



Honeywell Users Group 2008

**Solutions at work.**

**Uwe Waldschmidt; Boehringer Ingelheim  
Legacy System Migration / Integration to  
Experion PKS in a Pharmaceutical Plant**

**Honeywell**

## Company Overview

- Boehringer Ingelheim

- Founded 1885 in Ingelheim, Germany by Albert Boehringer
- One of the top 20 research-based pharmaceutical companies in the world (1.574 M€ R&D investment)
- World wide presence; production sites in 18 countries
- >38.000 employees (R&D, Production, Marketing)
- Overall revenues 10.574 M€ in 2006



A. Boehringer

# Boehringer Ingelheim Site in Biberach, Germany



## Major Investment Biberach Location

Biopharmaceutical Active Ingredients



Duplication of biopharmaceutical production capacity;  
Investment > 255 Million €

About 400 additional jobs involved

Project update since it was first presented at a previous Users Group

## Another Major Biberach Location Investment

Biopharmaceutical Active Ingredients



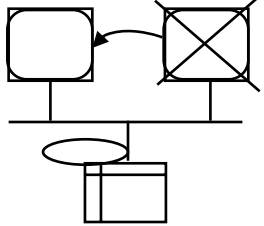
Additional 80 Million €  
investment in biotechnology  
capacity expansion

Project details: as of June 2008

## Integration and/or Migration

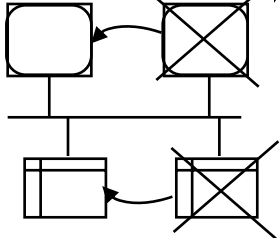
Project request for integration and migration, with a phased migration approach lasting for several years

### Integration



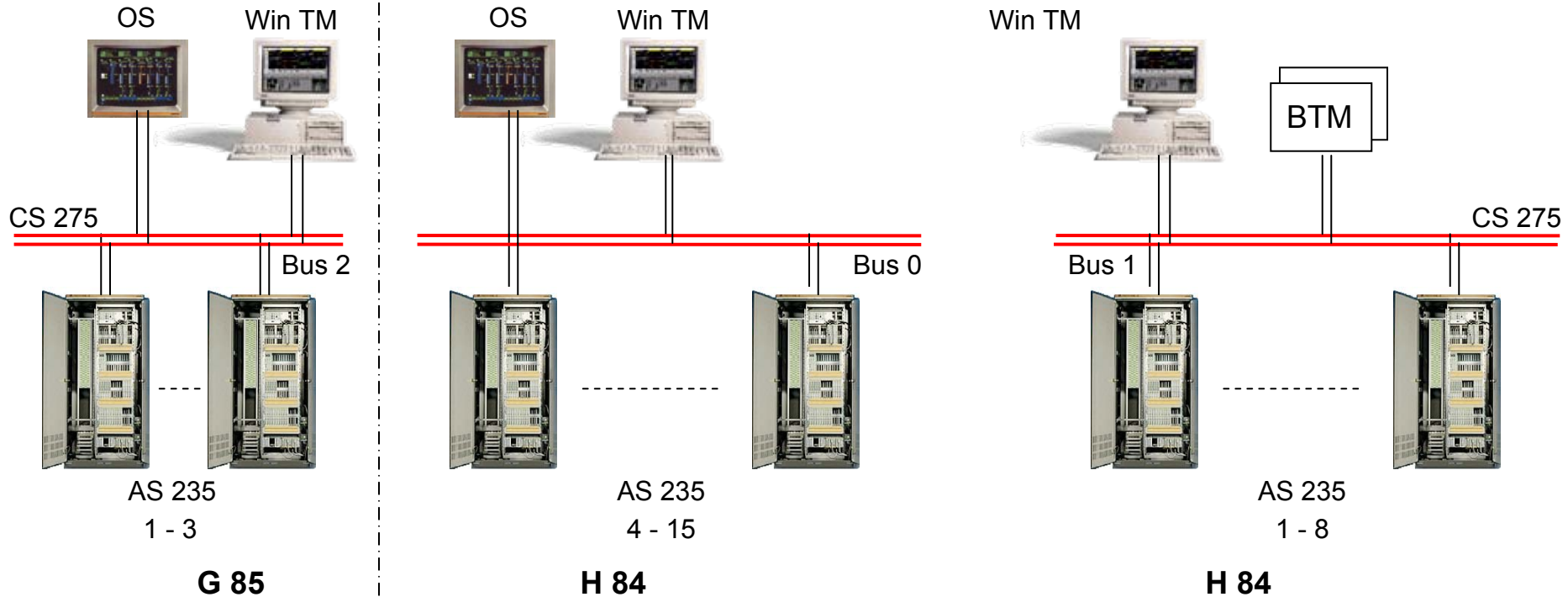
Integral part of legacy automation elements (components and functionality) within new automation system (e.g. due to investment protection)

