Data Warehouse – The Utility's Smart Grid Clearinghouse
Version 3.0
April 26th, 2010

1 Descriptions of Function

This use case describes how the essential data elements are incorporated into The Utility's smart grid clearinghouse

1.1 Function Name

Data Warehouse

1.2 Function ID

IECSA identification number of the function

1.3 Brief Description

The data warehouse provides a persistent storage mechanism to integrate data from disparate systems for the purpose of reporting and analysis.

1.4 Narrative

The data warehouse receives a regular feed of information from smart grid systems via the ***Operational Data Store (ODS).*** All of these data feeds are processed through an Extract, Transform and Load (ETL) mechanism, which perform the following operations as necessary:

- Extract the data elements of interest
- De-identify the data as needed
- Verify the quality of the data
- Report data problems
- Reduce or aggregate the data if needed
- Load the valid data into the warehouse

- Insure that all data is accounted for and none is duplicated

The design of the database is optimized for analysis and reporting given the metrics required and the data segments identified during requirements gathering. After the warehouse is populated via ETL processes, reporting, analysis and modeling are be conducted through the use of business intelligence tools.

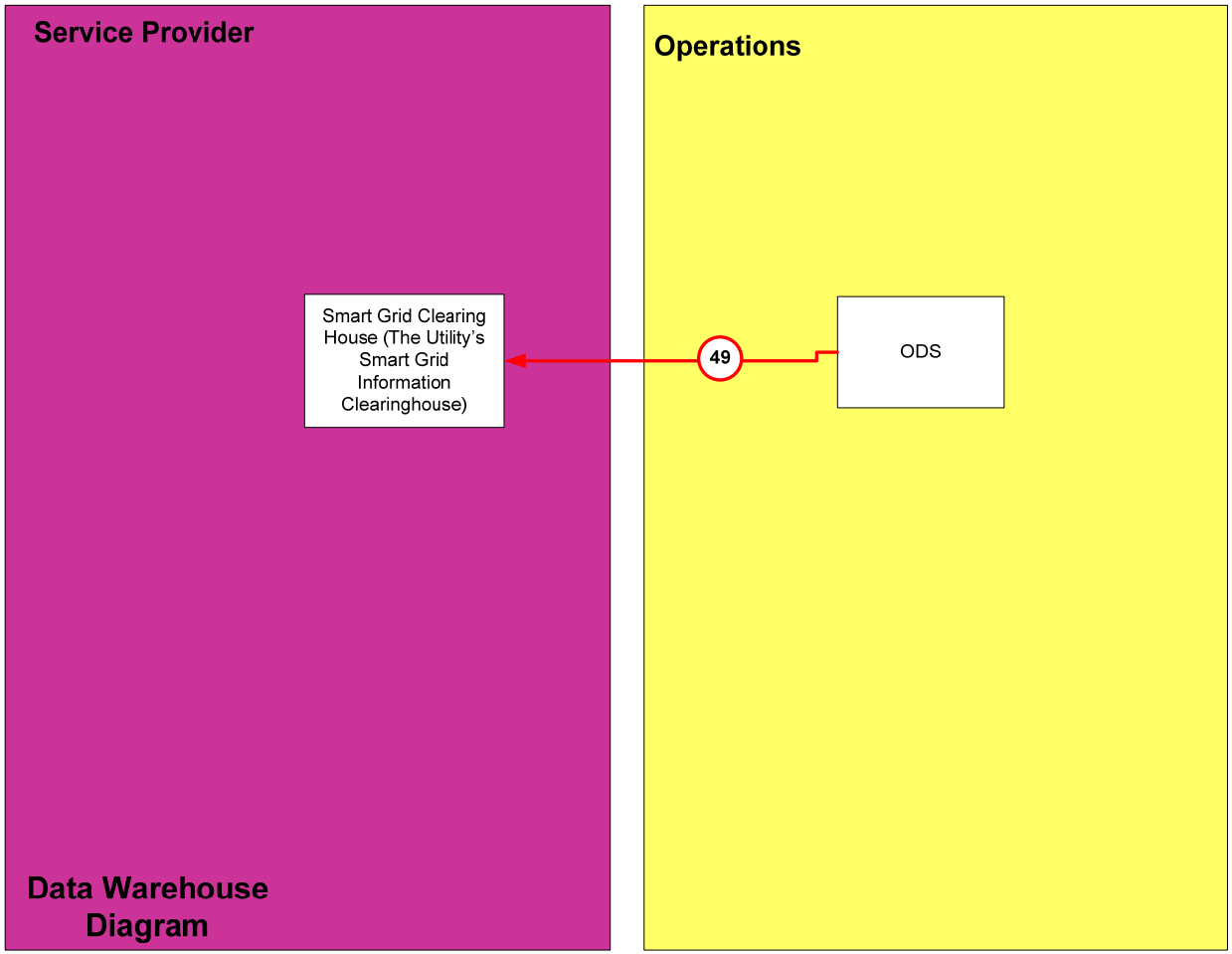


Figure 1-1
Context Diagram for Smart Grid Clearinghouse

1.5 Actor (Stakeholder) Roles

Grouping (Community)		*Group Description*
Actor Name	*Actor Type (person, device, system etc.)*	*Actor Description*
Smart Grid Clearinghouse	System	Information system that handles data from the ODS (data warehouse) in a reporting format specified by the DOE
ODS	Sub-System	Operational Data Store is a sub-system of The Utility's data warehouse, which stores operational data i.e. all metering events and messages.

1.6 Information exchanged

