

Do-it-yourself CI/CD made easy with AL-Go for GitHub



Dynamics 365 Business Central Launch Event

**Do-it-yourself CI/CD made easy with AL-Go
for GitHub**

Freddy Kristiansen
Technical Evangelist
[April 2022](#)



AL-Go for GitHub

"For simple PTEs and AppSource apps, DevOps should be a tool - not an investment area!"

"You should never ever build production bits on your laptop!"

"Nobody should install apps manually on a customer environment anymore!"

Agenda

- What is AL-Go for GitHub
- Scenario walkthrough
 - Demos, demos and demos...
- Versioning



What is AL-Go for GitHub

What is AL-Go for GitHub?

- Plug-and-play DevOps on GitHub
 - Continuous Integration/Continuous Deployment
 - Source control, pull requests, issue tracking, code reviews, collaboration
 - Automated functional and upgrade tests
 - Build and test your app against future versions (Next Minor / Next Major)
 - Release management
 - Automatic release to QA environment
 - Gated deployment to Production
- No need for a DevOps engineer
 - Easy to get started - use a template to get CI/CD for your app in 5 minutes
 - Easy to maintain - apply updates to the template using a GitHub workflow
- GitHub only



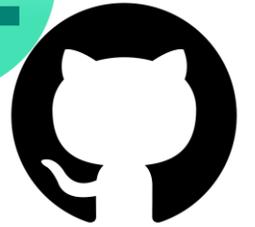
Why GitHub

- Insufficient resources to support multiple DevOps backends
- Azure DevOps is more complex / enterprise style
- GitHub was born for cloud, open source and agile
- Other alternatives exists for Azure DevOps (ALOps, Cosmo, ...)
- We want to support codespaces
- Very good for open-source projects



GitHub

Template repositories and actions repository



GitHub

- Template repository with workflows and various files for
 - PTEs – <https://aka.ms/al-go-pte>
 - AppSource Apps – <https://aka.ms/al-go-appsource>
- Workflows utilize actions in <https://github.com/microsoft/AL-Go-Actions>
 - Add existing app or test app
 - CI/CD
 - Create Online Dev. Environment
 - Create new app
 - Create a new test app
 - Create Release
 - Increment Version Number
 - Publish To Environment
 - Test Current
 - Test NextMajor
 - Test NextMinor
 - Update AL-Go system files



Scenario walkthrough

With a ton of demos...

Get Started

- Create your first repository
 - <https://aka.ms/al-go-pte> (for PTEs)
 - <https://aka.ms/al-go-appsource> for (AppSource apps)
- Specify
 - Owner
 - Name
 - Description
 - Access control



Business Central Demos on GitHub

Denmark | <https://freddysblog.com> | @freddydk

- Overview
- Repositories
- Packages
- People 1
- Teams
- Projects
- Settings

Pinned

Customize your public pins

People



Invite someone

BusinessCentralDemos doesn't have any pinned public repositories yet.

Repositories



This organization has no repositories.

Create a new repository

Create an app

- Run the "Create a new app" workflow
 - Like AL:Go in VS Code
 - Creates a Hello World app
- Specify
 - Name
 - Publisher
 - Object ID range
 - Direct COMMIT

Workflows [New workflow](#)

All workflows

- Add existing app or test app
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All workflows

Showing runs from all workflows

Filter workflow runs

0 workflow runs

Event	Status	Branch	Actor
 There are no workflow runs yet.			

Add existing app

- Run the "Add existing app" workflow
 - Like Copy/Paste the source from an existing app to your repo
 - Extracts the .app or .zip files and adds the source(s) to your repo
- Specify
 - Direct download URL to an .app or a .zip file
 - Direct COMMIT



Search or jump to...