### Migration



Replacement of legacy automation elements (components and functionality) with new elements of the same or another supplier

## Legacy System Layout (Teleperm M)



**Task:** Migrate Visualization & Operation, Batch Management, Historization  
Integrate AS235 controller into Experion PKS, including peer-to-peer

## Project Business Drivers

- Expand plant capacity by adding new units and adopt new technologies
- Legacy DCS component support ends (OS) or is obsolete in a few years (2008/12)
- Improve process operability (+ reliability, + efficiency)
- Improve batch management; especially for implementing new product recipes
- Establish paperless reporting (CIP, SIP, Prod. Reports)
- Potentials for MES integration infrastructure, ready-to-use



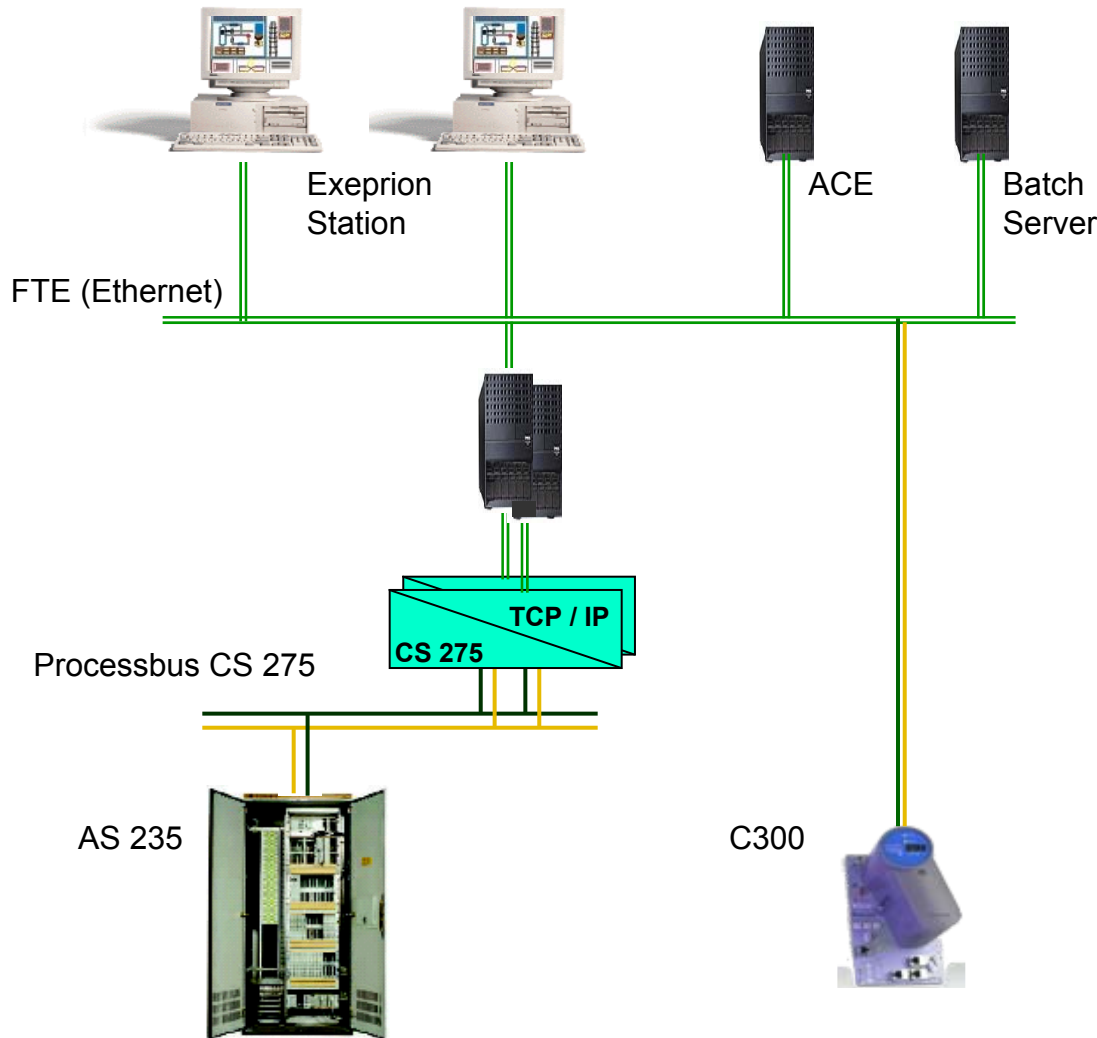
## Project Tasks / Challenges

- Phased migration / integration approach required
