Controls Middleware – Towards a Common Infrastructure

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(On behalf of the CMW Project Team)

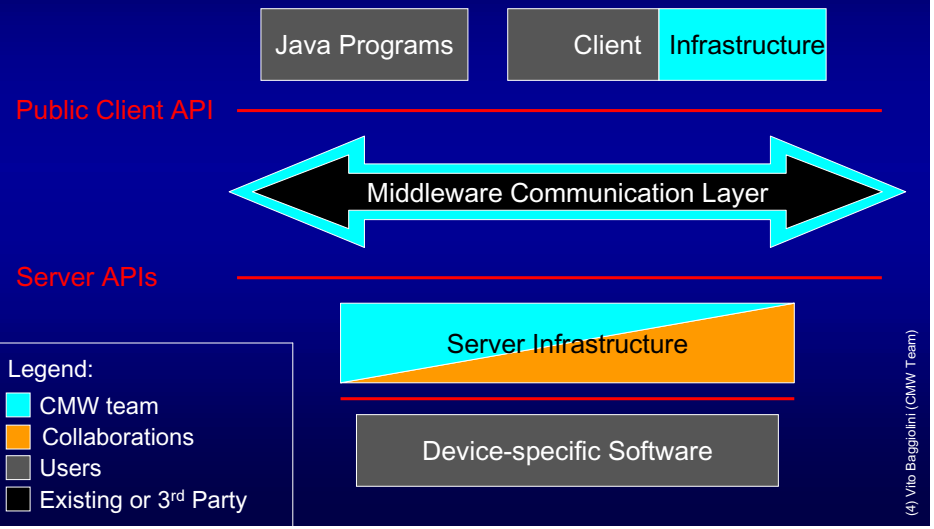
Overview

- Reminder
- State of Work
- CMW Users
- Conclusions

Controls Middleware (CMW)

- Project Team: (PS/CO and SL/CO)
  - K. Kostro, N.Trofimov, R.Swoboda, P.A. Pignard, St. Jensen, F. Chevrier, F.Calderini, V.Baggiolini
- Device/Property Model
  - Set/Get of device properties
  - Monitor device properties
- Topic-oriented Model
  - Publish/subscribe of information organized as topics
- Implementation
  - Stable, technology-independent APIs
  - Implemented with CORBA and Java Messaging Service

Simplified CMW Architecture



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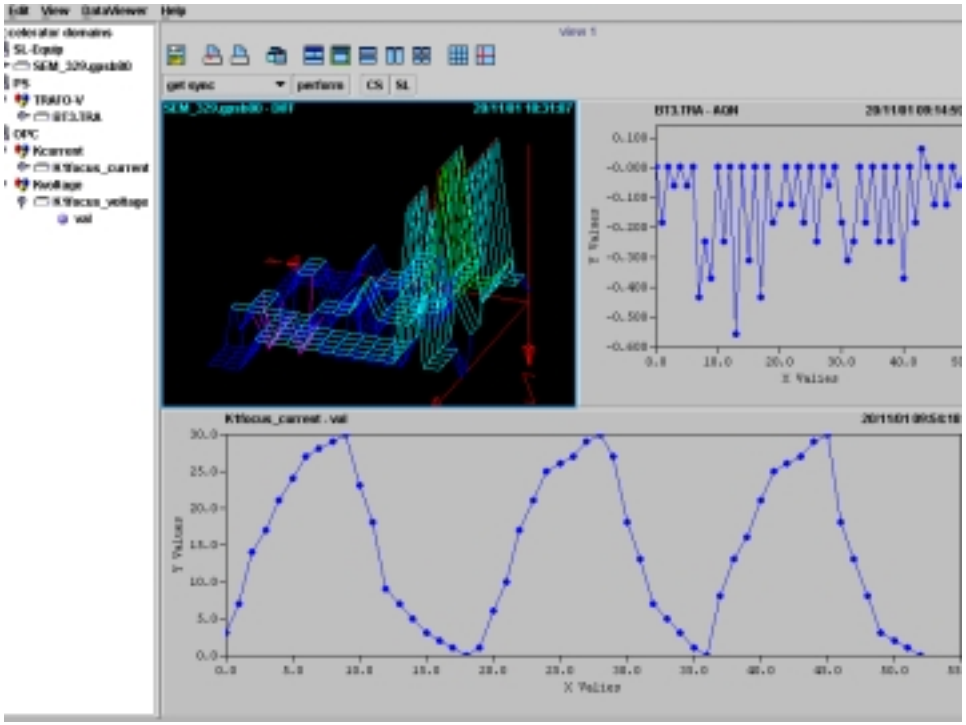
Main Achievements since last Year

- Rewritten server infrastructure
  - Better performance and reliability
  - With experience of deploying PS servers
- SL-Equip Gateway + Passerelle
  - Access to all SL-Equip devices from Java
  - Device Access from Excel (Passerelle)
  - Used by members of SL/OP
- OPC Gateway
  - Access to PLCs through Middleware
  - Used by SL/HRF (Luca Arnaudon)
- Compliant with SL Release Mechanism



