



UCTE Interoperability Test Report

Margaret Goodrich
CIM User Group Meeting
May 13, 2009



Topics

- UCTE IOP
 - IOP Participants, Products & Models
 - IOP Test Witnesses & Test Host
 - IOP Contents
 - IOP Result Highlights
 - IOP Test Tools
- Test Approach
 - Profile Data Groups
 - Import/Export Exchange Tests
 - EDF Converter Tests
 - Interoperation Tests
 - Power Flow Tests
 - Solution Exchange Tests
- IOP Report Contents & Status



UCTE IOP Product Participants

- AREVA T&D
- CESI-BU Electric Power Systems
- DlgSILENT
- EDF
- EPS Software
- Siemens PTI
- SISCO
- Tractebel/RTE



CIM-GID IOP Products

- Areva – Pre-Release **e-terrasource** Version 2.0 & CIMbiosis Beta
- CESI-BU Electric Power Systems – SPIRA
- DlgSILENT - PowerFactory Version 1.4
- EDF - EDF Converters
- EPS Software - ISPEN/OCD
- Siemens PTI - PSS/ODMS Version 6.1 & PSS/E Version 31
- SISCO - UIB Core Version 4.61 & UIB Adapter for PI-AF Version 2.0.2 Beta
- Tractebel/RTE - Eurostag Release 4.4



UCTE IOP Models

- Three models formed the set of files for the Official IOP Models
 - UCTE 10 Node Model – in PSS/E format
 - UCTE 21 Node Model – in PSS/E and UCTE-DEF format
 - UCTE 9200 Node Model – in PSS/E and UCTE-DEF format
- PTI furnished a set of Profile Data Group files for Each IOP Model:
 - UCTE10P_EQ_R3.XML; UCTE10P_TP_R3.XML; UCTE10P_SV_R3.XML
 - UCTE21P_EQ_R4.XML; UCTE21P_TP_R4.XML; UCTE21P_SV_R4.XML (also R3)
 - UCTE92P_EQ_R3.XML; UCTE92P_TP_R3.XML; UCTE92P_SV_R3.XML
- PTI & UCTE furnished a set of Profile Data Group files for the UCTE 10 Node Model containing Short Circuit data:
 - UCTE10U_EQ_R3.XML; UCTE10U_TP_R3.XML; UCTE10U_SV_R3.XML (also R1)
- EDF furnished a set of Profile Data Group files for the UCTE 21 and UCTE 9200 Node Models:
 - UCTE21E_EQ_R2.XML; UCTE21E_TP_R2.XML; UCTE21E_SV_R2.XML (also R1)
 - UCTE92E_EQ_R2.XML; UCTE21E_TP_R2.XML; UCTE92E_SV_R2.XML



CIM-GID IOP Test Witnesses & Test Hosts

- Ernst Wierenga, TenneT (TSO, The Netherlands)
- Patrick Panciatici, RTE (TSO, France)
- Marc Emery, swissgrid (TSO, Switzerland)
- Erik Wolfs and Gregory Van Koninckxloo, Elia (TSO, Belgium)
- Marcel Forlong, RWE Transportnetz Strom GmbH (TSO, Germany)
- Tomasz Rogowski, Epcon Sp (Subsidiary of PSE-Operator, TSO, Poland)
- Krzysztof Dabrowski, PSE Operator (TSO, Poland)
- Patricia Labra and Jorge Ribot, REE (TSO, Spain)
- Pietro Capurso and Domenico Iorio, TERNA (TSO, Italy)
- David Bogen, ONCOR Electric Delivery (Transmission Operator, USA)
- RTE – Thierry Lefebvre and Denis Clement for Hosting the IOP and providing wonderful refreshments and food!

UCTE IOP Contents

- CIM XML UCTE Profile Exchange tests including:
 - Full Model Exchange (import and export)
 - Power Flow Solutions
 - Interoperation of full test models between two or more vendors
 - Exchange of Solution Files
- EDF Converters
 - Converted UCTE-DEF files to CIM XML files
 - Converted CIM XML files to UCTE-DEF files
 - Validated CIM XML and UCTE DEF file conversions



UCTE IOP Result Highlights

- All eight vendors imported at least one set of Profile Data Group files for one or more of the official test files.
- Five of the vendors ran a Power Flow solution on the imported files
- Five of the vendors exported at least one set of Profile Data Group files for one or more of the official test files.
- Seven of the vendors executed one or more of the Interoperation Test Procedures
- Four of the vendors participated in one or more of the Solution Exchange tests



