POWER GENERATION IN HARSH ENVIRONMENTS

Y DUSHYANT

IIoT in Harsh Environments

- -40 to +85°C or beyond
- Dust / Dirt
- Water / Ice
- Shock / Vibration
- EMI / EMC

How does IoT help in Generating power in harsh Environments?

Major Applications :

COAL MINES

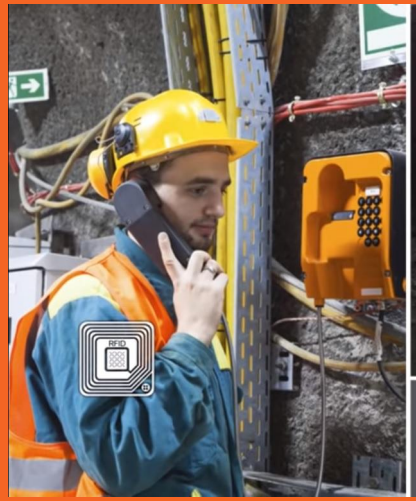
Digital Power plants

Space based SOLAR POWER

COAL MINES :

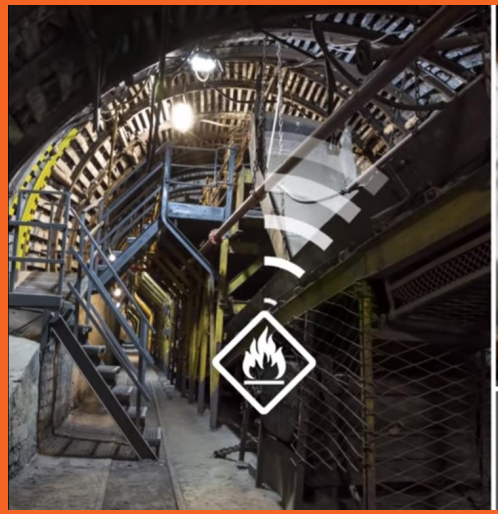
- Unmanned Vehicles
- Predictive Maintenance
- Safety
- Inventory Management Of Spare Parts
- Cloud-Based Logistics

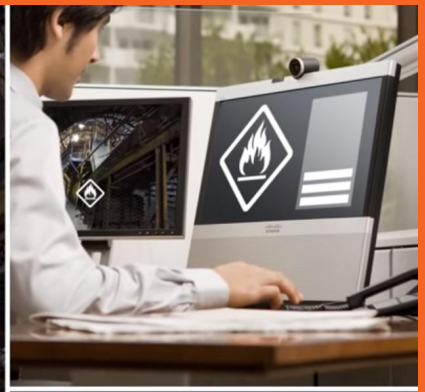
Monitor critical truck components



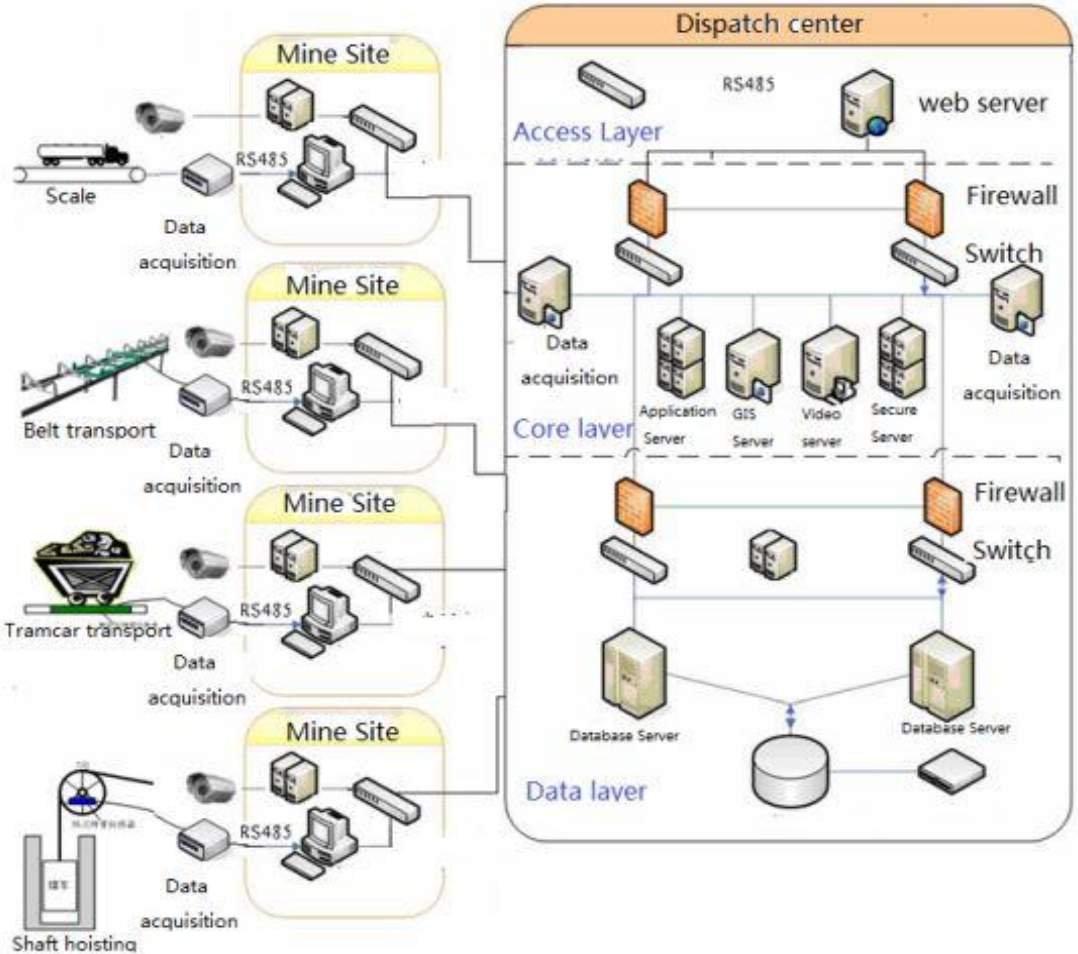
Real-time tracking of miners and machinery