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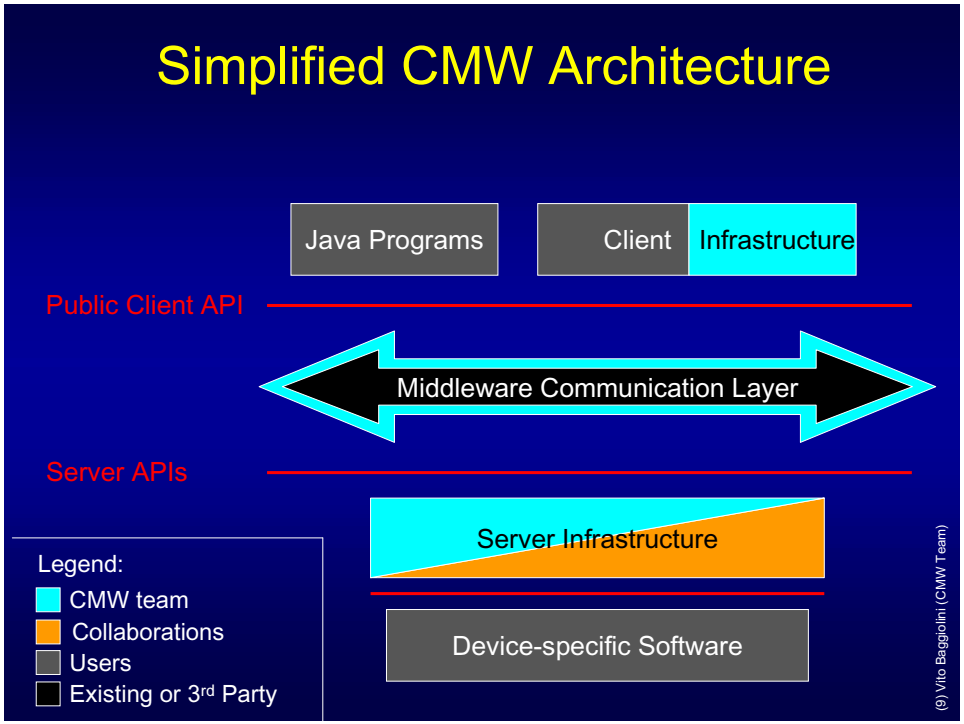
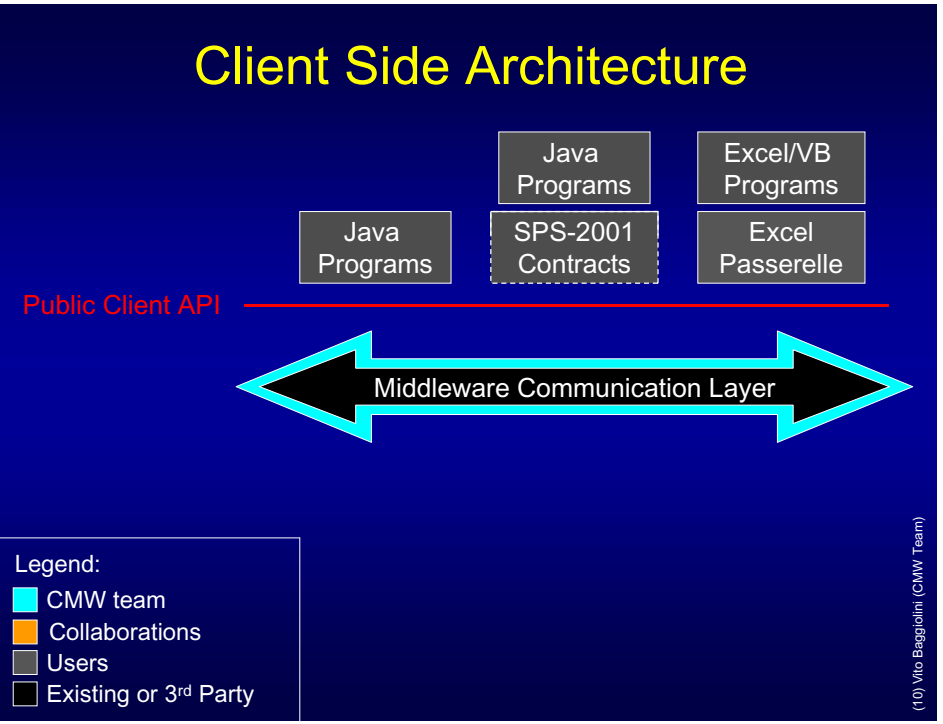
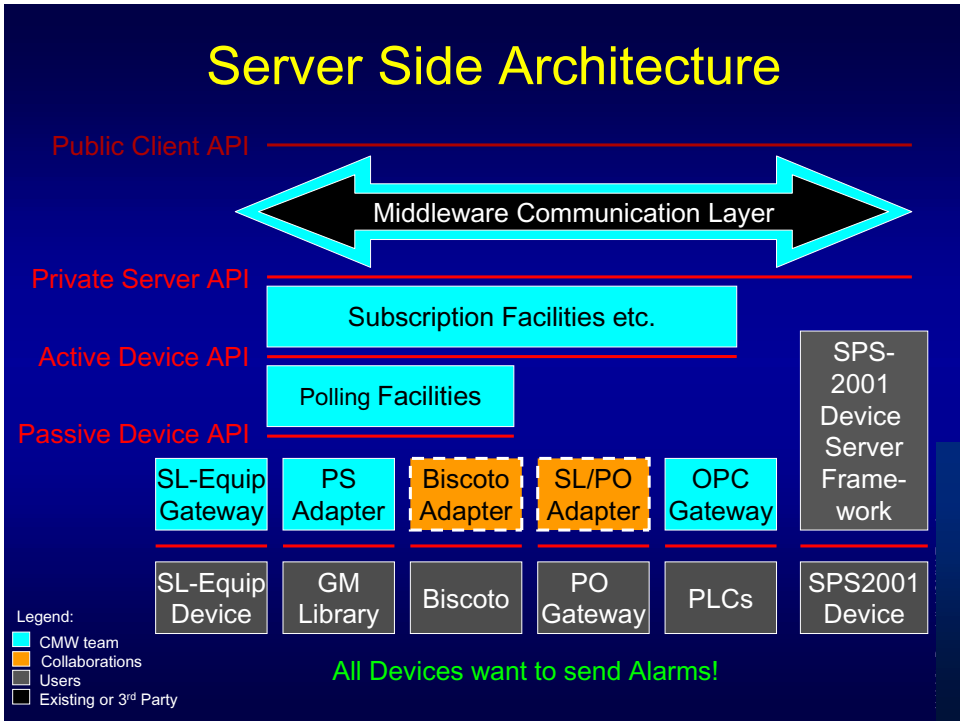


