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Smart Buildings SHOW

18-19 October 2023 • ExCel London

iSMACONTROLLI

**Edge to Cloud Solutions** – Exploring how solutions are evolving to support latest technology trends.
by iSMA **CONTROLLI**

Jim Sword
Sales Manager - UK&I

# Agenda

- How solutions have evolved to date
- Today's market trends.
- How solutions are evolving.
- What we are doing to meet these needs.
- What of the future.
- Q&A
- Close

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**How solutions have evolved to date.**

# How solutions have evolved to date

## Early Systems

- Standalone Buildings
- Standalone solutions
- Plant controlled Independently
- Hardwire interlocks

## Early BMS

- Standalone Buildings
- Standalone solutions
- **Plant control integrated in software**
- **Communication protocols**

## Remote BMS

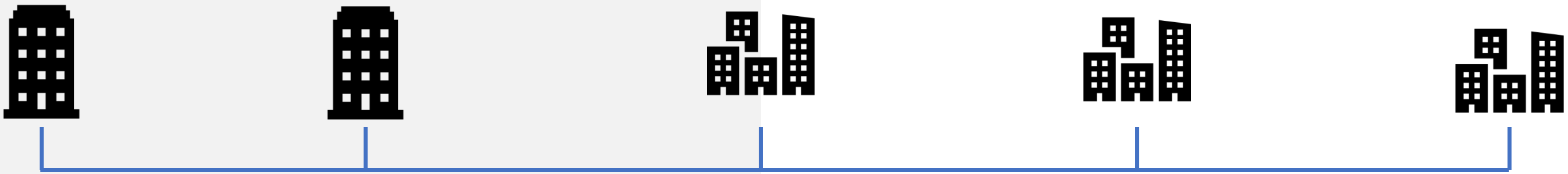
- Plant control integrated in software
- Communication protocols
- **Remote monitoring alarming**
- **Dial up solutions**

## Integrated BMS

- Remote monitoring alarming
- Open protocols
- **Interoperability**
- **Integrated Building Automation Solutions**

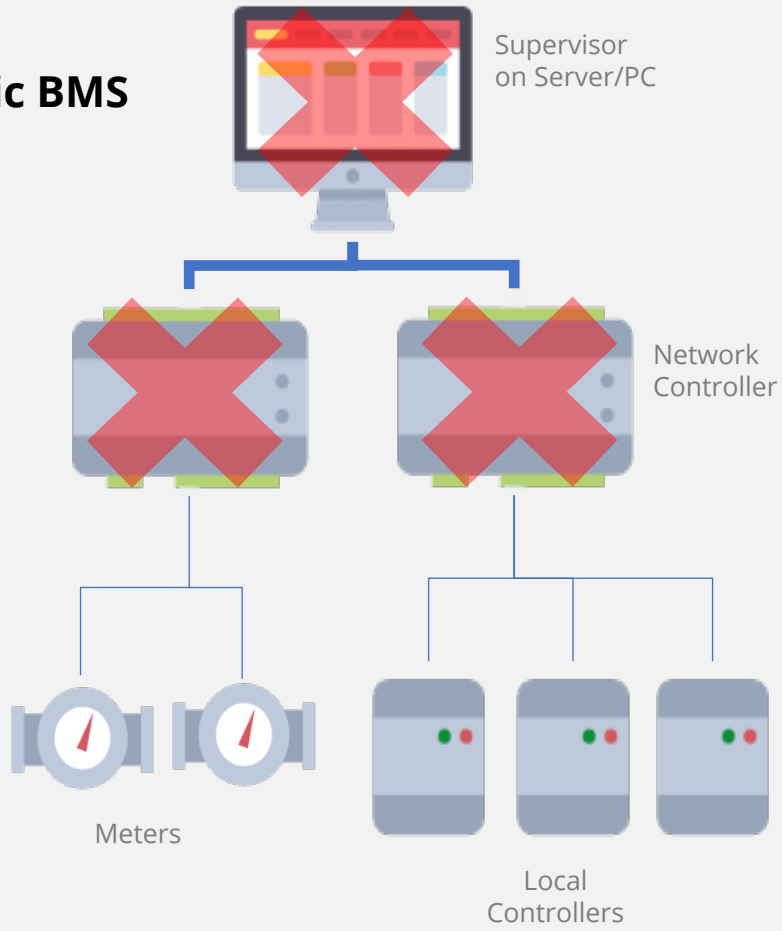
## Web Enabled BMS

- Remote monitoring alarming
- Interoperability
- Integrate Building Automtion Solutions
- Open protocols
- **IP Connectivity**

