

Continuous Delivery von Micro Services im Cloud-Umfeld

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Inhalt

- Cloud Computing
- Micro Services
- Continuous ...
Integration, Delivery, Deployment
- DevOps Werkzeuge
- CI/CD auf GitHub
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Digitales Handout
<https://github.com/phd4hsma/HSMA>

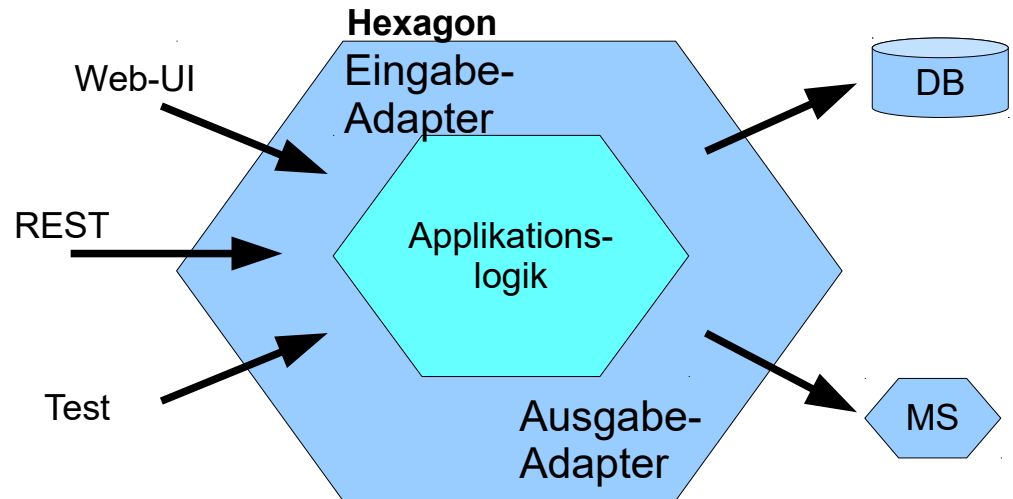
Cloud Computing

- Örtlichkeit und Verantwortung
 - On-Premise bzw. Private Cloud
 - Public und Hybrid Cloud
- Dienstleistungsart (Service)
 - Infrastructure as a Service (IaaS)
 - Platform as a Service (PaaS)
 - Software as a Service (SaaS)

Aufbau von Micro Services

Architektur von Micro Services (Mikro-Architektur)

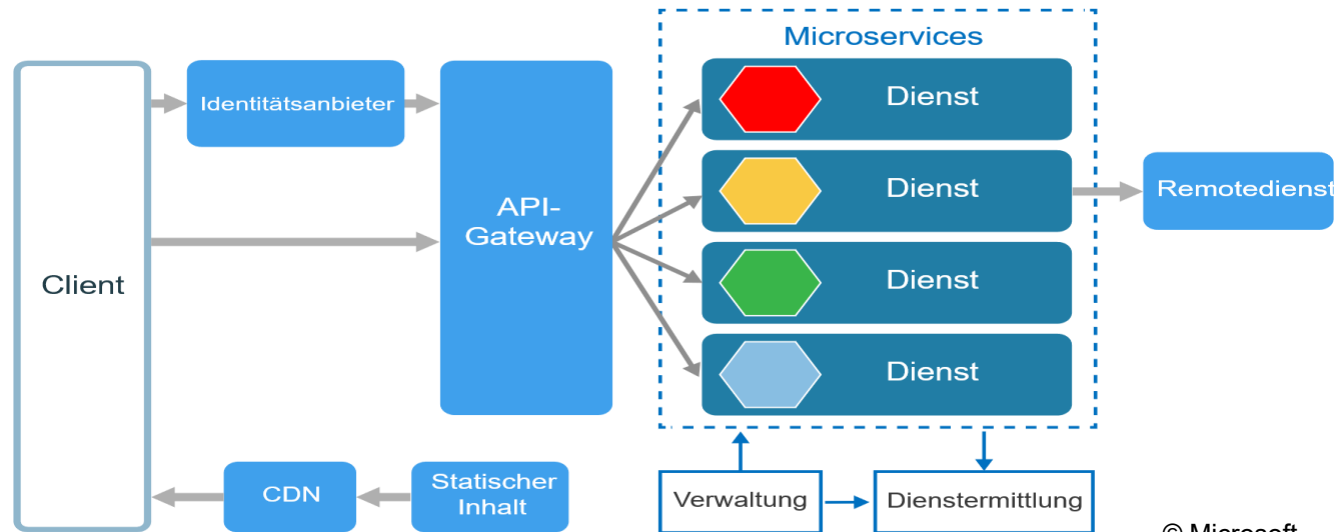
- Fachliche Architektur (*Domain-Driven Design, Bounded Context*)
- *Command Query Responsibility Segregation* (CQRS)
- *Event Sourcing*
- Hexagonale Architektur (Erweiterung der 3-Schichten Architektur)



