

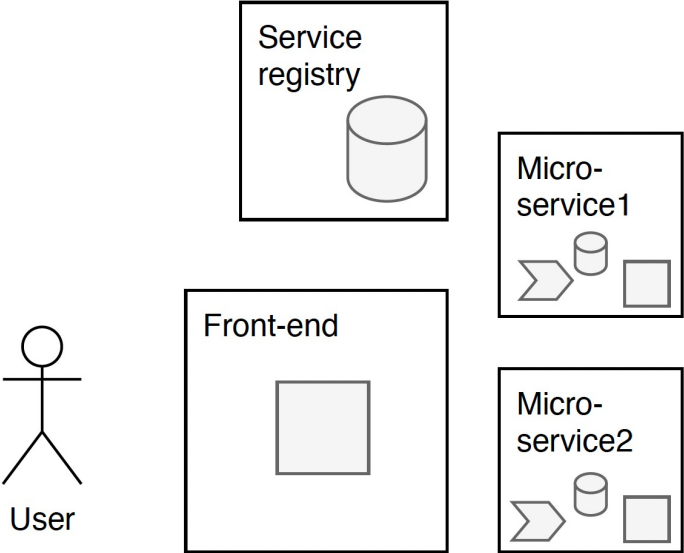
Open Tracing Tools: Overview and Critical Comparison

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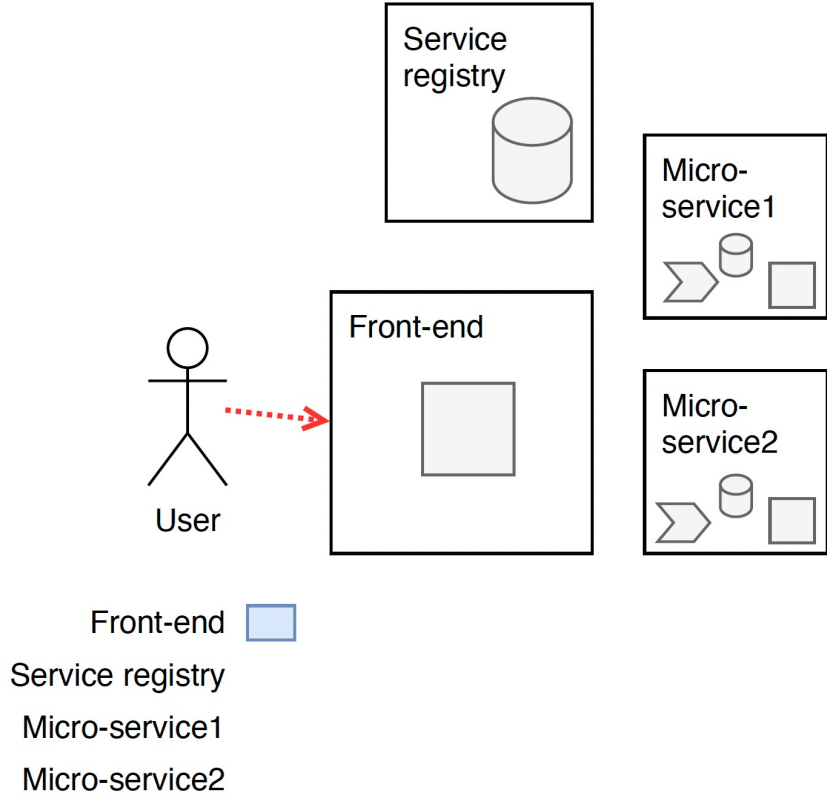
1) FHV Vorarlberg University of Applied Sciences, Austria

