

Smart Cities and un-speculated barriers

With the smart city vision of enormous IT infrastructure and sensing environments are we resolving barriers and decreasing the inclusivity gap or are we creating more barriers and marginalizing citizens based on biases?

- Neeta Khanuja

Section 1. Developing Context: Define Inclusivity

Inclusivity is the ability to a city to consider everyone as an equal recipient of the shared resources, having an equal say in decision-making, with right to participation and experiencing same amount of belongingness.

Dimensions of inclusivity in a city:

Economic,

Spatial,

Social -> **Participation:** a need to interact with these new mechanisms
and interfaces

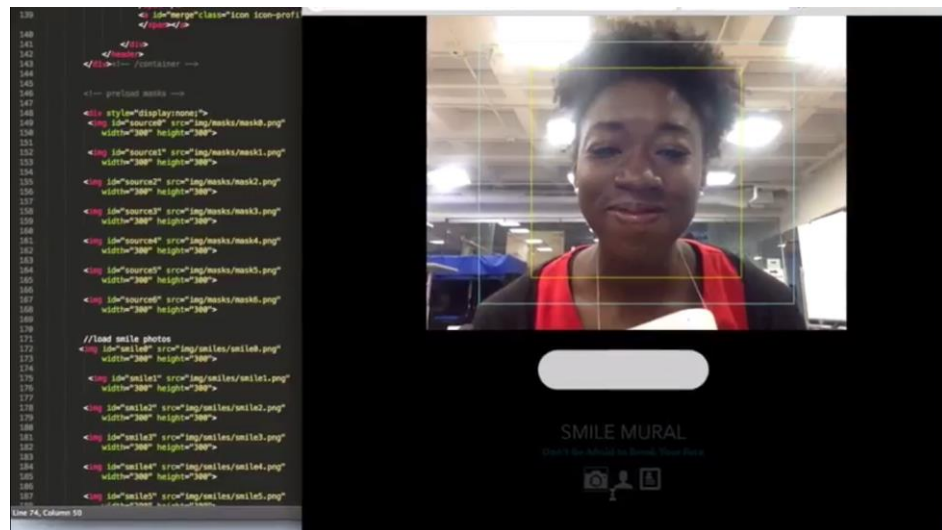
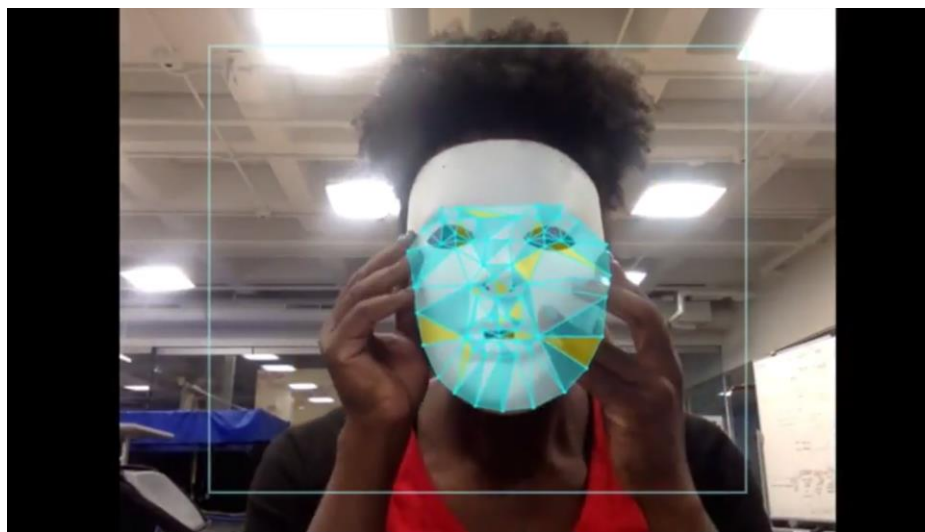
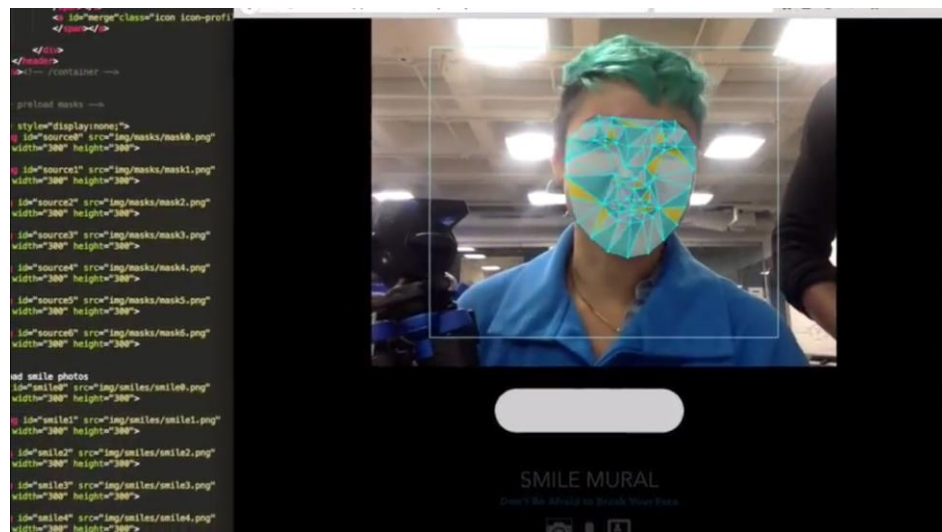
With a high dependence on sensing environments, big data and intelligent machines, what format of a citizen is acceptable by these mechanisms to read them, understand them, listen to them, mark their presence and accommodate their needs.

