## **Internal Dependencies**

#### References

- Analyze java package metrics in a graph database
- Calculate metrics
- Neo4j Python Driver

### **Artifacts**

List the artifacts this notebook is based on. Different sorting variations help finding artifacts by their features and support larger code bases where the list of all artifacts gets too long.

Only the top 30 entries are shown. The whole table can be found in the following CSV report: List\_all\_Java\_artifacts

Table 1a - Top 30 artifacts with the highest package count

	artifactName	packages	types	incomingDependencies	outgoingDependencies
0	axon-messaging-4.10.0.jar	64	787	8	0
1	axon-server-connector-4.10.0.jar	11	131	1	4
2	axon-modelling-4.10.0.jar	10	156	6	1
3	axon-eventsourcing-4.10.0.jar	9	133	5	2
4	axon-spring-boot-autoconfigure-4.10.0.jar	9	74	0	7
5	axon-test-4.10.0.jar	8	87	1	3
6	axon-configuration-4.10.0.jar	1	41	2	4
7	axon-disruptor-4.10.0.jar	1	22	1	3
8	axon-tracing-opentelemetry-4.10.0.jar	1	5	1	1

Table 1b - Top 30 artifacts with the highest type count

	artifactName	packages	types	incomingDependencies	outgoingDependencies
0	axon-messaging-4.10.0.jar	64	787	8	0
1	1 axon-modelling-4.10.0.jar		156	6	1
2	<ul><li>axon-eventsourcing-4.10.0.jar</li><li>axon-server-connector-4.10.0.jar</li></ul>	9	133	5	2
3		11	131	1	4
4	axon-test-4.10.0.jar	8	87	1	3
5	axon-spring-boot-autoconfigure-4.10.0.jar	9	74	0	7
6	axon-configuration-4.10.0.jar	1	41	2	4
7	axon-disruptor-4.10.0.jar	1	22	1	3
8	axon-tracing-opentelemetry-4.10.0.jar	1	5	1	1

# Table 1c - Top 30 artifacts with the highest number of incoming dependencies

The following table lists the top 30 artifacts that are used the most by other artifacts (highest count of incoming dependencies, highest in-degree).

	artifactName	packages	types	$incoming {\bf Dependencies}$	outgoingDependencies
0	axon-messaging-4.10.0.jar	64	787	8	0
1	axon-modelling-4.10.0.jar	10	156	6	1
2	axon-eventsourcing-4.10.0.jar	9	133	5	2
3	axon-configuration-4.10.0.jar	1	41	2	4
4	axon-disruptor-4.10.0.jar	1	22	1	3
5	axon-server-connector-4.10.0.jar	11	131	1	4
6	axon-test-4.10.0.jar	8	87	1	3
7	axon-tracing-opentelemetry-4.10.0.jar	1	5	1	1
8	axon-spring-boot-autoconfigure-4.10.0.jar	9	74	0	7

# Table 1d - Top 30 artifacts with the highest number of outgoing dependencies

The following table lists the top 30 artifacts that are depending on the highest number of other artifacts (highest count of outgoing dependencies, highest out-degree).

	artifactName	packages	types	$incoming {\bf Dependencies}$	outgoingDependencies
0	axon-spring-boot-autoconfigure-4.10.0.jar	9	74	0	7
1	axon-configuration-4.10.0.jar	1	41	2	4
2	axon-server-connector-4.10.0.jar	11	131	1	4
3	axon-disruptor-4.10.0.jar	1	22	1	3
4	axon-test-4.10.0.jar	8	87	1	3
5	axon-eventsourcing-4.10.0.jar	9	133	5	2
6	axon-modelling-4.10.0.jar	10	156	6	1
7	axon-tracing-opentelemetry-4.10.0.jar	1	5	1	1
8	axon-messaging-4.10.0.jar	64	787	8	0

Table 1e - Top 30 artifacts with the lowest package count

	artifactName	packages	types	$incoming {\bf Dependencies}$	outgoingDependencies
0	axon-configuration-4.10.0.jar	1	41	2	4
1	axon-disruptor-4.10.0.jar	1	22	1	3
2	axon-tracing-opentelemetry-4.10.0.jar	1	5	1	1
3	axon-test-4.10.0.jar	8	87	1	3
4	axon-eventsourcing-4.10.0.jar	9	133	5	2
5	axon-spring-boot-autoconfigure-4.10.0.jar	9	74	0	7
6	axon-modelling-4.10.0.jar	10	156	6	1
7	axon-server-connector-4.10.0.jar	11	131	1	4
8	axon-messaging-4.10.0.jar	64	787	8	0

Table 1f - Top 30 artifacts with the lowest type count

	artifactName	packages	types	$incoming {\bf Dependencies}$	outgoingDependencies
0	axon-tracing-opentelemetry-4.10.0.jar	1	5	1	1
1	<ul><li>axon-disruptor-4.10.0.jar</li><li>axon-configuration-4.10.0.jar</li></ul>		22	1	3
2			41	2	4
3	3 axon-spring-boot-autoconfigure-4.10.0.jar	9	74	0	7
4	axon-test-4.10.0.jar	8	87	1	3
5	axon-server-connector-4.10.0.jar	11	131	1	4
6	axon-eventsourcing-4.10.0.jar	9	133	5	2
7	axon-modelling-4.10.0.jar	10	156	6	1
8	axon-messaging-4.10.0.jar	64	787	8	0

# Table 1g - Top 30 artifacts with the lowest number of incoming dependencies

The following table lists the top 30 artifacts that are used the least by other artifacts (lowest count of incoming dependencies, lowest in-degree).