Pull requests Issues Marketplace Explore



BusinessCentralDemos / app1 Public

generated from microsoft/AL-Go-PTE

Pin Unwatch 1 Fork 0 Star 0

<> Code Issues Pull requests Actions Projects Wiki Security Insights Settings

main 1 branch 0 tags

Go to file Add file Code

About

freddydk 'New PTE (Loyalty)'	e7d038c 14 hours ago	🕒 2 commits
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📄 al.code-workspace	'New PTE (Loyalty)'	14 hours ago

About

App1
Readme
0 stars
1 watching
0 forks

Releases

No releases published
[Create a new release](#)

Packages

No packages published
[Publish your first package](#)

Languages



☰ README.md ✎

AL-Go Template

Per Tenant Extension Project

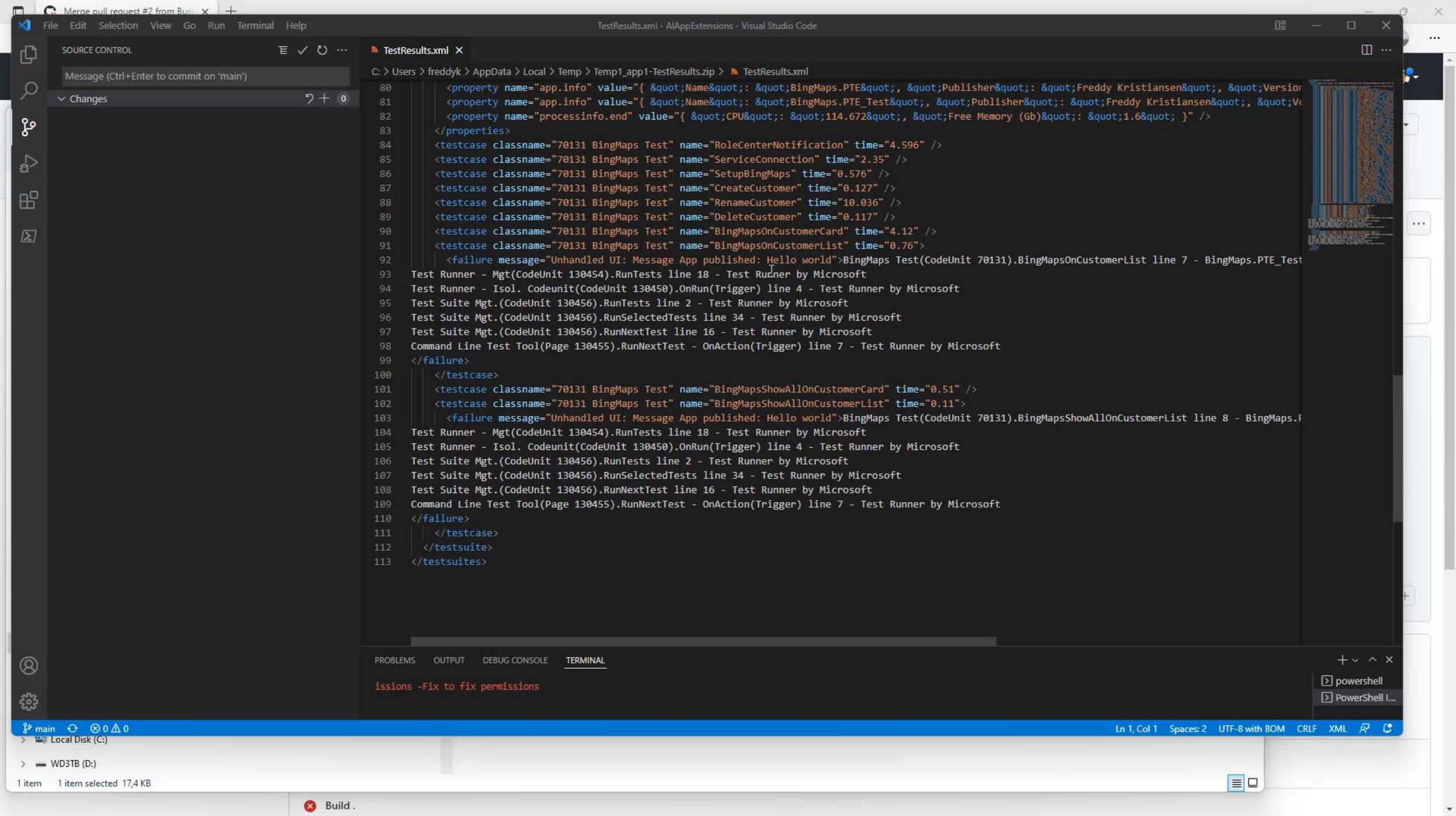
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Process:

1. Click **Use this template** to create a new repository based on this template
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3. Continuous Integration (CI) pipeline is automatically started
4. **Register a customer environment** using an AAD app for authentication. (Remember to register the AAD app in the Business Central environment as well)
5. When CI pipeline finishes, Continuous Deployment pipeline is automatically started.
6. CD pipeline published latest CI build to ready environments setup for CD.

