The Pursuit of Reliable Data

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Advanced Process Control (APC) Engineer
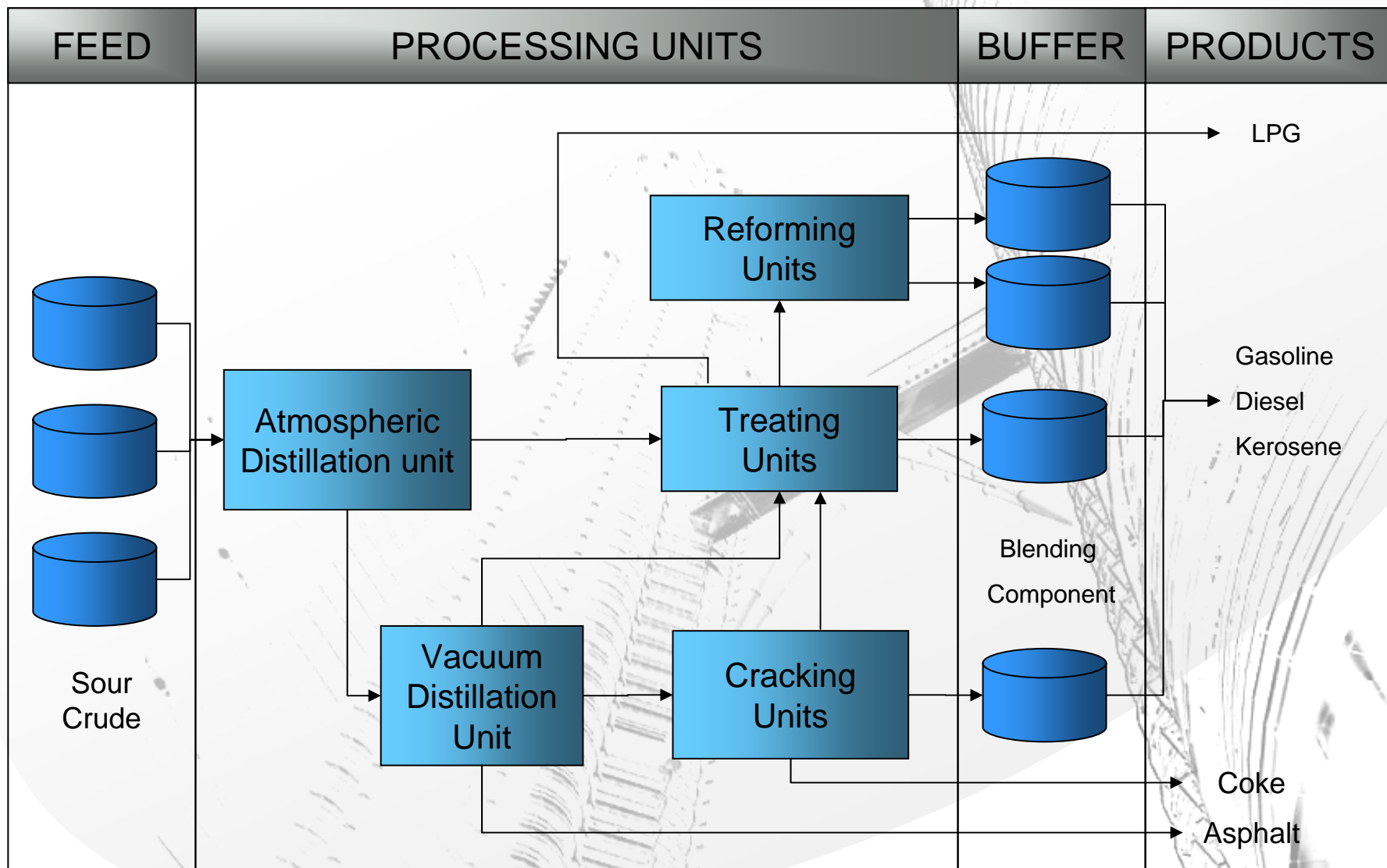PETRONAS