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GLOBAL MOBILE ASSOCIATION EXECUTIVE WHITE PAPER SERIES

The Hidden Value Leak

Six Stages Where Margin Is Won or Lost in the Secondary Mobile Device Lifecycle

6

interconnected operating stages

\$6.4B

returned to U.S. consumers through
trade-in in 2025

+9%

2026 forecast growth for the organized
secondary smartphone market

Global operating analysis | September 2026

Prepared by GMA Research and Insights

ABOUT THIS PUBLICATION

Purpose and Scope

A device does not create or lose value only when it is bought and sold. Value can change at every decision point between acquisition and final disposition. This paper examines six operating stages - intake, condition assessment, erasure and verification, software readiness and reimaging, processing, and channel routing - and shows how incomplete data, inconsistent decisions, delay, rework, lock status, process variation, and channel mismatch can reduce the net recovery available from a device.

The six-stage framing was recently highlighted by Blancco Technology Group in an industry seminar developed with FDM CCS Insight. GMA used that framing as a starting point, then independently researched the underlying operating issues using public market data, standards, platform documentation, OEM guidance, academic research, and current secondary-market sources. This paper is not sponsored by Blancco, FDM CCS Insight, or any other vendor.

Mobile First - Not ITAD Expansion

The seminar addressed both ITAD operators and mobile processors. GMA focuses this analysis on smartphones, tablets, connected mobile devices, and the businesses that acquire, process, redistribute, and resell them. Laptop examples appear only where they clarify the reimaging stage or where the underlying dataset combines device categories.

What This Paper Does Not Do

- It does not create or propose a new device grading standard. CTIA already maintains a well-established wireless device grading framework, updated to Version 5.1 in June 2026.
- It does not treat vendor performance claims as industry benchmarks unless independently supported. Vendor-reported case studies are clearly labeled.
- It does not assume the highest gross selling price is the best route. Net recovery, speed, risk, returns, fees, and working-capital exposure all matter.
- It does not provide legal, cybersecurity, privacy, tax, customs, accounting, or regulatory advice.

WORKING HYPOTHESIS The largest hidden losses are often not caused by a single bad decision. They arise when accurate information generated at one stage does not travel with the device to the next stage.

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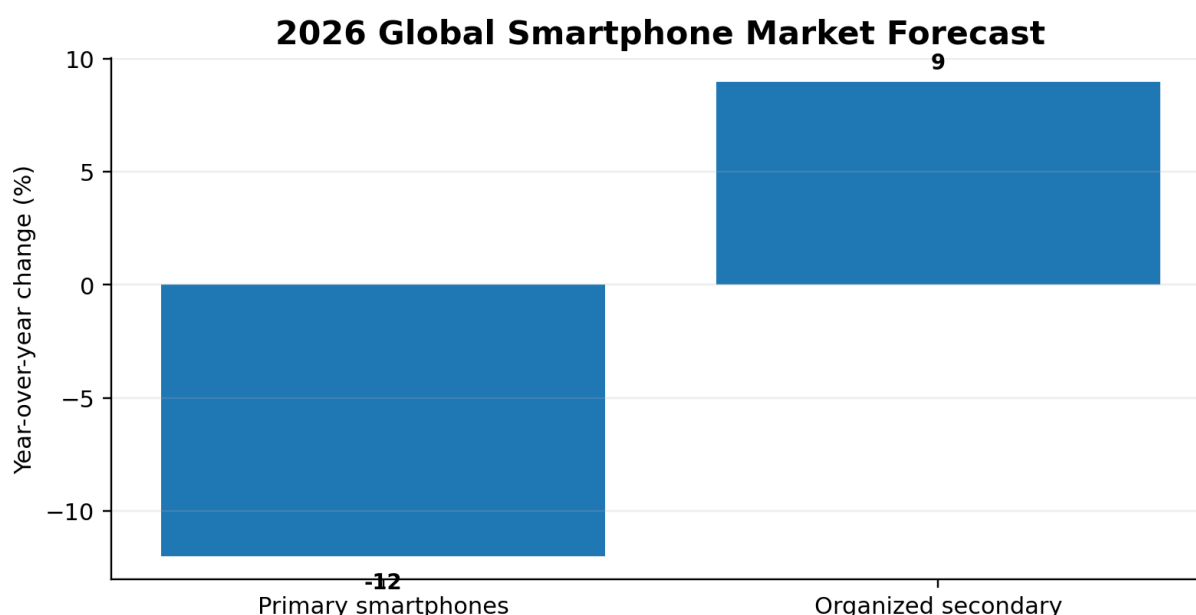
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EXECUTIVE SUMMARY

Value Is Lost Between the Purchase Price and the Sale Price

The organized secondary smartphone market is being asked to do more with constrained supply. FDM CCS Insight reported that the organized secondary market grew 3% year over year in 2Q26 and forecast 9% full-year growth, while the primary smartphone market was forecast to decline 12%. The same research identified supply shortages as a major limiter of secondary-market growth. When supply is scarce, the economics of each recoverable unit become more important. [3]



Source: FDM CCS Insight, 2Q26 market update (August 2026).

The operating implication is straightforward: leaders cannot manage margin only at acquisition and final sale. The device moves through a chain of decisions. At each stage, the business either improves its understanding of the asset and routes it toward the highest credible net recovery - or introduces uncertainty, delay, unnecessary cost, rework, or risk.

Six places where value can leak

- Intake: inaccurate identity, condition, ownership, lock, or source information creates the wrong starting valuation.
- Condition assessment: inconsistent interpretation can underprice a good device, overprice a weak one, create buyer disputes, or send a device down the wrong process path.
- Erasure and verification: a device that cannot be securely sanitized, unlocked, or verified may be commercially unusable even when the hardware is sound.
- Software readiness and reimaging: a clean device is not always a sale-ready device. Software state, activation, licensing, support eligibility, and configuration can determine deployability.
- Processing: excessive touches, queue time, manual handoffs, inconsistent decisions, and poor exception management consume both labor and device value.

- Channel routing: the same physical device can produce very different net recovery depending on geography, buyer type, marketplace, fees, return exposure, timing, and demand.

WORKING HYPOTHESIS Operators that measure stage-level yield and cross-stage handoffs will identify margin opportunities that remain invisible in a simple “buy price versus sell price” P&L view.

