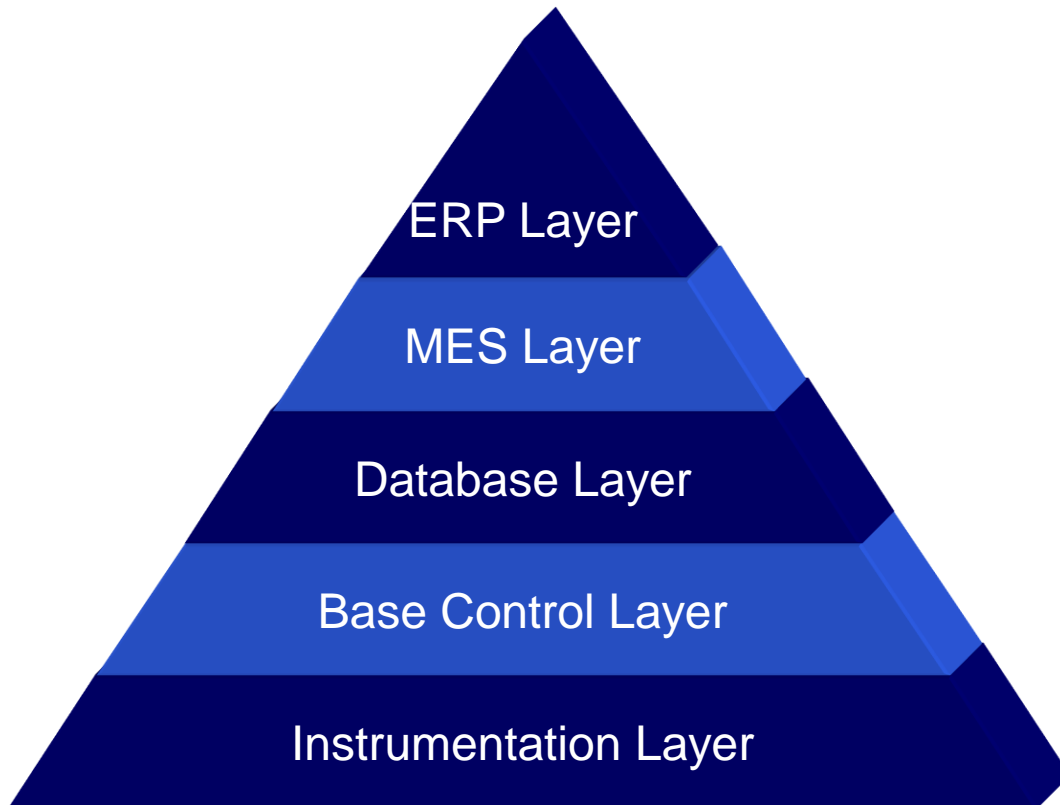# *Sasol Synfuels' Site-Wide IT Health monitoring*
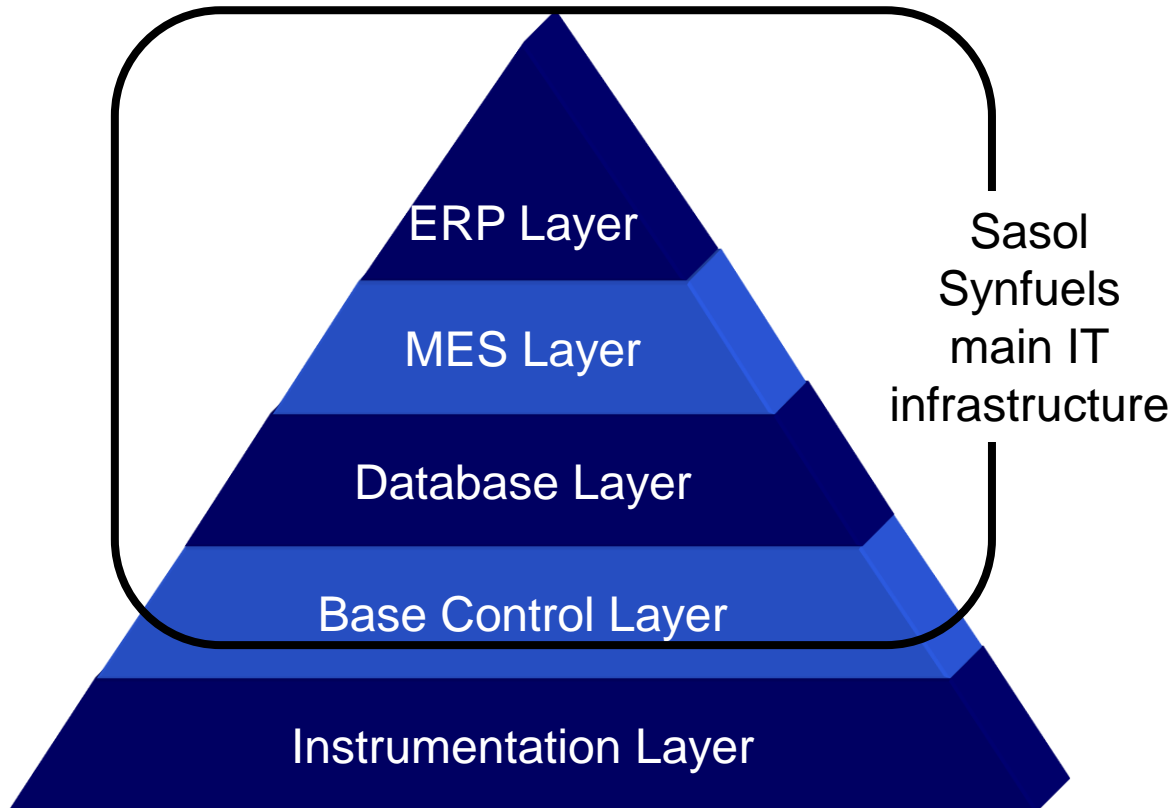
Presenter: Johan de Waal

