



**Maintenance.  
Automated.**



## Roman Bertolami

Solution Architect and Partner

### Focus

- Solution Architecture
- Machine Learning & AI
- Innovation
- Cloud Computing
- Coaching & Teaching

### CV

- 2019 - today  
dsi engineering ag
- 2008 - 2019  
Zühlke Engineering AG
- 2004 - 2008  
PhD Uni Bern
- 1999 - 2004  
Uni Bern



# **Problem statement**



**Software does not change...**

**...but the world around it does**

## **Continuing Change**

---

**A program that is used [...] undergoes continual change or becomes progressively less useful.**

**The change or decay process continues until it is judged more cost effective to replace the system with a recreated version.**

**Laws of Program Evolution, Lehman, 1980**

# Reasons that require changes

## Requirements

- New user needs
- Regulatory changes
- Increase of load
- ...

## Dependencies

- Changes in systems/APIs we depend
- Security vulnerabilities
- New versions of frameworks, libraries & platforms
- New hardware
- ...



How do you handle  
this problem in  
your organisation?





# Reasons that require changes

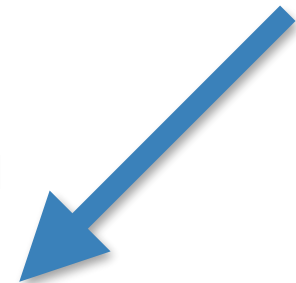
## Focus today

### Requirements

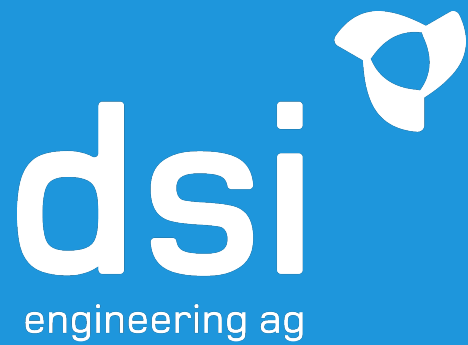
- New user needs
- Regulatory changes
- Increase of load
- ...

### Dependencies

- Changes in systems/APIs we depend
- **Security vulnerabilities**
- **New versions of frameworks, libraries & platforms**
- New hardware
- ...



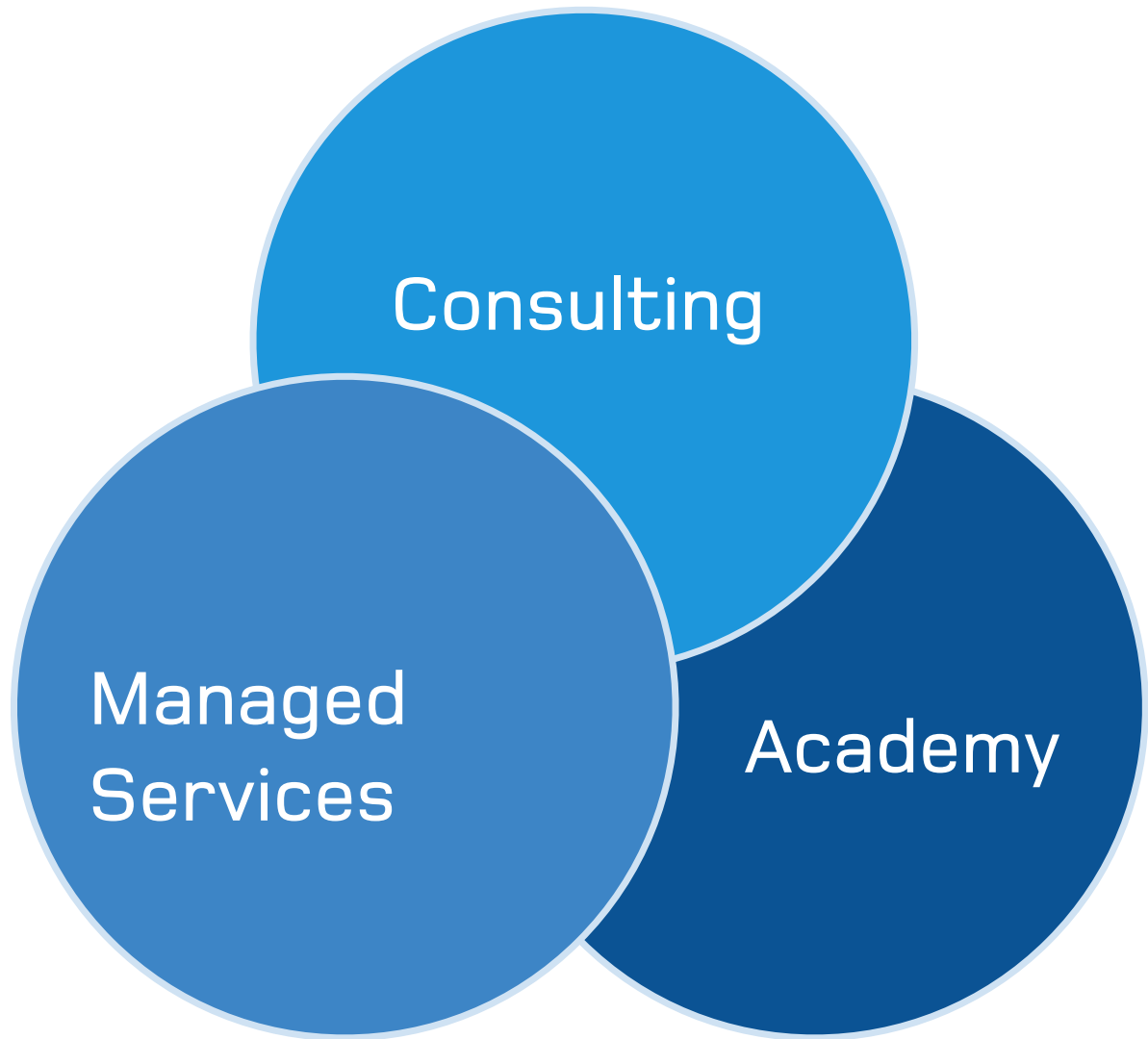
managed services  
by  
dsi engineering ag



