



Building a High Performance, Large Scale Enterprise PI System

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Shell



+70
COUNTRIES
WHERE WE OPERATE



50%
OF OUR PRODUCTION IS
NATURAL GAS



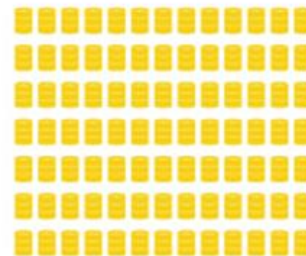
WE RUN
30+
REFINERIES &
CHEMICAL PLANTS



**20.2 MILLION
TONNES**
OF EQUITY LNG
SOLD DURING THE YEAR



87,000
AVERAGE NUMBER OF
EMPLOYEES



**3.3 MILLION
BARRELS OF OIL**
EQUIVALENT WE PRODUCE EVERY DAY



44,000
SHELL SERVICE
STATIONS WORLDWIDE

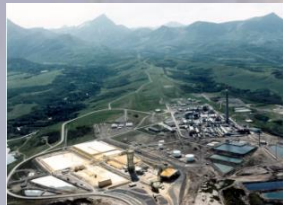


PI System History in Shell

Using PI System for almost 20 years, ~250 PI Systems globally, ~2000 servers, ~20.000 users

■ Upstream: >200 assets/sites (incl. Heavy Oil, Integrated Gas, Unconventionals, Deep Water, Wind, Drilling, etc.)

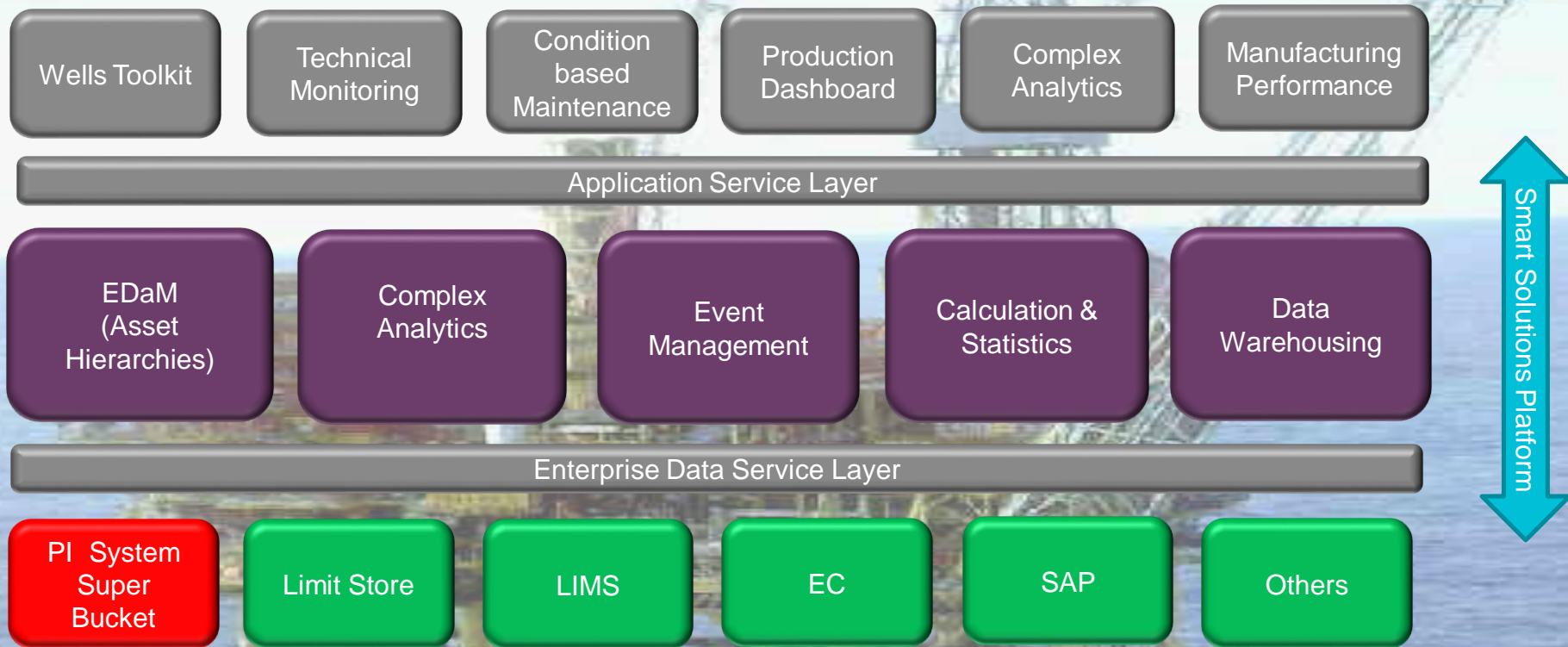
■ Downstream: >20 Refineries and/or Chemicals Plants, Trading, Pipeline



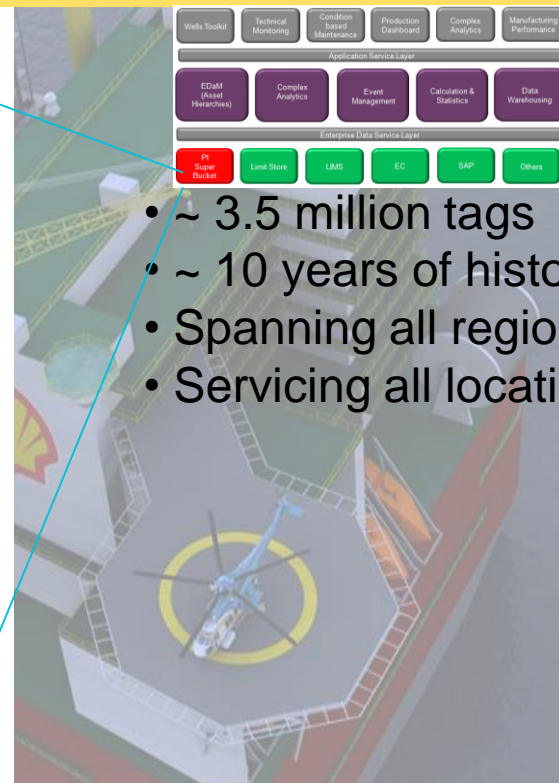
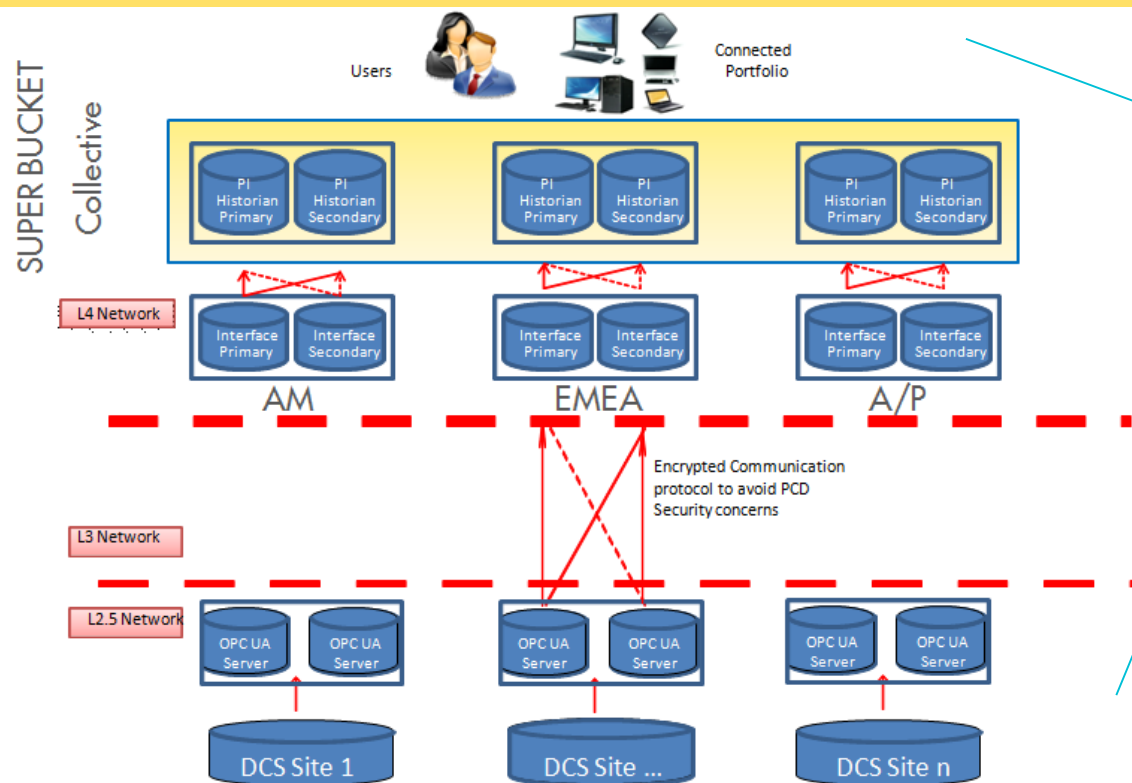
Business Challenge