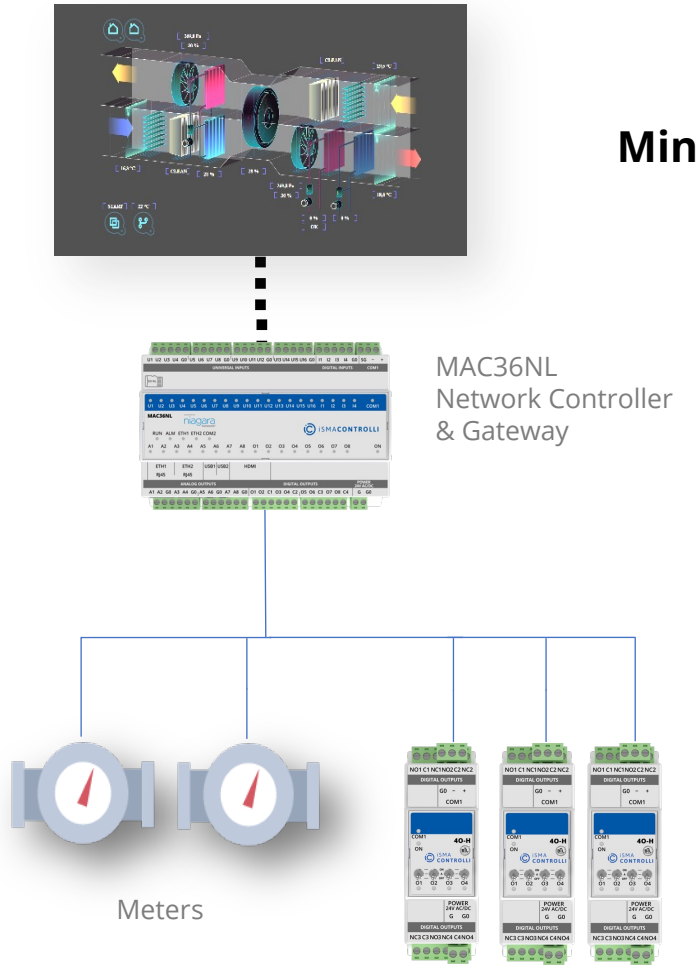


# How solutions have evolved to date.

## Classic BMS




## Mini-BMS



## Today’s market trends

# Smart Buildings Trends

- Greater user interaction
- Wellness
- Integrated solutions
- Intelligence moving to the Edge
- Cloud based analytics
- Optimisation
- Cyber Security

# Smart Buildings Trends

PC’s & Laptops

Tablets & Mobile Devices

Connected Home Devices

# Interesting Statistics

- **Estimated 41.6 billion IoT devices by 2025**
- **79 ZB (ZettaBytes) Data**
- **127 new connected devices per second – 12m per day**
  - ***Source IDC (International Data Corporation)***
- **1.7mb/ps –Every Human globally**
  - ***Source Tech Jury***
- **75m Google home units sold – 2025**

**....** *Automation, connectivity & greater interaction are becoming an expectation*

## How solutions are evolving

# BMS - Classic

**Cloud**
*Tag's Data Analytics ,*
*AI, Machine Learning*

Administrator

Outside the Building

Inside the Building

**BMS Software**
*Visualisation, Alarms, History*
*Preparing data for Cloud*

IP Network ( LAN )