If citizens are nodes and inputs to the system what are the variable types for these inputs, that are predefined in the system and what happens to the ones, not in sync.

Do they go ignored, do they generate errors or do they have to mask themselves to adjust to these systems?

2.1. An un-speculated case of bias and racial exclusion

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A seemingly neutral machine programmed with algorithmscodified processes simply fails to detect Joy's features. Buolamwini is, she says, "**on the wrong side of computational decisions**" that can lead to exclusionary and discriminatory practices and behaviors in society.

Graduate researcher Joy Buolamwini, a master's candidate in media arts and sciences at the MIT Media Lab.

Image and content source: <https://medium.com/mit-media-lab/the-algorithmic-justice-league-3cc4131c5148>

2.1. An un-speculated case of bias and racial exclusion

✗ The photo you want to upload does not meet our criteria because:

- Subject eyes are closed

Please refer to the technical requirements.
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Man of Asian descent erroneously had his eyes registered as closed by facial recognition software that analyzed his photo during an interaction with an automated passport renewal system.

Image and content source:
<https://medium.com/mit-media-lab/the-algorithmic-justice-league-3cc4131c5148>

Such instances of biases are unintended, un-speculated and unplanned for.

What happens when we encounter such biases on an urban scale?

What would be implications of denial of a service, based on a bias
or inaccessibility of a system based on lack of literacy or tech-savviness
or misidentification due to system inaccuracy?

2.1.1 Open book to black box and its effect on inclusivity

Legible cities : Cities that are constructed to facilitate the clarity of cognitive image in the minds of inhabitants and visitors. – Kevin Lynch, Image of the City.

With networked urbanism and cities infused with digital technologies, the concept of legible cities being an ideal city is undergoing an transition to **the concept of algorithmic cities being ideal and efficient.**

One concern with the processing of big data that is highly quantitative and gathered by sensor-based data collection methods, is **the dryness in decision making based on numbers, with less or no room for exceptional scenarios.**

