Streamlining Development Workflows in Azure
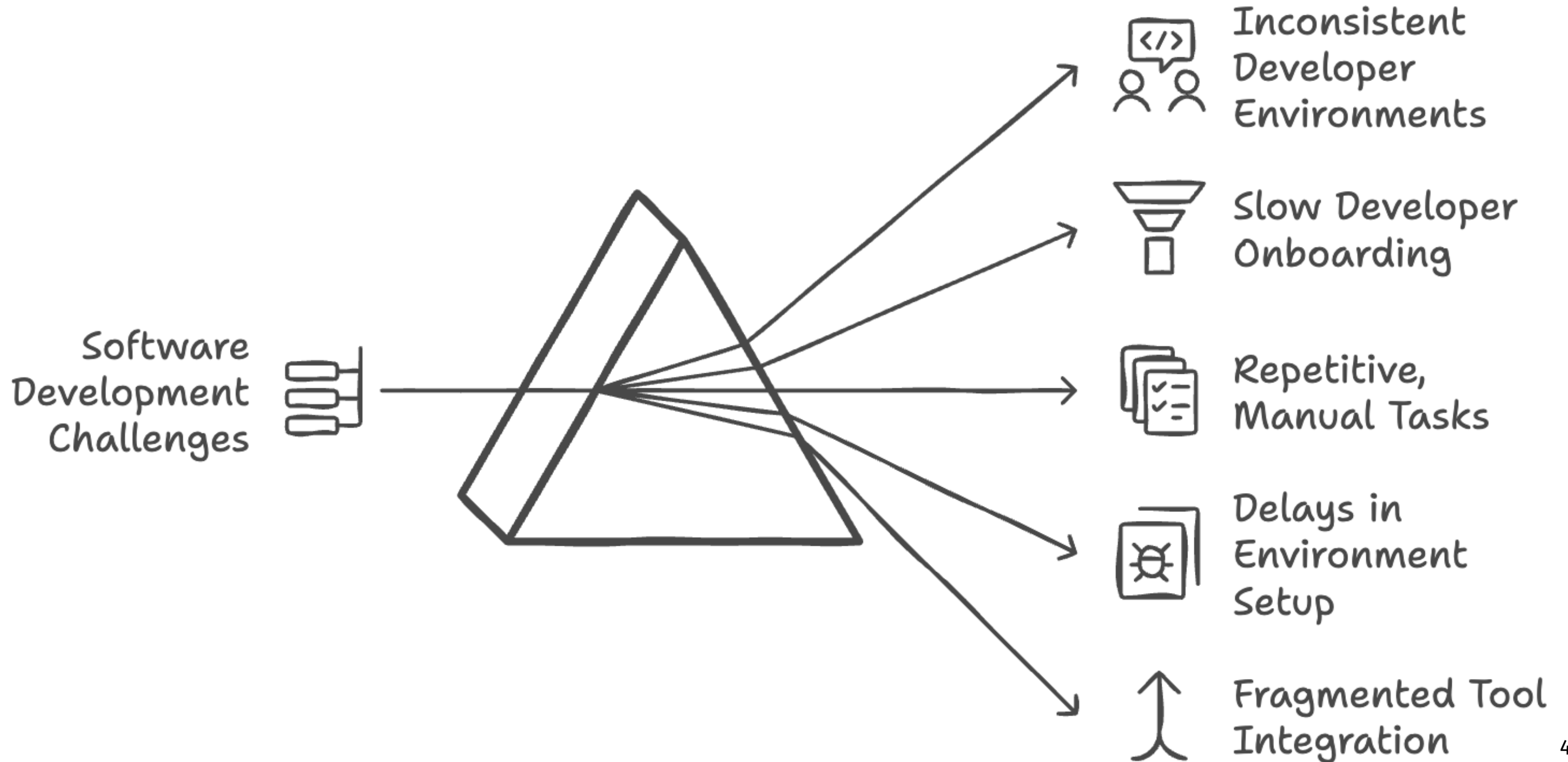
Christos Galanopoulos

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→ **Sessionize:** christos-galanopoulos

Current State

Development Workflow Challenges

Software Development Challenges

- Inconsistent Developer Environments
- Slow Developer Onboarding
- Repetitive, Manual Tasks
- Delays in Environment Setup
- Fragmented Tool Integration

