



Success Story in Performance Evaluation using AF Analytics & PII4BA with High Number of Calculations

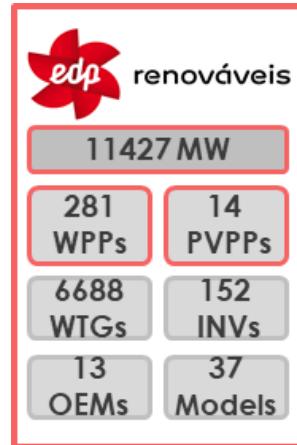
Sergio Valencia



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EDPR



Assets to date: September 2018

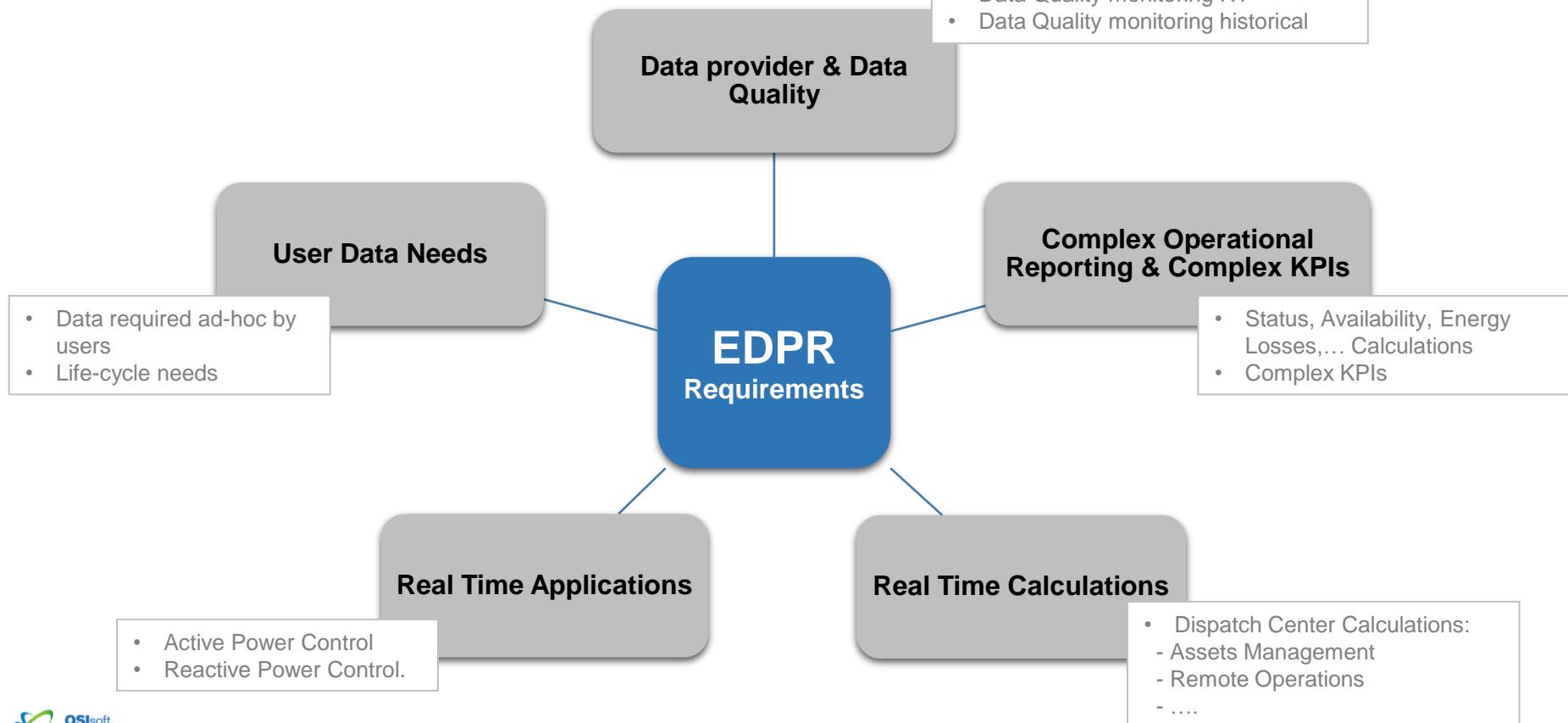


Challenge

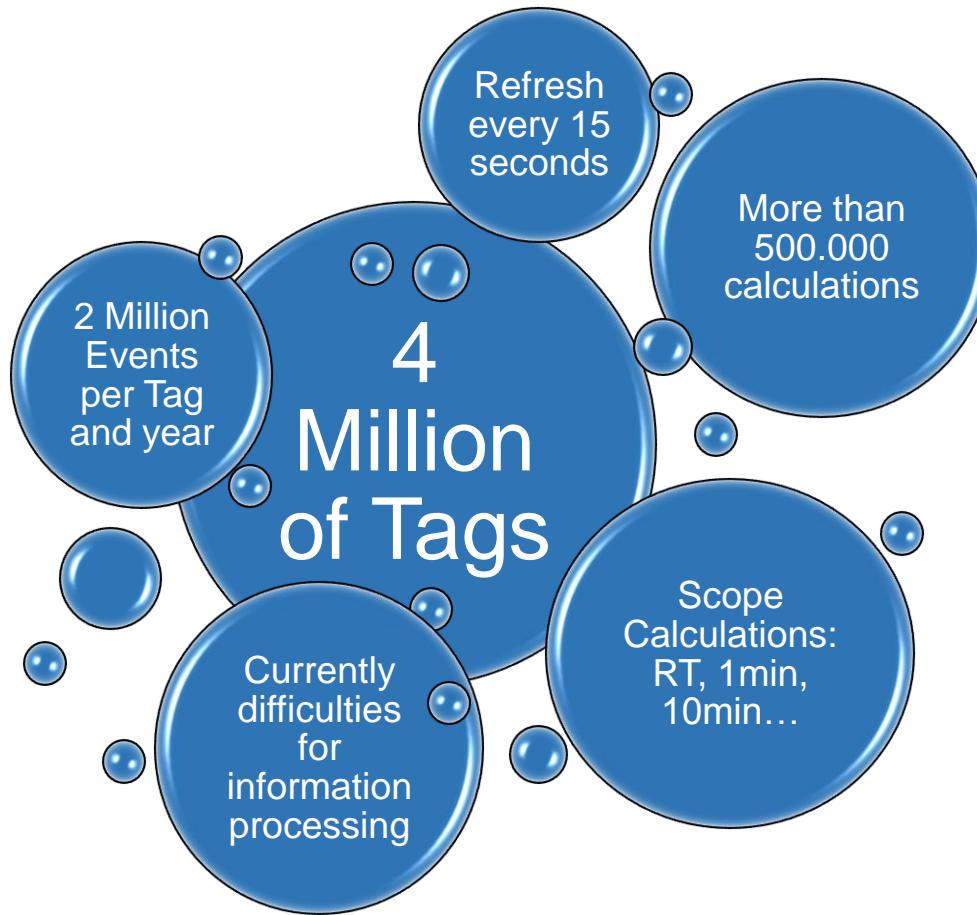


Scope: Know the PI infrastructure performance to decide which calculations and application can support