	artifactName	packages	types	$incoming {\bf Dependencies}$	outgoingDependencies
axon-spring-boot-autoconfigu	axon-spring-boot-autoconfigure-4.10.0.jar	9	74	0	7
1	axon-disruptor-4.10.0.jar	1	22	1	3
2	axon-server-connector-4.10.0.jar	11	131	1	4
3	axon-test-4.10.0.jar	8	87	1	3
4	axon-tracing-opentelemetry-4.10.0.jar	1	5	1	1
5	axon-configuration-4.10.0.jar	1	41	2	4
6	axon-eventsourcing-4.10.0.jar	9	133	5	2
7	axon-modelling-4.10.0.jar	10	156	6	1
8	axon-messaging-4.10.0.jar	64	787	8	0

# Table 1h - Top 30 artifacts with the lowest number of outgoing dependencies

The following table lists the top 30 artifacts that are depending on the lowest number of other artifacts (lowest count of outgoing dependencies, lowest out-degree).

	artifactName	packages	types	incomingDependencies	outgoingDependencies
0	axon-messaging-4.10.0.jar	64	787	8	0
1	axon-modelling-4.10.0.jar	10	156	6	1
2	axon-tracing-opentelemetry-4.10.0.jar	1	5	1	1
3	<b>3</b> axon-eventsourcing-4.10.0.jar		133	5	2
4	axon-disruptor-4.10.0.jar	1	22	1	3
5	axon-test-4.10.0.jar	8	87	1	3
6	axon-configuration-4.10.0.jar	1	41	2	4
7	axon-server-connector-4.10.0.jar	11	131	1	4
8	axon-spring-boot-autoconfigure-4.10.0.jar	9	74	0	7

### Cyclic Dependencies

Cyclic dependencies occur when one package uses a class of another package and vice versa. These dependencies can lead to problems when one of these packages needs to be changed.

### Table 2a - Cyclic Dependencies Overview

Show the top 40 cyclic dependencies sorted by the most promising to resolve first. This is done by calculating the number of forward dependencies (first cycle participant to second cycle participant) in relation to backward dependencies (second cycle participant back to first cycle participant). The higher this rate (approaching 1), the easier it should be to resolve the cycle by focusing on the few backward dependencies.

Only the top 40 entries are shown. The whole table can be found in the following CSV report:

Cyclic Dependencies

#### Columns:

- artifactName identifies the artifact of the first participant of the cycle
- packageName identifies the package of the first participant of the cycle
- dependentArtifactName identifies the artifact of the second participant of the cycle
- dependentPackageName identifies the package of the second participant of the cycle
- forwardToBackwardBalance is between 0 and 1. High for many forward and few backward dependencies.
- numberForward contains the number of dependencies from the first participant of the cycle to the second one
- numberBackward contains the number of dependencies from the second participant of the cycle back to the first one
- someForwardDependencies lists some forward dependencies in the text format "type1 -> type2"
- backwardDependencies lists the backward dependencies in the format "type1 <- type2" that are recommended to get resolved

	artifactName	packageName	dependentArtifactName	dependentPackageName	forwardToBackwardBalance	
0	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	0.900000	
1	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	0.882353	
2	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.tracing	0.875000	
3	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.messaging	0.857143	
4	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.messaging.annotation	0.840000	
5	axon- messaging- 4.10.0	org.axonframework.deadline	axon-messaging-4.10.0	org.axonframework.tracing	0.800000	
6	axon- messaging- 4.10.0	org.axonframework.commandhandling	axon-messaging-4.10.0	org.axonframework.tracing	0.777778	
7	axon- eventsourcing- 4.10.0	org.axonframework.eventsourcing	axon-eventsourcing- 4.10.0	org.axonframework.eventsourcing.eventstore	0.777778	
8	axon- messaging- 4.10.0	org.axonframework.commandhandling.callbacks	axon-messaging-4.10.0	org.axonframework.commandhandling	0.733333	
9	axon-server- connector- 4.10.0	org.axonframework.axonserver.connector.util	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector	0.666667	
10	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.serialization	0.647059	
11	axon- messaging- 4.10.0	org.axonframework.messaging.unitofwork	axon-messaging-4.10.0	org.axonframework.messaging	0.647059	
12	axon-server- connector- 4.10.0	org.axonframework.axonserver.connector.event.axon	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector	0.615385	
13	axon-server- connector- 4.10.0	org.axonframework.axonserver.connector.query	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector	0.571429	
14	axon- messaging- 4.10.0	org.axonframework.eventhandling.async	axon-messaging-4.10.0	org.axonframework.eventhandling	0.538462	
15	axon- messaging- 4.10.0	org.axonframework.eventhandling.replay	axon-messaging-4.10.0	org.axonframework.eventhandling	0.454545	
16	axon-server- connector- 4.10.0	org.axonframework.axonserver.connector	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector.event.util	0.333333	
17	axon-server- connector- 4.10.0	org.axonframework.axonserver.connector.query	axon-server-connector- 4.10.0	org. ax on framework. ax on server. connector. query. s	0.333333	
18	axon- messaging- 4.10.0	org.axonframework.serialization.upcasting.event	axon-messaging-4.10.0	org.axonframework.eventhandling	0.333333	
19	axon- eventsourcing- 4.10.0	org.axonframework.eventsourcing.eventstore.jdbc	axon-eventsourcing- 4.10.0	org.axonframework.eventsourcing.eventstore.jdb	0.317073	
20	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org. ax on framework. eventh and ling. to ken store	0.285714	
21	axon- modelling- 4.10.0	org.axonframework.modelling.command.inspection	axon-modelling-4.10.0	org.axonframework.modelling.command	0.250000	
22	axon- messaging- 4.10.0	org.axonframework.queryhandling.registration	axon-messaging-4.10.0	org.axonframework.queryhandling	0.250000	
23	axon- messaging- 4.10.0	org.axonframework.messaging	axon-messaging-4.10.0	org.axonframework.serialization	0.238095	
24	axon-server- connector- 4.10.0	org.axonframework.axonserver.connector.command	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector	0.222222	
25	axon- messaging- 4.10.0	org.axonframework.messaging.annotation	axon-messaging-4.10.0	org.axonframework.messaging.interceptors	0.200000	

	artifactName	packageName	dependentArtifactName	dependentPackageName	forwardToBackwardBalance
26	axon- modelling- 4.10.0	org.axonframework.modelling.saga	axon-modelling-4.10.0	org.axonframework.modelling.saga.metamodel	0.142857
27	axon- messaging- 4.10.0	org.axonframework.commandhandling.distributed	axon-messaging-4.10.0	org.axonframework.commandhandling.distributed	0.076923

### Table 2b - Cyclic Dependencies Break Down

Lists packages with cyclic dependencies with every dependency in a separate row sorted by the most promising dependency first.