What leaders should take away from the six-stage lens

- The practical value of the model is not the number six. It is the discipline of separating market movement from preventable operating loss. When the organization can explain why a device changed value, it can improve the decision rule, shorten the cycle, or stop adding cost where the economics no longer justify it.
- Measure each stage against an economic output, not only a technical completion metric.
 - Treat exceptions as inventory with an owner, an aging clock, and a decision deadline.
 - Preserve evidence across handoffs so later teams do not rediscover identity, condition, security, or eligibility facts.
 - Compare realized outcomes back to the acquisition assumption so buying rules improve with experience.
 - Separate losses caused by market price movement from losses caused by avoidable process variance.

How to use this paper

Use the following chapters as a diagnostic map. The objective is not to adopt one vendor workflow. It is to locate where value changes, identify whether the change was expected or avoidable, and determine which evidence and decision controls would have protected net recovery.

RESEARCH INTEGRITY

What the Six-Stage Model Gets Right - and What Still Needs Verification

Blancco and FDM CCS Insight have brought useful attention to a practical operating problem: device value can be lost between functional teams even when each team appears to be doing its job. Public materials confirm the six-stage framing and state that the associated webinar uses fresh 4Q25 smartphone and laptop data. However, some of the promotional figures circulating around the seminar are not available with enough public methodology for GMA to reproduce them independently. [1, 2, 4]

Seminar claim or theme	What GMA could verify publicly	Treatment in this paper
“47 million devices traded hands last quarter”	FDM CCS confirms a proprietary 4Q25 Pulse dashboard covering smartphones, smartwatches, tablets, and newly added laptops. A public 4Q23 release documented 46.8 million second-hand mobile devices sold. The exact 4Q25 “47 million” number is not visible in the public dataset. [4, 5]	Not used as a verified market statistic.
Two experts can grade the same device differently	Blancco publicly states this issue; CTIA continues to update its grading framework specifically to improve transparency and consistency. [2, 9]	Treated as a real operational risk, not as a quantified universal rate.

Seminar claim or theme	What GMA could verify publicly	Treatment in this paper
One undetected lock can destroy resale value	Apple Activation Lock, Android factory-reset protection, GSMA block-list status, and carrier/ownership restrictions can prevent reuse or materially restrict marketability. [14, 15, 16]	Strongly supported directionally; impact depends on lock type and ability to clear it.
20-30% resale uplift from reimaging	GMA found public evidence that correct reimaging/software readiness improves deployment readiness and workflow efficiency, but not a public, market-wide dataset supporting a universal 20-30% uplift. [21, 22]	The percentage is not presented as an industry fact.
The U.S. is automated while everyone else is deciding	Automation vendors show substantial U.S. deployments and global expansion, but no comprehensive dataset supports this geographic generalization. [19, 20]	Not used as a market fact.
2x volume moves through unaudited channels	GMA did not locate a public methodology sufficient to validate this multiplier.	Not used as a quantified claim.

Why this matters: A GMA white paper should help members separate a valuable operating idea from numbers that may depend on proprietary definitions. The six-stage concept stands on its own even without adopting every promotional statistic.

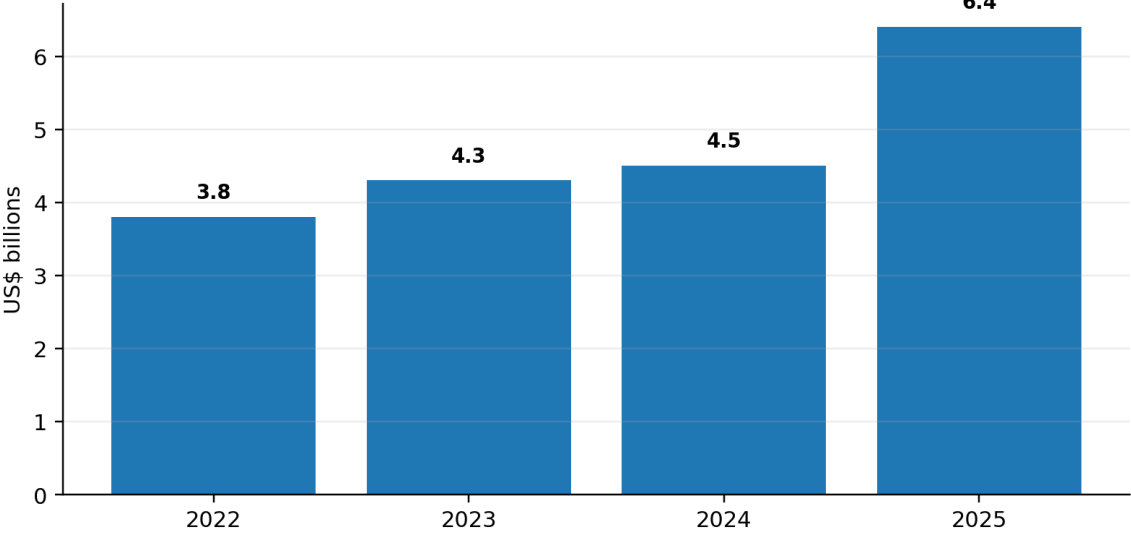
1 | MARKET CONTEXT

Why Every Recoverable Unit Matters More

Secondary mobile demand is strengthening at the same time supply is constrained. FDM CCS Insight reported that the organized secondary smartphone market grew 3% in 2Q26 despite shortages, while exports from China and Japan partially offset reduced U.S. supply. Markets with import restrictions faced additional scarcity. [3]

Trade-in economics also continue to expand. Assurant reported that U.S. mobile trade-in programs returned \$6.4 billion to consumers in 2025, up 42% from 2024. In Q2 2026 alone, programs returned \$1.43 billion. [6, 7]

