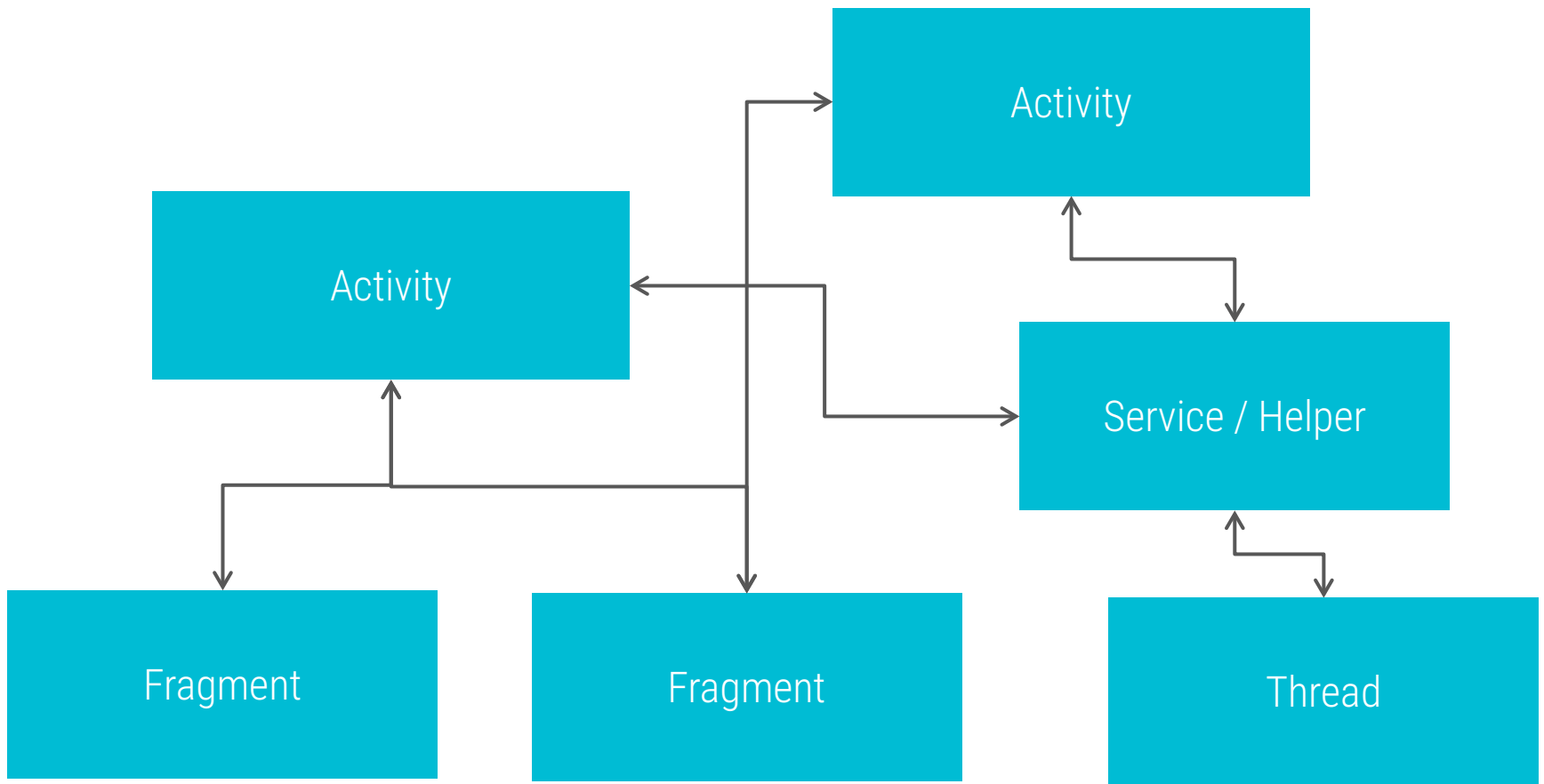


EventBus 3

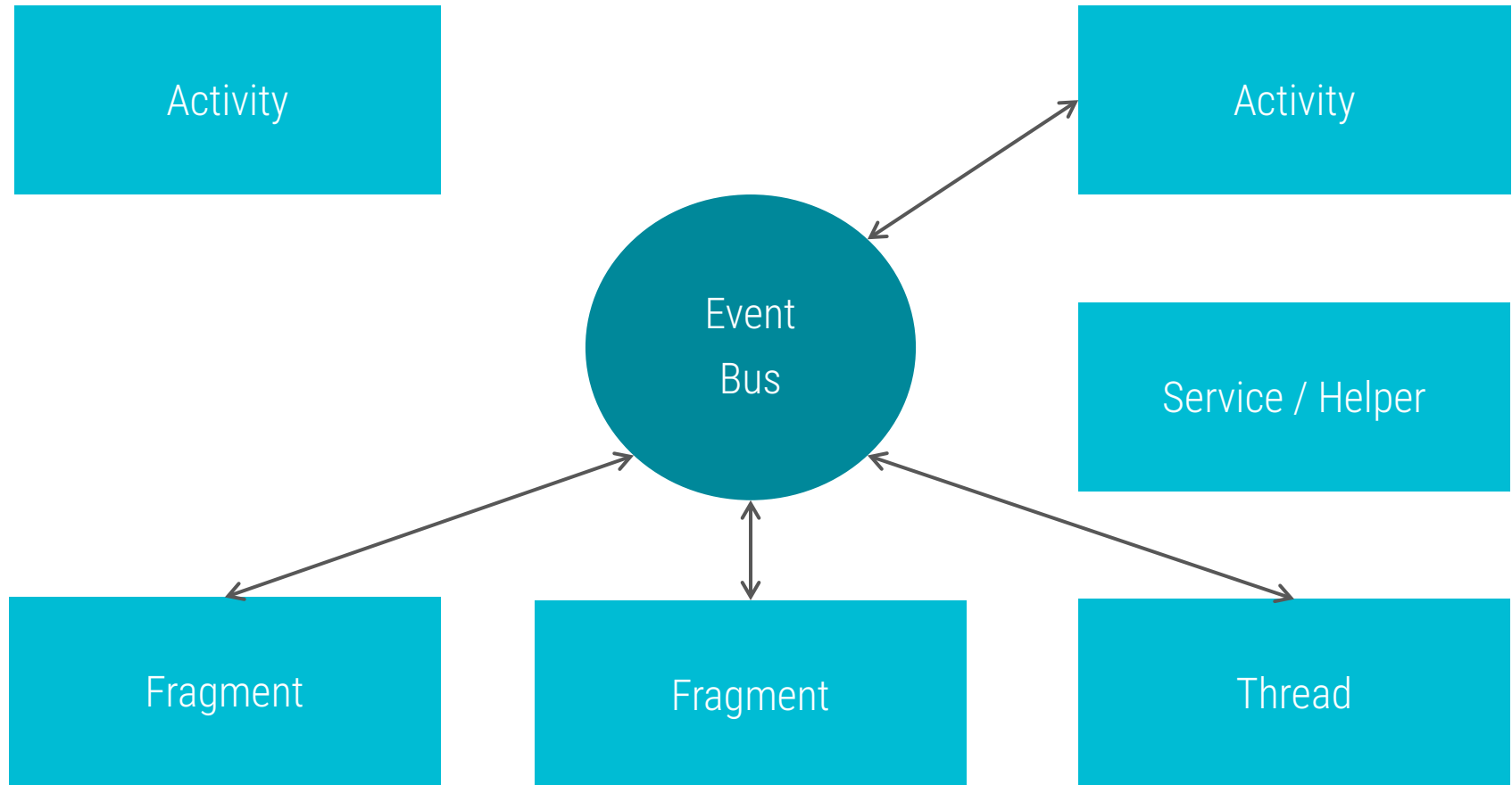
Markus Junginger, greenrobot.
droidcon Berlin, June 4th, 2015.