Locate workers in minutes





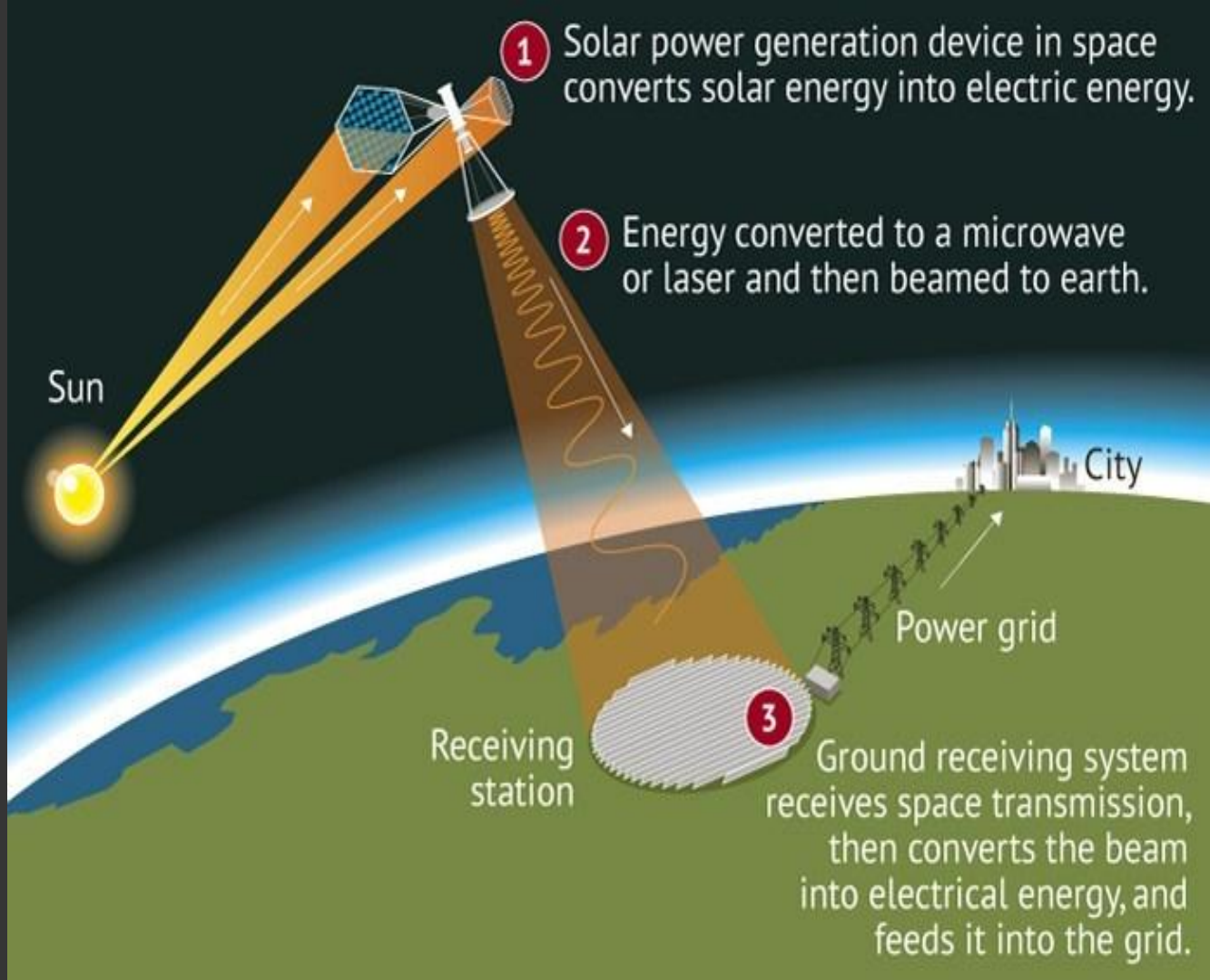
Remote, real-time gas detection

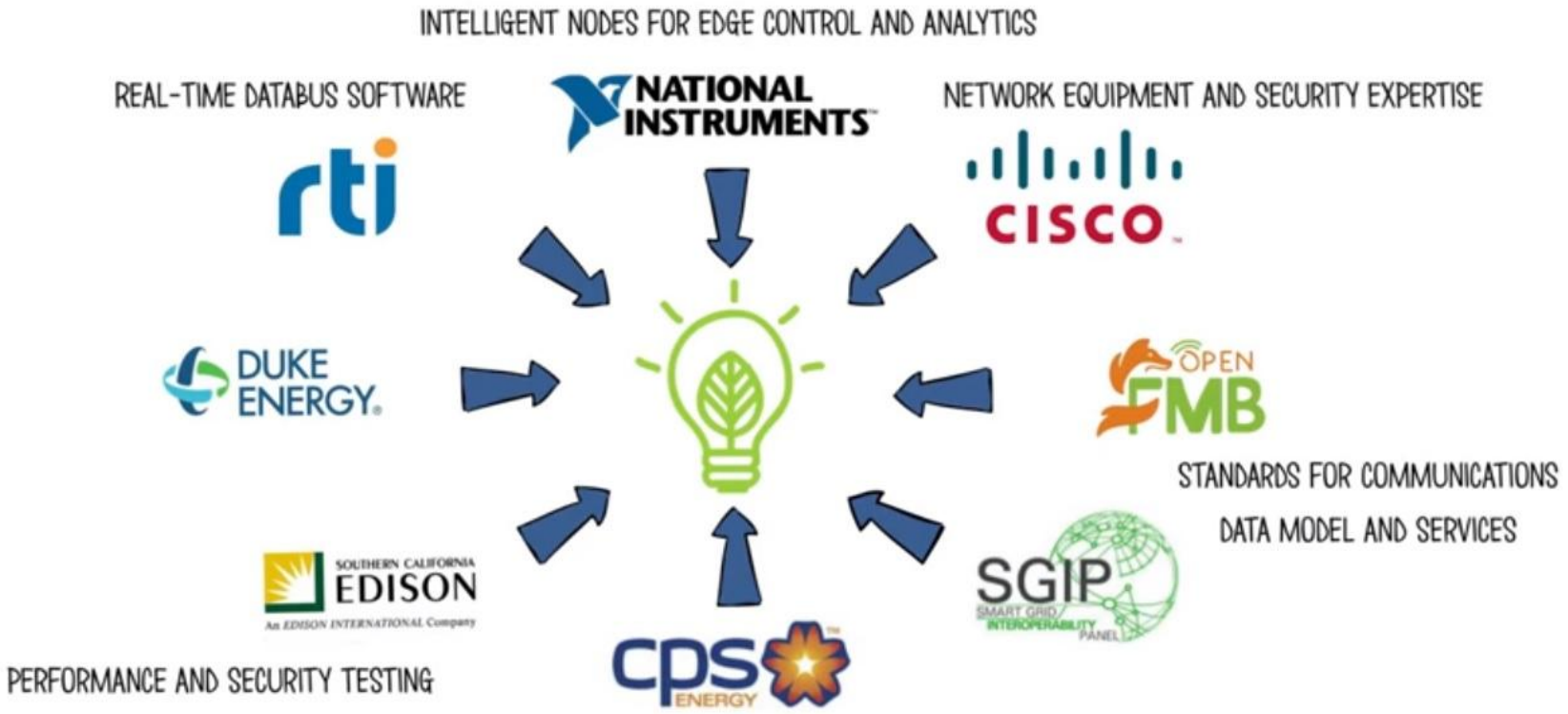

Dispatch center
Mine Site
RS485
Scale
Data
acquisition
Mine Site
