Deployment environments: A practical guide

Azure User Group Norway meetup

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About me

- principal solution architect @ Cegal
- meetups, conferences, ACP, communities (ALZ, Azure Arc, Bicep, AVM, Terraform in Azure)

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- Blog: azurescholar.cloud

What are Azure Deployment Environments

- part of Azure platform engineering offering with components shared with Microsoft Dev Box
- collection of Azure infra resources defined in a template (blueprint) – environment definition
- empower dev teams to quickly and easily spin up app infrastructure with project-based templates that establish consistency and best practices while maximizing security.
- provides on-demand access to secure environments accelerates the stages of the software development lifecycle in a compliant and cost-efficient way.

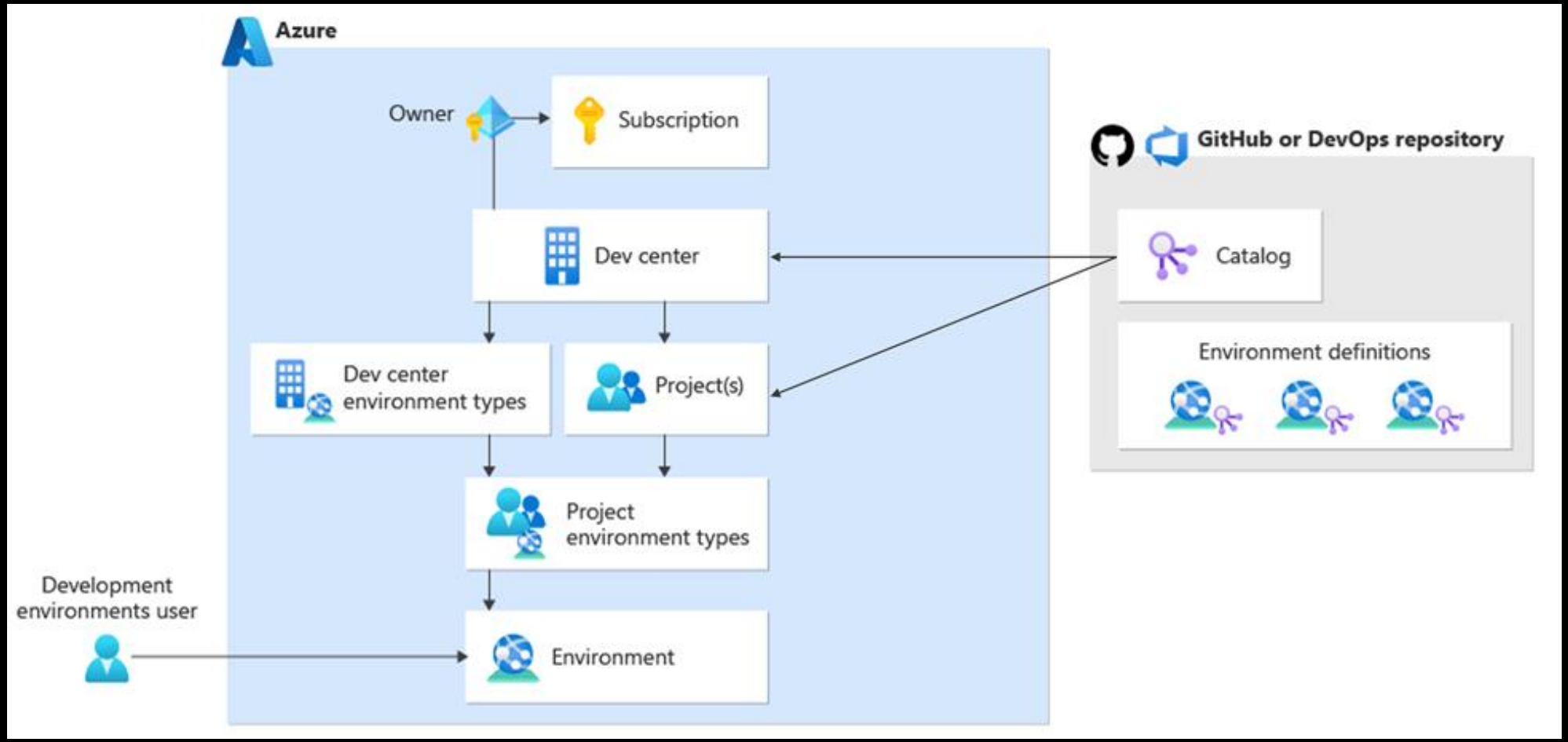
Not this platform engineering

kubernetes

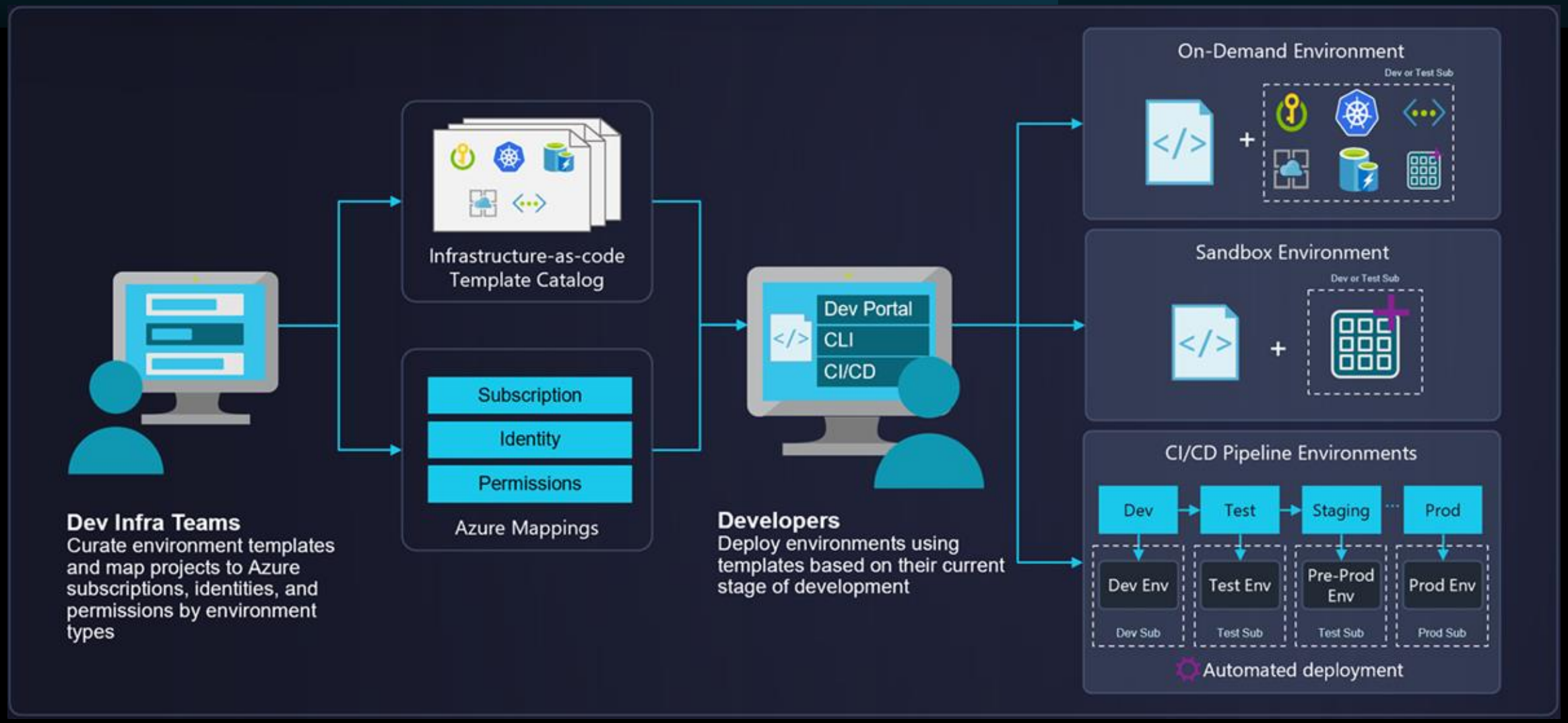
Benefits

- ✓**Standardization and collaboration**
  - share IaC templates in VCS within your organization
  - collaboration through inner-sourcing
- ✓**Compliance and governance**
  - enforce enterprise security policies
- ✓**Project-based configurations**
- ✓**Self-service for devs**
- ✓**Integration with your existing toolchain**: CI, IDE, CLI

