

# PI System Platform Migration

Zach Wagner and April Phillips

# Agenda

- About Our Companies
- Starting Point
- Architecture
- Migration
- Where we are now

# RoviSys

## Focused Services

Process Automation  
Process Historian & eBR  
Data Integrity  
Digital Transformation (IIOT, Industry 4.0, Analytics, AR/AI)  
IT/OT & Infrastructure  
Building Automation  
Validation  
Electrical Engineering Services

## Life Sciences Expertise

Upstream, downstream, & fill finish  
Process & building automation  
Infrastructure design and implementation  
Validation and SDLC expertise

Clients include:

- 8 of top 10 bio-pharma
- Emerging cell and gene therapy



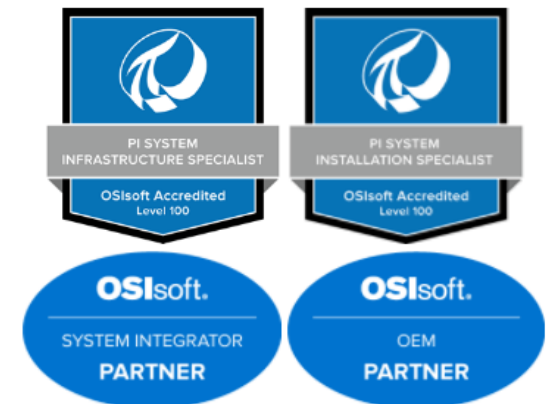
## Business Strategy

**Customer** focus drives our mission  
**Growth** hinges on relationships  
**Independence** enforces best solutions  
**Diversification** fortifies our sustainability

# RoviSys & OSIsoft

## OSIsoft PI System Experience

- Select Level System Integration and Consulting Partner with OSIsoft (1st of 4 Globally)
- First integration firm to install OSIsoft PI v3.0 in 1990
- Over 500 OSIsoft PI Server systems have been deployed by RoviSys
- OSIsoft “Accredited” engineers on staff
- Complete OSIsoft product knowledge
- OEM product offering & PI Connector development specialist
- PI System installed and validated for Life Science clients



# Genentech

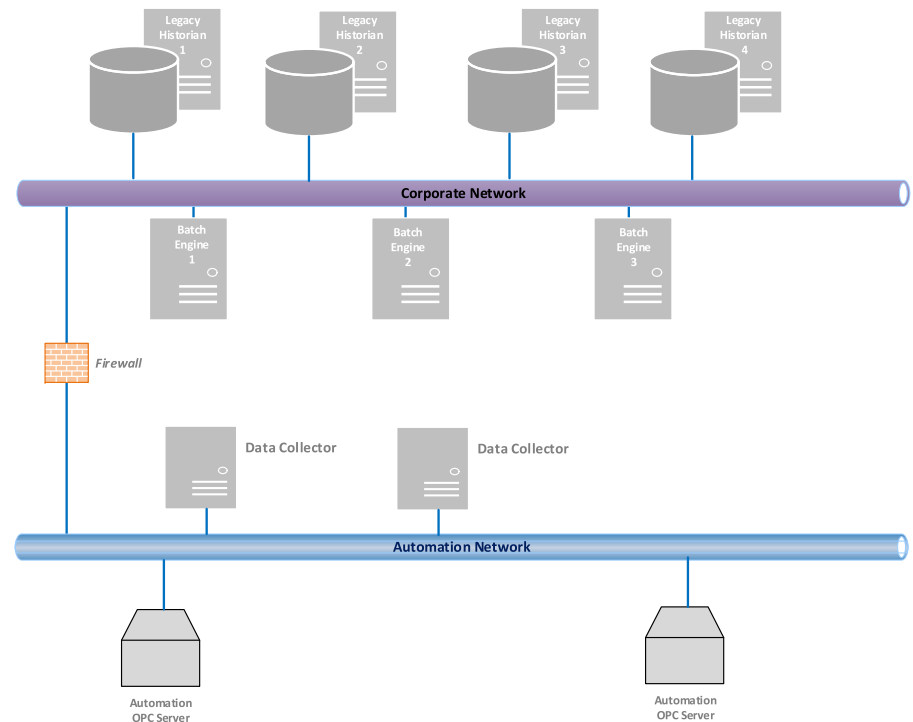
## Genentech South San Francisco

- Founded more than 40 years ago as the first biotech company
- Genentech discovers, develops, manufactures and commercializes medicines to treat patients with serious and life-threatening medical conditions
- The company, a member of the Roche Group, has headquarters in South San Francisco, California.
- South San Francisco Site is a combination of corporate functions, research and manufacturing.
- Manufacturing Plant includes all phases of biopharmaceutical production.



