



SPS COMMERCE

BUILDING AN *INTERNAL DEVELOPER PORTAL* THAT *EMPOWERS* DEVELOPERS

"

Empowerment is the key to accelerating innovation
in any team.

Satya Nadella

"



NORTHFIELD

improving
it's what we do.™

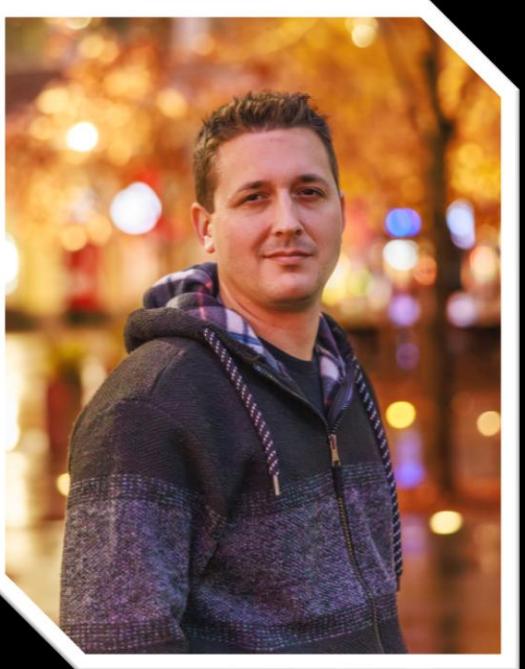
online
business systems

CONQUEST

IcePanel

POLLARD
banknote limited

RICHARDSON



TRAVIS GOSELIN

DISTINGUISHED SOFTWARE ENGINEER

DEVELOPER EXPERIENCE

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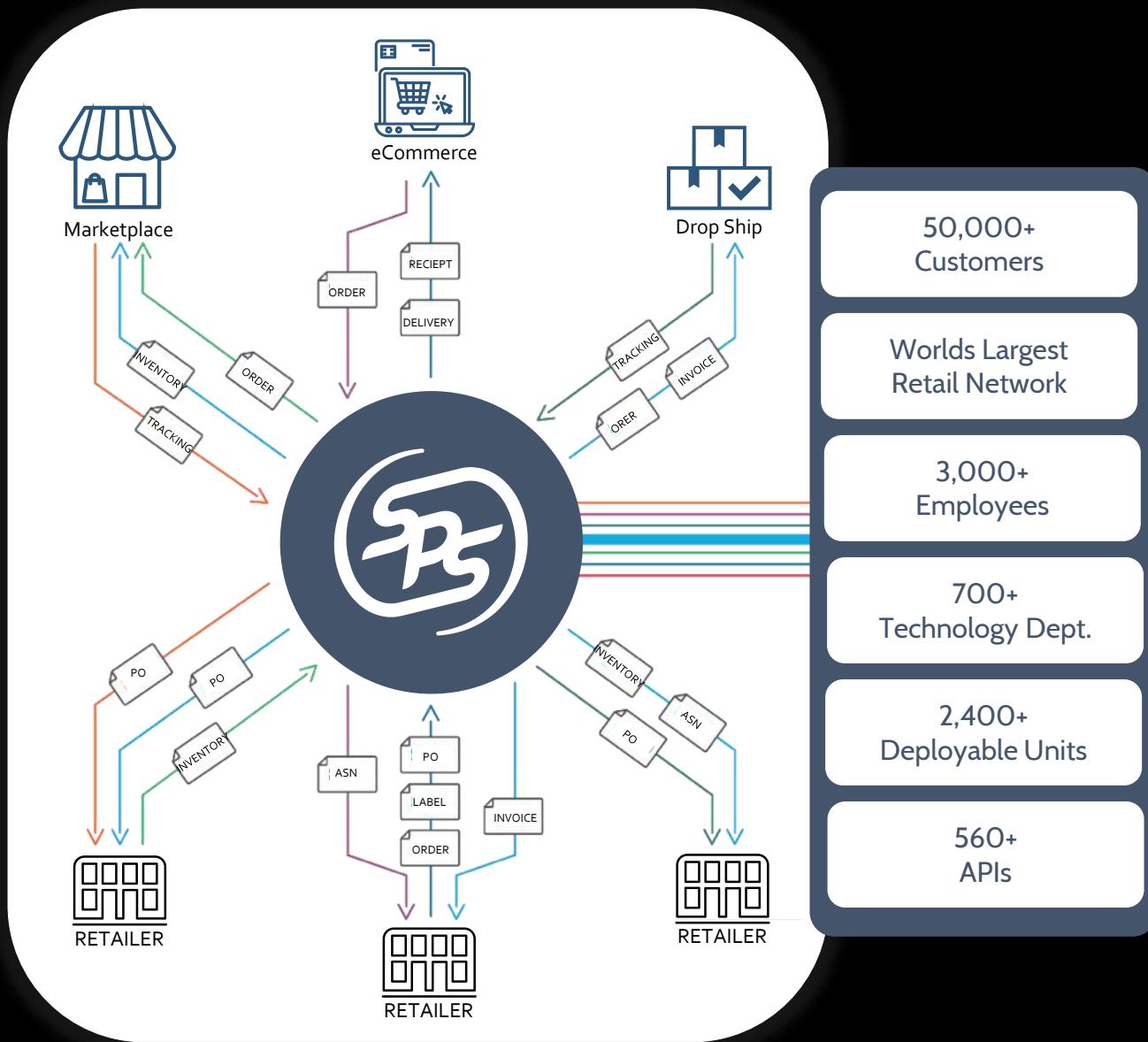


SPS COMMERCE

INFINITE RETAIL POWER™

The screenshot displays the SPS Commerce platform's dashboard. At the top, there are four summary cards: 'Pending Partner Acknowledgment' (13), 'New Orders' (218), 'Errors' (21), and 'Ready for Change Acknowledgment' (59). Below these are two main sections: 'Open Orders' and 'Orders Missing a Shipment'. The 'Open Orders' section lists 13 orders from various trading partners, including Dick's Sporting Goods, Apex Sports, Walmart, Cabela's, Champ's Sports, Finish Line, Foot Locker, Gander Mountain, Bass Pro Shops, and Mills Fleet Farm. The 'Orders Missing a Shipment' section lists 218 orders. On the right side, a 'RECENT ACTIVITY' sidebar shows a log of events such as order acknowledgments and vendor compliance updates.

DEVELOPER PRODUCTIVITY



SPS COMMERCE

Small Enterprise

50,000+ Customers
Worlds Largest Retail Network
3,000+ Employees
700+ Technology Dept.
2,400+ Deployable Units
560+ APIs

Medium Enterprise

\$40 M

SPS Commerce currently has 8% headcount allocated to productivity teams.

\$600 M

SPS Commerce

\$1,000 M

Large Enterprise

DEVELOPER EXPERIENCE

Challenge

The Developer Crisis is Intensifying

Today's developers find themselves wearing multiple hats – they're expected to be security experts implementing robust safeguards, operations specialists managing complex infrastructure, performance engineers optimizing system efficiency, and UX advocates ensuring seamless user experiences.

State of Software Delivery (Harness 2025)

Infrastructure as Code

Supply Chain

Docs as Code

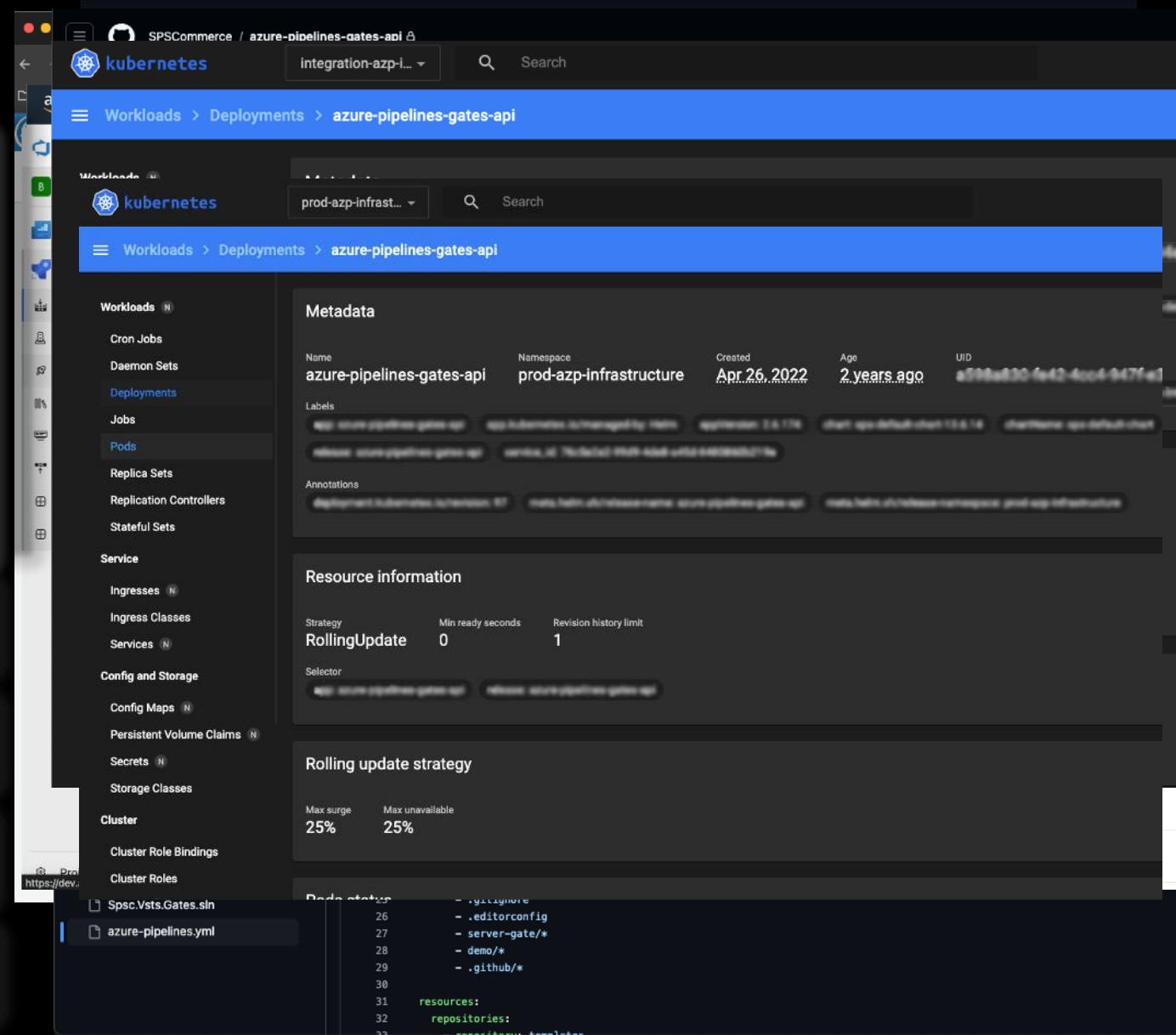
SAST & DAST

Operations

Quality & Testing

Legacy Code

Design



DEVELOPER EXPERIENCE is about EMPOWERMENT

Empowerment

“authority or power given to someone to do something.”

