Customer Communications Portal Management – Telecommunications Issues

1 Descriptions of Function

Issues confronting an Energy Company's Management Systems responsible for management of Telecommunications and Access Networks to support Customer Communications Portals.

1.1 Function Name

Customer Communications Portal Management – Telecommunications issues

1.2 Function ID

IECSA identification number of the function

C-4

1.3 Brief Description

This scenario attempts to describe key issues relevant to the operation of Management Systems in a large Energy Company (Electric and/or Gas and/or Water with several million customers) that provide access to information from and access to control devices located at customer sites. Access to information from devices and access to control one or more devices on the customer premises is provided via Customer Communications Portals.

Here, we focus on telecommunications issues.

1.4 Narrative

Many Energy companies have extensive internal telecommunications networks, leased telecommunications systems and the Internet, which are utilized for a variety of operational and administrative business purposes. The extensive deployment of Customer Communications Portals will significantly expand telecommunications networking use and thus both existing and new networks must be effectively managed to ensure that they meet the needs of the Customer Communications Portal applications, external entities requiring access to specific customer data and the Energy Company and its customers. Many existing telecommunications networks utilized have their own proprietary management systems, which are specific to their domain. As the complexity of the networks

grow, a more integrated approach is required that can utilize information from many diverse sources including the existing and new Customer Communications Portals and associated access networks as well as information from components and systems utilizing the internet.

There are several key components that are required in order to ensure effective management of networking systems and attached components; knowledge of applications that are utilized by Customer Communications Portals and associated devices, access network performance and operational metrics (data traffic patterns, usage by application, network anomalies, performance degradation, etc.) usage patterns of the users that make use of the data obtained along with many other components. Specific attributes of the applications must be know in order to ascertain if it is being used by individuals or other applications authorized to utilize it. In addition the type of transactions that are being performed by the application must be known so that the type of traffic expected can be supported. The usage patterns of many diverse users and applications must also be known on a statistical basis in order to ensure that the network is adequately configured to support the traffic and the response times needed by the applications and users.

Privacy needs of business entities, Governmental Agencies, Regulatory Agencies, Energy Company users and other users of the retrieved data and resources of the telecommunications access network must be assured. In order to satisfy these needs several issues must be addressed in the Telecommunications Network Management System; The policies determined by the various business entities for access control and security must be clearly identified and recognized by the Telecommunications Network Management System (TNMS) (this does not meant that the TNMS will implement these polices, but that it is aware of these policies and that the policies are taken into account in the operational configuration of the networks and that the TNMS will be aware of any breach of the polices and log any discrepancies, provide alarms of any breach and take corrective actions if possible.

In order to manage the operational aspects of the Customer Communications Portal, devices and Access Networks tools will be part of the TNMS to monitor the network for health, performance, availability and its capability to meet service level agreements negotiated with the various users of the network. These tools will also provide data, which can be used by management to ensure rapid reconfiguration of Access Network resources to restore service during any disruptions and to reconfigure network resources as needed to meet user needs. These tools are indispensable in the current business and technical networking environment where human resources are limited and near perfect reliability and availability of the network is almost a given.

1) Every application supported or enabled by the Customer Communications Portal and Energy Company Computer systems communicating with the Portals must be formally identified and recognized by the Network Management System

   a) The purpose of the application and what it is intended to accomplish must be clearly identified and recognized by the Network Management System

   b) The Status of the application and the version release must be recognized

   c) The type of data communications required by each application must be recognized, i.e.,

      i)   Retrieval of batch data,

      ii) Interactive inquiry/response data,

      iii) Downloading of application updates to Portals and Devices

   d) The Energy Company and other (Government, ISO/RTO's and various regulatory bodies) users of the data must be clearly identified and recognized

2) The overall data load must be recognized by the Network Management System for each application, including:

   i) Average data uploaded from each Portal

   ii) Average data download to each Portal

   iii) Peak data load in each direction

   iv) The number of transactions per day, hour, etc

   v) The transaction message size in bytes in each direction

3) The privacy and security requirements for each application must be identified and recognized by the Network Management System. Note this does not imply that the Network Management System will have the capability to set or change any security or privacy settings or levels, only that the Network Management System knows what the application and user security requirements are.

