WaterAPProval

Project presentation

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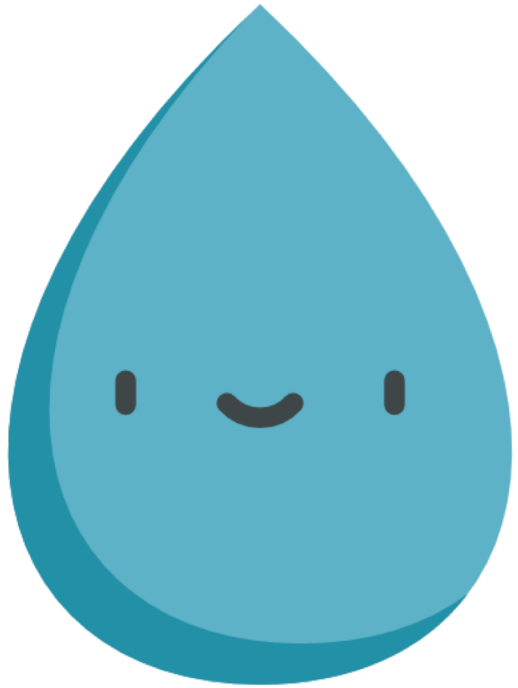
Design and Implementation of Mobile Applications
(A.Y. 2019/2020) – Politecnico di Milano

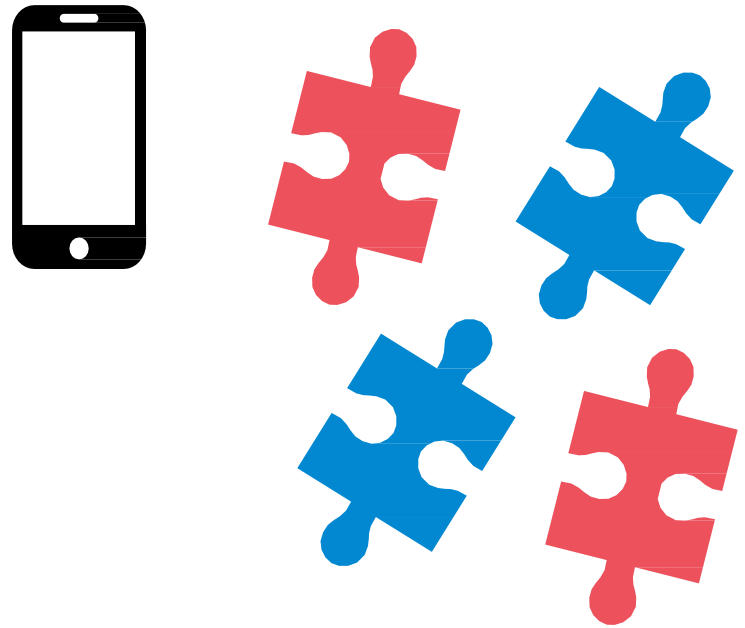
ELEVATOR PITCH!

https://youtu.be/kHbYwKZ56fw

Context



Design



Overview

Principle of clean architecture:

"The goal is to keep core **business logic** separate from the **UI**, **database**, **network** and **third-party packages**"

Main idea:
Define separate application layers for different areas of concern
UI
business logic
services

Overview

Principle of clean architecture:

"The goal is to keep core **business logic** separate from the **UI**, **database**, **network** and **third-party packages**"

Main idea:
Define separate application layers for different areas of concern:

UI, business logic, services ➔ MVC design pattern

Other design decisions

External web-service APIs

Aquapp API 2.0

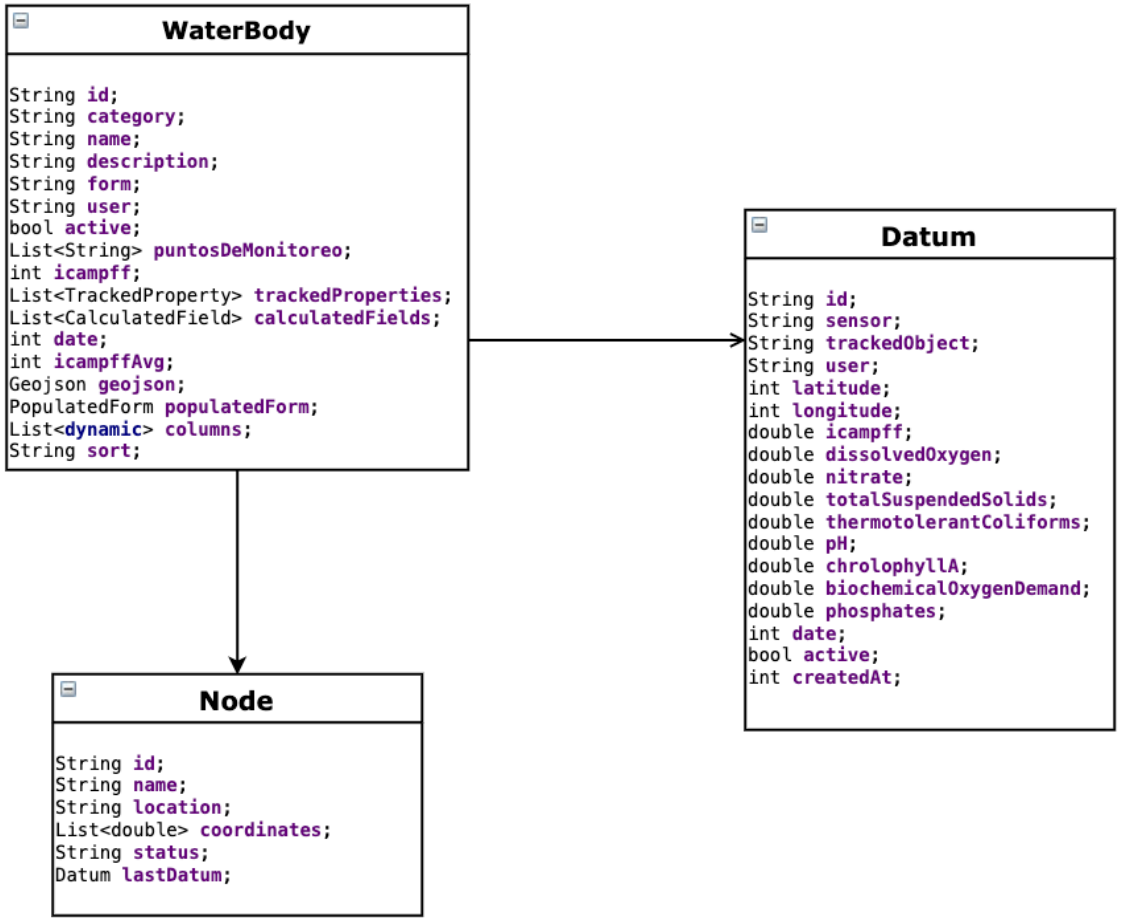
AquApp

Google Maps API (v2)

