Verified, Trusted, Simplified: What's Ahead in Mainframe Software Maintenance

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Introduction: The Changing Landscape

The Drivers for Change

The increasing need for supply chain security (Zero Trust).

The Drivers for Change

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The demand for operational efficiency and automation.

The Vision

Moving toward a maintenance process that is both verified and streamlined.

Strengthening Trust (Package Signing)

Package Signing

What is Package Signing?

Why Now?

How does It Work?

Benefits

What is Digital Package Signing?

Digital Signature is a cryptographic "fingerprint" for software packages

- **Key Benefits:**
  - Authenticity - confirms Broadcom origin
  - Integrity - guarantees no tampering since signing
- SMP/E automatically verifies signature during RECEIVE operation:
  - Valid signature = proceed
  - Invalid/missing signature = halt installation with an error

Why is This Relevant Now

IBM enhanced the SMP/E and z/OSMF programs

The following PTFs include the GIMZIP enhancements:

- HMP1K00 = UO05209
- HSMA254 = UO05212
- HSMA314 = UO05211
- HSMA324 = UO05210

SMP/E requires changes to configuration for both signed and unsigned packages!

GIMZIP Package Signing

- **GIMZIP Enhanced to Support Digital Signing**
  - Uses public/private key technology
  - Each Vendor has their own PRIVATE/PUBLIC Key
    - *Public Key (Encryption)*
    - *Private Key (Decryption)*

GIMZIP affects SMP/E RECEIVE commands

Receive ORDER

Receive FROMNTS

Receive from Network

Prepare For Package Signing

- **Customer One-Time Setup**
  - Download and Add certificate to SAF KEYRING
  - Update SMP/E Receive JCL
  - For **UNSIGNED** Packages, update access needed to
    - IBMFAC(**GIM.ACTION.ALLOW_UNSIGNED_GIMZIP**)

SMP/E RECEIVE JCL Updates

Update CLIENT session of your RECEIVE JCL

** Add the Signature Keyring is required if Package is SIGNED

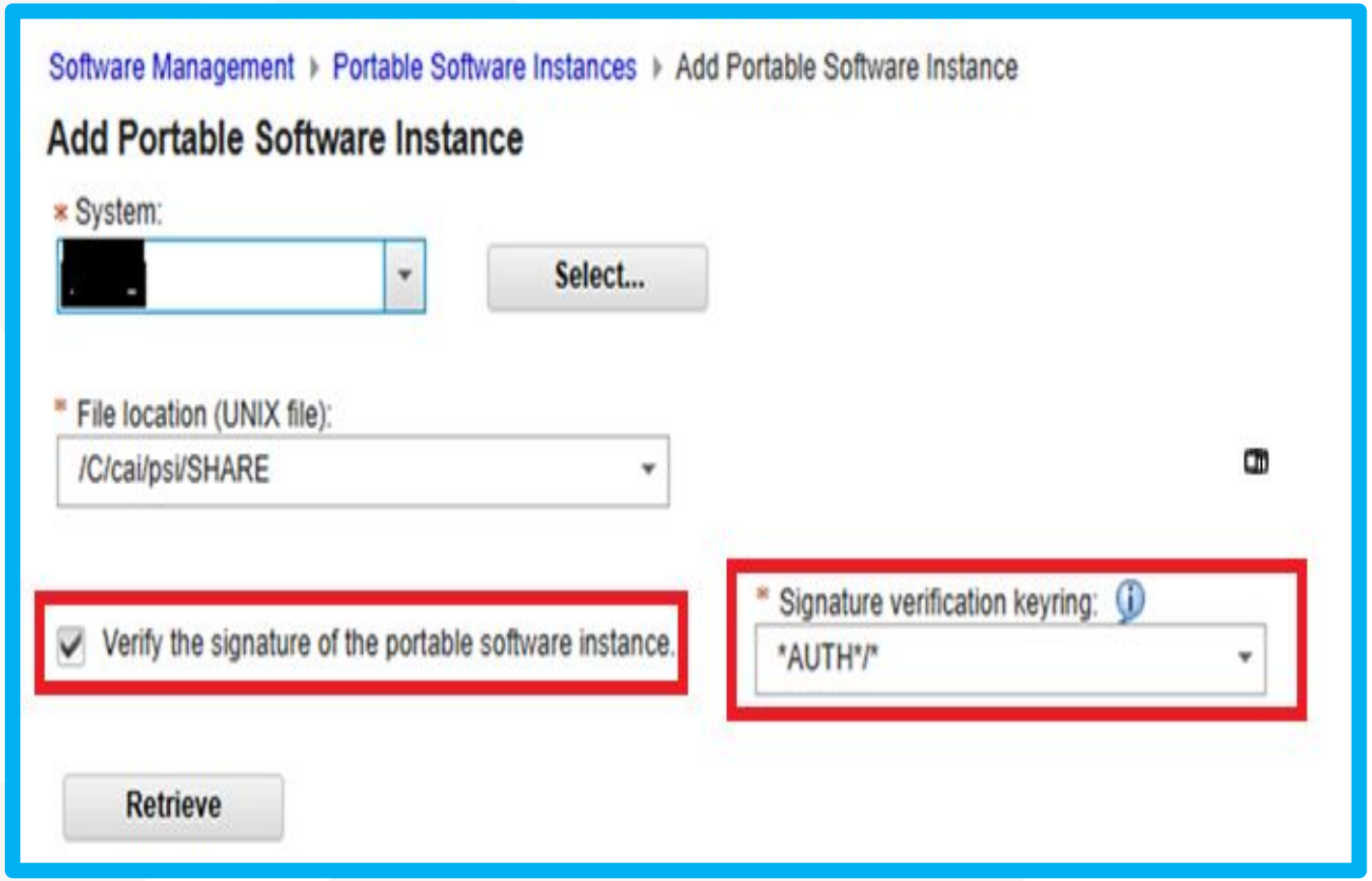
```
<CLIENT
downloadmethod="https"
downloadkeyring="*AUTH*/*"
signaturekeyring="*AUTH*/*"
javahome="/C/java/java64bt/v8r0m0/usr/lpp/java/J8.0_64"
classpath="/usr/lpp/smp/classes"
>
</CLIENT>
```