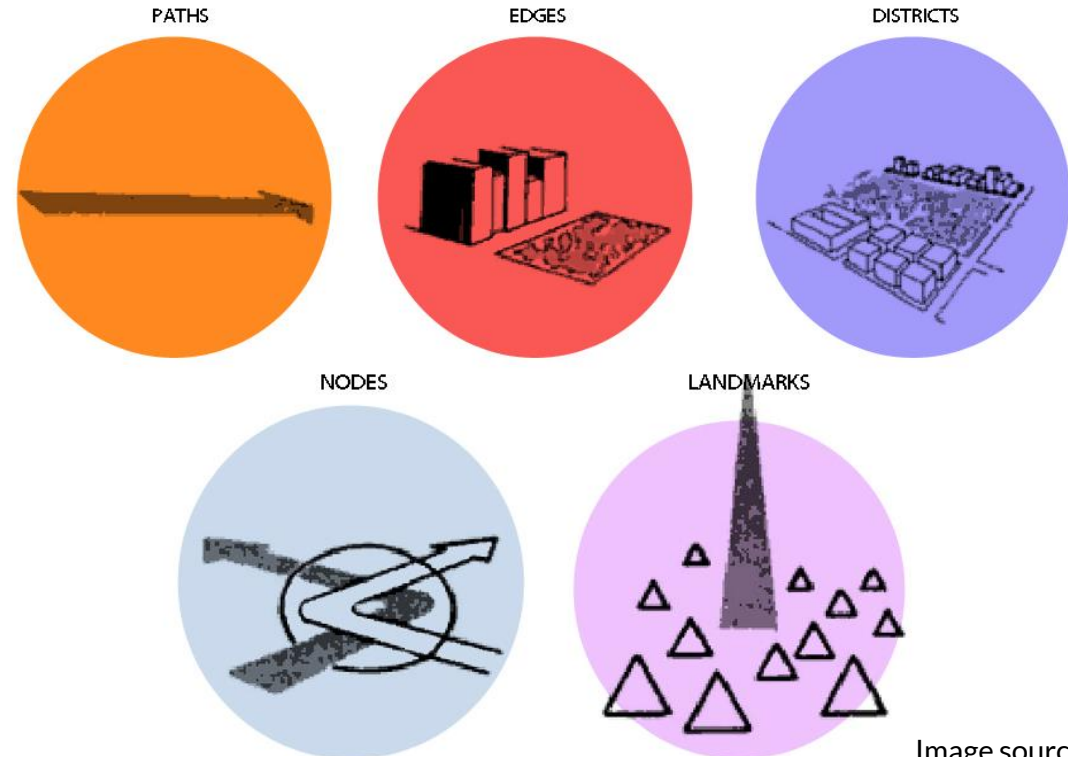


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<http://www.vowelsindia.com>

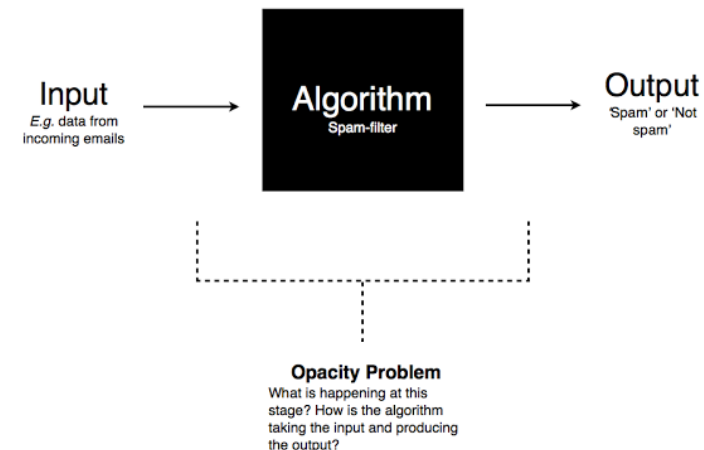


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<https://ieet.org/index.php/IEET2/more/Danaher20160426>

How do we fit city dynamics in a numerical matrix for an urban dashboard?
How would we identify the data points of exclusion?

What would be the mechanisms of identification of biases that trigger exclusions and
what would be the methodology to break open these systems and fix biases?

Who would make decisions ensuring accommodation for requirements of inclusivity? Will it allow citizens
to modify the system?

2.2. Smart City vision and digital exclusion

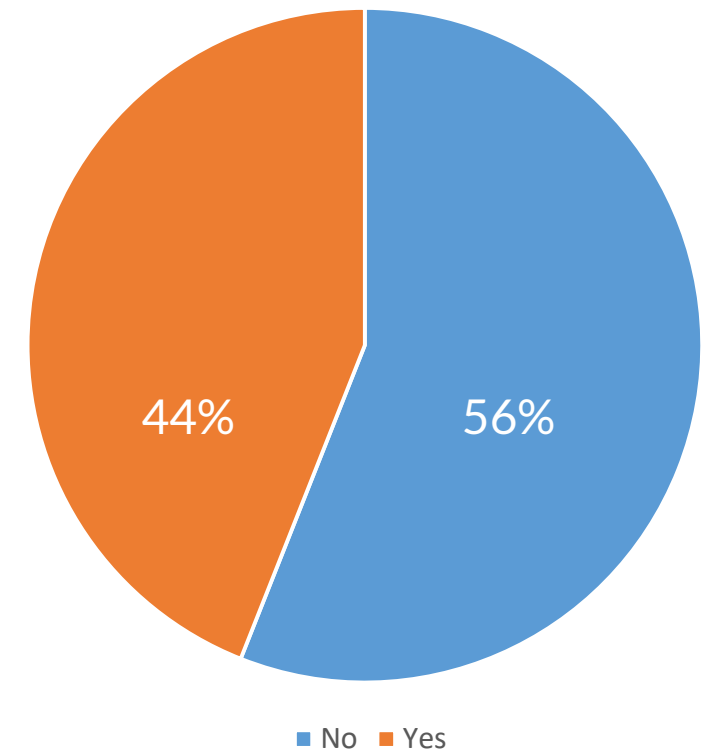
15% of world's population that means one out of seven people in the world live with some kind of disability, visible or otherwise.