EventBus Overview

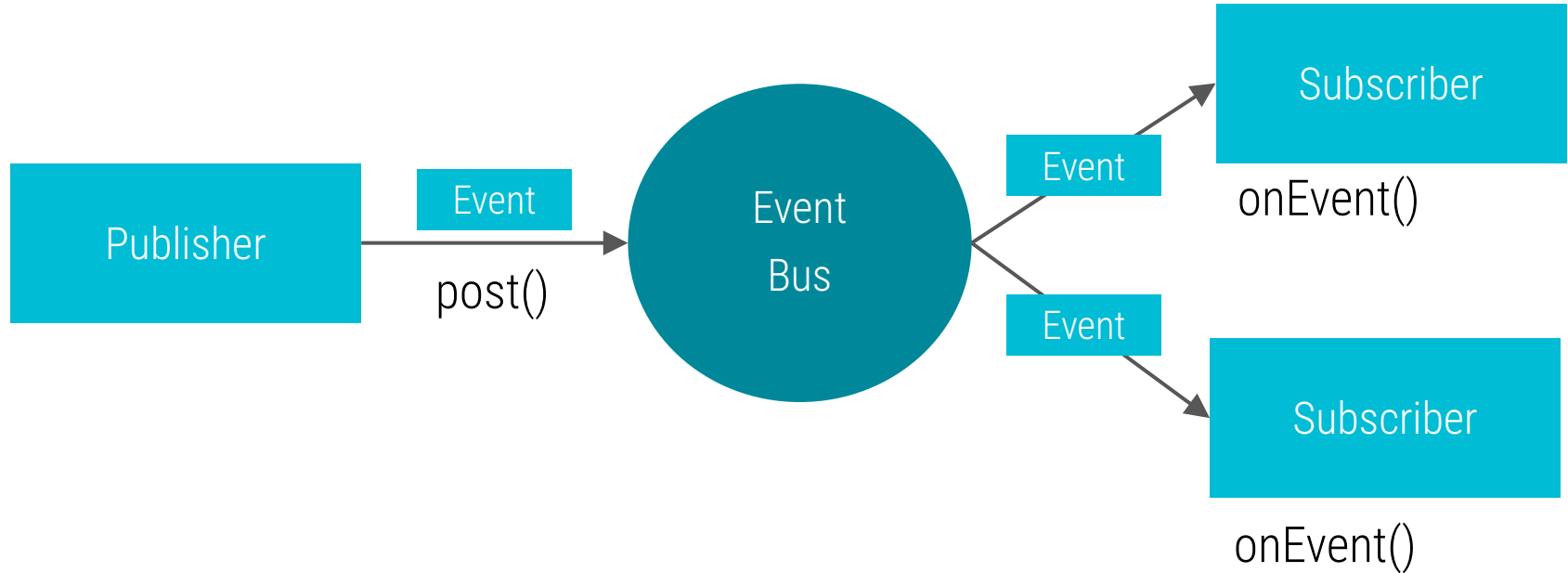
Android without EventBus



EventBus Communication



Publish / Subscribe













EventBus: Top Selling Points

- **Simple, but powerful API**
Distant communication gets easy
- **Fast**
No Annotations, cached data, optimized
- **Threading Support**
The receiving method defines the thread

EventBus 2 Adoption

- Check AppBrain
#3 Lib in Utilities
- ~5,000 stars on
GitHub
- One of the most
used libraries
for Android

Top apps using greenrobot EventBus

 Clean Master (Boost & AppLock) Cheetah Mobile	 CM Security Antivirus AppLock Cheetah Mobile (AntiVirus & AppLock)
★ 4.7 Free 100,000,000+	★ 4.7 Free 100,000,000+
 WhatsApp Messenger WhatsApp Inc.	 Battery Doctor (Battery Saver) Cheetah Mobile Inc. (NYSE: CMCM)
★ 4.4 Free 1,000,000,000+	★ 4.5 Free 100,000,000+
 Wish - Shopping Made Fun Wish Inc.	 Camera360 Ultimate PinGuo Inc.
★ 4.4 Free 10,000,000+	★ 4.4 Free 100,000,000+
 Power Clean(Booster & Cleaner) LIONMOBI	 Looney Tunes Dash! Zynga
★ 4.5 Free 10,000,000+	★ 4.2 Free 10,000,000+
 Pinterest Pinterest, Inc.	 Photo Lab FREE photo editor VicMan LLC
★ 4.6 Free 50,000,000+	★ 4.5 Free 10,000,000+

The road to EventBus 3

EventBus 3 is all about Annotations

- **Allow a simpler, more scalable API**
 - Optional parameters in the annotation
 - No more overloaded register(...) calls
- **More concise than naming conventions**
- **More flexible: per-method parameters**

Example Annotations

```
{ register(this); }
```

```
public void onEvent(MyEvent event) {...}
```



```
{ register(this); }
```

```
@Subscribe
```

```
public void handle(MyEvent event) {...}
```

