



CI/CD with Acumatica

Deploy your Acumatica customizations with confidence

Gabriel Michaud

Founder

Velixo



Velixo

Excel-based reporting for

 **Acumatica**



Lettie Wiemann

Controller, Vanguard Resources

"I love Velixo. It's user-friendly and incredibly **quick**. I actually **trust** Velixo Reports and have piece of mind knowing I'm **capturing everything** since it's **integrated** with Acumatica."



5 min.

Time to install and build your first report



70+

Exclusive Acumatica functions and tools designed for financial and project reporting



Any Inquiry

Works with *any* Acumatica Generic Inquiry



800+

Happy Customers Worldwide



Unlimited

Number of users and installations included

Contact Info



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Wednesday of the month
at noon EST! ***

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Agenda









- ✓ Introduction
- ✓ Why CI/CD?
- ✓ Setting up your own CI/CD pipeline for Acumatica development projects

Add tasks

Refresh

Search

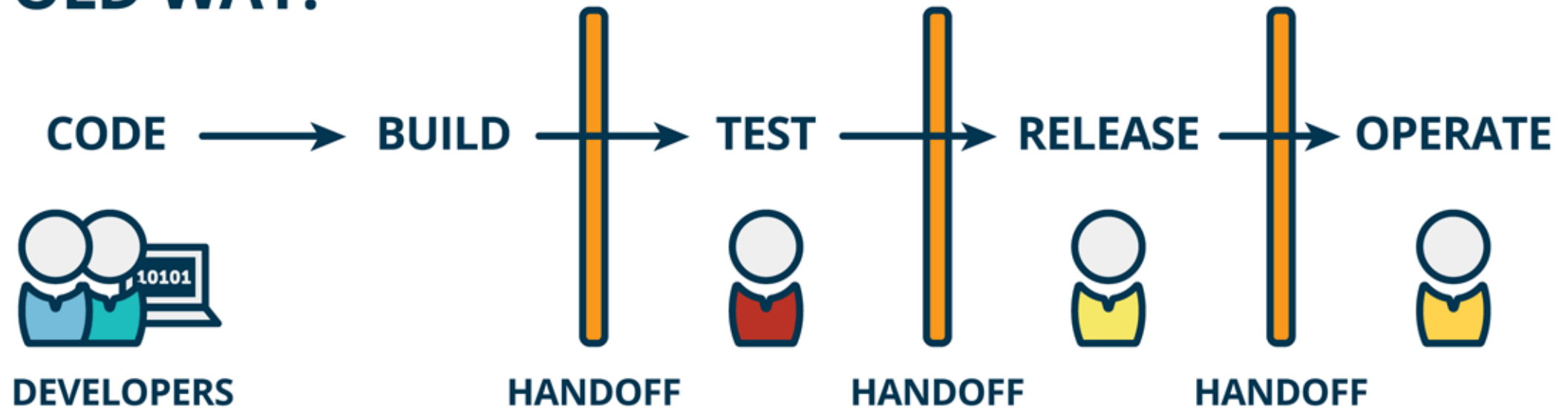
All Build Utility Test Package Deploy Tool Marketplace

-  .NET Core
Build, test, package, or publish a dotnet application, or run a custom dotnet command
-  Amazon ECR Pull
Pull a Docker image from an Amazon Elastic Container Registry on AWS
-  Amazon ECR Push
Push a Docker image to an Amazon Elastic Container Registry on AWS
-  Amazon S3 Download
Download file and folder content from an Amazon Simple Storage Service (S3) Bucket on AWS
-  Amazon S3 Upload
Upload file and folder content to an Amazon Simple Storage Service (S3) Bucket on AWS
-  Android signing
Sign and align Android APK files
-  Ant
Build with Apache Ant
-  App Center distribute
Distribute app builds to testers and users via Visual Studio App Center



