Global Initiative on Blockchain-based Omnidirectional Pandemic Surveillance

Fighting the COVID-19 pandemic by knowing the unknown in the right way

Yu Yuan, PhD

Chair, IEEE Global Initiative on Blockchain-based Omnidirectional Pandemic Surveillance
Chair, IEEE Consumer Technology Society Standards Committee

Email: y.yuan@ieee.org

Contact: y.yuan@ieee.org

IEEE TAB CoS Special Project R3P11
IEEE SA Industry Connections Activity IC20-005
IEEE P2677.x Working Group (CES/BSC/BOPSWG)

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Advancing Technology for Humanity

Background and Vision

## Fighting the COVID-19 pandemic by knowing the unknown in the right way

The outbreak of COVID-19, declared as a pandemic by WHO (World Health Organization), reminds us that pandemic/epidemic surveillance is a globally important topic. At present, pandemic/epidemic surveillance is mainly conducted within the healthcare industry especially the public health sector. With digital technologies especially blockchain and artificial intelligence, we are able to improve the efficiency, transparency, and privacy of pandemic/epidemic surveillance by building an "omnidirectional" platform that integrates data from a wide range of sources (individuals and multiple industries: healthcare, telecom, transportation, retail, etc.) to better detect and respond to a pandemic/epidemic, especially to be able to precisely monitor the pandemic/epidemic at a fine-grained level (the community/building level rather than the county/city level) and assess the risk of infection around each person in near real-time while the data privacy of individuals and entities shall not be compromised. Our initiative will facilitate the development and deployment of such platforms globally to help stem the spread of virus and reduce the risk of reopening the economy in addressing current and future pandemics/epidemics.

Efficiency

PANDEMIC SURVEILLANCE

Transparency

Privacy

REOPENING THE ECONOMY

**STEMMING THE SPREAD OF VIRUS**

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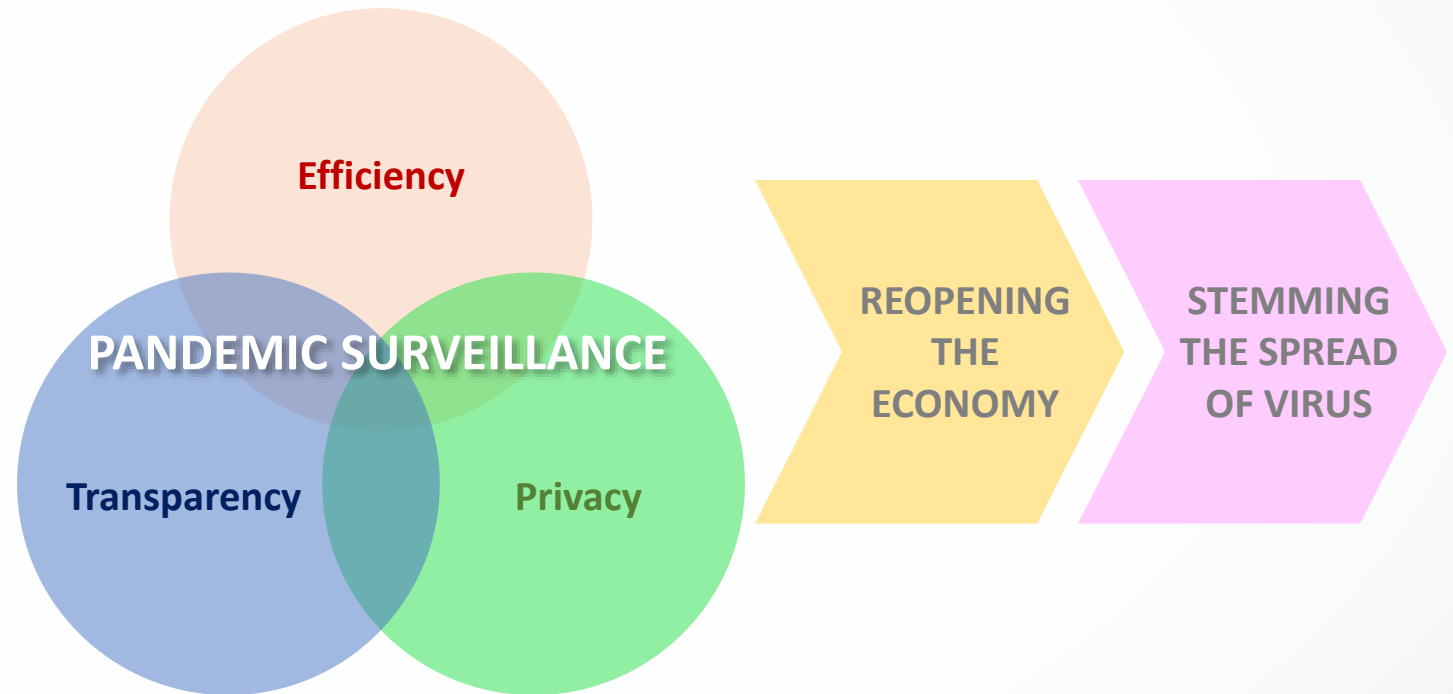
Key Features

