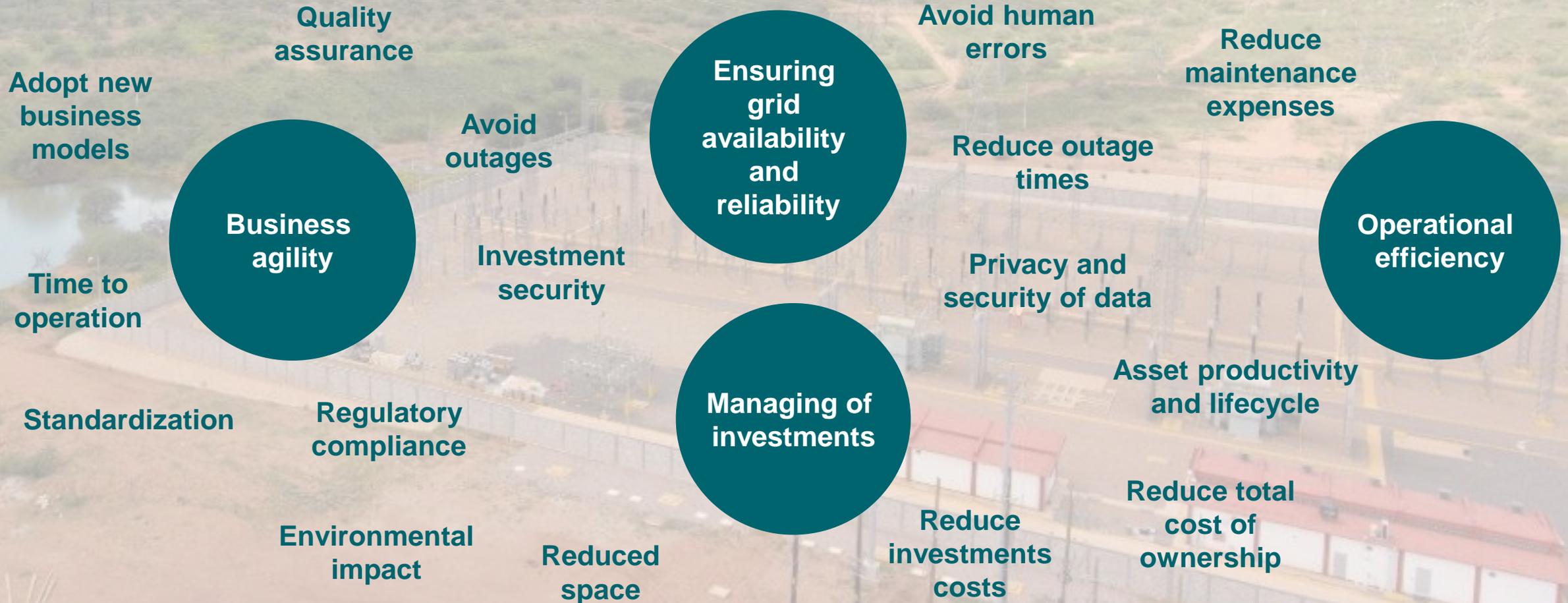
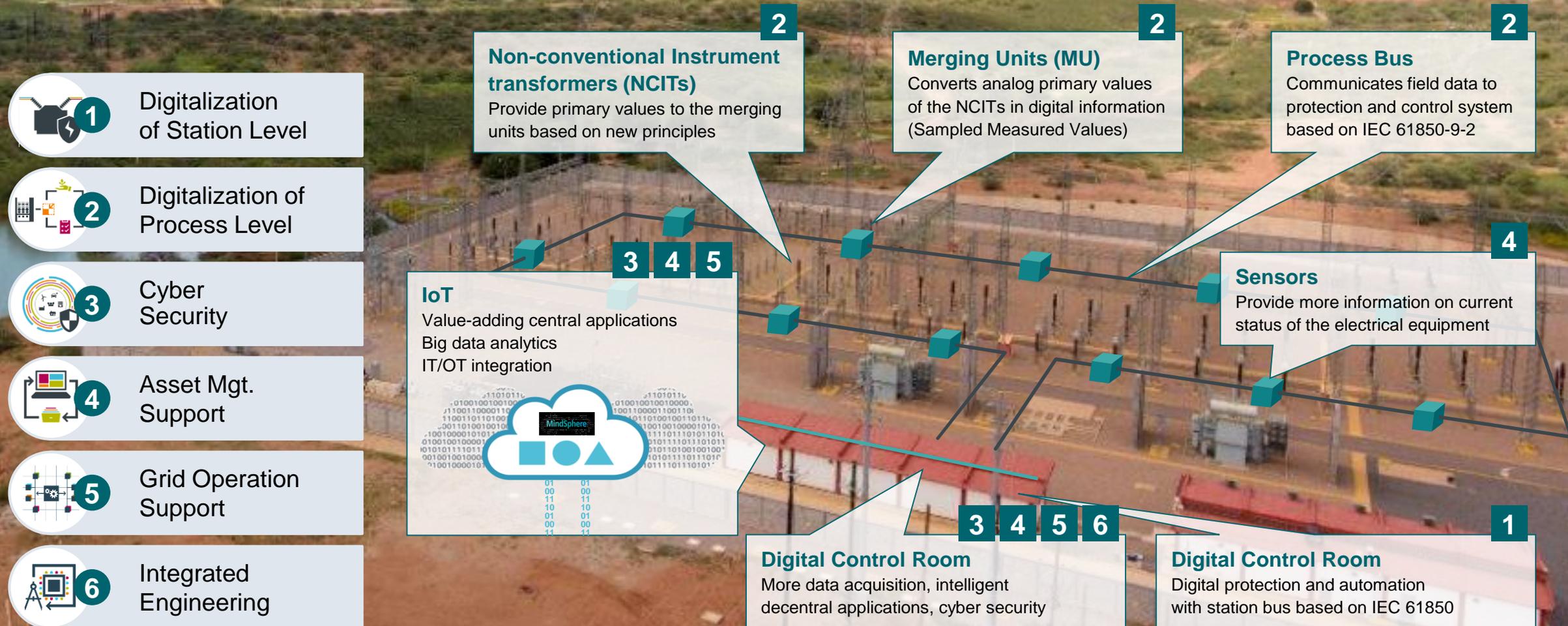


