

Acesso a Dados de IIoT com o PI System | PI Vision & Integradores

Anderson Amaral | Engenheiro de Sistemas

Jun-2017



A Internet em Tempo-Real

30 segundos

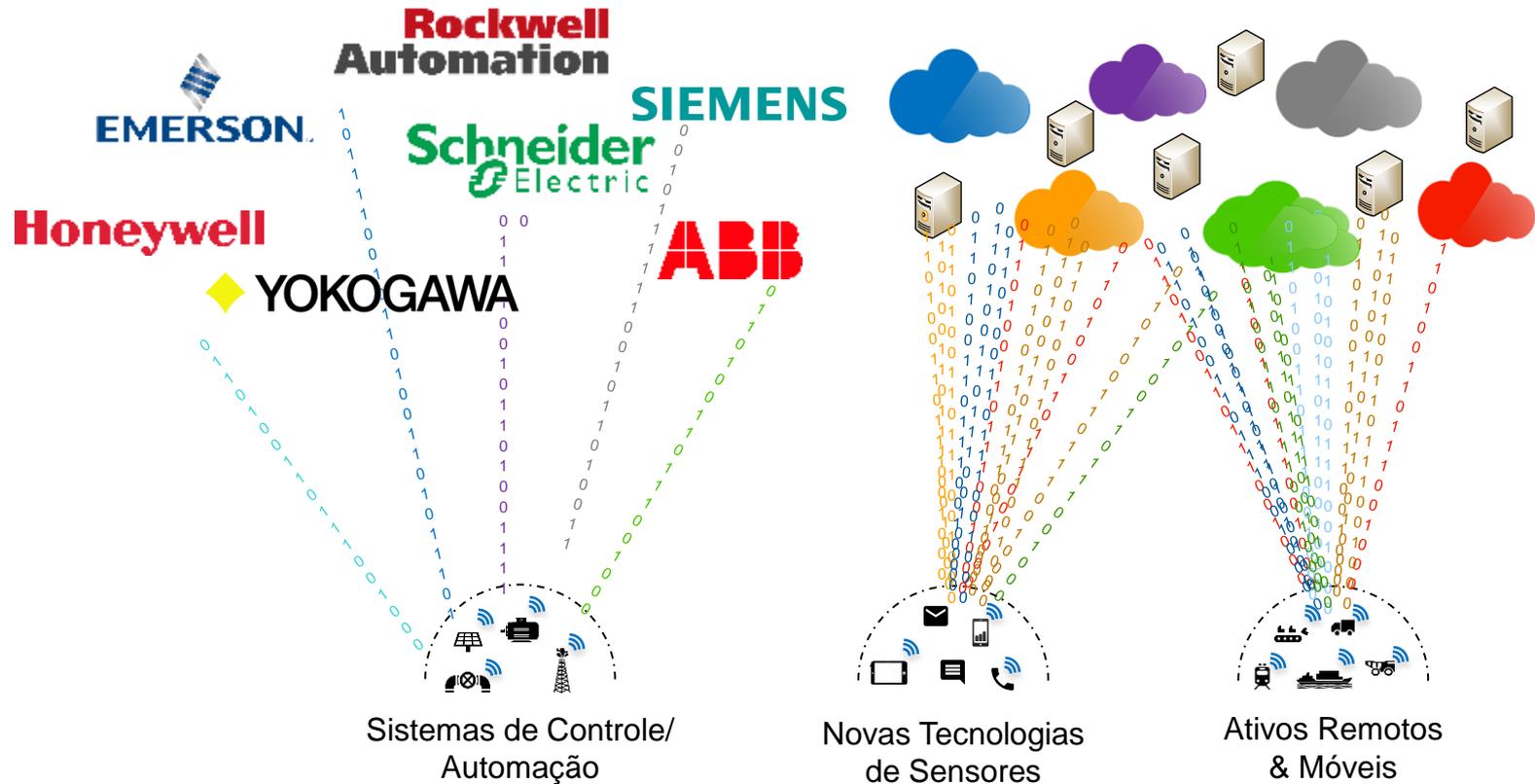


30 dias

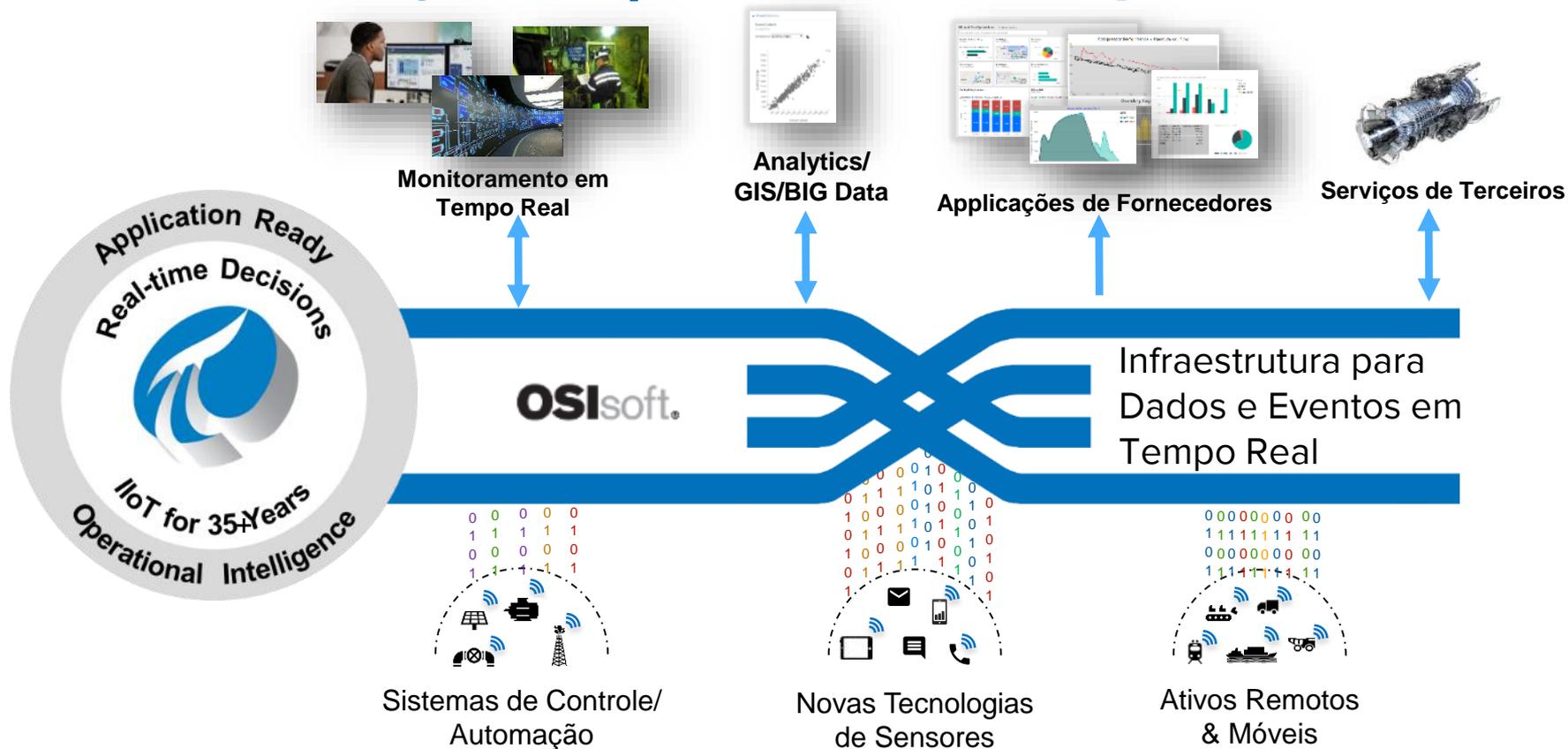


fonte: <https://www.befy.co.uk/internet-realtime/>

O Desafio de Industrial Internet of Things (IIoT)



PI System | Infraestrutura para IIoT



Os dados do PI System são utilizados por toda a empresa para solucionar inumeros impactos de negócios



**Operadores
Especialistas
Supervisores**



**Engenheiros de Processo
Gerentes de Produção
Centro de Excelência**



**Gestores Locais
Admin. Regionais/Globais
Dirigentes**

Infraestrutura do PI System



Utilizando os dados do PI System

PI Vision

Infraestrutura de visualização unificada, sua conexão com a inteligência operacional

Integradores

