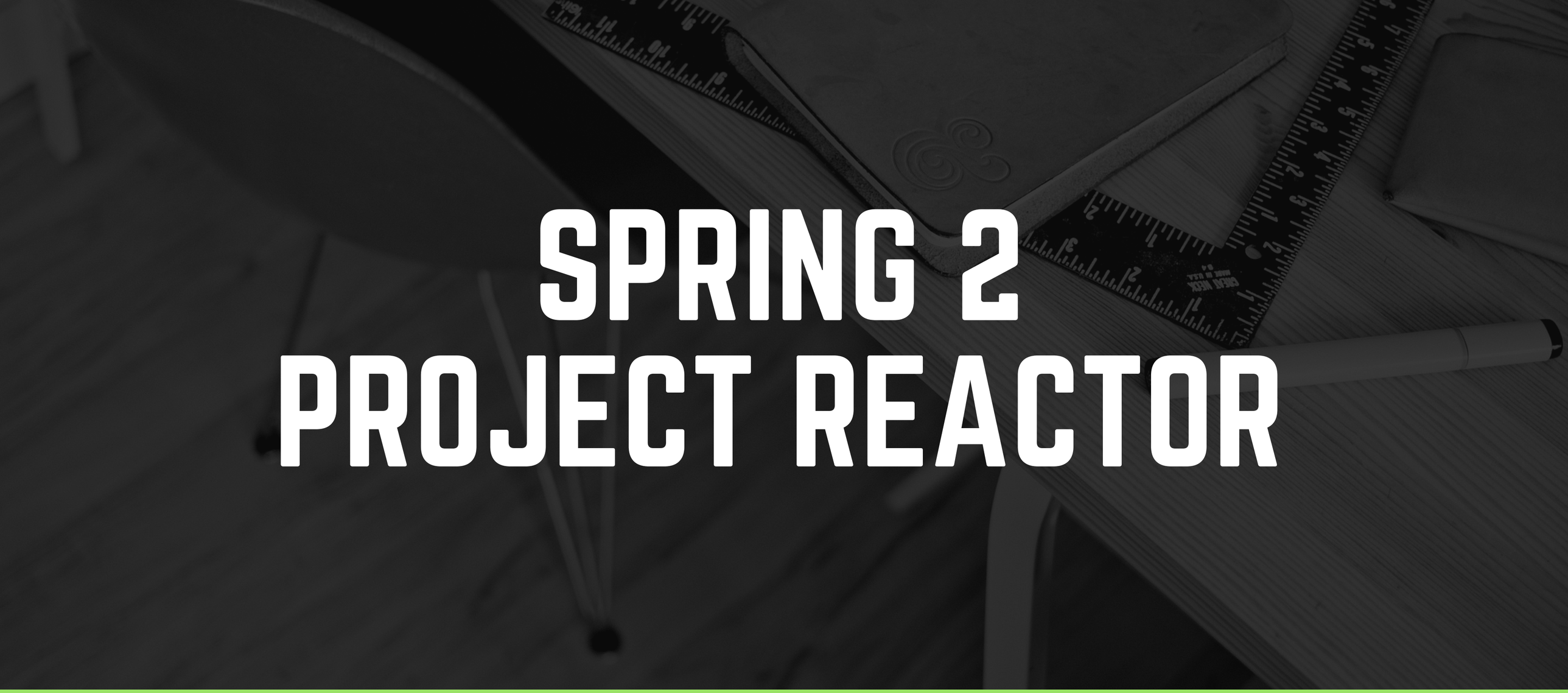


SPRING 2
PROJECT REACTOR

TOPICS

REACTIVE, REACTOR & JAVA 9 SPI

MONO & FLUX

