

WORKSHOP ON NETWORK MANAGEMENT AND MONITORING

Lightning talks

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CARNET
znanje povezuje

CARNET Infrastructure



- Private network of Croatian academic, scientific and research community, as well as of institutions of elementary and high school educational system
- Ministry of Science and Education
- Ministry of Health
- Ministry of Demography, Families, Youth and Social Politics
- Ministry of Environmental Protection and Energy
- Croatian Pension Insurance Institute
- Overall more than 4000 connected locations

e-Schools project

Comprehensive digitalization of school operation processes and teaching processes aimed at the development of digitally mature schools for the 21st century.

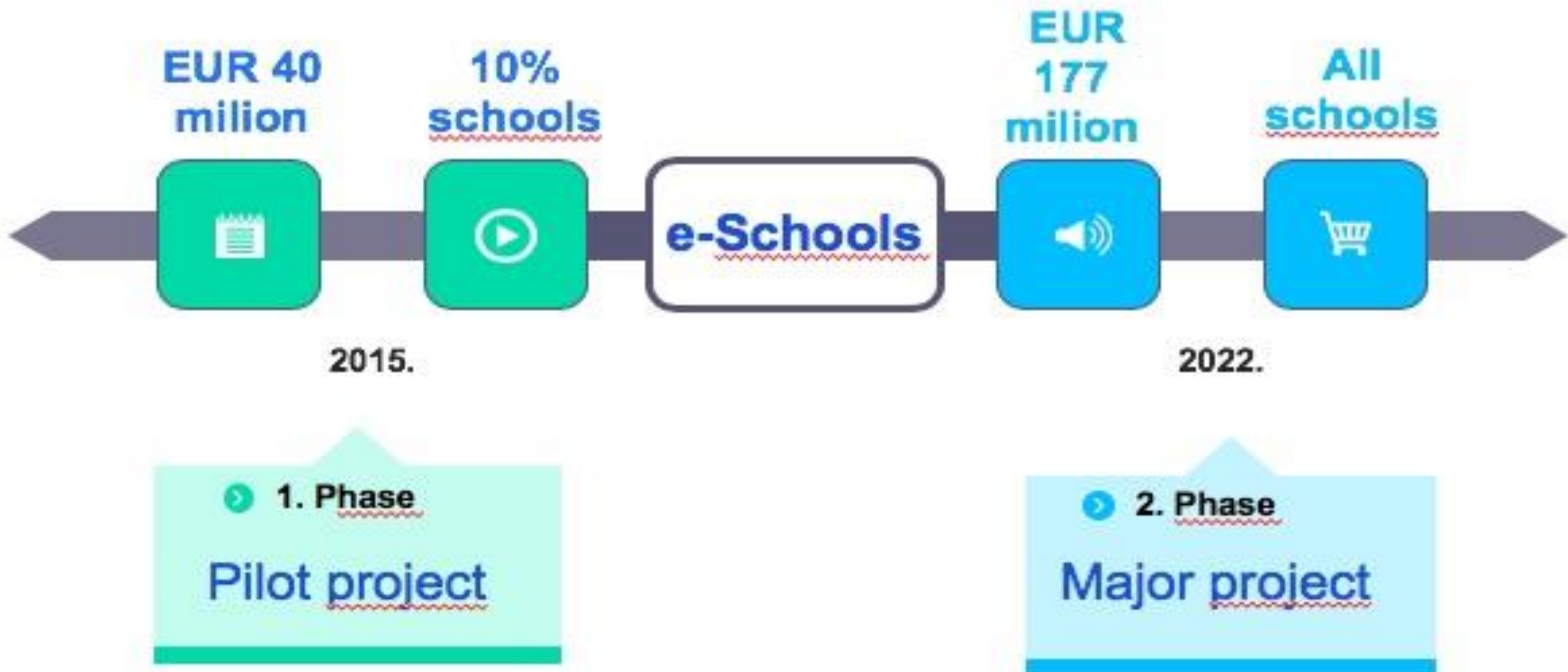
In digitally mature schools, the appropriate use of ICT contributes to the following:

- an efficient and transparent management of the school;
- the development of digitally competent teachers and students.

e- Schools actually bring IT technology into the schools.

