

System Version Description

for the

KNEAD Example System

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DOCUMENT CHANGE HISTORY

The following table is a simple list of released revisions sent for review. Records of reviews and the review artifacts are saved with reviewer information in the The KNEAD Project artifact repository.

Change Record

Date	Version	Author(s)	Change Reference
22 Dec 2023	P1	Lewis Collier	Preliminary DRAFT version

Each subsequent “section” outlines changes in each release.

Items in this version that are marked with change bars have been modified from the most recent previous version (e.g. P3 changes from P2) or are new as of the current revision. A list of all changed items may be found in the Index section under the heading “All Changes This Version”.

Draft P1 Preliminary version of this document.

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CHAPTER 1

Scope

ALL-1.0 :: IF APPLICABLE, EACH SECTION HAS A SUMMARY OF DATA ITEM DESCRIPTION (DID) INFORMATION SHOWN IN THIS FONT. THESE ARE DISPLAYED IN SMALL CAPITAL FONT AND ARE NOT PART OF THE FORMAL DOCUMENT. DISPLAY OF THESE DID INFORMATION NOTES CAN BE TURNED OFF FOR FORMAL RELEASES, BUT ARE DISPLAYED HERE FOR REFERENCE.

This document provides the System Version Description (SVD) for the Smart Silvia. The system will be referred to as the Smart-Silvia-Sys.

This document is generally cited as [ref`KNEAD`SVD`ExProj].

1.1 Identification

ALL-1.1 :: THIS PARAGRAPH SHALL CONTAIN A FULL IDENTIFICATION OF THE SYSTEM TO WHICH THIS DOCUMENT APPLIES, INCLUDING, AS APPLICABLE, IDENTIFICATION NUMBER(S), TITLE(S), ABBREVIATION(S), VERSION NUMBER(S), AND RELEASE NUMBER(S).

The Smart Silvia described in this document shall be known as Smart-Silvia-Sys version 1.

1.2 System Overview

ALL-1.2 :: THIS PARAGRAPH SHALL BRIEFLY STATE THE PURPOSE OF THE SYSTEM TO WHICH THIS DOCUMENT APPLIES. IT SHALL DESCRIBE THE GENERAL NATURE OF THE SYSTEM; SUMMARIZE THE HISTORY OF SYSTEM DEVELOPMENT, OPERATION, AND MAINTENANCE; IDENTIFY THE PROJECT SPONSOR, ACQUIRER, USER, DEVELOPER, AND SUPPORT AGENCIES; IDENTIFY CURRENT AND PLANNED OPERATING SITES; AND LIST OTHER RELEVANT DOCUMENTS.

The Smart Silvia system is ...TBD....

Figure 1 shows the high-level architecture for the Smart-Silvia-Sys system. This diagram shows the major external interfaces that provide the capabilities of Smart-Silvia-Sys. As are shown, the Smart-Silvia-Sys can provide. This system's main goal is to automate functionality in order to make great Espresso.

The general concept of operations (CONOP) for this system is User Selects an input weight through an OLED screen using a rotary encoder. Espresso is prepared. User begins a shot, solid state relays are enabled and the shot begins to pull and a timer is started. As water falls into the cup and onto the load cells, the espresso cup is weighed. Once the desired weight is met the pump is turned off. The user is displayed their time and weight on the OLED screen and data is pushed ...TBD...

While the system is not actively pulling a shot, it will be monitoring the water level. If low water is detected the user will be notified.

