

ANTONINE UNIVERSITY — Lebanon
Faculty of Engineering in Informatics,
Multimedia, Networking and Telecom.



UNIVERSITY OF BURGUNDY — France
UFR Science and Techniques
Department of Informatics



Masters in Software Engineering

Masters in Databases and Artificial Intelligence

WORK PLACEMENT REPORT

Educational Director: Dr. Richard CHBEIR
Presented by: Elie MATTA

Development on Cloud-Based CRM
Synchronization and migration from a web application to a CRM solution

Hosting company: PRIVACY APPLIED — Mkalles, Lebanon

Copyright © 2011-2012, eliematta.com. All rights reserved

STATEMENT

I hereby declare on my word of honor that:

- (i). The information provided is to the best of my knowledge, correct and complete.
- (ii). I am the only author of the text, figures, schemas, tables, code and results in this project.
- (iii). I take full responsibility for my work and achievements.
- (iv). I am aware that any incorrect statements may influence my final grade.
- (v). I understand that any fraud, plagiarism, use or even partial reformulation of any text, figure or result taken out of this document without any reference could result in my failure and exclusion regarding my transcripts.
- (vi). I have fulfilled any obligations imposed on me by the laws of an intern.
- (vii). I have fulfilled all the objectives that was set to accomplish during the internship period.

PREFACE

My internship held at **PRIVACY APPLIED**, Lebanon consisted on migrating essential data from **PRIVACY APPLIED** Web Application to Salesforce.com cloud-based CRM¹, that is to minimize the amount of ambiguities and duplication of data between these two systems.

I explored **PRIVACY APPLIED** Web application infrastructure including its database and core architecture, therefore delimited the type of development to proceed with creating a new workflow and UML² diagrams to abide to.

I have followed the execution life-cycle and therefore developed the required java batches and stored procedures to get the data from the application. Furthermore, I conducted a background research in order to get a closer look to the market to know what are the emerging solution used for synchronization between the existing systems.

I have gained extreme development experience while learning Apex, the #1 on-demand programming language in the world[1], used in Salesforce.com CRM. I also have developed my analytical experience while using SOQL, an object-oriented querying language.

I succeeded on developing the requirements and satisfied the objectives, putting together all the researches and results that I have carried out during the internship period in a team-work professional environment where we enjoyed working on new high-tech products and services in the cloud computing concept, the next generation of the internet world.

¹ Customer relationship management (CRM) is all about managing the relationships with customers — It involves using technology to organize, automate, and synchronize business processes [2].

² Unified Modeling Language (UML) is a standardized general-purpose modeling language in the field of object-oriented software engineering. The standard is managed, and was created by the Object Management Group[3].

ACKNOWLEDGEMENTS

This project has been successfully developed and deployed with the help of many individuals and the collaboration between the Antonine University — Lebanon and University of Burgundy — France.

*Therefore I would like to thank all **PRIVACY APPLIED** team who helped me throughout the internship period to excel in different ways, some of whom are:*

***PRIVACY APPLIED** — CEO of **PRIVACY APPLIED**, for his professional and personal support that urged me to push my skills and innovation to the edge.*

***PRIVACY APPLIED** — Project Manager in **PRIVACY APPLIED**, for her guidance and hands-on coding advises which gave me valuable experience in software engineering.*

***PRIVACY APPLIED** — Senior Software Developer in **PRIVACY APPLIED**, whom I reported my daily tasks and accomplishments to, and therefore has benefited me to strengthen my thoughts and analysis skills throughout the development life cycle.*

*I would foremost wish to thank my dear mentor, **PRIVACY APPLIED** — Associate Professor (HDR), University of Burgundy, who helped me to gain initial preparations and fundamental decisions taking into consideration his fruitful ideas during the internship.*

*I would also like to send my acknowledgments to the management of the Antonine University who gave me valuable theoretical, analytical and development skills that was a core help to my work, hence I would like to thank **PRIVACY APPLIED** — Dean of Faculty of Engineering, **PRIVACY APPLIED** & **PRIVACY APPLIED** — Academic Supervisors, and all my teachers for their valuable courses throughout the years of formation which helped me to strive in excellence in my internship.*