Combine dados operacionais com dados de negócios para obter análises complexas



PI Vision 2017

Infraestrutura
de Visualização
Unificada

PI Vision

Estamos embarcando em uma **infraestrutura de visualização unificada** para oferecer uma experiência integrada, avançada e extensível.

Crie Telas &
Dashboards
Singulares

Monitore e
Otimize
Processos
Complexos

Analise e
Compare
Eventos
Importantes

Insira Dados
Críticos com
Contexto

Sua conexão com a Inteligência Operacional

Uma **plataforma única** para suas necessidades de visualização

Hoje



PI ProcessBook

Editor de Tela
Monitoramento de Processos



PI Vision

Análise Ad Hoc
Visualizador de Display do PB



PI WebParts

Dashboards

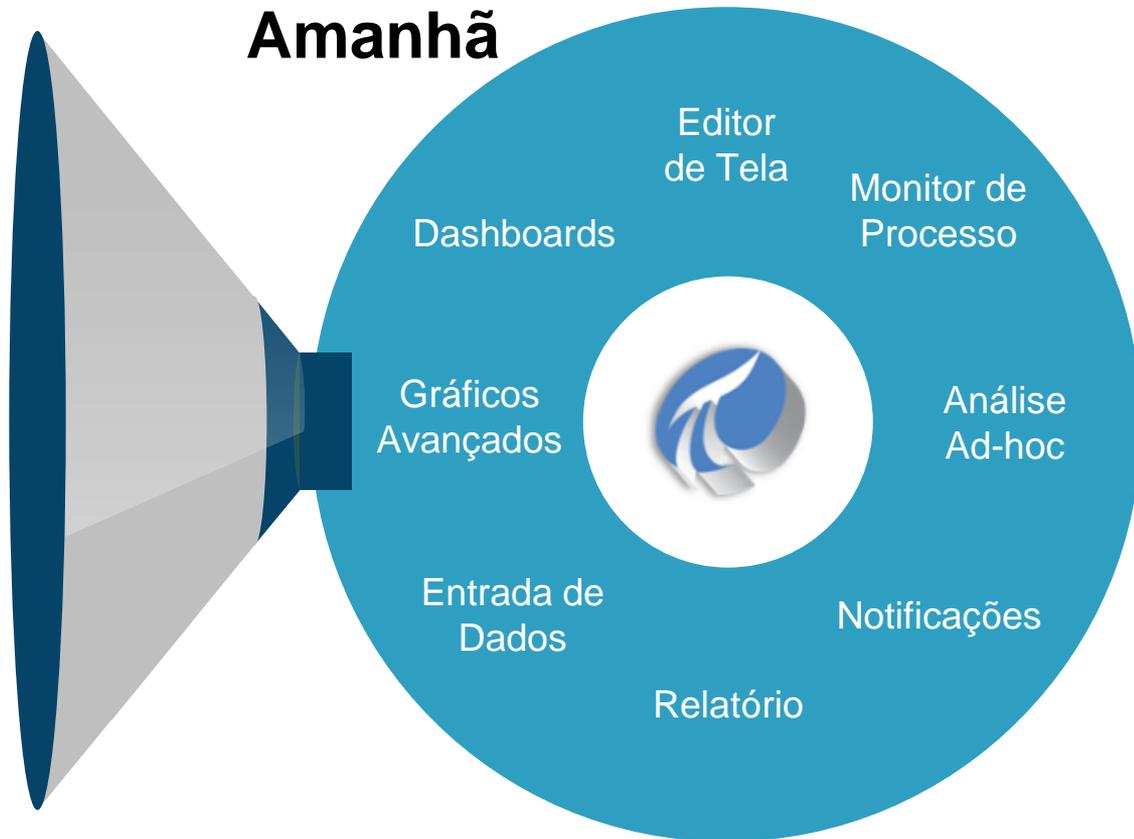


PI Manual Logger

Entrada Manual de Dados



Amanhã



Uma Infraestrutura de Visualização Verdadeiramente Extensível

Quem se beneficia das extensões?



