

Citizen Science for Promoting Public Engagement with Science

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Citizen science

Citizen science is the involvement of volunteers, in scientific research projects (Silvertown 2009).

Citizen science outcomes can be assigned to one or more categories:

1. Science- research finding, publications.
2. Society- action, legislation, building relationships.
3. Individuals- skills, knowledge, identity. (Shirk et al., 2012)

Sensing The Air



Citizen science initiative for involving citizens in air quality research and empowering them through collaborative efforts.

- Collaboration between the Technion and citizens
- Many local measurements
- Easy access to data
- Social platform
- Empower citizens through the collection and interpretation of meaningful and reliable data

Public Engagement with Science

An approach in science communication which advocates creating a dialogue between citizens and scientists, determining public desires and needs and encouraging transparency and collective decision making. (McCallie 2009, Brossard & Lewenstein, 2009)

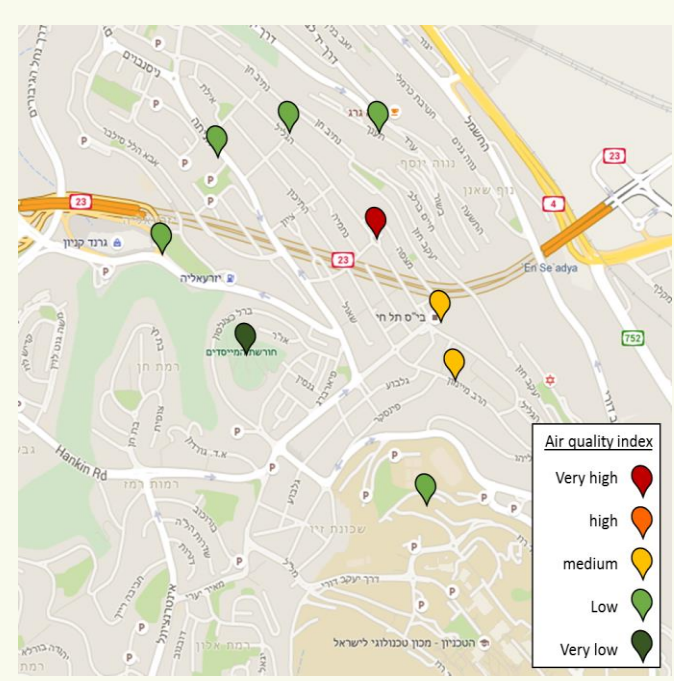


User Centered Design

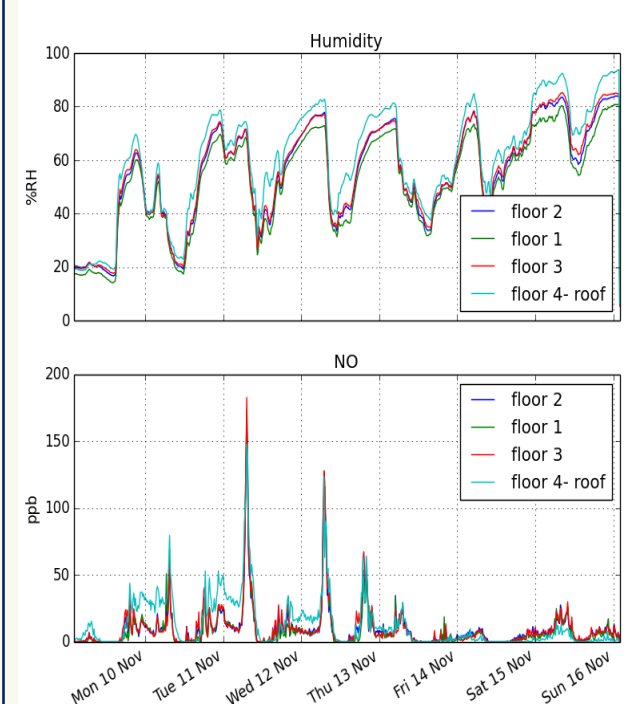
A user-centered design approach was used to design a data collection and presentation platform for Sensing The Air. It is based on active involvement of users, to improve the understanding of platform requirements, and conduct design and evaluation iterations (Preece 2000).