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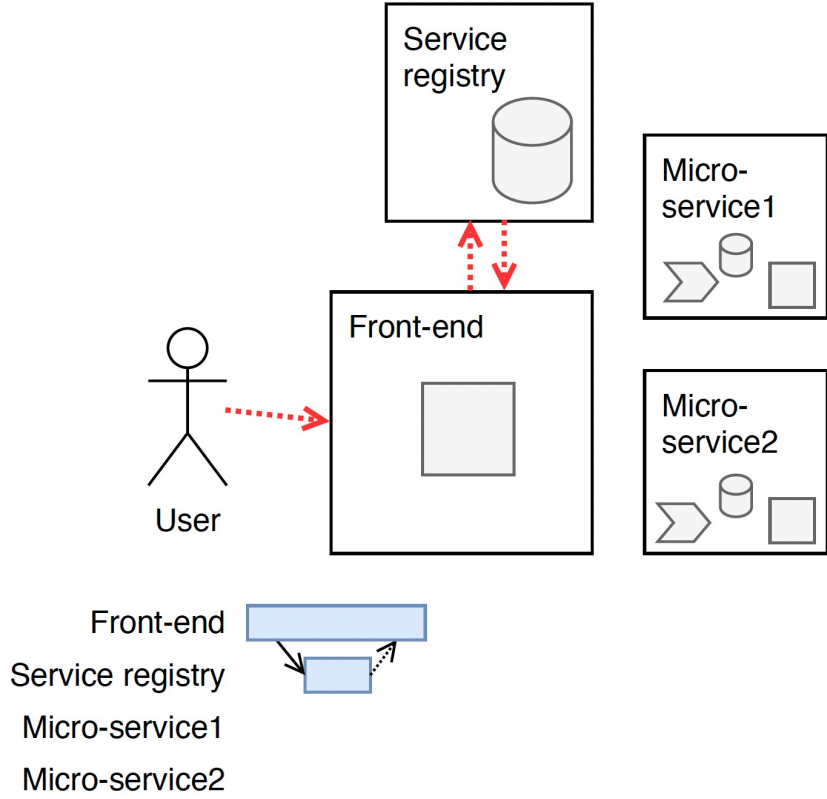
What is Tracing?