Test Results

- JUnit format
 - Including extra information about memory, apps installed & cpu usage
- V0.2 doesn't have a UI for viewing test results 😞
- Download and view!



Create an online development environment

- Create Online Business Central Sandbox Environment
- Build and publish all apps to dev. scope in dependency order
- Modify launch.json to include new sandbox environment

- Ready for RAD!

Workflow run deleted successfully.

- Workflows New workflow
- All workflows
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✓	Create a new app Create a new app #1: Manually run by freddydk				yesterday 2m 2s

Develop against online dev. environment

- Clone the repository to your laptop
- Download symbols (authenticate if necessary)
- Modify a file and press F5 to launch the Sandbox environment

Workflows New workflow

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Develop against local docker environment

- Clone the repository to your laptop
- Setup local development environment
 - Run localDevEnv.ps1
 - Specify
 - Container Name
 - Password
 - Optional license file (mandatory for AppSource Apps)
- Modify a file and press F5 to launch the Sandbox environment

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Setup Continuous Deployment to QA

- Create GitHub environment named QA
- Add AUTHCONTEXT secret
 - Using OAuth - S2S or user impersonation
- Modify your app and submit your changes to deploy

main 3 branches 0 tags Go to file Add file Code

freddydk 'Create a development environment Sandbox'	0e581f3 11 hours ago	9 commits
.AL-Go 'Add existing apps (BingMaps.PTE_Test)'		22 hours ago
.github Initial commit		2 days ago
BingMaps.PTE 'Create a development environment Sandbox'		11 hours ago
BingMaps.PTE_Test 'Create a development environment Sandbox'		11 hours ago
Loyalty 'Create a development environment Sandbox'		11 hours ago
.gitignore Initial commit		2 days ago
README.md Initial commit		2 days ago
al.code-workspace 'Add existing apps (BingMaps.PTE_Test)'		22 hours ago

README.md

AL-Go Template

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About

App1

Readme

0 stars

1 watching

0 forks

Releases

No releases published

[Create a new release](#)

Packages

No packages published

[Publish your first package](#)

Languages

AL 81.7% PowerShell 18.3%

Environments

- Register environments for deployment in GitHub
 - AuthContext secret can be specified on the environment or in a KeyVault
- Sandbox environments
 - are automatically picked up for continuous deployment in CI/CD
- Production environments
 - PTEs can be deployed by running a workflow
 - Currently not supported for AppSource Apps
 - For AppSource Apps we should auto-submit for validation when creating a release

Test your app against upcoming releases

- Test your app against Current, Next Minor or Next Major release
 - On demand or on a schedule
- Add additional countries to the tests

Workflows New workflow

All workflows

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All workflows

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Filter workflow runs

8 workflow runs	Event	Status	Branch	Actor
Add Loyalty program CI/CD #6: Commit a88a497 pushed by freddydk	main	2 hours ago 17m 0s	...	
Create Online Dev. Environment Create Online Dev. Environment #2: Manually run by freddydk		14 hours ago 20m 44s	...	
Delete HelloWorld.al CI/CD #3: Commit f7b641d pushed by freddydk	main	14 hours ago 17m 25s	...	
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Add existing app or test app Add existing app or test app #1: Manually run by freddydk		yesterday 1m 45s	...	
Create a new app Create a new app #1: Manually run by freddydk		2 days ago 2m 2s	...	

Versioning of your app

- Schema: Major.Minor.Build.Revision
- Major and Minor are taken from app.json
- Build and Revision are calculated
- 3 Versioning strategies supported currently
 0. Major.Minor.GITHUB_RUN_NUMBER.Attempt (with configurable offset)
 1. Major.Minor.GITHUB_RUN_ID.Attempt
 2. Major.Minor.yyyyMMdd.hhmmss
- IncrementVersionNumber can help bump version number in apps
- NextMajor and NextMinor builds are using maxint

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11 workflow runs	Event	Status	Branch	Actor
✓ Test Next Major Test Next Major #2: Scheduled			5 hours ago 32m 54s	...
✓ Update AL-Go System Files Update AL-Go System Files #2: Manually run by freddydk			yesterday 3m 13s	...
✓ Test Next Major Test Next Major #1: Manually run by freddydk			yesterday 19m 29s	...
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Versioning

The background features a dark blue field with large, overlapping circles in orange and blue. A white, torn-paper-like corner is visible in the top right.