Oxford Languages

Reducing Friction

Centralized Access & Resources

Automated Workflows

Self-Service

Streamlined Onboarding

Improving Fulfillment

Enhanced Collaboration

Visibility and Metrics

Ownership and Accountability

Personalization and Customization



DEVELOPER EXPERIENCE

Empowering Developers with an Internal Developer Portal



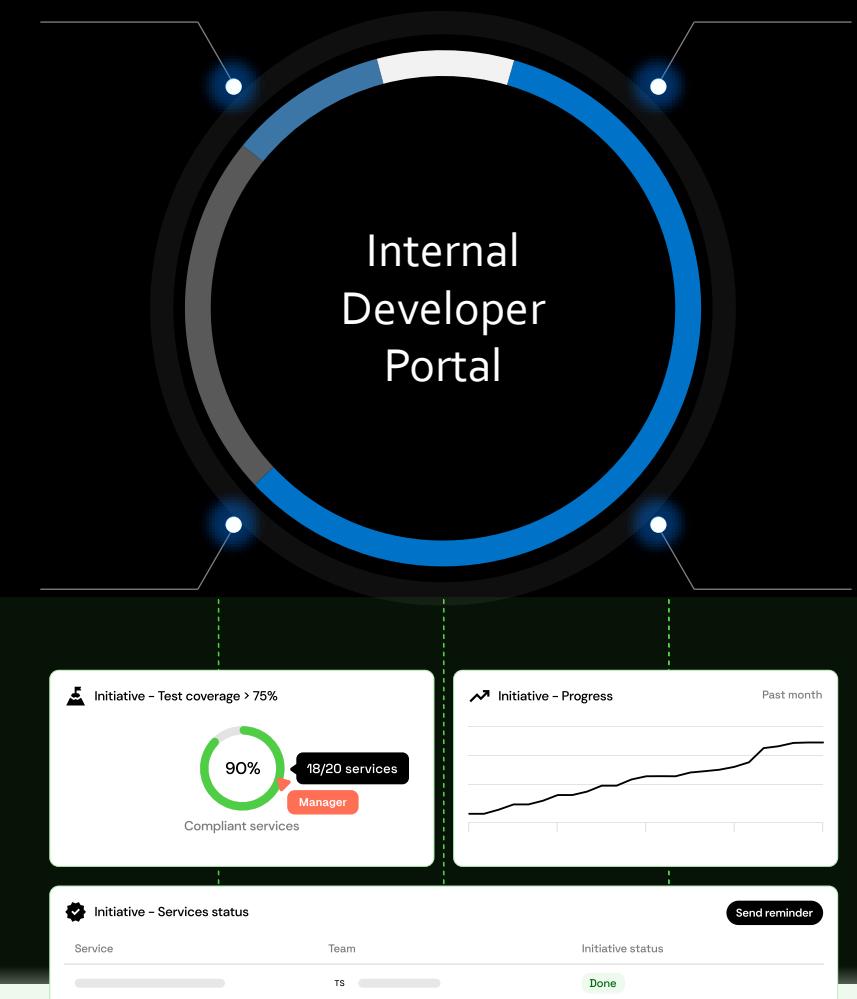
Development Hub

Tackling cognitive overload head-on through recognizing the need for connection, centralization and context.



Architectural Considerations

Insights, learnings, and considerations for your Internal Developer Portal architecture.



Building a Developer Centered Portal

Tackling questions on where to get started, team ownership, and building a business case.



Adoption and Impact

Strategies, stories and ideas for quantifying your success and future direction.

DEVELOPMENT HUB

Context Is Usually Not Obvious



Purpose: Protect Occupants
from an Apocalypse

Sometimes Context is Obvious



Purpose: To Drop Things

DEVELOPMENT HUB

What is an iDP? Internal Developer Portal

"

An internal developer portal is a central location that individual developers, teams, and managers use to own, operate, and improve software.

OpsLevel

"

Support Golden Paths

Real Time Events

Machine Decisions

Workflow Automation

Self-Service

Scorecards

78%

of engineering teams wait a day or more for SRE and DevOps assistance regularly.

85%

of developers indicate they DON'T have clarity of standards across domains.

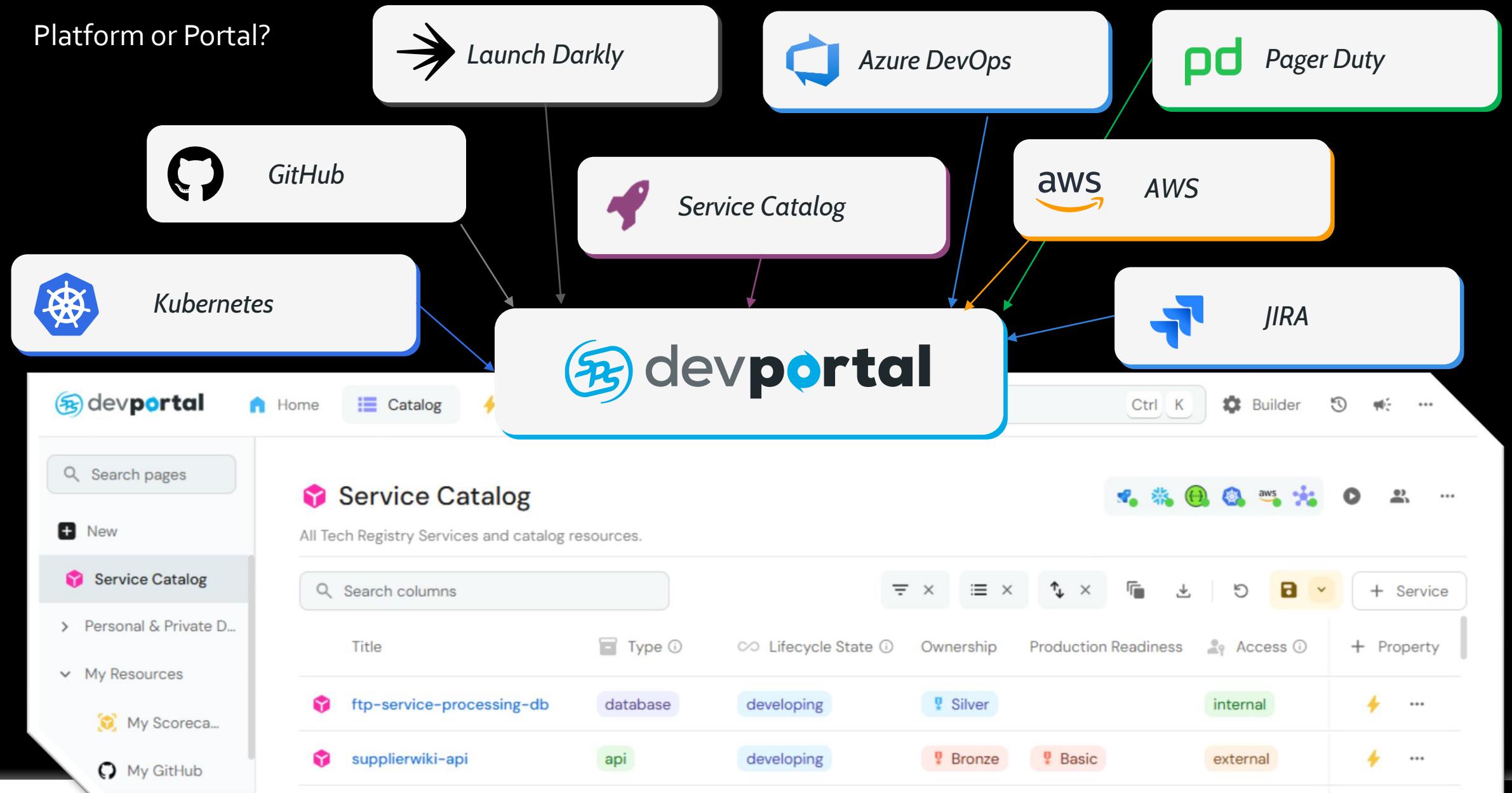
Software Catalog

50%

of engineering teams lack trust in the data quality of their central data repository.

DEVELOPMENT HUB

Platform or Portal?



DEVELOPER EXPERIENCE

SPS Commerce – Internal Developer Portal



A screenshot of the SPS Commerce Internal Developer Portal's Self-Service Hub. The interface is clean with a white background and light gray card-like components for each action. It includes a top navigation bar with links for Home, Catalog, Self-service, a search bar, and user profile icons. A sidebar on the left shows a tree view of categories like 'Create Actions', 'Create Services', and 'Create Dashboards'. The main area displays ten actions in a grid: 1. Provide DevPortal Feedback (megaphone icon), 2. Scaffold an Action (rocket icon), 3. Create GitHub Repository (GitHub icon), 4. Create an Azure DevOps Pipeline (Azure icon), 5. Create a Woodland App (people icon), 6. Create a Kube Namespace (cog icon), 7. Create a Feature Flag Rule (arrow icon), 8. Create a Feature Flag (arrow icon), 9. Create a Dashboard [BETA] (grid icon), and 10. Scaffold an API (Y icon). Each card has a brief description, a 'Create' button, and sometimes additional buttons for 'Portal Feedback' or 'Service'.

