



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

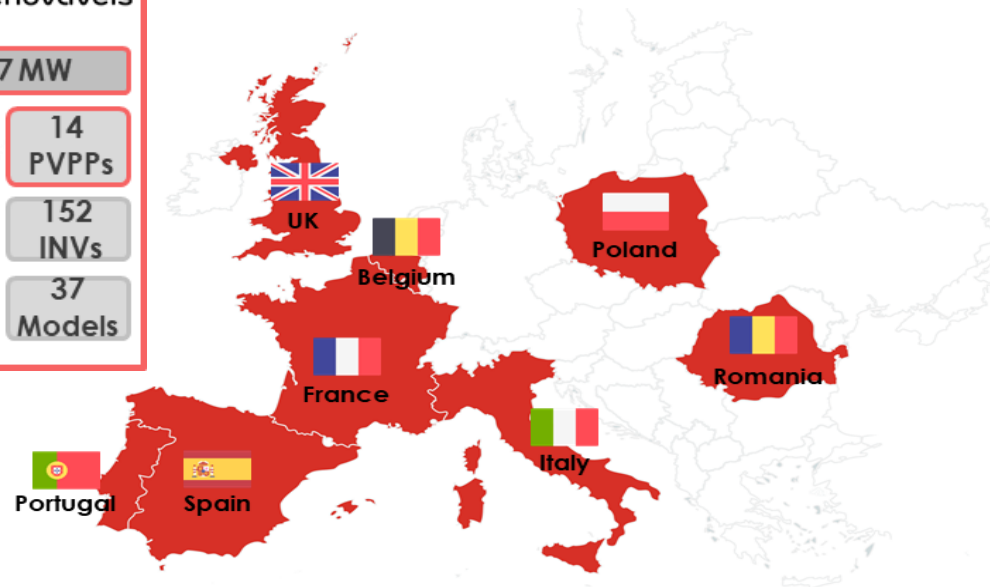
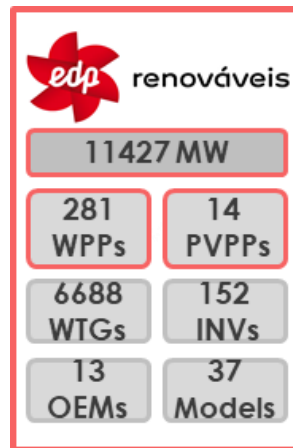
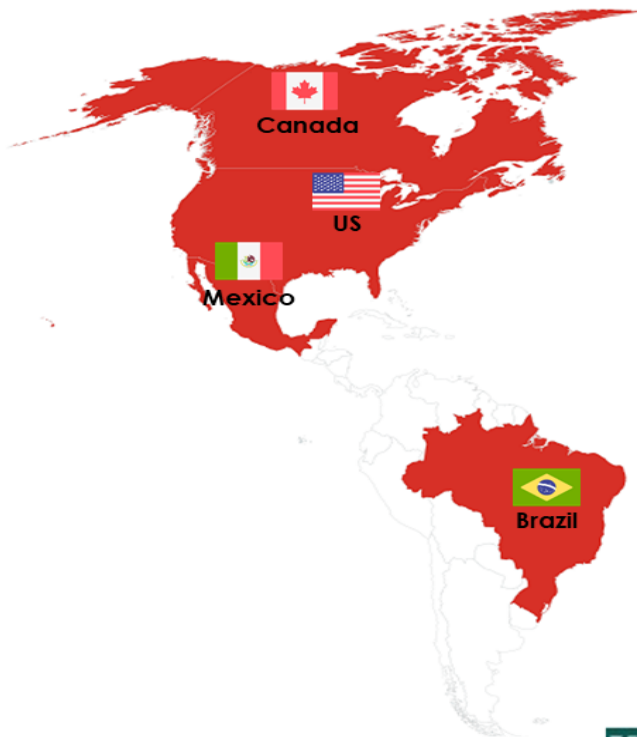
Sergio Valencia