Only the top 40 entries are shown. The whole table can be found in the following CSV report: Cyclic\_Dependencies\_Breakdown

#### **Columns in addition to Table 2a:**

dependency shows the cycle dependency in the text format "type1 -> type2" (forward) or "type2<-type1" (backward)</li>

	artifactName	packageName	dependentArtifactName	dependentPackageName	dependency	fon
0	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	EventProcessorSpanFactory->Span	
1	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	AbstractEventBus\$Builder->SpanFactory	
2	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	DefaultEventProcessorSpanFactory\$Builder->Span	
3	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	DefaultEventProcessorSpanFactory->Span	
4	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	EventMessage<-NestingSpanFactory	
5	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	AbstractEventBus->SpanScope	
6	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	DefaultEventProcessorSpanFactory- >SpanFactory	
7	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	AbstractEventProcessor->Span	
8	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	AbstractEventBus\$Builder->NoOpSpanFactory	
9	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	DefaultEventProcessorSpanFactory- >NoOpSpanFact	
10	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	AbstractEventProcessor\$Builder- >NoOpSpanFactory	
11	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	DefaultEventBusSpanFactory->SpanFactory	
12	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	SubscribingEventProcessor\$Builder- >SpanFactory	
13	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	AbstractEventBus->Span	
14	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	AbstractEventProcessor\$Builder->SpanFactory	
15	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	SimpleEventBus\$Builder->SpanFactory	
16	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	TrackingEventProcessor\$Builder->SpanFactory	
17	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	DefaultEventBusSpanFactory\$Builder- >SpanFactory	
18	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	DefaultEventBusSpanFactory->Span	
19	axon- messaging- 4.10.0	org.axonframework.eventhandling	axon-messaging-4.10.0	org.axonframework.tracing	EventBusSpanFactory->Span	
20	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	GenericQueryMessage->ResponseType	
21	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	StreamingQueryMessage->ResponseType	
22	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	SimpleQueryUpdateEmitter->MultipleInstancesRes	
23	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	QueryMessage->ResponseType	
24	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	SubscriptionQueryMessage->ResponseType	
25	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	SimpleQueryUpdateEmitter- >OptionalResponseType	

	artifactName	packageName	dependentArtifactName	dependentPackageName	dependency	fon
26	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	QueryGateway->ResponseType	
27	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	SimpleQueryUpdateEmitter- >PublisherResponseType	
28	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	QueryResponseMessage<- ConvertingResponseMessage	
29	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	GenericSubscriptionQueryMessage- >ResponseType	
30	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	DefaultQueryGateway->ResponseType	
31	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	QueryGateway->ResponseTypes	
32	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	SimpleQueryUpdateEmitter->ResponseType	
33	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	GenericStreamingQueryMessage- >PublisherRespons	
34	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	GenericStreamingQueryMessage->ResponseType	
35	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	QuerySubscription->ResponseType	
36	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.messaging.responsetypes	SimpleQueryBus->ResponseType	
37	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.tracing	DefaultQueryUpdateEmitterSpanFactory\$Builder->	
38	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.tracing	SimpleQueryUpdateEmitter->Span	
39	axon- messaging- 4.10.0	org.axonframework.queryhandling	axon-messaging-4.10.0	org.axonframework.tracing	SimpleQueryBus->SpanScope	

# Table 2c - Cyclic Dependencies Break Down - Backward Dependencies Only

Lists packages with cyclic dependencies with every dependency in a separate row sorted by the most promising dependency first. This table only contains the backward dependencies from the second participant of the cycle back to the first one that are the most promising to resolve.

Only the top 40 entries are shown. The whole table can be found in the following CSV report:

Cyclic Dependencies Breakdown BackwardOnly

	dependentPackageName	dependentArtifactName	packageName	artifactName	
EventMess	org.axonframework.tracing	axon-messaging-4.10.0	org.axonframework.eventhandling	axon- messaging- 4.10.0	0
Ç Cor	org.axonframework.messaging.responsetypes	axon-messaging-4.10.0	org.axonframework.queryhandling	axon- messaging- 4.10.0	1
(	org.axonframework.tracing	axon-messaging-4.10.0	org.axonframework.queryhandling	axon- messaging- 4.10.0	2
	org.axonframework.messaging	axon-messaging-4.10.0	org.axonframework.eventhandling	axon- messaging- 4.10.0	3
TrackingToken<-S	org.axonframework.messaging	axon-messaging-4.10.0	org.axonframework.eventhandling	axon- messaging- 4.10.0	4
Domaiı	org.axonframework.messaging	axon-messaging-4.10.0	org.axonframework.eventhandling	axon- messaging- 4.10.0	5
Aggreç	org.axonframework.messaging.annotation	axon-messaging-4.10.0	org.axonframework.eventhandling	axon- messaging- 4.10.0	6
DomainEventMessage<-Sour	org.axonframework.messaging.annotation	axon-messaging-4.10.0	org.axonframework.eventhandling	axon- messaging- 4.10.0	7
Dea	org.axonframework.tracing	axon-messaging-4.10.0	org.axonframework.deadline	axon- messaging- 4.10.0	8
Com	org.axonframework.tracing	axon-messaging-4.10.0	org.axonframework.commandhandling	axon- messaging- 4.10.0	9
EventStreaml	org.axonframework.eventsourcing.eventstore	axon-eventsourcing- 4.10.0	org.axonframework.eventsourcing	axon- eventsourcing- 4.10.0	10
EventStreamUtils<-Ab	org.axonframework.eventsourcing.eventstore	axon-eventsourcing- 4.10.0	org.axonframework.eventsourcing	axon- eventsourcing- 4.10.0	11
NoOpCallback<-Sin	org.axonframework.commandhandling	axon-messaging-4.10.0	org.axonframework.commandhandling.callbacks	axon- messaging- 4.10.0	12
LoggingCallback<-Sin	org.axonframework.commandhandling	axon-messaging-4.10.0	org.axonframework.commandhandling.callbacks	axon- messaging- 4.10.0	13
Exce	org.axonframework.axonserver.connector	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector.util	axon-server- connector- 4.10.0	14
( Ga <sub>l</sub>	org.axonframework.serialization	axon-messaging-4.10.0	org.axonframework.eventhandling	axon- messaging- 4.10.0	15
GenericDomainEventMessag	org.axonframework.serialization	axon-messaging-4.10.0	org.axonframework.eventhandling	axon- messaging- 4.10.0	16
GenericEventMessage<-	org.axonframework.serialization	axon-messaging-4.10.0	org.axonframework.eventhandling	axon- messaging- 4.10.0	17
CurrentUnit	org.axonframework.messaging	axon-messaging-4.10.0	org.axonframework.messaging.unitofwork	axon- messaging- 4.10.0	18
UnitOfWork	org.axonframework.messaging	axon-messaging-4.10.0	org.axonframework.messaging.unitofwork	axon- messaging- 4.10.0	19
UnitOfWork<-N	org.axonframework.messaging	axon-messaging-4.10.0	org.axonframework.messaging.unitofwork	axon- messaging- 4.10.0	20
AxonServerEventStoreFact	org.axonframework.axonserver.connector	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector.event.axon	axon-server- connector- 4.10.0	21
AxonServerEventStore<-Se	org.axonframework.axonserver.connector	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector.event.axon	axon-server- connector- 4.10.0	22
EventProcessorInfoConfiç	org.axonframework.axonserver.connector	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector.event.axon	axon-server- connector- 4.10.0	23
AxonServerEventStoreFacto	org.axonframework.axonserver.connector	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector.event.axon	axon-server- connector- 4.10.0	24
AxonServerEventStore\$Bui	org.axonframework.axonserver.connector	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector.event.axon	axon-server- connector- 4.10.0	25
EventProcessorInfoConfig AxonServerEventStoreFact	org.axonframework.axonserver.connector	axon-server-connector-4.10.0  axon-server-connector-4.10.0  axon-server-connector-	org.axonframework.axonserver.connector.event.axon	4.10.0  axon-server- connector- 4.10.0  axon-server- connector- 4.10.0  axon-server- connector-	23 24

artifactName	packageName	dependentArtifactName	dependentPackageName	
axon-server- connector- 4.10.0	org.axonframework.axonserver.connector.query	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector	AxonServerNonTransientRem
axon-server- connector- 4.10.0	org.axonframework.axonserver.connector.query	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector	AxonServerRemote(
axon-server- connector- 4.10.0	org.axonframework.axonserver.connector.query	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector	AxonServerQueryBus\$Builde
axon-server- connector- 4.10.0	org.axonframework.axonserver.connector.query	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector	AxonServerQueryBus<-Serv
axon-server- connector- 4.10.0	org.axonframework.axonserver.connector.query	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector	QueryPriorityCalculator<
axon-server- connector- 4.10.0	org.axonframework.axonserver.connector.query	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector	AxonServerQueryDisp
axon- messaging- 4.10.0	org.axonframework.eventhandling.async	axon-messaging-4.10.0	org.axonframework.eventhandling	SequencingPolicy<-SimpleI
axon- messaging- 4.10.0	org.axonframework.eventhandling.async	axon-messaging-4.10.0	org.axonframework.eventhandling	SequencingPolicy<-S
axon- messaging- 4.10.0	org.axonframework.eventhandling.async	axon-messaging-4.10.0	org.axonframework.eventhandling	SequentialPerAggregatePo
axon- messaging- 4.10.0	org.axonframework.eventhandling.replay	axon-messaging-4.10.0	org.axonframework.eventhandling	GenericResetContext<-Ann
axon- messaging- 4.10.0	org.axonframework.eventhandling.replay	axon-messaging-4.10.0	org.axonframework.eventhandling	Re
axon- messaging- 4.10.0	org.axonframework.eventhandling.replay	axon-messaging-4.10.0	org.axonframework.eventhandling	ResetContext<-Annot
axon-server- connector- 4.10.0	org.axonframework.axonserver.connector	axon-server-connector- 4.10.0	org.axonframework.axonserver.connector.event.util	ErrorCc
axon-server- connector- 4.10.0	org.axonframework.axonserver.connector.query	axon-server-connector- 4.10.0	org. ax on framework. ax on server. connector. query. s	GrpcBa
	axon-server- connector- 4.10.0  axon- messaging- 4.10.0  axon- server- connector- 4.10.0  axon-server- connector-	axon-server- connector- 4.10.0  axon- messaging- 4.10.0  a	axon-server-connector-4.10.0 axon-messaging-4.10.0	axon-server- connector- 4.10.0 org.axonframework.axonserver.connector.query 4.10.0 axon-server- connector- 4.10.0 org.axonframework.axonserver.connector.query 4.10.0 org.axonframework.axonserver.connector. 4.10.0 org.axonframework.eventhandling.async axon-messaging- 4.10.0 org.axonframework.eventhandling.async axon-messaging- 4.10.0 org.axonframework.eventhandling.replay axon-messaging- 4.10.0 org.axonframework.axonserver.connector. 4.10.0 org.axonframework.axonserver.connector. 4.10.0 org.axonframework.axonserver.connector.