- Distributed databases (> 500)
- Various definitions of equipment (>50)
- Multiple tools for the same job (>2000)
- Time consuming deployments (>1 year)
- Large number of IT systems / servers (>2000)
- High IT spend

Target – Smart Solutions Platform



Super Bucket PI System (Vision)



- ~ 3.5 million tags
- ~ 10 years of history
- Spanning all regions
- Servicing all locations

Main Challenges

- Hosting capacity
- Storage performance
- Application capabilities



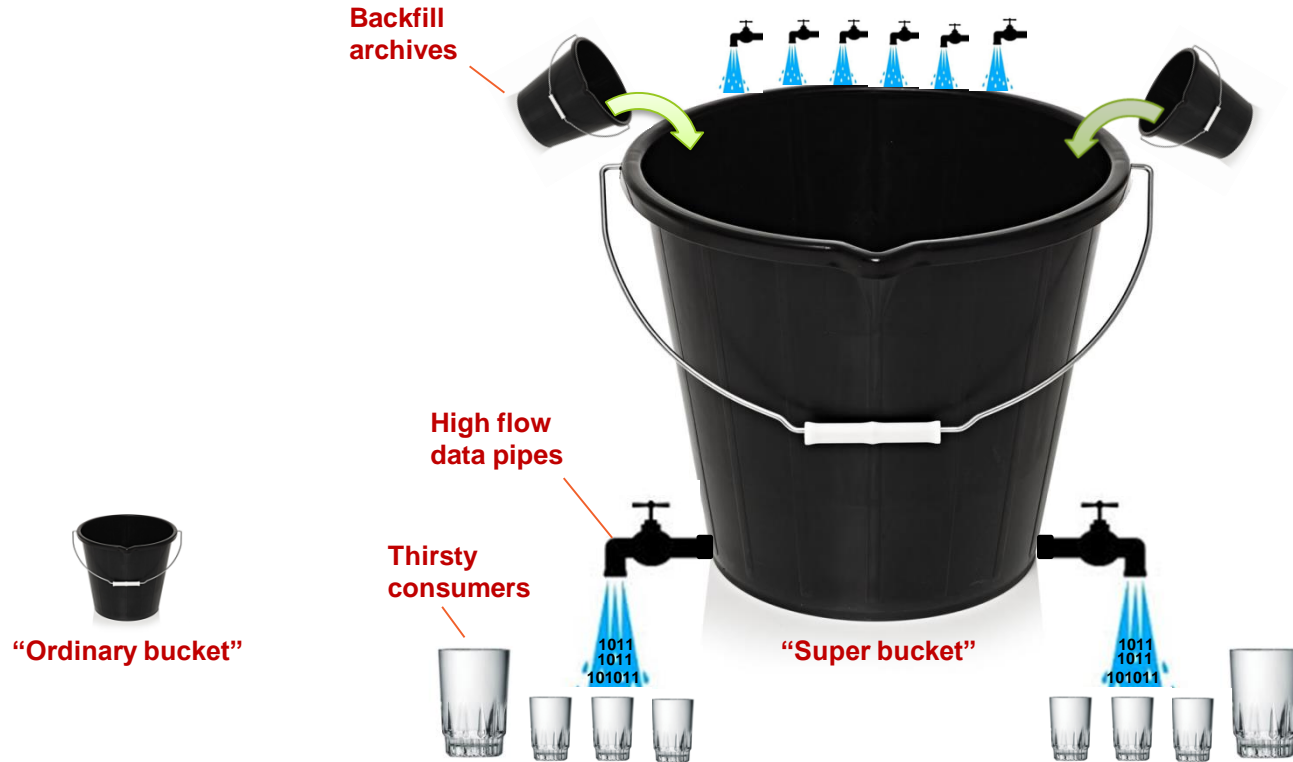
Solution

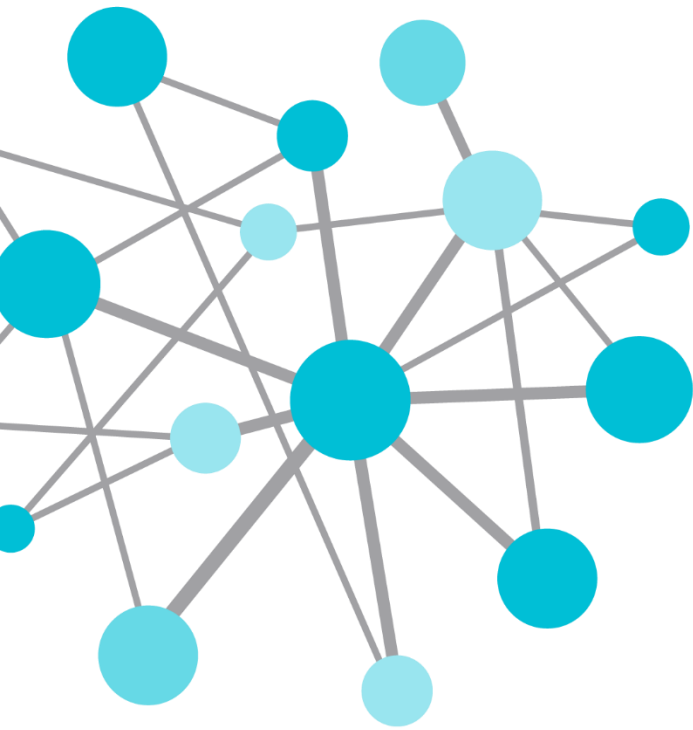
- Increased scalability of PI System
- High range infrastructure
- In memory data processing

Increased scalability from.....