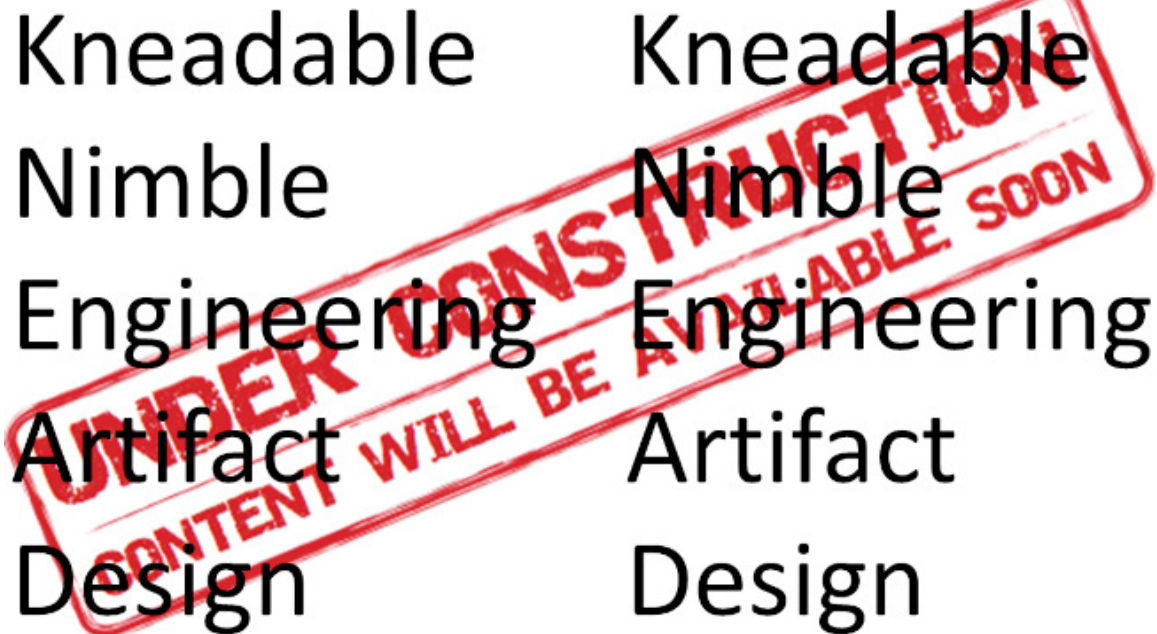


Figure 1: System Overview

1.3 Document Overview

ALL-1.3 :: THIS PARAGRAPH SHALL SUMMARIZE THE PURPOSE AND CONTENTS OF THIS DOCUMENT AND SHALL DESCRIBE ANY SECURITY OR PRIVACY CONSIDERATIONS ASSOCIATED WITH ITS USE.

This section provides information about this document's security/privacy considerations, contents, structure, and version information.

1.3.1 Security and Privacy Considerations

This document has been identified as "Controlled Unclassified Information" (CUI). Please follow the control block on the title page for ownership, creation, category, dissemination, and Point of Contact (POC) information. This information should be delineated, per <https://www.dodcui.mil> as:

Owner the name of the DoD Component (not required if identified in the letterhead)

Creator identification of the office creating the document

Category identification of the categories contained in the document

Dissemination applicable distribution statement or limited dissemination control (LDC)

POC name and phone number or email of POC

1.3.2 Contents and Structure

This document format is based upon the guidance in the SDP DID [ref'SVD'DID], but is tailored to reflect current quality management system (QMS) requirements for many of

the items described in the DID. The system development plan information also follows the guidelines of ISO-12207 [ref`ISO`12207] and MIL-STD-498 [ref`MIL`STD`498] (from which ISO-12207 originated). It is expected that significant coverage of the SDP DID items will simply be references to external QMS or CMMI documentation. Thus, agencies using this artifact will formalize it to serve as a checklist for tailoring each effort per their own processes and procedures.

This tailoring also includes planning for hardware aspects as may be needed for the complete system development efforts. The SDP DID mainly covered integration of software onto hardware. This artifact includes sections that cover the development of hardware as well as development of the software. Integration and testing are also included. But, as noted above, all aspects of development are expected to illustrate the existing QMS steps to be followed based on organizational processes and the project's operational needs.

This document follows a tailored SVD sub-section order of:

Section 1 provides an overview of the system and this document.

Section 2 lists general and application-specific reference documents as well as glossary terms and acronyms.

Section 3 summarizes the required work, with references to existing QMS processes and procedures as applicable:

- program status / acquisition strategy,
- SDLC Situation,
- plans for development of requirement artifacts,
- plans for overall documentation development,
- schedule / resource constraints, and
- other requirements/constraints.

Section 4 Plans for system development

- Hardware development processes and plans,
- Firmware development processes and plans,
- Software development processes and plans,
- Integration plans,
- Testing plans, and
- Other development activities per organizational processes.

Section 5 Plans for system transistion

- Configuration Management plans,

- Release plans,
- User Support plans, and
- Other system transition activities per organizational processes.

Section 6 Management and control activities

- SETR events (internal previews and with customer),
- Skills and resources needed,
- Schedule Development and Monitoring, and
- Other management and control activities per organizational processes.

Section 7 if needed, lists any general notes as may be applicable.

Appendices if needed, provide additional information as may be needed.