IT Monitor in Sasol
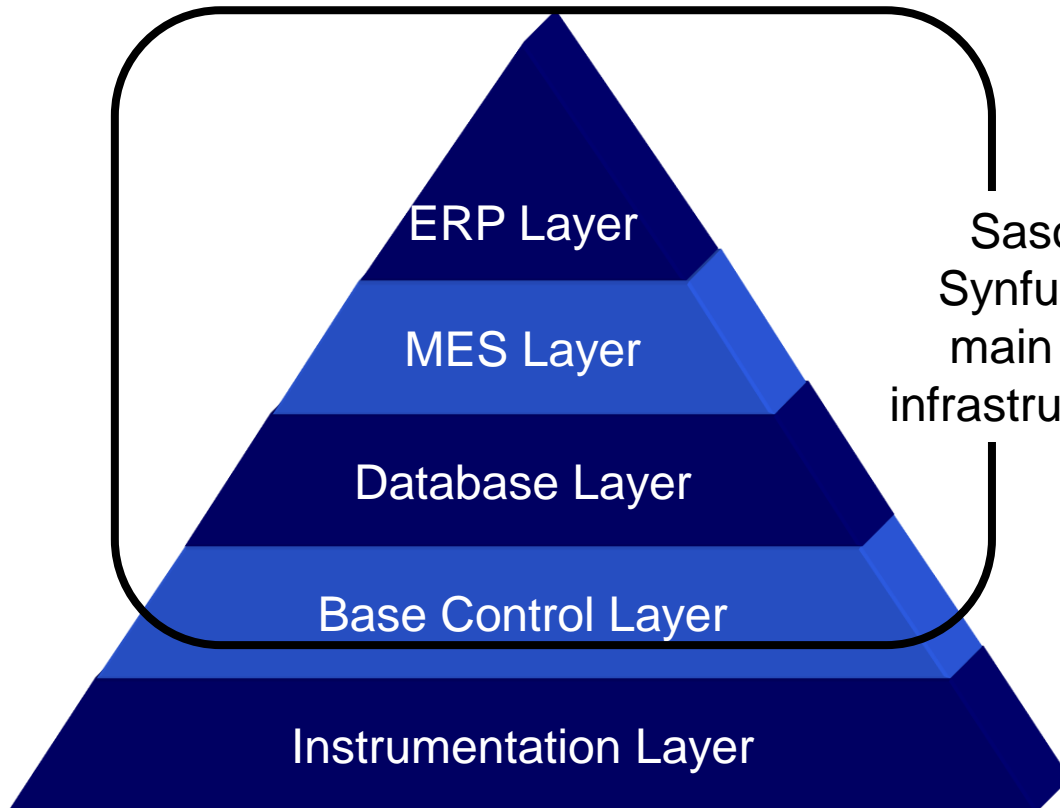

- ERP Layer
- MES Layer
- Database Layer
- Base Control Layer
- Instrumentation Layer

IT Monitor in Sasol

ERP Layer

MES Layer

Database Layer

Base Control Layer

Instrumentation Layer

Sasol Synfuels main IT infrastructure

IT Monitor in Sasol

ERP Layer

MES Layer

Database Layer

Base Control Layer

Instrumentation Layer

Sasol Synfuels main IT infrastructure
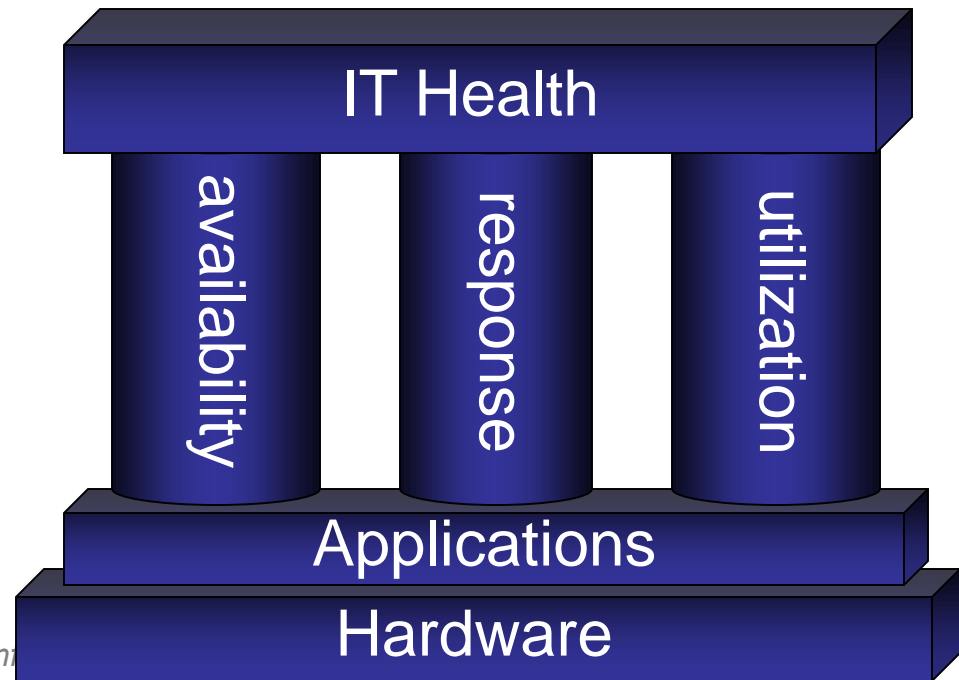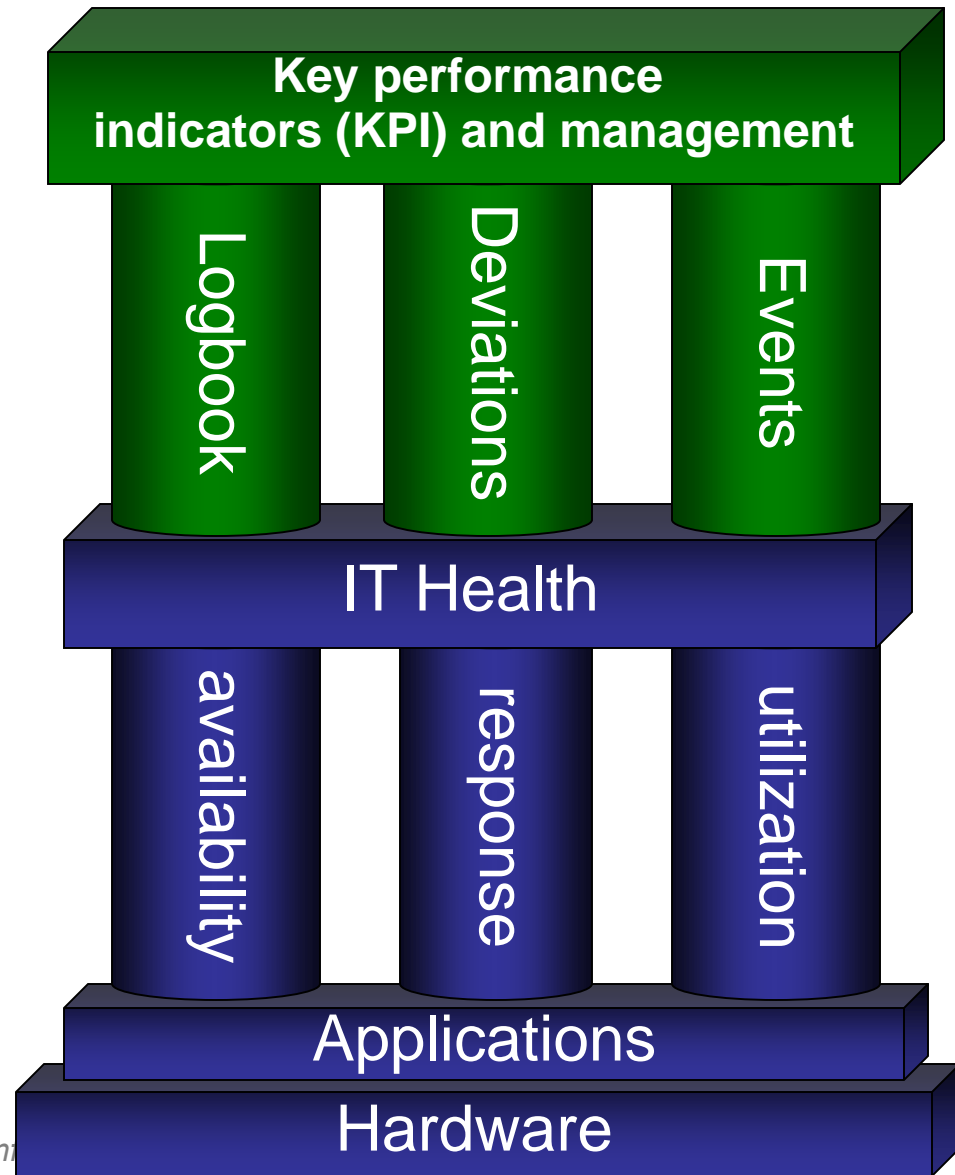
- Monitor System Performance

