Project Number: 774571
Start Date of Project: 2017/11/01
Duration: 48 months

Type of document 2.2 – V1.0

Document title: Guidelines for Components and Documentation compatibility

Dissemination level	PU
Submission Date	2018-06-29
Work Package	WP2
Task	T2:1
Type	DEC
Version	1.0
Author	Emanuele Graziani
Approved by	Emanuele Garone + PMC

Executive Summary

This document describes the Wiki-Page of the project PANTHEON, available since May 2018 at the address https://89.97.5.192:8984
The report discusses the structure and content of the Wiki-Page, including development guidelines and architecture overview.

Table of Content

Abbreviations and Acronyms

API	Application Programming Interface
DBMS	Database Management System
IDE	Integrated Development Environment
LDAP	Lightweight Directory Access Protocol
LIDAR	Laser Imaging Detection and Ranging
LTS	Long Term Support
PEP	Python Enhancement Proposals
PU	Public
ROS	Robot Operating System
SCADA	Supervisory Control And Data Acquisition
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UAV	Unmanned Aerial Vehicle
UGV	Unmanned Ground Vehicle
VCS	Version Control System
WP	Work Package

1 Wiki-Page Conceptual Design

1.1 Goal of the Wiki-Page

The PANTHEON Wiki-Page has been designed with the goal of defining the project development guidelines in order to ensure the compatibility of the hardware/software components and the consistency of all the documentation. In addition, the Wiki-Page should contain a description of the overall system architecture and the main components that compose it.

The main information that the Wiki-Page will contain is the description of:

- Workgroup Collaboration Services
- Project Documentation
- Code Styles and Documentation
- Team Coding
- System HW/SW Architecture

1.2 Hosting and Technical Choices

The Wiki-Page service is self-hosted on a consortium machine, more precisely on the same server that manages all the PANTHEON collaboration services (like "Cloud Space" and the "Forum").

The Wiki-Page service is accessible to the members of the PANTHEON project and guest users through the internet at the address https://89.97.5.192:8984/.

From a technical standpoint, the wiki has been developed by configuring and customizing the Doku-Wiki component. Doku-Wiki is one of the most popular and mature Wiki services used on the Web. Doku-Wiki is OpenSource and is distributed under Licence.

Several plugins exist for Doku-Wiki. A subset of these plugins has been activated and configured to meet the needs of the PANTHEON Wiki-Page, both from a functional and appearance point of view.

1.3 Access and Security

The Wiki-Page have two levels of access based on a confidentiality policy: "public" and "consortium" access.

1. The "public" access does not require a login and any guest user can read public contents of the Wiki-Page.
2. The "consortium" access level guarantees reading an editing of all Wiki content and it is reserved to the members of the project PANTHEON. Specifically, project members can login the service using the same LDAP account used for other project's collaboration tools in order to enable Wiki revisions.

The LDAP access functionality, required to harmonize Wiki software to other collaboration services, has been enabled in Doku-Wiki adding a specific plugin and configured to refer to the PANTHEON LDAP server.

On the security side, the website must guarantee a secure channel for sensitive information exchanged on the internet (like email and password).

One of the best ways to achieve this goal is to enable HTTPS, also known as SSL (secure socket layers), so that any information going to and from your server is automatically encrypted.

Wiki-Page is hosted on a SSL enabled server, so the HTTPS protocol provides the required security level.

1.4 History

The Wiki-Page was online from April 2018, and since then, it went through several revisions until the current version. The Wiki-Page is ready to host, in the future, more content than Deliverable 2.2, like a detailed description of the design of the system architecture, so, it will be regularly updated during the project.

The Wiki service keeps track of any changes made to the content by the members of the project. The page collecting information concerning old revisions is shown in the following Figure 1:

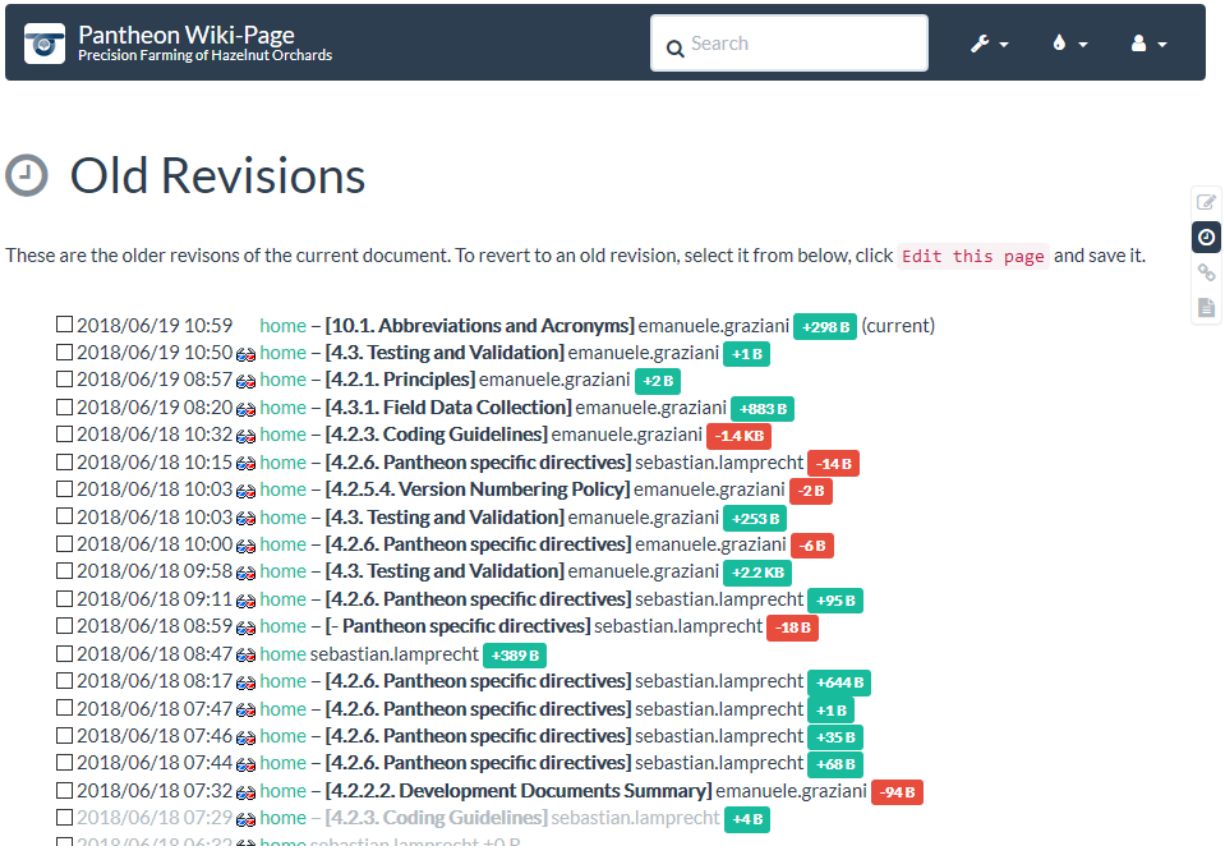

Figure 1 - Wiki-Page Revisions

1.5 Structure of Wiki-Page

The Wiki-Page structure follows a hierarchical tree style. In particular, a table of contents, always available on the page, ensures a quick and easy navigation of the wiki itself, as shown in the following Figure 2.

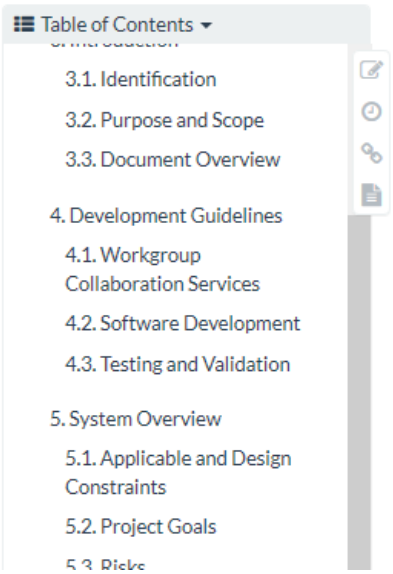

Figure 2 - Floating Navigation Menu

More specifically, the hierarchy of the wiki-page consists of 11 sections.

The main sections of the Wiki are: Development Guidelines, System Architectural Design, and Detailed Subsystem Architectures. Only the contents of the Development Guidelines section and the initial part of the System Architectural Design section are included in the deliverable D2.2.

A complete description of each of the main sections will be carried out in Section 2.3.

1.6 Graphics and Layout

The Doku-Wiki application can be customized in layout and graphics using Template extensions. To configure the Wiki-Page the Bootstrap3 template has been selected. This template makes different themes available. Each user can choose the combination of colours that He/She prefer.

The following Figure 3 shows the dropdown menu that allows the user to choose the favourite theme:

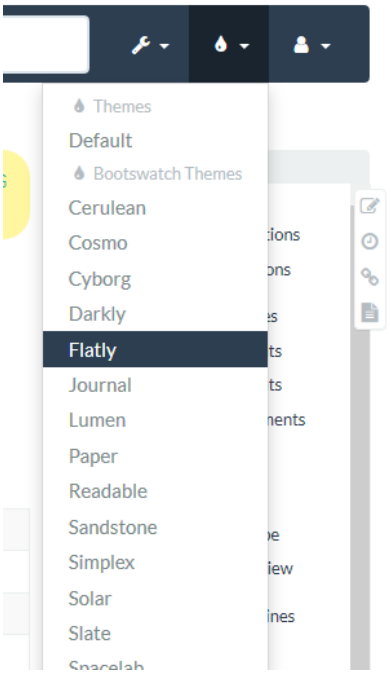

Figure 3 - Theme Selection Dropdown Menu

1.7 Mobile Compatibility

The Doku-Wiki component is a mobile-ready service. The content layout visualization automatically scales according to the resolution of the device used to display it. So, one can access the Wiki-Page even from mobile devices, such as smartphones and tablets. We believe this feature will turn out to be very important especially if required to access some viable information during the experimental activities on the field.

