

Enriching Citizen-Science with Data Storytelling Workshops

Abhishek Viswanathan, Dr. Amy Babay, Dr. Rosta Farzan – School of Computing and Information

Project Description

- We are hosting **data storytelling workshops** using local **air quality data**
- We aim to:
 - Make local environmental and civic data more **accessible** to residents
 - Solicit resident perspectives on bridging the gap between available data and **advocacy**
 - Understand the **current role of data** in residents' understanding of air quality

Context and Background

- During a pilot project in 2021, we worked with local non-profit Upstream Pittsburgh and 19 citizen scientists to collect environmental data using low-cost sensing devices as part of a *Social Sensing System*
- We identified a need for air quality data to be contextualized towards advocacy efforts.

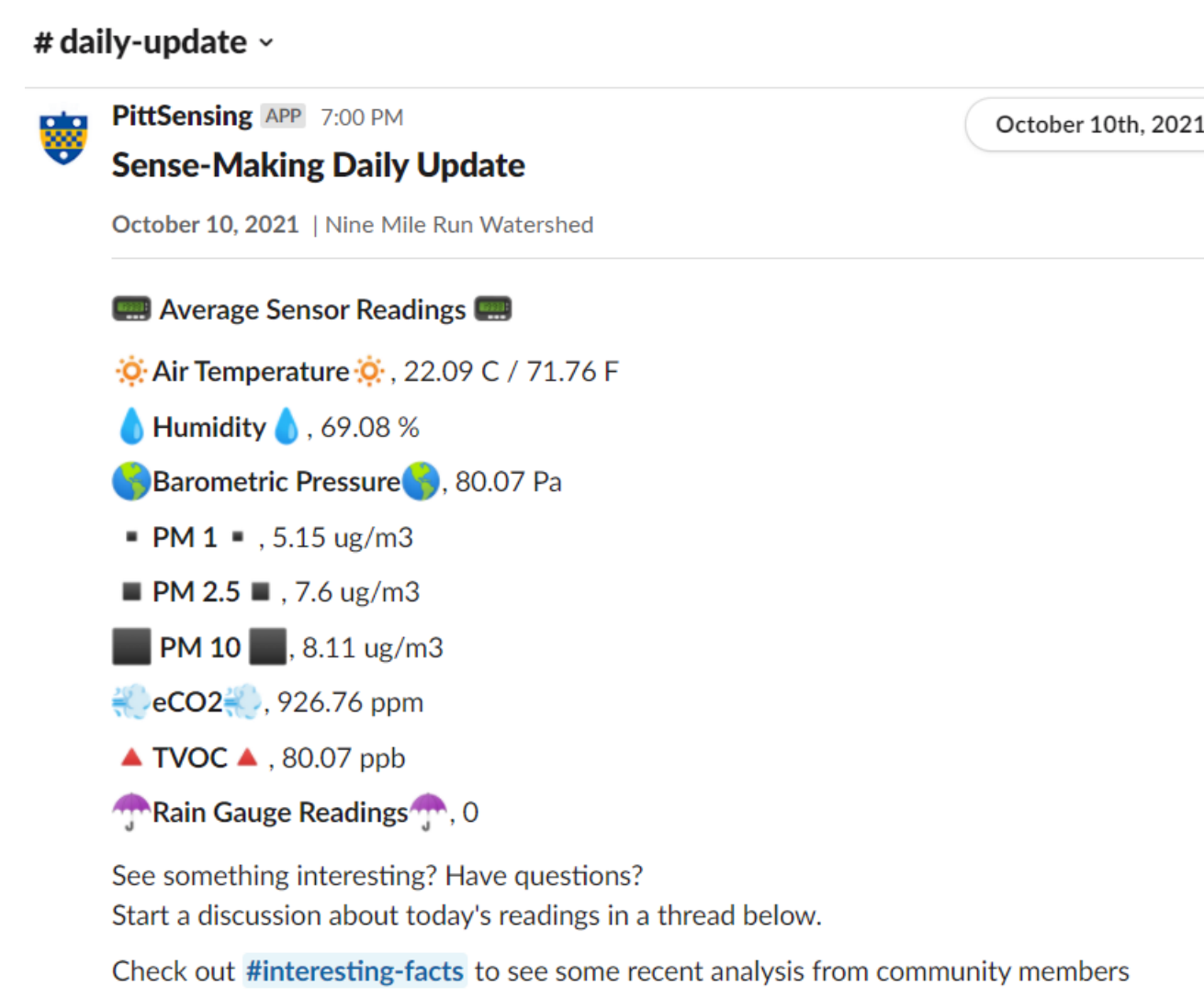


Figure 6: Daily Summaries sent to Citizen Scientists

The architecture from our pilot project allowed integration of citizen scientists' efforts and environmental sensors data towards multifaceted data collection: daily updates, context for high values, and interesting observations from around the Nine Mile Run Watershed.



