

AUTO-X:

Autonomous biomonitoring - A citizen science project to monitor water quality under the influence of climate change



Hydroguard UG <https://hydroguard-iot.de/>

Algae App LLC



Lack of oxygen: Vicious circle in the lake

Stand: 02.02.2024 10:25 Uhr

Once lakes have too little oxygen, it is hard to bring them back to a good condition. This is often caused by nutrients from agricultural runoff during increasingly vicious rainfall events due to climate change effects.

AUTO-X:

Autonomous biomonitoring - A citizen science project to monitor water quality under the influence of climate change



Climate Change,
Extreme Weather Conditions

Warming of Lake Water

Toxic algal blooms,
fish kills,
habitat alteration,
food poisoning

Human health
and well-being

Traditional Monitoring

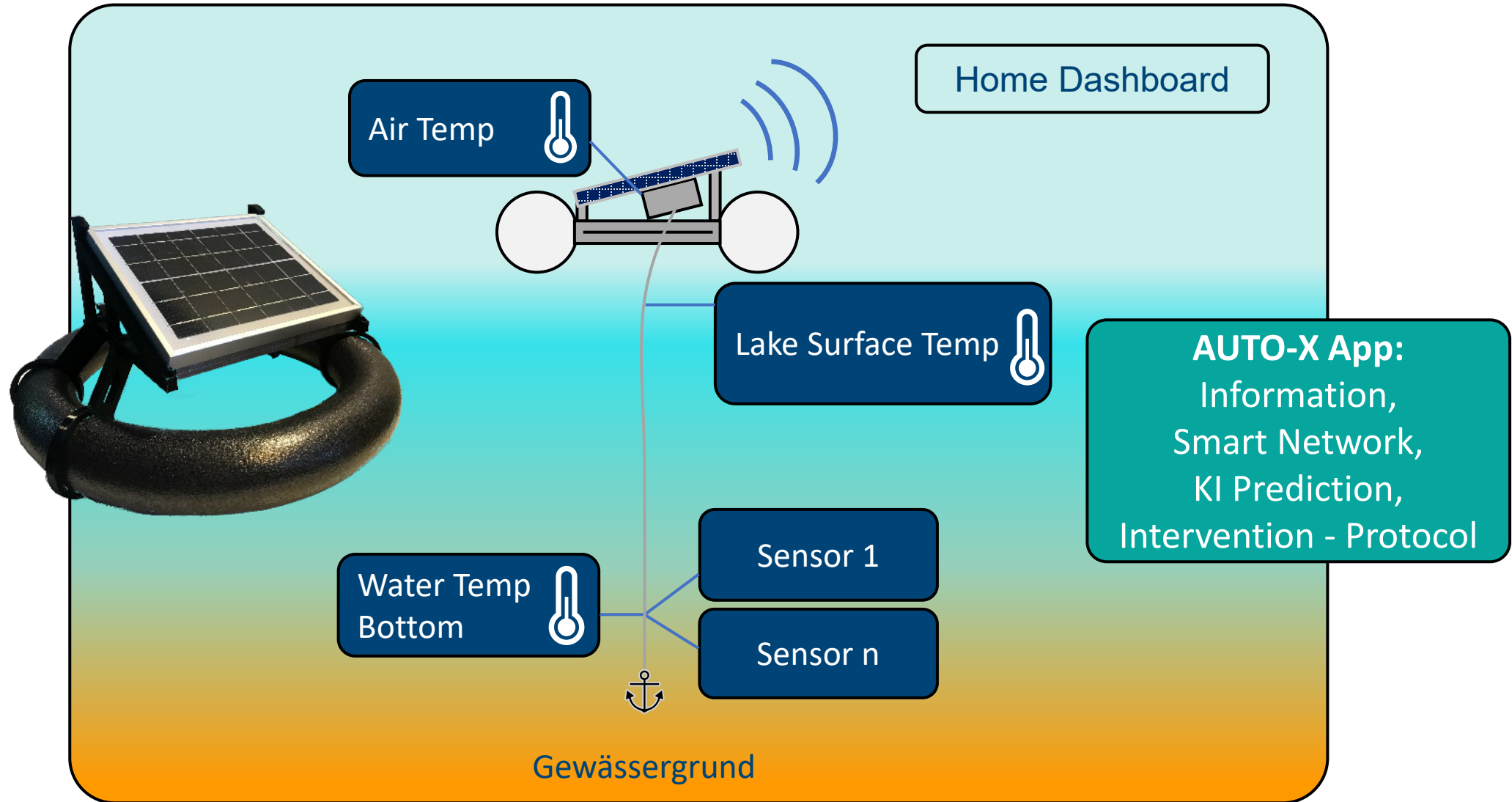


- Labor-intensive Manual Sampling
- Time allowance for Onsite Sampling
- Laboratory Analysis
- Expert Evaluation
- Cost-intensive Equipment
- Status Assessment



Autonomous Real Time Monitoring: **HYDROGUARD**

- Autonomous Automated Data Acquisition
- Efficient LoRaWAN Transmission
- Dashboard and Real-Time Information
- Detection: Manipulation, Damage
- Design: Cost-efficient, Environmentally-friendly
- **KI: Prediction**
- **Crisis Intervention Protocol**
- **Citizen Sciences: Smart Network**



AUTO-X: Join and work both ways



AUTO-X
Citizen Sciences App:

- Attractive
- Interactive



Institutions
Home Dashboard

Information,
Smart Network,
KI Prediction,
Intervention - Protocol



AUTO-X: What we need for Citizen Sciences

Web – App (Browser):

User Benefits and Incentives: Why should I play?

- Gamification:
 - Pokemon Go -> Pokestop at the Buoy
- Voucher:
 - For local stores (List to be negotiated with the town in question)
- Information:
 - FAQ about HAB [see old Storyboard]
 - Local Lake/River Information [brief Text]

AUTO-X: What we need for Citizen Sciences

App Output: What can I learn?

- Buoy/Location
- Buoy Data:
 - Temperature (Air and Water),
 - Traffic Light Warning (AI Prediction)
- Weather Data:
 - Closest Station, Precipitation (Weather API)
- Copernicus Sentinel Satellite Data:
 - Satellite Image of Location
 - last NDCI Chlorophyll Index

AUTO-X: What we need for Citizen Sciences

User Input: What can I contribute?

- Image of the Buoy (targetpoint in camera with QR Code) and surrounding water including Metadata (Location/Time)
- Beach description:
 - Visual:
 - Beach: Scum – No Scum
 - Water Clarity: Can see the bottom – Can not
 - Dead Fish: Yes - No
 - Odor:
 - neutral – smelly

AUTO-X: What you start with

- Getting into the Spirit: Information to the Public (Leaflet)
- Joining the Team: Learn more about the AUTO-X Project
- Sipping the Science: Project Publications
- Depicting the Scene: Image Library
- Diving into the Web:
 - UWP App Factory: <https://appfactoryuwp.com/projects/algae-app>
 - Social Media / Video Link: <https://youtu.be/Ac6tzjYrraQ>
 - SME: <https://hydroguard-iot.de/>
- Inventing New: Old Story Board
- Asking Questions: We are out there – contact us!



Yes, we can: Vote for Auto-X