The compliance of the website on the main mobile platforms can be verifies at the following link:

http://quirktools.com/screenfly/#u=https%3A//89.97.5.192%3A8984&w=414&h=736&a=37&s=1

2 Description of the Wiki-Page

2.1 Layout Structure

At the moment, the content of the Wiki-Page is organized in sections, and the chosen layout permits a scrollable arrangement to facilitate the navigation experience for the user.

The Wiki-Page layout is composed of 5 elements (as shown in Figure 4 and Figure 5):

1) A head bar containing the main title, a search bar, the settings dropdown menu, the theme selection dropdown menu, and the user profile dropdown menu (for logged members only).
2) The table of contents is always positioned at the top right, close to main bar, under it. When it is not active, this item is auto-minimized to give space in order to displaying the content. When selected, it shows the first two levels of the section hierarchy and highlights the section corresponding to the current content displayed.
3) The content of the Wiki is arranged so that can be easily navigated by scrolling it.

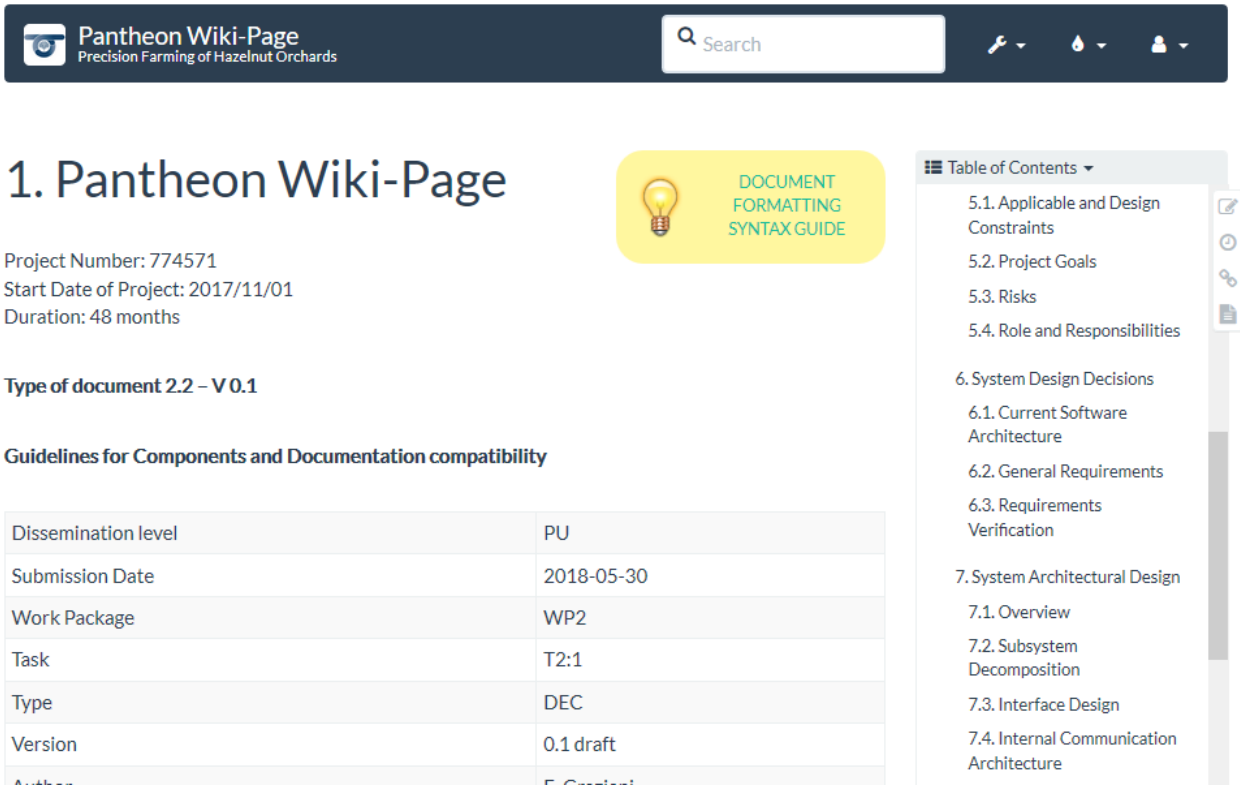

Figure 4 - Wiki-Page Layout (Display of elements 1, 2 and 3)

4) Footer, composed by following elements:
    a. quote references
    b. date, time and author of the last change
    c. page trailer showing Doku-Wiki license terms
5) A "scroll to top" button, always positioned at the bottom right of the page

