

RAIN + Visual Interfaces & the “Black Box” Problem

Outcome-centric Solutions for Healthcare

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New Applications for RAIN RFID

A new way of using RAIN RFID to accelerate adoption of eLabels in clinical trials (and healthcare in general)

Solving the “Black Box” problem

The Underlying Proposition

The economics of disposable IoT depend on outcomes that depend on

- The actions of people, and those actions depend on
 - Actionable intel, and
 - Wireless *and* visible interfaces (to the intel)
- Ad-hoc aggregation of stakeholders
- End-to-end trust / verification

The “Black Box” Problem

eLabels for Clinical Trials

- Regulatory and commercial push: electronically updatable *visual* expiry dates
- Tens of millions of packaged drugs, distributed around the globe
- Best practices currently require *visual verification of printed labels*
- Labeled drugs are packaged/kitted and placed inside a “black box” where they can’t be seen or accessed using near-field communications



Trust but... Verify

Acceptance and adoption of eLabels depends on:

Verifying the actual, visible information on which human actions (and outcomes) depend

- First time, every time information is written to the display
- Greater compliance; use of immediately available information
- Fewer errors, mistakes, omissions plus real-time reporting

The economics from

- Writing *and* verifying the visible information **in-bulk** while **in-the-box**
 - Simplifying, lowering cost of operations
 - Handling, packaging, monitoring, reporting, training and administration
 - Shortening time to acceptance



Visual Verification Technologies

VerifiablyVisible™ (V.V™)

Electrical

- Integrated electrical detection/determination of the 'state' of individual segments/pixels (e.g. black, white, gray)
- Rewriteable, bi-stable displays
- Pre and post write (update) to "bookend" visible information between updates / access to power

Optical

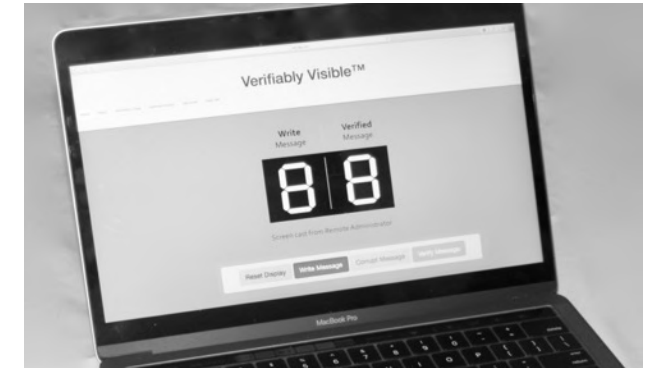
- Transmissive or reflective depending on device/application
- PV/OPV + light source (e.g. LED) + lightguide



V.V Demo

Remote Administrator (notebook)

Remote Admin sends write message and receives results of V.V



eLabel (text fixture)

- Bi-stable, rewriteable electrophoretic display
- Electrical detection/determination circuitry
- Wireless enabled

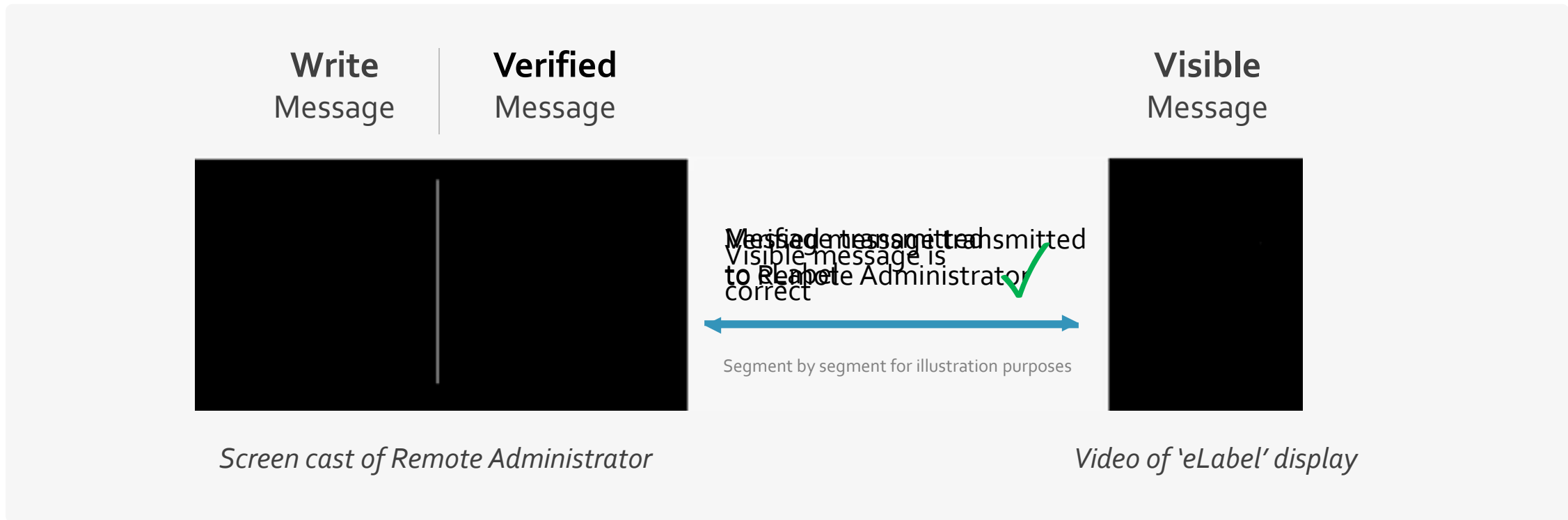
V.V is performed by the "eLabel"