Digital Substation

A Substation – Why Should We Make It Digital?

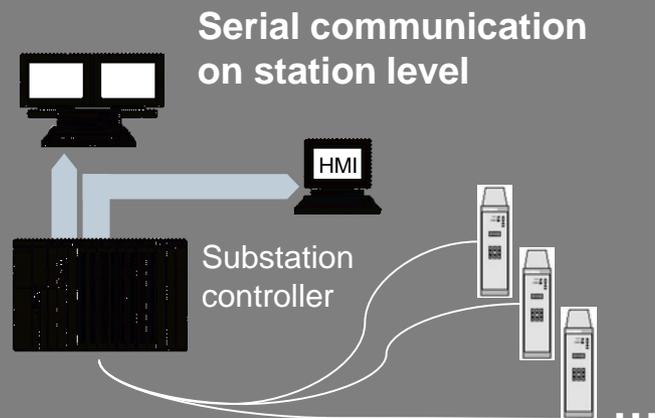


A Digital Substation – What is it about?



1 Digitalization of Station Level

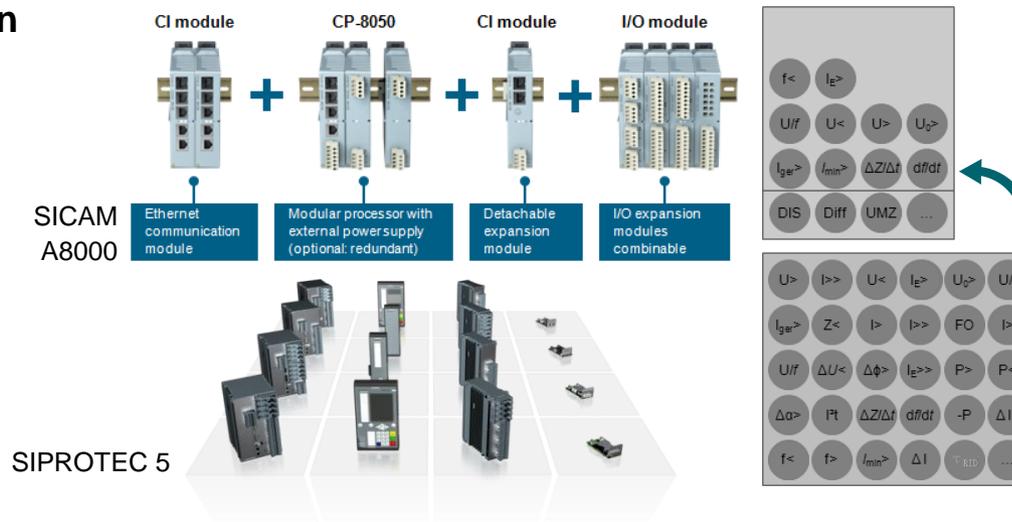
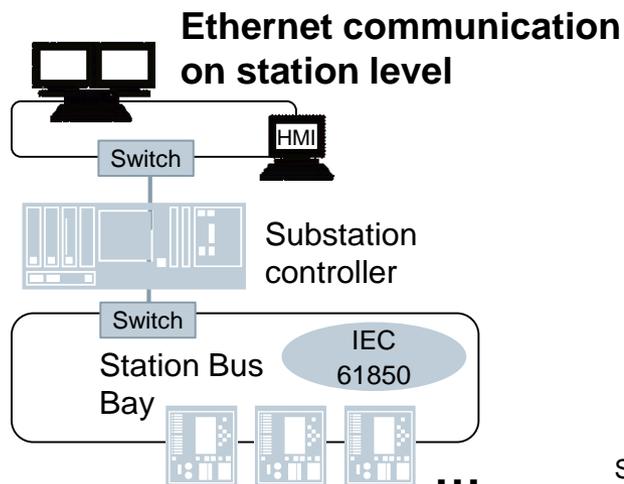