*Wir helfen unseren Partnern  
intelligente Services zu entwickeln.*

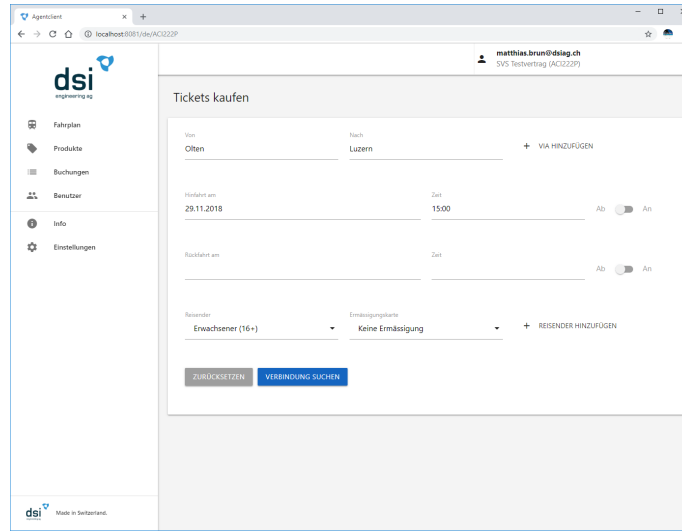
[www.dsiag.ch](http://www.dsiag.ch)

Our business  
model



# Managed Services





# Public Transport



## Ihre Sparbillette von Schönenwerd SO

Fr., 07.10.2022, Abfahrt 08:00, Halbtax, Ändern

Wir haben folgende Reiseziele für Sie gefunden:

 <p><b>Solothurn.</b> Die schöne Barockstadt an der Aare: sympathische Altstadt mit einem lebendigen Kultur- und Gastronomie-Angebot.</p> <p>Sparbillette anzeigen →</p>	 <p><b>Basel.</b> Wenn die Chemie stimmt: vielfältige Museen, eine schöne Altstadt und der Rhein laden zum Verweilen ein.</p> <p>Sparbillette anzeigen →</p>	 <p><b>Luzern.</b> Wenn See und Berge verschmelzen: die Kapellbrücke, die Altstadt, der Vierwaldstättersee und ganz viel Lebensgefühl.</p> <p>Sparbillette anzeigen →</p>	 <p><b>Biel/Bienne.</b> Die Stadt, die zwetsprachig tickt: rein in die gemütliche Altstadt und raus zu den Weinbergen am Bielersee.</p> <p>Sparbillette anzeigen →</p>
---	---	--	---

Soll Original	Ist Original	Alternative 1
07:11 ●●●●●●●●●● 10:14	07:11 ●●●●●●●●●● 10:14 <span style="color:red">A</span> <span style="color:red">B</span>	07:11 ●●●●●●●●●● 10:51 <span style="color:red">C</span> <span style="color:red">D</span>
	Echtzeit verfügbar - Ausfall, Anschlussbruch oder über 60 min verspätet	Echtzeit verfügbar, unter 60 min verspätet
07:11   Schönenwerd SO, Gleis 1 S 26 8624 07:21   Olten, Gleis 3CD	07:11   Schönenwerd SO, Gleis 1 S 26 8624 07:21   Olten, Gleis 3CD	07:11   Schönenwerd SO, Gleis 1 S 26 8624 07:21   Olten, Gleis 3CD
8 min  Umsteigen	8 min  Umsteigen	8 min  Umsteigen
07:29   Olten, Gleis 11 IC 61 959 07:56   Bern, Gleis 5	07:29   Olten, Gleis 11 IC 61 959 07:56   Bern, Gleis 5	07:29   Olten, Gleis 11 IC 61 959 07:56   Bern, Gleis 5
11 min  Umsteigen	11 min  Umsteigen	11 min  Umsteigen
08:07   Bern, Gleis 6 IC 8 806 09:02   Visp, Gleis 7	08:07   Bern, Gleis 6 <span style="color:red">A</span> <span style="color:red">C</span> IC 8 806 09:02   Visp, Gleis 7 <span style="color:red">+3'</span>	08:07   Bern, Gleis 6 <span style="color:red">C</span> IC 8 806 09:02   Visp, Gleis 7 <span style="color:red">+3'</span>
6 min  Umsteigen	6 min  Umsteigen	39 min  Umsteigen
09:08   Visp, Gleis 3 R 221 10:14   Zermatt, Gleis 4	09:08   Visp, Gleis 3 <span style="color:red">C</span> R 221 10:14   Zermatt, Gleis 4 <span style="color:red">+12'</span>	09:41   Visp, Gleis 3 <span style="color:red">C</span> R 323 10:51   Zermatt, Gleis 5 <span style="color:red">+5'</span>