Penapisan (Melaka) Sdn Bhd.
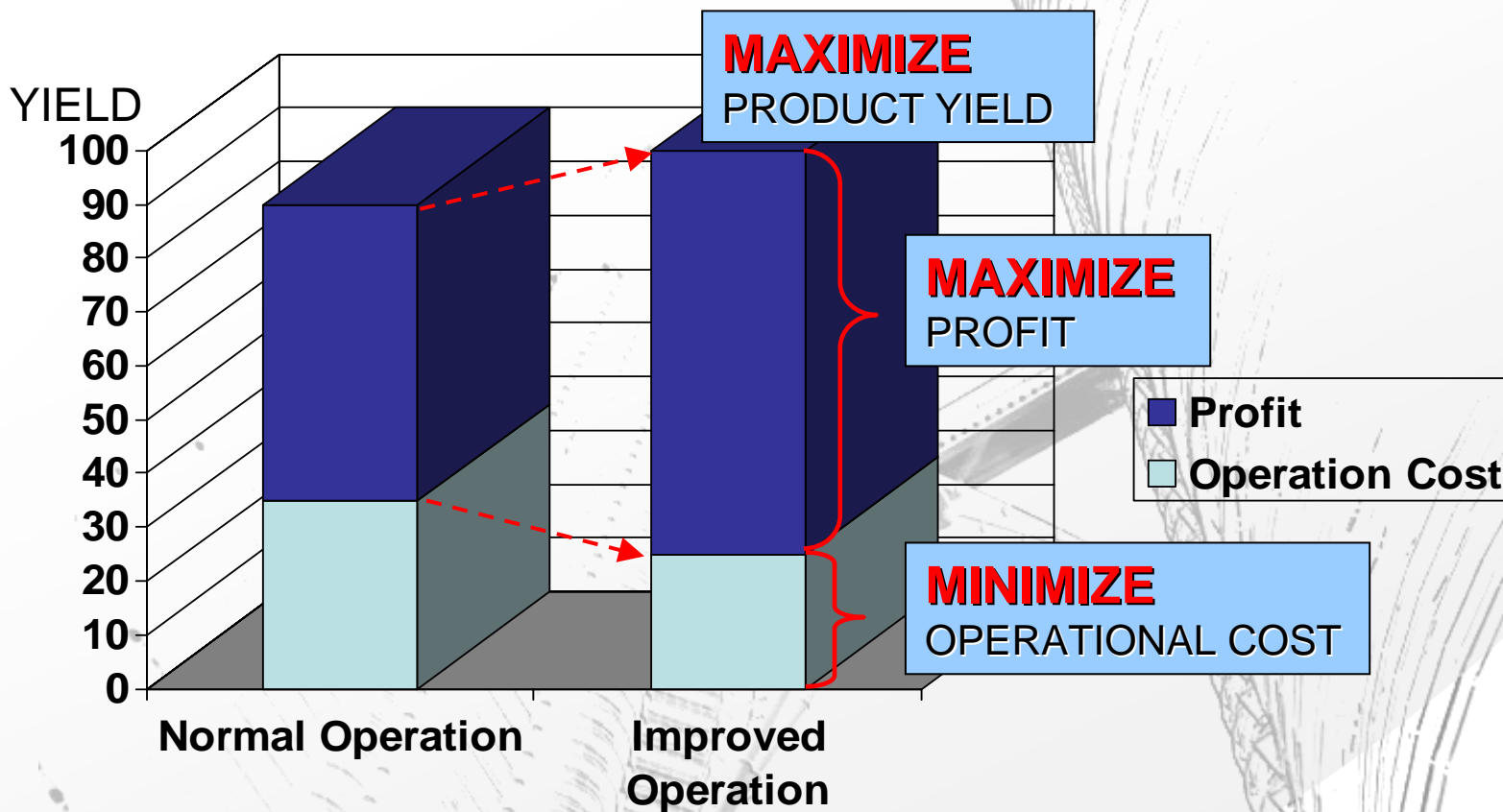
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PETRONAS Penapisan (Melaka) Sdn. Bhd.