Aufbau von Micro Services

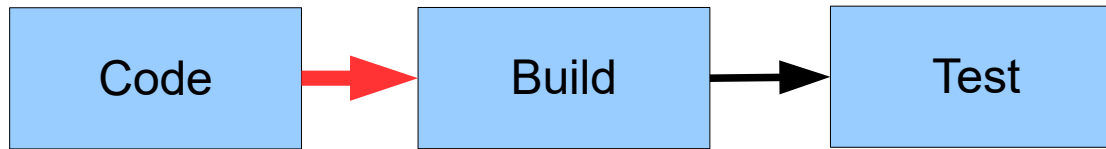
Architektur von Micro Services Systemen (Makro-Architektur)

- Fachliche Architektur (*Bounded Context*)
- *Event-Driven Architecture*
- *Service Discovery*
- *Load Balancing*

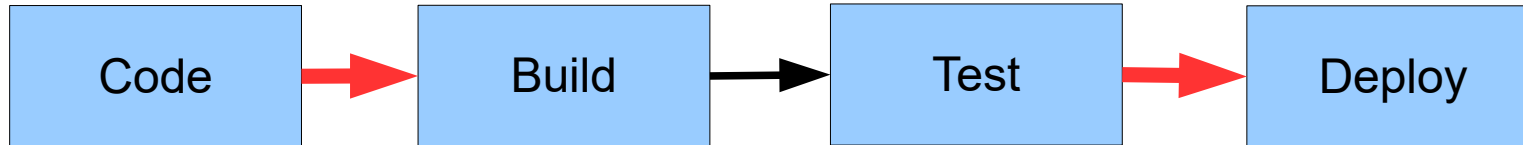


Continuous ...

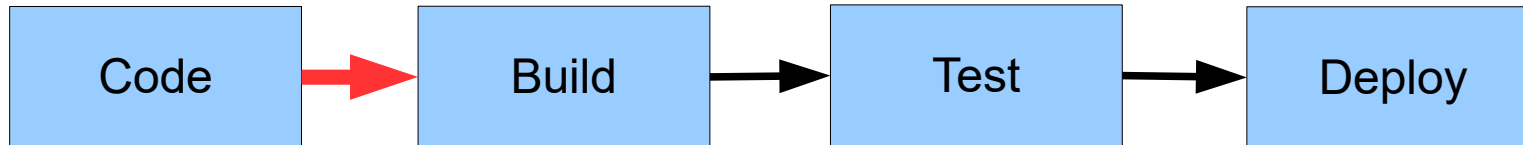
- ... Integration (CI)



- ... Delivery (CD)