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Target State

Core Elements

Rapid, Tailored Environment Provisioning

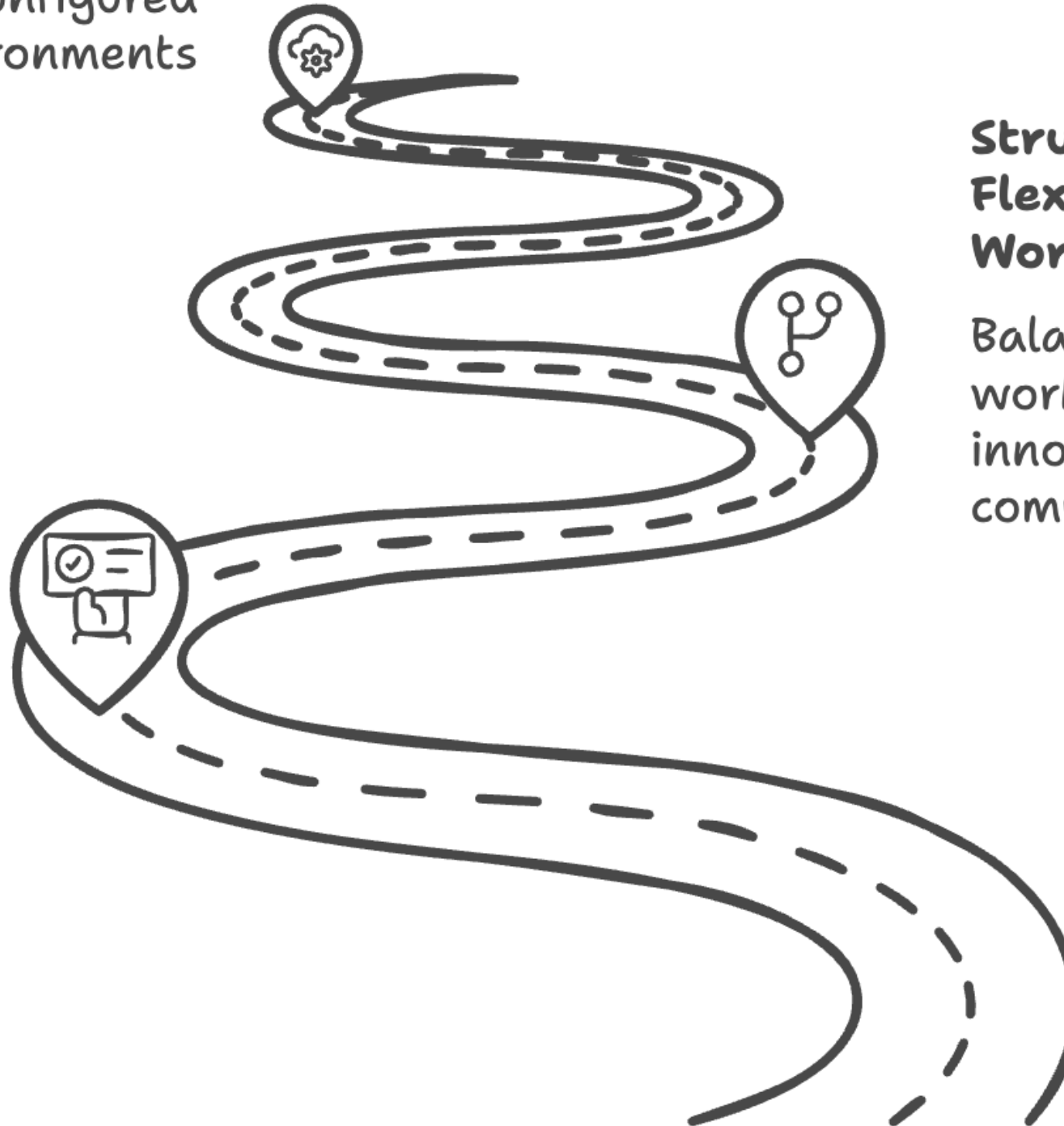Instant access to pre-configured environments

Structured, Flexible Workflows

Balanced workflows for innovation and compliance

Optimized Workstations

Standardized setup process for workstations

Azure Dev Center

The Hub for Modern Development

Azure Dev Center serves as a centralized platform for managing development projects in the Azure ecosystem. It offers a suite of features designed to enhance productivity and collaboration. From project organization to resource management, it provides a comprehensive solution for modern software development.

Features

→ **Project Organization**: Group similar projects and apply consistent settings

→ **Resource Management**: Oversee dev boxes, deployment environments, and managed DevOps pools

→ **Access Control**: Granular permission management with role-based access

→ **Service Integration**: Seamless connection with Azure DevOps and other Microsoft services

Microsoft Dev Box
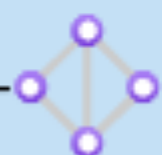
Cloud-Powered Workstations

Microsoft Dev Box provides developers with high-performance, ready-to-code cloud workstations, enabling seamless access to preconfigured environments. It accelerates onboarding and simplifies development by eliminating the need for manual setup.