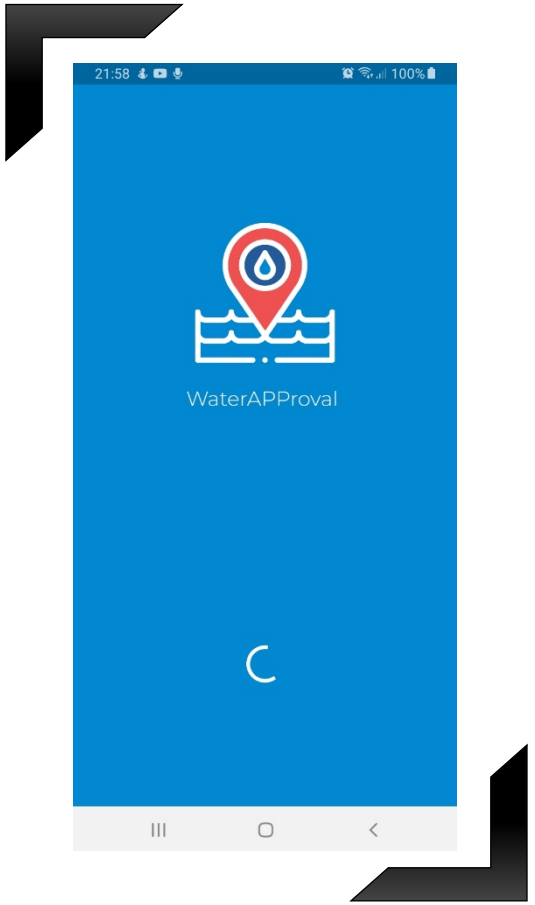
Invemar ICAM web service

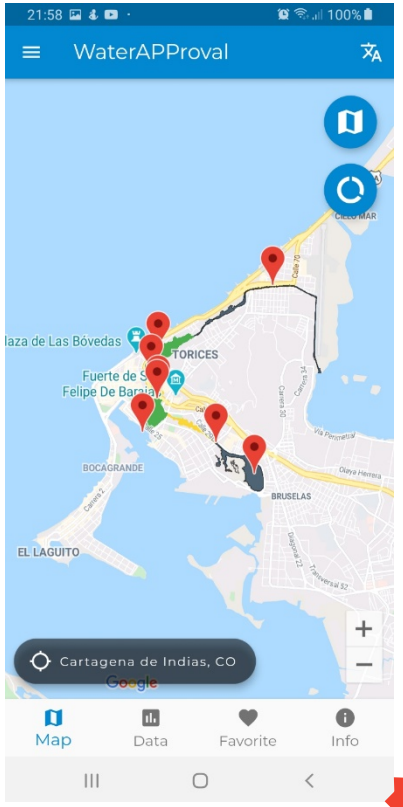
invemar

Local Data model

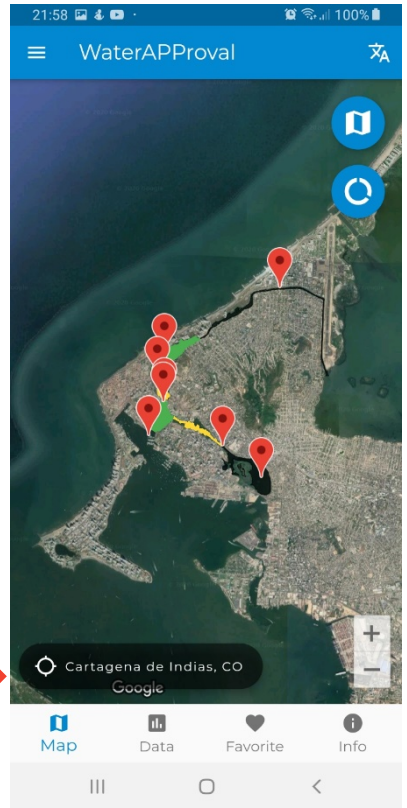


User interface




21:58 100%
WaterAPProval
Cartagena de Indias, CO
Map
Data
Favorite
Info

1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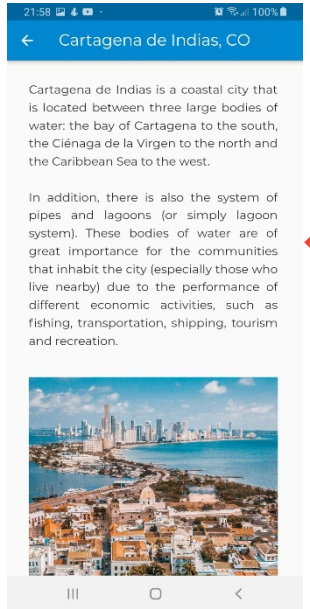
WaterAPProval
Cartagena de Indias, CO
Map
Data
Favorite
Info

2

3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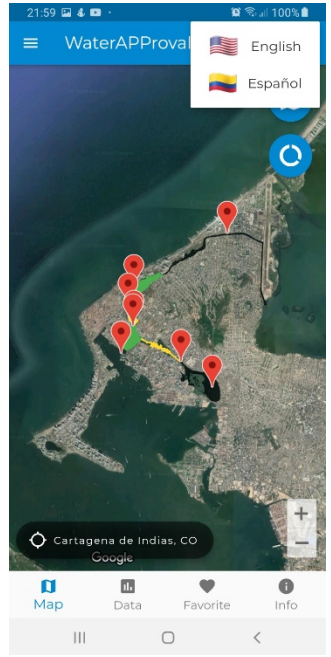
Cartagena de Indias, CO
Cartagena de Indias is a coastal city that is located between three large bodies of water: the bay of Cartagena to the south, the Ciénaga de la Virgen to the north and the Caribbean Sea to the west.
In addition, there is also the system of pipes and lagoons (or simply lagoon system). These bodies of water are of great importance for the communities that inhabit the city (especially those who live nearby) due to the performance of different economic activities, such as fishing, transportation, shipping, tourism and recreation.

1

2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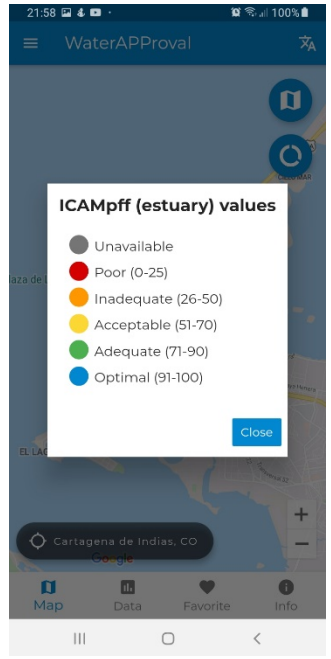
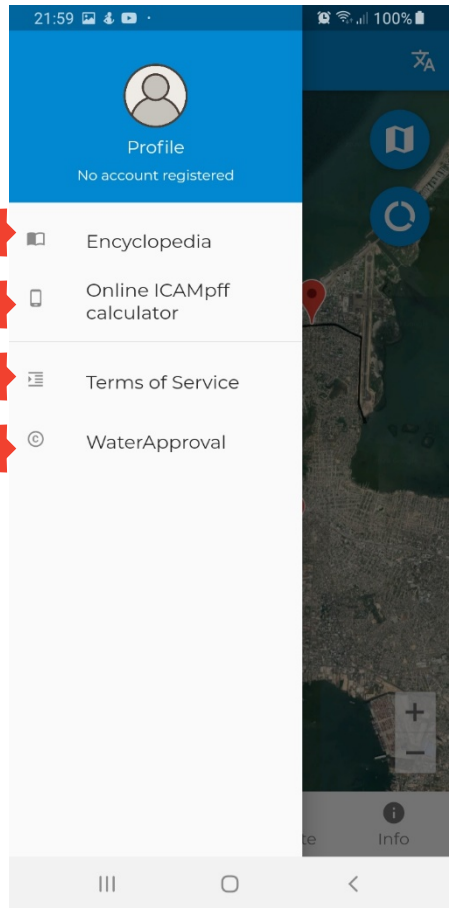
WaterAPProval
English
Español
Cartagena de Indias, CO
Map
Data
Favorite
Info

