RMIT UNIVERSITY

Project
Cloud-based Spatio-temporal Big Data Visualization

PROJECT CHARTER

Version: V2.0

Date: 18th Sept, 2016

Sponsor: Doc. Ian Peake
Dr Jan Olaf Blech

Authors: Argyll McGhie,
Christine Zhu,
Robert Marlin,
Shyam Nath,
Kim Heffernan

Commercial - in – Confidence

Document Control

File Directory	https://docs.google.com/document/d/18jyLxYKcGpLqZWhKSmz07x_FC7umisubgd017I7mOfk/edit#heading=h.t01ohhfg6vnt

Distribution

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Amendment History

Section	Page	Version	Comment
NA	NA	NA	NA

Add a row for each section update or consolidate if changes are minimal. NOTE: Changes should be tracked within the document if the document is to be re-distributed, so that the audience can quickly see the changes.

Staff or Entities Consulted

Name	Position / Organization
Dr Jan Olaf Blech	School of Science
Dr Ian Peake	Laboratory Manager - Virtual Experiences Laborator

Add rows as needed. If not relevant, enter N/A.

Related Documents

Name	Author	Description
Risk Register	Kim Heffernan	Risk Management documentation

Add rows as needed. If not relevant enter N/A.

Preface

The purpose of this document is to outline the Charter for Project Cloud-based Spatio-temporal Big Data Visualization. It serves as an agreement between the project team, the sponsor and the supervisor. It outlines the project's purpose and how the project will be approached, resourced, managed and delivered. Any amendments after this document has been signed off will be via addenda.

Table of Contents

Project Summary

Cloud-based Spatio-temporal Big Data Visualization

Description:

Proof-of-concept for a platform to visualize 3D spatio-temporal data. The test case will support a data-set gathered from 3D depth scanners and path analysis tools, specifics are determined by the supplied data-base. The application is based on scala technology, sitting within a HTML5 framework allowing for a more complex user interface.

The application will display on multiple devices, and monitors using an open source SAGE2 platform to allow for scalable graphics, and multiple user interaction.

Objectives:

To create an application that will display an interactive 3D visualization of a data-set in a highly graphical manner, using SAGE2 to display across a broad range of devices, allowing multiple user interactive processes in a simultaneous manner.

Further incorporated aspects would include spatial analysis utilizing data that is imported from BeSpaceD and converted into JSON which is then utilized by the application.

Project Sponsor

Name: Dr Ian Peake

Position: Laboratory Manager - Virtual Experiences Laboratory (VxLab)

Name: Dr Jan Olaf Blech

Position: Research Fellow - School of Science

Organization: RMIT

The Virtual Experiences Laboratory (VXLab) is a multi-disciplinary virtual laboratory connecting visualisation and automation facilities in RMIT and industry. The VXLab is designed in a manner that supports simulated cloud connectivity, access to virtualisation and telepresence. Users collaboration is encouraged within a scope of experimental design scenarios, including operational and testing phases of global cyber physical systems. (RMIT, Virtual Experiences Laboratory 2016)

The School of Science are leaders in fundamental and applied research, with a strong reputation for industry focused teaching. Their focus addresses key questions essential to Australia's innovation agenda. Including programs in biological, chemical, computer, geospatial and mathematical sciences, physics and nanoscience. (RMIT, School of Science 2016)

Stakeholders and End Users

Stakeholders

Organization: RMIT

Names: Argyll McGhie, Christine Zhu, Robert Marlin, Shyam Nath, Kim Heffernan

Positions: Students/Developers

Trello Agile Scrum Board: https://trello.com/c/rVygf6UP

Description: The above mentioned persons are students completing a unit at RMIT called "Programming Project". Each person is involved in the different elements of the development of an application in a project to develop an application for "Cloud-based Spatio-temporal Big Data Visualization".

Argyll McGhie, code development and testing, working with BeSpaceD, and SAGE2. The development of SCALA centric applications using JSON derived from data imported from BeSpaceD.