- Detect Failures

- Manage Service Level Agreements (SLA) with 3rd Party Support Companies

- Enable Preventative Maintenance

- Do Capacity Planning and development

Positioning IT Monitor

Positioning IT Monitor

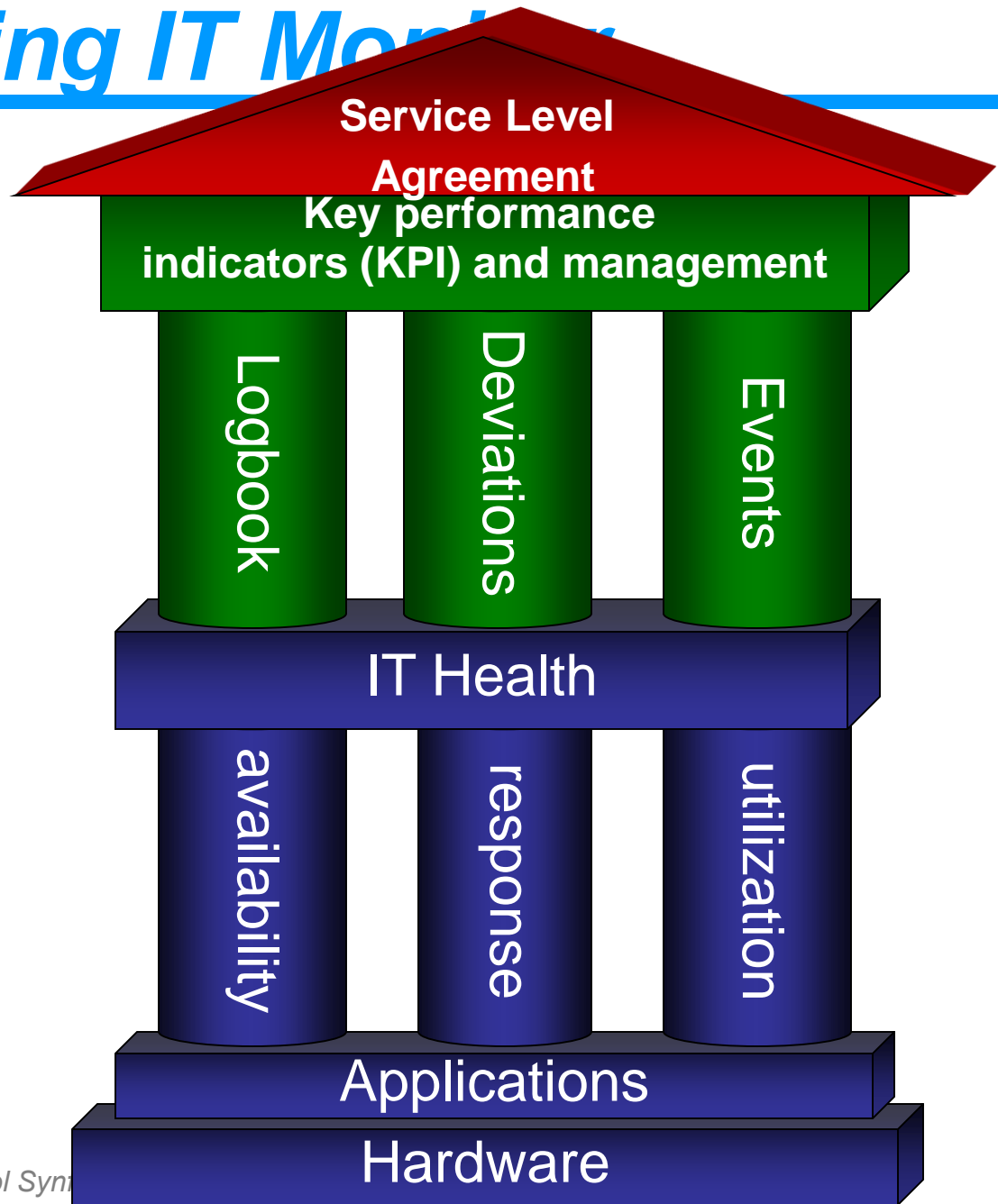Key performance indicators (KPI) and management

Logbook

Deviations

Events

IT Health

availability

response

utilization

Applications

Hardware

sasol
reaching new frontiers

Sasol Syn

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Positioning IT Monitor

Service Level Agreement

Key performance indicators (KPI) and management

Logbook

Deviations

Events

IT Health

availability

response

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Applications

Hardware

Positioning IT Monitor

Service Level Agreement

Key performance indicators and management

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IT Monitoring & Management

Applications

Hardware

Sasol Syn

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Positioning IT Monitor

Service Level Agreement

Key performance indicators and management

Information System

Monitoring & Management
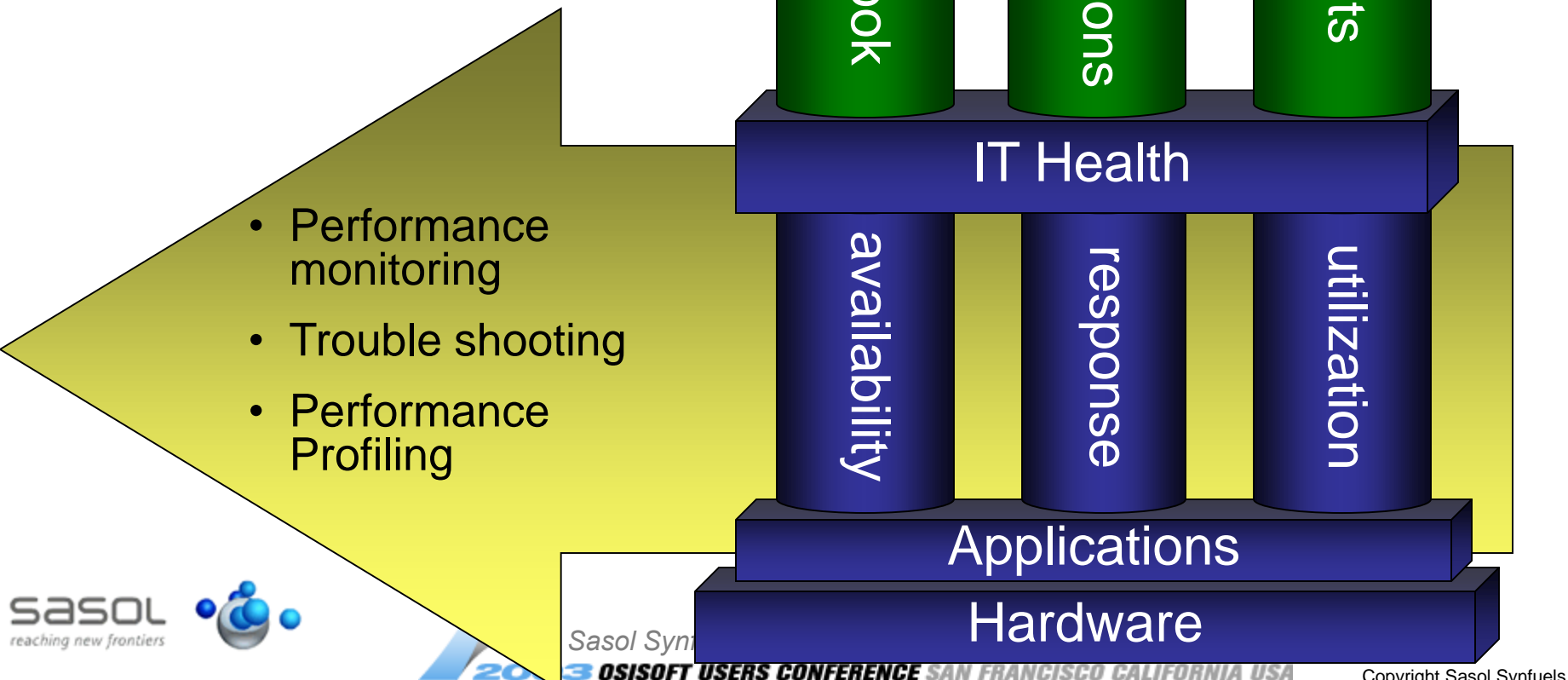
Logbook

Deviations

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IT Health

IT Monitoring & Management

availability

response

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SASOL
reaching new frontiers