**Network Controller**
*Integration*

**Gateway**
*RS485 to IP*

RS485

**RAC Controller**
*Algorythm*

RS485 Interface

**DDC Controller**
*Algorythm*

**EDGE**
based on
***Microcontroller***

User

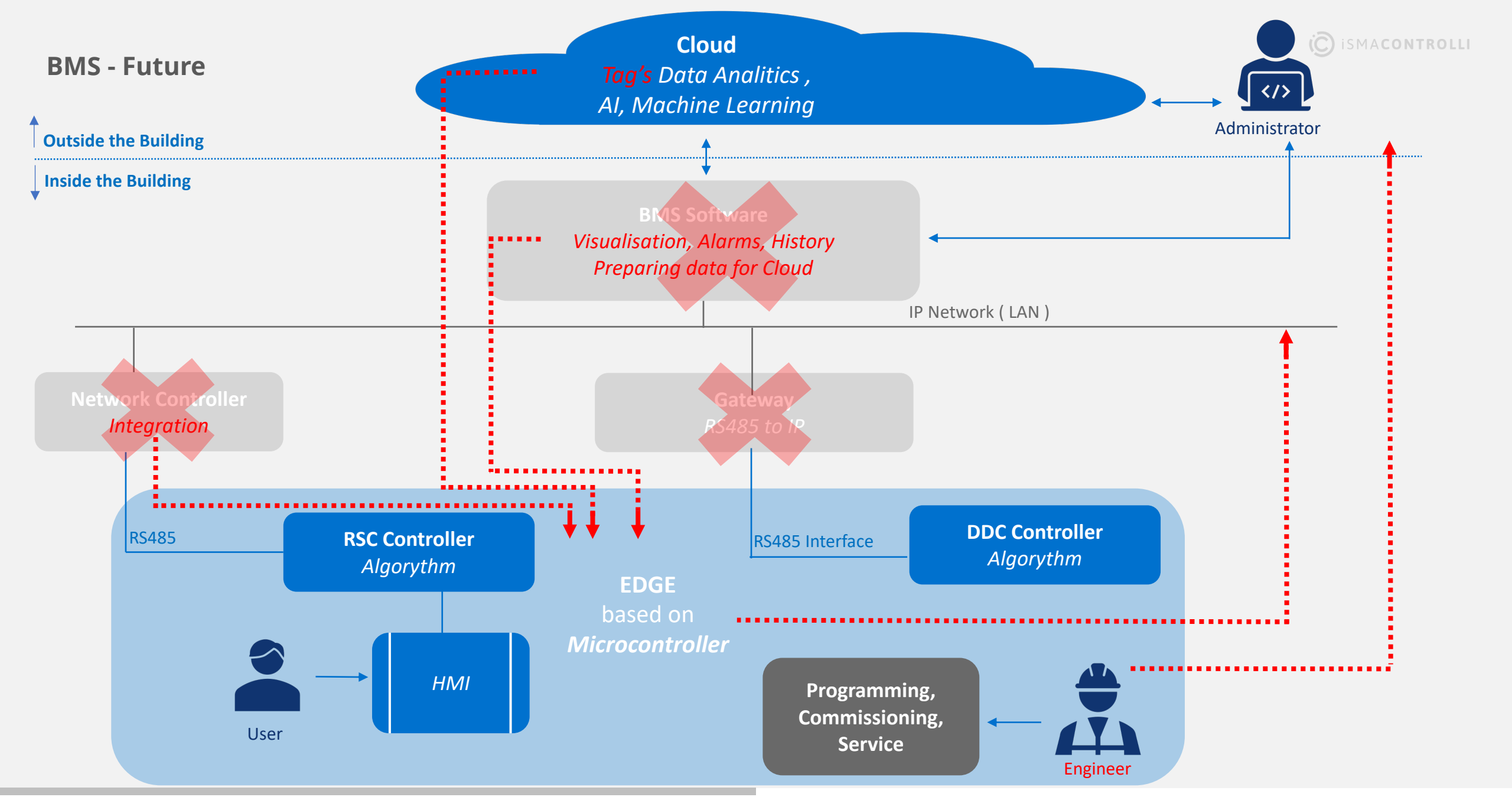
*HMI*

**Programming, Commissioning, Service**

Engineer

## Main Problems

# BMS - Future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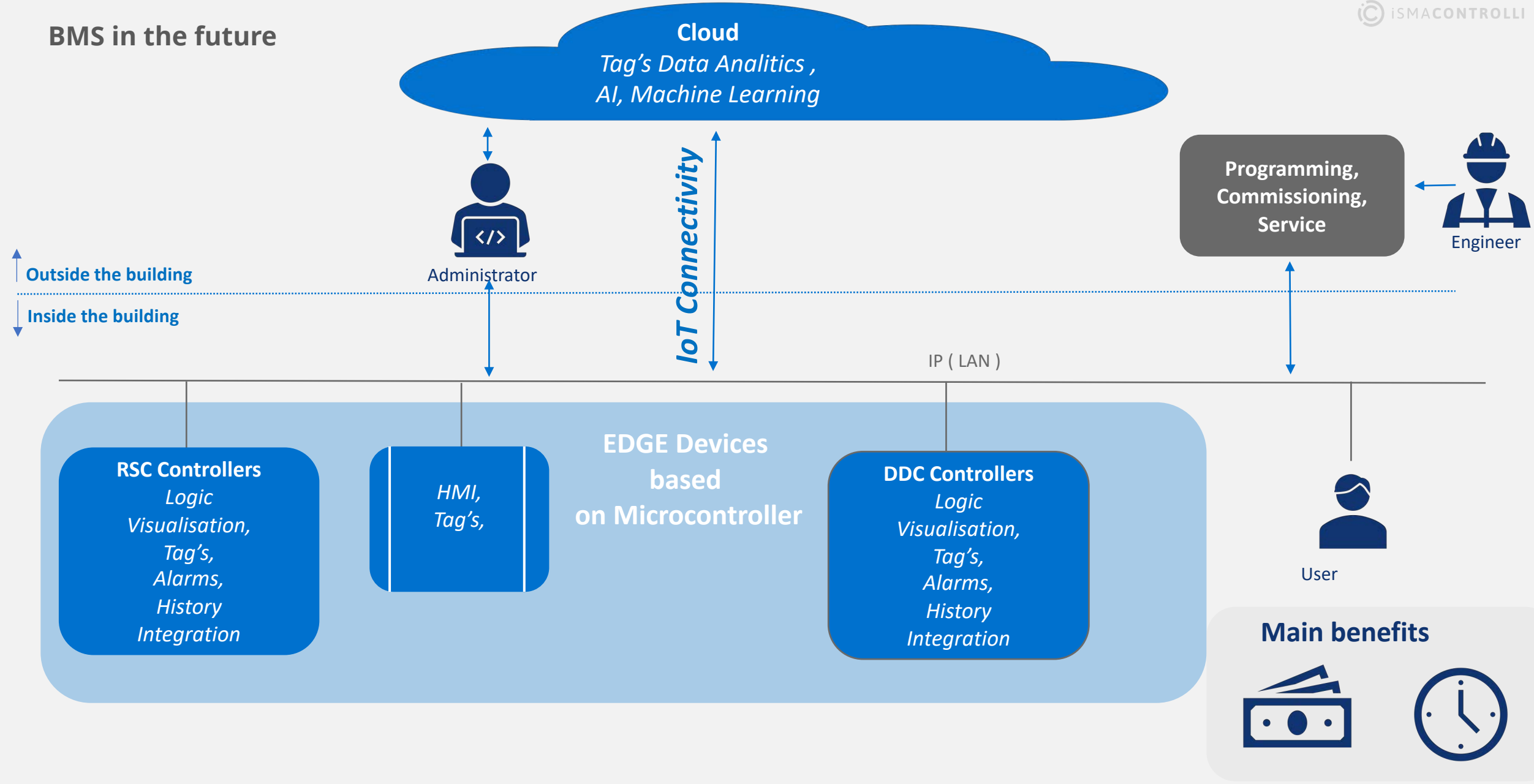
# BMS in the future



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**What are we doing to support evolution.**