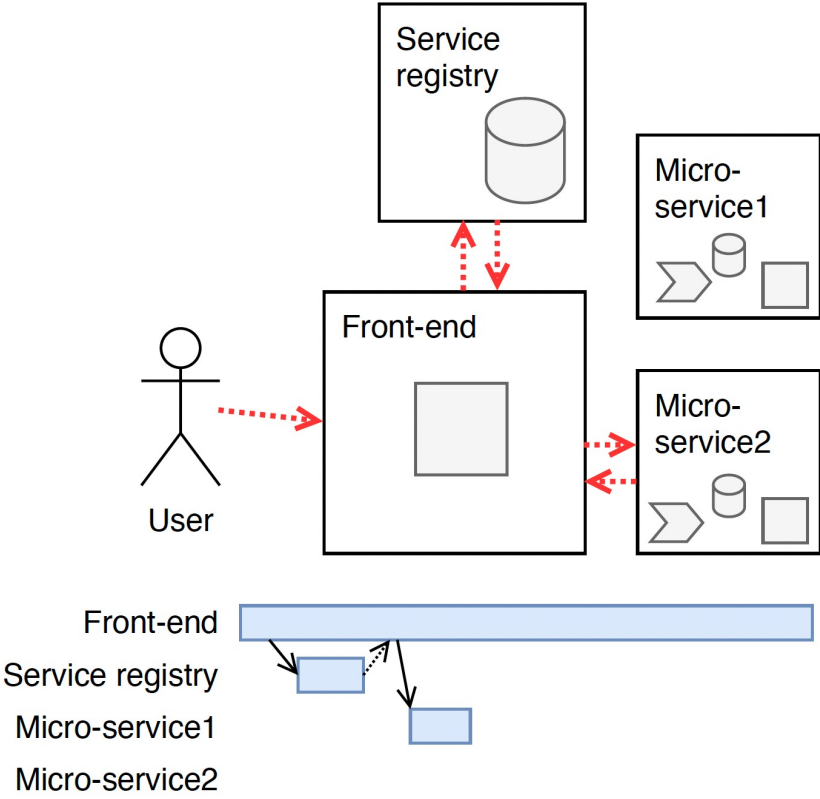
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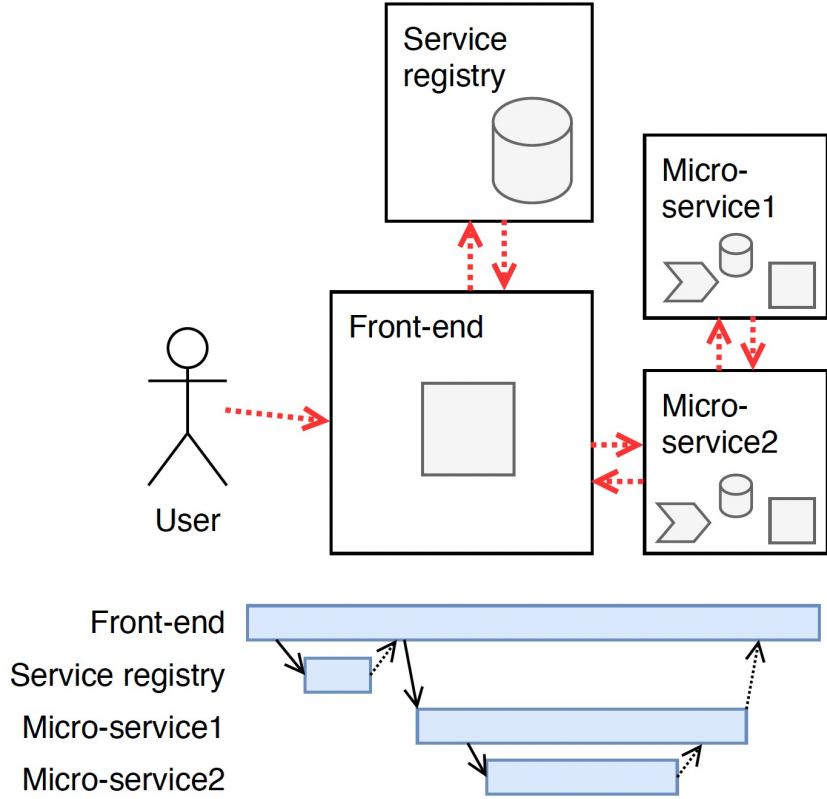
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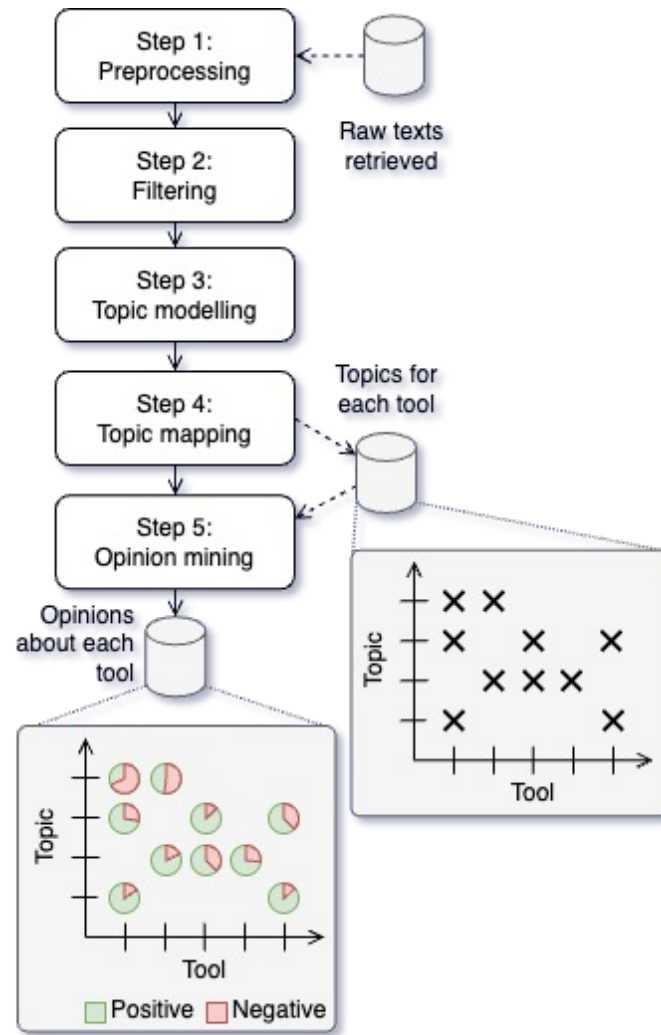
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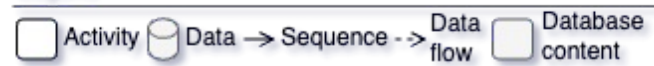
Research questions

- RQ1: Distinctive features
- RQ2: Tool popularity
- RQ3: Benefits
- RQ4: Issues

Process



Legend



The identified tools

Table 1: The 30 retrieved tools

Tool name	Web site
Appdash	https://github.com/sourcegraph/appdash
Appdynamics	https://www.appdynamics.com/
Containiq	https://www.containiq.com/
DATADOG	https://www.datadoghq.com/
Dynatrace	https://www.dynatrace.com/
Elasticapm	https://www.elastic.co/
Grafana tempo	https://grafana.com/oss/tempo/
Haystack	https://expediadotcom.github.io/haystack/
Honeycomb.io	https://www.honeycomb.io/
Hypertrace	https://www.hypertrace.org/
Instana	https://www.instana.com/
Jaeger	https://www.jaegertracing.io/
Kamon	https://kamon.io/
Lightstep	https://lightstep.com/
Logit.io	https://logit.io/

