

NETx BMS Platform

Building automation systems are heterogeneous

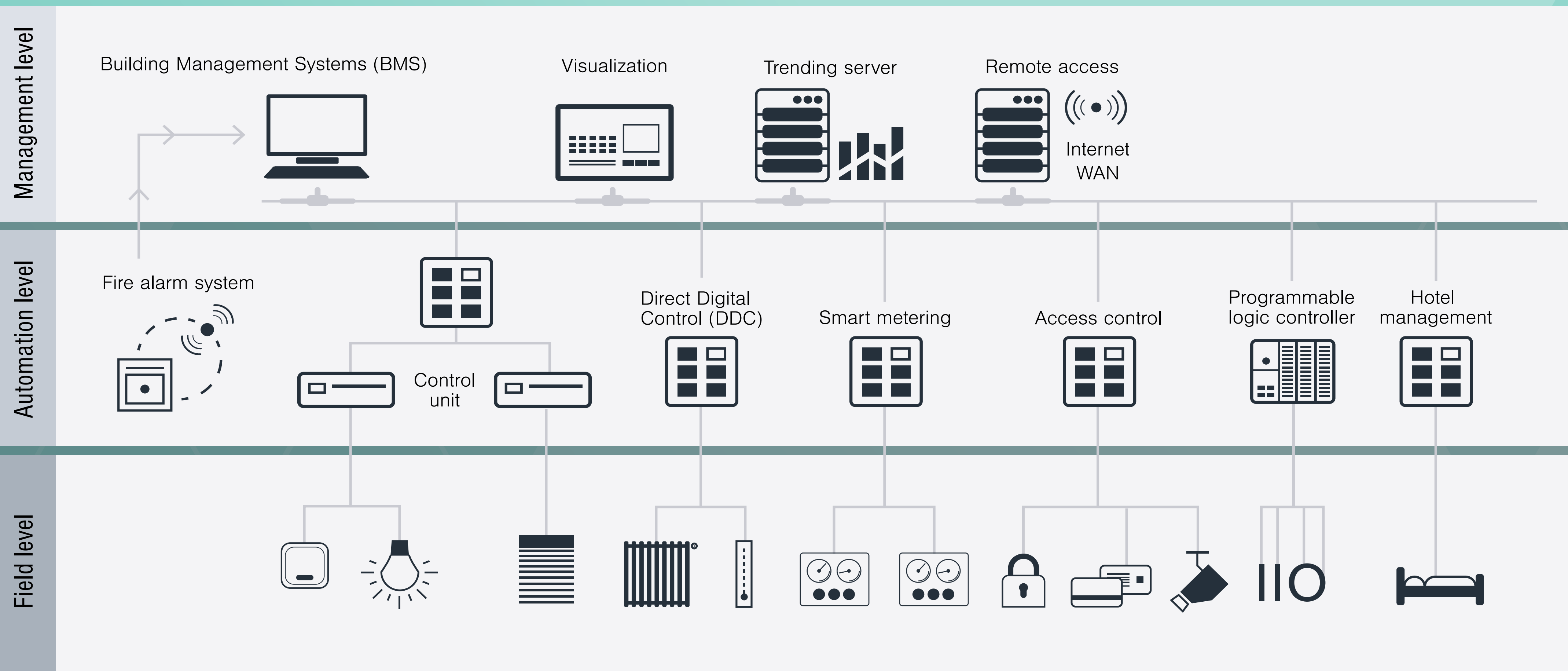


Many different technologies are used



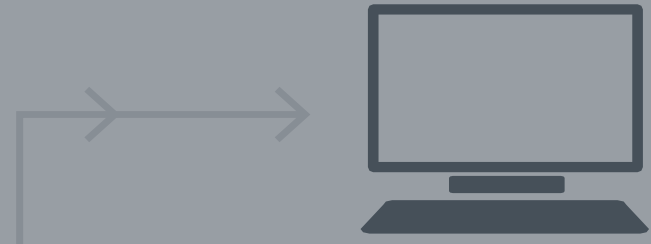
Each technology has its characteristics and its own way to represent and process control data



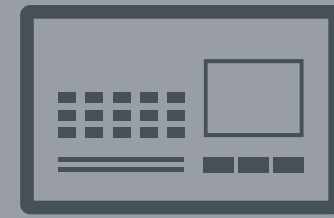


management level

Building Management Systems (BMS)



Visualization



Trending server

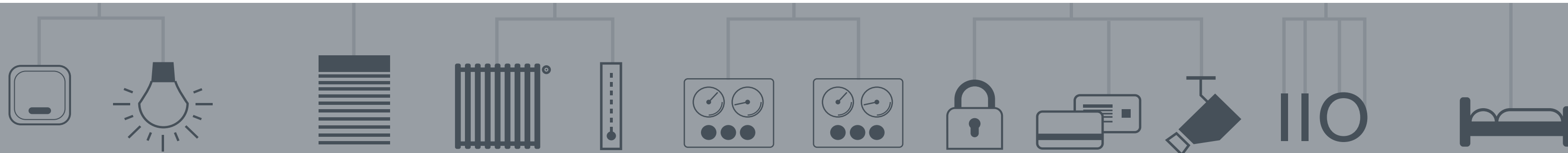


Remote access



M-Bus, DALI, EnOcean, Fidelio/Opera, VingCard, ...
other open and proprietary technologies