    - Phase I : Migration of MMI, batch management, Integration of legacy controllers
    - Phase II: Migration of legacy controllers
  - Plant downtime as short as possible
  - No plant downtime for batch management replacement
  - Recipe Execution (TPBatch) links to phases in different DCS's
  - Peer-to-Peer between different DCS controllers (AS235, C300)
  - MES Integration ready-to-use, i.e. no plant downtime for potential MES integration
  - Keep Validation Status of Plant and Recipe Handling
  - No impact on DCS reliability measures
- } Will last for years

## Major Technical Solution Aspects

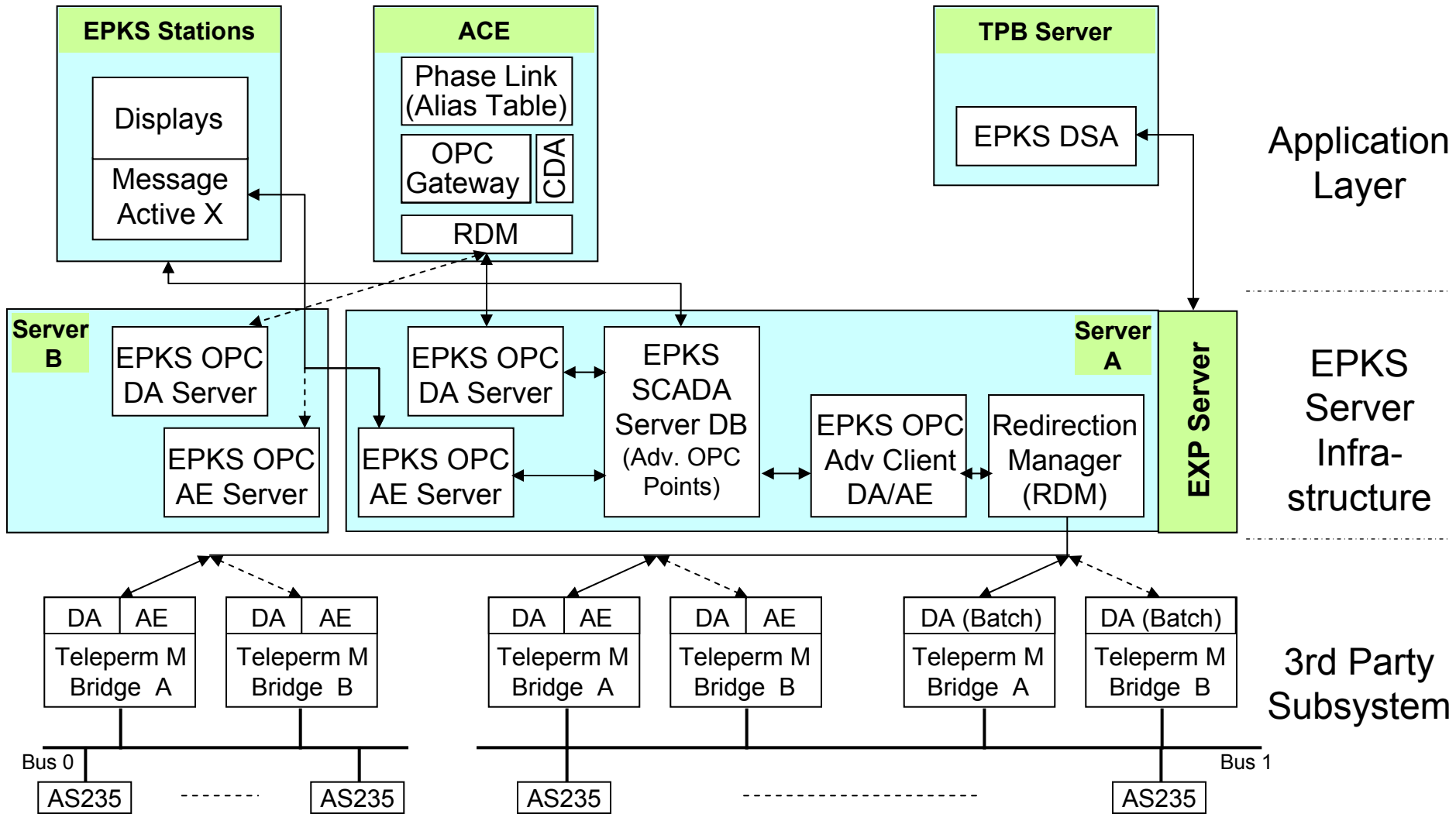
- Solution architecture
- Data consolidation  
Teleperm M → Experion PKS database
- Operator handling consolidation
- Recipe management / batch handling
  - (Recipe communication to Experion and Teleperm M controllers)
- Historization consolidation

