Building a Web Catalog

For your private Bicep Registry

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Introduction

What to expect from this session?

The Problem

Documentation problem

Public vs Private Registry

The Tools

PSDocs

MKDocs

Live Demo

Publish module to ACR

Automate the documentation with PSDocs

Implement MKDocs

Who am I?

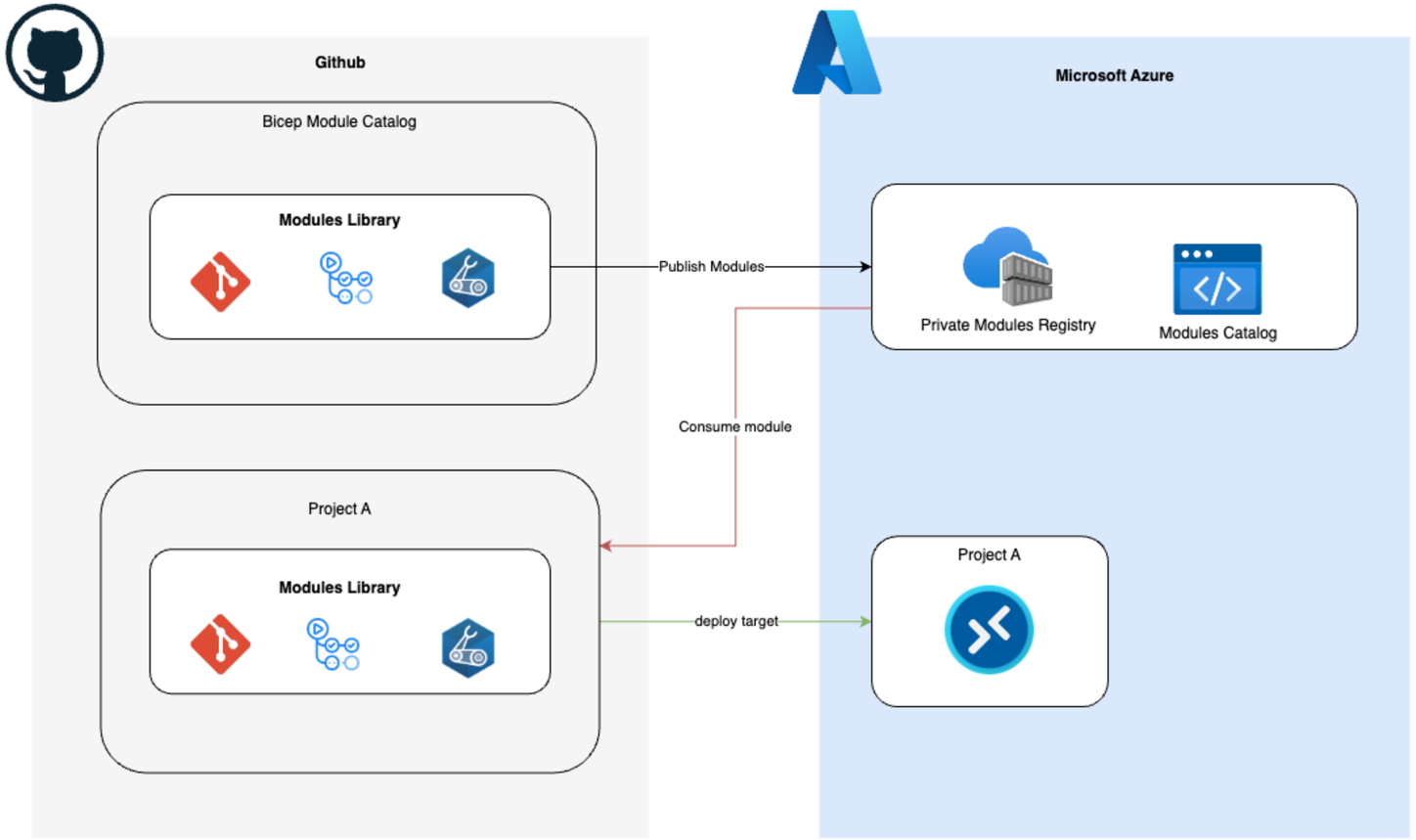
Simen Østensen

Senior Cloud & DevOps Engineer

Devoteam M Cloud

The Problem

- Project background
  - Automation library for Azure Virtual Desktop
  - Ended up with around 70 modules
- Initial challenges with module documentation
- Public or Private registry