Key concepts



ADE Overview



Platform engineers

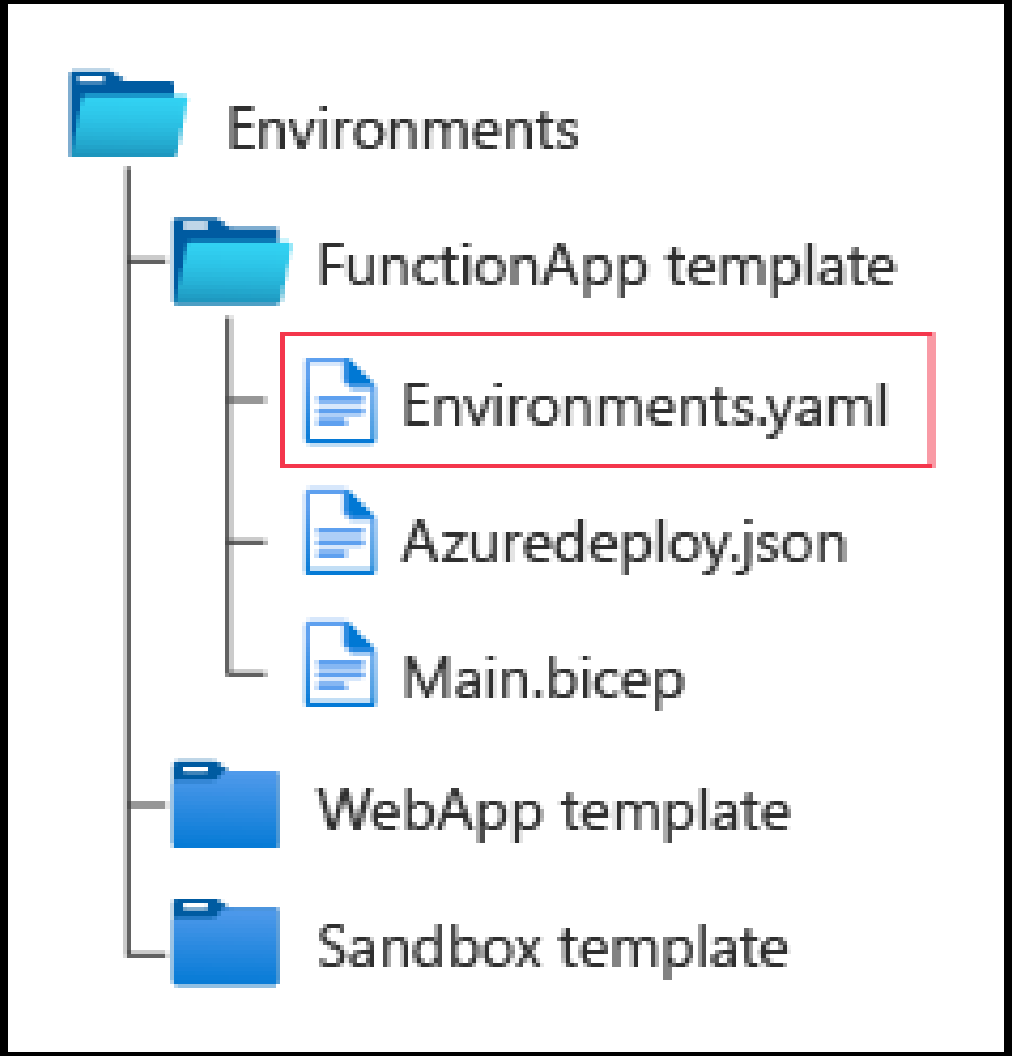
Publishers, building IDP as a product

Platform team responsibility

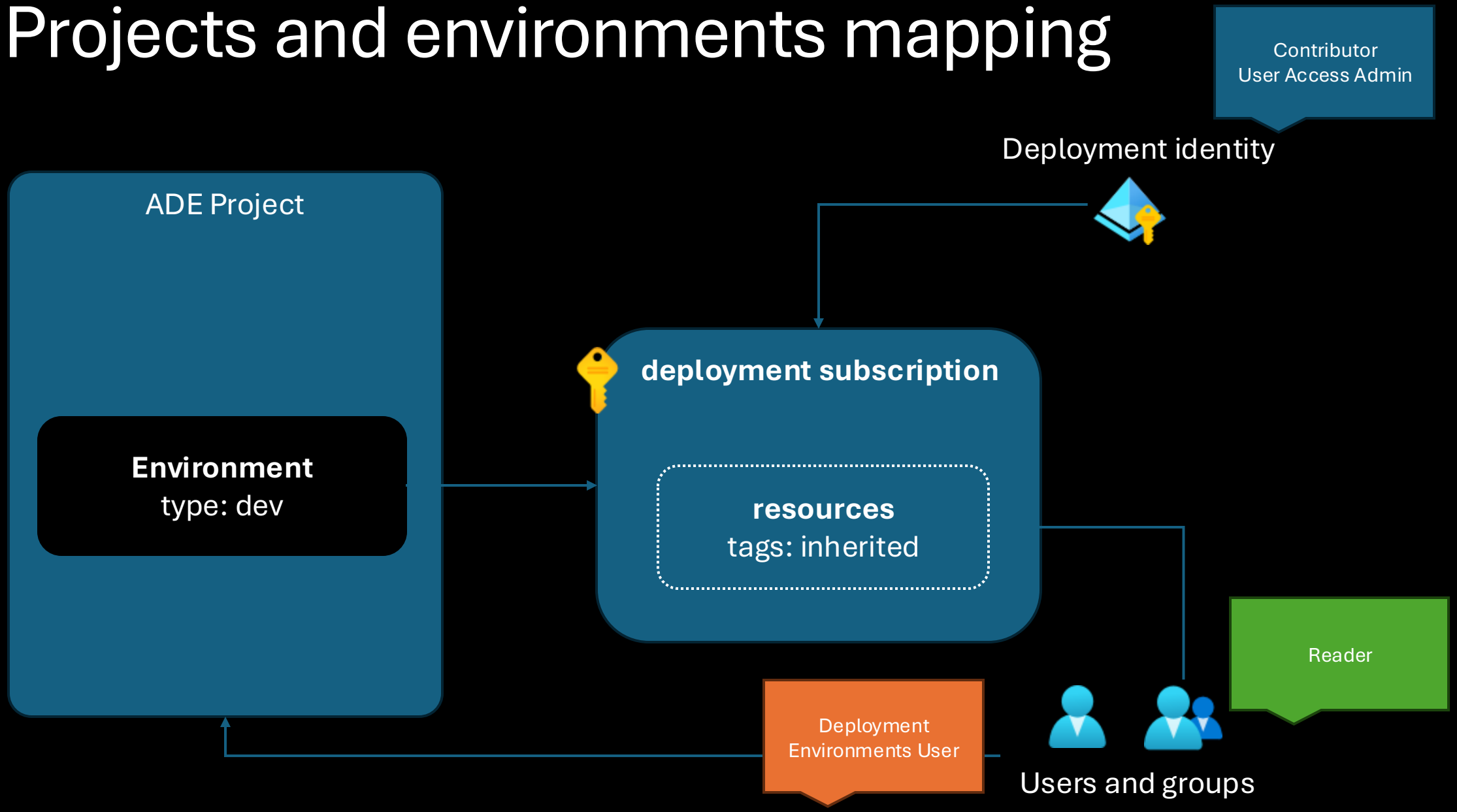
- create and configure a dev center
- define environment types
- create and manage Catalog(s) with environment definitions
- configure subscriptions
- create a project in the dev center, add environment ty, allow dev access to the project (assign permissions to devs)
- track costs, security alerts
- manage environments across projects and dev centers

Definitions Catalog

- Definitions are are rendered to the Developer portal
- IaC template + manifest file (yaml)
- Structure of folders



Projects and environments mapping




:)
Your PC is running perfectly fine with no problems whatsoever.
There are no updates pending, and it does not need to restart.
Enjoy your day!
If you'd like to know more, you can search online later for this message: ALL_IS_WELL

Demo time...

