GFS Crane DCIM

*Implementation Case
Study: Telecom Operator*

greenfield
software
Cost Savings | Energy Optimization

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Case Study Summary

About the Customer

Challenges & Business Case for DCIM

Delivered Functionalities & Business Benefits

Power Monitoring & Management

Environment & Cooling Monitoring & Management

Fuel Automation & Management

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About the Customer

The Customer is part of a global telecommunication company, that operates in over 20 markets with more than 460 million inhabitants, including the Nordic and Baltic countries, the emerging markets of Eurasia and Spain and South-east Asia.

The Customer provides network access and telecommunication services in a South Asian country that help people and companies to communicate in an easy, efficient and environmentally friendly way. The Customer has continued expanding coverage, enhancing quality and bringing new, efficient and easy-to-use services to the people in the market it operates.

The Customer owns 4 telecom data centers and chose GreenField Software to implement its DCIM software GFS Crane in its data center facilities

Challenges & Business Case for DCIM

❑ **Challenge 1:** Data Centers located in a region having daily 12 hour power outages. Heavy dependence on DG sets meant very high power costs

Business Case:
➢ Reduction in operating cost by optimizing diesel usage and power usage were key business objectives

❑ **Challenge 2:** Two of its largest and oldest data centers did not have BMS: monitoring of DG sets, fuel usage, power systems, Cooling systems done manually

Business Case:
➢ Improve operational efficiency by minimizing errors while taking readings of critical system parameters manually, which used to result in inaccurate reporting.

➢ Minimize downtime and unavailability of services to its mobile consumers through faster fault identification.

➢ Improve Mean Time to Repair (MTTR) and thereby ensure customer satisfaction through faster Root Case Identification of infrastructure issues.

➢ Optimize utilization of critical resources like power, cooling, fuel and prevent pilferage, misuse and financial losses through adoption of a 24x7 real-time infrastructure monitoring system.
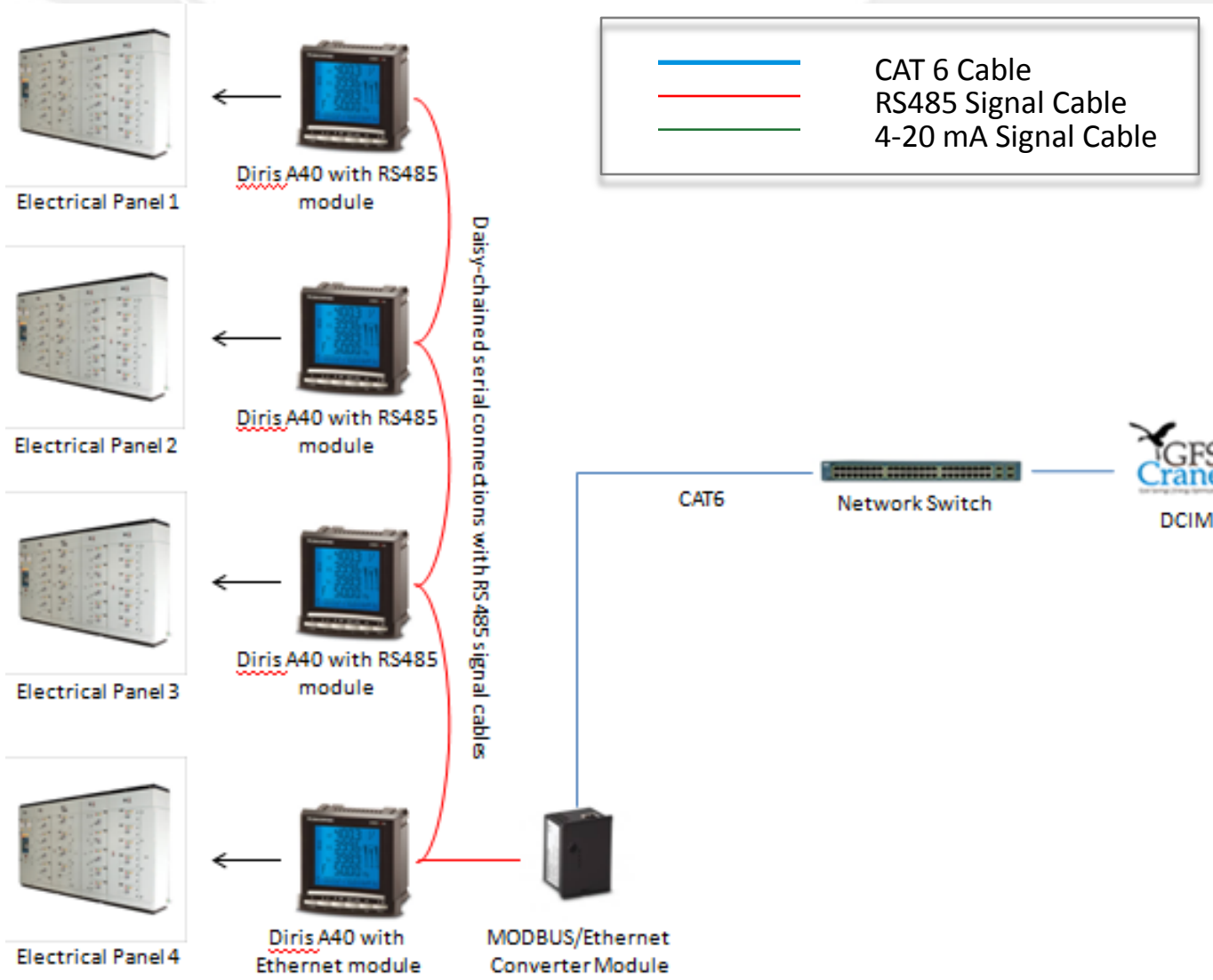
Delivered Functionalities & Business Benefits