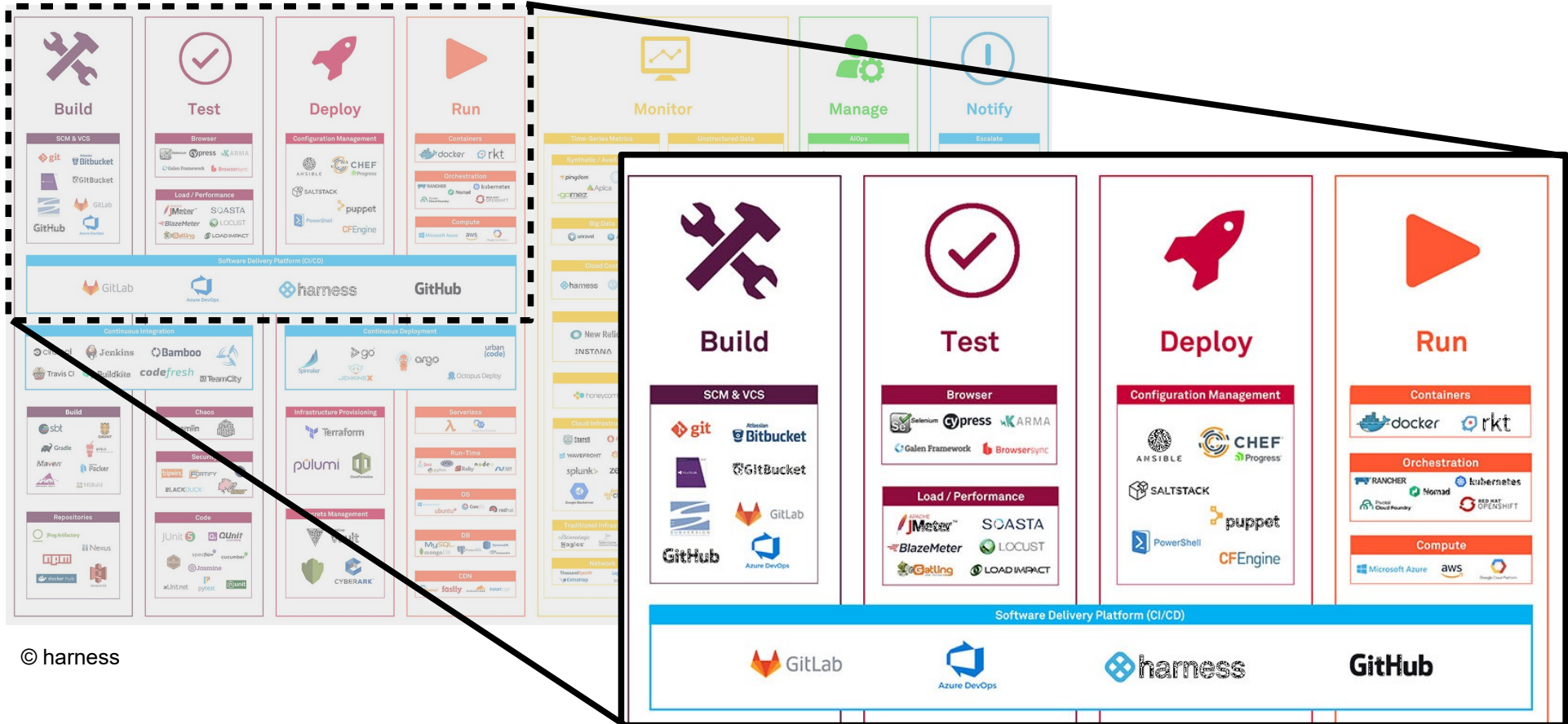


- ... Deployment



Manuell
(Trigger)
→
automatisch

DevOps Werkzeuge



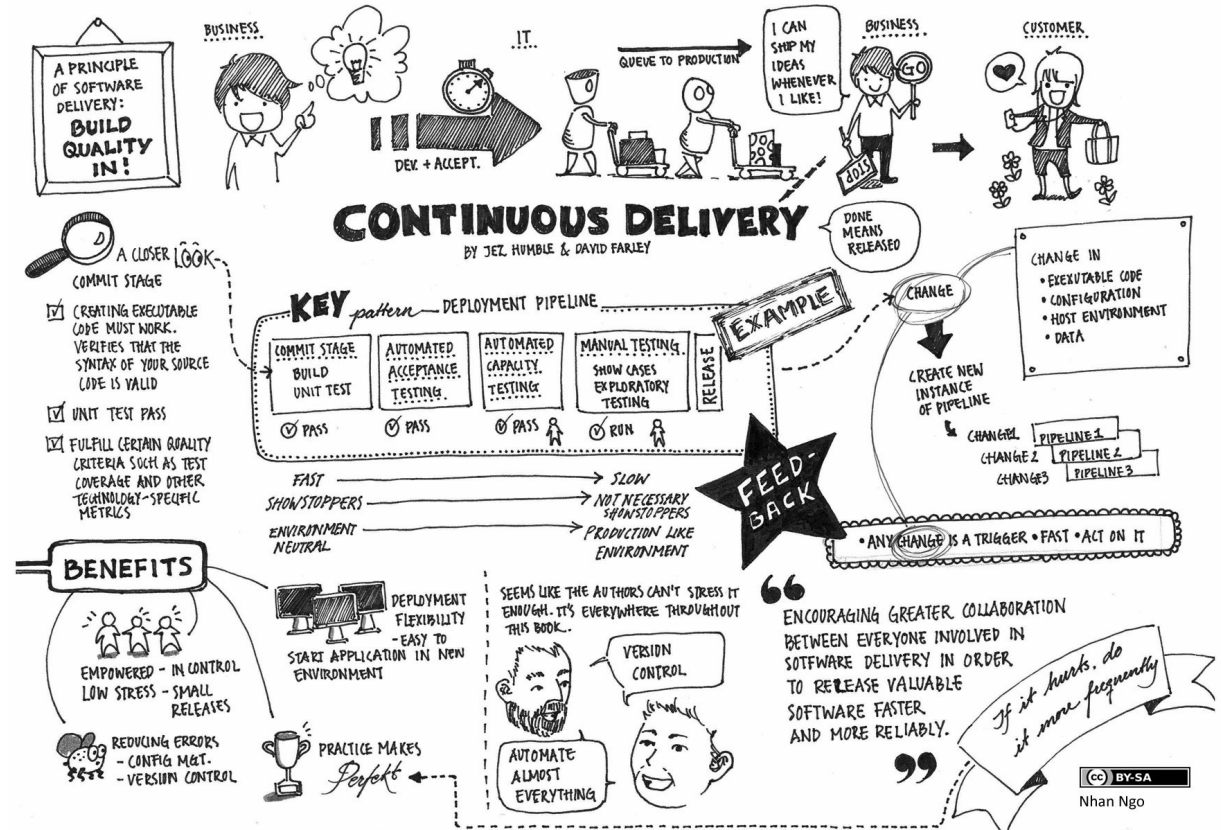
CI/CD auf GitHub

GitHub Actions

The screenshot displays the GitHub Actions interface. At the top, a navigation bar includes links for Code, Issues, Pull requests, Actions (highlighted), Projects, Wiki, Security, Insights, and Settings. The left sidebar, titled 'Actions', contains a 'New workflow' button, a list of 'All workflows' with 'Compile, Test And Deliver a Java File' selected, and sections for 'Management' and 'Caches'. The main content area shows the selected workflow, 'Compile, Test And Deliver a Java File', with a search bar for 'Filter workflow runs'. Below this, it indicates '8 workflow runs' and provides filters for Event, Status, Branch, and Actor. A light blue banner states, 'This workflow has a workflow_dispatch event trigger.', with a 'Run workflow' button. The first workflow run is shown with a green checkmark, titled 'Text etwas überarbeitet', and details: 'Compile, Test And Deliver a Java File #18: Commit 243b28e pushed by phd4hsma' on the 'main' branch. It was executed '2 hours ago' and took '45s'.

Zusammenfassung

- Micro Services zu entwickeln ist einfach
- Micro Services zu integrieren ist schwer
- Continuous Integration/Delivery (CI/CD), der automatisierte Build/Test/Deploy Prozess, erleichtert dabei die Arbeit



<https://continuousdelivery.com/2014/02/visualizations-of-continuous-delivery/>

Literatur

- **Dave Farley (2021)**
Continuous Delivery Pipelines: How To Build Better Software Faster
- **Eberhard Wolff (2016)**
Continuous Delivery: Der pragmatische Einstieg
- **Jez Humble, David Farley (2010)**
Continuous Delivery: Reliable Software Releases Through Build, Test, and Deployment Automation

Quellen

- **What is Continuous Delivery?**
 - <https://continuousdelivery.com/>
 - <https://learn.microsoft.com/en-us/devops/deliver/what-is-continuous-delivery>
 - <https://www.ibm.com/topics/continuous-delivery>
- **Continuous Delivery (CD, „fortlaufende Auslieferung“)**
https://de.wikipedia.org/wiki/Continuous_Delivery
- **GitHub Actions Documentation**
<https://docs.github.com/en/actions>

The Periodic Table of DevOps Tools (V4.2)

