Business Intelligence System Infrastructure

Algonquin College

BI Architecture

23W\_CST2210

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Assignment

Group Project Documentation

Due: 21st February 2023

# Milestone Submission

The group has been tasked to assist the CIO of Algonquin College, in explaining the change in approach from a large enterprise-wide BI project to a phased approach in implementation, to the College. This document has been created to record the group plans, including the organization of tasks, decisions, work schedule and questions for the CIO amongst others, as will be seen in the following sections.

## Task

Allocation of Tasks

### Meeting 01

|  |  |  |  |
| --- | --- | --- | --- |
| S/N | Tasks | Assigned to | Status |
| 1 | Meeting minutes and general notes | Anyone | Complete |
| 2 | Information Tier | Ife | Complete |
| 3 | Application Tier | Sarah | Complete |
| 4 | Technology Tier | Ahmed | Complete |
| 5 | Future State Diagram | Fatma | Complete |
| 6 | Documentation | Everyone | Complete |
| 7 | Presentation slides preparation | Everyone | Complete |
| 8 | Diagram review | Everyone | Complete |

## Schedule

Before the commencement of the project, the group members had established two modes of communication apart from the physical meetups as an allowance for tight or incompatible schedules. The first is a WhatsApp chat group for basic communications and notifications, while the other is a Microsoft Teams chat group for virtual meetings, sharing of files and collaborative work from any location.

### First Meeting 31st January 2023

The first official meeting took place on the noted date as opposed to the initial meeting set for the 27th January 2023, due to other reasons.

The overall approach to the project as well as a review of the requirements was carried out by the group members, possible software’s and applications to be used in the execution of the project were also proposed.

### Second meeting 1st February 2023

The second meeting took place on the 1st of February, where the group continued from where things were left off in the previous meeting. Discussion was made over the individual findings of each designated architecture and clarifications were made as to the approach of the project.

### Third Meeting 13th February 2023

The third meeting was held online via Teams meet, and it covered the drafts of the various architecture diagrams which was created by everyone in the group, opinions and corrections were made to each diagrams collectively.

### Fourth Meeting 20th February 21, 2023

The last meeting was held in person, in this meeting we finalised all the architecture diagrams, as well as created the PowerPoint slides for the presentation. At the end we did a mock presentation in anticipation of the final presentation.

## Decisions

#### General decisions

1. Based on the tool selected for collaborative work, Microsoft Teams, other applications in the Microsoft Office Suite were considered for use in the project to leverage the SharePoint features and the selected ones are as follows:
   1. Microsoft Word – Documentation, Meeting minutes, Notes
   2. Microsoft Power Point – presentation Slides
   3. Lucid app – Visualization of the Diagrams
   4. Microsoft Excel – Meeting attendance, contribution recording
2. Microsoft Visio was also considered for the creation of the architecture diagrams, but due to the lack of familiarity with the application by some members of the group, Luci Chart was selected. Primarily due to its ease of use and free student accounts available.
3. For the initial part of the project all members of the group will be involved the reviewing of related materials.
4. A short progress report on what has been done since the last meeting will be given by all members of the group.

#### Project decisions

1. Kimball model will be used as the basis for the project.
2. Future state comparison for the fourth deliverable.
3. Future state diagram will be implemented on the information Architecture layer.
4. Aws for cloud service provision to combat the lack of servers and storage.
5. 2 availability zones should be considered and 2 instance sets for each zone.
6. Python script should be used for ETL processes to save cost
7. Integrating the AC Way journey from the Business plan into the development of the project.
8. Data sources for the pilot project should include:
   1. OLTP databases Microsoft SQL Server
   2. Microsoft excel flat files
9. Data sources for the future state Information Architecture diagram should include:
   1. OLTP databases Microsoft SQL Server
   2. Microsoft excel flat files
   3. GeneSIS/ACSIS – Student Management,
   4. Brightspace - LMS,
   5. Peoplesoft – Human Resources Management)
   6. Mobile apps – I-cent and Pulse
   7. Surveys – Staff and Student
10. PowerBI will be included in the pilot architecture but absent from the future state architecture.
11. IBM Cognos will be installed in the VMs.
12. Each tier should be installed on a different server for performance optimization.

## Questions to ask the CIO

1. When considering the Algonquin Student Union (individual not part of the college. Have their systems) should they be viewed as part of the HR dept or apart from them?
   1. They are an independent body, hence not part of the HR.
2. The college has a couple of Mobile applications for the students, like Pulse and Icent, we would like to know if they are also used by the staff members and if there are others that we aren’t aware of, as they might be a suitable data source for the BI project. (HR App – not visible to students and staff, only HR Staff and senior management.)
   1. Not applicable in the pilot project, can be included in the enterprise wide implementation
3. How quickly can we failover from the primary site to the secondary site? What components are considered as a high Availability regarding this project.
   1. Failover is needed to be at the basic state at least, high availability is not a priority.

# General Notes for the Project

From the questions asked in class by the other groups during their meetings with the CIO

* What is the current capacity?
  + 85% no new application is placed on the server, either buy or use cloud services.
* Is there any budget available for getting the backup servers?
  + All the new components must be on the cloud for now and might be moved back to the premises after the budget has been adjusted, as it is quite expensive to keep them on the cloud.
* The current process of uploading overnight can’t be changed so they can be added to but not eliminated.
* What’s the relationship between PowerBI and IBM Cognos?
  + IBM Cognos has been decided upon as our enterprise tool. It should be front and center as the BI tool application for the project.
* What’s the budget for cloud?
  + No fixed budget, only using surpluses available in the college’s finance. Be judicious in the scaling (don’t be overzealous) start with a minimal setup and then scale up. Be conscious of cost but don’t sacrifice the design.
* At least 4 diagrams.
* Regarding the documentation
  + apart from the tiers and their explanations
* No changes can be made to the existing infrastructure and about replacement, only upon the successful adoption of the pilot would it be replacing the old one. The project requires both to work at the same time. Remember no changes to the current infrastructure but can be incorporated in a future design.
* Project requires just simple failover for each of the three tiers, you don’t really have to focus on high availability.
* Focus only on reporting database not the operational database.
* Any changes should be able to be processed in the overnight downtime, no need to change IP addresses and port to allow inbound and outbound request are doable. There shouldn’t be any interruptions in the daily operations.
* Can the reports be run off-campus?
  + We currently use VPN to access from outside for the current system. No need to integrate the VPN currently in place, you can use a separate one for the cloud.
  + You can create the reports anywhere cloud or premises, but they should be able to be accessed from any platform.
* Cognos must be on the cloud.
* Technology issue with one of the reports as it takes a long time to generate, and it slows down the server. How do we change that?
* The only users for the system are the HR staff and the executives.
* Open new ports
* The consolation for the centralized reporting happens in an overnight process, the reporting database should be done in an overnight process.
* Every server is backed up every day
* OLTP databases and excel files