Features

→ **On-Demand Access**: Self-service creation and management of dev boxes

→ **Tailored Environments**: Pre-configured with project-specific tools and code

→ **Flexible Connectivity**: Access via Remote Desktop or web browsers

→ **Performance**: Azure VMs with Premium SSDs for powerful computing

Features

→ **Cross-Platform**: Support for Windows, macOS, Android, iOS, and web

→ **Network Isolation**: Secure deployment in specific virtual networks

→ **Cost Optimization**: Auto-stop and usage-based billing

→ **Azure Integration**: Seamless connection with Azure AD and services

Azure Deployment Environments

Infrastructure on Demand

Azure Deployment Environments empowers teams to rapidly deploy and manage consistent infrastructure environments in a vending-machine-like fashion, reducing the complexity of manual setup. It ensures environments are configured securely and aligned with organizational policies for compliance and efficiency.
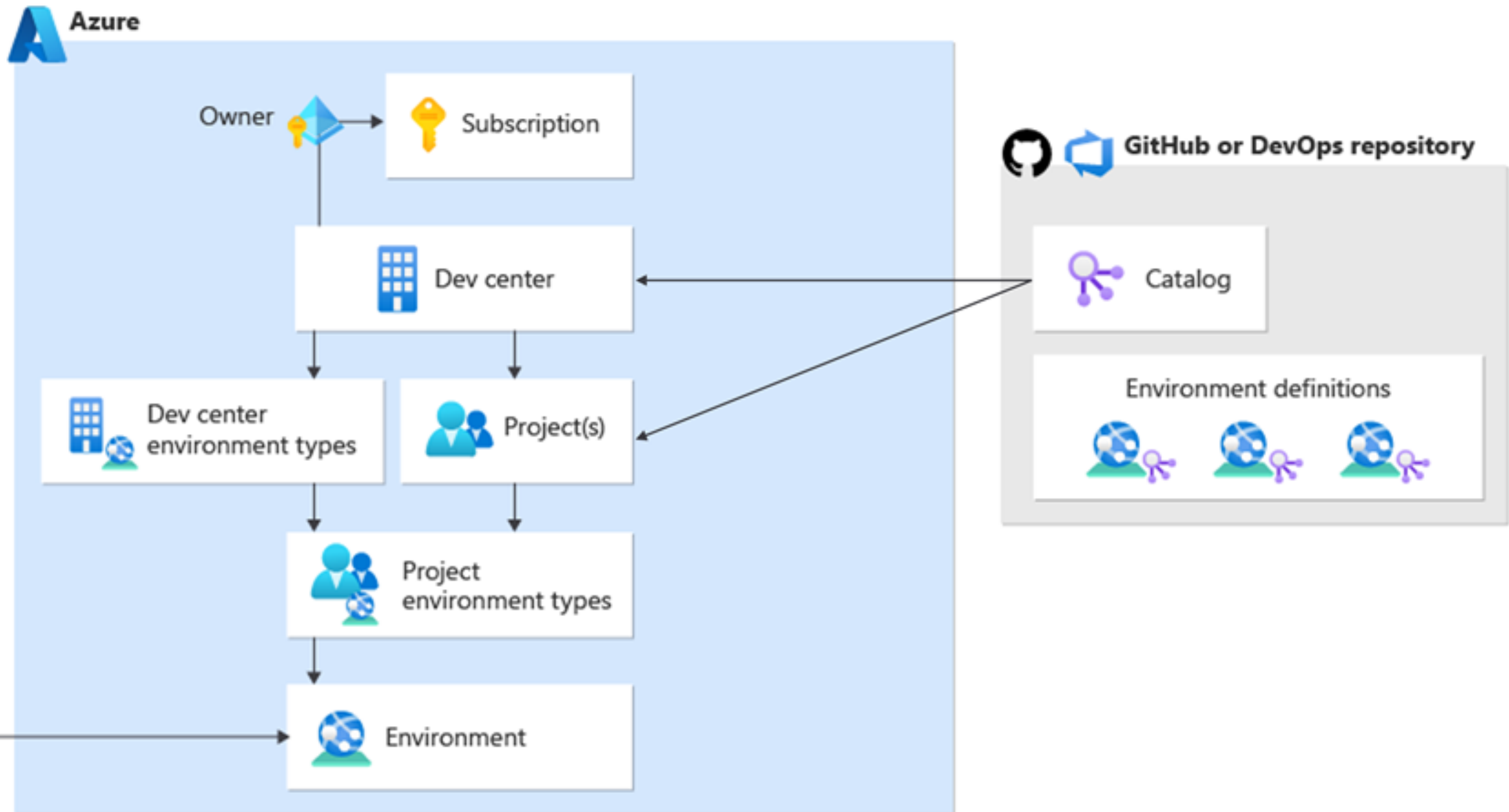
Features