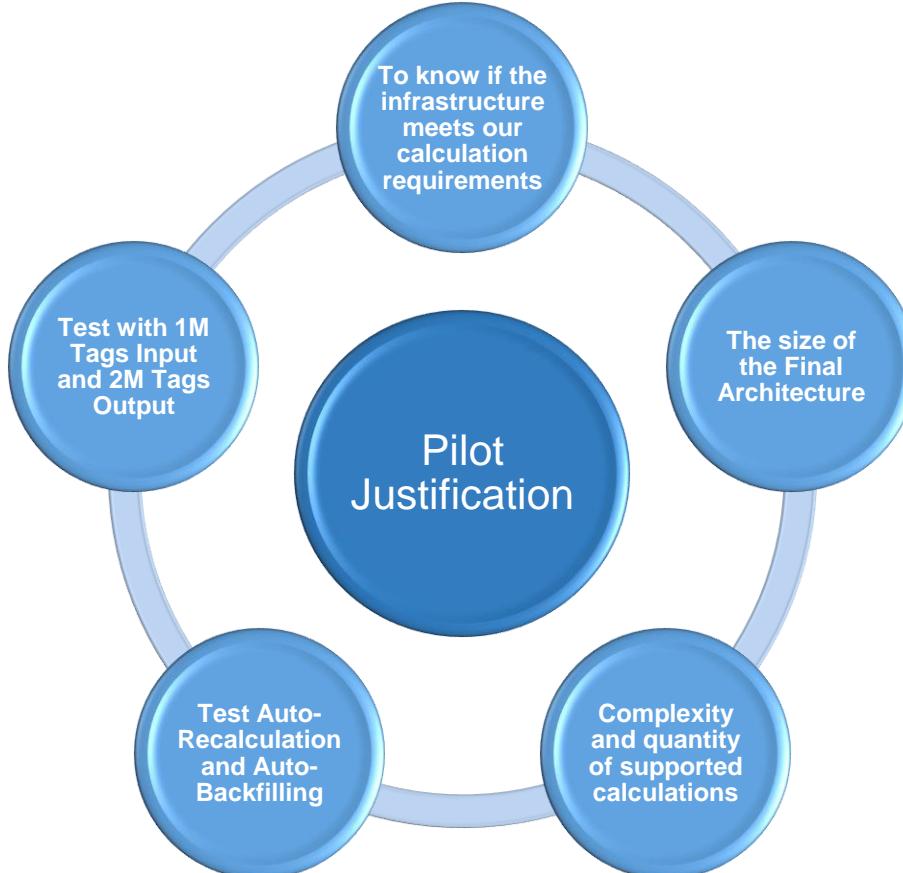
EDPR's Requirements



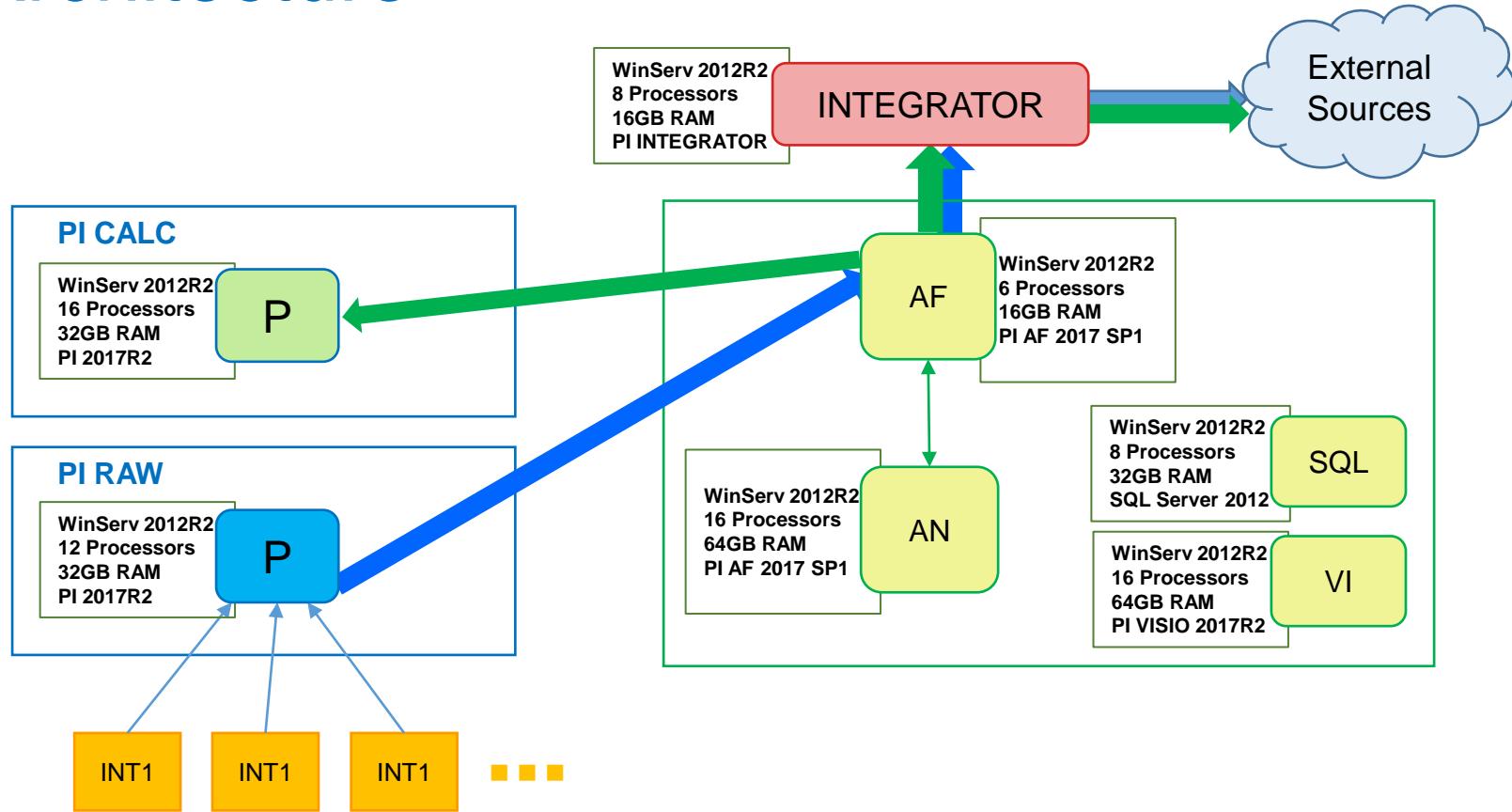
Requirements in Numbers



Reasons to Build a Pilot



Pilot Architecture



Tests Results with PI Analysis Service 1/2

TEST 1

Type: 10min
Config: Default
Analysis: **230.000**
Tags IN/OUT: 230K/1.3M

Time Exec: **3'10"**
CPU: **35%**
MEM: **32GB**

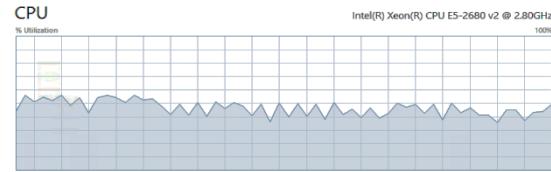


<NumberParallelDataPipes>1</NumberParallelDataPipes>
<NumberEvaluationThreads>4</NumberEvaluationThreads>

TEST 2

Type: 10min + Data Quality
Config: Default
Analysis : **300.000**
Tags IN/OUT: 300K/1.4M

Time Exec: **3'20"**
CPU: **40%**
MEM: **40GB**



<NumberParallelDataPipes>1</NumberParallelDataPipes>
<NumberEvaluationThreads>4</NumberEvaluationThreads>

Configuration of
Analysis Service
by Default

TEST 3

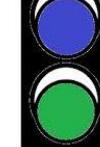
Type: 10min + Data Quality + Digitals
Config: Default
Analysis : **830.000**
Tags IN/OUT: 1M/1.5M



<NumberParallelDataPipes>1</NumberParallelDataPipes>
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Bad Performance



Moderate Performance