Previously



Hardware and functionality as one fix unit



Digital



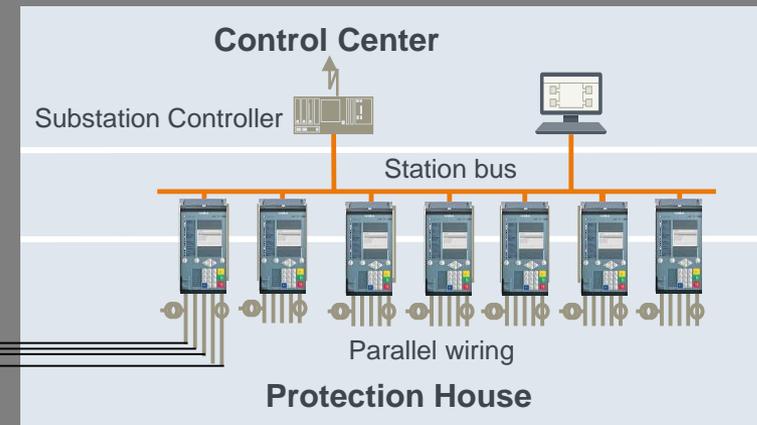
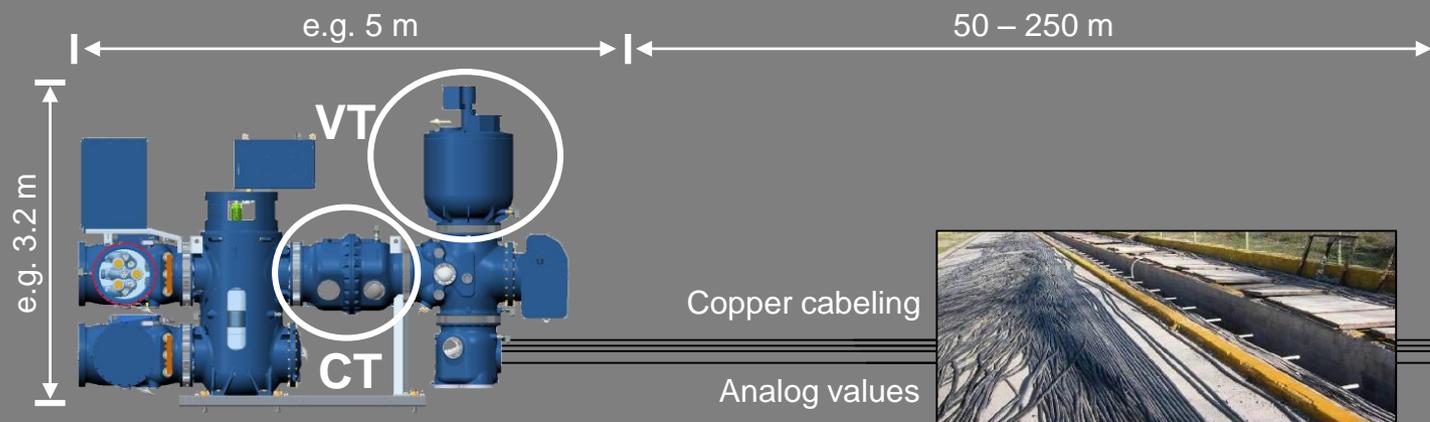
Flexibility throughout the life time – Functions and apps are independent from a modular hardware