- **IT technology become part of the daily life of the schools in Croatia.**
- **For students - In the teaching processes**
- **For professors - in the working processes**

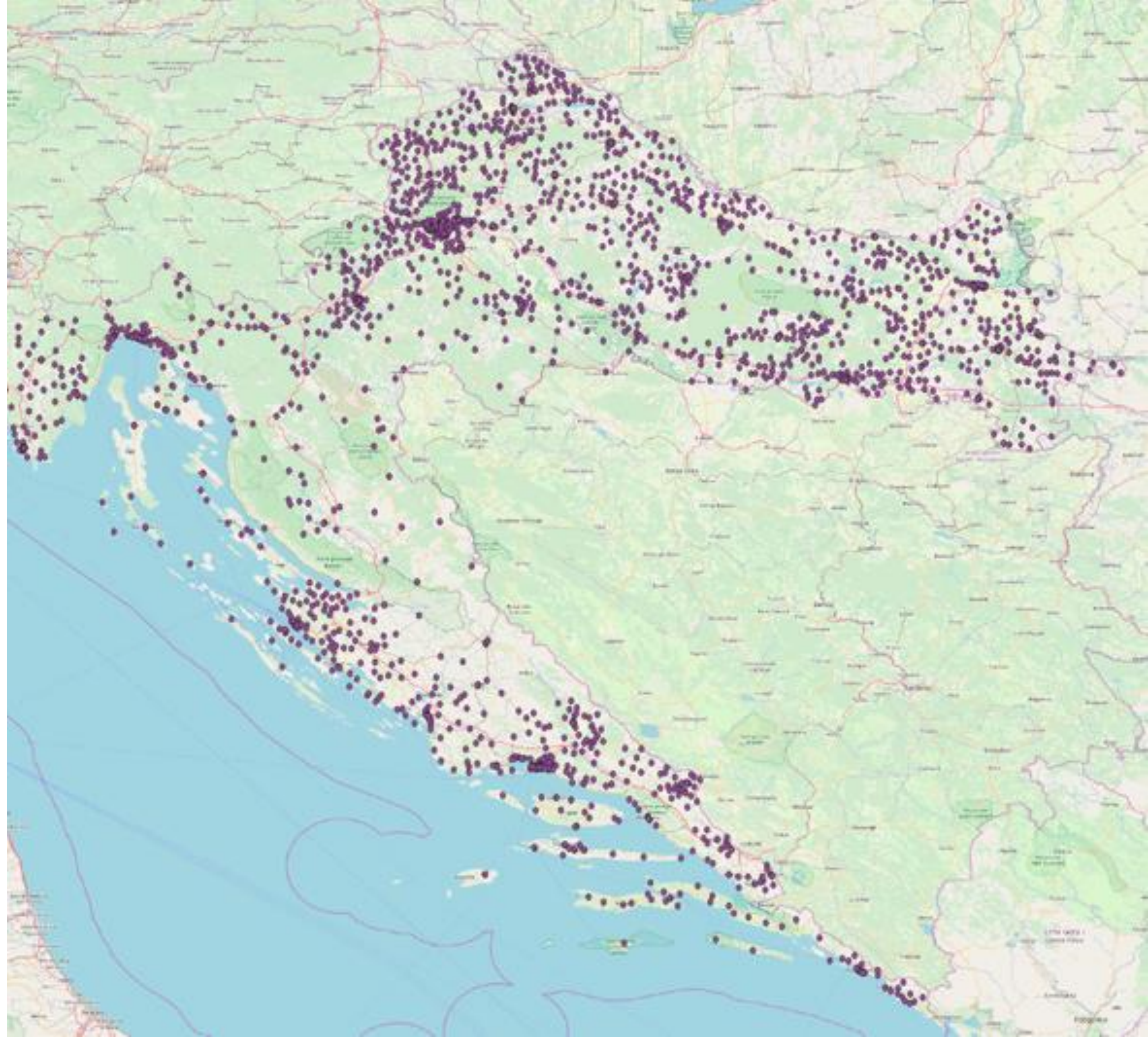
e-Schools project



1317 schools

**Together with pilot
phase and all branch
schools in the villages
more than**

2500 locations!



e – Schools in numbers

- **35 000 APs**
- **8000 switches**
- **70 000 teachers**
- **230 000 students**
- **more than 70 000 laptops, tablets, devices, ...**

Infrastructure schools

- **Local Area Networks – LANs**
- **Laptops for school's staff**
- **Interactive equipment for classrooms**

Infrastructure CARNET

- **Upgrade of CARNET network backbone**
- **Upgrade of data centers**
- **Upgrade of network security infrastructure**

A green speech bubble graphic with a tail pointing downwards, containing the text 'e-services'.

e- services

**AAI@EduHr - Authentication and Authorisation
Infrastructure of science and higher education in Croatia**

**LMS - Learning Management System (online teaching
materials, online classes)**

CMS – Content Management System (schools web)

**e-Class Register - tracking grades of students, tracking
work of all school classes**

A green speech bubble graphic with a white outline, containing the text 'e-services'. The bubble has a tail pointing downwards and to the right.

e- services

CARNET fi - a system for simple authentication for elementary schools

GDPR 360 - a system for user master data management

MDM - a system for centralized mobile device management in schools

ERP for schools

A green speech bubble graphic with a white outline, containing the text 'Main idea'.

