



Microsoft Point of View in Plant Operations

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Industry BDM
WW Manufacturing
Microsoft Corporation

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OSIsoft Corporation

Agenda

- Microsoft in Manufacturing – Vision
- Microsoft Application Platform
- Customer Example
- Future in Manufacturing
- Questions & Answers

Shortage of
Skilled Resources



Increasing Pressures



Convergence of IT
and Operations



Shifting Locations and
Business Models



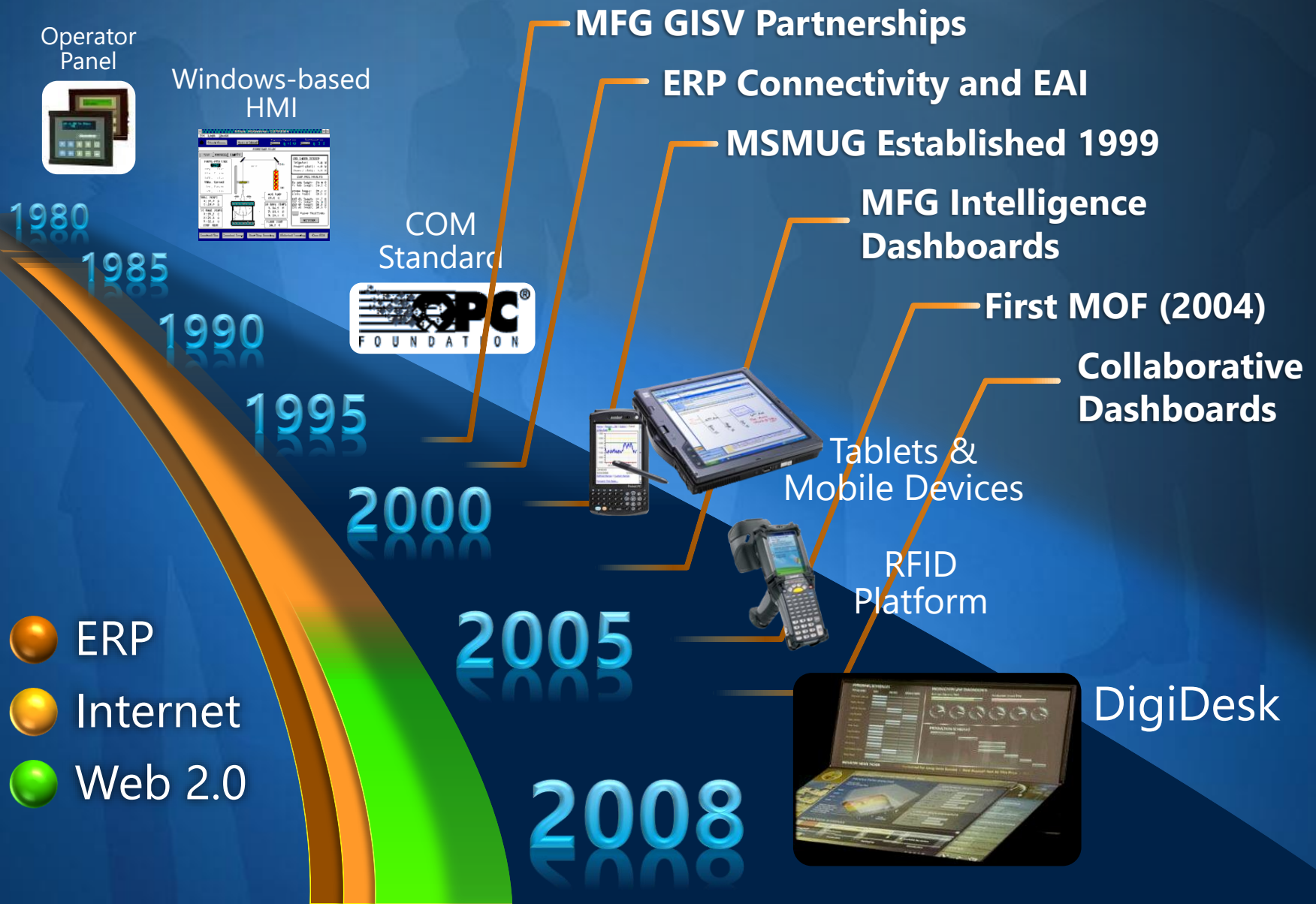
Digital User
Experience



Sustainability



Microsoft Milestones in Manufacturing Operations

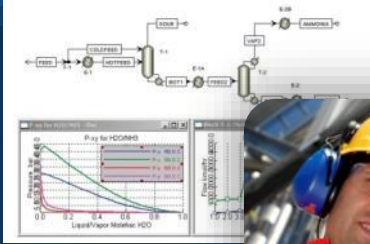


Industry Standards and Organizations

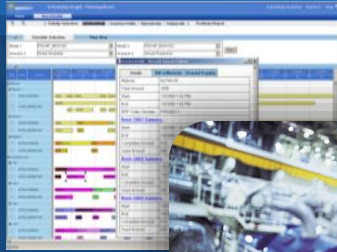


People

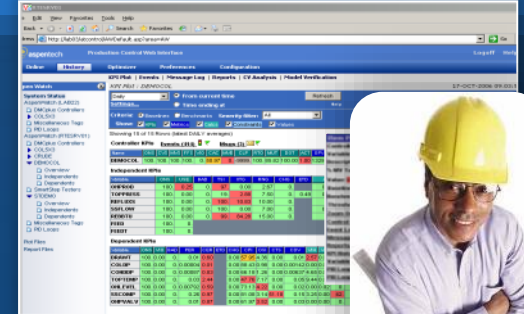