Benefits

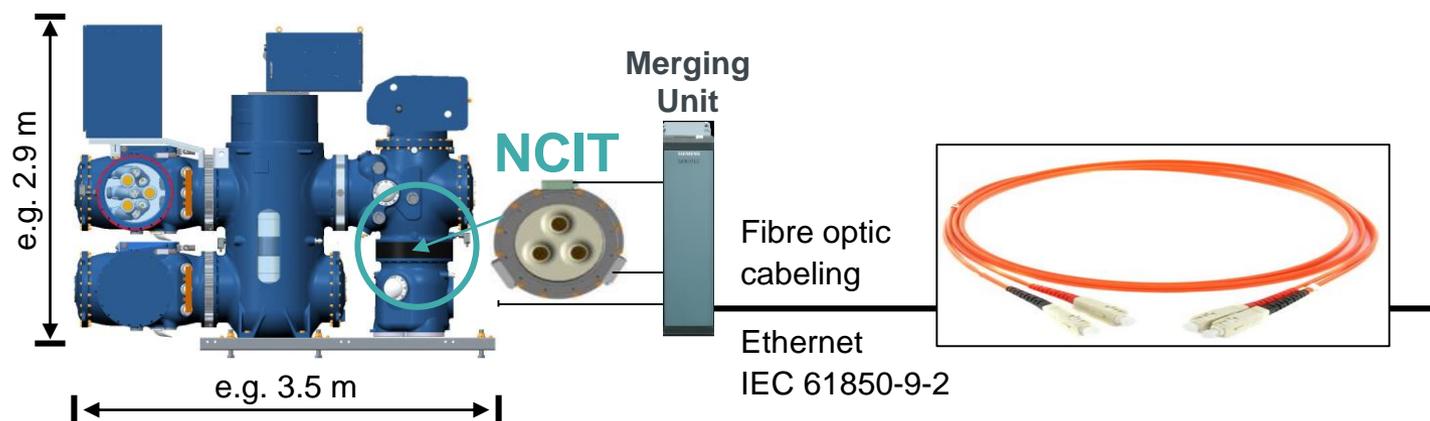
- Agility regarding future requirements
- Investment security

