

TeleChain: Bridging Telecom Policy and Blockchain Practice

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Microsoft



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tanla



Telecom Regulatory Authority of India



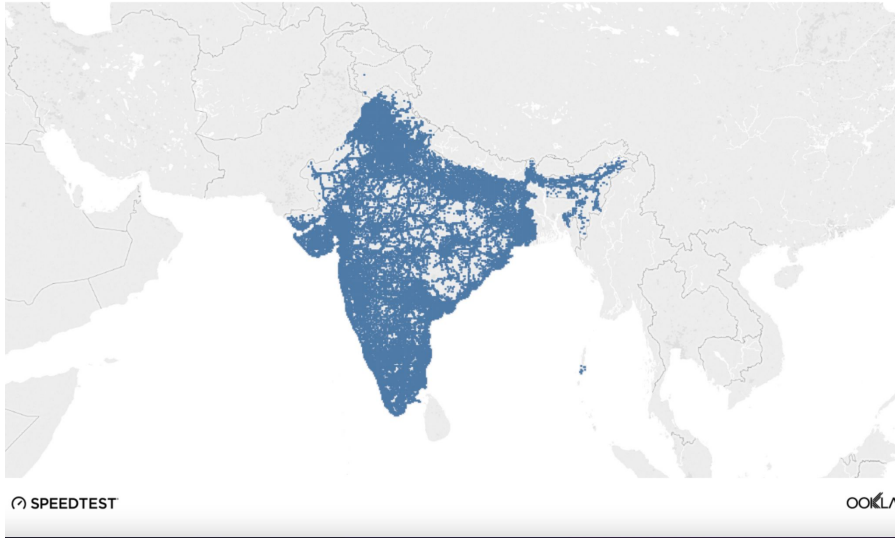
Context

A somewhat simplified version of the Current Telecom Ecosystem, the nature of the problem and the ambitious goals.



India's Telecommunications Market

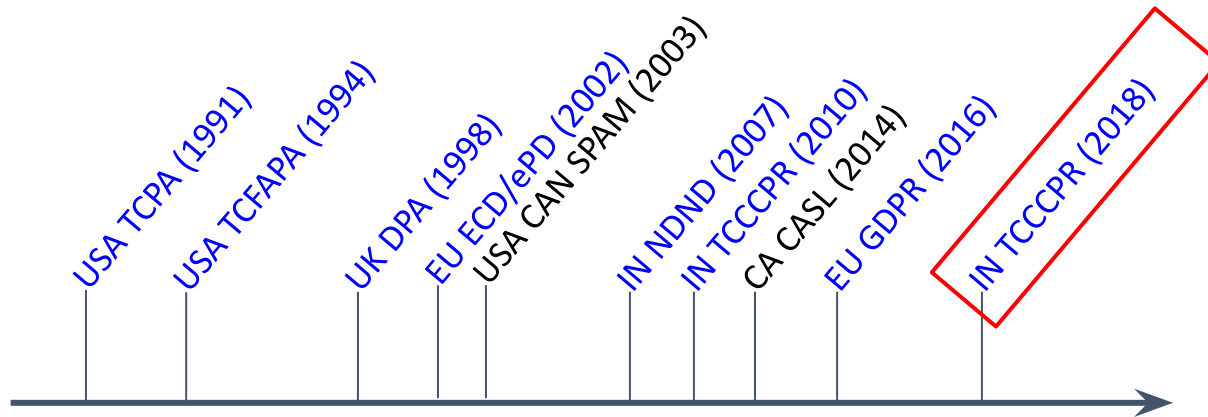
Cellular Signal General Availability in India
Four largest carriers | Q3-Q4 2018