*Finally, I cannot forget to also thank the management of the Masters in Databases & Artificial Intelligence, thus **PRIVACY APPLIED** & **PRIVACY APPLIED** — Directors of the masters course, for their valuable knowledge that gave me extra knowledge in Software Engineering, learning to develop new high-tech products to excel in my work.*

Kind Regards,

Elie Matta

Table Of Contents

1 INTRODUCTION.....	1
2 CONTEXT AND OBJECTIVES	2
2.1 INTERNSHIP CONTEXT	2
2.2 COMPANY IDENTITY.....	2
2.3 ORGANIZATION CHART	3
2.4 SERVICES AND ACTIVITIES	4
2.5 FUNCTIONAL SPECIFICATIONS	5
2.6 INTERNSHIP OBJECTIVES.....	6
2.6.1 Synchronization with SFDC for client details	6
2.6.2 Synchronization with SFDC for user details related with clients.....	6
2.6.3 SFDC Invoice management	7
2.7 RESOURCES MADE AVAILABLE FOR THE INTERN	7
2.8 TIME ORGANIZATION	8
2.9 SUMMARY.....	9
3 PLANNING AND FUNCTIONAL REQUIREMENTS.....	10
3.1 PLANNING.....	10
3.1.1 Background research.....	10
3.1.2 Approach.....	<i>Error! Bookmark not defined.</i>
3.2 DESIGN	ERROR! BOOKMARK NOT DEFINED.
3.2.1 Workflow.....	<i>Error! Bookmark not defined.</i>
3.2.2 UML diagrams.....	<i>Error! Bookmark not defined.</i>
3.3 SUMMARY.....	ERROR! BOOKMARK NOT DEFINED.
4 DEVELOPMENT AND VERIFICATION.....	ERROR! BOOKMARK NOT DEFINED.
4.1 DEVELOPMENT ENVIRONMENT.....	ERROR! BOOKMARK NOT DEFINED.
4.1.1 Eclipse IDE.....	<i>Error! Bookmark not defined.</i>
4.1.2 Force.com IDE.....	<i>Error! Bookmark not defined.</i>
4.1.3 Subversion.....	<i>Error! Bookmark not defined.</i>
4.1.4 MS SQL Server.....	<i>Error! Bookmark not defined.</i>
4.1.5 Apatar	<i>Error! Bookmark not defined.</i>
4.1.6 Salesforce.com CRM.....	<i>Error! Bookmark not defined.</i>

4.2	DATABASE AND STORED PROCEDURES	ERROR! BOOKMARK NOT DEFINED.
4.2.1	<i>EQ_PRIVACY APPLIED _GetInfo</i>	<i>Error! Bookmark not defined.</i>
4.2.2	<i>EQ_PRIVACY APPLIED _GetInfoParAnnee</i>	<i>Error! Bookmark not defined.</i>
4.2.3	<i>EQ_PRIVACY APPLIED _GetVend</i>	<i>Error! Bookmark not defined.</i>
4.3	BATCH IMPLEMENTATION	ERROR! BOOKMARK NOT DEFINED.
4.3.1	<i>Properties</i>	<i>Error! Bookmark not defined.</i>
4.3.2	<i>Development</i>	<i>Error! Bookmark not defined.</i>
4.4	SALESFORCE.COM CRM	ERROR! BOOKMARK NOT DEFINED.
4.4.1	<i>Force.com platform</i>	<i>Error! Bookmark not defined.</i>
4.4.2	<i>Sales and service cloud</i>	<i>Error! Bookmark not defined.</i>
4.5	EXPLORING SFDC	ERROR! BOOKMARK NOT DEFINED.
4.5.1	<i>Custom objects</i>	<i>Error! Bookmark not defined.</i>
4.5.2	<i>Custom tabs</i>	<i>Error! Bookmark not defined.</i>
4.5.3	<i>Custom fields</i>	<i>Error! Bookmark not defined.</i>
4.5.4	<i>Relationships</i>	<i>Error! Bookmark not defined.</i>
4.6	INITIAL RESULTS	ERROR! BOOKMARK NOT DEFINED.
4.6.1	<i>Page layout</i>	<i>Error! Bookmark not defined.</i>
4.7	VISUALFORCE CONCEPT	ERROR! BOOKMARK NOT DEFINED.
4.7.1	<i>Pages</i>	<i>Error! Bookmark not defined.</i>
4.7.2	<i>Components</i>	<i>Error! Bookmark not defined.</i>
4.7.3	<i>Controllers</i>	<i>Error! Bookmark not defined.</i>
4.8	CREATING VISUALFORCE PAGES	ERROR! BOOKMARK NOT DEFINED.
4.8.1	<i>Apex programming language</i>	<i>Error! Bookmark not defined.</i>
4.8.2	<i>SOQL</i>	<i>Error! Bookmark not defined.</i>
4.8.3	<i>Implementation</i>	<i>Error! Bookmark not defined.</i>
4.9	APATAR OPEN SOURCE INTEGRATION.....	ERROR! BOOKMARK NOT DEFINED.
4.9.1	<i>Protocols</i>	<i>Error! Bookmark not defined.</i>
4.9.2	<i>Usage</i>	<i>Error! Bookmark not defined.</i>
4.9.3	<i>Initial setup</i>	<i>Error! Bookmark not defined.</i>
4.9.4	<i>Datamap for synchronizing clients with SFDC</i>	<i>Error! Bookmark not defined.</i>
		<i>defined.</i>
4.9.5	<i>Datamap for synchronizing activities with SFDC</i>	<i>Error! Bookmark not defined.</i>
		<i>defined.</i>

