# IEC 61850 2019 IOP Meeting Minutes (2019-09-03)

## Agenda

Logistics – Equipment can arrive on September 16th. Have warned EPRI, this may not be controllable.

Shipping Address:

**Confirmed Shipping and Receiving Address for Charlotte:**

Electric Power Research Institute (EPRI)

Attn: Paul Myrda/Linda Dabbs

1300 W. W.T. Harris Blvd

Charlotte, NC 28262

All Labels MUST include the following information:

1. Meeting Dates: September 19, 2019 – September 27, 2019
2. Meeting Name: IEC 61850 IOP
3. Meeting Location: Building 3 Room 741

When you are ready to ship please provide me with all the shipping tracking numbers.  EPRI does have a forklift and flatbed truck to bring equipment from building 1 to building 3. There is NO receiving dock in building 3.   Send tracking information to: ldabbs@epri.com (Linda Dabbs)

* Participation Matrix
* ICD file status

Of 18+ registered companies, only 8 have posted ICDs.

* Wifi is available
* Next Meeting September 10th, 9:30 AM Eastern.
* Contacting Margaret Goodrich: margaret@ucaiug.org
* Waiting on revised company list. In the interim if your company is participating or witnessing and is NOT listed on the sharepoint site, please send me an email.
* Make sure all boot camp attendees, participants, and witnesses are registered on the attendee list. <http://iec61850.ucaiug.org/2019IOP-Charlotte/Lists/2015%20IOP%20Attendees/registration.aspx>

Will be closing registration next week.
* Room layout to be completed this week.

### Boot Camp

Boot Camp speaker organization and agenda to be completed this week. Topics have not changed.

Saturday (Septeber 21)

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| Time Slot | Topic | Presenter(s) |
| 8-8:30 | Registration (EPRI Building 2) |  |
| 8:30-9:30 | Introduction to IEC 61850 | Christoph Brunner |
| 9:30-10:00 | Overview of recent changes | Karen LeggitHerbert Falk |
| Break |  |  |
| 10:15-Noon | SCL Engineering | ASE and Helinks |
| Noon-12:30 | Lunch |  |
| 11:30-Noon | Network Design | Herbert Falk/Jeff Volpert |
| 12:30-13:30 | Utility Business Cases |  |
| 13:30-14:00 | Integrated Application Introduction | Herbert FalkChristoph Brunner |
|  | Break |  |
| 14:15-16:00  | CIM/IEC 61850 Harmonization | Herbert Falk |
| 16:00-16:30 | UCA Conformance Testing | Herbert Falk |

Sunday (Septeber 22)

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| Time Slot | Topic | Presenter(s) |
| 8:30-9:00  | Registration (EPRI Building 2) |  |
| 9:00-9:30 | System Management | Aurelie Dehouck (EDF)  |
| 9:30-10:30 | Security | Steve Kunsman |
| Break |  |  |
| 10:45-Noon | Maintenance and Isolation | Doble, Schweitzer, OMICRON, RTDS |
| Noon-12:30 | Lunch |  |
| 12:30-14:30 | Maintenance and Isolation | Doble, Schweitzer, OMICRON, RTDS |
|  | Break |  |
| 14:45 – 17:00 | Utility Use Cases | Hydro QuebecRTENational GridComed |

### Test Area Report

#### Integrated Application

Decisions:

* SCD Engineering to start September 9 to be completed draft SCD by September 16th.
* Validated ICDs must be available on the 8th.
* Signal exchange & Assignment of positions completed September 2.
* Participation Matrix – Completed by September 2. Desired completion by August 26th.
	+ Resurrect the address assignment sheet from 2017 and modify as needed – completed during PACWorld.

		- Vendors at 2017 IOP will be attempted to be given the same address space.

No GPS in the room. Doble and OMICRON to provide time source simulators.

1. Assignment of IEDs into SLD functions - who and when

2. The switches being provided are Copper TX connections. Vendors must provide any adapters to reach Copper. Vendors to bring own Ethernet cables. At least one 25 footer. UCA to check on spool.