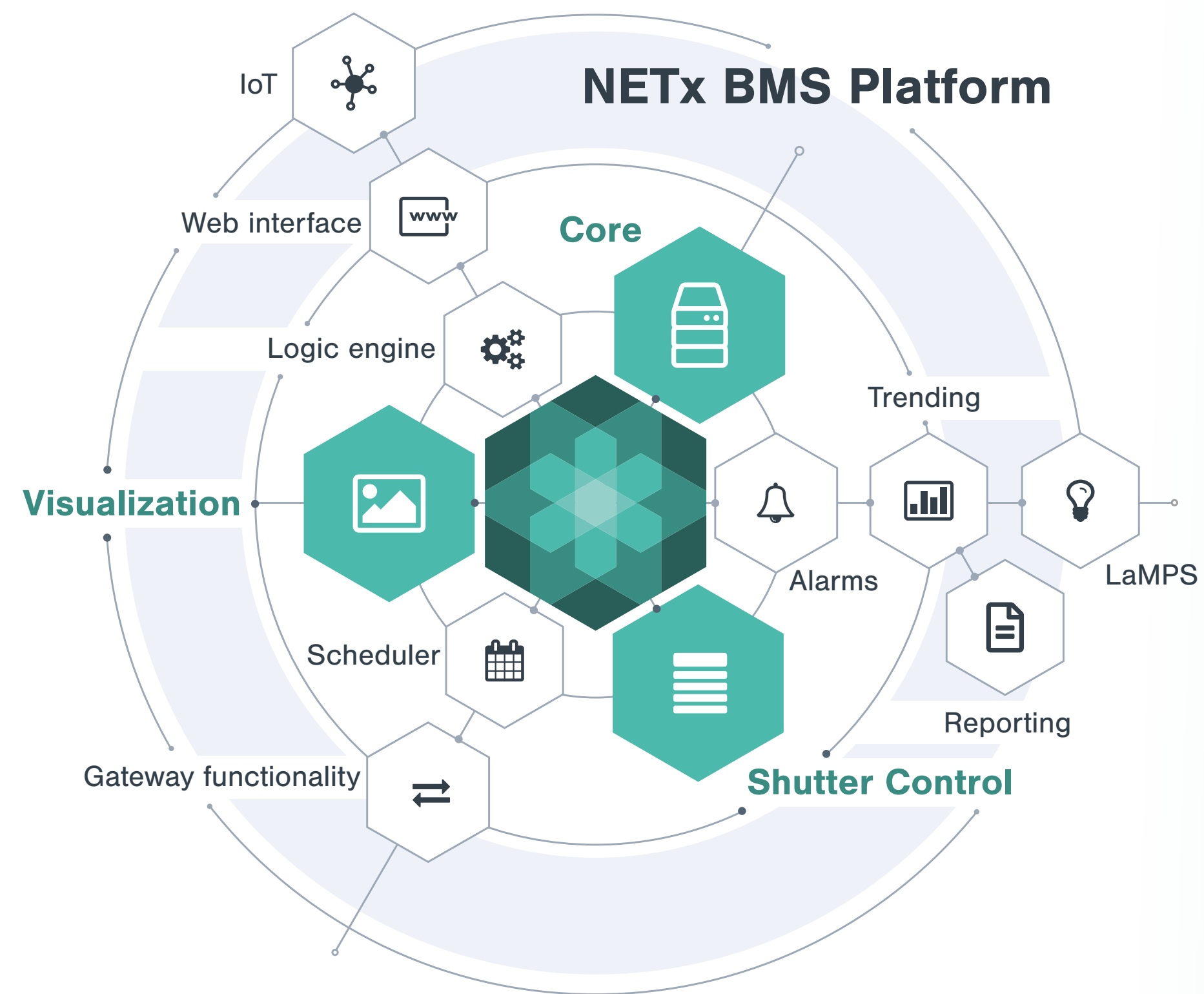
Field level



How to integrate management applications
e.g. visualization, trending, alarm management, ...?



M-Bus, DALI, EnOcean, Fidelio/Opera, VingCard, ... other open and proprietary technologies



Software solution for building management

Multi-protocol gateway

Support for different systems and technologies

Providing building management functions

Alarm management, trending, scheduling, logic engine

User management

Central user management with different backends (e.g. AD authentication)

Visualization

Web and PC based visualization clients

Web interface

Managing BMS functions

Add-ons

KNX/DALI management, automatic shading control

Operating system - Windows based operating system required

Windows 10

Windows Server 2016

Windows Server 2019

For maintainable systems we strongly recommend at least Windows 10 or Windows Server 2016 (or higher), except NETx KNX OPC Server 3.5. Our products basically also run on older Windows versions down to Windows 7 and Windows Server 2008. However, due to limited future support for these operating systems by Microsoft we will not be able to provide full support for our software running on these systems.

Hardware

Any device that supports
Microsoft Windows can be used

Requirements depend on project size
(small embedded device up to server systems)

Use of virtualization
environments possible

VMWare, Virtualbox, Hyper-V, ...

License

Amount of data points

Integrated data points from field level like KNX group addresses, BACnet objects, Modbus registers, SNMP data points, ...

Amount of visualization clients

Web and/or PC based clients

Optional: additional license fees for special modules and interfaces

- **Hotel management interfaces**
Fidelio/Opera or Protel
Fix fee +5 data points for each room
- **Door lock interfaces**
VingCard, Salto, Kaba
Fix fee +5 data points for each door lock
- **NETx LaMPS**
Fix fee +1 data point for each DALI ballast
- **NETx Shutter Control**
Project specific fee