4.9.6	Datamap for synchronizing user clients with SFDC	Error! Bookmark not defined.
4.9.7	Scheduling.....	Error! Bookmark not defined.
4.10	MIGRATING TO OFFICIAL RELEASES	ERROR! BOOKMARK NOT DEFINED.
4.11	SUMMARY	ERROR! BOOKMARK NOT DEFINED.
5	CONCLUSION.....	ERROR! BOOKMARK NOT DEFINED.
6	FUTURE WORK	ERROR! BOOKMARK NOT DEFINED.
7	REFERENCES	ERROR! BOOKMARK NOT DEFINED.
7.1	DOCUMENTS	ERROR! BOOKMARK NOT DEFINED.
7.2	WEBSITES	ERROR! BOOKMARK NOT DEFINED.
7.3	BOOKS	ERROR! BOOKMARK NOT DEFINED.
	APPENDIX.....	ERROR! BOOKMARK NOT DEFINED.
	APPENDIX A — STORED PROCEDURES	ERROR! BOOKMARK NOT DEFINED.
	A-1 — EQ_BATCH_PRIVACY APPLIED TOSF_GetInfo ...	Error! Bookmark not defined.
	A-2 — EQ_BATCH_PRIVACY APPLIED TOSF_GetInfoParAnnee	Error! Bookmark not defined.
	A-3 — EQ_BATCH_PRIVACY APPLIED_GetVend.....	Error! Bookmark not defined.
	APPENDIX B — FUNCTIONS	ERROR! BOOKMARK NOT DEFINED.
	B-1 — clsMain.java	Error! Bookmark not defined.
	B-2 — Start.xml.....	Error! Bookmark not defined.
	B-3 — Initialization.java.....	Error! Bookmark not defined.
	APPENDIX C — SALESFORCE.COM CRM CODE.....	ERROR! BOOKMARK NOT DEFINED.
	C-1 — VisualForce page	Error! Bookmark not defined.
	C-2 — Apex class	Error! Bookmark not defined.