## Meine Reisetage verwalten

Swiss Travel Pass Flex 3 Tage E-Ticket, 1. Klasse, Max Mustermann

Referenz-Nr: 97784955  
 Gültigkeit: 22. Juli 2019 - 21. Aug. 2019  
 Gekaufte Tage: 3  
 Bezogene Tage: 2  
 Aktivierte Tage: 0  
 Verbleibende Tage: 1

Juli				2019		
MO	DI	MI	DO	FR	SA	SO
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

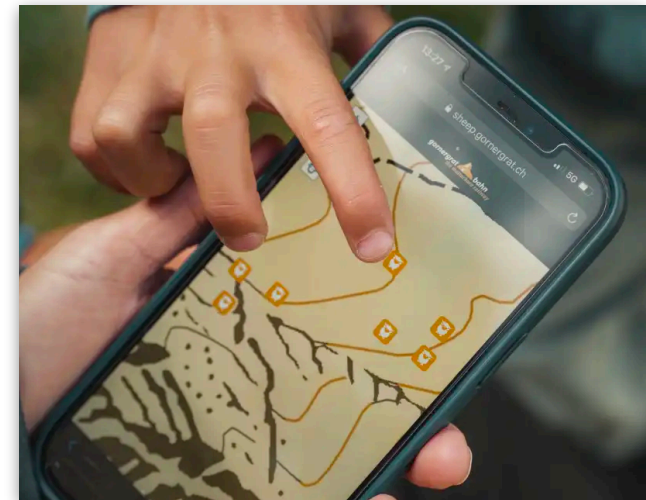
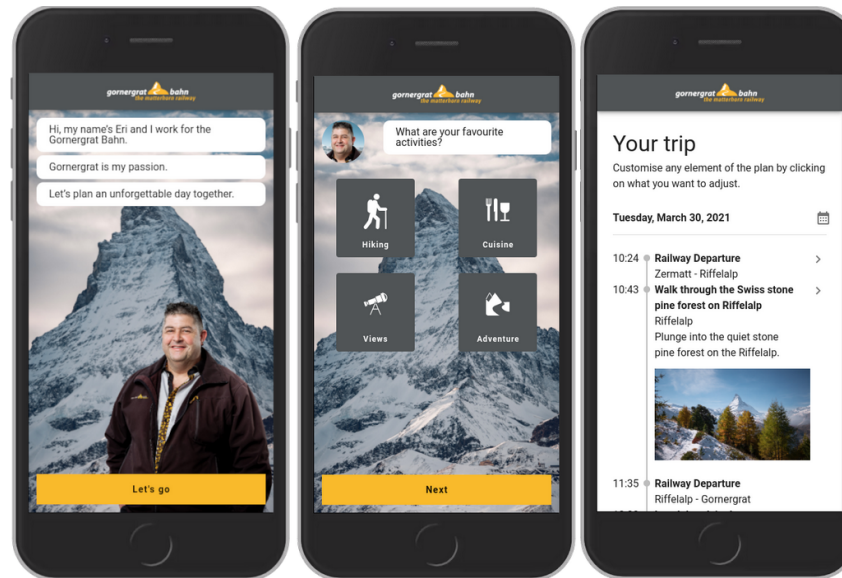
### Verwalten Sie Ihre Flex-Tage

- Wählen Sie Ihre gewünschten Reisetage durch Klick auf das entsprechende Datum. Ein gewählter Tag kann durch erneutes Anklicken abgewählt werden. **Wichtig:** Jede Wahl/Abwahl mittels Klick auf "Tickets aktivieren/deaktivieren" bestätigen.
- Jeder Reisetag muss spätestens vor Antritt der Reise aktiviert werden. Ein aktiviertes Ticket kann am Reisetag nicht mehr deaktiviert werden.
- Unter "Meine Tickets" finden Sie pro aktivierten Reisetag Ihr gültiges Ticket. Bitte bei der Kontrolle vorweisen.

Tickets aktivieren/deaktivieren



# Managed Services Tourism



# Managed Services Logistics

AKL Felben

Belegnummer: 452897-LB04-L

Auto Dispo

**AUFTRAG**  
Beleg-Nr.: PL0007157166  
Gepickt: 0/7  
Mandant: 0  
Dispo-Nr: 124334  
Lauf-Nr: X  
Rückentblock: X  
Lieferdatum: 2021-03-29