Licensing process

Hardlock

USB Dongle
hardware independent

Softlock

Unlock code
hardware dependent

NETx BMS Platform

Core	Visualization	LaMPS	Shutter control
<ul style="list-style-type: none"> Gateway functionality Alarm management Trending Reporting Scheduler Logic engine 	<p>PC client / Web client</p> <ul style="list-style-type: none"> Visualization for small, medium and large projects PC and web based clients Any number of clients possible 	<ul style="list-style-type: none"> Lighting management DALI management 	<ul style="list-style-type: none"> Automatic shading system Complex buildings Inclusion of weather data 3D design and simulation Add-on for BMS Server
<p>Web interface</p> <ul style="list-style-type: none"> Alarm management Trending Scheduler Explorer Actions & Conditions 	<p>Web interface</p> <ul style="list-style-type: none"> Visualization 	<p>Web interface</p> <ul style="list-style-type: none"> LaMPS app 	<p>Web interface</p> <ul style="list-style-type: none"> Shutter Control app
<ul style="list-style-type: none"> KNX BACnet Modbus OPC SNMP 	<ul style="list-style-type: none"> Fidelio/Opera, Infor, Protel, VingCard, Salto, Kaba 	<ul style="list-style-type: none"> Universal XIO interface HTTP Server and other web service gateways 	<p>3rd party BACnet, oBIX, MQTT and OPC clients</p> <ul style="list-style-type: none"> 3rd party web service clients <p>Hardware gateways:</p> <ul style="list-style-type: none"> Dali EnOcean M-Bus DMX





Multi-protocol gateway

Bidirectional data and information change between different protocols and technologies



Alarm management

Monitor the building automation system and report unexpected behavior



Trending

Store past data point values for analysis



Scheduler

Definition of time based events to change data point values or trigger actions



Logic engine

Add control functionality using graphical function block programming or scripts



Visualization

Sophisticated visualization engine for web and PC based visualization clients

Lighting/DALI management



NETx LaMPS

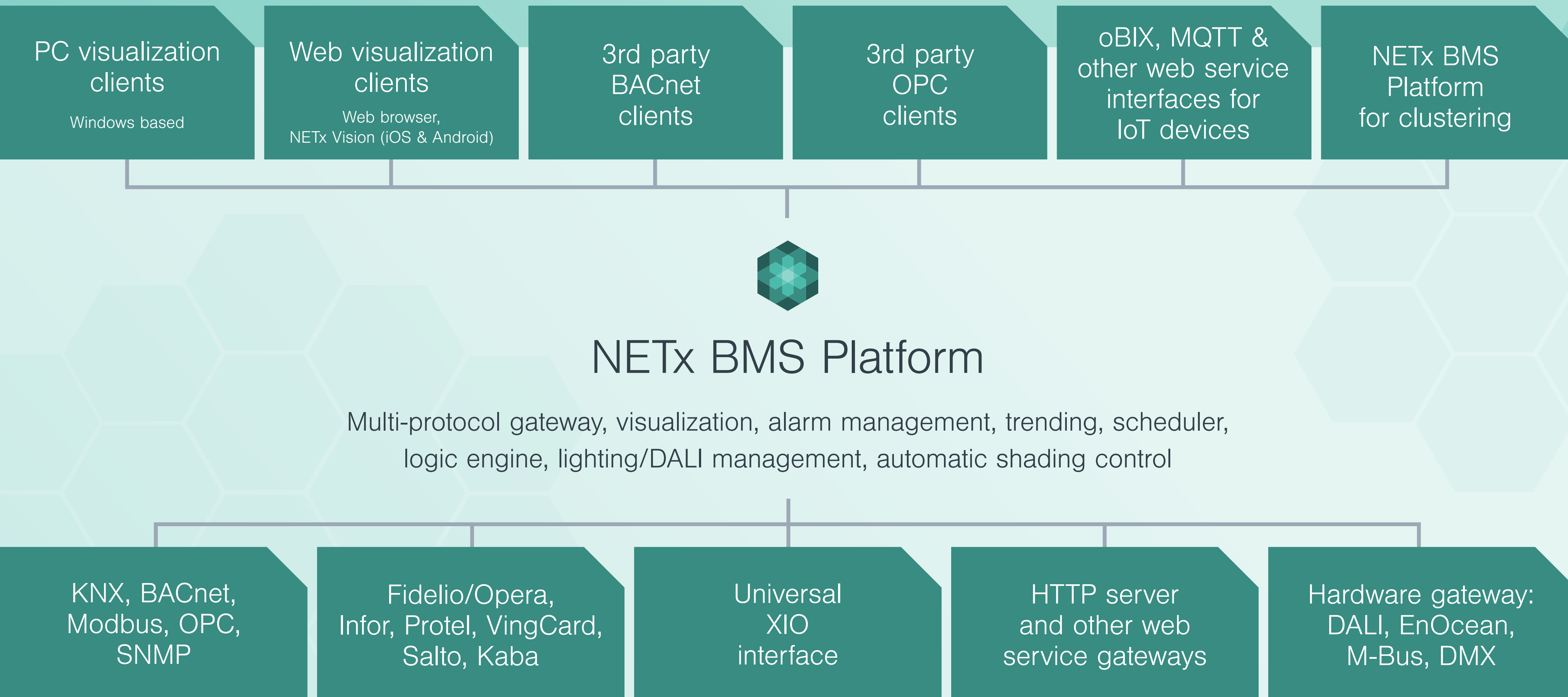
Easy management of KNX/DALI gateways

Automatic shading control



NETx Shutter Control

Automatic shading of complex buildings



Open and standard protocols

KNX, BACnet, Modbus,
SNMP, OPC, MQTT

Hotel management system

Fidelio/Opera,
Protel

Door lock systems

VingCard, Kaba, Salto

HTTP Server and other Web Service Gateways

Develop your own interface

Customer specific interfaces on request

Interfaces to management level

OPC

OPC DA 2.0 and OPC UA

BACnet

BACnet/IP server

oBIX and other Web
Service interfaces for IoT
oBIX 1.1 and KNX Web Services

MQTT

Communication to one or
more MQTT brokers

Web interface

Web Manager and
Web Visualization

VNET

Secure connection to
PC based visualization

Integration of OPC clients

3rd party clients

Integration of BACnet clients

3rd party BMS systems from Siemens, Schneider Electric, Honeywell, Sauter

Integration of OPC servers

Fire detection systems, elevators, etc. with different proprietary systems

Alarm management

Dashboard / Alarms / List / History

Alarm List

0 (0) 0 (0) 0 (0) 2 (0)