« Traditional » Software Development

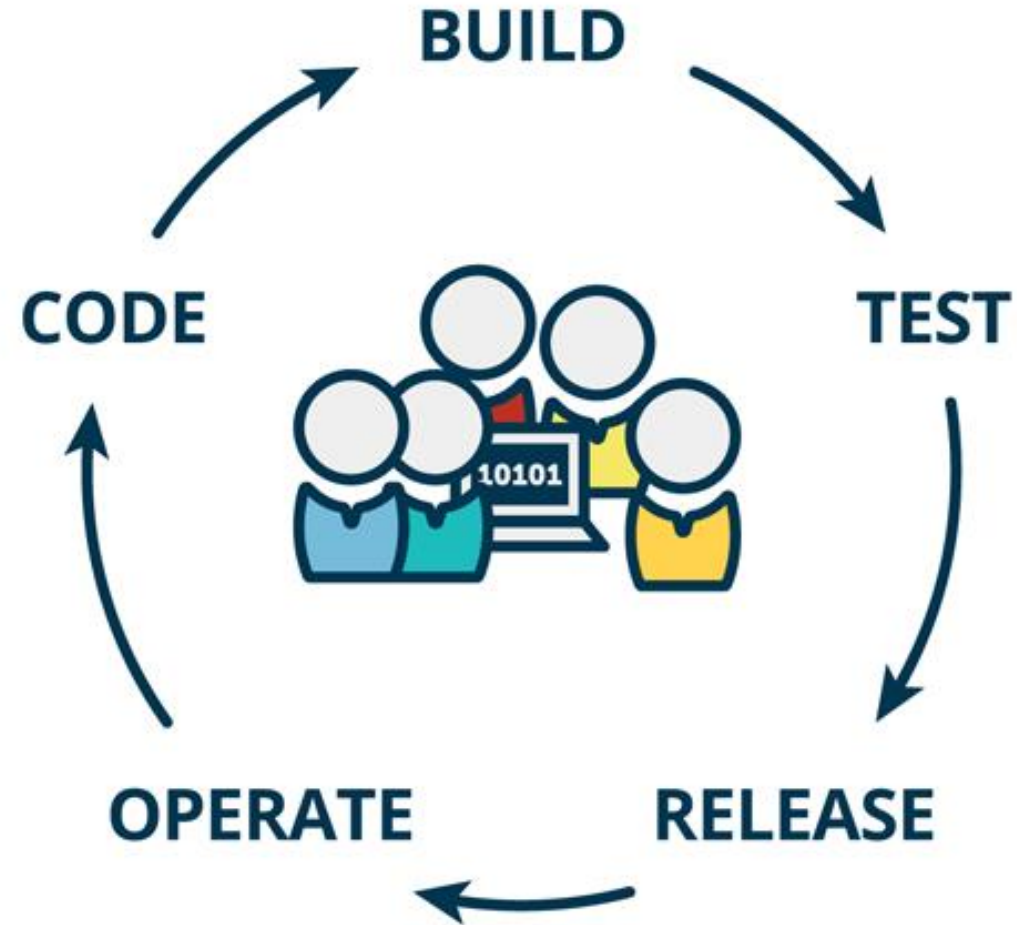
OLD WAY:



Source: The Product Managers' Guide to Continuous Delivery and DevOps
<https://www.mindtheproduct.com/what-the-hell-are-ci-cd-and-devops-a-cheatsheet-for-the-rest-of-us/>



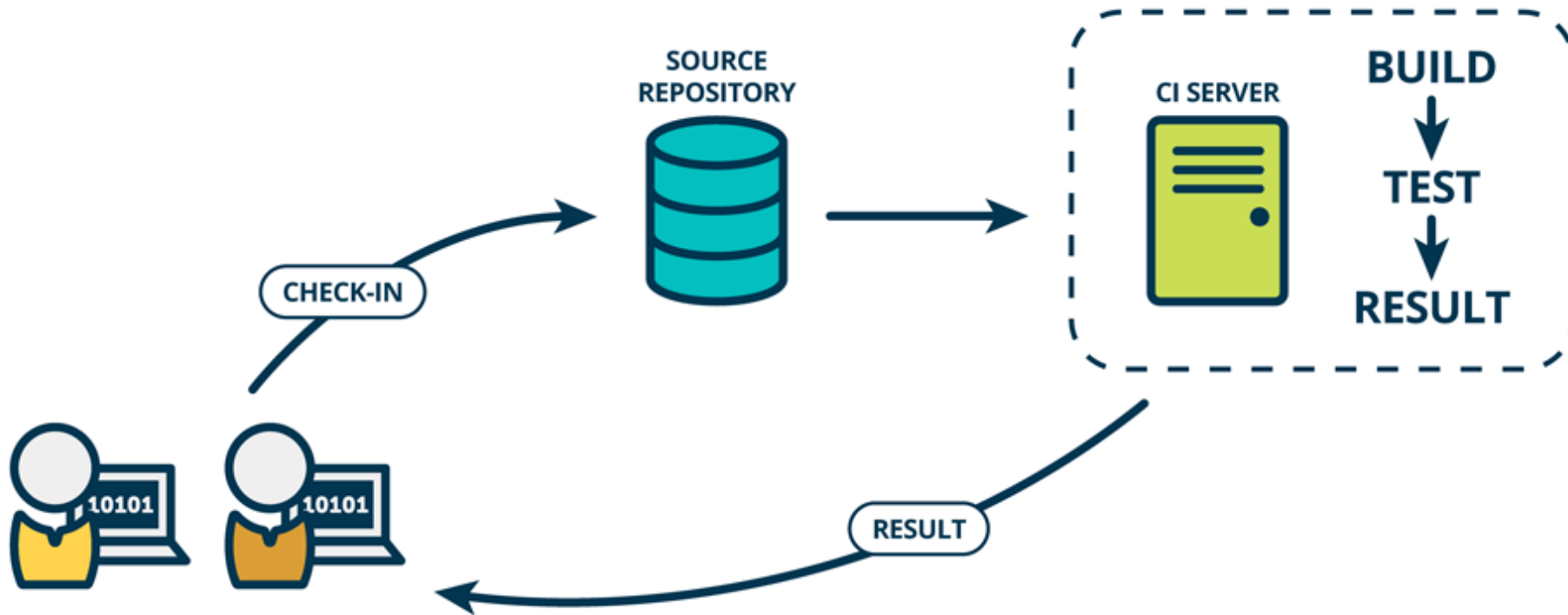
Enter Continuous Integration!