# Smart Buildings Trends

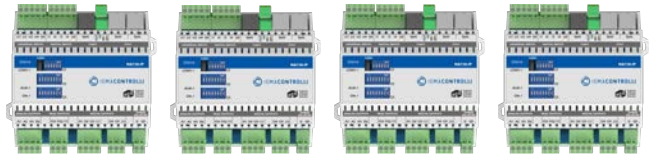
PC’s & Laptops

Tablets & Mobile Devices

Connected Home Devices

# Smart Buildings Trends

**Plant and Network Controllers**



**Room and Local Controllers**

nano EDGE ENGINE

**Field Devices**

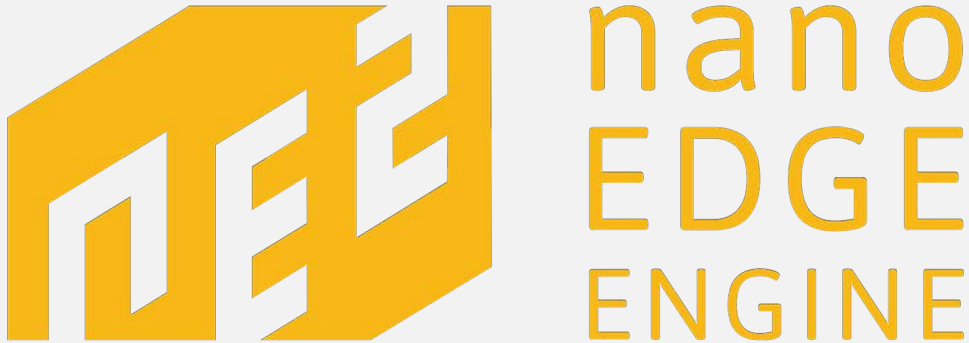
## nano EDGE ENGINE

It is an IoT-ready embedded software engine for microcontroller based devices

**nano** - very light to be installed on field \edge devices (actuators, automation and network controllers) based on microcontroller and not microprocessor