Empowering Understanding of Local Air Quality Data through Storytelling & Informing Advocacy Efforts

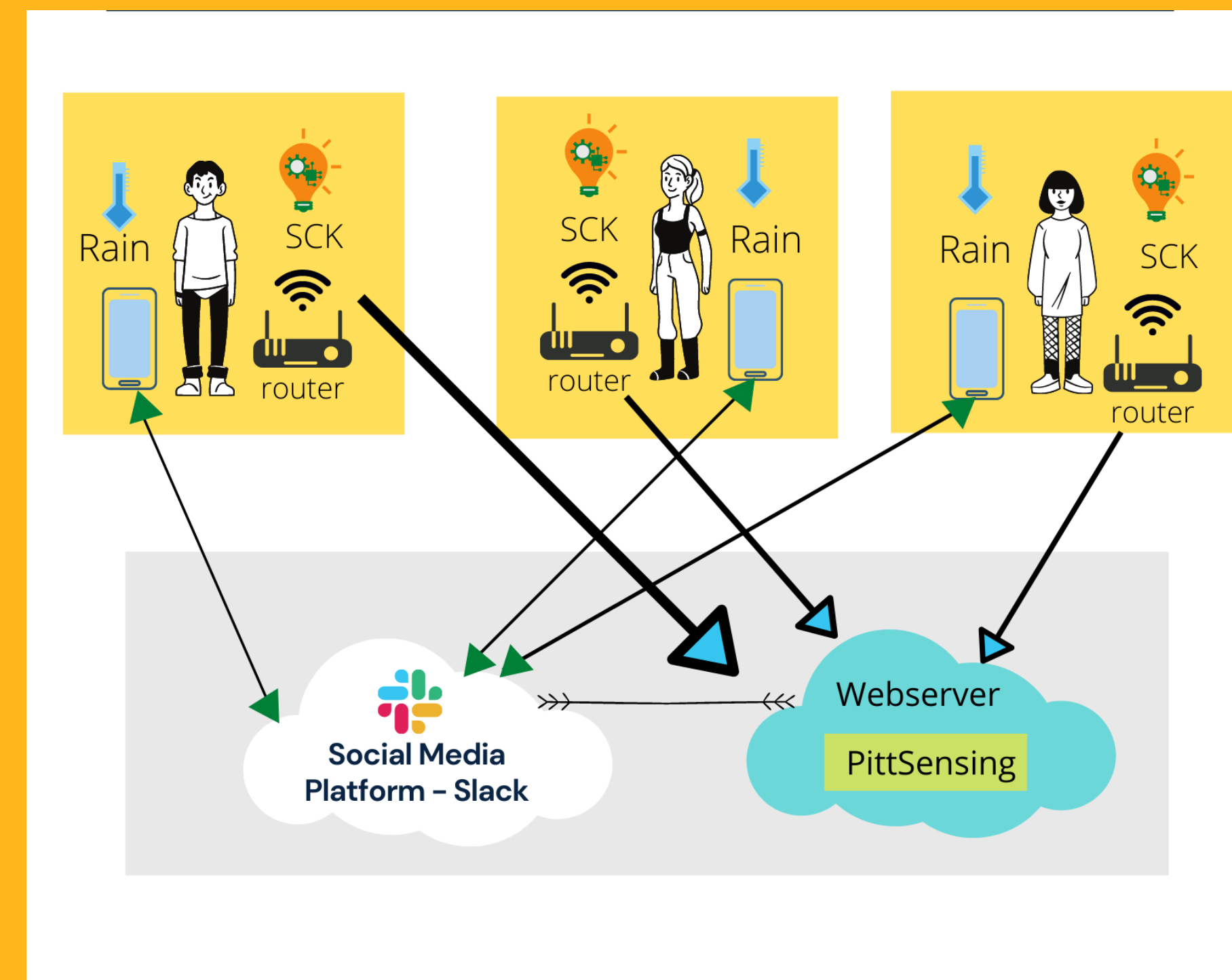