Project Tree

- Hotel Hilton
 - Floor1
 - Room101
 - Room102
 - Room103
 - Room104
 - Room105
 - Room106
 - Room107
 - Room108
 - Room109
 - Room110
 - Floor2
 - Floor3
 - Floor4
 - Floor5
 - Floor6
 - Trendings

New list Old list History

\Hotel Hilton

Priority	State	Reason	Name	Path	Date
■	ACK	condition fulfilled	Room1 Overheat	\Hotel Hilton\Floor1\Room101\Al...	2018-09-26 14:40:25
■	ACK	condition fulfilled	Room2 Overheat	\Hotel Hilton\Floor1\Room102\Al...	2018-09-26 14:39:05
■	ACK	acknowledged	Room1 Overheat	\Hotel Hilton\Floor1\Room101\Al...	2018-09-26 14:38:51
■	ACK	acknowledged	Room2 Overheat	\Hotel Hilton\Floor1\Room102\Al...	2018-09-26 14:38:51
■	IDL	activated	Room2 Overheat	\Hotel Hilton\Floor1\Room102\Al...	2018-09-26 14:38:04
■	NEW	activated	Room2 Overheat	\Hotel Hilton\Floor1\Room102\Al...	2018-09-26 14:38:04
■	NEW	condition fulfilled	Room2 Overheat	\Hotel Hilton\Floor1\Room102\Al...	2018-09-26 14:38:04
■	IDL	activated	Room1 Overheat	\Hotel Hilton\Floor1\Room101\Al...	2018-09-26 14:37:57
■	NEW	condition fulfilled	Room1 Overheat	\Hotel Hilton\Floor1\Room101\Al...	2018-09-26 14:37:57
■	NEW	activated	Room1 Overheat	\Hotel Hilton\Floor1\Room101\Al...	2018-09-26 14:37:57
■	IDL	deactivated	Room1 Overheat	\Hotel Hilton\Floor1\Room101\Al...	2018-09-26 13:04:07
■	IDL	deactivated	Room2 Overheat	\Hotel Hilton\Floor1\Room102\Al...	2018-09-26 13:04:07
■	IDL	activated	Room2 Overheat	\Hotel Hilton\Floor1\Room102\Al...	2018-09-26 13:03:07
■	IDL	activated	Room2 Overheat	\Hotel Hilton\Floor1\Room102\Al...	2018-09-26 13:03:07
■	IDL	reconfigured	Room2 Overheat	\Hotel Hilton\Floor1\Room102\Al...	2018-09-26 13:03:07
■	IDL	created	Room2 Overheat	\Hotel Hilton\Floor1\Room102\Al...	2018-09-26 13:03:07
■	IDL	reconfigured	Room2 Overheat	\Hotel Hilton\Floor1\Room102\Al...	2018-09-26 13:03:07
■	IDL	reconfigured	Room1 Overheat	\Hotel Hilton\Floor1\Room101\Al...	2018-09-26 13:01:12
■	IDL	activated	Room1 Overheat	\Hotel Hilton\Floor1\Room101\Al...	2018-09-26 13:01:12
■	IDL	activated	Room1 Overheat	\Hotel Hilton\Floor1\Room101\Al...	2018-09-26 13:01:12

Core Server: Simulation (Demo_NETx_Platform) Database: connected NETx BMS Platform 2018 R1 Build 0 2018-09-26 14:41:10

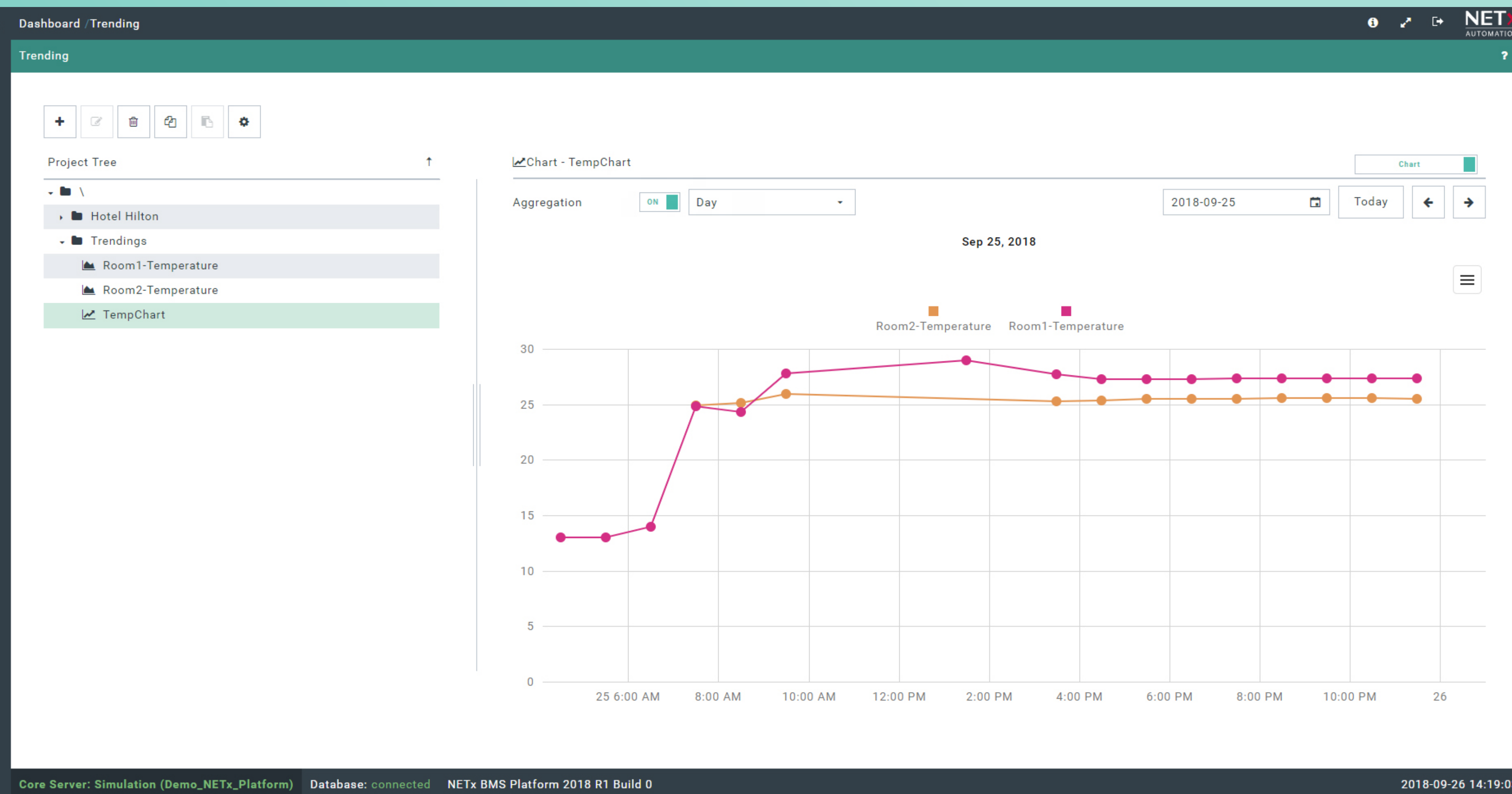
Definition of alarm conditions to detect unexpected system behavior