Efficiency, Transparency, Privacy

- Tracking the spread of virus precisely at the community & building level rather than the county & city level

- Assessing the risk of infection around each person in near real-time

- Multi-source cross validation to improve the accuracy of situation estimates and risk assessments

- Reports from "whistleblowers" may be rated by peers but will never be censored

- Data may be corrected but cannot be concealed or fabricated without leaving a trace

- Safe and secured cross-industry data sharing and interactions to address current and future pandemics

- The strictest privacy protection by design, leaving no chance for any "Big Brother" to watch you
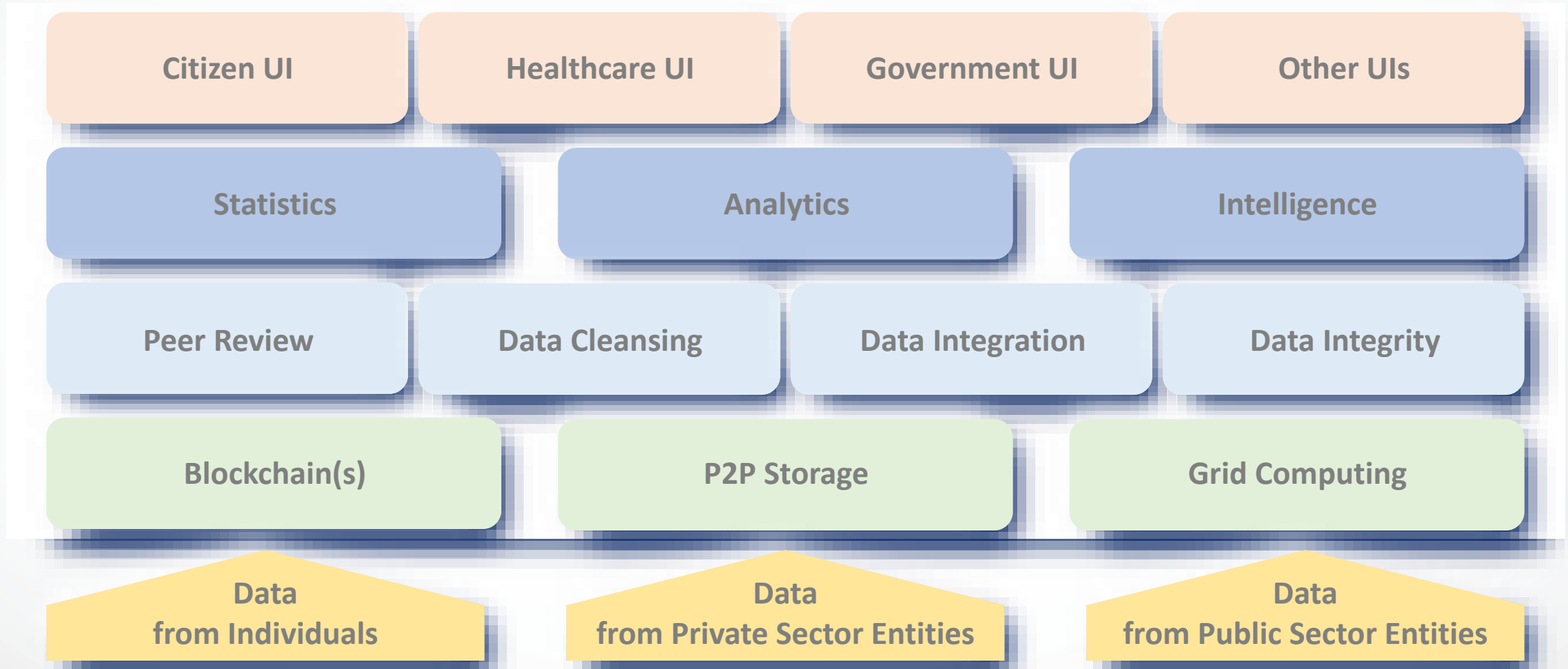