Shyam Nath, setup NeCTAR cloud Linux based server, setup GitHub repository, as well as being a developer using WebGL, BeSpaceD, SAGE2. Develop code for the main SCALA application.

Christine Zhu, research, and test platforms being SAGE2 and BeSpaceD both relevant in conjunction to the development of the main SCALA application. As well as other code related development in the application.

Robert Marlin, co-development of documentation for the project, including documentation required for submission being, project charter, meeting minutes, and meeting agenda. Testing and assisted development of main SCALA application.

Kim Heffernan, co-development of documentation for the project, including documentation required for submission being, project charter, meeting minutes, and meeting agenda. Testing and assisted development of main SCALA application.

End Users

Organization: RMIT

Names: Dr Ian Peake, and Dr Jan Olaf Blech

Positions: Mentors

Trello Agile Scrum Board: https://trello.com/c/HK0ZzDNv

Description: Both Dr Peake and Dr Blech are involved in the development of this particular project as mentors, helping to guide the development of this project in a meaningful and positive manner. As both Dr Peake and Dr Blech are involved in the RMIT Virtual Experiences Laboratory and School of Science, they each have experience with the technology involved, and as such have the capacity to help guide in the development of this application. (RMIT, Dr Ian Peake 2016) (RMIT, Dr Jan Olaf Blech 2016)

Appointment of Project Leader

Name: Robert Marlin

Reasons: Thirty years' real world experience in the information and technology industry.

Skillset:

- Skilled planning and research
- Effective organization skills
- Qualified communication skills
- Team building collaboration experience
- Project management experience

Method of appointment: Majority vote

Project Team Members

Argyll McGhie s3494113@student.rmit.edu.au

Role: Code Developer/Tester

Setup SAGE2
Testing SAGE2
Researching BeSpaceD
Setup and testing BeSpaceD
Research SCALA related material
Co-develop SCALA application
Setup working/testing space for project application

Christine Zhu s3499001@student.rmit.edu.au

Role: Code Developer/Tester

Researching custom application - JavaScript & SCALA
Writing custom SCALA application
Researching BeSpaceD
Accessing BeSpaceD data
Research SCALA related material
Co-develop SCALA application
Setup working/testing space for project application

Shyam Nath s3421215@student.rmit.edu.au

Role: Code Developer/Tester

Setup Linux Server - Nectar Cloud
Testing Linux Server - Nectar Cloud
Setup GitHub Repo
Setup SAGE2
Testing SAGE2
Research BeSpaceD
Accessing BeSpaceD data
Setup working/testing space for SCALA application

Robert Marlin s3494109@student.rmit.edu.au

Role: Code Tester and Documentation Co-Producer

Prepare documentation for project including
Agenda documentation
Minutes documentation
Project Charter
Project Formula
Setup and maintain Trello Scrum Board
Setup working/testing space for SCALA application
Develop HTML5 & CSS3 framework

Kim Heffernan s3021242@student.rmit.edu.au

Role: Code Tester and Documentation Co-Producer

Prepare documentation for project including
Agenda documentation
Minutes documentation
Project Charter
Project Formula
Setup and maintain Trello Scrum Board
Setup working/testing space for SCALA application
Testing and coding project related applications

Project Methodology and Approach

Trello Agile Scrum Board: https://trello.com/b/ARauINZx

Delivery: Using Agile Scrum project methodology, this team will develop each function of the application as separate deliverable elements. The first few weeks of the project will focus on researching the technology involved, as well as testing all the platform frameworks involved to produce a fully functional end product.

After researching and testing the necessary elements within the structure of the application, the team will be involved in writing and testing code for each function within the application, this will cover several sprints, delivering final product at the end of each sprint.

The final few weeks will cover the last sprint which will involve setting up of the presentation that is a requirement for the handover of the project.

Location: RMIT via OUA, as such each team member is located at different locations within Australia.