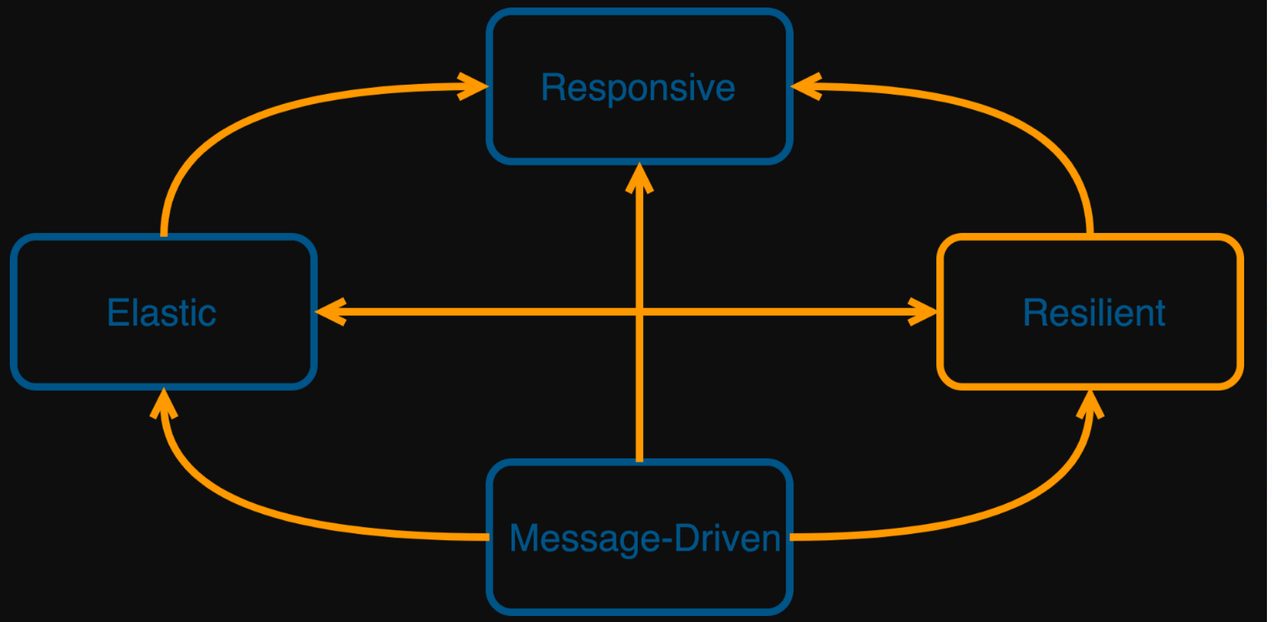
OPERATORS

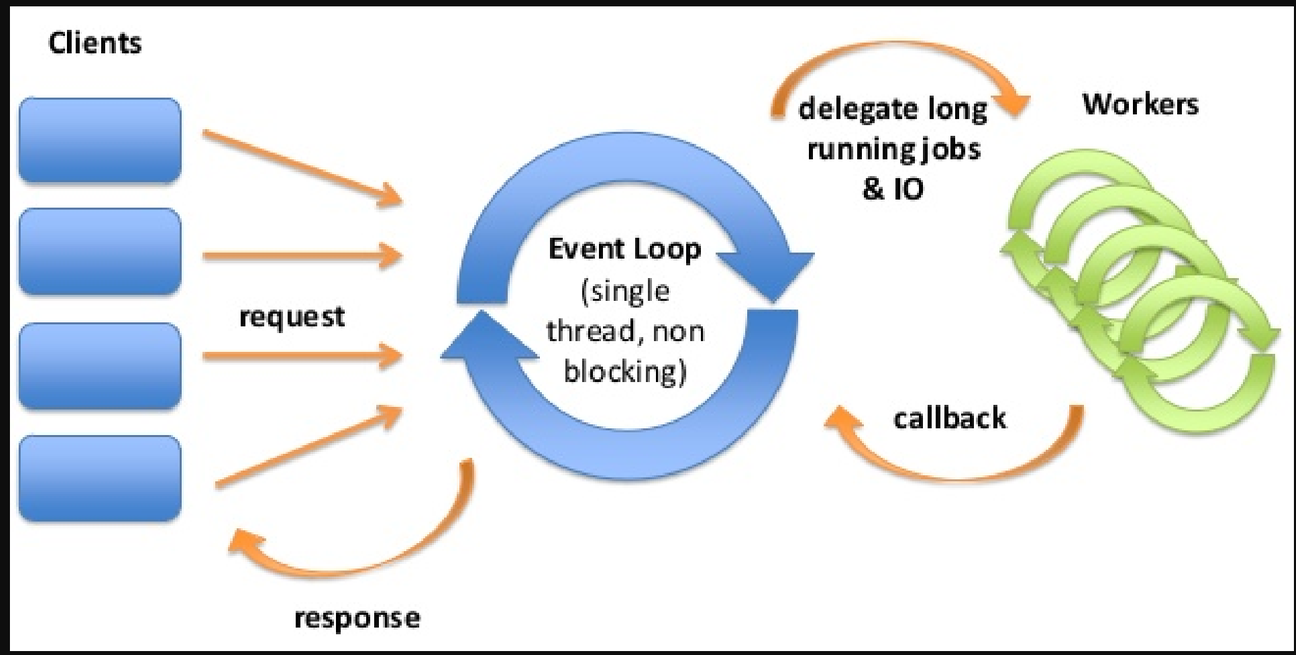
NON-BLOCKING

PROFITS

REACTIVE. REACTOR.