Power Monitoring & Management

Delivered Functionalities	Business Benefits
All power systems like Transformers, DG, UPS, Rectifiers and all Feeder Panels are now being monitored at real-time.	Power monitoring has been completely automated through GFS Crane DCIM resulting in improvement in operational efficiency
Reports (both real-time and historical trends) on critical electrical parameters, based on data captured from the equipment, can now be viewed through the web-based dashboards	Data inaccuracy and inconsistency due to human errors in manually reading data has been addressed by DCIM
Threshold based alarms from the electrical systems are now being sent to support staffs/NOC personnel through email or SMS and also sent to the customer's fault management & ticketing system, IBM Netcool	Improved turn-around-time and resolution time for any infrastructure issue as DCIM is helping in quick alerting on issues and identification of root cause.
Power chain of the data centers showing all devices in the electrical infrastructure with live data & alarms can now be viewed in single console	Provided ability to identify upstream and downstream relationship of each power device and the cascading effect of any failure in the electrical infrastructure
Real-time & average PUE of both data centers are now being calculated automatically from the power data captured from devices and reported	Provided an 'always available' energy efficiency scorecard for both data centers. Any deviation in energy efficiency can now be tracked immediately and acted upon.

Power Monitoring & Management

CAT 6 Cable	
RS485 Signal Cable	
4-20 mA Signal Cable	

Electrical Panel 1 — Diris A40 with RS485 module

Electrical Panel 2 — Diris A40 with RS485 module

Electrical Panel 3 — Diris A40 with RS485 module

Electrical Panel 4 — Diris A40 with Ethernet module

MODBUS/Ethernet Converter Module