Processes: Agile Scrum is being used in this project as the method for project management, as this method allows for incremental development, testing and release of each function as independent components (sprints) within the framework of the total processes that make up the application deliverables.

Project Governance

Decision making Process

1. Proposed change/suggestion raised with team via email, or Skype during our weekly meeting.
2. Team debates proposal, and considers pros/cons.
3. Proposal voted on. Majority wins.
4. Decision outcome recorded, and documented in Trello. Project documentation is then updated as required.

Communication and Collaboration

We used multiple workspaces and communication tools to help with our collaboration. These included: Trello, Google Hangouts, Google Drive, Google Docs, GitHub and Skype.

How you use these tools.

Trello - Agile Scrum Board: As a team we use Trello to document scrum artefacts such as the product backlog, sprints and other scrum associated processes. By using Trello in this manner it allows for better tracking of the functionality of our project, it also allows for better collaboration within the group. We also create task cards for meetings, where we included minutes and agenda documentation, this allows for a historical archive of the project processes and associated materials/documentation. As Trello is also connected to our RMIT

email accounts we are sent notification from Trello if any changes that are made on the Trello board where the team member is included in the card. https://trello.com/b/ARauINZx

Google Hangout, Google Drive and Google Docs: The team mainly use Google Hangout, and Google Docs to collaborate, and contribute content for our assignments allowing for multiple team members to work on project specific documents at the same time. We use Google Drive for storage, as well as backup of project content/code using the zip format for compression of multiple files/folders.

GitHub: The team use GitHub for code development, as the site allows for version control and archival (backup), this repository allows multiple team members to collaborate on code development at the same time. https://github.com/Pretty-Cure-5

Skype: The team uses Skype for our weekly meetings, these meetings include the team members, as well as the mentors for the project. The meetings are scheduled each Wednesday night, at 8.30pm.

Email: The team use RMIT Gmail as our main means of email communications between team members, this line of communication would be utilised whenever there was a need to get in touch with other members, or mentors. It is common to have a response within 24hrs.

Reporting

The team is using Trello, as our Agile Scrum Board. This board displays our product backlog, as well as sprint information, meeting and communications details, project tools and workspaces details, project member's details, a completed column, and a roadblock column where any member can list any issues they are having and ask for help from the other team members.

Trello currently hosts cards that link to documentation that is stored in Google Drive, as well as Google Docs, these links allow any user with access privileges to follow the project, and all the documentation relating to specific functions/processes.

Meetings

The team use Skype for their weekly meetings, as well as for daily communication as most members stay logged on during the day/night. By using Skype as our collaboration and communication tool, any team member has the ability to view historical data/chat dialogue, this allows a team member to catch up on any information they may have missed out on during the week.

During the meetings we exchange any documentation for the project using attachments and Google Docs. The team preference is to use the keyboard with Skype, as this leaves a historical archive of chat dialogue to be reviewed any time needed.

The team sometimes also use Google Hangouts, as a text based line of communication with team members, as we are all students with RMIT accounts it is a place where you could find other team members on a periodic basis.

Google Drive Link Meeting Minutes and Agenda documentation:
https://drive.google.com/drive/u/0/folders/0B-jNY6HPS7MVbXFLQWRiT2h5clU

Walkthroughs

When the code is ready for walkthroughs, each team member will test the application on a standalone server, leaving feedback on processes, any bugs, as well as any suggestions and recommendations.

Executive Milestones

The table below lists the high-level Executive Milestones of the project and their estimated completion date.