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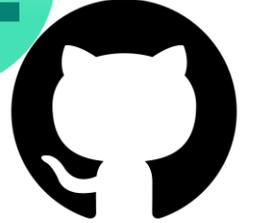
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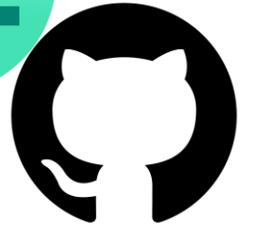
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Scenario walkthrough

With a ton of demos...

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Denmark | <https://freddysblog.com> | @freddydk

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Add existing app

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 - Extracts the .app or .zip files and adds the source(s) to your repo
- Specify
 - Direct download URL to an .app or a .zip file
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Search or jump to...

Pull requests Issues Marketplace Explore



BusinessCentralDemos / app1 Public

generated from microsoft/AL-Go-PTE

Pin Unwatch 1 Fork 0 Star 0

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main 1 branch 0 tags

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☰ README.md ✎

AL-Go Template

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About ⚙️

App1

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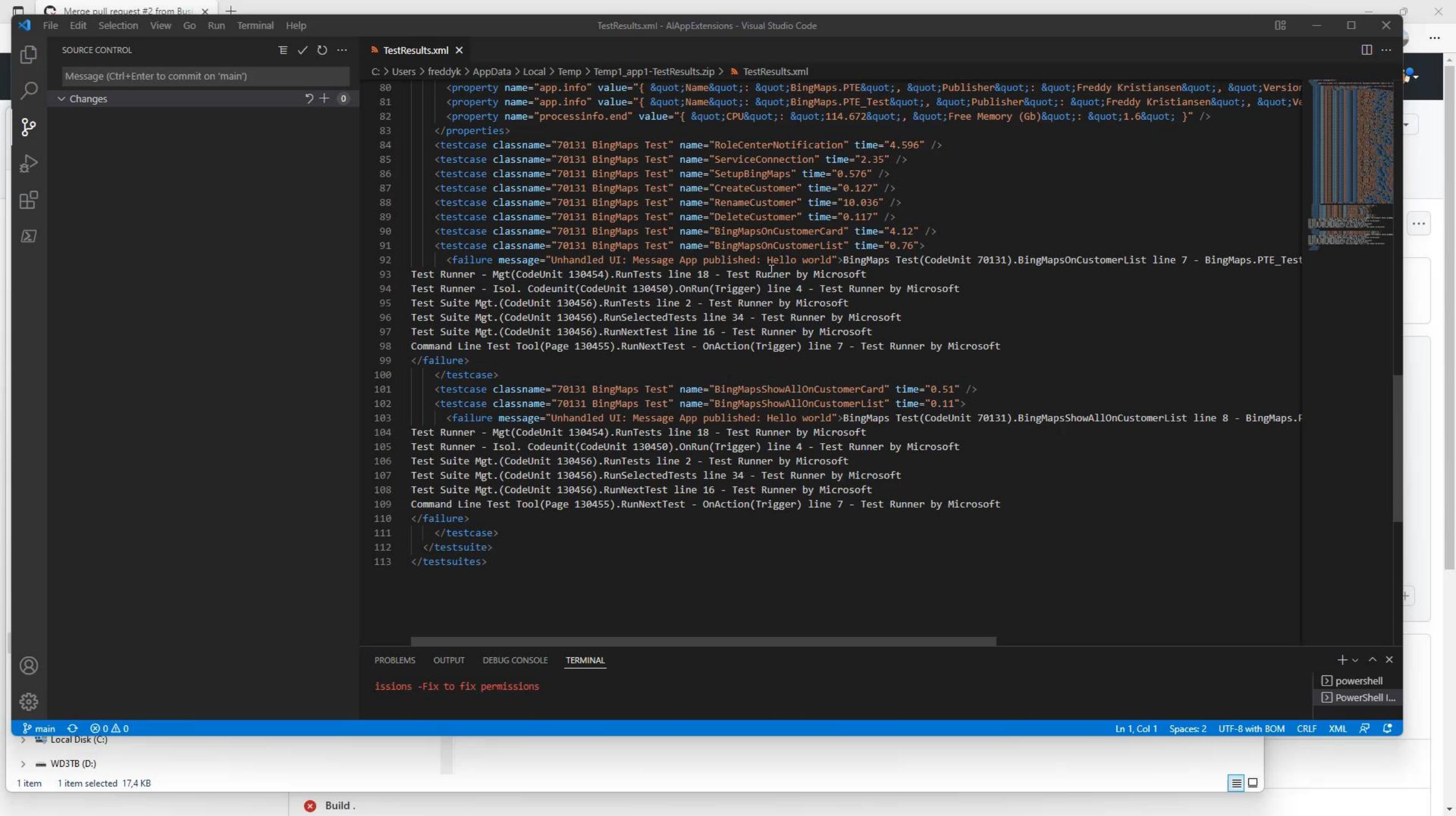
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- Ready for RAD!