JAVA SERVICE PROVIDER INTERFACE FOR REACTIVE STREAM



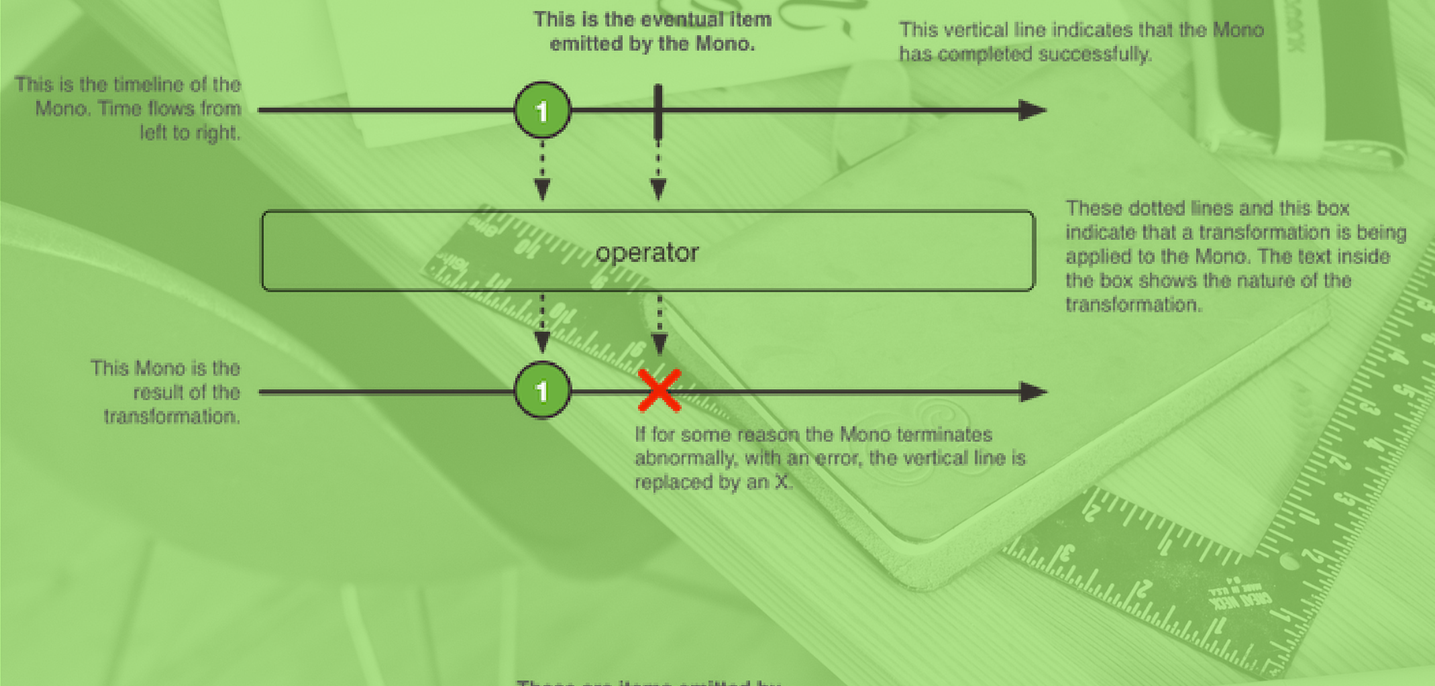


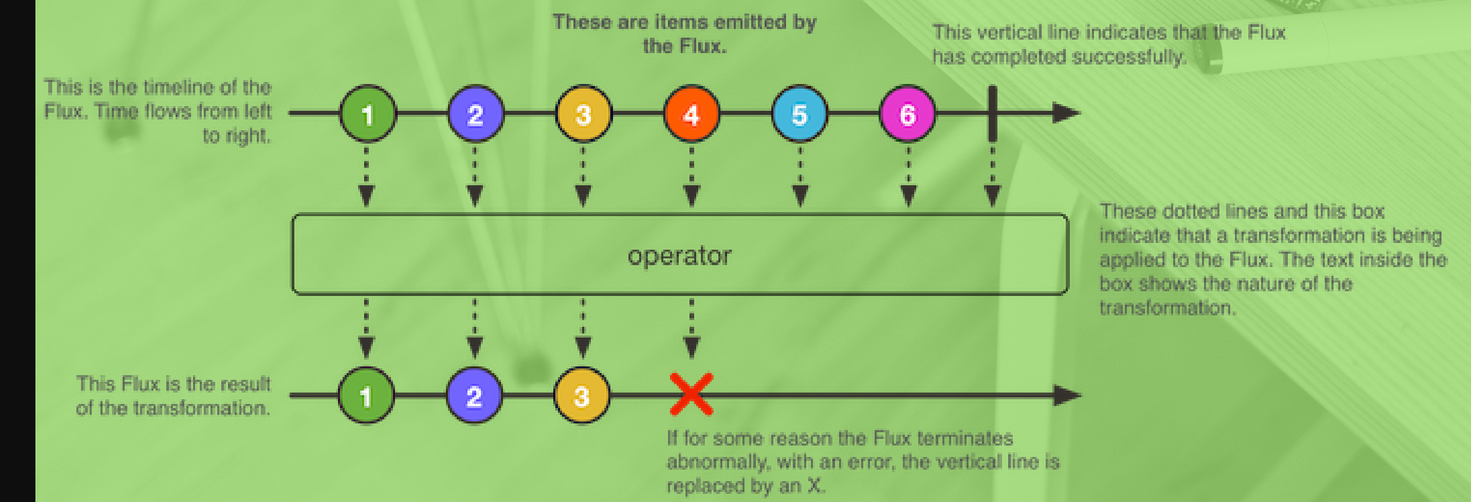
MONO

implementation of Publisher
0..1 sequence of data

FLUX

implementation of Publisher
0..N sequence of data





OPERATORS

How does filter, map and others differ from their stream equivalents?