   a) The location of each Portal and supported devices that make use of each application must be known so that the topology of the various system components on an application basis is recognized

4) Service Level data must be collected and logged, by application and by user in order to ensure that service level agreements made with the internal and external users of the data and the Energy Company Customers is maintained. If any significant deviation is revealed by the data obtained controlling actions on the telecommunications access network, or components must be taken (note that some action will take place in an automated basis, but in other cases design changes must be undertaken)

5) Continuous data relative to the health of the network components must be obtained from each major element of the telecommunications access network in order to ensure that any downtime of the network or of sub network components is kept to a minimum. This is also necessary in order to ensure that problem resolution activities are quickly implemented and escalation of problems is kept to a minimum

   a) Diagnostic tools will be an integral part of the Network Management System in order to support the problem determination portion of the system and to help evaluate the statistics obtained from the network

   b) Preventative maintenance procedure development will be based on evaluation of data obtained

6) Network testing must be executed on a regularly scheduled basis to ensure that each major component of the telecommunications network is functioning properly and within design parameters (even though alarm systems will notify the Network Management System of component failures partial failures or performance degradations may not trigger alarms).

7) Network recovery procedures must be in place to ensure that any telecommunications access network failures will not impact receipt of data from the Customer Communications Portals and associated devices.

   a) Note that this function must be performed in an automated fashion and must be consistent with the need as defined by the application and service level agreements made with the users and Energy Company customers.

8) Configuration management procedures will be enabled in order to:

   i) Maintain the proper service level agreements by application, users and customers

   ii) Appropriate utilization of telecommunications network access resources

   iii) Ensure that alternate routing is available for critical services

   iv) Defective components are bypassed

9) Telecommunication Access Network, Customer Communications Portal and Customer Device activation, deactivation and connection set up tools will be an integral component of the Network Management System

1.5 Actor (Stakeholder) Roles

Describe all the people (their job), systems, databases, organizations, and devices involved in or affected by the Function (e.g. operators, system administrators, technicians, end users, service personnel, executives, SCADA system, real-time database, RTO, RTU, IED, power system). Typically, these actors are logically grouped by organization or functional boundaries or just for collaboration purpose of this use case. We need to identify these groupings and their relevant roles and understand the constituency. The same actor could play different roles in different Functions, but only one role in one Function. If the same actor (e.g. the same person) does play multiple roles in one Function, list these different actor-roles as separate rows.

Grouping (Community) '		Group Description	
Actor Name	Actor Type (person, device, system etc.)	Actor Description	

Grouping (Community) '		Group Description
Actor Name	Actor Type (person, device, system etc.)	Actor Description

Replicate this table for each logic group.

1.6 Information exchanged

Describe any information exchanged in this template.

Information Object Name	Information Object Description

1.7 Activities/Services

Describe or list the activities and services involved in this Function (in the context of this Function). An activity or service can be provided by a computer system, a set of applications, or manual procedures. These activities/services should be described at an appropriate level, with the understanding that sub-activities and services should be described if they are important for operational issues, automation needs, and implementation reasons. Other sub-activities/services could be left for later analysis.

Activity/Service Name	Activities/Services Provided

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. If there is more than one set of steps that are relevant, make a copy of the following section grouping (Preconditions and Assumptions, Steps normal sequence, and Steps alternate or exceptional sequence, Post conditions)

2.1   Steps to implement function

Name of this sequence.

2.1.1   Preconditions and Assumptions

Describe conditions that must exist prior to the initiation of the Function, such as prior state of the actors and activities

Identify any assumptions, such as what systems already exist, what contractual relations exist, and what configurations of systems are probably in place

Identify any initial states of information exchanged in the steps in the next section. For example, if a purchase order is exchanged in an activity, its precondition to the activity might be 'filled in but unapproved'.