## Basic Project Architecture Elements

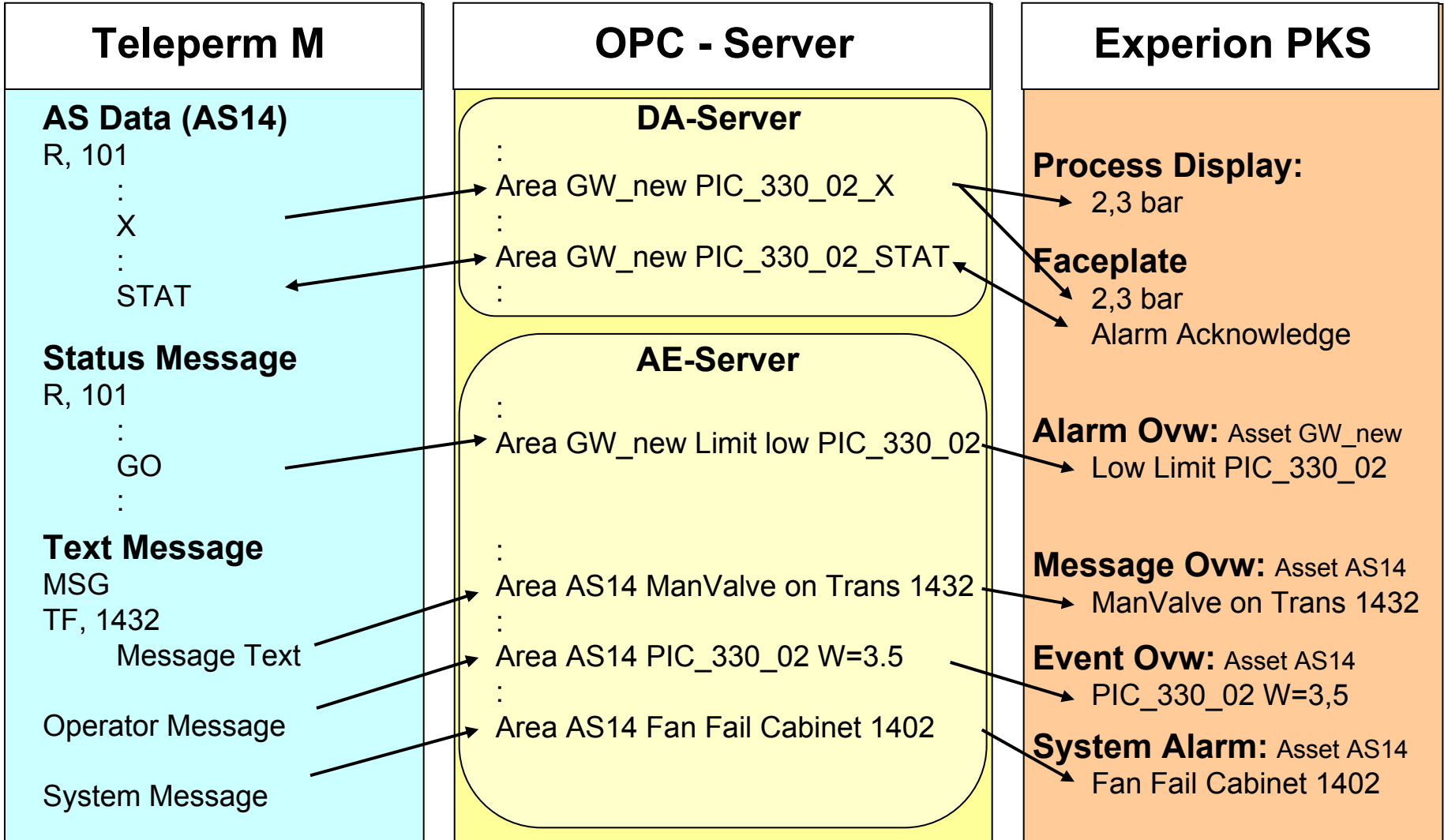


- Experion Stations
- Application Control Environment
- Batch Server
- Experion Server
- Teleperm M OPC Server Bridge
- Controller (AS235, C300)

## Detailed Project Integration Structure



## Teleperm M - EPKS Data Consolidation



## Operator Handling Consolidation

- Seamless operation of both system controller points out of Experion station environment
    - Common process displays
    - Identical faceplates and symbols
  - Direct Teleperm point data mapping into Experion Enterprise Model (Unit Allocation Filtering)
- Custom display example : see next slide (faceplate of controller and phase)

## Identical Operation of Points in Both Systems

The screenshot displays the Honeywell process control interface for 'MAB Säule 333'. The main window shows a detailed piping diagram with various components including tanks (T-513, T-331, T-330, T-510, T-522), valves (XV\_331\_08, XV\_330\_08, FV\_510\_02, FV\_522\_03, XV\_333\_05, XV\_333\_07, XV\_333\_06, XV\_333\_04, XV\_333\_01, XV\_333\_02, XV\_333\_03, XV\_341\_01, XV\_340\_01), and control loops (PIC\_333\_02, FIC\_333\_01, FQ\_333\_01). A central window shows the 'Regler' (controller) for 'PIC\_333\_02' with a setpoint of 3.8°C and a current reading of 2.5°C. A status window on the right shows 'TF\_13\_1\_Q3' with a 'PROGRAM' mode. The bottom status bar indicates an alarm signal at 10/25/2007 16:23:05.

