

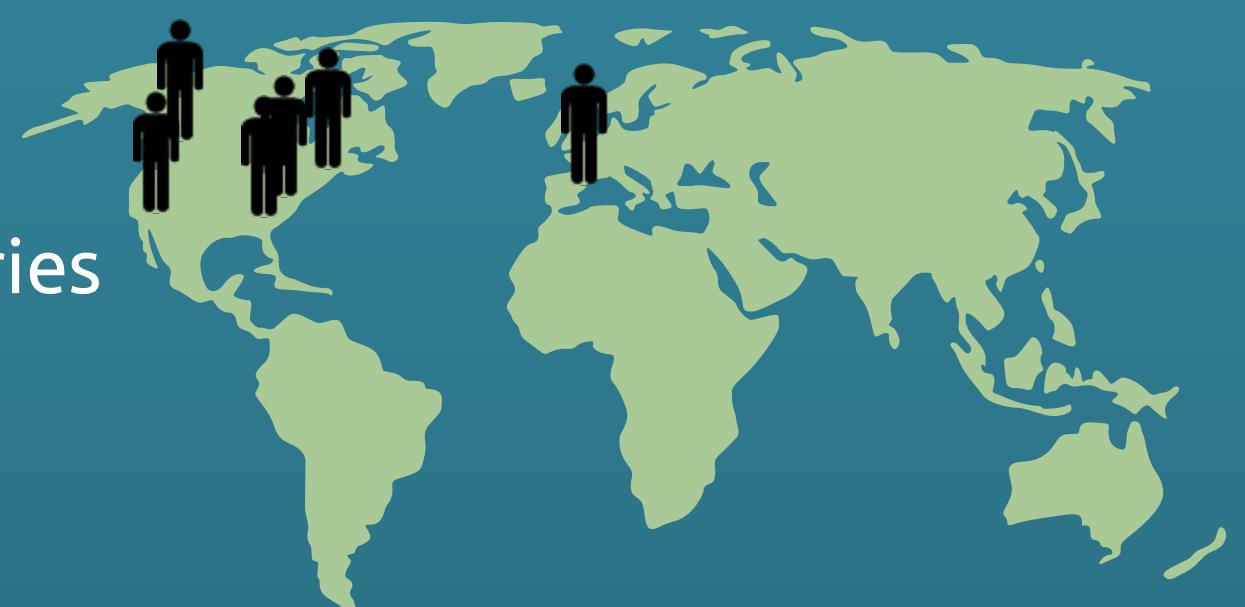
Insights into home energy consumption in INDIA

Nipun Batra, Manoj Gulati, Amarjeet Singh, Mani Srivastava

WHY INDIA?

All previous deployments only in developed countries

Does India offer anything new? Lets find out



WHAT DID WE MONITOR?