Figure 1: Social Sensing System - Architecture

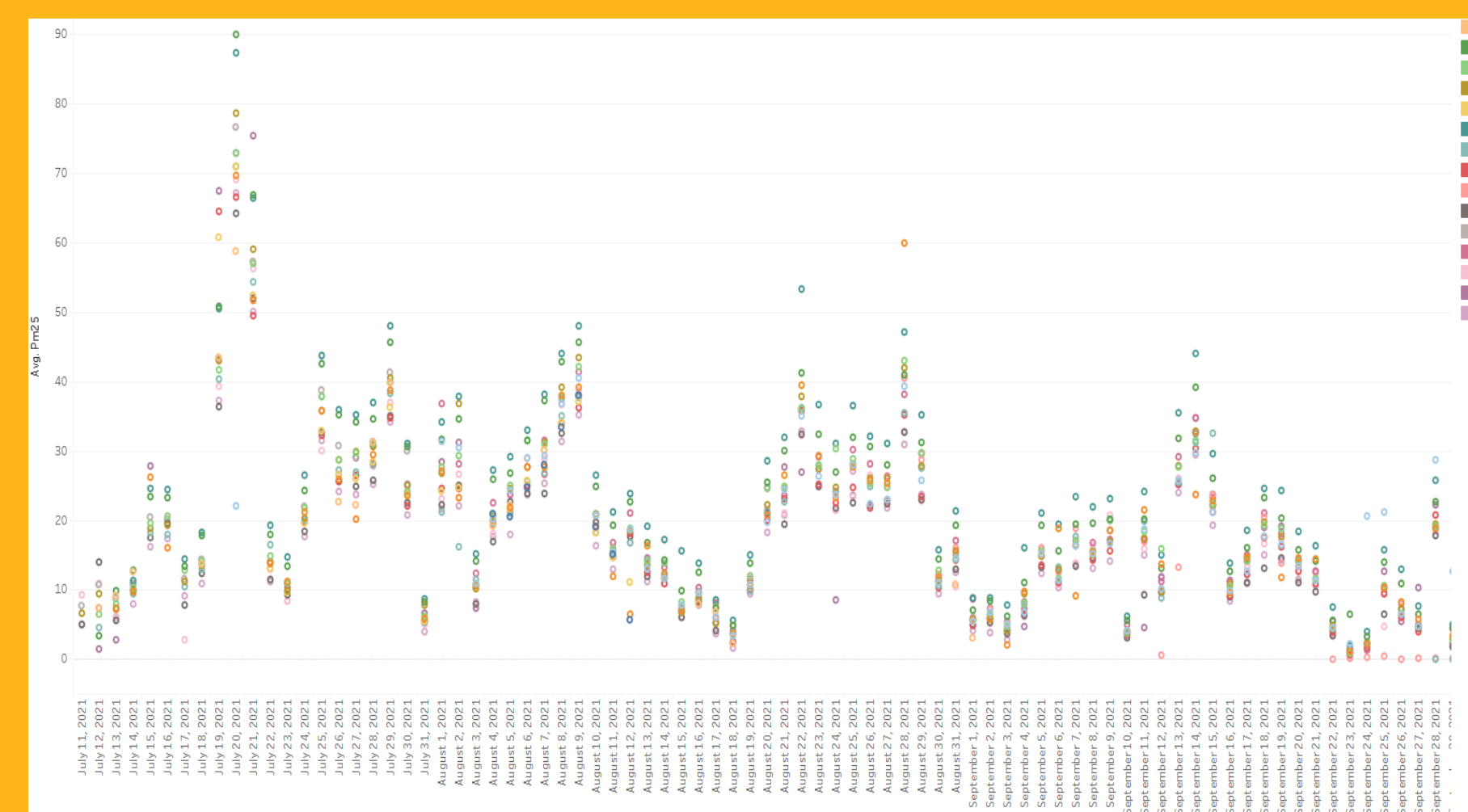
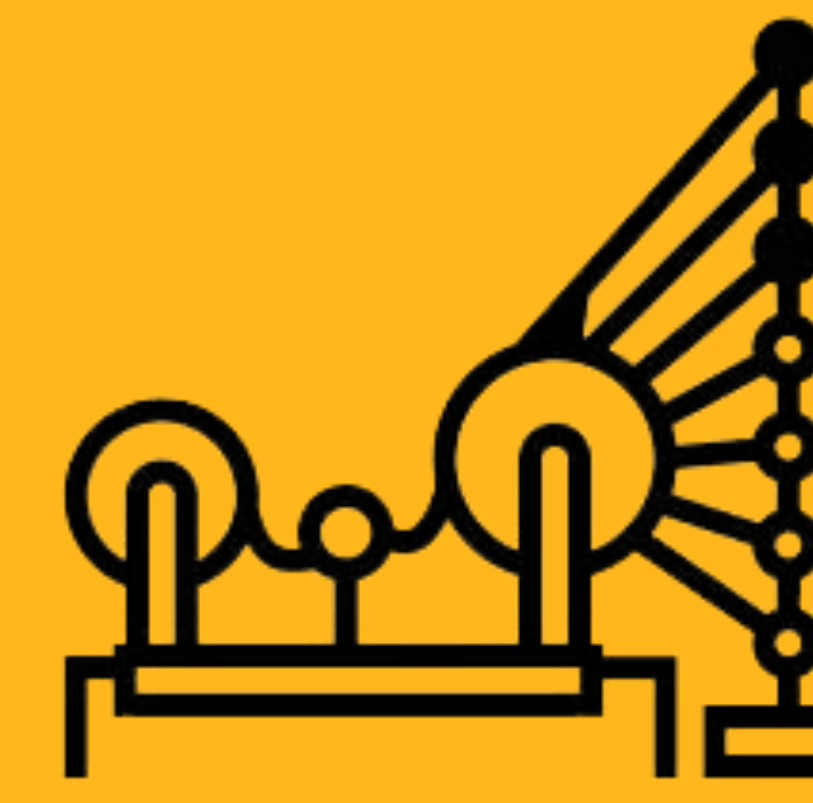