UCTE IOP Result Highlights

- Import Tests: Areva, CESI, DlgSILENT, EDF, EPS, Siemens PTI, SISCO and Tractebel
- Full Model Power Flow Solution Tests: CESI, DlgSILENT, EPS, Siemens PTI and Tractebel
- Export Tests: Areva, DlgSILENT, EDF, Siemens PTI, Tractebel
- Interoperation Tests: Areva, CESI, DlgSILENT, EPS, Siemens PTI, SISCO (import test only), Tractebel
- Solution Exchange Tests: DlgSILENT, Siemens PTI, SISCO (import test only), Tractebel



UCTE IOP Result Highlights

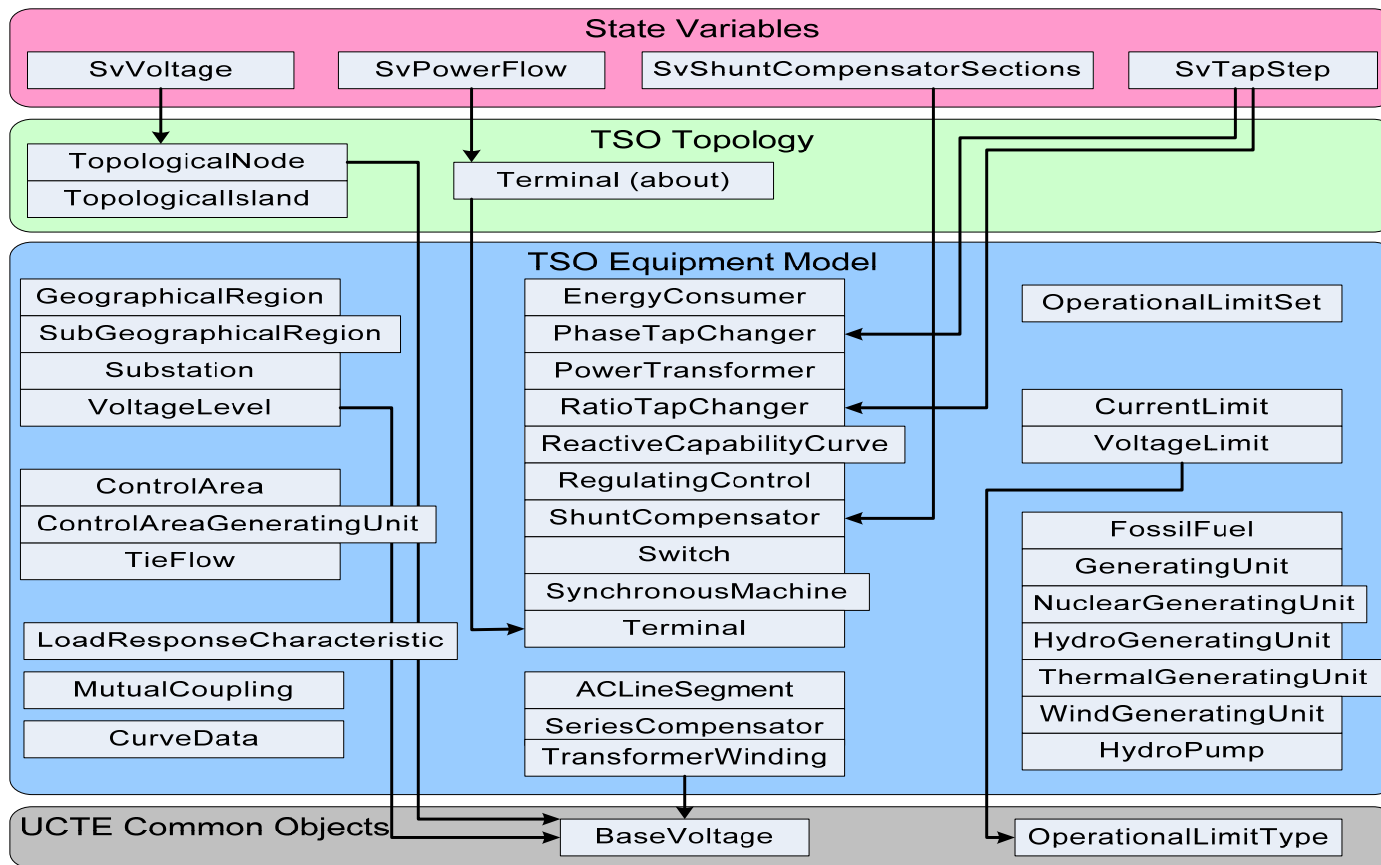
- EDF executed several unstructured tests to prove the EDF Converters can accurately generate CIM XML files from UCTE-DEF files. These tests included:
 - **Import UCTE-DEF 21 Node and 92 Node files & convert them to CIMXML model files**
 - **Split CIM XML 21 Node and 92 Node Model files into three Profile Data Groups (EQ, TP, SV)**
 - **Import UCTE-DEF 21 Node and 92 Node files & convert to PSS/E raw files**