RS485
Belt transport
Data
acquisition
Mine Site
RS485
Tramcar transport
Data
acquisition
Mine Site
RS485
Data
acquisition
Shaft hoisting
RS485
web server
Access Layer
Firewall
Switch
Data
acquisition
Application
Server
GIS
Server
Video
server
Secure
Server
Data
acquisition
Core layer
Firewall
Switch
Database Server
Database Server
Data layer

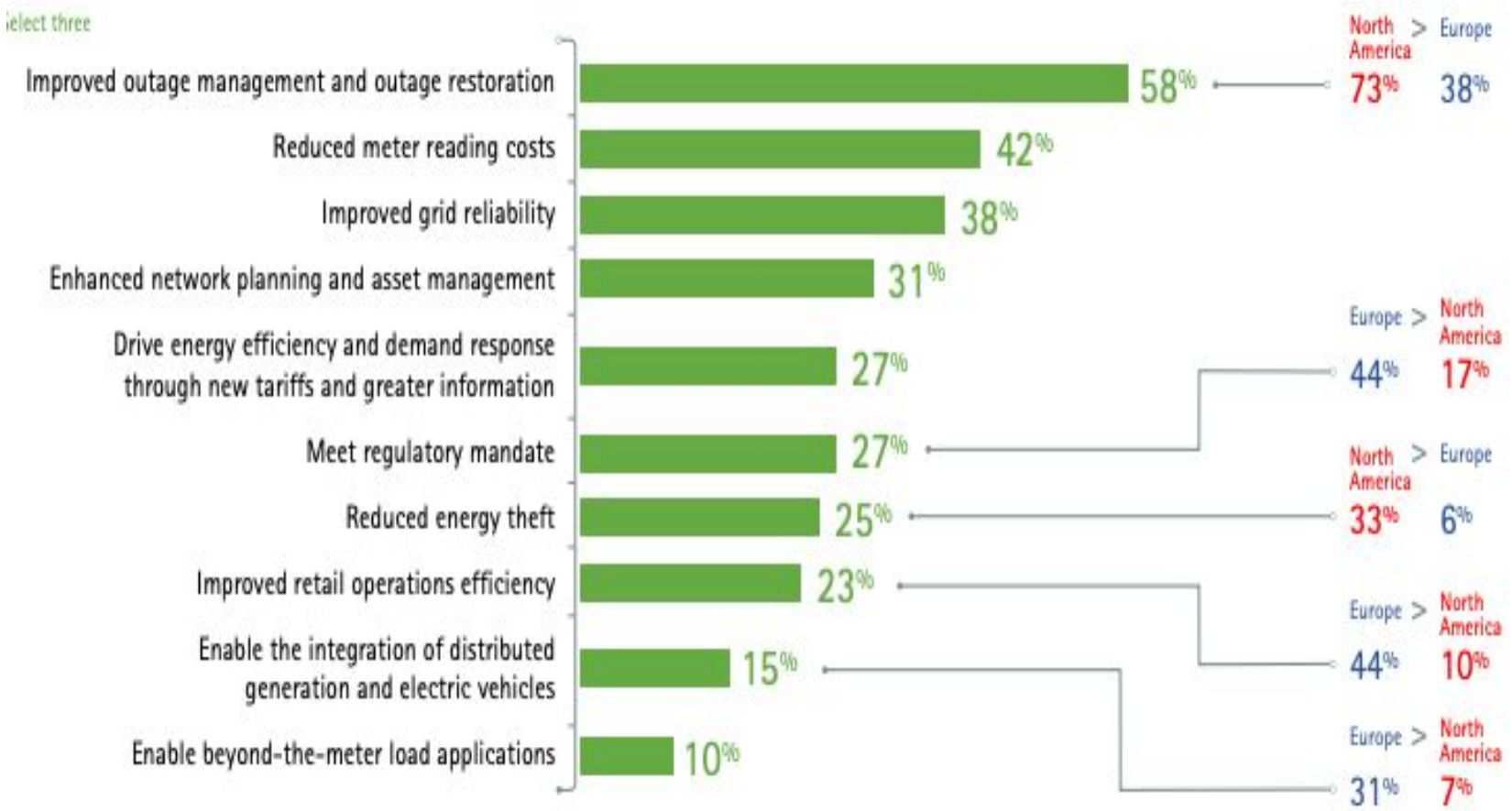
DIGITAL POWER PLANTS

Video time!!!