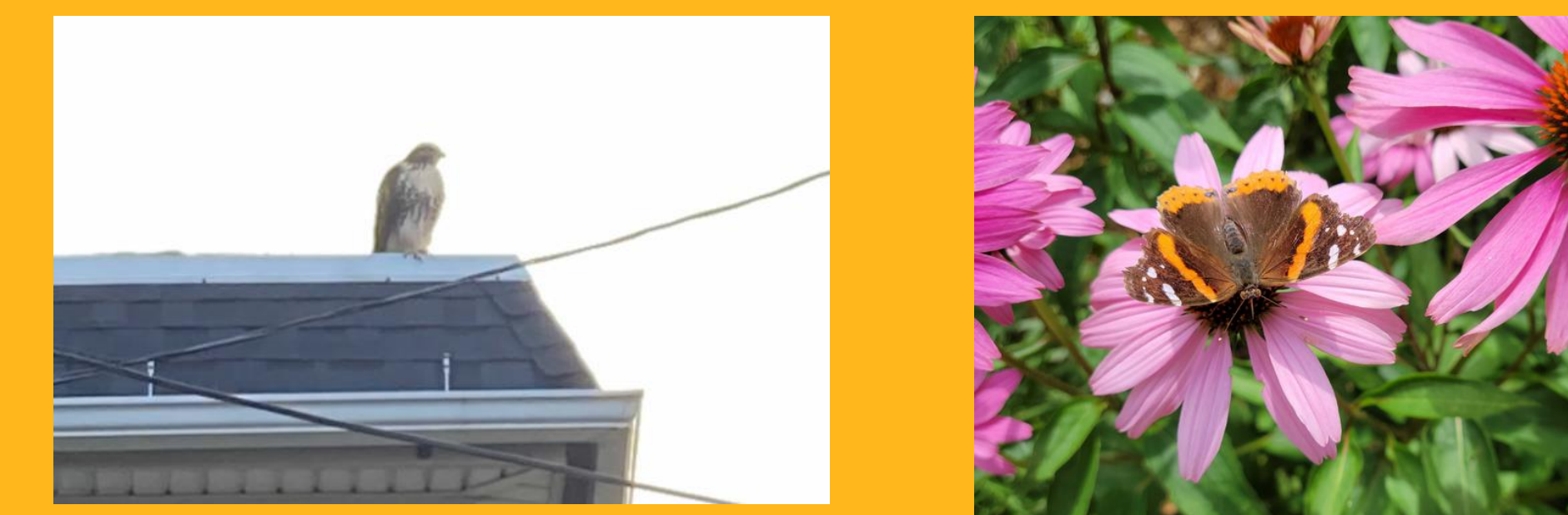
Figure 2: Variation in local environmental data collected by citizen scientists