DEVELOPMENT HUB

Context – Platform Level

GOAL

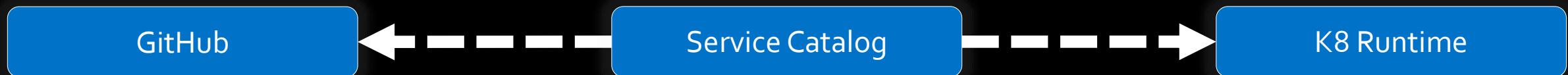
Enable ARM64 Runtime Support for Core Languages

Python

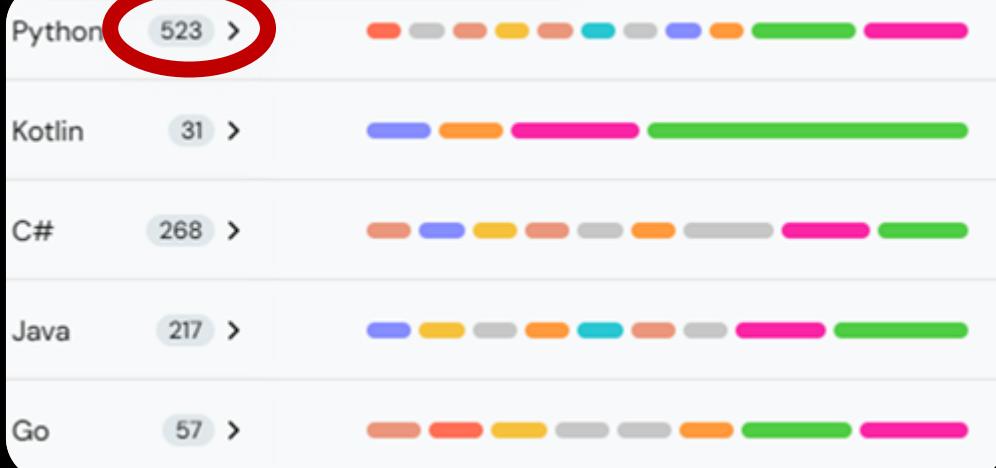
Java

C#

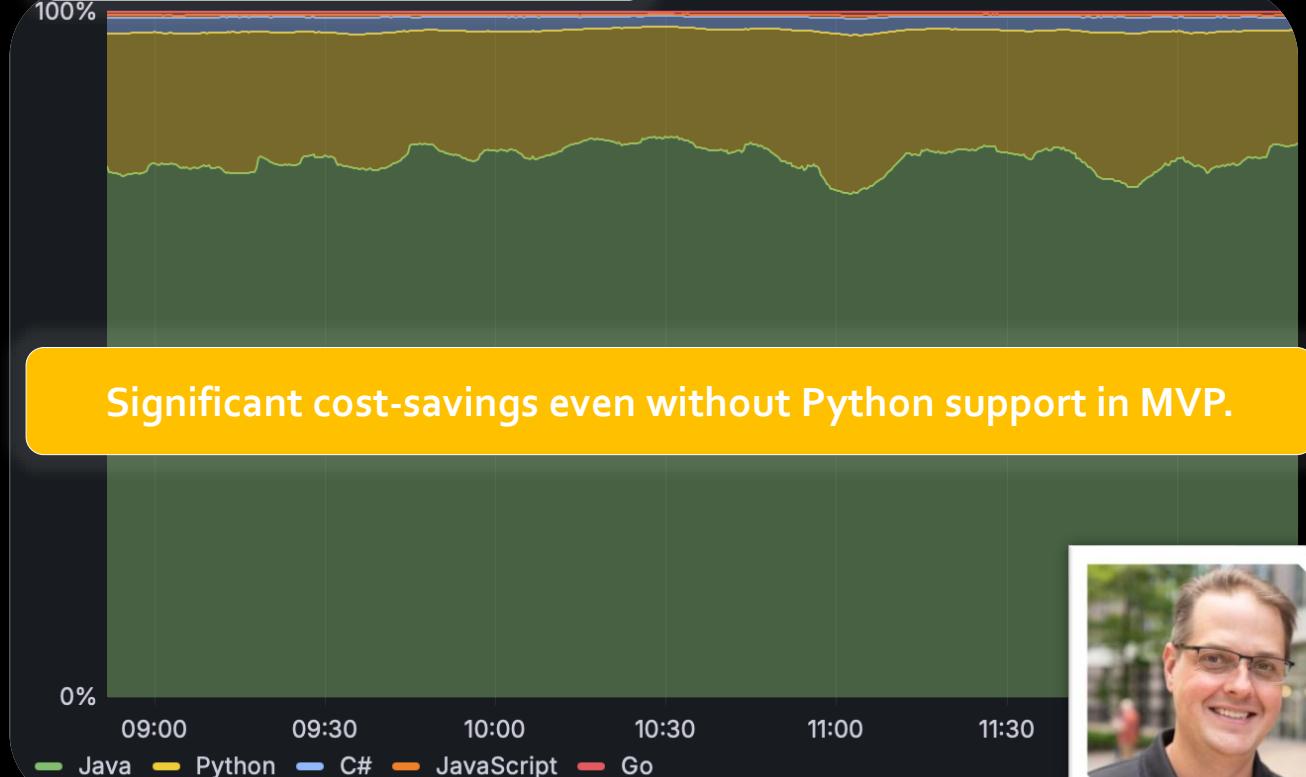
Go



Services by Language



Memory Usage by Language



BLOCKER

Limited Support for Emulation to build ARM64 for Python (which doesn't support Cross-Compilation either)



DEVELOPMENT HUB

Defining the Problem



SPS Commerce's developer experience is hindered by fragmented tools, complex processes, and a rapidly expanding ecosystem, making it difficult to understand and navigate the system effectively. This leads to increased frustration, reduced productivity, and a higher risk of errors, ultimately impacting software quality and efficiency. The lack of centralization and the tedious setup of new applications further exacerbate these challenges by proliferating incorrect practices.

Key Problem	Description
Expanding Tool Sprawl	20+ Individual and Disconnected Development Interfaces, with plans to adopt more niche tools.
Unavailable Service Context	No shared context to drive associated resource and state of an app.
Scattered Repeatable Processes	Processes to create development resources are ticketed and not trivial.
Growing Complexity in Application Development Patterns	Evolving architectures, practices, distributed systems, and diverse technology stacks multiplied against evolving product needs.
Onboarding & Acquisitions Through Tribal Knowledge	Exponential increase in acquisitions and onboarding leave no room for fractured information and unclear expectations.
Tedious to Create New Apps	Engineers are spending as much as 2 weeks to create "hello world" APIs on our Internal Developer Platform.

DEVELOPMENT HUB

Business Case

Defining the Problem

An Internal Developer Portal is one potential solution

"Developers code 52 minutes per day..."

Software.com

Measurement

Industry benchmarks, internal metrics, qualitative surveys, and anecdotal stories.

"78% of developers spend at least 30% of their time on manual, repetitive tasks."

Harness

Leadership Priorities

How does solving this problem advance key business objectives?

The positive developer experience is forged in acknowledging the complexity developers routinely face and actively creating ways to navigate that complexity. This starts with communication and continues with internal developer advocacy – or formal support within an organization for improving the developer experience.

The New Stack

Broader DX Strategy

Platform Engineering, Developer Portals, APIs, Tool Sprawl, Multi-Cloud, Multi-Region...

Culture

Intersection of business strategy and the collection of beliefs, values and behaviors for developers...

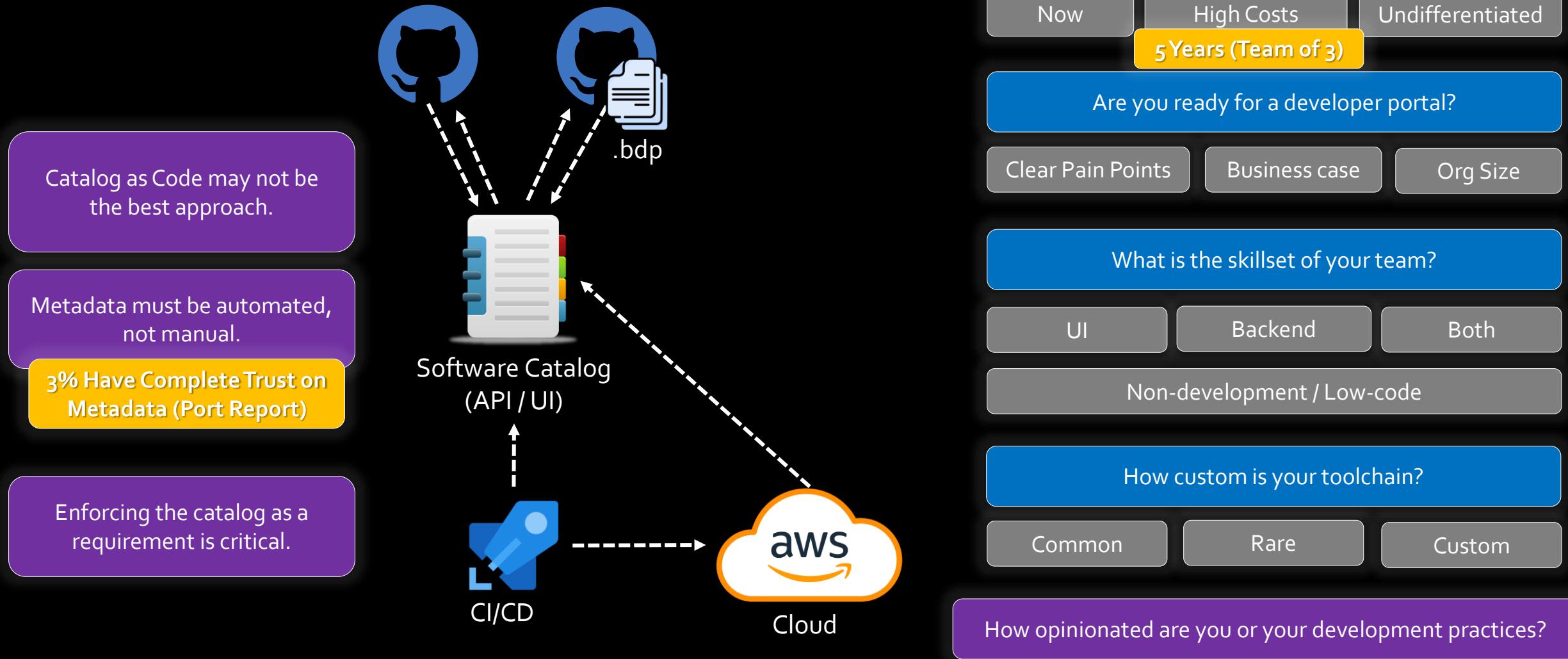
How?