Triggering of alarm actions like notifications (e.g. e mail, twitter, ...) or changing data points

Alarm lists via web interface according to VDI/VDE 3699

Alarm history

Alarm logs stored in SQL database



Past values of data points can be stored in SQL database

Multiple database backends (MS SQL, MySQL)

Different trending types like change-of-value (COV), sampling, averages, ...

Define the amount of data via max data age

Pre and post processing of values

Presentation via charts and tables within web interface

Dashboard / Scheduler NETx AUTOMATION

Scheduler

Project Tree

- Hotel Hilton
 - Floor1
 - Room101
 - Alarms
 - Scheduler
 - Lights ON
 - Room101 Lights ON
 - Room102 Lights OFF
 - Room102
 - Room103
 - Room104
 - Room105
 - Room106
 - Room107
 - Room108
 - Room109
 - Room110
 - Floor2
 - Floor3
 - Floor4
 - Floor5
 - Floor6

Start-Stop Time Event - Lights ON

Enabled: ON

Name: Lights ON

Description: Turn Lights ON

Start date/time: 2018-09-26 18:30:00

End date/time: 2018-09-26 22:30:00

Different Actions: ON

Start Action: \\Hotel Hilton\Floor1\Room101\Scheduler\Room101 Lights ON

Stop Action: \\Hotel Hilton\Floor1\Room101\Scheduler\Room102 Lights OFF

Recurrence: Daily

Repeat: Every day Every [] days

January	February	March	April	May	June
Juli	August	September	October	November	December