Executive Milestones	Estimated Completion Timeframe
Project Initiation	September 5th, 2016
Installation of SAGE2	September 11th, 2016
Setup of Linux Server	September 11th, 2016
Product Backlog	September 18th, 2016
Import data from BeSpaceD	September 25th, 2016
Complete SCALA custom application	October 30th, 2016
Testing SCALA custom application completed	November 20th, 2016
All documentation completed	November 20th, 2016
Project video completed	November 20th, 2016
Project submitted for grading	November 27th, 2016
Project Closure	November 27th, 2016

Issues and Risk Management

Assumptions

- The Cloud Linux server will not crash
- There will be no connectivity issues
- All team members will be able to complete the unit
- Each team member will complete their assigned tasks
- The big Data will not be corrupt
- The SAGE2 application will work without any issues
- No roadblocks will stop the development process
- The team can get support from their mentors when needed

Constraints

- 3D graphics are constrained by the supplied big data imported from BeSpaceD
- 12 weeks in total for development as per the unit timeline
- Connectivity is a fundamental necessity for the functionality of this application
- FEEL FREE TO ADD MORE...

Risk Register

See appendix 1. Risk Register

Task assignment:

Robert Marlin: s3494109@student.rmit.edu.au

- Scrum Master
- Co-Producer Project documentation
    - Meeting agenda
    - Meeting minutes
    - Project Charter
- Trello development
- HTML5 - CSS3 development
- SCALA Application testing

Kim Heffernan: s3021242@student.rmit.edu.au

- Co-Producer Project documentation
    - Meeting agenda
    - Meeting minutes
    - Project Charter
- Trello development
- SCALA Application testing

Argyll McGhie: s3494113@student.rmit.edu.au

- Code development and testing
    - Research SAGE2
    - Setup SAGE2 - test platform
    - Researching BeSpaceD
    - Importing data from BeSpaceD
    - Researching custom application - SCALA
    - Writing custom SCALA application (Co-developer)

Christine Zhu: s3499001@student.rmit.edu.au

- Code development and testing
  - Research SAGE2
  - Setup SAGE2 - test platform
  - Researching BeSpaceD
  - Importing data from BeSpaceD
  - Researching custom application - SCALA
  - Writing custom SCALA application (Co-developer)

Shyam Nath: s3421215@student.rmit.edu.au

- Code development and testing
  - Research SAGE2
  - Setup SAGE2 - test platform
  - Setup Linux Server - Nectar Cloud
  - Testing Linux Server - Nectar Cloud
  - Setup GitHub Repo
  - Researching custom application - SCALA
  - Writing custom SCALA application (Co-developer)

Project Scope & Deliverables

Deliverable	Description
Project Charter	This Project Charter document which details reasons for undertaking our project. It lists objectives, milestones, participants and stakeholders in our project.
Technical Solution Design	A document providing a detailed Technical Solution to our project. It will list the technical environment we used including both system and database architecture and any other requirements.
Peer Review document	A document detailing the contribution of all team members.
Project Closure Report	The Project Closure Report will be prepared at completion of our project. It will detail how we performed against our objectives. It will makes assessments of what worked well and what needs improvement.
Working Software	This working software will be delivered in increments over the 12 weeks of our project, as per the Agile Scrum methodology.

Project formula

Analysis and Design	25%
Delivered software	25%
Testing	5%
Documentation	20%
Project Planning and Management	15%
Communication with the supervisor/client (might include presentation)	10%
TOTAL	**100%**

References

RMIT 2016, “Dr Ian Peake”, 1.rmit.edu.au, viewed 12/09/2016
http://www1.rmit.edu.au/staff/ian-peake

RMIT 2016, “Dr Jan Olaf Blech”, 1.rmit.edu.au, viewed 12/09/2016
http://www1.rmit.edu.au/staff/jan-blech

RMIT 2016, “School of Science” , rmit.edu.au, viewed 18/09/2016
https://www.rmit.edu.au/about/our-education/academic-schools/science

RMIT 2016, “Virtual Experiences Laboratory”, rmit.edu.au, viewed 12/09/2016
http://www.rmit.edu.au/about/our-locations-and-facilities/facilities/research-facilities/virtual-experiences-laboratory

Appendix 1.

Refer to Risk Register PDF. (landscape format as such delivered as a separate PDF)