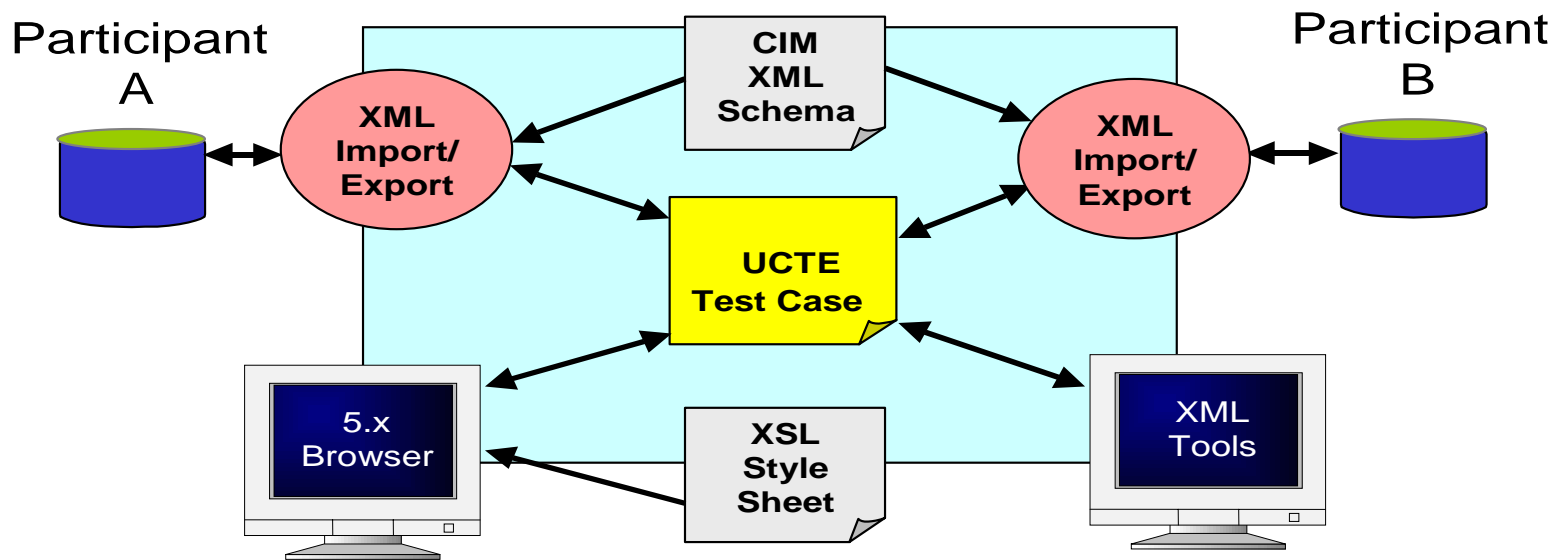
UCTE IOP Test Tools

- CIMTool from Langdale Consultants (Arnold deVos)
 - Used to generate the UCTE Profile
 - Used to validate the merged models
- CIMSpy from PowerInfo (Jun Zhu)
 - Used to validate each Profile Data Group and the Merged model
- CIMphony from University of Strathclyde (Alan McMorran)
 - Used to validate each Profile Data Group and the Merged model