IF THIS TEXT IS VISIBLE, THE FIRST INSTANCE OF EACH SECTION MAY DISPLAY A SUMMARY OF DATA ITEM DESCRIPTION (DID) INFORMATION SHOWN IN THIS FONT. THESE ARE DISPLAYED IN SMALL CAPITAL FONT AND ARE NOT PART OF THE FORMAL DOCUMENT.

1.3.3 Document Version Information

This document was produced in \LaTeX and *BibLaTeX/Biber*. The editing and document preparation were performed using MiKTeX version 2.9 with the build option [$\text{\LaTeX} \Rightarrow \text{PS} \Rightarrow \text{PDF}$]. The $\text{\LaTeX}svn-multi$ package was used to glean SVN tracking information, when files are stored in an “SVN” version control system. The style `KNEADdocument` was used to provide the \LaTeX and *BibLaTeX/Biber* formatting details.

This revision of this document has the following properties:

Tracking Item	Data
Repository	https://svn.riouxsvn.com/kneadlatxinputs/ExampleArtifactFolders/7%20-%20SVD/KNEAD_SVD.tex
Author	LCollier
Revision	595
Rev Date	2017-05-30 14:07:20Z
Print Date	16 Feb, 2024 17:04
KNEADdocument Version	1.00
KNEADdocument Date	2021/12/05

CHAPTER 2

References

ALL-2.0.0 :: THIS SECTION SHALL LIST THE NUMBER, TITLE, REVISION, AND DATE OF ALL DOCUMENTS REFERENCED IN THIS SPECIFICATION. THIS SECTION SHALL ALSO IDENTIFY THE SOURCE FOR ALL DOCUMENTS NOT AVAILABLE THROUGH NORMAL GOVERNMENT STOCKING ACTIVITIES. IT ALSO SHALL INCLUDE A LIST OF ACRONYMS AND GLOSSARY TERMS SO THAT THEY ARE DEFINED BEFORE USE.

This section provides a list of referenced items for this document.

2.1 Acronyms and Abbreviations

ALL-2.1.0 :: THIS SECTION SHALL CONTAIN A FULL LIST OF DEFINITIONS FOR ALL ACRONYMS AND ABBREVIATIONS USED IN THIS DOCUMENT. THESE ARE OFTEN INCLUDED IN AN APPENDIX BUT ARE INCLUDED IN CHAPTER 2 ALONG WITH GLOSSARY TERMS AND CITED REFERENCES TO PRESENT THE READER WITH THE INFORMATION BEFORE IT IS NEEDED.

This section defines acronyms and abbreviations used in this and related documents.

Table 1: Acronym Definitions

Acronym	Definition
ADC	Analog to Digital Converter
A/V	Audio / Visual
End of acronym definition table	

2.2 Glossary and Definitions

ALL-2.2.0 :: THIS SECTION SHALL CONTAIN A FULL LIST OF GLOSSARY DEFINITIONS FOR ALL SPECIALTY TERMS USED IN THIS DOCUMENT. THESE ARE OFTEN INCLUDED IN AN APPENDIX BUT ARE INCLUDED IN CHAPTER 2 ALONG WITH ACRONYMS / ABBREVIATIONS AND CITED REFERENCES AND GLOSSARY TERMS TO PRESENT THE READER WITH THE INFORMATION BEFORE IT IS NEEDED.

This section defines glossary terms used in this and related documents.

Table 2: Glossary Terms and Definitions

Glossary Term	Definition
Communications	Communication is information transfer, among users or processes, according to agreed conventions.
Glossary terms continue on next page	

Glossary terms – continued from previous page

Glossary Term	Definition
Customer	The local government project lead who is acting as a general manager for the sponsor to ensure that the contractor team executes the project according to stakeholder goals.
End of glossary terms table	

2.3 Referenced Documents

ALL-2.3.0 :: THIS SECTION SHALL CONTAIN A FULL LIST OF ALL ARTIFACTS REFERENCED FROM WITHIN THIS DOCUMENT. THESE ARE OFTEN INCLUDED IN A FINAL CHAPTER/SECTION OR APPENDIX BUT ARE INCLUDED IN CHAPTER 2 ALONG WITH ACRONYMS / ABBREVIATIONS AND GLOSSARY TERMS TO PRESENT THE READER WITH THE INFORMATION BEFORE IT IS NEEDED.

This section lists the referenced documents for this document. The references are categorized into two categories:

External Documents not directly associated with this project.

Project Documents that are directly associated with this project.

