Configuration of a Community Energy Storage (CES) Unit

Version 3.1

May 14th, 2010

1 Descriptions of Function

This use case will describe how the settings of a CES Unit (an operating unit in the field) can have its operational settings changed from a remote location.

1.1 Function Name

CES Unit Configuration

1.2 Function ID

IECSA identification number of the function

1.3 Brief Description

The CES Management system is used to manage the configuration of the CES Units.

1.4 Narrative

Once it has been determined that a configuration change is needed with a ***CES Unit***, the ***CES Management System*** issues a command to affect that change. Each communication change received by the ***CES Unit*** is acknowledged by a message back to the ***CES Management*** system and a log entry is created in ***D-SCADA*** to maintain situational awareness. The ***CES Management System*** also tells the appropriate ***CES Controller*** of the change the ***CES Units*** under its control and makes any necessary configuration changes. Each change is acknowledged by a message back to the ***CES Management System***. For each change, a log entry is created in ***D-SCADA***. The message is also shared with the ***Historian*** by ***D-SCADA***.

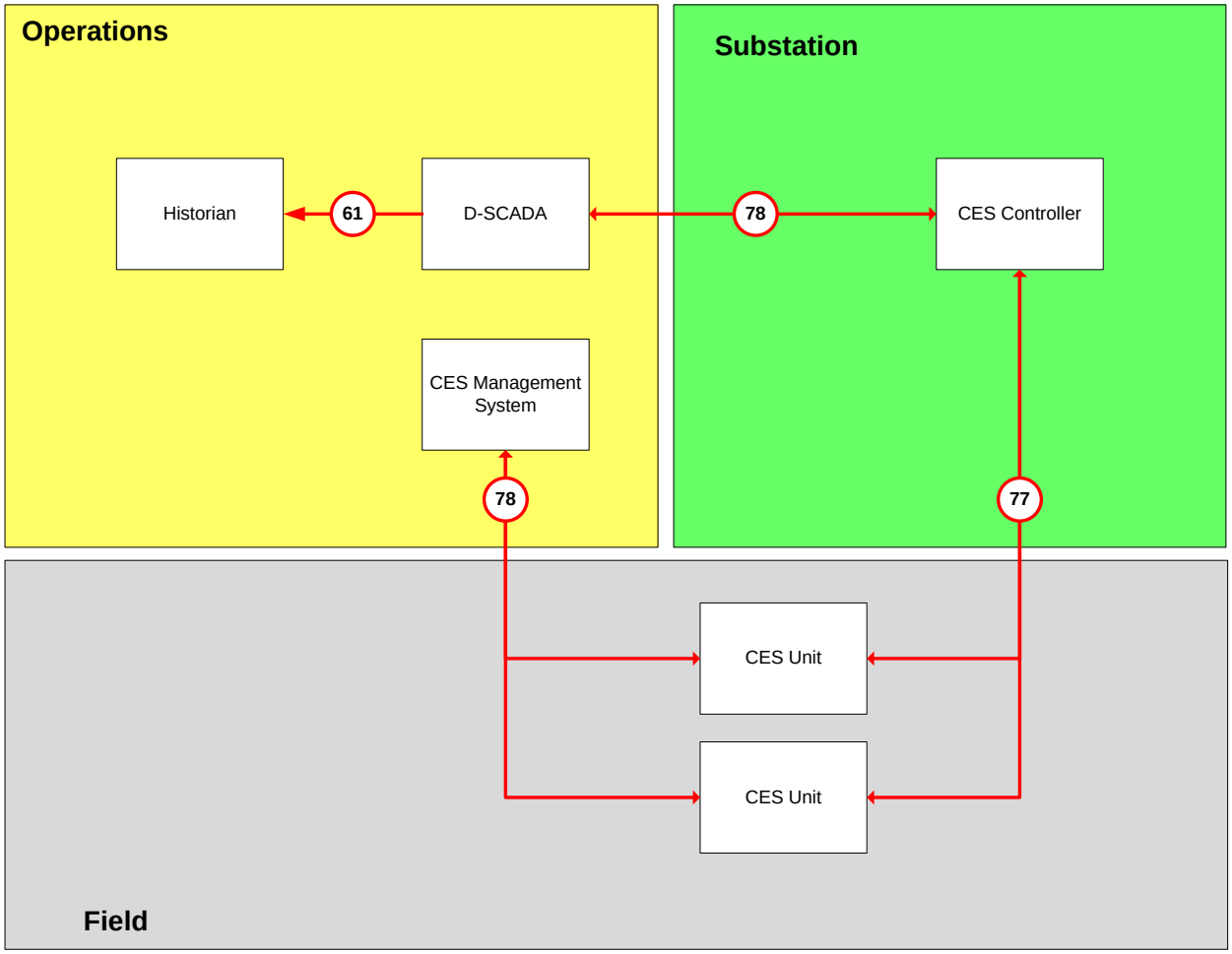


Figure 1-1
Context Diagram for Configuration of a CES Unit

1.5 Actor (Stakeholder) Roles

Grouping (Community)		*Group Description*
Actor Name	*Actor Type (person, device, system etc.)*	*Actor Description*
CES Units	Device	Community Energy Storage – Distributed Energy Storage supporting the several customers connected to a single distribution transformer. Provides load following for the substation and islanding for the connected customers.
DSCADA	Sub-System	Distribution Supervisory Control and Data Acquisition System. DSCADA is a sub-system of the DMS.
Historian	Sub-System	CES data archive
CES Management System	System	Community Energy Storage Management System – Back office system that manages the configuration of the CES Controller and the CES Units.
CES Controller	Device	Community Energy Storage Controller Device that resides at the substation providing communications, control and dispatching function with the CES Unit.

1.6 Information exchanged

Information Object Name	*Information Object Description*
CES Units requiring a Configuration Change/Update	CES Units whose operational settings or software is not up to date

Information Object Name	*Information Object Description*
Configuration Change/Update	Operational Settings for the CES Units or CES Controllers that need to be updated.
Communications Acknowledgements	An acknowledgement that the communication signal has arrived at its intended source.
Configuration Change Log Entry	A log entry verifying that the Configuration Change has taken place in the CES Unit

1.7 Activities/Services

Activity/Service Name	*Activities/Services Provided*

1.8 Contracts/Regulations

Contract/Regulation	*Impact of Contract/Regulation on Function*

Policy	*From Actor*	*May*	*Shall Not*	*Shall*	*Description (verb)*	*To Actor*

Constraint	*Type*	*Description*	*Applies to*

2 Step by Step Analysis of Function

