UPISC UNIVERSITY OF PITTSBURGH INFRASTRUCTURE SENSING COLLABORATION WORKSHOP

NATIONAL ENERGY TECHNOLOGY LABORATORY

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Our Work – Nine Mile Run Watershed

- Partnered with Upstream Pittsburgh to distribute 17 ***Smart Citizen Kits*** (low-cost environmental and air quality sensors) to residents of the Nine Mile Run Watershed.
- The system supported community scientists who were part of the **Social Sensor Network** by offering **interconnected automatic, active, passive, and interactive ways of engaging**.
- We were able to collect **multidimensional data** that is usually not captured by community sensing projects.
- We conducted **Data Storytelling workshops** to connect locally collected civic and environmental data to advocacy priorities of residents.

Social Sensor Network: A distributed hyper-local network of low-cost air quality sensors and community scientists

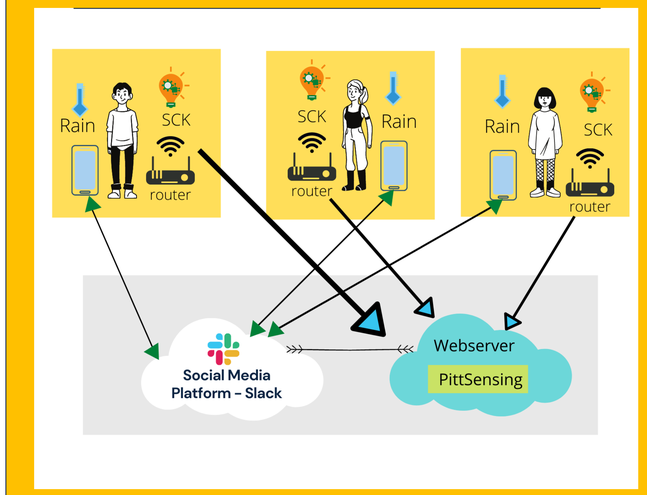

Figure 1: Social Sensor Network - Architecture

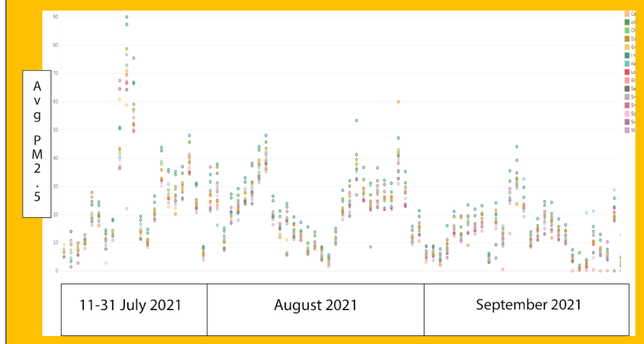

Figure 2: Variation in local environmental data collected by citizen scientists

Figure 3: Smart Citizen Kits (SCKs)

Which sensors does the kit include?

Air Temperature	°C	Sensirion SHT31
Relative Humidity	%rh	
Noise Level	dBA	Invensense ICS4342
Ambient Light	lx	Rohm BH1721FVC
Barometric pressure	kPa	NXP MPL3115A2
Equivalent Carbon Dioxide	ppm	AMS CCS811
Volatile Organic Compounds	ppb	
Particle Matter (PM1/2.5/10)	$\mu g/m^3$	Plantower PMS 5003

Figure 4: Data collected by SCKs

Figure 5: Part of a Data Story created by participants

Hazelwood

- Partnering with Hazelwood Initiative, an organization in an environmental justice neighborhood in Pittsburgh, to provide granular **low-cost air quality sensors (PurpleAir)** that **track and map the short and long-term pollution exposure** of residents as the neighborhood undergoes *revitalization.*

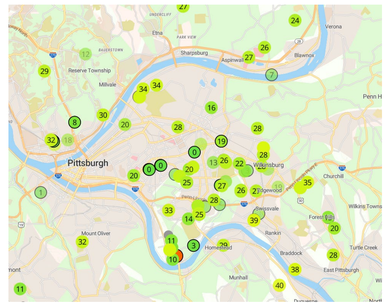

Figure 6: PurpleAir Realtime Air Quality Map in Hazelwood

- Understanding the **role of sensor data in residents' current understanding of air quality** and identifying ways to improve science communication
- Providing **indoor air purifiers and sensors** to improve residents' understanding of real-time indoor air quality and enhancing science communication.