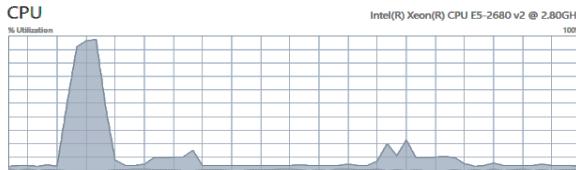


Very Good Performance

Tests Results with PI Analysis Service 2/2

TEST 4

Type: 10min
Config: Pararell Calc. 16
Analysis: 230.000 Time Exec: 15"
CPU: 10% MEM: 28GB
Tags IN/OUT: 230K/1.3M



<NumberParallelDataPipes>4</NumberParallelDataPipes>
<NumberEvaluationThreads>16</NumberEvaluationThreads>

TEST 5

Type: 10min
Config: #4 & Auto Recalc.
Analysis: 230.000 Time Exec: 45"
CPU: 50% MEM: 28GB
Tags IN/OUT: 230K/1.4M

Only With
OSIsoft
Recomendations!

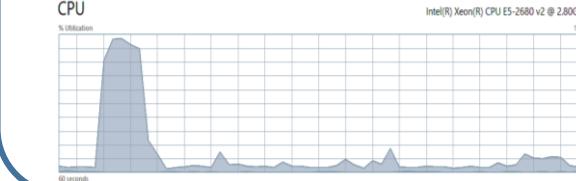


<AutoRecalculationIgnoreTimeInSeconds>30</AutoRecalculationIgnoreTimeInSeconds>
<AutoRecalculationMinWaitTimeInSeconds>60</AutoRecalculationMinWaitTimeInSeconds>

Configuration of
Analysis Service
and Auto-Backfill
Adjusted

TEST 6

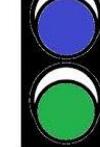
Type: 10min + Data Quality Time Exec: 20"
Config: #5 & Auto Recalc Adjustm.
Analysis: 300.000 CPU: 20%
MEM: 23GB
Tags IN/OUT: 300K/1.4M



<AutoRecalculationIgnoreTimeInSeconds>600</AutoRecalculationIgnoreTimeInSeconds>
<AutoRecalculationMinWaitTimeInSeconds>60</AutoRecalculationMinWaitTimeInSeconds>



