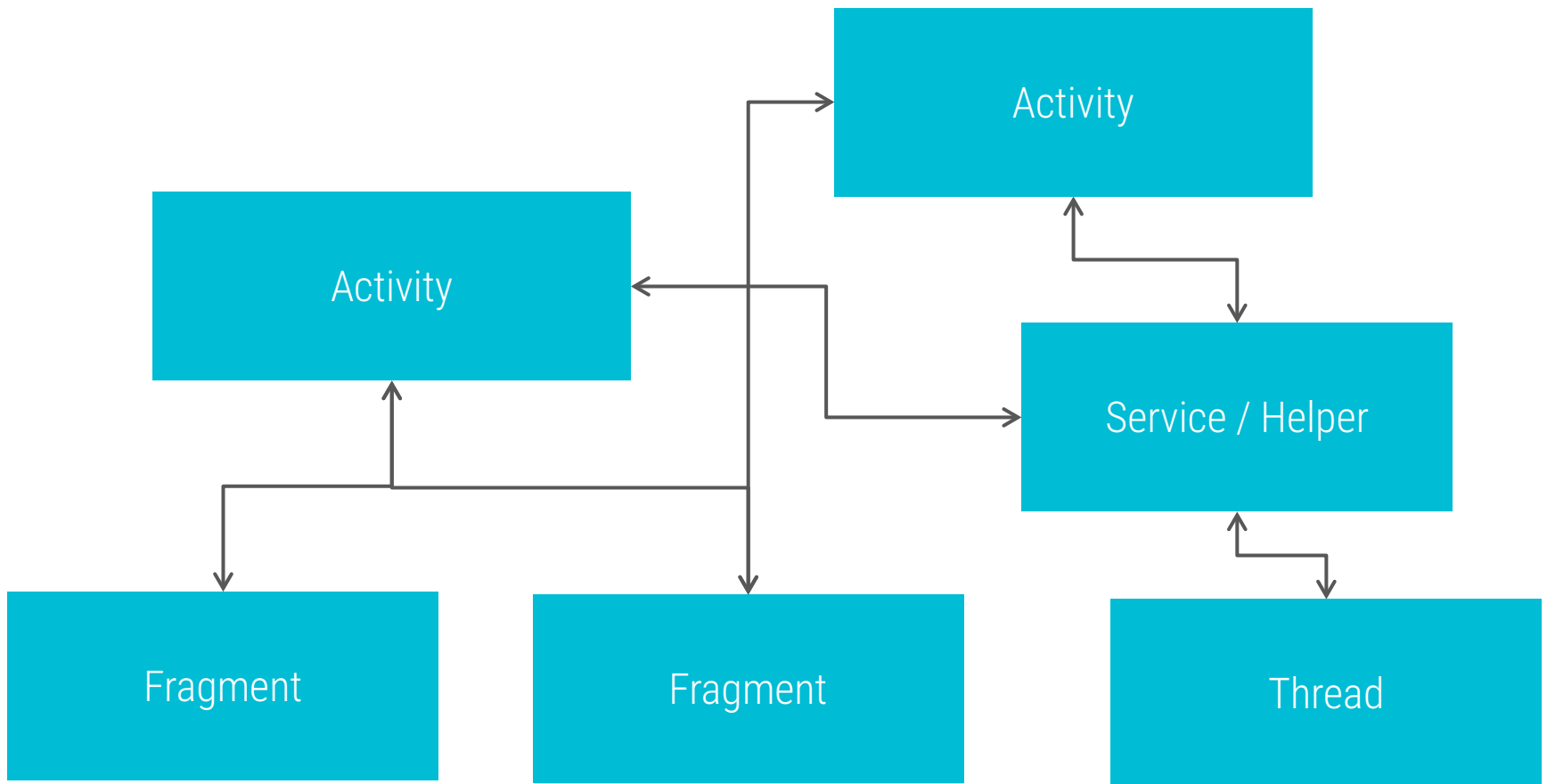


# EventBus 3

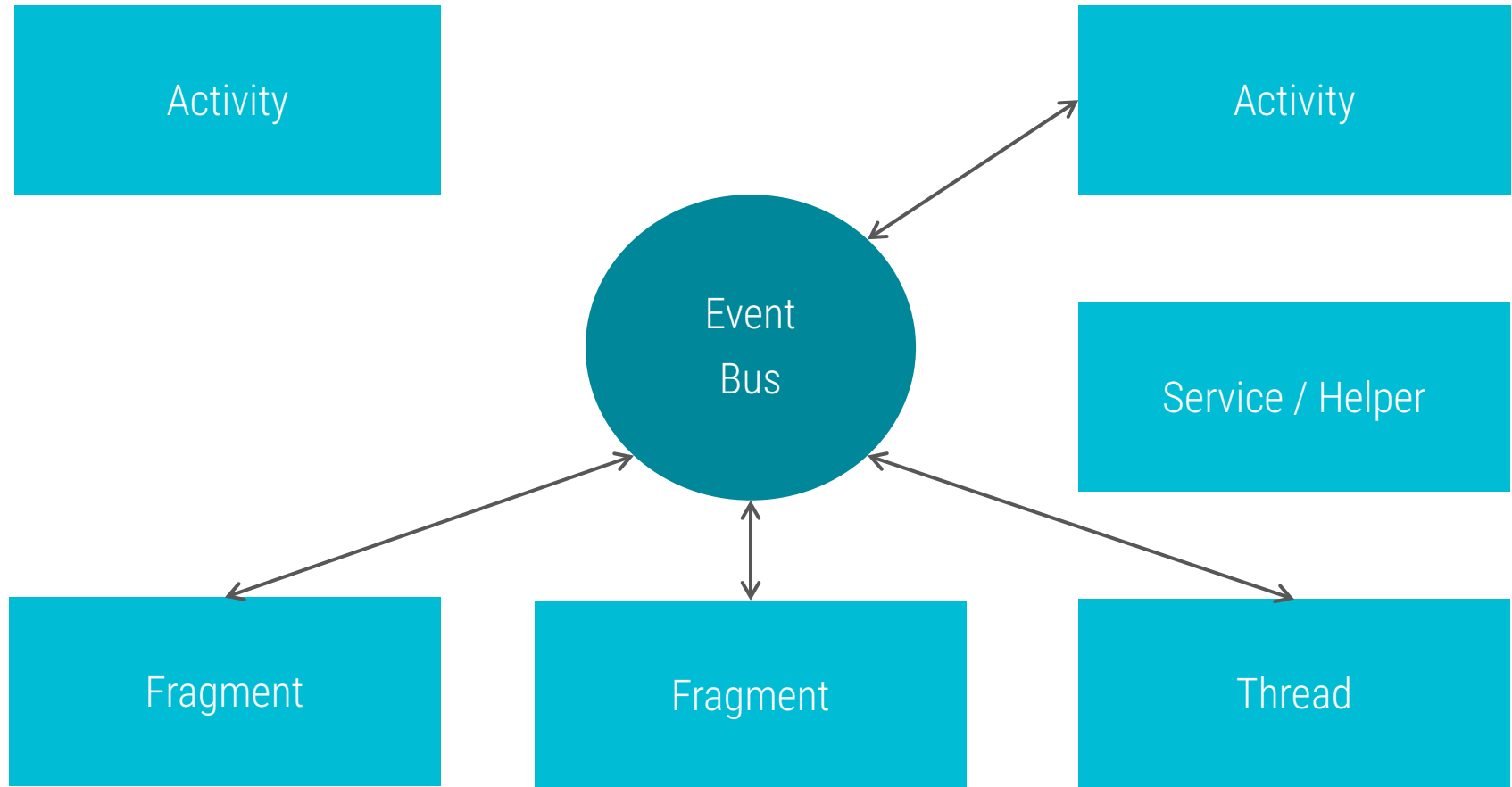
Markus Junginger, greenrobot.  
droidcon Berlin, June 4th, 2015.

