Data Matters: Ethics, Data, and International Research Collaboration in a Changing World

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What does Bitcoin & Block Chain have to do with data integrity?

"Block Chain" technology and the positive "use" and "abuse" of data

The use of super-secure crypto-coding is increasingly key to cyber-security, especially where there is an exchange of goods, value, or information, and especially in an internationally competitive world.

The use of 12 seed words randomly selected from the dictionary and then twice encoded as a 64 character and number combo reates a "distributed ledger". It can serve as a powerful protector of data, digital assets, or bot-based "fake news" or "distorted information."

The key to the so-called "distributed ledger technology" is what is also called a "smart contract." A smart contract is defined as "automatically-executing pieces of code that can carry value, data, or other such condition-based execution." The push for privacy, borderless and clandestine currency, and/or anonymous communications or data protection has produced the growth of the dark web and the growth of "distributed networks"

Trolls, Social Media and Data Integrity

Trolls & "Fake Information & News"

Buzzfeed, an on-line political reporting network in the U.S. reported in November 2016 that "top fake news reports on-line" had significantly larger impact in terms of measured face time over actual legitimate "factual news" during the U.S. Presidential election. They reported that "engagement on Facebook" with 'fake news' as purveyed by bots and trolls exceeded in hits that of 19 legitimate news outlets combined. *(Pelton & Singh, 21st Century Smart Cities (Springer Press, 2018)*

Cyber-Security of Urban Systems

- *The protection of Supervisory Control & Data Acquisition (SCADA) networks against cyber attacks.*

- *The need for protection of vital information stored in the cloud against cyber-theft, power outages, solar storms, etc.*

- *Back up of data at remote sites and effective Human-Machine Interfaces to protect automated urban systems against cyber-attack, distributed denial of service, or natural disasters.*
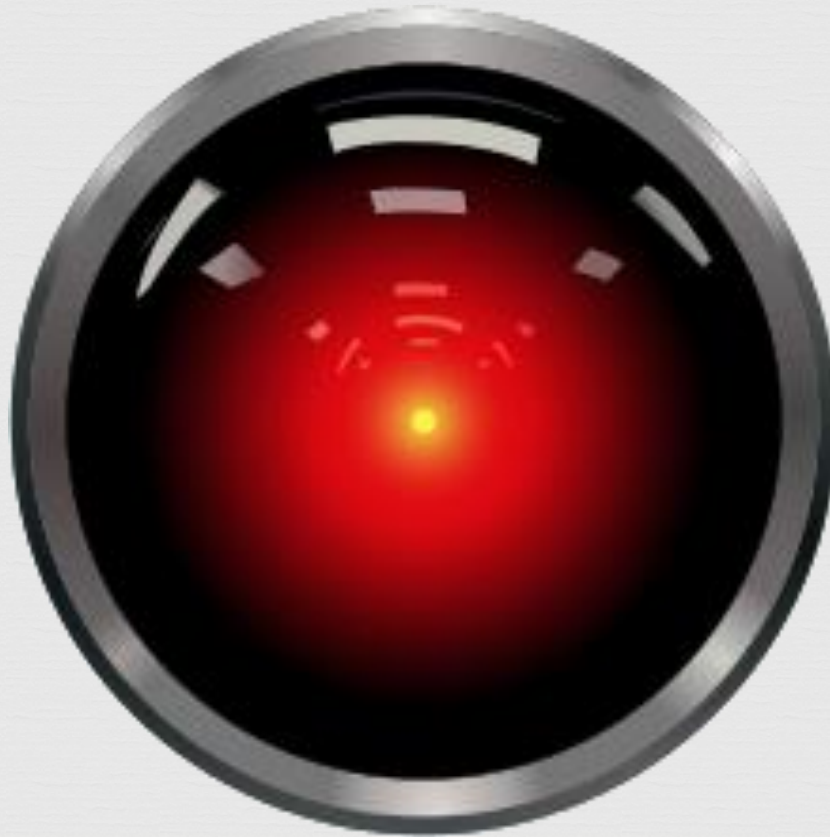
Protecting Data Against Preprocessing and A.I.

In the case of Mars missions using remote sensing of the Mars-scape there is on-going debate of pre-processing of data, archiving data on Mars, or sending back all of the data at 1/20th the efficiency via the Deep Space Network.

With the development of A.I. technology, "digital algorithms" will be increasingly between the researcher and actual data. Will there be a time when "sentient" processors will distort data for various reasons. (Think HAL in 2001: *The Space Odyssey*. When the "singularity" comes we will not be ready.