Example Annotations

```
{ register(this); }
```

```
public void onEventMainThread(MyEvent e) {...}
```



```
{ register(this); }
```

```
@Subscribe(threadMode = ThreadMode.MainThread)  
public void handle(MyEvent event) {...}
```

Example Annotations

```
{ registerSticky(this); }
```

```
public void onEvent(MyEvent event) {...}
```



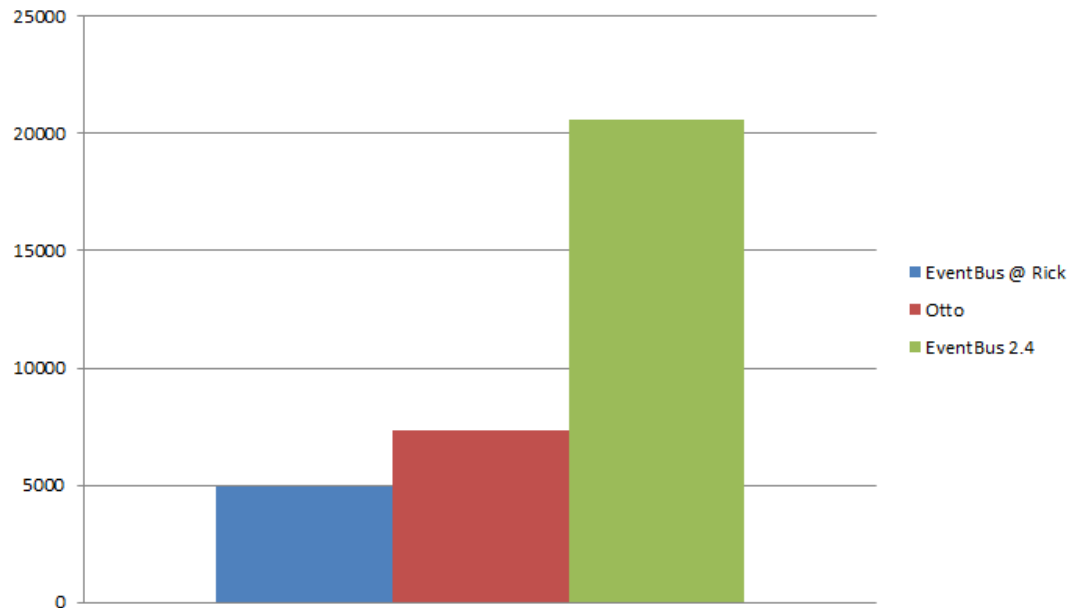
```
{ register(this); }
```

```
@Subscribe(sticky = true)
```

```
public void handle(MyEvent event) {...}
```