3


21:58 100%
WaterAPProval
ICAMpff (estuary) values
Unavailable
Poor (0-25)
Inadequate (26-50)
Acceptable (51-70)
Adequate (71-90)
Optimal (91-100)
Close
Map
Data
Favorite
Info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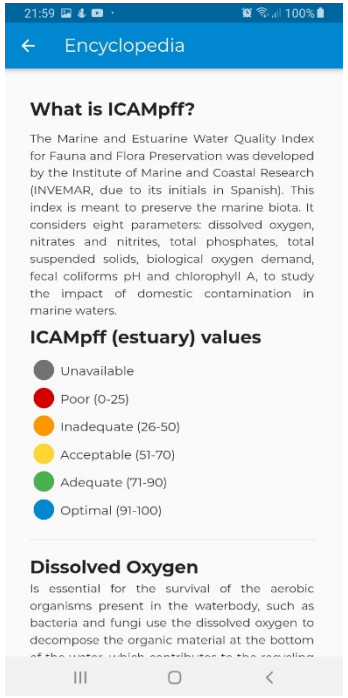
100%
Profile
No account registered
1
Encyclopedia
2
Online ICAMpff calculator
3
Terms of Service
4
WaterApproval
Info

1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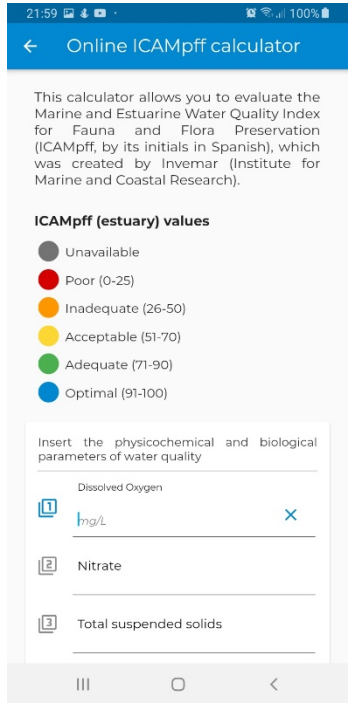
Encyclopedia
What is ICAMpff?
The Marine and Estuarine Water Quality Index for Fauna and Flora Preservation was developed by the Institute of Marine and Coastal Research (INVEMAR, due to its initials in Spanish). This index is meant to preserve the marine biota. It considers eight parameters: dissolved oxygen, nitrates and nitrites, total phosphates, total suspended solids, biological oxygen demand, fecal coliforms pH and chlorophyll A, to study the impact of domestic contamination in marine waters.
ICAMpff (estuary) values
Unavailable
Poor (0-25)
Inadequate (26-50)
Acceptable (51-70)
Adequate (71-90)
Optimal (91-100)
Dissolved Oxygen
Is essential for the survival of the aerobic organisms present in the waterbody, such as bacteria and fungi use the dissolved oxygen to decompose the organic material at the bottom

2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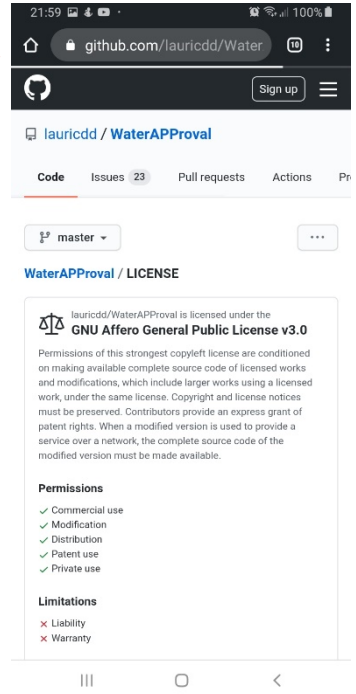
Online ICAMpff calculator
This calculator allows you to evaluate the Marine and Estuarine Water Quality Index for Fauna and Flora Preservation (ICAMpff, by its initials in Spanish), which was created by Invemar (Institute for Marine and Coastal Research).
ICAMpff (estuary) values
Unavailable
Poor (0-25)
Inadequate (26-50)
Acceptable (51-70)
Adequate (71-90)
Optimal (91-100)
Insert the physicochemical and biological parameters of water quality
Dissolved Oxygen
mg/L
Nitrate
Total suspended solids