Validate Signature on z/OSMF Package

Select “Verify Signature”

Enter KEYRING that contains Package Signing certificate

Package will be validated



Current Status

Broadcom Mainframe Products

		Signed	Required Steps
1	**Receiver Order**	✓	Download the signing certificate, add the certificate to the keyring, and update the JCL.
2	**Service Order**	✓	Download the signing certificate, add the certificate to the keyring, and update the JCL.
3	**PSWI**	**In-progress**	For signed packages: Download the signing certificate, add the certificate to the keyring, and update the JCL. Current list of products with signed PSWIs. For unsigned packages: Add security permission to bypass signing validation.
4	**Classic SMP/E JCL Packages**		
5	**PTF Downloads from the Support Portal**	✗	No changes required.

Why Package Signing?

Act Now to Avoid Maintenance and Installation Issues!

Validate all of your digitally signed SMP/E software packages to ensure that they have not been tampered with by an unauthorized third party.

- Prevent the installation of malicious software
- Protect your business against man-in-the-middle attacks
- Eliminate costly and unnecessary system outages

Managing Your Security Risk

Managing Security Integrity Risk

Use Case:

Timely notification of Security and Integrity fixes

Using Secure Portal is time consuming

Solution

- Download SECINT Details from download server

  Files are in CSV format (new JSON file coming soon)
- Use z/OSMF API or SMP/E ERRORSYSMOD Report
- Software Toolkit displays the SECINT details

Download CSV File to find Details

- CSV file that contains Detailed Info on Security Integrity Fixes
- Download CSV File to find SECINT Details (**Format consistent with other large MF Software providers**)
- Broadcom provides JSON format along with CSV

CSV Tag	Description
DATE	Date SECINT PTF Published
PTF	SYSMOD that resolves the SECINT
CVSS Score	Base and Tempal Score
CVSS VECTOR	TEXT String with values to calculate the CVSS Score
CVE	Catalog Number(s) for publicly disclosed Vulnerabilites and Exposures
CVSS URL	URL to NVD CVSS Calculator
etc	

Find Missing Critical Fixes

Using z/OSMF API

- z/OSMF Software Mgmt API – JSON Output
- /zosmf/swmgmt/swi/<swi-uuid>/missingcriticalupdates
- Parse JSON