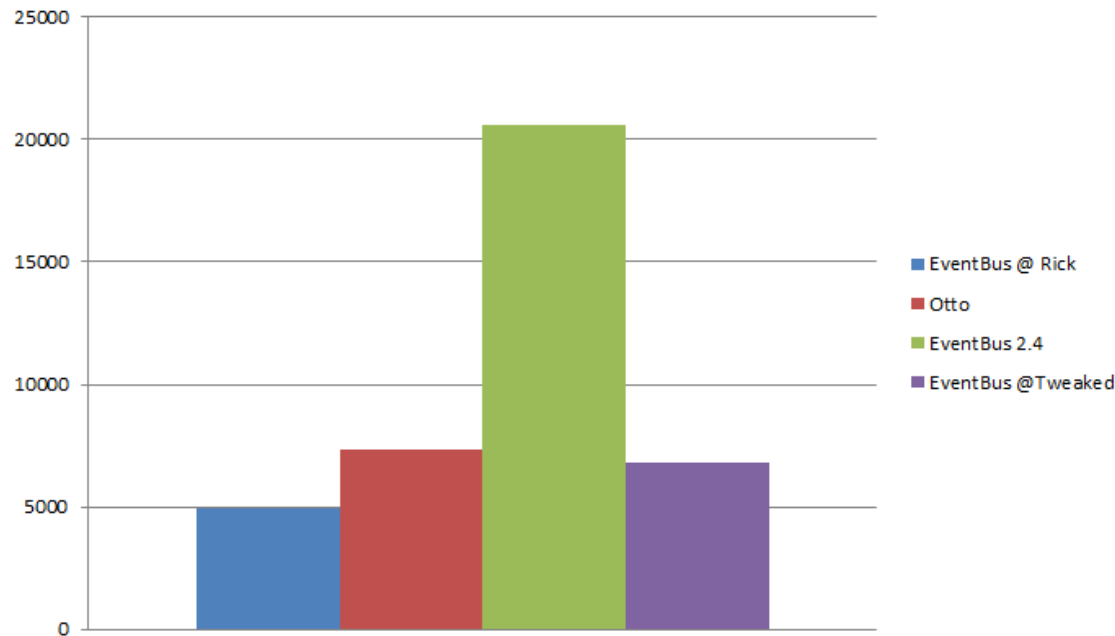
The Journey to EventBus 3: Community

- A couple of surprises along the way
- Initial contribution by Rick Brock (Thanks!)
- 1st time registration per second



