Agenda

15:00 - 15:05 Introduction

15:05 -15:15 Why nano EDGE ENGINE ?

15:15- 15:50 Live presentation

15:50 - 16:00 Future !

nano **TECH DAY**

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**

BMS - Today

Cloud

Tag's Data Analytics,
AI, Machine Learning

Administrator

nano EDGE ENGINE

↑ **Outside the Building**

↓ **Inside the Building**

BMS Software
Visualisation, Alarms, History
Preparing data for Cloud

IP Network (LAN)

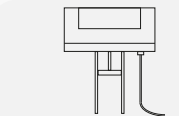**DDC Controller**
Algorythm

Network Controller
Integration
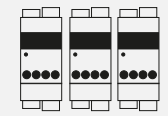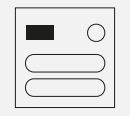
Gateway
RS485 to IP

RS485 Interface

RS485 Interface

Hard-wired

FCU Controller
Algorythm

I/O Modules

Main **Problems**

Actuator

User

€

Engineer

Programming,
Commissioning,
Service

EDGE based on **Microcontroller**

BMS in the future

iC Cloud

Administrator

iC Connect

Analytics, Modeling, AI, Machine Learning, Commissioning, Programming, Service

iC Connect

Engineer

User

Outside the Building

Inside the Building
IP Network (LAN)
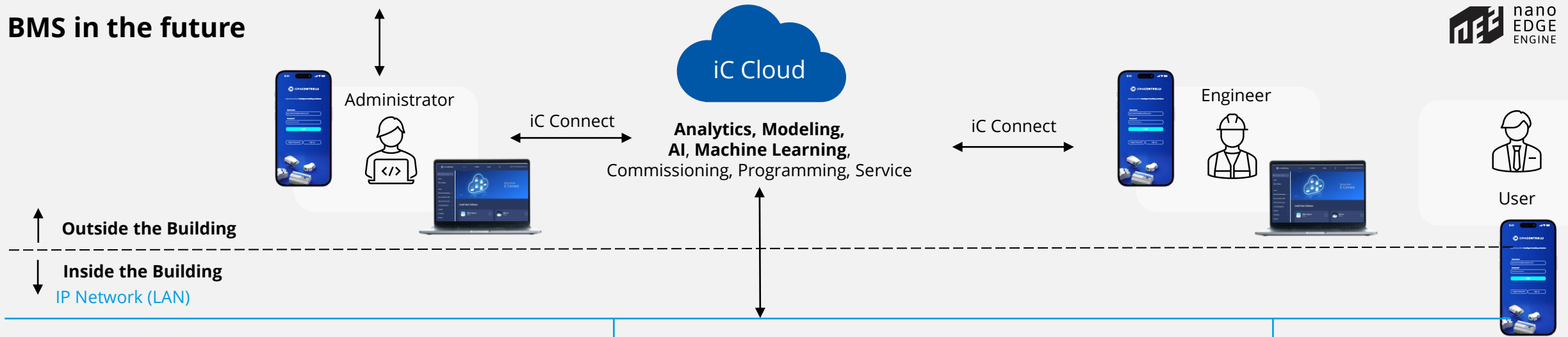
SMART

EDGE Devices based on **Microcontroller**

Smart RAC Controller

Logic
Simple Visualisation
Alarms
History
Simple Integration
Data Tagged
Real Time Programming
IoT Connectros

Smart DDC Controller

Logic
Simple Visualisation
Alarms
History
Simple Integration
Data Tagged
Real Time Programming
IoT Connectros

Smart VAV Controller

Logic
Simple Visualisation
Alarms
History
Simple Integration
Data Tagged
Real Time Programming
IoT Connectros

Smart Actuator

Logic
Simple Visualisation
Alarms
History
Simple Integration
Data Tagged
Real Time Programming
IoT Connectros

EDGE Devices based on **Microprocessor**

MAC36PRO

Advanced Logic
Visualisation
Data Tagged
Alarms,
History
Integration
Real–Time Programming
IoT Connectors