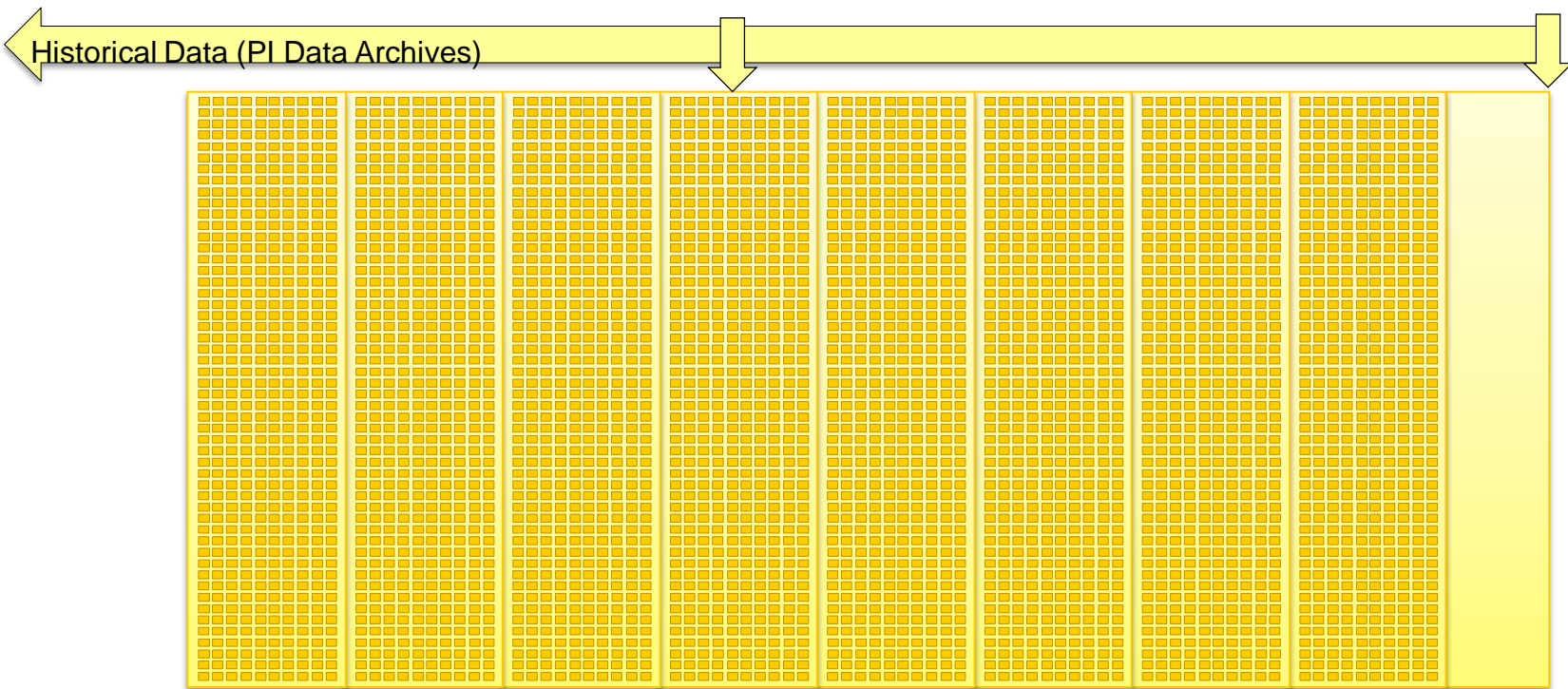


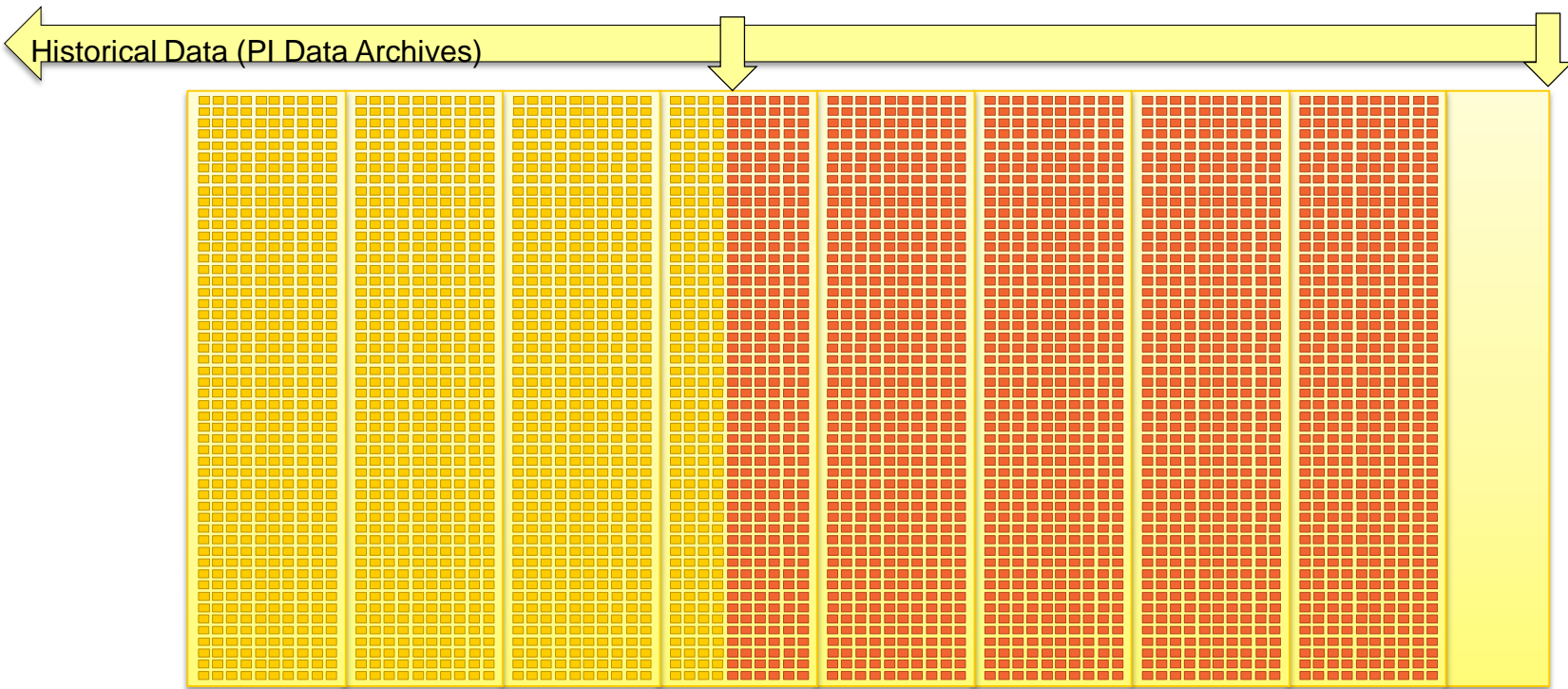
Increased scalability To.....