The Journey to EventBus 3: Tweaking

- Tweaking registration performance a bit



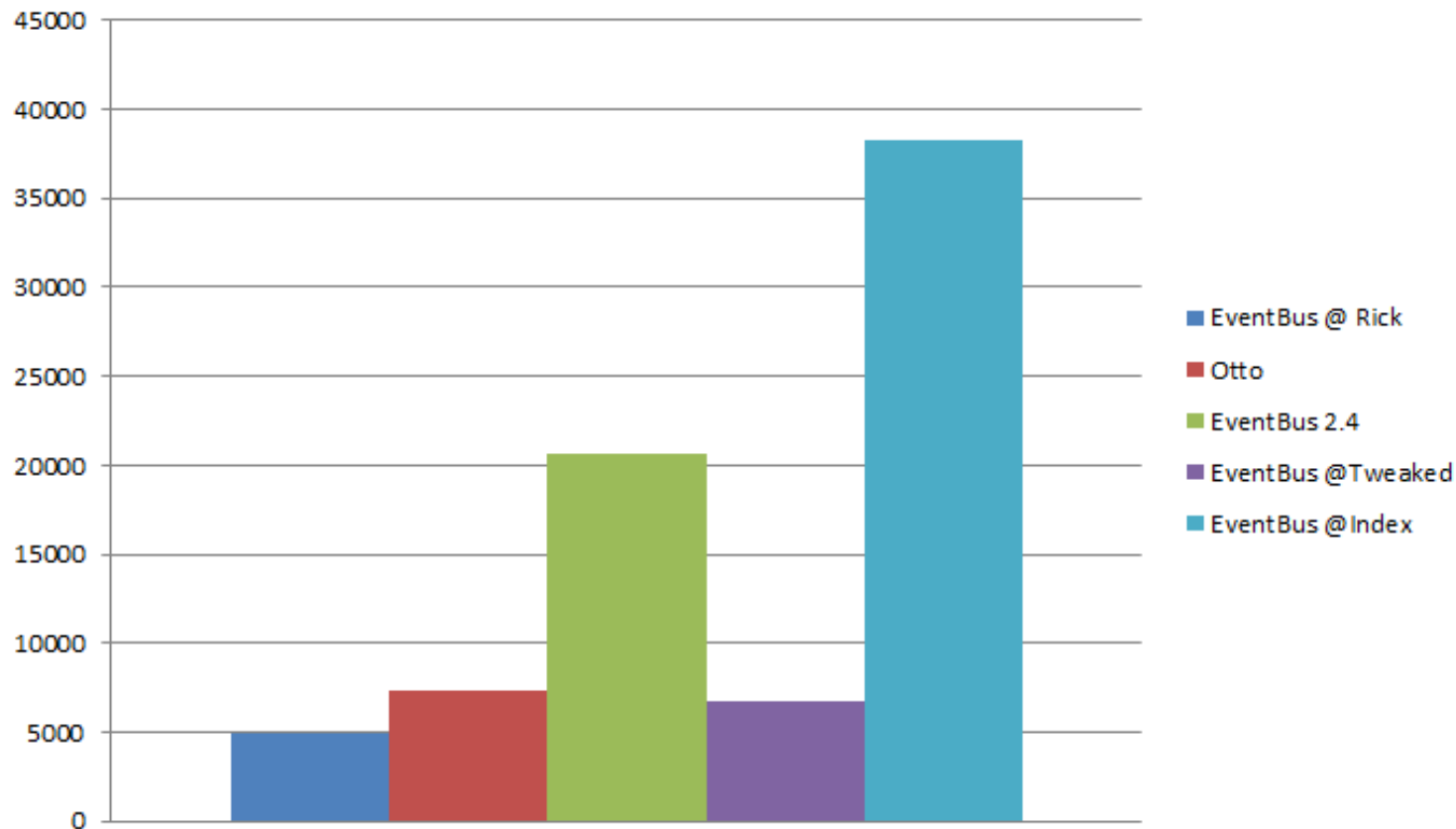
- About en par with Otto

The Journey to EventBus 3: @Processing

- ~7,000 1st time registrations/second
Registering 70 classes take 10ms
- Perfectly OK for most apps (newer Androids)
- But it can be done faster, right?
- Idea: scan classes at build time not run time
- Generate a class containing subscriber info
Class objects and method names

The Journey to EventBus 3: @Processing

- Prototype: Index generated by @Processing



Annotation Processor Caveats

