From Pipes to Platforms
Designing a Country Scale Project

Ranjit Singh

PhD Candidate, Department of Science and Technology Studies, Cornell University
ECSAS, 25th November, 2018

Source: Varma, P. (2016). Aadhar: A number to facilitate the lives of the next billion. Retrieved from https://www.youtube.com/watch?v=aJPk9w11O10

Infrastructural Processes

Enrollment

Mandatory collection of biometric data along with demographic details of enrollees during enrollment

Establishment of Uniqueness

Seeding

Adding Aadhaar number to other public and private database records of an Aadhaar user in an effort to clean them

Circulation of Uniqueness

Authentication

Claiming ownership of an Aadhaar number using different combinations of demographic information, mobile numbers, and biometrics

Certification of Uniqueness

Internet:

Above: Applications (websites, etc.)

Stem: Transmission Control Protocol/ Internet Protocol (TCP/IP)

Below: Wired/Wireless network

Aadhaar:

Above: Apps that need identity verification

Stem: Aadhaar number + Authentication Services linked to the number

Below: Biometric devices

How do you design a biometrics-based identification system spanning across the **infrastructural diversity** of a country like India?

Hourglass

Technical

Organizational

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"It's not actually complex. It's not complex because you breakdown your problem to smaller pieces of the puzzle and then, you compose the puzzle back onto a larger puzzle. Otherwise, everything looks complex. If you say, issue a biometric identity, unique, for a billion people, never been done in the world, you have to do it all in three months, all within the constraints of government, and you have to do RFP [request for proposal], you have to do lowest price guy, it all looks very complex. But, you break down. You break down in pieces, pieces, pieces, and pieces".

Hourglass

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Source: Kairav involved in designing the data architecture of Aadhaar, personal communication (24 Sep. 2015).

"Traditionally because of the lack of people like us in the system, when you ask for an identity solution. You get all-proprietary, all in a box solution. […] We unpacked them and sort of commoditized them".

Source: Kairav involved in designing the data architecture of Aadhaar, personal communication (24 Sep. 2015).

Principles of API-based software design are not only instrumentalized to distribute the work of deduplication to biometric companies, but also to implement Aadhaar's infrastructural processes (enrollment, seeding, and authentication) at scale.

Hourglass

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"Aadhaar is a new ecosystem of new and old companies, private organizations and public institutions, connected together by the standards that UIDAI has created on both sides".

The waist of the hourglass consists of UIDAI that creates standards, and MoUs for Aadhaar. Below the waist lies a networked hierarchy of enrollment and authentication agencies that enable UIDAI to uniquely identify an Aadhaar enrollee and provide verification services. Above the waist lies any public or private organization that leverages UIDAI's identification services to conduct their own work.

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"The operators were in a three level [organizational] structure. They were part of an enrollment agency contracted by the state government that had a relationship with UIDAI. We had very little control in the field. We had to make sure that the enrollment client was self-sufficient; even though we had this very long distance relationship with this operator, they couldn't mess up, the data was safe and secure, and they couldn't tamper with it. We specified the mechanics of data capture by the client—both user data and process data. When the user [operator] logs into the system, starts a new enrollment, moves screen to screen, moves back, corrects data, and so on…

Hourglass

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Source: Praful involved in documentation of Aadhaar's infrastructural processes, personal communication (24 Sep. 2015)

… Every one of those events is logged. All this data is sent back to the server and processed, so now we have a clear view of what the operator is doing in the field that allows us to even correlate behavior with quality of enrollment. […] We created reports to tell people that this operator is messing up. We interestingly found that when operators behave badly in one aspect, they behave badly in others also. For operators doing badly, there was sort of a shaming process, where you send back a report highlighting the best and the worst. […] If they consistently didn't get their act up, some people were no longer part of the system".

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Source: Praful involved in documentation of Aadhaar's infrastructural processes, personal communication (24 Sep. 2015)

In the pipe model, control is embedded in designing end-to-end vertically integrated solutions carried out by various government departments in coordination with each other. Example: Food grain-based PDS.

Whereas, in the platform model, the government only controls a critical part of a service—akin to the waist of an hourglass architecture—and opens up space for innovation by horizontally integrating the rest of the parts—above and below the waist—to a market created and regulated for delivering the service. Example: Cash-based PDS.

Hourglass

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No one has ever seen a laboratory fact move outside unless the lab is first brought to bear on an 'outside' situation and that situation is transformed so that it fits laboratory prescriptions. […] Since scientific facts are made inside laboratories, in order to make them circulate you need to build costly networks inside which they can maintain their fragile efficacy. *If this means transforming society into a vast laboratory, then do it* (Latour 1983, 166, emphasis in original)

Hourglass

Technical

Organizational

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Source: Latour, Bruno. 1983. "Give Me a Laboratory and I Will Raise the World." In *Science Observed: Perspectives on the Social Study of Science*, edited by Karin D Knorr-Cetina and Michael Mulkay, 141–70. London and Beverly Hills: Sage.

Following Latour, transforming the government into a platform of services requires rendering the Indian resident population into a big data archive with Aadhaar number as its primary key.

How are modularity and power negotiated between the relatively stable waist of the hourglasses and the highly variable components above and below the waist currently involved in implementing digital interfaces as public goods in India?

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Thank you!

Ranjit Singh

rps244@cornell.edu