Legend		Legend		Legend		Legend	
■ AIOps/Analytics	■ Artifact/Package Management	■ Continuous Integration	■ Database Management	■ Security	■ Serverless/PaaS	■ Source Control Management	
■ Cloud	■ Collaboration	■ Deployment	■ Enterprise Agile Planning	■ Testing	■ Value Stream Management		
■ Configuration Automation	■ Issue Tracking/ITSM	■ Release Management					
■ Containers							
1 En Aja Atlassian Jira Align							
3 En Daa Digital.ai Agility	4 En Tp Targetprocess						
11 En Pv Planview	12 En Br Broadcom Rally						
19 Pd In Instana	20 En Dd Datadog	21 En Ja JFrog Artifactory	22 En Aws AWS	23 En Sl Slack	24 En Mt Microsoft Teams	25 Os Rha Red Hat Ansible	26 Os Ht HashiCorp Terraform
37 En Sp Splunk	38 En Ad AppDynamics	39 Os Snx Sonatype Nexus	40 En Az Azure	41 En Gc Google Cloud	42 En Ac Atlassian Confluence	43 Os Ch Chef	44 En Acf AWS CloudFormation
55 En Dt Dynatrace	56 En Nr New Relic	57 Fm Dh Docker Hub	58 En Np npm	59 En Ic IBM Cloud	60 En So Stack Overflow	61 Fm Pu Puppet	62 Os Hc HashiCorp Consul
73 Os Gr Grafana	74 Os El Elastic ELK Stack	75 Os Yn Yarn	76 Os Nu NuGet	77 Os Os OpenStack	78 Os Mm Mattermost	79 Os Sa Salt	80 Os Hg HashiCorp Vagrant
81 Os Hp HashiCorp Packer	82 En Gk Google GKE	83 Os Hm Helm	84 En Db DBmaestro	85 En Cfd CloudBees Flow	86 En Acd AWS CodeDeploy	87 Os Sn Snort	88 Fm Pbs PortSwigger Burp Suite
90 Os Cf Cloud Foundry	91 En Gf Google Firebase	92 En He Heroku	93 En Cx Checkmarx SAST	94 En Sb Synopsys Black Duck	95 En Od Octopus Deploy	96 Os Sk Spinnaker	97 Os Qt Quest Toad
98 Fm Azf Azure Functions	99 En Ff Micro Focus Fortify SCA	100 En Sr SonarQube	101 Os Vc Veracode	102 En Ha Harness	103 Os Id IDERA	104 En De Docker Enterprise	105 En Ak Amazon EKS
106 En Ku Kubernetes	107 En Rho Red Hat OpenShift	108 En Dk Docker	109 Os Ht HashiCorp Terraform	110 En Rha Red Hat Ansible	111 En Mt Microsoft Teams	112 En Sl Slack	113 En Aws AWS
114 En Ja JFrog Artifactory	115 En Dd Datadog	116 Pd In Instana					
117 En Br Broadcom Rally	118 En Pv Planview						
119 En Tp Targetprocess							
120 En Aja Atlassian Jira Align							



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are now Digital.ai

91 Os	92 En	93 Os	94 Os	95 Fm	96 Os	97 Pd	98 Os	99 En	100 Os	101 En	102 Pd	103 En	104 Pd	105 Os
Jn Jenkins	Azc Azure DevOps Code	Glc GitLab CI	Tr Travis CI	Cc CircleCI	Mv Maven	Ab Atlassian Bamboo	Gd Gradle	Acb AWS CodeBuild	Aj Atlassian Jira	Bi BMC Helix ITSM	At Atlassian Trello	Sw ServiceNow	Td TOPdesk	Pd PagerDuty
106 Fr	107 Pd	108 Fr	109 Fr	110 Pd	111 En	112 En	113 Os	114 Fr	115 Fr	116 Pd	117 En	118 En	119 En	120 Os
Tt Tricentis Tosca	Nn Neotys NeoLoad	Se Selenium	Ju JUnit	Sl Sauce Labs	Ct Compware Topaz	Ap Applium	Sq Squash TM	Cu Cucumber	Jm JMeter	Pa Parasoft	Dai Digital.ai	Tp Tasktop	Pr Plutora	Gl GitLab