Source: latimes.com
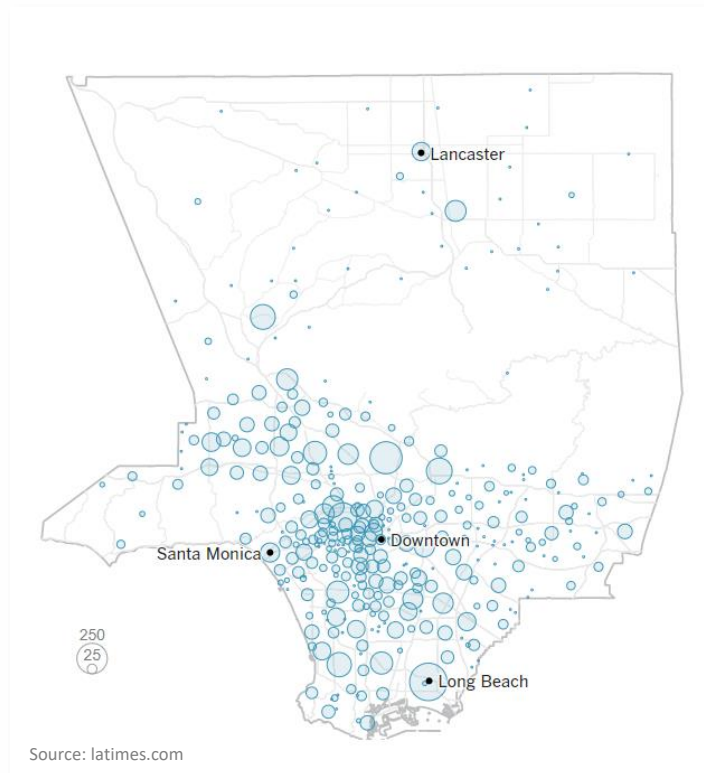
**County/City Level
Updated hours ago**
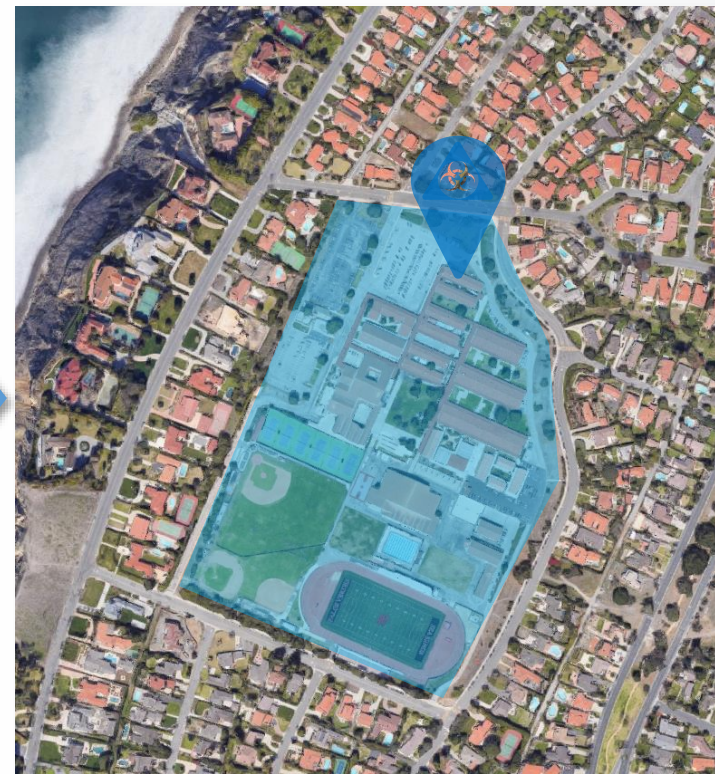
**Community/Building Level
Updated a minute ago**