Table of Figures

Figure 1 - PRIVACY APPLIED Web Application.....	2
Figure 2 - PRIVACY APPLIED identity	2
Figure 3 - Organization chart of PRIVACY APPLIED.....	3
Figure 4 - PRIVACY APPLIED Services.....	4
Figure 5 - Salesforce.com CRM Platform.....	5
Figure 6 - SFDC invoice/billing management example.....	7
Figure 7 - Time Sheet.....	8
Figure 8 - Gantt Diagram	8
Figure 9 - Apatar Logo.....	Error! Bookmark not defined.
Figure 10 - Workflow Engine of PRIVACY APPLIED To Salesforce.com.	Error! Bookmark not defined.
Figure 11 - Class diagram	Error! Bookmark not defined.
Figure 12 - Sequence Diagram.....	Error! Bookmark not defined.
Figure 13 - Activity Diagram	Error! Bookmark not defined.
Figure 14 - Package Explorer.....	Error! Bookmark not defined.
Figure 15 - runnerAnnee.bat	Error! Bookmark not defined.
Figure 16 - runnerVend.bat	Error! Bookmark not defined.
Figure 17 - runnerHelp.bat	Error! Bookmark not defined.
Figure 18 – Force.com platform.....	Error! Bookmark not defined.
Figure 19 – Snapshot on main page of DE SFDC.....	Error! Bookmark not defined.
Figure 20 – Setup page snapshot.....	Error! Bookmark not defined.
Figure 21 – Creating a custom object.....	Error! Bookmark not defined.
Figure 22 – Custom object	Error! Bookmark not defined.
Figure 23 - Creating a custom tab	Error! Bookmark not defined.
Figure 24 – Custom object	Error! Bookmark not defined.
Figure 25 – Custom Text Field	Error! Bookmark not defined.
Figure 26 – New Relationship.....	Error! Bookmark not defined.
Figure 27 - Users page	Error! Bookmark not defined.
Figure 28 - Clients page	Error! Bookmark not defined.
Figure 29 - Activities page	Error! Bookmark not defined.
Figure 30 - Invoice page.....	Error! Bookmark not defined.
Figure 31 – Client Lookup	Error! Bookmark not defined.
Figure 32 – Client Page.....	Error! Bookmark not defined.

Figure 33 - Page layout	Error! Bookmark not defined.
Figure 34 – Salesforce MVC.....	Error! Bookmark not defined.
Figure 35 – Salesforce VisualPage structure.....	Error! Bookmark not defined.
Figure 36 –VisualForce markup.....	Error! Bookmark not defined.
Figure 37 –Creating VisualForce page.....	Error! Bookmark not defined.
Figure 38 – Page editor bar	Error! Bookmark not defined.
Figure 39 - Apatar Interface	Error! Bookmark not defined.
Figure 40 - XML Property	Error! Bookmark not defined.
Figure 41 – XML Property – Primary key	Error! Bookmark not defined.
Figure 42 - DataMap	Error! Bookmark not defined.
Figure 43 - Transform operation	Error! Bookmark not defined.
Figure 44 - Useful functions.....	Error! Bookmark not defined.
Figure 45 - SFDC - XML synchronization process	Error! Bookmark not defined.
Figure 46 - SFDC accounts	Error! Bookmark not defined.
Figure 47 – DataMap with join operation	Error! Bookmark not defined.
Figure 48 – Join operation.....	Error! Bookmark not defined.
Figure 49 – Join On fields	Error! Bookmark not defined.
Figure 50 – Activities custom page upserted	Error! Bookmark not defined.
Figure 51 – Client page with activities.....	Error! Bookmark not defined.
Figure 52 – Join Operation for users	Error! Bookmark not defined.
Figure 53 – Inner join.....	Error! Bookmark not defined.
Figure 54 – Client details with related users	Error! Bookmark not defined.
Figure 55 – Created scheduler.....	Error! Bookmark not defined.
Figure 56 - Package eclorer for SFDC components.....	Error! Bookmark not defined.
Figure 57 - Migration tool in Force.com IDE	Error! Bookmark not defined.

Table of Schemas

Schema 1 - EQ_ PRIVACY APPLIED _GetInfo	Error! Bookmark not defined.
Schema 2 - EQ_ PRIVACY APPLIED _GetInfoParAnnee	Error! Bookmark not defined.
Schema 3 - EQ_ PRIVACY APPLIED _GetVend	Error! Bookmark not defined.
Schema 4 - Controller declaration in apex page	Error! Bookmark not defined.
Schema 5 - Declaring variables in apex pages	Error! Bookmark not defined.
Schema 6 - Referencing Hyperlinks in apex pages.....	Error! Bookmark not defined.
Schema 7 - Referencing HTML tags as output for apex code .	Error! Bookmark not defined.
Schema 8 - Declaring arrayList in apex controller	Error! Bookmark not defined.
Schema 9 - Constructor in apex classes	Error! Bookmark not defined.
Schema 10 - Function to load required data.....	Error! Bookmark not defined.
Schema 11 - Generated XML.....	Error! Bookmark not defined.