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Positioning IT Monitor

Service Level

Monitoring & Management

Service Level Agreement

Key performance indicators and management

Logbook

Deviations

Events

Information System

Monitoring & Management

IT Health

availability

response

utilization

IT Monitoring & Management

Applications

Hardware

Positioning IT Monitor

Service Level Agreement

Key performance indicators and management

Logbook

Deviations

Events

IT Health

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utilization

Applications

Hardware

- Performance monitoring
- Trouble shooting
- Performance Profiling

SASOL
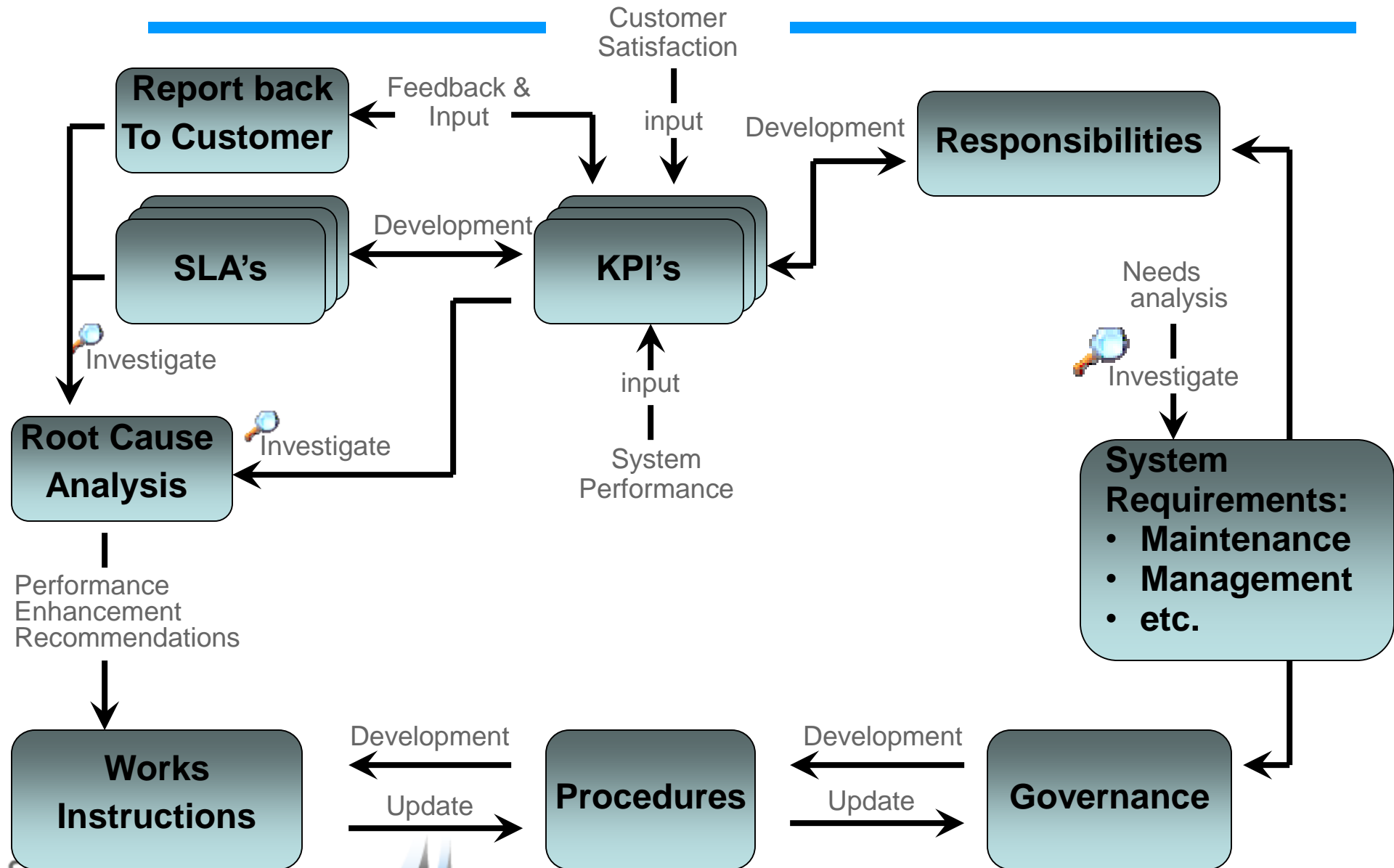reaching new frontiers

Sasol Syn...

Positioning IT Monitor

- Preventative maintenance
- Capacity Planning
- Advanced Fault finding

- Performance monitoring
- Trouble shooting
- Performance Profiling

Service Level Agreement

Key performance indicators and management

Logbook

Deviations

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IT Health

availability

response

utilization

Applications

Hardware

sasol
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- Incentive based SLA management
- Service Optimization
- Prevent maintenance
- Capacity Planning
- Advanced Fault finding
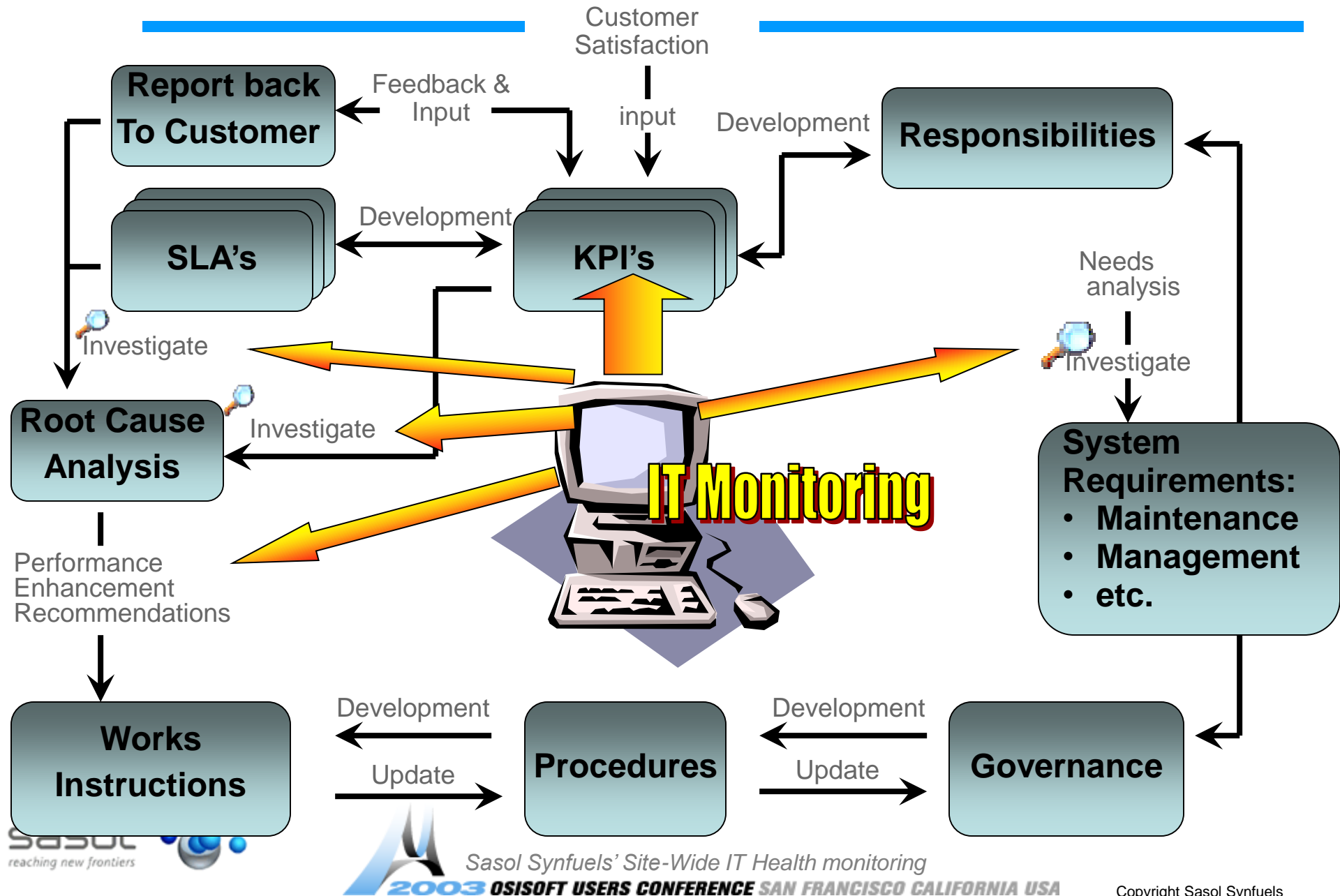- Perform monitoring
- Trouble shooting
- Performance Profiling