Broad impact, guardrails, golden paths, best practices, SDLC standardization....



BUILDING A DEVELOPER-CENTERED PORTAL

To Build or Not to Build? **How Much Do You Want to Build?**



BUILDING A DEVELOPER-CENTERED PORTAL

Approaches

- Quick Win & Fast Setup
- Appeals to Executives
- Limited Adaptability
- Can Hinder Long Term

Balancing standardization and flexibility.



Rigid



Flexible Defaults



Unopinionated

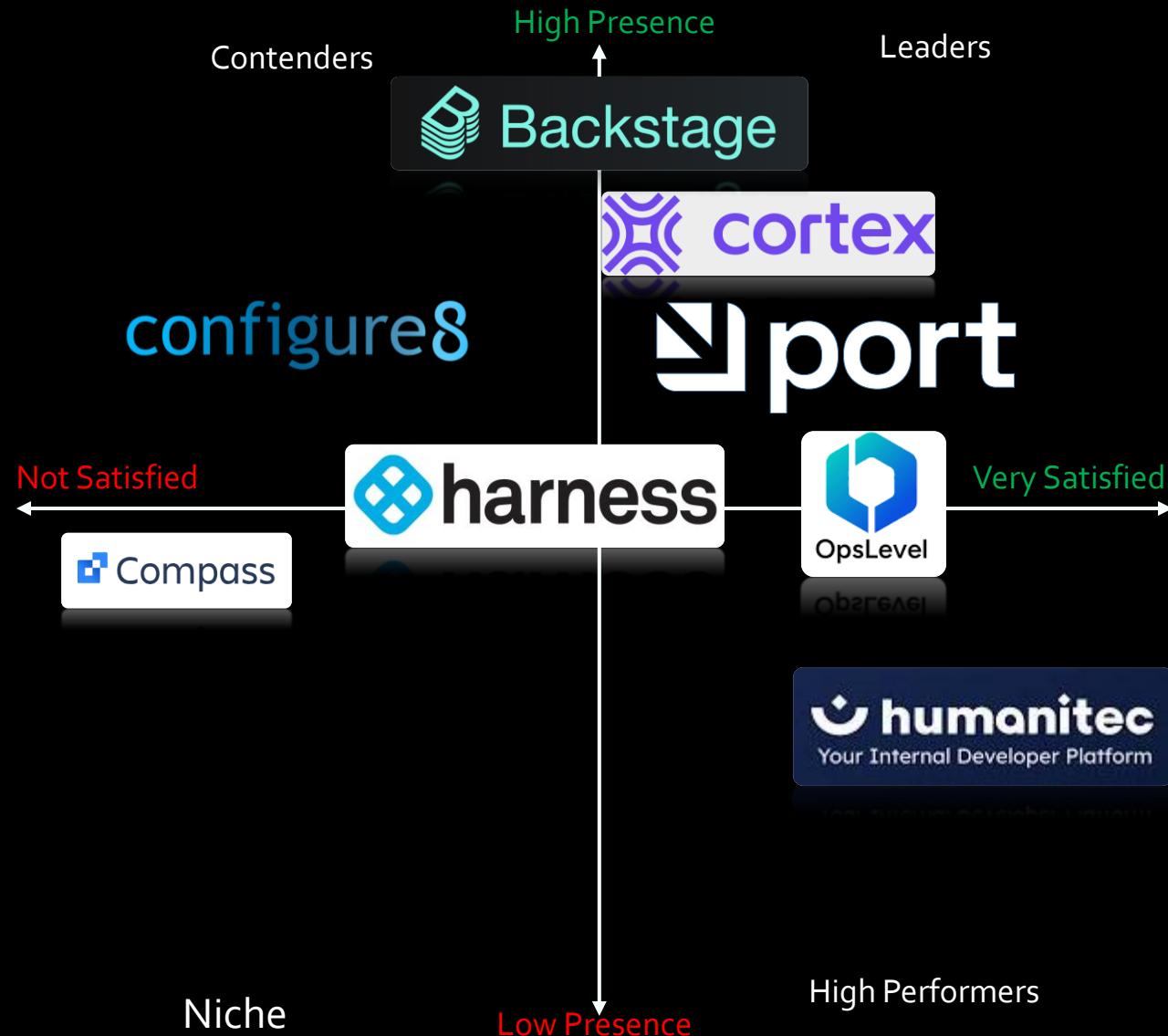
- Extensible
- Prioritize Workflows
- Significant Investment



BUILDING A DEVELOPER-CENTERED PORTAL

Buy Options

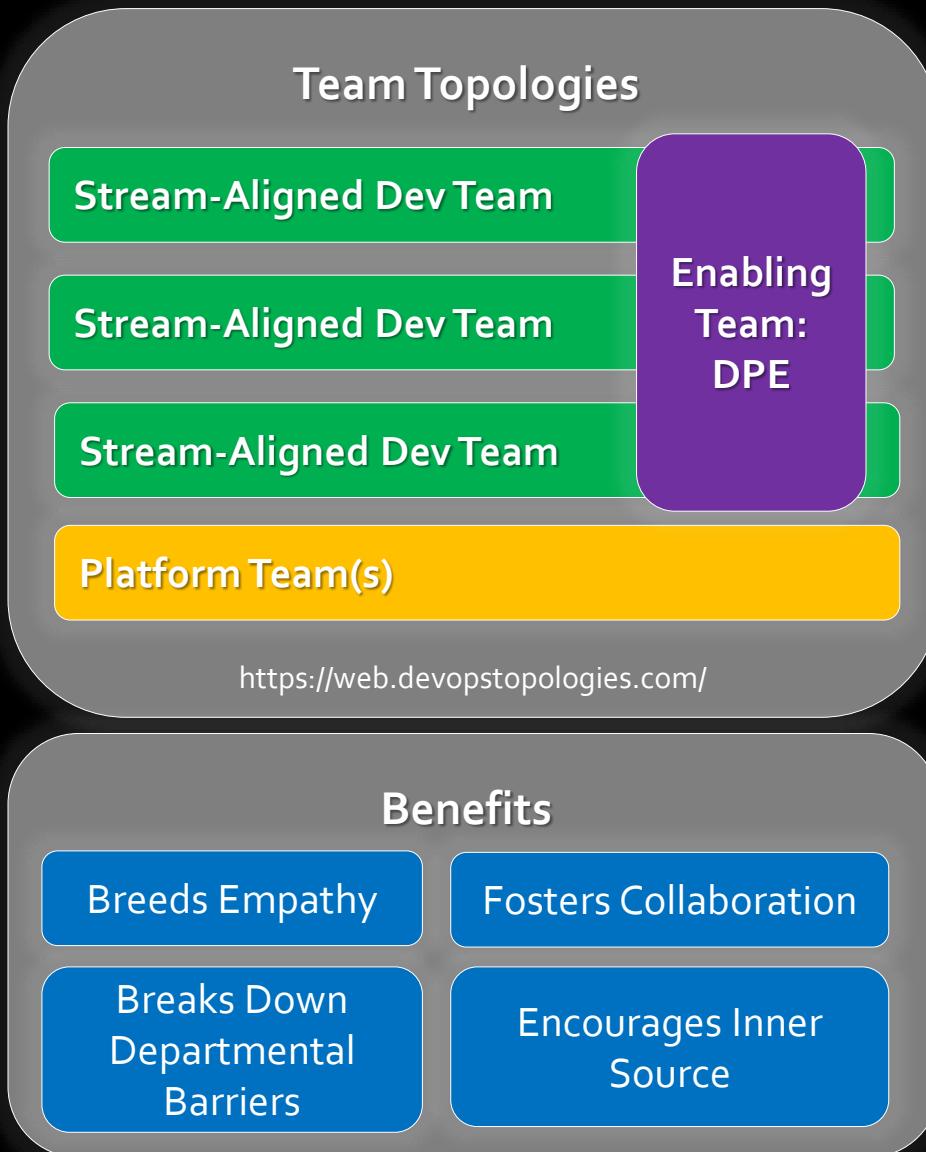
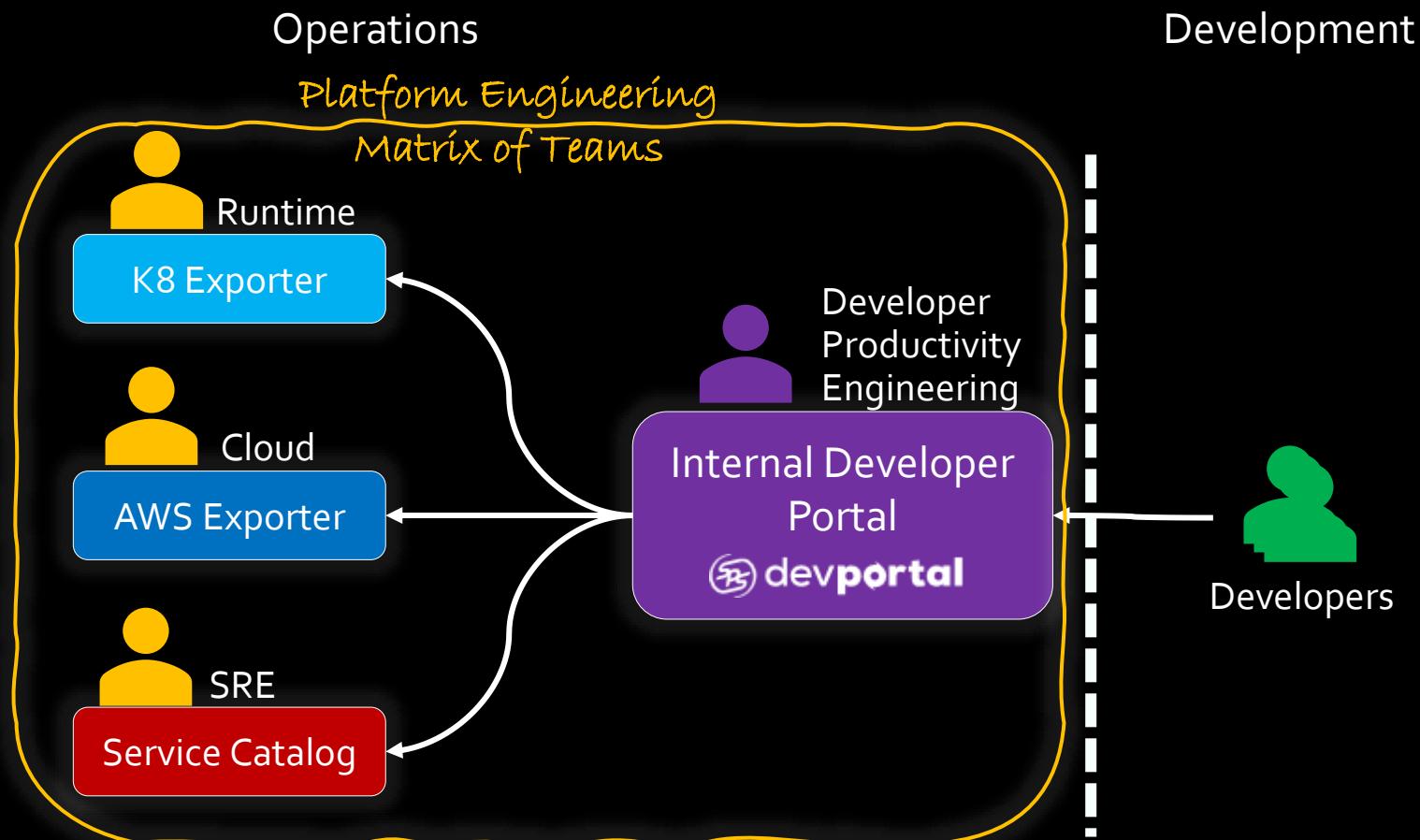
Gartner Magic Quadrant for
DevOps Platforms
Harness – 2025 Leader