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EDPR



Assets to date: September 2018

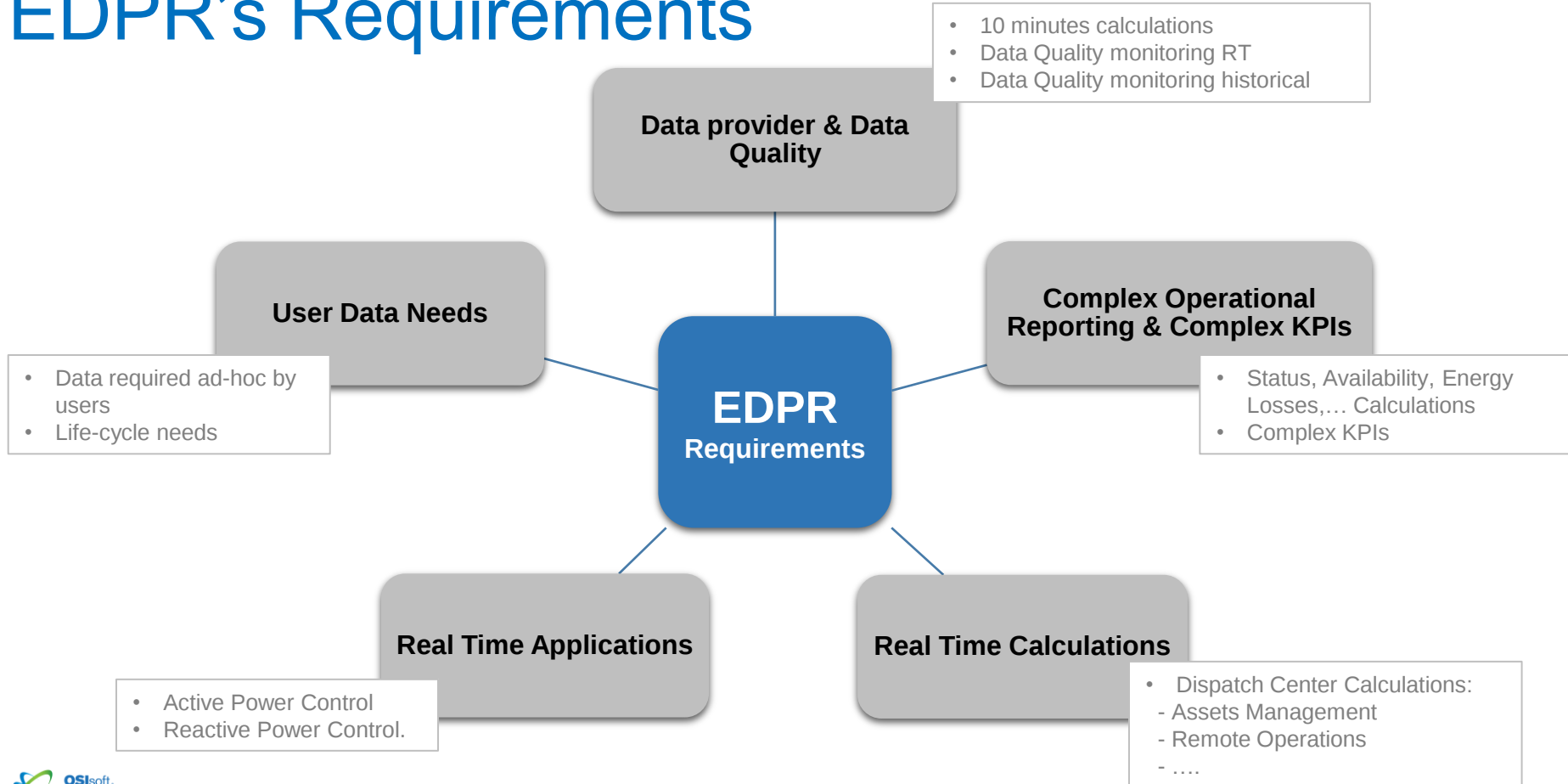


Challenge

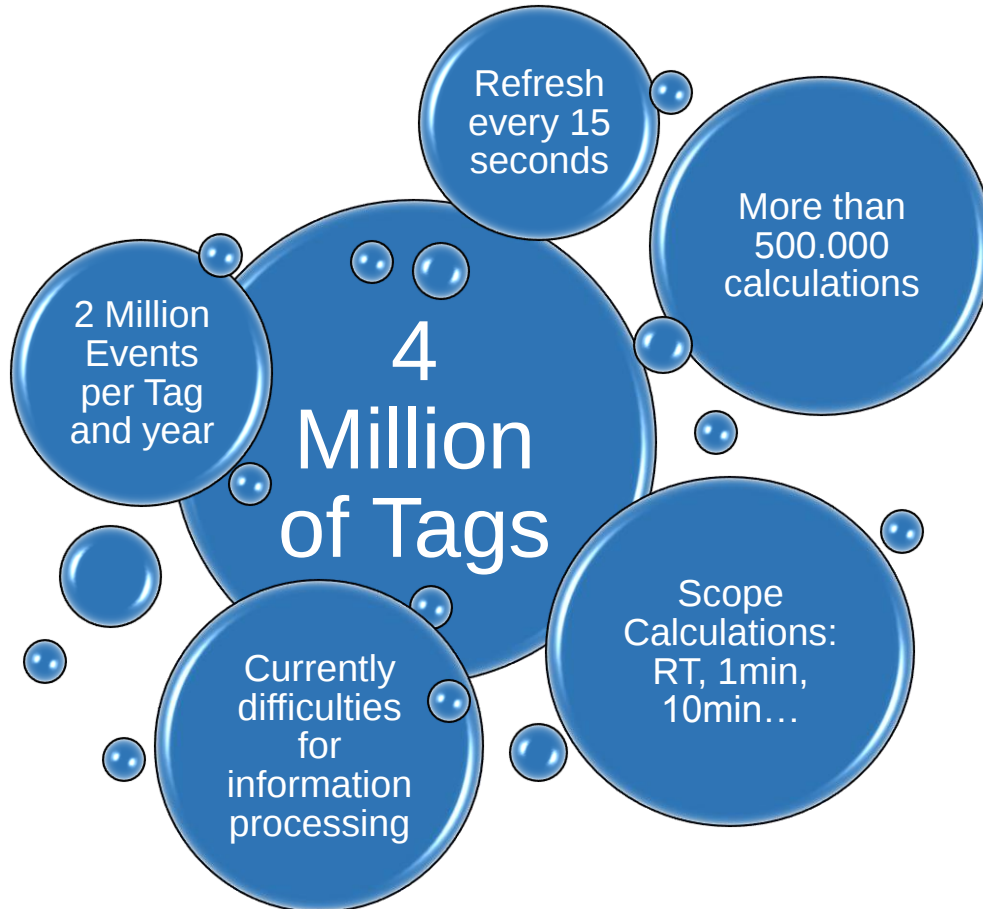


Scope: Know the PI infrastructure performance to decide which calculations and application can support