2 Digitalization of Process Level

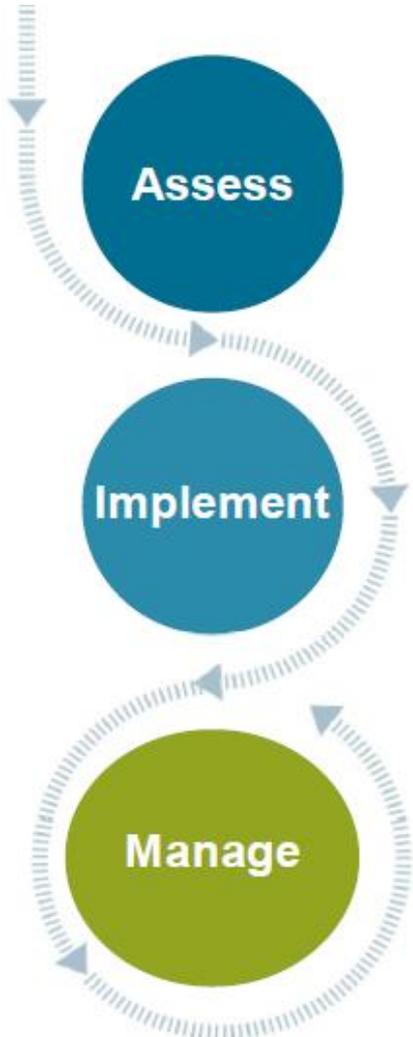
Previously



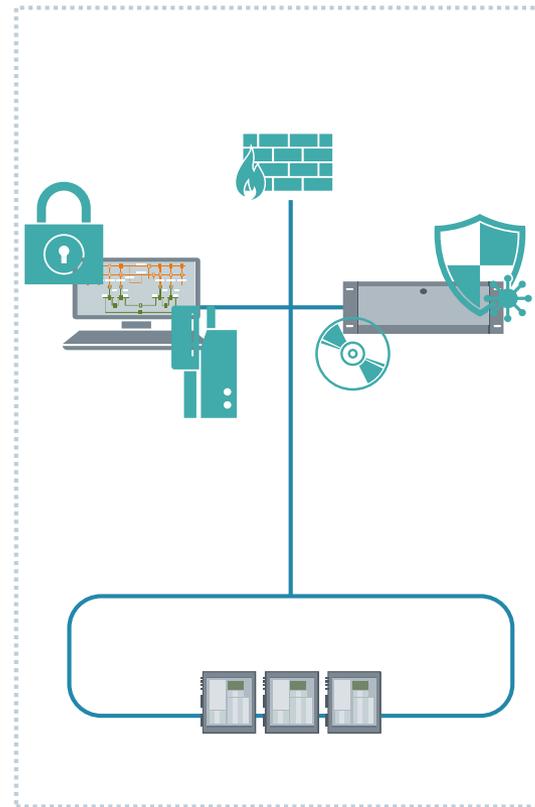
Digital



3 Cyber Security



Secure Substation

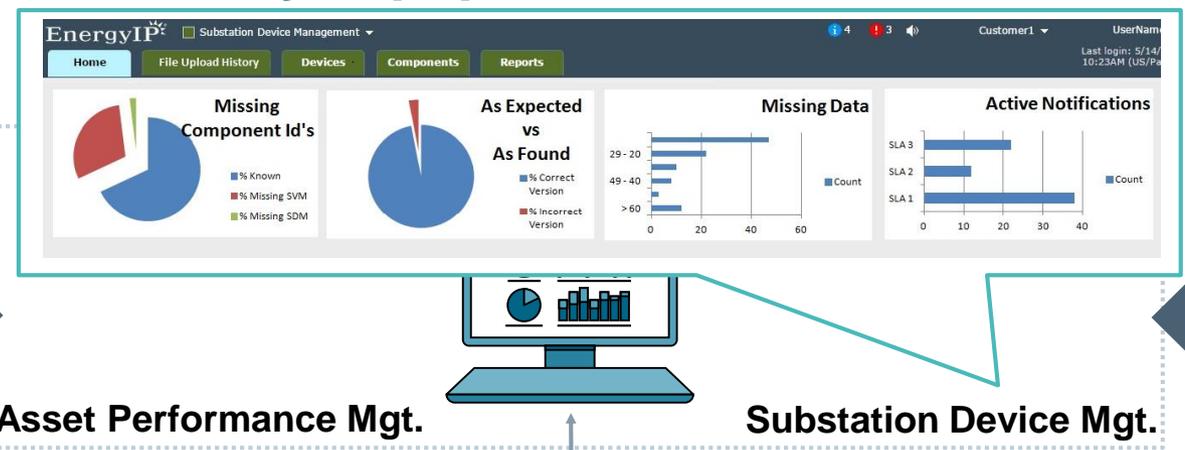


-  Firewall
-  Access Control
-  Backup / Restore
-  System Hardening
-  Malware Protection
-  Logging



- ### Benefits
- Preventing downtimes by minimizing cyber risks
 - Compliant with regulations & laws
 - Retention of good reputation
 - Comprehensive coverage of all security aspects from a single, trusted partner

4 Asset Management Support for Primary and Secondary Equipment



Asset Performance Mgt.

Substation Device Mgt.

Benefits as ProductCERT

- Lower investment and operational costs
- Higher performance by improved reliability, availability and updated security
- Efficient processes by conscious decisions and action

Central Database