User's view of the world is role-based



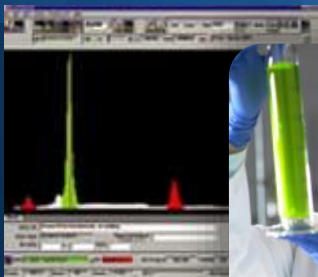
Process Engineer



Production Manager



Control Engineer



Lab / Quality

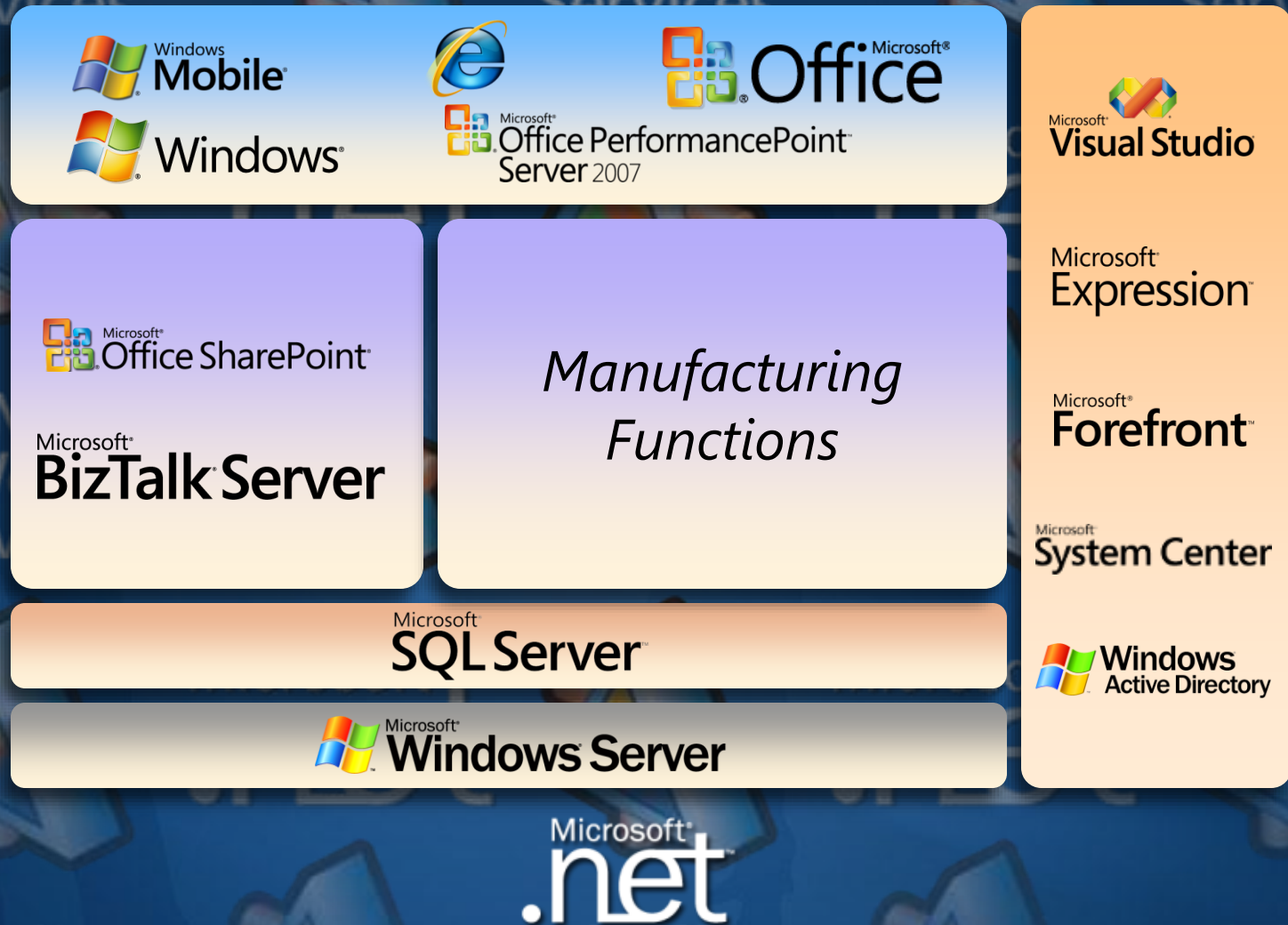


VP, Operations



Maintenance

Application Platform Stack



Application Platform Stack

Online Services

Azure™ Services Platform



Web

Microsoft

Home

About

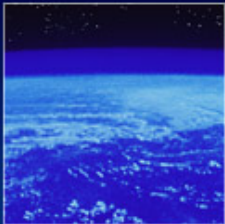
Solutions

Services

Resources

Community

Sign In



Experience the Azure Services Platform

Build new applications in the cloud - or use interoperable services that run on Microsoft infrastructure to extend and enhance your existing applications. **You choose what's right for you.**

- ▶ Azure for web developers
- ▶ Azure for corporate developers
- ▶ Azure for ISVs
- ▶ Azure for systems integrators
- ▶ Azure for business