Overarching Framework

Decentralized, Crowdsourcing, Evolutionary

| Citizen UI | Healthcare UI | Government UI | Other UIs |

| Statistics | Analytics | Intelligence |

| Peer Review | Data Cleansing | Data Integration | Data Integrity |

| Blockchain(s) | P2P Storage | Grid Computing |

| Data from Individuals | Data from Private Sector Entities | Data from Public Sector Entities |

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Work Streams

## *Open Standards, Open Source, Open Community*

Reference Implementations
Developing open-source reference implementations of the new systems and components needed in the Blockchain-based Omnidirectional Pandemic Surveillance
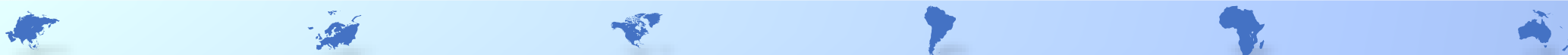
Industry Engagement
Engaging with key data providers to get the minimal viable data input for the purpose of pandemic surveillance without compromising their data privacy
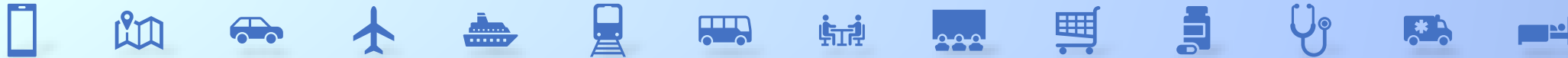
Deployment
Negotiating with selected cities in Asia, Europe, Americas, and other areas in the world in order to deploy pilot runs in those cities

Standardization
Providing standards, recommended practices and guides for cross-industry data sharing and interactions in the Blockchain-based Omnidirectional Pandemic Surveillance
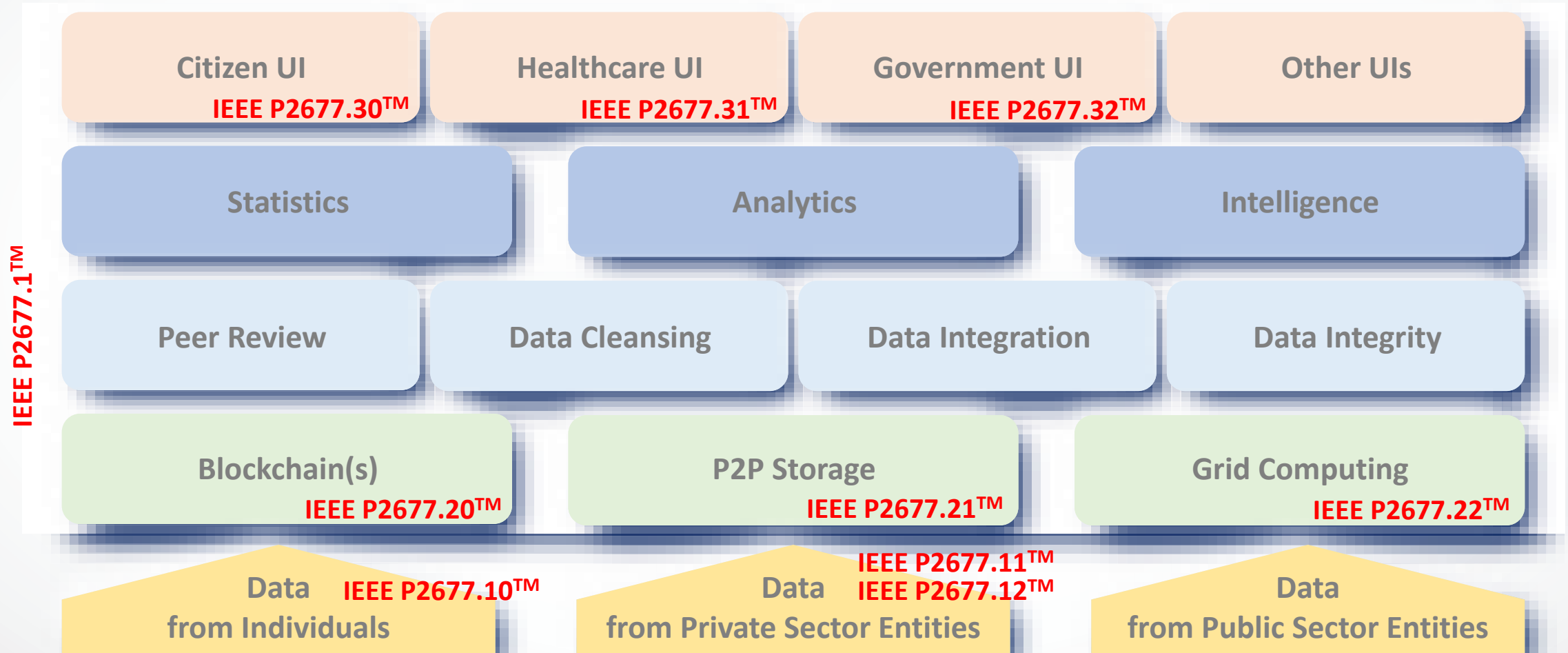
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Standardization