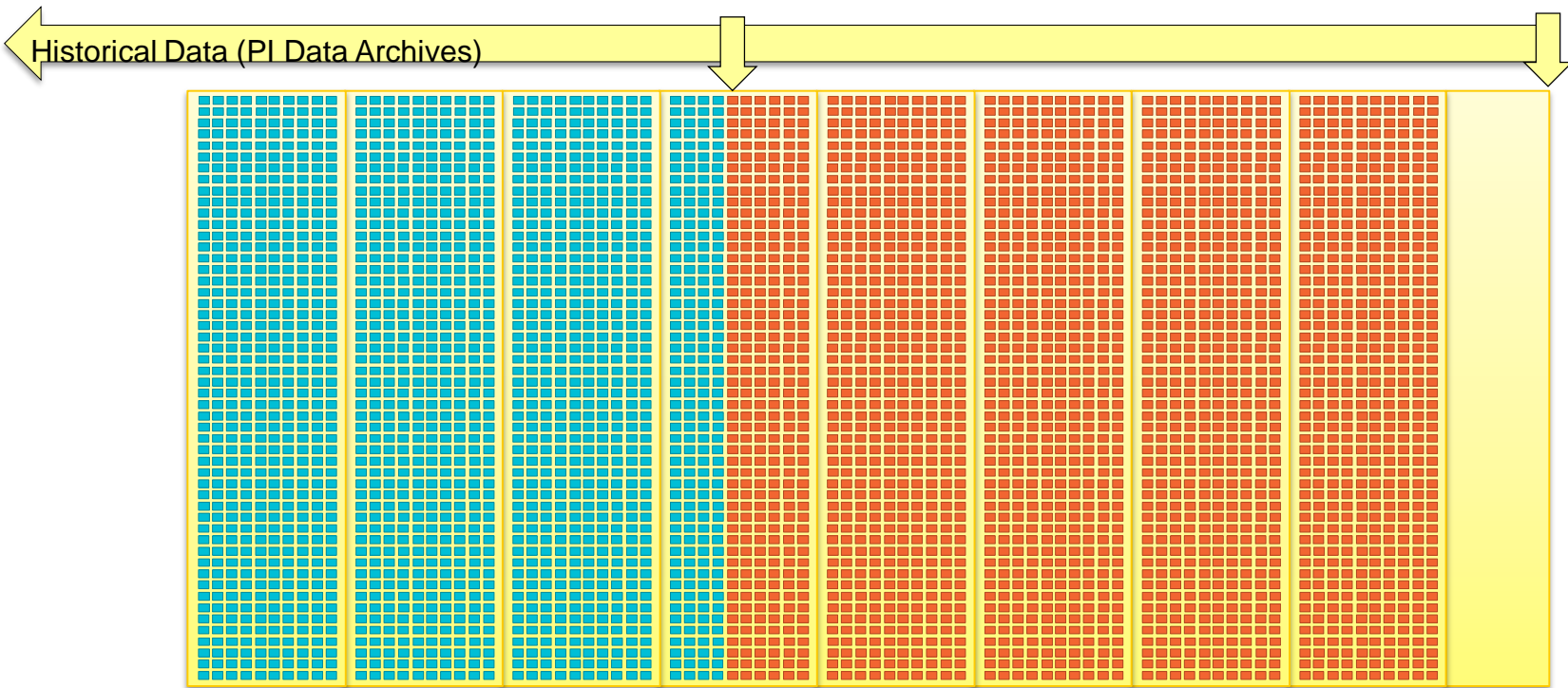


The current PI System Cache

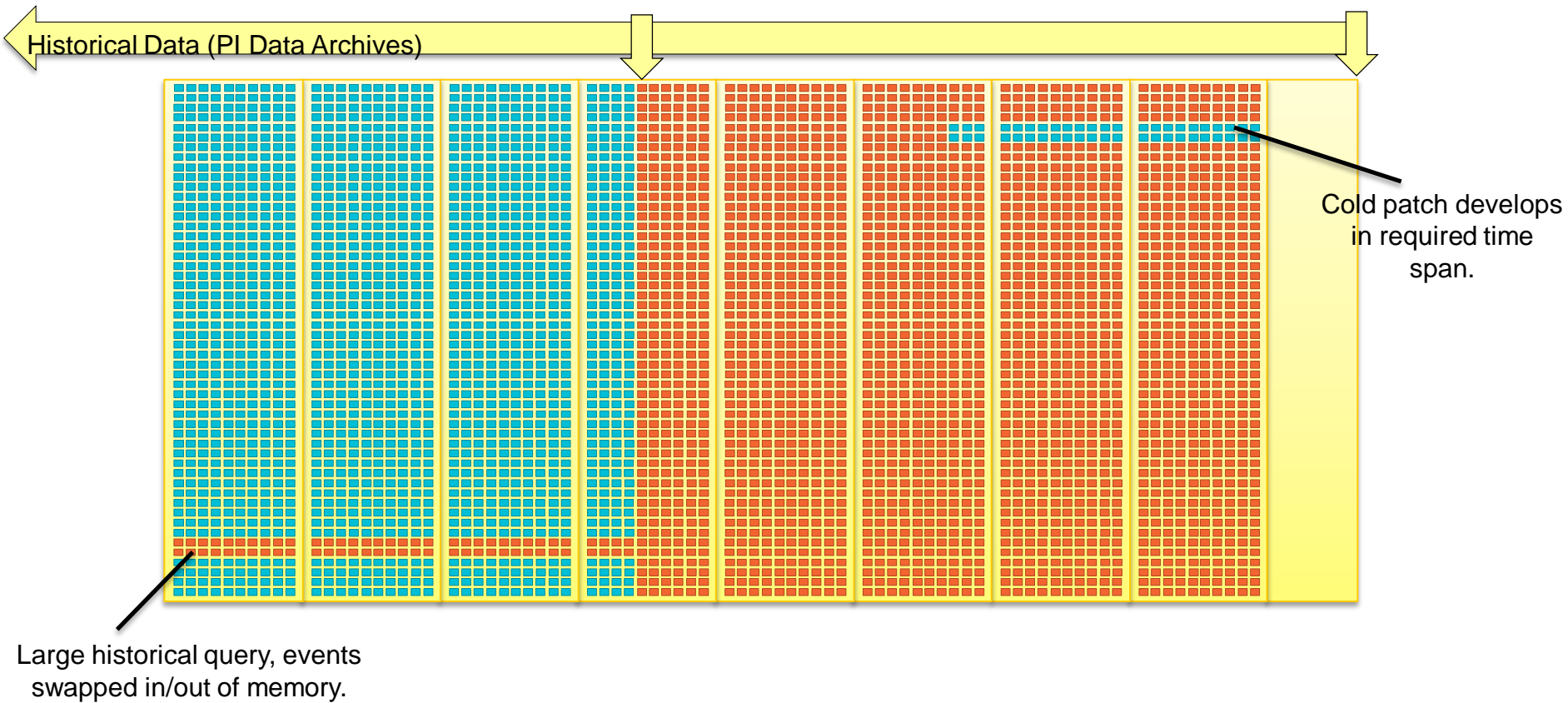


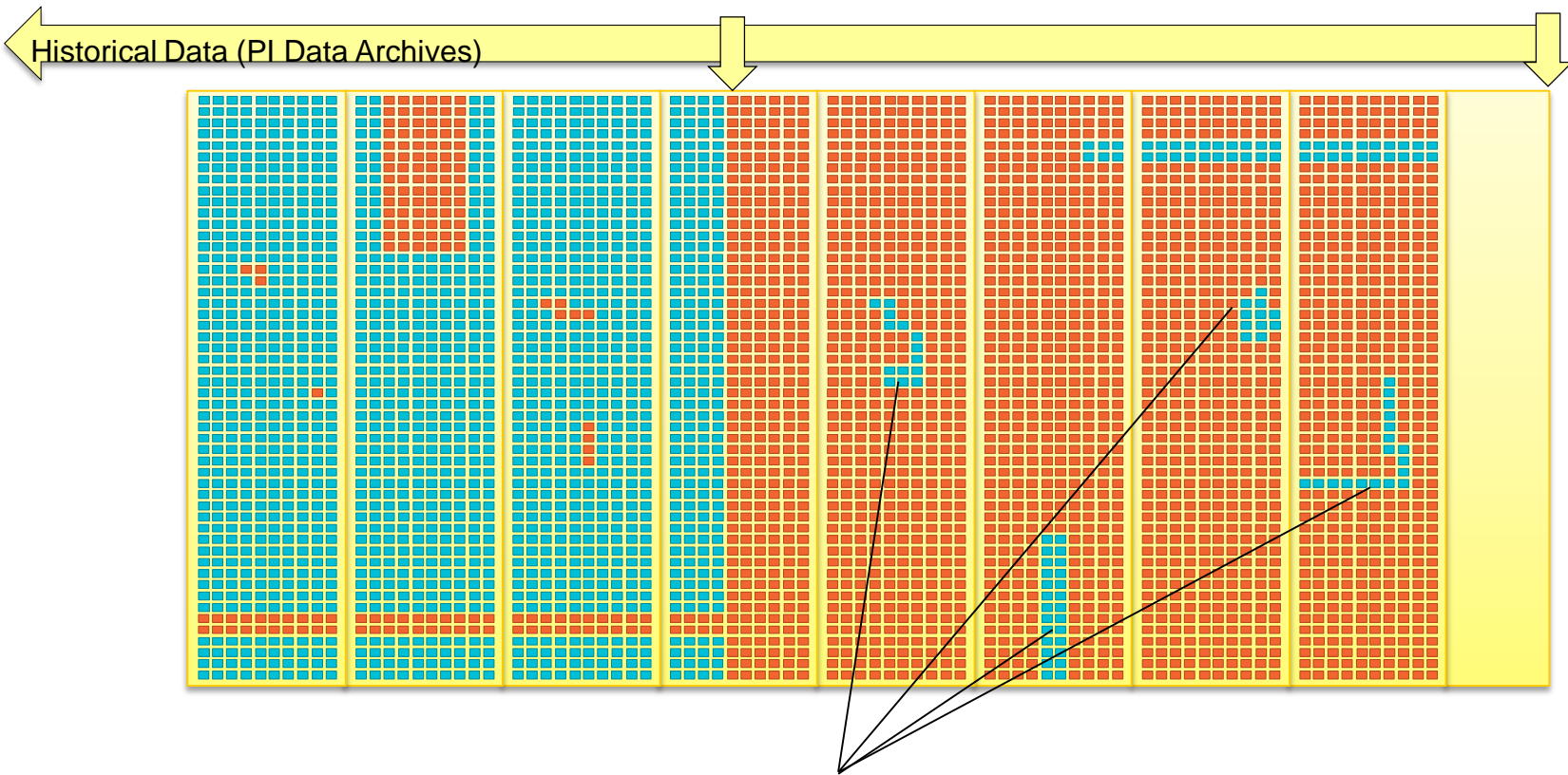


Pre-loaded events into memory (File system Cache)
Considered "hot" events.

