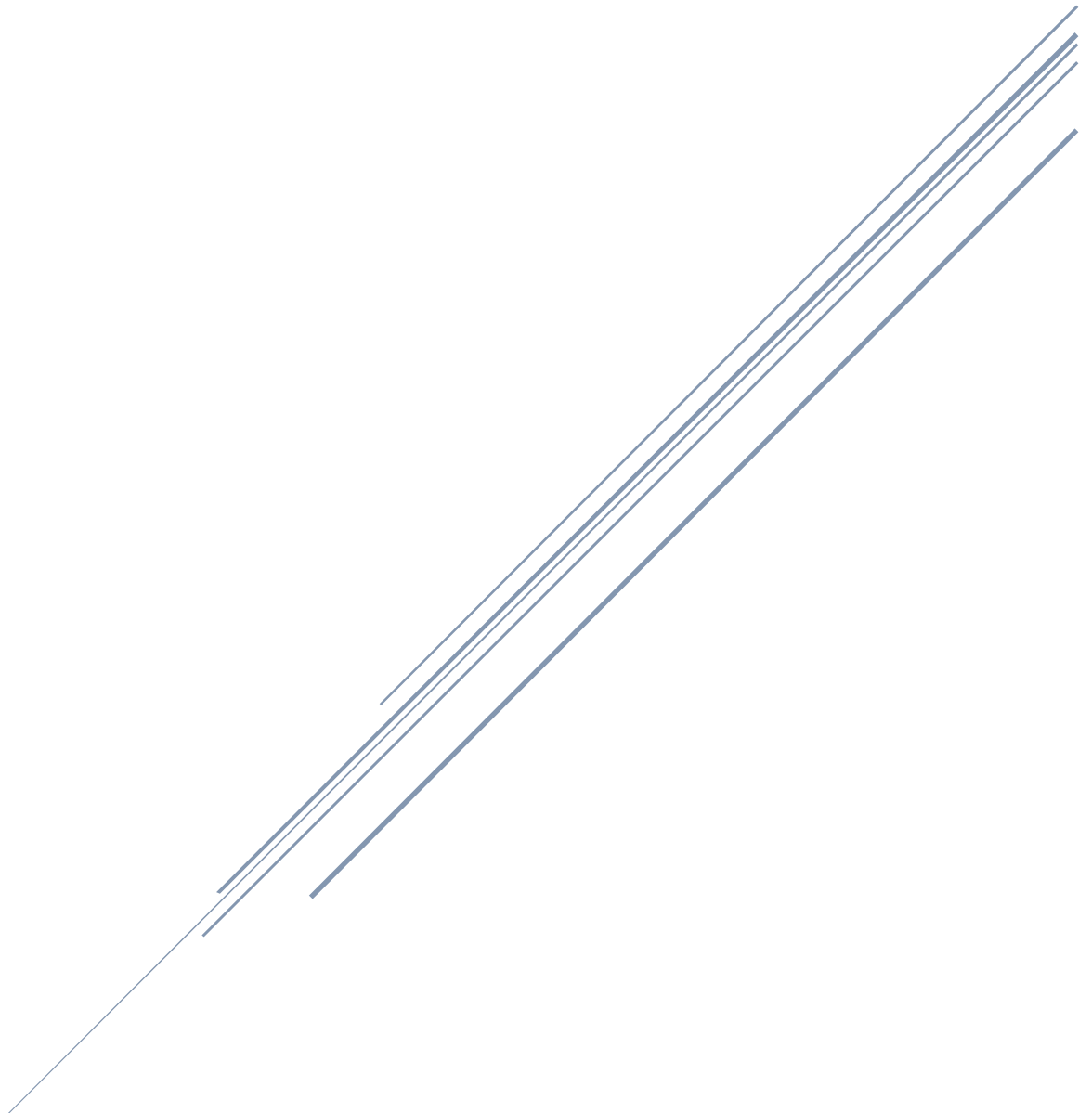


VISOIL – DRILLING DATA GRAPHICAL DISPLAY

Project Charter



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Executive Summary

VVISOIL – DRILLING DATA GRAPHICAL DISPLAY is a project to develop a web application that automatically generates live drilling data live graphs.