Figure 3: Context provided by citizen scientists for poor air quality



Identifying Theories of Change, Weaving Multiple Datasets and Lived Experience to Tell an Impactful Story



Red-tailed Hawk & Red Admiral Butterfly: What These Neighbors Can Tell Us About Our Environment

Figure 5: Example Data story based on photos taken by local citizen scientists

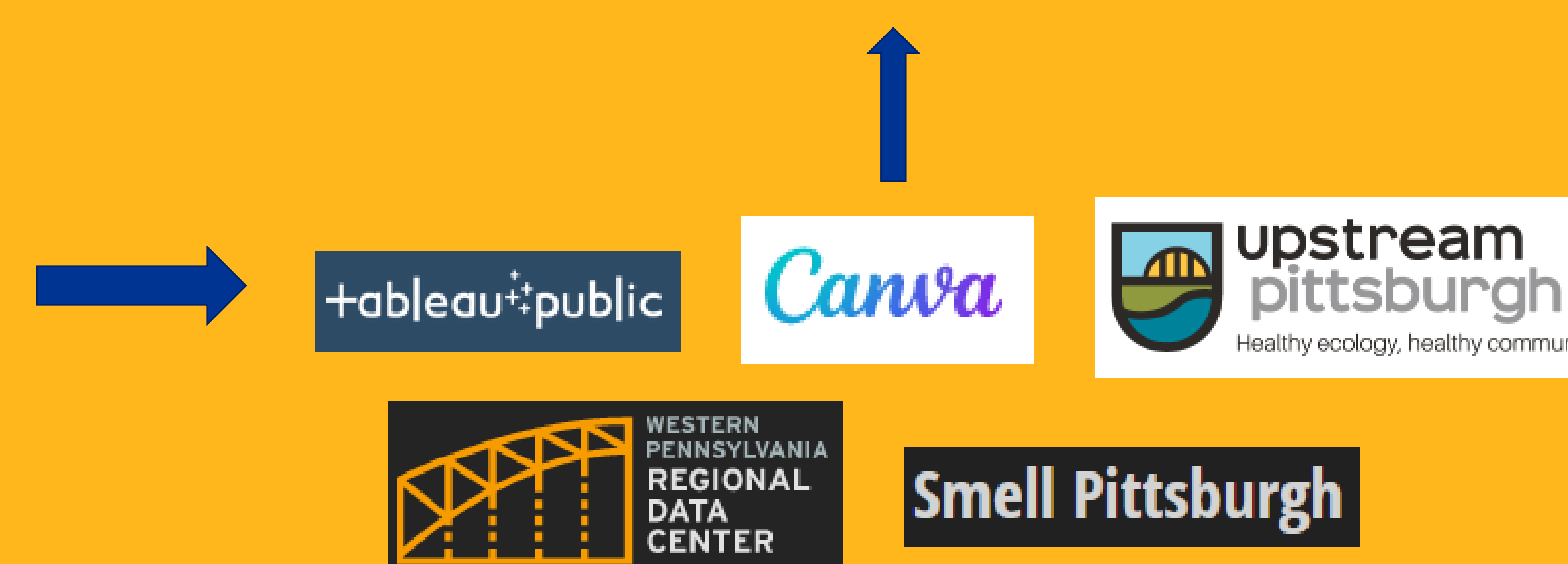


Figure 4: Introducing sources of local civic data and tools to understand and express them to Data Storytelling Workshop Participants

Project Outputs

- Conducting Data Storytelling Workshops and empowering residents to craft their own environmental data stories
- Better understanding the way residents perceive local air quality
 - How much of it is informed by data?
 - How can data inform their understanding?