Describe steps that implement the function. If there is more than one set of steps that are relevant, make a copy of the following section grouping (Steps to implement function, Preconditions and Assumptions, Steps normal sequence, Post-conditions) and provide each copy with its own sequence name.

2.1 Steps to implement function – Name of Sequence

Configuration of a CES Unit

2.2 Preconditions and Assumptions

Actor/System/Information/Contract	*Preconditions or Assumptions*
CES Controller	1. CES Controller is configured to poll a frequency of 80 times in 5 minutes 2. 79 polls per 5 minutes, 1 poll per CES Unit #2 per 5 minutes 3. This will allow validation of conflicts between configuration and polling
CES Unit	In this use case CES Unit will refer to one specific CES Unit

2.2.1 Steps – Name of Sequence

Describe the normal sequence of events, focusing on steps that identify new types of information or new information exchanges or new interface issues to address. Should the sequence require detailed steps that are also used by other functions, consider creating a new "sub" function, then referring to that "subroutine" in this function. Remember that the focus should be less on the algorithms of the applications and more on the interactions and information flows between "entities", e.g. people, systems, applications, data bases, etc. There should be a direct link between the narrative and these steps.

#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environment
#	*Triggering event? Identify the name of the event.*[1]	*What other actors are primarily responsible for the Process/Activity? Actors are defined in section0.*	*Label that would appear in a process diagram. Use action verbs when naming activity.*	*Describe the actions that take place in active and present tense. The step should be a descriptive noun/verb phrase that portrays an outline summary of the step. "If …Then…Else" scenarios can be captured as multiple Actions or as separate steps.*	*What other actors are primarily responsible for Producing the information? Actors are defined in section0.*	*What other actors are primarily responsible for Receiving the information? Actors are defined in section0.* *(Note – May leave blank if same as Primary Actor)*	*Name of the information object. Information objects are defined in section 1.6*	*Elaborate architectural issues using attached spreadsheet. Use this column to elaborate details that aren't captured in the spreadsheet.*	*Reference the applicable IECSA Environment containing this data exchange. Only one environment per step.*
1.1	CES Management System is initiating a CES Unit Configuration Change	CES Management System	CES Unit Configuration change needed	CES Management System identifies a CES Unit or group of CES Units that require a Configuration Change/Update	CES Management System	CES Management System	CES Units requiring a Configuration Change/Update	Configuration Change/Update (eg. Energy reserve of CES Unit,	
1.2.1		CES Management System	CES Management System sends Configuration Change/Update	CES Management System sends Configuration Change/Update to CES Unit	CES Management System	CES Unit	Configuration Change/Update	DNP3	

[1] Note – A triggering event is not necessary if the completion of the prior step – leads to the transition of the following step.