Holidays: Ignore

Ends: Never On [] After [] recurrences

Additional recurrence: None

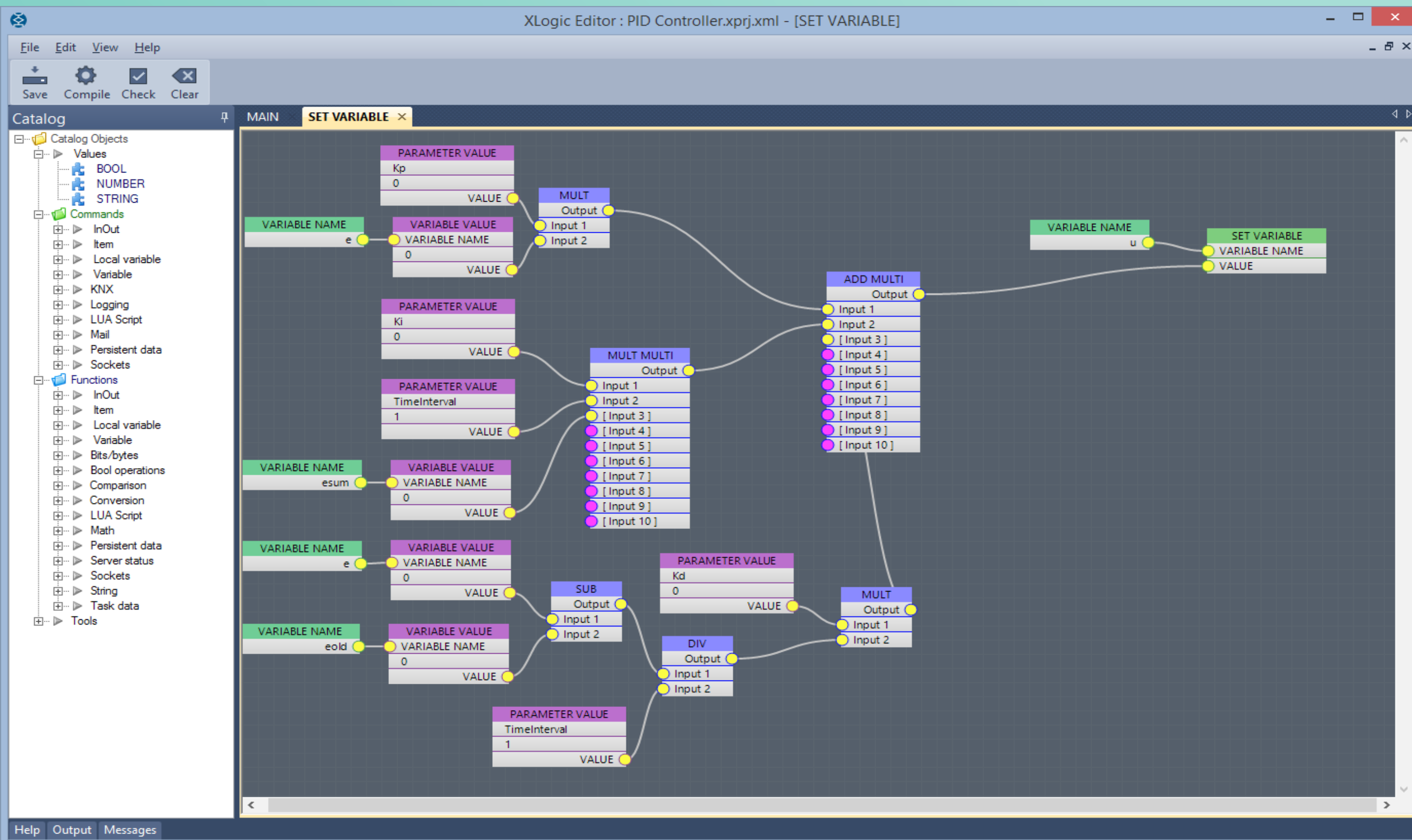
Save

Core Server: Simulation (Demo_NETx_Platform) Database: connected NETx BMS Platform 2018 R1 Build 0 2018-09-26 14:09:10

Time based events to trigger actions (timers, start stop event, cyclic event) and conditional events

Definition of recurrence

Event program list and calendar view within web interface



Adding control functions that are missing within the field devices

Adding control functions that are distributed across devices that use different technologies

XLogic editor: graphical functional block programming

LUA scripts: script engine

Features



Versatile

- Web and/or PC based visualization clients can be used
- No difference between web and PC based visualization



Unlimited

- No limit on the amount of used graphical elements and pages
- Licensing is done via BMS Platform



Scalable

- Fast creation of large visualization projects
- Enhanced concepts like variables and templates



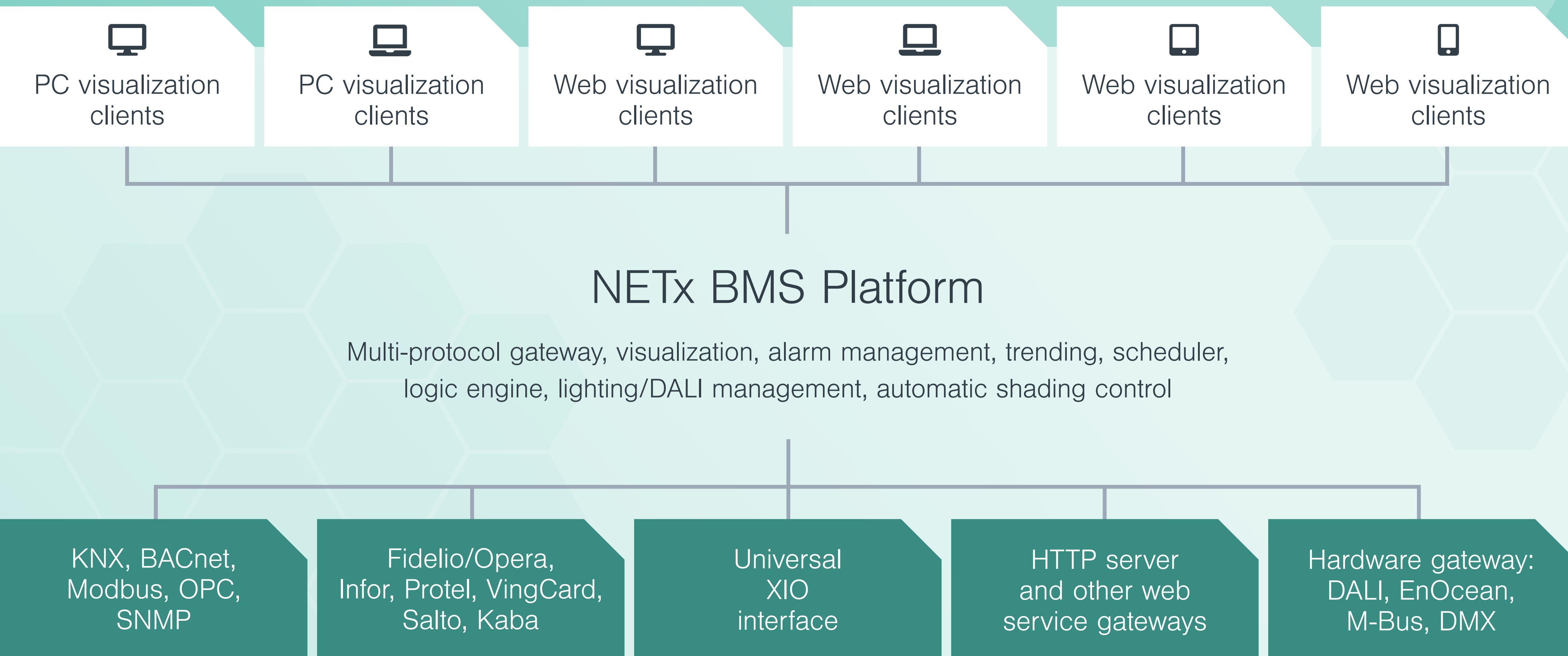
Customizable

- User-defined look and file
- Enhanced elements like multi-state elements, vector graphic and web based content



Ubiquitous

- Independent of used technology and protocols
- KNX, BACnet, Modbus, SNMP, ... in one single visualization



Functions I



Control elements

Label, buttons, analog elements (sliders, gauges, ...), link area, multi-state elements, ...