Value Returned to U.S. Consumers Through Mobile Trade-In Programs

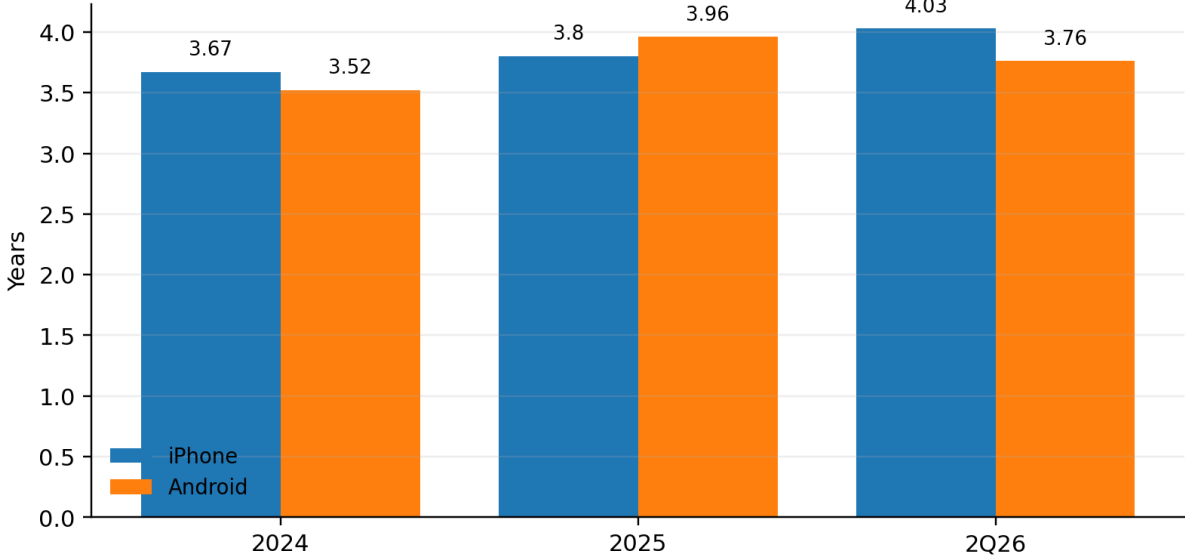


Source: Assurant annual trade-in reports. 2025 was up 42% year over year.

Older devices create more process variability

Average device age at trade-in has continued to rise. Assurant reported average ages of 3.80 years for iPhones and 3.96 years for Android devices in 2025; in Q2 2026, iPhone age crossed four years for the first time at 4.03 years. Older devices are not necessarily low-value, but longer life increases the probability of battery wear, repair history, account or management locks, unsupported configurations, cosmetic variance, and part replacements. [6, 7]

Average Device Age at Trade-In



Sources: Assurant 2024 annual, 2025 annual, and Q2 2026 reports. 2Q26 is quarterly, not full-year.

WORKING HYPOTHESIS As device age and supply scarcity increase together, operational accuracy becomes a source of inventory. A device recovered from an avoidable lock, wrong route, poor listing, or unnecessary rework is effectively new supply for the business.

2 | ECONOMIC MODEL

Defining Value Leakage

For this paper, GMA defines value leakage as the difference between the best credible net recovery available to a device at a point in time and the net recovery actually realized because of avoidable information, process, timing, risk, or routing failures. This is an analytical framework, not an accounting standard.

The relevant number is net recovery - not headline resale price

A higher selling price can produce a lower economic result if it requires more labor, more days in inventory, higher marketplace fees, greater returns, more warranty exposure, or cross-border costs. Leaders therefore need a device-level contribution view.

A practical decision model is:

Expected Net Recovery = Expected Sale Proceeds - Processing Cost - Channel Cost - Expected Returns/Warranty - Logistics - Cost of Time and Capital

Value leakage can then be measured against the highest credible net recovery route that was available when the device was processed. The word credible is important. A theoretical consumer retail price is not a valid benchmark for a bulk device that requires extensive repair, carries high return risk, or would take months to sell.

Four categories of leak

Leak category	Examples	What it usually changes
Information	Wrong model/storage, missing lock status, incomplete diagnostics, lost repair history	Valuation, process path, listing accuracy, buyer confidence
Process	Duplicate testing, manual re-entry, unnecessary handling, weak exception routing	Labor, cycle time, queue time, throughput
Risk	Data-remanence uncertainty, fraud, blocklist status, ownership ambiguity, poor audit trail	Eligibility, reserves, returns, compliance exposure
Market / routing	Wrong geography, buyer, channel, timing, fee structure, or lot composition	Net selling price, days to sell, working capital, return rate



Each handoff can preserve value - or quietly destroy it.

3 | LEAK ONE

Intake: The First Decision Can Contaminate Every Decision After It

Intake is not simply receiving a box and recording an IMEI. It is the point where the operation establishes the identity, ownership context, eligibility, physical state, source, and initial economic hypothesis for the device. When those inputs are wrong or incomplete, downstream teams often spend time correcting the record - or never discover the mistake at all.

Blanco describes high-volume intake as increasingly difficult because of device diversity, manual testing, account locks, fraud attempts, unclear device history, labor-heavy workflows, and growing data-handling expectations. Phonecheck similarly argues that model, IMEI, carrier, storage, ESN, and lock status should be machine-read and attached to the device record at intake rather than re-keyed later. These are vendor positions, but they describe a common control principle: a downstream decision cannot be better than the upstream data it receives. [17, 18]

Where intake value leaks

- Incorrect SKU, storage, color, carrier, or model identification changes both buy price and eligible sales channels.
- A quoted condition that is not validated quickly can lead to overpayment, customer disputes, or avoidable reverse logistics.
- Activation, FRP, MDM, carrier, finance, and block-list restrictions can convert apparently valuable inventory into exception stock.
- Late detection of physical or battery damage creates extra touches and can expose other devices to safety risk.
- Weak chain-of-custody records make later data-erasure, ownership, and customer disputes harder to resolve.

Metrics leaders should see daily

Metric	Why it matters
Quote-to-receipt variance	Shows whether the acquisition promise matches the physical asset received.
Identity accuracy / re-key rate	Measures preventable data error before processing.
Lock and exception discovery at first touch	Shows whether unusable inventory is identified before cost is added.
Time to first economic decision	Measures how fast the device reaches a valid reuse, repair, hold, return, or recycle path.
Source-level yield	Shows which acquisition channels actually produce saleable devices after exceptions.

WORKING HYPOTHESIS The first 60 seconds of intake often determine whether later automation improves economics or simply accelerates a bad starting decision.