**PICKEN**  
2 / 54 ST  
Pid: 219147  
Nr: UNN 24055006  
Artikel: Adapter G 3/4" Messing vernickelt

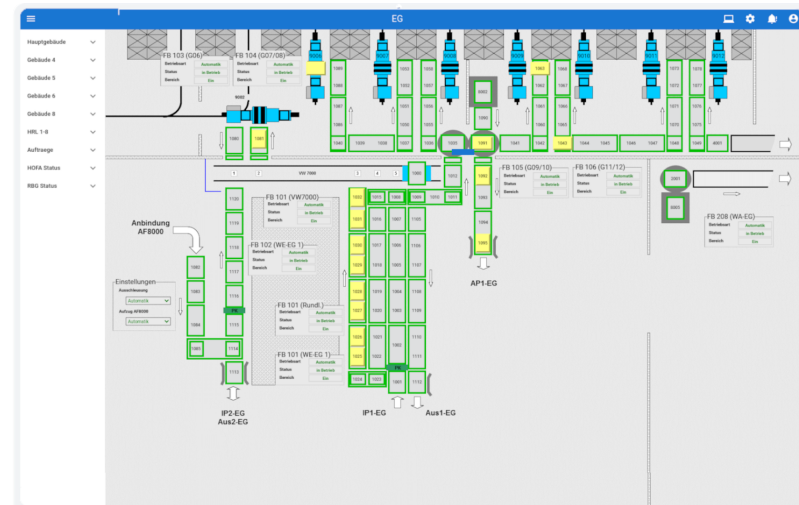
**ZIELBEHÄLTER**  
Zielbehälter auswählen  
Nr: -

ZIELBEHÄLTER AUSWÄHLEN FEHLMENGE

PICK BESTÄTIGEN

130136 219147 219515 218850

WEGFAHREN



# Our technologies

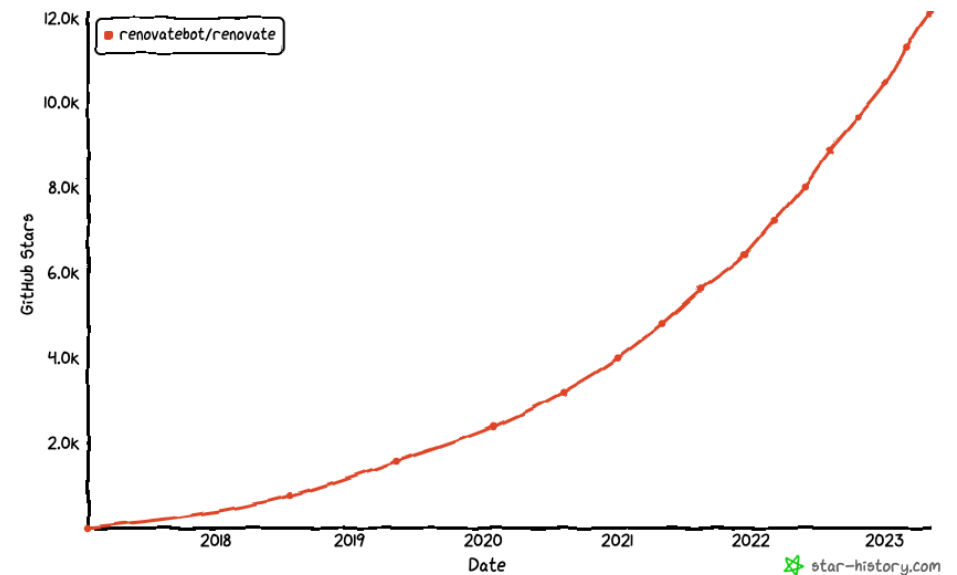




# Renovate Bot

# Why use Renovate? (by Renovate)

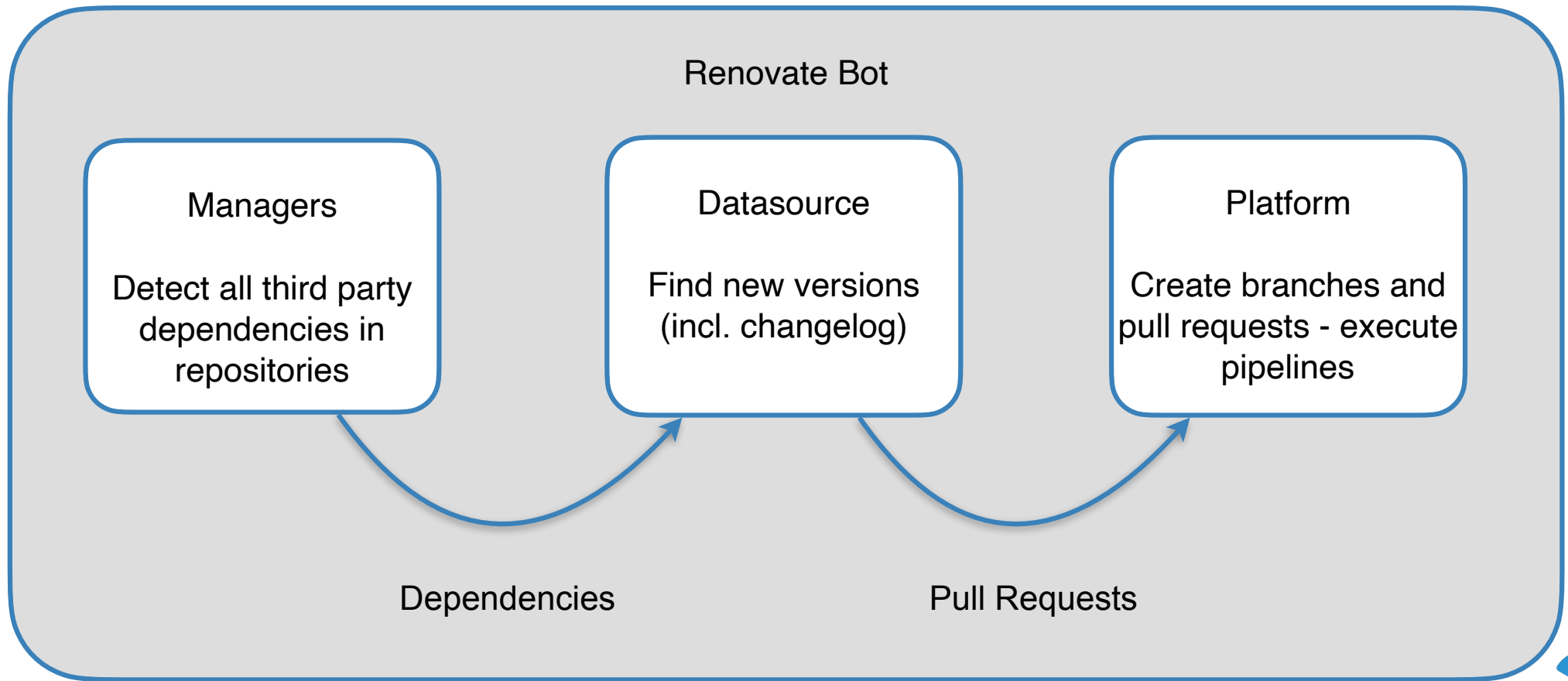
- Open source as npm package or docker image
- Get pull requests to update your dependencies and lock files
- Reduce noise by scheduling when Renovate creates PRs
- Renovate finds relevant package files automatically, including in monorepos
- You can customize the bot's behavior with configuration file