Lumigo	https://lumigo.io/
New relic	https://newrelic.com/
Ocelot	https://www.inspectit.rocks/
Opencensus	https://opencensus.io/
Opentelemetry	https://opentelemetry.io/
Sentry	https://sentry.io/welcome/
Skywalking	https://skywalking.apache.org/
Site24x7	https://www.site24x7.com/
Signoz	https://signoz.io/
Splunk	https://www.splunk.com/
Stagemonitor	https://www.stagemonitor.org/
Tanzu	https://tanzu.vmware.com/tanzu
Uptrace	https://uptrace.dev/
Victoriametrics	https://victoriametrics.com/
Zipkin	https://zipkin.io/

Architecture

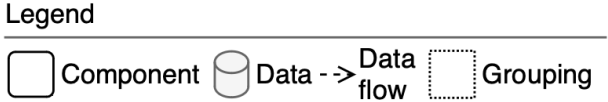
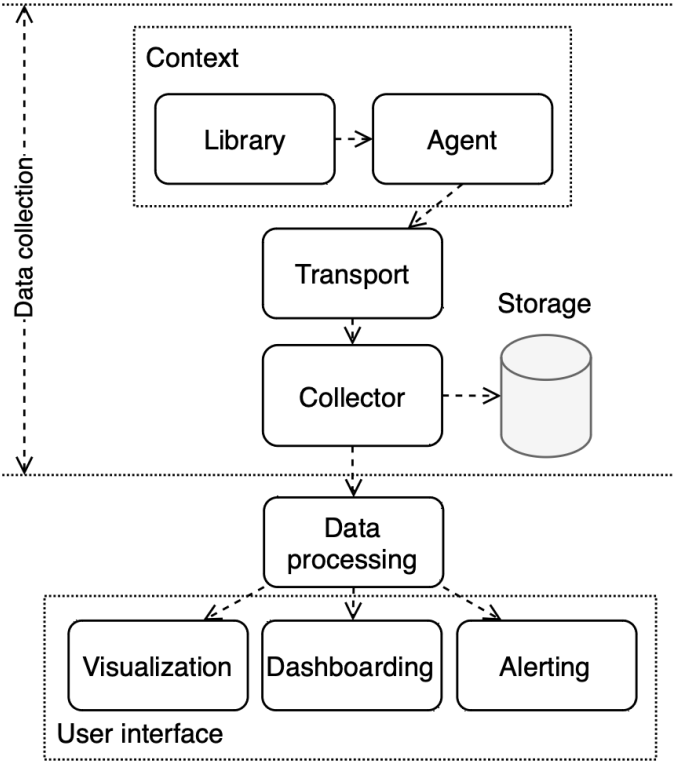


Figure 3: APM components according to the OpenAPM initiative [16] and their typical communication data flow