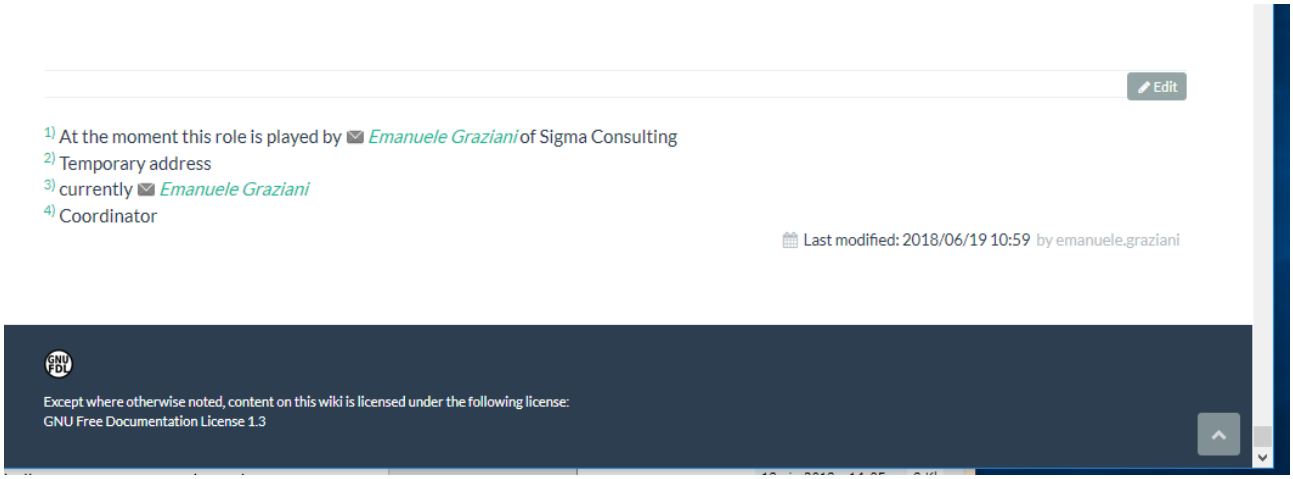

Figure 5 - Wiki-Page Layout (Display of elements 4 and 5)

2.2 Mark-up Features

Doku-Wiki allows only team members to edit documents collaboratively using a simplified mark-up language.

On top of the editing page there is a toolbar which helps the user to insert formatting elements. The following Figure 6 shows the editing page. In addition to the menu bar, there are a text editing area, and the "save", "preview", "cancel" buttons:

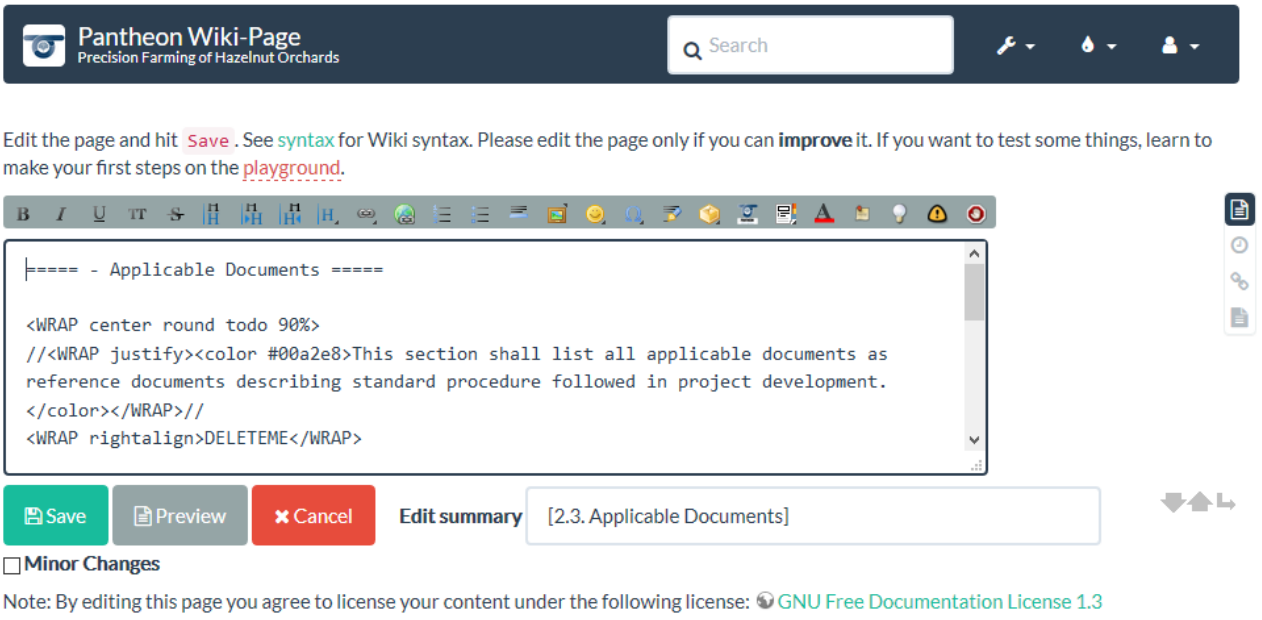

Figure 6 - Wiki Editing Page

During the setup phase, the Wiki service has been configured installing additional components that have increased the number of formatting elements. The main formatting elements currently are:

- Font format
- Subscript, superscript, strikethrough text
- Paragraphs and new line
- Internal and external links
- Image inserting
- Footnotes
- Sectioning in hierarchical way
- Ordered and unordered lists
- Emoticons
- Code blocks with syntax highlighted
- Tables
- Info Box

On top of the Wiki-page, only for logged members, there is an information box placed on the right. This box links the Doku-Wiki formatting syntax user's guide.

2.3 Description of the Sections

The Wiki-Page has been created based on a SDD (Software Design Description) document template, modified appropriately to meet the requirements of the deliverable D2.2.

