured a doctorate in economics at the Massachusetts Institute of Technology, calculated the amount of investor’s lost money due to the benchmark interest rates debacle. Ramada is one of many mathematicians and engineers trying to estimate the damage caused by the LIBOR bank catastrophe that is estimated at $300 trillion in financial instruments, ranging from mortgages to student loans. Where a trillion represents 1 billion of billions (10^9 x 10^9) or 10^18 (Ramada, 2013). Therefore, a change or manipulation of a mere 0.1% has a damage of 10^15 of Euros per year; this is the mechanism that banks used to cover the fall of the LIBOR and save their investments at the cost of ruining middle and lower-class households; knowing that some banks like the Swiss UBS got much richer (Anders, 2014).
That caused a global geopolitical and financial crisis.

The Geopolitical Background

The integration of BCMC’s mechanisms in the global economy can face major manipulations, like for example, in the following case: In 2006, Christopher Smith, a United States of America congressman, proposed the Global Online Freedom Act. This act prohibits United States Financial engineering organizations to work with countries that apply: 1) internet censorship activities; and 2) requests to deliver personal information of internet/Financial engineering users; that can be extended to for example Swiss banks UBS and CS. Such demands were being asked by various countries. United States financial engineering organizations, which were violating these rules, had included on internet the data concerning information technology vendors and search engine companies, supporting millions of financial engineering companies and private users. This act was approved after the congressional hearing in Washington (USA) that took place in 2006 (Farhoomand & Tsang, 2006). An efficient financial system must have access to international and national financial engineering-related risk and legal acts, court decisions, as well as access to companies and countries listed for having violated these acts. Such actions had a devastating effect on the national Gross Domestic Product (GDP).

The relation to the growth and jobless rate

The case of the United States

Figure 3. The US GDP, expressed in “2016 US dollars” (Trading Economics, 2017a).

As presented in Figure 3, the effect is serious on the US GDP but the US economy is very robust and it stayed solvable due to the important volume of cash that is managed by its financial institutions. The US citizens took the hardest hit and the level of joblessness rose to nearly 10% in the 2008 crisis period; as shown in Figure 4.
The case of the United Kingdom

As presented in Figure 5., the effect is moderately serious on the UK’s GDP but the UK economy is very robust and it stayed solvable due to the important volume that is managed by the London financial hub and its financial institutions. The UK citizens took the hardest hit and the level of joblessness rose to nearly 8% in the period; as shown in Figure 5.

The case of the Helvetic Federation

Figure 7. The Helvetic Confederation GDP (Trading Economics, 2017c).
As presented in Figure 7., the effect is extremely weak on the Swiss GDP but the Swiss economy is richer due to the manipulations of LIBOR and the use of hit and run Swiss banking tactics (Anders, 2014). If the Swiss financial system managed 20% of the LIBOR volume, the profits of the LIBOR manipulation can be estimated to $2 * 10^14$ Euros earning per year. The Swiss confederation and citizens and the level of joblessness rose to nearly 10% in the period; as shown in Figure 5.

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<tbody>
<tr>
<td>Suisse</td>
<td>2.7%</td>
<td>3.1%</td>
<td>4.4%</td>
<td>4.1%</td>
<td>3.4%</td>
<td>4.5%</td>
<td>4.2%</td>
<td>4.5%</td>
<td>3.3%</td>
</tr>
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Figure 8. The Swiss jobless rate (Wikipedia, 2016).

The case of Italy

As presented in Figure 9., the effect is extremely serious on the Italy’s GDP and the Italian economy is not robust and lacked cash. The Italian government and citizens took the hardest hit and the level of labour force dropped for-10% in the period; as shown in Figure 10.

Figure 9. The Italian GDP (Trading Economics, 2017d).

<table>
<thead>
<tr>
<th>Date</th>
<th>Value</th>
<th>Modifier, %</th>
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<tbody>
<tr>
<td>2016</td>
<td>11.7</td>
<td>-2.17%</td>
</tr>
<tr>
<td>2015</td>
<td>11.9</td>
<td>-3.81%</td>
</tr>
<tr>
<td>2014</td>
<td>12.6</td>
<td>4.35%</td>
</tr>
<tr>
<td>2013</td>
<td>12.1</td>
<td>15.51%</td>
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<tr>
<td>2012</td>
<td>10.7</td>
<td>27.20%</td>
</tr>
<tr>
<td>2011</td>
<td>8.4</td>
<td>0.50%</td>
</tr>
<tr>
<td>2010</td>
<td>8.4</td>
<td>8.20%</td>
</tr>
<tr>
<td>2009</td>
<td>7.7</td>
<td>15.04%</td>
</tr>
<tr>
<td>2008</td>
<td>6.7</td>
<td>9.33%</td>
</tr>
<tr>
<td>2007</td>
<td>6.1</td>
<td>-9.91%</td>
</tr>
<tr>
<td>2006</td>
<td>6.3</td>
<td>-11.68%</td>
</tr>
<tr>
<td>2005</td>
<td>7.7</td>
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Figure 10. The Italian labour force (Knoema, 2016).