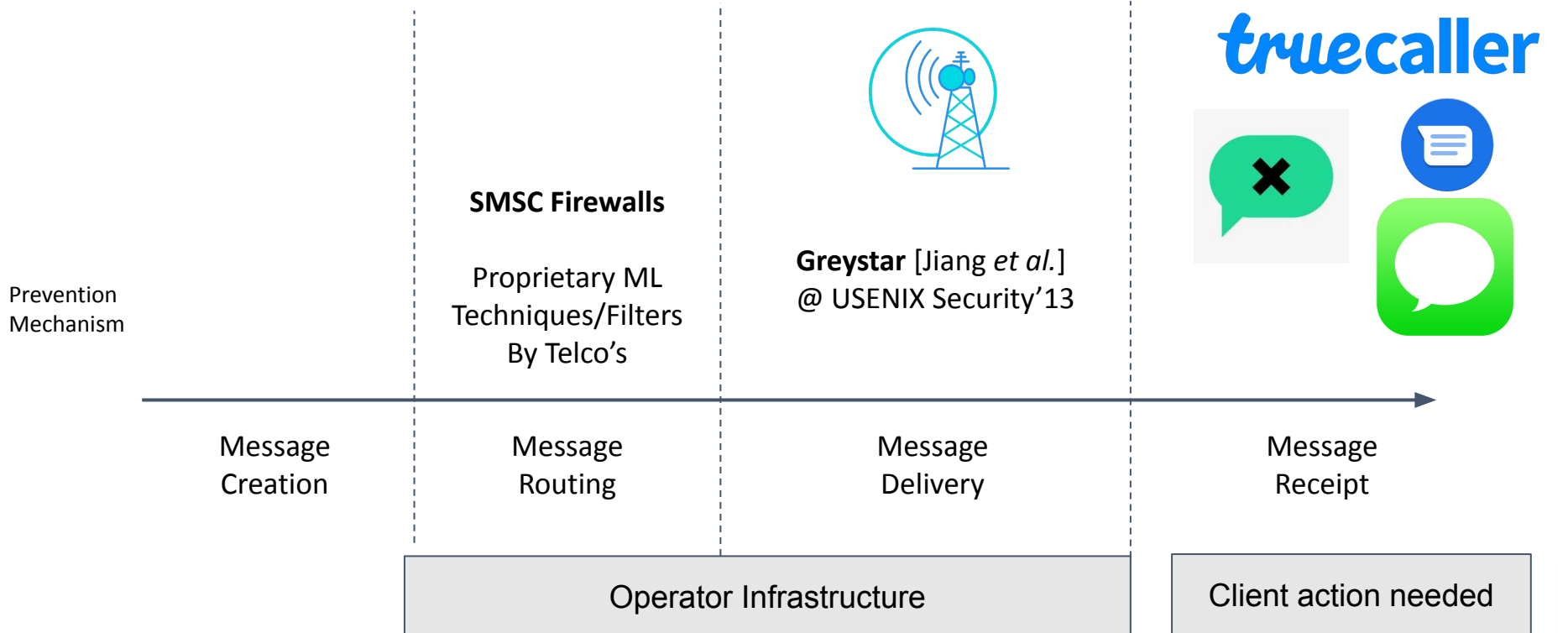
- **2nd largest telecommunications market** in the world.
- Over **1.2 Billion** active wireless telecom service subscribers
- **Low cost** messaging (0.001 USD/SMS) (0.0085 INR/SMS)
- > 30 Billion SMS messages sent **every month**

