

FIWARE Water DAY

DIGITALISING THE FUTURE OF WATER

17 September 2020, 14:00-16:30 (CEST)

FIWARE in NAIADES Smart Water Platform

Eunah Kim
UDG Alliance



eunah.kim@udgalliance.org



IN COLLABORATION WITH



BUSINESS REPORTER

COMPASSLIST

euobserver

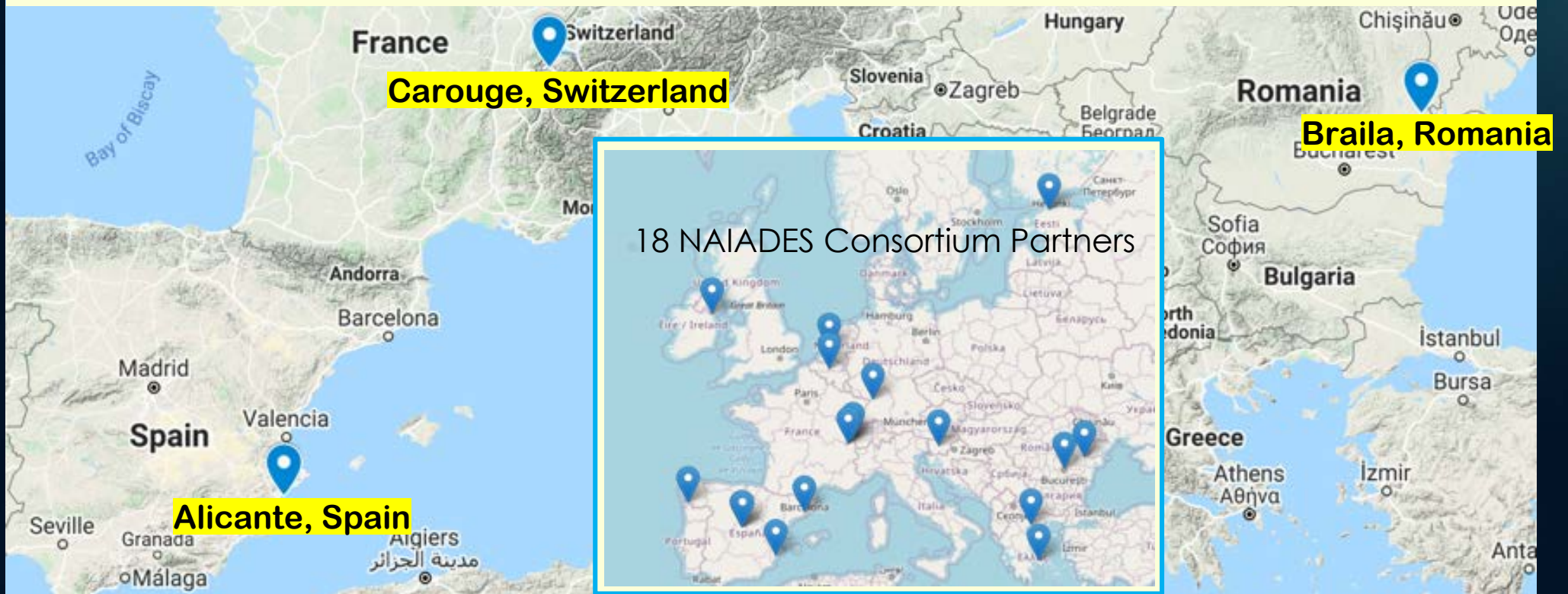


MEDIA PARTNERS

NAIADES in a nutshell

Smart Water Management for Sustainable Development Goals, <https://naiades-project.eu/>

NAIADES supports digitization of the water sector by providing a holistic solution for the control and management of water ecosystems and sustainable and eco-friendly water management.