V.V Demo

Basic Detection/Determination

This video can also be viewed at: <https://youtu.be/QVcnKYNPYRc>

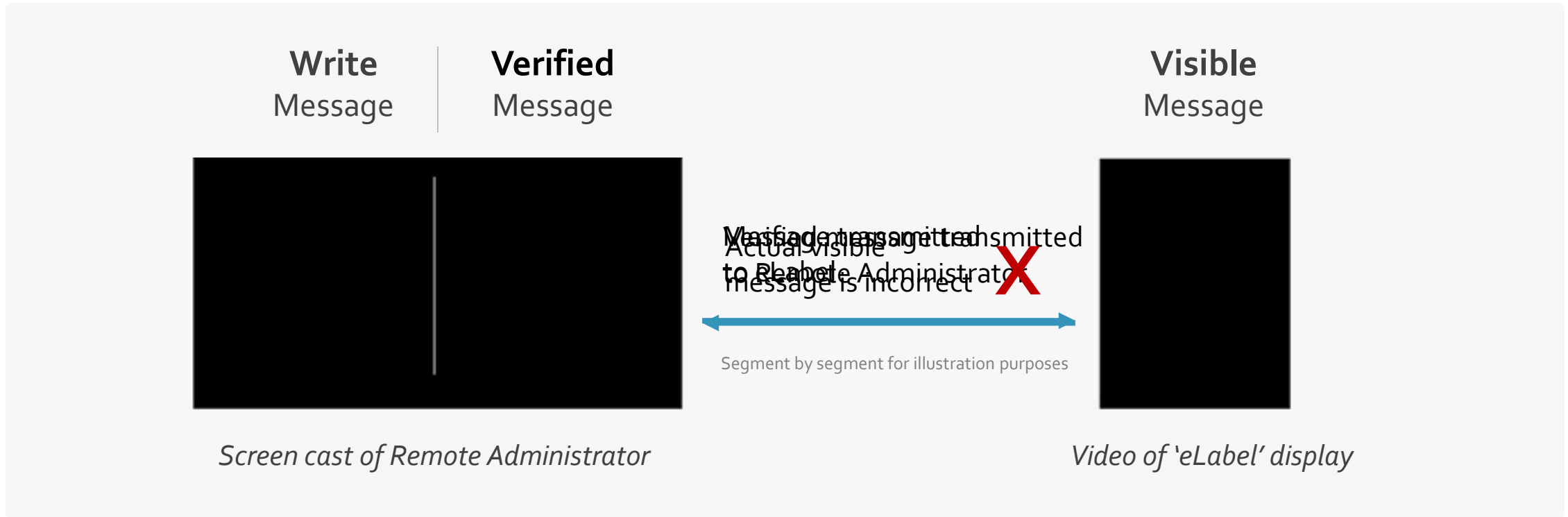


 Click to start video

V.V Demo

Error Detection/Determination

This video can also be viewed at: https://youtu.be/y8pUo_cEpyM



 Click to start video

Solution

Wirelessly Updatable Expiry Dates for Clinical Trials

RAIN RFID + visual verification + rewriteable/bi-stable displays

Update and verify in-bulk, inside the black box

Outcomes

- Best results from clinical trials
 - Up-to-date information
 - Visually accessible to all concerned
 - Verifiably trustworthy
- Remote monitoring, admin and access to trusted info
- Cost neutral (or better)

Benefits

- Lowest overall cost of operation
- Accelerated approval/adoption
- Unlimited shelf/operating life
- Flexible business models
- Platform for future services

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