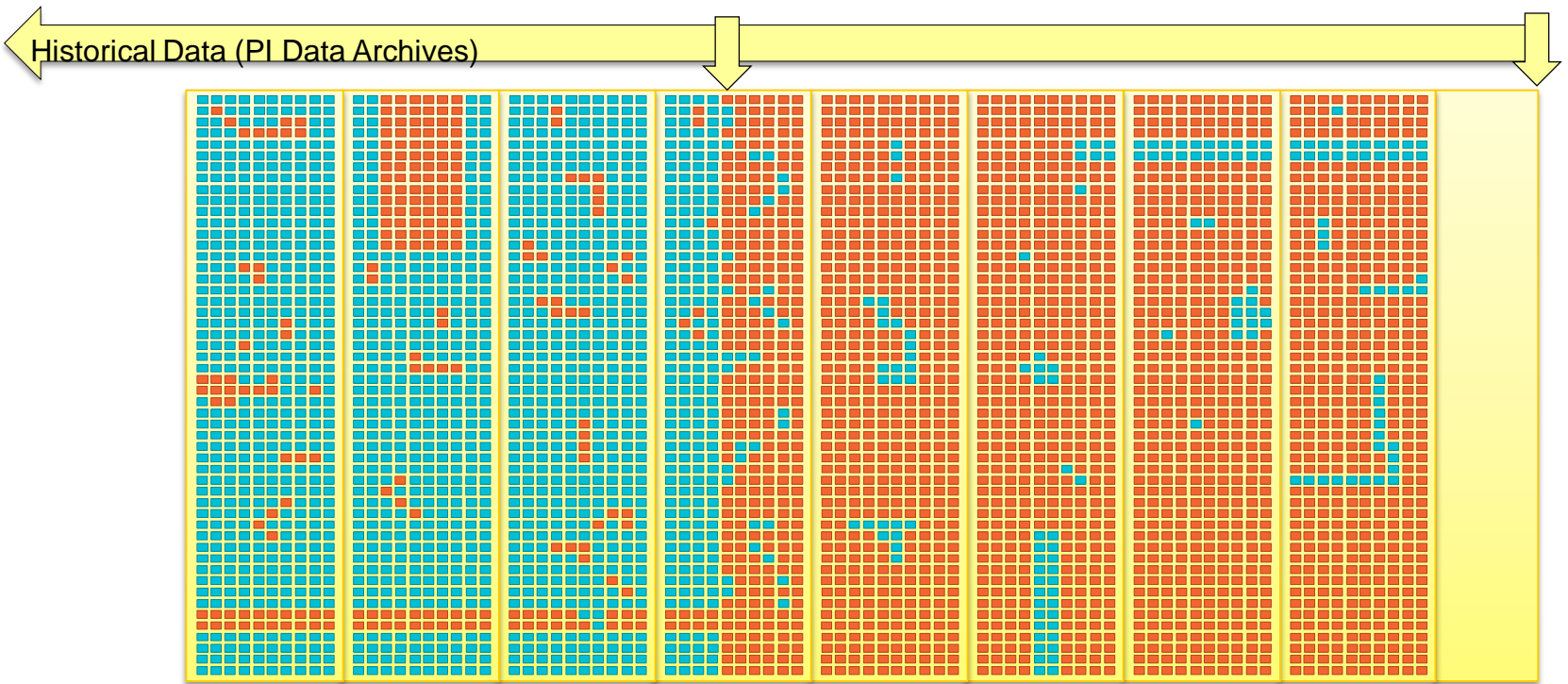


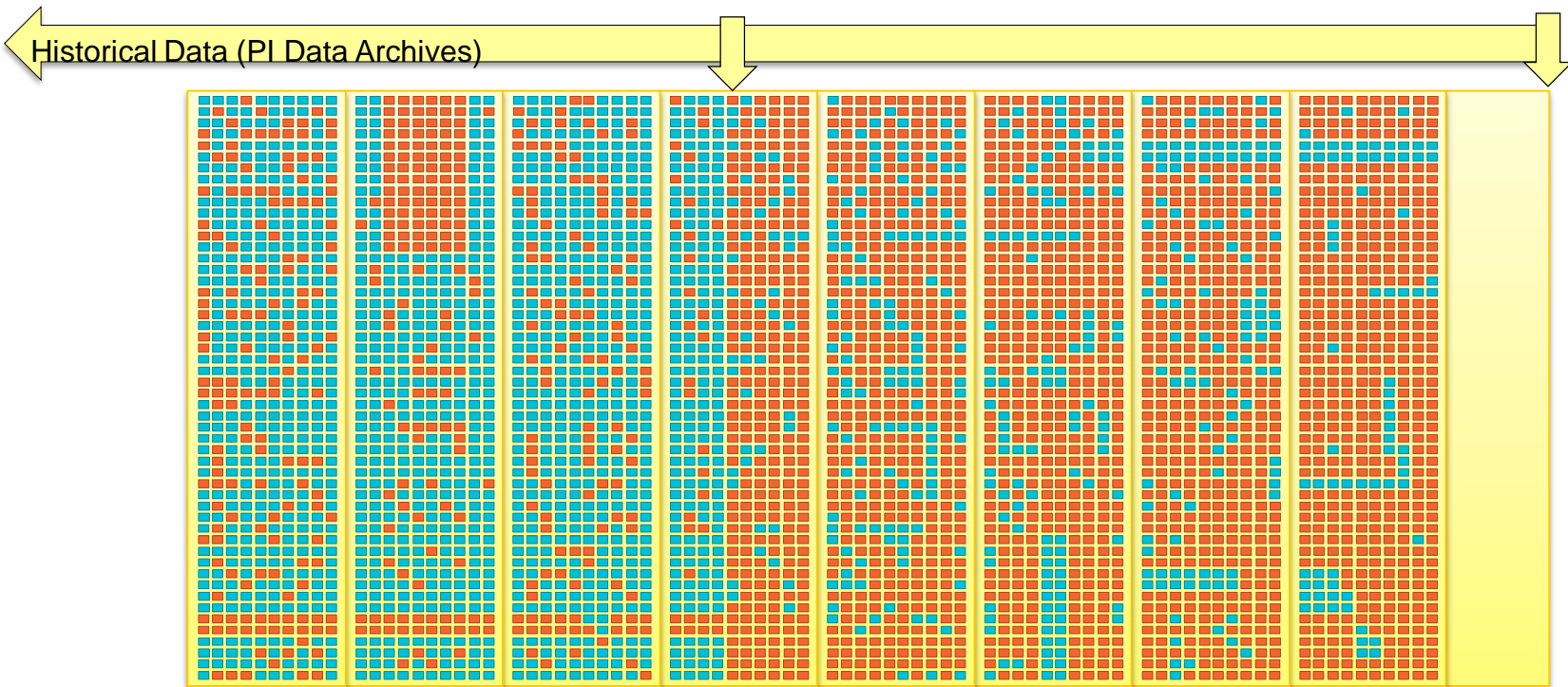
Events in storage.
Considered "cold" events.