JACE 9000

Complex Integration
Complex Visualisation
Data Tagged
Alarms,
History
Real-Time Programming
IoT Connectors

nano EDGE ENGINE

niagara⁴

iSMACONTROLLI Simplicity in technology

www.nee.tech

nano
EDGE
ENGINE

It is an embedded software platform dedicated to EDGE Devices with microcontrollers, making them IoT-ready building devices with smart functionalities.

nano - extremely light software engine designed to be installed on EDGE Devices based on microcontrollers such as actuators, controllers, I/O modules, sensors, etc.

EDGE – tailored to provide EDGE Devices intelligent and smart functionalities with secure connection to the cloud.

ENGINE – allowing to build logic, integrate with other devices, collect data, expose data and connect with cloud. It's developed to be hardware independent.

nano EDGE ENGINE
Architecture

Applications

Process	HVAC
Time	FCU
Logic	Core
Math	Schedules

Applications the functional center of the device. Here are located time-deterministic, **cycle-driven multithreaded** applications.

Services

Services utility center of the device. This part incorporates all services that enhance the basic functionality of the device.

Networks

Modbus
RTU Client,
RTU Server
TCP/IP Server,
TCP/IP Client,
Gateway

BACnet
IP Client,
IP Server
MS/TP Client
MS/TP Server

Networks peripheral communication center of the device. It includes components that allow the device to transfer the HVAC automation data needed for the device to communicate externally using open communications protocol like Modbus or BACnet.

System

OS Manager   License
iFnet   DHCP
Logs   DNS
Platform Manager   NTP
Backups Users

System configuration center of the device. It provides the hardware characteristics of the device with information such as device model, version of the operating system, free memory and allows configuring its settings.

Zone Controllers – Room Application Controller
RAC18-IP - Summary

Real Time Clock (RTC)

Real Time Programming

18 I/Os On Board

USB host and micro SD card

SD card with system and application

RS485 port

2 Fail-safe Fast Ethernet with built-in switch

Native BACnet IP

BACnet MS/TP

Modbus RTU Client and Server

Modbus TCP/IP Client and Server

Modbus RTU to TCP/IP Gateway

150 Data Points

DHCP and DNS

NTP Client

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Key Features

Data Points with automatic BACnet IP and Modbus TCP/IP exposition universal components representing values in applications.

Multiple cycle-driven applications with independent scan period.

Reference linking method dedicated for linking Data Points with network points, transferring value along with the component's status.

Back-up & Restore

System and applications on SD card.

Favorable limitations
Data Points are the only limited elements.

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Coming soon

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TOOL

PRESENTED TODAY!