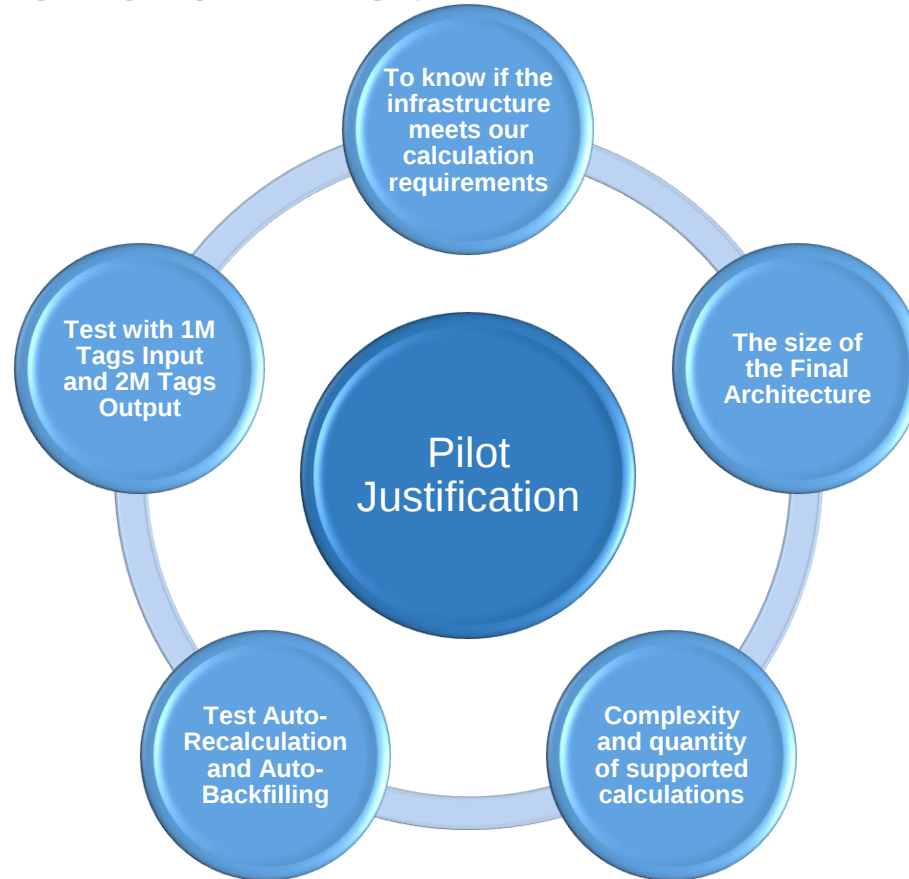
EDPR's Requirements



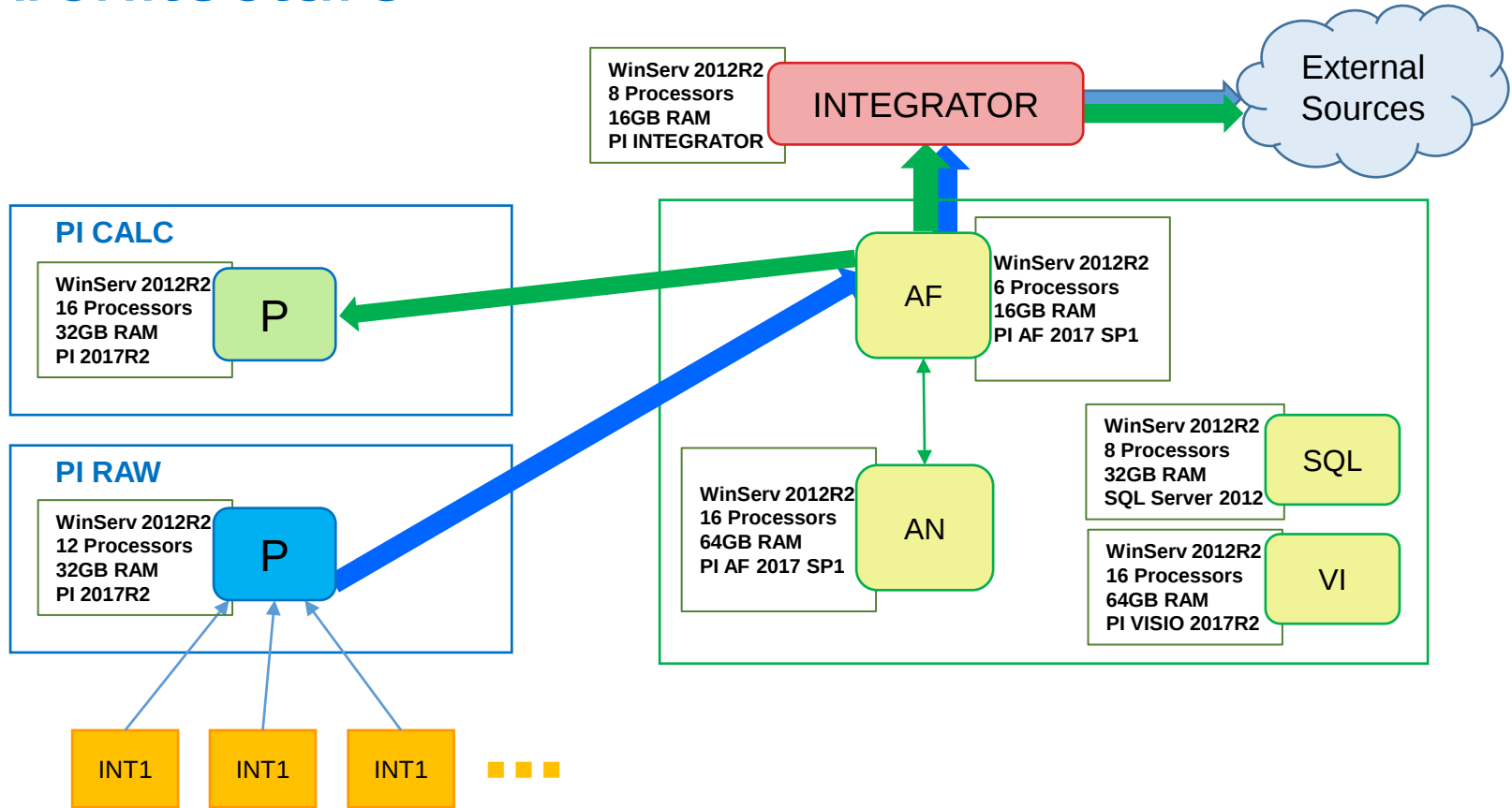
Requirements in Numbers



Reasons to Build a Pilot



Pilot Architecture

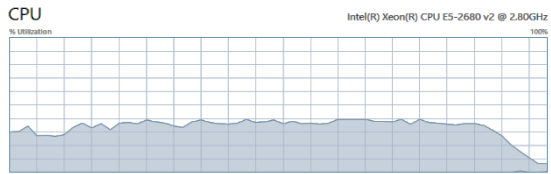


Tests Results with PI Analysis Service 1/2

TEST 1

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

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

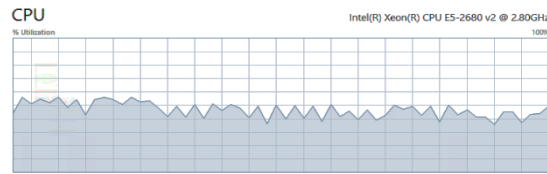


<NumberParallelDataPipes>1</NumberParallelDataPipes>
<NumberEvaluationThreads>4</NumberEvaluationThreads>