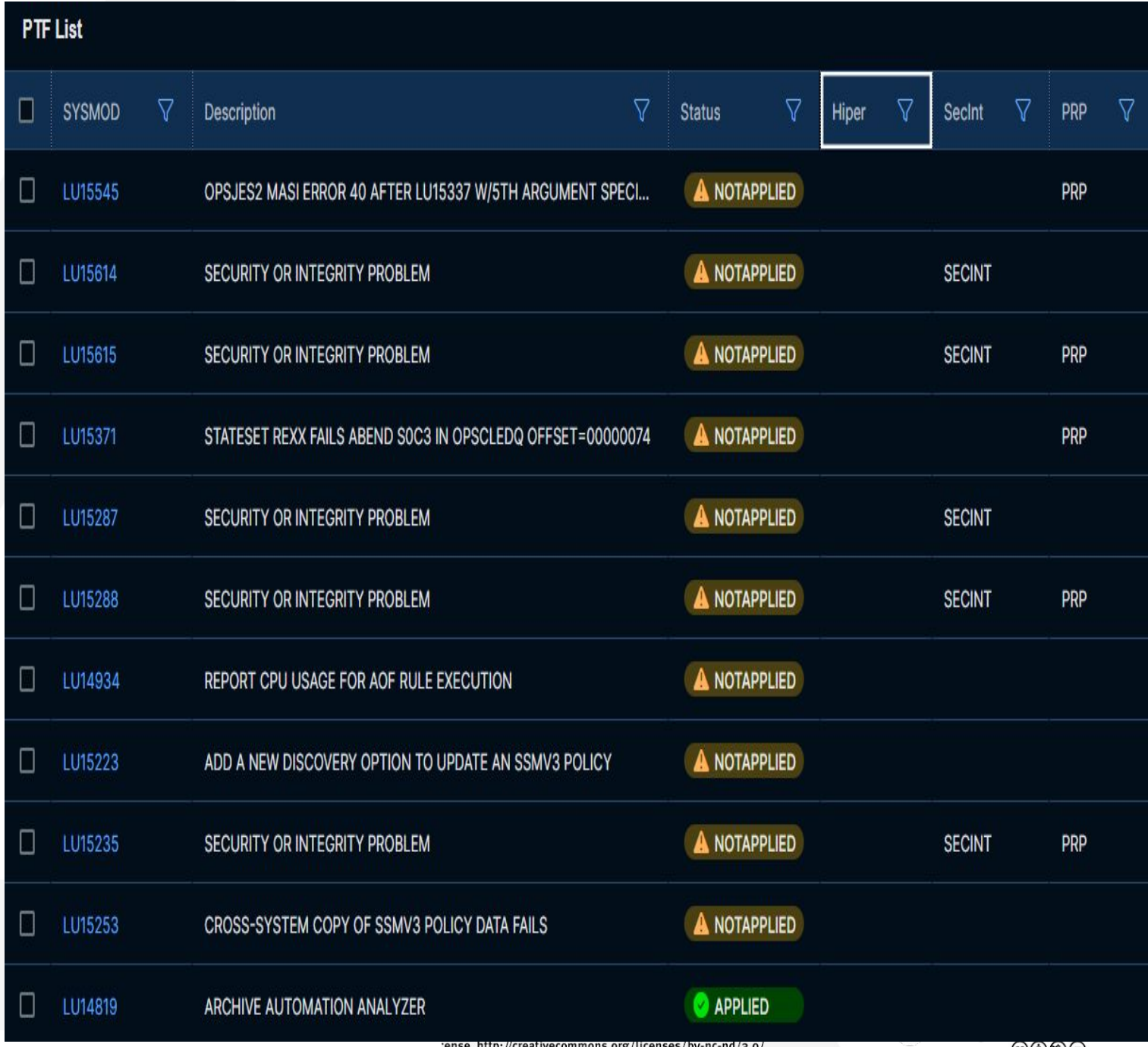

```
{
  "status": "complete",
  "lastholdrecvdate": "2026-02-12T09:38:08Z",
  "missingcriticalupdates": [
    {
      "name": "XX12345",
      "holdclass": "SECINT",
      "holdsymptom": "B5.1,T5.4",
      "heldsysmod": "CDMFC10",
      "fmid": "CXXXC10",
      "fmiddesc": "Share Demo Product",
      "resolvers": [
        {
          "name": "LU12345",
          "received": false
        }
      ],
      "tgtzones": [
        "CAIT0"
      ]
    },
    {
      "name": "XX23450",
      "holdclass": "HIPER",
      "holdsymptom": "DAL",
      "heldsysmod": "LU23456",
      "fmid": "CXXXC10",
      "fmiddesc": "Share Demo Product",
      "resolvers": null,
      "tgtzones": [
        "CAIT0"
      ]
    }
  ]
}
```

Using z/OSMF Toolkit

- **Plugin Benefits**

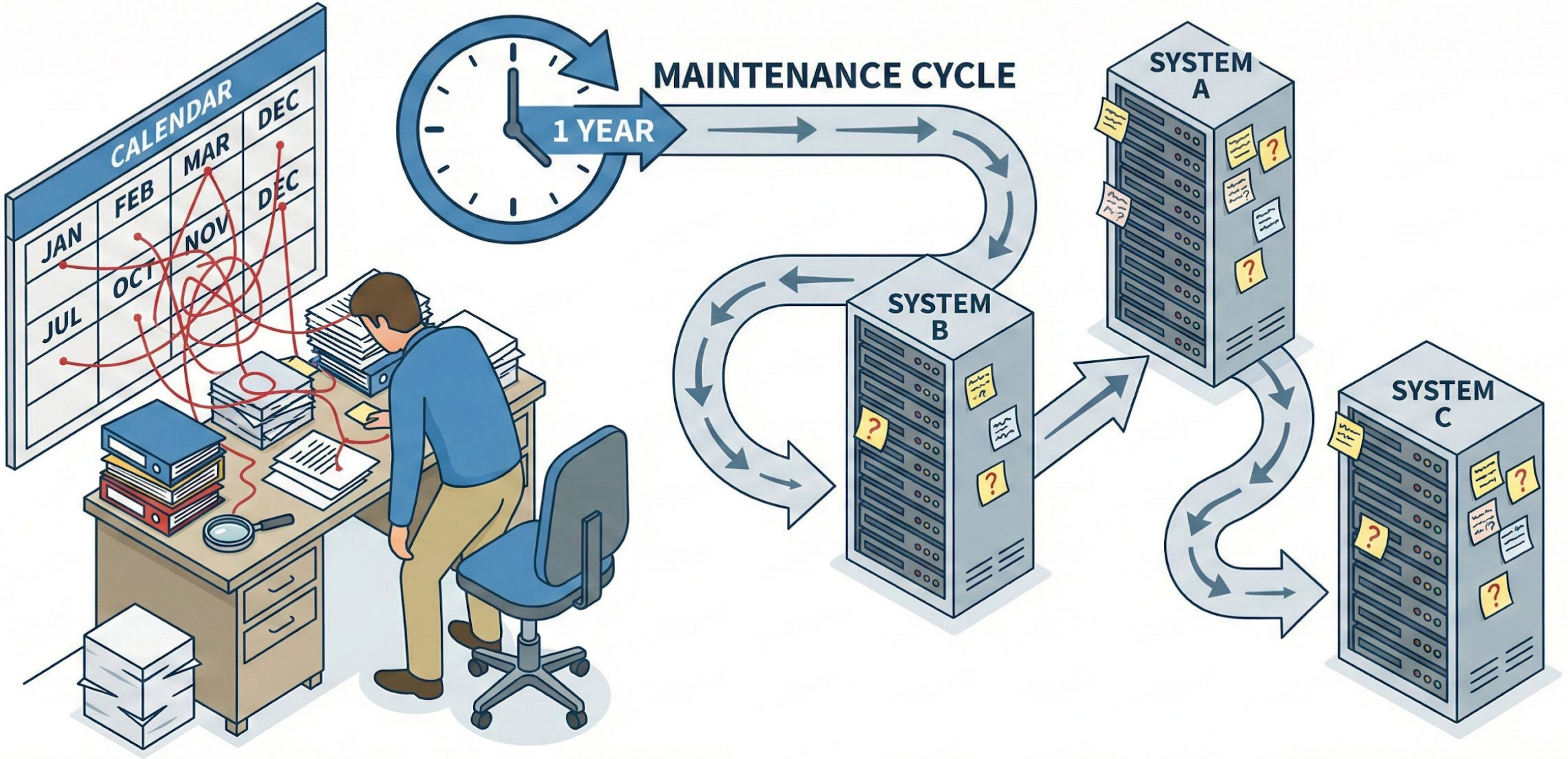
- Analyze any SMP/E installed product
- Determine if you are missing critical PTFs
- Displays PTFs have NOT been received
- Filter on any column