- **AnnotationProcessor development sucks**
Gradle daemon has to be killed after changes
Debugging is hard, exception info hard to get
- **Not all use cases covered!!**
Anonymous classes are invisible to @Processor
Non-public classes inaccessible to index class

The Journey to EventBus 3: Finale

- **Performance vs. Convenience**

Force subscribers&event classes to be public?

Prohibit anonymous subscriber classes?

- **Hybrid solution**

Use index when possible

Fallback to reflection when needed

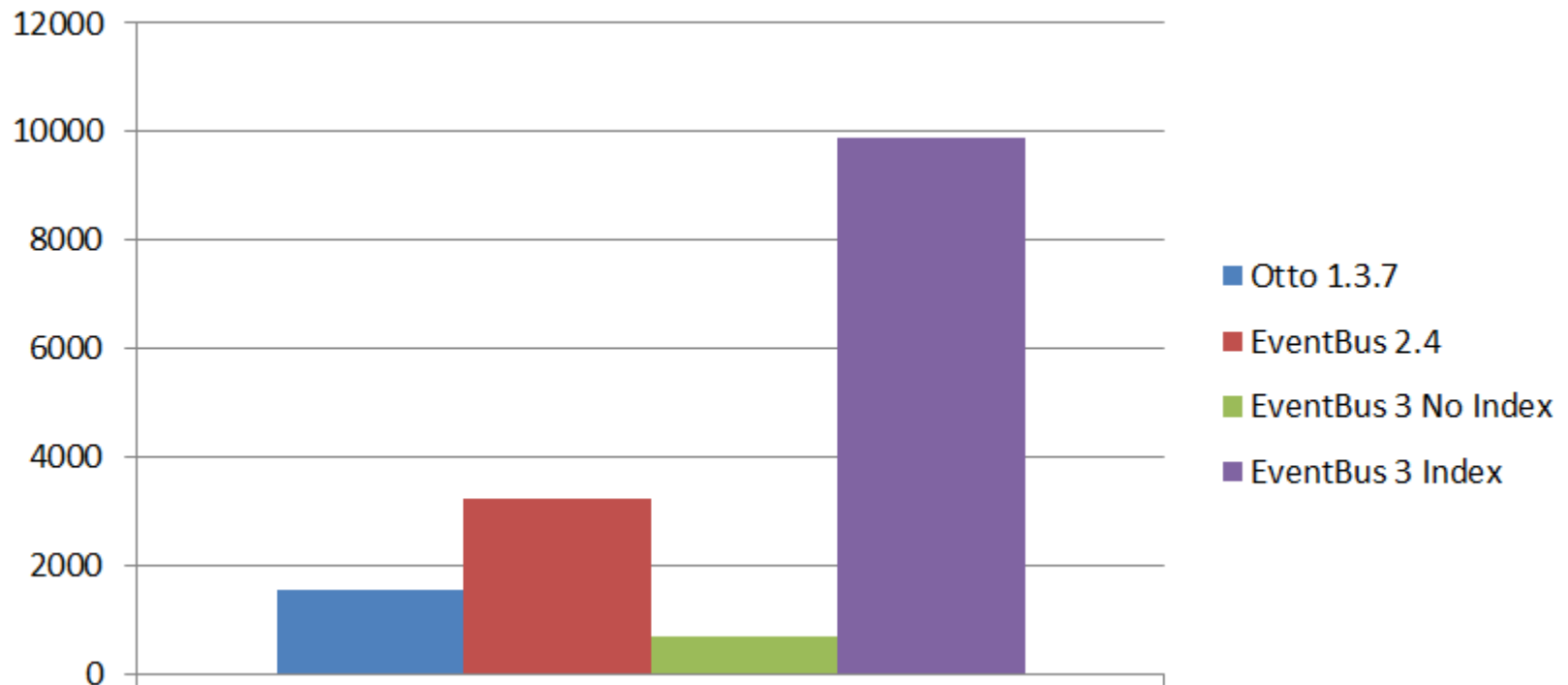
- **@Processor must detect problematic cases**

Also in superclasses...