Information Object Name	*Information Object Description*
Flat File - Data elements needed for analysis or reporting	In this context, data elements may represent any piece of information required for reporting and analysis purposes.

1.7 Activities/Services

Describe or list the activities and services involved in this Function (in the context of this Function).

Activity/Service Name	*Activities/Services Provided*

1.8 Contracts/Regulations

Identify any overall (human-initiated) contracts, regulations, policies, financial considerations, engineering constraints, pollution constraints, and other environmental quality issues that affect the design and requirements of the Function.

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.

2.1 Steps to implement function – Name of Sequence

Data Warehouse – The Utility's Smart Grid Clearinghouse

2.1.1 Preconditions and Assumptions

Actor/System/Information/Contract	*Preconditions or Assumptions*
ODS	ODS is populated with data required by The Utility's Smart Grid Clearinghouse

2.1.2 Steps – Name of Sequence

#	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 section1.5.*	*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 section1.5.*	*What other actors are primarily responsible for Receiving the information? Actors are defined in section1.5.* *(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] 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
1.1	Scheduled ETL of the Smart Grid Clearinghouse stored within ODS	ODS	ETL from ODS for the Smart Grid Clearinghouse	On a predetermined frequency a batch process (ETL) will run, extracting data from ODS and creating a Flat File for the Smart Grid Clearinghouse	ODS	ODS	Flat File - Data elements needed for analysis or reporting		
1.2		ODS	Flat File to the Smart Gris Clearinghouse	FTP flat file to the Smart Grid Clearinghouse	ODS	Smart Grid Clearinghouse	Flat File - Data elements needed for analysis or reporting		