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Develop against online dev. environment

- Clone the repository to your laptop
- Download symbols (authenticate if necessary)
- Modify a file and press F5 to launch the Sandbox environment

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Develop against local docker environment

- Clone the repository to your laptop
- Setup local development environment
 - Run localDevEnv.ps1
 - Specify
 - Container Name
 - Password
 - Optional license file (mandatory for AppSource Apps)
- Modify a file and press F5 to launch the Sandbox environment

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Process:

1. Click **Use this template** to create a new repository based on this template
2. Under Actions, use the **Add existing** or **add new** workflows to add your apps and test apps
3. Continuous Integration (CI) pipeline is automatically started
4. **Register a customer environment** using an AAD app for authentication. (Remember to register the AAD app in

About

App1

- Readme
- 0 stars
- 1 watching
- 0 forks

Releases

No releases published
[Create a new release](#)

Packages

No packages published
[Publish your first package](#)

Languages

AL 81.7% PowerShell 18.3%

Environments

- Register environments for deployment in GitHub
 - AuthContext secret can be specified on the environment or in a KeyVault
- Sandbox environments
 - are automatically picked up for continuous deployment in CI/CD
- Production environments
 - PTEs can be deployed by running a workflow
 - Currently not supported for AppSource Apps
 - For AppSource Apps we should auto-submit for validation when creating a release

Test your app against upcoming releases

- Test your app against Current, Next Minor or Next Major release
 - On demand or on a schedule
- Add additional countries to the tests

Workflows New workflow

All workflows

- Add existing app or test app
- CI/CD
- Create Online Dev. Environme...
- Create a new app
- Create a new test app
- Create release
- Increment Version Number
- Publish To Environment
- Test Current
- Test Next Major
- Test Next Minor
- Update AL-Go System Files

All workflows

Showing runs from all workflows

Filter workflow runs

8 workflow runs	Event	Status	Branch	Actor
Add Loyalty program CI/CD #6: Commit a88a497 pushed by freddydk	main	2 hours ago 17m 0s	...	
Create Online Dev. Environment Create Online Dev. Environment #2: Manually run by freddydk		14 hours ago 20m 44s	...	
Delete HelloWorld.al CI/CD #3: Commit f7b641d pushed by freddydk	main	14 hours ago 17m 25s	...	
Merge pull request #2 from BusinessCentralDemos/nirfg... CI/CD #2: Commit 6e5e459 pushed by freddydk	main	yesterday 19m 29s	...	
Add existing app or test app Add existing app or test app #2: Manually run by freddydk		yesterday 2m 6s	...	
Merge pull request #1 from BusinessCentralDemos/c35rx... CI/CD #1: Commit 9c7d06e pushed by freddydk	main	yesterday 15m 33s	...	
Add existing app or test app Add existing app or test app #1: Manually run by freddydk		yesterday 1m 45s	...	
Create a new app Create a new app #1: Manually run by freddydk		2 days ago 2m 2s	...	