BUILDING A DEVELOPER-CENTERED PORTAL

Empathy Driven-Development

What type of team structure and ownership best supports a development portal that is the intersection, or nexus of so many teams?



BUILDING A DEVELOPER-CENTERED PORTAL

Balancing Content

Pilot, POC, Workshop Ideas Early for Feedback

An Internal Developer Portal helps you manage tool sprawl in most cases, not eliminate it!

- Link to existing tools instead of replicating their UI.
- Prioritize the integration of owned data sources/tools.
- Unowned data sources require extra effort before they offer value for teams.
- An Internal Developer Portal is not a reporting platform (typically)!

Direct URLs to log queries and Kubernetes dashboards with context.

Relating resources via software catalog “Service ID”!

Feature Flags do not relate to Service IDs...

Current state, minimal history, trends...



ARCHITECTURE

Environments

Key Challenge

We needed to decide how to map our data to environments



Service Catalog (Non-Prod)



Service Catalog (Prod)

Development

Production

ARCHITECTURE

Environments

Key Challenge

We needed to decide how to map our data to environments



Non-Prod GitHub Org



GitHub Org

Development

Production

ARCHITECTURE

Environments

Key Challenge

We needed to decide how to map our data to environments



AWS (Non-Prod)



AWS (Prod)

Development

Production

ARCHITECTURE

Infrastructure as Code



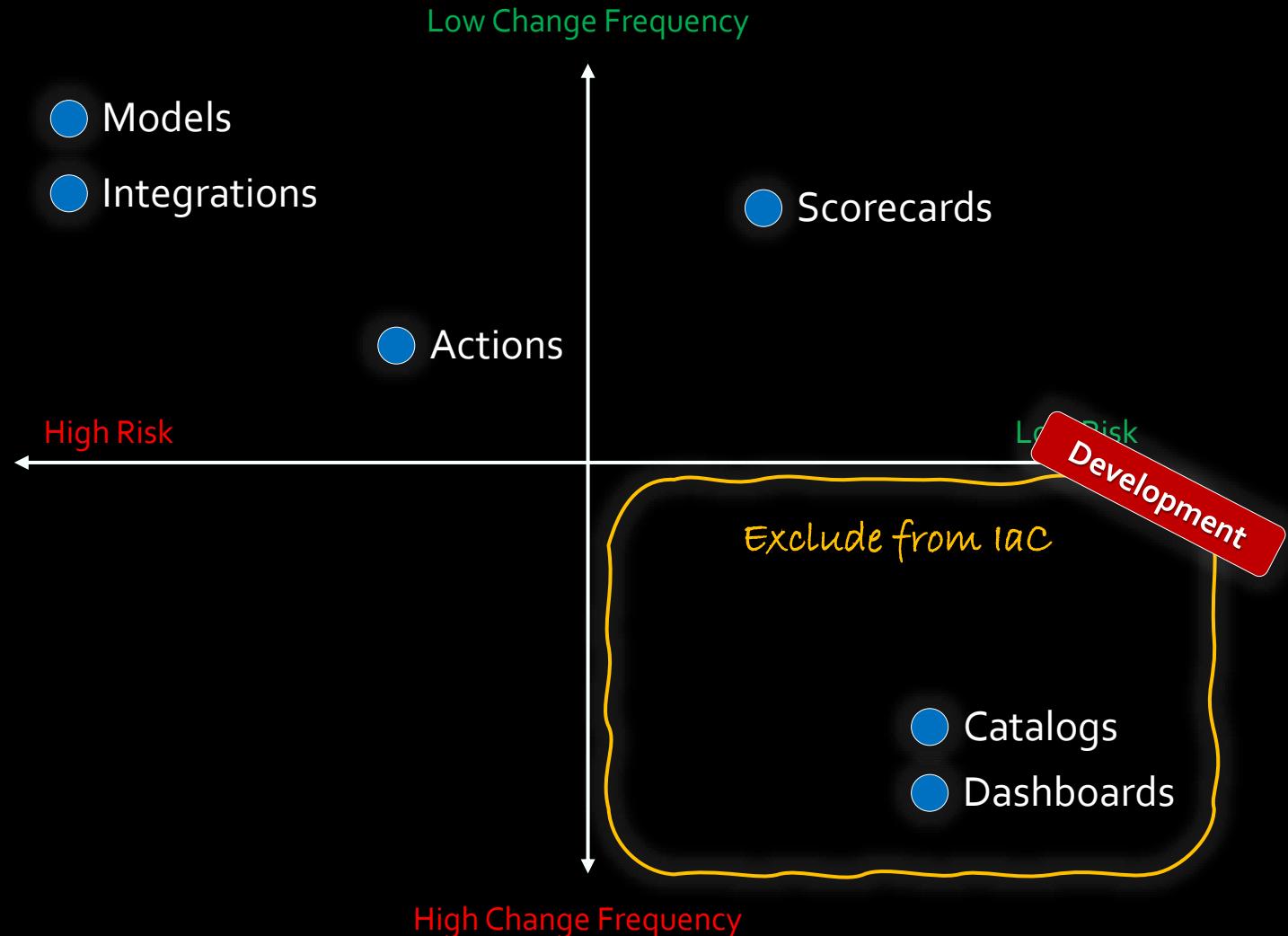
Key Challenge

We want stable, predictable environments

Balancing risk with change frequency needs

We didn't want to repeat past mistakes

Frequency and risk are not static variables



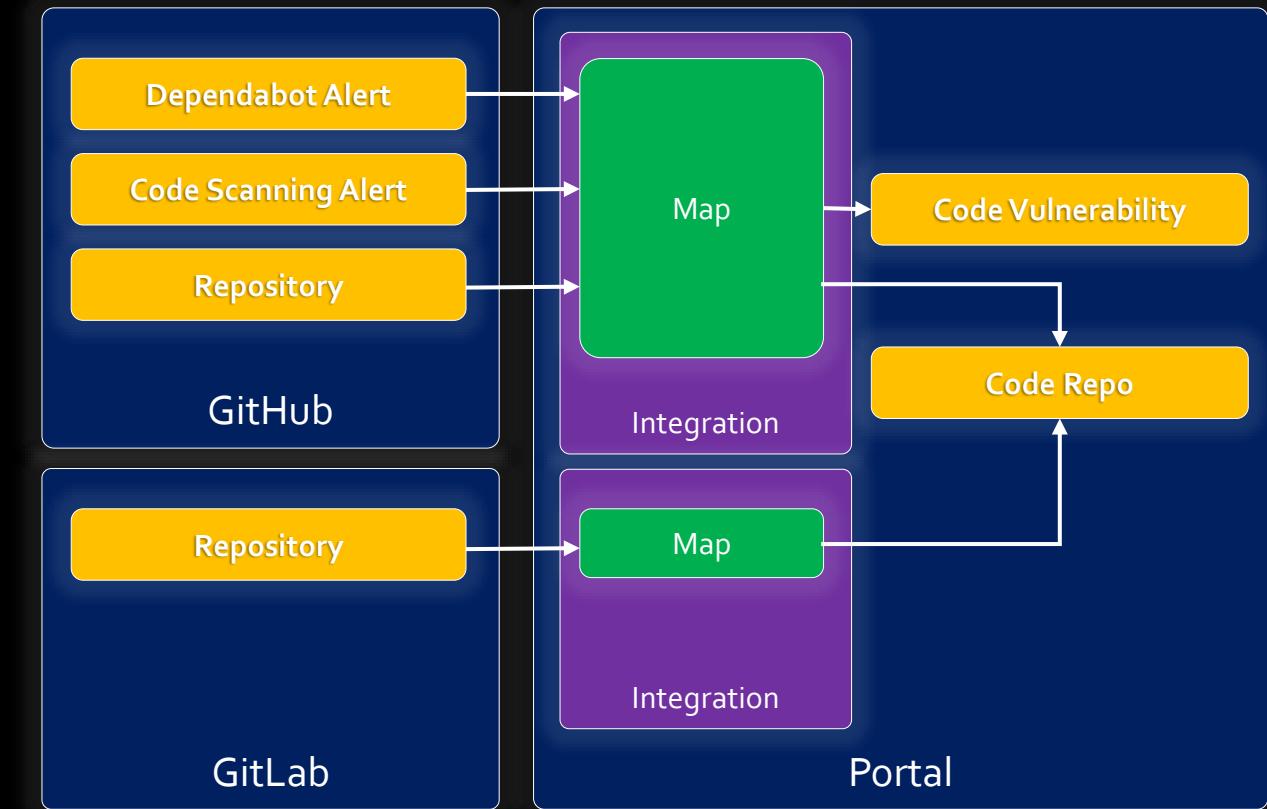
ARCHITECTURE

Data Modeling

Key Challenge

We want to balance scalability and maintainability on the models that represent our SDLC