4 | LEAK TWO

Condition Assessment and Grading: Accuracy Without Reinventing the Standard

GMA should not attempt to create a new grading standard. CTIA has worked in this area for years and published Version 5.1 of its Wireless Device Grading Scales Criteria and Definitions in June 2026. The value-leak issue is operational: does the company apply its chosen standard or buyer specification consistently, and does the resulting condition information travel accurately into valuation and routing? [9]

Blanco has publicly described the grading problem this way: two experts can inspect the same device and reach different prices. Marketplaces also use different consumer-facing condition vocabularies. Back Market, for example, defines Premium, Excellent, Good, and Fair cosmetic conditions while requiring functional criteria and battery thresholds. CTIA’s updated work specifically seeks greater transparency between wholesale grading and consumer-facing descriptions. [2, 9, 10]

The two directions of grading leakage

- Under-grading: a device capable of a higher-value route is sold too cheaply or unnecessarily refurbished.
- Over-grading: the business books an unrealistic value, creates buyer disputes, increases returns, or damages trust.

The financial problem is not the letter attached to the device. It is the variance between the assessed condition, the buyer’s expected condition, and the realized net recovery after returns, credits, regrading, or rework.

What to measure

Measure	Signal
Inter-rater / inter-station variance	How often the same evidence produces different condition decisions.
Regrade rate after handoff	How often downstream teams or buyers change the condition assessment.
Grade-to-sale variance	Difference between expected and realized recovery by condition tier.
Condition-related return / credit rate	Cost of mismatch between internal assessment and buyer expectation.
Evidence completeness	Whether photos, functional data, battery status, and exceptions support the grade decision.

WORKING HYPOTHESIS The most valuable grading improvement is not a new label. It is a repeatable evidence trail that lets pricing, processing, and buyers understand why the device received the condition decision it did.

5 | LEAK THREE

Erase and Verification: A Working Device Can Still Be Unsellable

Data sanitization and commercial eligibility intersect. A processor can have a fully functional device that cannot safely or lawfully be released because data cannot be sanitized with sufficient assurance, ownership is unclear, an activation lock remains, or the device is block-listed.

NIST SP 800-88 Revision 2, published in September 2025, shifted emphasis toward an enterprise media-sanitization program with controls, trust, and validation rather than a checklist of device-specific wipe commands. SERI's R2v3 Appendix B similarly requires tracking, verification, record keeping, and quality controls for logical data sanitization. [11, 12, 13]

The lock problem is commercial, not only technical

Apple describes Activation Lock as a theft-deterrence control that makes it difficult to use or resell a lost or stolen device; Apple also states that an Activation-Locked device is not accepted for trade-in unless the original owner removes the lock. Android Factory Reset Protection can likewise prevent a reset device from being activated without the prior account credentials. The GSMA Device Registry and Device Check allow ecosystem participants to identify devices reported lost or stolen. [14, 15, 16]

Where value leaks

- Sanitization is performed but not verifiably recorded, reducing buyer confidence or forcing repeat work.
- Locks are discovered after labor has already been invested.
- Failed erasure exceptions sit in queue because ownership of the exception is unclear.
- The erasure certificate does not follow the device into the sales or customer record.
- A device is destroyed because a logical process failed even though a recoverable path may have existed under policy.

Key measures

Metric	Management question
First-pass sanitization success	How many devices clear securely without exception or repeat work?
Time to lock resolution	How quickly are commercially blocked devices resolved or returned?
Verified certificate completeness	Can the business prove what happened to every serialized device?
Exception aging	How much value is trapped in devices waiting for a data or lock decision?
Sanitization-to-sale handoff completeness	Does the next team receive proof without manual reconstruction?

WORKING HYPOTHESIS The largest erasure-stage leak is often not the wipe itself. It is the device that waits, gets reprocessed, or loses its market window because the proof and exception workflow are disconnected from valuation and routing.

The commercial release gate

Erasure completion should not be treated as an isolated security event. It should be a release gate that tells the next stage whether the device is both safe to transfer and commercially eligible for the intended route. A strong gate prevents the business from spending repair, setup, listing, or freight dollars on a unit that is still blocked.

Release question	Evidence leadership should expect
Was sanitization completed successfully?	Device-linked result, method, date/time, software or process used, and exception status.
Can the device be activated by the next legitimate owner?	Account-lock, activation-lock, management-lock, carrier/finance, and block-list checks appropriate to the route.
Is ownership / custody sufficiently documented?	Source record, chain of custody, transaction evidence, and any required release documentation.
Did an exception receive an explicit disposition?	Named owner, reason code, economic decision, aging clock, and final resolution.
Will the proof travel with the device record?	Certificate or evidence reference linked to the serialized unit and available to downstream teams or buyers where required.

Why this matters economically

The earlier a non-recoverable restriction is discovered, the fewer value-added dollars are exposed. A late lock or verification failure does not merely remove a sale; it can strand every labor minute, part, freight movement, and day of working capital invested after the restriction should have been known.

6 | LEAK FOUR

Software Readiness and Reimaging: Clean Is Not the Same as Ready to Sell

“Reimaging” is a natural term for PCs and laptops. For smartphones and tablets, the equivalent commercial question is broader: after sanitization, is the device in a known, supported, activatable, updateable, buyer-ready software state? The exact workflow varies by operating system and device class.

Blancco launched an integrated Windows reimaging capability in 2026 that connects erasure, diagnostics, grading, and OS reinstallation for refurbished PCs. Microsoft’s own licensing guidance confirms that reimaging rights depend on the license source, edition, version, and eligibility of the device. These sources establish that software readiness is operationally important, but they do not support a universal 20-30% resale uplift across device categories. [21, 22]

For mobile devices, software readiness can include

- Successful reset to a supported setup state.
- Removal of prior account associations and management profiles when authorized.
- Operating-system eligibility and update status.
- Activation readiness, network compatibility, language/region configuration, and eSIM/SIM considerations.
- Accurate disclosure of repair or parts messages where the platform exposes them.

- Configuration needed for a specific enterprise, carrier, marketplace, or geographic route.

Where value leaks

- A sanitized device fails activation during downstream QA.
- A device reaches the sales queue without an OS or support state acceptable to the intended buyer.
- Software work is performed on units that should have been routed elsewhere based on economics.
- Licensing or configuration assumptions are made without evidence.
- Repeated setup and reset cycles add labor and days without increasing net recovery.

WORKING HYPOTHESIS Software readiness should be treated as an economic gate: perform only the work required to unlock a higher-confidence or higher-value route, and stop when additional preparation costs more than the expected recovery it creates.