Daisy-chained serial connections with RS485 signal cables

CAT6 — Network Switch — DCIM

Power Monitoring & Management

Eaton UPS

SNMP

Eltek Rectifier

SNMP

Uniflair PAC

SNMP

CAT 6 Cable
RS485 Signal Cable
4-20 mA Signal Cable

Network Switch

DCIM

Delivered Functionalities & Business Benefits

Environment & Cooling Monitoring & Management

Delivered Functionalities	Business Benefits
Performance of all cooling systems (PACs) are now being monitored real-time by DCIM. Performance reports, both current & historical, of the cooling units are available on dashboards	Transformed the erstwhile manual monitoring methods of cooling systems to a completely automated process, thereby improving operational efficiency
Temperature & humidity sensors are installed in each room in the cold aisles to constantly monitor the environment being maintained for servers and other IT devices in the data rooms	Provided the ability to monitor hotspots in the data rooms that can potentially bring down the IT devices. Also provided the ability to identify cold spots due to over cooling that will result in higher power cost
Threshold based alarms on PAC health and environmental probe reading are now being sent to support staffs/NOC personnel through email or SMS and also sent to the customer's fault management & ticketing system, IBM Netcool	Improved turn-around-time and resolution time for any cooling issue that may potentially lead to outages
Analysis on the overall cooling system efficiency for the data centers are provided based on PAC performance and the conditioned environment maintained in the data room	Provided the ability to monitor and optimize cooling the data center, avoid over/under cooling and compliance to industry standards such as ASHRAE guidelines
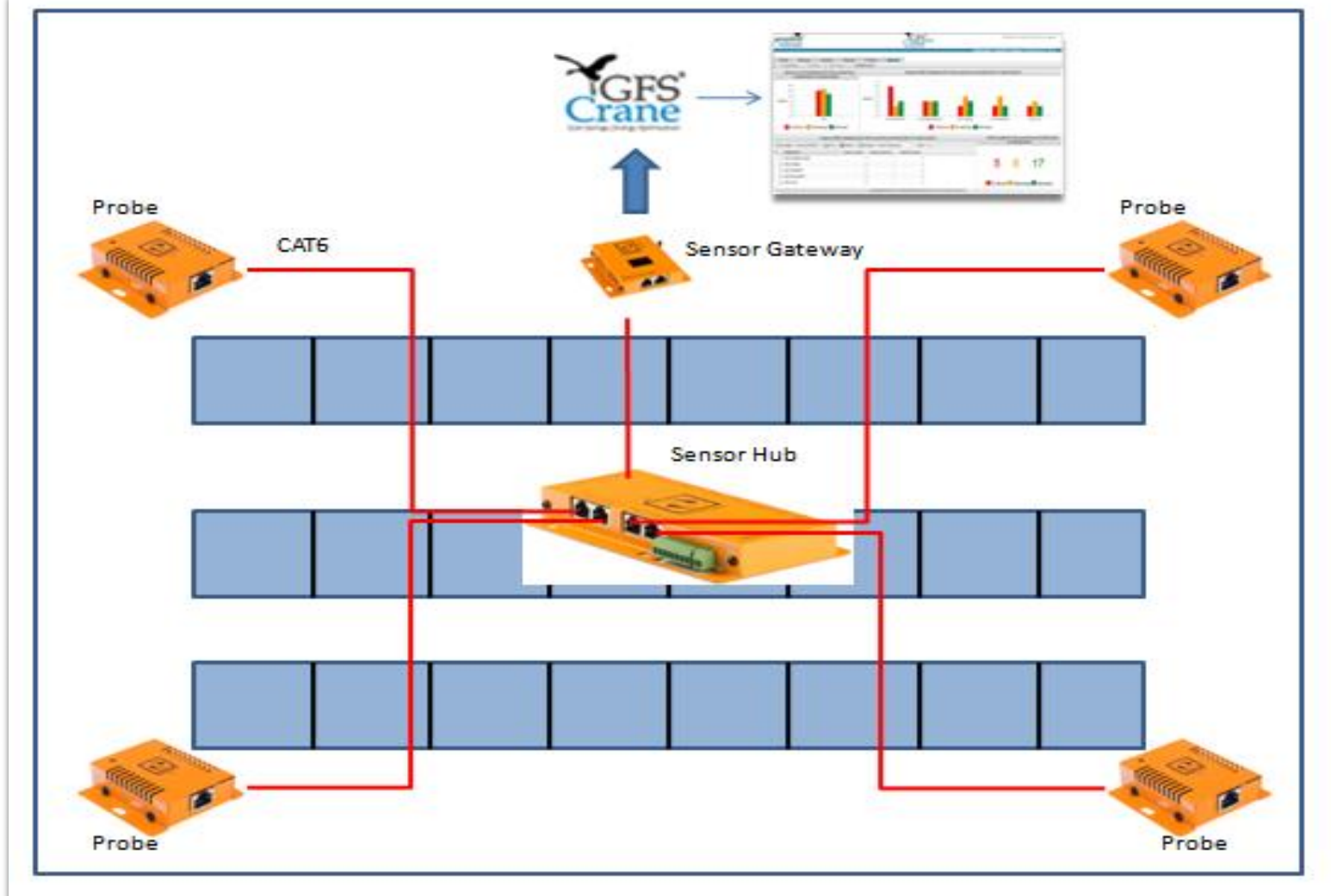
Delivered Functionalities & Business Benefits

