

IEC TC57 WG-16

Status & Plans

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IEC WG-16



IEC Technical Committee 57

Power System Management and Associated Information Exchange

- ▶ WG-3 Telecontrol Protocols
- ▶ WG-10 Power system IED Communication and associated data models
- ▶ WG-13 Energy Management API
- ▶ WG-14 System Interfaces for Distribution Management
- ▶ WG-15 Data and communication security
- ▶ **WG-16 Deregulated Energy Market Communications**
- ▶ WG-17 Communications Systems for Distributed Energy Resources
- ▶ WG-18 Hydroelectric Power Plants—Communications for monitoring and control
- ▶ WG-19 Interoperability with TC-57 in the long term
- ▶ WG-20 Planning of (single sideband) power line carrier systems

WG-16 Deregulated Market Communications

- ▶ Mission, Scope:
 - ▶ Develop Standards for Electricity Market Communications
 - Market Participants to Market Operator
 - Intra Market Operator
 - ▶ Use of TC 57 Common Information Model (CIM)



Countries Represented on WG-16

- ▶ Australia
- ▶ Austria
- ▶ China
- ▶ France
- ▶ Germany
- ▶ Netherlands
- ▶ Norway
- ▶ Spain
- ▶ Sweden
- ▶ Switzerland
- ▶ USA

		WG-16 Expertise
Total Countries	11	Vendors
Active Countries	10	Consultants
Total Members	32	Transmission System Operators
		Research Institutes



WG-16: Recent Meetings

▶ Last Meetings

- ▶ Kirkland Jan 14-15, 2009
- ▶ Princeton June 1-2, 2009
- ▶ Massy Oct 20-21, 2009
- ▶ Minnetonka Feb 9-10, 2010
- ▶ Kista April 29-30, 2010

▶ Next Meetings

- ▶ Virtual Sept, 2010
- ▶ Paris Nov 2-4, 2010
- ▶ Santa Clara Feb 1-3, 2011



Two Sub-teams formed and working

- ▶ **Two Styles of Markets throughout world**
- ▶ **“European Style” Markets:**
 - ▶ **Day Ahead Markets: Bilateral**
 - ▶ **Intra-day Markets**
 - ▶ **Balancing Markets**
 - ▶ **Collaboration with ENTSO-e**
- ▶ **“US Style” Market**
 - ▶ **Day Ahead Markets with SCUC**
 - ▶ **Hour Ahead Markets**
 - ▶ **Real Time Markets with SCED**
 - ▶ **Collaboration with IRC, and ISO projects**
- ▶ **Beneficiaries will include Market Participants, Market Operators, Vendors**

"European Style" Markets:

- ▶ Data Exchanges to support Energy Markets
- ▶ Derived from ETSO Electronic Data Exchange (EDI)
 - ▶ ENTSO-E Scheduling System – ESS
 - ▶ ENTSO-E Settlement Process – ESP
 - ▶ ENTSO-E Reserve Resource Process – ERRP
 - ▶ ENTSO-E Capacity Allocation and Nomination – ECAN
- ▶ Mapping of existing data exchanges to CIM-based data exchanges
- ▶ IEC WG-16 working in formal liaison with ENTSO-e
- ▶ Standardization as IEC 62325