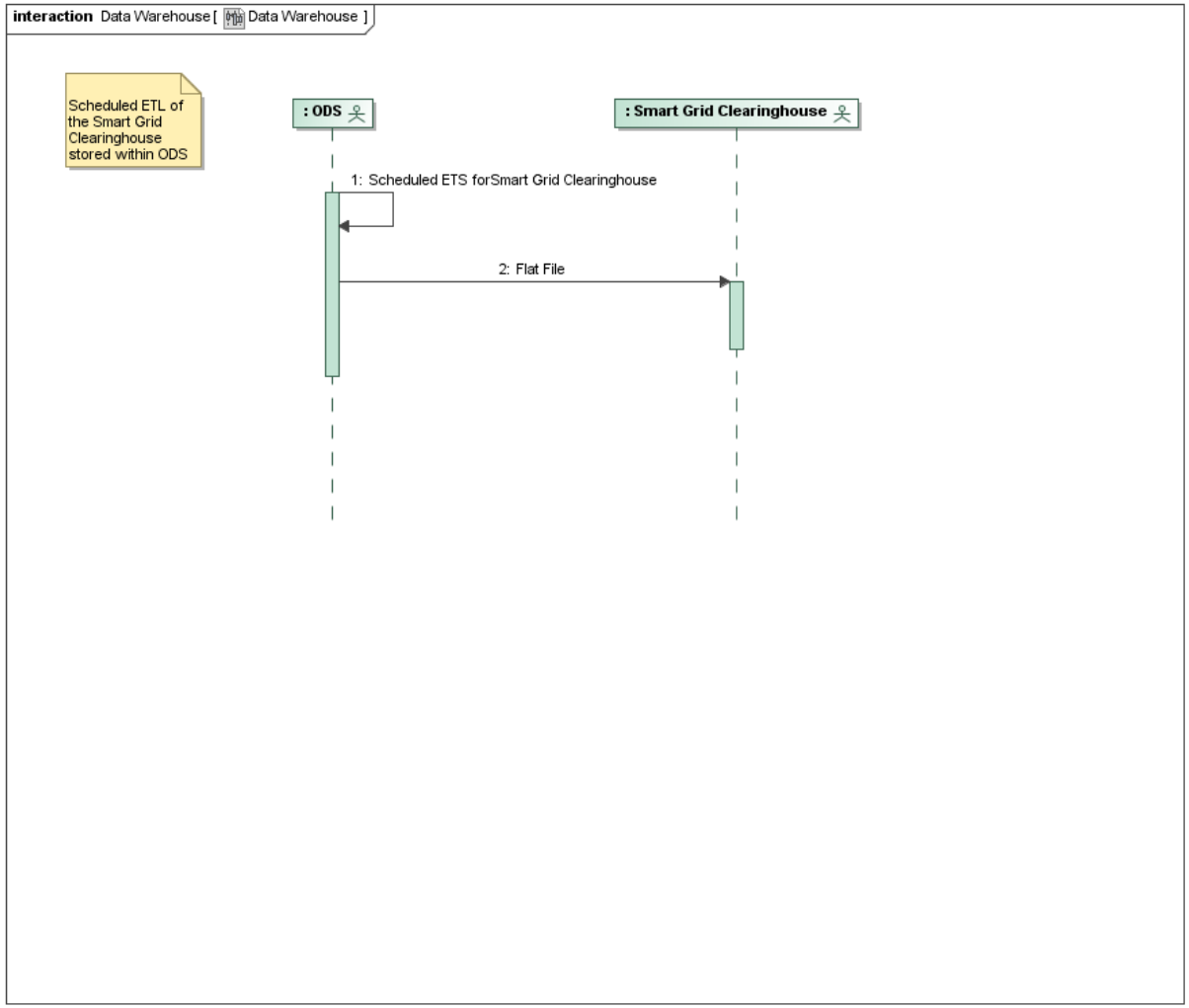
2.1.3 Post-conditions and Significant Results

Actor/Activity	*Post-conditions Description and Results*
DOE Smart Grid Clearinghouse	Integration to be defined (based on DOE requirements) between The Utility's Smart Grid Clearinghouse to the DOE's Smart Grid Clearinghouse