- **Accessing Toolkit**
  - Powered by Mainframe Essentials

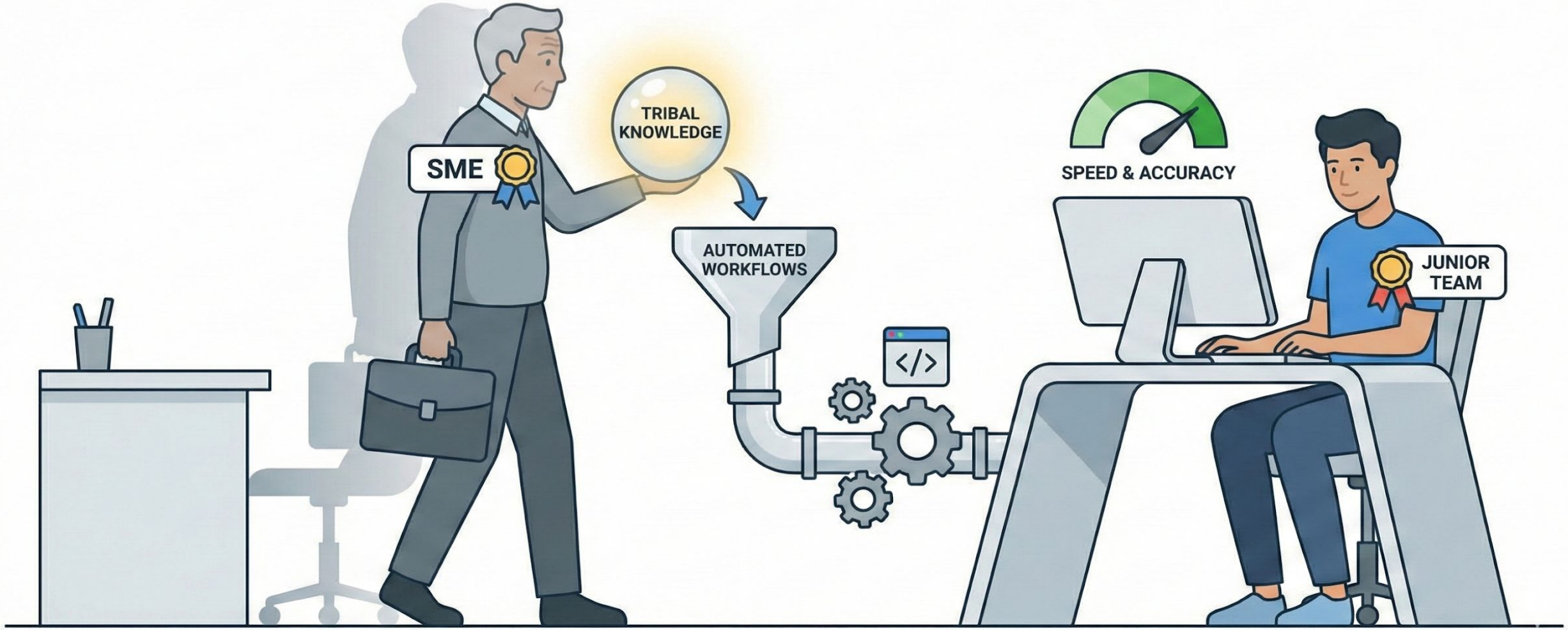


Simplifying Operations (HOLDDATA Approach Redefined)