Main idea

More infrastructure and services to the schools for students and teachers

but

Move complex IT technology from the schools into the **CARNET cloud!**

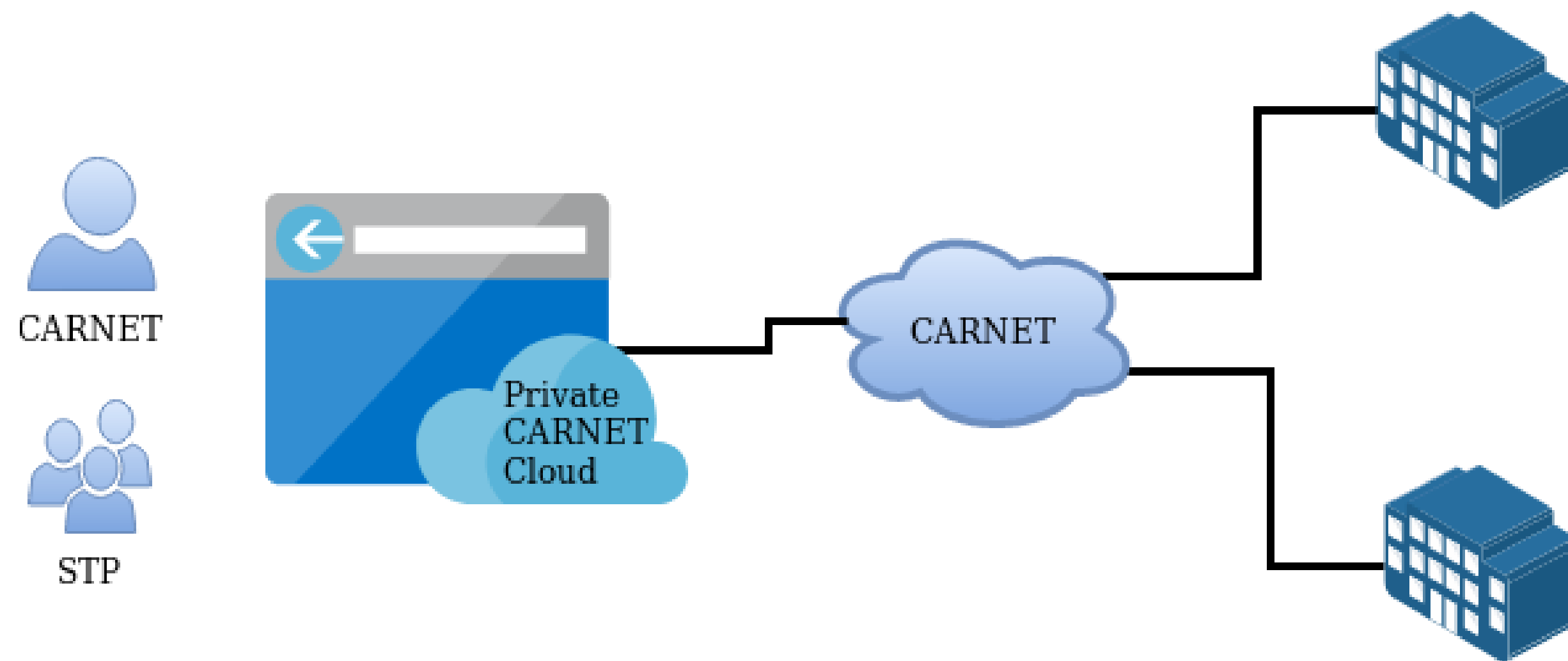
e-Schools LAN

Objective – building Managed LAN Service for schools in Croatia

Technical support of school LAN:

- first level – e-School technician delegated on a per school or per multiple school basis
- second level – CARNET Helpdesk / Mobile Teams (10 agents)
- third level – CARNET NOC or vendor support