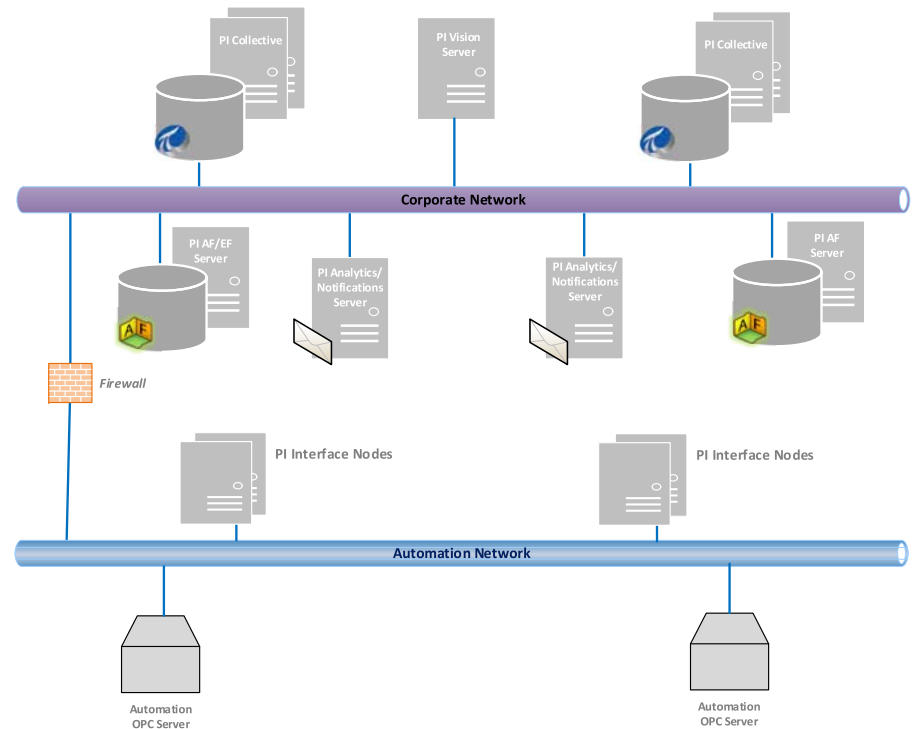
# Genentech Starting Point/Motivation for Upgrade

- Legacy Historian
- Legacy Batch Generator for 3 of 4 plants
- Plant area 1-4
- Out of Sync with Roche Plants

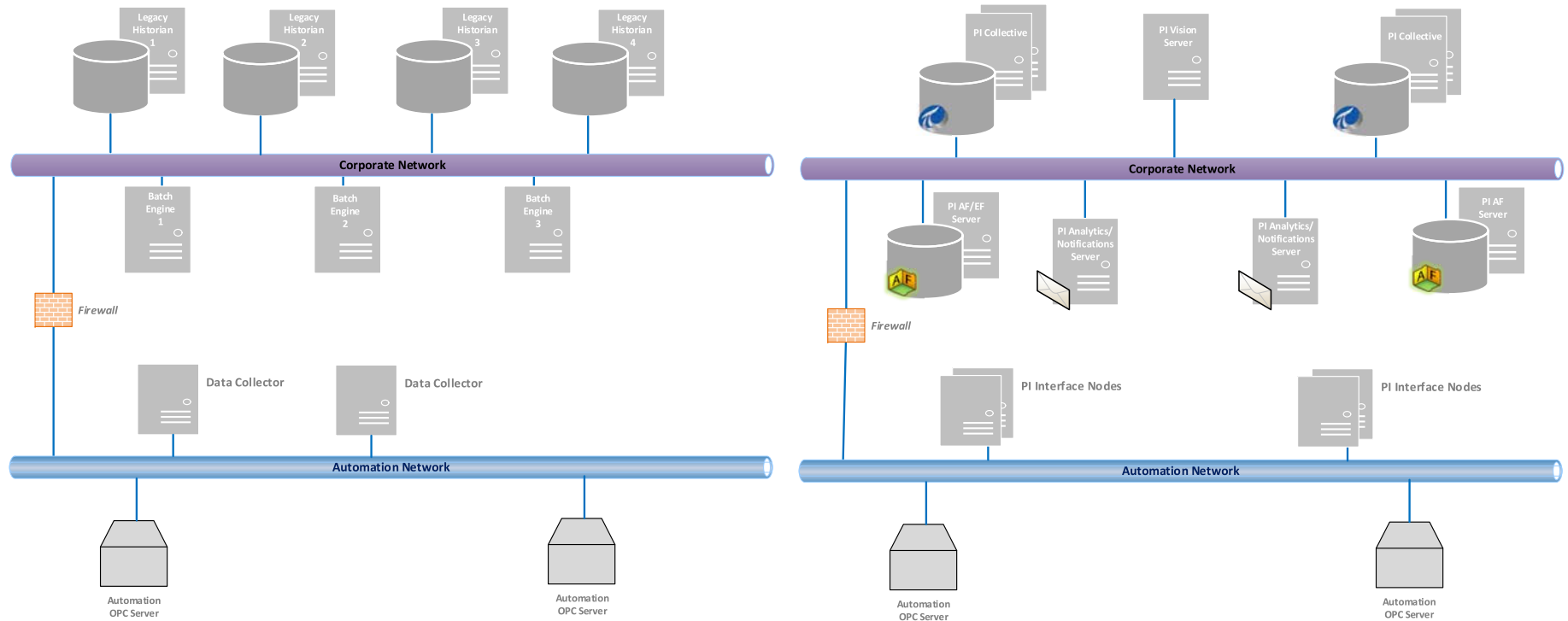


# PI Architecture

- Enterprise Agreement
- 2 PI System Installations
  - Collective
  - AF
  - Analytics/Notifications
  - Failover Interfaces
- Single Vision Instance