Fuel Automation & Management

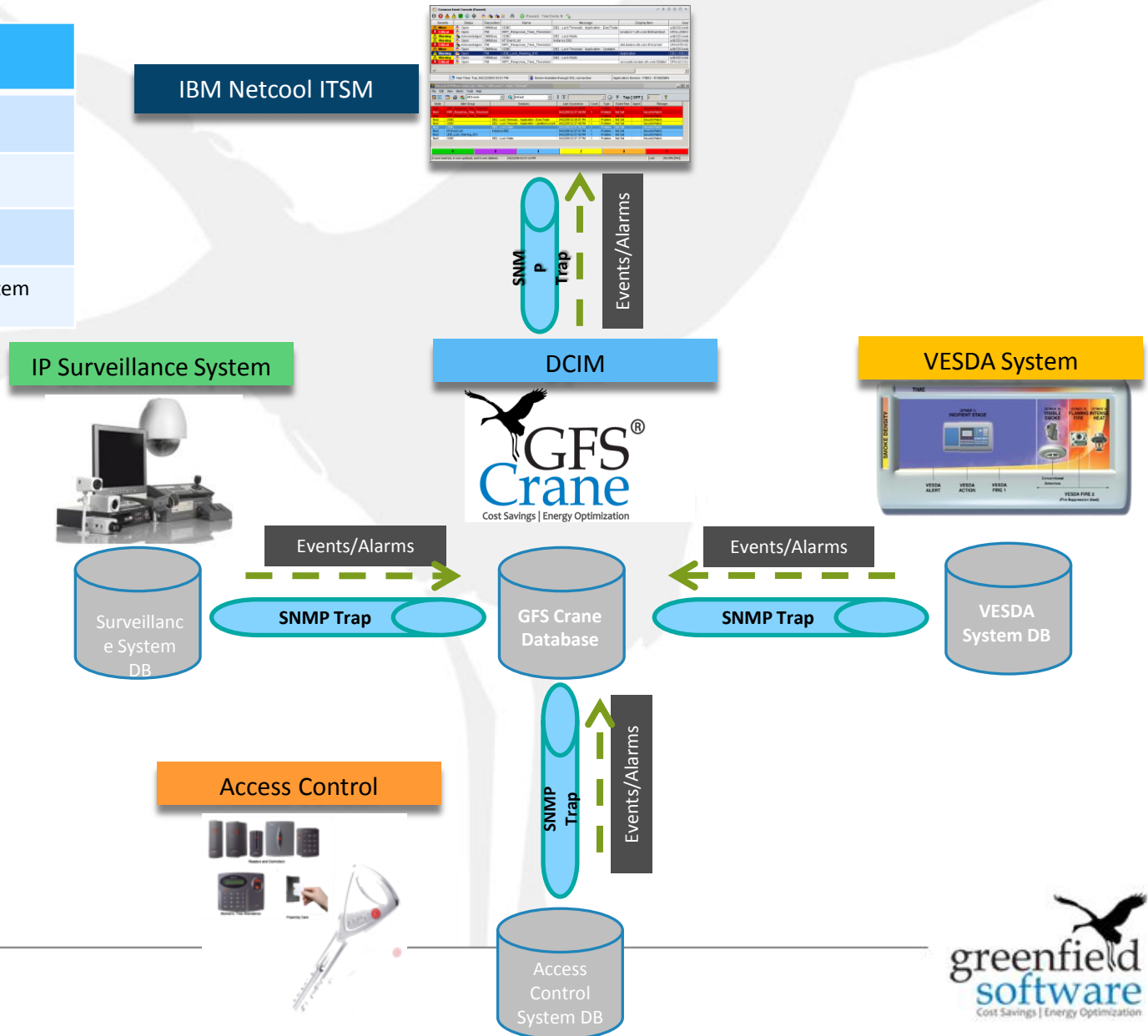| Delivered Functionalities	Business Benefits
The level of diesel in the day/belly tanks and reserve tanks are being measured at real-time using level sensors	Transformed the erstwhile manual dip-stick method of measuring fuel volume in tanks to a completely automated process, thereby improving operational efficiency and eliminating chances of inaccuracy in reporting
The flow of fuel from the reserve tanks to day tank has been automated based on fuel level thresholds set on day tanks, through a PLC program and intelligent pumps, integrated with the DCIM	The dispenser based manual method of transferring fuel from reserve tanks to day tanks have been replaced by a completely sealed & automated process, based on actual readings on fuel level measured by DCIM from the tanks. This has eliminated the possibility of fuel pilferage and misuse.
Fuel tank parameters like day end fuel stock, decanting volume, fuel usage volume are reported based on actual reading by the DCIM	Provided the ability to accurately track the volume of fuel purchased by the customer for the DG systems and the actual utilization per day. This has improved efficiency, prevented misuse and controlled operating cost
Critical DG system parameters like run-hours and fuel consumption is now being measured by DCIM.	Provided the ability to monitor the health and efficiency of the DG systems.