European Style Markets & ENTSO-E

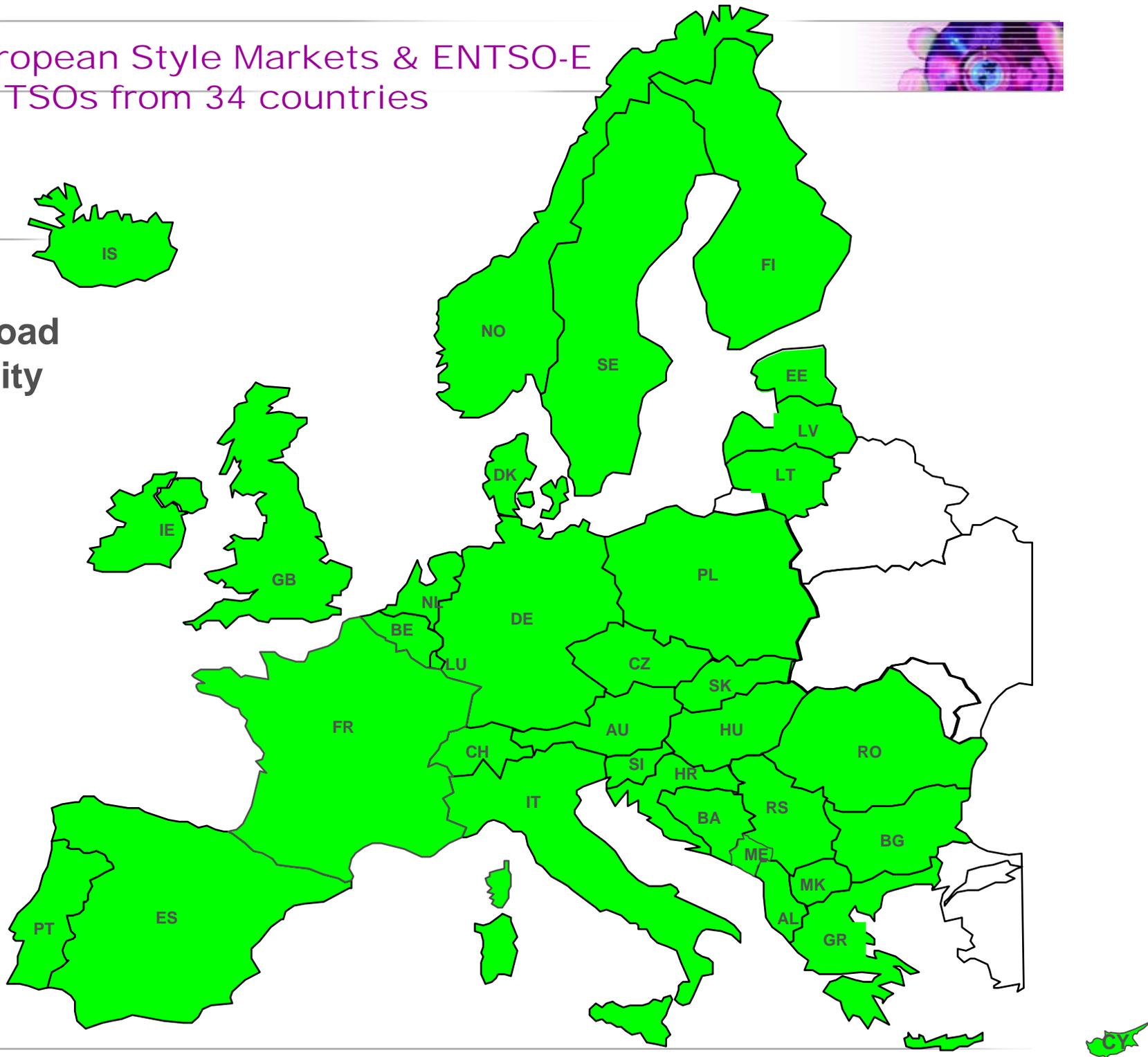
42 TSOs from 34 countries



100

~540 GW peak load
~900 GW Capacity

** source ENTSO-e 2009



"US Style" Markets:

- ▶ **Data Exchanges to support:**
 - ▶ Day Ahead Markets
 - ▶ Real Time Markets
 - ▶ Financial Transmission Rights