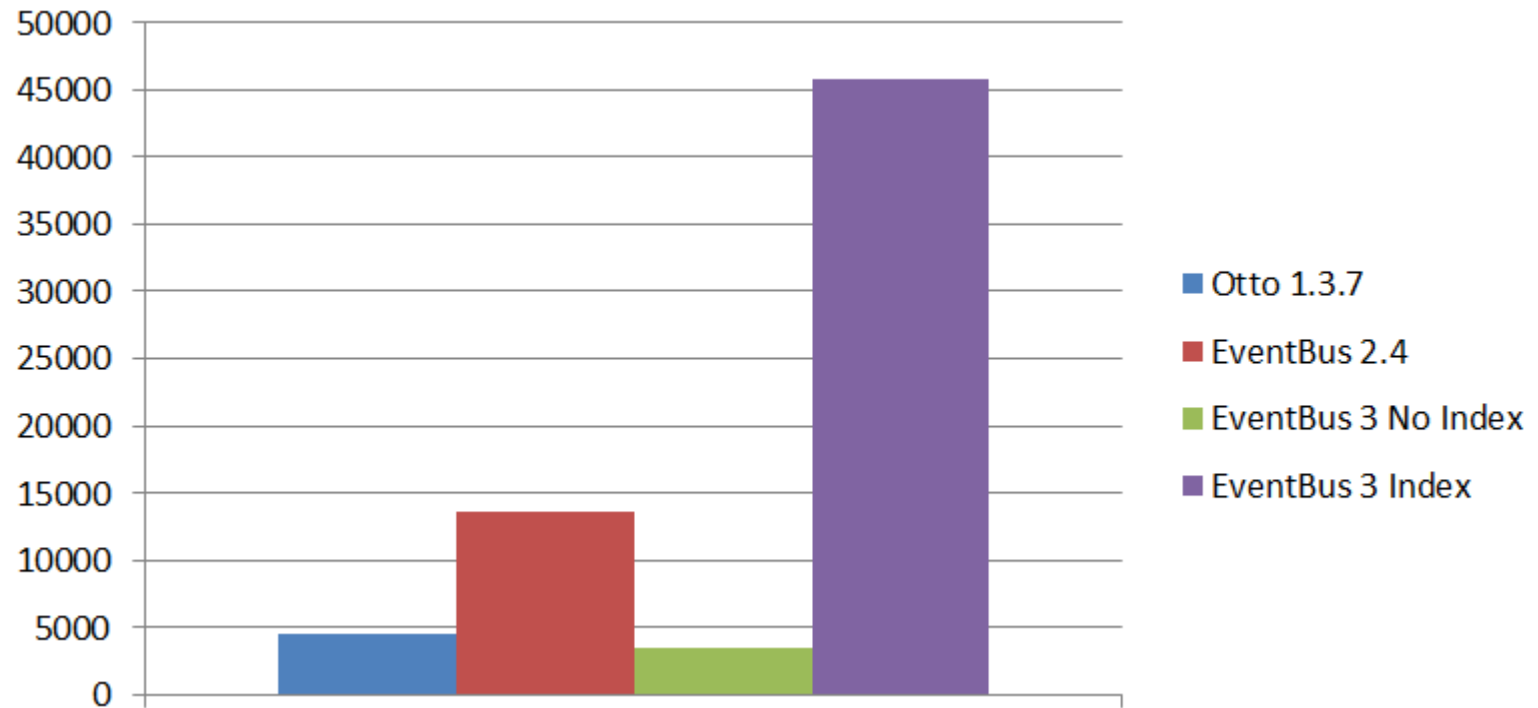
State of EventBus 3

- OK: All unit tests are green
- OK: API is about final
- OK: basic documentation on GitHub
- Open: Code clean up, mostly generated code
- Open: Use it in production apps
- Open: Finalize/update documentation