Bad Performance

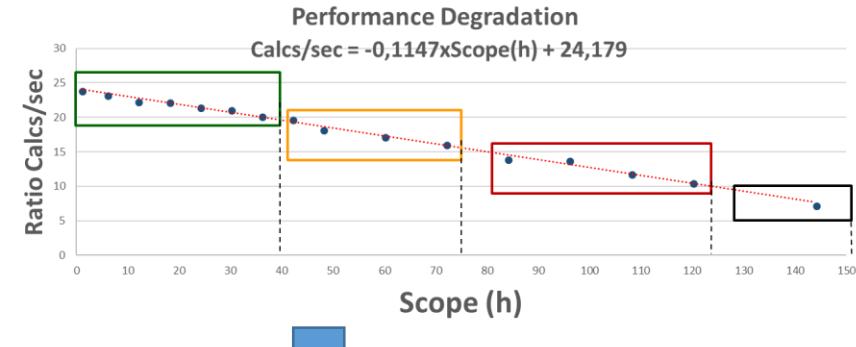
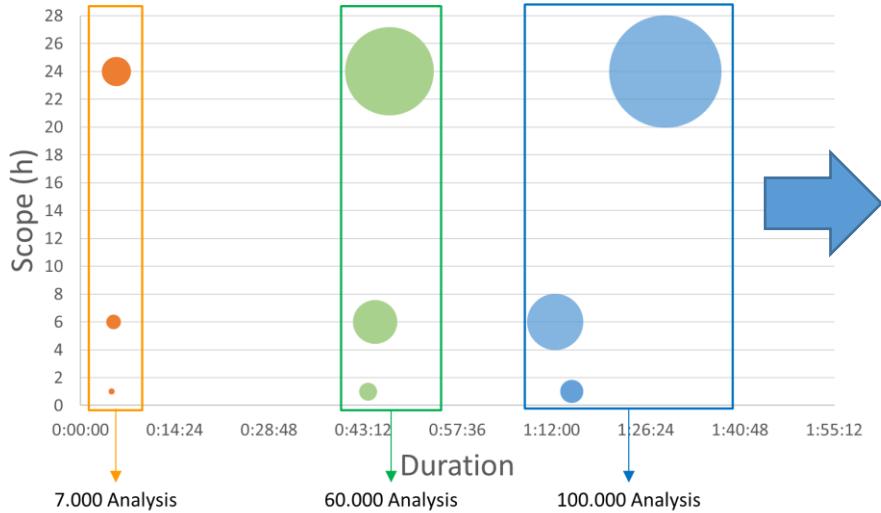


Moderate Performance

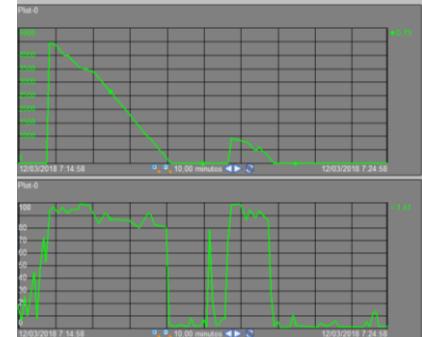
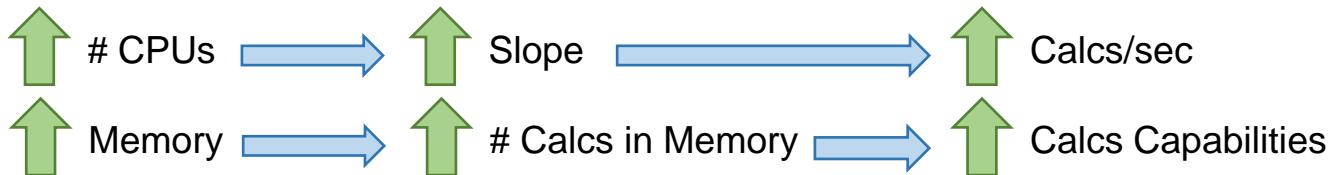