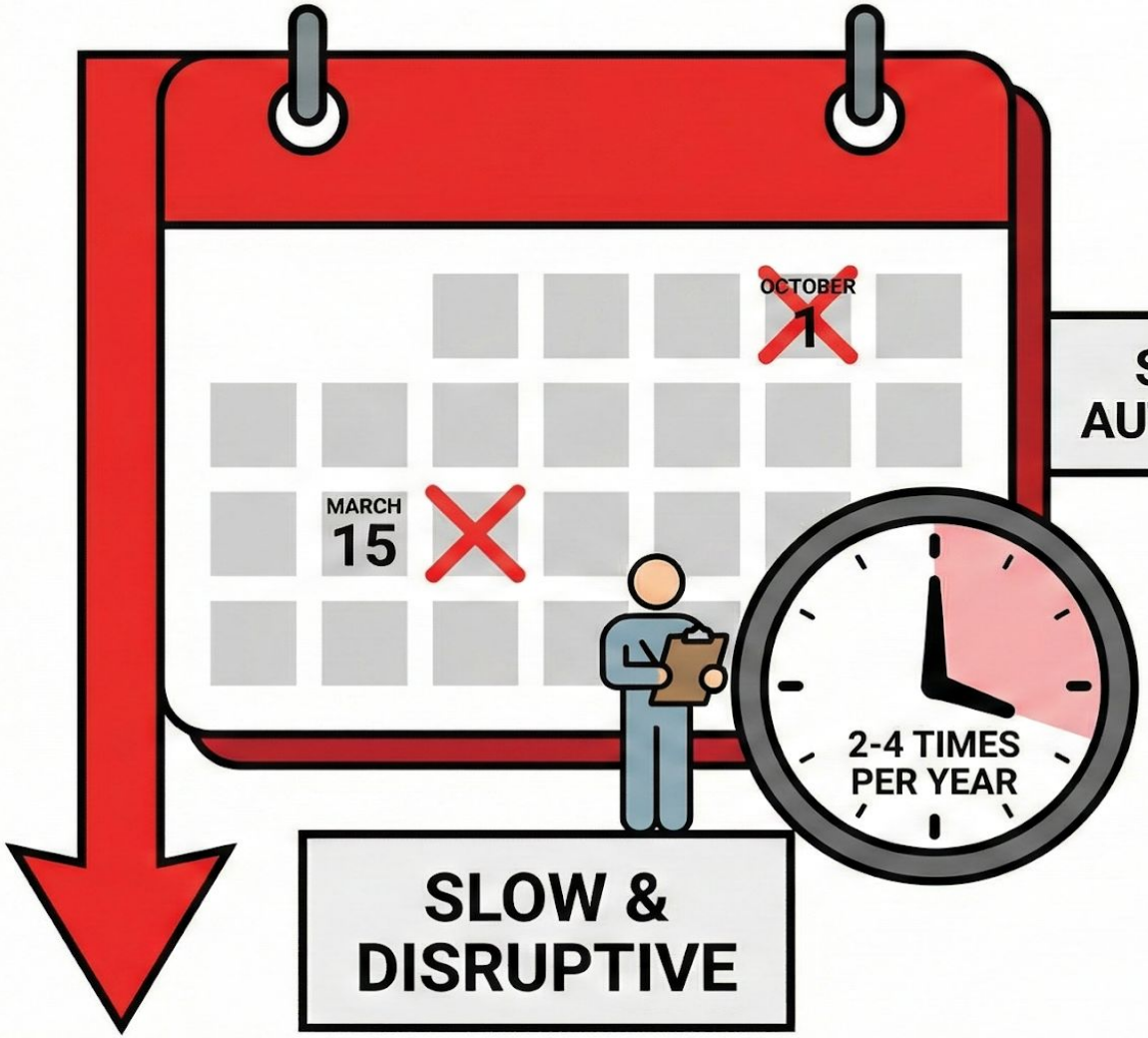
THE REALITY TODAY: MANUALLY INTENSIVE MAINTENANCE CYCLES



THE “RETIREMENT GAP”: CAPTURING TRIBAL KNOWLEDGE INTO AUTOMATION

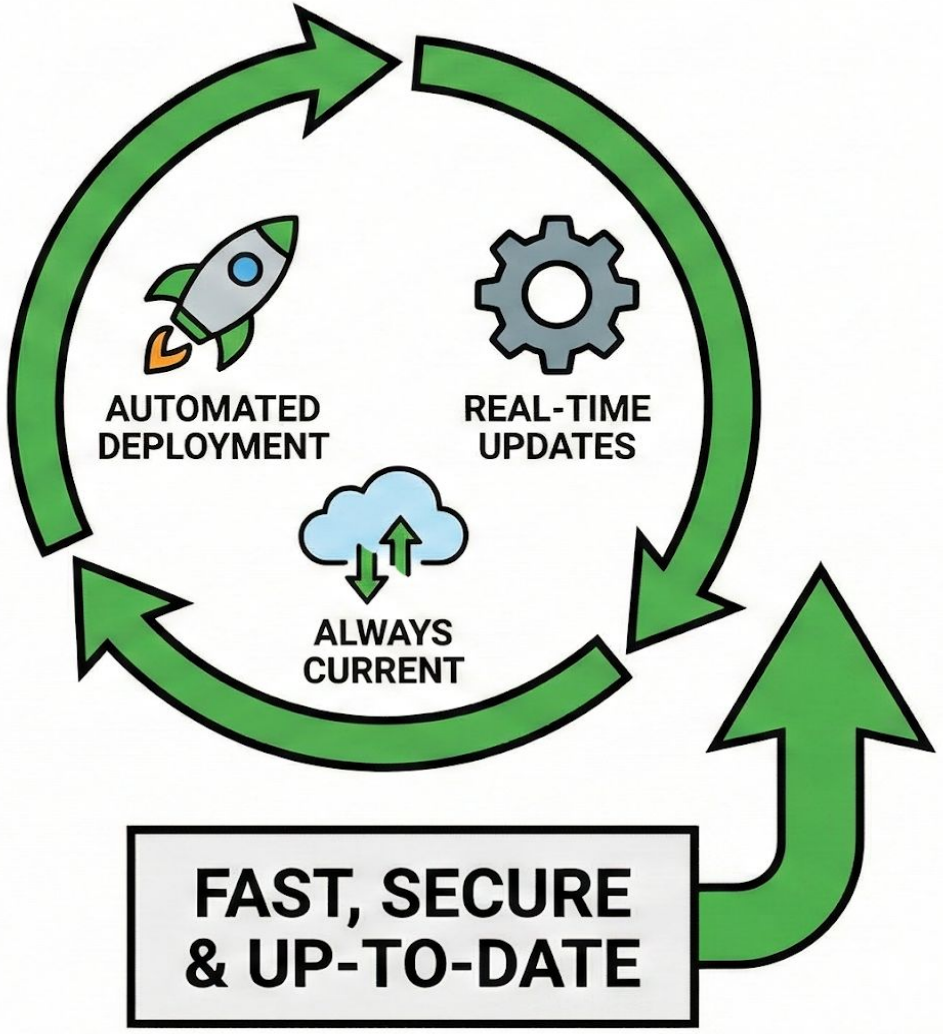


BEFORE:
INFREQUENT, MANUAL MAINTENANCE



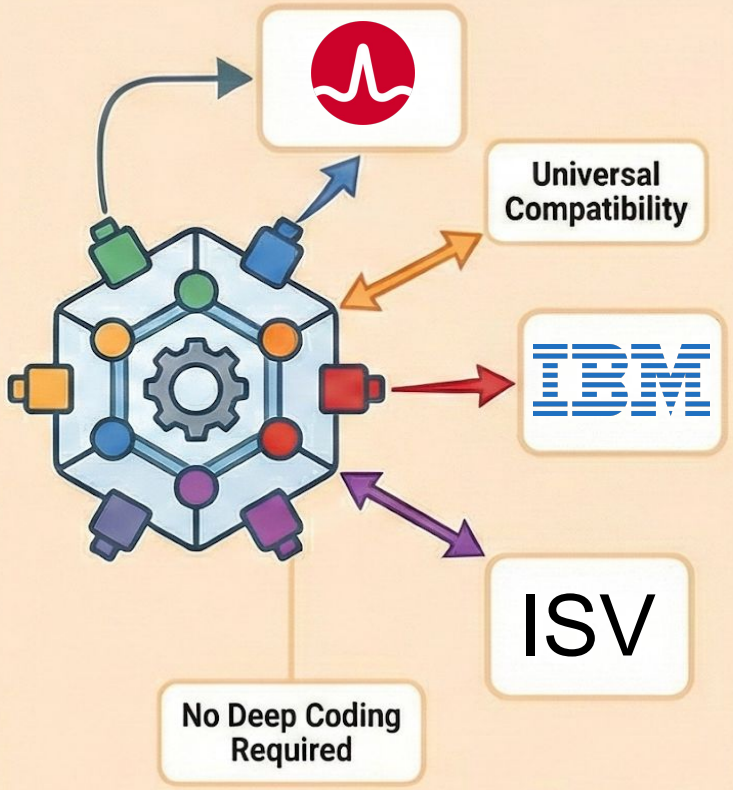
SHIFT TO AUTOMATION

AFTER:
CONTINUOUS, "STAY CURRENT" MODEL