**Production
Planning**



**Production
Scheduling**

Ten Years of Microsoft BI ...and Beyond

Project Management

Corporate
Decisions

BSM

PPS
V1

PPS V2

Business Intelligence

Personal and
Team Insights

Excel '9'

SSRS

Excel '12'

Excel '14'
MOSS BI
Self-Service
Embedded BI

Data Warehousing

Sound Data

OLAP

Enterprise OLAP
EDW

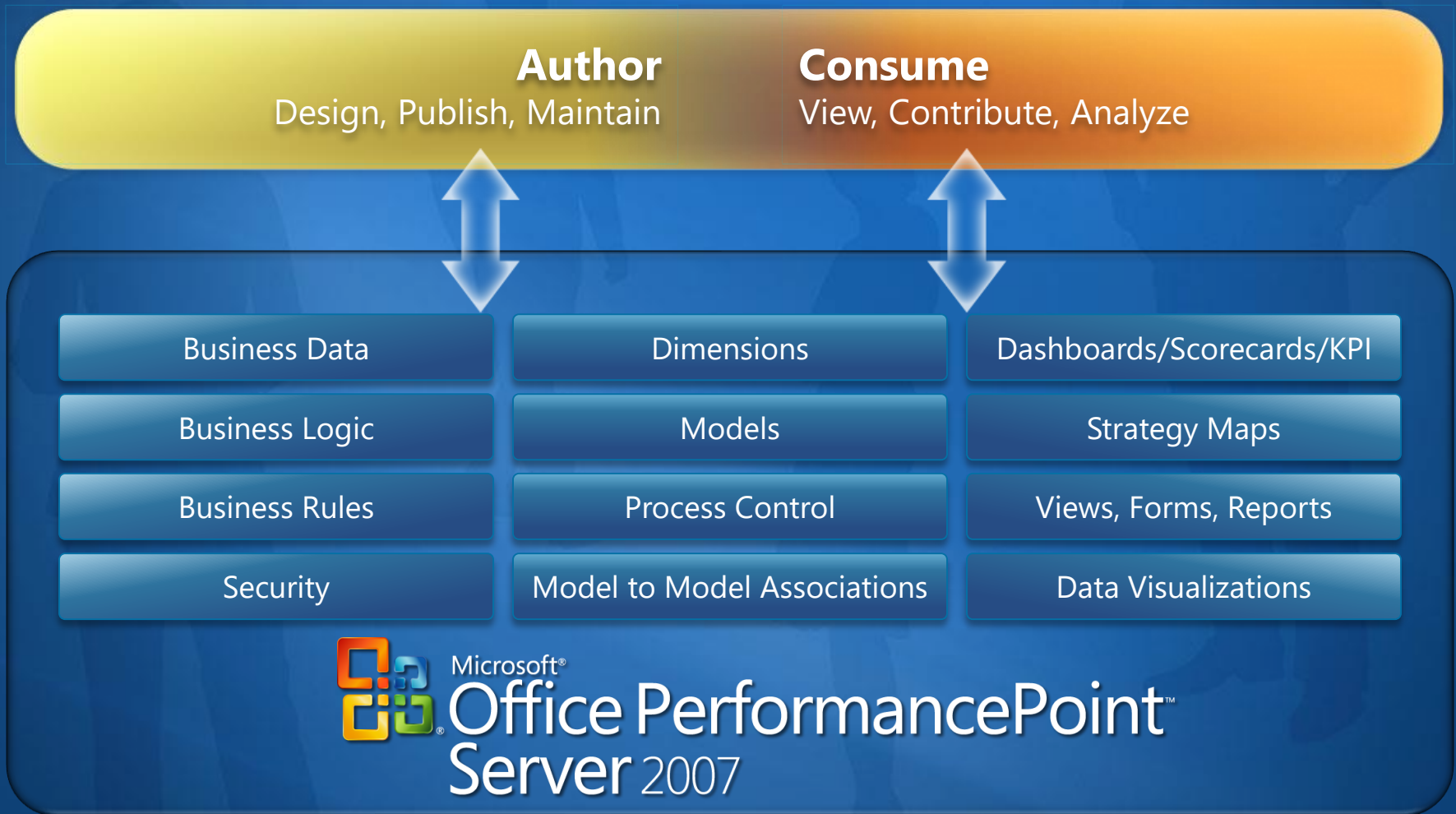
MDM

1998

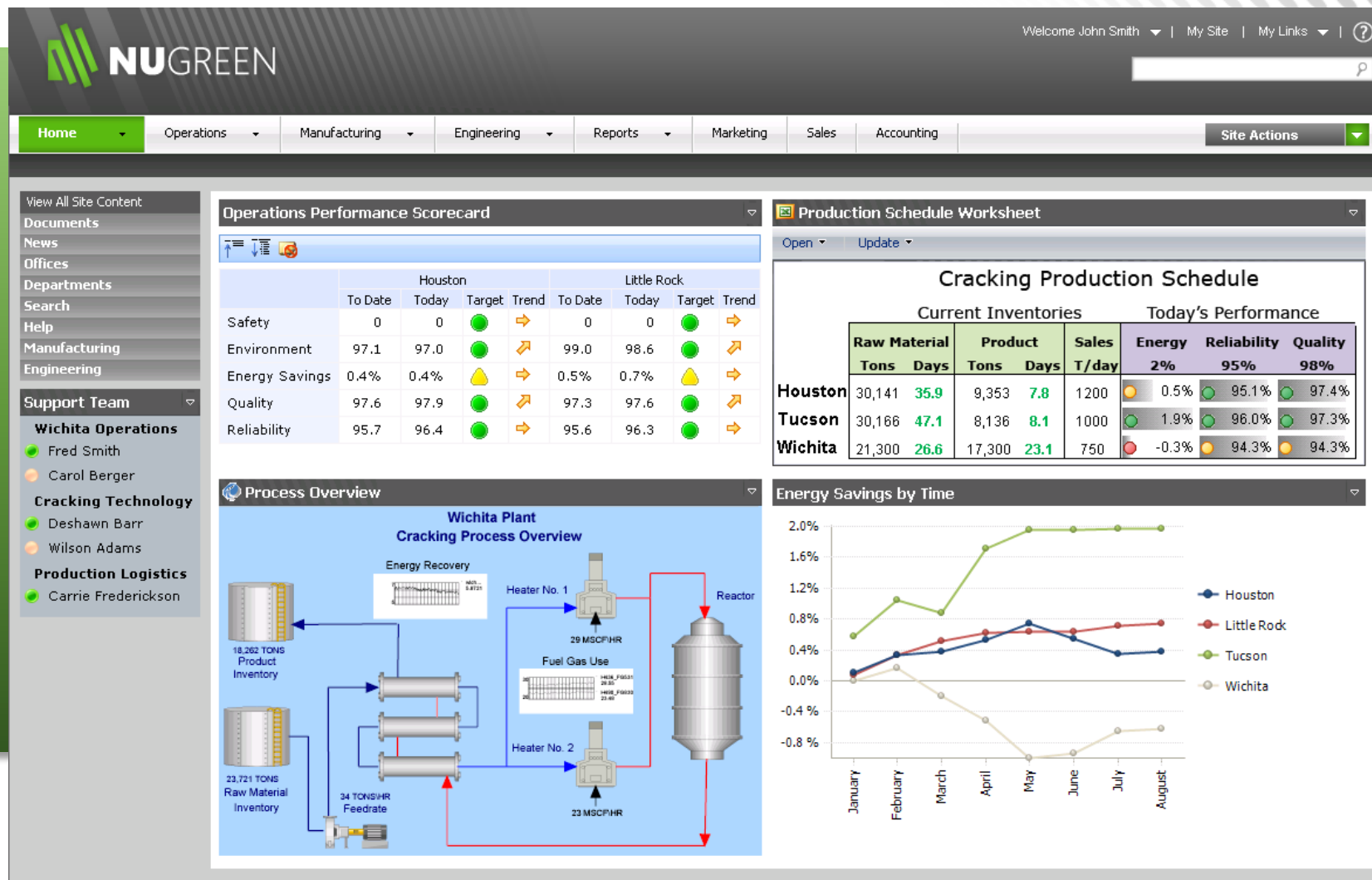
2008

Wave 14

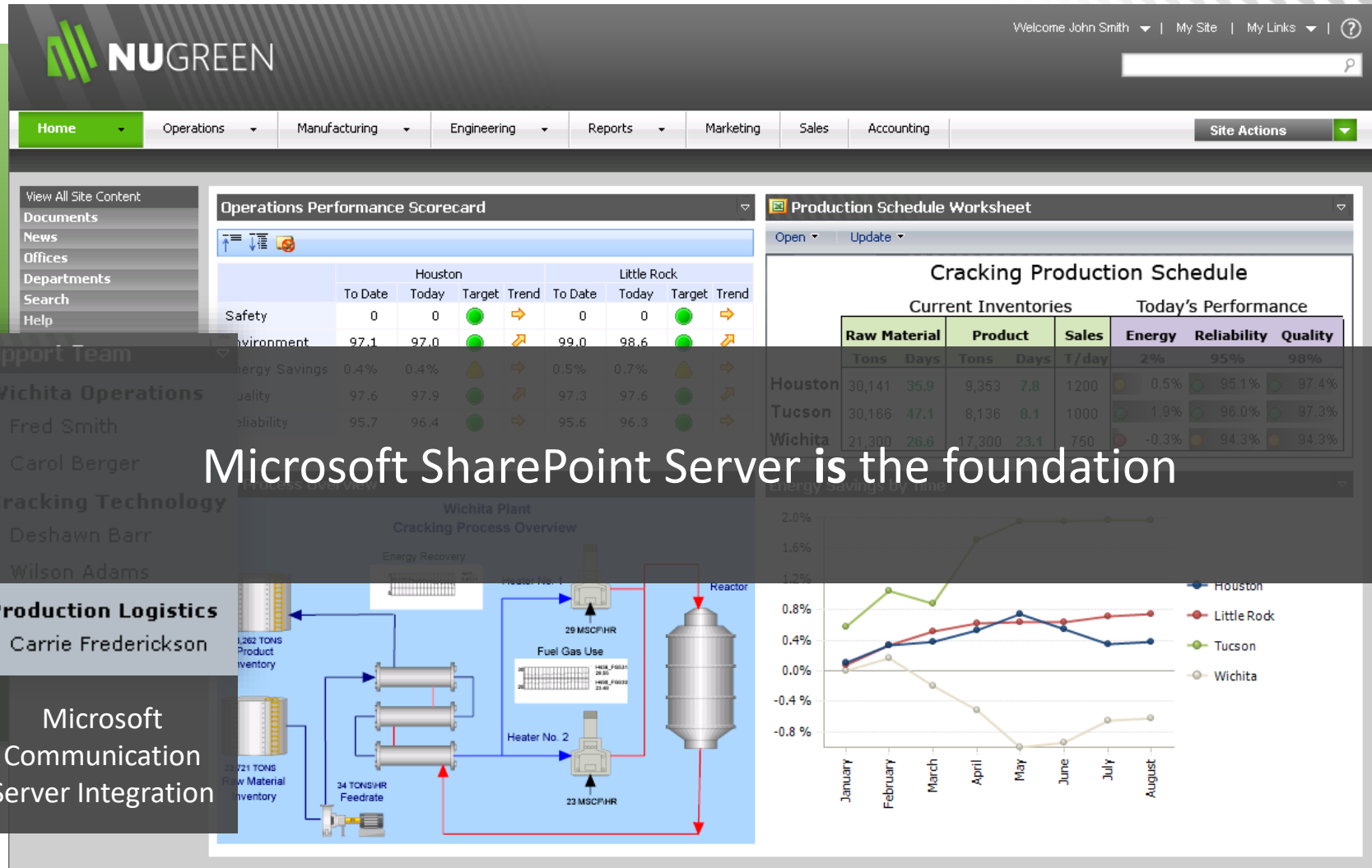
PerformancePoint Server 2007



OSIsoft – PI & PerformancePoint Server (BI)