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>

TEST 3

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

Time Exec: 4'40"
CPU: 60%
MEM: 50GB



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Configuration of
Analysis Service
by Default



Bad Performance

Moderate Performance

Very Good Performance

Tests Results with PI Analysis Service 2/2

TEST 4

Type: 10min

Time Exec: 15"

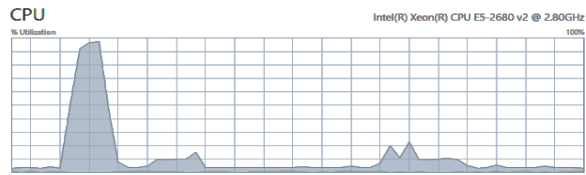
Config: Pararell Calc. 16

CPU: 10%

Analysis: 230.000

MEM: 28GB

Tags IN/OUT: 230K/1.3M



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

TEST 5

Type: 10min

Time Exec: 45"

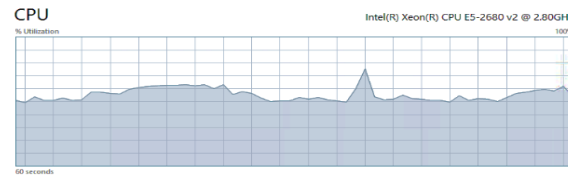
Config: #4 & Auto Recalc.

CPU: 50%

Analysis: 230.000

MEM: 28GB

Tags IN/OUT: 230K/1.4M



Only With
OSIsoft
Recommendations!

<AutoRecalculationIgnoreTimeInSeconds>30</AutoRecalculationIgnoreTimeInSeconds>
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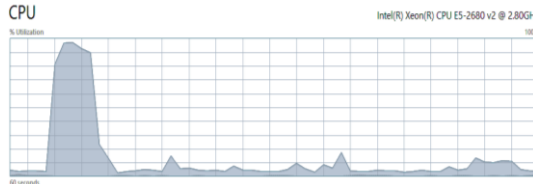
TEST 6

Type: 10min + Data Quality Time Exec: 20"

Config: #5 & Auto Recalc Adjustm. CPU: 20%

Analysis: 300.000 MEM: 23GB

Tags IN/OUT: 300K/1.4M



<AutoRecalculationIgnoreTimeInSeconds>600</AutoRecalculationIgnoreTimeInSeconds>
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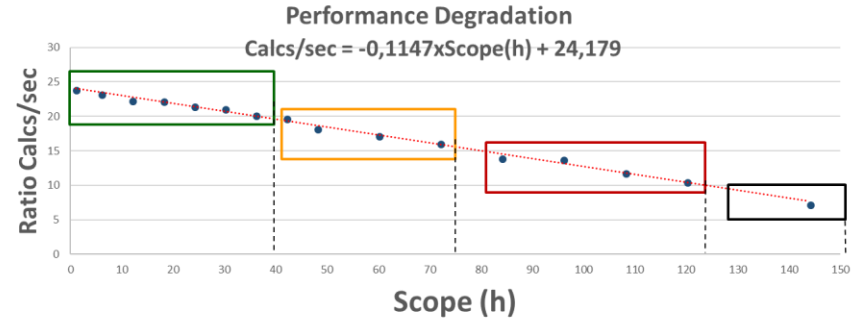
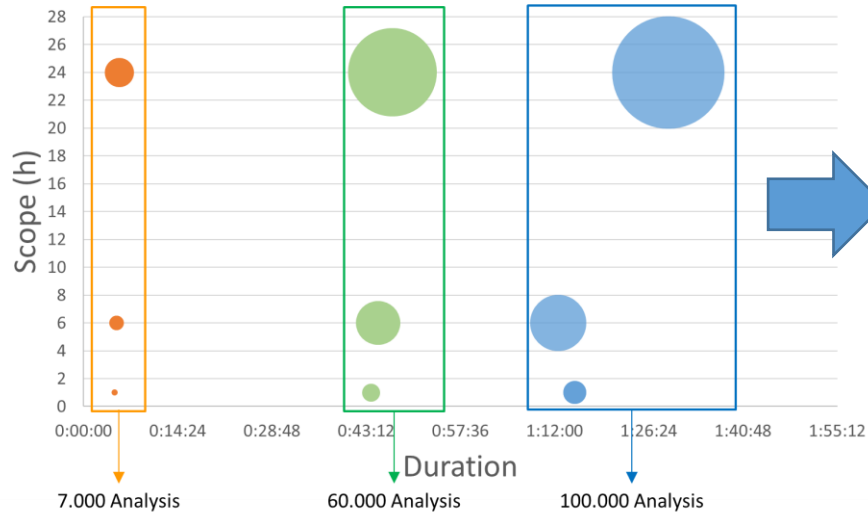