# EventBus Overview

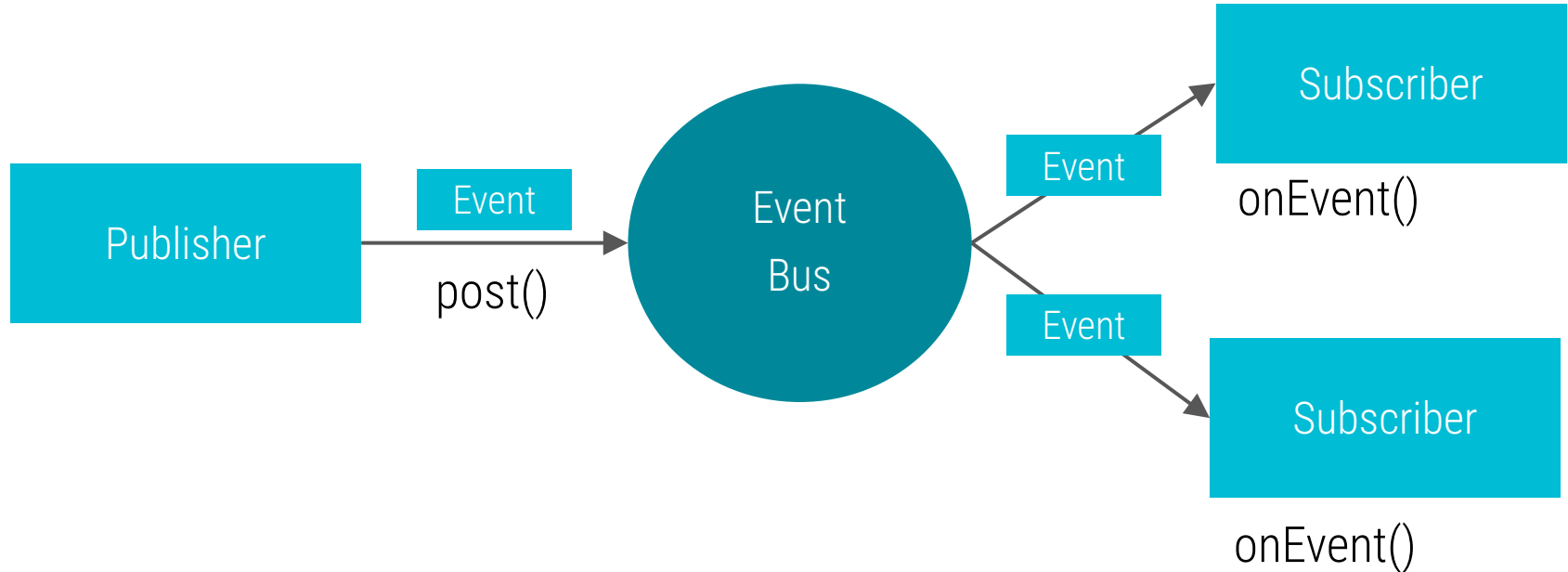
# Android without EventBus



# 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

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



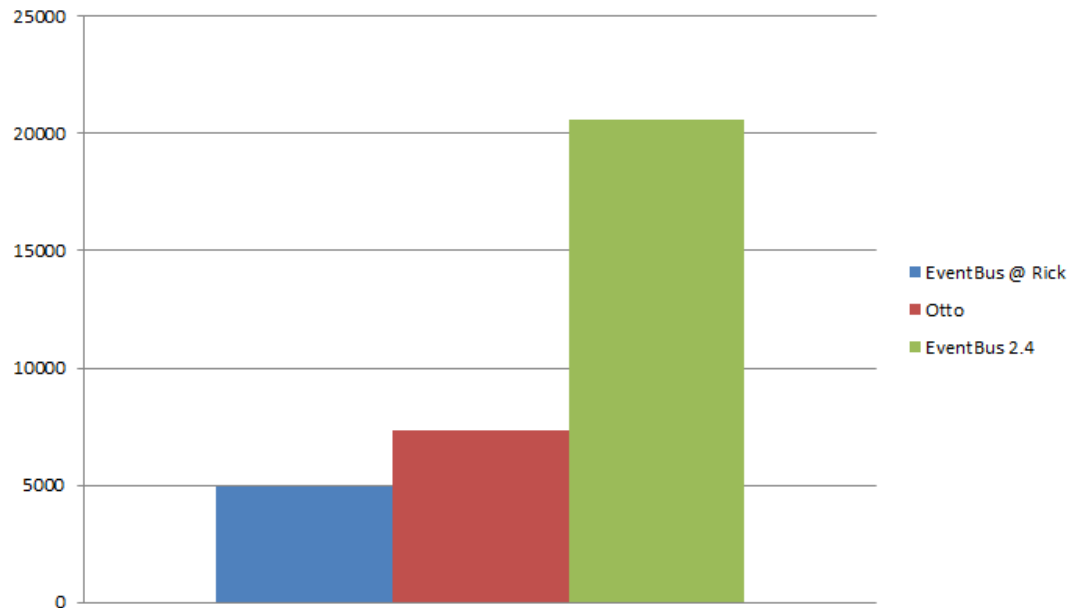