<https://docs.renovatebot.com/>



# System Overview



# Managers

**Detect all third party dependencies in repositories**

# Manager Example: Maven



## Automated Dependency Updates for Maven



Renovate supports updating Maven dependencies.

### File Matching

By default, Renovate will check any files matching any of the following regular expressions:

```
(^|/|\.)pom\.xml$  
^(((\.\mvn)|(\.m2))/?)?settings\.xml$
```



For details on how to extend a manager's `fileMatch` value, please follow [this link](#).

### Supported datasources

This manager supports extracting the following datasources: [maven](#).

### References## Default config

```
{  
  "fileMatch": [  
    "(^|/|\.\.)pom\.xml$",  
    "^(((\.\mvn)|(\.m2))/?)?settings\.xml$" ] ,  
  "versioning": "maven"  
}
```



### Additional Information

The `maven` manager focuses on extracting dependencies from `pom.xml`. It uses the official Maven versioning scheme.

# Supported Managers

**docker:** `ansible`, `docker-compose`, `dockerfile`, `droneci`, `gitlabci`, `kubernetes`, `woodpecker`

**dotnet:** `cake`, `nuget`

**elixir:** `mix`

**golang:** `gomod`

**java:** `gradle`, `maven`, `osgi`

**js:** `meteor`, `npm`

**node:** `nodenv`, `nvm`, `travis`

**php:** `composer`

**python:** `pip-compile`, `pip_requirements`, `pip_setup`, `pipenv`, `poetry`, `pyenv`, `setup-cfg`

**ruby:** `bundler`, `puppet`, `ruby-version`

**rust:** `cargo`

**other:** `ansible-galaxy`, `argocd`, `asdf`, `azure-pipelines`, `batect`, `batect-wrapper`, `bazel`, `bazelisk`, `bicep`, `bitbucket-pipelines`, `buildkite`, `cdnurl`, `circleci`, `cloudbuild`, `cocoapods`, `conan`, `deps-edn`, `fleet`, `flux`, `fvm`, `git-submodules`, `github-actions`, `gitlabci-include`, `gradle-wrapper`, `helm-requirements`, `helm-values`, `helmfile`, `helmsman`, `helmv3`, `hermit`, `homebrew`, `html`, `jenkins`, `jsonnet-bundler`, `kotlin-script`, `kustomize`, `leiningen`, `maven-wrapper`, `mint`, `nix`, `pre-commit`, `pub`, `regex`, `sbt`, `swift`, `tekton`, `terraform`, `terraform-version`, `terragrunt`, `terragrunt-version`, `tflint-plugin`, `velaci`



## Dependency Extraction by Managers

```
INFO: Dependency extraction complete (repository=dsdiag/pare-timetable, baseBranch=master)
  "stats": {
    "managers": {
      "docker-compose": {"fileCount": 1, "depCount": 1},
      "kustomize": {"fileCount": 2, "depCount": 2},
      "maven": {"fileCount": 3, "depCount": 18},
      "npm": {"fileCount": 2, "depCount": 19}
    },
    "total": {"fileCount": 8, "depCount": 40}
  }
```



# Datasources

Find new versions  
(incl. changelog)



# Datasource Example:

## Maven



## Maven Datasource



**Identifier:** `maven`

**Default versioning:** `maven`

**Custom registry support:**

Custom registries are supported.

**Description:**

### Making your changelogs fetchable

In case you are publishing artifacts and you want to ensure that your changelogs are fetchable by `Renovate`, you need to configure the `scm section` on their `pom.xml` file.

For example:

```
<scm>
  <url>scm:git:https://github.com/path_to_repository</url>
</scm>
```



This is what allows `Renovate` to determine the `sourceUrl`, that it then uses to fetch the changelogs.

#### Note

This also works for private repositories. It can leverage the same `token` that you had to configure in order to be able to reach the private Artifactory.