- Introduction

- Our Aspiration

- Data Utilization

- Issues and Challenges

- PP(M)SB Way of Data Management
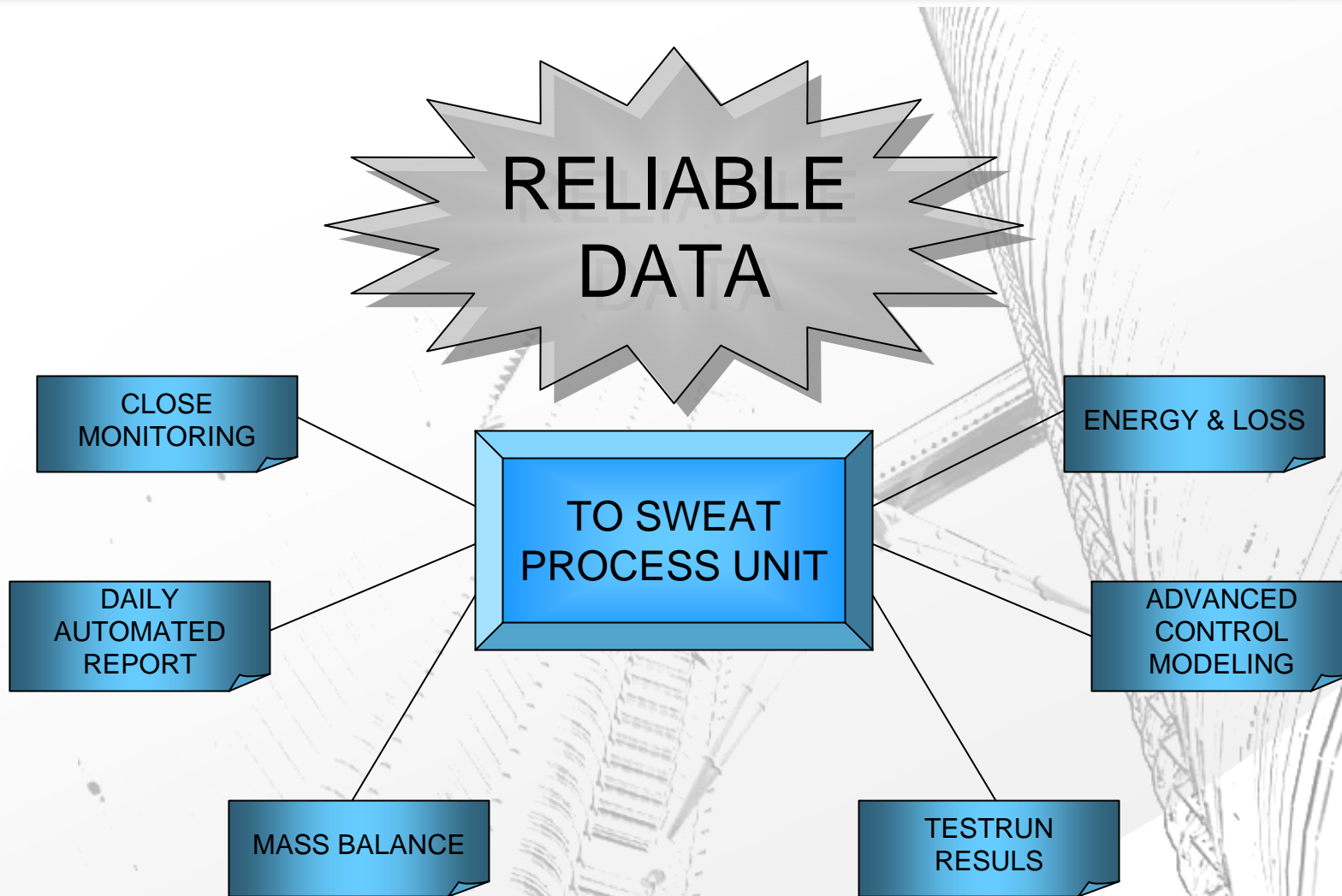
- Benefits

- Conclusion

- PETRONAS Penapisan (Melaka) Sdn Bhd is a subsidiary of PETRONAS.

