

ELECTRONIC VOTING MACHINES: CUSTODIAN OF DEMOCRACY IN INDIA

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- ▶ **Voting in seven phases over 5 weeks**
- ▶ **Counting on a single day on 23rd May**
- ▶ **About 900 million voters**
- ▶ **543 Members of Lok Sabha (parliament) to be elected**
- ▶ **1035918 polling stations**
- ▶ **3.96 million EVMs**
- ▶ **1.74 million VVPATs**
- ▶ **20625 VVPATs were counted**
- ▶ **69% voters exercised their voting rights**



INDIAN ELECTIONS 2019

- ▶ **ECI is the central constitutional body to conduct elections.**
 - ▶ For Lok Sabha, Rajyasabha
 - ▶ For State assemblies
- ▶ **Public votes for Lok Sabhs and state assemblies.**
- ▶ **Other local body elections are carried out by other authorities in India.**
- ▶ **The ECI is a very small body but takes charge of the beurocracy during elections.**
- ▶ **ECI is also the custodian of the EVMs.**



ELECTION COMMISSION OF INDIA

▶ Election Process

- ▶ The voter appears at the polling booth.
- ▶ The finger is inked on the finger as a proof of voting.
- ▶ The voter then presses a key on the polling booth or ballot unit (BU)
- ▶ The votes are recorded in the control unit (CU)
- ▶ The CU is then sealed and locked and kept in a secure custody.



ELECTRONIC VOTING MACHINES

- ▶ **EVMs have three components**
- ▶ **Control Unit: With the polling officer**
- ▶ **Balloting Unit: With the voter (to be kept in a secure place for the voter to cast vote in privacy)**
- ▶ **VVPAT: Voter verifiable Paper Audit Trail. A printer kept for the voter so that the voter can be see the slip corresponding to his vote.**



EVMS



CU

VVPAT

BU



- ▶ The entire system works on Battery
- ▶ At power on time, CU goes into unit discovery
- ▶ It then sets up an authentication system between the public-private
- ▶ After authentication system, each CU sets up a session key for privacy of the data communication
- ▶ At the end, the voting data is encrypted, signed and kept securely in the CU for day validation.

Largest public key cryptosystem implementation anywhere in the world.

HOW DOES EVM WORK?



- ▶ COTS system based.
- ▶ Security by design
- ▶ End to end security
- ▶ No unknown component
 - ▶ No OS
- ▶ Simple but effective implementation
- ▶ Free of errors
- ▶ LARGEST MAKE IN INDIA initiative



EVMS

- ▶ **VVPATs provide an alternate way of counting.**
- ▶ **These can be verified in case of any suspicion.**
- ▶ **This year about 20625 VVPATs were counted**
 - ▶ **About 100 million votes counted manually.**
 - ▶ **NOT EVEN A SINGLE MISMATCH....**



EVM AND VVPAT