→ **Self-Service Deployment**: Spin up environments through various interfaces

→ **Standardized Templates**: Curated, reusable infrastructure-as-code templates

→ **Flexible Environment Types**: Configurable for sandbox, testing, staging, and production

Features

→ **Centralized Governance**: Manage templates, permissions, and policies across projects

→ **Cost Management**: Track and control resource usage across environments

→ **Automated Cleanup**: Scheduled environment teardown

Integrated Workflow

Boosting Development Efficiency

Dev Center Setup

Create a project ...

Basics   Dev box management   Tags   Review + Create

Projects enable you to manage team level settings and empower development teams to self-serve dev boxes.

Resource details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *

| Cloud-Native-Sub | ⌄ |

Resource group * ⓘ

| rg-devstream-in-azure | ⌄ |

Create new

Project details

Dev center *

| Select a dev center | ⌄ |

Name * ⓘ

| |

Description

| |

Activity log

Access control (IAM)

Tags

Settings

Dev center settings

Project policy (preview)

Identity

Properties

Locks

Dev box configuration

Networking

Azure compute galleries

Dev box definitions

Environment configuration

Catalogs

Environment types

Manage

Projects

Monitoring

Metrics

Diagnostic settings

Logs

Showing 1 to 1 of 1 records.

No grouping

List view

Name ↑↓	Dev center ↑↓	Tags
Project-X (Project-X)	Platform-X	...

20

Add catalog   ✕

Name *

[   ]

Catalog source *

🔘 Azure DevOps

⚪ GitHub

⚪ Microsoft's quick start catalog

Authentication type *

🔘 Managed identity

⚪ Personal access token

The managed identity attached to the dev center must be added to the selected Azure DevOps organization as a user, and given read access to the selected Azure DevOps project. Learn more ⧉

⚠ There is no managed identity associated with this dev center. Learn more ⧉

Organization *

[∨]

☑ Automatically sync this catalog ⓘ

devcenter-catalog

⋮

> 📦 Tasks
  ℹ️ README.md

⑂ main ⌄   📁 / Type to find a file or folder...

Files

Contents   History

[Set up build]   [Clone]   ⋮

Name ↑	Last change	Commits	
📁 Tasks	30 Sept	1a996a58 Update content	Christos Galanopoulos
ℹ️ README.md	30 Sept	add9a3ca Update content	Christos Galanopoulos

DevCenter Catalog

The **DevCenter Catalog** is a repository designed to facilitate the onboarding and setup of developer workstations using automated tasks. This catalog integrates various scripts and task definitions to streamline the installation of essential tools and configurations required for efficient development environments.

Tasks

Each task is contained within its directory and includes PowerShell script/s and a configuration file:

- **Choco**: Automates package installation via Chocolatey.
- **Git Clone**: Facilitates cloning of Git repositories.
- **Install VS Extension**: Installs Visual Studio extensions.
- **PowerShell**: Runs arbitrary PowerShell commands.
- **Winget**: Manages software installations using the Windows Package Manager.

Usage

Reference the task YAML files within your customization library or onboarding scripts to use these tasks. Customize parameters as needed for your development environment.

22

Type / to search

Code   Issues 15   Pull requests 6   Actions   Security   Insights

Files

devcenter-catalog / Environment-Definitions / ARMTemplates /

main

Go to file   t

> .github
v Environment-Definitions
  v ARMTemplates
    > App-Service-with-Cosmos_...
    > Container-App-with-Cosmos...
    > Function-App-with-Cosmos...
    > Sandbox
    > WebApp
    README.md
  v BicepTemplates
    > AppConfig
    v ContainerApp
      environment.yaml
      main.bicep
    README.md
> Tasks
.gitignore
CODE_OF_CONDUCT.md
LICENSE
README.md
SECURITY.md

wbreza Minor fixes ✓   d6811d

Name	Last commit message
..	
App-Service-with-Cosmos_AZD-template	Minor fixes
Container-App-with-Cosmos_AZD-template	Updates environment variable outputs from CRA to vite
Function-App-with-Cosmos_AZD-template	Updates environment variable outputs from CRA to vite
Sandbox	Condensing Environments quickstart catalog
WebApp	Condensing Environments quickstart catalog
README.md	changing links from ARM templates -> READMEs

README.md

ARM Deployments

This template folder contains a suite of templates deployed through Azure Resource Manager (ARM). ARM templates are currently in GA for Azure Deployment Environments, and available to deploy for all customers.