This project charter gives a brief overview of the project vision, goals, and description, and lays out the context that led up to the initiation of the project. The key stakeholders are listed in order to assign responsibility to the different areas of the project. The charter defines the project scope, by starting with the major project components and drilling down into each component to clearly define each sub-component. A brief list of items that are not included in the scope are also given.

The project goals and key requirements of the final deliverable are listed to ensure that each functionality item can be traced back to the original client needs. A thorough risk assessment outlines each area of the project, and its associated risks, giving each item a rating according to its predicted likelihood and impact, as well as a control measure to minimize the risk.

Finally, the project charter contains the schedule, including major milestones, and a granular budget that encapsulates the cost of each major component and phase of the project

Project Overview

Project Vision

To reduce the need for manual data entry tasks through the use of technology.

Project Purpose

The purpose of this project is to develop a web application that will automate the process of creating graphical displays for geological drilling data.

Problem / Opportunity

The Client's current process of making graphical reports manually is inefficient and incurs heavy labor costs the Client's company. This process also introduces unnecessary risks to the security of the data being manipulated, and minimizes the value of the final reports that are produced.

Process and Task Automation is Essential

The process of making graphical reports needs to be automated in order to help the company reduce costs and maintain a competitive edge in the exploration and production market. This solution can be implemented through the use of an application that would make the reports, which would drastically reduce the time it takes to generate reports, as well as increase the integrity and availability of the data used in the reports.

Project Description

The Client works for petroleum exploration and production company that provides detailed graphical reports of the wells that they are drilling. These data for these logs are generated by gamma ray sensors on the drilling rig, that measure rock formations as it is drilling. This information is sent wirelessly to a third-party database, where the Client logs in and downloads the data as a spreadsheet of raw data points. This data is then translated manually into a line graph utilizing custom made excel spreadsheets. Currently it takes up to 4 hours to download new data and translate it into a graph.

This graph is then used to relay information to the drilling operators to provide guidance on which direction to steer the drill, in order to avoid 'bad' sectors that could damage the drill. These graphs are generated periodically during the drilling, and the Client must choose when to log in to the database to get updated information, and the entire process must be repeated.

Sometimes a request is made from the drilling site to get an update on the data, and must wait for the graph process to be completed before they can receive a response

After drilling is completed, the accumulated data is formatted into a final report that is printed to paper and presented to engineers who will use the information for fracking operations.

The process of manually creating well logs is time consuming and inefficient. This can be overcome by implementing a tool to generate these graphs automatically from the raw data that is produced by the drill.

The VisOil - Drilling Data Graphical Display project will include the design, development and implementation of a web application that automatically download, format, and present the wellsite data as graphs.

Key Stakeholders

Role	Name
Project Sponsor	Dino Zelantini, Chris Driedger, Odole Banks
Project Customer	Dino Zelantini
Project Team Members	Jeong (Jason) Seok Kim, Shkumbin (Ben) Muli, Thomas Llewellyn

Product Scope

Major Components

Major Component	Description
Website	A website that is accessible from the internet, and will serve as the user interface to the graphical display
Graphical Display	The actual interactive display of data, as distinct from the general website it is hosted in
System Infrastructure	The back end of the application that is not visible to the user, including hardware, software, networking, services, and security

Individual Component Features

Website Application

Feature	Description
Login Page	A login page that authenticates the user and creates a session on the webserver
Wellsite Selection Page	A wellsite selection page that allows the user to select which wellsite data to view
Graphical Display Page	The live display of the selected drilling data
Logout Confirmation Page	A page to confirm when a user has successfully logged out of the application