#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environment
1.2.2		CES Unit	CES Unit sends Communications Acknowledgements	CES Unit sends Communications Acknowledgements to the CES Management System	CES Unit	CES Management System	Communications Acknowledgements	DNP3	
1.3		CES Unit	CES Unit performs Configuration Change/Update	CES Unit performs Configuration Change/Update accordingly	CES Unit	CES Unit	Configuration Change/Update	DNP3	
1.4.1		CES Management System	CES Management System sends configuration change/update	CES Management System sends the CES Unit Configuration Change/Update to the CES Controller	CES Management System	CES Controller	Configuration Change/Update	DNP3	
1.4.2		CES Controller	CES Controller sends Communications Acknowledgements	CES Controller sends Communications Acknowledgements to the CES Management System	CES Controller	CES Management System	Communications Acknowledgements	DNP3	
1.5		CES Controller	CES Controller implements the new settings	CES Controller implements the new Configuration Change/Update	CES Controller	CES Controller	Configuration Change/Update		

#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environment
1.6		DSCADA	DSCADA receives CES Unit Configuration Change Log Entry via next scheduled poll	DSCADA receives CES Unit Configuration Change Log Entry during next scheduled poll of appropriate CES Controller	CES Controller	DSCADA	Configuration Change Log Entry	DNP3	
1.7		DSCADA	DSCADA sends Configuration Change Log Entry	DSCADA sends Configuration Change Log Entry to the Historian	DSCADA	Historian	Configuration Change Log Entry	Pi Historian Interface	

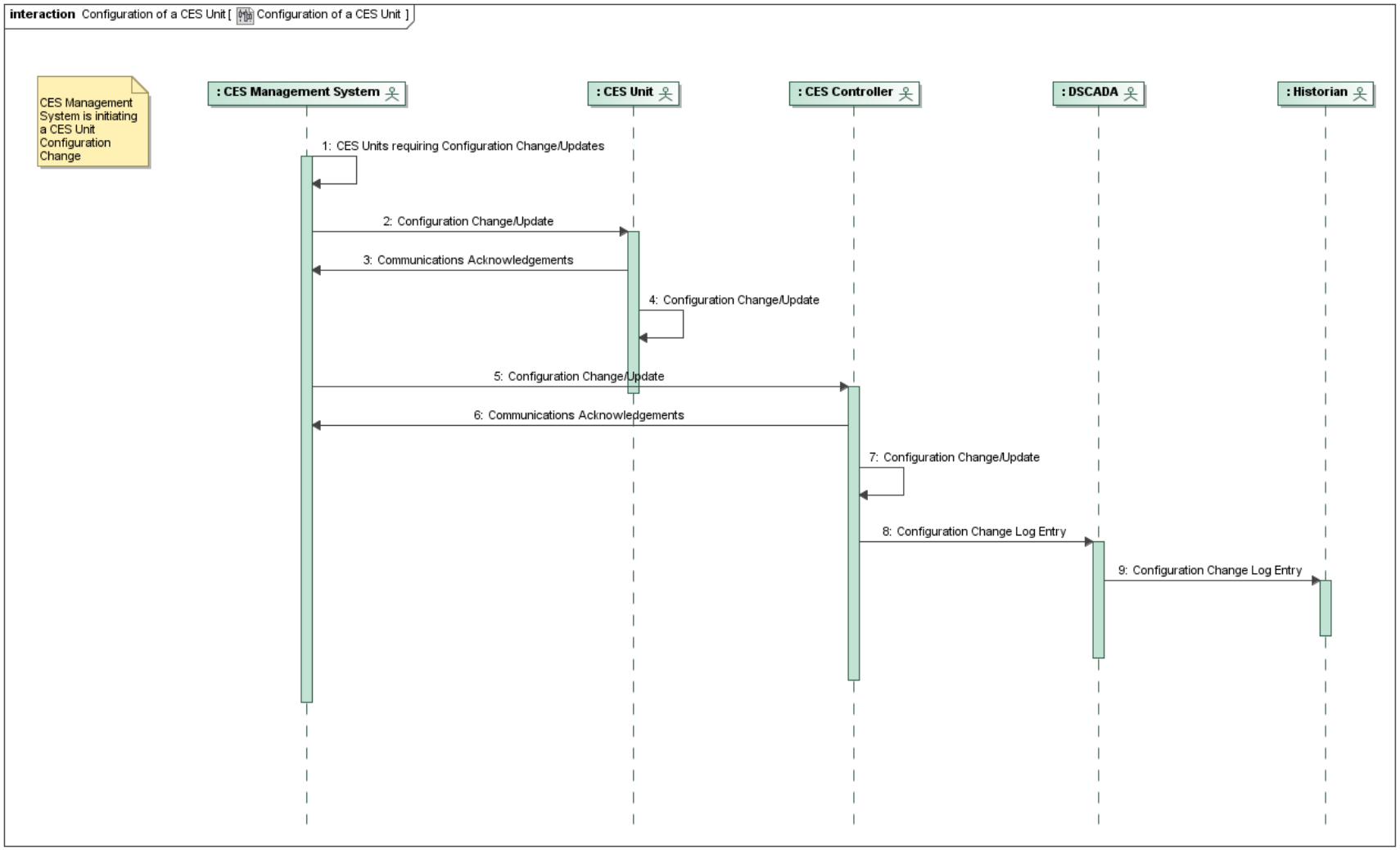
2.2.2 Post-conditions and Significant Results