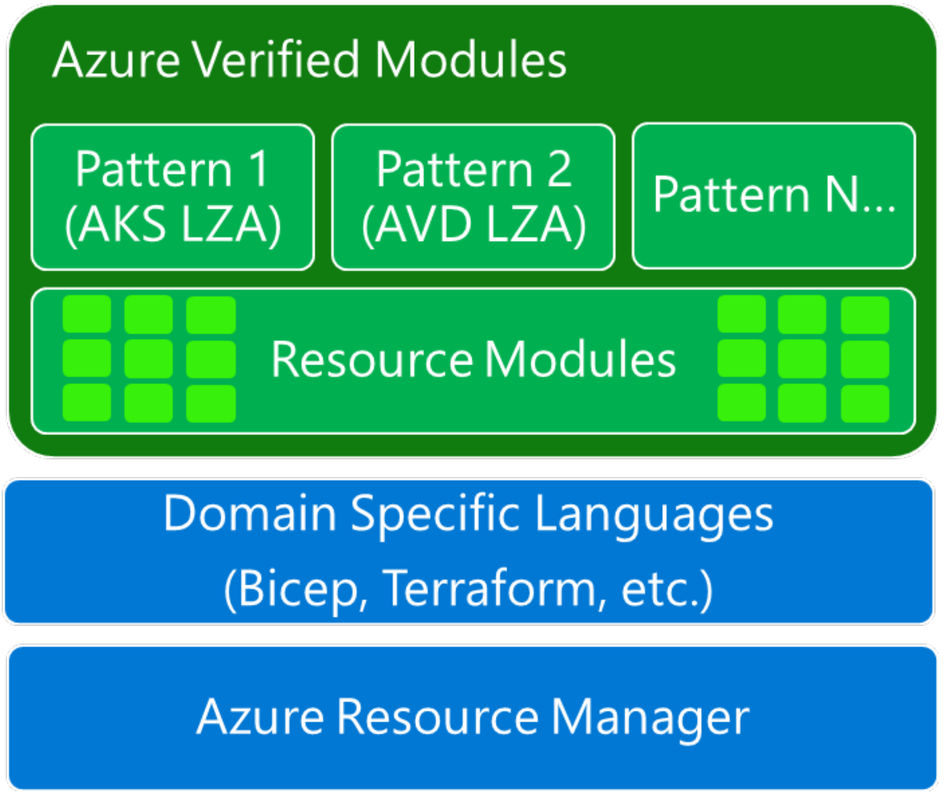
Azure Verified Modules

Public registry for IaC Modules

- Modules for both Bicep & Terraform
- Two classifications of modules (across both languages)
  - Resource Modules
  - Pattern Modules
- Benefits:
  - **Microsoft is taking the heavy lifting:** You don’t have to maintain the modules
  - **Quality Assurance**: Each module is thoroughly tested
  - **Community Support**: Leveraging collective insights enhances module reliability and functionality