**Equipes da
OSIsoft**



Parceiros



Clientes

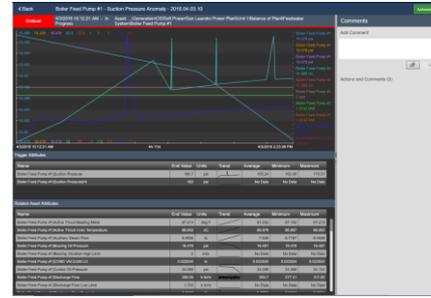
Uma Moderna Visualização para o Moderno PI System



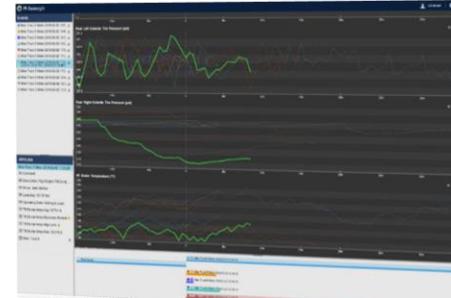
Criação



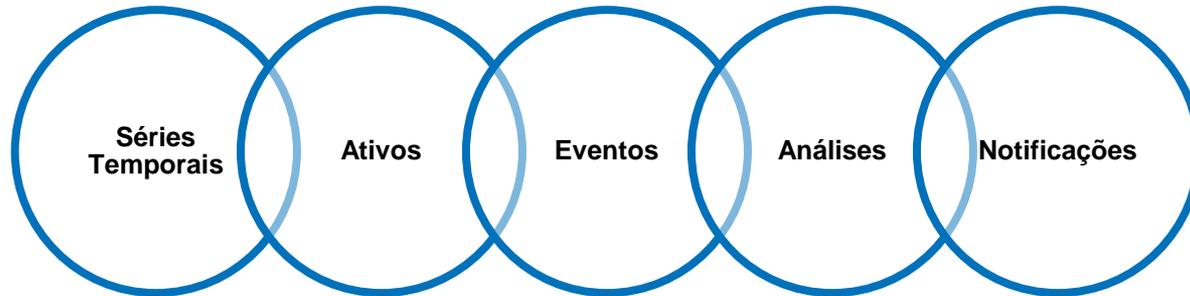
Monitoramento



Entrada Manual



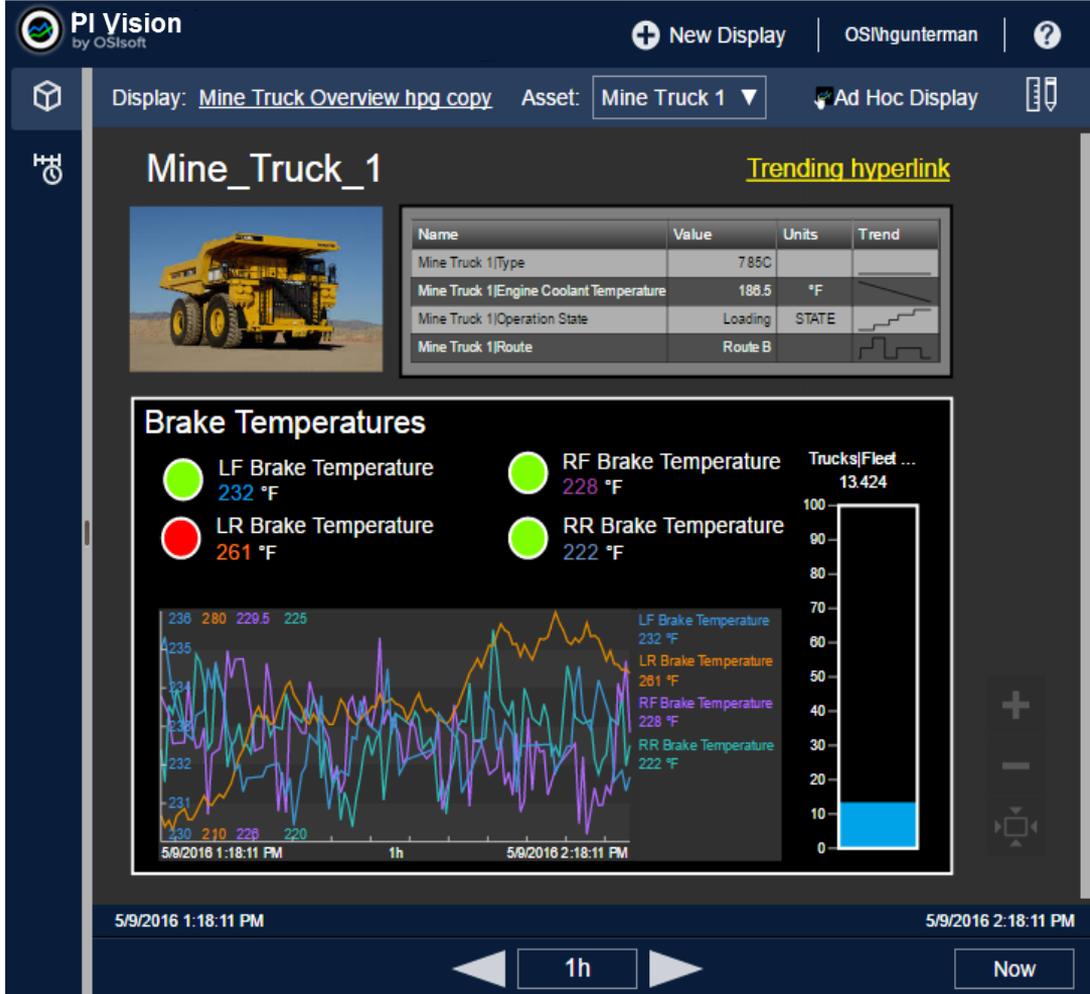
Análise Ad Hoc



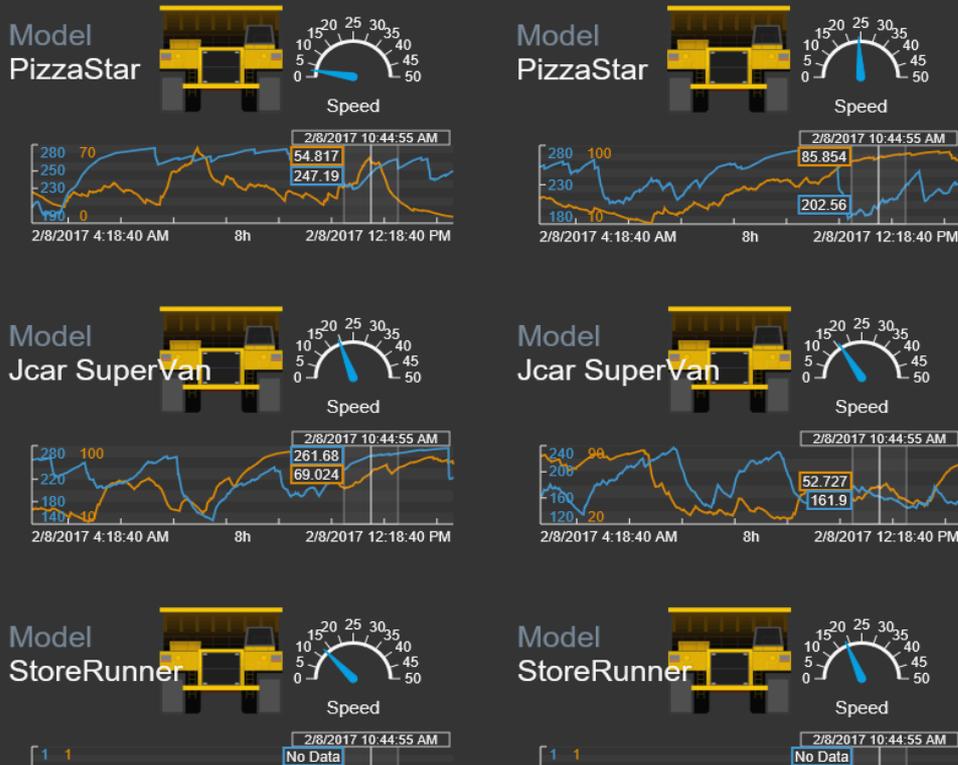
O que é o PI Vision?

A maneira mais rápida e fácil de visualizar os dados do PI System

- Acesse dados em qualquer navegador Web, incluindo navegadores de dispositivos **móveis**
- Colabore e **compartilhe** comentários com toda a empresa
- De rápida **implantação**



Preenche Automaticamente as Telas de Monitoramento com Coleções



Agrupe um ou mais símbolos como uma “coleção”



Preenche automaticamente a tela deste agrupamento com **todos os ativos**

- Novos ativos são adicionados automaticamente
- Adicione **critérios de filtro** para ver rapidamente ativos com problemas

Eventos Fixados

- Identifique desvio(s) de processos em lote comparando com uma referência
 - “Fixe” um ou mais eventos para serem utilizados como uma referência
 - Os eventos fixados são salvos com a tela

The screenshot displays the 'Events' interface. At the top, there is a checkbox labeled 'Automatically refresh the list' which is checked. Below this, a section titled 'Pinned' is visible. The main list of events includes:

- OSIsoft_201581181621 (CLEANING) 8/11/2015 4:16:21 AM - 8/11/2015 6:46:49 AM
- OSIsoft_201585185135 (CLEANING)
- OSIsoft_201581202655 (CLEANING) 8/11/2015 8:26:55 AM