- ▶ IEC WG-16 picked up results of EPRI CME project

- ▶ Working with ISO/RTO Council

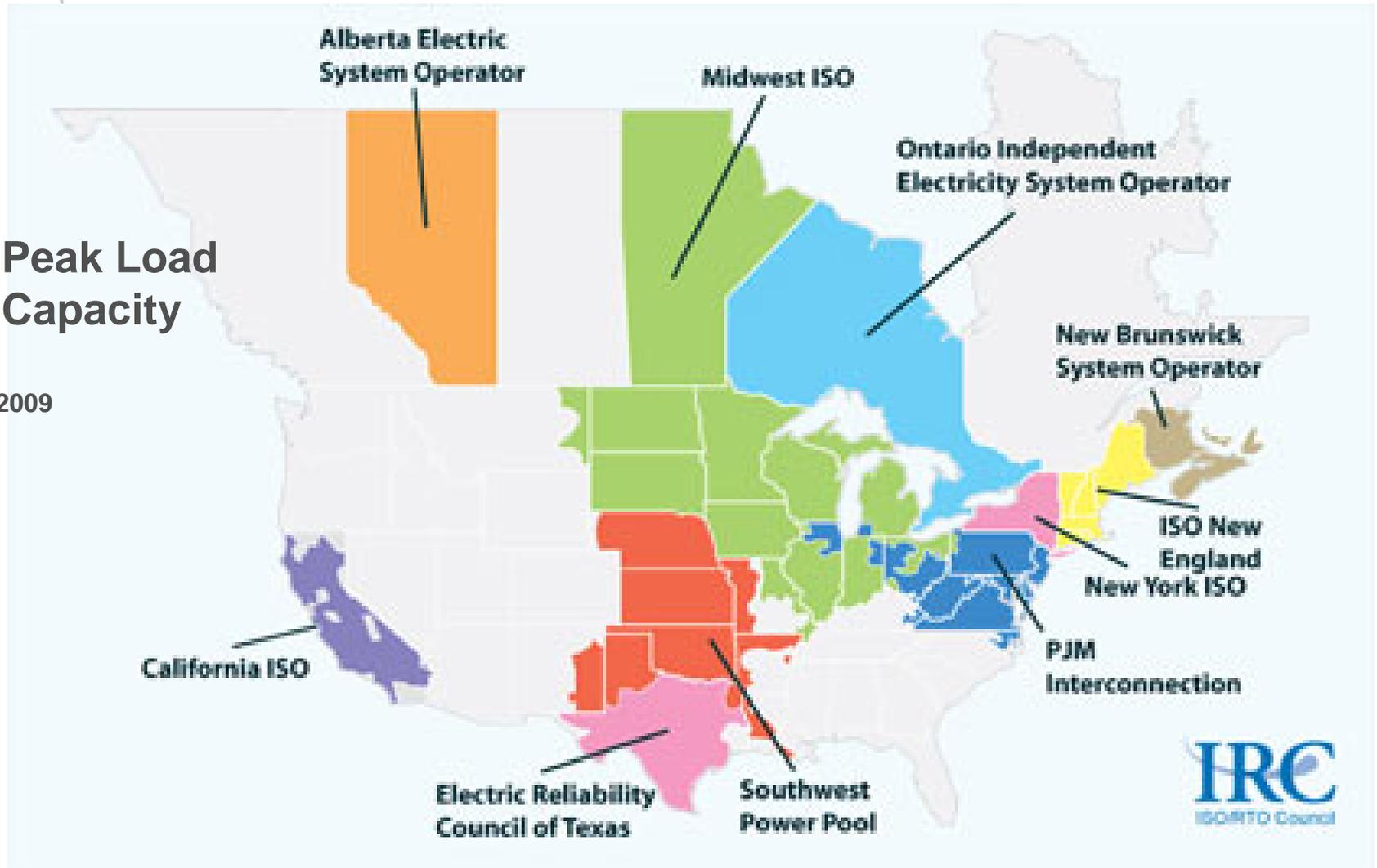
- ▶ Individual ISO/RTO projects contributed extension to the CIM to support Energy Markets.

- ▶ Standardization as IEC 62325

"US Style" Markets:

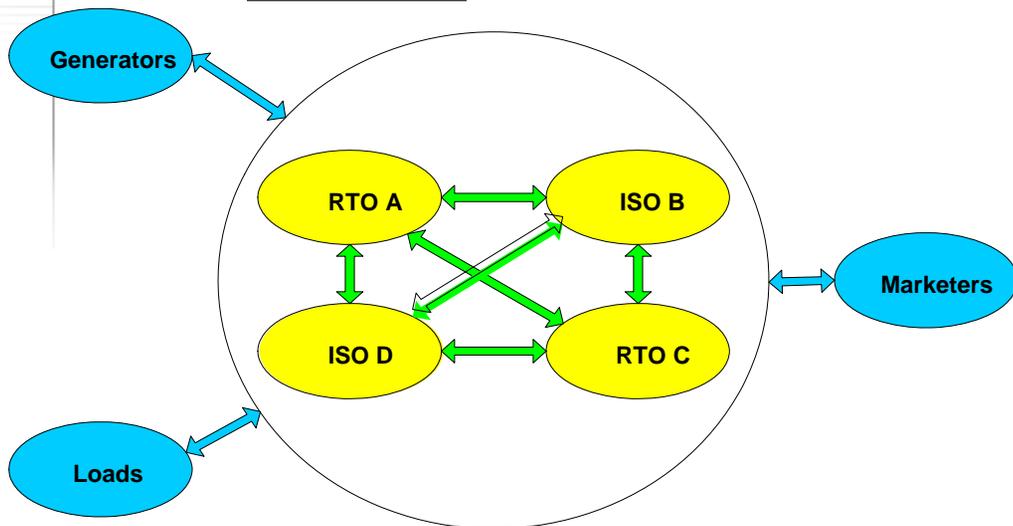
476 GW Peak Load
591 GW Capacity

* Source IRC 2009

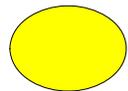
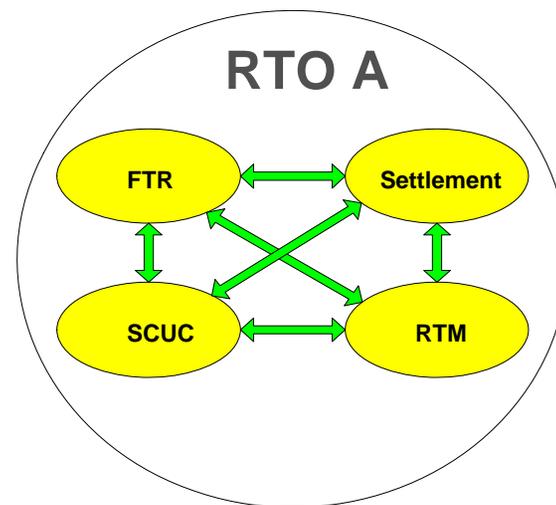