UCTE IOP Test Approach – Profile Data Groups

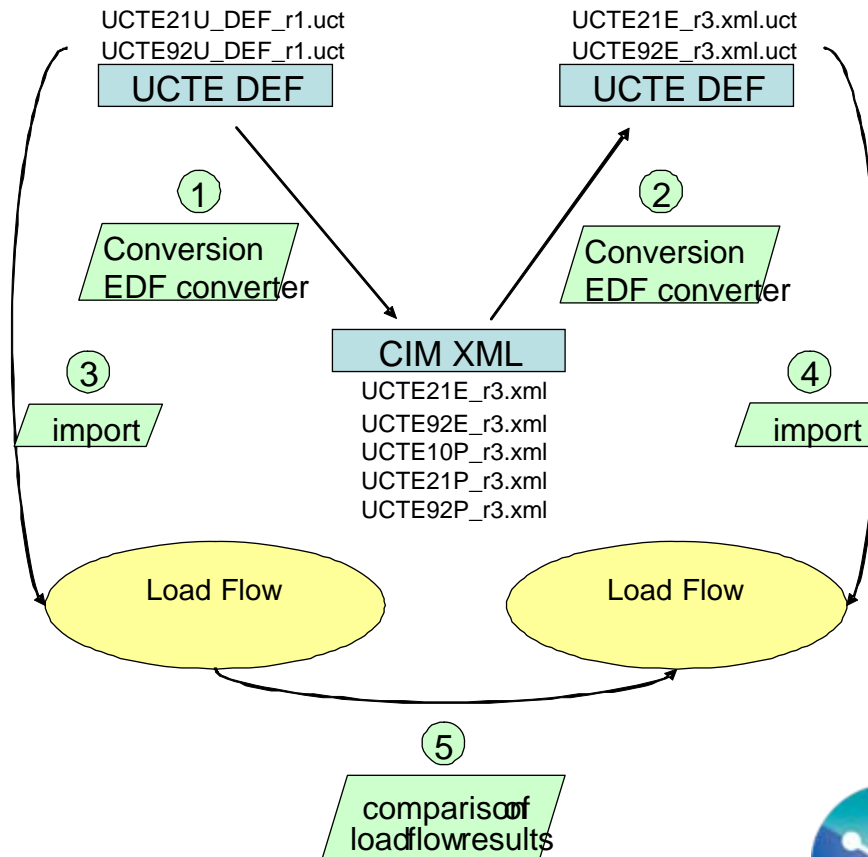


UCTE IOP Test Approach – Import/Export Exchange Tests



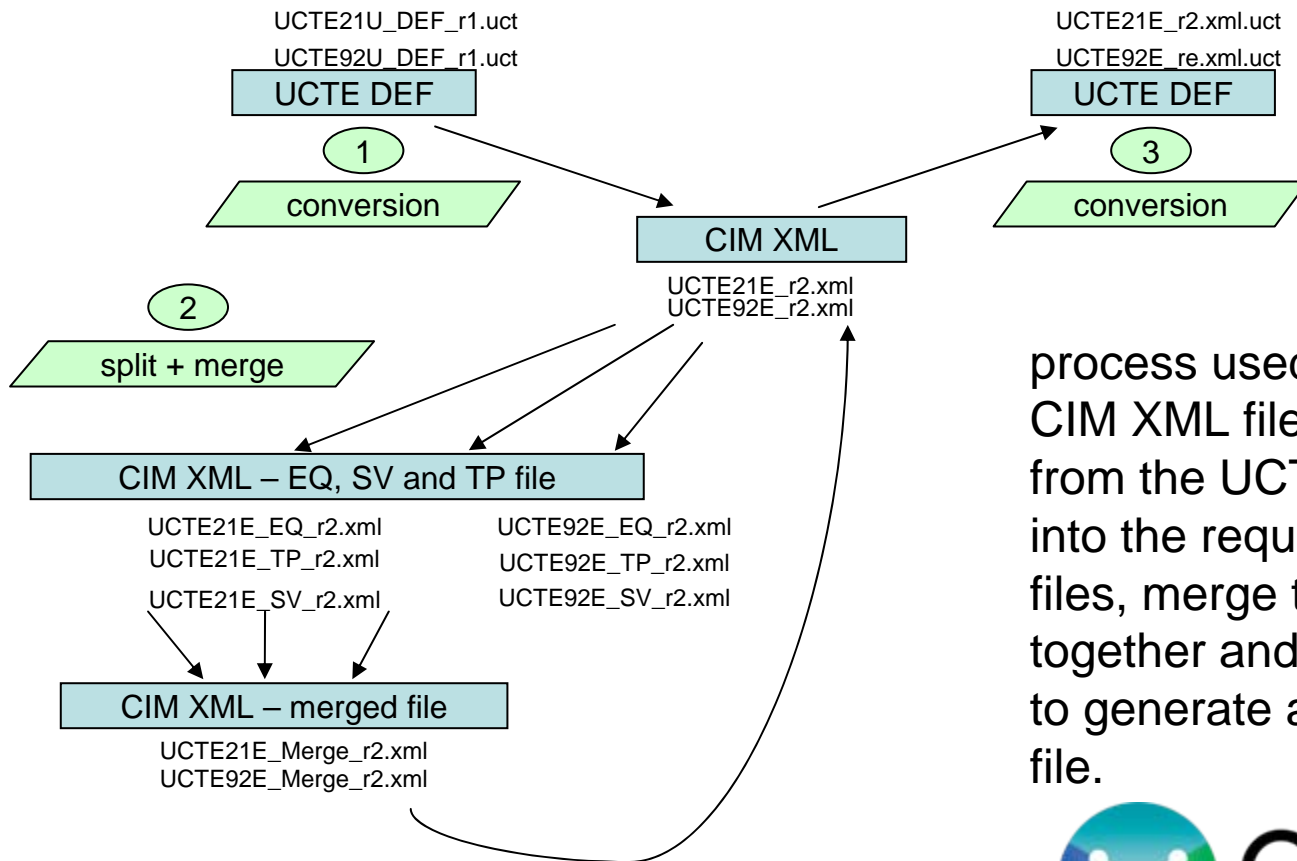
UCTE IOP Test Approach – EDF Converter Tests