Bad Performance

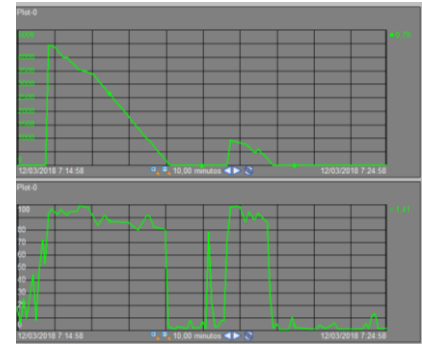
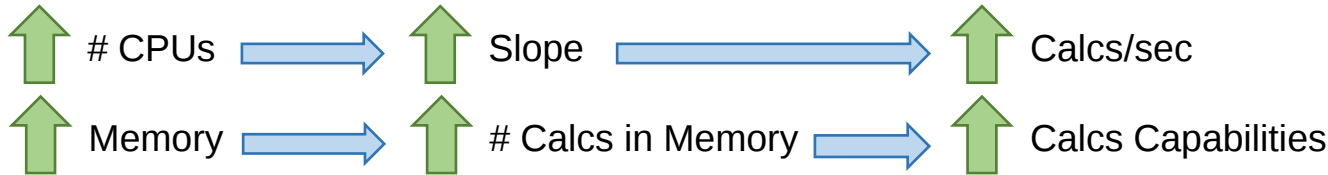
Moderate Performance