# Supported Datasources



artifactory  
aws-machine-image  
aws-rds  
azure-bicep-resource  
azure-pipelines-tasks  
bazel  
bitbucket-tags  
cdnjs  
clojure  
conan  
conda  
cpan  
crate  
dart  
dart-version  
deno  
→ docker  
dotnet-version  
flutter-version  
galaxy  
galaxy-collection  
git-refs  
git-tags  
github-release-attachments  
github-releases  
github-tags

gitlab-packages  
gitlab-releases  
gitlab-tags  
go  
golang-version  
gradle-version  
helm  
hermit  
hex  
hexpm-bob  
java-version  
jenkins-plugins  
kubernetes-api  
→ maven  
→ node-version  
npm  
nuget  
orb  
packagist  
pod  
puppet-forge  
pypi  
repology  
ruby-version  
rubygems  
sbt-package  
sbt-plugin  
terraform-module  
terraform-provider

# Datasource version fetching

```
"maven": [  
  {  
    "datasource": "maven",  
    "packageFile": "backend/pom.xml",  
    "deps": [  
      {  
        "datasource": "maven",  
        "depName": "org.springframework.boot:spring-boot-starter-parent",  
        "currentValue": "3.0.2",  
        "fileReplacePosition": 403,  
        "registryUrls": ["https://repo.maven.apache.org/maven2"],  
        "depType": "parent",  
        "depIndex": 0,  
        "updates": [  
          {  
            "bucket": "non-major",  
            "newVersion": "3.0.6",  
            "newValue": "3.0.6",  
            "releaseTimestamp": "2023-04-20T11:15:22.000Z",  
            "newMajor": 3,  
            "newMinor": 0,  
            "updateType": "patch",  
            "branchName": "renovate/spring-boot"  
          }  
        ],  
        "warnings": [],  
        "versioning": "maven",  
        "sourceUrl": "https://github.com/spring-projects/spring-boot",  
        "registryUrl": "https://repo.maven.apache.org/maven2",  
        "homepage": "https://spring.io/projects/spring-boot",  
        "currentVersion": "3.0.2",  
        "isSingleVersion": true,  
        "fixedVersion": "3.0.2"  
      }  
    ],  
    "warnings": [],  
    "versioning": "maven",  
    "sourceUrl": "https://github.com/spring-projects/spring-boot",  
    "registryUrl": "https://repo.maven.apache.org/maven2",  
    "homepage": "https://spring.io/projects/spring-boot",  
    "currentVersion": "3.0.2",  
    "isSingleVersion": true,  
    "fixedVersion": "3.0.2"  
  }  
],
```

# Platforms

**Create branches & pull requests**

**Execute pipelines**

# Supported Platforms



AWS CodeCommit



**GitHub**



**GitLab**



**Bitbucket**



**Gitea**



Azure DevOps

# Pull Request Management by Platform

```
DEBUG: processRepo() (repository=dsdiag/pare-timetable)
DEBUG: Processing 5 branches: renovate/com.google.cloud-spring-cloud-gcp-dependencies-4.x, renovate/feign-monorepo, renovate/major
DEBUG: Calculating hourly PRs remaining (repository=dsdiag/pare-timetable)
DEBUG: getPrList() (repository=dsdiag/pare-timetable)
DEBUG: Retrieving PR list (repository=dsdiag/pare-timetable)
DEBUG: Retrieved Pull Requests, count: 279 (repository=dsdiag/pare-timetable)
DEBUG: currentHourStart=2023-05-03T08:00:00.000+00:00 (repository=dsdiag/pare-timetable)
DEBUG: PR hourly limit remaining: 2 (repository=dsdiag/pare-timetable)
DEBUG: Calculating prConcurrentLimit (20) (repository=dsdiag/pare-timetable)
DEBUG: getBranchPr(renovate/spring-boot) (repository=dsdiag/pare-timetable)
DEBUG: findPr(renovate/spring-boot, undefined, open) (repository=dsdiag/pare-timetable)
DEBUG: getPrList() (repository=dsdiag/pare-timetable)
DEBUG: Found PR #241 (repository=dsdiag/pare-timetable)
DEBUG: getBranchPr(renovate/com.google.cloud-spring-cloud-gcp-dependencies-4.x) (repository=dsdiag/pare-timetable)
DEBUG: findPr(renovate/com.google.cloud-spring-cloud-gcp-dependencies-4.x, undefined, open) (repository=dsdiag/pare-timetable)
DEBUG: getPrList() (repository=dsdiag/pare-timetable)
DEBUG: Found PR #272 (repository=dsdiag/pare-timetable)
DEBUG: getBranchPr(renovate/org.springdoc-springdoc-openapi-ui-1.x) (repository=dsdiag/pare-timetable)
```



# Configuration

# Configuration - Renovate

```
renovate / config.js
1  module.exports = {
2    platform: "bitbucket",
3    username: process.env.USERNAME,
4    password: process.env.PASSWORD,
5    baseDir: `${process.env.BITBUCKET_CLONE_DIR}/renovate`,
6    repositories: [
7      "dsdiag/agenturclient",
8      "dsdiag/activationwebsite",
9      "dsdiag/pare-timetable",
10     "dsdiag/visu",
11     "dsdiag/website",
12     "dsdiag/renovate"
13   ],
14   "onboardingConfig": { "extends": ["config:base"] }
15 }
16
```





