HYBRID ELECTION SYSTEM

A New Era of Transparent, Secure Voting:

In an increasingly digital world, the bedrock of democracy – the election process – often grapples with challenges of trust, transparency, and efficiency. Traditional methods can be slow, prone to manual error, and difficult to audit, while purely electronic systems raise concerns about unverified digital trails.

H.E.S., a groundbreaking approach that marries the tangible security of paper ballots with the speed of modern digital technology, all powered by readily available hardware: a standard laptop and a webcam.

Developed by PHILCAST Advocates, H.E.S. is an innovative system that redefines what's possible in election administration, creating a "software platform environment" that puts power back into the hands of voters and the public.

PHILCAST

www.hybridelection.net

H.E.S. empowers citizens with direct control over their votes, bypassing the influence of foreign technology. Because H.E.S. operates without centralized counting or data servers, there is no single point of entry for malicious actors.

This design ensures no central vulnerabilities exist, leaving nothing for hackers to compromise.

Voter Interaction & Private Verification

1. The process begins traditionally: the voter shades their choices on a paper ballot.

2. This physical ballot is then presented directly in front of a standard webcam connected to a laptop.

3. 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.

4. 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.

Official Counting & Public Audit

1. Once the polls close, the sealed ballot box is opened.

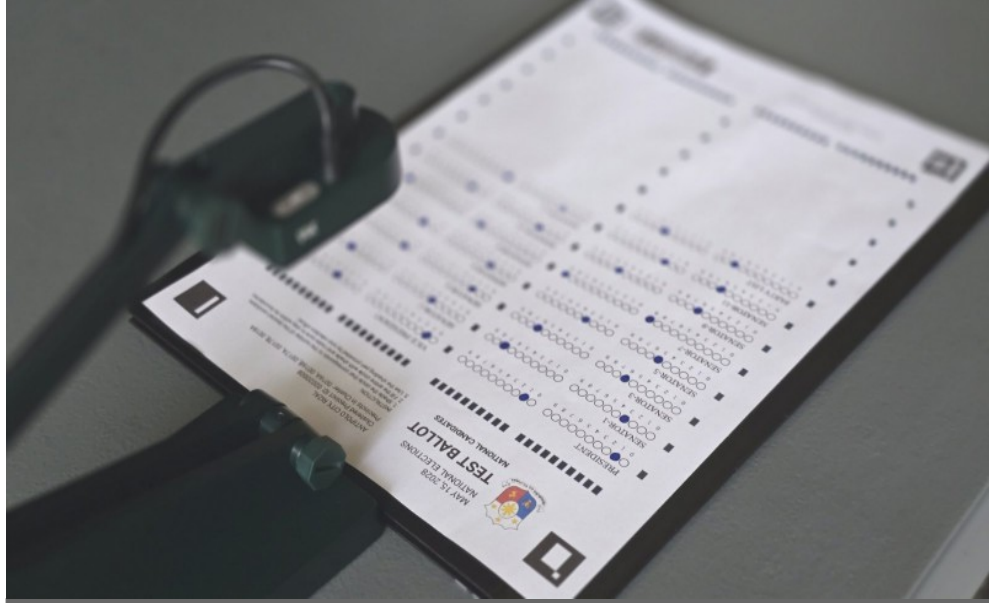
2. All physical ballots are then scanned again, one by one, using the same laptop and webcam setup.

3. 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.

4. Should a ballot be unreadable by the system due to imperfections (e.g., stray marks, incomplete shading or dirts), 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.

5. 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.

6. 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.



H.E.S. is a comprehensive election software environment that seamlessly integrates traditional and modern methodologies to enhance transparency, security, and public trust.

Its unique approach fosters a powerful synergy between human and machine intelligence, leveraging cutting-edge technologies such as AI image processing and machine learning to significantly boost its capabilities. Additionally, H.E.S. employs a decentralized system for the distribution of election results.

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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.

The Digital Backbone

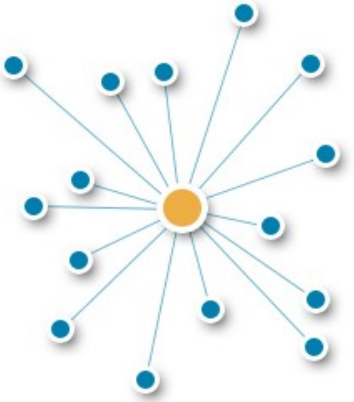
A significant advantage of a blockchain-powered distributed network within H.E.S. lies in its inherent security and resilience compared to the centralized networks common among most automated election vendors today.

Unlike a single server or database that presents a tempting and vulnerable target for malicious actors, a blockchain distributes vote records across numerous interconnected nodes.

This decentralization eliminates the single point of failure inherent in current systems, making it significantly more resistant to hacking, denial-of-service attacks, and data manipulation.