Graphical Display

Feature	Description
Automatic Updates ("Live Data")	- A live display of the drilling data pertaining to the site that was selected, which is updated automatically on 30minute intervals (1800s)
Line Graph	- This data represented as a colored line graph of subsea elevation (y-axis) vs measured depth (x-axis), and will include the following data points: <ul style="list-style-type: none">o ROP (Rate of penetration)o Gammao Gaso Wetness ratioo Balance ratio
Layer Toggles	- Toggle switches to turn data layers on or off
Annotation Tools	- Annotation tools to add textual notes, flags, and tags to the graph
Printing Option	- Print to pdf option that will print either the entire graph or a selected area of the graph to pdf
Email Option	- Option to email the printed pdf using the client's installed email application

System Infrastructure

Feature	Description
Hardware	Servers, monitors, keyboard/mouse, cables, routers, switches
Software	Operating systems, licensing, development software, productivity applications, Databases, Scripts, 3 rd party software.
Security	Firewalls, Intrusion Detection Systems, Anti Malware, Encryption, Secure Connections
Networking	WANs, LANs, VPNs, network connections, network configurations
Services	Web Service, Backup/Restore, DNS, DHCP, Email

Not Included in Product Scope

The following features are not included in the project scope

- Displaying data that is not in the same format as the test data
- Displaying data or values that are not specified in section **3.2.2. Graphical Display**
- Any design, development or implementation of applications that are not strictly web-based

Project Objectives

Objective #	Description
OBJ1	Eliminate the need to manually download drilling data by August 2020.
OBJ2	Reduce the time it takes to create drilling data graphs by 50%
OBJ3	Reduce the time it takes to respond to drilling site update requests by 50%

Key Requirements

Functional Requirement No.	Description
FR 1	The application must be able to generate graphs without manual data entry.
FR 2	The application must be accessible from the internet.
FR 3	The application must download data automatically on a pre-set interval, without the need for manual scheduling.
FR 4	The graphs generated by the application must match the current format being used by the Client, or a format that the client approves.
FR 5	The application must translate the data accurately
FR 6	The application must be secure from data loss
FR 7	The application must be secure from unauthorized access

Desired Functionality

The application provided will include the following added-value features to some degree, depending on the option chosen:

Data Interaction

- The ability to configure or modify the data represented as needed

Friendly User Interface

- Simple and friendly web design to give employees a fluid viewing experience

High Availability

- Quick access to the data, and the ability to access it from remote locations

Risk Assessment

Asset	Threat/ Vulnerability	Existing Controls	Chance	Impact	Risk Level	Mitigation Strategy
Host Machines	Physical device theft	Building Locks	Rare	Major	E	Turn on BitLocker feature on HDDs and schedule regular data backups.
Host Machines	Unwanted Physical Access	User Passwords	Possible	Major	E	Enable lock screen timeout, and apply OS hardening to restrict access
Host Machines	Natural Disaster / Device Damage	Backups	Possible	Major	E	Continue to use offsite backups
Virtual Machines	Human Error - File corruption, loss of VMs, accidental deletion	Backups	Possible	Major	E	Implement snapshots; backup to Google cloud
Internal Files, Application Source Code, Database Files	Human Error - Accidental file deletions, data loss	Offsite Backups, File History on SharePoint	Possible	High	E	Use GitHub for version control, continue to use backups and file history
Internal Files, Application Source Code, Database Files	Security / Data breaches, including: Virus, Malware, Crypto Locking, Ransomware, etc.	Passwords, SSL Connection, Network Security	Possible	High	E	Add firewall rules to protect against intrusion. Ensure all contractor and client computers have antivirus installed and activated. Implement OS hardening scheme. Implement backup and recovery protocols.
Application	Major Bugs / Errors	Product Testing Specification	Possible	High	E	Utilize testing specification to ensure application functionality
Virtual Network	Privilege escalation via improper access controls	Upgrade router firmware	Possible	Major	E	Download the latest router ISO file and check new versions periodically
VLAN	Technical - Slow or failed data transfer (System Failure)	Reduce unnecessary traffic	Likely	Minor	E	Optimize DB queries and scripts' algorithm to transfer data faster
Samba File Server	Unintended external access from	Monitor Samba's disconnection status	Unlikely	Major	H	Block Samba port after disconnection happens between web server, a client, and the file server

