



# Azure DevOps effizienter nutzen – Automatisierung mit PowerShell

Nico Orschel  
Principal Consultant  
AIT GmbH & Co. KG

Dr. Eike Hirdes  
Senior Consultant  
AIT GmbH & Co. KG



# Agenda

---

- Einführung
  - Azure DevOps REST API Basics
  - („PowerShell“) Bibliotheken
  - Fazit
- 
- Diskussion / Fragen

# Mit **wem** habt ihr es zu tun?

## AIT – Applied Information Technologies GmbH & Co KG.



**Eike Hirdes**

 +49 151 550526-26

 @DrMuhahaaa

 Eike.Hirdes@aitgmbh.de

[www.linkedin.com/in/makes](https://www.linkedin.com/in/makes)




**Nico Orschel**


 +49 151 550526-24

 @NicoOrschel

 Nico.Orschel@aitgmbh.de

 Leitzstraße 45  
70469 Stuttgart  
GERMANY

 [www.aitgmbh.de](http://www.aitgmbh.de)

 @aitgmbh

# Azure DevOps REST API

- AzD/TFS verfügt seit Mai 2014 über REST API ([Link](#))
  - Zugriff via HTTP Operationen + Header
- Url Format: ***VERB https://{instance}[/{team-project}]/\_apis[/{area}]/{resource}?api-version={version}***
- Funktionsumfang TFS/AzD Versionsabhängig
- Link: <https://docs.microsoft.com/en-us/rest/api/azure/devops/>

Version
Azure DevOps Services REST API 7.1
7.1 (preview)
7.0
6.0
5.1
5.0
4.1
Azure DevOps Server 2019
TFS 2018 U2

# API and TFS version mapping

<b>TFS Version</b>	<b>REST API</b>	<b>Version Build Version</b>
Azure DevOps Server vNext	7.1	
Azure DevOps Server 2020	6.0	Versions >= 18.170.30525.1
Azure DevOps Server 2019	5.0	Versions >= 17.143.28621.4
TFS 2018 Update 3	4.1	Versions >= 16.131.28106.2
TFS 2018 Update 2	4.1	Versions >= 16.131.27701.1
TFS 2018 Update 1	4.0	Versions >= 16.122.27409.2
TFS 2018 RTW	4.0	Versions >= 16.122.27102.1
TFS 2017 Update 2	3.2	Versions >= 15.117.26714.0
TFS 2017 Update 1	3.1	Versions >= 15.112.26301.0
TFS 2017 RTW	3.0	Versions >= 15.105.25910.0
TFS 2015 Update 4	2.3	Versions >= 14.114.26403.0
TFS 2015 Update 3	2.3	Versions >= 14.102.25423.0
TFS 2015 Update 2	2.2	Versions >= 14.95.25122.0
TFS 2015 Update 1	2.1	Versions >= 14.0.24712.0
TFS 2015 RTW	2.0	Versions >= 14.0.23128.0

<https://docs.microsoft.com/en-us/rest/api/azure/devops/?view=azure-devops-rest-7.1#api-and-tfs-version-mapping>

# Authentifizierung (1/2)



- <https://docs.microsoft.com/en-us/rest/api/azure/devops/?view=azure-devops-rest-7.1>

## Create the request

### Authenticate

There are many ways to authenticate your application or service with Azure DevOps Services or TFS. The following table is an excellent way to decide which method is the best for you:

Type of application	Description	example	Authentication mechanism	Code samples
Interactive client-side	GUI based client side application	Windows app enumerating bugs for a user	Active Directory authentication library (ADAL)	<a href="#">sample</a>
Interactive JavaScript	GUI based JavaScript application	AngularJS single page app displaying work items for a user	ADAL	<a href="#">sample (coming soon)</a>
Non-interactive client-side	Headless text only client side application	Console app displaying all bugs assigned to a user	<a href="#">Device Profile</a>	<a href="#">sample</a>
Interactive web	GUI based web application	Custom Web dashboard displaying build summaries	OAuth	<a href="#">sample</a>
TFS application	TFS app using the Client OM library	TFS extension displaying team bug dashboards	Client Libraries	<a href="#">sample</a>
<a href="#">Azure DevOps Services Extension</a>	Azure DevOps Services extension	<a href="#">Azure DevOps extension samples</a>	<a href="#">VSS Web Extension SDK</a>	<a href="#">sample walkthrough</a>