A screenshot of a web application interface titled "Vulnerabilities by Repository". The page displays a list of repositories with their associated vulnerabilities. The first repository, "dependabot", has 13 vulnerabilities, with 1 being critical (orange), 10 being major (grey), and 2 being minor (yellow). The second repository, "code_scanning", has 2 vulnerabilities, both being critical (orange). The interface includes filters for "Type" (dependabot, code_scanning) and "Severity Level" (critical, major, minor).



ADOPTION & IMPACT

Start Small

Ease of Delivery

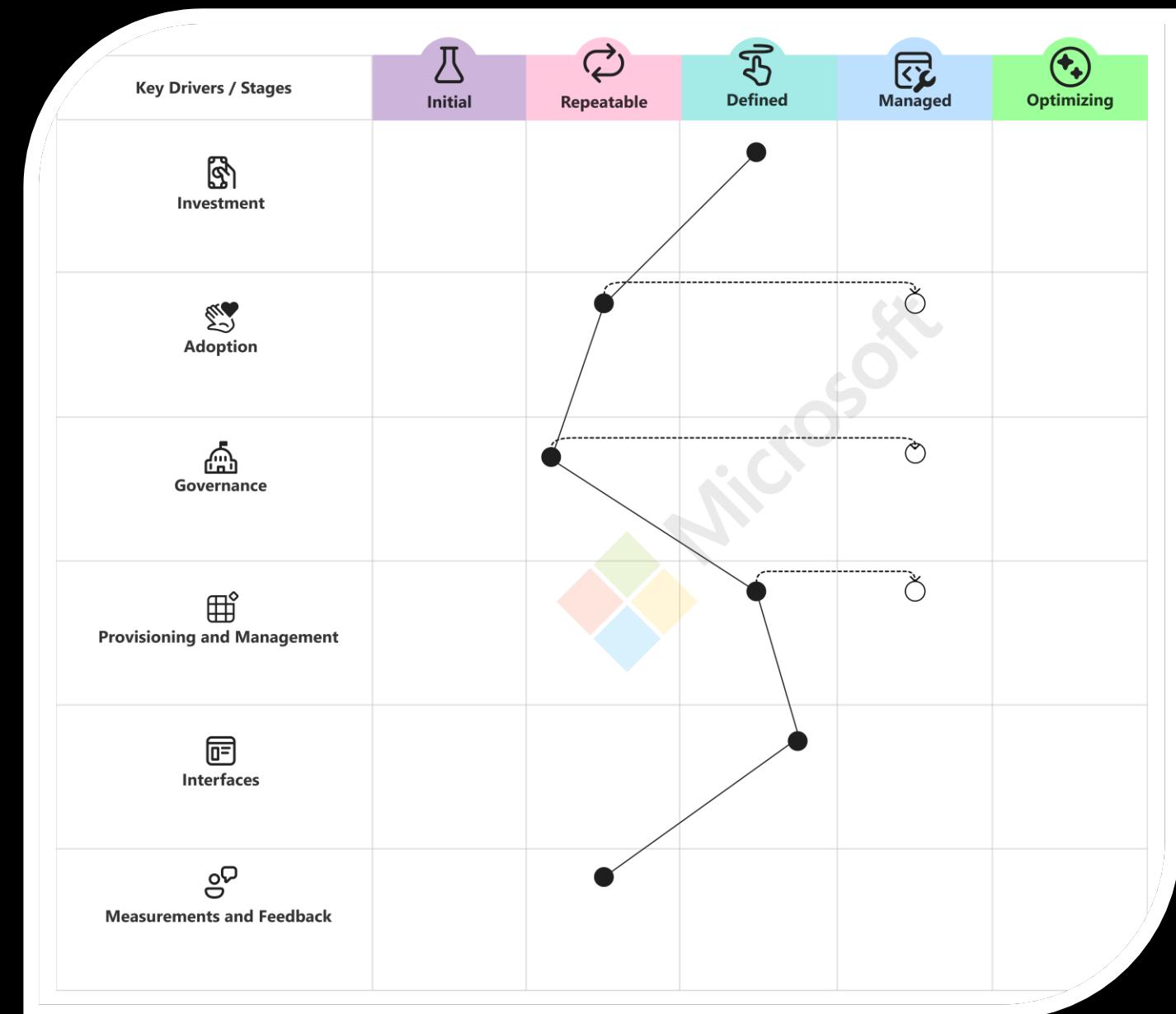
Pull Request Completion Time

Pull Request Open Duration

Time to 1st Pull Request

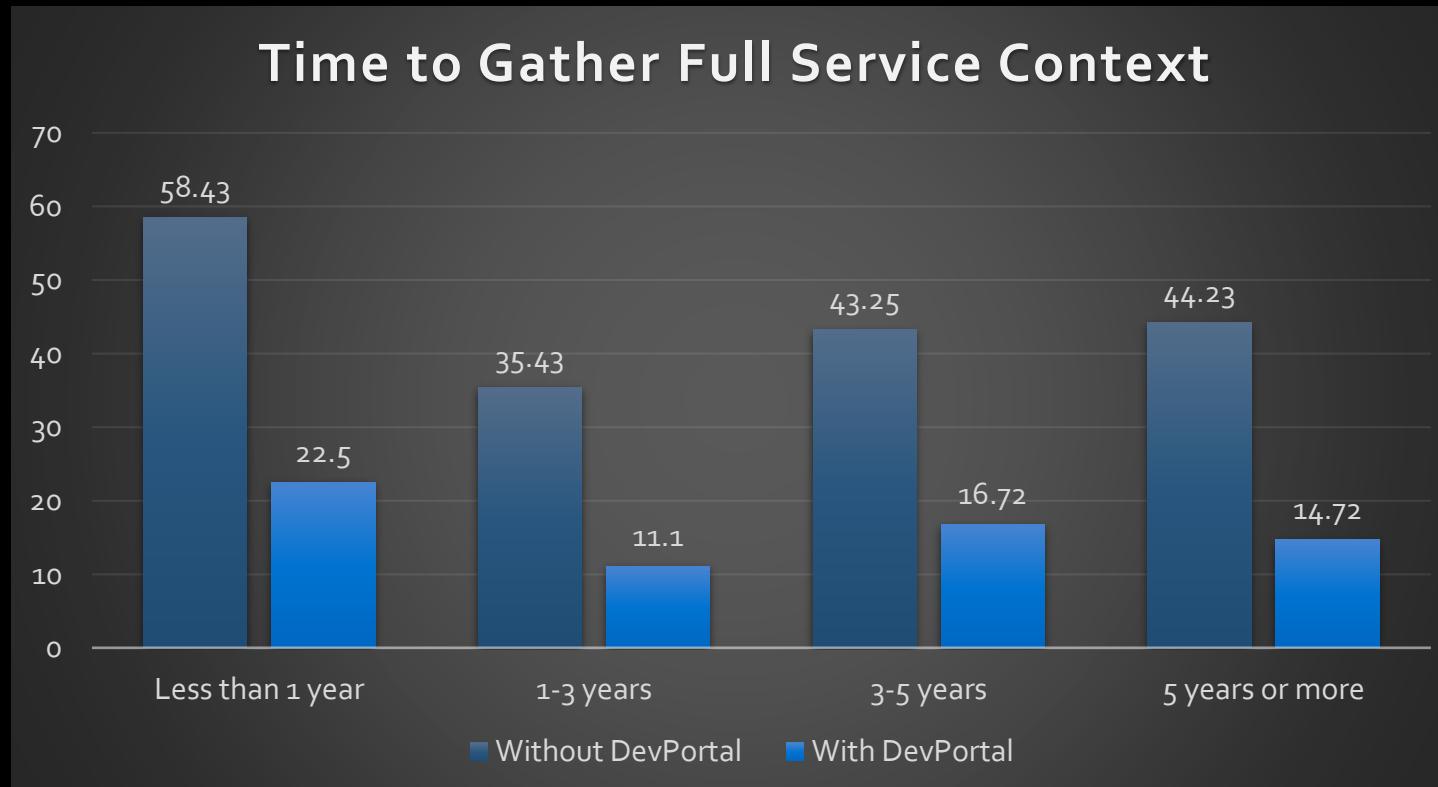
Time to 10th Pull Request

Time Spent in Deep Work (Focused)