- Consist of 2 refineries:
  - PSR-1 (process 100MBD of sweet crude)
  - PSR-2 (process 135MBD of sour crude)

- Use Solomon Benchmarking to identify current ranking with peers:
  - PSR-1; 1st in the world (74 refineries)
  - PSR-2; 3rd in the world (74 refineries)

  } **Refinery utilization**

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MAXIMIZE PRODUCT YIELD

MAXIMIZE PROFIT

MINIMIZE OPERATIONAL COST

YIELD

Profit

Operation Cost

Normal Operation

Improved Operation

PROFIT ⬆ = PRODUCT YIELD ⬆ – OPERATIONAL COST ⬇

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RELIABLE DATA

TO SWEAT PROCESS UNIT

CLOSE MONITORING

ENERGY & LOSS

DAILY AUTOMATED REPORT

ADVANCED CONTROL MODELING

MASS BALANCE

TESTRUN RESULS

PRODUCT

TECHNOLOGY
-Daily monitoring

OPERATION
-Daily monitoring
-To monitor product specification

SCHEDULER
-Monitor blending components' availability

PROCESS UNIT

TECHNOLOGY
-Daily monitoring
-Monthly reporting
-Troubleshooting

OPERATION
-Daily report
-View current process condition
-To ensure process stability
-Troubleshooting

SIX SIGMA
-Optimization project

PROJECT
-View historical data for future expansion

FEED

OPERATION PLANNING
-Monitor crude availability
-Mass balance
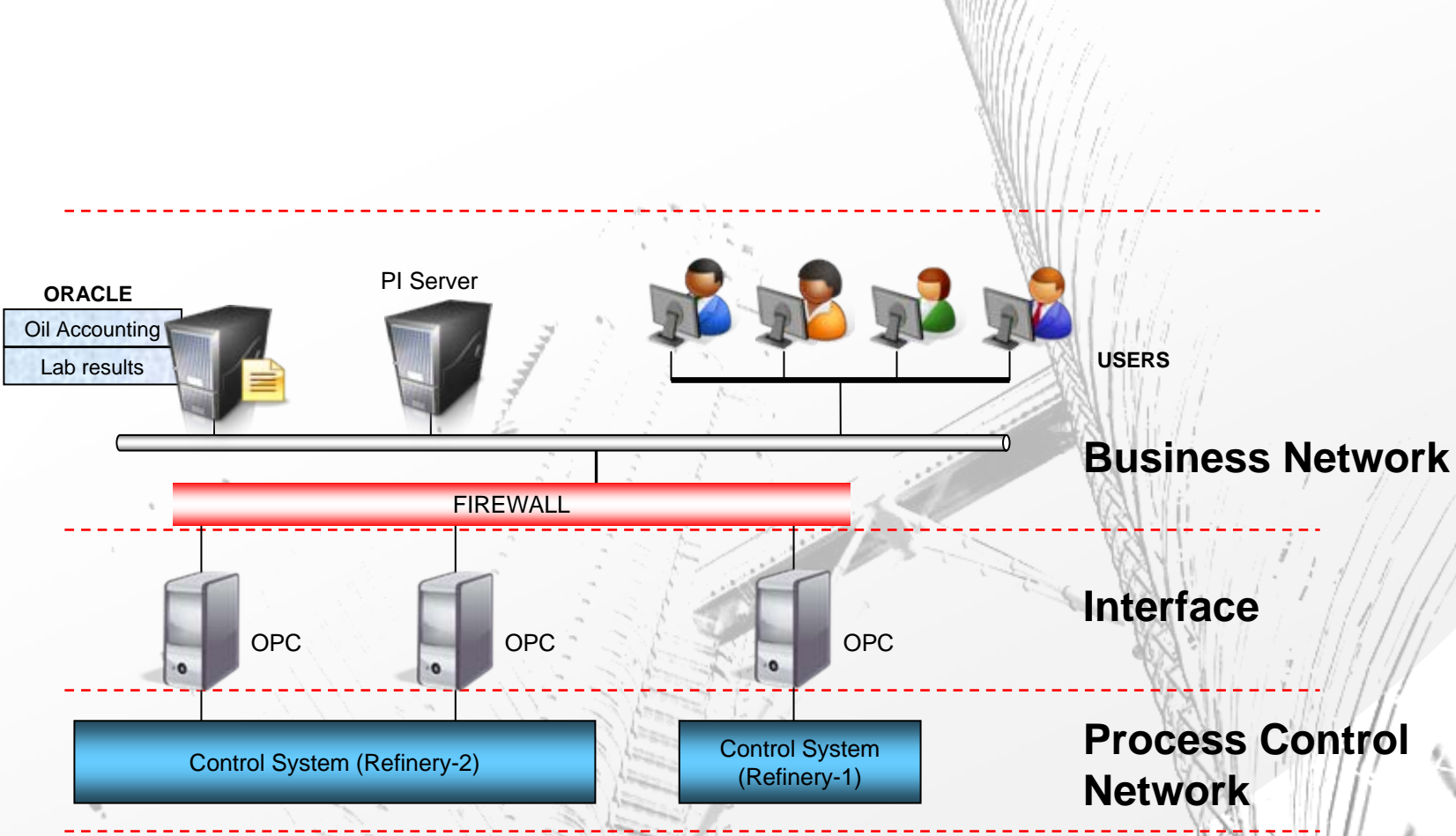
- Data availability at desktop
- Timeliness
- Easy access – anytime, anywhere
- High data processing speed