Furthermore, the cryptographic immutability of blockchain ensures that once a vote is cast and recorded, it cannot be altered or deleted without detectable consensus from the entire network, providing an unprecedented level of data integrity and auditability that is virtually impossible to achieve in a proprietary, opaque centralized model.

This transparency and tamper-proof nature fosters greater public trust and allows for real-time, independent verification of election results, directly addressing the critical vulnerabilities and trust deficits associated with relying on centralized systems that are perpetually prone to external and internal compromise.



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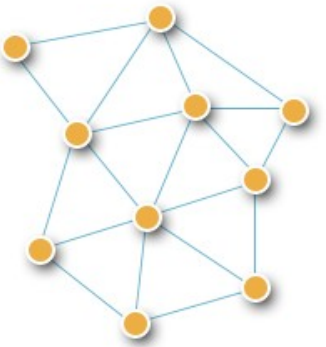

DISTRIBUTED

The above illustrations clearly differentiate between two distinct network architectures for handling election results.

Centralized Network: each blue circle signifies an ACM/VCM, with all devices transmitting their election data to a single, central server represented by the yellow circle. This configuration highlights a singular point of data aggregation.

Distributed Network: all yellow circles denote laptops that have our H.E.S. software installed, enabling them to function as individual nodes. With an estimated over 300,000 such nodes potentially spread across the country, this distributed configuration is designed to be virtually impossible to compromise, offering robust security against any hacking attempts.

Why H.E.S. matters

H.E.S. represents a significant leap forward in election technology, addressing critical needs in modern democracies:

- Unparalleled Transparency & Auditability: The combination of voter-verified physical ballots, public live scanning, and blockchain-secured digital records creates multiple layers of verification. Every step is open to scrutiny, from the individual voter to public observers and technical experts.
- Enhanced Security: The hybrid nature mitigates risks. A physical paper trail protects against purely digital vulnerabilities, while blockchain technology provides a tamper-proof, distributed ledger for electronic results, making widespread fraud virtually impossible.
- Increased Voter Confidence: By allowing voters to see their ballot interpreted before it's dropped, the system directly addresses concerns about misinterpretation or manipulation, fostering greater trust in the process.
- Cost-Effective & Scalable: Utilizing standard laptops and webcams significantly reduces the cost barrier often associated with specialized election equipment, making advanced electoral technology accessible even in remote or resource-constrained areas.
- Real-time Accessibility: The interactive web portal democratizes access to election results, empowering citizens with immediate, verifiable data at every level of detail.

H.E.S. isn't just an upgrade; it's a paradigm shift. By embracing off-the-shelf technology in an intelligent, multi-layered design, it promises to deliver elections that are demonstrably more secure, transparent, and trustworthy, setting a new global standard for democratic processes in the digital age.

Other Consideration

H.E.S. also presents a compelling alternative to traditional foreign-based vendor vote counting machines, primarily due to its inherent cost-effectiveness and versatile utility after elections.

Unlike specialized, single-purpose ACMs/VCMs that become idle once votes are tallied, the core equipment of the H.E.S standard laptop computers, large LCD screens, and Webcam can be seamlessly repurposed for classroom instruction by the very schools hosting polling places, transforming election expenditures into valuable educational assets.

This dual functionality translates into substantial savings, as the acquisition cost of these widely available components is dramatically lower than that of proprietary ACMs/VCMs, which, by their very nature, offer no secondary application and often incur the significant burden of costly warehousing.

Crucially, H.E.S. offers a significant advantage by eliminating the reliance on expensive, lock-in, Telco-based VPN SIM packages. This fundamental design choice drastically reduces operational costs, while simultaneously enhancing the accessibility and scalability of secure election result reporting across even the most diverse geographical locations.

Unlike traditional solutions, H.E.S. only requires regular public internet connectivity, making it incredibly flexible and easy to deploy. Furthermore, and critically for sensitive applications, its robust process and design architecture is engineered to be immune to hacking threats, ensuring the utmost integrity and security of the reported data.

Furthermore, the H.E.S. system extends its economic advantages to consumables and operational logistics; it utilizes standard A4-sized ballot paper, significantly cheaper to print than the specialized ballots required by foreign systems.

It is crucial to understand that the H.E.S. is fundamentally distinct from a commercial vendor, a proprietary product, or merely another solution provider. Instead, H.E.S. stands as a robust platform, conceptually engineered and meticulously developed to directly confront and resolve the myriad challenges and persistent issues that have historically plagued existing electoral methodologies and systems used in countless past elections.

The very genesis of H.E.S. lies in a unified and groundbreaking collaboration, drawing upon the diverse and invaluable expertise of IT professionals, former COMELEC officials, seasoned government ICT leaders, military IT experts, independent observers, electoral analysts, and reform advocates from various societal sectors.

This broad-based synergy was the catalyst, forging the functional concept and workflow of H.E.S. with a singular purpose: to deliver a transparent, accurate, and trustworthy electoral process, thereby explaining precisely why H.E.S. was conceived and brought into existence.

THANK YOU

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