US Style Market Communications

Inter-ISO/RTO Messaging



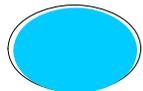
Intra-ISO/RTO Messaging



CIM extensions in scope for CME

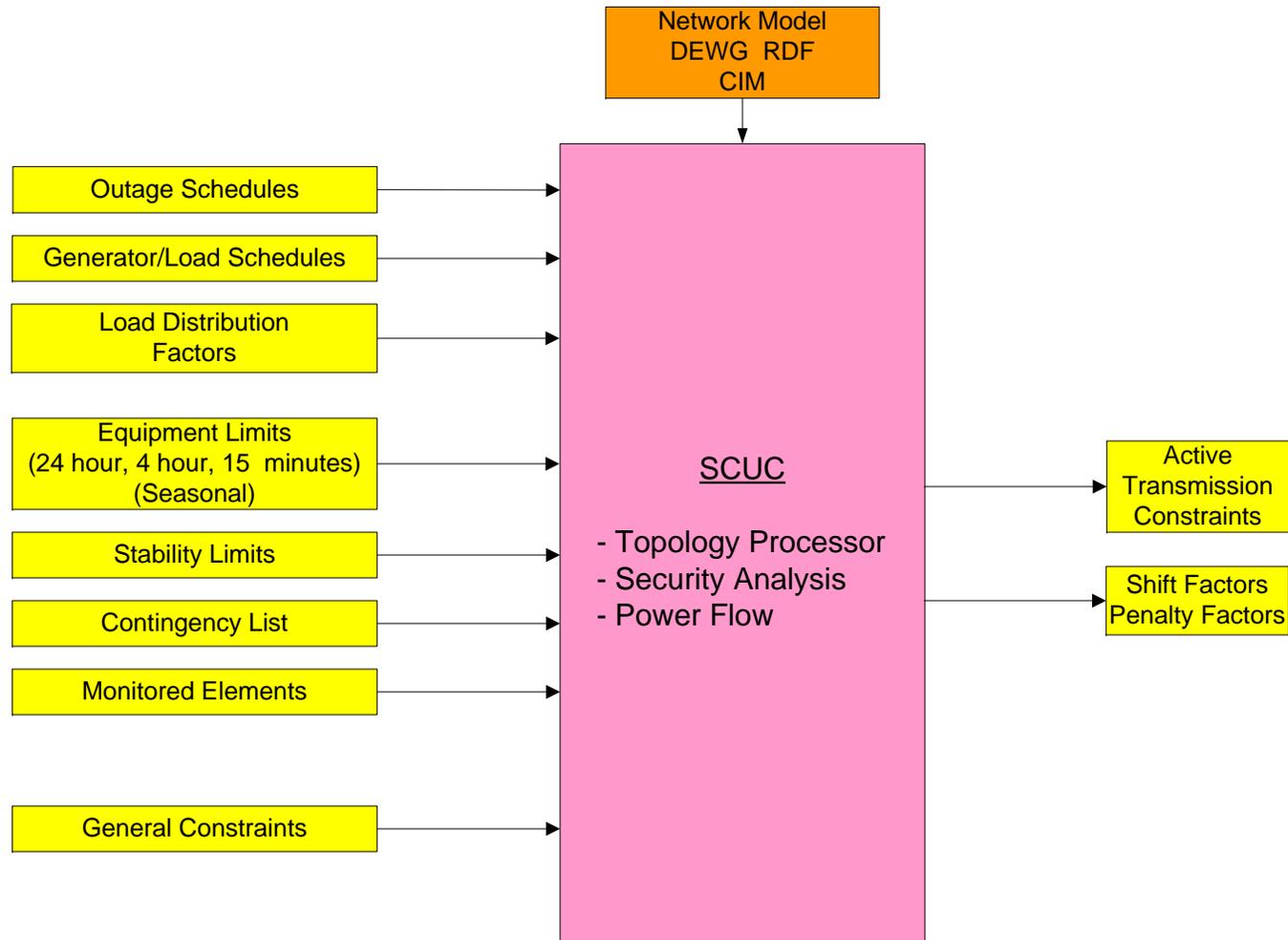


XML information exchange model and terms database – message standards to be developed as part of RTO/ISO Data Initiative



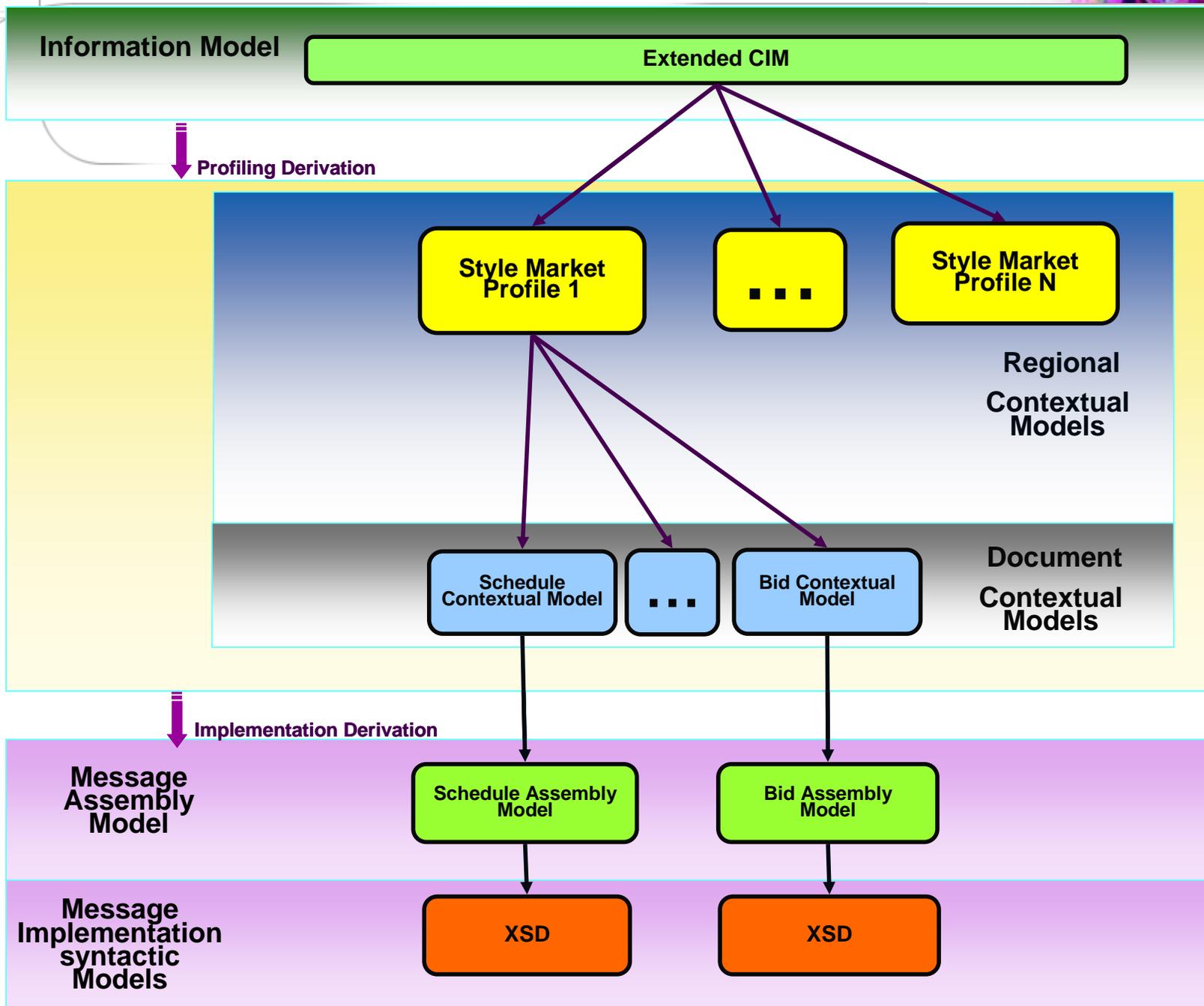
Market, Load, Generation Participants CIM extension and information exchange model – Other Initiatives and/or Future Phase(s)