World Enabled and G3cit recently conducted a survey of **more than 250 Global Experts**, a series of roundtable discussions in global Smart Cities (Barcelona, London, Quito, New York, and San Francisco), and **one-on-one interviews** with numerous Smart City program managers and technologists. (Smart City for all).

The research concluded, **60 percent of the experts believe that today's smart cities are failing people with disabilities.**



Do you know of a smart city initiative with an explicit focus on ICT accessibility?



Is it a smart move to first strengthen digital divide for people with disabilities and old age, and then try to fix the problem by patch work in trying to bring inclusion?

2.3. An inevitable vision of economic exclusion

Dr. Anthony Townsend, in his talk suggests smart cities holding an inevitable vision of economic exclusion, by discussing the concepts of :

1. A Networked Society, 2. The Centralizing Internet

The idea of internet becoming a centralized entity by companies like Google will result in consolidation of power through networks and as internet of things becomes a method for rationing of resources, exclusion comes in by default

The networks creating connections and the idea of ubiquity, is accompanied with the rules to control these links leading to creation of barriers.

This process of predictive policing based on sensor readings in gated communities will lead to exploitation and suppression of the poor and the vulnerable.

And as he suggests, the scariest part would be the fact that these gates are invisible with citizens having no idea about how, why or by whom they are being controlled.

Section 3. Initiatives for Inclusion

3.1. G3ict- the Global Initiative for Inclusive Information and Communication Technologies and World Enabled join hands for infusing accessibility in smart city programs



G3ict and World Enabled share a vision of an accessible and inclusive smart city and their objective by this initiative is to bring global industry, government, and civil society experts and practitioners together, to define how a Smart City can also be a digitally inclusive city.

Section 3. Initiatives for Inclusion

3.1.1 G3ict + World Enabled objective

G3ict and World Enabled aim to deliver resources that include:

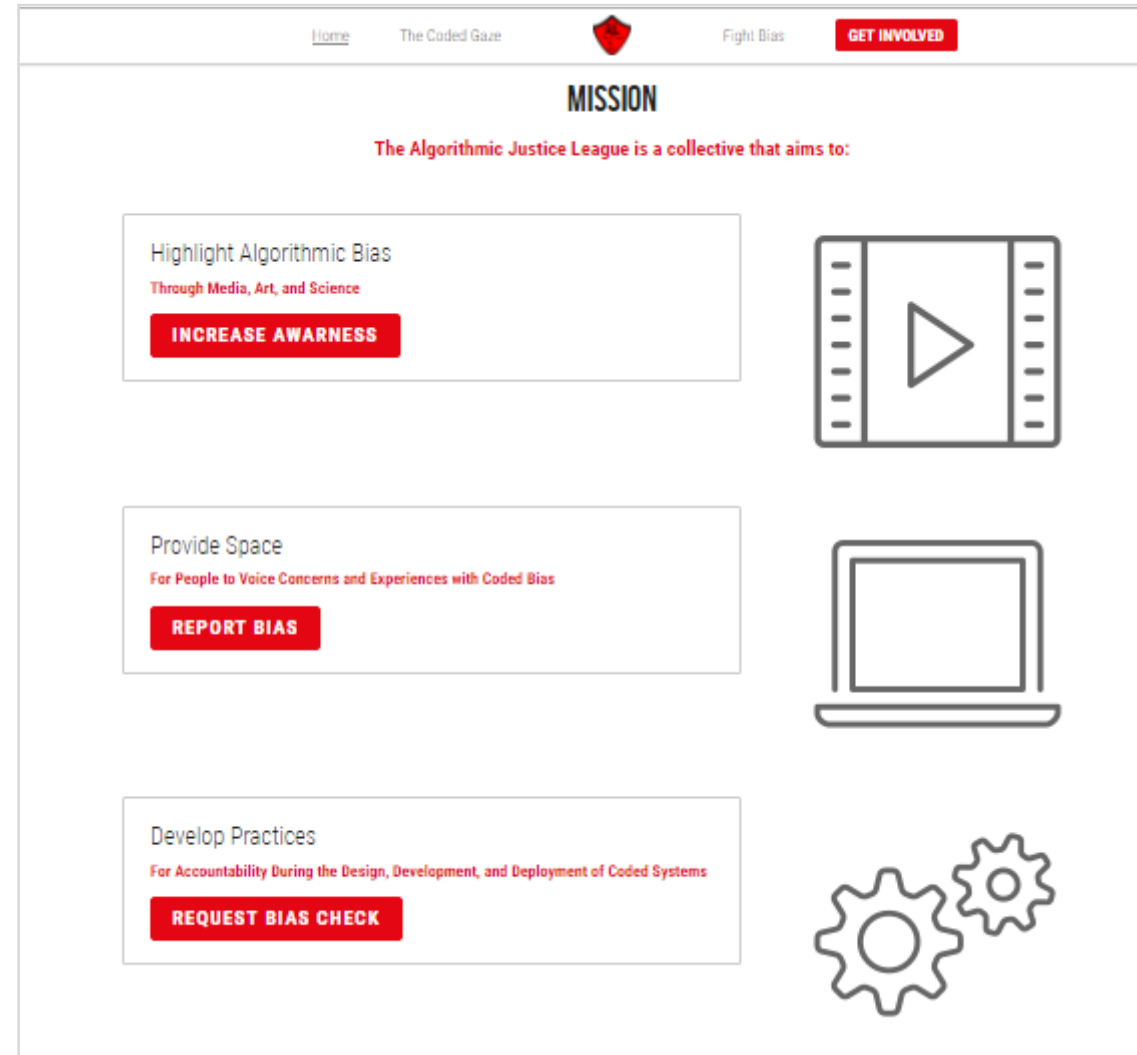
1. **guiding principles for planning and development** of accessible Smart Cities programs.
2. **Model policies** that Smart Cities programs can adopt for ensuring commitment to accessibility.
3. **Inventory** that includes relevant accessibility technical standards
4. An interface **and platform to share best practices** and an access to database of accessible Smart City solutions to share knowledge and insights.
5. **A catalog of Smart Cities indicator and metrics.**
6. **Capacity building programs** that can be used by city officials, CIOs and technology leaders.
7. Other specific tools to ensure that accessible technology is positioned as an explicit and central component of Smart Cities programs worldwide.