Versioning of your app

- Schema: Major.Minor.Build.Revision
- Major and Minor are taken from app.json
- Build and Revision are calculated
- 3 Versioning strategies supported currently
 0. Major.Minor.GITHUB_RUN_NUMBER.Attempt (with configurable offset)
 1. Major.Minor.GITHUB_RUN_ID.Attempt
 2. Major.Minor.yyyyMMdd.hhmmss
- IncrementVersionNumber can help bump version number in apps
- NextMajor and NextMinor builds are using maxint

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11 workflow runs	Event	Status	Branch	Actor
------------------	-------	--------	--------	-------

✓ Test Next Major Test Next Major #2: Scheduled			5 hours ago 32m 54s	...
✓ Update AL-Go System Files Update AL-Go System Files #2: Manually run by freddydk			yesterday 3m 13s	...
✓ Test Next Major Test Next Major #1: Manually run by freddydk			yesterday 19m 29s	...
✓ Add Loyalty program CI/CD #6: Commit a88a497 pushed by freddydk			yesterday 17m 0s	...
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✓ Merge pull request #1 from BusinessCentralDemos/c35rx			2 days ago	...

Versioning

The background features a dark blue field with large, overlapping circles in orange and blue. A white, torn-paper-like corner is visible in the top right.

Versioning of AL-Go for GitHub

- Using a template simply copies the repository {

- With a reference to the template

```
  "type": "PTE",  
  "templateUrl": "https://github.com/microsoft/AL-Go-PTE@main"  
}
```

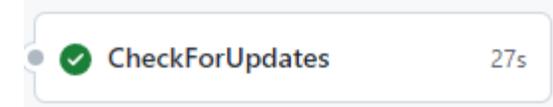
- Workflows points to a specific version of actions

- Main branch in AL-Go-Actions is not referenced

```
- name: Run pipeline  
  uses: microsoft/AL-Go-Actions/RunPipeline@v0.2
```