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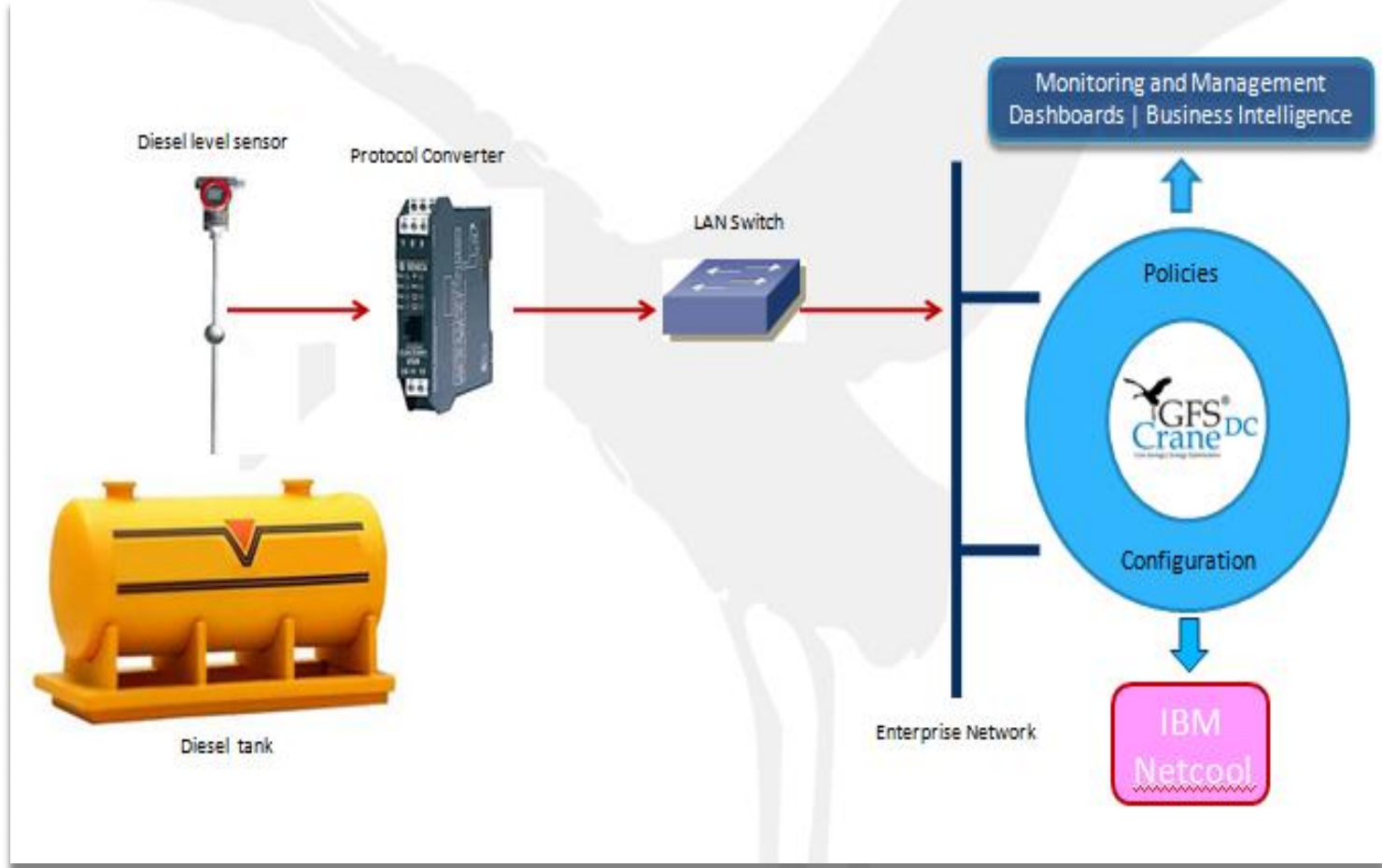