ORACLE

| Oil Accounting |
| Lab results |

PI Server

USERS

Business Network

FIREWALL

Interface

OPC

OPC

OPC

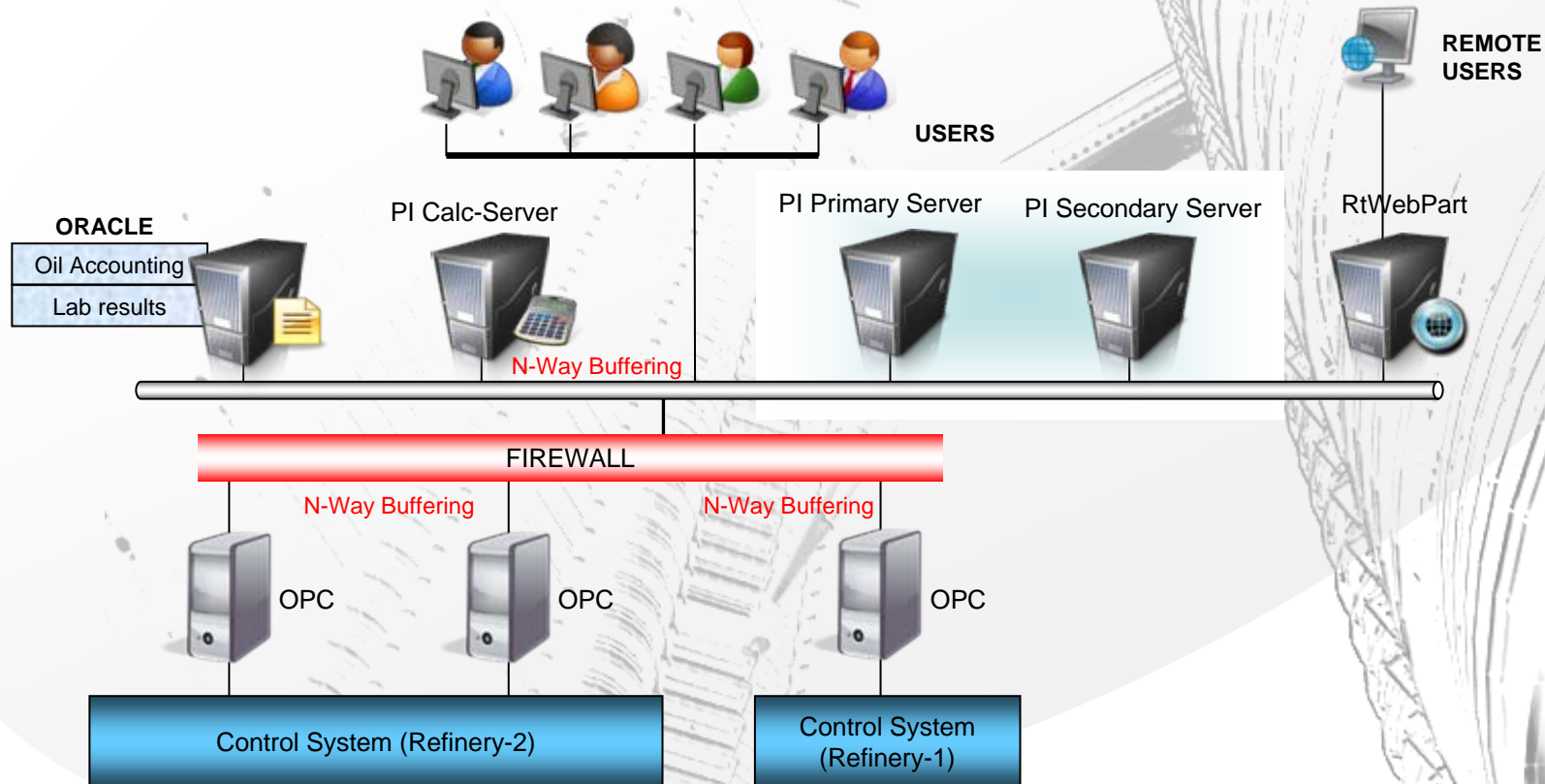**Process Control Network**

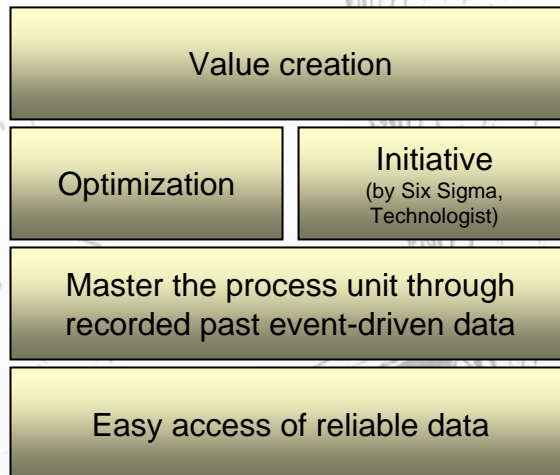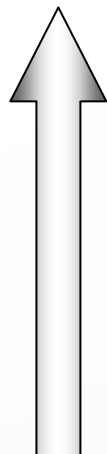Control System (Refinery-2)

Control System (Refinery-1)

- # High Utilisation