- OSIsoft_20158...
- OSIsoft_20158...
- OSIsoft_20158...
- OSIsoft_201584104839 (CLEANING)
- OSIsoft_201584103941 (CLEANING)

A context menu is open over the third event, showing the following options: Hide Event, Event Details, Compare Similar Events by Name, Compare Similar Events by Type, and Pin Event. The 'Pin Event' option is highlighted. At the bottom right of the interface, there is a link for 'Edit Search Criteria'.

Biblioteca Gráfica

- Crie **telas** facilmente usando uma extensa biblioteca de símbolos gráficos
- Os mesmos símbolos disponíveis no PI ProcessBook

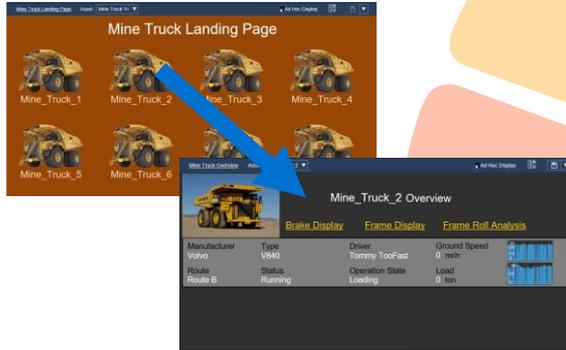




PI Vision 2017

Coleções

Navegação Drill-in



Eventos Fixados

Search Results

- OSIsoft_201581181621 (CLEANING) 8/11/2015 4:16:21 AM - 8/11/2015 6:46:49 AM
- OSIsoft_2015810231135 (CLEANING)
- OSIsoft_201581202655 (CLEANING)
- OSIsoft_2015810232451 (CLEANING)
- OSIsoft_20158519028 (CLEANING)
- OSIsoft_201585185135 (CLEANING)
- OSIsoft_2015853150 (CLEANING)
- OSIsoft_201584104839 (CLEANING)
- OSIsoft_201584103941 (CLEANING)

Tabela de Eventos

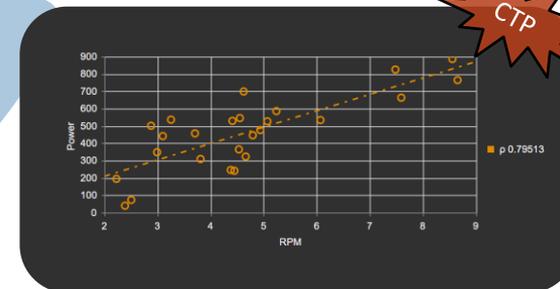
CTP

Start Time	End Time	Acknowledgement
2017-01-26 06:21:43.000	2017-01-26 07:14:43.000	Acknowledge
2017-01-26 07:14:43.000	2017-01-26 07:23:43.000	Acknowledged
2017-01-26 07:23:43.000	2017-01-26 07:34:13.000	Acknowledged
2017-01-26 07:34:13.000	2017-01-26 08:25:13.000	Acknowledged
2017-01-26 08:25:13.000	2017-01-26 08:29:13.000	Acknowledge
2017-01-26 08:29:13.000	2017-01-26 08:57:13.000	Acknowledge