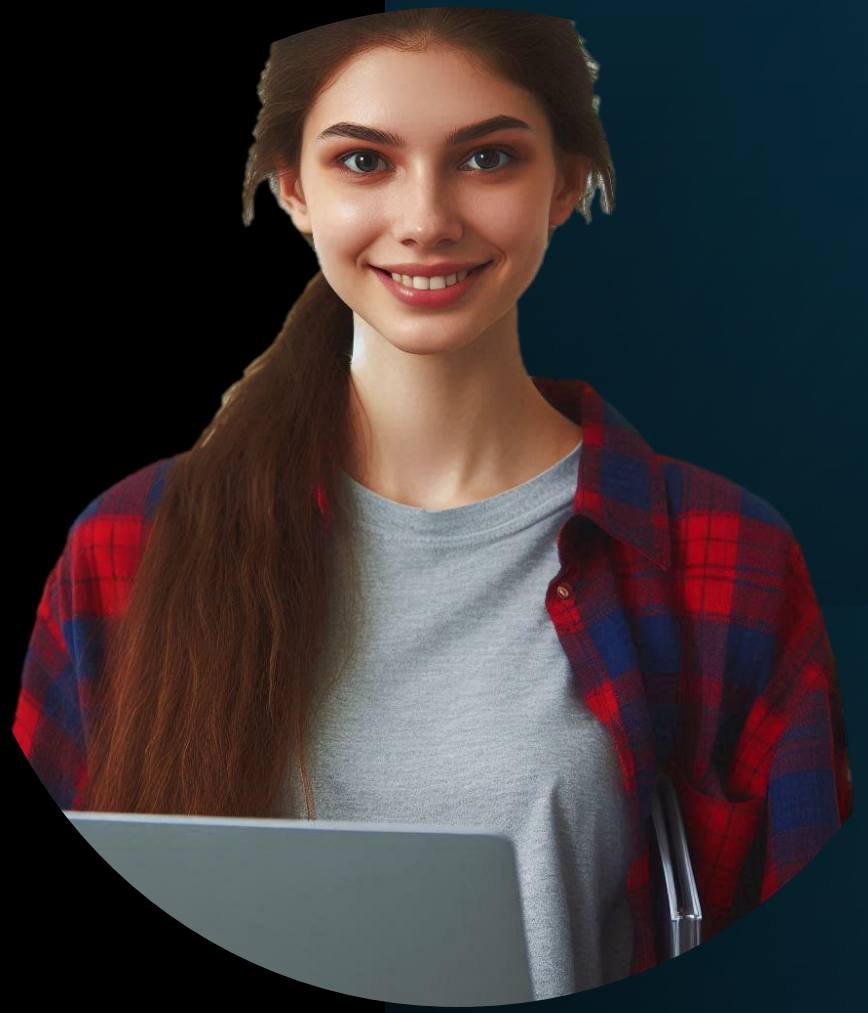
Lessons learned

- AD
- AV
  eng
- Issu
  gre
- Do
  env

YAML

```yaml
name: todo-nodejs-mongo-aca
metadata:
    template: todo-nodejs-mongo-aca@0.0.1-beta
platform:
    type: devcenter
    config:
        catalog: SampleCatalog
        environmentDefinition: Todo
        name: sample-devcenter
        project: SampleProject
services:
    api:
        project: ./src/api
        host: containerapp
        language: js
    web:
        project: ./src/web
        host: containerapp
        language: js
```