Regulatory Initiatives Worldwide

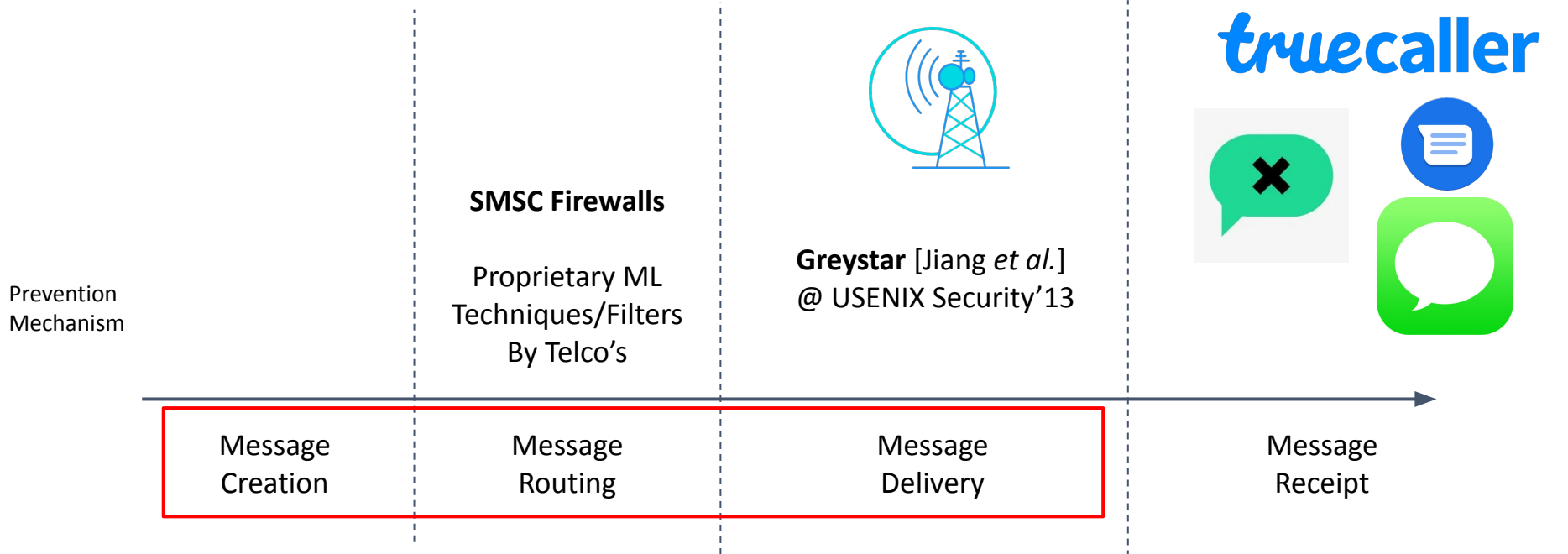
With low economic entry barriers, telemarketing (Promotional SMS/calling) made it easy for businesses to acquire new customers but brought with it a serious invasion of privacy and became a major source of irritation.



Technological Initiatives



Technological Initiatives



The NDND Registry [Dash *et al.* ICEGOV'09]

2009 - Large **centralized** database of mobile subscriber phone numbers.



2011 - Category based message blocking

Introduced 7 new categories:

1. Banking, Insurance, and Financial Products
2. Real estate
3. Education
4. Health
5. Consumer goods and automobiles
6. Communications, Broadcasting and Entertainment
7. Tourism