2.3.1 External Documents**2.3.2 Project Specific Documents**

CHAPTER 3

Version Description

SVD-3.0.0 :: THIS CHAPTER PROVIDES AN OVERVIEW OF THE SYSTEM RELEASE. SEE REFERENCE [ref*SVD***DID**] FOR MORE INFORMATION.

This chapter is ...**TBD**....

3.1 Inventory of Materials

SVD-3.1.0 :: THIS SECTION SHALL LIST BY IDENTIFYING NUMBERS, TITLES, ABBREVIATIONS, DATES, VERSION NUMBERS, AND RELEASE NUMBERS, AS APPLICABLE, ALL PHYSICAL MEDIA (FOR EXAMPLE, LISTINGS, TAPES, DISKS) AND ASSOCIATED DOCUMENTATION THAT MAKE UP THE SOFTWARE VERSION BEING RELEASED. IT SHALL INCLUDE APPLICABLE SECURITY AND PRIVACY CONSIDERATIONS FOR THESE ITEMS, SAFEGUARDS FOR HANDLING THEM, SUCH AS CONCERNS FOR STATIC AND MAGNETIC FIELDS, AND INSTRUCTIONS AND RESTRICTIONS REGARDING DUPLICATION AND LICENSE PROVISIONS.

The hardware used in this system are focused on the ESP-32, a list of items purchased with applicable links can be found here:

ESP-32: <https://www.amazon.com/dp/B09C5K91H7>

OLED: <https://www.amazon.com/dp/B09C5K91H7>

Solid State Relay: <https://www.amazon.com/dp/B01N0L5WSU>

Load Sensor & ADC: <https://www.amazon.com/dp/B078KS1NBB>

Rotary Encoder: <https://www.amazon.com/dp/B00NL7PVGM>

Water Level Sensor: <https://www.amazon.com/gp/B08JPNY5KJ>

Assorted Wires and Connectors:

<https://www.amazon.com/dp/B0746HMTPP>

<https://www.amazon.com/dp/B07WWWPR2X>

<https://www.amazon.com/dp/B08RS737TF>

3.2 Inventory of Software

SVD-3.2.0 :: THIS SECTION SHALL LIST BY IDENTIFYING NUMBERS, TITLES, ABBREVIATIONS, DATES, VERSION NUMBERS, AND RELEASE NUMBERS, AS APPLICABLE, ALL COMPUTER FILES THAT MAKE UP THE SOFTWARE VERSION BEING RELEASED. ANY APPLICABLE SECURITY AND PRIVACY CONSIDERATIONS SHALL BE INCLUDED.

The firmware being used by the ESP32 is part of the Smart Silvia project. This is flashed into the ESP32. This project can be found and documented here: <https://github.com/too9le/smart-silvia>

This system connects to software ...**TBD**...

3.3 Changes From Prior Version

SVD-3.3.0 :: THIS SECTION SHALL CONTAIN A LIST OF ALL CHANGES INCORPORATED INTO THE SOFTWARE VERSION SINCE THE PREVIOUS VERSION. IF CHANGE CLASSES HAVE BEEN USED, SUCH AS THE CLASS I/CLASS II CHANGES IN MLL-STD-973, THE

CHANGES SHALL BE SEPARATED INTO THESE CLASSES. THIS PARAGRAPH SHALL IDENTIFY, AS APPLICABLE, THE PROBLEM REPORTS, CHANGE PROPOSALS, AND CHANGE NOTICES ASSOCIATED WITH EACH CHANGE AND THE EFFECTS, IF ANY, OF EACH CHANGE ON SYSTEM OPERATION AND ON INTERFACES WITH OTHER HARDWARE AND SOFTWARE. THIS PARAGRAPH DOES NOT APPLY TO THE INITIAL SYSTEM VERSION.

Version 2.0 focuses on network improvements and is ...TBD.... (And is not applicable to the first release.)

3.4 Adaptation Data

SVD-3.4.0 :: THIS PARAGRAPH SHALL IDENTIFY OR REFERENCE ALL UNIQUE-TO-SITE DATA CONTAINED IN THE SOFTWARE VERSION. FOR SOFTWARE VERSIONS AFTER THE FIRST, THIS PARAGRAPH SHALL DESCRIBE CHANGES MADE TO THE ADAPTATION DATA.

This system contains user information such as Network SSID and passwords. The remaining items are ...TBD....