1 INTRODUCTION

The work placement is an essential step for an engineering student as it leverages personal potential strengths starting by analysis and theoretical studies, through development and testing. I have also followed these steps throughout the internship period since there was no existing solutions, hence I elaborated my work starting by the analysis background research and studies, through the development and validation phase.

There are many advantages for the student that could be derived from this work, some of which are intellectual where the students implement all the theories that they have learnt, and other communicational, for whom the students learn how to deal with real issues in the software development life-cycle.

My work consisted first on getting familiar with the company's main products and services, and then migrate them into a cloud-based CRM. This was not an easy task as I had to get hands-on coding on an application that has been in development for several years which was conducted on ColdFusion, an unfamiliar programming language for me. To solve this problematic, I had to do an efficient analysis on both the database infrastructure and the source code with the help of **PRIVACY APPLIED** team.

As a second step, I conducted a background research that abides to the restrictions that the company has imposed and therefore successfully found Apatar, an Open Source Integration solution that maps data from a system to another. In the same context, I went further to list the diagrams and the succession of what I expect from the java project to give as output.

After finishing from the analysis and research part, I started developing the stored procedures to get the data from **PRIVACY APPLIED**. Consequently I developed a java project in Eclipse IDE to execute the stored procedures to deliver the result as the XML to map it to Salesforce.com CRM. I used Apatar to map all the required fields using join and transform operations.

In the midst of the development process, I have learned to develop pages and classes using Apex programming language[4] from scratch which was rather an intermediate task to achieve since it was a new programming language for me knowing that the resources were well documented.

2 CONTEXT AND OBJECTIVES

2.1 Internship context

The internship is held at **PRIVACY APPLIED** in Berytech - Mansourieh (Mkalles), Lebanon.

PRIVACY APPLIED is the tech division of **PRIVACY APPLIED** the leader in electronic catalogue B2B solutions and data interchange between suppliers and distributors has over 400 customers, more than 1,000 leads and 2,000 users.

PRIVACY APPLIED was established in 1999 at Geneva. Its activity is centered on the management of product information and digitization of product and tariff data interchanges between the suppliers and their customers.

PRIVACY APPLIED is an active member of organizations that publish GS1 standards. It had its first catalogue certified by GS1 in 2002 and has renewed its qualified tool certification in 2008.