## Interface Segregation Candidates

Well known from Design Principles and Design Patterns by Robert C. Martin, the *Interface Segregation Principle* suggests that software components should have narrow, focused interfaces rather than large, general-purpose ones. The goal is to minimize the dependencies between components and increase modularity, flexibility, and maintainability.

Smaller, focused and purpose-driven interfaces

- make it easier to modify individual components without affecting the rest of the system.
- make it clearer which client is affected by which change.
- don't force their clients to depend on methods they don't need.
- reduce the scope of changes since a change to one component doesn't affect others.
- lead to a more loosely coupled architecture that is easier to understand and maintain.

Reference: Analyze java package metrics in a graph database

### How to apply the results

If just one method of a type is used, especially in many places, then the result of this method can be used to call e.g. a method or constuct an object instead of using the whole object and then just calling that single method.

If there are a couple of methods that are used for a distinct purpose, those could be factored out into a separate interface. The original type can extended/implement the new interface so that there are no breaking changes. Then all the callers, that use only this group of methods, can be changed to the new interface.

### Table 4 - Top 40 most used combinations of methods

The following table shows the top 40 most used combinations of methods of larger types that might benefit from applying the *Interface Segregation Principle*. The whole table can be found in the CSV report Candidates for Interface Segregation.

	fullDependentTypeName	declaredMethods	calledMethodNames	calledMethods	callerTypes
0	org. ax on framework. command handling. Command Message	9	[getCommandName]	1	20
1	$org. ax on framework. eventh and ling. Event {\tt Message}$	9	[getIdentifier, getTimestamp]	2	11
2	org. ax on framework. eventh and ling. Domain Event Mes	10	[getSequenceNumber]	1	9
3	org. ax on framework. eventh and ling. Event Message	9	[getIdentifier]	1	9
4	org. ax on framework. eventh and ling. Tracked Event Me	10	[trackingToken]	1	8
5	org. ax on framework. command handling. Generic Comma	14	[asCommandResultMessage]	1	6
6	org. ax on framework. eventh and ling. Domain Event Mes	10	$[get Sequence Number, \ get Type, \ get Aggregate Ident$	3	6
7	org. ax on framework. messaging. Result Message	9	[exceptionResult, isExceptional]	2	6
8	org. ax on framework. eventh and ling. Replay Token	13	[createReplayToken]	1	5
9	org. ax on framework. dead line. Generic Dead line Message	11	[asDeadlineMessage]	1	5
10	org. ax on framework. eventh and ling. Domain Event Mes	10	[getAggregateIdentifier]	1	5
11	$org. ax on framework. eventh and ling. Tracked {\tt Event Me}$	12	[trackingToken]	1	4
12	org.axonframework.deadline.DeadlineMessage	10	[getDeadlineName]	1	4
13	org. ax on framework. eventh and ling. Domain Event Mes	10	[getType]	1	4
14	$org. ax on framework. eventh and ling. Generic {\tt EventMe}$	10	[asEventMessage]	1	4
15	org.axonframework.eventhandling.EventMessage	9	[getTimestamp]	1	4
16	org.axonframework.deadline.DefaultDeadlineMana	8	[builder]	1	4
17	org.axonframework.common.transaction.NoTransac	4	[instance]	1	4
18	org. ax on framework. query handling. Simple Query Upd	17	[builder]	1	3
19	org.axonframework.commandhandling.GenericComma	15	[asCommandResultMessage]	1	3
20	org.axonframework.eventhandling.ReplayToken	13	[isReplay]	1	3
21	org.axonframework.modelling.command.inspection	13	[type]	1	3
22	org. ax on framework. query handling. Subscription Qu	12	[getUpdateResponseType]	1	3
23	org. ax on framework. eventh and ling. Domain Event Mes	11	$[get Sequence Number, \ get Type, \ get Aggregate Ident$	3	3
24	$org. ax on framework. eventh and ling. Generic {\tt EventMe}$	11	[asEventMessage]	1	3
25	org.axonframework.queryhandling.SimpleQueryBus	11	[builder]	1	3
26	org.axonframework.eventhandling.DomainEventMes	10	[getSequenceNumber, getAggregateIdentifier]	2	3
27	org.axonframework.eventhandling.GapAwareTracki	10	[advanceTo, getGaps, withGapsTruncatedAt, newl	5	3
28	org.axonframework.queryhandling.DefaultQueryBu	10	[builder]	1	3
29	org.axonframework.commandhandling.gateway.Defa	9	[builder]	1	3
30	org.axonframework.config.Configuration	9	[getComponent]	1	3
31	org.axonframework.config.Configuration	9	[upcasterChain, snapshotFilter]	2	3
32	org.axonframework.messaging.MessageDecorator	9	[describeTo]	1	3
33	org.axonframework.queryhandling.QueryMessage	9	[getQueryName, getResponseType]	2	3
34	org.axonframework.commandhandling.DefaultComma	5	[builder]	1	3
35	org.axonframework.eventhandling.TrackedEventData	5	[trackingToken]	1	3
36	org.axonframework.eventhandling.tokenstore.Con	5	[get]	1	3
37	org. ax on framework. serialization. Simple Serializ	5	[emptyType]	1	3
38	org.axonframework.eventhandling.DefaultEventBu	4	[builder]	1	3
39	org. ax on framework. query handling. Default Query Up	4	[builder]	1	3