MySQL Database	System failure leading to loss of records	Save all records using .SQL file in external drive or cloud	Possible	Major	H	Regularly save database server's SQL files. Use transactions to easily rollback database.
MySQL Database	System failure leading to loss of database server's configuration	Save the database server's configuration file in external drive or cloud	Rare	Major	H	Regularly save database server's snapshots and configuration files. Regularly make archive document files for detailed configuration settings.
Network cable	Network connection failure due to bad cables	Change the connector to new one	Rare	Moderate	M	Prepare multiple new RJ-45 connectors to replace the malfunctioned ones
Samba File Server	System failure leading to loss of file server's configuration	Save the file server's configuration file in external drive or cloud	Rare	Moderate	M	Regularly save file server's snapshots and configuration files. Regularly make archive document files for detailed configuration settings.

Project Schedule

Phase / Milestone	Start	End
Project Start / Kickoff Meeting	May 10	May 16
Install / Setup	May 17	Jun 06
(M) Install & Setup Complete	Jun 06	Jun 06
Develop	Jun 07	Jul 18
(M) Development Complete	Jul 18	Jul 18
Implement	Jul 19	Aug 01
(M) User Acceptance	Aug 01	Aug 01
Project Close	Aug 02	Aug 08
(M) Project Complete	Aug 08	Aug 08

Project Team

Team Member	Roles / Responsibilities
Thomas Llewellyn	Interim Project Manager, Software, Services
Shkumbin (Ben) Muli	Interim Project Manager, Hardware, Services
Jeong (Jason) Seok Kim	Interim Project Manager, Network, Security, Services

Project Budget - Phases

Project Design

PROJECT DESIGN				
Task	Labor Hours	Labor Cost	Material Cost	Subtotal
Business Requirements Analysis	20	\$60	\$0	\$1,200
Develop Functional Specification	20	\$60	\$0	\$1,200
Develop System Architecture	20	\$60	\$0	\$1,200
TOTAL				\$3,600

Project Development

PROJECT DEVELOPMENT				
Task	Labor Hours	Labor Cost	Material Cost	Subtotal
Procurement	40	\$60	\$0	\$2,400
Hardware	240	\$60	\$6,017	\$20,417
Software	240	\$60	\$5,316	\$19,716
Network/Security/Services	240	\$60	\$0	\$14,400
TOTAL				\$56,933

Project Delivery

PROJECT DELIVERY				
Task	Labor Hours	Labor Cost	Material Cost	Subtotal
Customer Training	8	\$60	\$0	\$480
Final System Testing	20	\$60	\$0	\$1,200
TOTAL				\$1,680

Budget - Components

Hardware

HARDWARE				
Item	Qty.	Cost/Item	Subtotal	
HPE Proliant DL385 G7 (Server A)	1	\$2,350.00	\$2,350.00	
HPE Proliant DL385 G7 (Server B)	1	\$2,600.00	\$2,600.00	
LG 15-inch LCD Monitor	2	\$120.00	\$240.00	
USB Keyboard/Mouse Combo	2	\$30.00	\$60.00	
RJ45/Ethernet Cable	6	\$10.99	\$65.94	
TOTAL			\$5,315.94	

Software

SOFTWARE				
Item	Type/Edition	Qty.	Cost/Item	Subtotal
Windows Server 2016	Standard	2	\$399.99	\$799.98
Windows 10 Professional	Standard	1	\$186.90	\$186.90
ESXi	Enterprise	1	\$4,350.00	\$4,350.00
Exchange Server 2016 CU	Standard	1	\$449.00	\$449.00
Microsoft Excel 2019	Open	1	\$231.00	\$231.00
TOTAL			\$6,016.88	