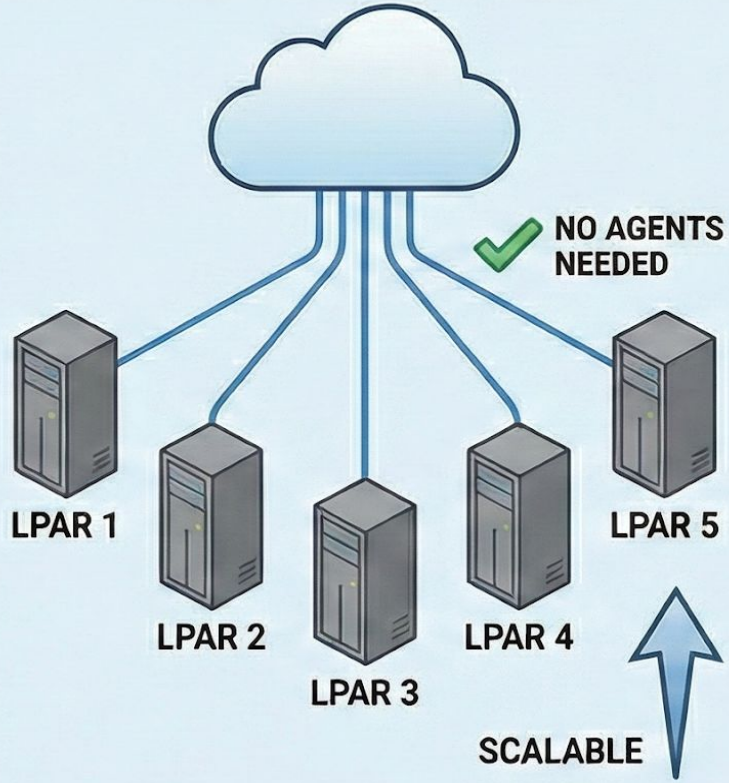


BUILDING AN AUTOMATION FRAMEWORK

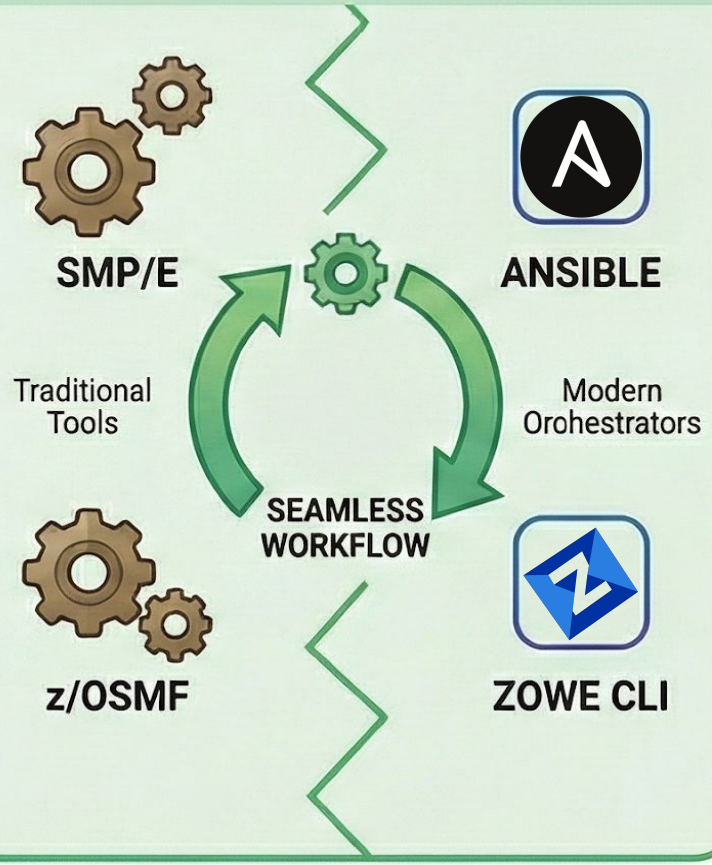
VENDOR AGNOSTIC



AGENTLESS & SCALABLE

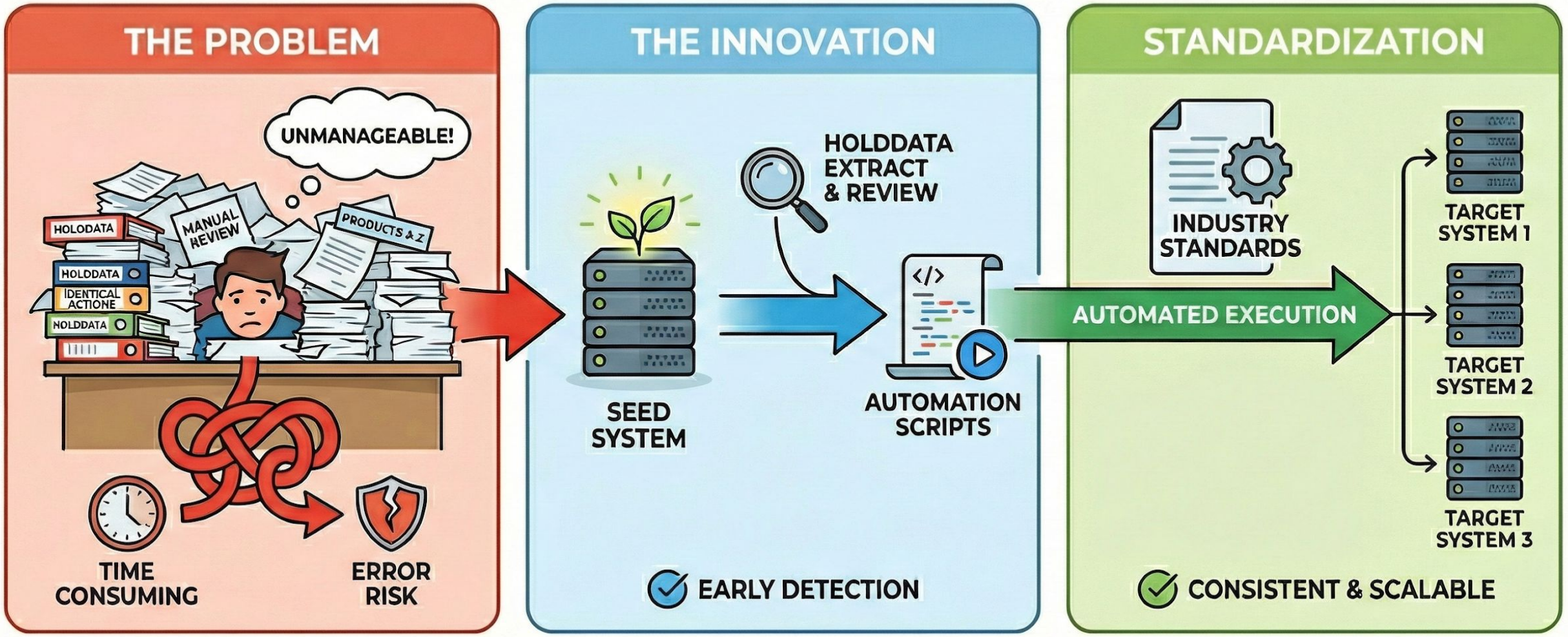


INTEGRATION-READY



Unified, Flexible, and Future-Proof Mainframe Automation

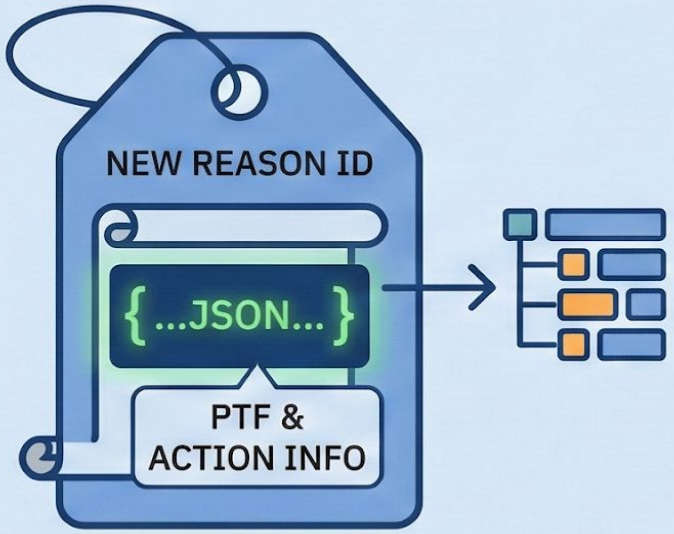
AUTOMATING HOLDDATA ACTIONS