```
{ register(this); }
```

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

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

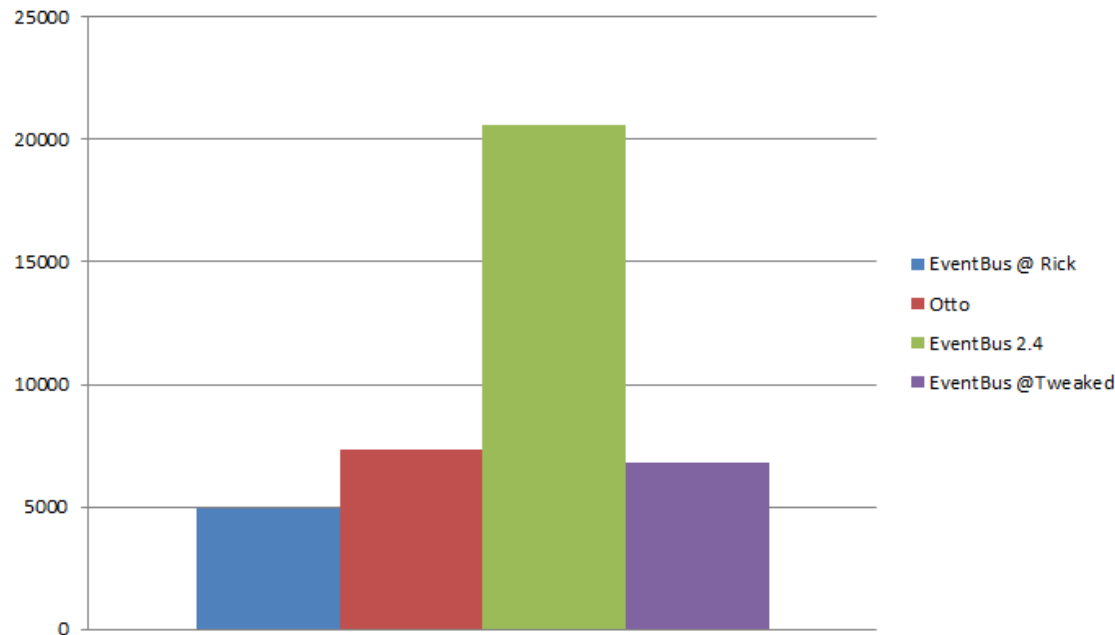
# The Journey to EventBus 3: Community

- 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