OSIsoft : Integration Today



Microsoft SharePoint Server is the foundation

Real Time Enterprise Platform

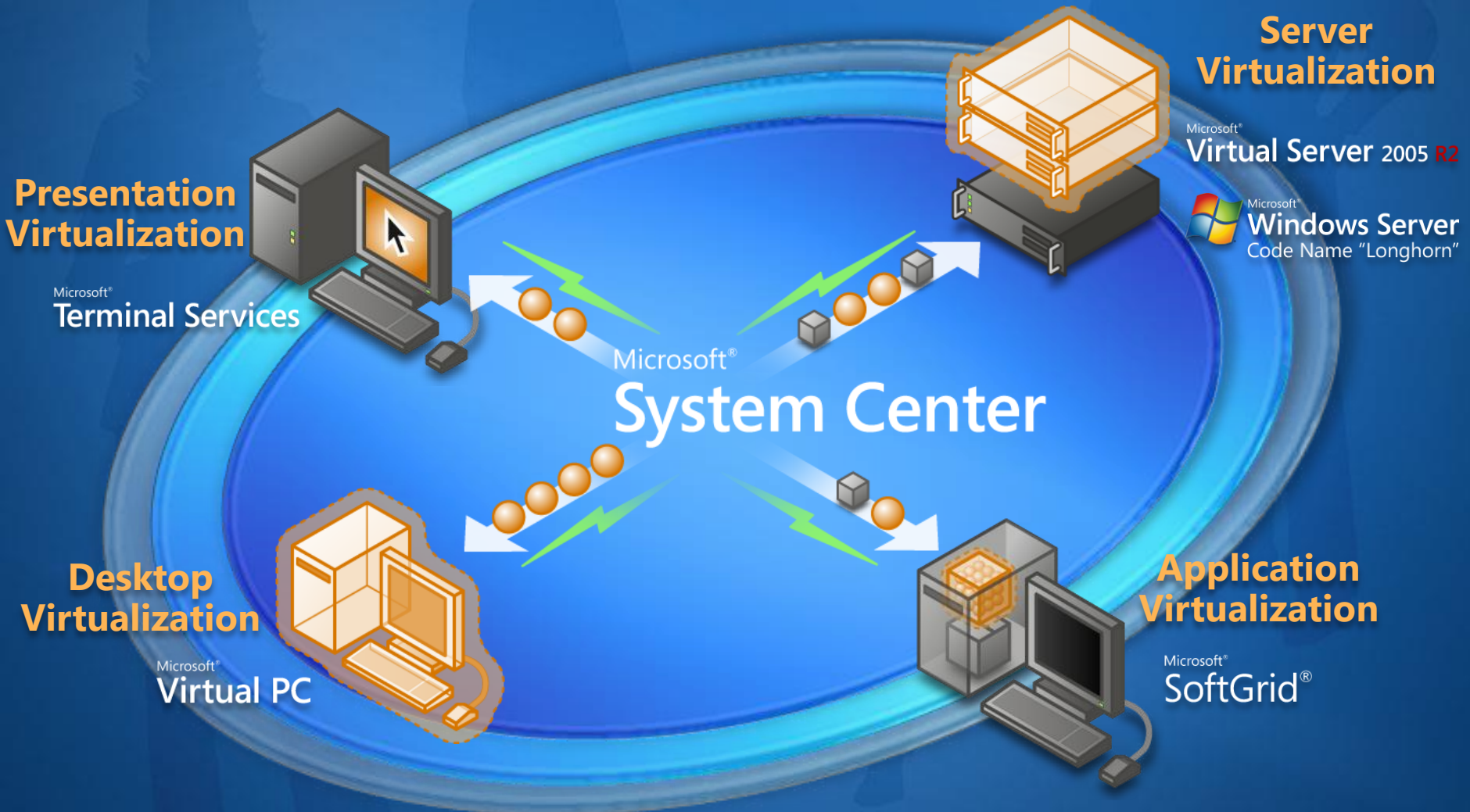
A functional view

Application Solutions	ISV Solutions, Dynamics Solutions Real Time Enterprise Apps, Oriented Enterprise Apps			
Services Layer	Open, standard based interfaces			
	Product Info Resolution Look-up	BizTalk Server, SQL Server Business Process Management	Analytics, Reports and Applications	Enterprise, Content Solutions
Event Mgmt Layer	SQL BI XML Web Services Events and Workflow Management Events, Messages, Business Rules			
Data Collection & Mgmt Layer	Data Collection and Management Collection, Storage, Smoothing, Filtering, Aggregation			
	RFID Services (New) Web Services for Devices			
Devices Layer	RFID Readers	Barcode Scanners	PDA's Windows CE, PocketPC	Handheld Terminals, Others

Microsoft Virtualization

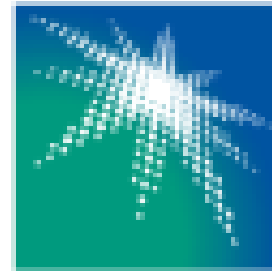
A complete set of virtualization products, from the data center to the desktop

All assets – both virtual and physical – managed from a single platform



Saudi Aramco

أرامكو السعودية
Saudi Aramco



Welcome to Mr. Abdullah H. Al-Bar

أرامكو السعودية
Saudi Aramco



Education:

B.S. Computer Science – KFUPM (2003)

M.S. Information Technology – Liverpool
(March 2009)

Current project: Using the PI System and Microsoft technologies to integrate all NAOO applications into one web portal framework. The web portal will have real-time data coming from the PI System and other in-house applications to streamline document management and business form processing.



OSIsoft.

Microsoft

Saudi Aramco—Leading Architect of the Energy Industry

“We’re a fully integrated, global petroleum enterprise encompassing exploration, producing, refining, distribution and shipping. We are stewards of the Earth’s largest proven conventional oil reserves and the fourth largest gas reserves. We lead the world in oil production and exports.

For generations, we have reliably supplied the oil that powers economic progress and, in turn, better living standards around the globe.”



أرامكو السعودية
Saudi Aramco



Ranked the world’s No. 1 oil company for 19 consecutive years
by *Petroleum Intelligence Weekly*.



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Business Challenges

- Scalability of System
- Validity of Data
- Management of Knowledge



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The Solution

Implemented the PI System – a robust real-time infrastructure using the latest Microsoft technologies