Multi-tenancy – for administration/support on each school



Moving complexity into a private CARNET cloud

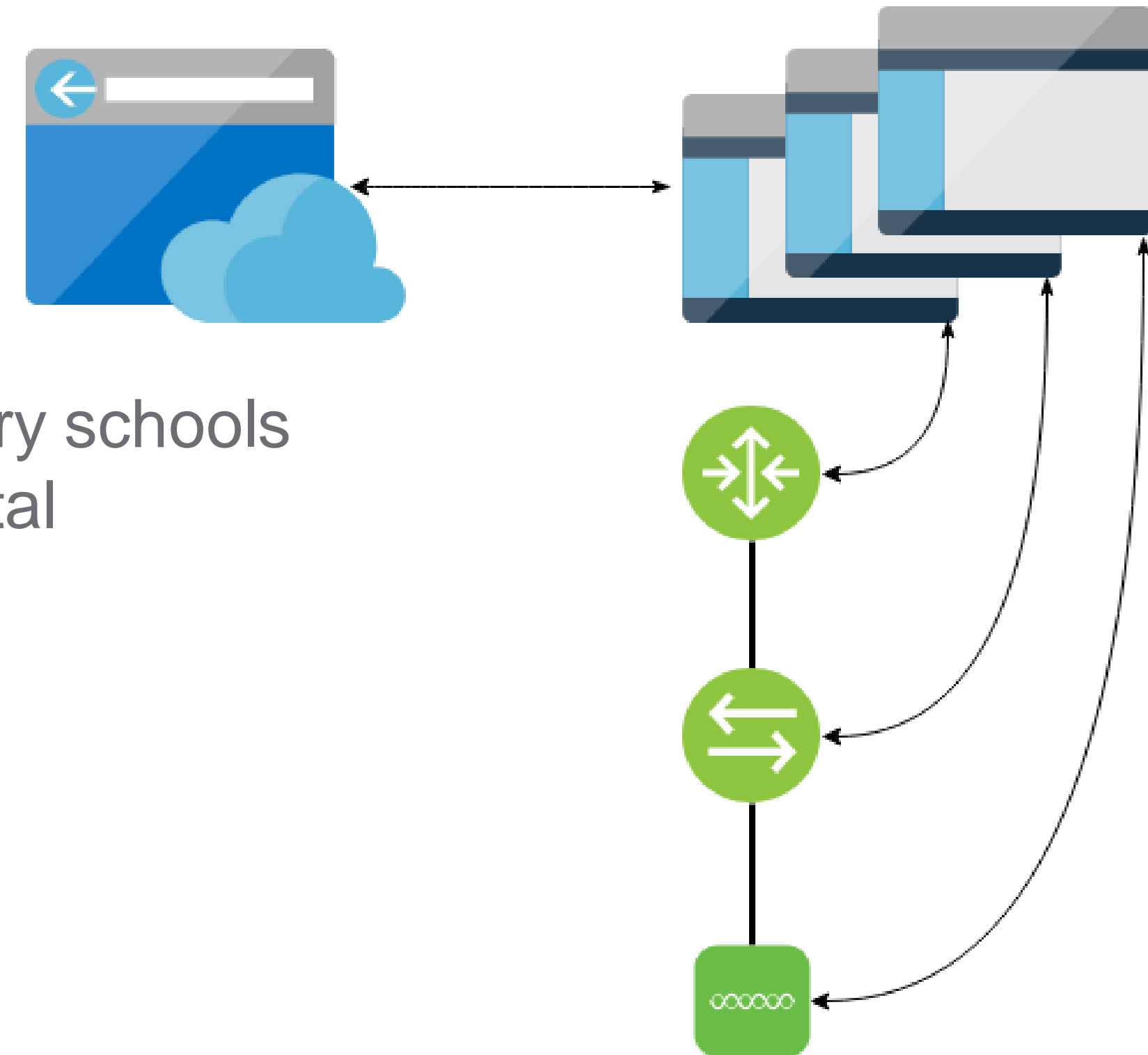
1. Security
2. Management
3. Visibility

e-Schools LAN management

API based umbrella application (to be developed) as part of a self-care portal

Key points:

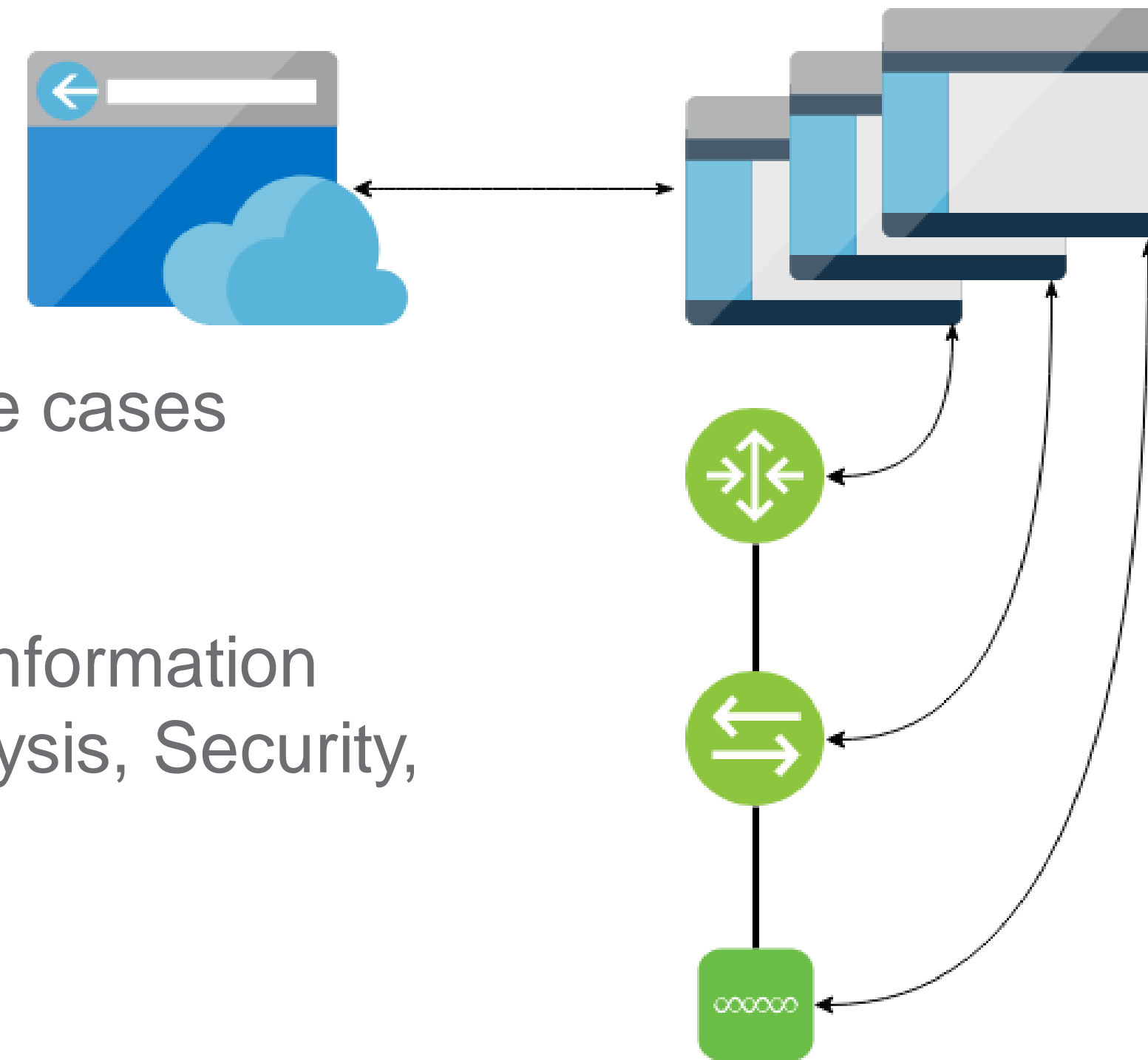
- Simplified authentication and authorization in elementary schools
 - Integration with national AAI@Edu.hr, Captive Portal
- Enabling efficient and proactive troubleshoot:
 - Passive monitoring – production traffic
 - Active monitoring – synthetic simulations



e-Schools LAN management

Key points:

- Network monitoring and provisioning through API
 - School admin perspective -> vendor agnostic
 - Global admin perspective -> CARNET NOC
- Adjusted based on specific needs – school use cases (SIMPLICITY, 1 VIEW OF LAN)
- Network visibility – client, user, application
- Analytics, reporting – correlating all available information
- Topology visualization, Network Behavior Analysis, Security, e-School client device management, etc.



Expected situations / solutions

- School LAN
 - On-site support:
 - Technical knowledge - time needed for the education of people
 - Lack of will to cooperate
 - Financial problems – investing in ICT
 - CARNET capacities – employing additional human resources, educating existing employees

Expected situations / solutions

LAN Cloud Management application – show triggers:

- Number of end-sites and devices
- Lack of on-site engineers / knowledge
- Repeatable tasks
- Multiple vendor equipment (specific knowledge)
- Integrations (AAA, CRM, Self-Care Portal, Security...)

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Q & A

Thank you!