3


21:59
100%
github.com/lauricdd/Water
Sign up
lauricdd / WaterAPProval
Code
Issues 23
Pull requests
Actions
master
WaterAPProval / LICENSE
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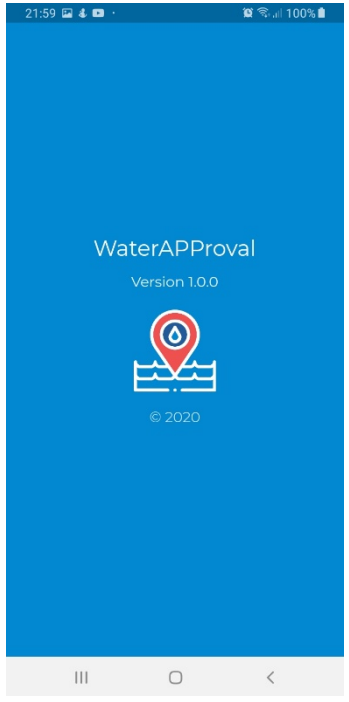
4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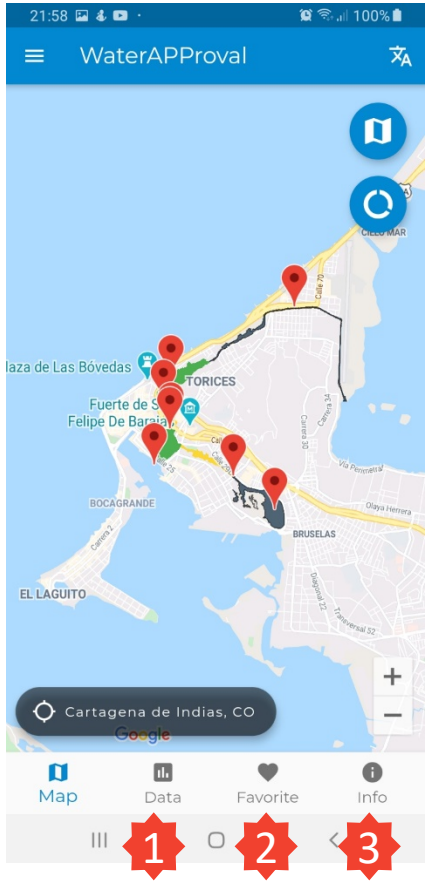
WaterAPProval
Version 1.0.0
© 2020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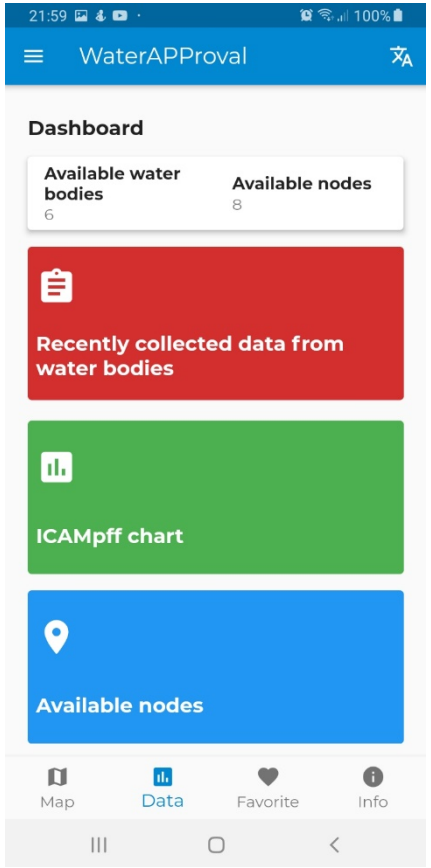
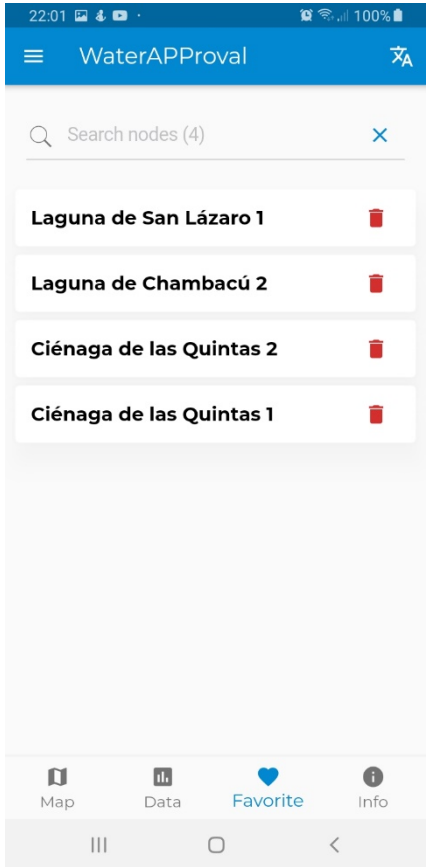
WaterAPProval
Cartagena de Indias, CO
Map
Data
Favorite
Info
1
2
3