Service Level Agreement

Key performance indicators and management

Logbook

Deviations

Events

IT Health

availability

response

utilization

Applications

Hardware

IT Monitoring in SLA management

Customer Satisfaction

Report back To Customer

Feedback & Input

input

Development

Responsibilities

Development

SLA's

KPI's

Needs analysis

Investigate

Investigate

Investigate

input

System Performance

Root Cause Analysis

Performance Enhancement Recommendations

System Requirements:
- **Maintenance**
- **Management**
- **etc.**

Works Instructions

Development

Update

Procedures

Development

Update

Governance

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Sasol Synfuels' Site-Wide IT Health monitoring

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IT Monitoring in SLA management

Customer Satisfaction

Report back To Customer

Feedback & Input

input

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Responsibilities

SLA's

Development

KPI's

Needs analysis

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Investigate

Root Cause Analysis

Investigate

IT Monitoring

System Requirements:
- **Maintenance**
- **Management**
- **etc.**

Performance Enhancement Recommendations

Works Instructions

Development

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Procedures

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Update

Governance

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Current IT Monitor implementation
(and growing daily)

• Monitoring of the following applications:

- 42 MES servers

- 7 SAP servers

- 8 SAP portal servers

- 2 ADS servers

- 37 switches

- 9 applications

- 14 LCNs

Proxy

SAN

LCN

...

IT Monitor

MES   SAP   EIP   …

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Access to Data

- **PI Processbook**

- **PI Datalink (Excel)**

- **SAP Portal**

IT Monitoring integration into Portals

IT Monitoring integration into Portals

navigation

- ALL
- IPS MONITORING
  - APP NODES
  - EBI
  - ORACLE
  - OTHER APPS
  - PHD
  - PI
  - PORTAL
  - WEB APPS
- EIP MONITORING
- SAP MONITORING

display

OSIsoft Selection = SECAAIPS

Zoom

ORACLE/PHD DEVELOPMENT SERVER

SECAAIPS

SERVER		
Availability	100	%
Uptime	3284733	s
CPU	80.54	%
Memory Utilization	40.52	%
Memory Available	623382528	Bytes
Memory Pages/sec	1.70	
Network Utilization	0.03	%
Network Bandwidth	100000000	Bytes
Network Bytes Total	27393.09	Bytes
Disk C Free Space	63.51	%
Disk D Free Space	51.81	%
Disk E Free Space	14.76	%
Disk F Free Space	----------	%
Disk G Free Space	----------	%
Disk H Free Space	----------	%

APPLICATION		
Oracle Availability	100	%
Oracle CPU	12.90	%
Oracle Memory	53.73	%
PHD Availability	100	%
PHD CPU	0.00	%
PHD Memory	0.16	%

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Sasol Synfuels' Site-Wide IT Health monitoring

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IS Monitoring & Management - Portal

oracle background processes   ▫ ▬ ⟳ ✎ ✕

OSIsoft Refresh in 1 min 52 s

⏮ ⏫ ⏬ ⏭ 1-5/5

Process	DEV	QA	PROD
DB MAINT			**OFF by 292 min**
RELTOPHD_INSERTS		**OFF by 527 min**	
USER_LOGONS			**OFF by 938 min**
VARIANCE_MONITORING		**OFF by 13 min**	
MINING HEAP MONITOR			**OFF by 837 min**

variance list   ▫ ▬ ⟳ ✎ ✕

Equipment = SECAAIPS, Start Time = TODAY-2D, End Time = NOW

⏮ ⏫ ⏬ ⏭ 1-2/2

Variance	Equipment	Tag	Unit	Type	Deviated
SECAAIPS.CPU_VAR	SECAAIPS	SECAAIPS.CPU	%	PERFORMANCE	Yes
SECAAIPS.DISK_E_VAR	SECAAIPS	SECAAIPS.DISK_E	%	PERFORMANCE	Yes

variance detail   ▫ ▬ ⟳ ✎ ✕

Variance = SECAAIPS.CPU_VAR, Start Time = TODAY-2D, End Time = NOW

⏮ ⏫ ⏬ ⏭ 1-4/4

Start Date/Time	End Date/Time	Duration (Hours)	Actual	Deviation	Min	Max	Running Cost
09-MAY-2003 00:05:00		8.58	99.31	+49.31	0	50	R
08-MAY-2003 00:05:00	09-MAY-2003 00:00:00	24	97.92	+47.92	0	50	R
07-MAY-2003 00:05:00	08-MAY-2003 00:00:00	24	99.39	+49.39	0	50	R
06-MAY-2003 00:05:00	07-MAY-2003 00:00:00	24	98.8	+48.8	0	50	R

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Sasol Synfuels' Site-Wide IT Health monitoring

IS & SLA Monitoring & Management - Portal

oracle background processes

OSIsoft Refresh in 1 min 52 s

1-5/5

Process	DEV	QA	PROD
DB MAINT			OFF by 292 min
RELTOPHD_INSERTS		OFF by 527 min	
USER_LOGONS			OFF by 938 min
VARIANCE_MONITORING		OFF by 13 min	
MINING HEAP MONITOR			OFF by 837 min