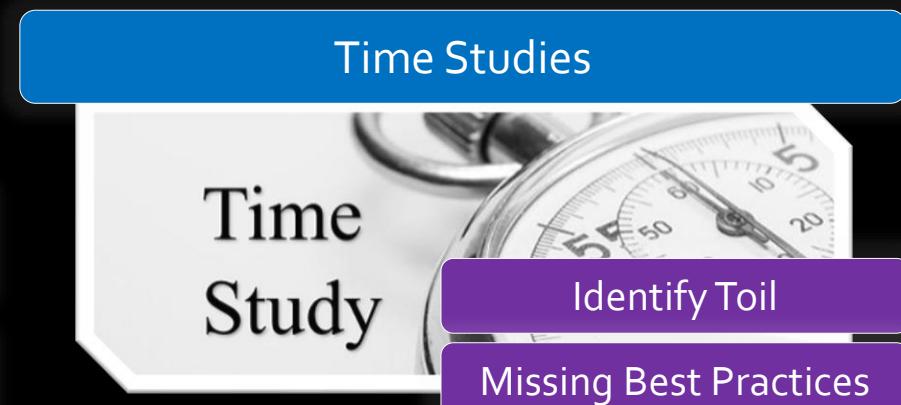
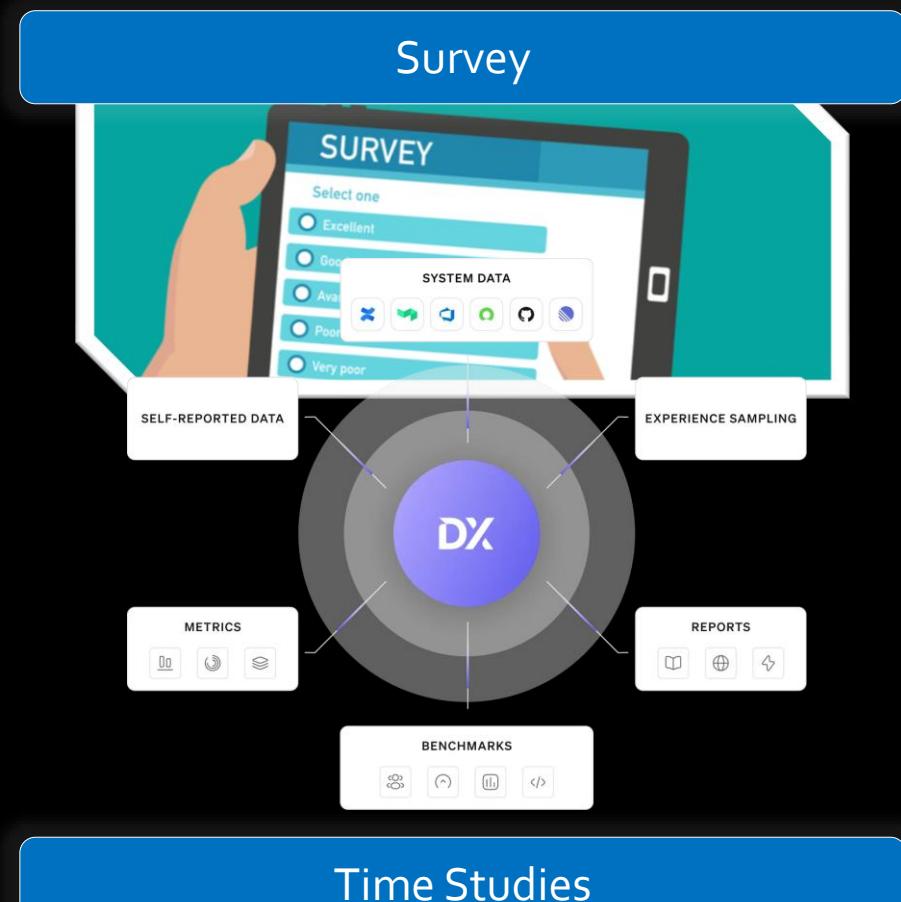
ADOPTION & IMPACT

SPS Commerce Results



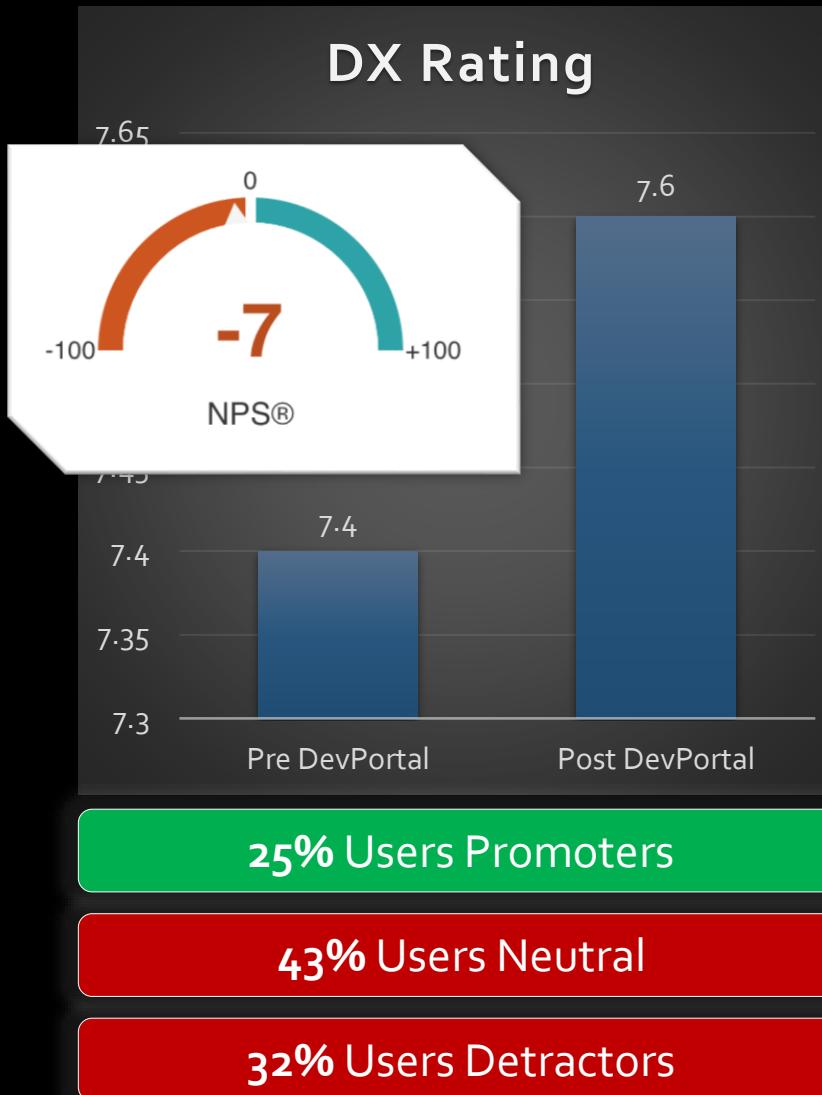
On an average, **65%** reduction in time spent gathering service context.

On an average, **76%** reduction in time spent locating Team entities



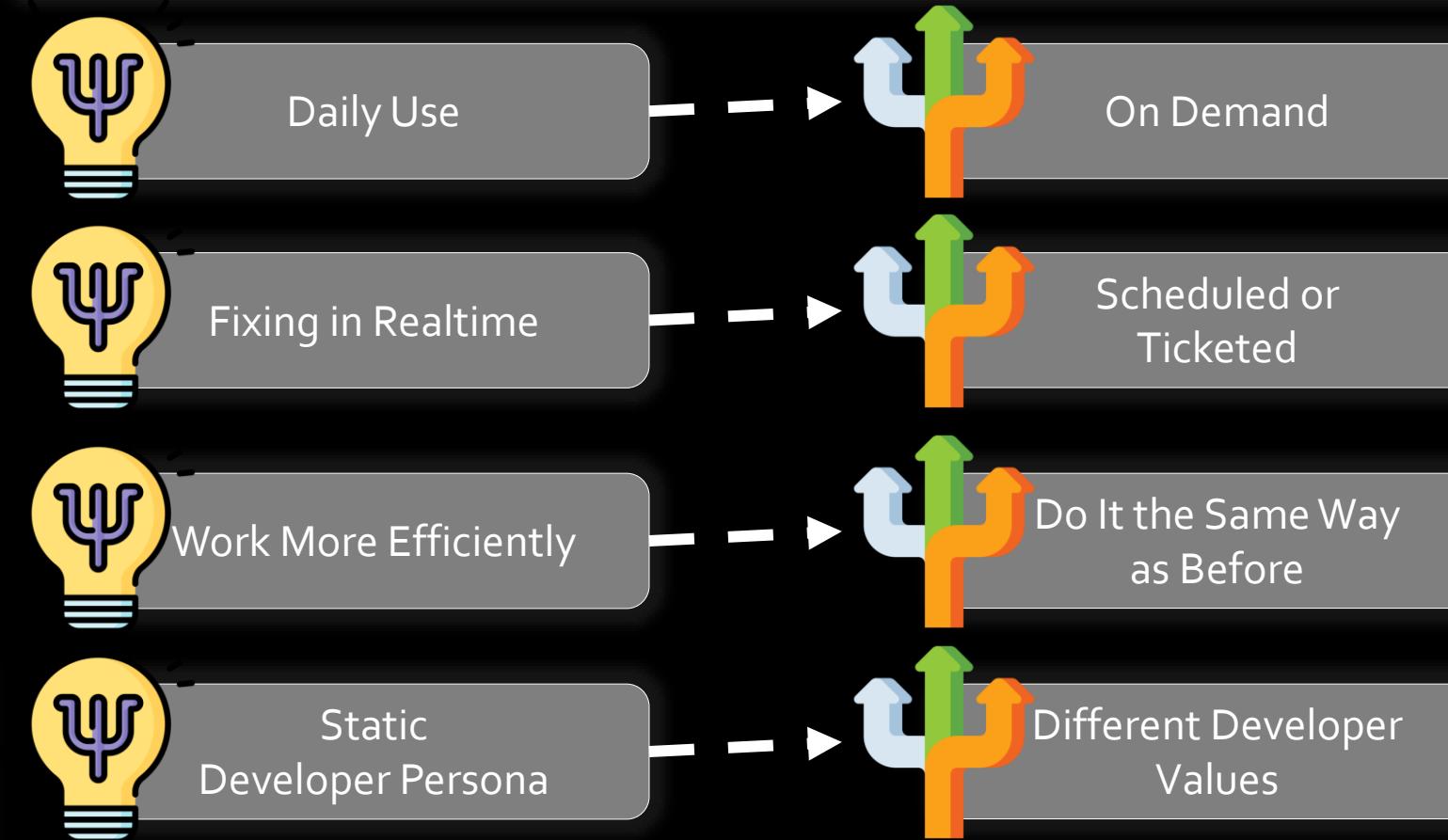
ADOPTION & IMPACT

SPS Commerce



The Net Promoter Score (NPS) is a customer experience metric that measures customer loyalty and satisfaction

What Happened for the Detractors?