For each section of the document an information special box has been inserted containing template instructions. An example of this is shown in the following Figure 7:

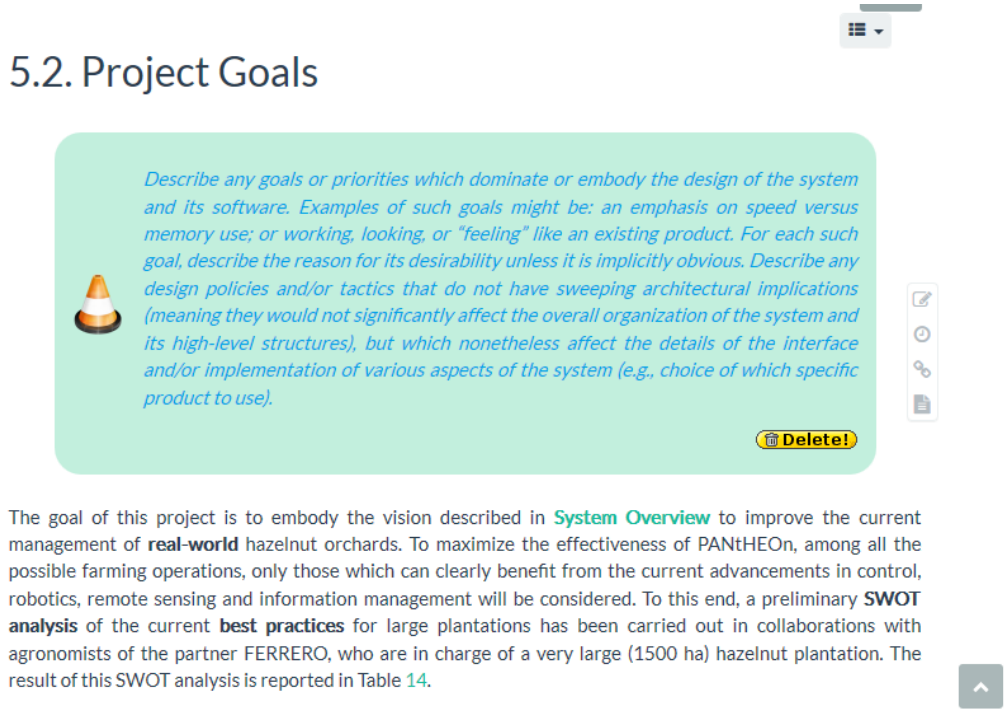

Figure 7 - Template Instructions in the paragraph 5.2

The instructions guide the user in how to properly insert the right contents in the appropriate paragraphs prepared to host them. Note that, this is also important from a collaborative standpoint, as team members can deal with different paragraphs without the risk of posting twice the same content or missing some other content.

Please note that the "Template Instruction" information boxes should be removed before the submission of the content.

Hereafter we report a short description of each section of the Wiki-Page.

2.3.1 PANTHEON Wiki-Page

The first section of the Wiki-Page defines the title and the information related to the project's deliverable D2.2. On the right of the title, there is an info box with a link to the wiki formatting syntax guide, visible only by logged members that can edit the Wiki. On the right side of the page it is shown the Table of Content which is always accessible also when the user scrolls the document.

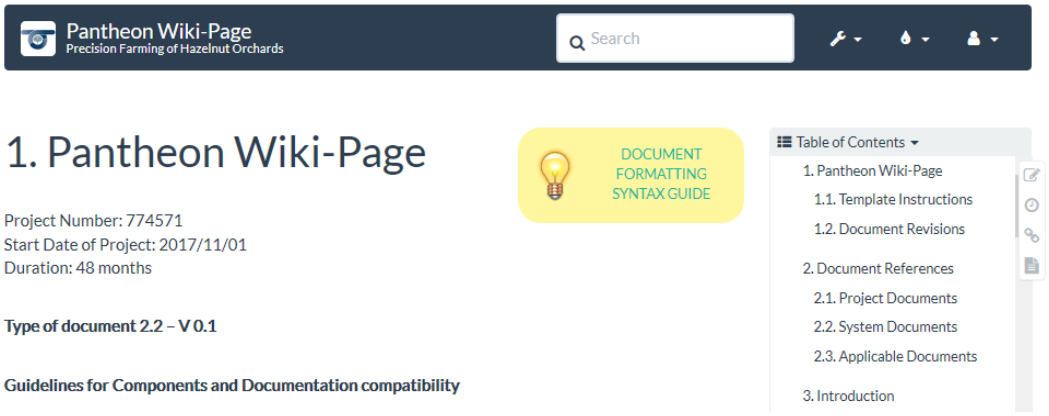

Figure 8 - Section 1, Wiki-Page Title

2.3.2 Document References

Section 2 defines the references and documents which have been used to draft the deliverable D2.2. Subsections have been created to separate the documents according to their scope, that is: i) project, ii) system and iii) miscellaneous.