Very Good Performance

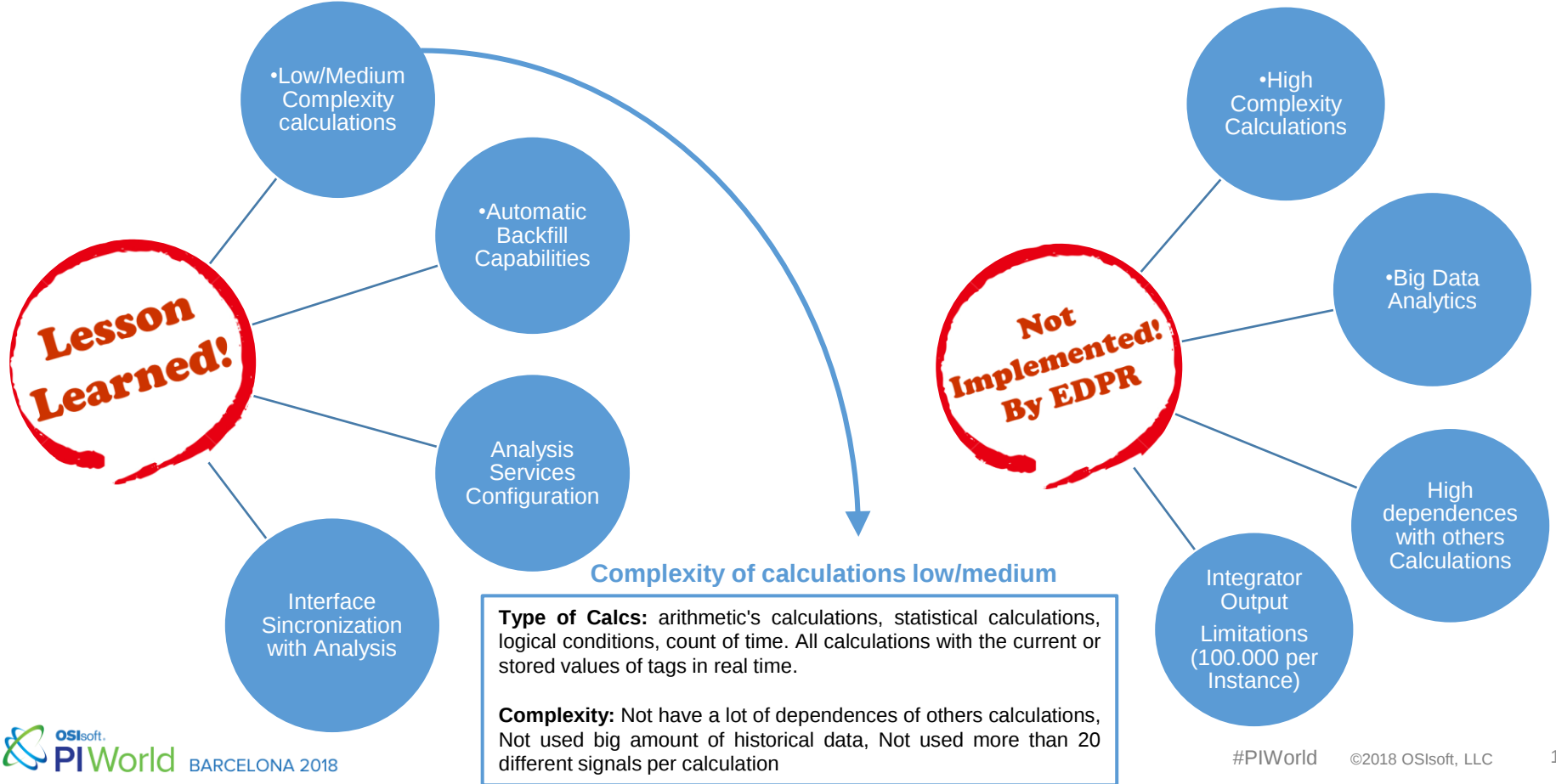
Performance of Manual/Auto Backfill



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

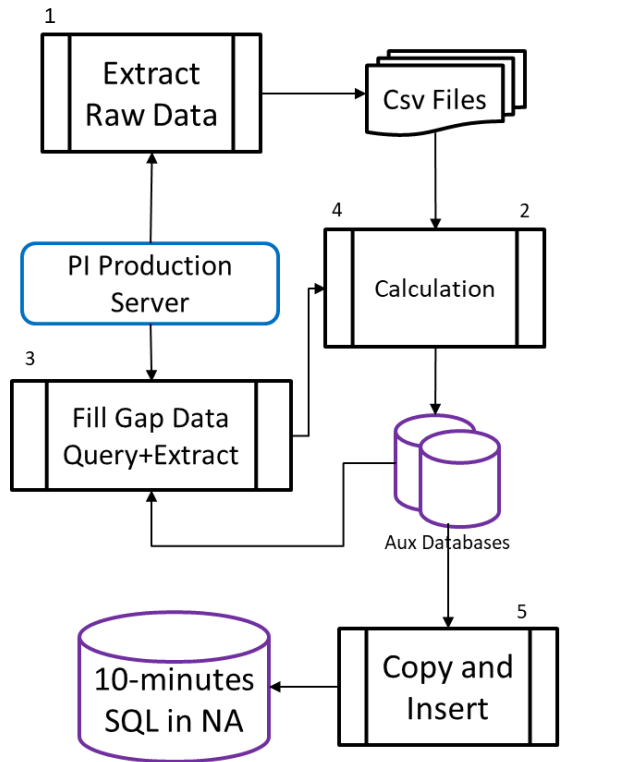


Lesson Learned

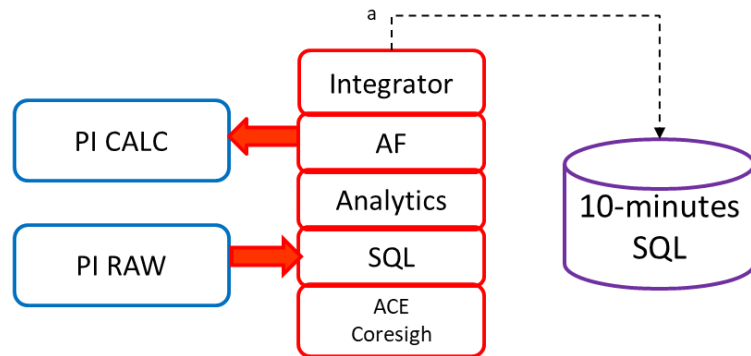


Example of a process Transformation

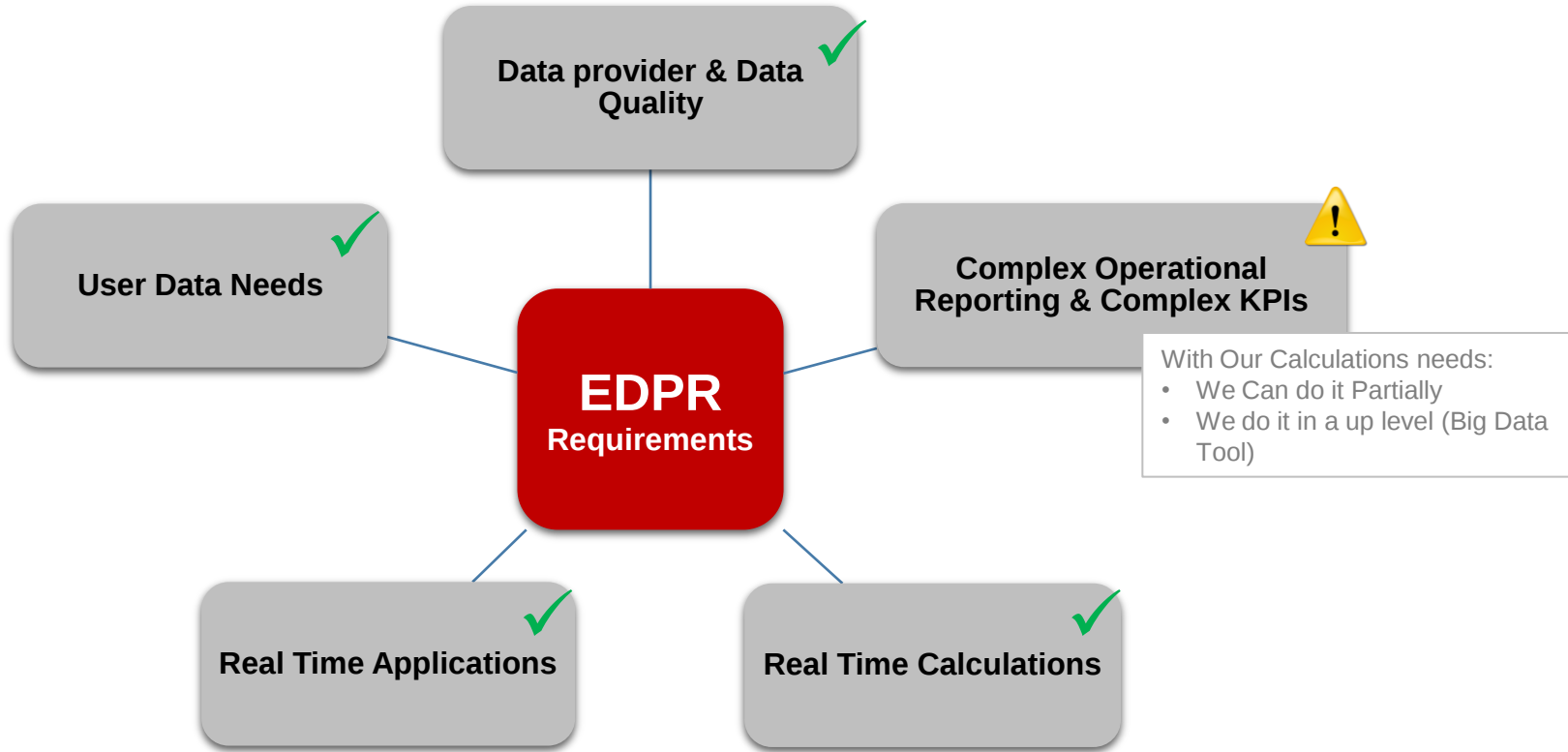
10 Minutes Calc. Before AF



10 Minutes Calc. After AF



EDPR's Requirements Fullfilled



Enterprise Agreement = Partnership

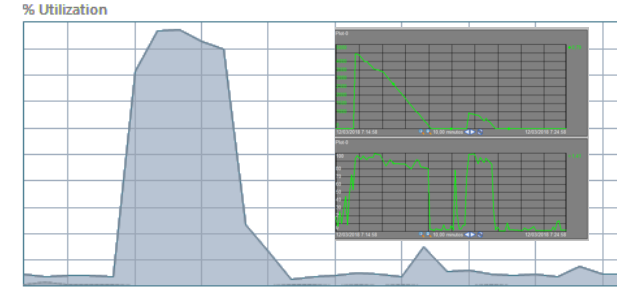


- A collaborative path towards customer success with OSIsoft products
- Extends across an entire portfolio of assets as opposed to a “buy as you go” plan
- The focus of the enterprise agreement is returning value to EDP
 - Workshops (AF, Architecture, etc.) and training plan
 - Analysis Configuration 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 & PII4BA with High Number of Calculations

CPU



CHALLENGE

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

- 4M of Tags
- More than 500.000 Analysis
- 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 and 2M of output tags
- Implement 830.000 Analysis

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



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- ROPI Technical Services Manager
- **EDP Renewables**

Questions?

Please wait for
the **microphone**

State your
name & company



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