Load Flow software
PSS/E,
PowerFactory,
PSA and
Integral



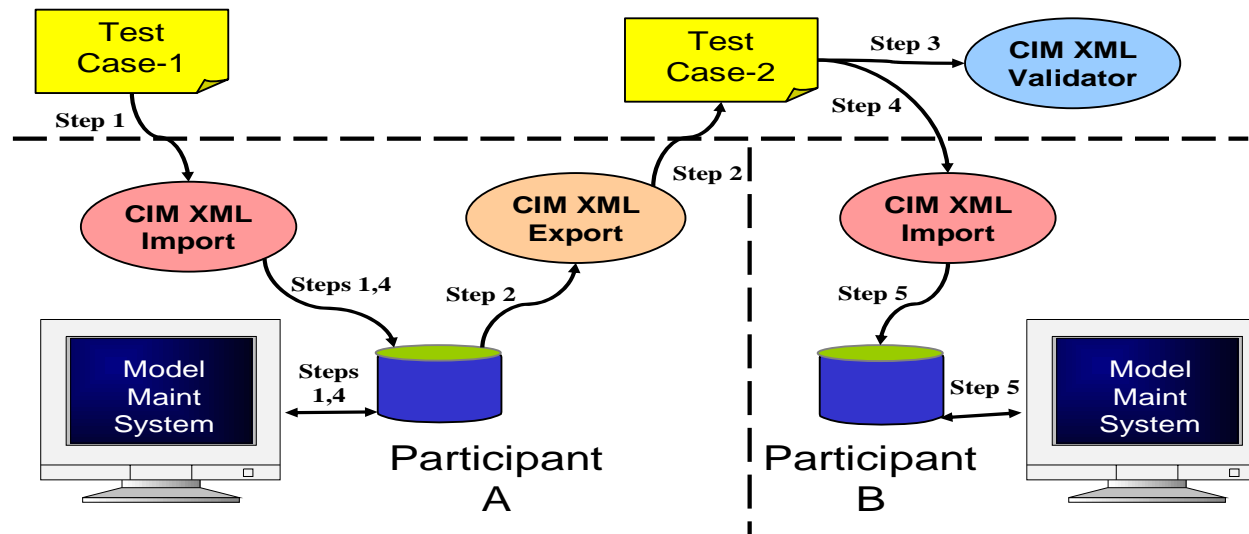
process used to export a CIM XML file from a UCTE DEF file or to generate a solved case using both CIM XML and UCTE DEF model files and compare the results.