Tabela de Comparação de Ativos

Asset	Manufacturer	Driver	Engine RPM	Load	Status
Mine Truck 1	Caterpillar	Jason Rice	0	0	Running
Mine Truck 2	Volvo	Tommy TooFast	0	0	Running
Mine Truck 3	Komatsu	Edna Thompson	1,682.6	159.87	Running
Mine Truck 4	Caterpillar	Revill Swivel	0	0	Running
Mine Truck 5	Volvo	John Sintias	0	0	Running
Mine Truck 6	Komatsu	Steve Kwan	1,744.9	194.14	Running
Mine Truck 7	Volvo	Brian Bostwick	0	0	Running
Mine Truck 8	Caterpillar	Steve Kia	0	0	Running
Mine Truck 9	Caterpillar	Justin Brown	0	0	Running
Mine Truck 10	Volvo	Bob Bonkers	1,719.7	157.74	Running

Gráfico XY

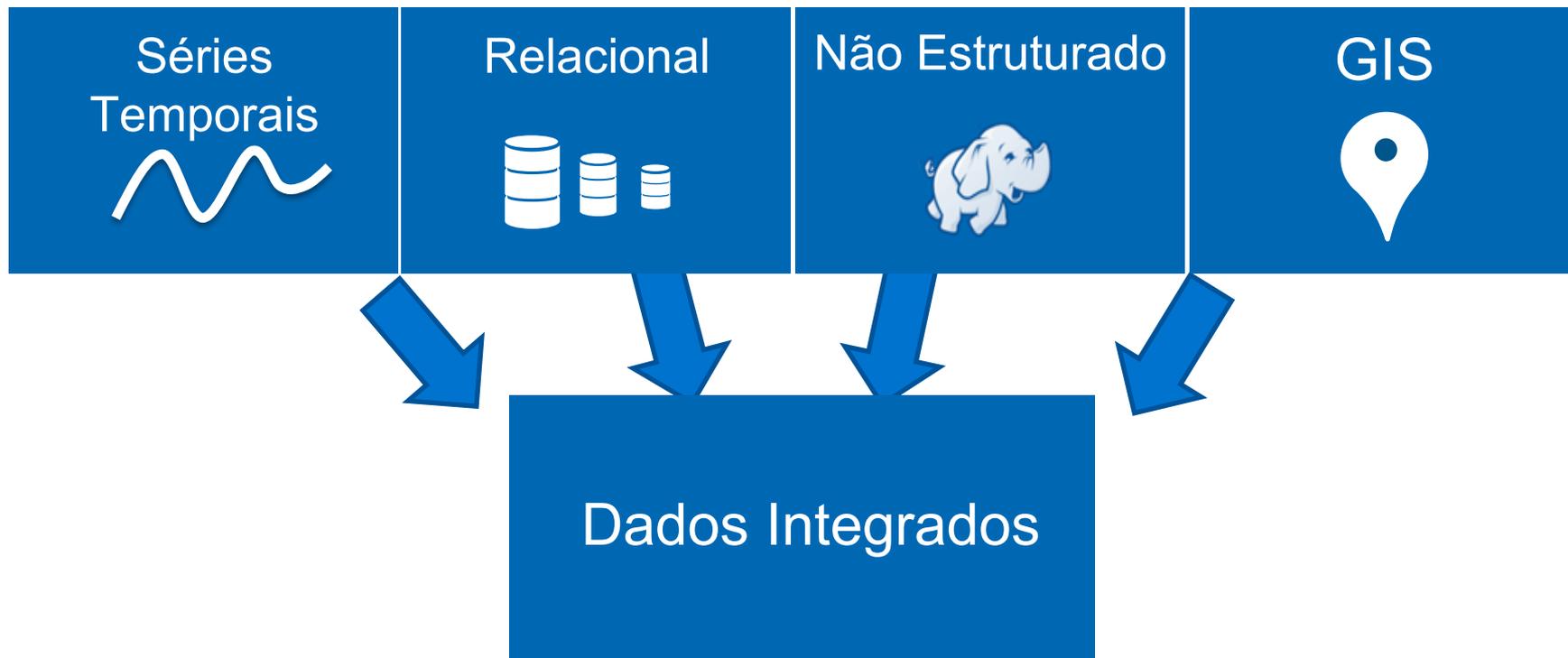


A background graphic of a network or data structure, consisting of numerous white nodes connected by thin white lines, set against a dark blue gradient background. The nodes are scattered across the frame, with a higher density in the lower right area.

Integradores | Combinando o Melhor de Dois Mundos



Integração de Dados agrupa Diferentes Tipos de Dados



Integrar: [verbo] combinar uma coisa com outra para que elas se tornem um todo

Séries Temporais são Dados Complexos!



Turbine 1

Speed
Bearing Temp
Oil Temp



Turbine 2

Speed
Bearing Temp
Oil Temp
Wear Factor

Prepara e Entrega Dados de Processo

para qualquer **Ferramenta de Visualização**
ou de **Análise** de banco de dados
no padrão ODBC



EXTRAIR

DEPURAR

INTEGRAR

MODELAR

TRANSMITIR

ENVIAR



Integrações Avançadas - Sistemas Suportados

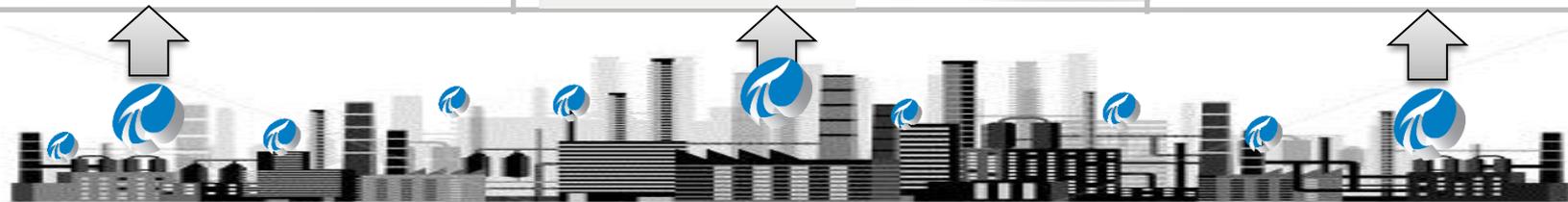
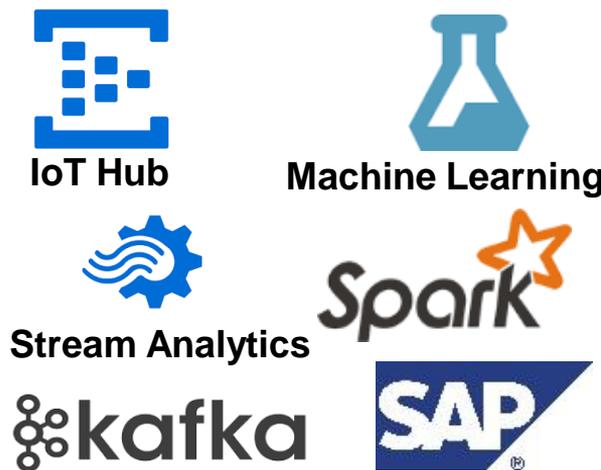
Visual Analytics



