

BI System Project

KOBAS Constructions



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CENTENNIAL COLLEGE

COMP 225 SOFTWARE METHODOLOGIES

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**Part A: The Business/Domain Model**

# Vision Statement

KOBAS is a large Canadian-based construction company that operates in several countries around the globe. The company would like to centralize its governing process to monitor and direct KOBAS’ global activities. The monitoring process should cover project’s critical routes, project’s implementation progress, risks prediction, ongoing expenses, human resource activities, internal/external regulations and profit/loss accumulations. The envisioned solution should help decision makers in taking critical decisions in a timely manner and enable executives to visualise opportunities using the latest predictive analysis techniques.

# Problem Description

At present, KOBAS’ sites work in isolation mode. Each site has developed its own procedures and standards to manage and monitor operations. High-level reports are sent to the head office in Canada for consolidation, monitoring and controlling. The governance team is facing challenges in merging these reports in a comprehensive fashion for executive use. This is preventing KOBAS from having a solid control over cash flows and remote project’s developments. Having a proper governing system would eliminate any fraud activity that can negatively affect company’s reputation, profits and future developments.

# Mission Statement

The CEO of the company has appointed an IT team to develop an automated governance application that equips managers with right tools to monitor major activities within the organization as well as to allow them to track the progress of ongoing construction projects. The vision will be implemented in various phases where each phase would take care of a specific problem area. The outcome of all these phases should gradually frame towards the absolute vision of this project.

# System Capabilities

Based on CEO’s perception, the IT team is challenged to build a Business Intelligence (BI) application to assist in governing the enterprise business, projects, and financial matters. The BI tool should facilitate the following features:

* Automated and on demand data loading capabilities to capture key data elements from various project sites.
* Comprehensive database engine to act as a single source of data.
* Sophisticated data analysis tool to help in studying data patterns and developing sufficient set of data gadgets.
* Executive dashboards that are dynamic and adequate to managers’ needs.

# Business Benefits

The envisioned BI system should provide managers with the following benefits:

* Enable timely informed decisions based on live data streams progressing from different project sites.
* Empower managers with business-predictive capabilities that are based on data patterns gathered from diverse locations.
* Enhance business relations between KOBAS and its partners and customers.
* Ensure all activities are complied with internal and external regulations.
* Enforce standards on KOBAS’ operations and resources.
* Enrich the cash flow administration process as projects evolve.

# Project Scope

This year’s implementation of the total BI solution covers the following aspects:

* Developing Business intelligence (BI) infrastructure to support the system full-scale capabilities
* Establish ***cash flow*** and ***project progress*** governance system
* Define Data model and transfer all related data into the corporate database
* Provide with data loading user interfaces to properly upload data into the system
* Deliver executive dashboard with pertinent charts and figures

# Interview Questions and Answers

1. **What are the biggest challenges in your role?**

* *Can’t control money flow*
* *Can’t control quality of work and clients’ satisfaction*
* *Can’t see the overall view of company situation*
* *No visibility on human resources data and employee performances*

1. **Who do you think is impacted (positively/negatively) by the project and how?**

* *Executives; capability of running KPI’s and Executive dashboard reports to analyse company’s overall performance.*
* *Project managers; more productive and tracking of project progress.*
* *Accountants; better financial reporting and cash flow.*
* *Data governors; real time consolidated data for analysis.*

1. **Who will input the data into the system?**

*Project managers, accountants and data governors*

1. **How the BI system will be used at KOBAS?**

* *The system will be used to control money flow, work quality, project progress, HR inbound/outbound human process, etc.*

1. **What is the key action that triggers all operations in KOBAS?**

* *Signing of a construction contract with a customer*

1. **What do you want to measure (govern)?**

* Profit/loss
* Cash flow
* Project performance
* Drill down on profit/loss
* Monitor quality of work
* Customer satisfaction
* Hiring/Terminations process
* Subcontractors
* Project shares
* Financial statements
* KPIs

1. **What type of standards or procedures do you follow in your company to govern proper implementation of activities within your company?**

