



Work Sharing SmartPlant Instrumentation on Joint Venture Projects

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INTERGRAPH

Work Sharing on Join Venture Projects



- ◆ **Divide and Conquer**
 - Large Projects are often too complex for a single contractor to manage or have different resource requirements
- ◆ **High Value Resources**
 - Extending SPI access to low cost engineering centers using terminal server technology can reduce project costs
- ◆ **Around to clock operations**
 - Global Work Sharing allows 24-7 utilization of hardware and software resources
- ◆ **Extend utilization of SPI experts**
 - Allow experts to access SPI in from different locations to optimize Subject Matter Experts
- ◆ **Using the SPI As-Built Functionality**
 - Using the As-Built mode to define Projects and Work Share splits makes division of work simpler

SPI Work Sharing Focus Points



- ◆ **Work Sharing Technology**
 - Work Sharing with SPI requires Terminal Services Web technology for remote connections
- ◆ **SPI Licensing**
 - License Sharing across several pillars can be an issue on joint venture projects
- ◆ **SPI Hosting**
 - The Database and server hosting will have a major impact on the work practices
- ◆ **SPI Administration**
 - Administration of the Software, users, databases and servers needs to be addressed up front
- ◆ **SPI Data Consistency**
 - Maintaining plant wide and database wide standards is an issue with multiple entities

SPI Work Sharing Focus Points



- ◆ **SPI Integration**
 - Integrating with external software resources or share base systems can get complicated on a Joint Venture project
- ◆ **SPI Deliverables**
 - The generation of Deliverables and Document Management in a shared environment can have issues
- ◆ **SPI Security**
 - IT security is always a major concern when extending access to data to external contractors
- ◆ **Work Share Game Changers**
 - Some things that can add to the complexity and costs of a work shared Joint Venture Project
- ◆ **Risk management**
 - One of the biggest issues on a Work Share Project is Risk mitigation and management

Divide and Conquer

- ◆ Splitting a Project among several contractors will allow multiple pillars with different capabilities to execute work concurrently
- ◆ Some things to watch for when splitting a SmartPlant Instrumentation project are:
 - Careful breakdown of P-A-U to eliminate sharing between Pillars and complex or redundant unit separation
 - Keep Naming Conventions simple and short to eliminate confusion and complex sorting
 - Don't stop at EPC splits – Projects can be divided by Instrument Systems, Primary Vendors and Main Automation Contractors.



High Value Resources

- ◆ **Most Engineering Companies have High Value centers located in other countries to leverage low cost labor and allow Global Work Sharing.**
- ◆ **Some things to watch for when High Value Centers on a SmartPlant Instrumentation project are:**
 - **The quality and training of the users at the High Value Office**
 - **Maintaining constant communication to facilitate rapid change management**
 - **Proper management of tasks performed by High Value Centers**
 - **Slow connection over Citrix or Terminal Services**
 - **Best use for Basic data loading and repetitive tasks**



Around to Clock Operations



- ◆ **Global Work Sharing allows 24-7 utilization of hardware and software resources**
- ◆ **Around the Clock Operations require Around the Clock Support**
- ◆ **Time differential cause inconvenient Net Meetings and Telecoms**
- ◆ **Some advantages to Global Work Sharing with SmartPlant Instrumentation project are:**
 - **Operations extend to 24 hours a day**
 - **Better hardware utilization**
 - **Better use of Licenses**
 - **Shorten Schedules**
 - **Faster Response**
 - **Offset Overtime**





Extend utilization of SPI experts

- ◆ Allow experts to access SPI in from different locations to optimize Subject Matter Experts
- ◆ Allow Specialized Users access to multiple projects
- ◆ IT Hosting and Administrative Services
- ◆ Utilize remote Vendor SPI Experts
- ◆ Access for Technical Support
- ◆ Share SPI Super Users
- ◆ MAC Operations
- ◆ Integrators
- ◆ Clients