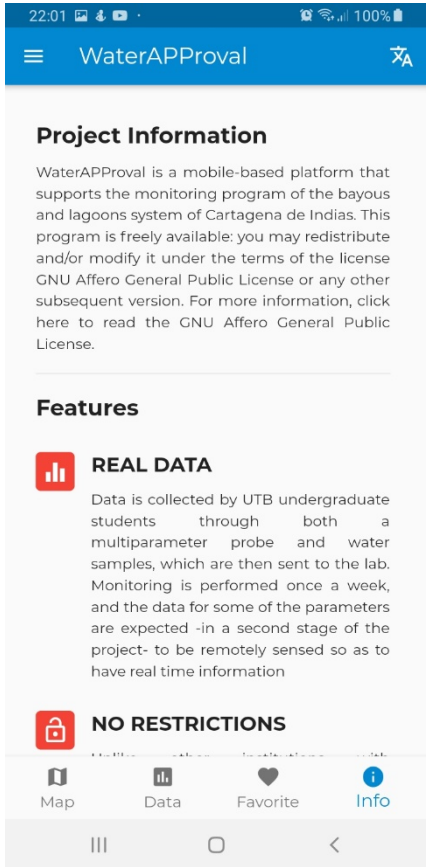
1


21:59
100%
WaterAPProval
Dashboard
Available water bodies
6
Available nodes
8
Recently collected data from water bodies
ICAMpff chart
Available nodes
Map
Data
Favorite
Info

2


22:01
100%
WaterAPProval
Search nodes (4)
Laguna de San Lázaro 1
Laguna de Chambacú 2
Ciénaga de las Quintas 2
Ciénaga de las Quintas 1
Map
Data
Favorite
Info

3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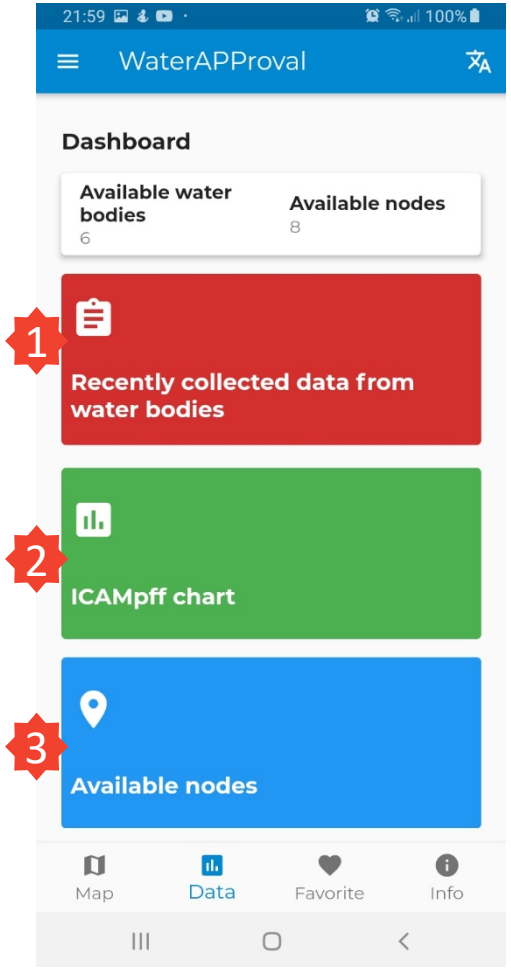
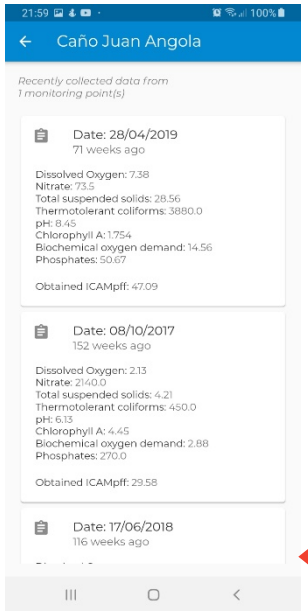
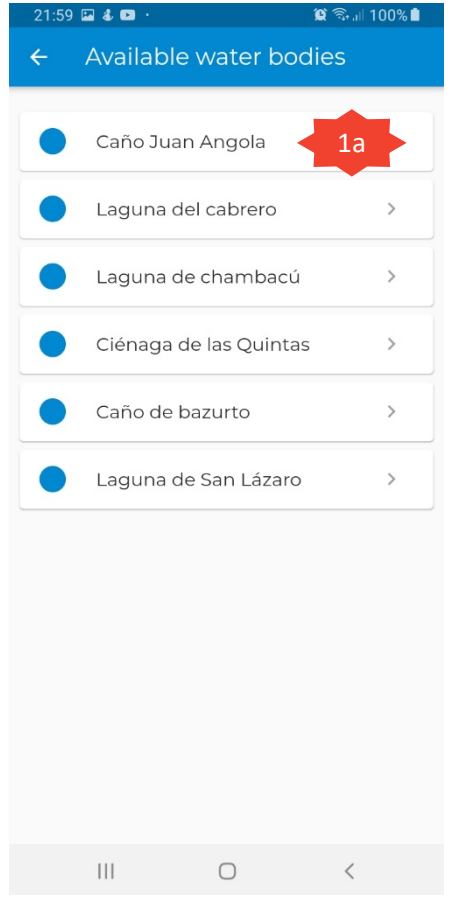
100%
WaterAPProval
Project Information
WaterAPProval is a mobile-based platform that supports the monitoring program of the bayous and lagoons system of Cartagena de Indias. This program is freely available: you may redistribute and/or modify it under the terms of the license GNU Affero General Public License or any other subsequent version. For more information, click here to read the GNU Affero General Public License.
Features
REAL DATA
Data is collected by UTB undergraduate students through both a multiparameter probe and water samples, which are then sent to the lab. Monitoring is performed once a week, and the data for some of the parameters are expected -in a second stage of the project- to be remotely sensed so as to have real time information
NO RESTRICTIONS
Map
Data
Favorite
Info