The needs of the cities – Alicante, Spain

No local water sources and extremely irregular rain events

- **Optimization of water production and energy costs by fulfilling the water demand.**

The seasonal population variation is from 300k to 500k inhabitants, which produces seasonal variation of water demand

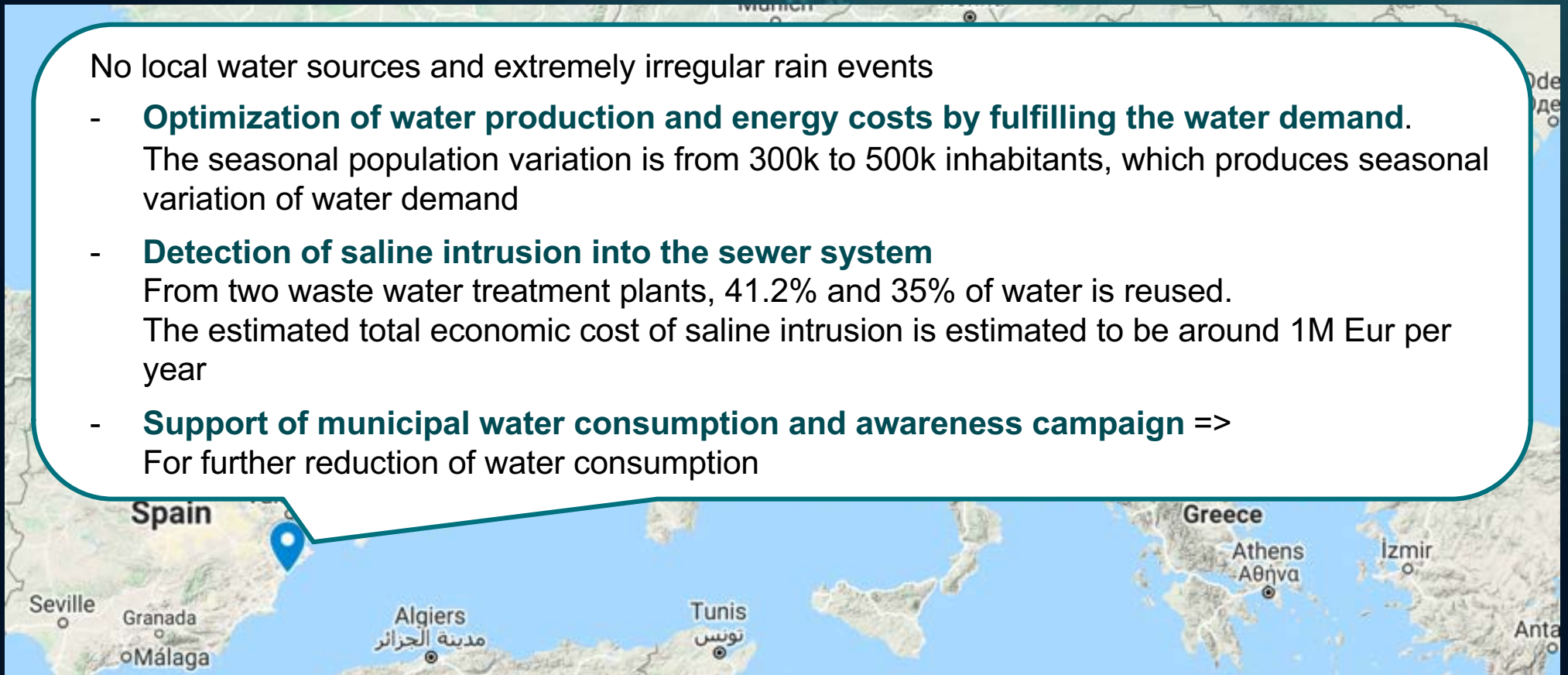
- **Detection of saline intrusion into the sewer system**

From two waste water treatment plants, 41.2% and 35% of water is reused.

The estimated total economic cost of saline intrusion is estimated to be around 1M Eur per year

- **Support of municipal water consumption and awareness campaign =>**

For further reduction of water consumption



The needs of the cities – Braila, Romania

The precipitation: around 500 mm/year. Main source of water: Danube River

- **Detection to reduce leaks in the network**

In 2018, they had 41% of loss/non-revenue water.