Data Warehouse / Data Lake



Streaming Analytics – 2017



PI Integrator for Esri ArcGIS

OSIsoft | Esri | Oil and Gas Dashboard

Wells

Q Search

- CE-08300011
Flow Rate: 250.92 k sft3/h
Flow Tubing Pressure: 181.21 psig
1/6/2014 12:19 PM
- CE-08300073
Flow Rate: 362.30 k sft3/h
Flow Tubing Pressure: 99.26 psig
1/6/2014 12:19 PM
- CE-08300083
Flow Rate: 302.46 k sft3/h
Flow Tubing Pressure: 167.81 psig
1/6/2014 12:19 PM
- CE-08300101
Flow Rate: 247.43 k sft3/h
Flow Tubing Pressure: 247.27 psig
1/6/2014 12:19 PM

Flow Rate

250.92

Flow Tubing Pressure

181.21

psi

Production KPI

295.17 k sft3/h

Cat Canyon Operations Dashboard Map

GeoFences

GeoFenceId	Category	Name
Danger Zone 1 Items		
DangerousArea/Danger Zone	DangerousArea	Danger Zone
Drilling Activity 1 Items		

Alerts

Alerts (8)

Incident Name	Resource	Resource Name	Description	As
Cumulative 8 Items				
DangerousArea	Roustabout Miguel		Ongoing for last 54 seconds.	
DangerousArea	Roustabout Miguel		Ended at Mon Jan 06 17:18:05 UTC 2014 and lasted for 36 seconds.	
DangerousArea	Roustabout Carol		Ongoing for last 3 minutes and 40 seconds.	

PI CoreSight

Bottom Hole Pressure

Trucks

- Roustabout Miguel
Fuel: 0.00 gal
Speed: 2.92 mph
- Electrician Bob
Fuel: 0.00 gal
Speed: 2.69 mph
- Welder Joe
Fuel: 68.22 gal
Speed: 10.84 mph
- Supervisor Lauren
Fuel: 16.52 gal
Speed: 26.13 mph