variance list

Equipment = SECAAIPS, Start Time = TODAY-2D, End Time = NOW

Operational & SLA Targets

1-2/2

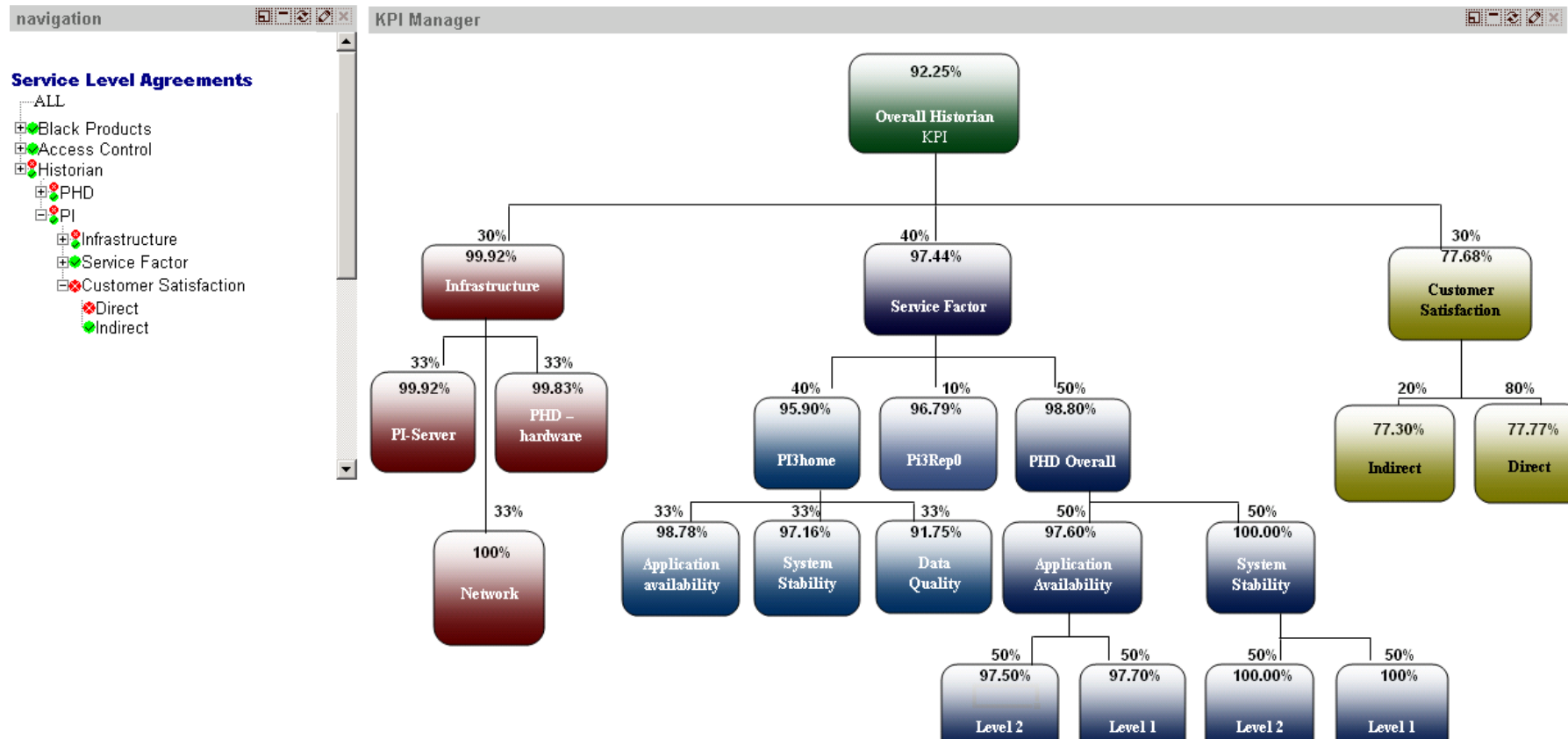| Variance	Equipment	Tag	Unit	Type	Deviated
SECAAIPS.CPU_VAR	SECAAIPS	SECAAIPS.CPU	%	PERFORMANCE	Yes
SECAAIPS.DISK_E_VAR	SECAAIPS	SECAAIPS.DISK_E	%	PERFORMANCE	Yes

variance detail

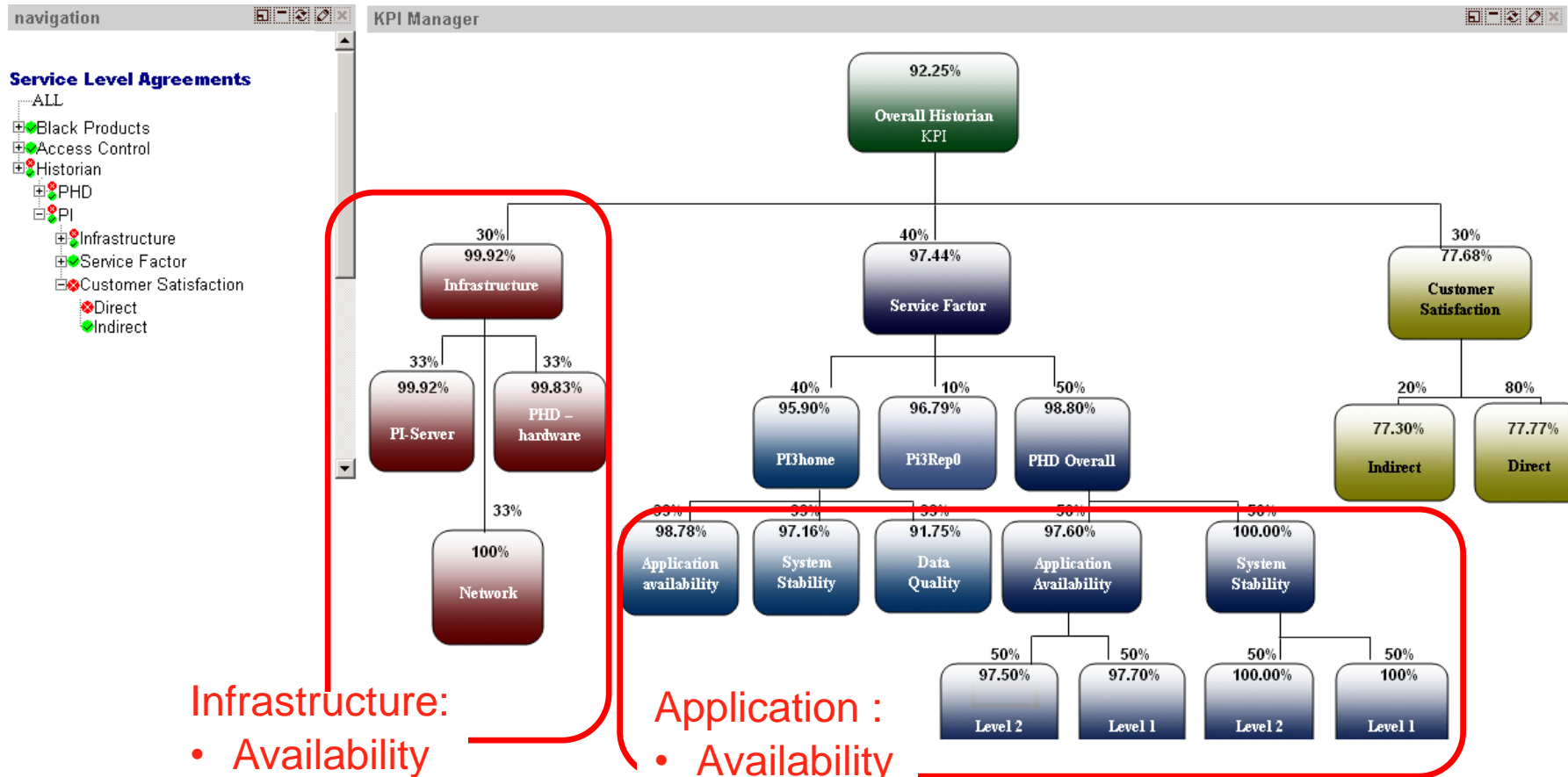Variance = SECAAIPS.CPU_VAR, Start Time = TODAY-2D, End Time = NOW