Current Scrubbing Workflow

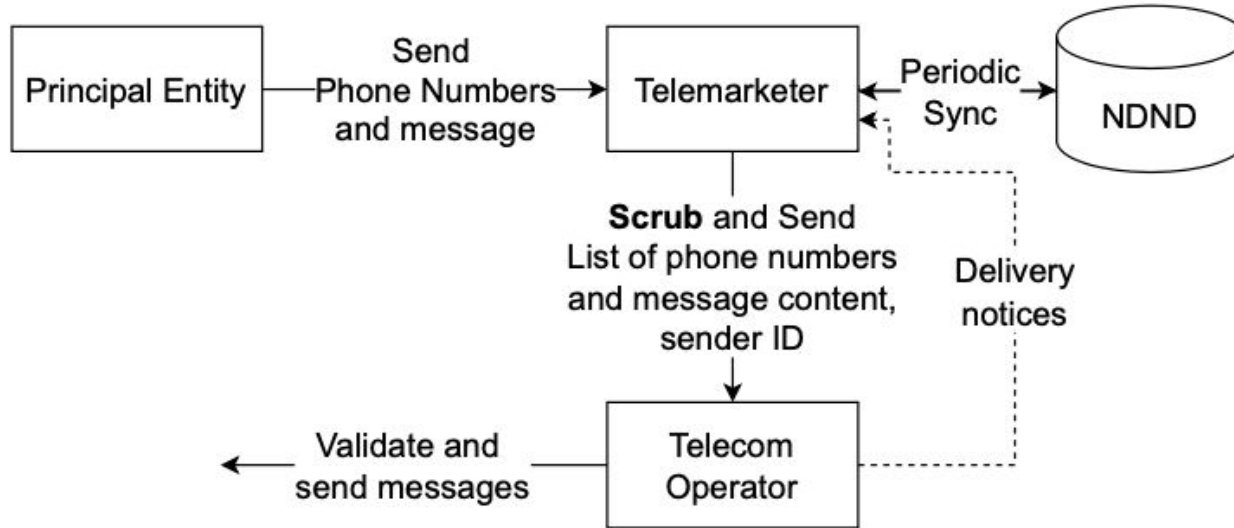


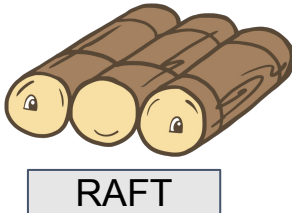
Figure 1: Current Interactions between Principal Entities, Telemarketers, and Telecom operators

Current Scrubbing Workflow

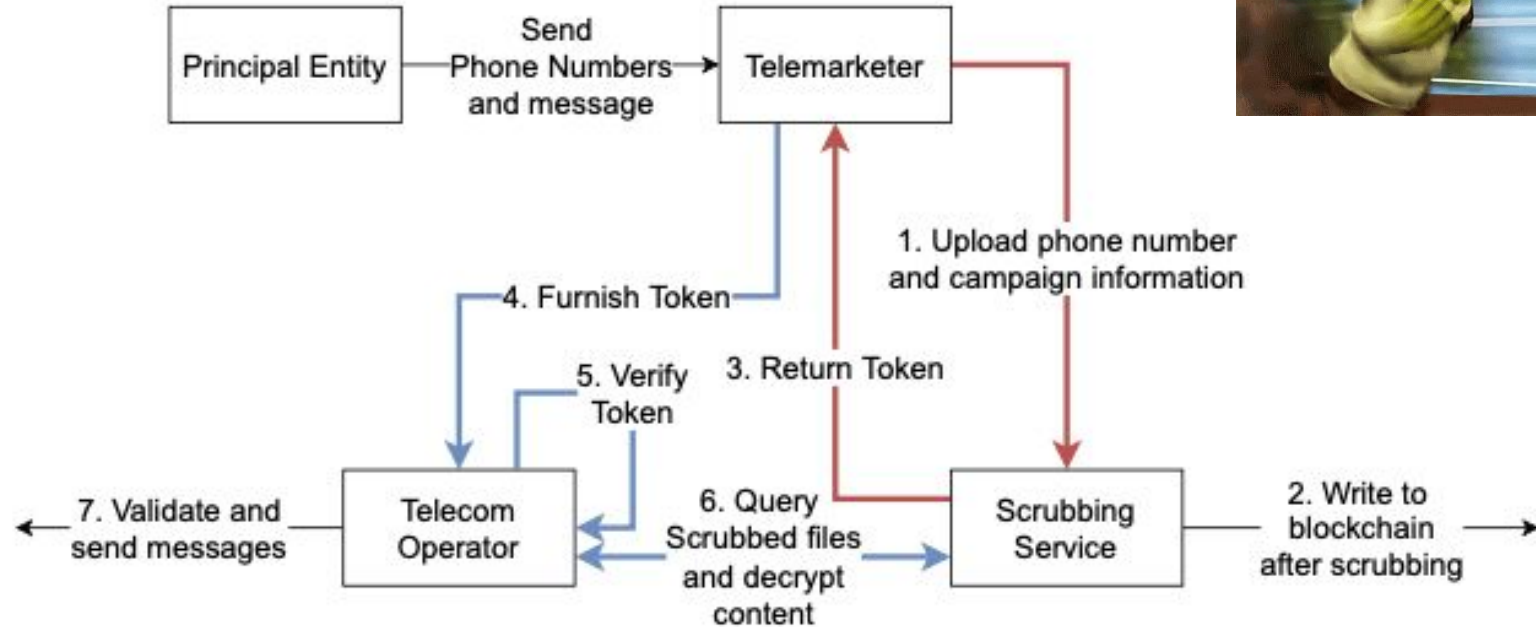


High level view of Implementation

1. Consortium blockchain network
2. Improved privacy of the NDND registry
3. Scrubbing nodes
4. Header and content template registry
5. Preference registry
6. Consent registration and acquisition
7. Smart contracts and agreements (Complaint management)
8. End user applications