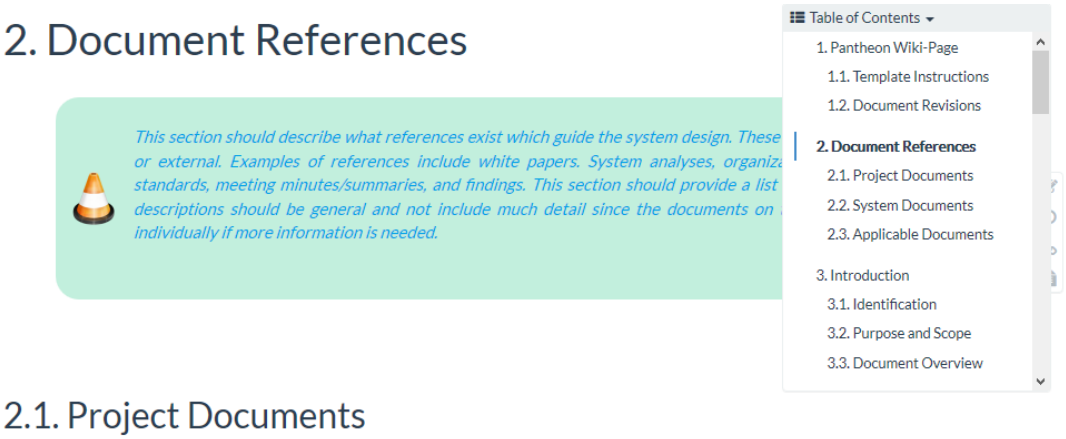

Figure 9 - Section 2, References

2.3.3 Introduction

Section 3 introduces the Wiki-Page by providing a general introduction, identification codes regarding the project, the purpose of the document, and a list of the sections available in the Wiki.

Figure 10 - Section 3, Document Introduction

2.3.4 Development Guidelines

Section 4 includes much of the contents that should be part of the deliverable D2.2, that is the development guidelines of the PANTHEON project. We chose to split out this section into 3 subsections to differentiate the development guidelines (defined in subsection 4.2) from the presentation of the collaboration tools (defined in subsection 4.1) to the test procedures of the components developed and final validation of the system (defined in subsection 4.3).

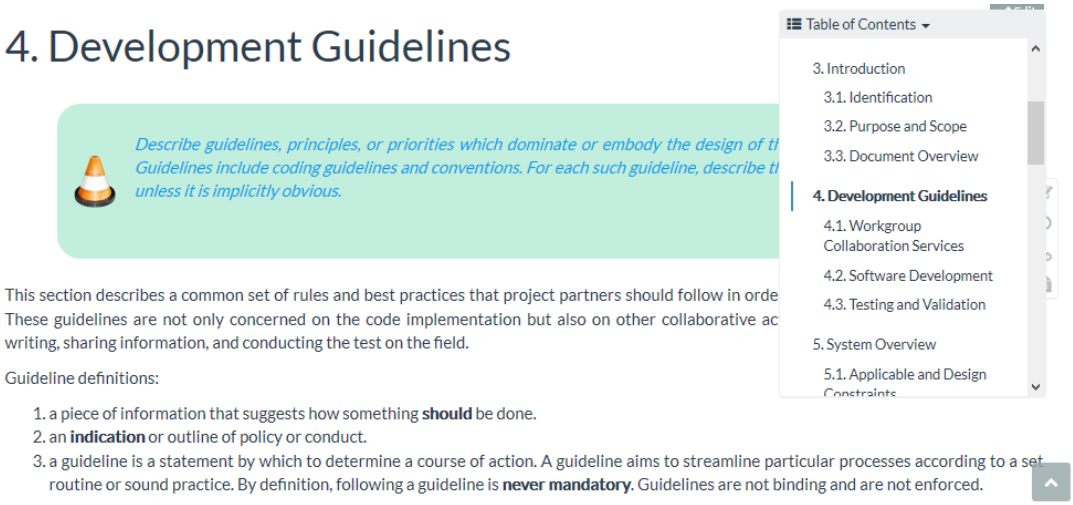

Figure 11 - Section 4, Guidelines

2.3.5 System Overview

Section 5 presents an overview of the system to be developed. More precisely, details concerning the objectives of the project, the risks, the team roles and the responsibilities are provided.