Source: The Product Managers' Guide to Continuous Delivery and DevOps
<https://www.mindtheproduct.com/what-the-hell-are-ci-cd-and-devops-a-cheatsheet-for-the-rest-of-us/>

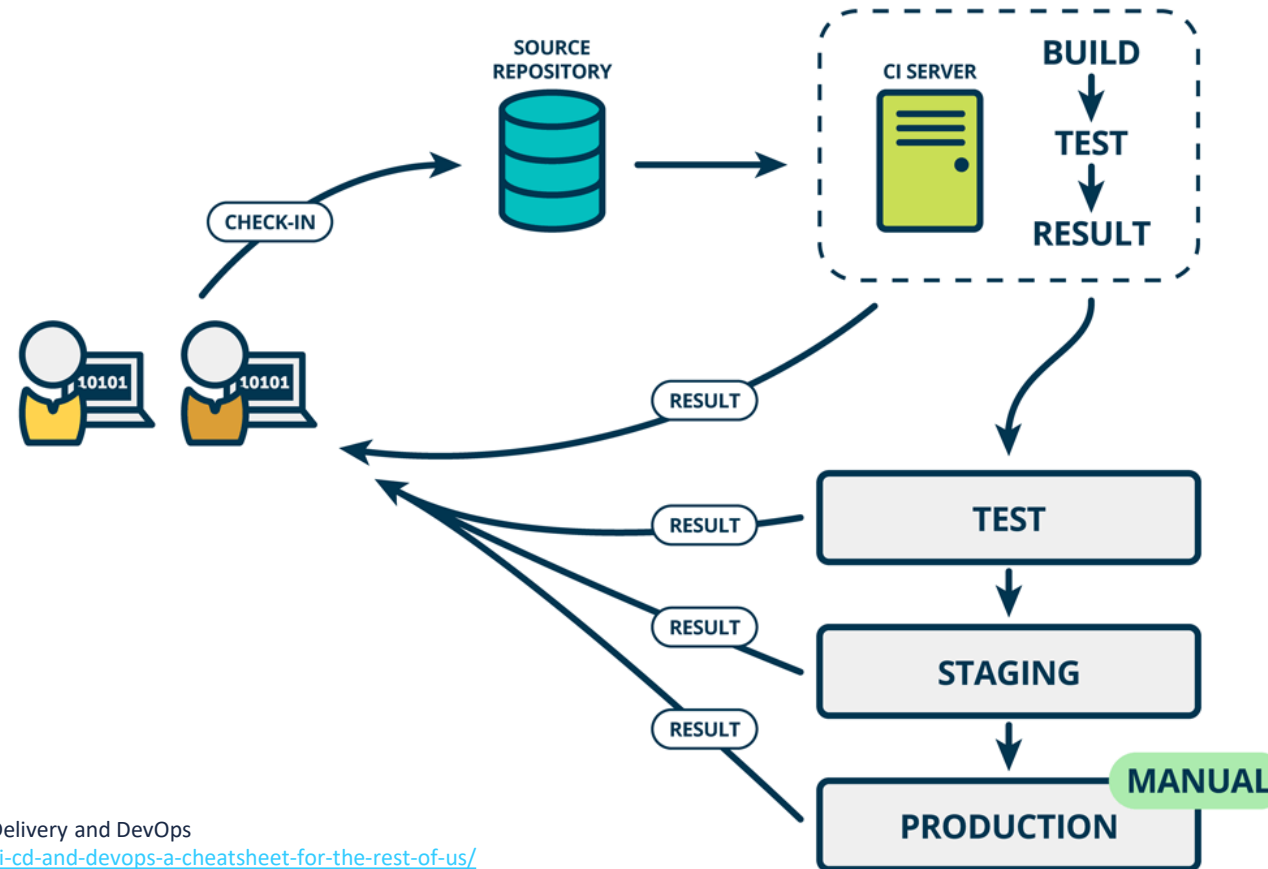
Continuous Integration

Continuous integration (CI) is a software development practice in which developers regularly integrate their code changes into a source code repository. To ensure that the new code does not introduce bugs, automated builds and tests run before or after developers check in their changes.



Continuous Delivery

Continuous Delivery (CD) is the ability to get changes of all types—including new features, configuration changes, bug fixes and experiments—into production, or into the hands of users, safely and quickly in a sustainable way.



Source: The Product Managers' Guide to Continuous Delivery and DevOps
<https://www.mindtheproduct.com/what-the-hell-are-ci-cd-and-devops-a-cheatsheet-for-the-rest-of-us/>

Coding Time!