Updated Scrubbing Workflow



Timeline & Deployment Challenges!

1. **18 July 2018:** Draft regulations
2. **December 2018:** Expected enforcement
3. **2019:** Severe pushback from Telecom operators (Cellular Operators Association of India [COAI])
 - a. **Reasons:**
 - i. Cost of implementation
 - ii. Telecom ecosystem is already too stressed
 - iii. Users and customers would migrate to OTT platforms (Whatsapp)
4. **28 February 2019:** Regulatory effect - Introduction of blockchain network
5. **September 2020:** Header and Template Registration and Header scrubbing
6. **March 2021:** Template scrubbing
7. **2020-2021:** Legal challenges
8. **2021-2022:** Evaluation

Legal Challenges

1. Public Interest Litigation (PIL)

a. Kansal v. The Union of India

- i. “TCCCPR 18 regulation violates citizen’s fundamental right to privacy and creates a priceless mega database of commercial relationships”
- ii. Supreme court of India rejected the request on 28th September 2020.

2. Court cases:

a. One97 Communications v. Telecom Operators

- i. “Non-adherence to TCCCPR 2018 resulted in SMS Header registration fraud due to deceptive headers”

b. Shivtel Communications v. The Union of India

- i. “The regulation would result in reduction and drop of more than 80% of message volume”



Trai's blockchain solution to tackle pesky calls, messages runs into legal hurdle

INDIAN TELECOM POLICY

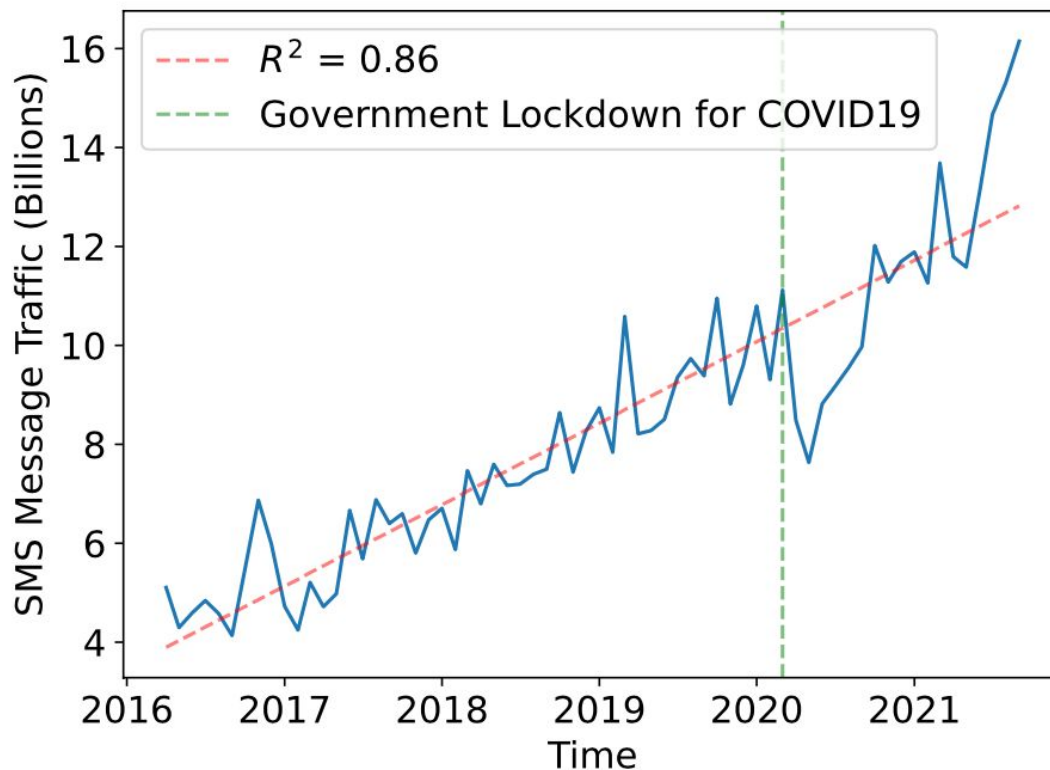
OTPs delayed, Aadhaar authentication service crashes as telecom companies implement SMS regulation