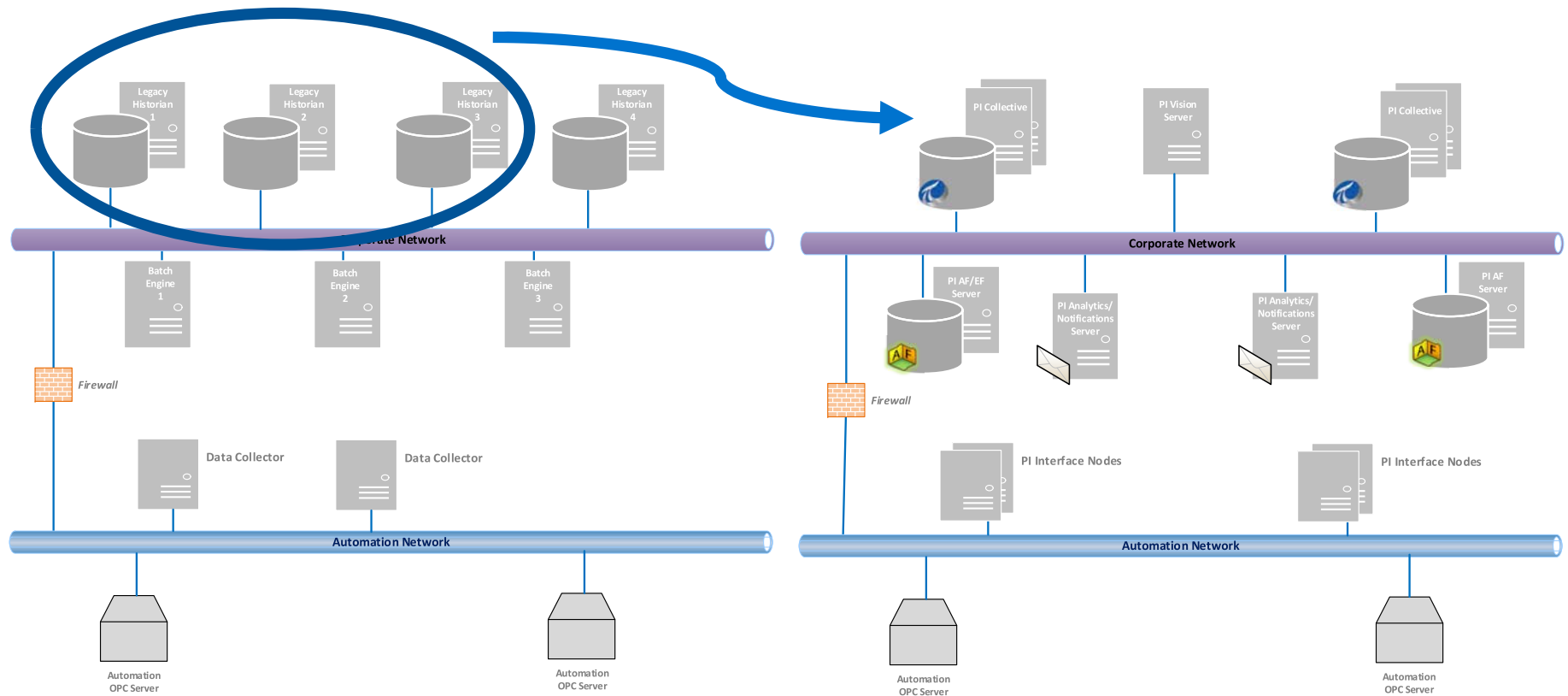


# Mapping from Legacy to PI System

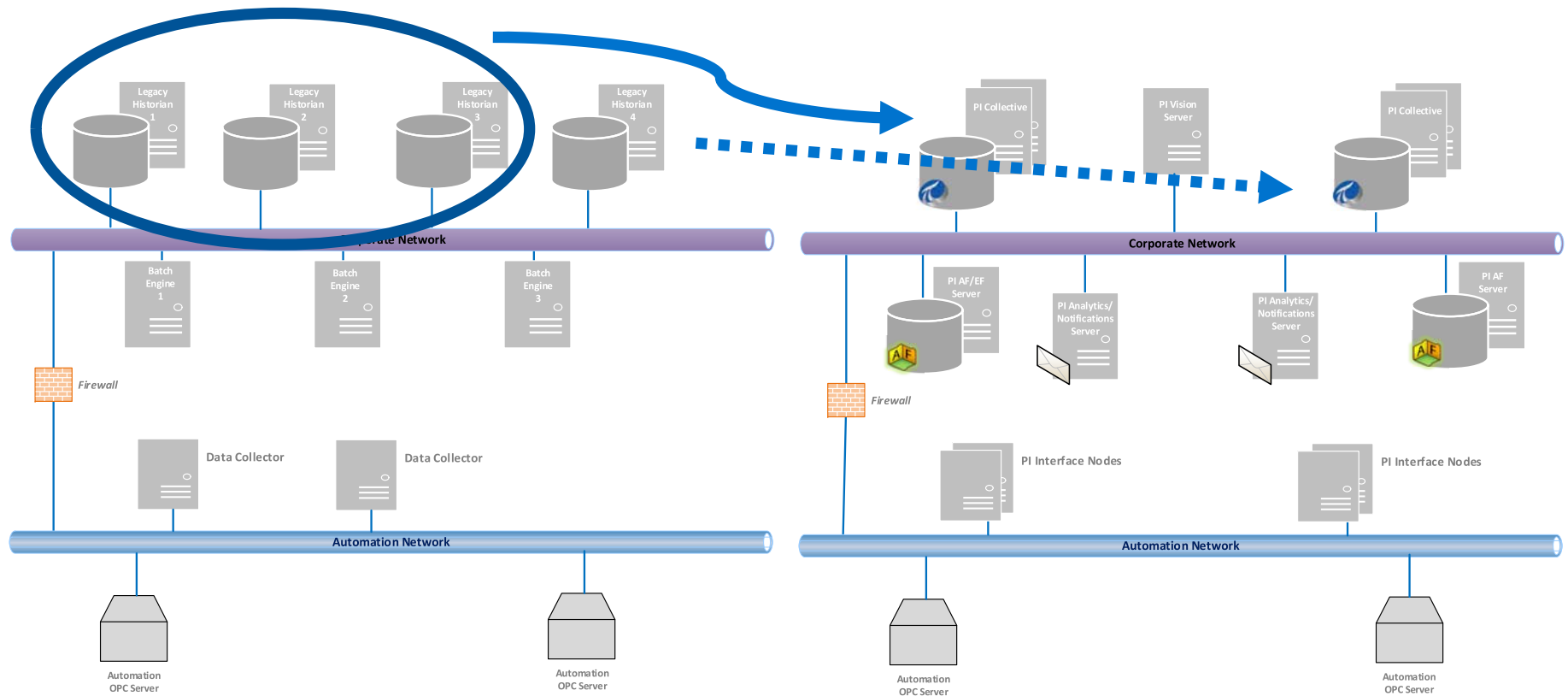




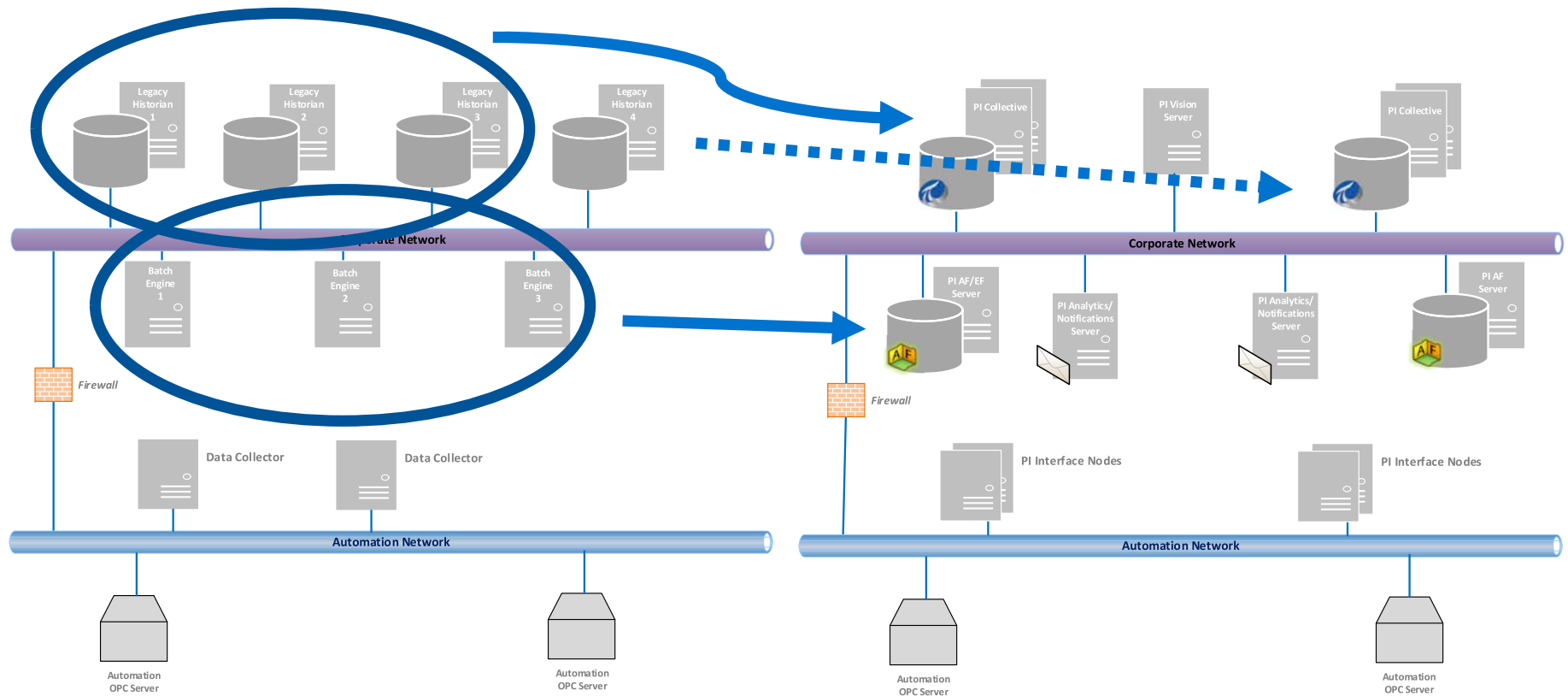
# Mapping from Legacy to PI System



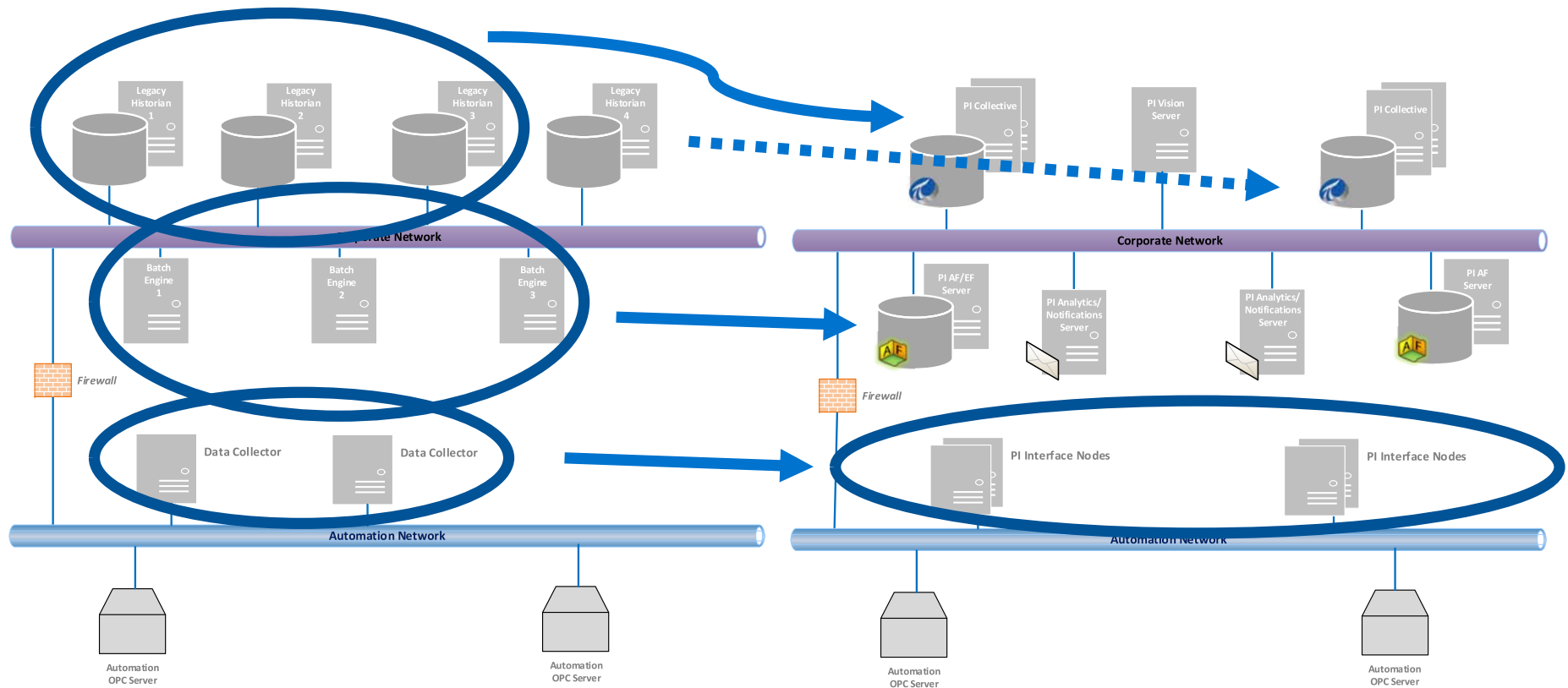