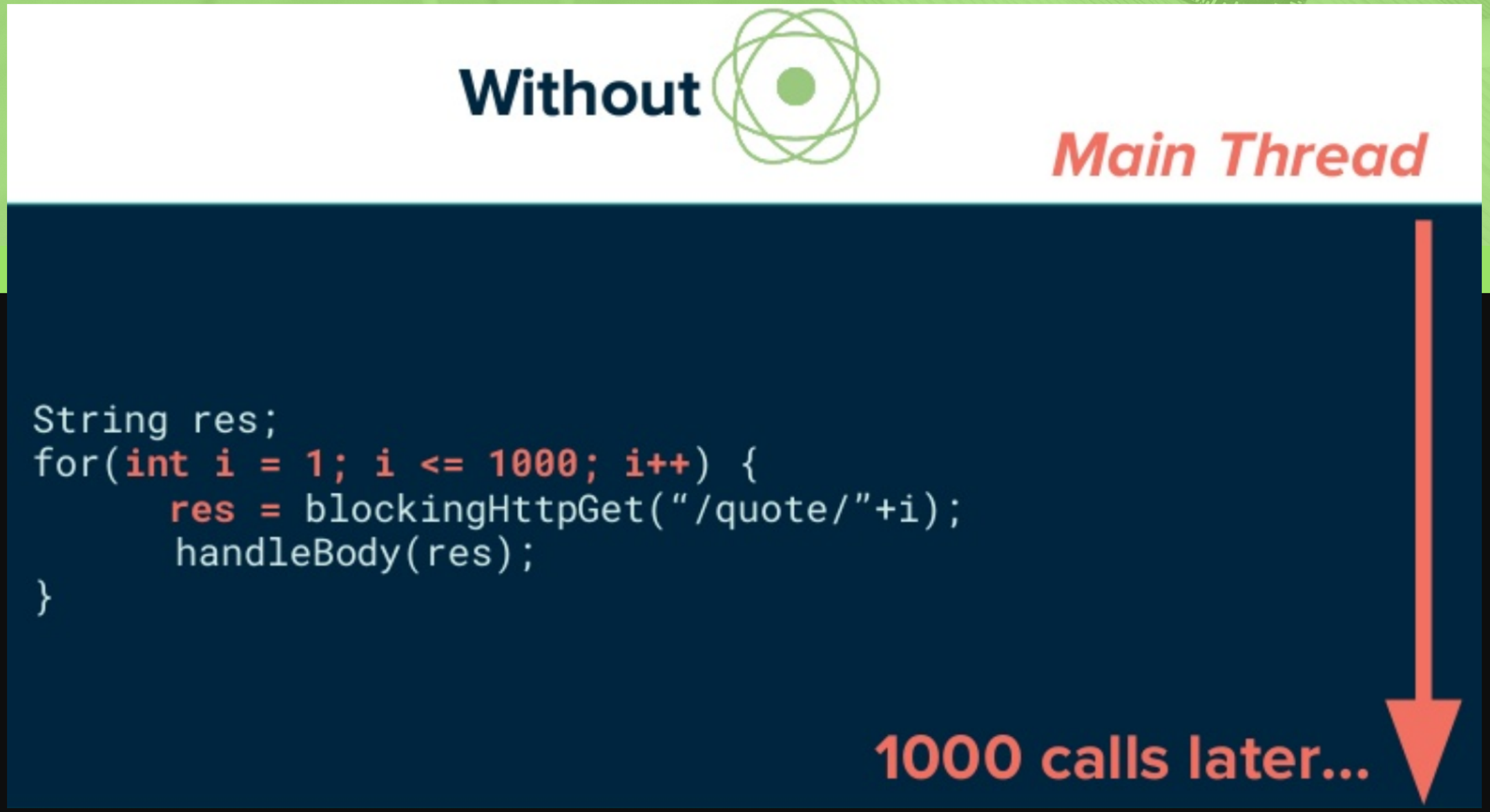
New operators exclusive for reactive stack

Type Semantic /Library	Java 8	Reactive Streams /Java 9	RxJava1 (java6)	Reactor3 (java8)	RxJava2 (java6)
0 or 1 result	CompletableFuture<T>	Publisher<T>	Observable<T>	Mono<T>	Maybe<T>
0 or N results		Publisher<T>	Observable<T>	Flux<T>	Observable<T> Flowable<T>
1 result	CompletableFuture<T>	Publisher<T>	Single<T>	Mono<T>	Single<T>
No result	CompletableFuture<Void>	Publisher<Void>	Completable	Mono<Void>	Completable

1. map(A) = B
2. map(B) = C
3. filter(C) = D

f(A) = D

NON-BLOCKING APPROACH



NON-BLOCKING APPROACH

With

Main Thread

```
Flux.range(1, 1000)
      .flatMap(i -> reactiveHttpCall("/quote/"+i))
      .subscribe(this::handleBody);
```

Backpressure set to 256

1 call later

PROFITS

TEST SUITE

2500 C. USERS
4 REQUESTS/USER
CALL AFTER CALL

STATISTICS

Executions

	Total	OK	KO
	10000	10000	0
Mean req/s	476.19	476.19	-

Response Time (ms)