Operators have put the onus on telemarketers and individual businesses to comply with the standards laid out for services to continue smoothly.

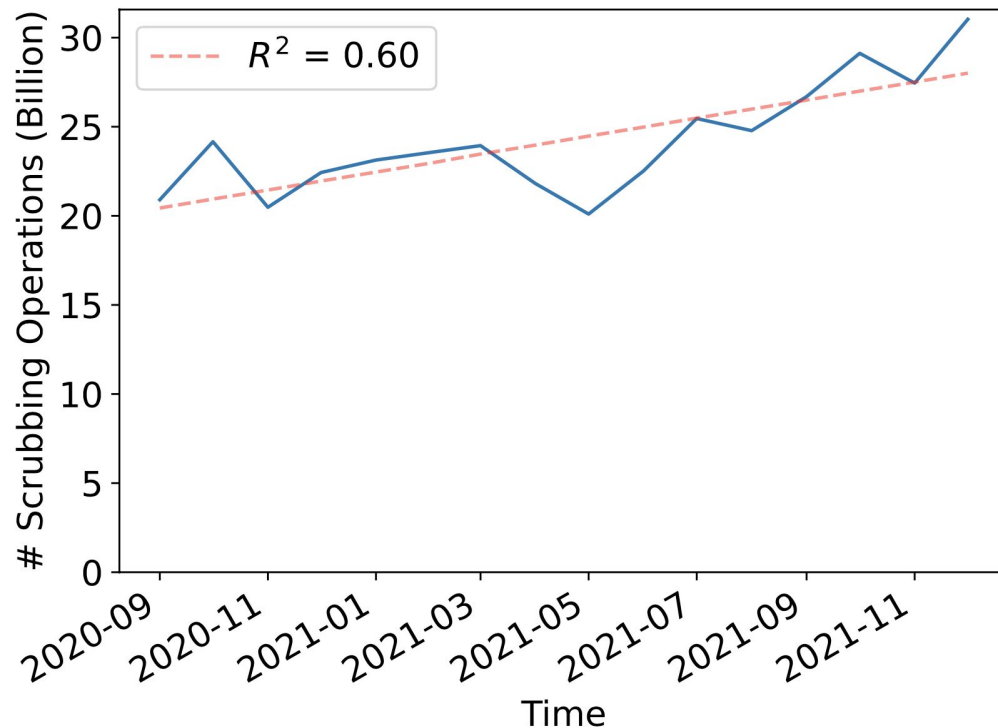
Aadhaar authentication service crashes as SMS regulation wipes out OTPs