Fuel Automation & Management
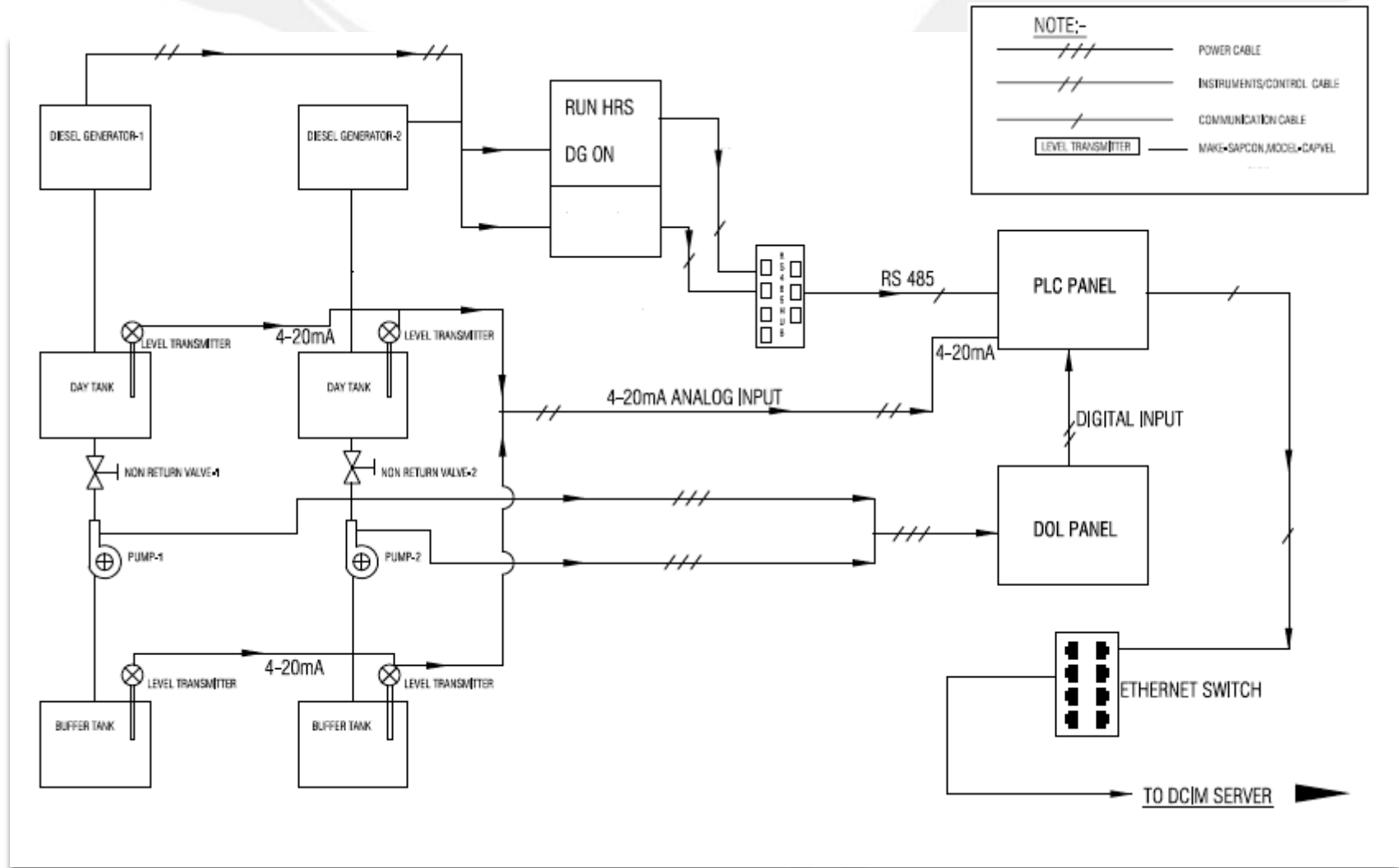
Integrations - *3ʳᵈ Party Monitoring Applications*