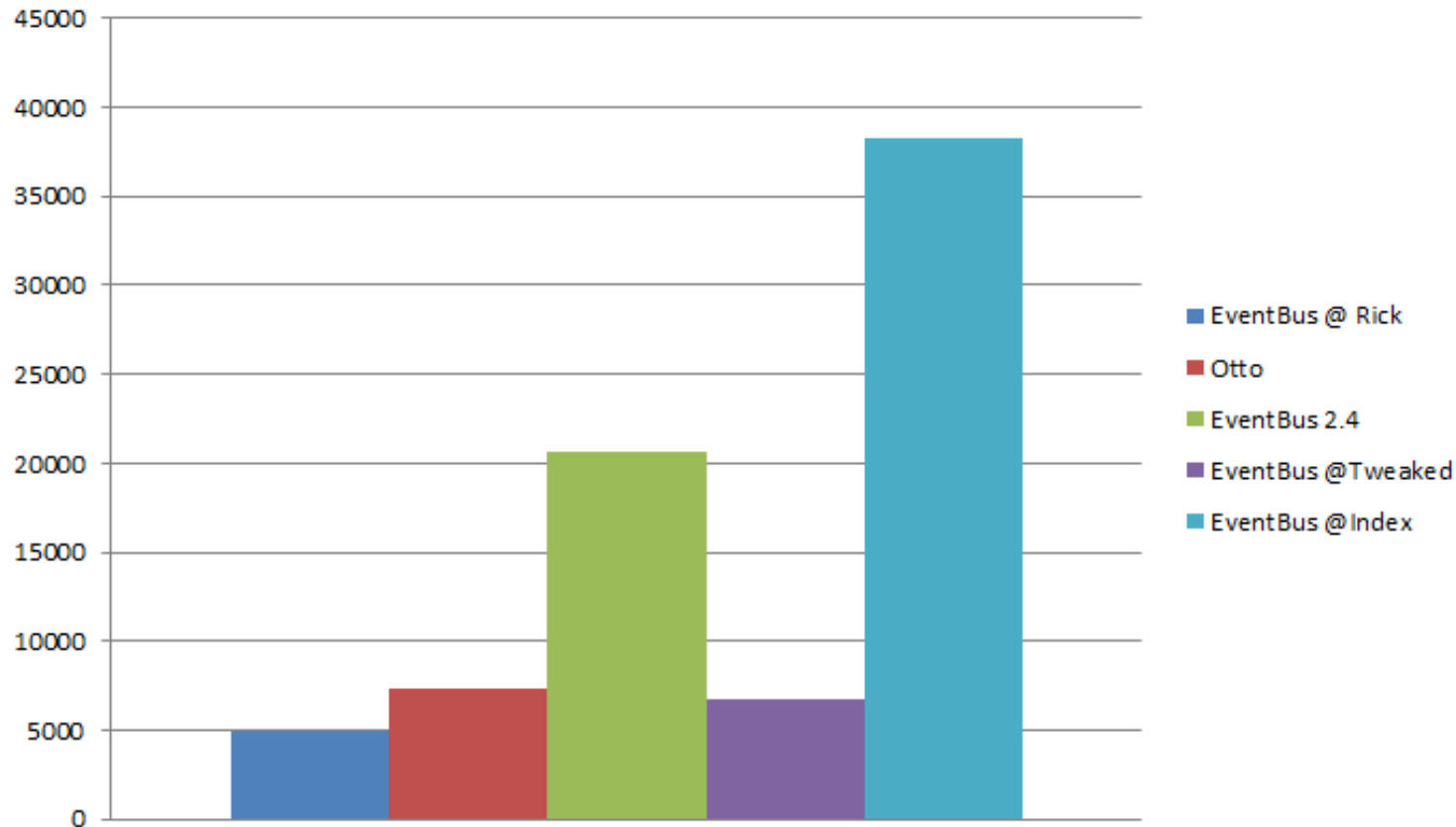
- About en par with Otto

# 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

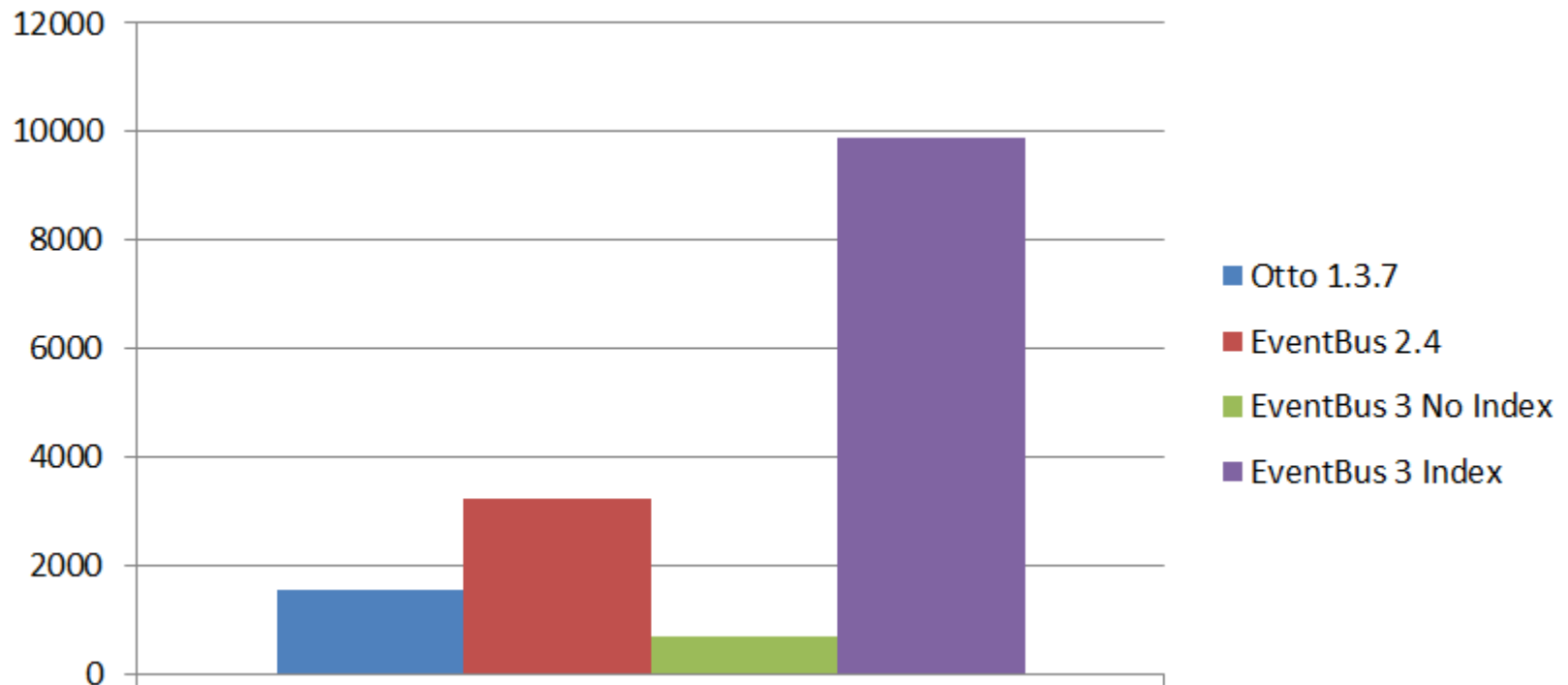
- **@Processor must detect problematic cases**