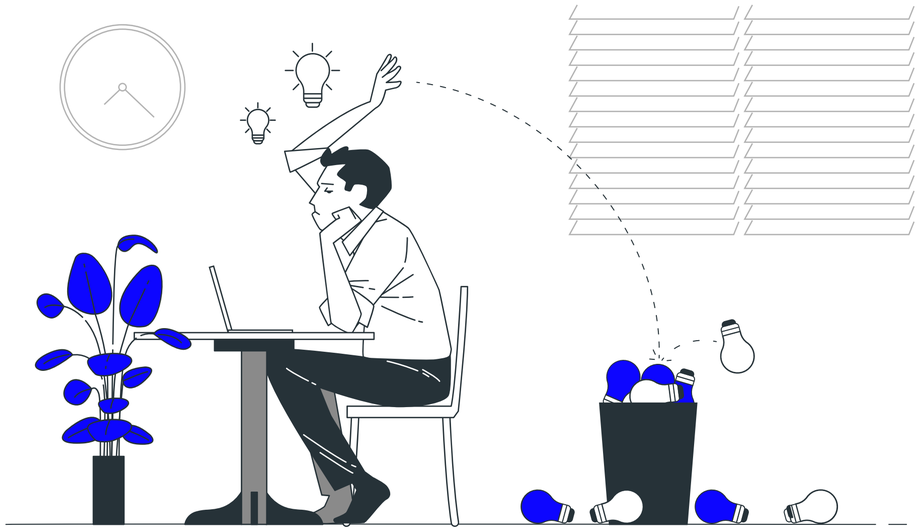
Why should you consider still using a private registry then?

- A lot of overhead with hosting your own Azure Container Registry
- Build **pattern modules** -> Aligned with your company standards and regulations
- Reducing dependencies to fix issues from Microsoft



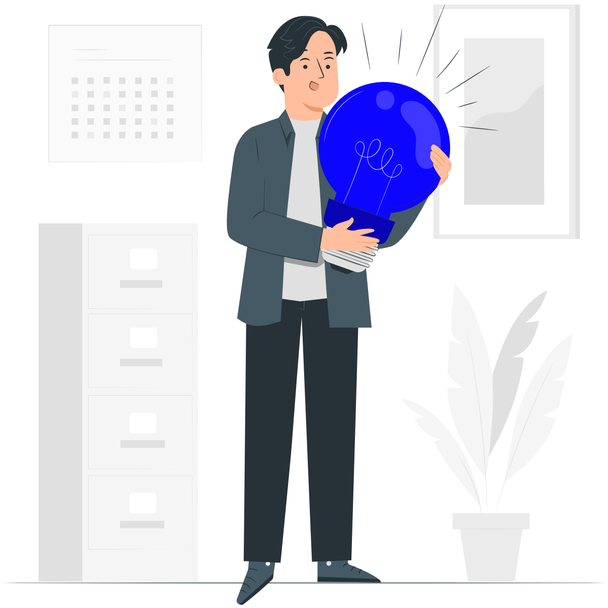
Solution Exploration

- 70 modules to create documentation for
- Looked at various tools:
  - PSDocs for generating markdown files
  - Hugo
  - Jekyll
  - Mkdocs



Solution

- PSDocs - To automate the process of creating markdown for our Bicep code
- MKDocs - To build our web catalog
- Azure Static Web App - For hosting our application



Technical Deep Dive

- Tool Explanations
  - PSDocs
  - MKDocs

- Live Demos
  - Part 1: Deployment of Modules
  - Part 2: Automated Documentation with PSDocs
  - Part 3: Setting up the Web Catalog with MKDocs

PSDocs

Create in-depth documentation for you modules

- Generates markdown from Azure infrastructure as code (IaC) artifacts.
  - Limitation:
    - Supports only Azure Resource Manager (ARM) template files.

```powershell
$bicepFilePath = "/modules/res/keyVault/deploy.bicep"

# Convert Bicep file to ARM template
$armTemplateFilePath = [System.IO.Path]::ChangeExtension($bicepFilePath, 'json')
bicep build $bicepFilePath --outfile $armTemplateFilePath

# Generate documentation for the
Invoke-PSDocument -Module PSDocs.Azure -InputObject $armTemplateFilePath
```