UCTE IOP Test Approach – EDF Converter Tests

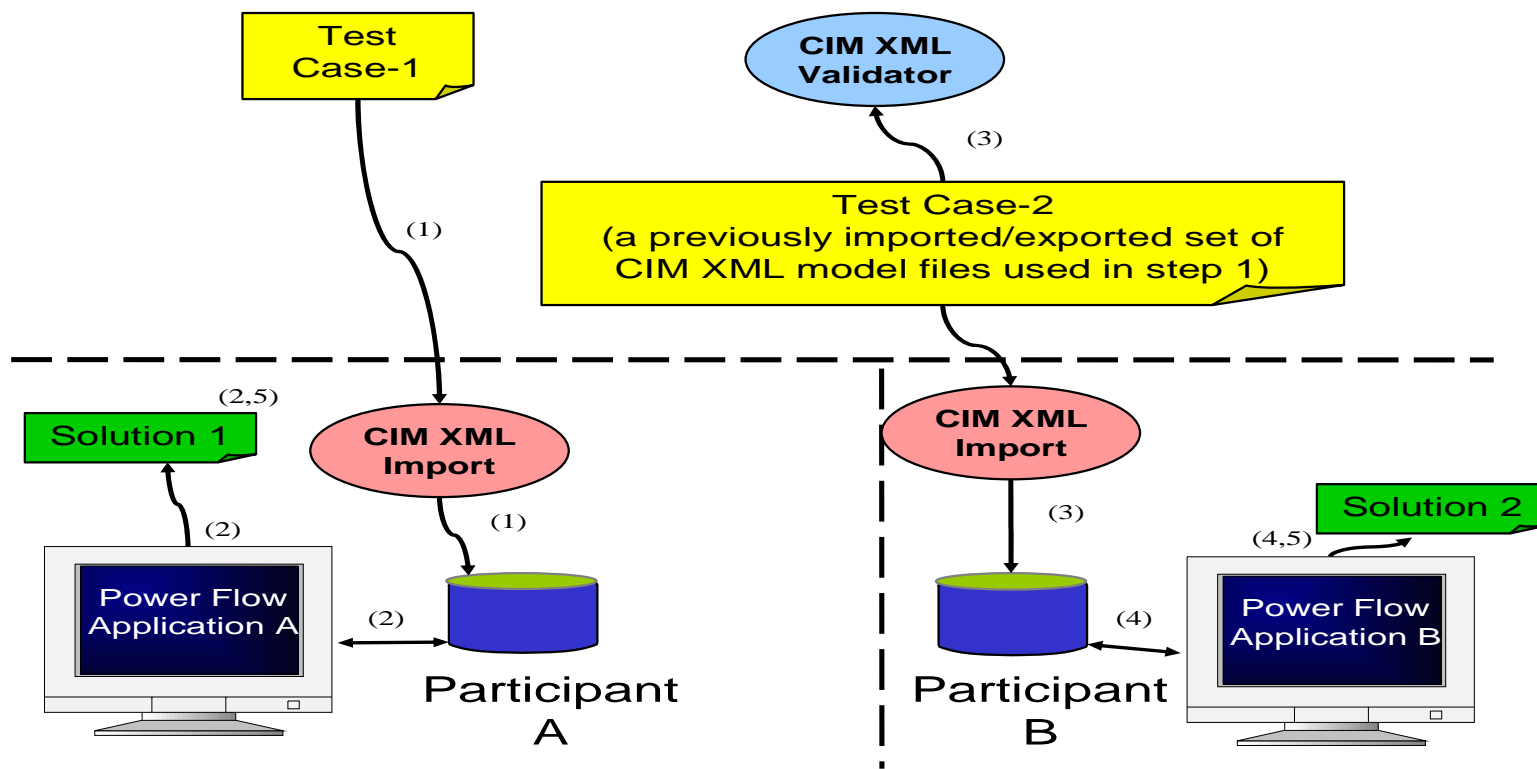


process used to split the CIM XML file generated from the UCTE DEF file into the required three files, merge them back together and use that file to generate a UCTE DEF file.