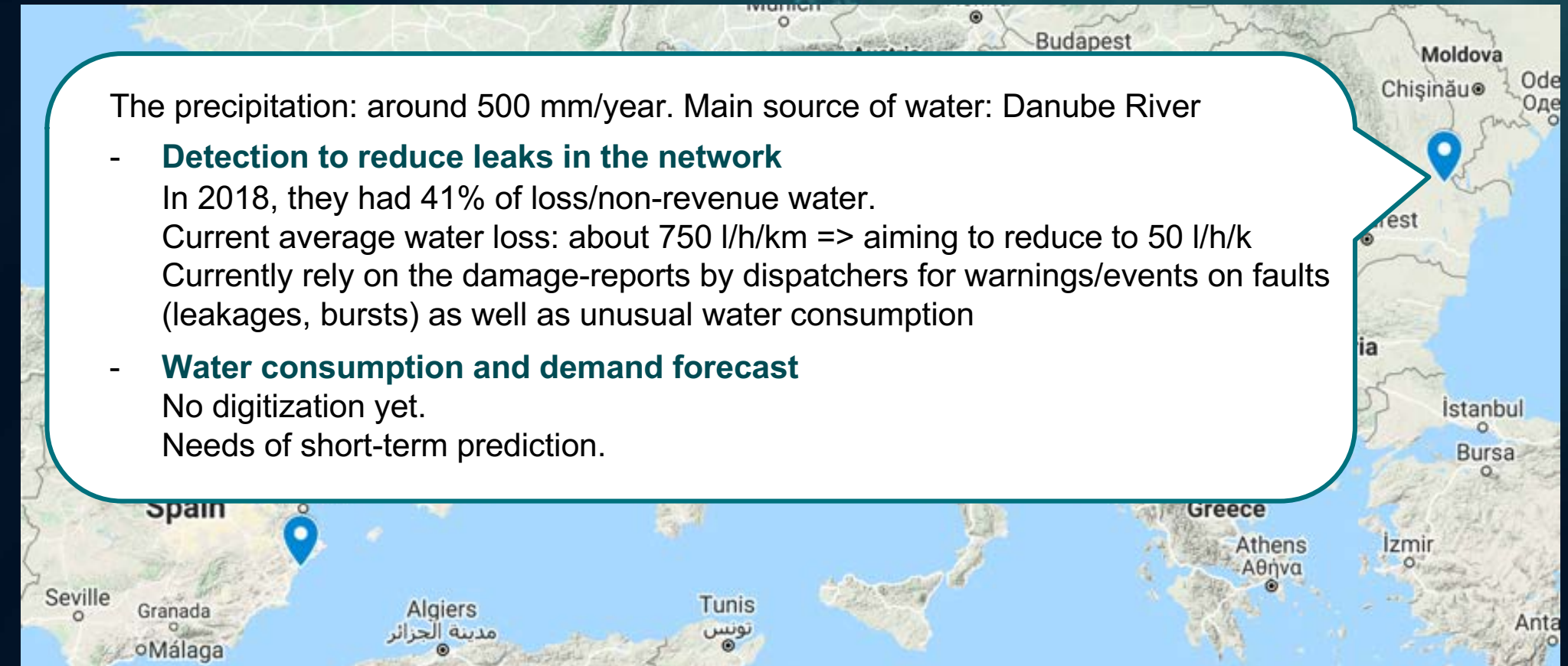
Current average water loss: about 750 l/h/km => aiming to reduce to 50 l/h/k

Currently rely on the damage-reports by dispatchers for warnings/events on faults (leakages, bursts) as well as unusual water consumption

- **Water consumption and demand forecast**

No digitization yet.

Needs of short-term prediction.



The needs of the cities – Carouge, Switzerland

Precipitation amounts: about 1,000 mm per year, Major water source: Lake Geneva

- **Reduction of the amount of water for city gardens and the time of the employees**
180 garden boxes in the city
Inefficient water usage and labour consumption: needs of technological solutions to reduce the costs and time.
- **Automation of water quality information of the city fountains**
Two water fountains people get contact to: the water quality =>public health issue
pH, bacteria and chlorine are manually monitored.
The most popular one, the Fontaine des Tours, has a capacity of 150,000 l and it consumes 2 million liter per year.