What will be deployed?

You can deploy the following test templates to ADE:

- Sandbox Will deploy an empty environment, which implies generating a resource group for your environment, but with no resources.
- WebApp Will deploy an environment to host a Web App.
- AppServiceWithCosmos - AZD Will deploy an environment to host a Web App with a connected CosmosDB database, and is a definition compatible with AZD + ADE Public Preview
- ContainerAppWithCosmos - AZD Will deploy an environment to host an Azure Container App with a connected CosmosDB database, and is a definition compatible with AZD + ADE Public Preview

24

Add catalog ✕

Name *

sample-environments

Quick start catalog type *

◯ Dev box customization tasks

● Azure deployment environment definitions

Microsoft's quick start catalog will make it easier for you to get started with Dev Center services like dev box customizations and deployment environments.

Repo

https://github.com/microsoft/devcenter-catalog.git

Branch

main

Folder path

Environment-Definitions

☑ Automatically sync this catalog ⓘ

25

ADO or GitHub repositories can be attached as catalogs. Learn More

	Name	Branch	Folder path	Clone URL	Last synced	Status	
☐	sample-environments	main	Environment-Definitions	https://github.com/microsoft/d... ⧉	4 minutes ago	✓ Sync successful	✎
☐	sample-devbox-tasks	main	Tasks	https://github.com/microsoft/d... ⧉	2 minutes ago	✓ Sync successful	✎

Dev Box Provisioning

Create dev box definition ...

The definition will not be available for use in dev box pools until it is successfully validated.

Name *

definition-x

Image * ⓘ

Visual Studio 2022 Enterprise on Windows 11 Enterprise + Microsoft 365 Apps 24H2 | Hibernate ... ⌄

See all images

By creating a dev box you are accepting the Privacy Policy and License Agreement.

Image version * ⓘ

Latest ⌄

Compute *

8 vCPU, 32 GB RAM ⌄

Storage *

256 GB SSD ⌄

Hibernation

Dev Box hibernation is only supported for specific dev box configurations. Learn more about hibernate and troubleshooting.

☐ Enable hibernation

28

Create a dev box pool ...

The pool will not be available for use until it is successfully validated.

Basics

Name * ⓘ

[   ]

Definition * ⓘ

[Select a dev box definition or image definition   ⌄]

See all definitions

Compute *

[⌄]

Storage *

[⌄]

Region

The region hosting a pool is determined by the region of the network connection. For best performance, create a dev box pool for every region where your developers are located.Learn more

Network connection * ⓘ

◉ Deploy to a Microsoft hosted network

○ Deploy to a network connection in my organization

[(Europe) North Europe   ⌄]

Management

☐ Enable single sign-on ⓘ

Learn more

Dev box Creator Privileges * ⓘ

In Session Settings

Select the devices or features your Cloud PC can use.

- ☑ Printer
- ☑ File transfer
- ☑ Microphone
- ☑ Clipboard
- ☑ Camera (Preview)
- ☑ Location (Preview)
- ☑ Keyboard shortcuts (Preview)

ℹ Your Cloud PC will start in full screen to enable keyboard shortcuts. Learn about keyboard shortcuts on Cloud PCs

Show Advanced Settings ⌄

☐ Don't show again   Connect

Welcome, Christos

Your dev box

my-devbox
Project-X

Windows

Creating...

Your environment

my-sandbox
Project-X

Type: Sandbox

```yaml
# This is a Visual Studio extension installation task for Dev Box.
$schema: '1.0'
name: install-vs-extension
description: Installs a Visual Studio extension
author: Microsoft Corporation
command: ".\\Install-VSIXExtension.ps1 -MarketplaceItemName {{marketplaceItemName}}"
parameters:
  marketplaceItemName:
    type: string
    required: true
    description: |
        The name of the Visual Studio extension to install.
        Visit https://marketplace.visualstudio.com to learn
        more about Visual Studio extensions.
documentation:
  notes: This task is used to install a Visual Studio extension.
  examples:
    - name: install-vs-extension
      description: Install GitHub Copilot
      parameters:
        marketplaceItemName: GitHub.copilotvs
```

```yaml
# Baseline Customization
$schema: '1.0'
name: baseline
tasks:
  - name: git-clone
    description: Clone this repository into C:\Workspaces
    parameters:
      repositoryUrl: https://github.com/microsoft/calculator
      directory: C:\Workspaces
  - name: git-clone
    description: Clone this repository's feature/winui2.6 branch into C:\Workspaces
    parameters:
      repositoryUrl: https://github.com/microsoft/calculator
      directory: C:\Workspaces
      branch: feature/winui2.6
  - name: winget
    description: install azure cli
    parameters:
      package: Microsoft.AzureCLI
  - name: winget
    description: install azd
    parameters:
      package: Microsoft.Azure.DeveloperCLI
```