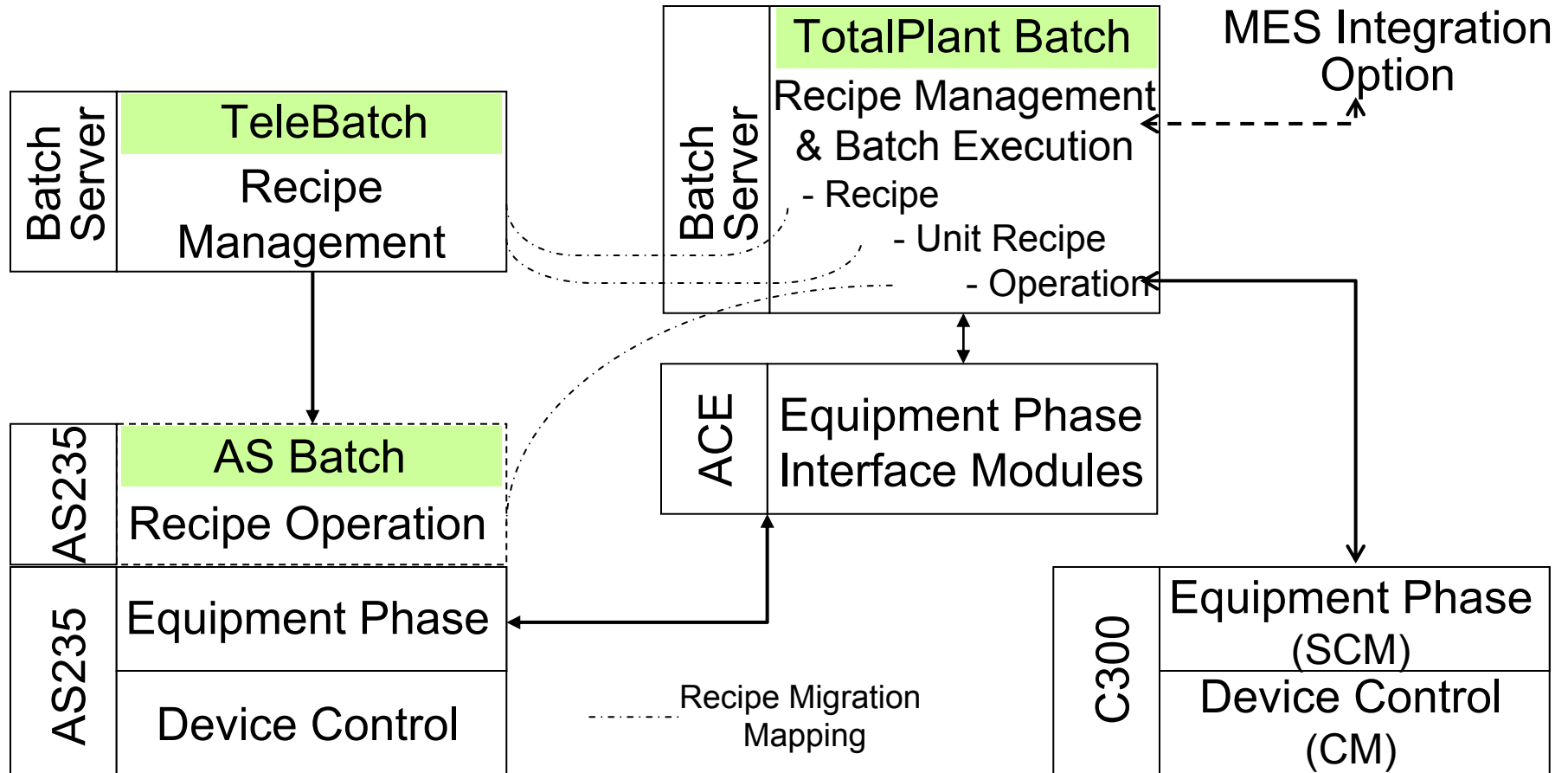
Date & Time	Location Tag	Source	Message
10/25/2007 16:23:05	AS17	AS17_KLA.AS17_MEL	PRUEFE : AUTOMATIK-EBENE! 0.000 0 M+