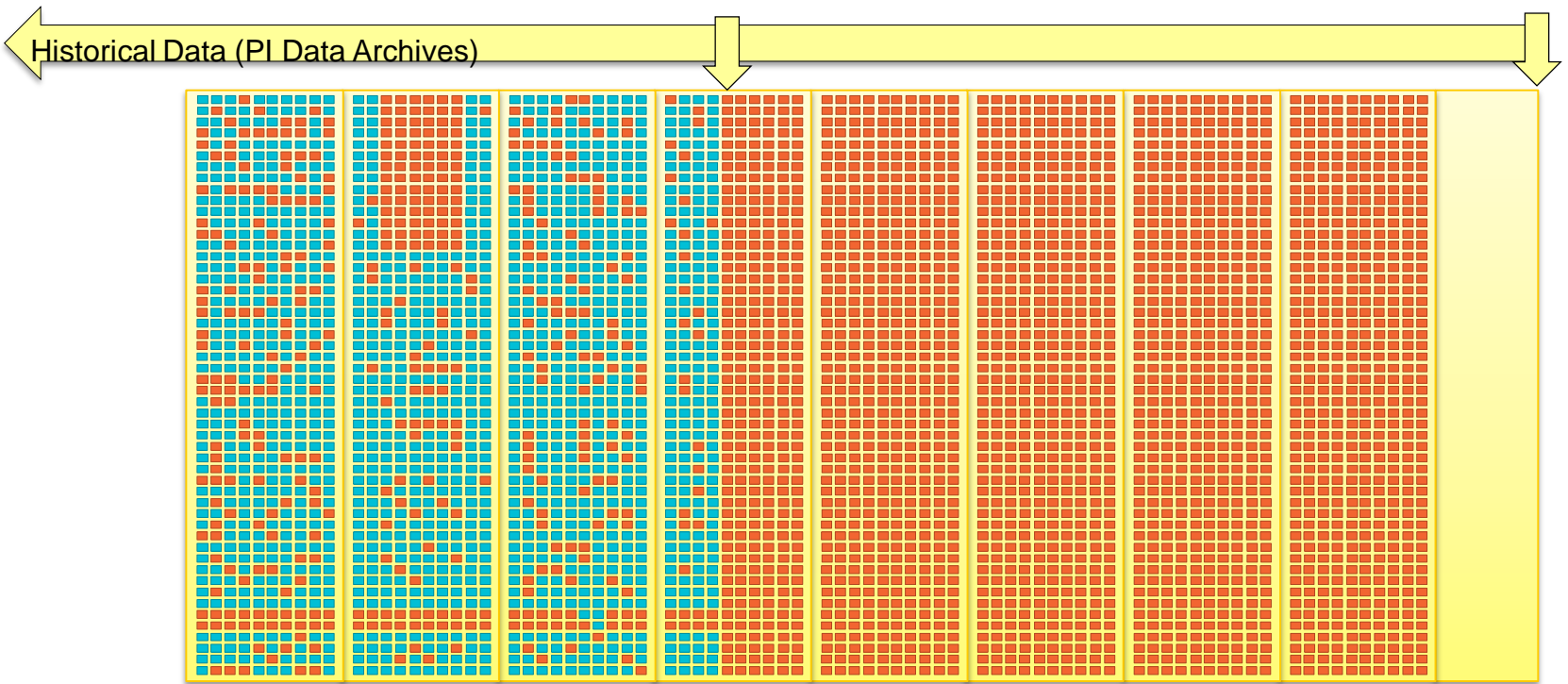


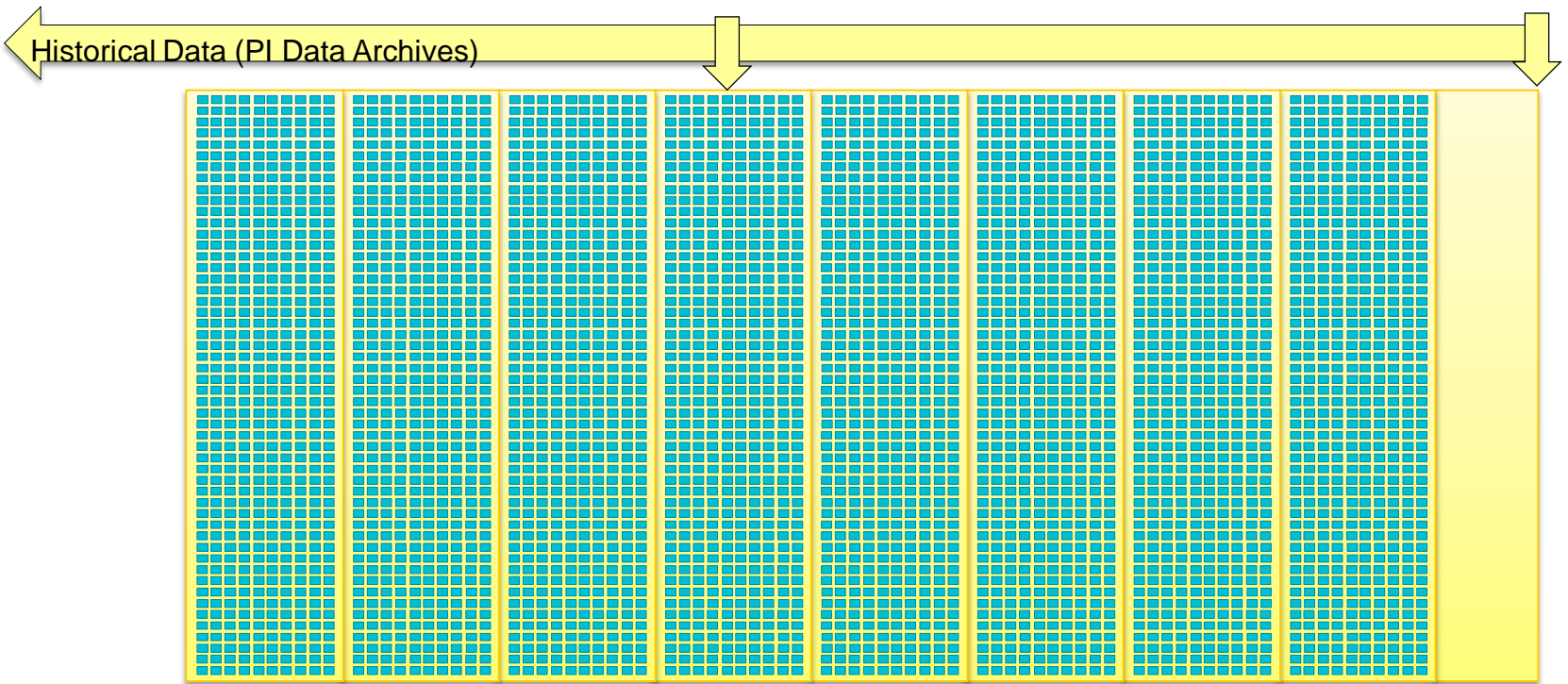


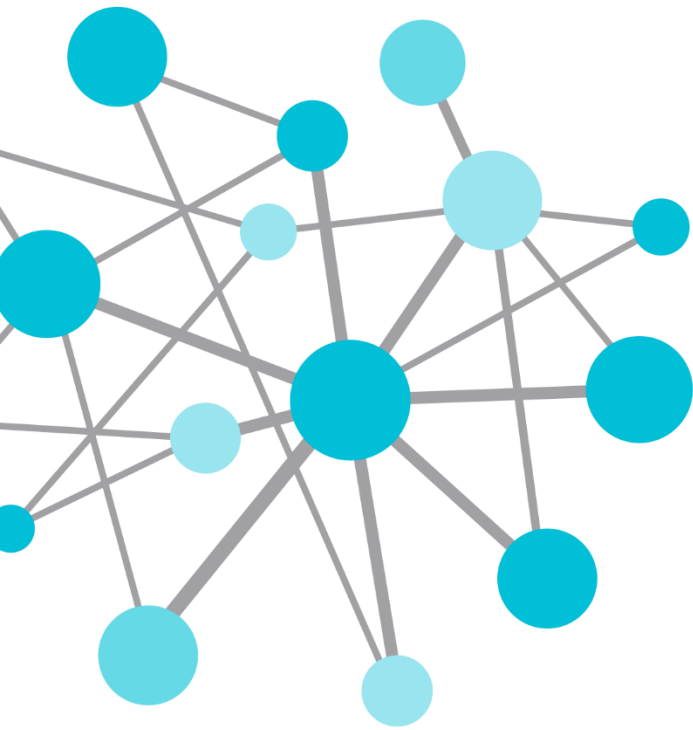
Further queries from consumers continue to fragment the "hot zone".