3). To assist SCL Engineering, will ICT provide any of the following information in ICD as default based on Integrated Apps requirement (so that SCTs can focus on Signal mapping between IEDs) ?

    a) Communication addressing (Subnetwork, IP, Subnet Mask, Gateway)

    b) Report Configuration (ID, Dataset config, TrgOpts, OptFlds etc)

    c) GOOSE Configuration (GOOSE ID, Dataset config, Multicast Address, VLAN ID, Priority etc.)

 Next meeting September 4th (2 hours).

#### Security

Work is complete except for test report form.

Will meet September 12th.

#### SCL

Focus on tests not in integrated application.

Will meet September 6th.

## Old Information

* WebSite – under construction (<http://iec61850.ucaiug.org/2019IOP-Charlotte/default.aspx>)

Currently it is not restricted. So not fully functional. People need to send me their UCAIug IDs.

If you don’t have a UCAID, go to <http://www.ucaiug.org/default.aspx> and Register for an ID.

Discussion of EPRI Registration Process: Paul to investigate. Herb to investigate Sharepoint webpart. Wrap this up for next meeting.
* Deadline for participant registration coming up (July 17th). How is the shopping cart working?
* SCL Validation Tool Links are available through Sharepoint.
* ICD Validation Process Document Circulated. What directory should we post it in?

Update naming convention to put vendor name first and repost document.
* Next Meeting – July 30th..
* Testing Areas and assignments of lead responsibilities
	+ How is the participation matrix working? Nobody has filled it out yet!
	+ Suggestion to test IEC 61850-6-2 (HMI configuration) – Dustin to explain intent.
		- Need at least one SST vendor. SST vendors must be participants in the IOP.
	+ PTP issues(National Grid to Provide Test Cases)
		- Configuration selection not changing clock domain. – use IEC 61850-9-3 domain for integrated application.
		- Transparent clocks not putting information into the correct TLV- National to provide a write-up for group review.
		- Others.
		- NIST to evaluate.
		- Had discussion at IEEE PSRC. There is a gap in PTP about clock resynch/jump. IEC 61869-9 specifies appropriate SV publisher behavior. Developing disruptive test case.

		Fred to create a TISSUE regarding this issue.

		Herb checked IEC 61850-8-1 Edition 2.1 and it specifies SNTP not NTP.

## Test Area Reports

* SCL report (focused on System Configuration Tools)
	+ SED exchange to be tested.
	+ SSD Import
	+ Ed2.1 Schema
	+ ISD testing
	+ ED 1 downgrade

	Next meeting 24th July. Sterin will lead, Bruce to Assist.
* Integrated Application (Next Meeting 07/24/2019) - nothing to report this meeting

	+ Test case review underway and modification underway. Link is:

	<http://iec61850.ucaiug.org/2019IOP-Charlotte/IOP%20Test%20Documents/Integrated%20Application/Integrated%20Application%20Test%20Cases_20190612.docx>
	+ Determined need for a narrative on the integrated application vs test cases.
		- Narrative draft has been supplied to the TF
		- Impacts Networking Equipment and its setup.
		- Need to discuss the inclusion of SDN
	+ Probably will be inserting schedules for specific disruptive testing:
		- PTP failures
		- IED Maintenance and isolation
		- HSR/PRP failures
		- Cyber
		- Network Overload
	+ Next meeting – June 26th.
	+ Submitted ICDs shall have a declaration of what the device is intended to provide in the integrated application.

	Keep everything open as much as possible. Have a sharepoint directory for testing of ICDs. – Herb to get procedure/directory set up.

	Formal process for verification.

	Mid-July for initial ICD for verification with intent to test documented. What role can be performed as part of the integrated application.

	Paul Myrda to check if EPRI having a 7-420 vendor attend.

	More effort for Process bus engineering.

	Use Edition 2.1 Schema. Test backward/forward compatibility with Edition 2 schema.
	+ ICD Submission

	
	Vendors will place files in the draft directory.

	Validation tools results will be documented so that problems can be tracked and reported in the test report (still working on how to do this).