Using the SPI As-Built Functionality



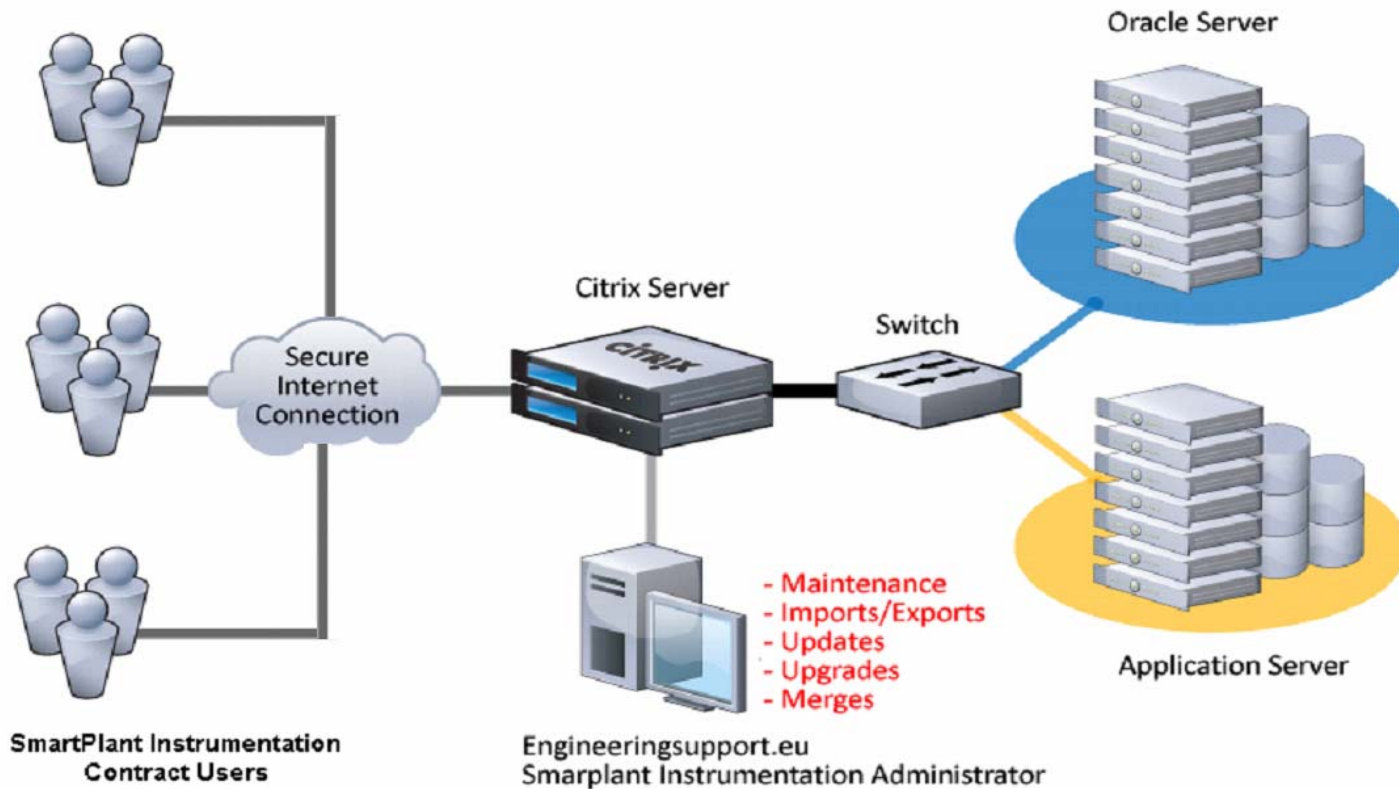
- ◆ Using the As-Built mode to define Projects and Work Share splits makes division of work simpler
- ◆ As-Built is created automatically when initializing an Owner Operator Domain
- ◆ The As-Built is the Master Project that contains all Formatting for all other Projects.
- ◆ The Domain Administrator creates Project Schemas for each Engineering Project
- ◆ When an Engineering Project is complete it is Merged into the As-Built



Work Sharing Technology



◆ Typical Work Sharing Connection for SPI using Citrix Server



Work Sharing Technology



- ◆ **Microsoft Terminal Server**
 - MS Terminal Server uses IP address security for faster firewall pass-through
 - Uses virtual private networking (VPN) or point-to-point tunneling protocol (PPTP)
 - Uses Remote Desktop for connection
 - Costs less than Citrix Server

- ◆ **Citrix MetaFrame**
 - Citrix Server uses encrypted security resulting in Firewall Issues
 - Uses 128-bit encryption and pass-through authentication for better security
 - Uses Citrix ICA (Independent Computing Architecture) Client for connection



Work Sharing Technology

- ◆ Each user will require a Terminal Server or Citrix Logon and an SmartPlant Instrumentation Logon
- ◆ Individual Folders and INtools.ini files will need to be created for each remote user
- ◆ Mapping of local Drives and Printers is problematic with both platforms
- ◆ Activities that run for long periods of time could corrupt database due to remote connection interruption
- ◆ Terminal Server be configured similar to a desktop
- ◆ Users access a single Application Server,
 - Pro - upgrading and maintenance is easy
 - Con - single point of failure



