



# Viglet Turing ES

## *Developer Guide*

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# Preface

Viglet Turing ES (<https://viglet.com/turing>) is an open source solution (<https://github.com/openturing>), which has Semantic Navigation and Chatbot as its main features. You can choose from several NLPs to enrich the data. All content is indexed in Solr as search engine.

# Chapter 1. More Documentation

Technical documentation on Turing ES is available at <https://docs.viglet.com/turing>.

# Chapter 2. Development Structure

## 2.1. Frameworks

Turing ES was developed using Spring Boot (<https://spring.io/projects/spring-boot>) for its backend.

The UI is currently using AngularJS (<https://angularjs.org>), but a new UI is being developed using Angular 12 (<https://angular.io>) with Primer CSS (<https://primer.style/css>).

In addition to Java, you also need to have Git (<https://git-scm.com/downloads>) and NodeJS (<https://nodejs.org/en/download/>) installed.

## 2.2. Databases

By default it uses the H2 database (<https://www.h2database.com>), but can be changed to other databases using Spring Boot properties. It comes bundled with OpenNLP (<https://opennlp.apache.org/>) in the same JVM.

## 2.3. Language and Deploy

It uses Java 14 (<https://adoptopenjdk.net/archive.html?variant=openjdk14&jvmVariant=hotspot>) and its deployment is done with Gradle 7.2 (<https://gradle.org/>) and works on Linux and Windows.

## 2.4. Docker

To use Semantic Navigation and Chatbot you must have a Solr (<https://solr.apache.org>) service available. If you prefer to work with all the services Turing depends on, you can use docker-compose (<https://docs.docker.com/compose/install>) to start these services, we use the Docker Desktop (<https://www.docker.com/products/docker-desktop>) installed on computer.

## 2.5. IDE

You can use Spring Tools 4 for Eclipse (<https://spring.io/tools>) or Eclipse (<https://www.eclipse.org/downloads/>) or Visual Studio Code (<https://code.visualstudio.com/>) or IntelliJ (<https://www.jetbrains.com/pt-br/idea/>) as IDEs.

## Chapter 3. Download

Use the git command line to download the repository to your computer.

### 3.1. Turing Server and Connectors

```
git clone https://github.com/openturing/turing.git
```

### 3.2. Turing Java SDK

```
git clone https://github.com/openturing/turing-java-sdk.git
```



# Chapter 4. Run during Development

To run Turing ES, execute the following lines:

## 4.1. Turing Server

### 4.1.1. Development

With UI

```
cd turing
./gradlew turing-app:bootrun
```

Without update UI

```
cd turing
./gradlew turing-app:bootrun -Pno-ui
```

### 4.1.2. New Turing UI

Start the Turing Server using dev-ui profile

```
cd turing
./gradlew turing-app:bootrun --args='--spring.profiles.active=dev-ui' -Pno-ui
```

And start one of the components of turing-ui

```
cd turing/turing-ui

## Console
ng serve console

## Search
ng serve sn

## Chatbot
ng serve converse
```

```
## Chatbot
ng serve welcome
```

**IMPORTANT**

You need start the Turing Server and Solr first.

### 4.1.3. Build

```
cd turing
./gradlew turing-app:build
```

## 4.2. Java SDK

### 4.2.1. Development

```
cd turing-java-sdk
./gradlew shadowJar
java -cp build/libs/turing-java-sdk-all.jar
com.viglet.turing.client.sn.sample.TurSNClientSample
```

**IMPORTANT**

You need start the Turing Server and Solr first.

### 4.3. Build

```
cd turing-java-sdk
./gradlew build
```

Or use the jitpack into your project at <https://jitpack.io/#openturing/turing-java-sdk>

### 4.4. WEM Listener

```
cd turing
./gradlew turing-wem:shadowJar
```

For development, copy the `turing-wem/build/libs/turing-wem-all.jar` into `WEM_DIR/libs` and test the listener using `turing-wem` command line.

**IMPORTANT** | You need start the Turing Server and Solr first and restart WEM

## 4.5. Database Connector

```
cd turing
./gradlew turing-jdbc:shadowJar
```

**IMPORTANT** | You need start the Turing Server and Solr first and restart WEM

## 4.6. Filesystem Connector

```
cd turing
./gradlew turing-filesystem:shadowJar
```

**IMPORTANT** | You need start the Turing Server and Solr first and restart WEM

## 4.7. Nutch

### 4.7.1. Nutch 1.12

```
cd turing/
./gradlew turing-nuch:nutch1_12:packageDistribution
```

For development, copy the files of `turing-nutch/nutch1_12/build/extracted_dist` to `APACHE_NUTCH1_12/plugins/indexer-viglet-turing`

### 4.7.2. Nutch 1.18

```
cd turing/
./gradlew turing-nuch:nutch1_18:packageDistribution
```

For development, copy the files of `turing-nutch/nutch1_18/build/extracted_dist` to `APACHE_NUTCH1_18/plugins/indexer-viglet-turing`

**IMPORTANT** | You need start the Turing Server and Solr first.

# Chapter 5. Docker Compose

You can start the Turing ES using MariaDB, Solr and Nginx.

```
./gradlew turing-app:build -x test -i --stacktrace  
docker-compose up
```

## NOTE

If you have problems with permissions on directories, run `chmod -R 777 volumes`

## 5.1. Docker Commands

### 5.1.1. Turing

```
docker exec -it turing /bin/bash
```

### 5.1.2. Solr

```
docker exec -it turing-solr /bin/bash
```

Check logs

```
docker-compose exec turing-solr cat /opt/solr/server/logs/solr.log  
# or  
docker-compose exec turing-solr tail -f /opt/solr/server/logs/solr.log
```

### 5.1.3. MariaDB

```
docker exec -it turing-mariadb /bin/bash
```

### 5.1.4. Nginx

```
docker exec -it turing-nginx /bin/bash
```

## Chapter 6. URLs

### 6.1. Turing Server

- Administration Console: <http://localhost:2700>. (admin/admin)
- Semantic Navigation Sample: <http://localhost:2700/sn/Sample>.