PI Infrastructure



Excel Services
InfoPath Forms



PI DataLink Client
PI Datalink Server
PI RtWebParts

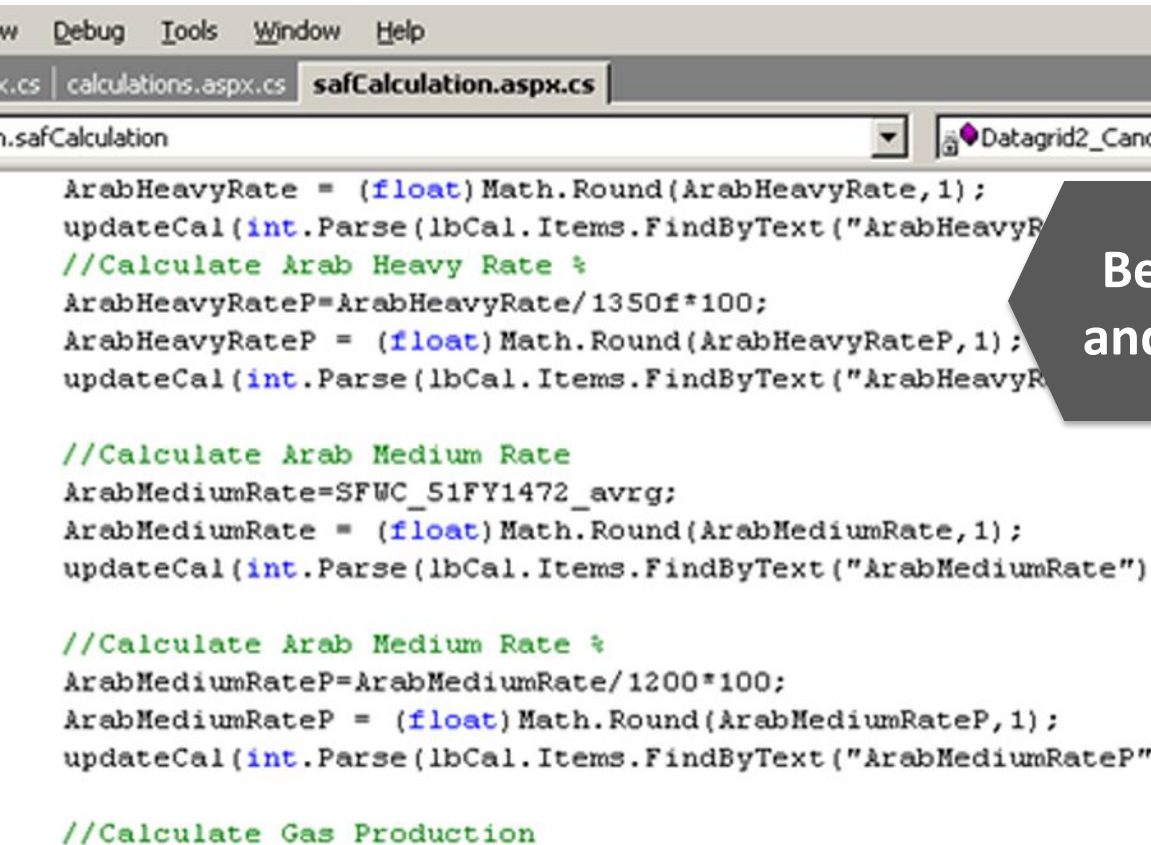
SharePoint Server 2007
Enterprise

Dynamic OBA
Accelerators

Windows Server
SQL Server



The Solution in Action – SharePoint 2007 and PI



```
ArabHeavyRate = (float) Math.Round(ArabHeavyRate, 1);
updateCal(int.Parse(lbCal.Items.FindByText("ArabHeavyRate")));
//Calculate Arab Heavy Rate %
ArabHeavyRateP=ArabHeavyRate/1350f*100;
ArabHeavyRateP = (float) Math.Round(ArabHeavyRateP, 1);
updateCal(int.Parse(lbCal.Items.FindByText("ArabHeavyRateP")));

//Calculate Arab Medium Rate
ArabMediumRate=SFWC_51FY1472_avrg;