  - Greater appreciation of historical data
  - More users
- # High Server Loading
  - More complex computations
  - More frequent computations
- # CAPEX Project support
  - The need for remote access
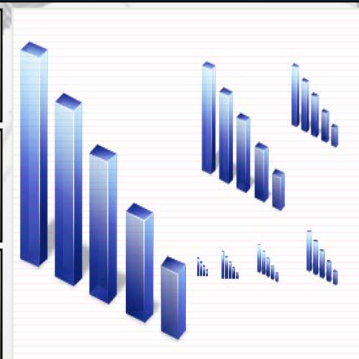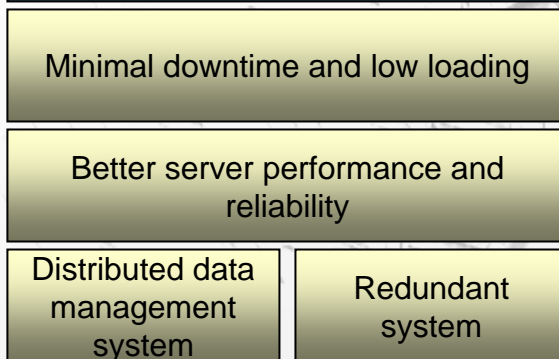
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✓ Redundant system to overcome high downtime