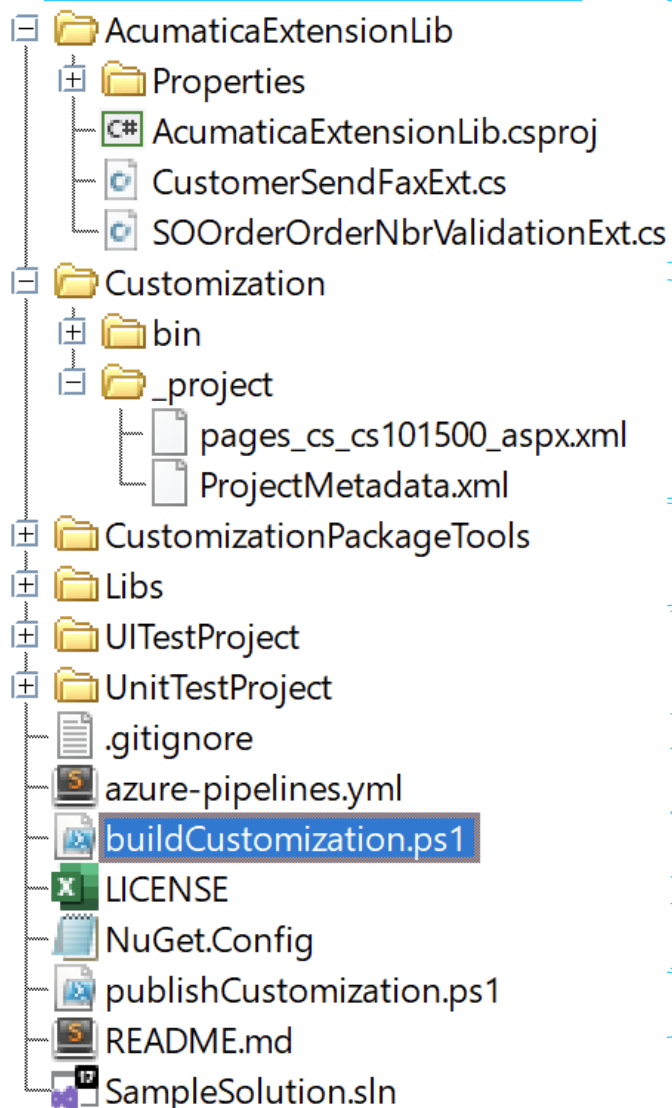
Our Toolset

- A GitHub repository with our Acumatica project and associated tests
- A test Acumatica 2021 R2 instance
- Azure Pipelines
- A local build Azure Pipelines build agent
- MSTest for unit/integration tests
- Acumatica Test Framework (built on Selenium WebDriver)
- Acumatica Unit Test libraries
- **Some duct tape!**



GitHub Repository Structure

<https://github.com/VelixoSolutions/AcumaticaCIDemo/>



Acumatica Extension Library

- Post-build event copies DLL to customization project

Acumatica Customization Project

- Saved using Source Control menu in customization project
- Note: bin folder is *not* under source control – generated at build time

Command line app for packaging/publishing of customization + other dependencies required for unit testing