Actor/Activity	*Post-conditions Description and Results*
CES Unit	The operational settings for the CES Unit is now able to be Updated as needed from a remote location via the CES Management System
CES Controller	The operational settings for the CES Controllers are now able to be Updated as needed from a remote location via the CES Management System

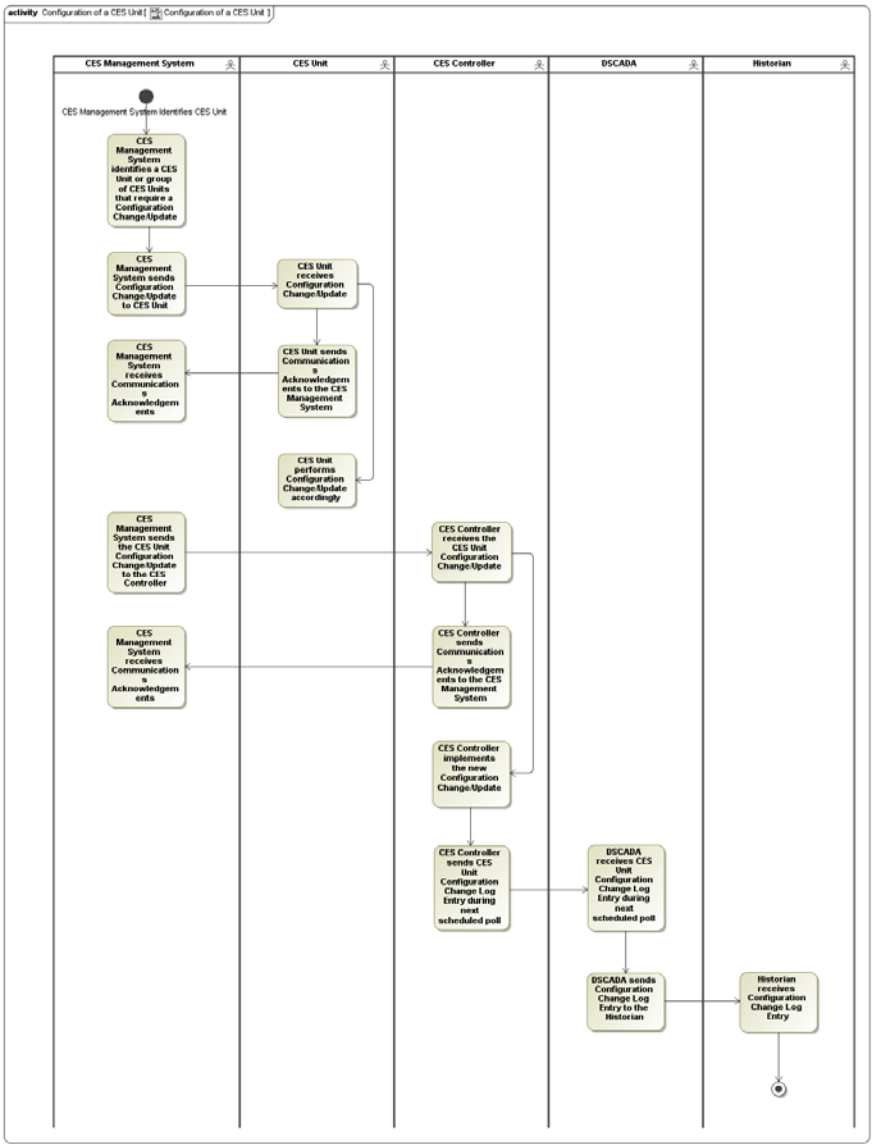
2.3 Architectural Issues in Interactions

Elaborate on all architectural issues in each of the steps outlined in each of the sequences above. Reference the Step by number.

2.4 Diagrams



Configuration of a CES Unit Sequence Diagram



Configuration of a CES Unit Activity Diagram

3 Auxiliary Issues

3.1 References and contacts

ID	Title or contact	Reference or contact information
[1]		

3.2 Action Item List

ID	Description	Status
[1]		

3.3 Revision History

No	Date	Author	Description
2.0	4-11-2010	John Simmins	Original Use Case
3.0	5-11-2010	Brian D. Green	Revisions and add diagrams
3.1	5-13-2010	Brian D. Green	The Utility's Revisions