Tool popularity

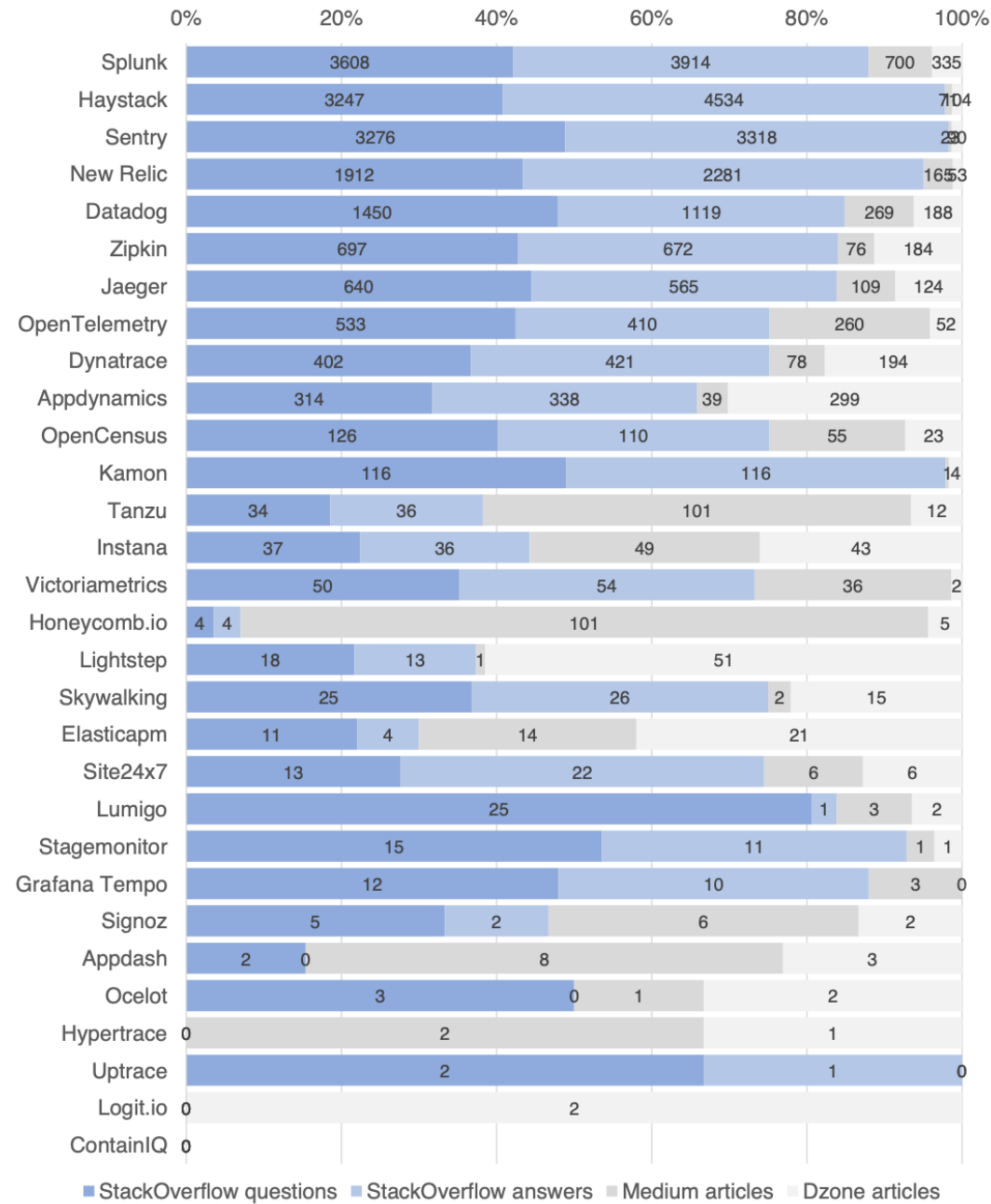


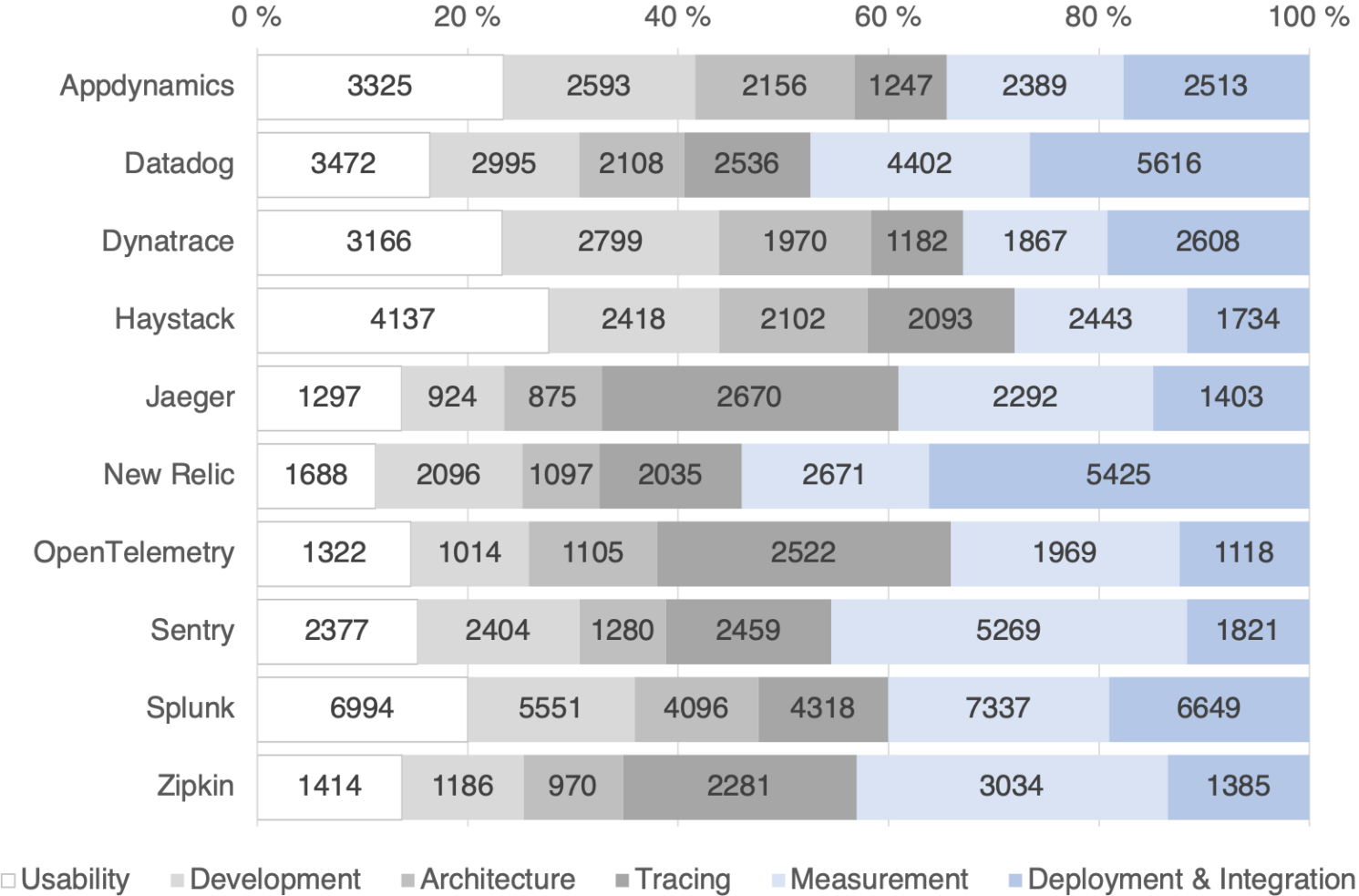
Figure 4: Social media content distribution (RQ₂)

Identified topics

Table 7: Topic interpretation with indicator keywords (RQ₃ and RQ₄)

Topic	Indicator keywords
Usability	'user', 'support', 'developer', 'security', 'build', 'performance', 'production', 'design', 'use', 'need', etc.
Development	'spring', 'team', 'software', 'development', 'implement', 'issue', 'develop', 'time', 'handle', 'process', etc.
Architecture	'architecture', 'distribute', 'scale', 'observability', 'business', 'customer', 'solution', 'pattern', 'release', 'feature', etc.
Tracing	'trace', 'source', 'code', 'framework', 'message', 'open', 'follow', 'alert', 'spring_boot', 'transaction', etc.
Measurement	'microservice', 'application', 'request', 'log', 'use', 'event', 'metric', 'server', 'kubernetete', 'api', etc.