Output

Simplest form

```bicep
targetScope = 'subscription'

param name string
param location string = deployment().location

resource rg 'Microsoft.Resources/resourceGroups@2023-07-01' = {
  name: name
  location: location
}
```

Outputs

Azure template

Parameters

Parameter name	Required	Description
name	Yes	
location	No	

name

parameter required

location

parameter optional

- Default value: `[deployment().location]`

Snippets

Parameter file

JSON

```json
{
    "$schema": "<https://schema.management.azure.com/schemas/2015-01-01/deploymentParameters.json#>",
    "contentVersion": "1.0.0.0",
    "metadata": {
        "template": "test.json"
    },
    "parameters": {
        "name": {
            "value": ""
        },
        "location": {
            "value": "[deployment().location]"
        }
    }
}
```

Customisation

- Uses metadata and the template structure to dynamically generate documentation
- Allows you to:
  - Include information with minimum effort
  - Use DevOps culture to author IaC documentation
  - Keep documentation up to date with your modules

Field	Scope	Type	Description
`name`	Template	`string`	Used for markdown page title
`summary`	Template	`string`	Used as a short description for the markdown page.
`description`	Template	`string`	Used for detailed description for the markdown page
`description`	Parameter	`string`	Used as the description for the parameter.
`example`	Parameter	`string`, `boolean`, `object`, or `array`	An example use of the parameter. The example is included in the JSON snippet. If an example is not included the default value is used instead.
`ignore`	Parameter	`boolean`	When `true` the parameter is not included in the JSON snippet.
`description`	Output	`string`	Used as the description for the output

Output

With metadata

```
metadata name = 'Resource Group'
metadata description = 'This module deploys a Resource Group.'

targetScope = 'subscription'

@description('Required. Name of your Resource Group')
param name string

@description('Optional. Location for your resource')
param location string = deployment().location

resource rg 'Microsoft.Resources/resourceGroups@2023-07-01' = {
  name: name
  location: location
}

@description('The name of the resource group.')
output name string = rg.name

@description('The resource ID of the resource group.')
output resourceId string = rg.id

@description('The location the resource was deployed into.')
output location string = rg.location
```

Resource Group

This module deploys a Resource Group.

Parameters

Parameter name	Required	Description
name	Yes	Required. Name of your Resource Group
location	No	Optional. Location for your resource

name

parameter required

Required. Name of your Resource Group

location

parameter optional

Optional. Location for your resource

- Default value: `[deployment().location]`

Outputs

Name	Type	Description
name	string	The name of the resource group.
resourceId	string	The resource ID of the resource group.
location	string	The location the resource was deployed into.