System Name	System Function
IBM Netcool	FMS & ITSM
Xtralis	VESDA
Milestone	IP Surveillance
Falco	Access Control System

IBM Netcool ITSM

SNMP Trap

Events/Alarms

IP Surveillance System

DCIM

VESDA System

GFS® Crane
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Events/Alarms

SNMP Trap

Surveillance System DB

GFS Crane Database

Events/Alarms

SNMP Trap

VESDA System DB

Access Control

SNMP Trap

Events/Alarms

Access Control System DB

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Integrations – *Building Management System*

Building Management Network

BACnet Server

BMS Integration Interface

DCIM Server with BACnet client

DCIM VLAN
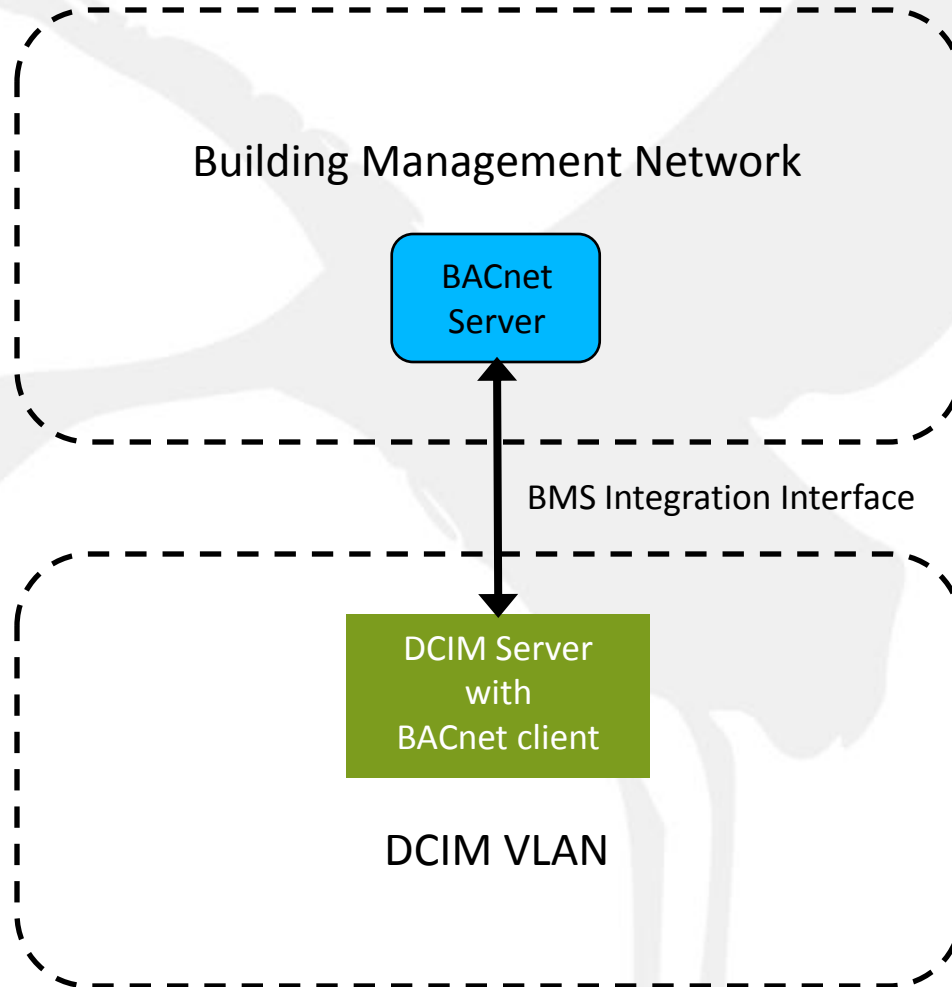
The Expected ROI

As-is Cost on Power & Fuel (US$)

Customer's Cost on Utility Power & Diesel	Data Center 1	Data Center 2	Total
Utility			
Total energy used per month from NEA (kWh)	608,014	150,616	758,630
Estimated annual energy use from NEA (kWh)	7,296,171	1,807,392	9,103,563
Average per kWh NEA rate (US$)	0.15	0.15	
Energy Bill to NEA per month (US$)	93,541	23,172	116,712
Annual Energy Bill to NEA (US$)	1,122,488	278,060	1,400,548
Diesel			
Total diesel consumption per month (Liters)	73,644	16,406	90,050
Estimated annual diesel consumption (Liters)	883,728	196,877	1,080,605
Rate of diesel per Liter (US$)	1.00	1.00	
Diesel cost per month (US$)	73,644	16,406	90,050
Annual diesel cost (US$)	883,728	196,877	1,080,605

Total Cost of Ownership (US$)

DCIM S/W + H/W + Implementation	Cost (US$)
Data Center 1	133,694
Data Center 2	40,323
Total	174,017
2nd & 3rd Year Support	69,607
TCO in 3 years	**243,623**

ROI	35%
Payback (in Months)	**17**

Savings from DCIM (a very conservative figure of 5% has been considered

Areas of Business Benefits	Levers	% Improvement	Annual Energy/Fuel Savings (kWh/Litres)	Savings (US$)
Reduced utility power consumptions	Improvement in PUE due improvement in efficiency of UPS and Cooling	5%	455,178	70,027
Reduced diesel consumption	Improved DG efficiency & prevention of fuel pilferage/wastage	5%	54,030	54,030
Estimated Annual Savings				124,058
Total savings in 3 years				372,173

For more details, please visit www.greenfieldsoft.com