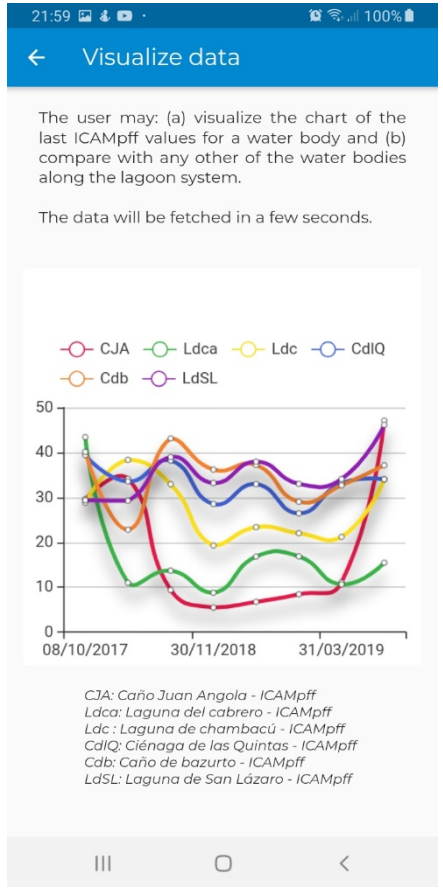

21:59 100%
WaterAPProval
Dashboard
Available water bodies
6
Available nodes
8
1
Recently collected data from water bodies
2
ICAMpff chart
3
Available nodes
Map
Data
Favorite
Info


21:59 100%
Caño Juan Angola
Recently collected data from 1 monitoring point(s)
Date: 28/04/2019
71 weeks ago
Dissolved Oxygen: 7.38
Nitrate: 73.5
Total suspended solids: 28.56
Thermotolerant coliforms: 3880.0
pH: 8.45
Chlorophyll A: 1.754
Biochemical oxygen demand: 14.56
Phosphates: 50.67
Obtained ICAMpff: 47.09
Date: 08/10/2017
152 weeks ago
Dissolved Oxygen: 2.13
Nitrate: 2140.0
Total suspended solids: 4.21
Thermotolerant coliforms: 450.0
pH: 6.13
Chlorophyll A: 4.45
Biochemical oxygen demand: 2.88
Phosphates: 270.0
Obtained ICAMpff: 29.58
Date: 17/06/2018
116 weeks ago