3.5 Related (Third Party) Documents

SVD-3.5.0 :: THIS PARAGRAPH SHALL LIST BY IDENTIFYING NUMBERS, TITLES, ABBREVIATIONS, DATES, VERSION NUMBERS, AND RELEASE NUMBERS, AS APPLICABLE, ALL DOCUMENTS PERTINENT TO THE SOFTWARE VERSION BEING RELEASED BUT NOT INCLUDED IN THE RELEASE. THESE ARTIFACTS WILL STILL BE LISTED IN THE REFERENCE SECTION, AND CITED HERE AND OTHER PLACES AS APPROPRIATE; THIS SECTION JUST PROVIDES A PLACE TO FURTHER DESCRIBE THESE REFERENCE DOCUMENTS.

This section is ...TBD....

3.6 Installation Instructions

SVD-3.6.0 :: THIS PARAGRAPH SHALL PROVIDE OR REFERENCE THE FOLLOWING INFORMATION, AS APPLICABLE: A. INSTRUCTIONS FOR INSTALLING THE SOFTWARE VERSION; B. IDENTIFICATION OF OTHER CHANGES THAT HAVE TO BE INSTALLED FOR THIS VERSION TO BE USED, INCLUDING SITE-UNIQUE ADAPTATION DATA NOT INCLUDED IN THE SOFTWARE VERSION; C. SECURITY, PRIVACY, OR SAFETY PRECAUTIONS RELEVANT TO THE INSTALLATION; D. PROCEDURES FOR DETERMINING WHETHER THE VERSION HAS BEEN INSTALLED PROPERLY; E. A POINT OF CONTACT TO BE CONSULTED IF THERE ARE PROBLEMS OR QUESTIONS WITH THE INSTALLATION.

This section is ...TBD....

3.7 Possible Problems and Known Errors

SVD-3.7.0 :: THIS PARAGRAPH SHALL IDENTIFY ANY POSSIBLE PROBLEMS OR KNOWN ERRORS WITH THE SOFTWARE VERSION AT THE TIME OF RELEASE, ANY STEPS BEING TAKEN TO RESOLVE THE PROBLEMS OR ERRORS, AND INSTRUCTIONS (EITHER DIRECTLY OR BY REFERENCE) FOR RECOGNIZING, AVOIDING, CORRECTING, OR OTHERWISE HANDLING EACH ONE. THE INFORMATION PRESENTED SHALL BE APPROPRIATE TO THE INTENDED RECIPIENT OF THE SVD (FOR EXAMPLE, A USER AGENCY MAY NEED ADVICE ON AVOIDING ERRORS, A SUPPORT AGENCY ON CORRECTING THEM).

This installation needs to be done by someone who is trained to work with 120V AC systems. If the system is operated or wired incorrectly serious harm or death can come to the user.

CHAPTER 4

Notes

ALL-NOTES :: THIS SECTION SHALL CONTAIN ANY GENERAL INFORMATION THAT AIDS IN UNDERSTANDING THIS DOCUMENT (E.G., BACKGROUND INFORMATION, RATIONALE, ETC.)

This section is ...TBD....

4.1 Note Area 1

ALL-NOTES :: THIS SECTION SHALL CONTAIN ANY GENERAL INFORMATION THAT AIDS IN UNDERSTANDING THIS DOCUMENT (E.G., BACKGROUND INFORMATION, RATIONALE, ETC.)

This section is ...TBD....

4.2 Note Area 2

ALL-NOTES :: THIS SECTION SHALL CONTAIN ANY GENERAL INFORMATION THAT AIDS IN UNDERSTANDING THIS DOCUMENT (E.G., BACKGROUND INFORMATION, RATIONALE, ETC.)

This section is ...TBD....

APPENDIX

Appendix

ALL-APPENDIX :: THIS SECTION SHALL CONTAIN ANY GENERAL INFORMATION THAT AIDS IN UNDERSTANDING THIS DOCUMENT (E.G., BACKGROUND INFORMATION, RATIONALE, ETC.)

This section is ...TBD....

A.1 Appendix Area 1

ALL-APPENDIX :: THIS SECTION SHALL CONTAIN ANY GENERAL INFORMATION THAT AIDS IN UNDERSTANDING THIS DOCUMENT (E.G., BACKGROUND INFORMATION, RATIONALE, ETC.)

This section is ...TBD....

A.2 Appendix Area 2

ALL-APPENDIX :: THIS SECTION SHALL CONTAIN ANY GENERAL INFORMATION THAT AIDS IN UNDERSTANDING THIS DOCUMENT (E.G., BACKGROUND INFORMATION, RATIONALE, ETC.)

This section is ...TBD....