How do people want to view data?

Overview map



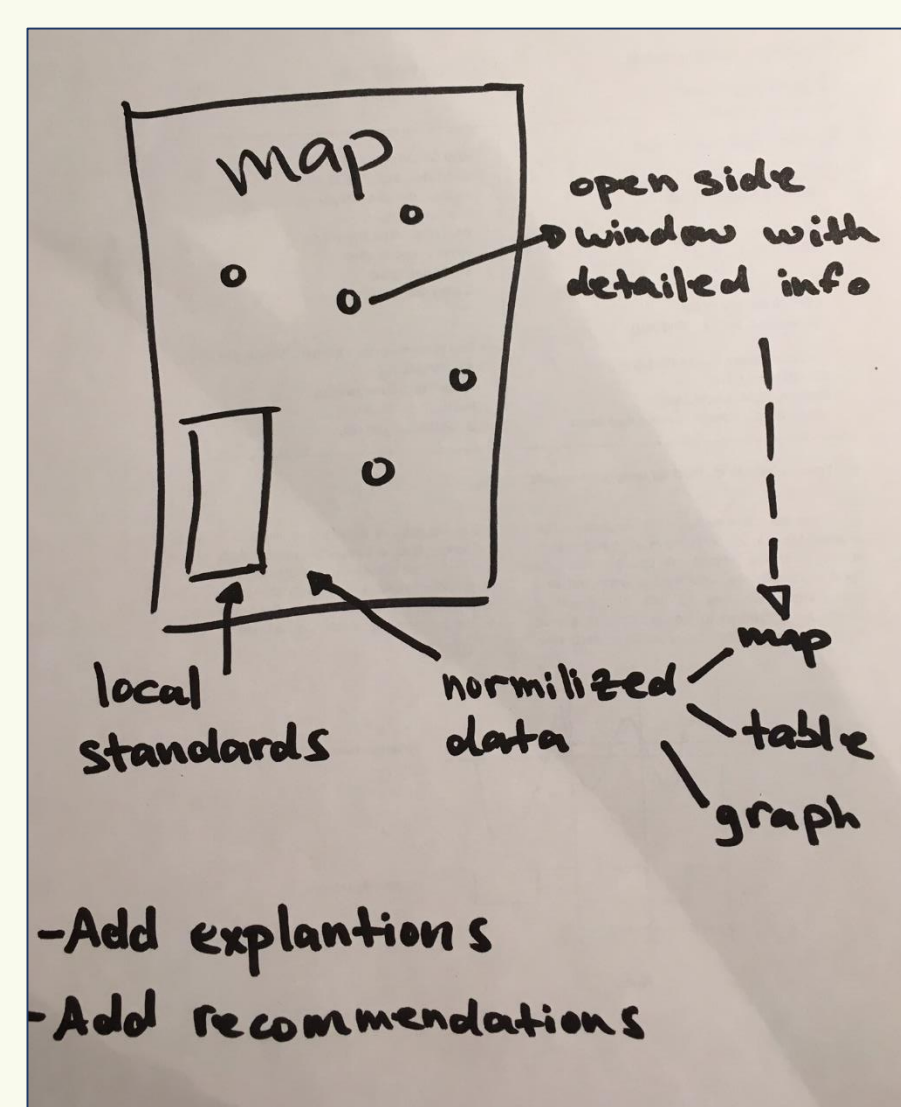
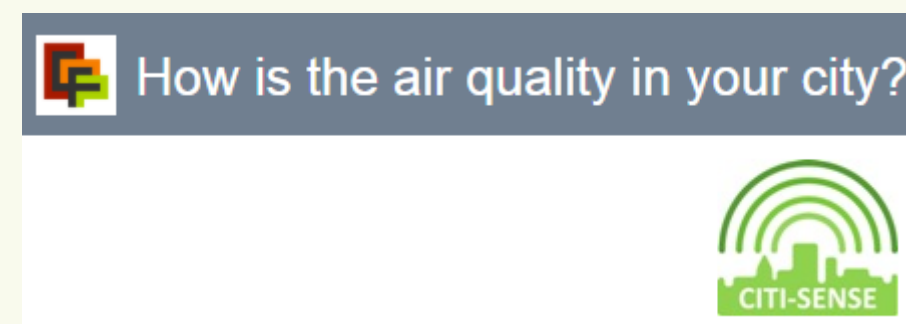
Distributions graphs