User Interface and Unit Test projects

Azure Pipelines YAML File

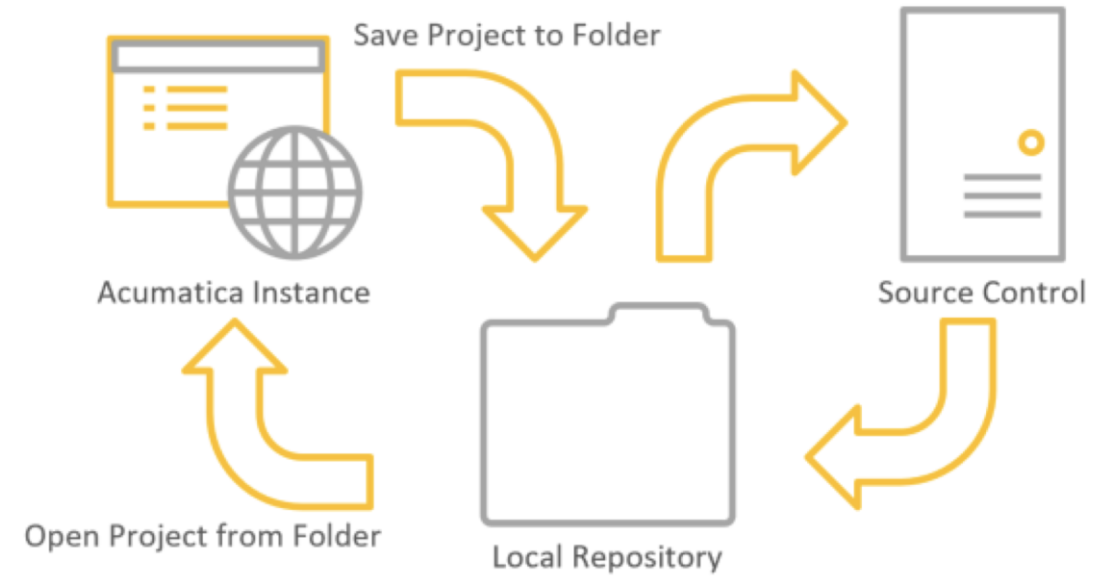
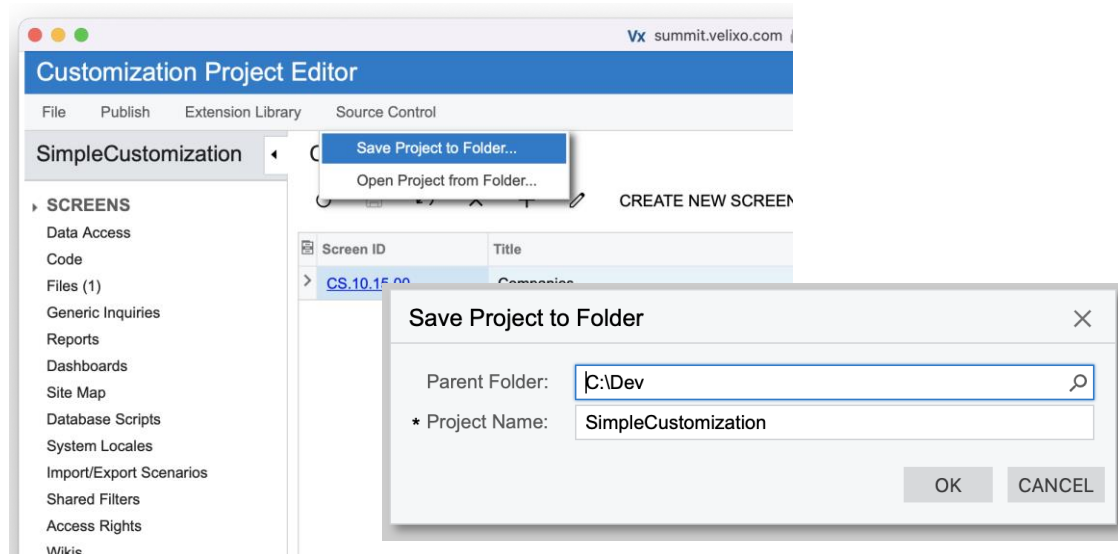
Script to **build** customization package

NuGet config to specify location of test SDK packages (not in online repo!)

Script to **publish** customization package

Acumatica Source Control Integration

- Not a direct link to any specific source control tool
- Read and write to a local folder
- Use a local folder subscribed to source control

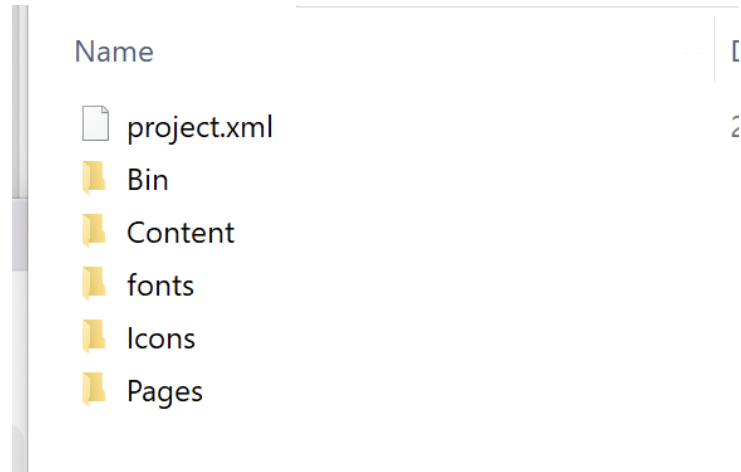


For more information, see “*Source Code and Automation for Acumatica Developers*” from the Acumatica Virtual Developer Confence 2019

Link: <https://www.acumatica.com/media/2019/07/2019-Acumatica-DevCon-Source-Control-Automation.pdf>

Building the Customization Package

- What's in a customization package?



- PX.CommandLine.exe
 - Problem 1: Requires a full Acumatica ERP instance to build
 - Problem 2: Slow
 - Problem 3: Doesn't seem to work at all when run in the context of a build agent
- Is there an alternative? Let's build one!

```
CustomizationPackageTools.exe build --customizationpath "Customization\" --  
packagefilename "Customization\SimpleCustomization.zip" --description "Simple  
customization project"
```

Publishing the customization package

- Acumatica Service API at </api/ServiceGate.asmx> (SOAP only!)
- Azure Pipelines can't call a web service API, but it can run any command-line app or PowerShell script

```
CustomizationPackageTools.exe publish --  
packagefilename  
"Customization\SimpleCustomization.zip" --  
packagename "SimpleCustomization" --url  
"https://summit.velixo.com" --username  
mylogin --password mypassword
```

ServiceGate

The following operations are supported. For a formal definition, please review the [Service Description](#).