## Package Usage

### Table 5 - Types that are used by multiple packages

This table shows the top 40 packages that are used by the highest number of different packages. The whole table can be found in the CSV report

 ${\tt List\_types\_that\_are\_used\_by\_many\_different\_packages}\ .$ 

	full Qualified Dependent Type Name	dependentTypeName	dependentTypeLabels	numberOfUsingPackages
0	org.axonframework.common.BuilderUtils	BuilderUtils	[Type, File, Java, ByteCode, Class, Mark4TopCe	49
1	org. ax on framework. common. Ax on Configuration Exce	AxonConfigurationException	[Type, File, Java, ByteCode, Class, Mark4TopCe	42
2	org.axonframework.messaging.Message	Message	[Type, File, Java, ByteCode, GenericDeclaratio	41
3	org. ax on framework. messaging. Meta Data	MetaData	[Type, File, Java, ByteCode, Class, Mark4TopCe	39
4	org. ax on framework. serialization. Serializer	Serializer	[Type, File, Java, ByteCode, Interface, Mark4T	36
5	org. ax on framework. eventh and ling. Event Message	EventMessage	[Type, File, Java, ByteCode, GenericDeclaratio	35
6	org. ax on framework. messaging. unit of work. Unit Of Work	UnitOfWork	[Type, File, Java, ByteCode, GenericDeclaratio	32
7	org. ax on framework. common. transaction. Transacti	TransactionManager	[Type, File, Java, ByteCode, Interface, Mark4T	31
8	org.axonframework.common.Assert	Assert	[Type, File, Java, ByteCode, Class, Mark4TopCe	29
9	org. ax on framework. serialization. Serialized Object	SerializedObject	[Type, File, Java, ByteCode, GenericDeclaratio	27
10	$org. ax on framework. serialization. Serialized {\it Type}$	SerializedType	[Type, File, Java, ByteCode, Interface, Mark4T	27
11	org. ax on framework. messaging. unit of work. Current	CurrentUnitOfWork	[Type, File, Java, ByteCode, Class, Mark4TopCe	22
12	org.axonframework.common.Registration	Registration	[Type, File, Java, ByteCode, Interface, Mark4T	22
13	org.axonframework.tracing.SpanFactory	SpanFactory	[Type, File, Java, ByteCode, Interface, Mark4T	22
14	org.axonframework.lifecycle.Lifecycle	Lifecycle	[Type, File, Java, ByteCode, Interface, Mark4T	20
15	org. ax on framework. life cycle. Life cycle \$ Life cycl	Lifecycle\$LifecycleRegistry	[Type, File, Java, ByteCode, Interface, Mark4T	20
16	org.axonframework.common.ObjectUtils	ObjectUtils	[Type, File, Java, ByteCode, Class, Mark4TypeW	20
17	org. ax on framework. eventh and ling. Tracking Token	TrackingToken	[Type, File, Java, ByteCode, Interface, Mark4T	20
18	org. ax on framework. event handling. Domain Event Mes	DomainEventMessage	[Type, File, Java, ByteCode, GenericDeclaratio	19
19	org. ax on framework. messaging. annotation. Paramet	ParameterResolverFactory	[Type, File, Java, ByteCode, Interface, Mark4T	19
20	org. ax on framework. common. Ax on Non Transient Excep	AxonNonTransientException	[Type, File, Java, ByteCode, Class, Mark4TopCe	18
21	$org. ax on framework. eventh and ling. Generic {\tt EventMe}$	GenericEventMessage	[Type, File, Java, ByteCode, Class, GenericDec	18
22	$org. ax on framework. messaging. Message {\tt DispatchInt}$	MessageDispatchInterceptor	[Type, File, Java, ByteCode, GenericDeclaratio	18
23	org. ax on framework. messaging. Message Handler In te	MessageHandlerInterceptor	[Type, File, Java, ByteCode, GenericDeclaratio	18
24	org. ax on framework. serialization. Simple Serializ	SimpleSerializedObject	[Type, File, Java, ByteCode, Class, GenericDec	18
25	org. ax on framework. tracing. No Op Span Factory	NoOpSpanFactory	[Type, File, Java, ByteCode, Class, Mark4TypeW	17
26	org. ax on framework. command handling. Command Message	CommandMessage	[Type, File, Java, ByteCode, GenericDeclaratio	16
27	org. ax on framework. event handling. Event Bus	EventBus	[Type, File, Java, ByteCode, Interface, Mark4T	15
28	org. ax on framework. messaging. annotation. Handler	HandlerDefinition	[Type, File, Java, ByteCode, Interface, Mark4T	15
29	org. ax on framework. common. transaction. No Transac	NoTransactionManager	[Type, File, Java, ByteCode, Enum, Mark4TypeWe	15
30	org.axonframework.messaging.ResultMessage	ResultMessage	[Type, File, Java, ByteCode, GenericDeclaratio	15
31	org.axonframework.tracing.Span	Span	[Type, File, Java, ByteCode, Interface, Mark4T	15
32	org.axonframework.messaging.unitofwork.Default	DefaultUnitOfWork	[Type, File, Java, ByteCode, Class, GenericDec	14
33	org.axonframework.common.ReflectionUtils	ReflectionUtils	[Type, File, Java, ByteCode, Class, Mark4TypeW	14
34	org. ax on framework. eventhand ling. Tracked Event Me	TrackedEventMessage	[Type, File, Java, ByteCode, GenericDeclaratio	13
35	org.axonframework.common.AxonException	AxonException	[Type, File, Java, ByteCode, Class, Mark4TopCe	12
36	org.axonframework.common.DateTimeUtils	DateTimeUtils	[Type, File, Java, ByteCode, Class, Mark4TypeW	12
37	org.axonframework.messaging.DefaultInterceptor	DefaultInterceptorChain	[Type, File, Java, ByteCode, Class, GenericDec	12
38	org. ax on framework. eventhand ling. Generic Domain E	GenericDomainEventMessage	[Type, File, Java, ByteCode, Class, GenericDec	12
39	org. ax on framework. messaging. Interceptor Chain	InterceptorChain	[Type, File, Java, ByteCode, Interface, Mark4T	12

