
AP Analytica

Access Point Analytics Software Development Plan

Version 2.3

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Revision History

Date	Version	Description	Author
24/10/2019	1.0	First rough draft	Hung Doan
1/17/2020	2.0	Added planned iterations for the spring semester	Justis Clark
1/21/2020	2.1	Re-ordered KPIs per iteration based on current viable KPIs	Justis Clark
2/16/2020	2.2	Re-ordered KPIs based on current momentum. Separate tables after today	Justis Clark
4/9/2020	2.3	Formatting, edits	Bradley Schoeneweis

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Software Development Plan

1. Introduction

1.1 Purpose

The purpose of the *Software Development Plan* is to gather all information necessary to control the project. It describes the approach to the development of the software and is the top-level plan generated and used by project managers to direct the development effort.

The following people use the *Software Development Plan*:

- The **project manager** uses it to plan the project schedule and resource needs, and to track progress against the schedule.
- **Project team members** use it to understand what they need to do, when they need to do it, and what other activities they are dependent upon.

1.2 Scope

This *Software Development Plan* describes the overall plan to be used by the AP Analytica team, including deployment of the product. The details of the individual iterations will be described in the Iteration Plans document.

The plans as outlined in this document are based upon the product requirements as defined in the *Vision Document* and *Use Cases*.

1.3 Definitions, Acronyms, and Abbreviations

See the Project Glossary:

<https://drive.google.com/open?id=1Gei7OouYNgt6AkryCEMw2jo0FsC0MPde>

1.4 References

Iteration Plans: <https://drive.google.com/open?id=1W5Yx4azuLPbAh-fcH7-Bj3r9AzoHMgdv>

Vision: https://drive.google.com/open?id=1IEw6DaiEjMIJYm6in_E0cW4Gy08cx7q

Software Requirements Specification:

<https://docs.google.com/document/d/1Kxp4Snz4o8G383lo8h4gGHVdDHs2i6Wc/edit>

Glossary: <https://drive.google.com/open?id=1Gei7OouYNgt6AkryCEMw2jo0FsC0MPde>

Any other supporting plans or documentation.

1.5 Overview

This *Software Development Plan* contains the following information:

Project Overview — provides a description of the project's purpose, scope, and objectives. It also defines the deliverables that the project is expected to deliver.

Project Organization — describes the organizational structure of the project team.

Management Process — explains the estimated cost and schedule, defines the major phases and milestones for the project, and describes how the project will be monitored.

Applicable Plans and Guidelines — provides an overview of the software development process, including methods, tools and techniques to be followed.

2. Project Overview

2.1 Project Purpose, Scope, and Objectives

The purpose of the Access Point Analytics Project is to provide the TCU Network Services Department with an automated solution; the automated system will analyze the data collected from the Departments' report, generate the required KPI's and present the information through a web application.

2.2 Assumptions and Constraints

The project is time constrained and will need to be deployed by March. Working in .NET Core and maintaining confidentiality and security of data is important with the type of software we are developing.

2.3 Project Deliverables

Deliverables are delivered towards the end of the iteration, as specified in section 4.2.4 *Project Schedule*.

2.4 Evolution of the Software Development Plan

The *Software Development Plan* will be revised prior to the start of each Iteration phase. The target dates for the end of each phase and iteration are shown below.

3. Project Organization

3.1 Organizational Structure

The project team consists of three TCU Computer Science students and two CITE students. The team members are Justis Clark, Bradley Schoeneweis, Hung Doan, Matt Liddy and Ryan Finnegan. The team is supervised by the Senior Design Professor, Dr. Bingyang Wei and Mr. Craig Baugh and Mr. Tony Fleming, two representatives from the TCU Network Services. The project will be delivered to Mr. Baugh and Mr. Fleming and to be maintained by the TCU Server Group.

3.2 External Interfaces

The Client & Server group at TCU will review the code twice once we have something working. Ben Crenshaw is our contact. The purpose of the reviews is to ensure we are using acceptable security practices.

3.3 Roles and Responsibilities

Person	Rational Unified Process Role
Justis Clark	Project Manager
Bradley Schoeneweis	Technical Lead Full Stack Developer
Matt Liddy	Data Scientist Developer
Ryan Finnegan	Developer
Hung Doan	Developer

Anyone on the project can perform any role activities. All members will contribute to every aspect of the project.

4. Management Process

4.1 Project Estimates

The first semester is dedicated to documentation, setting up the development environment and supporting applications, getting a view running to display data, starting the login system, and doing a few KPIs. The second semester will be dedicated to powering through the remaining KPIs and features, testing, and deployment.

4.2 Project Plan

4.2.1 Phase Plan

This section will remain unchanged to show the difference between the original plan and actual executed plan. 4.2.4 is kept up-to-date.