7 | LEAK FIVE

Processing: The Cost of Touches, Queues, and Variability

Processing is where all previous information becomes physical workflow. Devices move between stations, people, software systems, chargers, test fixtures, repair areas, exception queues, and outbound lanes. At scale, a few unnecessary minutes per unit can become a major labor and working-capital cost.

Automation vendors illustrate the potential. An Apkudo customer case study reports 270 devices processed per hour, 98% process repeatability, and a 40% reduction in grading variance after implementing automated processing. Those are vendor-reported results for one customer, not universal benchmarks, but they show the types of outcomes leaders should measure. [19]

FutureDial and Phonecheck describe rule-based workflows that automatically route devices based on test results, condition, and business rules. Blancco similarly positions automated diagnostics and erasure as a way to reduce labor-heavy workflows and standardize high-volume processing. [17, 18, 20]

Processing leakage is usually visible in five forms

- Touch inflation: more stations or manual interactions than the device economics justify.
- Queue inflation: devices spend more time waiting than being actively processed.
- Rework: the same test, grade, erase, setup, or record entry is repeated.
- Exception ambiguity: abnormal devices lack a fast owner and decision path.
- Batch blindness: high-value units receive the same process path as low-value units even when economics differ.

Core measures

Metric	Why leaders need it
Units per labor hour	Connects staffing and automation to throughput.
Active touch time vs. elapsed cycle time	Separates real work from queue delay.

Metric	Why leaders need it
First-pass yield	Shows how many units complete the intended path without rework.
Exception rate and aging	Identifies inventory trapped outside the standard flow.
Cost per processed unit by route	Prevents blended averages from hiding loss-making paths.
Value added per processing minute	Tests whether additional work increases net recovery.

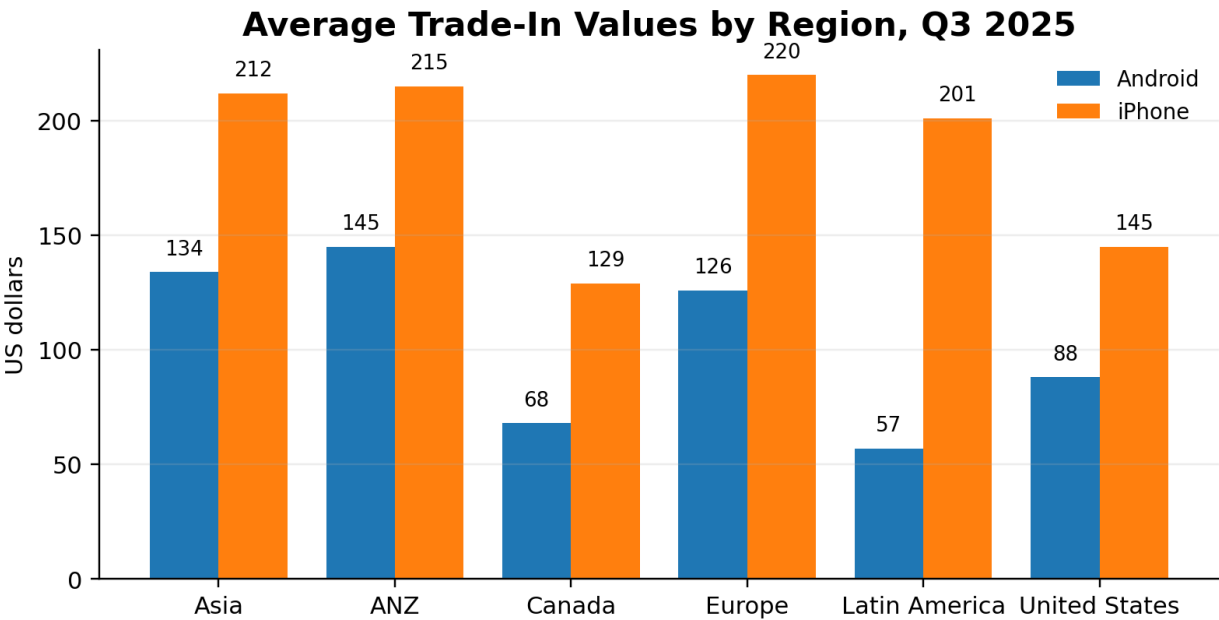
WORKING HYPOTHESIS The goal of automation is not maximum automation. It is minimum unnecessary handling with enough control and evidence to protect value, security, and buyer expectations.

8 | LEAK SIX

Channel Routing: The Same Device Can Be Worth Different Amounts in Different Markets

Channel routing is the final conversion of device information into cash. It determines which buyer sees the unit, under what terms, in which geography, with what fee load, warranty promise, return exposure, payment timing, and inventory risk.

Regional trade-in values demonstrate that mobile economics are not uniform. Assurant’s Q3 2025 data showed substantial differences in average iPhone and Android trade-in values across Asia, Australia/New Zealand, Canada, Europe, Latin America, and the United States. Those figures are trade-in values rather than resale prices, but they illustrate why regional demand and channel structure matter. [33]



Source: Assurant Q3 2025 Trade-In & Upgrade Industry Trends. Regional datasets cover selected countries.

B-Stock markets access to more than 35,000 active mobile buyers across more than 100 countries and emphasizes buyer segmentation by volume, grade, and geography. Amazon currently lists an 8% referral

fee for consumer electronics in the U.S. These examples show that route economics include both access to demand and the cost of reaching it. [23, 24]

Routing decisions should compare net outcomes

- Wholesale lot vs. direct-to-consumer marketplace.
- Domestic buyer vs. export market.
- Immediate auction vs. fixed-price sale.
- Repair/refurbish before sale vs. sell-as-is.
- Single-device listing vs. grouped lot.
- Premium buyer requiring more evidence vs. lower-friction buyer accepting more risk.

Routing measures

Metric	Interpretation
Net recovery by channel and SKU	Actual cash after fees, logistics, credits, and returns.
Days to cash	How quickly the route converts inventory into usable capital.
Return / claim rate	Whether high headline pricing is being erased after the sale.
Buyer concentration	Exposure to a small number of counterparties.
Price realization vs. route benchmark	Whether the business is consistently leaving value on the table.
Unlisted / unrouted inventory aging	Devices that have completed processing but are not economically assigned.