25-Oct-07 16:41:26 CIP1 CIP1.L\_731\_01\_0 AU U 00 L\_731\_01 Alarmsignal AU

Honeywell 25-Oct-07 16:41:29 Alarm System Message s211a Str32 Mngr

## Recipe Management / Batch Handling

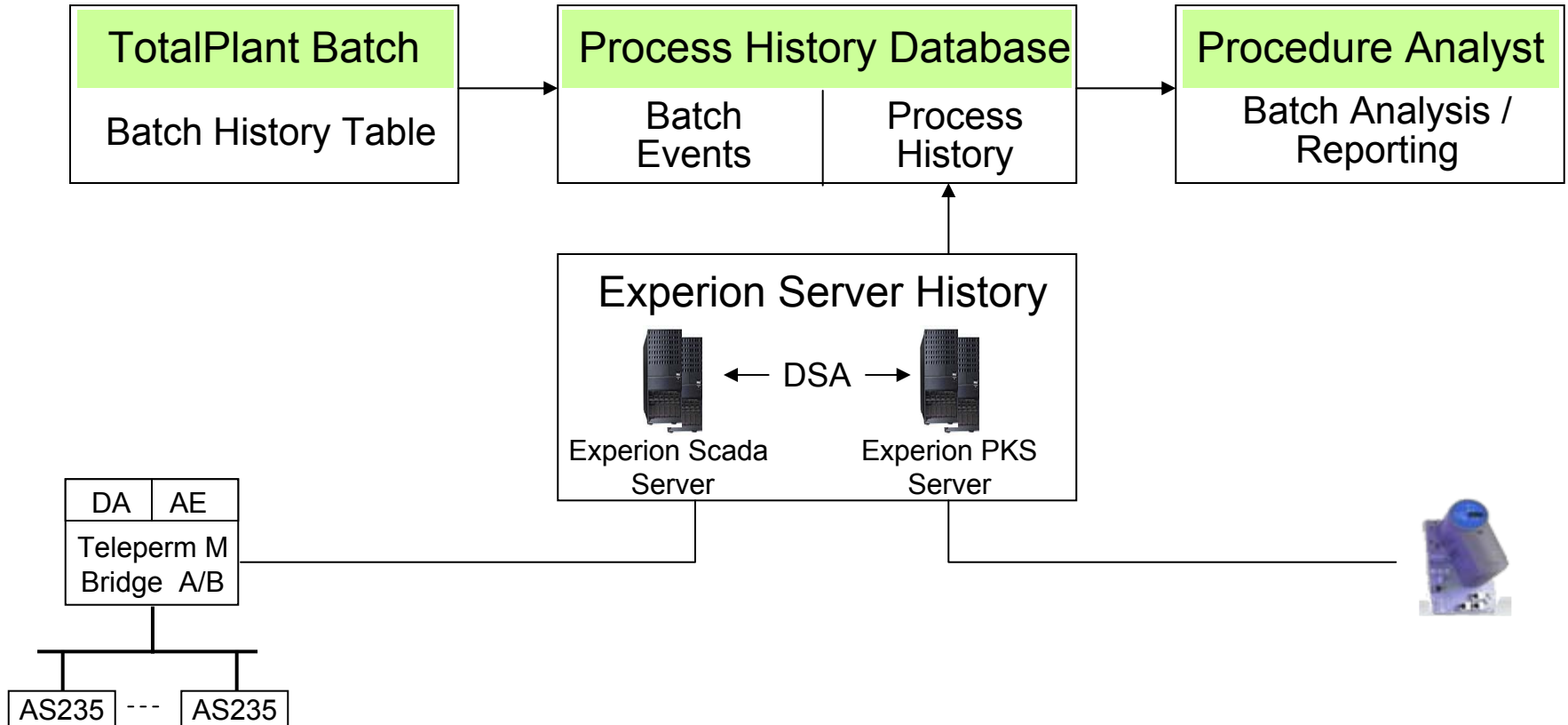
- Task:
- Replace legacy recipe management
  - New recipe execution with phases in 2 systems