- [CleanupPublish](#)
- [EnumGraphs](#)
- [EnumTables](#)
- [EnumTablesEx](#)
- [GetPackage](#)
- [LicenseInfo](#)
- [Login](#)
- [LoginEx](#)
- [Logout](#)
- [Process](#)
- [ProcessBatch](#)
- [PublishPackages](#)
- [PublishPackagesEx](#)
- [ReportEnumNames](#)
- [ReportEnumTableNames](#)
- [ReportGetPreview](#)
- [ReportGetVersionXml](#)
- [ReportGetXml](#)
- [ReportSave](#)
- [ReportSaveEx](#)
- [ReportSaveVersionXml](#)
- [SetBusinessDate](#)
- [UnpublishAllPackages](#)
- [UploadPackage](#)

Testing - taking advantage of the Acumatica testing tools and frameworks

User Interface Tests (Acumatica Test SDK)

[TestClass]

0 references

```
public class CustomerSendFaxTests : UITestBase
{
    [TestMethod]
    0 references
    public void TestSendFaxButton()
    {
        var customer = new Customer();
        customer.OpenScreen();
        customer.First();
        customer.SendFax();
        Assert.AreEqual("Who still uses a Fax?",
            customer.DefaultContact.Fax.GetValue());
    }
}
```

Unit Tests (PX.Tests.Unit.dll)

[TestMethod]