Payments disrupted, regulation suspended

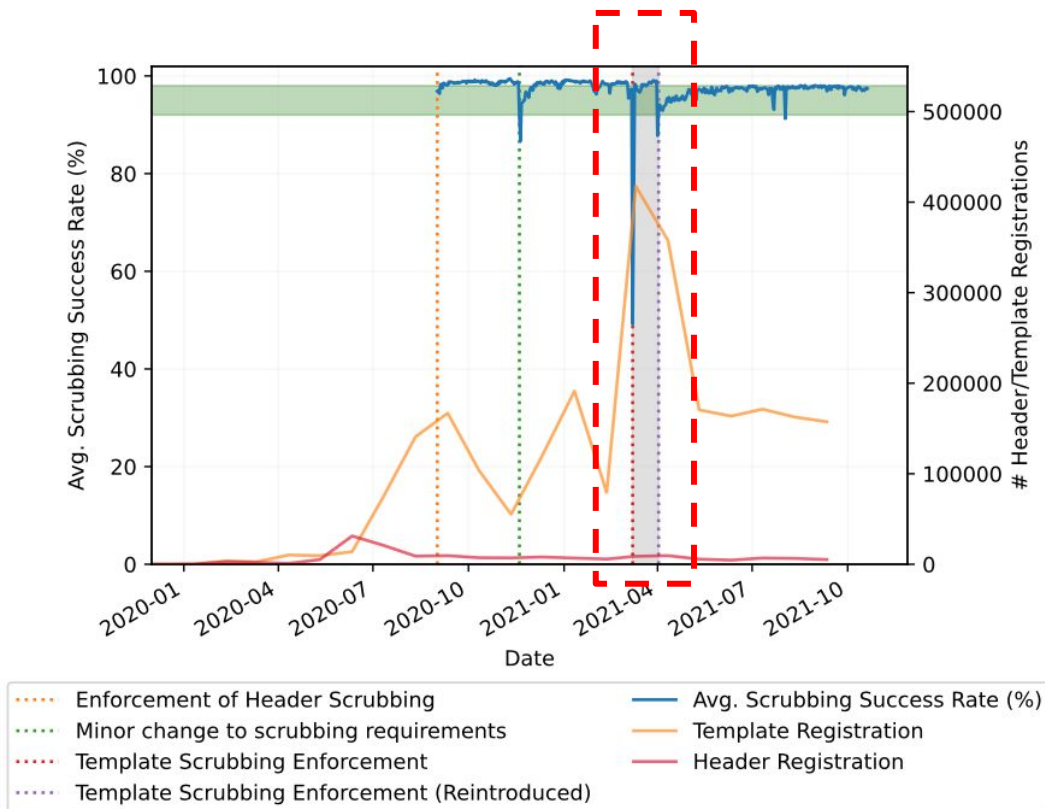
Evaluation - SMS Usage continues to increase



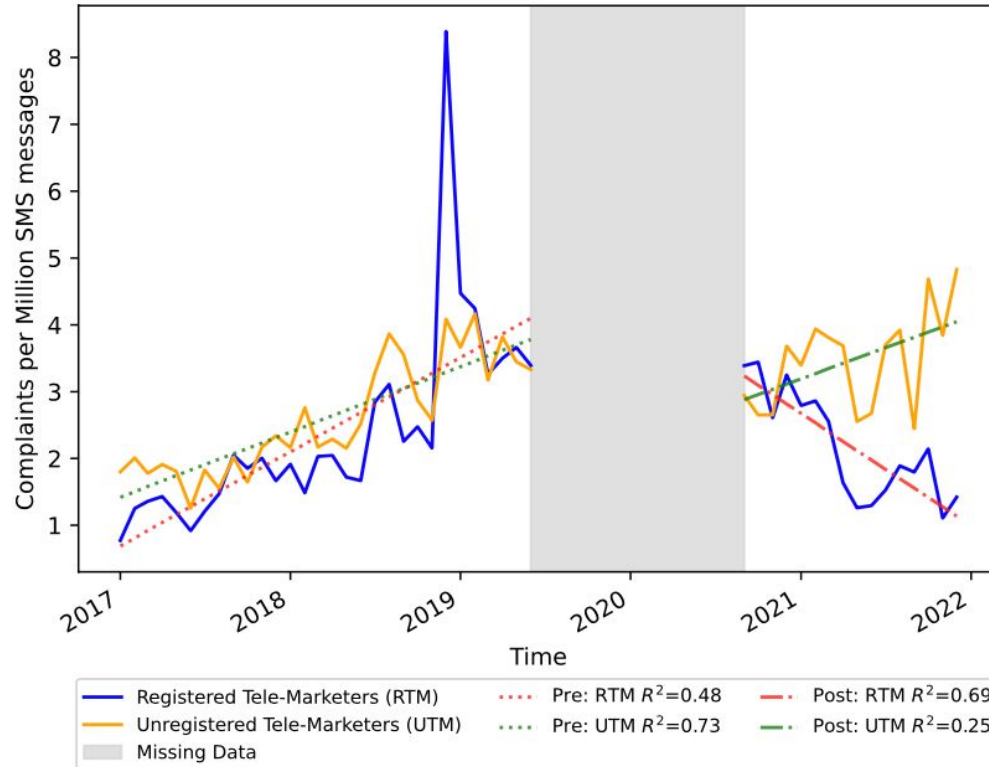
Evaluation - Service providers rely on Scrubbing