# Mapping from Legacy to PI System



# Mapping from Legacy to PI System



# Mapping from Legacy to PI System



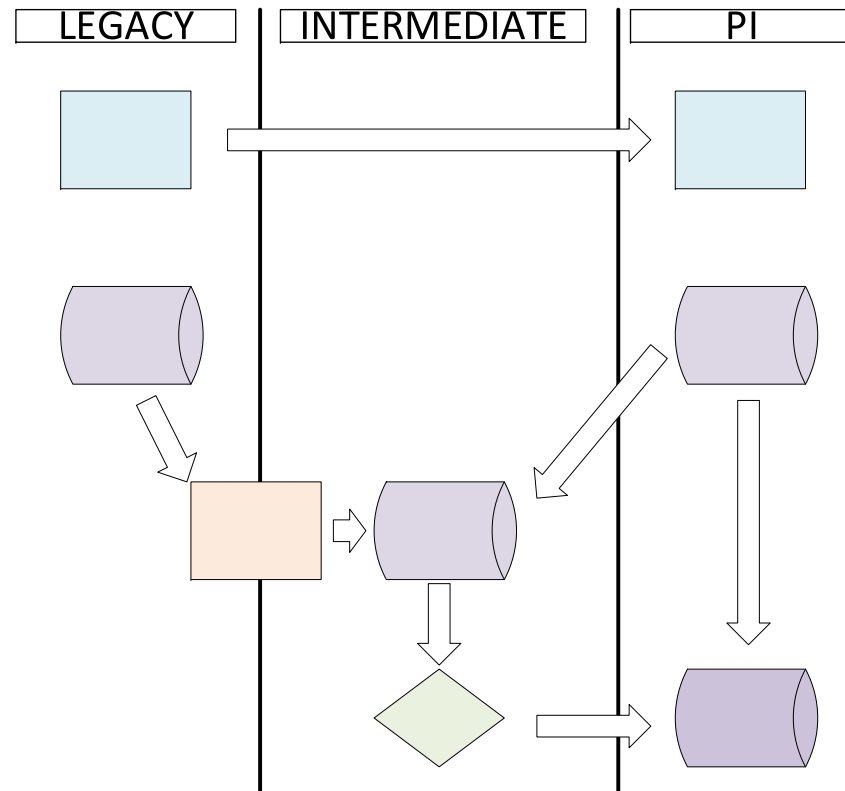
## Migration Requirements

- 100% data integrity
- Existing Tools
- Reuse existing OPC Servers
- No Data Gaps
- Batch can't be regenerated



# Migration Process

- Tag Generation
- Simultaneous Data Collection
- Intermediate Systems
- Migration Tool