ArabMediumRate = (float) Math.Round(ArabMediumRate, 1);
updateCal(int.Parse(lbCal.Items.FindByText("ArabMediumRate")));

//Calculate Arab Medium Rate %
ArabMediumRateP=ArabMediumRate/1200*100;
ArabMediumRateP = (float) Math.Round(ArabMediumRateP, 1);
updateCal(int.Parse(lbCal.Items.FindByText("ArabMediumRateP")));

//Calculate Gas Production
```

Before Excel Services
and PI DataLink Server

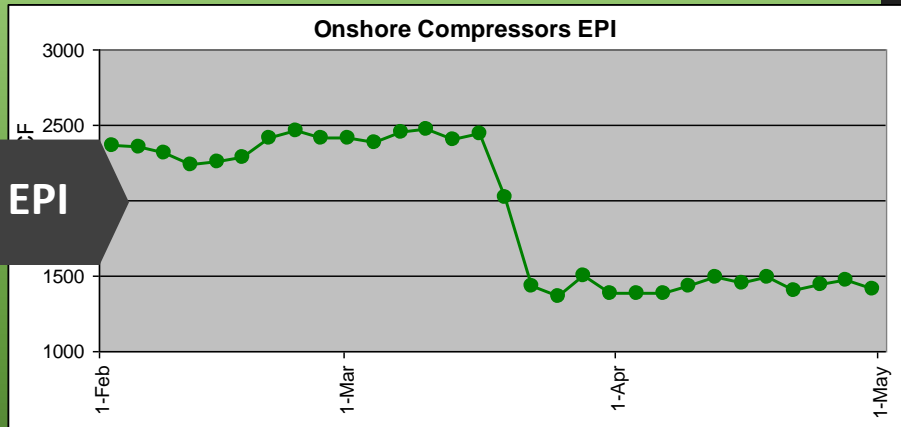


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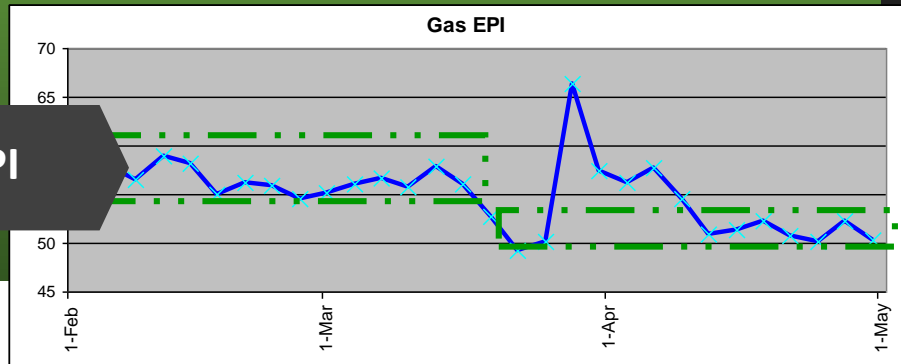
Microsoft

The Solution in Action – Role-Based EPIs *With Excel Services*

Process Area EPI



Product EPI



Quickly detect any problems in order to take corrective action.



OSIsoft.