✓ Hi-spec server to overcome high server loading

✓ Distributed Data Management System (DDMS) to handle complex computations
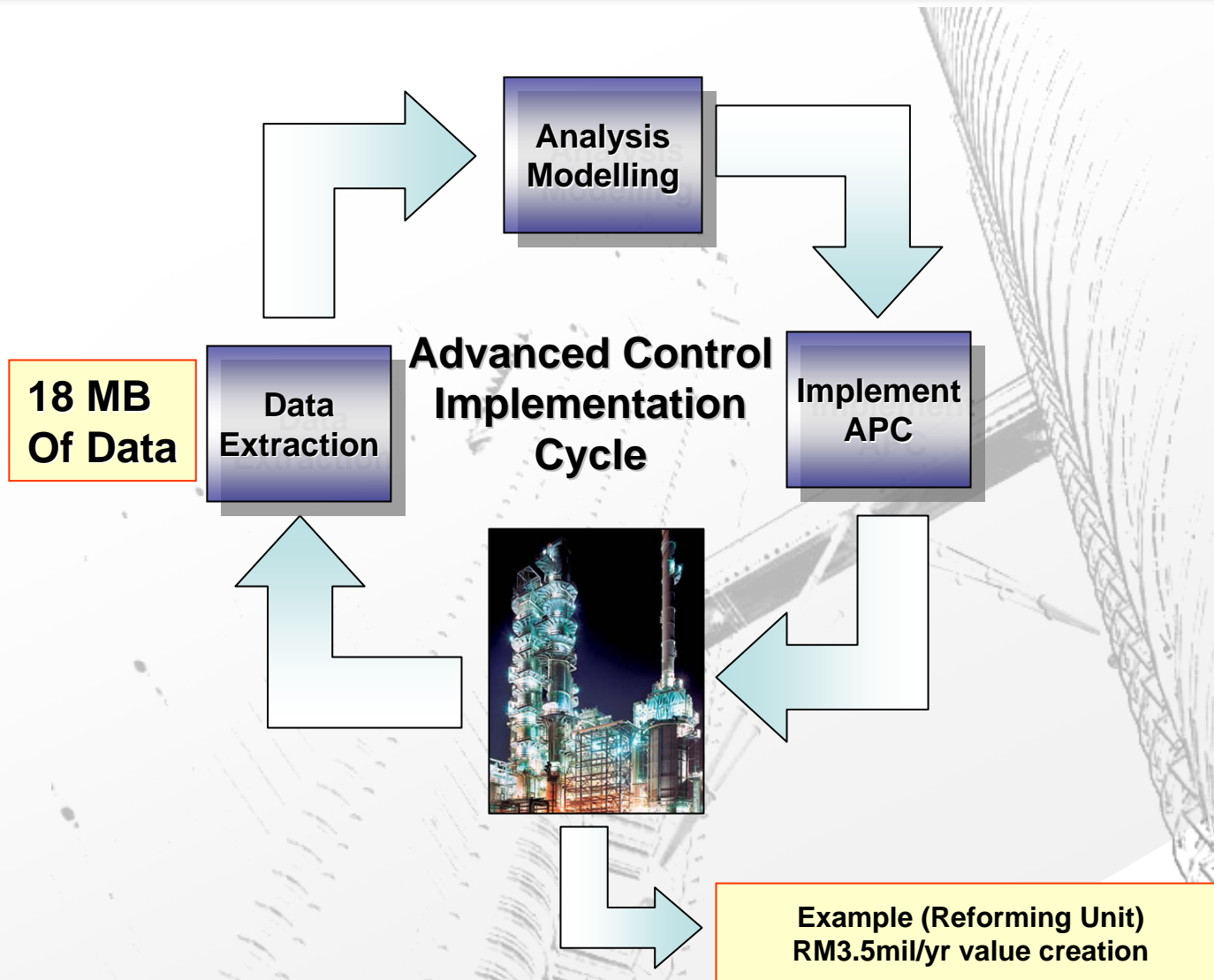
✓ RtWebPart in enabling remote access

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Increment on process capability

Value creation

Optimization

Initiative
(by Six Sigma, Technologist)

Master the process unit through recorded past event-driven data

Easy access of reliable data

High Availability Data

Minimal downtime and low loading

Better server performance and reliability

Distributed data management system

Redundant system

Increment on system capability

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Analysis Modelling

Advanced Control Implementation Cycle

18 MB Of Data

Data Extraction

Implement APC

Example (Reforming Unit) RM3.5mil/yr value creation

- Data drives value creation.

- The key requirement for a data historian system is continuous data availability.

THANK YOU