Very Good Performance

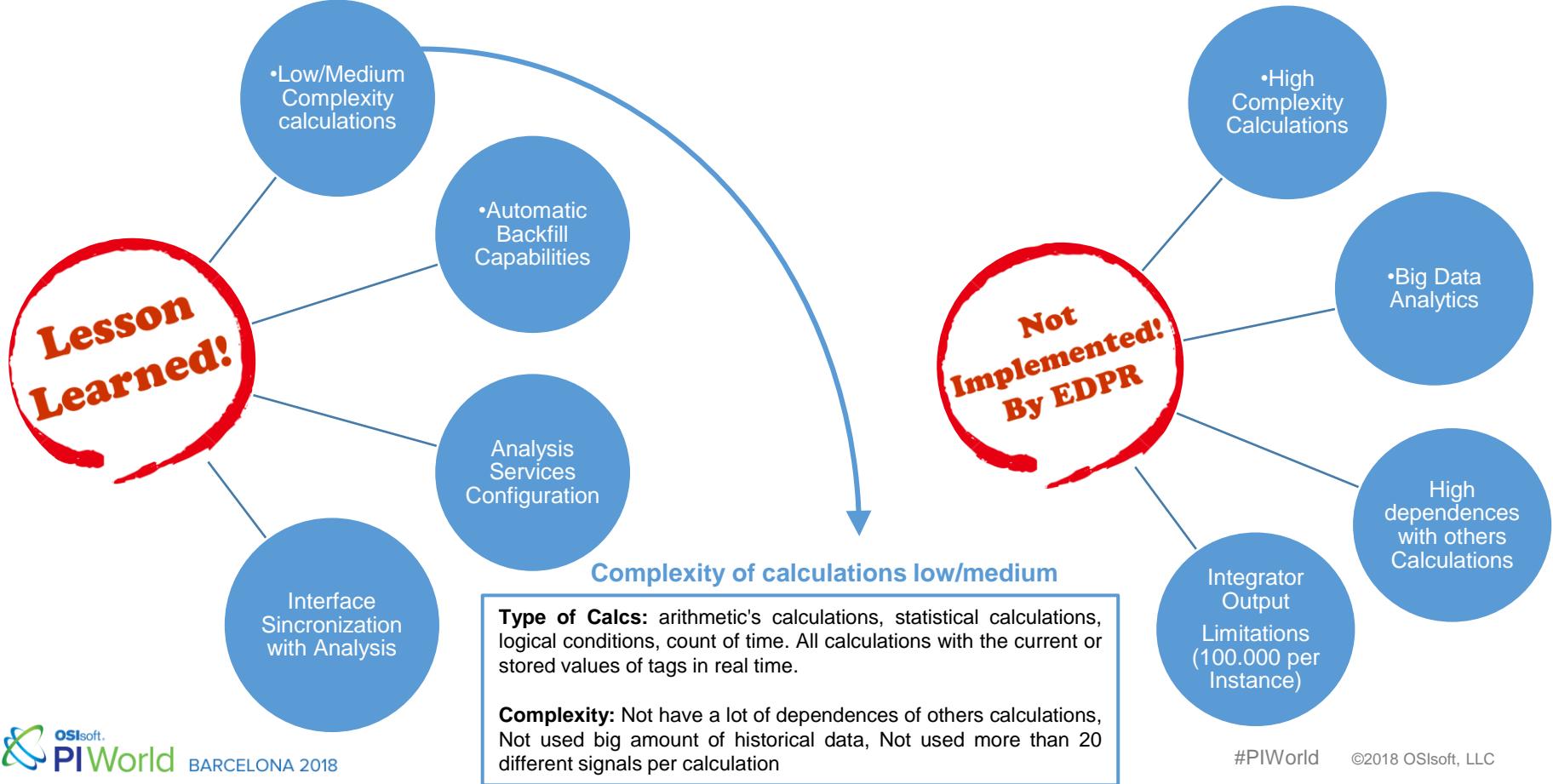
Performance of Manual/Auto Backfill



$$Time_{recalculation}(s) = \frac{\# Calculations}{-0,1147 \times Scope(h) + 24,179}$$