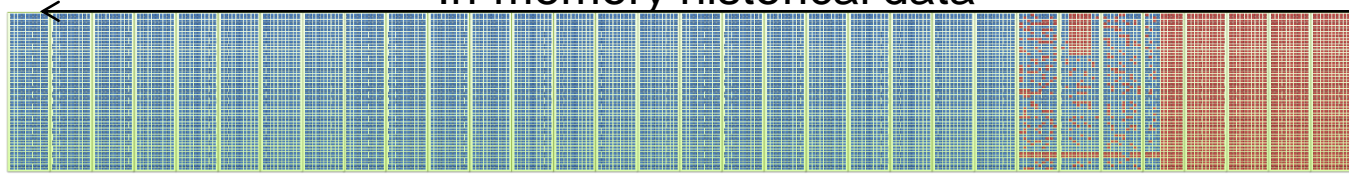




In memory data processing



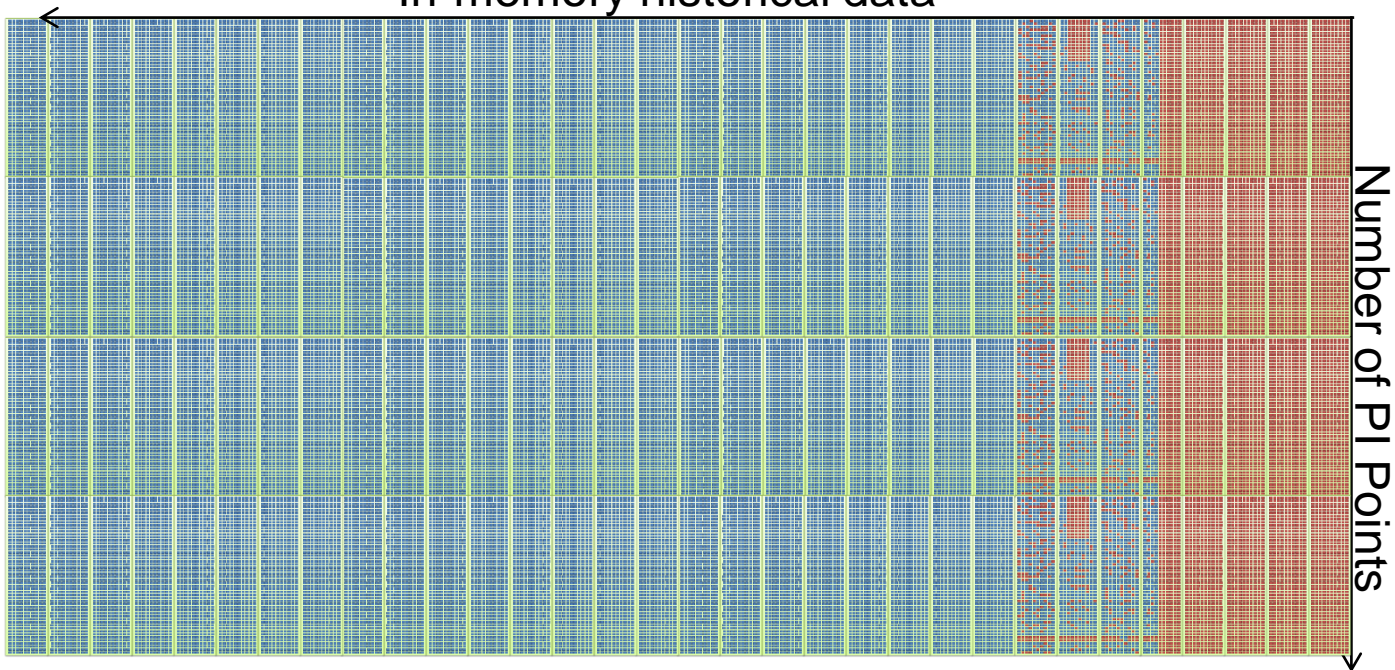
In-memory historical data



Number of PI Points



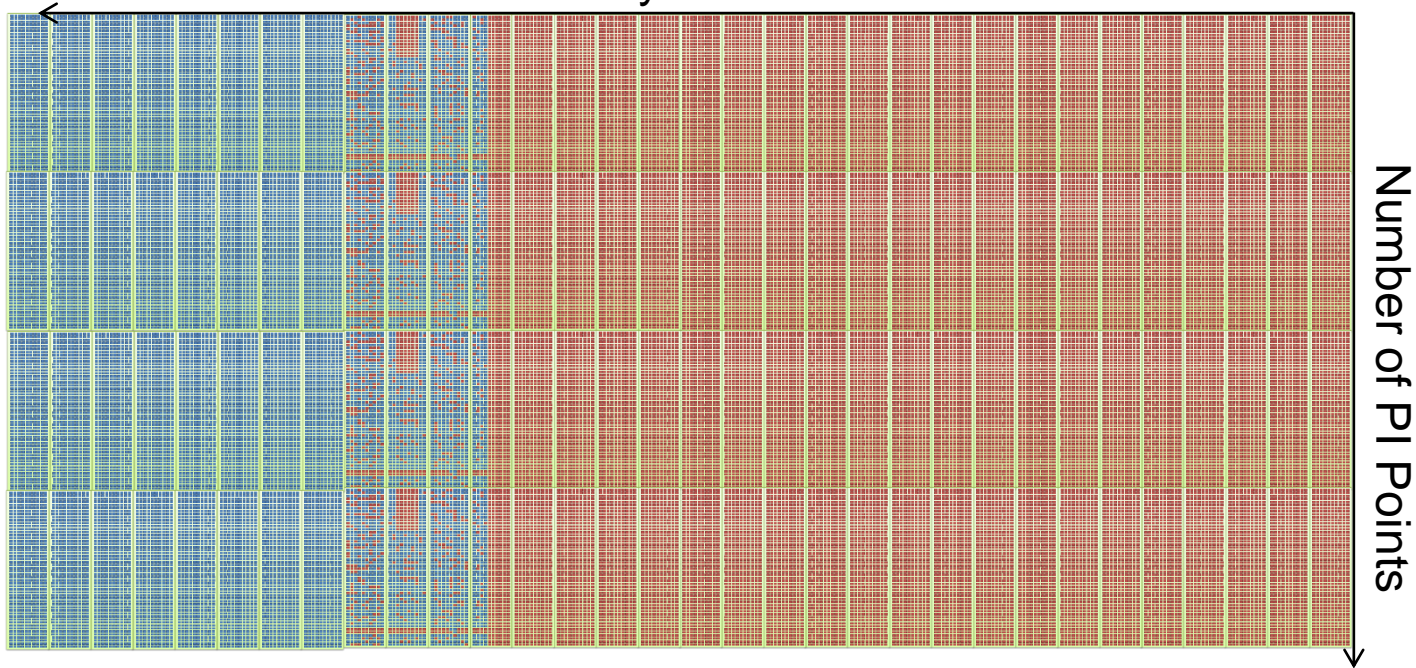
In-memory historical data



Number of PI Points



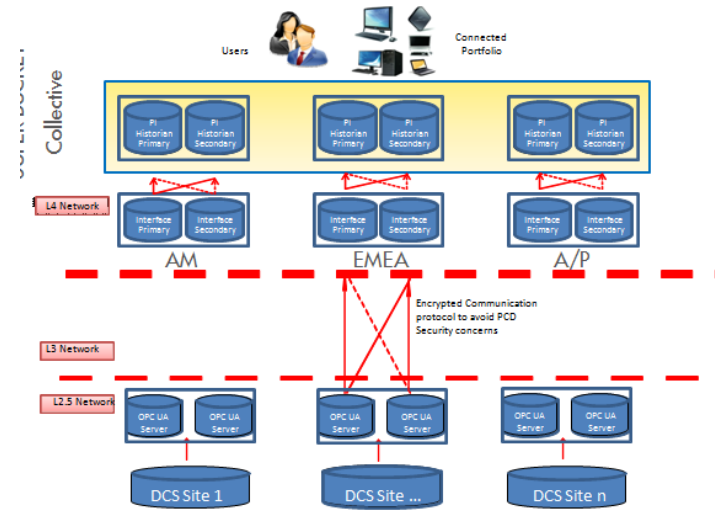
In-memory historical data



Number of PI Points

Building a High Performance, Large Scale Enterprise PI System

Driving value by Smart Solutions based on simplified access to big data



Business Challenge

- Distributed databases
- Various definitions of equipment
- Multiple tools for the same job