0 references

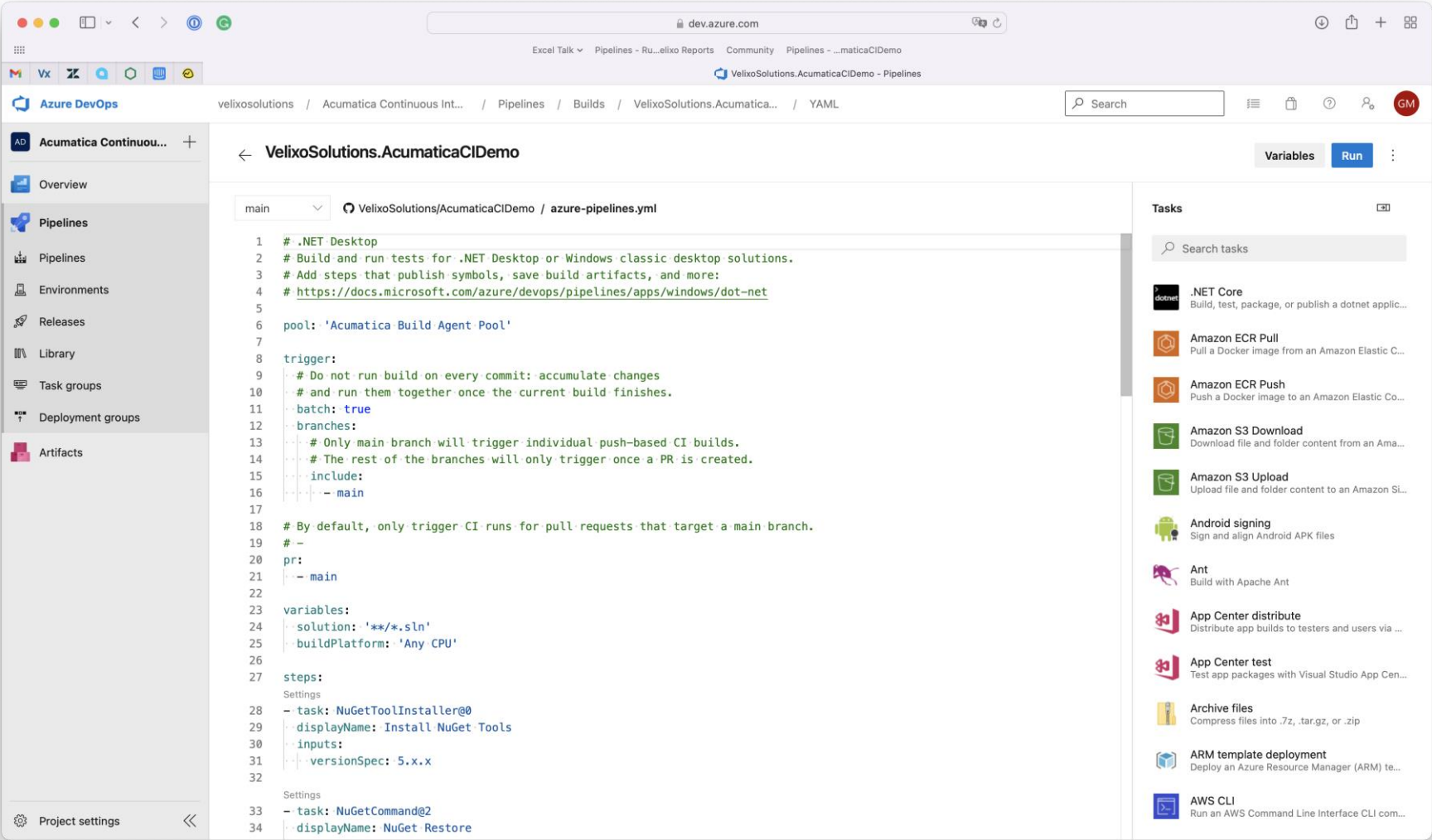
```
public void TestSendFaxButton()
{
    //Arrange
    var graph = PXGraph.CreateInstance<CustomerMaint>();
    var faxExt = graph.GetExtension<AcumaticaExtensionLib.CustomerSendFaxExt>();

    Customer customer = graph.BAccount.Insert(
        new Customer()
        {
            AcctCD = "TEST",
            AcctName = "Test"
        });

    //Act
    faxExt.SendFax.Press();

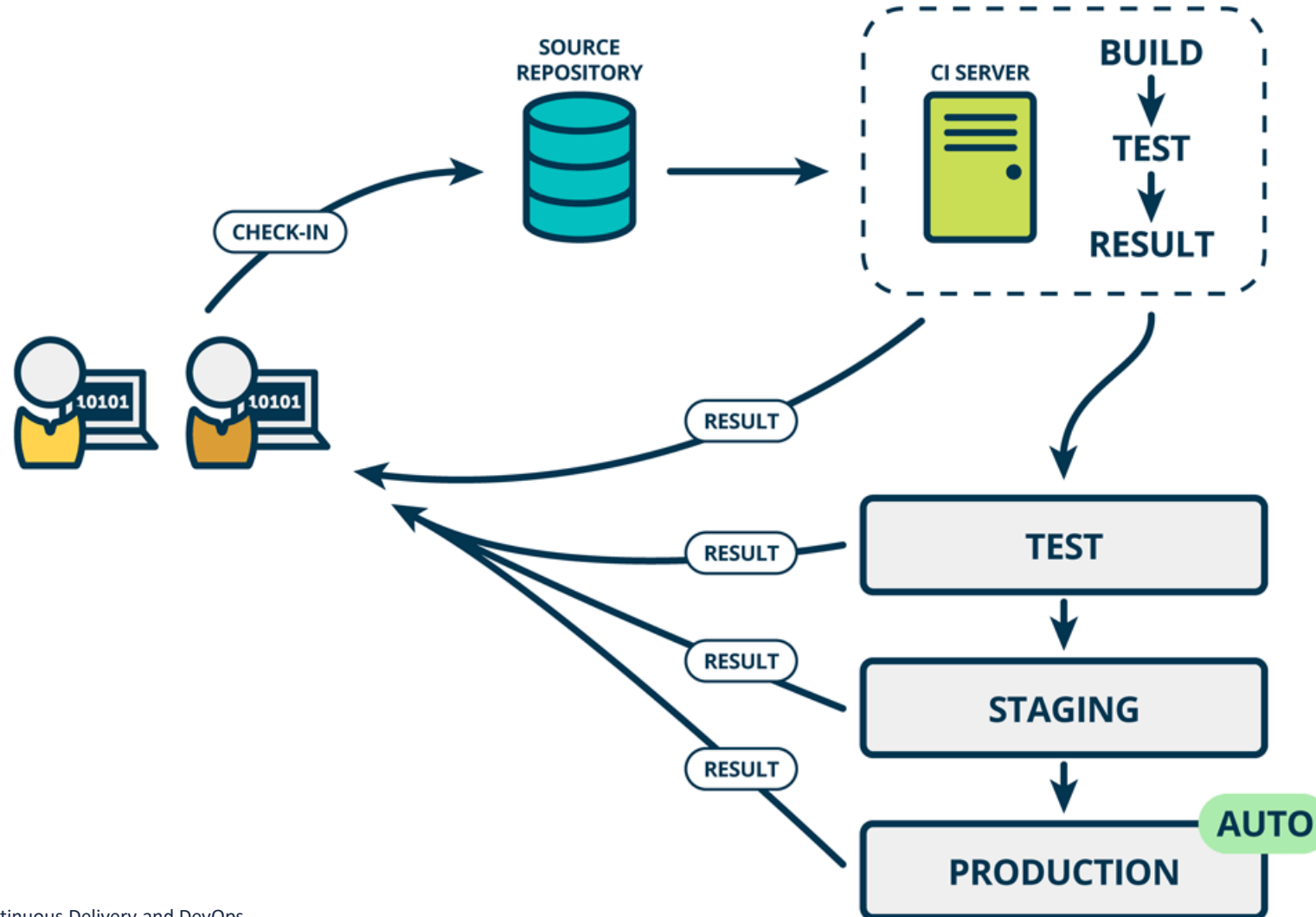
    //Assert
    var contactExt = graph.GetExtension<CustomerMaint.DefContactAddressExt>();
    Assert.AreEqual("Who still uses a Fax?", contactExt.DefContact.Current.Fax);
}
```

Putting it all together – the Azure pipeline YAML file



Let's try it out!