Also in superclasses...

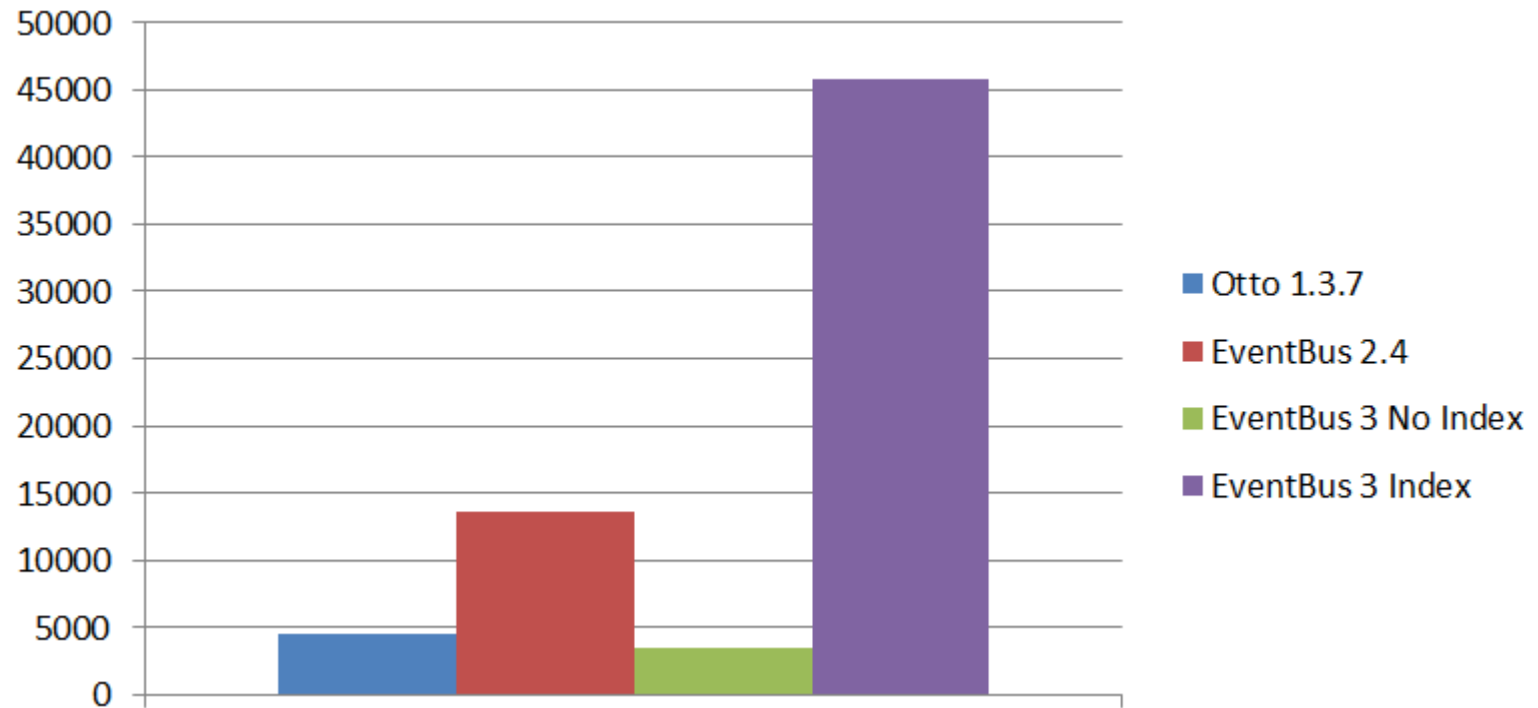
# State of EventBus 3

- 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

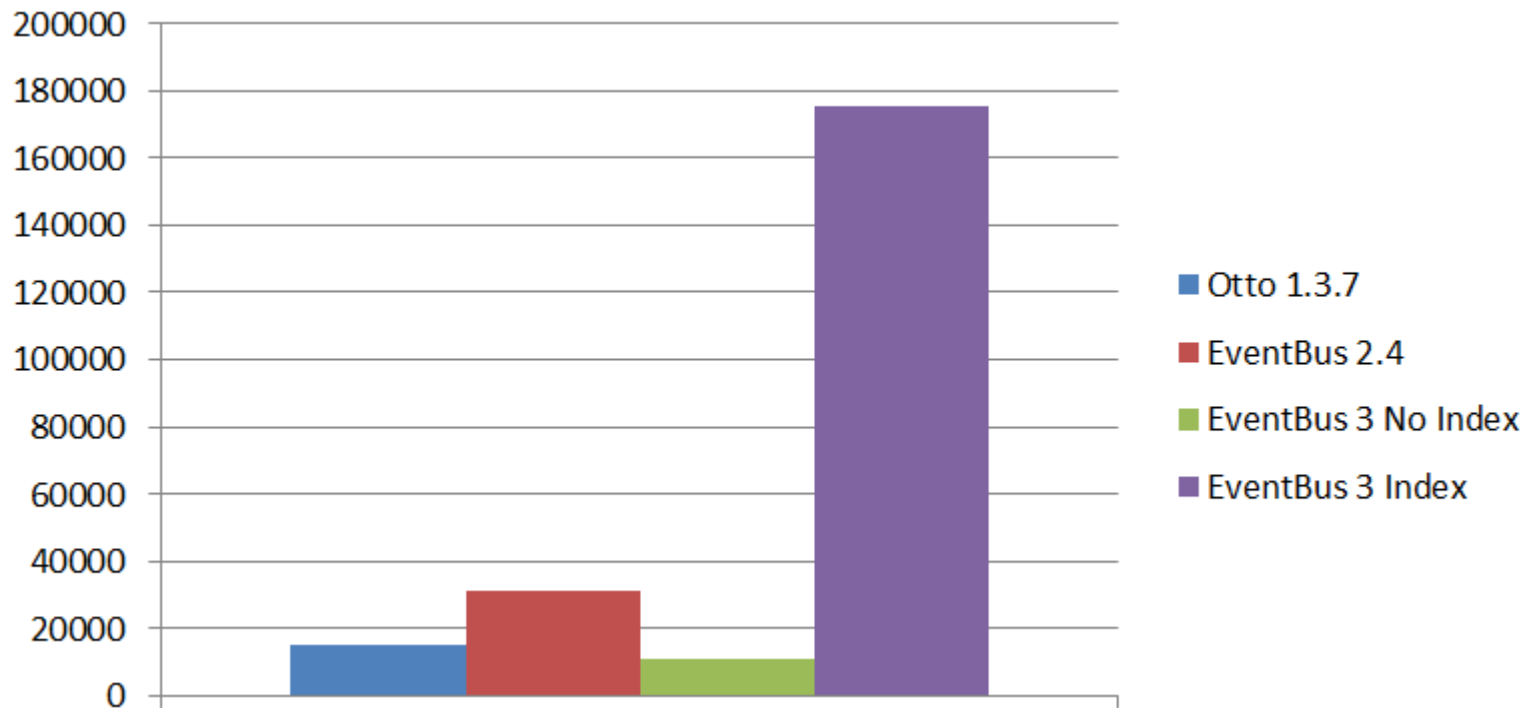
# EventBus 3 Reg. Performance Nexus One



# 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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