Technical Puzzle pieces



Cities



Water Infra data

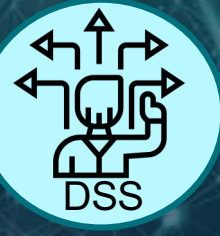
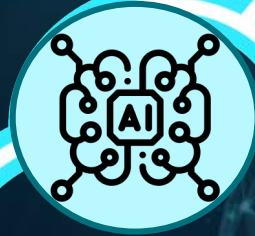
City Infra data

Sensor installation and integration

Open data integration

SCADA Integration

Cloud



Water Demand Prediction

Water Consumption

Failures and Leakages

Urban Water Models

Water Quality Forecast

Weather Prediction

Consumer Confidence

Water Treatment Suggestion

Users



User-friendly visualization

Real-time monitoring

Prediction services

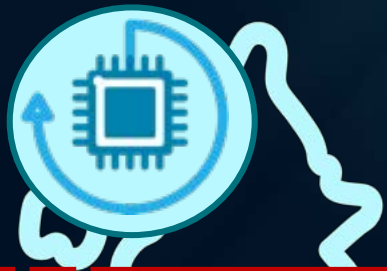
Alarm service for critical events

Consumer Awareness information

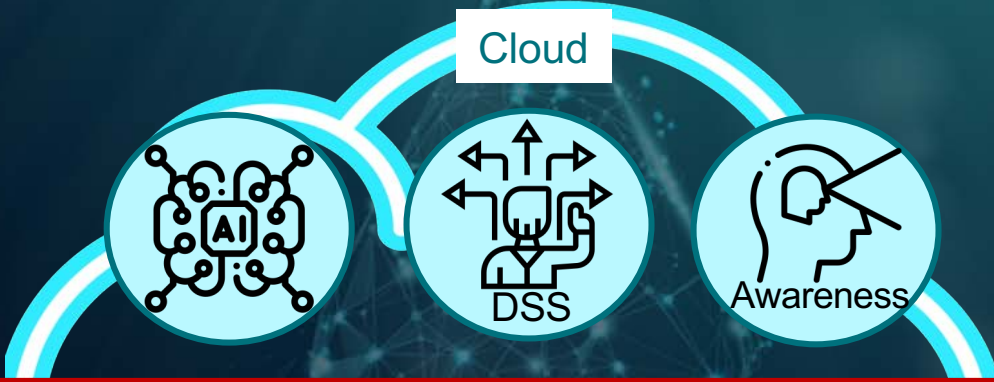
Holistic solutions: Data Interoperability