- Iteration 1 (Fall): Get a working view with a login page and a dashboard page with one working KPI
- Iteration 2 (Break): Finish full database to front-end connection with current KPI page.
- Iteration 3: Add admin tools for user management, write data ingestion scripts for backend for *AP Utilization and Channel Utilization* KPIs and their respective views on the dashboard
- Iteration 4: Write ingestion scripts and front-end for *Client Count, Power/Channel Fluctuation, and Anomaly Detection*
- Contingency (March 1-16)

4.2.2 Iteration Objectives

- Iteration 1 (Fall): Establish a starting framework to build onto
- Iteration 2 (Break): Finish fledgling out the database connection to the view
- Iteration 3: Write ingestion scripts and front-end connection for select KPIs
- Iteration 4: Write ingestion scripts and front-end connection for select KPIs
- Contingency (March 1-16): Reserved for emergency or early deployment

4.2.3 Releases

- Alpha 1.0: Set up the pages that will be present on the website. Login page and one KPI on dashboard are functional
- Alpha 1.1: Added change password page, Rogue APs
- Alpha 1.2: User Management, Channel Utilization
- Alpha 1.3: Client Count, Coverage Holes
- Alpha 1.4 Power/Channel Fluctuation, AP Utilization, Anomaly Detection
- Alpha 1.5: All KPIs added to the dashboard with table and graph views

4.2.4 Project Schedule

Iterations will be broken up into weeks, each week will be organized like a sprint. The following tables show the planned sprints for the upcoming iterations.

Iteration 3

Week of	13-Jan	20-Jan	27-Jan
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Plan	<ul style="list-style-type: none"> •Add functionality to "change password" page •Add "add user" page •Add range slider for Rogue AP KPI 	<ul style="list-style-type: none"> •Write ingestion scripts for Client Count •Write ingestion scripts for Coverage Holes 	<ul style="list-style-type: none"> •Write ingestion scripts for AP Utilization •Write ingestion scripts for Wireless Utilization •Add detail KPI view for Client Count •Add detail KPI view for Coverage Holes •Add user sessions
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Iteration 4

Week of	3-Feb	10-Feb
Plan	<ul style="list-style-type: none"> •Add SFTP functionality •Add detail KPI view for AP Utilization •Add functionality to "add user" page 	<ul style="list-style-type: none"> •Add detail KPI view for Wireless Utilization •Add functionality to "change password" page

Iteration 4.5

17-Feb	24-Feb
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<ul style="list-style-type: none"> •Add detail KPI view for Power/Channel Fluctuations •Finishing touches on any KPI detail pages •Add dashboard KPI view for Radio Channel/Power Fluctuations •Add dashboard KPI view for AP Utilization 	<ul style="list-style-type: none"> •Add dashboard KPI view for Coverage Holes •Add dashboard KPI view for Client Count •Add dashboard KPI view for Wireless Utilization •Begin acceptance testing
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Contingency

Week of	2-Mar	9-Mar	16-Mar
Plan	•Internal testing and debugging	•Contingency time or early deployment	•END

4.2.5 Project Resourcing

As described in the *Roles and Responsibilities* section, each person on the team will be doing development. There will be training time for all member to learn .NET Core and C#, and training time for some members to learn jQuery, AJAX, etc.

4.3 Project Monitoring and Control

Requirements Management

The requirements for this system are captured in the Vision document. Requested changes to requirements are captured in Change Requests, and are approved as part of the Configuration Management process.

Schedule and Budget Control

Expenses are monitored by the project manager, and reported and assessed monthly. (See Reporting and Measurement below).

The project manager maintains a schedule showing the expected date of each milestone. The line items in the schedule include work packages assigned to individuals. Each individual who is assigned a work package provides completion information to the project manager on a weekly basis. Changes in the schedule will be escalated to the project sponsors, who will then decide whether to alter scope in order to preserve target completion dates.

Quality Control

Defects will be recorded and tracked as Merge Requests, and defect metrics will be gathered (see Reporting and Measurement below).

All deliverables are required to go through the appropriate review process, as described in the Development Case. The review is required to ensure that each deliverable is of acceptable quality, using guidelines described in the RUP for Small Projects review guidelines and checklists.

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Any defects found during review which are not corrected prior to releasing for integration must be captured as Merge Requests so that they are not forgotten.

Reporting and Measurement

Updated cost and schedule estimates, and metrics summary reports, will be generated at the end of each iteration.

The Minimal Set of Metrics, as described in the RUP [Guidelines: Metrics](#), will be gathered on a weekly basis. These include:

- Earned value for completed tasks. This is used to re-estimate the schedule and budget for the remainder of the project, and/or to identify the need for scope changes.
- Total defects open and closed – shown as a trend graph. This is used to help estimate the effort remaining to correct defects.
- Acceptance test cases passing – shown as a trend graph. This is used to demonstrate progress to stakeholders.

In addition, overall costs will be monitored against the project budget.

Risk Management

Risks will be identified in Inception Phase using the steps identified in the RUP for Small Projects activity “Identify and Assess Risks”. Project risk is evaluated at least once per iteration and documented in this table.

Configuration Management

Appropriate tools will be selected which provide a database of Merge Requests and a controlled versioned repository of project artifacts.

All source code, test scripts, and data files are included in baselines. Documentation related to the source code is also included in the baseline, such as design documentation. All customer deliverable artifacts are included in the final baseline of the iteration, including executables.

The Merge Requests are reviewed and approved by one member of the project, the Change Control Manager role.

Full backups are performed monthly and increments are performed nightly.

5. Annexes

The project will follow the RUP for Small Projects process, as tailored by the project Development Case.

Other applicable process plans are listed in the references section, including Programming Guidelines.