* *Project execution standard*
* *Material quality*
* *Contractors hiring*
* *Cost sheet*
* *Inbound/outbound human resources process*
* *Payroll standards*

1. **How project shares are handled by the company? Do you have a fixed share figure?**

*Each project dictates its rules. The BI system should be flexible to assign shares as per distinct project’s rules.*

1. **What inside resources this project can utilize?**

* Accounting report
* Projects contracts
* KOBAS organization structure
* KOBAS branches and project sites
* Enterprise activities and standards
* Organization debt to the budget and off-budget funds
* Information on the company’s bank accounts

1. **How profit is measured? How do you measure the project’s performance?**

*Profits are based on applied cost, certified work and approved variances.* We measure performance by analysing budget vs actual project cost and changes to the original scope of work. Usually, this is a sophisticated calculation process and we use ConProg Calculator to get the project’s progress magic number.



# Workflows

There are two major workflows to be implemented within the scope of this year. These workflows are:

**1. Project Cash-Flow**

1. ***Project Manager*** requests funds from ***Accountant***
2. ***Accountant*** transfers the money to project’s account
3. ***Data Specialist*** captures the cash withdraw and update the ***Executive Dashboard*** information
4. When a construction’s work milestone is achieved, the ***Project Manager*** will inform ***Accountant*** to bill the client
5. ***Data Specialist*** registers the billed amount in the ***Executive Dashboard*** system
6. ***Accountant*** collects the money from the client if the job is certified
7. Otherwise, ***Project Manager*** starts a review process on the completed work with the client
8. ***Data Specialist*** records any certified work amounts and receives payments in the ***Executive Dashboard*** system
9. The workflow goes back to step number one (1.1), if more work is needed. Otherwise, the workflow ends there.



**2. Project’s Progress Workflow**

1. After the ***Project Manager*** analyzes project’s requirements, ***Accountant*** will work with him or her to identify the contract Value and Cost
2. ***Data Specialist*** inserts this information (Value & Cost) into the ***Executive Dashboard*** system after the contract is awarded to KOBAS
3. ***Project Manager*** develops the contraction plan and information will be stored into the ***Executive Dashboard*** system by the ***Data Specialist***
4. ***Project Manager*** starts the construction process and the following occurs for any variation:
   1. ***Accountant*** will raise the contract cost
   2. ***Accountant*** will solicit client’s approval
   3. ***Accountant*** will raise contract value based on approved variations
   4. ***Data Specialist*** captures all raised and approved variations plus the new contract cost
5. If more work to commence, go to step 2.4. Otherwise, end the workflow



**Part B: Use Case Model - Object interaction**

# Event Table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Cash Flow* | | | | | | |
| **No.** | **Event** | **Trigger** | **Source** | **Use Case** | **Response** | **Destination** |
| 1.1 | Accountant captures project’s transferred funds | Project money transfer notice | Accounting system | Capture project’s transferred funds | Project transfer details | Executives |
| 1.2 | Time to produce transaction summary report | “End of the week, month, quarter, year” |  | Produce transaction summary report | Transaction summary reports | Executives |
| 1.3 | Accountant records invoices | Client bill | Accounting system | Record invoice | Project status details | Executives |
| 1.4 | Time to produce billing report | “Beginning of the project, middle of project, the end of the project” |  | Produce billing report | Billing report | Executives |
| 1.5 | Accountant captures certified work | Certification status | Accounting system | Capture certified work | Certification details | Executives |
| 1.6 | Project certification status approved | Certification status |  | Change certification status | Project certification status sent to project manager | Executives |
| 1.7 | Accountant captures payments | Payment notification | Accounting system | Capture payment | Made payment confirmation | Executives |
| 1.8 | Time to produce transaction summary report | “End of the week, month, quarter, year” |  | Produce transaction summary report | Transaction summary reports | Executives |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Project Progress* | | | | | | |
| **No.** | **Event** | **Trigger** | **Source** | **Use Case** | **Response** | **Destination** |
| 2.1 | Accountant creates a contract | Contract creation | Accounting system | Create a contract | Contract value and cost | Executives |
| 2.2 | Project Manager captures the project progress plan | construction plan | Work front- Project Management Software | Capture project progress plan | construction plan | Executives |
| 2.3 | Project Manager captures project process information | Fulfilled construction report | Work front- Project Management Software | Capture project process information |  | Executives |
| 2.4 | Time to produce fulfillment summery record | “Beginning of the project” |  | Produce fulfillment summery record | Fulfillment summery record | Executives |
| 2.5 | Time to produce construction process report | “End of the week, month, quarter, year” |  | Produce construction process report | construction process report | Executives |
| 2.6 | Project manager records project’s variations | Customer requirement changes, project manager money lack statement | Work front- Project Management Software | Record project’s variations | Project variation report | Executives |
| 2.7 | Accountant approves record variation | Project variation report from project manager | Accounting system | Approve record variation | Confirmation of project variation | Executives |
| 2.8 | Accountant updates contract figures | Confirmation of project variation | Accounting system | Update contract figures | Contract value and cost | Executives |
| 2.9 | Time to produce prospective project progress | “End of month” |  | Produce prospective project progress | Prospective project progress report | Executives |