3.2 The Algorithmic Justice League

Algorithmic Justice League is Joy's initiative to fight the coded gaze and problems with inclusion in tech and in machine learning.

It is a collective of concerned citizens, artists, researchers, and activists to perform :

- Identification of Algorithmic bias
- Mitigating or reducing biases
- Highlighting Algorithmic bias



3.3 JAM (Just A Minute card and App)

Just a Minute card and app is a digital innovation by NOW Group.

JAM started as a plastic credit card sized card that was used by the service users of the organization who felt under pressure when they were out in everyday life and wanted a discreet way of letting people know that they needed a little extra time.

Imagine, a simple solution like JAM in an urban setting where people can ask for a minute and report of functions when in need of more time.



Section 4. Proposed Framework

Proposed framework constitutes of a set of principles to envision a system for inclusive smart city development

4.1. Being present to the differences and diversities:

Platform for defining the right problems.

wider research methodologies in order to deliver mediums that can cater to diverse groups

Possibly a modular system of research method that have various components each focusing on one group that can later be clubbed together to get a broader picture.

4.2. Not treating Inclusion as an add on feature but a necessity:

A city cannot be imagined as a composition of boxed isolated functions and groups sitting adjacent to each other.

A city is a complex structure with interwoven interactions between communities, functions and technologies in a fabric that is hard to disassemble as individual components and thus It is important that inclusivity is considered as a priority from the phase of conceptualization rather than integrating it as a feature following development.

4.3 An interface that blends the top down and the bottom up initiatives

Top down initiatives like G3ict and World Enabled are more focused in the domain of governance, policy making and creating guidelines, while the bottom up approaches like JAM, Algorithmic Justice League and similar, are grassroots initiatives and take into account, challenges and concerns of users in order to come up with solutions.

While top down initiatives can create a larger impact but lack in a solution based approach to a particular problem and work with 'one size fits all' philosophy, bottom up approaches are creative and solves problems but have low impact.

One possible solution is a system with an umbrella structure where the grassroots initiatives with a participatory approach are supported and nurtured by a top down policy based setup to ensure its sustainability and growth, not letting them die down and encouraging more involvement and initiation of similar grassroots initiatives.

4.4 Testing with diverse audience before deployment

Testing of digital technologies with diverse audience demands a platform that gives equal opportunities of participation considering needs and requirements of all.

End Note

Inclusion is not a problem to be solved or an add-on, inclusion is an attitude that needs to be integrated from the beginning of the conceptualization and development process as a priority to ensure participation from all and growth for all.

It is not diversity or disability that creates barriers, it is the act of not accepting and accommodating these differences that gives rise to barriers.