# Configuration - Project

```
pare-timetable / renovate.json
1 {
2   "$schema": "https://docs.renovatebot.com/renovate-schema.json",
3   "extends": ["config:base", ":prConcurrentLimit20"],
4   "timezone": "Europe/Berlin",
5   "gitAuthor": "renovate@dsiag.ch",
6   "packageRules": [
7     {
8       "matchDepTypes": ["devDependencies"],
9       "automerge": true
10    },
11    {
12      "matchDepTypes": ["test"],
13      "matchManagers": ["maven"],
14      "automerge": true
15    },
16    {
17      "matchPaths": ["uitests"],
18      "automerge": true
19    }
20  ]
21 }
22
```

```
activationwebsite / renovate.json
1 {
2   "$schema": "https://docs.renovatebot.com/renovate-schema.json",
3   "extends": ["config:base", ":prConcurrentLimit20"],
4   "timezone": "Europe/Berlin",
5   "gitAuthor": "renovate@dsiag.ch",
6
7   "packageRules": [
8     {
9       "packagePatterns": ["^@angular", "^@ng"],
10      "groupName": ["Angular packages"]
11    },
12    {
13      "matchDepTypes": ["devDependencies"],
14      "automerge": true
15    },
16    {
17      "matchDepTypes": ["test"],
18      "matchManagers": ["maven"],
19      "automerge": true
20    },
21    {
22      "matchPaths": ["uitests"],
23      "automerge": true
24    }
25  ]
26 }
27
```

**Automerge**

# Automerge

Updates to packages are merged into the main branch if

- all tests pass
- branch is up-to-date with main branch

```
"packageRules": [  
  {  
    "matchDepTypes": ["devDependencies"],  
    "automerge": true  
  },  
  {  
    "matchDepTypes": ["test"],  
    "matchManagers": ["maven"],  
    "automerge": true  
  },  
  {  
    "matchPaths": ["uitests/**"],  
    "automerge": true  
  }  
]
```

## Automerge - Considerations

renovate must be run multiple times in sequence in order to perform multiple automerges

Reduced risk for devDependencies and or test dependencies.

Depending on test coverage.

Increases significantly the number of pipeline builds



# Demo Time



# Summary

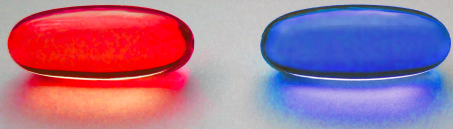
# Benefits

- Have an overview of how much your dependencies are outdated
  - All changes listed
  - Release notes of individual updates
- Automatic check if an update breaks your regression tests
- One-click updates
- Automerge where possible



# Trade-Offs

- Where can I use automerge?
  - How good are my regression tests?
- How often do you update libraries?
  - The more often the smaller the change
  - For major updates not all libraries are yet compatible with the new version





# Challenges



- Often our regression tests fail because of external systems
- If manual merges are not done regularly, the maximum number of pull requests is reached
- Increased number of builds

# Pitfalls

# Artifact Renamed

If a dependency is moved to another group/artifact renovate does not detect it

<pre>&lt;dependency&gt;   &lt;groupId&gt;org.springframework.cloud&lt;/groupId&gt;   &lt;artifactId&gt;spring-cloud-gcp-logging&lt;/artifactId&gt;   &lt;version&gt;\${spring-cloud-gcp.version}&lt;/version&gt; &lt;/dependency&gt;</pre>	<pre>107 108 109 110 111</pre>	<pre>113 ⬆ 114 115 116</pre>	<pre>&lt;dependency&gt;   &lt;groupId&gt;com.google.cloud&lt;/groupId&gt;   &lt;artifactId&gt;spring-cloud-gcp-starter-logging&lt;/artifactId&gt; &lt;/dependency&gt;</pre>
<pre>&lt;dependency&gt;   &lt;groupId&gt;io.micrometer&lt;/groupId&gt;   &lt;artifactId&gt;micrometer-registry-stackdriver&lt;/artifactId&gt; &lt;/dependency&gt;</pre>	<pre>112 ⬆ 113 114 115</pre>	<pre>117 118 ⬆ 119 120 121</pre>	<pre>&lt;dependency&gt;   &lt;groupId&gt;com.google.cloud&lt;/groupId&gt;   &lt;artifactId&gt;spring-cloud-gcp-starter-metrics&lt;/artifactId&gt; &lt;/dependency&gt;</pre>



# Abandoned Project

If a dependency is no longer maintained and should be replaced renovate does not detect it

Considering using Moment in your project?  
*There may be better modern alternatives.*  
For more details and recommendations,  
please see [Project Status](#) in the docs.



# Platform Constraints

Avoid to reach the maximum number of Pull Requests

Consider the maximum number of parallel builds that your CI/CD system can execute



# Alternatives

## Alternatives



- Strong focus on security
- Additional features e.g. licence check
- Pricing is different



# Alternatives



**Dependabot**

- Mainly for github
- Easier but less features, supported languages and configurations

Auto-merge was disabled on the Dependabot into GitHub:

Auto-merge will not be supported in GitHub-native Dependabot for the foreseeable future. We know some of you have built great workflows that rely on auto-merge, but right now, we're concerned about auto-merge being used to quickly propagate a malicious package across the ecosystem. We recommend always verifying your dependencies before merging them.