WORKING HYPOTHESIS The “best” channel is the route with the highest risk-adjusted net recovery within the required time window - not necessarily the route with the highest advertised selling price.

Routing is a portfolio decision, not a last-step sales decision

A mature operation does not wait until processing is finished to ask where a device should go. Route eligibility and expected economics should influence how much the company pays, how much work it performs, how quickly it moves the unit, and what evidence it preserves. The right route can therefore be determined early and refreshed as market conditions change.

Route factor	Questions to test before committing inventory
Net proceeds	What remains after marketplace fees, buyer credits, logistics, taxes/duties where applicable, returns, warranty exposure, and expected concessions?
Time to cash	How many days will the device spend waiting for a buyer, settlement, export movement, or claim window?
Buyer / market fit	Does the route value this exact model, storage, network profile, condition, and evidence package?
Risk	What fraud, return, payment, customs, compliance, or counterparty risk is embedded in the route?
Capacity	Can the channel absorb the available quantity without materially depressing price or extending days-to-cash?

Route factor	Questions to test before committing inventory
Fallback path	If the first route fails, what is the next best route and how much value is likely to be lost by the delay?

The decision should be refreshed when a major fact changes - condition, lock status, repair economics, market price, buyer demand, return history, or timing. That turns routing from a static sales assignment into an active inventory-management control.

9 | CROSS-STAGE MULTIPLIER

The Cross-Stage Handoff Problem

The six leaks are connected. A device may be diagnosed correctly, graded correctly, erased correctly, and still lose money because the next team never receives the information. The handoff is therefore a multiplier on every stage.

Circular Connect’s summary of the Blancco lifecycle argument gives a practical example: a device can pass diagnostics clean but be graded without that information, or be identified as high-value at intake and then routed through a generic channel. The individual stage may have succeeded while the device economics failed. [1]

The device record should carry forward

- Identity and provenance.
- Source and acquisition economics.
- Diagnostic evidence.
- Condition evidence and photos where appropriate.
- Battery and parts information.
- Lock, ownership, and block-list status.
- Sanitization method, result, and certificate.
- Software/readiness status.
- Repair and processing events.
- Eligible channels, restrictions, and route history.
- Final net recovery and return/claim outcomes.

The purpose is not to create a massive data warehouse for its own sake. It is to prevent the organization from repeatedly rediscovering facts it already knew and to make later decisions explainable.

A useful control test

Pick one device that produced an unexpected loss. Can leadership reconstruct the exact evidence available at every stage, the decision made, the person or rule that made it, and the economic outcome? If not, the operation cannot reliably distinguish market loss from process loss.

WORKING HYPOTHESIS Device-level traceability turns value leakage from an argument between departments into a measurable operating variance.

10 | THE HIDDEN MULTIPLIER

Time, Working Capital, and Depreciation

A used phone is a depreciating inventory asset. Even when no one makes an obvious mistake, delay can reduce recovery because model launches, promotions, component costs, carrier offers, regional demand, and buyer inventory change quickly.

Public resale guides consistently show that completed sale prices move sharply around flagship announcements and launches. Academic research on hundreds of thousands of used smartphone listings also found that model, age, condition, brand, and market factors materially affect second-hand value. [25, 27]

This makes elapsed time a cross-stage cost. The operation should know how long devices spend in receiving, grading, security exceptions, repair, QA, listing, and outbound inventory - and which queues destroy the most value.

Three separate time costs

- Market depreciation: the likely selling price changes while the device waits.
- Working-capital cost: cash remains tied up in inventory that has not converted.
- Opportunity cost: processing capacity and floor space are occupied by units that may not deserve more work.

What to measure

Metric	Purpose
Days from receipt to sale-ready	Shows internal processing latency.
Days sale-ready to sold	Shows channel fit and pricing accuracy.
Days sold to cash	Shows settlement and payment friction.
Value decay during cycle	Separates operational delay from market movement.
Aging by exception reason	Shows where trapped value accumulates.
Working capital by stage	Makes queues financially visible.

WORKING HYPOTHESIS For fast-depreciating SKUs, a lower price today can be economically superior to a higher theoretical price after another week of processing or listing exposure.

11 | ELIGIBILITY RISK

Device Identity, Locks, Fraud, and Eligibility

Condition is only one dimension of value. A visually excellent device may be commercially constrained by ownership, theft status, financing, activation, account, MDM, carrier, parts, or network restrictions.

GSMA Device Check allows traders, retailers, insurers, repair centers, recyclers, regulators, and law enforcement to determine whether an IMEI has been flagged lost or stolen in the GSMA Device Registry.

Apple advises buyers not to take ownership of used devices protected by Activation Lock. Google's device protection similarly requires prior credentials after certain factory resets. [15, 16, 31]

Why late discovery is expensive

If an ineligible device is discovered at intake, the business can return, isolate, or price the exception quickly. If the same issue is discovered after grading, erasure attempts, repair, listing, or sale, the business has added labor, inventory days, shipping, customer-service cost, and possibly fraud exposure without increasing recoverable value.

Control questions

- Which eligibility checks occur before value-added work begins?
- Which lock types are potentially resolvable through authorized owner or enterprise processes?
- Which device statuses require immediate quarantine or return?
- Are check results timestamped and tied to the serialized device?
- Do downstream teams understand the difference between a device that is functionally good and one that is commercially eligible?
- Are changes in lock or block-list status rechecked when inventory ages?

WORKING HYPOTHESIS The highest-value eligibility check is the one performed before the business spends money improving a device it cannot lawfully or practically sell.

12 | GLOBAL ECONOMICS

Global Routing and Regional Value Differences

Secondary mobile is global because supply and demand are rarely balanced in the same place. Mature trade-in markets may generate strong device supply, while price-sensitive markets may generate strong demand for specific models. The route between them can create value - or introduce customs, tax, logistics, payment, regulatory, network-compatibility, and returns risk.

FDM CCS Insight reported in August 2026 that reduced U.S. trade-in supply was partly offset by strong exports from China and Japan, while markets with restrictions on imported used smartphones experienced supply constraints. That is a direct example of channel and geography affecting both inventory availability and market growth. [3]

Assurant's global trade-in values also show that average device value differs materially by region. Those differences should not be read as arbitrage opportunities by themselves because the underlying model mix, age, condition, program structure, taxes, and logistics differ. They do prove that a single global price assumption is inadequate.