Developers

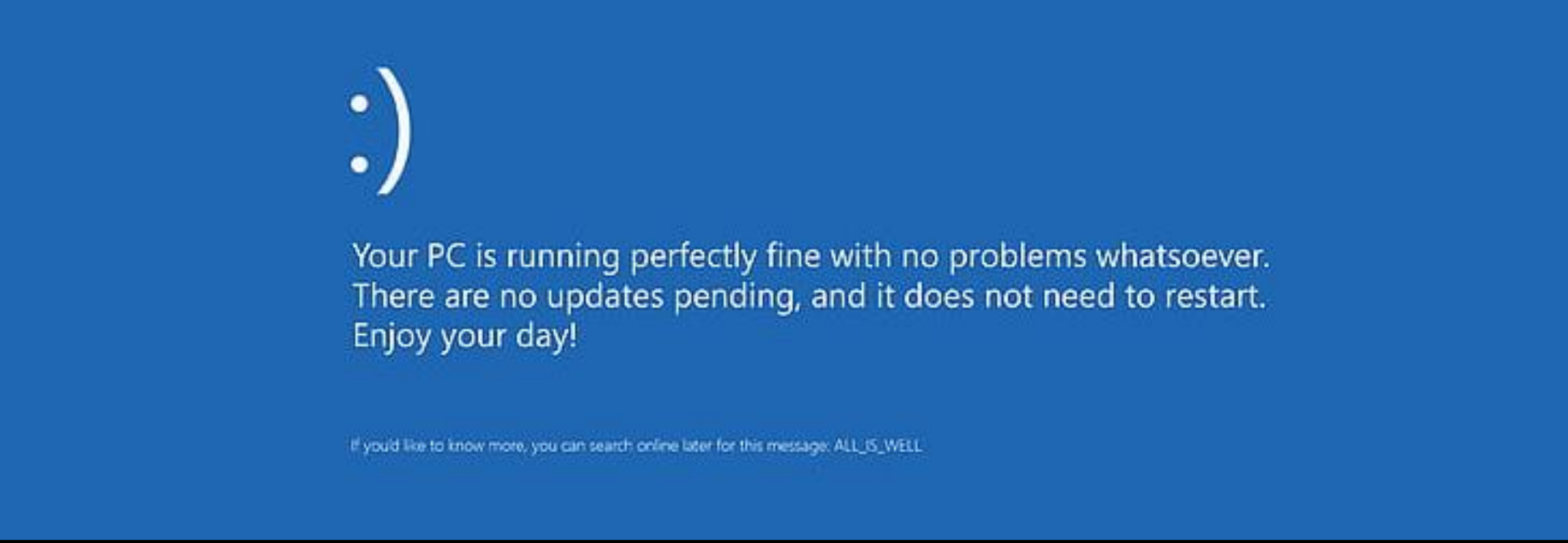


Consumers of IDP, benefiting from a great DevEx

Responsibility

- create environments based on the templates
  - Developer portal - https://devportal.microsoft.com/
  - Az CLI
  - AZD CLI
- build and deploy applications on the infrastructure

```
$params = "{ 'name': 'firstMsi', 'location': 'northeurope' }"
az devcenter dev environment create --dev-center-name <devcenterName>
    --project-name <projectName> --environment-name <environmentName> --
environment-type <environmentType>
    --environment-definition-name <environmentDefinitionName> --catalog-name
<catalogName>
    --parameters $params
```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Demo time...