MCB level power

Meter level power

Appliance level power

Water consumption and intake

Temperature, light, Network motion performance

1

Home

3

Occupants

4

GB data

6

Single board computers

33

Sensors

73

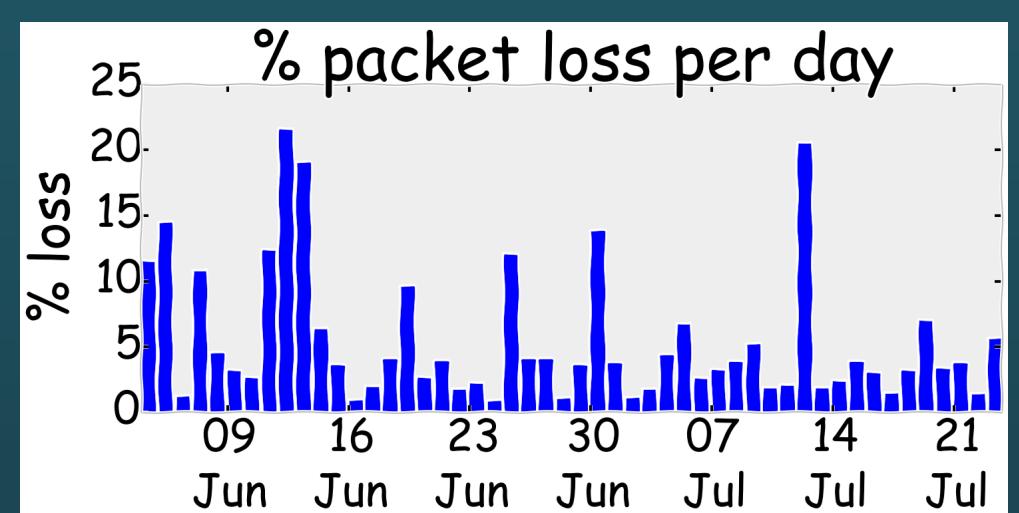
Days of data

Deployment in numbers

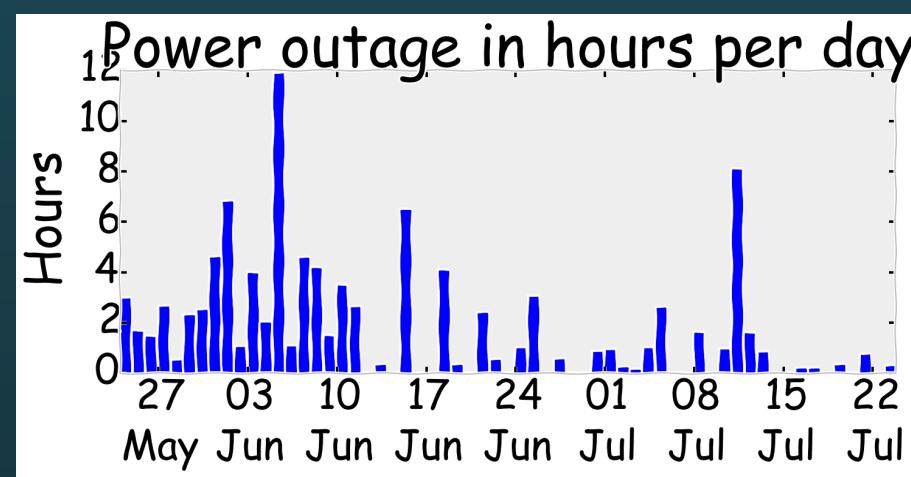
WHAT DID WE FIND?

1. Unreliable internet

Up to **25** percent packet drop observed



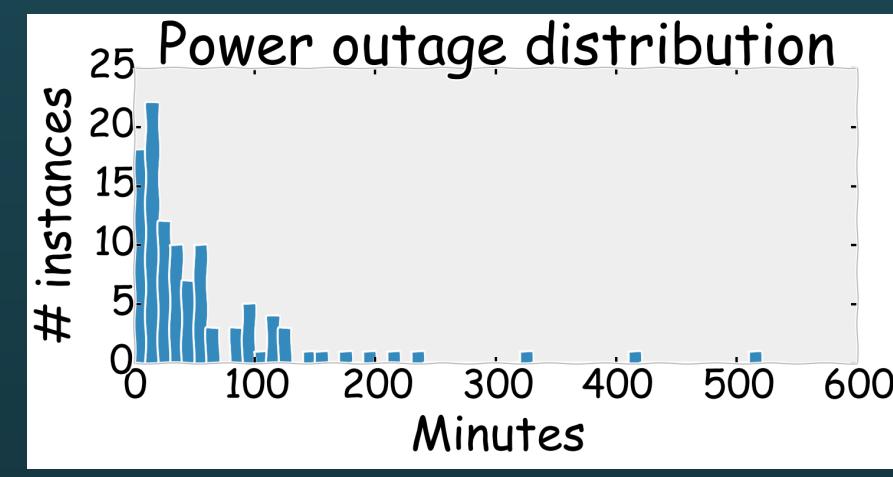
2. Unreliable grid



Power outages upto

12

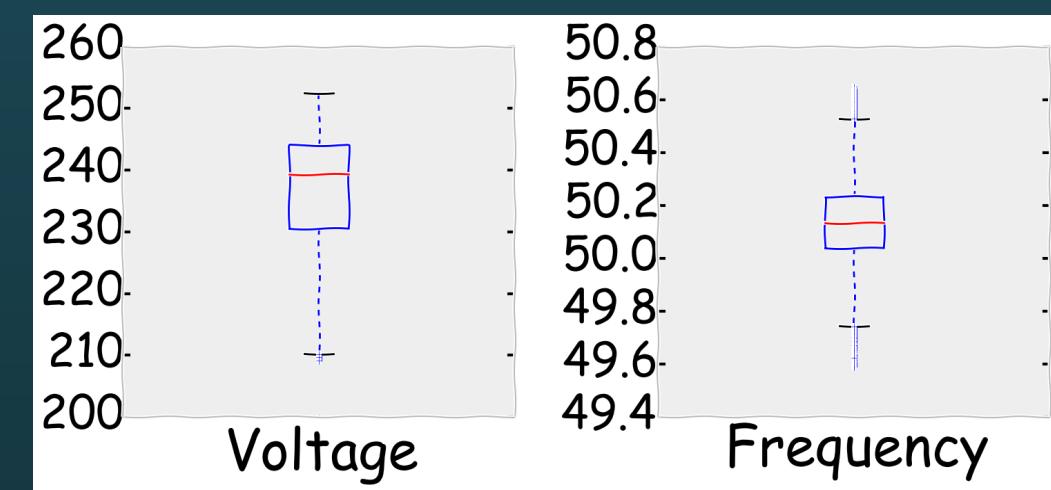
hours a day



Single outage lasting upto

9

hours



Voltage fluctuation upto

50

volts

10

times more than that in US

WHAT DID WE LEARN?

1. Architecture to accommodate network loss
2. Software to recover from power outages