ADOPTION & IMPACT

Campaigns and Initiatives

CI/CD Agent Migration

V2 Agent Migration
Migration from Legacy Agent Pools to new Agent Collections

Pipeline Definitions
Represents all pipelines using the Base Template, identifying an agent collection or N/A if not set.

1445

Legend: N/A (teal), atlas-linux (light blue), legacy (dark blue), atlas-windows (pink)

All Pipelines
All pipelines in the organization, including those without the base template usage.
All pipelines should use the base template.

3350

Legend: dbe (orange), intouch (blue), intertrade-map... (purple), comm... (pink), sre (red), network-access (yellow), development-p... (green), tpd-engineering (light green), sysops (cyan), sps-shared (light blue), demos (dark blue), fulfillment (orange), analytics-data... (red), analytics-pac... (yellow), Other (grey)

GOAL Migrate All Pipelines to New Self-Hosted CI/CD Agent Pools

Shows all pipelines with...

Agent Collection	Title	URL	Repository	+
atlas-linux	540 >			
	895 >			
cy	9 >			
ws	1 >			

SPCommerce.itt-network-econnect-distribution | azure-pipelines.yml

itt-network-econnect-distribution ***

Improved Security & Performance

Helm Chart Upgrades

Default Chart Version
Identify services and teams on older default chart versions that should be upgraded.

Configured Default Chart Versions
Default Chart Versions configured and used in BDP Files.

1325

Legend: N/A (teal), 13 (light blue), 12 (purple), 13.1.0 (pink), 13.0.0 (red), 12.5.14 (orange), 13.6.18 (yellow), 10.4.39 (light green), 13.0.3 (cyan), 13.3.0 (dark blue)

All Default Chart Versions
Grouping of helm apps deployed for all versions.

#	Chart Version	Region	Title	URL	+
1	13.8.0-canary_0.0.0-pr543.3	2 >			
2	13.8.0	397 >			
3	*3.7.2	406 >			

GOAL Migrate All Deployments to Default Chart V13

Unblocks Kubernetes Cluster Upgrades

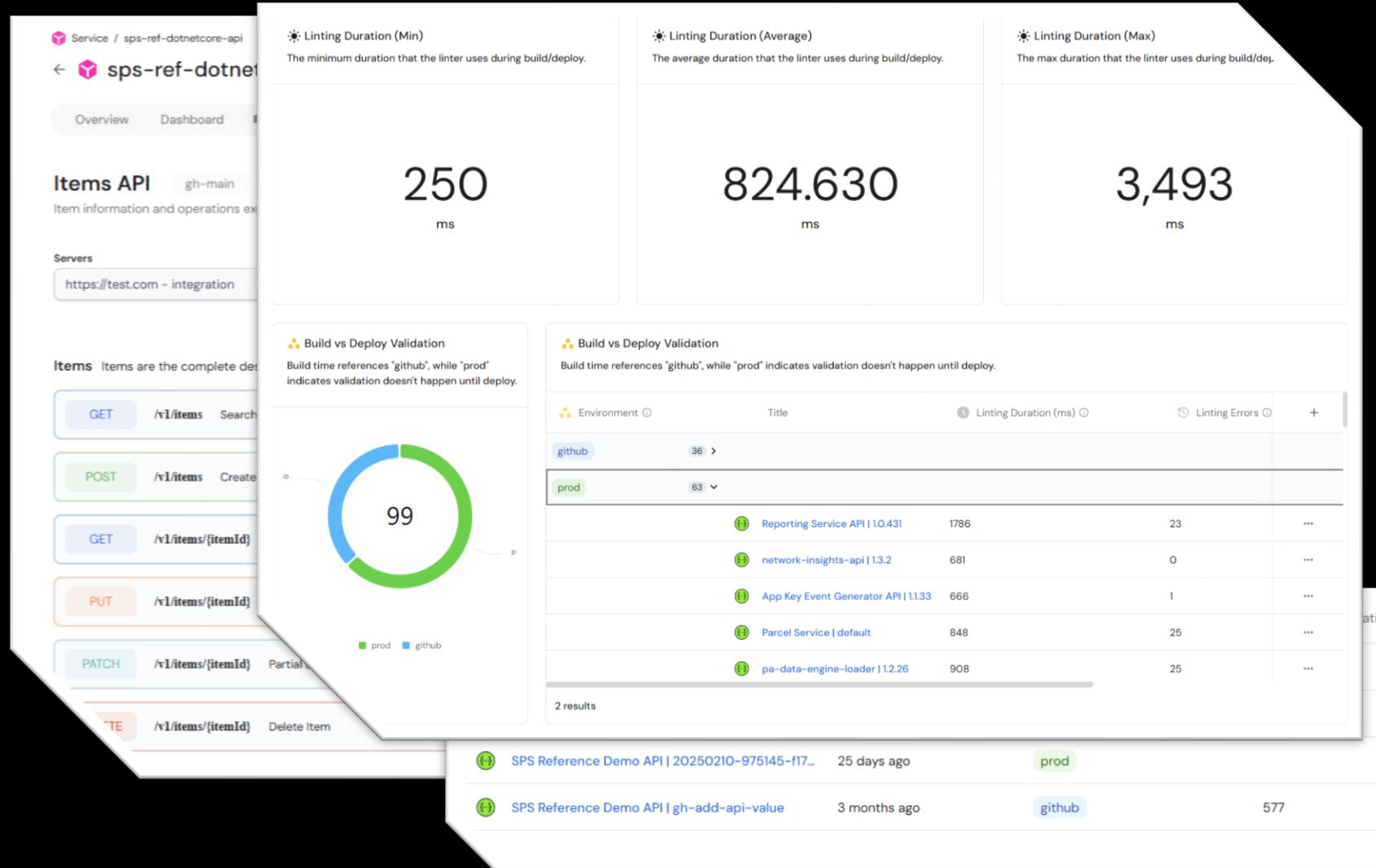
ADOPTION & IMPACT

GOAL

Consolidate API Design First Process & Tooling

Eliminate Duplicate or Superfluous Tooling

Saved \$75K/year



Built API Catalog

Full Context

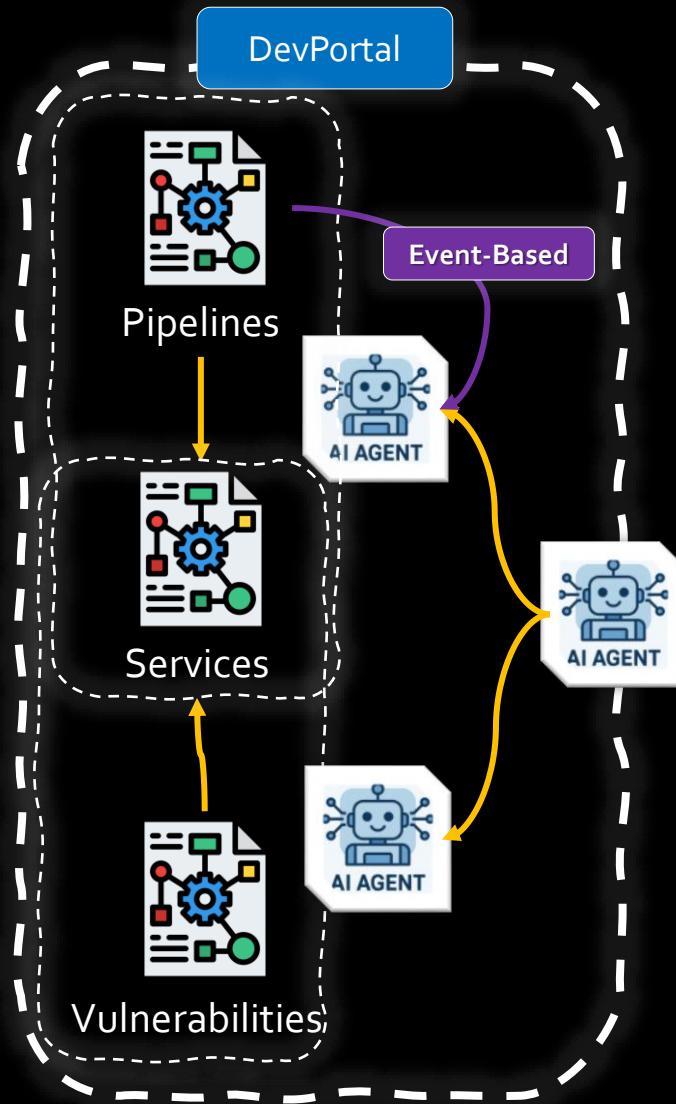
Compliance

Governance

Visibility

ADOPTION & IMPACT

Foundational for AI Enablement in the SDLC



An internal developer portal is the control plane for AI in the SDLC—turning scattered tools and chaotic workflows into a structured, context-rich ecosystem where agents can actually deliver real autonomy.



INTERNAL DEVELOPER PORTAL

Before and Now

Before

Now

20+ Individual and Disconnected Developer Interfaces

A Single Interface for Read-Only Context in Near Real-time

Scattered Repeatable Processes Requiring Tickets Across Many JIRA Backlogs

Centralized Catalog, Standardized Inputs & Maintained Contract

New Platform Features & Best Practices Buried in Release Notes & Developer Documentation

Real-time Feature Usage, Governance and Compliance Information on “My Stuff”

Time to Launch Boilerplate API...

1 Week

13 Minutes!





BUILDING AN *INTERNAL DEVELOPER PORTAL* THAT EMPOWERS DEVELOPERS



"The future of developer experience is self-service.
A great internal portal is how you stop interrupting your teams and start empowering them.

Katie Wilde
VP Engineering @ Buffer



"



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DISTINGUISHED SOFTWARE ENGINEER

linkedin.com/in/travisgosselin