### Table 6 - Packages that are used by multiple artifacts

This table shows the top 30 artifacts that only use a few (compared to all existing) packages of another artifact. The whole table can be found in the CSV report ArtifactPackageUsage .

	artifactName	dependent Artifact Name	dependentPackages	dependentArtifactPackages	packageUsagePercentage	dependentFullQualifiedPackageNames
0	axon- modelling- 4.10.0	axon-modelling-4.10.0	6	10	0.600000	[org.axonframework.modelling.saga, org.axonfra
1	axon-test- 4.10.0	axon-test-4.10.0	5	8	0.625000	[org.axonframework.test, org.axonframework.tes
2	axon- messaging- 4.10.0	axon-messaging-4.10.0	41	64	0.640625	[org.axonframework.messaging, org.axonframewor
3	axon- eventsourcing- 4.10.0	axon-eventsourcing- 4.10.0	7	9	0.777778	[org.axonframework.eventsourcing.snapshotting,
4	axon-server- connector- 4.10.0	axon-server-connector- 4.10.0	9	11	0.818182	[org.axonframework.axonserver.connector, org.a
5	axon-spring- boot- autoconfigure- 4.10.0	axon-spring-boot- autoconfigure-4.10.0	8	9	0.888889	[org.axonframework.springboot, org.axonframewo

## Table 7 - Types that are used by multiple artifacts

This table shows the top 30 types that only use a few (compared to all existing) types of another artifact. The whole table can be found in the CSV report ClassesPerPackageUsageAcrossArtifacts.

	artifactName	dependentArtifactName	packageName dependentPackage.fqn		dependentTypes dependentPac
0	axon- eventsourcing- 4.10.0	axon-messaging-4.10.0	org.axonframework.eventsourcing.snapshotting	org.axonframework.eventhandling	1
1	axon- modelling- 4.10.0	axon-messaging-4.10.0	org.axonframework.modelling.saga.metamodel	org.axonframework.eventhandling	1
2	axon-test- 4.10.0	axon-messaging-4.10.0	org.axonframework.test.matchers	org.axonframework.eventhandling	1
3	axon-spring- boot- autoconfigure- 4.10.0	axon-messaging-4.10.0	org.axonframework.springboot.autoconfig.legacyjpa	org.axonframework.eventhandling	1
4	axon-server- connector- 4.10.0	axon-messaging-4.10.0	org.axonframework.axonserver.connector	org.axonframework.eventhandling	1
5	axon-spring- boot- autoconfigure- 4.10.0	axon-messaging-4.10.0	org.axonframework.springboot.util	org.axonframework.eventhandling	1
6	axon-server- connector- 4.10.0	axon-modelling-4.10.0	org.axonframework.axonserver.connector	org.axonframework.modelling.command	1
7	axon- eventsourcing- 4.10.0	axon-modelling-4.10.0	org.axonframework.eventsourcing.conflictresolu	org.axonframework.modelling.command	1
8	axon- eventsourcing- 4.10.0	axon-modelling-4.10.0	org.axonframework.eventsourcing.eventstore.jdbc	org.axonframework.modelling.command	1
9	axon- modelling- 4.10.0	axon-messaging-4.10.0	org.axonframework.modelling.command.legacyjpa	org.axonframework.eventhandling	2
10	axon- modelling- 4.10.0	axon-messaging-4.10.0	org.axonframework.modelling.command	org.axonframework.eventhandling	2
11	axon-test- 4.10.0	axon-messaging-4.10.0	org.axonframework.test.eventscheduler	org.axonframework.eventhandling	2
12	axon- eventsourcing- 4.10.0	axon-messaging-4.10.0	org.axonframework.eventsourcing.conflictresolu	org.axonframework.eventhandling	2
13	axon-server- connector- 4.10.0	axon-eventsourcing- 4.10.0	org.axonframework.axonserver.connector.event.axon	org.axonframework.eventsourcing	1
14	axon-spring- boot- autoconfigure- 4.10.0	axon-configuration-4.10.0	org.axonframework.springboot	org.axonframework.config	1
15	axon-spring- boot- autoconfigure- 4.10.0	axon-configuration-4.10.0	org.axonframework.springboot.autoconfig.legacyjpa	org.axonframework.config	1
16	axon-server- connector- 4.10.0	axon-configuration-4.10.0	org.axonframework.axonserver.connector.processor	org.axonframework.config	1
17	axon-test- 4.10.0	axon-messaging-4.10.0	org.axonframework.test	org.axonframework.messaging	1
18	axon-test- 4.10.0	axon-messaging-4.10.0	org.axonframework.test.matchers	org.axonframework.messaging	1
19	axon- eventsourcing- 4.10.0	axon-messaging-4.10.0	org.axonframework.eventsourcing.eventstore	org.axonframework.messaging	1
20	axon- eventsourcing- 4.10.0	axon-messaging-4.10.0	org.axonframework.eventsourcing.conflictresolu	org.axonframework.messaging	1
21	axon-spring- boot- autoconfigure- 4.10.0	axon-messaging-4.10.0	org.axonframework.springboot.autoconfig.legacyjpa	org.axonframework.serialization	1
22	axon- eventsourcing- 4.10.0	axon-messaging-4.10.0	org.axonframework.eventsourcing.eventstore.jpa	org.axonframework.serialization	1
23	axon- eventsourcing- 4.10.0	axon-messaging-4.10.0	org.axonframework.eventsourcing.eventstore.leg	org.axonframework.serialization	1
24	axon- eventsourcing- 4.10.0	axon-messaging-4.10.0	org.axonframework.eventsourcing.eventstore.jdbc	org.axonframework.serialization	1
25	axon- eventsourcing- 4.10.0	axon-messaging-4.10.0	org.axonframework.eventsourcing.eventstore.jdb	org.axonframework.eventhandling	3