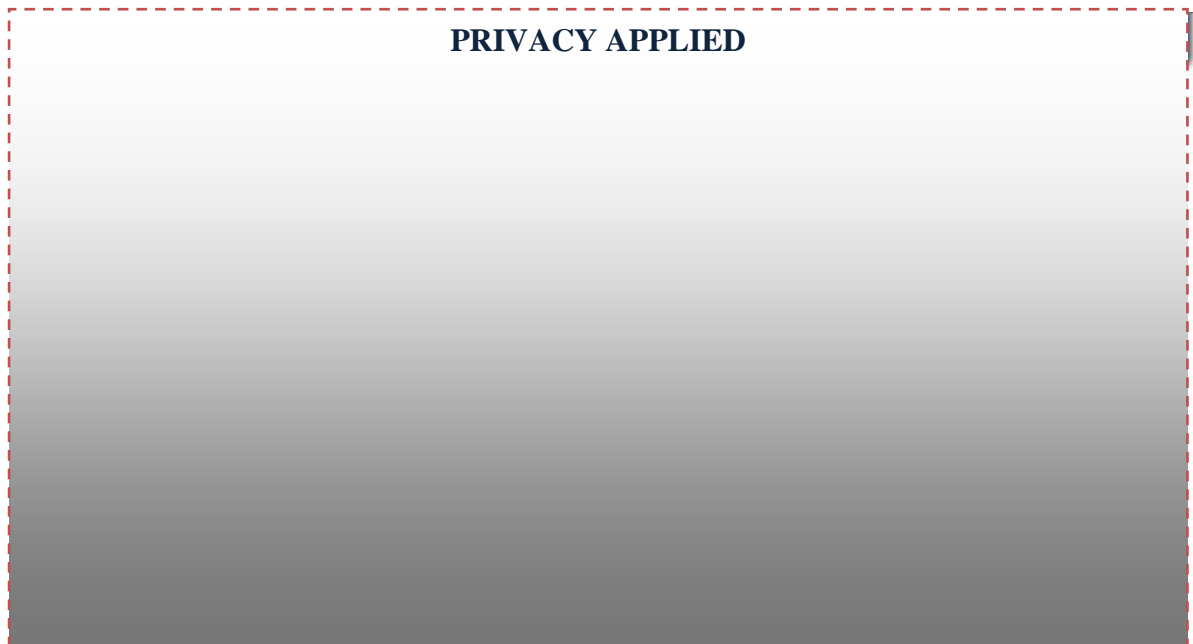


Figure 1 - PRIVACY APPLIED Web Application

2.2 Company identity

Name	PRIVACY APPLIED — Lebanon
Nationality	Lebanese — Swiss
Telephone	PRIVACY APPLIED
Email	PRIVACY APPLIED
Address	Mar roukoz, Mkalles, Lebanon
Logo	PRIVACY APPLIED

Figure 2 - PRIVACY APPLIED identity

Web Application, the development of the java batch from scratch and to further document all my work in a professional way.

2.4 Services and activities

In order to provide the best service to its customers, the company is organized around 2 interactive centers working together. This bipolarity allows a globalized approach of product and tariff data management projects.

- **PRIVACY APPLIED:** A Computer Research & Development centre, comprising engineers devoting their knowledge and their skills to the "business" and having acquired an expertise in the management of incoming XML messages and management rules.
- A Sales Development & Support centre with consultants who assist customers and users in their approaches on GDS projects & flow interchanges with their customers. To this centre is integrated the training department which, since almost 10 years, has been initiating and training our users and customers, for the principles of the GDS and digitized interchanges.

The services provided are shown as follows:



Figure 4 - PRIVACY APPLIED Services

These elements make **PRIVACY APPLIED** a recognized leader in its market as consultant to several companies (distributors and suppliers) on problems of the electronic catalogue and the GDS and data interchanges.

2.5 Functional specifications

PRIVACY APPLIED uses Salesforce CRM (SFDC: Salesforce Data Center) to store its knowledge base of all the clients, user clients, leads and prospects. This knowledge base includes follow-ups, emails, invoices, report management, excel sheets, etc.

Currently, all the data is being divided and stored in both **PRIVACY APPLIED** main application and SFDC which leads to undesirable errors of ambiguities and duplication.

The requirements are to maintain in one place, SFDC, the client information management in the most comprehensive way in turns of turnovers, daily use of **PRIVACY APPLIED** Application statistics and the various exchanges that takes place between the clients and **PRIVACY APPLIED**.

The main aspect of Salesforce.com is that it is the CRM that is "built for the cloud" which is the cloud computing concept of leveraging the power of delivering Software's, Platforms, Databases and Interfaces as a service which will make the data integrity more flexible, scalable and easy to use.

PRIVACY APPLIED support will use the Sales and Services Cloud provided by Salesforce.com CRM that will help me to handle and use the data synchronized to SFDC and visualize them like I want. An essential point to overview here is the data manipulation and statistical data that could be driven from SFDC such as automated data mining generation, report management for the client turnovers, total number of sheets per year and peruse.

On top of all of these products, comes Chatter, a real-time collaboration between SFDC users, this permits us to easily connect with people and discover new information you can use to make better decisions.



Figure 5 - Salesforce.com CRM Platform

2.6 Internship Objectives

PRIVACY APPLIED gives a codename for each project, therefore this **PRIVACY APPLIED** To Salesforce.com CRM project had the code name "**PRIVACY APPLIED**" with the following objectives:

2.6.1 Synchronization with SFDC for client details

PRIVACY APPLIED database holds global information about each user that should be mapped into SFDC with the following context.

- Transfers data following a unique direction: From **PRIVACY APPLIED** Web Application → SFDC.
- The clients are determined by a unique id entitled "**PRIVACY APPLIED**", therefore this primary key will be used to synchronize the following data:

PRIVACY APPLIED

2.6.2 Synchronization with SFDC for user details related with clients

The second part of the process will require a live synchronization from **PRIVACY APPLIED** to SFDC:

- Each client has 1 or multiple users.
- Each user has his own page and details.
- The user details related to the client should be chosen dynamically.