Customize your dev box `preview`

Customization file(s) will allow you to create your ideal ready-to-code environment. Learn more

☐ Choose a customization file from a repository

☑ Upload a customization file(s)

baseline.yaml ✕

Add customizations from file

✓ Customization task validation success

🕐 Dev Box creation takes 25 minutes on average, but can take up to 65 minutes. We will email you once your dev box is ready. Learn more

Continue   **< Previous**

Dev box creation summary   ✕

my-customized-devbox

Project-X
backend (North Europe)
8 vCPU 32GB RAM 256GB SSD

Customizations and Tasks

⌄ **baseline.yaml**

```
- task: git-clone
  inputs:
      repositoryUrl: https://github.com/microsoft/calcul
      ator
      directory: C:\Workspaces

- task: git-clone
  inputs:
      repositoryUrl: https://github.com/microsoft/calcul
      ator
      directory: C:\Workspaces
      branch: feature/winui2.6

- task: winget
  inputs:
      package: Microsoft.AzureCLI

- task: winget
  inputs:
      package: Microsoft.Azure.DeveloperCLI

- task: winget
  inputs:
      package: Microsoft.Azure.AZCopy.10

- task: winget
  inputs:
      package: Microsoft.Azure.FunctionsCoreTools

- task: winget
  inputs:
      package: Microsoft.Azure.DataCLI
```

🕐 Dev Box creation takes 25 minutes on average, but can take
up to 65 minutes. We will email you once your dev box is
ready. Learn more

[Create]   [< Previous]

37

Customization details ✕

my-customized-devbox
Preparing to apply the following customizations:

⌄ ◯ **git-clone**

repositoryUrl: https://github.com/microsoft/calculator
directory: C:\Workspaces

＞ ◯ git-clone

＞ ◯ winget

⌄ ◯ **winget**

package: Microsoft.Azure.DeveloperCLI

＞ ◯ winget

＞ ◯ winget

＞ ◯ winget

38

Environment Spin-Up

Add environment type to Project-X ...

Environment types added to the project will be available to developers when they deploy environments, and they determine the subscription and identity used for those deployments.

Basics

Type *

<div style="border:1px solid #ccc; padding:10px;">▾</div>

Deployment subscription * ⓘ

<div style="border:1px solid #ccc; padding:10px;">Cloud-Native-Sub ▾</div>

Deployment identity

☑ Use system assigned managed identity for deployment ⓘ

Permissions on environment resources

Environment creator role(s) * ⓘ

<div style="border:1px solid #ccc; padding:10px;">▾</div>

Additional access ⓘ

<div style="border:1px solid #ccc; padding:10px; display:inline-block;">Search for user or AAD group ▾</div> : <div style="border:1px solid #ccc; padding:10px; display:inline-block;">Select role ▾</div>

Tags

Name		Value
▾	:	▾

Activity log

Access control (IAM)

Tags

Settings

    Catalogs

    Identity

    Properties

    Locks

Dev box configuration

    Limits

Environment configuration

    Environment types

Manage

    Dev box pools

    Image definitions

    Environments

    Managed DevOps Pools

Environment types define deployment settings and permissions available to developers when deploying environments in this project. Learn more

	Name	Subscription	Identity	Status	Tags
	Sandbox	Cloud-Native-Sub	System assigned	✅ Enabled	

41
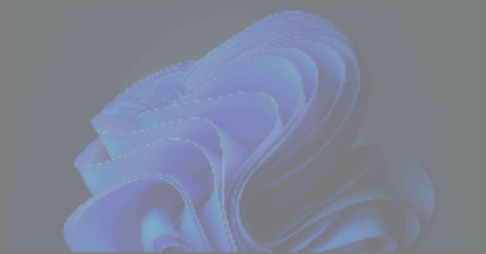
Error details

DevCenterHasNoIdentity
Parent DevCenter Platform-X does not have an assigned identity.

Your dev box

my-devbox
Project-X

▦ Windows

◯ Creating...

Your environment

⚠ Provisioning of this environment failed. Please delete and recreate it, or contact your admin.