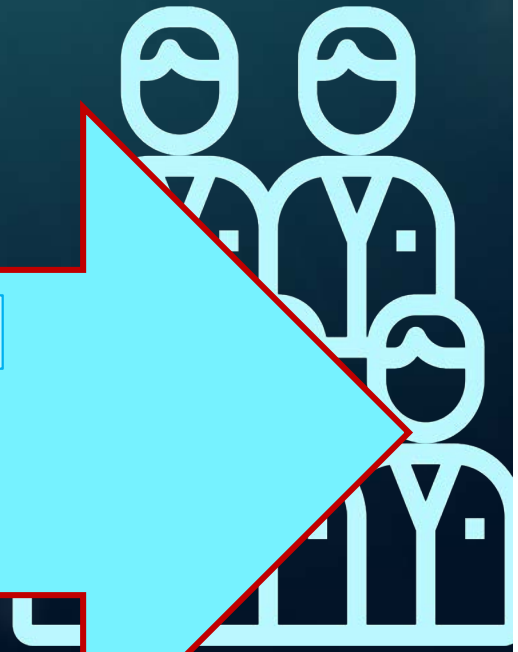
Cities



Cloud



Users



Powered by
FIWARE

Common data model

Standardized Open APIs

Context Management for different services


Identity Management

Access control

From the field work



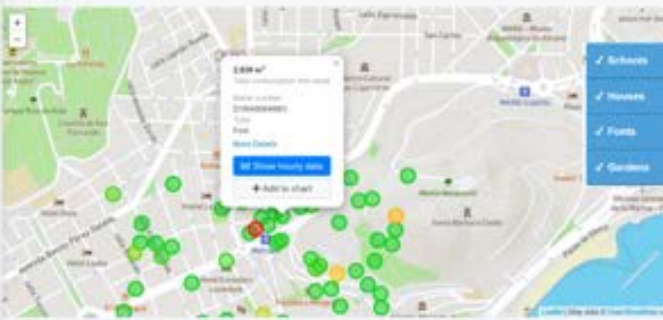
Prototypes of User Application (1/3)



Alexander Pierce

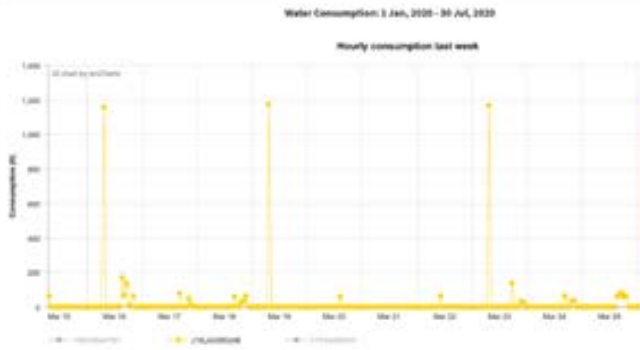
- Dashboard
- Public Gardens
- Font
- Municipal offices
- Municipal Sport facilities
- Schools
- Fire Hydrants
- Irrigation hydrants
- Hydrants
- Houses
- Other Sport facilities

Home Contact Search



Water Consumption

Water Consumption: 1 Jan, 2014 - 30 Jul, 2014



Weekly water consumption

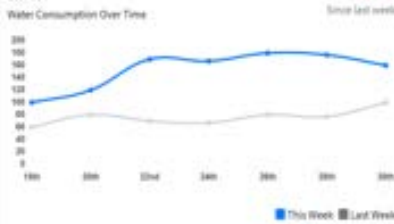
| | |
|----------------|-------|
| School | 501.9 |
| Public Garden | 301.9 |
| Font | 201.1 |
| Sport facility | 165.8 |
| Office | 138.9 |

Alexan

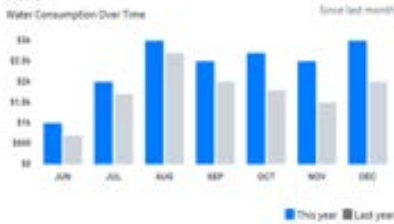
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- Hydrants
- Houses
- Other Sport facilities

Consumption Point 1

Water Consumption: 130 lt ↑ 12.5% Since last week




Monthly water consumption: 180 lt ↑ 12.1% Since last month



Water Consumption Report

Water Consumption: 1 Jan, 2014 - 30 Jul, 2014



| Category | Value |
|----------------------|---------|
| ADD PRODUCTS TO CART | 160/200 |
| COMPLETE PURCHASE | 330/400 |
| VISIT PREMIUM PAGE | 480/500 |
| SEND INQUIRIES | 250/500 |

DAILY CONSUMPTION: 10 lt + 11%

WEEKLY CONSUMPTION: 50 lt + 5%

MONTHLY CONSUMPTION: 200 lt + 20%

YEARLY CONSUMPTION: 1200 lt + 10%

| | | | |
|---------------------|-------|--|---|
| Consumption point 1 | 13 lt | ↑ 12% | 🔍 |
| Another point | 29 lt | ↓ 0.5% | 🔍 |
| Consumption point 1 | 13 lt | ↓ 3% | 🔍 |
| Another point | 29 lt | ↑ 63% | 🔍 |
| Consumption point 1 | 13 lt | ↑ 12% | 🔍 |
| Another point | 29 lt | ↓ 0.5% | 🔍 |