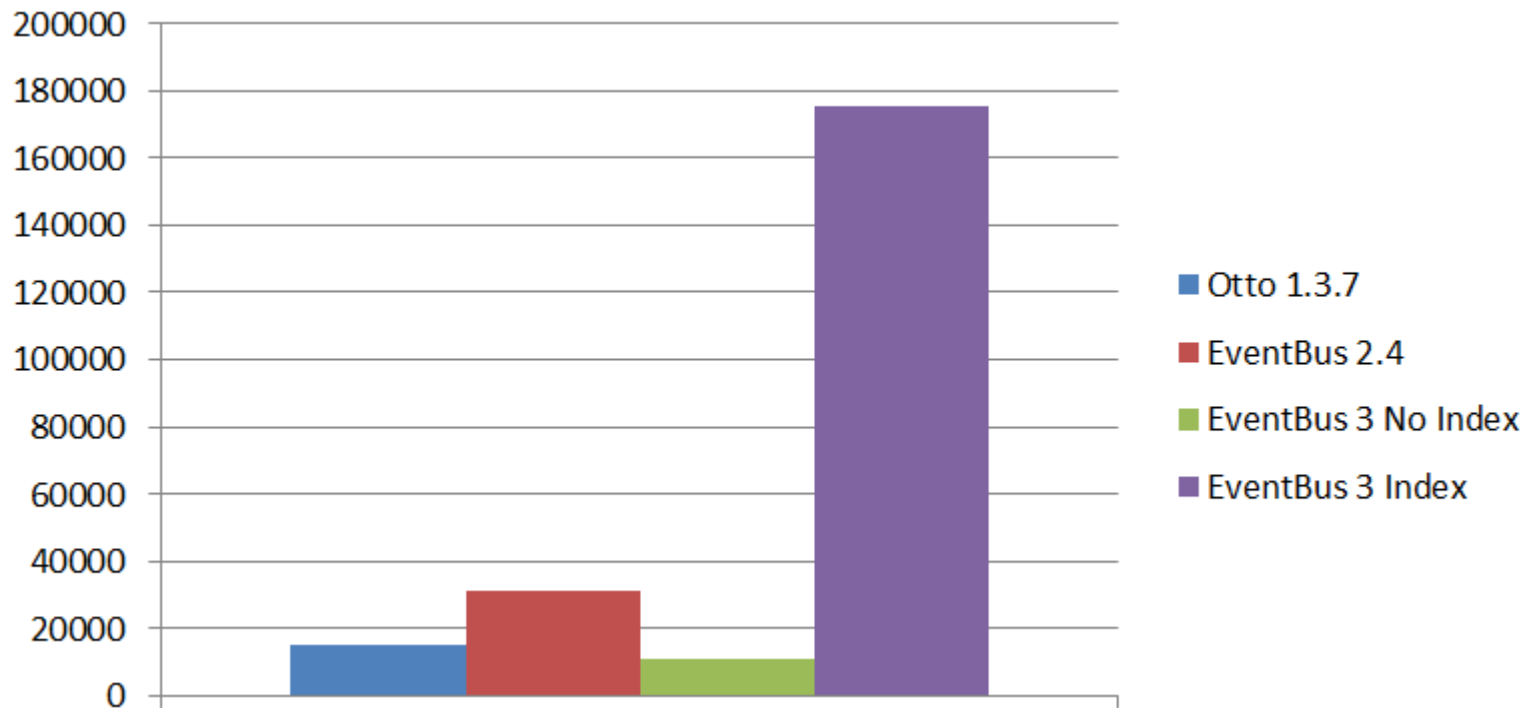
EventBus 3 Reg. Performance Nexus One



EventBus 3 Reg. Performance Nexus 5 (5.1)



EventBus 3 Reg. Performance Nexus 9 (M)



Registration Performance Observations

- Annotation Reflection is still very slow
- Annotation lookup slows down EventBus 3-5x
Compared to method lookup
- **With index, EventBus V3 is 3x faster than V2.4**
On the Nexus 9 & Android M even 5,7x faster

EventBus 3 Beta available TODAY

```
compile 'de.greenrobot:eventbus:3.0.0-beta1'  
provided 'de.greenrobot:  
    eventbus-annotation-processor:3.0.0-beta1'
```


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