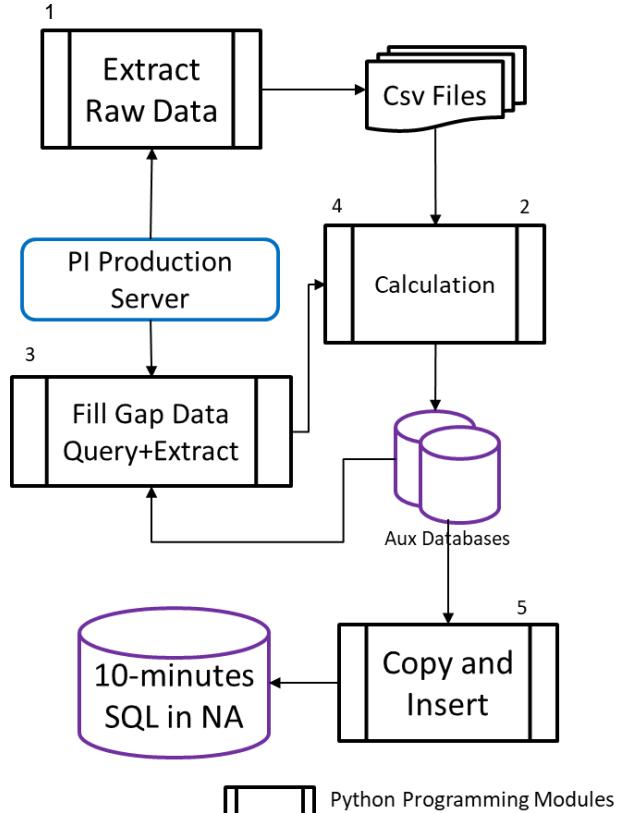


Lesson Learned

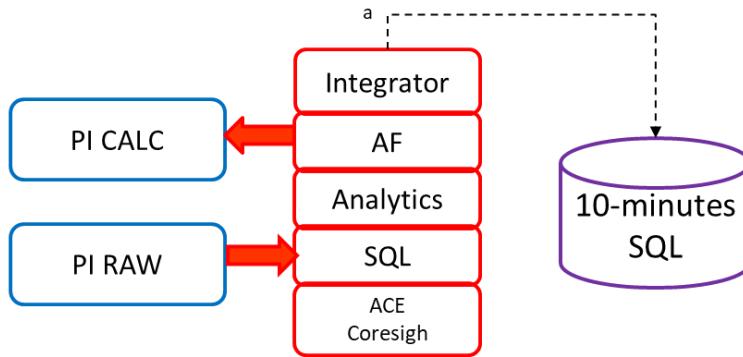


Example of a process Transformation

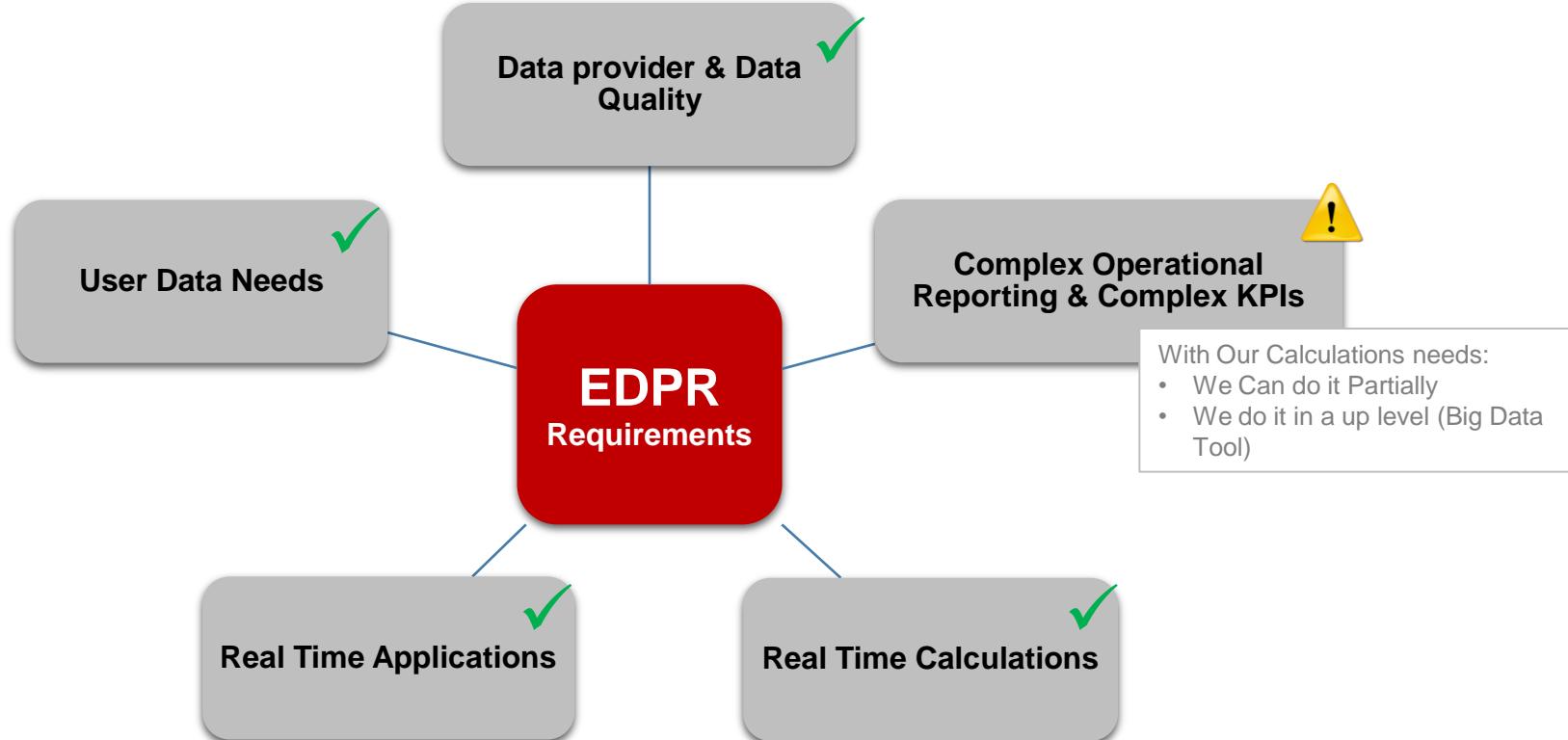
10 Minutes Calc. Before AF



10 Minutes Calc. After AF



EDPR's Requirements Fullfilled



Enterprise Agreement = Partnership



- A collaborative path towards customer success with OSIsoft products
- Extends across an entire portfolio of assets as opposed to a “buy as you go” plan
- The focus of the enterprise agreement is returning value to EDP
 - Workshops (AF, Architecture, etc.) and training plan
 - Analysis Configuration Engine
 - AF Analytics Recommendations
 - Field Service Activities
 - Access to Center of Excellence
 - Enterprise Program Manager
 - Asset Monitoring
 - Audit Plans

EDPR

Success Story in Performance Evaluation using AF Analytics & PI4BA with High Number of Calculations

CHALLENGE

Know if our PI infrastructure support our requirements regarding calculations and application

- 4M of Tags
- More than 500.000 Alanyisis
- Heterogenous Requirements

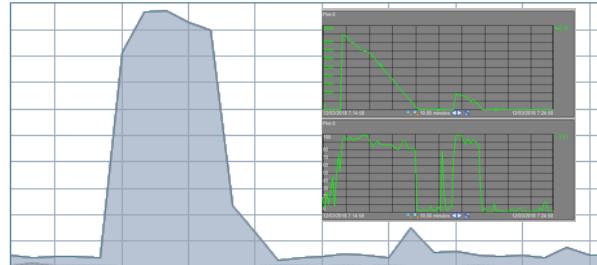
SOLUTION

Design a Pilot with OSIsoft to adapt the calculations and configure the Analysis Services

- Server with Productive configurations (Analysis Server:16 Cores and 64GB RAM)