Prototypes of User Application (2/3)

Naiades Map View List View Laurent H. Options

Today Tomorrow View Route

Need Watering Water OK Add New Box

Box Name: Type of soil:
 Type of flowers: Exposure of sun:
 Date of box installation: Box size:

More Details Report Problem

Naiades Map View List View Laurent H. Options

Box Near Carouge Grand Place

Date Filter Start Watering

Box Name: Date of box installation:
 Exposure of sun: Box size:
 Type of soil: Type of flowers:

| Date | Amount of watering | Comments |
|------------------|--------------------|----------|
| 20/03/2020 15:30 | Amount of watering | Comments |
| 21/03/2020 15:30 | Amount of watering | Comments |
| 22/03/2020 15:30 | Amount of watering | Comments |

Naiades Map View List View Laurent H. Options

Today Tomorrow Search Box

Need Watering Water OK Add New Box

| Name | Humidity level | Amount of watering | |
|-------|----------------|--------------------|---|
| Box 1 | 25% | 0.3 lt | > |
| Box 2 | 25% | 0.5 lt | > |
| Box 3 | 25% | 0.4 lt | > |
| Box 4 | 25% | 0.5 lt | > |
| Box 5 | 25% | 0.25 lt | > |
| Box 6 | 25% | 0.6 lt | > |
| Box 7 | 25% | 0.55 lt | > |
| Box 8 | 25% | 0.4 lt | > |

Prototypes of User Application (3/3)

Fountain des Tours
Fri, May 29, 2020

Current Status

Water quality: **Medium**

Foreign Objects: **Yes** **No**

Swimmers: **Yes** **No**

People: 12

Animals: 8

Reported Issues: 2

Reported Issues Feed

- Water quality dropped to medium
- Sensor 03 Failure. Check for damage.

Water Quality

| | |
|----------------|---------------|
| PH Level | 12 |
| Avg per hour | 13 |
| Avg per day | 15 |
| Chlorine Level | 13 |
| Avg per hour | 12 |
| Avg per day | 12 |
| Chloride Level | 12 |
| Avg per hour | 12 |
| Avg per day | 15 |
| Temperature | 10 |
| Avg per hour | 10.5 |
| Avg per day | 12 |
| Water Quality | Medium |
| Avg per hour | Medium |
| Avg per day | Good |

Weather Forecast

| | |
|-----------------|-------------|
| Temperature | 10 °C |
| Rain | 2.0 (mm/hr) |
| Solar radiation | 12 (W/m²) |
| Wind velocity | 15 (km/h) |

Water Consumption

Radu Negru district, Braiila

Daily Report

Water Flow

Noise Sensors

Water Pressure

DASHBOARD

Urban Water Models

Water Treatment

- WT1: Chemical Addition
- WT2: Sedimentation and Clarification
- WT3: Chemical Addition
- WT4: Filtration

Water Treatment Models

| | |
|-------------------------------------|----|
| Water Quality Index | 98 |
| Total Suspended Solids - TSS (mg/L) | 23 |
| TDC (mg/L) | 2 |
| Total Phosphorus - TP (mg/L) | 4 |
| Total Nitrogen - TN (mg/L) | 1 |
| Ammonia nitrogen (mg/L) | 0 |
| Pathogens (E. coli, Salmonella) | 43 |
| Flow (m³/s) | 23 |
| Coagulant dose (mg/L) | 23 |
| O ₃ -D ₄ | 12 |
| Chlorine dose (mg/L) | 21 |

Weather Forecast

| | |
|-----------------|-------------|
| Temperature | 10 °C |
| Rain | 2.0 (mm/hr) |
| Solar radiation | 12 (W/m²) |
| Wind velocity | 15 (km/h) |

Water Consumption

Failure & Leakage

Quality Forecast: 98

Water Demand: 23%

Consumer Confidence: 76%

#FIWAREWaterDAY



Thank you for listening

Eunah Kim
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eunah.kim@udgalliance.org



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Our Future Water

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