### 6.2. New Turing UI

- Welcome <http://localhost:4200/welcome>
- Console <http://localhost:4200/console>
- Search Page [http://localhost:4200/sn/template?\\_setsite=Sample&\\_setlocale=en\\_US](http://localhost:4200/sn/template?_setsite=Sample&_setlocale=en_US)
- Converse <http://localhost:4200/converse>

### 6.3. Docker Compose

- Administration Console: <http://localhost>. (admin/admin)
- Semantic Navigation Sample: <http://localhost/sn/Sample>.
- Solr: <http://localhost:8983>

### 6.4. Code Quality

You can check the quality of Turing Code at:

- SonarCloud at <https://sonarcloud.io/organizations/viglet-turing/projects>
- Github Actions at <https://github.com/openturing/turing/actions>
- Github Security at <https://github.com/openturing/turing/security/code-scanning>
- Codecov at <https://app.codecov.io/gh/openturing/turing>

# Chapter 7. Installation Modes

## 7.1. Turing ES Server

### 7.1.1. Simple.

Turing ES will be installed only using OpenNLP and H2 database embedded in Turing ES itself.

#### Prerequisites

1. Linux server
2. Java 14
3. 50Gb HDD
4. 2 Gb of RAM

#### Target Audience

Development and testing environment. Because it requires fewer components and lower memory usage.

#### Estimated Hours

2 hours

**IMPORTANT** | Servers will be provided by the customer.

### 7.1.2. Docker Compose

Turing ES and its dependencies will be installed using Docker Compose script, including the following services:

- MariaDB – to store Turing ES system tables
- Solr – Used by Turing ES's Semantic Navigation and Chatbot
- Nginx – WebServer for Turing ES to use port 80



- Turing ES.

### Prerequisites

1. Linux server
2. Docker and Docker Compose installed
3. 50Gb HDD
4. 4Gb of RAM

### Target Audience

Customers who need more complex environments, but avoid the installation and configuration of each product. It can be used in an QA or Production environment.

### Estimated Hours

16 hours

**IMPORTANT** Servers and docker configuration will be provided by the customer.

## 7.1.3. Kubernetes

Turing ES and its dependencies will be installed using Kubernetes scripts, including the following services:

- MariaDB – to store Turing ES system tables
- Solr – Used by Turing ES's Semantic Navigation and Chatbot
- Nginx – WebServer for Turing ES to use port 80
- Turing ES.

### Prerequisites

1. Linux Server with Kubernetes installed or Cloud that supports Kubernetes
2. 100Gb of Storage
3. 4Gb RAM

### Target Audience

Customers who want to use cloud solutions like Google, AWS, Oracle, etc. It can be used in the production environment in a scalable way.

### Estimated Hours

20 hours

#### **IMPORTANT**

Cloud infrastructure and servers will be provided by the customer.

### 7.1.4. Manual Installation of Services

The services will be installed individually on the servers following the Installation Guide procedure, which will include the following services:

- MariaDB – to store Turing ES system tables
- Solr – Used by Turing ES's Semantic Navigation and Chatbot
- Apache – WebServer for Turing ES to use port 80
- Turing ES.

### Prerequisites

1. One Linux server or up to 4 Linux servers to install services
2. 50 - 100Gb of Storage for each server
3. Minimum 2Gb RAM for each Server
4. The services will be installed individually on the servers following the Installation Guide procedure.

### Target Audience

Customers who prefer the on-premise structure and want to have the services installed directly on the servers. It can be used in Development, QA and Production.

### Estimated Hours

20 hours

**IMPORTANT**

Servers will be provided by the customer.

## 7.2. Connectors

Turing ES has several connectors to allow you to index the contents in Semantic Navigation:

- Apache Nutch (Crawler)
- Wordpress
- OpenText WEM Listener
- FileSystem
- Database

### 7.2.1. Prerequisites

1. New linux server or existing server with content or files that will be indexed.
2. 50 of Storage for each server.

### 7.2.2. Estimated Hours

On average, it will take **16 hours** to configure the connector and have the first indexing version in Turing ES.

## 7.3. NLP

The customer can choose the NLP that will be used by Turing ES:

- Apache OpenNLP (Embedded)
- SpaCy NLP
- Stanford CoreNLP
- OpenText Content Analytics
- Poliglot

### 7.3.1. Prerequisites

1. Linux server
2. 50 of Storage for each server
3. Minimum 2 Gb of RAM

### 7.3.2. Estimated Hours

On average, it will take **4 hours** to configure NLP and configure Turing ES to use it.