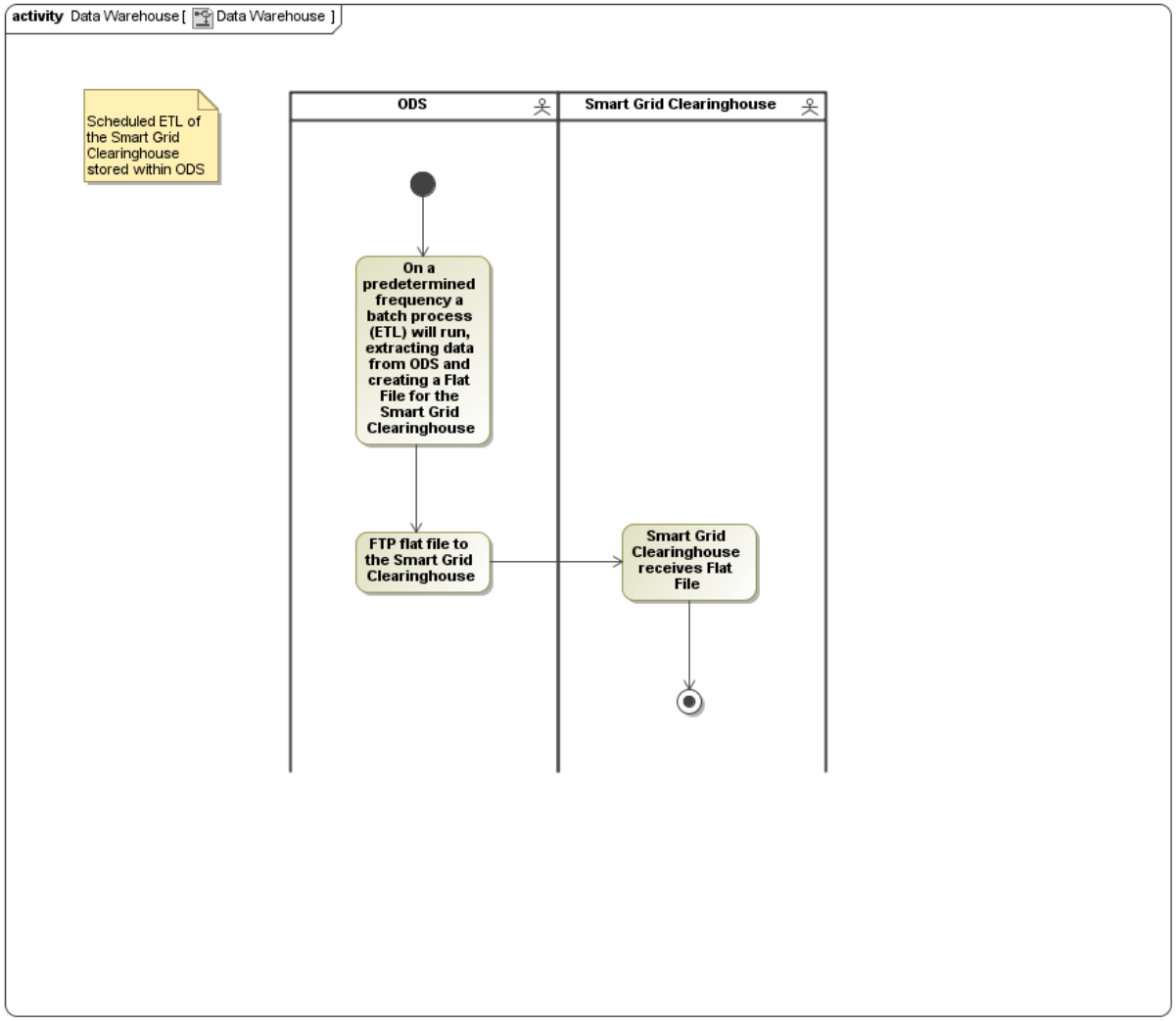
2.2 Architectural Issues in Interactions

Elaborate on all architectural issues in each of the steps outlined in each of the sequences above.

2.3 Diagrams



Data Warehouse Sequence Diagram



Data Warehouse 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 J. Simmins	Create Brief Description and Fill in Gaps
3.0	4-26 2010	Brian D. Green	Update revisions and add diagrams