Snippets

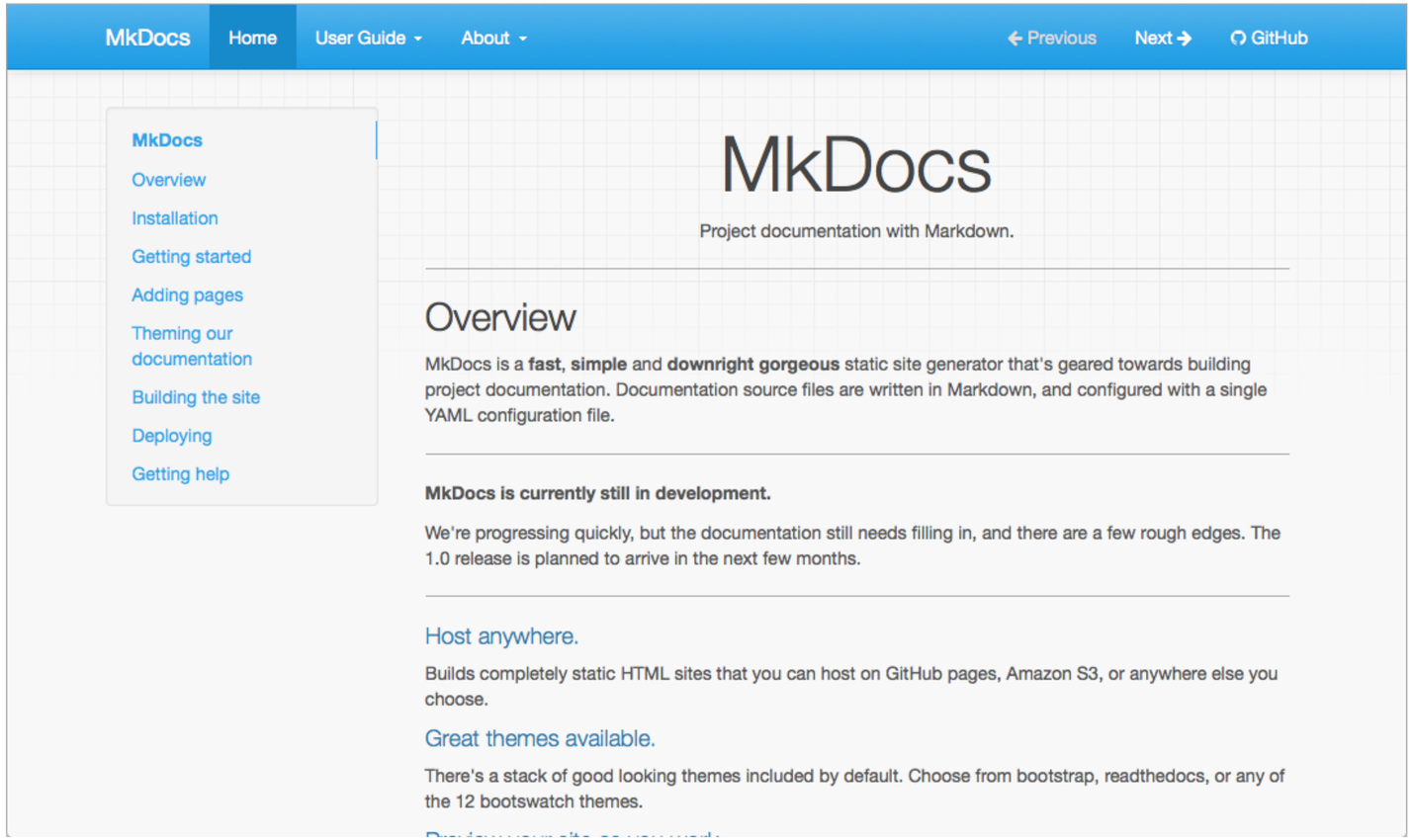
Parameter file

```
{
    "$schema": "<https://schema.management.azure.com/schemas/2015-01-01/deploymentParameters.json#>",
    "contentVersion": "1.0.0.0",
    "metadata": {
        "template": "test.json"
    },
    "parameters": {
        "name": {
            "value": ""
        },
        "location": {
            "value": "[deployment().location]"
        }
    }
}
```