	Total	OK	KO
Min	202	202	-
50th percentile	302	302	-
75th percentile	382	382	-
95th percentile	552	552	-
99th percentile	700	700	-
Max	1053	1053	-
Mean	331	331	-
Std Deviation	108	108	-

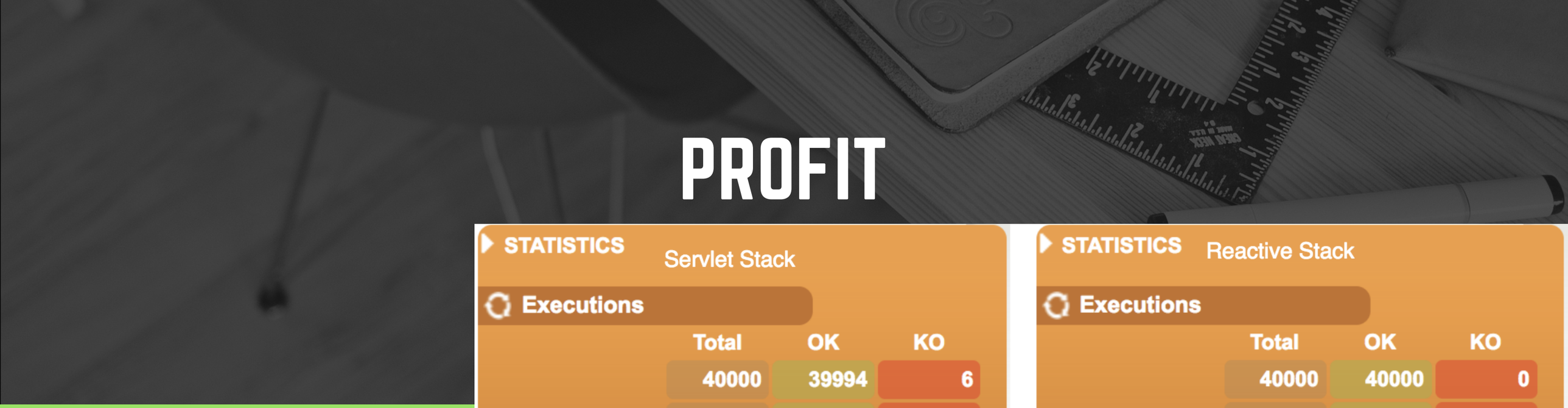
STATISTICS

Executions

	Total	OK	KO
	10000	10000	0
Mean req/s	714.286	714.286	-

Response Time (ms)

	Total	OK	KO
Min	201	201	-
50th percentile	272	273	-
75th percentile	337	337	-
95th percentile	495	495	-
99th percentile	650	650	-
Max	859	859	-
Mean	301	301	-
Std Deviation	96	96	-



PROFIT

TEST SUITE

10000 C. USERS
4 REQUESTS/USER
CALL AFTER CALL

STATISTICS Servlet Stack

Executions

	Total	OK	KO
	40000	39994	6
Mean req/s	784.314	784.196	0.118

Response Time (ms)

	Total	OK	KO
Min	202	202	2443
50th percentile	2093	2093	3151
75th percentile	3017	3017	3763
95th percentile	4547	4547	4104
99th percentile	5061	5061	4154
Max	5356	5356	4166
Mean	2102	2101	3216
Std Deviation	1304	1304	660

STATISTICS Reactive Stack

Executions

	Total	OK	KO
	40000	40000	0
Mean req/s	975.61	975.61	-

Response Time (ms)

	Total	OK	KO
Min	201	201	-
50th percentile	315	315	-
75th percentile	422	422	-
95th percentile	865	865	-
99th percentile	1392	1392	-
Max	1883	1883	-
Mean	390	390	-
Std Deviation	232	232	-

Credits

Testing Spring 2 Reactive vs MVC

https://medium.com/@the.raj.saxena/springboot-2-performance-servlet-stack-vs-webflux-reactive-stack-528ad5e9dadc

Documentations