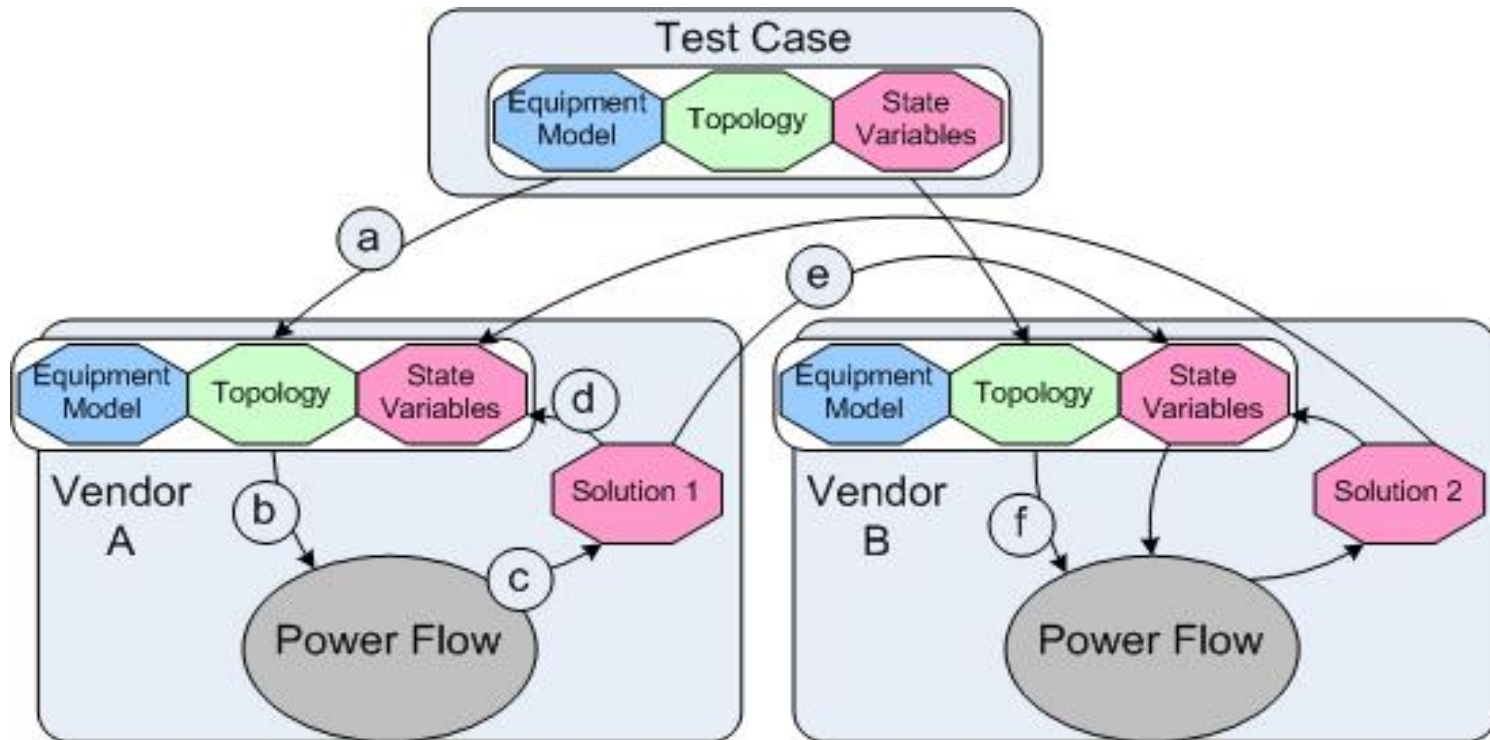
UCTE IOP Test Approach – Interoperation Tests



UCTE IOP Test Approach – Power Flow Tests



UCTE IOP Test Approach – Solution Exchange Tests



UCTE IOP Report Contents & Status

- The UCTE IOP Test Report contains:
 - List of Vendor, Test Witnesses, Products and Models that were part of the test including a full list of the Official files as well as the files that were generated
 - Detailed Test Results
 - Product Descriptions for all participants
 - List of all Issues that were identified and the disposition/resolution/proposed solution if possible
 - Summary description of the Test Approach
- The UCTE IOP Test Report has been generated and reviewed
- EPRI will published the report in the next 1-2 months
- The report fully documents all the results as well as the issues discovered during testing.
- This report will be posted on the CIMug Web Site as soon as it is published.



Additional Information

- UCTE IOP Test Sponsor – Dave Becker at EPRI
 - email – dbecker@epri.com
- UCTE IOP Test Directors:
 - Margaret Goodrich email – margaret@sisconet.com
 - Margaret Goodrich Cell – + 1-903-477-7176
 - Terry Saxton – tsaxton@xtensible.net
 - Terry Saxton Phone – + 1-763-473-3250
- UCTE Contact – provided hosting, sponsorship and technical consulting
 - Chavdar Ivanov – chavdar.ivanov@ucte.org