Client Side Architecture



Server Side Architecture



SPS-2001

- *Thou shalt have no other Middleware before CMW* (Mike, Feb. 2002)
  - looking for a common solution => CMW
- Contracts and Device/Property Model can coexist
  - SPS-2001 Contracts can be placed on top of CMW
  - Also possible to use Device/Property model directly
- Additional Work
  - Overlap exists between SPS-2001 Server Framework and CMW Server Framework
  - Additional CMW functionality needed
  - Looking to integrate features of the SPS-2001 Device Server Framework with CMW

PS/CO

- CMW was made to work on Front-Ends
  - Challenge to deploy CORBA on LynxOS
  - Server Framework rewritten
  - Some Front-ends needed Memory extensions
- Validated in PS/CO for AD machine
  - During last 2 weeks of 2001 Run
- Now Confident
  - All Java Control Programs run with CMW this year
  - Good performance (1000 updates in 200ms)
  - 5 MBytes with Server FW and equipment libraries

Biscoto

- "On a fait l'effort" (JJ. Gras)
  - Biscoto converted to Device/Property Model
  - Kris is integrating CMW with Biscoto
- Questions to be addressed
  - How to give CMW access to TG-8 timing in Front-ends
  - Standard Middleware uses too much memory for some BI front-ends
- Testing/evaluation in the next few weeks
- Cesar Project will use CMW with Biscoto

LHC Power Converters

- Late 2001 was too early
  - CMW Server framework was not really ready
  - "Insufficient documentation and examples"
  - Not all required functionality available
- SL/PO now concentrates on String 2
  - Socket-based communication
- Collaboration with Middleware
  - Aim: try to integrate PO Front-ends with CMW
  - CMW-based communication next to sockets
  - API between PO software and CMW
  - Manpower for integration comes from CMW project

SL/BT

- New equipment will be integrated using SPS-2001 device server framework
  - PLC based Equipment for Extraction to TI8
  - Strategy: plug SPS-2001 Server Framework into CMW
- Exact terms to be worked out

LHC Alarms Project

- Current State
  - Close collaboration since start of CMW
  - Based on Pub/Sub (Topic-Oriented API)
  - A PVSS Alarm source (VAC) is being integrated into CMW
  - Working on unique alarm source API
- Questions to be addressed
  - How to integrate different Equipment Servers on LynxOS (striving for a uniform solution)
- Milestone
  - PVSS (VAC) Alarm integration by SPS Start-up
  - Goal: Validate API and Middleware integration

Conclusions

- CMW is building up momentum
  - Used in PS, being integrated with servers of all major SL players
  - SL-Equip and OPC access
  - Integrated in Release mechanism
- Some shortcomings and missing functionality
  - Documentation can still be improved
  - Memory (?)
  - Urgent functionality: C Client, Access Control,…
- CMW can play the role of an integrating element
  - Common Model, common APIs
  - Integration is not always simple
- PS/CO has shown feasibility