Deployment & Integration	'application', 'service', 'monitor', 'cloud', 'deploy', 'deployment', 'infrastructure', 'integration', 'manage', 'environment', etc.

Topic frequency



Topic sentiment

Table 8: Topic sentiment average percentage for each tool (RQ₃ and RQ₄)

Tool	Positive	Neutral	Negative
AppDynamics	47.4%	36.6%	16.0%
Datadog	43.3%	42.2%	14.6%
Dynatrace	45.7%	39.7%	14.6%
Haystack	38.0%	40.3%	21.7%
Jaeger	40.8%	46.6%	12.6%
New Relic	32.5%	47.4%	20.1%
OpenTelemetry	41.9%	46.2%	11.9%
Sentry	30.8%	36.6%	32.6%
Splunk	44.7%	40.1%	15.2%
Zipkin	41.1%	45.8%	13.1%

Benefits and Issues

Table 9: Benefits and issues for each tool regarding topics (RQ₃ and RQ₄)

Criteria	AppDynamics	Datadog	Dynatrace	Haystack	Jaeger	New Relic	OpenTelemetry	Sentry	Splunk	Zipkin
Architecture	+	+	+	+	+	+	+	+	+	+
Deployment & Integration				+	+			+		
Development	-		-	-	-	-		-		
Measurement	-	-	-	-	-	-	-	-	-	-
Tracing		-	-			-		-		
Usability		+		+	+	+	+	+		+

+Benefit
 -Issue

Thank you for your attention!