- 1M of input tags nd 2M of output tags
- Implement 830.000 Analysis

CPU

% Utilization



RESULTS

Configure 300.000 Analysis, with Auto Backfill configuration and know what calculations we can implement and which ones not

- 20% CPU Average
- 23GB RAM Average
- 230.000 10Minutes calculations in 15"
- AutoBackfill configuration has not affect the Performance



- **Sergio Valencia**
- svalencia@edpr.com
- ROPI Technical Services Manager
- **EDP Renewables**

Questions?

Please wait for
the **microphone**



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A smartphone showing the OSIsoft PI World mobile application. The screen displays the OSISOFT logo, the text "osisoft. PIWorld", and "WELCOME TO PI WORLD 2018! SAN FRANCISCO | APRIL 23-27".

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PAKMET СІЗГЕ
GO RAIBH MAITH AGAT
БЛАГОДАРЯ

GRACIAS
ТИ БЛАГОДАРАМ
TAK DANKE
RAHMAT MERCI
HATUR NUHUN

CẢM ƠN BẠN
WAZVIITA

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TAPADH LEIBH 고맙습니다
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OBRIGADO شکرا SALAMAT
DANKON TANK TAPADH LEAT

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PAKKA PÉR
PAXMAT CAGA

FALEMINDERIT
ありがとうございました
SIPAS JI WERE
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СИПОС