Subprime
As shown in Figure 11, the LIBOR was closely linked to the Subprime mortgage debt system; the LIBOR was closely defined to cover the Subprime loses (Utt, 2008). The deterministic LIBOR artefact caused all related financial products to collapse and it seems that the governance methods were defiant and the legal systems have been handicapped.

The Governance and Legal Background

Finance law

Looking at the financial legal point of view, acts like the Uniform Law Commissioners (ULC) that promulgated the Uniform Electronic Transactions Act (UETA) in 1999 were inefficient. Many countries and regions have adopted financial standards to support fields like for example financial transactions and the digital signature’s legislation. The UETA is the first effort that provides standardized rules to govern finances. The UETA rules are related to the Uniform Commercial Code, where the Uniform Electronic Transactions Act rules are primarily for (e) records and (e) signatures that are related to the execution of (e) finances. The (e) finance is composed of related actions that are executed between two or more endpoints. Many Financial engineering topics are excluded from (e) law acts, like for example: 1) required notices; 2) disclosures; 3) courts’ decisions archiving; and 4) governmental agencies rules (The Uniform Law Commissioners, 2015). These excluded topics can be included as critical success factors in the Environment.

Governance and legal integration

The evolution of financial and business engineering forces various industries to implement BCMC like mechanisms into their business transformation frameworks. Such frameworks must incorporate (e) finances legal collaboration with: 1) international; 2) national; 3) electronic; and 4) local-regional laws, 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. By the year 2016, 40% of all business companies were supposed to standardize their governance, control and monitoring architecture; comparing this to the actual less than 10% in 2014; this proves that the BCMC’s integration is a strategic goal for all BTPs and financial engineering projects (Kowall, & Fletcher, 2013). The Business Transformation Manager (BTM) should be a member of the company’s strategic planning team and s/he should closely work with the company’s risks and legal teams, where s/he can bring an effective view to changes in financial engineering risk and legal regulations, control and governance integration issues that will stimulate reduction of the number of intermediaries. The models use the following financial intermediaries: 1) banks; 2) insurance companies; 3) mutual funds; 4) finance institutions; and 5) financial service providers. The BTM must insure that financial concepts do not lock in the business enterprise.

Locked-in situations
“A situation where an investor is unwilling or unable to exit a position because of the regulations, taxes or penalties associated with doing so. This may be an investment vehicle, such as a retirement plan, which cannot be accessed until a specified retirement date” (Investopedia, 2017). The post 2008 crisis witnessed a lock in situation for the many countries and business companies that may stimulate many of them to redesign their financial technology platform.

The Technological Background

Financial engineering integration

The global business environment needs a multimode (e) finance model that minimizes the dependencies between various financial transaction endpoints; where the endpoints connections are established between the consumer and the end business environment with minimal risks (Jin & Zhu, 2011). An important Critical Success Factor (CSF) that can be integrated in the BTP is the cost of (e) finance ratio before and after the BTP completion. To calculate costs related to (e) finance operations, there is the need to add-up the total cost of providing financial services and to divide it by the total number of successfully executed financial (e) transactions (Government Service Design, 2015). BTPs’ (e) finances’ outcomes have to be controlled in real-time and routine financial reports must be reported to the BTM and to the business enterprise’s executive management. (e) Finance impact on BTPs depends on security violations (Fu & Mittnight, 2015).

Finances’ security violations

Global finance’s functions and financial transactions are orthogonal to global security requirements, where the global financial environment functions and transactions define the responsibility for the enterprises’ financial results. Management of the enterprise’s financial interests, resources, governance, support, usage and reporting of security access activity, should be managed by the BTM’s team or by enterprise architect(s). In exceptional security breaches, like the case of denial of request for access rights to vital financial and business resources, the BTM must delegate the design of the solution to the enterprise security team. Thus, the business environment’s structure is an important factor that has implication on (e) law control, financial auditing, governing, control, access management and monitoring of (e) finance’s security. The (e) finance’s security concept uses the following standards: 1) the policy framework; 2) business messaging is needed for domain-specific assertion languages; it defines assertions for declaring reliable-messaging policy; and 3) timestamps based finance collaboration and processing (OASIS, 2009).

Discussions and Conclusions

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. In this article, the focus is on financial control and the causes of failure. The BCMC component’s holistic integration is an important factor for the financial engineering environment’s evolution and stability. Many industries have been implementing BCMC-like local solutions to respond to probable risk and legal problems and challenges in production; unfortunately, that failed for many reasons, the most important one is that major banks manipulated the LIBOR and caused the 2008 landslide crisis. 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 (Trad & Kalpić, 2014).

Research Limitations and Direction for Further Research

The Framework’s future research will focus on other LIBOR collateral effects.

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