Monitoring and Information

Research

Microsoft

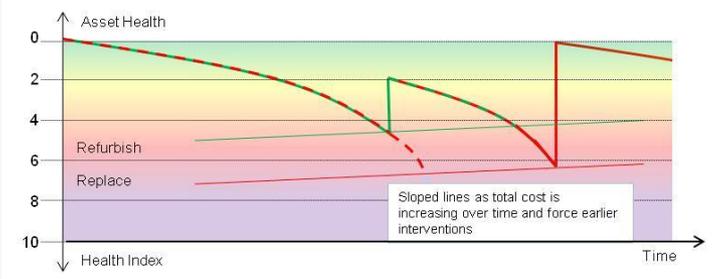
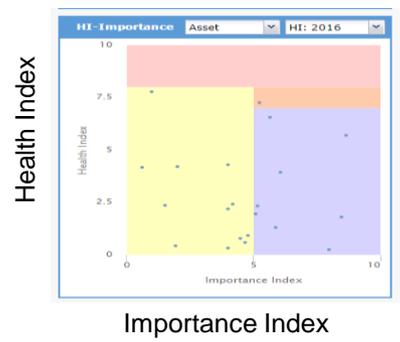
IT-Security Contractors

Adobe

EnergyIP[®] RCAM Dynamic

Assets | Health/Risk Trend | Asset Classes and Types | Reports

Group	HI	Risk	Asset ID	Asset Type	Asset Class	Region	Status	Age	C-Int	S-Int	Imp	C-Risk	M-Date	Region	I-Date	Strategy
Renewable upon Type	5.53	97,006,038														
SS-04	3.95	8,026,299														
HV GIS 132kV	n/a	n/a														
HV GIS	3.95	8,026,299														
SS-05	4.2	5,388,033														
HV GIS 132kV	4.2	5,388,033														
SS-06	4.01	22,504,383														
HV GIS 132kV	0.76	3,021,046														
HV GIS	7.25	19,483,337														
SS-07	3.3	3,019,519														
HV GIS 132kV	3.3	3,019,519														
SS-08	7.78	27,280,326														
HV GIS 132kV	7.78	27,280,326														