See details

my-sandbox
Project-X

🛡 Type: Sandbox
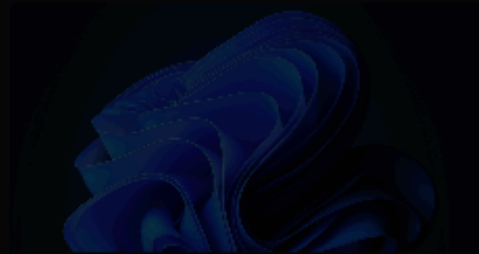
👤 Owner: Christos Galanopoulos

📅 Expires in 1 day

43

☐ 🔑 Platform-X
f6a7033b-a69f-4aa0-85c2-f...   Managed identity   Owner   🔑 This resource   Active permanent

Redeploy my-sandbox

Deploys a Container App within a Container App Environment, along with a Log Analytics Workspace

Environment definition

ContainerApp

Amount of Memory (GB)

1

Container Image

mcr.microsoft.com/azuredocs/containerapps-helloworld:latest

location

northeurope

Number of CPU Cores

0.75

Your dev box

my-devbox
Project-X

Windows

Creating...

Your environment

⚠ Provisioning of this environment failed. Please delete and recreate it, or contact your admin.

See details

my-sandbox
Project-X

Type: Sandbox

Owner: Christos Galanopoulos

Expires in 1 day

Redeploy   Cancel

45

Your dev boxes

◯ Creating a Dev Box with your customizations. This may take a while.

[See details]

my-customized-devbox
Project-X

🪟 Windows

◯ Creating...

my-devbox
Project-X

🪟 Windows

◯ Creating...