Vector graphic

Support of SVG and AutoCAD drawings (DWG, DXF, ...)



Auto scaling

PC and web based visualization is automatically scaled to the current screen resolution



Multiple views

Support of multiple views for using multiple screens, browser tabs or floating window elements

Functions II



Variables

Fast creation of large visualizations using project, page, layer, block and group variables. Reuse of pages and groups



BMS function

Show graphical interface of BMS functions like alarm lists, calendars, trending charts and tables



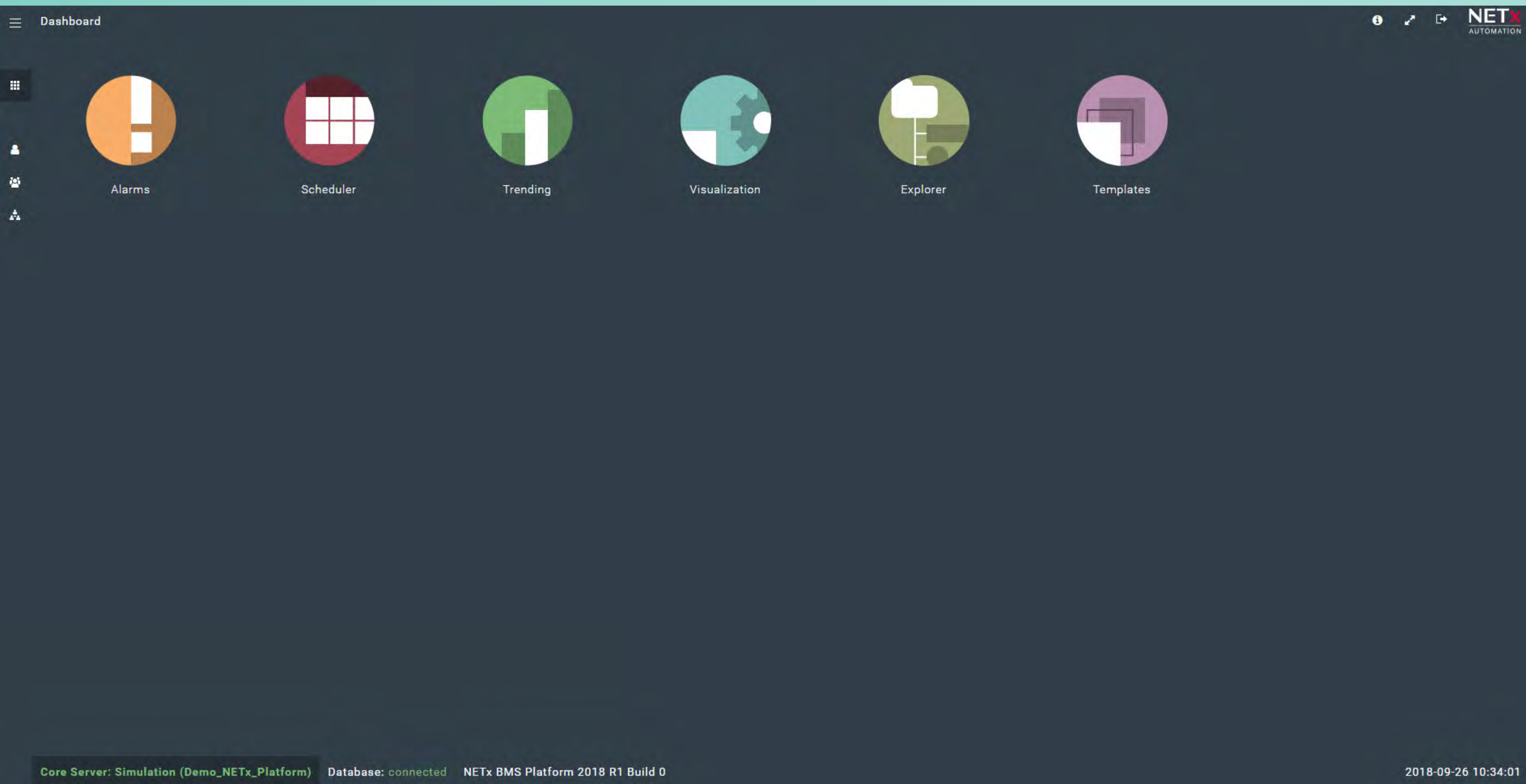
User administration

Use of central user management of BMS Platform and defining different access rights



Usability

Easy to use editor for creating visualization projects



Web based interface to manage BMS functions

Access by any client with web browser via secure connection (TLS secured https)

User management

Sophisticated user management and access permissions

Web Manager Apps

Use of central user management of BMS Platform and defining different access rights

Web Manager Apps I



Alarms

Configuration of alarms - showing alarm lists and alarm history



Scheduler

Configuration of time based and conditional events - shown event lists and calendar views



Trending

Configuration of trends and charts - showing charts and tables

Priority	Name	Path	Date	Actions...
High	Room2 Overheat	\Hotel Hilton\Floor1\Room102\Alarms	2018-09-26 14:38:03	Stop, Ack, Clear
High	Room1 Overheat	\Hotel Hilton\Floor1\Room101\Alarms	2018-09-26 14:37:56	Stop, Ack, Clear

Start-Stop Time Event - Lights ON

Enabled:

Name: Lights ON

Description: Turn Lights ON

Start date/time: 2018-09-26 18:30:00

End date/time: 2018-09-26 22:30:00

Different Actions:

Start Action: \Hotel Hilton\Floor1\Room101\Scheduler\Room101 Lights ON

Stop Action: \Hotel Hilton\Floor1\Room101\Scheduler\Room102 Lights OFF

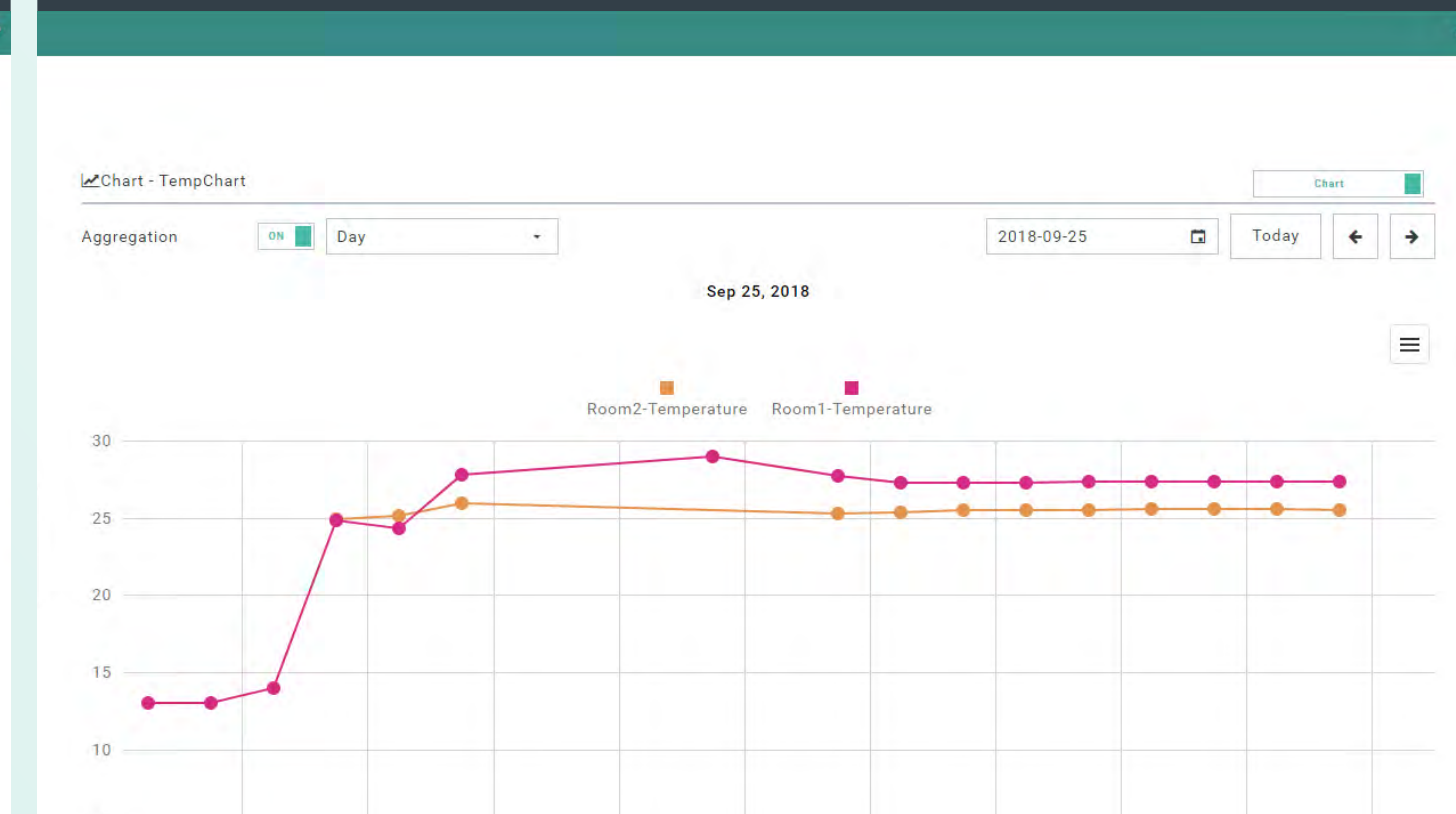
Recurrence: Daily

Repeat: Every day Every [] days

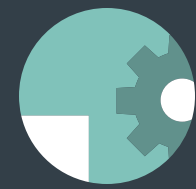
Months:

January	February	March	April	May	June
July	August	September	October	November	December

Holidays: Ignore



Web Manager Apps II



Visualization Manager

Managing visualization projects, devices, connections and user permissions

The screenshot shows the 'Edit - Device1' form with the following fields:

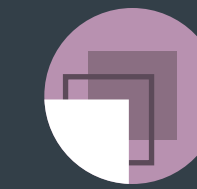
- Name *: Device1
- MAC address: MAC address
- Auto login: ON, admin
- Connection limit: OFF
- Project: FloorController



Explorer

"Master App" for doing all things at single place

The screenshot shows the Explorer interface with a 'Project Tree' on the left and a 'Folder - Alarms' view on the right. The Project Tree shows a hierarchy: Hotel Hilton > Floor1 > Room101 > Alarms > Scheduler. The Folder - Alarms view shows a search bar and a list of items: Alarm Notification, Cool down, Room1 Overheat (Condition: \), and Room1 Temperature over 50.



Templates

Sophisticated app to create multiple definitions (e.g. alarms) with a view clicks

The screenshot shows the 'Edit - Alarm Template' form with the following fields:

- Name *: Alarm Template
- Path extension: {FloorNo}\{RoomNo}
- Alarm - Room Temp Alarm
- Name *: Room Temp Alarm
- Description: Description
- Priority: Info
- Condition: Condition - Room Temp Alarm_Condition
- Name *: Room Temp Alarm_Condition
- Description: Description
- Logic operation: AND
- XCondition: COMPARISON GREATER

Use	Name	Data type	Value
-----	------	-----------	-------

www.netxautomation.com