Truck Detail

Roustabout Miguel

This truck has consumed 0.00 gallons and has driven 316,019.69 miles

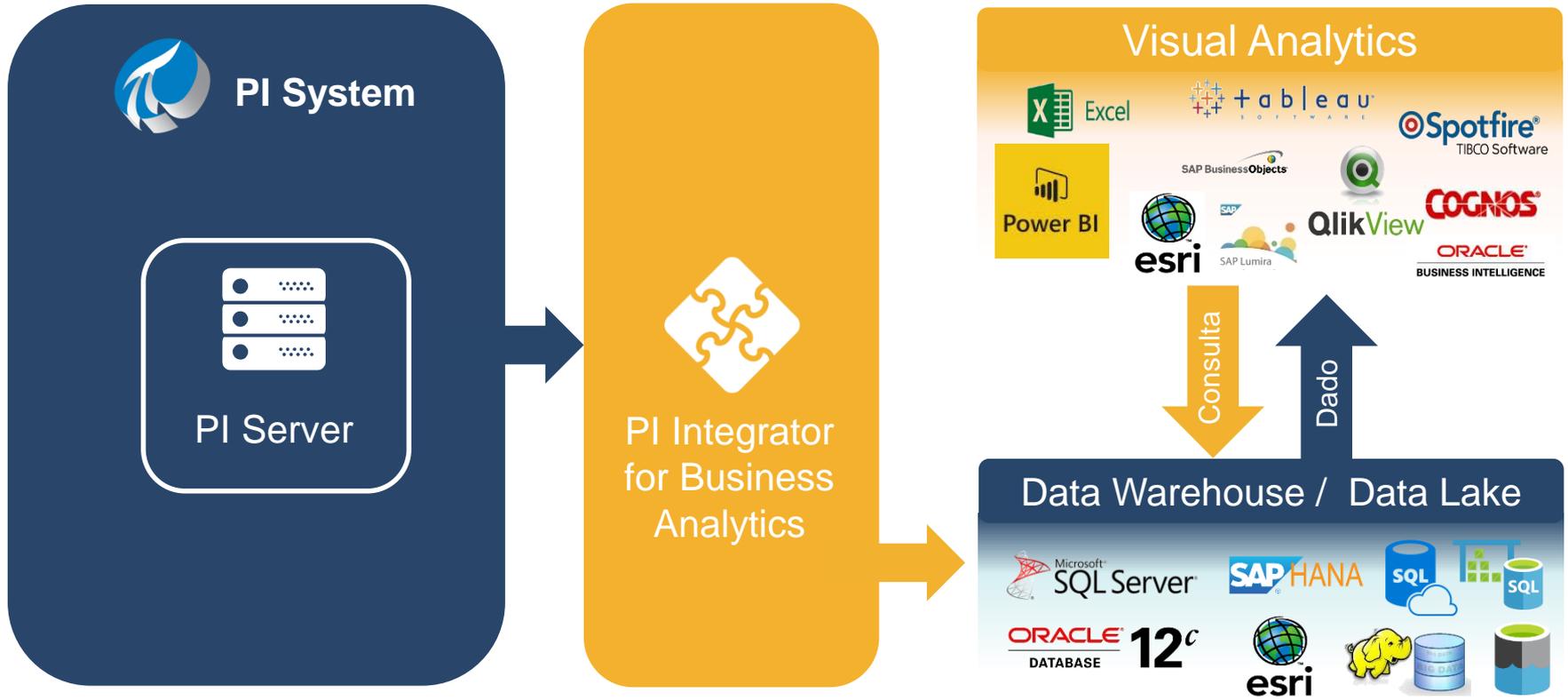
Roustabout Miguel

Fleet Average Speed

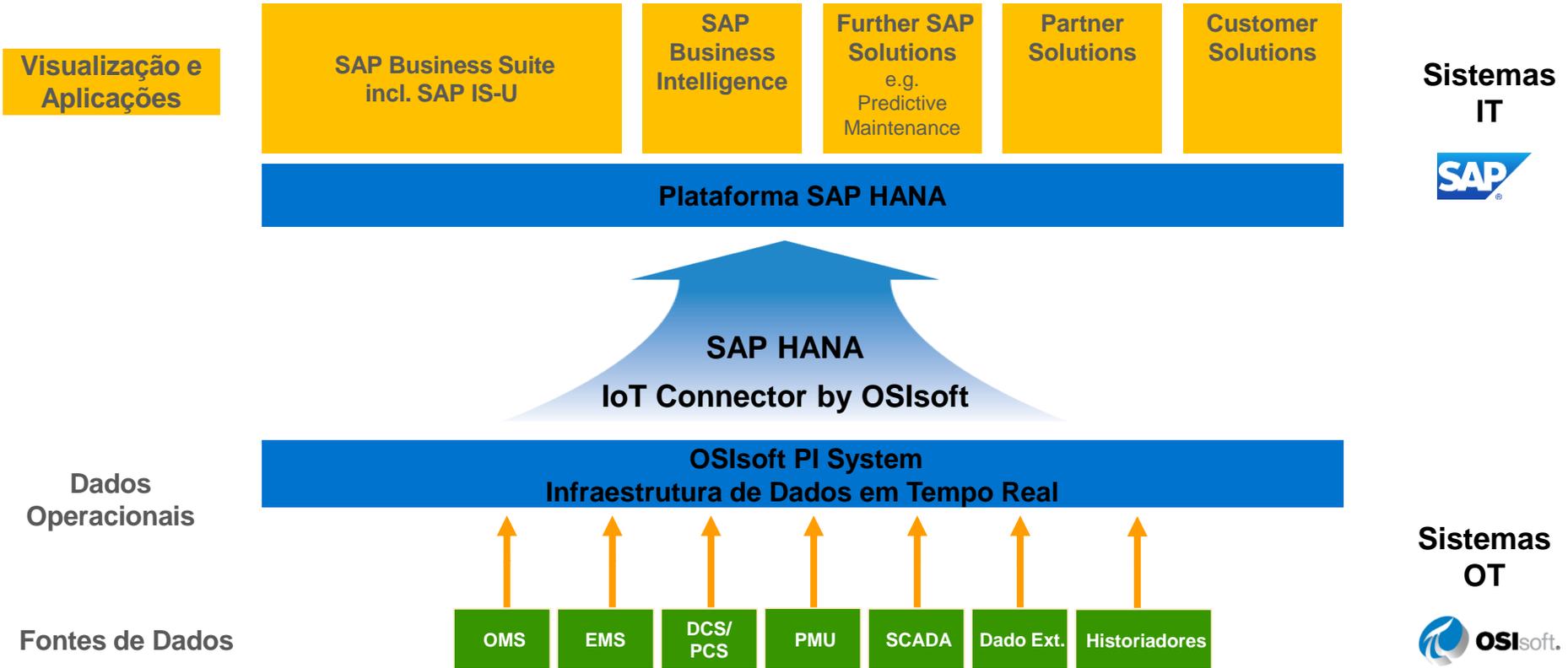
10.68 mph

Fleet Average Speed

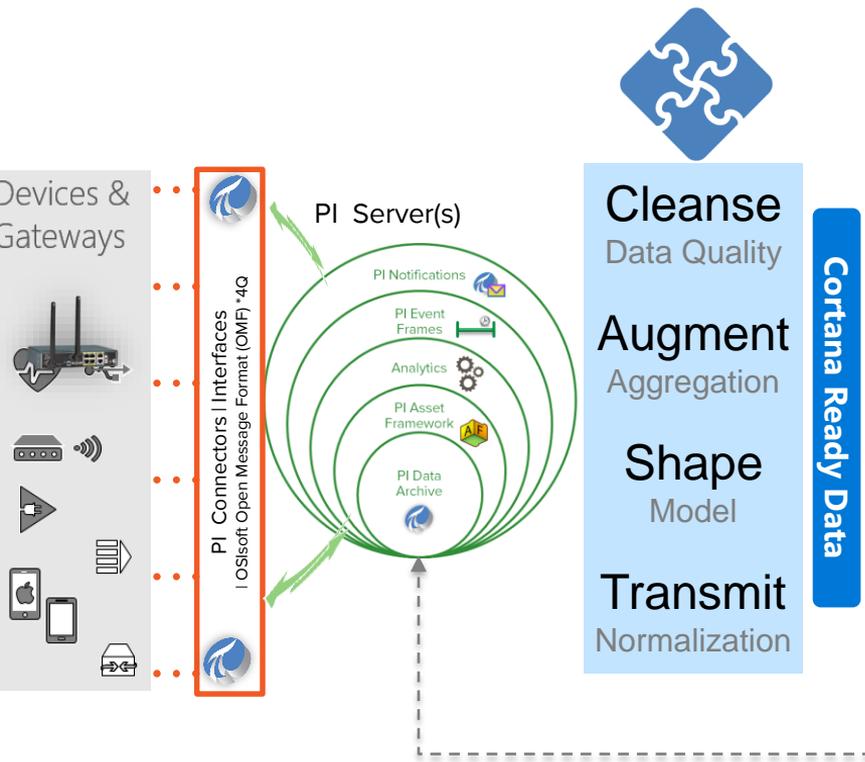
PI Integrator for Business Analytics



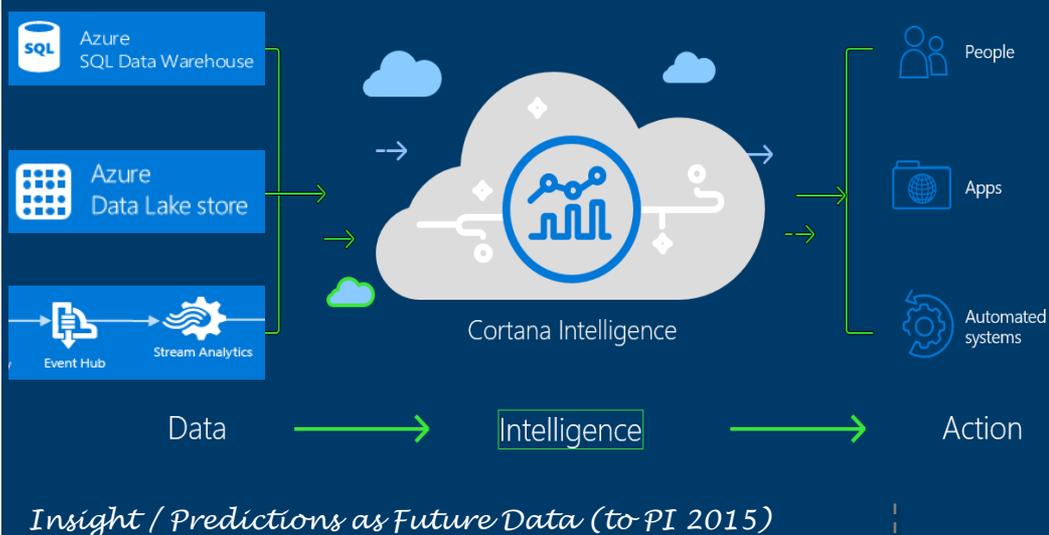
SAP HANA IoT Integrator by OSIsoft



PI Integrator for Microsoft Azure



Cortana Intelligence



Exemplo do Cliente: Deschutes Brewery

Leveraging the PI System and Cortana Intelligence to Increase Process Efficiency



COMPANY and GOAL

Deschutes Brewery is the 7th largest craft brewery in US, and wanted to maximize production with its existing infrastructure to fund construction of a 2nd brewery in Roanoke, VA

CHALLENGE

Batch's phase transition happens between manual density measurements occurring every 8-10 hours

- Impact: Losing up to 72 hours in production time

SOLUTION