A routing decision should include

- Model and storage demand in the destination market.
- Network band, carrier, SIM/eSIM, and regulatory compatibility.
- Import restrictions, taxes, customs, battery transport, and documentation.
- Buyer credit quality and payment terms.

- Expected return, warranty, and dispute behavior.
- Freight, insurance, consolidation, and delivery cycle.
- Required certification, testing, or data-erasure evidence.
- FX exposure and settlement currency.

WORKING HYPOTHESIS Global routing is not a search for the highest price. It is a portfolio optimization problem balancing net recovery, velocity, risk, and repeatability by model and destination.

13 | TECHNOLOGY

Automation and AI: Where Technology Actually Protects Margin

Automation can reduce value leakage when it makes a decision faster, more repeatable, more evidence-based, or less dependent on manual handoffs. It creates little value when it simply adds another disconnected system.

Current platforms illustrate different approaches: Blancco integrates diagnostics and erasure; FutureDial automates conditional workflow decisions; Phonecheck automates diagnostics and routing; Apkudo combines device-event data with automated processing. Vendor claims should be evaluated against the operator's own economics rather than accepted as universal outcomes. [\[17, 18, 19, 20\]](#)

Best use cases for automation

- Machine-read identity and specification capture.
- Repeatable functional diagnostics.
- Lock, blacklist, and eligibility checks.
- Routing based on explicit business rules.
- Data sanitization control and evidence generation.
- Queue prioritization by device value and market urgency.
- Exception detection and ownership.
- Price and channel recommendations using current market data.
- Audit trail generation and customer reporting.

Where AI requires discipline

- Cosmetic assessment must be validated against buyer outcomes, not only internal agreement.
- Price recommendations must reflect completed transactions, fees, returns, and aging rather than asking prices.
- Models can amplify biased or stale historical routing if the market has changed.
- Automated decisions need explainability where they affect customer payouts, compliance, or high-value inventory.
- Human exception paths remain necessary for ambiguous identity, fraud, damage, and ownership cases.

WORKING HYPOTHESIS Technology should be evaluated by recovered contribution margin and reduced cycle time - not by the number of manual steps it can technically replace.

14 | MANAGEMENT SYSTEM

The Measurement System Leaders Need

A six-stage operating model is useful only if leadership can see stage-level economics and the connections between stages. A blended gross-margin percentage is too late and too aggregated to diagnose where value disappeared.

Minimum device-level scorecard

Stage	Leading measures	Outcome measures
Intake	identity accuracy, quote variance, lock hit rate, time to first decision	source-level saleable yield, realized acquisition cost
Condition assessment	inter-rater variance, evidence completeness, regrade rate	grade-to-sale variance, condition-related claims
Erase & verification	first-pass success, exception aging, certificate completeness	eligible-for-release yield, repeated sanitization cost
Software readiness	setup/activation pass rate, support eligibility, rework	sale-ready yield, cost per ready device
Processing	touch time, queue time, first-pass yield, units/labor hour	cost per unit, cycle time, throughput by route
Channel routing	route recommendation coverage, listing age, buyer concentration	net recovery, days to cash, return/credit rate
Cross-stage	data completeness, handoff exception rate	total days in system, working capital, value decay, contribution per device

Three levels of financial visibility

- Unit level: Was this device economically optimized?
- Cohort level: Which source, model, condition, buyer, facility, or workflow produces the best repeatable economics?
- Enterprise level: Where should capital, technology, people, and process improvement be concentrated?

The objective is not to create dozens of KPIs. It is to create a closed loop where the outcome of the sale improves the assumptions used at intake, valuation, processing, and routing for the next device.

WORKING HYPOTHESIS A device operation becomes measurably smarter when final selling outcomes feed back into the rules that determine acquisition price and processing path.

15 | OPERATING MATURITY

A Five-Level Value-Leak Maturity Model

Level	Operating characteristic	Typical blind spot	Leadership priority
1 - Transactional	Buy, process, sell; stages measured separately	Margin surprises explained after the fact	Establish serialized device traceability and baseline stage metrics
2 - Controlled	Basic SOPs, grading/diagnostic evidence, sanitization records	Rework and queue time hidden in blended averages	Measure first-pass yield, exception aging, and cycle time
3 - Connected	Stage data travels with device; rules drive routing	Channel decisions still rely heavily on judgment	Compare net recovery by source, route, SKU, and buyer
4 - Predictive	Market data and device evidence inform acquisition and routing	Models can become stale or optimize local metrics	Use feedback from realized outcomes and monitor model drift
5 - Portfolio optimized	Capital, processing, and channels managed as one system	Complexity can outrun governance	Optimize risk-adjusted contribution and resilience across markets

Most operators will not sit cleanly at one level. A company may have highly automated diagnostics but manual channel routing, or strong marketplace data but weak intake controls. The purpose of the model is to identify the constraint that limits the entire lifecycle.

The bottleneck rule

Improving one stage cannot create full value if the next stage cannot absorb the improvement. Faster diagnostics can increase queue inventory. Better grading can create no benefit if routing ignores the grade evidence. More buyers can increase disputes if listings are inaccurate. Technology investments should therefore be sequenced around the system constraint, not around the most visible department.

WORKING HYPOTHESIS The economic return on an improvement depends on the next stage being able to use the information, speed, or accuracy that the improvement creates.

16 | DEVICE-LEVEL ECONOMICS

A Device-Level Decision Framework

The following framework can be applied without assuming a particular software vendor or business model. It is designed to make the value hypothesis explicit at each gate.