Your environment

my-sandbox
Project-X

🏛 Type: Sandbox
👤 Owner: Christos Galanopoulos
📅 Expires in 1 day

🔗 Environment resources

Key Benefits

→ **Rapid Onboarding**: Quickly set up fully configured development environments

→ **Self-Service**: Empower developers to create and manage their own resources

→ **Consistency**: Identical environments reduce "works on my machine" issues

→ **Efficiency**: Automated provisioning saves time and reduces errors

→ **Scalability**: Easily adapt to changing project needs and team sizes

→ **Governance**: Centralized management ensures compliance and cost control

Potential Architecture

User Flow

50
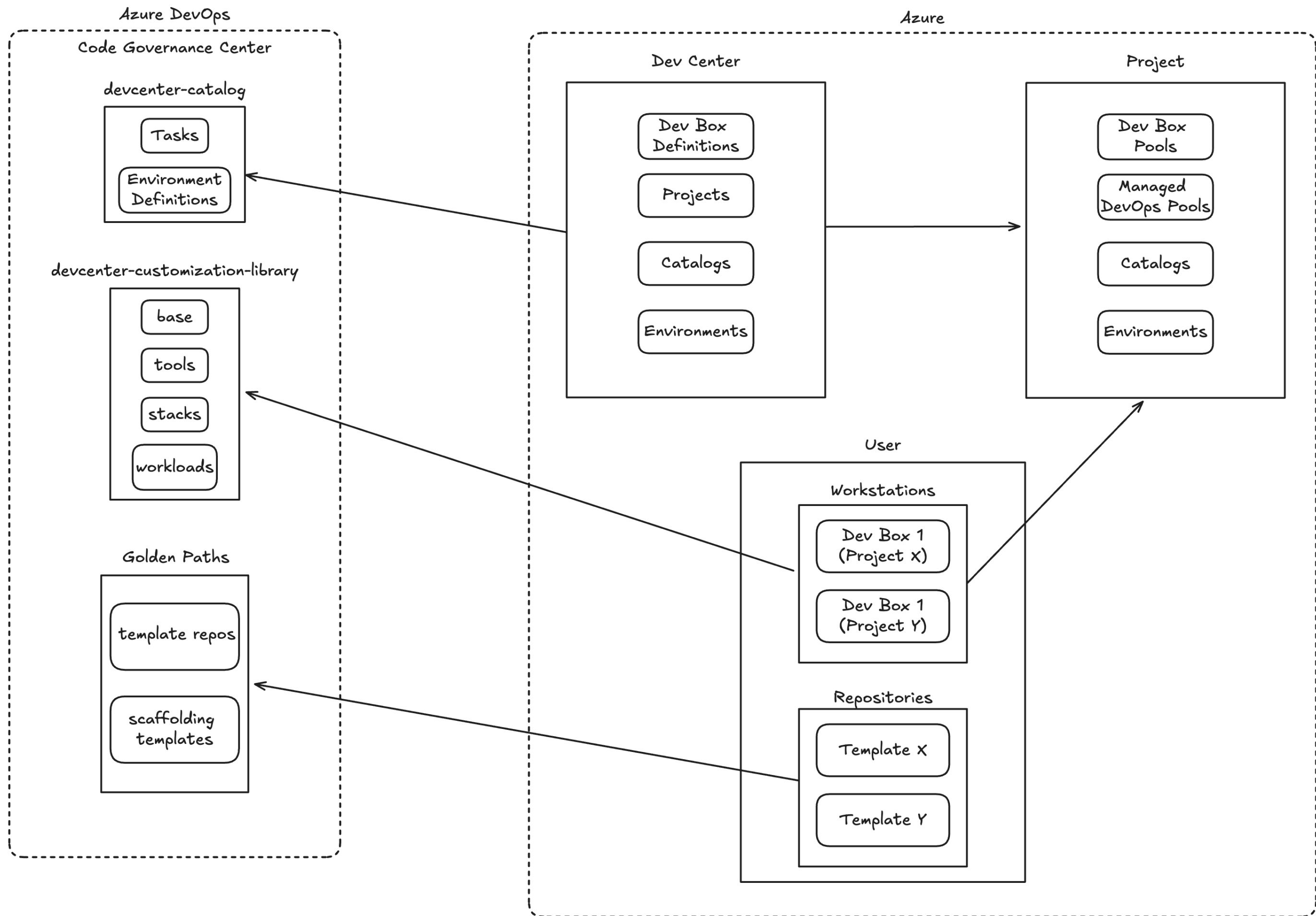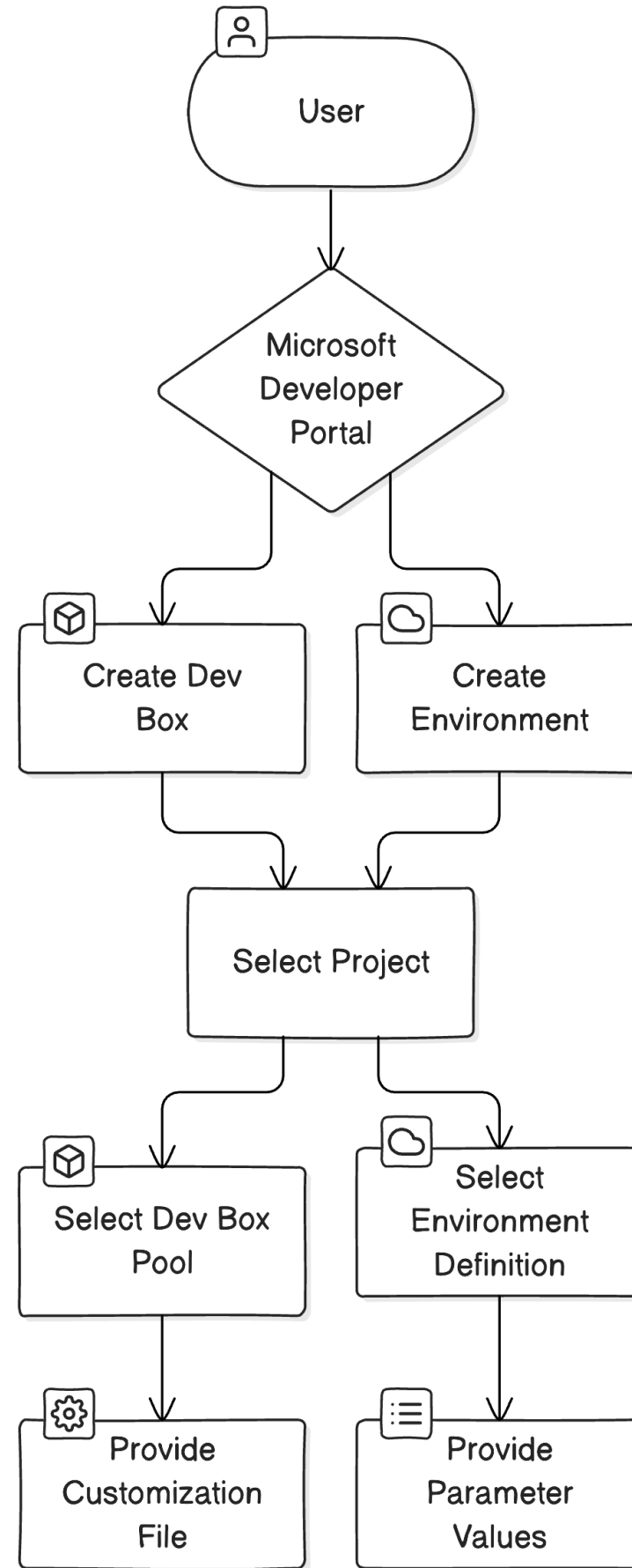
By leveraging this integrated Azure ecosystem, organizations can significantly streamline their development workflows, from coding to deployment, while maintaining robust security and governance.

Thank you