# Migration Tool: Continuous

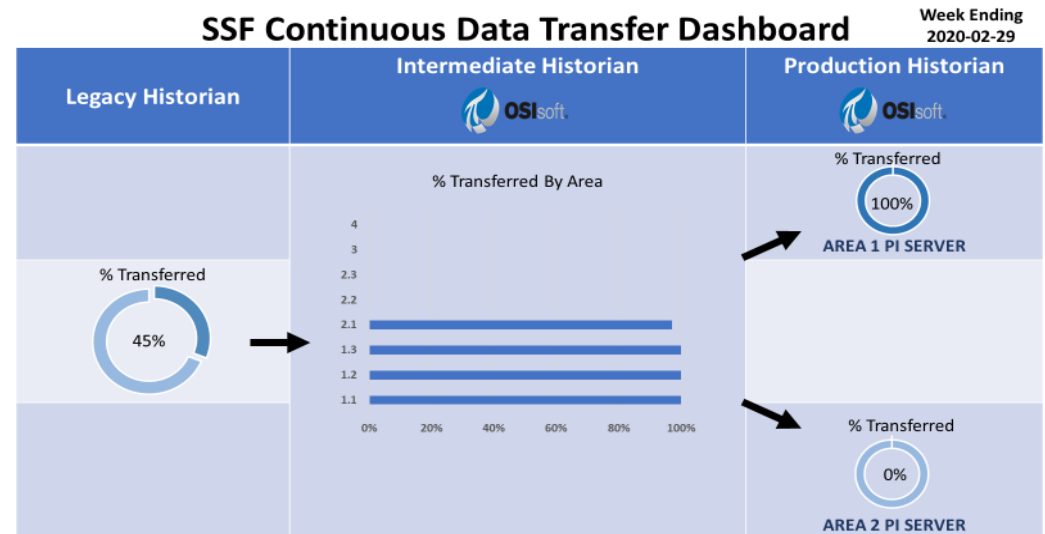
- Windows Form Application C#
- ODBC Connection to Legacy Historian
- AFSDK connect to PI System
- Backfill and/or Validate
- Executes in configurable “chunks”
- Multiple Instances of application running simultaneously

```

2020-02-14 15:23:07,060|Validation Tag|PI Count|Legacy Count|Start Time(Local)|End Time(Local)|PASS
2020-02-14 17:03:01,393|TAG1|596|596|11/9/2014 12:00:00 AM|11/10/2014 12:00:00 AM|True
2020-02-14 17:03:01,402|TAG1|676|676|11/10/2014 12:00:00 AM|11/11/2014 12:00:00 AM|True
2020-02-14 17:03:01,410|TAG1|755|755|11/11/2014 12:00:00 AM|11/12/2014 12:00:00 AM|True
2020-02-14 17:03:01,419|TAG1|771|771|11/12/2014 12:00:00 AM|11/13/2014 12:00:00 AM|True
2020-02-14 17:03:01,429|TAG1|1126|1126|11/13/2014 12:00:00 AM|11/14/2014 12:00:00 AM|True
2020-02-14 17:03:01,438|TAG1|633|633|11/14/2014 12:00:00 AM|11/15/2014 12:00:00 AM|True
2020-02-14 17:03:01,449|TAG1|547|547|11/15/2014 12:00:00 AM|11/16/2014 12:00:00 AM|True
2020-02-14 17:03:01,459|TAG1|845|845|11/16/2014 12:00:00 AM|11/17/2014 12:00:00 AM|True
2020-02-14 17:03:01,469|TAG1|970|970|11/17/2014 12:00:00 AM|11/18/2014 12:00:00 AM|True
2020-02-14 17:03:01,479|TAG1|789|789|11/18/2014 12:00:00 AM|11/19/2014 12:00:00 AM|True
2020-02-14 17:03:01,488|TAG1|785|785|11/19/2014 12:00:00 AM|11/20/2014 12:00:00 AM|True
2020-02-14 17:03:01,497|TAG1|547|547|11/20/2014 12:00:00 AM|11/21/2014 12:00:00 AM|True
2020-02-14 17:03:01,505|TAG1|585|585|11/21/2014 12:00:00 AM|11/22/2014 12:00:00 AM|True
2020-02-14 17:03:01,516|TAG1|1094|1094|11/22/2014 12:00:00 AM|11/23/2014 12:00:00 AM|True
2020-02-14 17:03:01,525|TAG1|603|603|11/23/2014 12:00:00 AM|11/24/2014 12:00:00 AM|True
2020-02-14 17:03:01,535|TAG1|820|820|11/24/2014 12:00:00 AM|11/25/2014 12:00:00 AM|True
2020-02-14 17:03:01,545|TAG1|1198|1198|11/25/2014 12:00:00 AM|11/26/2014 12:00:00 AM|True
2020-02-14 17:03:01,554|TAG1|784|784|11/26/2014 12:00:00 AM|11/27/2014 12:00:00 AM|True
2020-02-14 17:03:01,564|TAG1|609|609|11/27/2014 12:00:00 AM|11/28/2014 12:00:00 AM|True
2020-02-14 17:03:01,573|TAG1|554|554|11/28/2014 12:00:00 AM|11/29/2014 12:00:00 AM|True
2020-02-14 17:03:01,580|TAG1|436|436|11/29/2014 12:00:00 AM|11/30/2014 12:00:00 AM|True
2020-02-14 17:03:01,590|TAG1|495|495|11/30/2014 12:00:00 AM|12/1/2014 12:00:00 AM|True
2020-02-14 17:03:01,600|TAG1|996|996|12/1/2014 12:00:00 AM|12/2/2014 12:00:00 AM|True
2020-02-14 17:03:01,616|TAG1|2686|2686|12/2/2014 12:00:00 AM|12/3/2014 12:00:00 AM|True
2020-02-14 17:03:01,625|TAG1|511|511|12/3/2014 12:00:00 AM|12/4/2014 12:00:00 AM|True
2020-02-14 17:03:01,634|TAG1|626|626|12/4/2014 12:00:00 AM|12/5/2014 12:00:00 AM|True
2020-02-14 17:03:01,644|TAG1|546|546|12/5/2014 12:00:00 AM|12/6/2014 12:00:00 AM|True
2020-02-14 17:03:01,652|TAG1|553|553|12/6/2014 12:00:00 AM|12/7/2014 12:00:00 AM|True
2020-02-14 17:03:01,661|TAG1|658|658|12/7/2014 12:00:00 AM|12/8/2014 12:00:00 AM|True
2020-02-14 17:03:01,670|TAG1|755|755|12/8/2014 12:00:00 AM|12/9/2014 12:00:00 AM|True
2020-02-14 17:03:01,680|TAG1|648|648|12/9/2014 12:00:00 AM|12/10/2014 12:00:00 AM|True
2020-02-14 17:03:02,503|Total Counts: PI Values: 203586714. LEGACY Values: 203586714
2020-02-14 17:03:02,503|Completion Time: 03:29:01.6862664
    
```