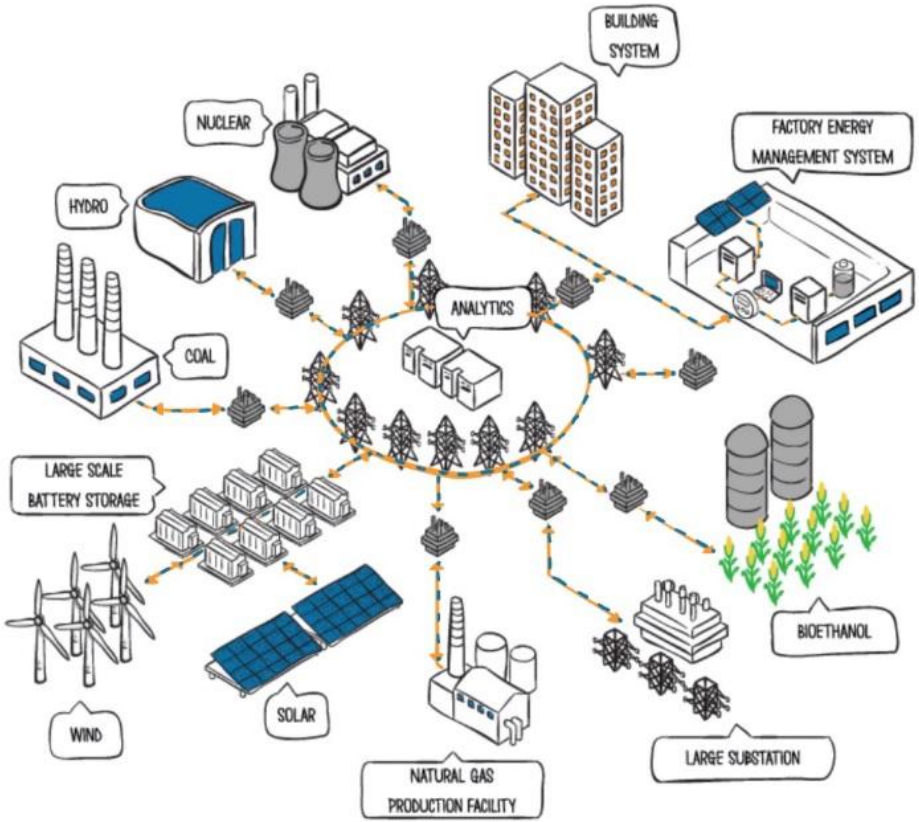
Space based Solar Power




INTELLIGENT NODES FOR EDGE CONTROL AND ANALYTICS
REAL-TIME DATABUS SOFTWARE
rti
NATIONAL INSTRUMENTS
NETWORK EQUIPMENT AND SECURITY EXPERTISE
CISCO
DUKE ENERGY
OPEN FMB
STANDARDS FOR COMMUNICATIONS
DATA MODEL AND SERVICES
SGIP
SMART GRID INTEROPERABILITY PANEL
SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company
PERFORMANCE AND SECURITY TESTING
CPS ENERGY


elect three
Improved outage management and outage restoration
58%
North America > Europe
73% 38%
Reduced meter reading costs
42%
Improved grid reliability
38%
Enhanced network planning and asset management
31%
Drive energy efficiency and demand response through new tariffs and greater information
27%
Europe > North America
44% 17%
Meet regulatory mandate
27%
Reduced energy theft
25%
North America > Europe
33% 6%
Improved retail operations efficiency
23%
Enable the integration of distributed generation and electric vehicles
15%
Europe > North America
44% 10%
Enable beyond-the-meter load applications
10%
Europe > North America
31% 7%

SMART GRID


BUILDING SYSTEM
NUCLEAR
FACTORY ENERGY MANAGEMENT SYSTEM
HYDRO
ANALYTICS
COAL
LARGE SCALE BATTERY STORAGE
BIOETHANOL
WIND
SOLAR
NATURAL GAS PRODUCTION FACILITY
LARGE SUBSTATION
REAL-TIME SECURE CONNECTIVITY FRAMEWORK


THANK
YOU