Operational & SLA Deviations

1-4/4

Start Date/Time	End Date/Time	Duration (Hours)	Actual	Deviation	Min	Max	Running Cost
09-MAY-2003 00:05:00		8.58	99.31	+49.31	0	50	R
08-MAY-2003 00:05:00	09-MAY-2003 00:00:00	24	97.92	+47.92	0	50	R
07-MAY-2003 00:05:00	08-MAY-2003 00:00:00	24	99.39	+49.39	0	50	R
06-MAY-2003 00:05:00	07-MAY-2003 00:00:00	24	98.8	+48.8	0	50	R

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Sasol Synfuels' Site-Wide IT Health monitoring

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SLA Monitoring and Management - Portal

SLA Monitoring and Management - Portal

Infrastructure:
- Availability

Application :
- Availability
- Response
- Utilization

Case Study – *Memory Leak*
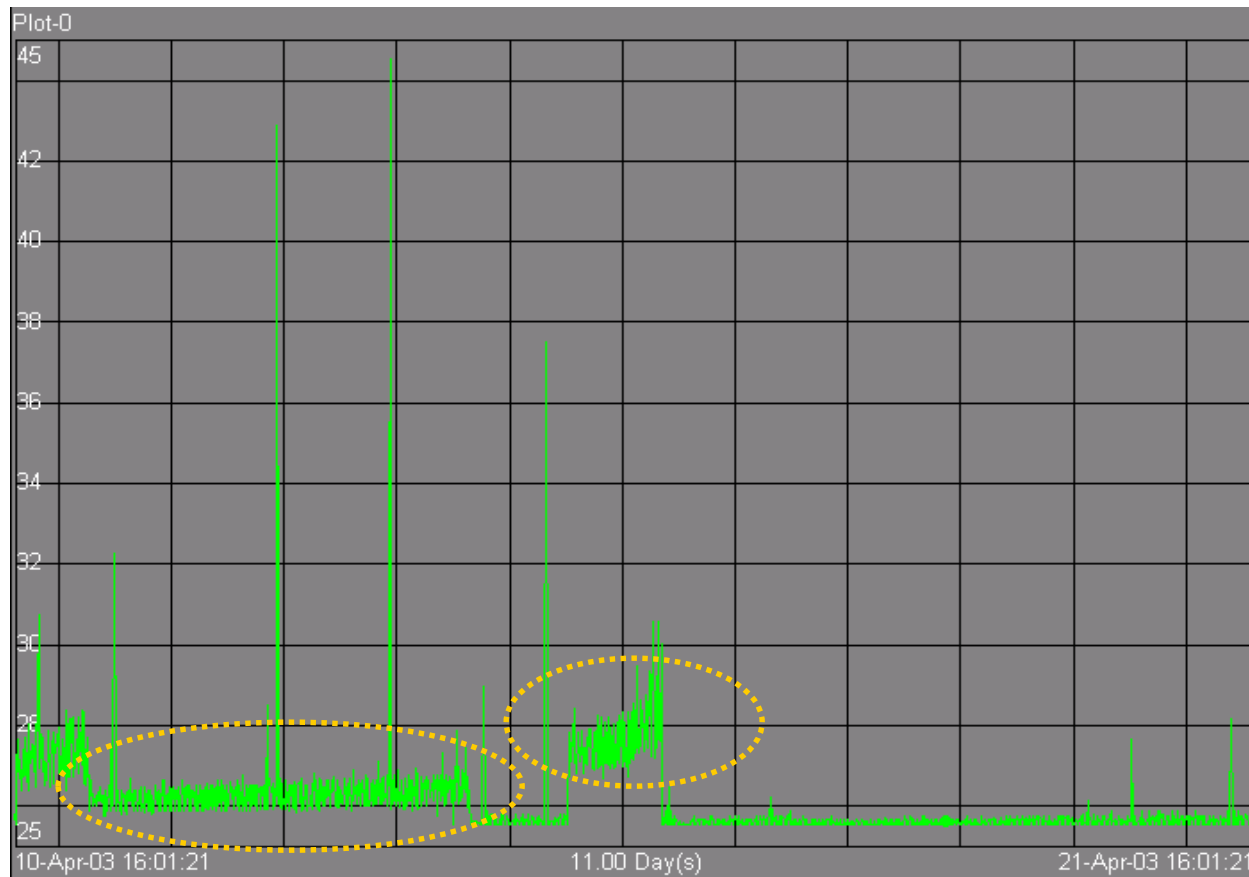
Memory leak on Application

Potential impact:

- **Data loss due to application failure**

- **Plant trip on critical applications**

○ Typical Monitoring system

Case Study *– Response deterioration*
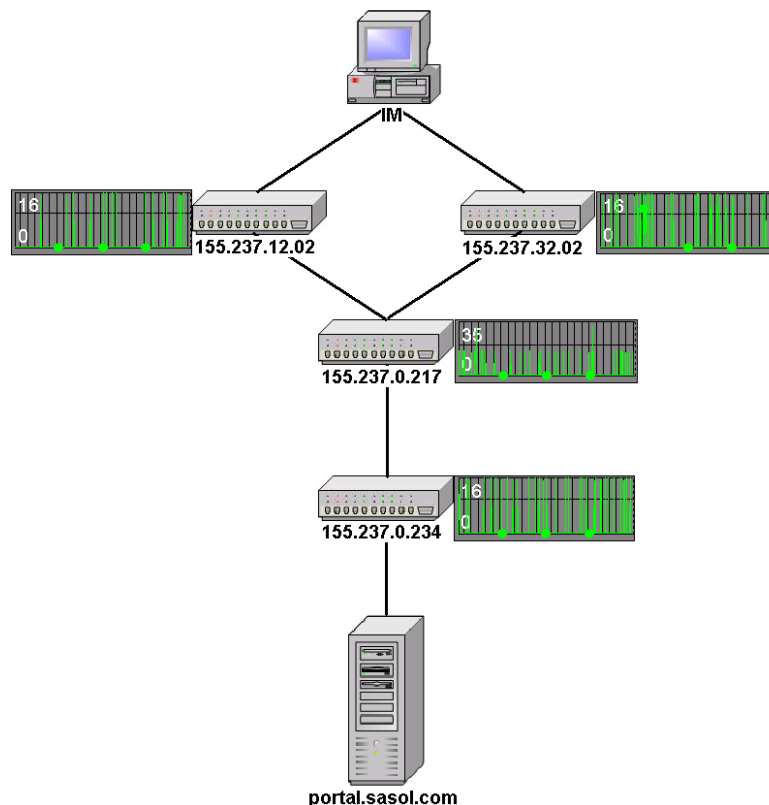
Production Portal slow response time problems

Problem Detected:

- **Slow increase in response time**

- **Settings changed**

- **Patch applied**

- **Settings changed**

Case Study – Bottleneck detection / Capacity Planning

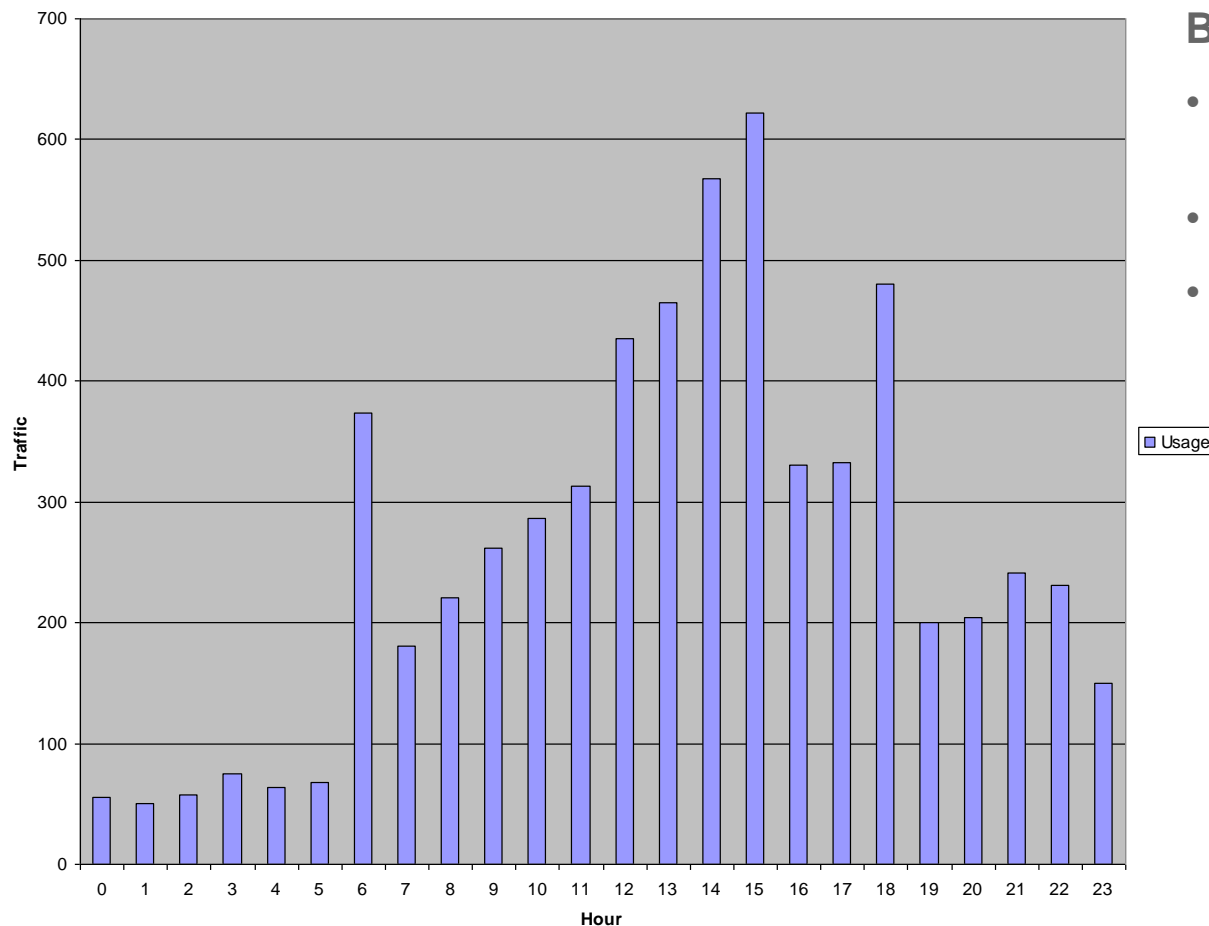Client network path to the portal servers

Benefits:

- **Track network performance**

- **Identify bottleneck (PC, Network, Server, Application) without using expensive network instruments**

- **Do capacity planning**

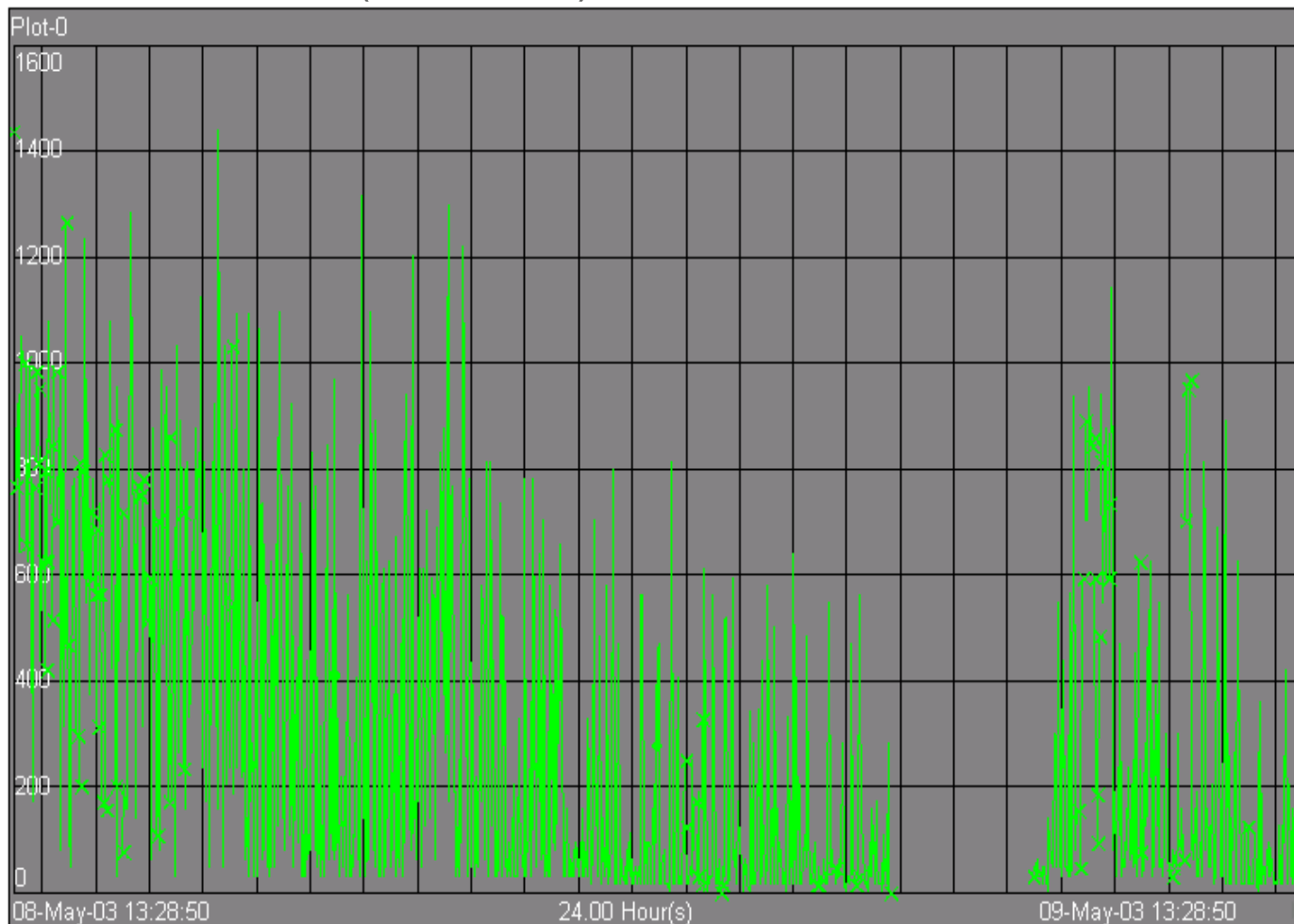# *Case Study* *– Application Utilization*

Application Usage monitoring

Benefits:

- **Utilization profile of any application**

- **Do capacity planning**

- **Preventative Maintenance**

Case Study – *Preventative Maintenance*

WAN downtime (2h 40min) due to failure

Benefits:

- **Early problem detection - preventative maintenance**

- **Minimized Downtime**

Case Studies

Benefits thus far

- Real-time Performance Monitoring

- Preventative Maintenance strategies

- Advanced trouble shooting and fault finding system

- Incentive Based Service Level Agreements (SLA), based on Key Performance indicators (KPI)

- Integration into Synfuels Portal as Monitoring, Fault finding, operations and Management tool

- Single Site-wide monitoring system

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Q & A

Questions?

Questions?