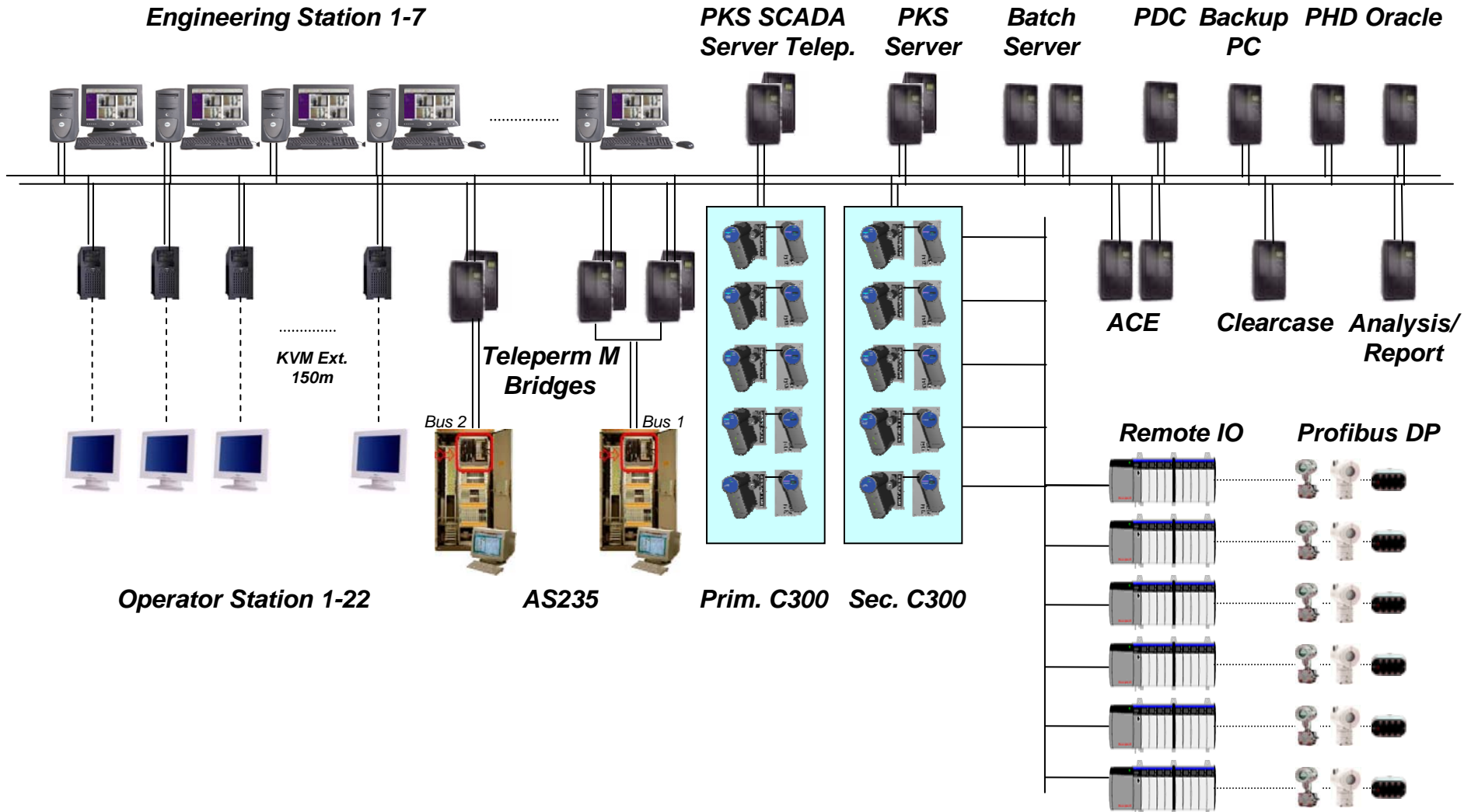


## Historization Consolidation

- Task:
- Common Process History Database
  - Common Batch Evaluation and Reporting



## System Layout Project H84



## Solution 'Specials' Summary

- One common MMI for two different control systems (including box peer-to-peer data transfer)
- Communication bridge redundancy
- Experion SCADA points of Teleperm M data allow for structured handling of point parameters
- Size of communication data (50.000 Items per TpM-Bus)
  - Teleperm bus load limitations handled by communication bridge
  - Data transfer only on data change
- Teleperm data points 'filtered' into Experion enterprise model for unit-based alarm/event handling
- Teleperm events matched into standard Experion event/message lists

## Experiences and Recommendations

- Sound design required due to many interfaces involved
- OPC communication as a standard ..  
.. but with many facets to be considered
- Pay attention to project team profile
  - Legacy system know-how
  - New system / application know-how
  - Network setup know-how
  - OPC communication know-how
- System migration / integration - hardly an out-of-the-box project; details require detailed treatment
- Consider adaptation of User Knowledge Profile!

} 'Master of None'  
and  
Knowledge Details

## Status and Next Steps

- On production since October 2007
- Migration phase II to be defined yet (Migration of AS controllers)
- MES integration to be defined
- Future use of C300 'Unit Control Functionality' foreseen

*Thank you for your time....Questions /  
Comments?*