Evaluation - Disruptions can and will happen



Evaluation - But is it all for the better?



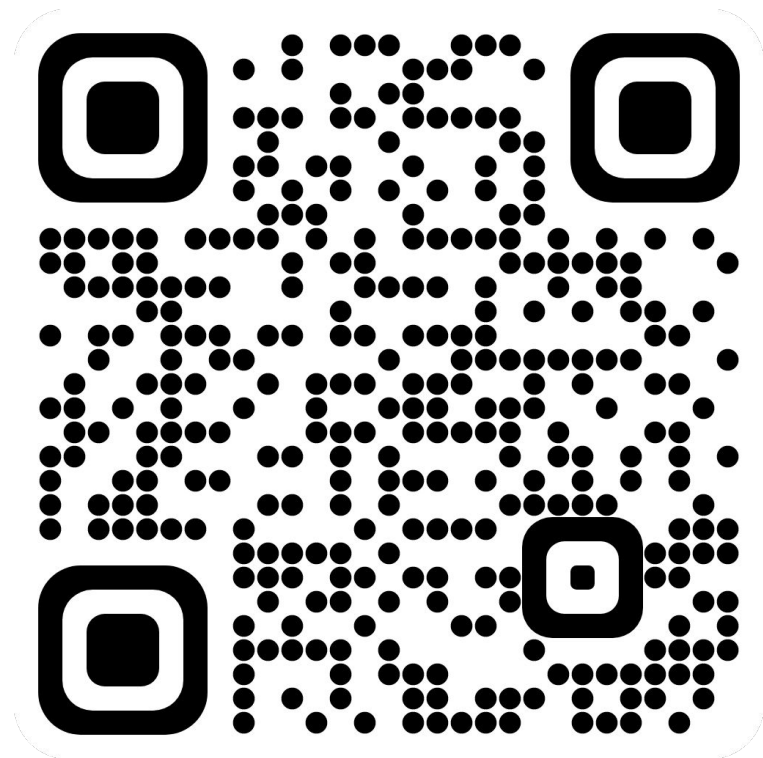
Is this the end of spam? **Unfortunately No!**

1. Spam moved from registered telemarketing channels to unregistered telemarketing channels
 - a. A malicious actor registers a phone number and uses a personal 10 digit number to make all the necessary phone calls or send SMSs.
 - b. A network of malicious actors operate hundreds of phone numbers and illegally perform SIM takeover attacks
 - c. Insider attacks in telecoms
2. Improved awareness resulted in increased reporting.
3. The knowledge of date, time, content template, SMS header, helps automatically identify root cause for failures
4. Lesser complaints against legit telemarketers is positive.
5. Strengthened collaborations, and credibility of technology
 - a. On-going discussions for instantaneous carrier transfer or number port

What have we learnt?

1. High latency business operations between competitors can be efficiently done given regulatory pushes and incentive alignments
2. Loss of potential business due to strict scrubbing requirements to over the top channels remain unfounded.
3. The blockchain network allowed for more efficient tracking of complaints and better information sharing being established
4. The network allowed operators to identify fraudulent marketing businesses and reduce risk.
5. Spam messages are still being received but has moved to P2P channels.
6. Future efforts at privacy preserving techniques are needed
7. Regulatory efforts combined with technology and ex-ante approaches could yield returns.

Thank You!



Paper:

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