The data that should be transferred from the user table are:

PRIVACY APPLIED

The relationship between client and user is 1-n and the main primary key/foreign key is the unique **PRIVACY APPLIED** field.

2.6.3 SFDC Invoice management

In order to explore the strong capability of Salesforce.com CRM, another objective for the internship was to initially develop from scratch a customized page for the invoice management.

The requirements for this page was to offer a well-formed representation of invoices divided into multiple sections and having:



This page should also be available in the client page in a short-listed way where the sum of amounts should be automated and the invoice should be presented with a unique Number of document related to the client.

Finally all the synchronization and creation of pages should always be related with the client as it will be the main page where we could visualize the details of the users and invoice related to the client.

	Billing type	Document type	Amount	Status	Start date	End date
Edit	Subscription	Invoice	1000 €	Payed	01/01/2011	01/01/2012

Figure 6 - SFDC invoice/billing management example

2.7 Resources made available for the intern

PRIVACY APPLIED has equipped me with everything that I needed in order to complete my work, I list a few:

- A laptop equipped with the latest Software in order to run **PRIVACY APPLIED** Web application
- Access to the database and confidential information
- Documentation of the workflow of the company and its infrastructure
- A monthly budget to fulfill my daily needs
- Access to the official **PRIVACY APPLIED** account to Salesforce.com CRM
- The required data in order to run the synchronization
- Access to Salesforce.com CRM support in Switzerland and EMEA
- A fast internet connection

2.8 Time organization

In order to abide to the internship deadline, I have used Microsoft Office Project 2007 to set the following time sheet in order not to overflow any given task in a excessive manner therefore I have divided the tasks into two main parts: Analysis, where I review the existing application, and therefore make a background research on existing solutions. The second part is the development where I retain a specific workflow and try to implement it. I have divided these tasks in a chronological way, and both **PRIVACY APPLIED**, Director of **PRIVACY APPLIED** and **PRIVACY APPLIED**, my mentor, has been kept updated with the following:

		Task Name	Duration	Start	Finish	Predecessors
1		Background research on synchronization with SFDC	5 days	Mon 28/3/11	Fri 1/4/11	
2		Test solutions	5 days	Mon 4/4/11	Fri 8/4/11	1
3		Study Salesforce.com infrastructure	5 days	Mon 11/4/11	Fri 15/4/11	2
4		Explore Equadis database	5 days	Mon 18/4/11	Fri 22/4/11	3
5		Develop the stored procedures to get the required data	5 days	Mon 25/4/11	Fri 29/4/11	4
6		Develop the java batch that will generate the XML	5 days	Mon 2/5/11	Fri 6/5/11	5
7		Debugging on java batch and stored procedures	5 days	Mon 9/5/11	Fri 13/5/11	6
8		Create data maps on Apatar	5 days	Mon 16/5/11	Fri 20/5/11	
9		Synchronize data using apatar	5 days	Mon 23/5/11	Fri 27/5/11	7
10		Create custom objects and tabs	5 days	Mon 30/5/11	Fri 3/6/11	8
11		Create the manual and documentation	5 days	Mon 6/6/11	Fri 10/6/11	9
12		Create VisualForce pages	5 days	Mon 13/6/11	Fri 17/6/11	10
13		Test the migration from DE to PE	5 days	Mon 20/6/11	Fri 24/6/11	11
14		Present for the CEO and the team the work, optimize classes and pages	5 days	Mon 27/6/11	Fri 1/7/11	12
15		Migrate the official work to Professional Edition	5 days	Mon 4/7/11	Fri 8/7/11	13

Figure 7 - Time Sheet

From the list of these tasks, we obtained Gantt chart which will help us to always keep us with my performance and progression regarding the global time due to accomplish the requirements. We can notice the connection between the tasks since there is always continuous development and documentation in order to tackle new solutions:

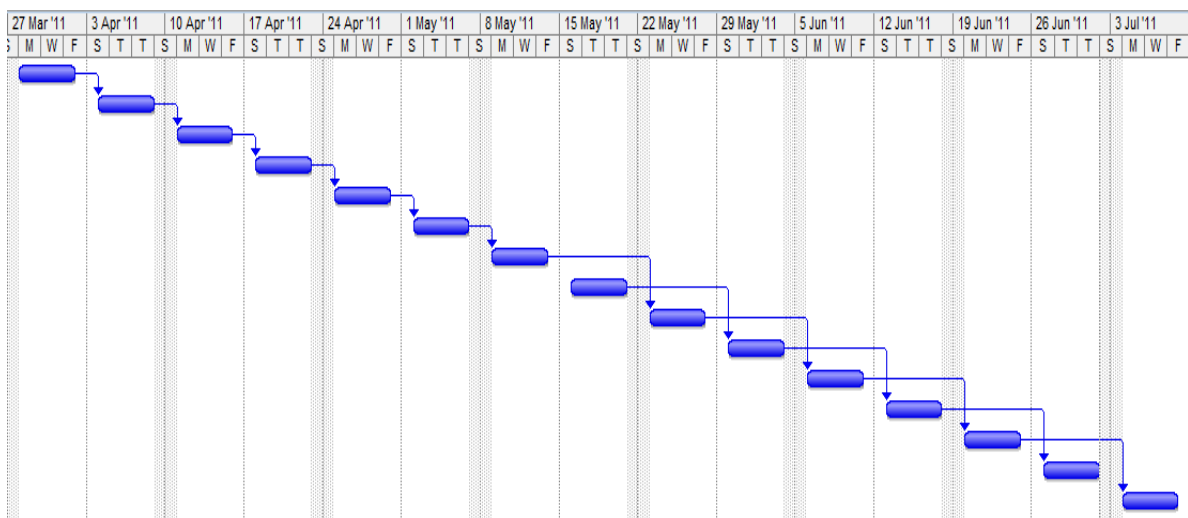


Figure 8 - Gantt Diagram

2.9 Summary

In this part, I have first detailed the global context of the internship listing the hosting company details and identity. I have further detailed their existing web application and the way to incorporate it with their demands. Then I have explained the roles of the employees in **PRIVACY APPLIED** and the ways of my contributions pointing at the importance of the direct supervision and reporting to personals. I have also detailed the services and application that **PRIVACY APPLIED** offers and the ways of sanctioning the European market to deliver on-promise Product Data Management services and reliability.

I have also explained the internship subject which is to carry on through a synchronization process between **PRIVACY APPLIED** Web Application and Salesforce.com cloud-based CRM in order to remove disambiguation and duplicated data. From his part I have concluded the specific internship objectives listing all the requirements and constraints.

Finally, I have modularized the tasks organized by a chronological way to always be aware of the progress of my work and to identify the upcoming task to accomplish. From this part, I have followed the Gantt chart that helped me to follow the project schedule following the start and end date of each task.

3 PLANNING AND FUNCTIONAL REQUIREMENTS

In order to process with tackling problem solutions, I divided the steps that I followed into two main parts: Planning, where I will detail the benchmarking studies on the existing solutions for the synchronization and therefore propose a certain approach. The second part is design, where I will show how will I implement my workflow integration life-cycle and its back end processes equipped to help the whole synchronization to run smoothly.

3.1 Planning

To apply this synchronization, we needed to study the current solutions available in the market in order to choose the best solution or even create our own.

First I explored the ways to open a session with Salesforce.com CRM in order to transfer data, thus I found Web Services API, the utility that accepts REST and bulk API via SOAP messages.

From this idea, I have concluded that any new or existing solution should use this protocol in order to transfer data to the cloud.

After a detailed search on the top most used synchronization tool, I included the list of the most known stable solutions that are being used for synchronization in the following paragraph.

3.1.1 Background research

I have found more than 20 solutions for data synchronization between MS SQL Server 2005 and Salesforce.com CRM.

I have chosen to list the top 9 solutions following the given constraints from the hosting company, the constraints précised to choose the solution with the preferred following details:

- The most reviewable
- Online support
- Multi-platform
- Free to try
- Low cost
- Open source
- Takes into consideration SFDC requirements for implementation
- Well-known in the cloud-computing industry

Here is the list of the solutions that exist and abides to the mentioned constraints:



Contact me for the full version
em@eliematta.com