Solution

- Increased scalability of PI System
- High range infrastructure
- In memory data processing

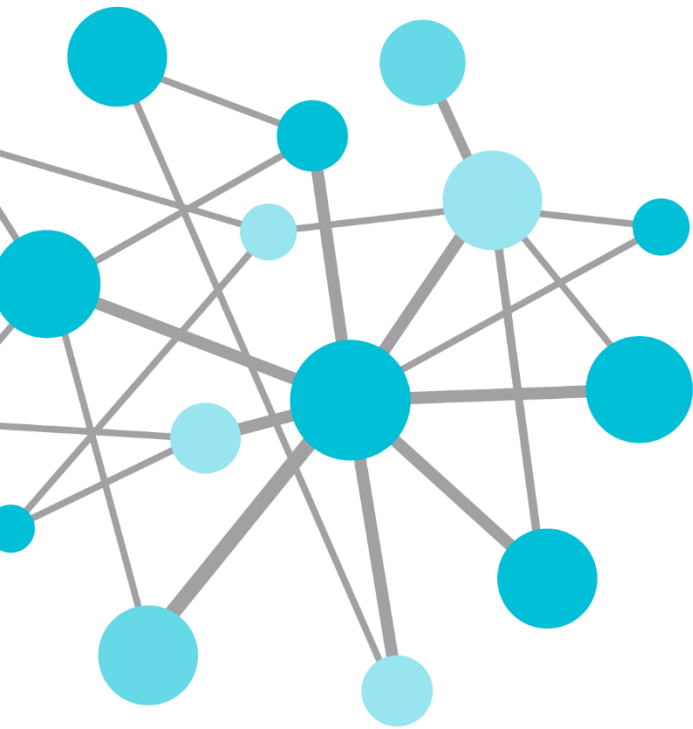
Results and Benefits

- One stop shop for data
- Asset based data
- Single solutions

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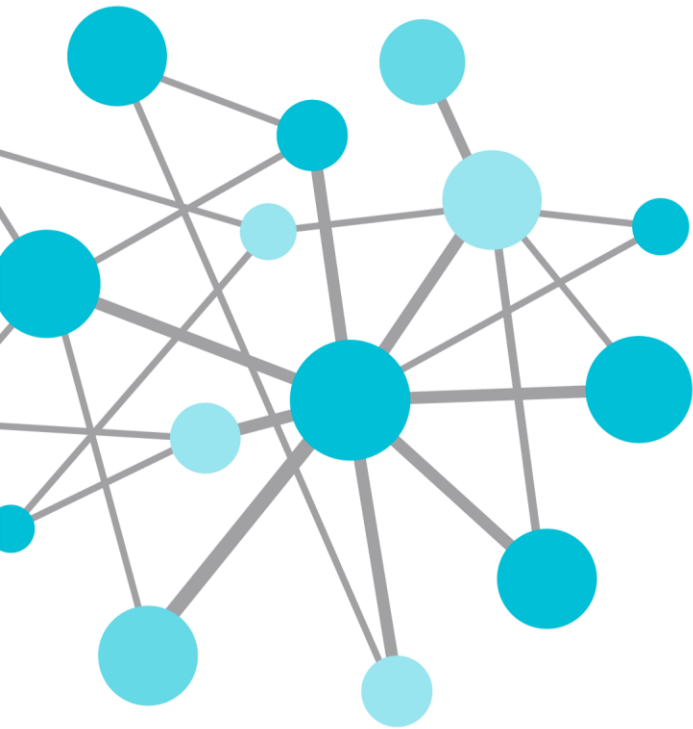


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your questions



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**name &
company**



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YOU

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