IEEE Blockchain-based Omnidirectional Pandemic/epidemic Surveillance Working Group (BOPSWG)

▸ Standards Projects approved on 03 Jun 2020

- **IEEE P2677.1**^{TM} - Standard for Blockchain-based Omnidirectional Pandemic/epidemic Surveillance: Overarching Framework
- **IEEE P2677.10**^{TM} - Standard for Blockchain-based Omnidirectional Pandemic/epidemic Surveillance: Access to Personal Data
- **IEEE P2677.11**^{TM} - Standard for Blockchain-based Omnidirectional Pandemic/epidemic Surveillance: Access to Telecommunications Data
- **IEEE P2677.12**^{TM} - Standard for Blockchain-based Omnidirectional Pandemic/epidemic Surveillance: Access to Transportation Data
- **IEEE P2677.20**^{TM} - Standard for Blockchain-based Omnidirectional Pandemic/epidemic Surveillance: Requirements for Blockchain Infrastructure
- **IEEE P2677.21**^{TM} - Standard for Blockchain-based Omnidirectional Pandemic/epidemic Surveillance: Requirements for Peer-to-Peer Storage Infrastructure
- **IEEE P2677.22**^{TM} - Standard for Blockchain-based Omnidirectional Pandemic/epidemic Surveillance: Requirements for Grid Computing Infrastructure
- **IEEE P2677.30**^{TM} - Standard for Blockchain-based Omnidirectional Pandemic/epidemic Surveillance: Personal Application Programming Interface
- **IEEE P2677.31**^{TM} - Standard for Blockchain-based Omnidirectional Pandemic/epidemic Surveillance: Healthcare Application Programming Interface
- **IEEE P2677.32**^{TM} - Standard for Blockchain-based Omnidirectional Pandemic/epidemic Surveillance: Government Application Programming Interface

▸ Jointly sponsored by:

- **IEEE Consumer Technology Society** Blockchain Standards Committee
- **IEEE Society on Social Implications of Technology** Standards Committee
- **IEEE Engineering in Medicine and Biology Society** Standards Committee

Overarching Framework

Decentralized, Crowdsourcing, Evolutionary

Citizen UI	Healthcare UI	Government UI	Other UIs
IEEE P2677.30™	**IEEE P2677.31™**	**IEEE P2677.32™**	

IEEE P2677.1™

Statistics	Analytics	Intelligence

Peer Review	Data Cleansing	Data Integration	Data Integrity

Blockchain(s)	P2P Storage	Grid Computing
IEEE P2677.20™	**IEEE P2677.21™**	**IEEE P2677.22™**

Data from Individuals	Data from Private Sector Entities	Data from Public Sector Entities
IEEE P2677.10™	**IEEE P2677.11™** **IEEE P2677.12™**	

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Thanks

Contact us for participation and collaboration opportunities

Dr. Yu Yuan
Email: y.yuan@ieee.org
LinkedIn: http://www.linkedin.com/in/DrYuYuan