	As vendors fix problems, new ICDs are uploaded to draft.

	The “final” validated initial ICD is to be copied into the validated directory.

	Validation to be performed by: Triangle, DNVGL, Bruce, EDF/Hydro Quebec, Gridclone

	If validation vendors have webtesting capability, need links.

	Herb to write up process document. Circulated.
* Cyber Security (Next Meeting 07/25/2019) - nothing to report this meeting

	+ Test case review underway. Draft document posted:

	<http://iec61850.ucaiug.org/2019IOP-Charlotte/IOP%20Test%20Documents/Security/Security%20Test%20Cases%20for%202019%20IOP%20%2020190613.docx>
	+ Need to stage a CA infrastructure for the IOP
		- Certificate generation, revocation
		- OCSP
		- Radius
		- Bring Syslog Server, just for interest, no test cases
		- R-GOOSE
* Secure MMS
* Adding test cases for OCSP and Radius test cases. Testing regarding Syslog was discussed and determined to not test.
* Adding KDC/R-GOOSE Test Cases.
	+ - Re-discuss RBAC testing at next meeting.
		- Next meeting 6-26.

		Looking for assistance in staging. **Need a volunteer (utility IT person) to assist in staging the CA consistent with utility IT practice.**
* Infrastructure/Network – Jeff Volpert

### Other information

* EPRI Site “Export” Procedure
* Heads-up: CIM and OpenFMB will be having IOPs at the same time in a different building.
* EDF/Hydro-Quebec OpenSource SCL Validation Tool to be added as validation checker.
	+ Add as forth validation tool.
	+ Add some discussion of validation tools in Boot Camp.

### Dates

* September 21-22 Training Boot Camp
* September 23-27 Actual Testing
* September 20-22 Setup
* Charlotte, EPRI facility
* Tentative date for payment to participate as a vendor: mid-May/June as the drop dead.
Tentative date for payment for witnesses/individuals: mid-July.

### Previous Issues

Need to address issues encountered with Last IOP

* ICD SCL file validity

Testing to be performed mid-June.
Test import into SCTs.
Follow-up after test being run to review results and determine ETA for corrections.
* System Engineering

Address assignments prior to – Lets discuss with tool vendors. IP Addresses for sure. R-GOOSE/R-SV need assignments. VLANs are part of the overall system design.

Preliminary SCD targeted for mid-August. Without IP and GOOSE/SV address assignment.
 Paul and Christoph.

Final SCD Expect to be complete September 21st.

Submitted ICDs shall have a declaration of what the device is intended to provide in the integrated application.

Keep everything open as much as possible. Have a sharepoint directory for testing of ICDs. – Herb to get procedure/directory set up.

* General marketing communication and expectation settings of witnesses.
	+ Appoint a Witness Coordinator – Joel Greene, Herb Falk, Al and Mark Thompson (National Grid).
* Define scope of the IOP
* Prioritization of testing
* Network engineering and deployment

Network setup for the integrated application: September 20th.
* Allocation of Control Blocks/Subscriptions for Reports and DataSet Content design needs to be addressed.
	+ Signal Mappings
	+ SSD file
* Cyber-Security organization
	+ Ralph, Scott, Herb, Joel
* Resource limitation by vendors – number of participants and devices.
	+ Lower cost may equate to more participants.
	+ Suggestion would be to include 2 people for participant fee.
* Observer usage and training
* Test case details
* Visa letters – Herb
* Reach out to local universities – UNC Charlotte, UNC, Freedom Center, Duke, NC State, Clemson

## Pricing

Pricing (approved). Shopping cart technology has been replaced and revision is complete. Will allow functionality for credit cards to purchase multiple combinations (e.g. participant and additional witnesses) in one transaction.

For credit card payments, there will be a place for adding the company name. The person ordering will be contacted for a list of individuals who will be attending.

Invoices: Place attending individual names into the Comment field.