- With every build the template is checked for updates

- Notification if changes to workflows or references

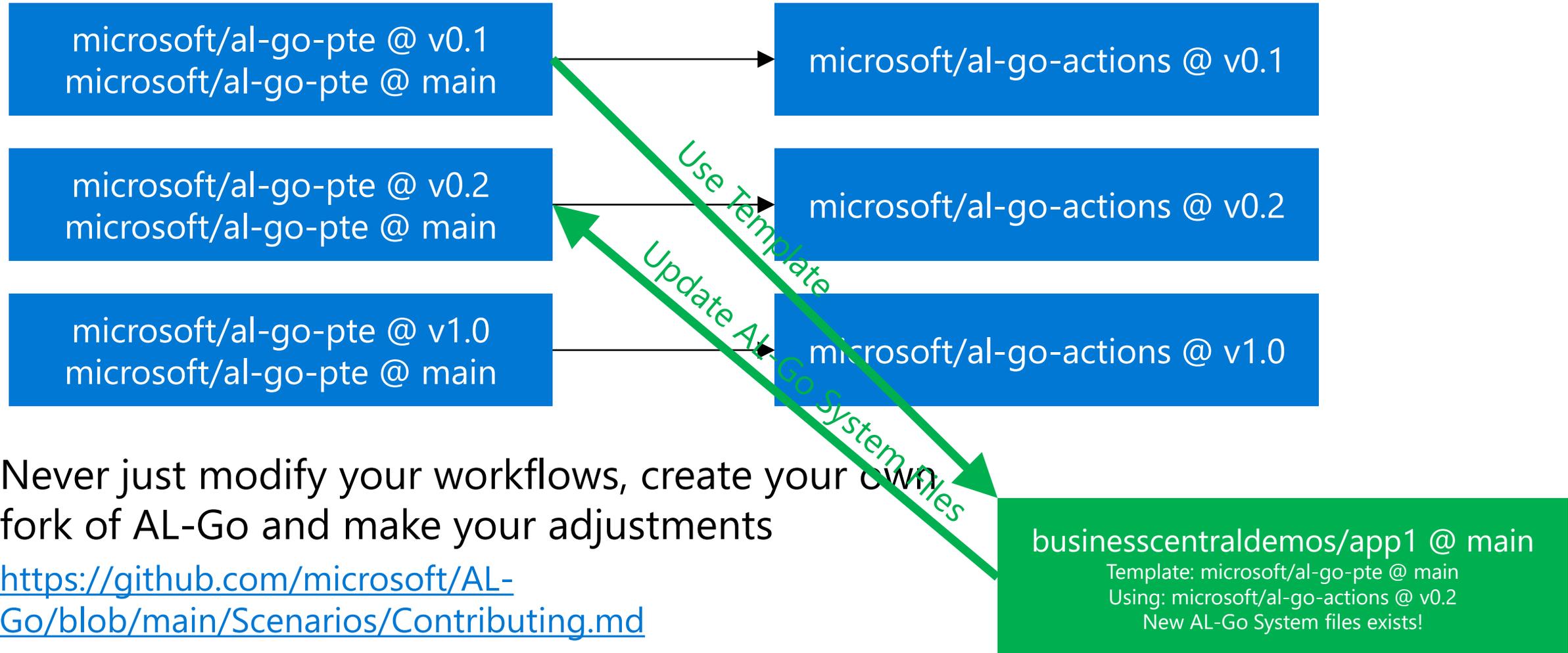


- Update AL-Go System Files

- By running a workflow

 Update AL-Go System Files

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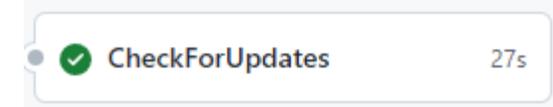
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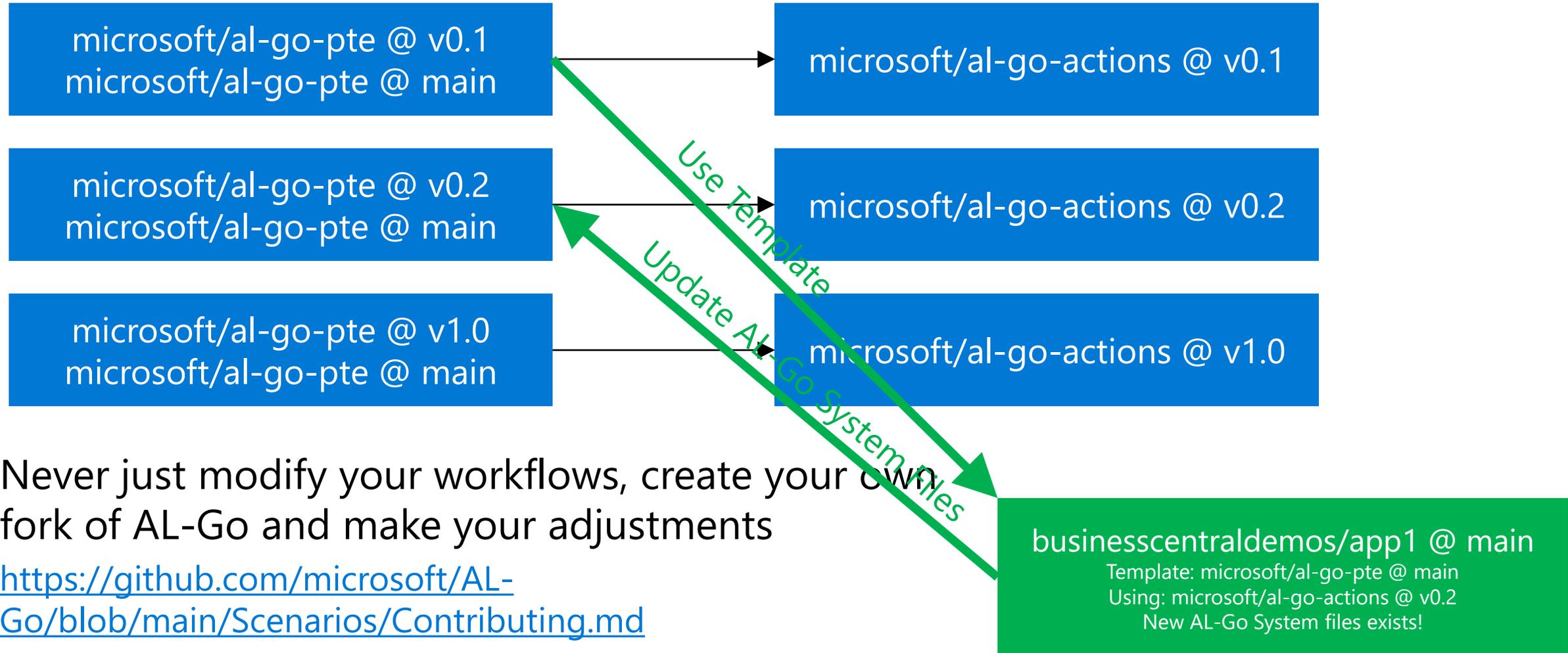


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Versioning of AL-Go for GitHub



Thank you