Trends of Analog and Binary Data Points

Multi-device Manager

SDK

Alarms

Custom Configuration

Web

BACnet Discover

Haystack

Reorder of components

ne2Link — Programming from Niagara workbench

Multi-user

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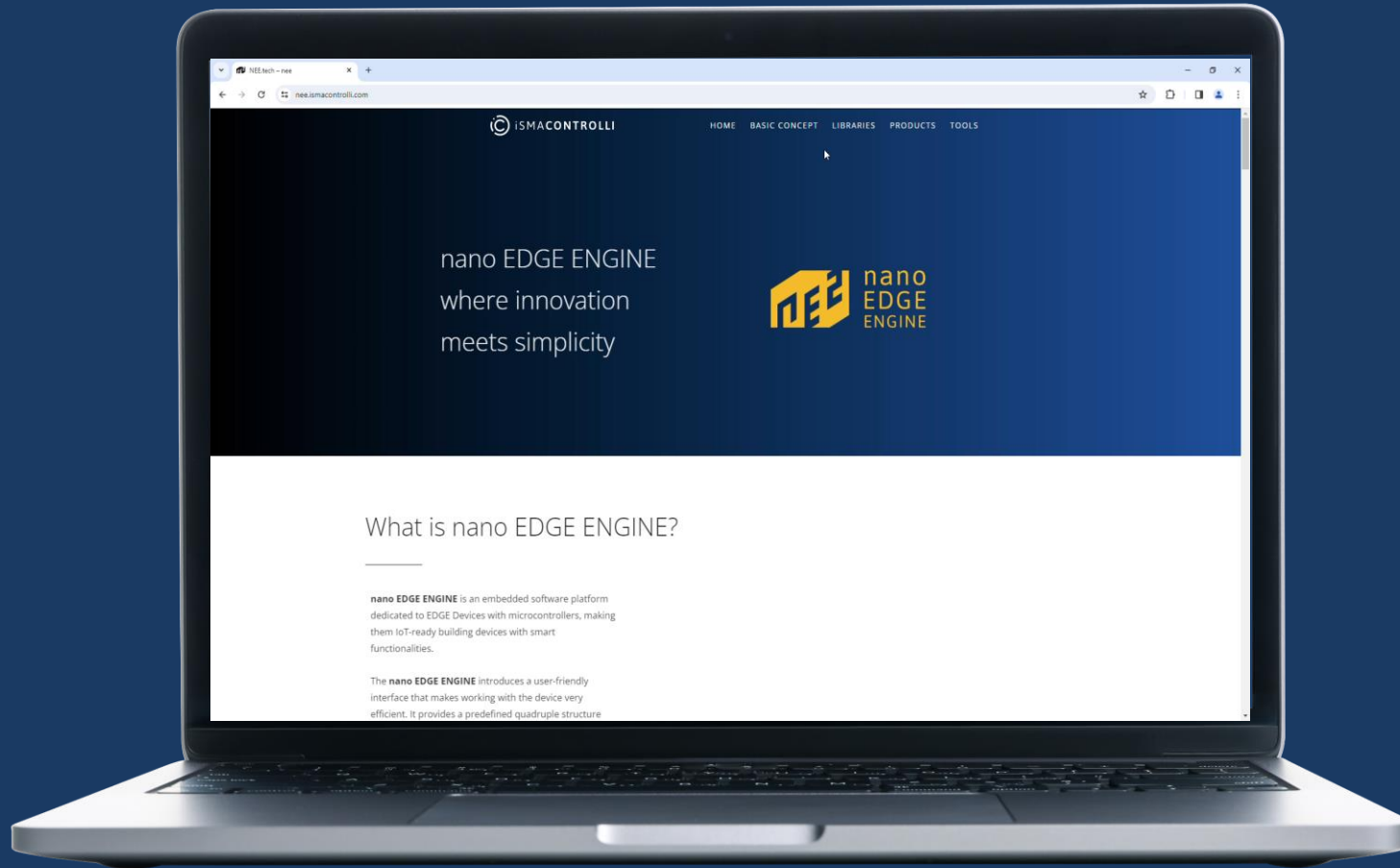Cooming soon

UAC22-IP
Unitary Application Controller

Smart Actuator

VAV14-IP
Variable Air Volume Controller

nano EDGE ENGINE
Where you can find useful information

Landing page
www.nee.tech

nano EDGE ENGINE
Where you can find useful information

TRAININGS

iSMA CONTROLLI e-learning Platform

nano EDGE ENGINE Basic training

nano EDGE ENGINE 1.1 Update

nano EDGE ENGINE 1.2 Update

nano EDGE ENGINE 1.4 Update

DOCUMENTATION

Online Docs

iSMA CONTROLLI Download Center

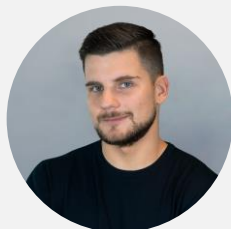## SOFTWARE

iC Tool

EXAMPLE APPLICATIONS

Universal FCU application for RAC18-IP

Thank you

Marcin Płoski
Chief Business Development

Tobiasz Mróz
Technical Training Specialist

Tomasz Janicki
Solution Product Manager