# Stats/Results

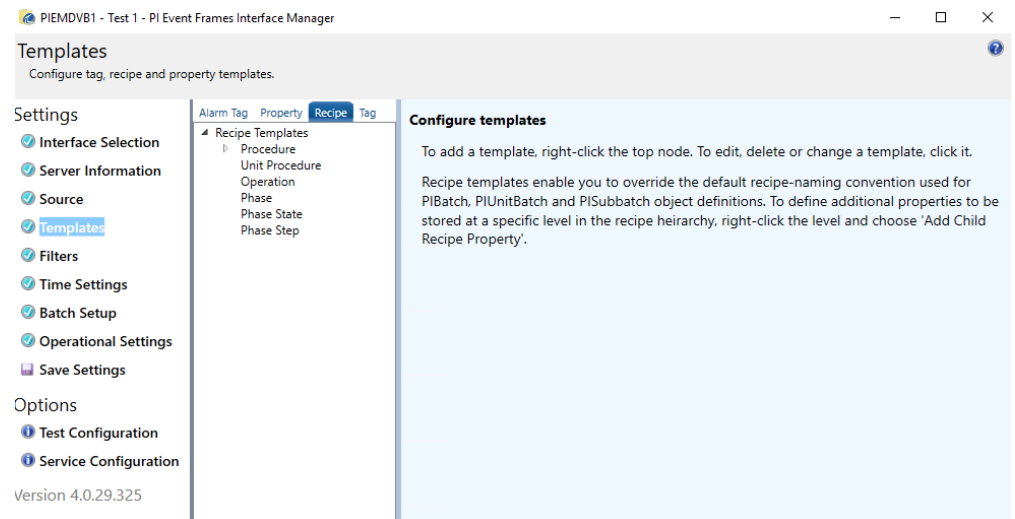
- 12.5-14.5K writes/second
  - Per instance
- 130 billion events for one area





# Batch Generation

- Interfaces
  - Event Frames Generator
  - Factory Talk Batch
  - EMDVB
- Custom Batch Reports



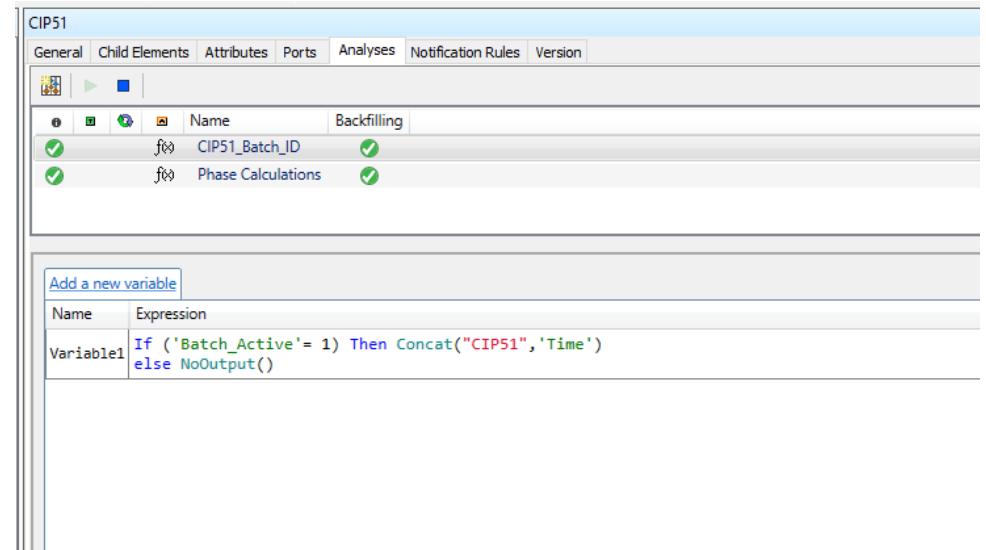
# Migration Tool: Batch

- Windows Form Application C#
- AFSDK connect to PI System
- XML Exports from legacy database
- Parse XML Files, and write to Event Frames

```
<batch name="3038411" t2="2015-06-08T01:06:55" t1="2015-06-07T23:09:05"
><attribute name="Recipe" type="character"
>Q52 Main Procedure</attribute
><attribute name="Unitname" type="character"
>X1011</attribute
><attribute name="Product Name" type="character"
>PRODUCT</attribute
><attribute name="Batch Number" type="character"
>3038411</attribute
><attribute name="Product" type="character"
>100</attribute
><procedure name="UNIT_PROCEDURE" t2="2015-06-08T01:06:55" t1="2015-06-07T23:09:05"
><operation name="PRODUCT_TRANSFER" t2="2015-06-08T01:05:09" t1="2015-06-07T23:09:05"
><phase name="MULTIPLE_PROMPT" t2="2015-06-07T23:25:15" t1="2015-06-07T23:09:05"
><event name="STOPPED" t2="2015-06-07T23:25:14" t1="2015-06-07T23:09:05"
></event
><event name="ALARM" t1="2015-06-07T23:18:31" t2="2015-06-07T23:18:32"
><attribute name="Tag" type="character"
>FIT-11-1</attribute
><attribute name="PV" type="numeric"
>2.755469</attribute
><attribute name="Fault" type="character"
>HH Range</attribute
></event
><event name="RUNNING" t1="2015-06-07T23:25:14" t2="2015-06-07T23:25:15"
></event
```