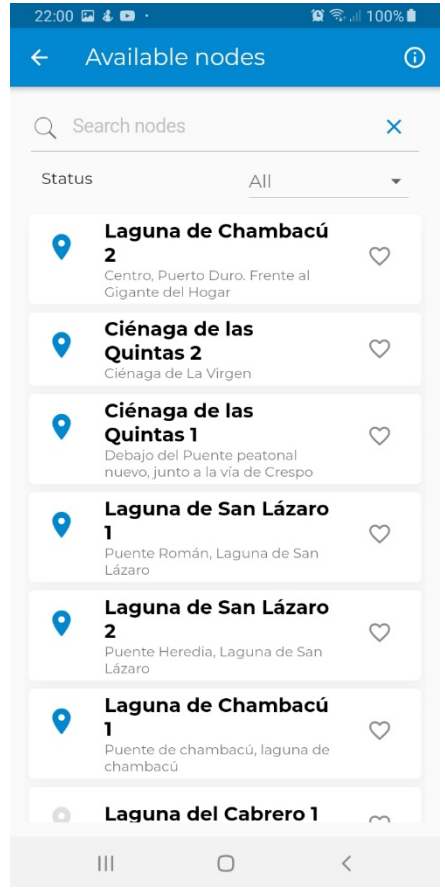
1a

1


21:59 100%
Available water bodies
Caño Juan Angola
1a
Laguna del cabrero
Laguna de chambacú
Ciénaga de las Quintas
Caño de bazurto
Laguna de San Lázaro


21:59 100%
Visualize data
The user may: (a) visualize the chart of the last ICAMpff values for a water body and (b) compare with any other of the water bodies along the lagoon system.
The data will be fetched in a few seconds.
CJA
Ldca
Ldc
CdlQ
Cdb
LdSL
50
40
30
20
10
0
08/10/2017
30/11/2018
31/03/2019
CJA: Caño Juan Angola - ICAMpff
Ldca: Laguna del cabrero - ICAMpff
Ldc : Laguna de chambacú - ICAMpff
CdlQ: Ciénaga de las Quintas - ICAMpff
Cdb: Caño de bazurto - ICAMpff
LdSL: Laguna de San Lázaro - ICAMpff

2


22:00 100%
Available nodes
Search nodes
Status
All
Laguna de Chambacú 2
Centro, Puerto Duro. Frente al Gigante del Hogar
Ciénaga de las Quintas 2
Ciénaga de La Virgen
Ciénaga de las Quintas 1
Debajo del Puente peatonal nuevo, junto a la vía de Crespo
Laguna de San Lázaro 1
Puente Román, Laguna de San Lázaro
Laguna de San Lázaro 2
Puente Heredia, Laguna de San Lázaro
Laguna de Chambacú 1
Puente de chambacú, laguna de chambacú
Laguna del Cabrero 1

3

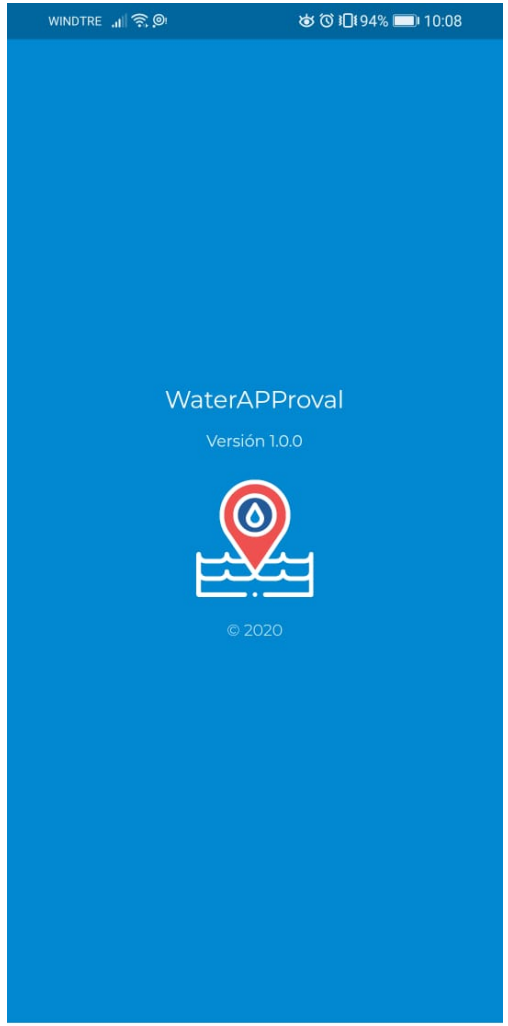
Requirements

- Map visualization with nodes and water bodies
- Data visualization in different ways
- Online ICAMpff calculator
- Encyclopedia
- Favorites
- Multi-language feature
- …

Test plan

ID	Description	Importance
TC01	Validate data fetching from external APIs	High
TC02	Validate if the user is able to the visualize the map	High
TC03	Validate if the user is able to visualize the data on the dashboard	High
TC04	Validate icampff computation done by the calculator	Medium
TC05	Validate multi-language feature	Medium
TC06	Validate data persistence of favorite nodes and selected language	Medium
TC07	Validate if the user is able to tap on the markers of the map to get node information.	Low

DEMO TIME !



QUESTIONS?