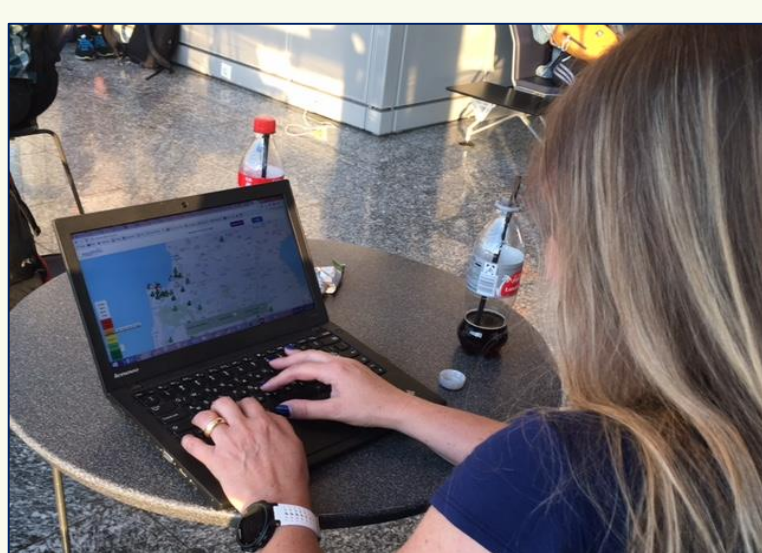
Raw measurement

Time	O3	Dust	No2
14:15 10/01/2015	57	4	20
14:30 10/01/2015	59	4	19
14:45 10/01/2015	60	4	19
15:00 10/01/2015	61	4	20
15:15 10/01/2015	60	4	16
15:30 10/01/2015	57	4	18
15:45 10/01/2015	59	5	22
16:00 10/01/2015	60	5	21
16:15 10/01/2015	59	5	17
16:30 10/01/2015	57	5	17
16:45 10/01/2015	55	5	21
17:00 10/01/2015	57	5	23
17:15 10/01/2015	62	4	19
17:30 10/01/2015	64	4	15
17:45 10/01/2015	65	5	15
18:00 10/01/2015	65	4	15