# Alternatives

## OS scanning



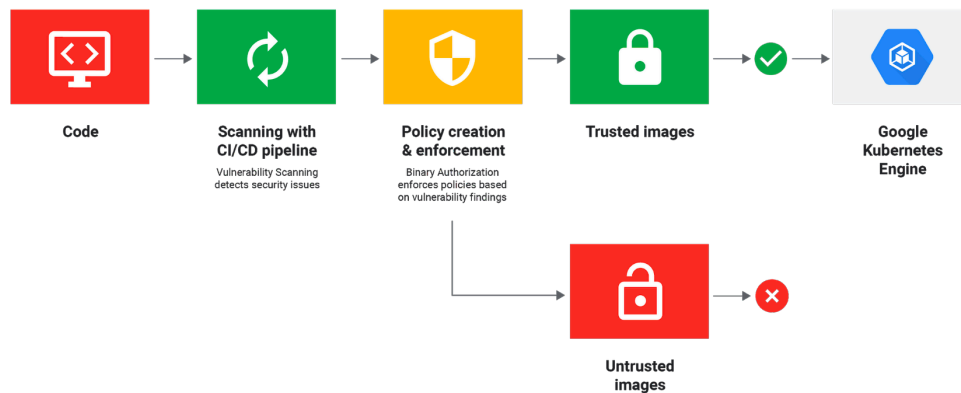
Container Analysis > Container Analysis documentation > Guides

## Scan images for OS vulnerabilities automatically

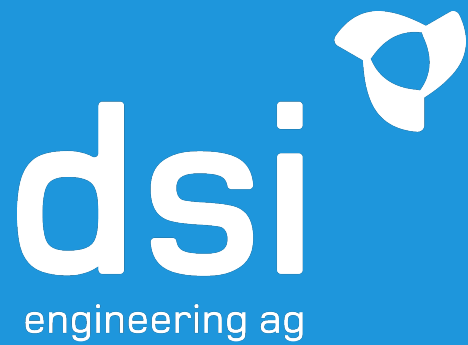
Container Analysis provides vulnerability information for the container images in Container Registry and Artifact Registry. The metadata is stored as [notes](#). An [occurrence](#) is created for each instance of a note associated with an image. See the [overview](#) and [pricing](#) documents for more information.

In this document you will learn how to enable the Container Analysis scanning API, push an image on Artifact Registry, and see the list of vulnerabilities found in the image.

★ **Note:** Enabling this API also triggers language package scans for Go and Java vulnerabilities.



**Questions?**



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intelligente Services zu entwickeln.*

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# We are hiring



Die dsi engineering ag ist ein junges innovatives Unternehmen und entwickelt partnerschaftlich innovative intelligente Software. Unsere Kunden sind führende, innovative Unternehmen aus den Branchen ÖV, Logistik und der Finanzdienstleistung.

Zur Erweiterung unseres Teams suchen wir per sofort oder nach Vereinbarung eine engagierte und innovative Persönlichkeit als

## **Software Engineer / Architect 80-100% (m/w/d)**

### **Deine Herausforderung**

Du unterstützt uns und unsere Kunden bei der Entwicklung von innovativer und qualitativ hochwertiger Software. Entweder im Mandat beim Kunden oder bei Projekten unter unserer Verantwortung an einem von dir gewählten Arbeitsort.

Wir betreiben und pflegen viel der von uns entwickelten Software selbst. Du hilfst mit einem reibungslosen Betrieb sicherzustellen und die Qualität der Software im Betrieb laufend zu verbessern.

### **Dein Profil**

Für diese spannende und abwechslungsreiche Tätigkeit suchen wir eine motivierte, selbständige und pragmatische Persönlichkeit. Du bringst dich gerne gewinnbringend für das Unternehmen ein, bist proaktives Handeln und selbständiges Arbeiten gewohnt und verfügst über ein ausgeprägtes Qualitätsbewusstsein.

Du verfügst über folgende Fähigkeiten und Erfahrungen:

- Abgeschlossenes Informatikstudium (FH/Uni/ETH/EPFL) oder vergleichbare Ausbildung
- Mindestens 2 Jahre Erfahrung in der Software-Entwicklung
- Professionelle, selbständige und pragmatische Arbeitsweise
- Unser Techstack ist Java / Spring Boot / Kotlin / JavaScript / Vue.js / Nuxt
- Unsere Software betreiben wir Cloud Native in der Google Cloud, mit und ohne Kubernetes

### **Deine Perspektive**

- Du übernimmst Verantwortung in spannenden Projekten
- Wir bieten dir Weiterbildung: Du musst mindesten 5 und darfst bis zu 15 Tage deiner Arbeitszeit in deine persönliche Weiterbildung investieren. Zusätzlich unterstützen wir dich mit einem Weiterbildungsbudget.
- Jährlich kümmern wir uns in einem mehrtätigen Retreat um uns und die Firma.
- Du kannst Einfluss auf die weitere Entwicklung des Unternehmens nehmen.  
Über unser Beteiligungsmodell besteht die Möglichkeit in Zukunft Partner zu werden.
- Flexible Anstellungsbedingungen sind selbstverständlich

Fühlst du dich angesprochen und möchtest Teil unseres Teams werden?

Dann freuen wir uns auf deine elektronische Bewerbung (inkl. Gehaltsvorstellungen und möglichem Eintrittstermin). Bitte schicke dein komplettes Dossier an [info@dsiag.ch](mailto:info@dsiag.ch)