# UML Use Case Diagram





# Prioritized List of Use Cases

|  |  |
| --- | --- |
| **Use Case Goal** | **Priority** |
| Capture project’s transferred funds | H |
| Record invoice | H |
| Capture certified work | H |
| Capture payment | H |
| Create a contract | H |
| Capture project progress plan | H |
| Capture project process information | H |
| Record project’s variations | H |
| Approve record variation | H |
| Update contract figures | H |

# Brief Use case Description

1. **Cash flow**

When the project is defined the BI system will capture the project’s actual cost. In addition, any billed amount to the customer will be captured and the certified work will be highlighted. Also any payment received from a client will be recorded and proper dashboard will be generated to provide the right message for decision maker on project’s cash flow.

1. **Project progress**

When the contract cost and value are identified they will be captured and the construction plan will be highlighted as well. During the execution of the project work progress will be recorded. Any variation would also be considered. When a variation is approved the contract value and cost will be updated.

# APPENDIX I: MEETINGS LOGS

**First Meeting**

Total time (3:30 pm – 4:30 pm)

All members were present

Discussed points:

Work to do:

* We will select a business case for a certain industry.
* We will look at the financial figures of a company.

Reasons for loss in a company

Competition

Internal and external culture

Reputation of an industry

**Second Meeting**

Total time: (9:00 am – 10:15 am)

All members were present

Work Done:

* Decided the project
* Assigned work to all group members

Work to do:

* Understand the problem
* Why? KVI

**Third Meeting**

Total time: (2:30 pm – 4:15 pm)

All members were present

Work Done:

* Brainstormed interview questions and the ones to be asked from the CEO
* Understood the problem to work on
* Preparations for vision document

Work to do:

* Design logo
* Write vision document
* Come up with questions for the interview

**Fourth Meeting**

Total time: (2:30 pm – 4:15 pm)

All members were present

Work Done:

Improved the vision document

**Fifth Meeting**

Total time: (2:30 pm – 4:15 pm)

All members were present

Work Done: Drawing the first work flow

**Sixth Meeting**

Total time: (9:00 am – 10:20 am)

All members were present

Work done:

Drawing the second workflow diagram

**Sixth Meeting**

Total time: (9:00 am – 10:20 am)

All members were present

Work done:

Drawing the second workflow diagram

**Seventh Meeting**

Total time: (2:30 pm – 4:00 pm)

All members were present

Work done:

Agreed on part B strategy

**Eighth Meeting**

Total time: (2:30 pm – 4:20 pm)

All members were present

Work done:

Developed Event Table using three strategies

**Ninth Meeting**

Total time: (2:30 pm – 4:20 pm)

All members were present

Work done:

Consolidating all Events

**Tenth Meeting**

Total time: (9:00 am – 10:20 am)

All members were present

Work done:

Priority and description