Labor

LABOR				
Task	Assigned Resource	Hours	Rate	Subtotal
Business Requirement Analysis	Shkumbin Muli	20	\$60	\$1,200.00
Develop Functional Specification	Thomas Llewellyn	20	\$60	\$1,200.00
Develop System Architecture	Jeong Seok Kim	20	\$60	\$1,200.00
Network/security/services Procurement	Jeong Seok Kim	20	\$60	\$1,200.00
Network/security/services Installation	Jeong Seok Kim	100	\$60	\$6,000.00
Network/security/services Configuration/ Development	Jeong Seok Kim	100	\$60	\$6,000.00
Network/security/services Maintenance/Testing	Jeong Seok Kim	40	\$60	\$2,400.00
Software Development	Thomas Llewellyn	100	\$60	\$6,000.00
Software Implementation	Thomas Llewellyn	100	\$60	\$6,000.00
Software Testing	Thomas Llewellyn	40	\$60	\$2,400.00
Hardware Procurement	Shkumbin Muli	20	\$60	\$1,200.00
Hardware Installation	Shkumbin Muli	100	\$60	\$6,000.00
Hardware Configuration	Shkumbin Muli	100	\$60	\$6,000.00
Hardware Testing	Shkumbin Muli	40	\$60	\$2,400.00
Final System Testing	Thomas Llewellyn	20	\$60	\$1,200.00
Training	Thomas Llewellyn	8	\$60	\$480.00
TOTAL			\$50,880.00	

GRAND TOTAL \$62,212.82

Project Charter Signoff

Offering	Signature	Date
Approval		

Glossary

Acronyms

DB	Database
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System.
HTTP	Hypertext Transfer Protocol. The
ISP	Internet Service Provider
PHP	Personal Home Page
LAN	Local Area Network
VPN	Virtual Private Network
WAN	Wide Area Network

Terms

Anti-Virus	A computer program designed to detect and remove computer viruses. [1]
Crypto Locking	(See "Ransomware")
Encryption	A means of encoding data so that only authorized parties can access it. [2]
Firewalls	A network security system that monitors and controls incoming and outgoing network traffic, based on predetermined rules. [3]
Intrusion Detection Systems	A device or software application that monitors a network or systems for malicious activity or policy violations. [4]
Malware	Any software intentionally designed to cause damage to a computer or network. [5]
Ransomware	A type of malware that threatens to permanently block access to a victim's data unless a ransom is paid. It may use encryption which is difficult to reverse. [6]
Virus	A type of malware that, when executed, replicates itself by modifying other computer programs and inserting its own code. [7]
Virtual Machine	An emulation of a computer system. [8]

References

- [1] Wikipedia, "Antivirus Software," [Online]. Available: https://en.wikipedia.org/wiki/Antivirus_software.
- [2] Wikipedia, "Encryption," [Online]. Available: <https://en.wikipedia.org/wiki/Encryption>.
- [3] Wikipedia, "Firewall (computing)," [Online]. Available: [https://en.wikipedia.org/wiki/Firewall_\(computing\)](https://en.wikipedia.org/wiki/Firewall_(computing)).
- [4] Wikipedia, "Intrusion detection system," [Online]. Available: https://en.wikipedia.org/wiki/Intrusion_detection_system.
- [5] Wikipedia, "Malware," [Online]. Available: <https://en.wikipedia.org/wiki/Malware>.
- [6] Wikipedia, "Ransomware," [Online]. Available: <https://en.wikipedia.org/wiki/Ransomware>.
- [7] Wikipedia, "Computer Virus," [Online]. Available: https://en.wikipedia.org/wiki/Computer_virus.
- [8] Wikipedia, "Virtual Machine," [Online]. Available: https://en.wikipedia.org/wiki/Virtual_machine.