Decision gate	Question	Required evidence	Economic output
Acquire / receive	What is the device and what can we reasonably pay?	identity, source, quote, basic condition, ownership/lock checks	initial expected net recovery and maximum acquisition cost
Assess	What condition and functional state is supported by evidence?	diagnostics, battery, cosmetics, parts, photos, exceptions	eligible routes and expected yield
Release / sanitize	Can the device be safely and legally transferred?	sanitization result, ownership, lock/block status, audit evidence	release eligibility or exception path

Decision gate	Question	Required evidence	Economic output
Prepare	What additional work will increase net recovery?	repair/software cost, time, parts, route requirements	work/no-work decision and target value
Process	What is the fastest controlled path?	workflow rules, queue priority, capacity, exception ownership	cost and cycle-time target
Route	Where should this exact device go now?	current market price, buyer terms, fees, region, return risk	best risk-adjusted net recovery
Learn	What did we actually realize?	sale price, fees, credits, returns, payment timing	variance feedback to acquisition and routing models

The management discipline

- Do not add cost without an expected recovery benefit.
- Do not add time without understanding expected depreciation and working-capital cost.
- Do not repeat a test when the original evidence remains trustworthy and accessible.
- Do not route from a headline price alone.
- Do not treat a device as saleable until identity, eligibility, data, condition, and buyer requirements align.

WORKING HYPOTHESIS Every stage should end with an explicit economic decision, not merely a completed technical task.

17 | GMA ANALYSIS

GMA Working Hypotheses

The following hypotheses are conclusions for industry discussion, not established universal benchmarks. They are intended to help leaders test their own operations with data.

WORKING HYPOTHESIS The largest recoverable margin opportunity is likely concentrated in a small number of recurring exception types rather than spread evenly across all devices.

WORKING HYPOTHESIS Operations that know why a device changed value between intake and sale will outperform operations that only know the final margin.

WORKING HYPOTHESIS Lock, ownership, and data exceptions discovered after value-added processing create a disproportionate loss because they consume cost without expanding route options.

WORKING HYPOTHESIS Condition evidence is more economically important than the grade label alone because evidence reduces regrading, disputes, and buyer uncertainty.

WORKING HYPOTHESIS Time-to-decision matters more than raw throughput for high-value devices exposed to rapid market repricing.

WORKING HYPOTHESIS Channel routing will become increasingly algorithmic, but human governance will remain critical for fraud, exceptions, new markets, and low-data SKUs.

WORKING HYPOTHESIS The next major operating advantage will come from a persistent device record that connects acquisition, diagnostics, sanitization, condition, processing, routing, and realized outcome.

WORKING HYPOTHESIS The best automation program will be measured by contribution margin and cash conversion, not simply labor reduction.

18 | INDUSTRY CONVERSATION

How GMA Can Support the Conversation

This subject fits GMA's role because it crosses technology, operations, compliance, global trade, business growth, and leadership. GMA does not need to create technical standards or prescribe a single operating platform to add value.

Useful ways an association can contribute

- Translate market and regulatory developments into practical operating implications for members.
- Create forums where buyers, sellers, processors, technology providers, carriers, marketplaces, and service partners can compare the business problems they are seeing.
- Use workshops and education to help leaders understand device economics across the full buy-process-sell lifecycle.
- Bring global perspectives into discussions that are often dominated by one geography or one part of the value chain.
- Encourage measurement practices that distinguish market movement from preventable operational loss.
- Represent the secondary mobile ecosystem when policies or technical initiatives could materially affect legitimate reuse and resale.

Any future GMA program, benchmark, toolkit, advocacy position, or recurring initiative would require appropriate leadership review, member input, resources, and approval. This paper should not be interpreted as a commitment to deliver programs that have not been formally approved.

WORKING HYPOTHESIS GMA's highest-value contribution is not to tell members how to run their businesses. It is to help the ecosystem ask better questions, compare evidence, and participate in conversations that affect how value is created and protected.

ACTION FRAMEWORK

Recommended Actions for Industry Leaders

First 30 days

- Map the six stages in your actual workflow, including every handoff, queue, system, and exception path.
- Choose three high-volume device cohorts and reconstruct value from intake through final net recovery.
- Measure where device information is re-entered, lost, contradicted, or unavailable to the next team.
- Identify the top five exception reasons by units, days held, and capital tied up.
- Confirm that lock, ownership, block-list, and sanitization controls occur before unnecessary value-added work.

Next 90 days

- Create a stage-level scorecard for yield, rework, cycle time, exception aging, and net recovery.
- Compare source-level realized acquisition cost with final contribution, not just quoted buy price.
- Measure condition regrades and condition-related buyer credits or returns.
- Build a net-routing model that includes fees, freight, expected returns, days to cash, and buyer risk.
- Pilot one automation or workflow change against a defined financial baseline and measure recovered contribution, not only labor saved.

Next 12 months

- Create a persistent device record that survives every internal handoff.
- Connect realized selling outcomes back to acquisition, condition, processing, and routing rules.
- Segment workflows by device economics so high-value and low-value units do not receive identical processing by default.
- Benchmark facilities, teams, and channels on comparable device cohorts.
- Develop leaders who can understand the entire lifecycle across purchasing, operations, technology, compliance, finance, and sales.

The objective is simple: know where value changed, why it changed, and whether the change was avoidable.

METHODOLOGY

Research Methodology and Limitations

GMA reviewed public information available through September 22, 2026. Sources included independent market research, trade-in datasets, industry standards, cybersecurity and sanitization guidance, OEM support documentation, secondary-market platforms, automation providers, marketplaces, and academic

research. The analysis is global, but some quantitative datasets - particularly trade-in and vendor operating data - are U.S.-weighted.

Source hierarchy

- Primary regulatory, standards, and OEM documentation for security, lock, sanitization, and eligibility claims.
- Independent or established market-research firms for market size, growth, supply, and pricing context.
- Large program operators for trade-in values and ownership-cycle data.
- Vendor documentation and case studies for examples of automation, throughput, and workflow capabilities; these are labeled as vendor-reported where appropriate.
- Marketplace and platform documentation for channel requirements, condition definitions, and fees.
- Academic research for longer-term evidence about the drivers of second-hand value.

Important limitations

- FDM CCS Insight's detailed 4Q25 Pulse dataset is proprietary. GMA verified the existence and scope of the research but did not have access to every underlying data point referenced in the Blancco webinar.
- There is no universal public dataset measuring "value leakage" across all six stages. Operators define costs, grades, routes, and contribution differently.
- Vendor performance results are not directly comparable because facility layout, device mix, staffing, software, and process design differ.
- Trade-in value is not resale value. Regional trade-in comparisons show market variation but should not be used as direct routing arbitrage calculations.
- The six stages are an operating model. Some companies combine stages, change their order, or use different terminology.

Analytical standard: Where public support was insufficient for a promotional statistic, the paper either excluded the number or explicitly identified the limitation.

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