User survey



Platform in use



Official launch



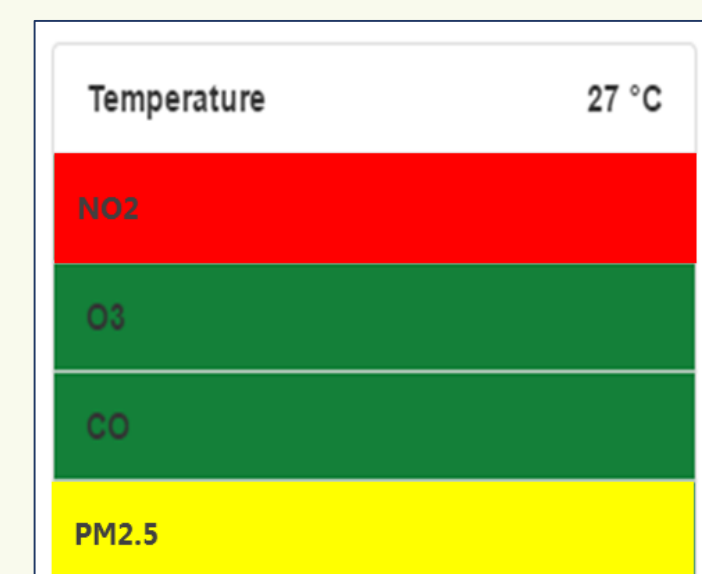
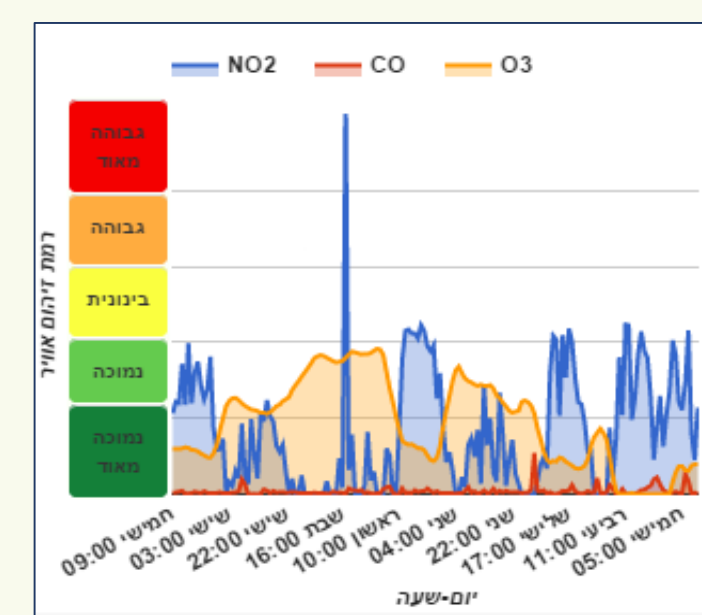
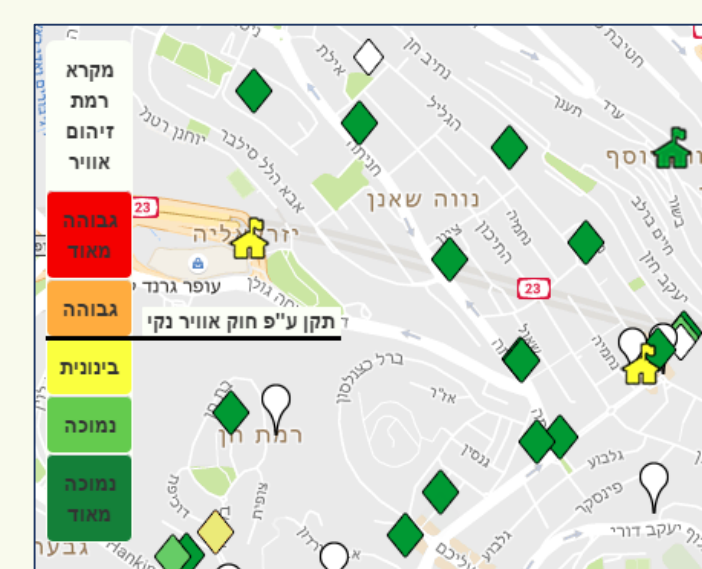
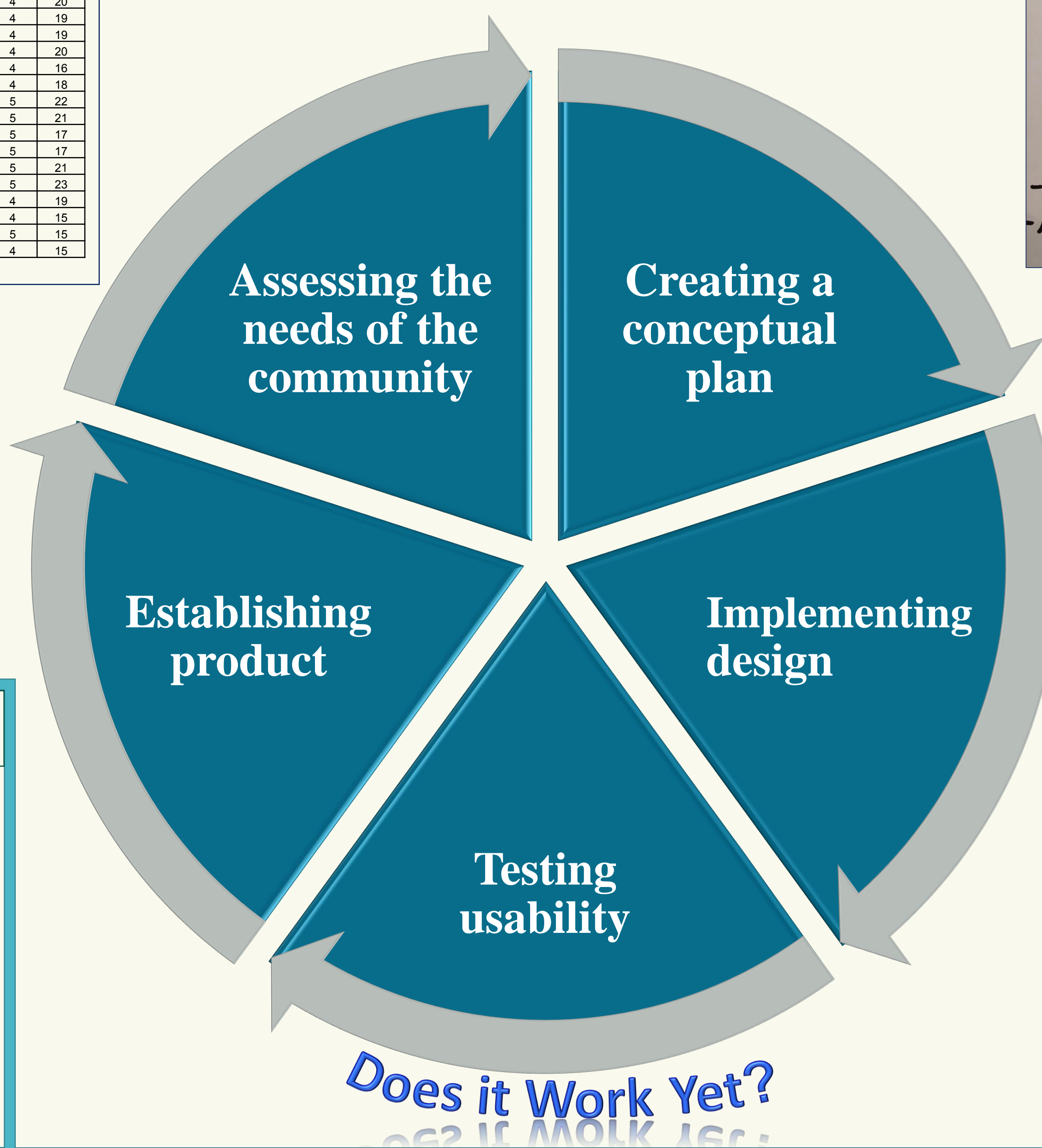
Data collection

Participants:

Residents with sensors in their homes (n= 10)
Active participants on project website (n≈ 150)

Data collection methods:

Semi-structured interviews (n= 10)
Perception questionnaire (n=132)
Comments left on the project website (n≈ 50)
Design process: one year, divided to two phases



Discussion

Applying the user centered design approach, contributed to a better design and development of the project platform, and better supports publics' needs in a clear and practical fashion.

This approach looks at citizen science as more than a tool for scientists for creating new scientific knowledge, transforming it into the relevant, practical science, citizens want it to be, through implementing principals of public engagement with science.

Assessing needs

Phase I Three styles of data presentation

Creating a conceptual design

- Multiple layer data
- Processed information
- Contextualize
- Participants ideas
- Trustworthy data

Implementing the design

- Three-layer information display
- Local standards
- Normalized data
- Discussion forums
- Pollutants explanation
- Sensor location and micro-environment
- Air quality status
- Recommendations

Testing usability

Testing, Data quality, Bug fixing
Testing, Data quality, Bug fixing

Establishing product

Launch of the online data presentation platform
Launch of beta platform