Microsoft

Dynamic Visibility as Business Value



**BUSINESS
VALUE**

- Minimized downtime
- Established Energy Performance Indexes (EPIs)
- Created a collaborative and efficient workflow for forms and documents
- Provided a fast and easy way for people to view data
- Formed “one version of the truth”
- Instituted automated reporting

Canvas of Dynamic Visibility



VIDEO: Dynamic Visibility



User Experience

New devices with natural user interfaces will make a difference in manufacturing operations



Cloud Computing

Applications exposed as services to be used by people in operations, customers, and suppliers

LIMS

MES

Manufacturing Applications

Enterprise Applications

ERP

SCM

Quality

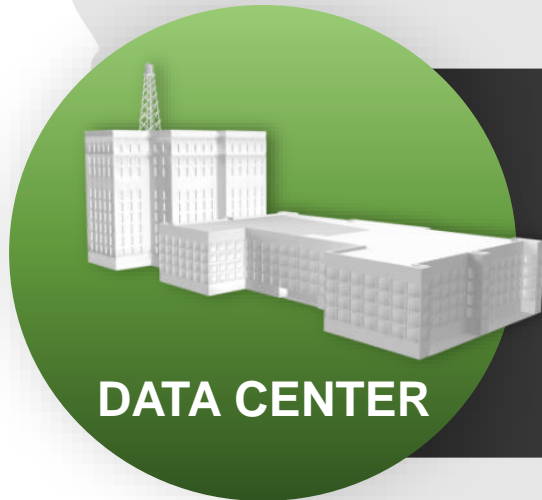
Production Schedule





Microsoft Data Centers

Microsoft Vision

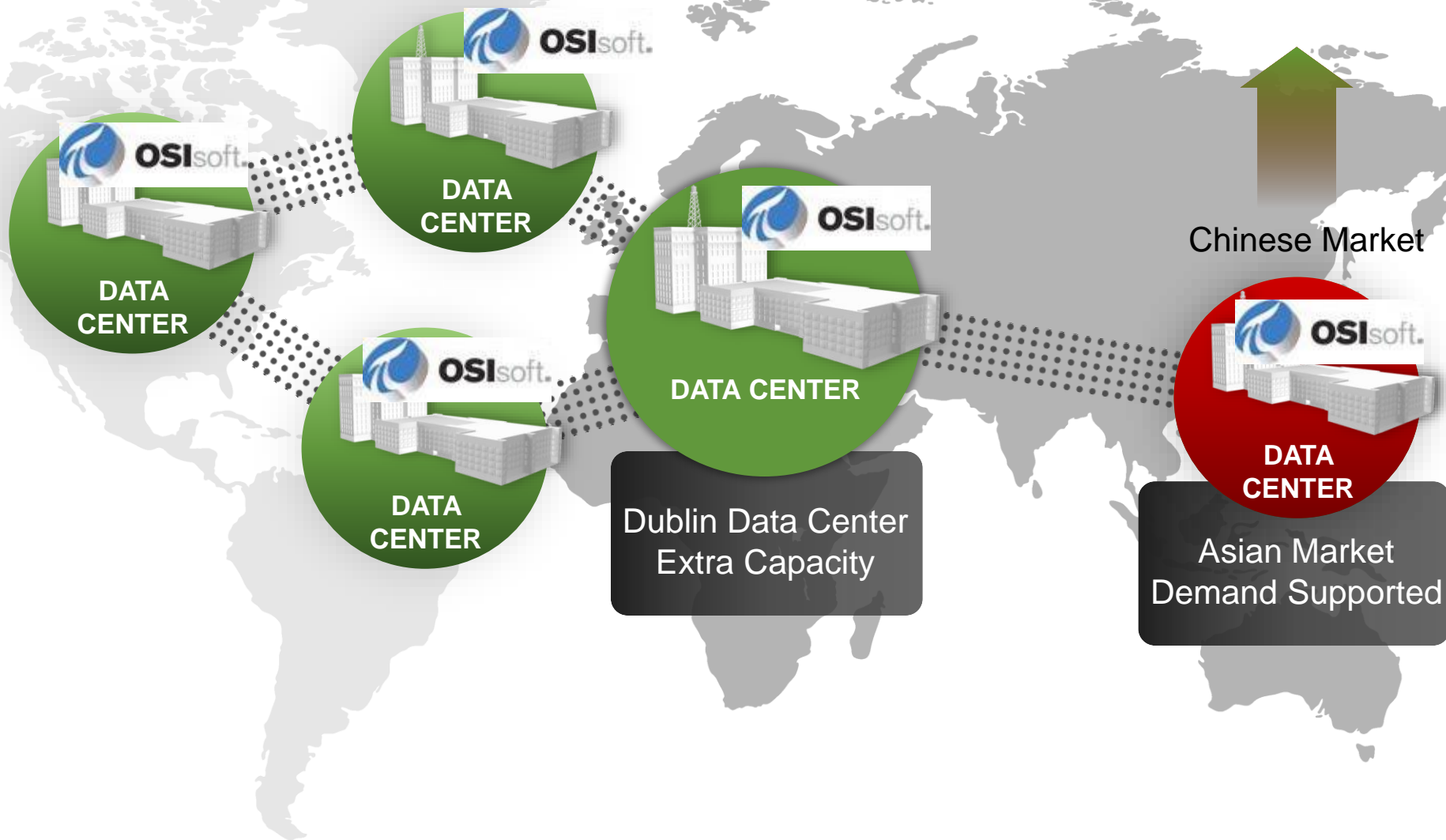


Local Holistic Visibility

- Energy Monitoring & Management
- Systems & Process Visibility
- Best Practices

First Step: Visibility at the Local Level

Our Vision



Dynamic Visibility Provides Solution


Microsoft



Thank You!

 Windows Live  Office Live  Exchange Online  SharePoint Online  Microsoft Dynamics CRM Online

Azure™ Services Platform

 Live Services

 Microsoft .NET Services

 Microsoft SQL Services

Microsoft
SharePoint Services

Microsoft Dynamics
CRM Services

 Windows Azure