



How H.E.S. works

The Hybrid Election System (H.E.S.) is a groundbreaking innovation that combines the tangible security of paper ballots with the speed of modern digital technology. Powering this system are readily available hardware components: a standard laptop and a webcam. Developed by PhilCast Advocates, H.E.S. redefines election administration by establishing a "software platform environment" that empowers voters and the public.

1. Voter Interaction & Private Verification:

- The process begins traditionally: the voter shades their choices on a paper ballot.
- This physical ballot is then presented directly in front of a standard webcam connected to a laptop.
- On a private screen shield, visible only to the voter, the software instantly interprets their shaded choices. This allows the voter to immediately verify that their chosen candidate have been accurately captured by the system. This step is designed to build voter confidence, ensuring they see exactly how their vote is being read, before it becomes part of the official count.
- Upon the voter's approval, the physical ballot is dropped into a sealed ballot box. Importantly, at this stage, the electronic interpretation is solely for voter verification and not yet an official record; the physical ballot remains the primary evidence.

2. Official Counting & Public Audit:

- Once the polls close, the sealed ballot box is opened.
- All physical ballots are then scanned again, one by one, using the same laptop and webcam setup.
- This time, however, the software's interpretation of each ballot is displayed prominently on a large public LCD screen. This allows poll watchers, representatives from various parties, and members of the public to witness the counting process in real-time.
- Should a ballot be unreadable by the system due to imperfections (e.g., stray marks, incomplete shading or dirt), human election officers and observers will collectively interpret it by consensus on the spot. This crucial step reinforces that human judgment and manual counting remain central to the electoral process, with technology functioning solely as an aid rather than the ultimate authority.
- Poll watchers are empowered to take pictures of each scanned ballot's interpretation on the public screen, providing an unprecedented level of real-time auditability and documentation.
- After all ballots are scanned and counted electronically, the aggregated results for that precinct are printed out. This printout is then signed by the relevant poll officials and watchers, becoming the official precinct result.

3. Digital Aggregation & Dissemination:

Blockchain-Secured Distribution: The official digital results from each precinct, along with the signed paper printouts, are then circulated electronically to higher levels for canvassing. This transport isn't reliant on a central server; instead, the broadcast of results occurs via a secured Blockchain **Distributed Network**. Every laptop used in every precinct also functions as a node in this network, creating a robust, immutable, and highly resilient ledger that is extremely difficult to tamper with.

Real-time Public Website: Concurrent with blockchain data circulation, each precinct laptop also gains access to a user-friendly website portal. This portal delivers real-time, aggregated results, offering granular detail from the national level down to regional, provincial, city, municipal, barangay, and even individual precinct levels.

Interactive Transparency Map: The website portal features an intuitive map interface, allowing the public to visually navigate the election results. Every dot on the map represents a specific precinct, and clicking on it reveals comprehensive details:

- Precinct number
- Name of the person/s in charge
- Result and broadcast timestamp
- GNSS location
- IP address and MAC address of the precinct device
- Data, image, send, received and size, and other relevant technical details.