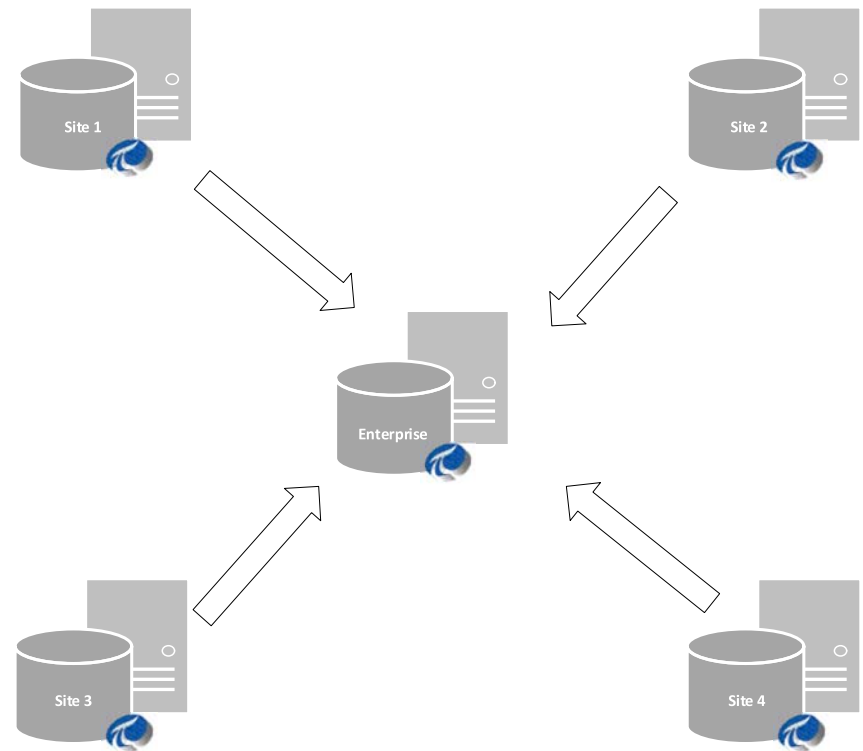
# New Plant Areas

- Asset Framework
- Vendor not S88 compliant
  - Creation of Analytics for batch Framing
  - Event Frames Generator



# Global Adoption

- Placed in Multiple Locations
- Standard AF Model across all sites
- Roll up to enterprise via PI System Connector



# Data Migration to PI



**Genentech**  
A Member of the Roche Group

## CHALLENGES

- Migrate from multiple Legacy historian instances to PI System
- 20 years Continuous and Batch Data
- Validated with no Data Loss

## SOLUTION

- 2 PI System installations via Enterprise Agreement
- Custom tool for migrating batch and continuous data
- Use of existing OPC Servers

## BENEFITS

- Stability
- Less Space to store same data
- Access to all Data
- Web Based Client/Asset Relative displays
- Documentation and Training



“During IT outages the PI Systems have fared much better than the legacy systems. We have had less data loss and much easier recovery.”  
-April Phillips, Genentech SSF PI System Owner



# Speakers



- Zach Wagner
- Project Engineer
- The RoviSys Company
- Zachary.wagner@rovisys.com



- April Phillips
- Senior Engineer
- Genentech
- phillips.april@gene.com

# Questions?

Please wait for  
the **microphone**

State your  
**name & company**



# Please remember to...

## Complete Survey!

Navigate to this session in  
mobile agenda for survey

An advertisement for the OSISOFT PI World app. It features a dark blue background with white text. On the right, a smartphone displays the app's logo, which consists of a stylized white atom symbol above the text "OSISOFT PI World". Below the text, there are two buttons: "Download on the App Store" with the Apple logo and "GET IT ON Google Play" with the Google Play logo.

TO DOWNLOAD APP,  
SEARCH OSISOFT  
PI WORLD

Download on the  
App Store

GET IT ON  
Google Play



謝謝 KEA LEBOHA  
 DZIĘKUJĘ CI TAPADH LEIBH 고맙습니다  
 NGIYABONGA БАЯРЛАЛАА MISAOTRA ANAO  
 TEŞEKKÜR EDERIM OBRIGADO شكرا SALAMAT  
 TERIMA KASIH DANKON TANK TAPADH LEAT  
 KÖSZÖNÖM DANKIE GRÁCIÉS  
 СПАСИБО MULTŪMESC  
 РАКМЕТ СИЗГЕ OSIssoft.  
 GO RAIBH MAITH AGAT PIWorld  
 БЛАГОДАРЯ GRACIAS HVALA HVALA ХВАЛА ВАМ  
 ТЕŞEKKÜR EDERIM  
 TI БЛАГОДАРАМ MAHADSANID  
 THANKYOU  
 DANKJE EΥΧΑΡΙΣΤΩ GRATIAS TIBI  
 TAK DANKE MAHALO IĀ 'ŌE TAKK SKALDU HA  
 АЇЇ SALAMAT  
 RAHMAT MERCI GRAZZI ПAKKA PĒR  
 HATUR NUHUN PAXMAT CAҒA  
 ありがとうございます  
 DI OU MÈSI  
 ĎAKUJEM  
 MATUR NUWUN  
 СẢM ƠN BẠN  
 UA TSAUG RAU KOJ  
 TI БЛАГОДАРАМ  
 СИПОС  
 WAZVIITA  
 FALEMINDERIT