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| Participant  |
|  | UCA Corporate Member | Non-Corporate UCA Member1 |
| One Person Included | $ 6,500 | $ 10,500 |
| Two People Included2 | $ 7,300 | $ 11,300 |
| 1 – Since corporate memberships are being prorated this year, this category probably does not make sense. Payment would not include UCA membership.2 – No refunds if 2 individuals do not attend. There is a $200 discount for the second person this registration method. |

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| Witnesses and Additional Attendees |
|  | UCA Individual or Corporate Members | Non-Individual Member1 |
| One Person  | $ 1,000 | $ 2,200 |
| 1 – Includes membership through December 2021 of $375 yearly UCA Individual Membership |

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| BootCamp |
|  |  |  |
| One Person  | 500 |  |
| Student | 200 | Participation limited to 10. |
|  |

Paul to supply hotel information and limit to number of seats for Boot Camp (Room size is 70 people). Need to set a deadline for students so can expand normal attendance.

Participant payment extended to July 17th.

Individual payment due August 15th. To be verified.

Put dates on the website. Put link on the home page and meeting list. - Done

### Some thoughts for Testing:

* Should reuse the SLD and application that was attempted in 2017- agreed
	+ 2 substations
	+ 1 control center
	+ Morph integrated application to make use of BAPs under development.
* Continuing from 2017 testing:
	+ Cyber Security (MMS, GOOSE, SV, R-GOOSE, R-SV Security, firewalls, RBAC, ACL, Event Logging) testing
	+ SCL Engineering
	+ Integrated Application
* New Areas of testing
	+ Had proposal from Hydro Quebec about DA/Telecom?
	+ CIM/61850 Harmonization
	+ R-GOOSE/R-SV as part of integrated application – might need a separate area
	+ PTP as part of integrated application
	+ 90-4 testing of SCL for communication topology – switch and router configuration?
	Need to check that SCTs support it.
	+ SED exchange between SCT.
	+ 7-420 Testing (DER)
* Areas we don’t need separate testing areas
	+ R-GOOSE/R-SV - still might need a separate area depending upon number of participants and network design.
	+ PTP – Need to discuss with ComEd and requesting utility.
* Areas for Separate Testing
	+ SED Exchanges – Christoph to lead
	+ SCL Validation- Bruce to lead
	+ Security (clustered but as part of the Integrated App).
	+ Leap Second Testing (maybe) – all participants to evaluate if they desire to test their devices and applications. If interested, send Herb and email.

### Boot Camp:

* Targeted to witnesses of the IOP
* Major topics
	+ Introduction to IEC 61850 – Christoph (lead)
	+ Utility Business Case – (e.g. ConED, SCE, StateGrid, AEP, RTE)
	+ SCL Engineering (of the IOP) – Sterin (lead)- to coordinate with Helinks (2.5 hours)
		- Concepts
		- Show re-arrangement of current engineering processes
		- Small substation design hands-on for people that bring laptops (1 hour)
		- OSMOSE project feedback (lower priority)
	+ Network design – Herb (lead)
		- Based upon Integrated Application design
		- Debugging PRP and HSR
	+ Integrated Application Introduction
	+ Maintenance and Testing Isolation – Jun (lead)
		- Concepts
		- Linkage of Concepts in the standard to the demo
		- Demo
	+ Security – Scott (lead) – Steve Kunsman to give.
	+ CIM/IEC 61850 Harmonization – Herb (lead)
	+ Overview of recent changes (standards update) – Christoph to give
		- 61869-9 instead of 9-2LE (legacy) – Karen Leggett
		- New Tissue Process
	+ Futures:
		- System Management – Aurelie (lead)
	+ UCA Conformance Testing Update – Herb
		- End-of-Life Edition 1 Conformance Testing
		- ITCA progress – certification bodies
		- Status of conformance test development
* Presenters (planning board consensus 7/7):
	+ Utility – UCA Members (1)
	+ Utility – non-UCA Members (2)
	+ Vendors/Consultants – UCA Members (3)
	+ Vendors/Consultants – non-UCA members (5)
	+ Other organization – UCA Members (4)
	+ Other organization – non-UCA Members (4)
	+ Regulatory Entities – (e.g. NERC) (1)