Streamlined, Accurate, and Standardized Mainframe Maintenance across all Systems.

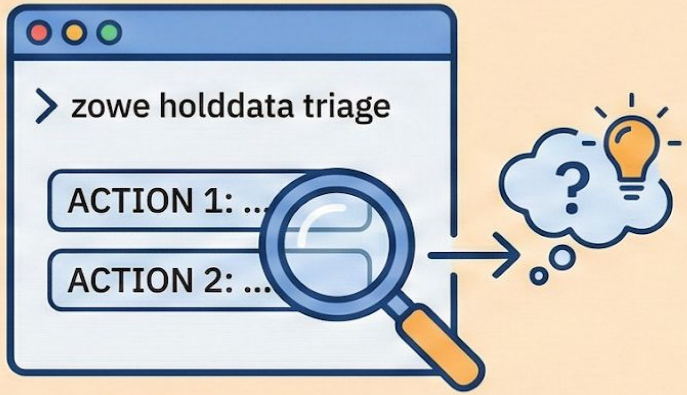
HOLDDATA ACTIONS IMPROVEMENTS

NEW STRUCTURE



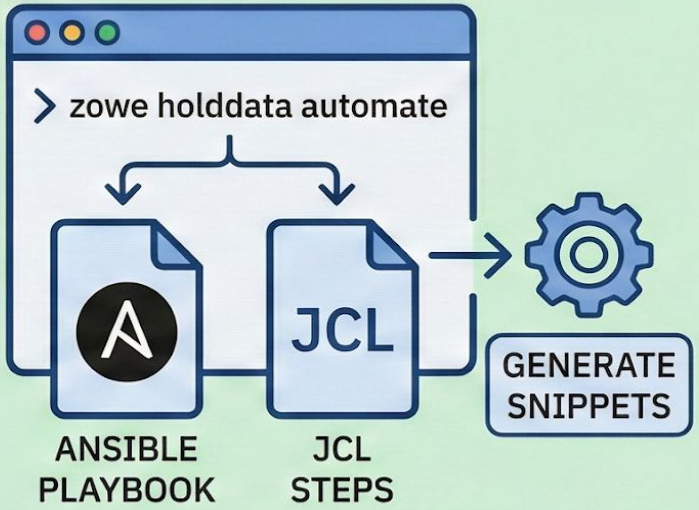
Captures all relevant information

HOLDDATA TRIAGE



Zowe CLI helps understand actions

AUTOMATION



Zowe CLI creates usable code

Simplified, Structured, and Automated Workflow for Sysprogs

Your feedback is important!

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www.share.org/evaluation

Resources

Package Signing Documentation

[Manage Package Signing]

Signed Packages

[Prepare for Signed Package Verification]

[Products with Signed PSWIs]

[Acquire Your z/OSMF Portable Software Instance]

Unsigned Packages

[Prepare for Unsigned Packages]