Taking it to the next level - Continuous Deployment



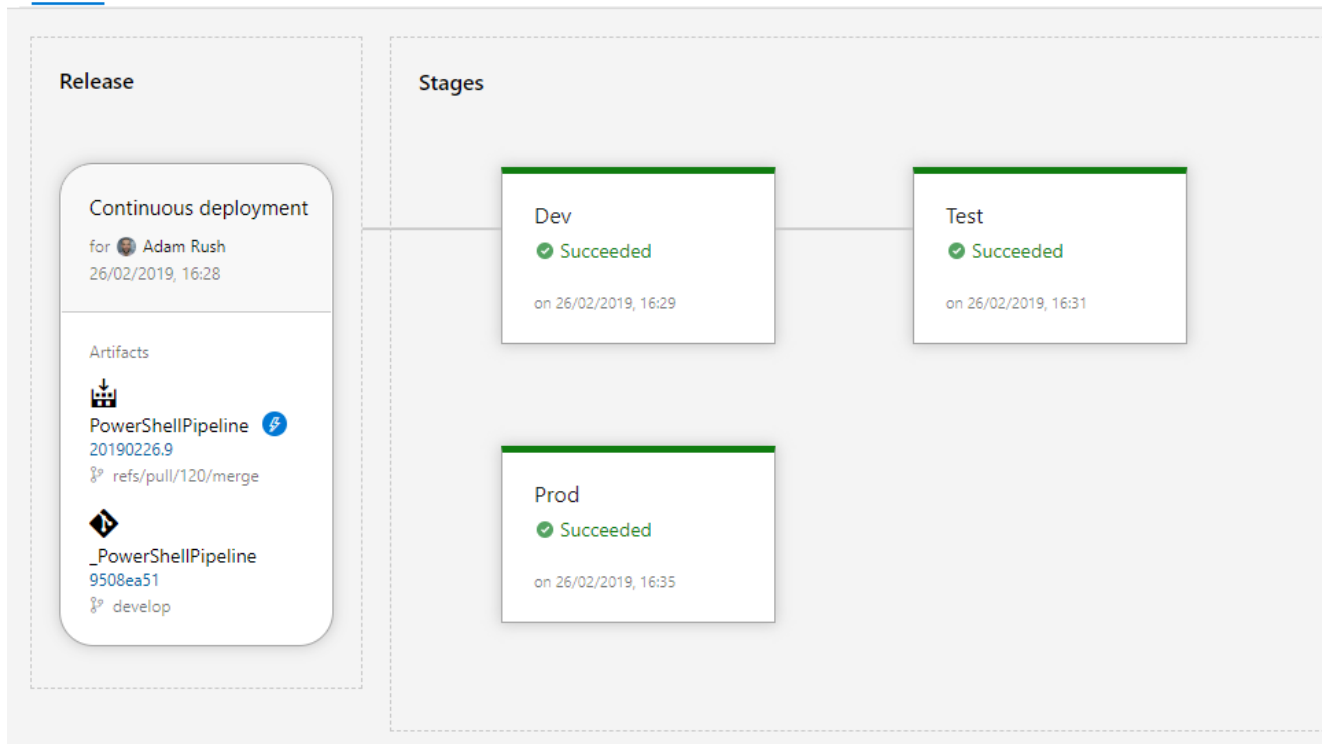
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Azure Release Pipelines

adamrushuk / PoC / Pipelines

PowerShellPipeline - Release - CD > Release-30

Pipeline Variables | + Deploy Cancel Refresh Edit ...



Gates Enabled

Define gates to evaluate before the deployment. [Learn more](#)

The delay before evaluation ⓘ

1 Minutes

Deployment gates ⓘ **+ Add**

Deployment queue settings ⓘ

Define behavior when multiple releases are queued

- Invoke Azure Function**
Invoke an Azure Function as a part of your pipeline.
- Invoke REST API**
Invoke a REST API as a part of your pipeline.
- Query Classic Azure Monitor Alerts**
Observe the configured classic Azure monitor rules for active alerts.
- Query Work Items**
Executes a work item query and checks for the number of items returned.
- Security and compliance assessment**
Security and compliance assessment with Azure policies on resources that belong to the resource group and Azure subscription

Reference

- The Product Manager's Guide to Continuous Delivery and DevOps
<https://www.mindtheproduct.com/what-the-hell-are-ci-cd-and-devops-a-cheatsheet-for-the-rest-of-us/>
- Deploy an Azure Pipelines Agent on Windows
<https://docs.microsoft.com/en-us/azure/devops/pipelines/agents/v2-windows?view=azure-devops>
- Getting Started with Acumatica Test SDK (VLOG by Robert Waite, Acumatica MVP)
https://www.youtube.com/watch?v=LiqTwe_Zhgk
- GitHub repository used in this session: <https://github.com/VelixoSolutions/AcumaticaCIDemo/>
- T280 DEVELOPMENT: TESTING BUSINESS LOGIC WITH THE ACUMATICA UNIT TEST FRAMEWORK 2021 R2
<https://openuni.acumatica.com/courses/development/t280-development-testing-business-logic/>
- NEW: Test SDK Beginner's Guide <https://github.com/AaronBeehoo/Acumatica-Test-SDK-Beginners-Guide/>



SEVEN IS MAGIC!



INTRODUCING

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July 12th, 10:00 AM PST / 1:00 PM EST

Register at velixo.com/webinar

Featuring
Magician/Mentalist
Joe Skilton



Thank You!

www.acumatica.com/developers

Let's stay in touch! gabriel@velixo.com