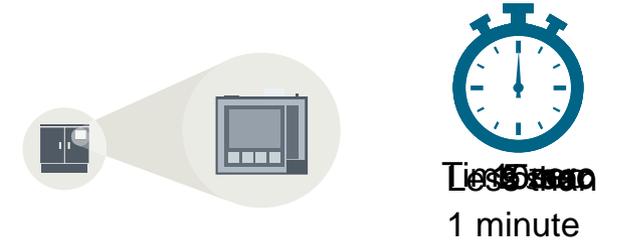
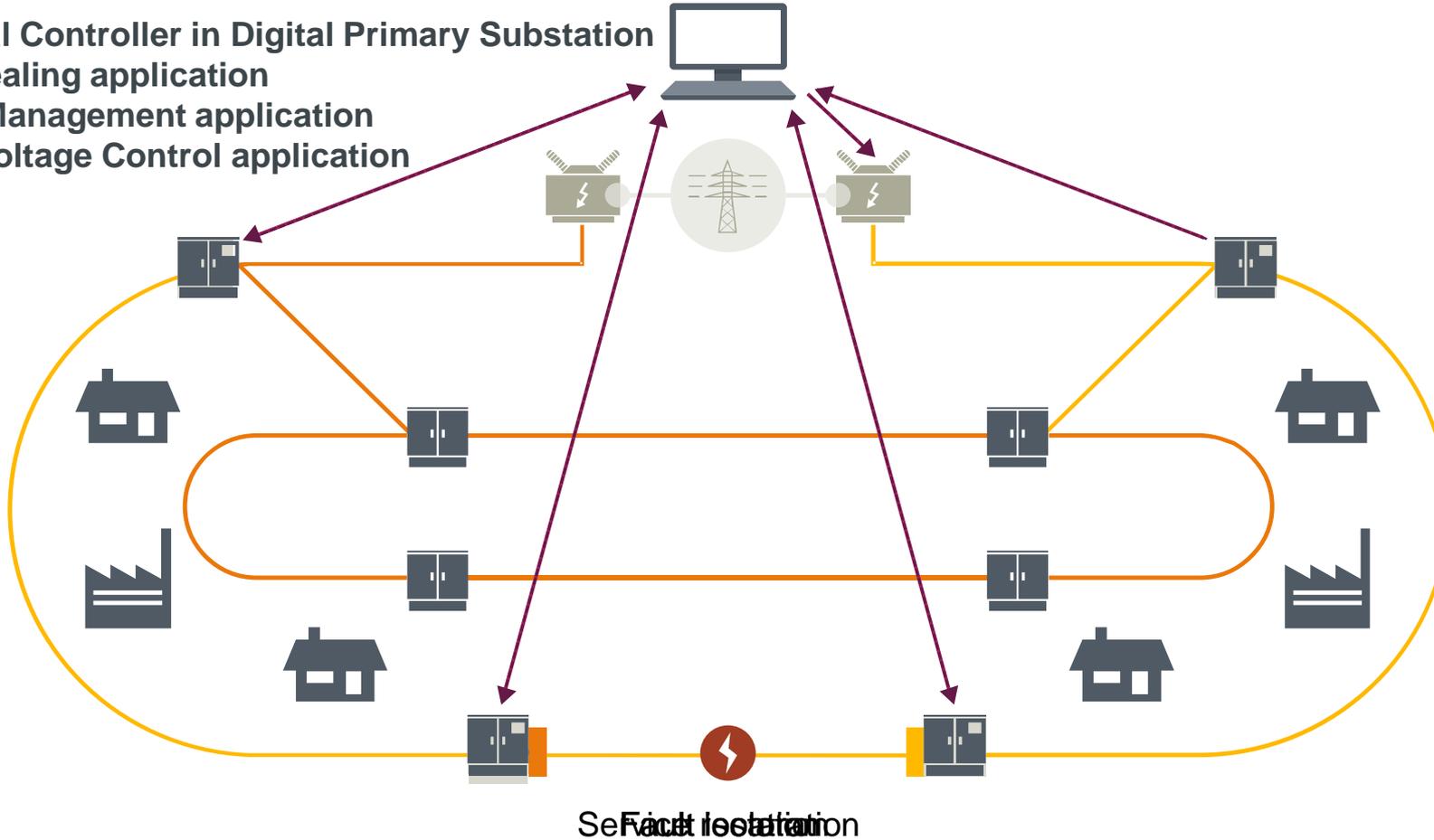