US Style Markets: SCUC Data Exchanges



IEC WG-16 Standards Methodology

- ▶ Documentation of Data Exchange Requirements
 - ▶ Use Cases, Workflows, etc
- ▶ Mapping to existing CIM UML Model
- ▶ Extensions to form new revision of CIM UML Model
- ▶ Generation of Contextual Models
- ▶ Generation of Data Exchange Profile
- ▶ Generation of Data Exchange formats
- ▶ Use of Open Source Tools (CIMtool, JcleanCIM)





Structure of Global IEC 62325 Standard

- ▶ **Part 301: Common Information Model-Extensions for Markets**
 - ▶ One document with description of UML models with “general modeling”
 - ▶ Documents only classes in Market Operations Package.
- ▶ **Part 351-399: Common Profile for Market Models**
 - ▶ UML model—manually implemented from 301, with “strict modeling”
- ▶ **Part 450 Modeling & Messaging Methodology**
 - ▶ Text document with rules to generate profiles
 - ▶ Documents using abstract object language how to generate other parts, starting with 301. May document as UML model, or as a word document from a tool
 - ▶ Is a common document
- ▶ **Part 451-1,2,3,4,5 Acknowledgment BP, ESS, ECAN, ERRP, ESP**
- ▶ **Part 452-1,2,3 DAM, RTM, FTR**
 - ▶ This is the real profile in UML for messages , basis for InterOp
- ▶ **Part 550-1 EU style translation rules for UML to XSD**
- ▶ **Part 550-2 NA style translation rules for UML to XSD**
 - ▶ Text defining rules for generation of 551 & 552,
- ▶ **Part 551-1,2,3,4 Implementation for ESS, ECAN, ERRP, ESP**
- ▶ **Part 552-1,2,3 Implementation for DAM, RTM, FTR, ...**
 - ▶ Contains XSD Implementations

TC57 WG-16 Roadmap

Current Version	1st Release	2nd Release
62325 Part 101, General Guidelines and Requirements	Part 301 CIM for Markets:	Part 301 (2nd edition)
62325 Part 102 Energy Market Example Model	Part 351 Profile for European Style	Part 352 Profile for US Style
62325 Part 501: General Guidelines and ebXML	Part 450 Methodology	Part 450 (same document)
62325 Part 502 Profile of ebXML	Part 451-1 Acknowledgement BP	Part 452-1 DAM
	CD 12/2010 CDV 6/2011	CD 4/2011 CDV 10/2011
Published 2004	FDIS 2/2012	FDIS 6/2012

Release

Features

Time Frame

TC57 WG-16 Roadmap

future Releases

Part 301 (3rd edition)

Part 451-2,3,4,5 ESS,
ECAN, ERRP, ESP

Part 452-2,3 RTM, FTR

Part 550-1 EU Translation
Rules,

Part 550-2 NA Translation
Rules

Part 551-1,2,3,4
Implementation

Part 552-1,2,3
Implementation

Release

Features