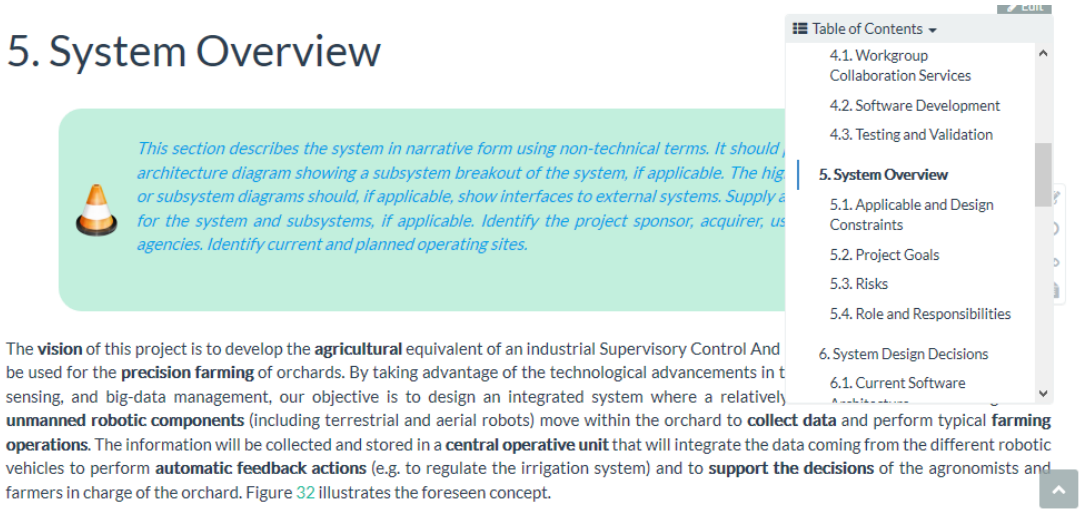

Figure 12 - Section 5, Overview of the project

2.3.6 System Design Decisions

Section 6 describes the design choices and the constraints that guide the definition of the system architecture. In particular, the identification of the system wide components selected to fulfil main requirements, and the verification techniques that should be applied to validate the system developed.

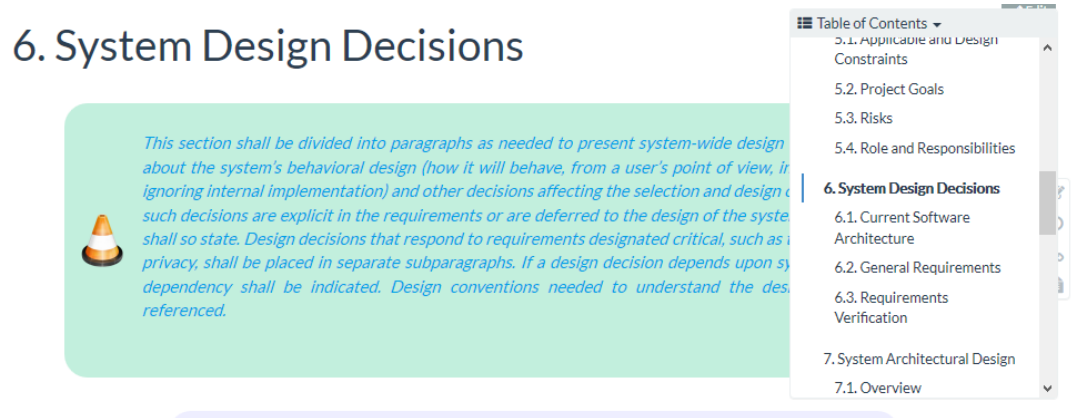

Figure 13 - Section 6, Design decisions

2.3.7 System Architectural Design

Section 7 includes another important part of the deliverable D2.2, that is an overview of the architecture of the project. In particular, this section is organized into several subsections to describe the main aspects of the system architecture, namely:

- Architecture overview
- Subsystems decomposition
- Interface design
- Persistent data definition
- User interface
- Access control

All topics are presented as an overview because the detailed description fall into the next section.

Figure 14 - Section 7, Architectural design

2.3.8 Detailed Subsystem Architectures

Section 8 is meant to provide a detailed description the architecture. This section will be fulfilled over time as soon as new details become available according to the project development. For this application scenario, the Wiki software turns out to be very suitable allowing revisions and continuous updates throughout the project lifetime. The content of this section is not included in the deliverable D2.2.

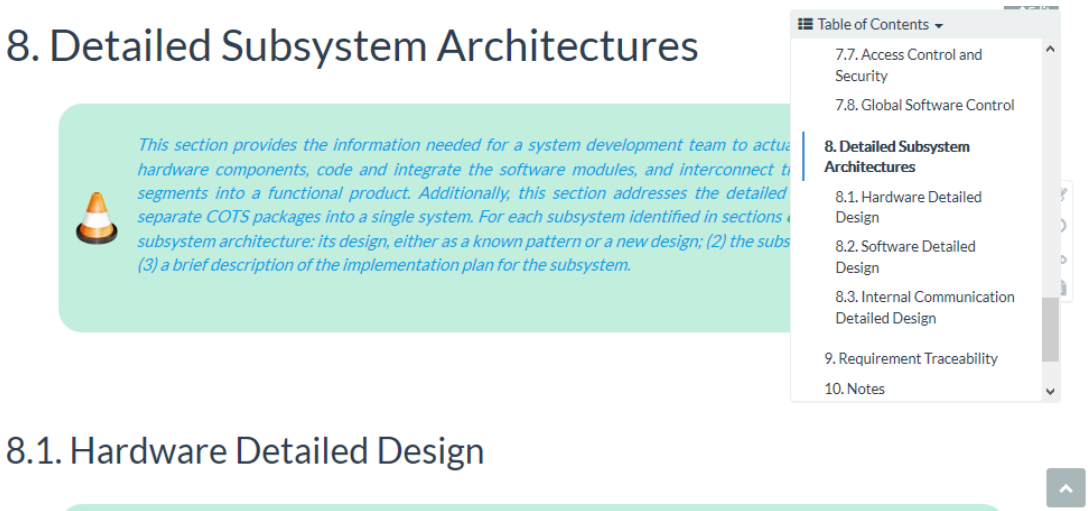

Figure 15 - Section 8, System detailed design

2.3.9 Requirement Traceability

Section 9 will be used to keep track of the association between system requirements and developed components. The content of this section will be produced when detailed definition of the architectural components is available. The content of this section is not included in the deliverable D2.2.