Impact

- Empowering resident to share their perspectives on air quality in Pittsburgh
- Providing residents with tools to advance advocacy efforts
 - Local Data Sources
 - Data Analysis and Visualization Tools
 - Storytelling Tools

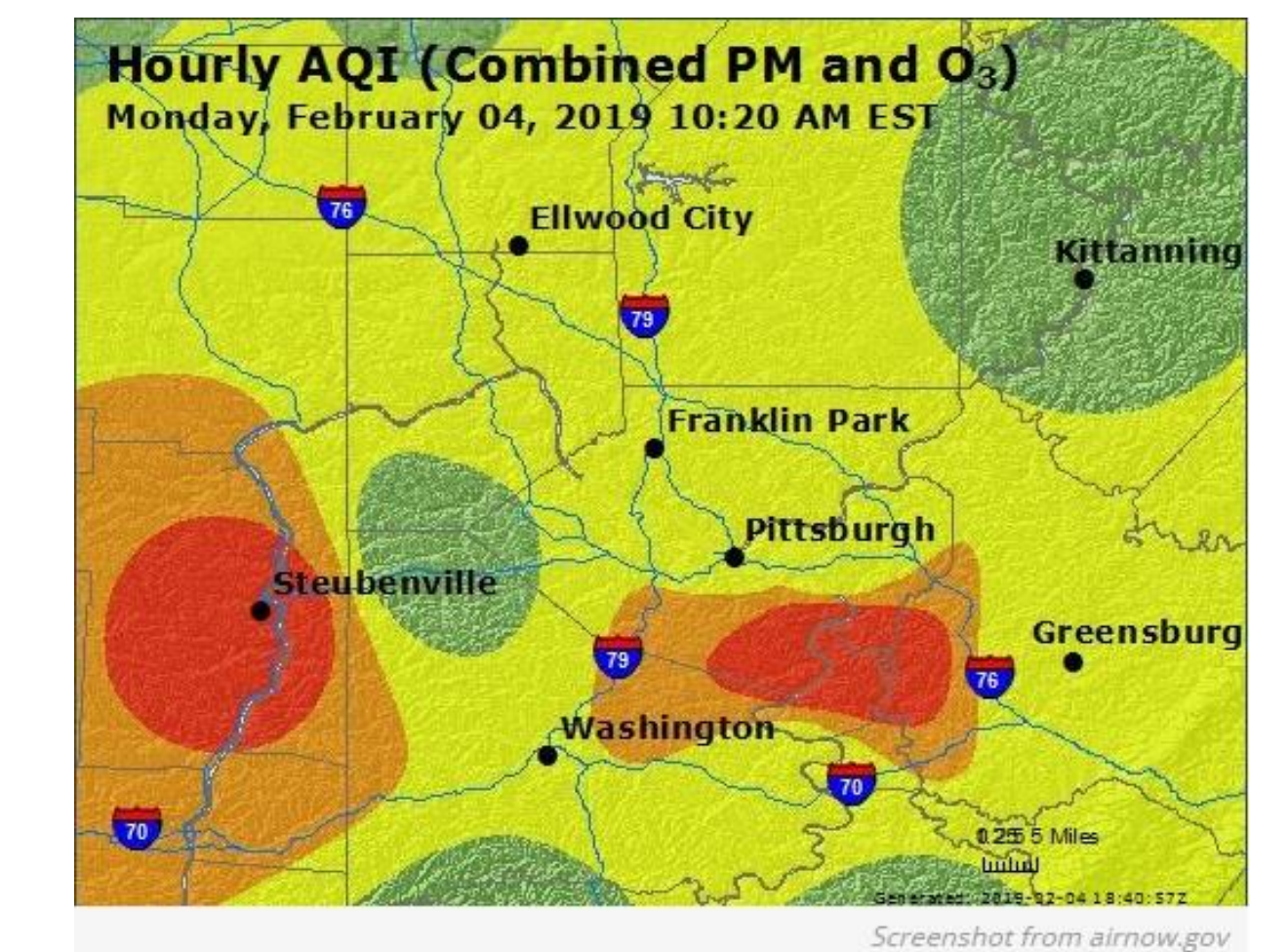


Figure 7: AirNow.gov showing Particulate and Ozone Pollution in the Region

DEI Values

- While the scientific process has historically excluded people's contributions based on race, gender, class, credentials, and methods, our framework emphasizes and empowers diverse contributions to science.
- Air pollution disproportionately impacts low-income communities & communities of color in the US. Using personal stories and citizen science, we introduce traditionally under-represented sources of data into the air quality conversation.

Acknowledgements

- We are very grateful to citizen scientists who took part in our pilot project and Upstream Pittsburgh for their support and advocacy work in the city.