**EDGE** – it is designed to provide field devices with smart functionalities and secure connectivity (SSL/TSL) to make them Edge Devices Ready for the IoT

**ENGINE** – it is designed to be hardware independent in order to be easily installed on different hardware bodies



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nano EDGE ENGINE

**High-end technology for embedded devices in the building.**

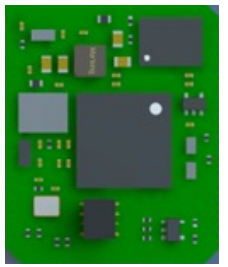
**The IoT-ready nano EDGE ENGINE provides unprecedented capabilities for a microcontroller-based device and takes them to the next level.**

**Take advantage of**

- **real-time programming,**
- **multiple cycle-driven applications,**
- **automatic multiprotocol exposure,**
- **cloud connectivity.**

Smart Edge devices

Smart Field devices



Future Solutions

# Zone Controllers – Room Application Controller

RAC18-IP

## Key Functionalities and Features

**BACnet and Modbus onboard**
Native BACnet IP, Native Modbus IP, and Modbus RTU Master protocols.

**nano EDGE ENGINE onboard**

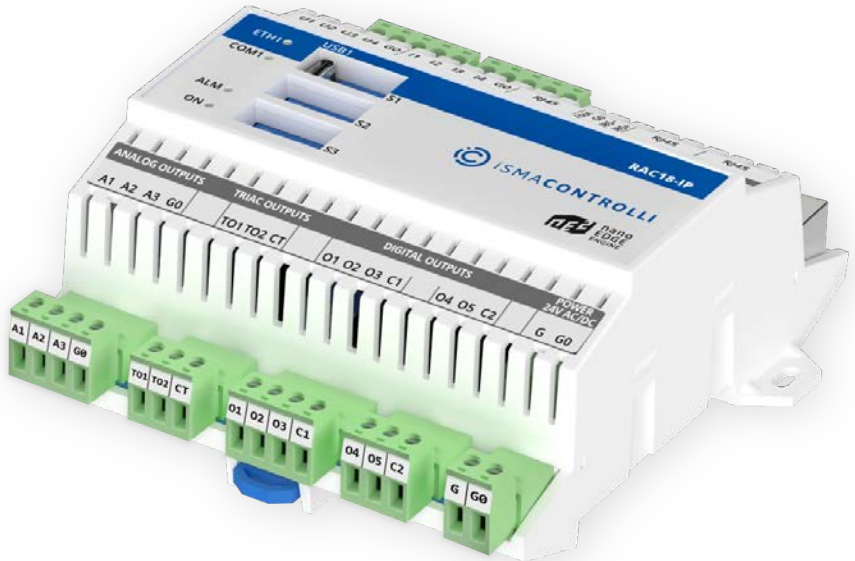
**Realtime Programming**
RAC18-IP is a freely programmable multifunctional controller dedicated for comfort and HVAC applications.

**Real-Time Clock (RTC)**

**I/Os**
Up to 18 inputs and outputs fitting most of room and zone applications.

**Two Ethernet ports**
Working in a switch mode with Fail-Save Protection.

**USB host and Micro SD Card**
USB host for power supply.



MAC36PRO
Future of mini-BMS
MAC36PRO
U1 U2 U3 U4 U5 U6 U7 U8 U9
RUN ALM ETH1 ETH2 COM2
A1 A2 A3 A4 A5 A6 A7 A8
ETH1 RJ45
ETH2 RJ45
USB1 USB2
HDMI
ANALOG OUTPUTS

## What of the future?

# What of the Future?



**Cloud**
*Tag's Data Analytics ,*
*AI, Machine Learning*

Administrator

*IoT Connectivity*

**Programming, Commissioning, Service**

Engineer

**Outside the building**

**Inside the building**

IP ( LAN )

**RSC Controllers**
*Logic*
*Visualisation,*
*Tag's,*
*Alarms,*
*History*
*Integration*

*HMI,*
*Tag's,*

**Smart Field Devices**
*Logic*
*Tag's,*
*Alarms,*
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*Integration*

**DDC Controllers**
*Logic*
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*Integration*

**EDGE Devices based on Microcontroller**

User

## Main benefits

# Thank you

Thank you
Jim Sword – Sales Manager – UK&I

**iSMA CONTROLLI S.p.A.**
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# Smart Buildings SHOW

9-10 October 2024 • ExCeL London

We look forward to seeing you in 2024