MkDocs

Static site generator

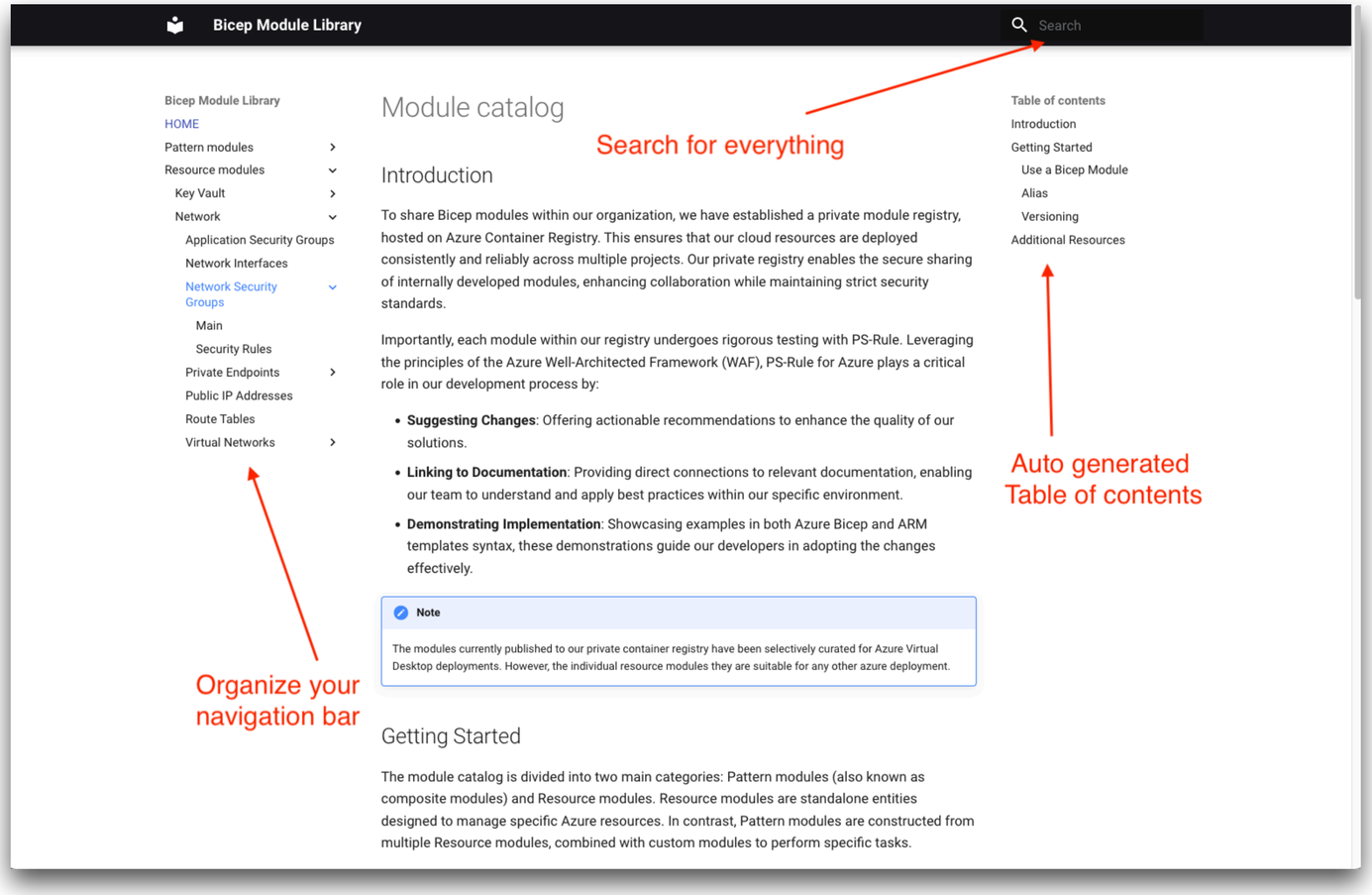
- Build towards project documentation
- Written for Markdown
- Configured with a single YAML config file
  - Themes
  - Plugins
- Host anywhere



Material Design ✨

Theme & features

- Built-in search bar
- Code annotations
- Many other features ++



Demo

Deployment of module, PSDocs & Mkdocs

Conclusion and Key Takeaways

- The importance of effective module management
- Choosing if the private registry is something for your company?
- Automating documentation with PSDocs
- Creating a web catalog with MKDocs

Resources and Links

- Github - https://github.com/SimenWO/bicep-module-library
- PSDocs - https://azure.github.io/PSDocs.Azure/overview/
- MKDocs - https://www.mkdocs.org/
  - Material design - https://squidfunk.github.io/mkdocs-material/
- Azure Verified Modules - https://azure.github.io/Azure-Verified-Modules/

Q&A

Thank you!

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