SPI Licensing

- ◆ License Sharing across several pillars can be an issue on joint venture projects
- ◆ SmartPlant License Manage will allow access to several licenses Servers
 - Each pillar will have their own license for the seats they need
 - The users INtools.ini will point to the proper license server
 - License servers may need to be in the Application Server Environment
- ◆ Using Owner Operator licenses
 - Must Provide seats for every work share user
 - License Server accessible to Application Server



SPI Hosting

- ◆ The Database and server hosting will have a major impact on the work practices and function of SmartPlant Instrumentation
- ◆ Who will Host the SPI Database?
 - Owner Hosted
 - Third Party
 - Main Engineering Contractor
 - Main Automation Contractor
- ◆ Remote User Access to the SPI Database
 - Microsoft SQL Server
 - Citrix MetaFrame
- ◆ What Database Engine will be used?
 - Microsoft SQL Server
 - Oracle DBMS



SPI Administration

- ◆ Administration of the Software, users, databases and servers needs to be addressed at the beginning of a Work Share Project
- ◆ IT Administration
 - Experience with Oracle or Microsoft SQL Server
 - Experience with Citrix or Terminal Services
 - Experience with SmartPlant Instrumentation
- ◆ System Administrator
 - Full time – Part Time – Location
- ◆ Domain Administrator
 - Full time – Part Time – Location
- ◆ Technical Support
 - In House
 - Intergraph
 - Third Party



SPI Data Consistency



- ◆ **Maintaining plant wide and database wide standards is an issue with multiple entities involved on a Work Share Project**
- ◆ **How to police contractors from changing plant standards**
 - **Best Method – Use As-Built Functionality**
 - **Restrict Access Rights (not secure)**
- ◆ **Implementation Specification**
 - **Define Contractors Scope in SPI Specification**
 - **Require any changes to Standard tables to be approved**
- ◆ **Develop Cross Pillar User Guide**
 - **Outlines User Rights**
 - **Reflects Implementation Tables**
 - **Defines Consistency Rules**
 - **Examples of Standard Forms**
 - **Examples of Standard Reports**



SPI Integration

- ◆ Integrating and Interfacing with external software resources or share base systems can get complicated on a Joint Venture project when attempting to connect remotely.
- ◆ Basic interfaces – must reside on server
 - Import / Export utilities
 - Save As and Print To Interfaces
- ◆ SmartPlant Interfaces – determined by TEF Adaptors
 - SmartPlant Foundation
- ◆ Software linking interfaces – neutral file format
 - Vendor Interfaces
 - Contractor Interfaces
- ◆ Utility interfaces – neutral file or reside on server
 - Analytical and Auditing Interfaces
 - Special report and deliverable Interfaces



SPI Deliverables

- ◆ The generation of Deliverables and Document Management in a shared environment can have issues
- ◆ Generation of deliverables when remote hosting
 - Controlling printer drivers in host server
 - Mapping local drives from remote servers
 - Adding standard MS Office to remote server
 - PDF file creation over remote connection:
 - Adobe Acrobat PDF Writer
 - Adobe Acrobat PDF Distiller
 - PDF995 Freeware
 - FinePrint Utility
 - Configuring ESL over remote connection
 - CAD drawing generation over Citrix
 - Running External editor remotely



SPI Security

- ◆ Security is always a major concern when extending access to servers and data to external contractors
- ◆ Work Share IT Security Concerns
 - Password Protection
 - Virus Scanning Software
 - Shared Printers and Drives
- ◆ Data Security maintenance
 - User Rights management
 - Support Table Control
 - Data Auditing Software
- ◆ Firewalls and Terminal Services
 - Firewall exceptions
 - Network Monitoring
 - Encryption Issues



SPI Risk Management & Mitigation



- ◆ **The Joint Venture Project Risk Management Execution issues are the most important factors in the polarization of entities in a Work Share Project:**
 - Develop a clear division of Scope of SPI usage and included in each pillar contract
 - Develop a clear definition of Scope of Services included in each pillar contract
 - Develop detailed SPI Responsibility Matrixes for all Pillars in the Joint Venture
 - Develop a Consolidated EPC SPI Schedule for all Pillars in the Joint Venture
 - Coordinated Work Procedures so all pillars have similar risk exposure



Work Share Game Changers

- ◆ **Some things that can add to the complexity and costs of a work shared Joint Venture Project**
 - **Selection of DBMS and Terminal Host**
 - **Risk Management issues**
 - **24-7 Support**
 - **24-7 Administration**
 - **IT Work Orders**
 - **Down Time Management**
 - **Consistent User Training**
 - **Change management issues**
 - **Change notification across pillars**
 - **Change tracking methods**
 - **Revision control on documents**
 - **Keep Scope of work within SPI Capabilities**
 - **Single Client Contact for Administration**





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Questions & Discussion