**Note:** You can find more information on authentication on our [authentication guidance page](#).

# Authentifizierung (2/2)

---

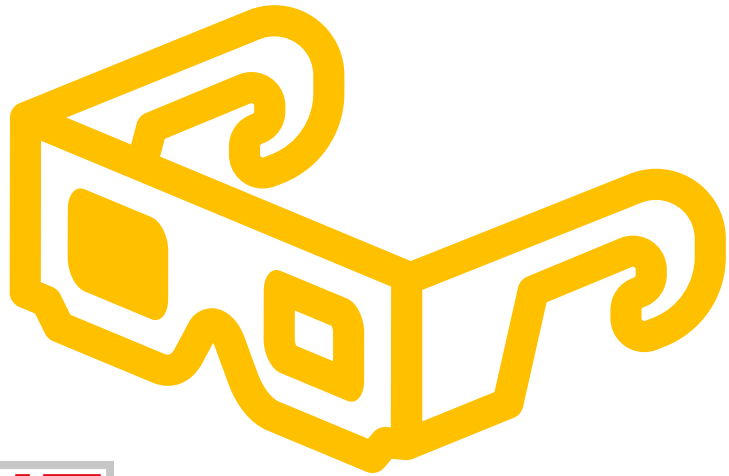
- Personal Access Token (PAT)
  - Zugriffsrechte (Scope) auf notwendige Organisationen + Funktionsbereiche begrenzen
  
- On-Premise
  - Zugriff über PAT bedingt SSL Verschlüsselung
  - Besser PAT als Username+Passwort verwenden (sicherer)
  - On-Premise unterstützt auch Username+Passwort (NTLM/Kerberos) als Alternative zu PAT

## DEMO

---

### Demo - REST API Basics

- Azure DevOps REST API
- Postman (von Hand und mit Hilfe)
- Rest API mit PowerShell (Do it yourself)

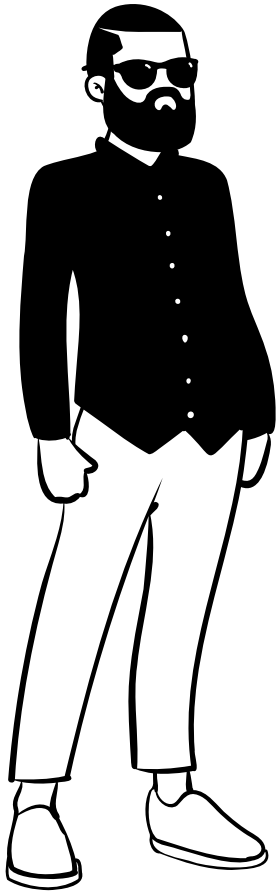




# BIBLIOTHEKEN

---

„Don't re-invent the wheel“



# Was gibt es schon (fertig)? – 1/2

---

- Azure DevOps CLI (az devops)
  - Eingeschränkter On-Premise Support (AzD 2020 in Preview)
  - <https://docs.microsoft.com/en-us/azure/devops/cli>
  
- Azure DevOps SDKs
  - Rest API
  - Extended Client
  - Auch in PowerShell nutzbar
  - <https://docs.microsoft.com/en-us/azure/devops/integrate/concepts/dotnet-client-libraries>