Use data science to achieve accurate predictive analytics for determining a batch's density measurements

- PI System
- PI Integrator for Microsoft Azure
- SQL Data Warehouse
- Azure Machine Learning
- Azure Data Factory

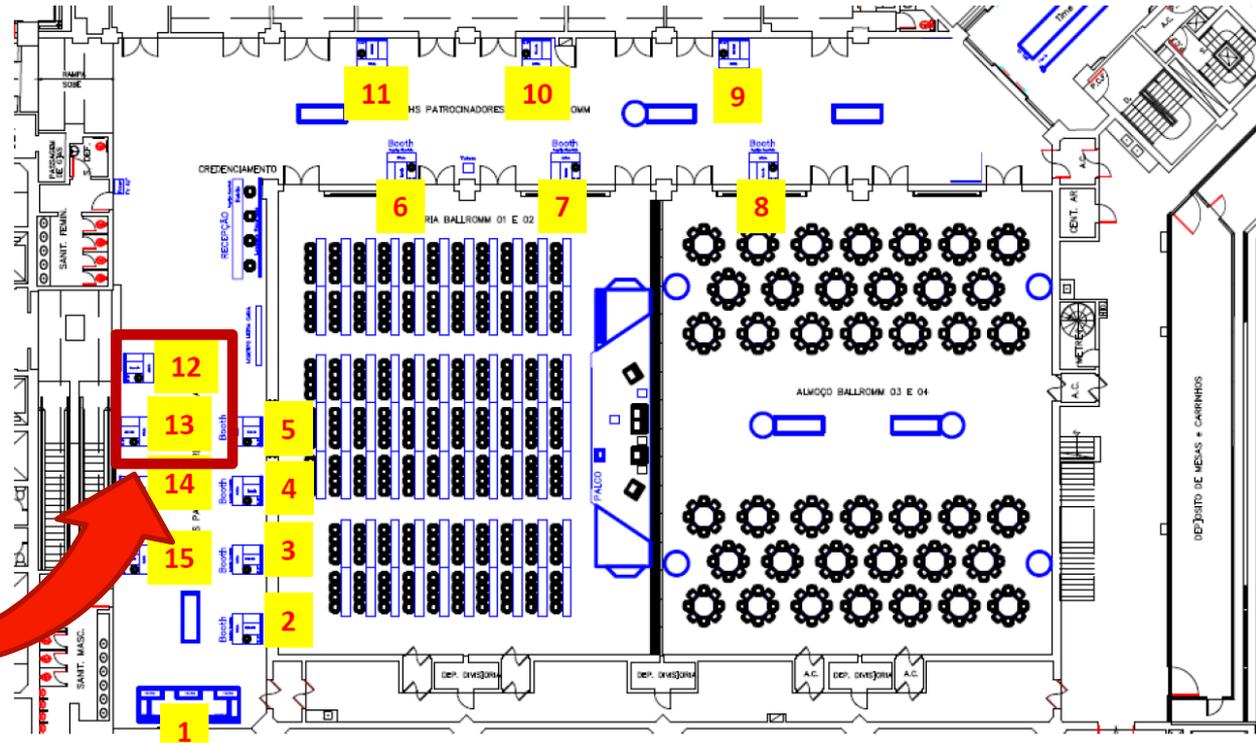
RESULTS

Ability to eliminate production time losses and increase production capacity

- Accurate predictions of when a batch's phase transitions from fermentation to free rise



Dias 1 & 2 | Estandes



Hora	Construindo displays com o novo PI Vision 2017	Monitoramento de Dados com foco em Manutenção Baseada em CBM	Uso de <i>Data Science, Machine Learning</i> e PI System em Modelos Analíticos Preditivos
13:30	Hands on Lab	Hands on Lab	Hands on Lab
15:00		Coffee Break	
15:30	Hands on Lab	Hands on Lab	Hands on Lab
17:00	Encerramento		

Anderson Amaral

Engenheiro de Sistemas

+55 11 3053 5032

aamaral@osisoft.com

OSIsoft



OBRIGADO

감사합니다

谢谢

Danke

Merci

Gracias

Thank You

ありがとう

Спасибо

Obrigado