	artifactName	dependentArtifactName	packageName	dependentPackage.fqn	dependentTypes	dependentPac
26	axon-test- 4.10.0	axon-modelling-4.10.0	org.axonframework.test.utils	org.axonframework.modelling.saga	1	
27	axon-test- 4.10.0	axon-messaging-4.10.0	org.axonframework.test.matchers	org.axonframework.commandhandling	1	
28	axon- eventsourcing- 4.10.0	axon-messaging-4.10.0	org. ax on framework. events our cing. conflict resolu	org.axonframework.commandhandling	1	
29	axon-server- connector- 4.10.0	axon-eventsourcing- 4.10.0	org.axonframework.axonserver.connector	org.axonframework.eventsourcing.eventstore	1	

### Table 8 - Duplicate package names across artifacts

This table shows the top 30 duplicate package names across artifacts. They are ordered by the number of duplicates descending.

This might lead to confusion, makes importing more error prone and might even lead to duplicate classes where only one of them will be loaded by the class loader. If a package is named the same way in two or more artifacts this even allows another artifact to access package protected classes, methods or members which might not be intended.

The whole table can be found in the CSV report DuplicatePackageNamesAcrossArtifacts.

packageName duplicates artifactNames

#### Table 9 - Annotated elements

This table shows 30 most used Java Annotations including some examples where they are used.

	annotationName	languageElement	numberOfAnnotatedElements	examples
0	javax.annotation.Nonnull	Parameter	1615	[org. axon framework. test. aggregate. Result Valida
1	java.lang.Deprecated	Method	130	[org. axon framework. test. aggregate. Result Valida
2	org.spring framework.context.annotation. Bean	Method	110	[org. axon framework. spring boot. autoconfig. Axon S
3	org. spring framework. boot. autoconfigure. conditi	Method	76	[org. axon framework. spring boot. autoconfig. Axon S
4	java.lang.FunctionalInterface	Interface	64	$[org. axon framework. test. matchers. Field Filter, \dots$
5	javax.annotation.Nullable	Parameter	61	[org. axon framework. modelling. command. Creation P
6	javax.annotation.Nonnull	Method	50	$[org. axon framework. test. aggregate. Aggregate {\it Tes}$
7	java.lang.Deprecated	Class	43	[org. axon framework. test. aggregate. Stub Aggregat
8	java.lang.annotation.Target	Annotation	43	[org. ax on framework. modelling. command. Aggregate
9	java.lang.annotation.Retention	Annotation	43	[org. ax on framework. modelling. command. Aggregate
10	javax.persistence.Basic	Field	39	[org. axon framework. modelling. saga. repository. j
11	jakarta.persistence.Basic	Field	33	[org. axon framework. modelling. saga. repository. j
12	com. fasterxml. jackson. annotation. Json Property	Parameter	32	[org. ax on framework. modelling. command. Aggregate
13	java.lang.annotation.Documented	Annotation	23	[org. ax on framework. modelling. command. Aggregate
14	org.spring framework.boot.autoconfigure.AutoCon	Class	22	[org. axon framework. spring boot. autoconfig. Axon S
15	java.beans.ConstructorProperties	Constructor	21	[org. ax on framework. modelling. command. Aggregate
16	org.spring framework. beans. factory. annotation. Q	Parameter	20	[org. axon framework. spring boot. autoconfig. Axon S
17	java.lang.Deprecated	Constructor	20	[org. axon framework. modelling. command. Annotatio
18	org.spring framework.boot.autoconfigure.AutoCon	Class	16	[org. axon framework. spring boot. autoconfig. Axon S
19	com. fasterxml. jackson. annotation. Json Creator	Constructor	16	[org. ax on framework. modelling. command. Aggregate
20	org.spring framework.boot.autoconfigure.AutoCon	Class	14	[org. axon framework. spring boot. autoconfig. Axon S
21	org. spring framework. boot. autoconfigure. conditi	Method	14	[org. axon framework. spring boot. autoconfig. Axon S
22	org. spring framework. boot. autoconfigure. conditi	Class	12	[org. axon framework. spring boot. autoconfig. Axon S
23	javax.persistence.Column	Field	12	[org. axon framework. modelling. saga. repository. j
24	jakarta.persistence.Column	Field	11	[org. axon framework. modelling. saga. repository. j
25	org.spring framework.boot.context.properties. En	Class	11	[org. axon framework. spring boot. autoconfig. legac
26	org.axonframework.common.Priority	Class	11	[org. ax on framework. test. Fixture Resource Paramet
27	org. spring framework. boot. autoconfigure. conditi	Method	11	[org. axon framework. spring boot. autoconfig. legac
28	javax.persistence.Lob	Field	10	[org. axon framework. modelling. saga. repository. j
29	javax.persistence.ld	Field	10	[org. axon framework. modelling. saga. repository. j

### Table 10 - Distance distribution between dependent files

This table shows the file directory distance distribution between dependent files. Intuitively, the distance is given by the fewest number of change directory commands needed to navigate between a file and a dependency it uses. Those are aggregate to see how many dependent files are in the same directory, how many are just one change directory command apart, and so on.

	numberOfDependencyProviders	numberOfDependencyUsers	numberOfDependencies	dependency. file Distance As Fewest Change Directory Commands	
[/axon-spring-b	1157	1025	2597	0 0	0
[/org/axonframev	38	82	90	1	1
[/org/axonframev	470	759	2499	2	2
[/org/axonframew	465	401	2223	3 4	3