# Was gibt es schon? - 2/2

---

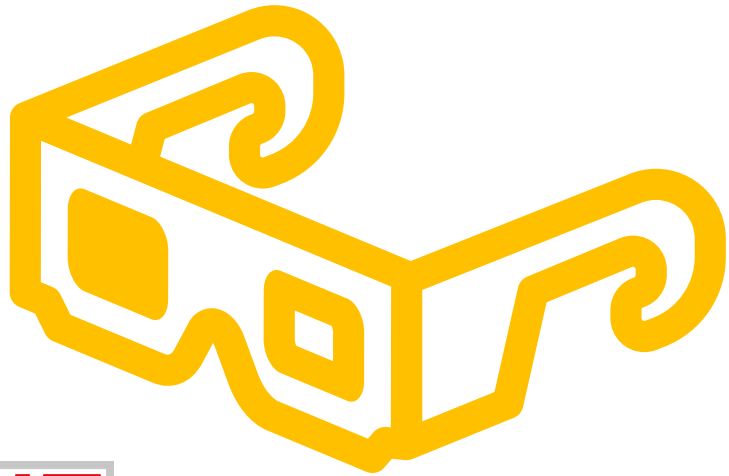
- Yeoman / Yo team
  - <https://github.com/DarqueWarrior/generator-team>
  
- VSTeam
  - <https://github.com/MethodsAndPractices/vsteam>
  - <https://www.powershellgallery.com/packages/VSTeam/7.5.0>
  
- PSDevOps
  - <https://github.com/StartAutomating/PSDevOps>
  - <https://www.powershellgallery.com/packages/PSDevOps/0.5.7>

## DEMO

---

### Demo - Bibliotheken

- PSDevOps - Work Item Update
- PSDevOps im Build
- Teams anlegen / updaten



# Fazit

---

- Automatisierung mit PowerShell ist kein Hexenwerk
- Es muss nicht immer eine UI Extension / Azure Function / Plugin / ... sein
- Das Rad nicht neu empfinden ... fertige Bibliotheken nutzen

# Ideen für mehr ...

---

- Entwicklung
  - Backlog Management (Aggregation)
  - Bulk Update
  - Areas / Iterations anlegen und anpassen
- Pipelines
  - Aggregation über Build Prozesse
  - Batch-Anpassungen
    - Build Steps ersetzen
    - Drop location anpassen
- Administration
  - Rollen und Berechtigungskonzept
  - Backup (insb. aus der Cloud)
  - Jobs triggern
- Reporting
  - Alles was nicht Analytics abgedeckt wird
  - Siehe auch Vinicius Moura (<https://vinijmoura.medium.com/>)
- Migrationen
- ...



# Mit **wem** habt ihr es zu tun?

## AIT – Applied Information Technologies GmbH & Co KG.



**Eike Hirdes**

 +49 151 550526-26

 @DrMuhahaaa

 Eike.Hirdes@aitgmbh.de

[www.linkedin.com/in/makes](https://www.linkedin.com/in/makes)




**Nico Orschel**


 +49 151 550526-24

 @NicoOrschel

 Nico.Orschel@aitgmbh.de

 Leitzstraße 45  
70469 Stuttgart  
GERMANY

 [www.aitgmbh.de](http://www.aitgmbh.de)

 @aitgmbh



WIR SUCHEN **DIE BESTEN!**

Entwickler, Berater, Software-Architekten,  
Werksstudenten, Junioren, Senioren,...

[www.aitgmbh.de/jobs](http://www.aitgmbh.de/jobs)

*Jetzt bewerben und  
Karrierechance sichern !*



[www.aitgmbh.de/jobs](http://www.aitgmbh.de/jobs)



# Links

---

- Demos aus Session
  - [https://github.com/norschel/Basta2022Spring-Demos/tree/AzureDevOps\\_PowerShell\\_Automation](https://github.com/norschel/Basta2022Spring-Demos/tree/AzureDevOps_PowerShell_Automation)
- Bibliotheken
  - <https://github.com/StartAutomating/PSDevOps>
  - <https://www.powershellgallery.com/packages/PSDevOps/>
  - <https://www.powershellgallery.com/packages/VSTeam/>
  - <https://github.com/MethodsAndPractices/vsteam/>
- REST API
  - <https://docs.microsoft.com/en-us/rest/api/azure/devops/?view=azure-devops-rest-7.1>
- Azure DevOps Postman Gallery (v5.0)
  - <https://github.com/hkamel/azuredevops-postman-collections>