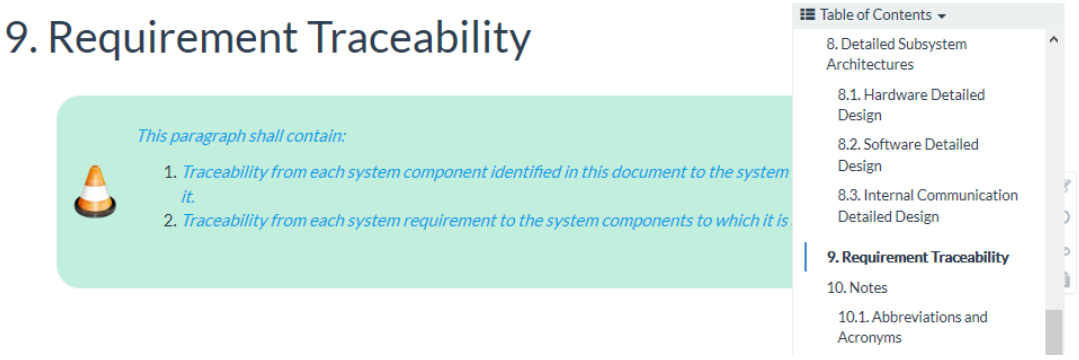

Figure 16 - Section 9, Requirements traceability

2.3.10 Notes

Section 10 has been introduced to enter notes and keep track of the acronyms list.

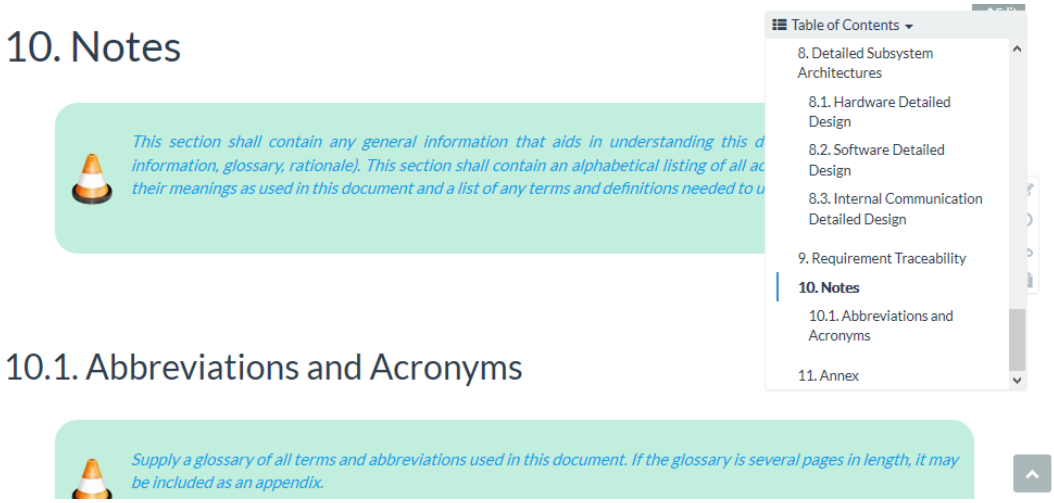

Figure 17 - Section 10, Notes

2.3.11 Annex

Section 11 provides the possibility to insert or list annex in order to further detail the content of the Wiki-Page if required.

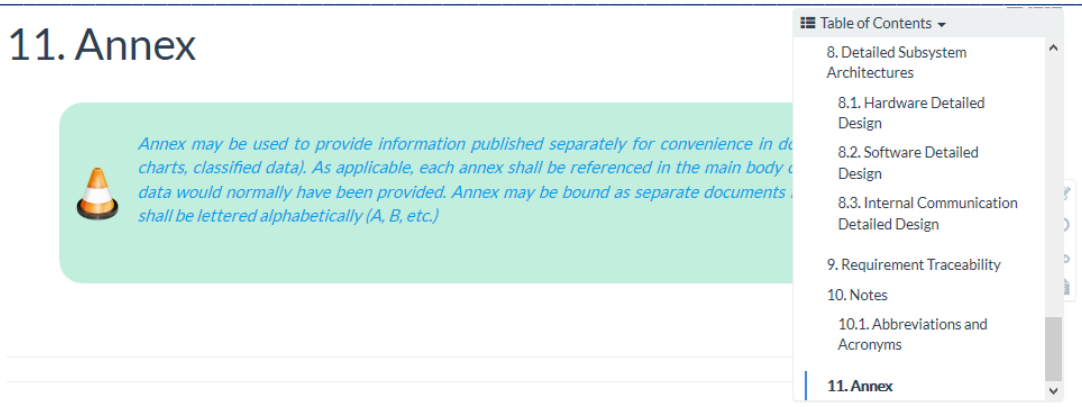

Figure 18 - Section 11, Annex