5 Grid Operation Support Power Distribution: Self-optimizing Applications



Regional Controller in Digital Primary Substation

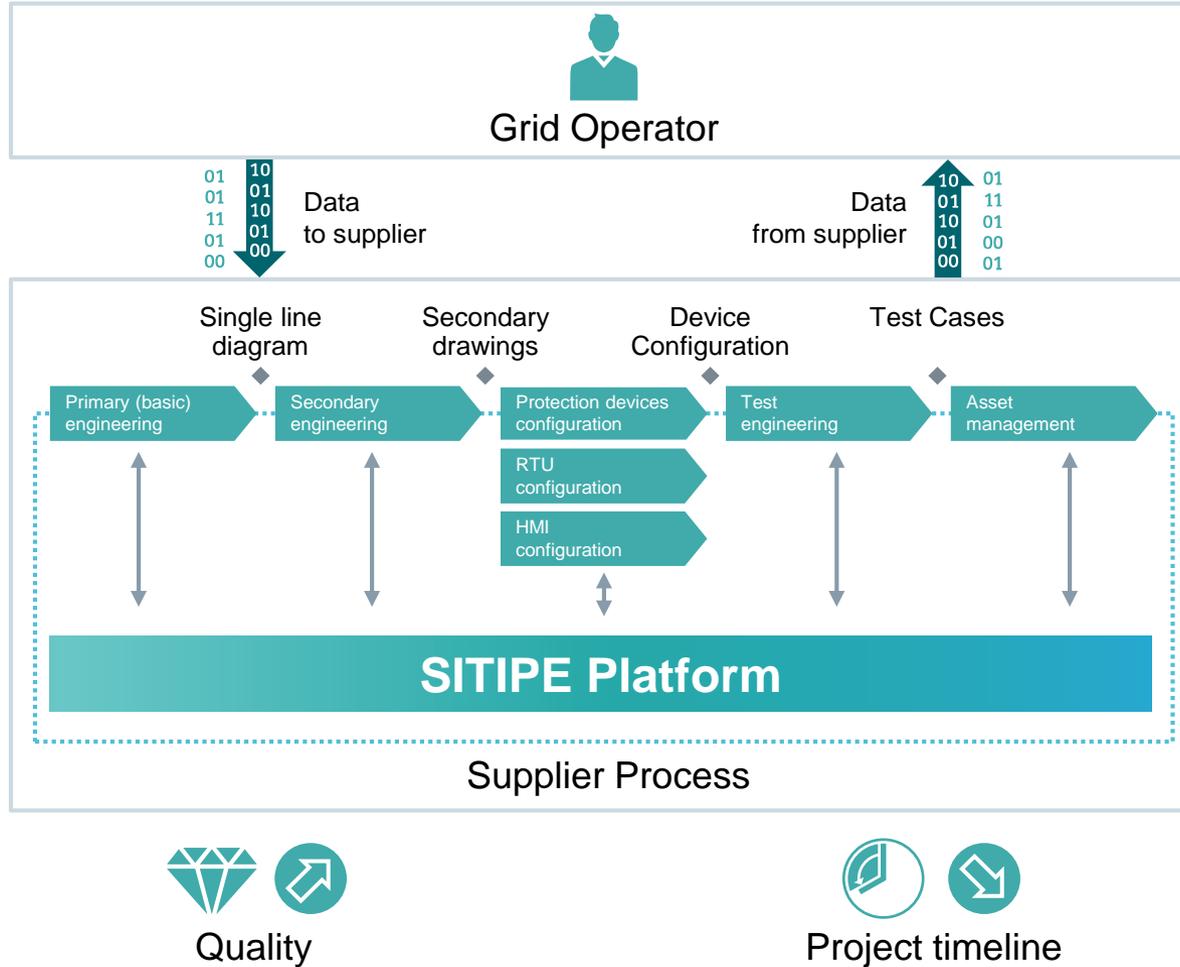
- Self-healing application
- Load Management application
- Area Voltage Control application



Benefits

- Avoidance of outages
- Reduction of outage times
- Protection of primary equipment

6 Integrated Engineering



- Benefits**
- Reduced time to operation
 - Data consistency
 - Optimized refurbishment process: easier updating of documentation and testing

Thank You for Your Attention!

SIEMENS
Ingenuity for life



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