Actor/System/Information/Contract	Preconditions or Assumptions

2.1.2 Steps – Normal 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.

The numbering of the sequence steps conveys the order and concurrency and iteration of the steps occur. Using a Dewey Decimal scheme, each level of nested procedure call is separated by a dot '.'. Within a level, the sequence number comprises an optional letter and an integer number. The letter specifies a concurrent sequence within the next higher level; all letter sequences are concurrent with other letter sequences. The number specifies the sequencing of messages in a given letter sequence. The absence of a letter is treated as a default 'main sequence' in parallel with the lettered sequences.

Sequence 1:

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1.1 – Do step 1
1.2A.1 – In parallel to activity 2 B do step 1
1.2A.2 – In parallel to activity 2 B do step 2
1.2B.1 – In parallel to activity 2 A do step 1
1.2B.2 – In parallel to activity 2 A do step 2
1.3 – Do step 3
1.3.1 – nested step 3.1
1.3.2 – nested step 3.2
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Sequence 2:

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2.1 – Do step 1
2.2 – Do step 2
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#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environments
#	*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.*

2.1.3 Steps – Alternative / Exception Sequences

Describe any alternative or exception sequences that may be required that deviate from the normal course of activities.   Note instructions are found in previous table.

#	Event	Primary Actor	Name of Process/Activity	Description of Process/Activity	Information Producer	Information Receiver	Name of Info Exchanged	Additional Notes	IECSA Environments

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

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2.1.4 Post-conditions and Significant Results

Describe conditions that must exist at the conclusion of the Function. Identify significant items similar to that in the preconditions section.
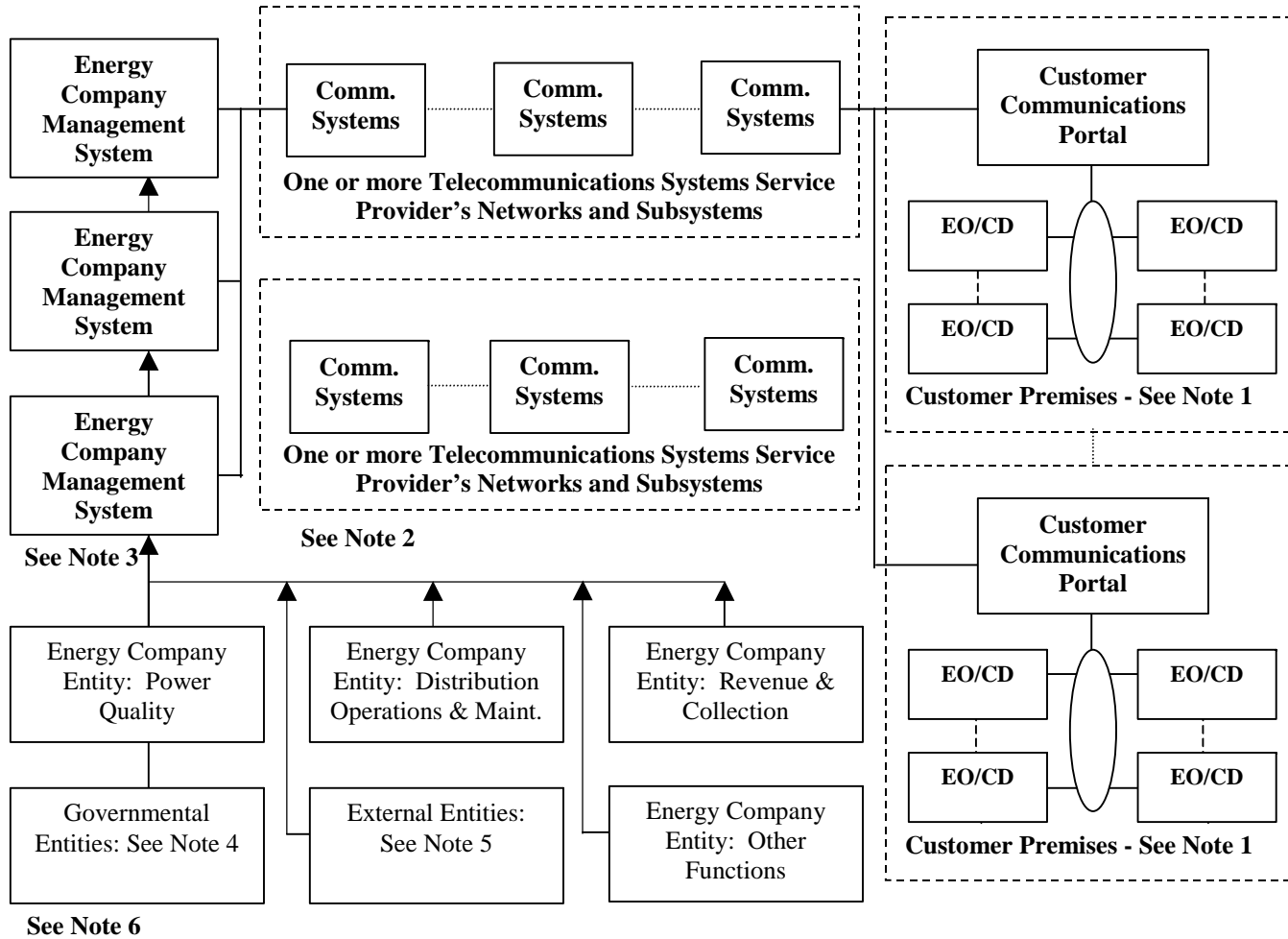
Describe any significant results from the Function