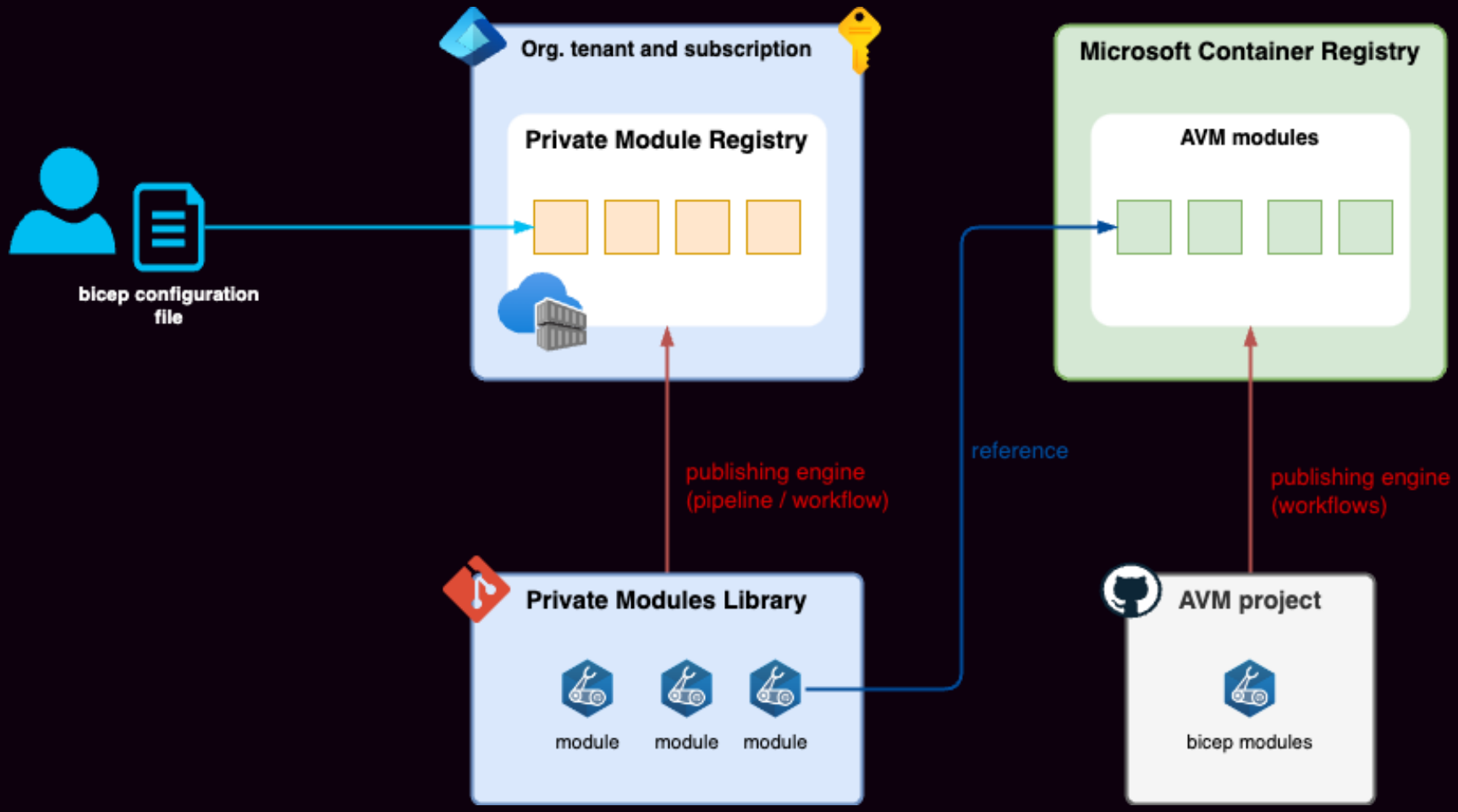
ADE + AVM: Better together

AVM is great but what if you…

- need a specific resource composition / module
- don't want to publish modules externally, but
- don’t want to create and maintain general-purpose resource modules, or
- need to temporarily deviate from AVM to fix a bug / enable feature

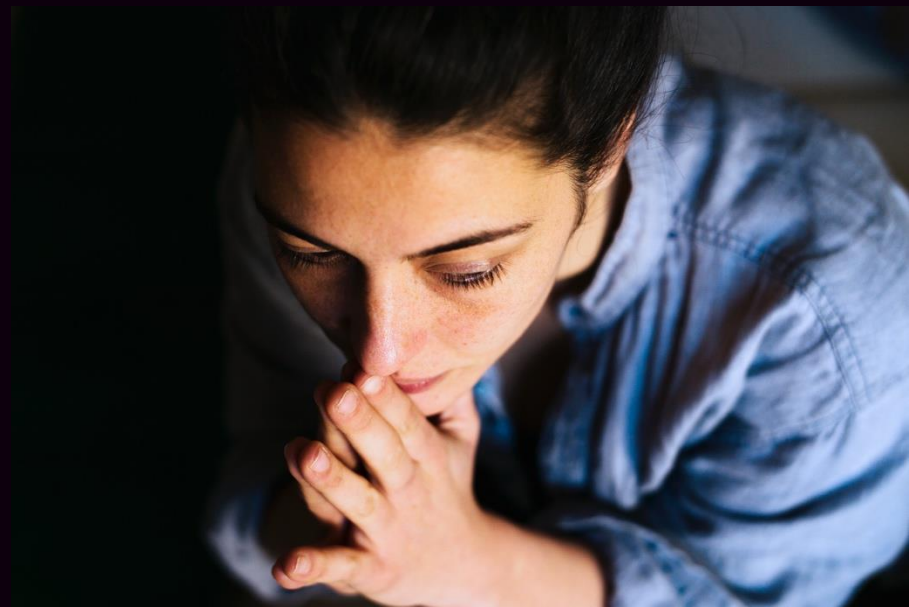
Build your own pattern modules but use AVM resource modules

Private Modules Library



Challenges 1/2

- **access management to registry**
  - adding MIs to ACR in ‘vending machine’
  - group memberships for engineers
- **lifecycle management – upstream modules**
  - change feed
  - all or some
  - test before publish
  - publishing *cascade*



Challenges 2/2

- flexibility can lead to complexity and verbosity
  - e.g., storage-account module (json) has 5281 lines of code
  - authoring and debugging
  - template size limits
- external dependency - software supply chain

Value	Limit
Parameters	256
Variables	256
Resources (including copy count)	800
Outputs	64
Template expression	24,576 chars
Resources in exported templates	200
Template size	4 MB
Resource definition size	1 MB
Parameter file size	4 MB

ADE vs. ALZ

References

- Private Modules Library
  - https://github.com/pazdedav/private-modules-library
  - https://azurescholar.cloud/azure-verified-modules-and-private-modules-a-powerful-combo