Actor/Activity	Post-conditions Description and Results

2.2 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..

2.3 Diagram

One or more Telecommunications Systems Service Provider's Networks and Subsystems

One or more Telecommunications Systems Service Provider's Networks and Subsystems

See Note 2

See Note 3

See Note 6

Legend:

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EO/CD   Energy Company Observable/Controllable Devices

(Systems, Hardware, Software, Applications, etc.)

<u>Notes:</u>

1. EO/CD's may be interconnected to the Customer Communications Portal by various LANs or wired/wireless systems

2. Many diverse Telecommunications Access Networks may be used to connect to Portals

3. Several different Energy Management Systems may be required including an overall "System Manager" (that deals with overall policies, views of various business entities, etc.) a Security Management System (that deals with authorization, security, reporting and related issues) and a Network Management System (that deals with the Customer Portal Access Networks and data communications issues)

4. Several Governmental Entities will need to access certain information that will be obtained via the Customer Communications Portals. Some of these are: PUC's, FERC, FTC, FCC, FBI, DHS, NIST, various State and Local Governmental Agencies, etc.

5. Several Entities outside of the Energy Companies will need to access certain information that will be obtained via the Customer Communications Portals. Some of these are: ISO, RTO, Independent Power Generators, various appliance manufacturers, etc

6. All of the Entities shown in the boxes are routed through the various Key Management Systems. This is meant to signify that the policies, procedures, access control rights, security and other enablers and constraints of these Management Systems will tailor the views of the data that these entities can access and the control messages that they are authorized to initiate. This does not imply that there will actually be individual computer/software systems that these entities must be routed through. The diagram represents a logical view , not a physical view.

3   Auxiliary Issues

3.1   References and contacts

Documents and individuals or organizations used as background to the function described; other functions referenced by this function, or acting as "sub" functions; or other documentation that clarifies the requirements or activities described. All prior work (intellectual property of the company or individual) or proprietary (non-publicly available) work must be so noted.

ID	Title or contact	Reference or contact information
[1]		

[2]		

3.2 Action Item List

As the function is developed, identify issues that still need clarification, resolution, or other notice taken of them. This can act as an Action Item list.

ID	Description	Status
[1]		
[2]		

3.3 Revision History

For reference and tracking purposes, indicate who worked on describing this function, and what aspect they undertook.

No	Date	Author	Description
0.			