



可觀測性(Observability)的實踐

Marcus @ DevOps Days Taipei 2022

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AGENDA

Observability

- 什麼是 Observability
- 可觀測性 vs 監控

Practices

- 挑戰 & 工具

Take Away

- 總結



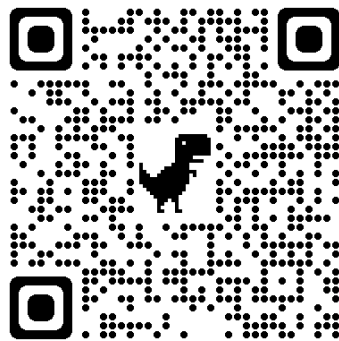


Hello!



I'm Marcus

- ▶ 專注在後端開發的工程師
- ▶ 喜歡上技術課程 / 研討會吸收新知識
- ▶ 分享學習技術於 Blog & fb 粉絲團



Blog : [m@rcus 學習筆記](#)



Fb : [粉絲團](#)

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專注

- 會提供投影片
- 會提供參考資料連結
- 有任何問題，歡迎會後聯繫討論



Observability

可觀測性

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ONCE A TIME



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新人內心
OS



有點小複雜



Reference : [強一點點](#)

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Challenge



Monolith



N - tier



SOA



Microservices



Serverless / FaaS



Virtualization



Cloud



Containers



Orchestration

Complexity low

Complexity high

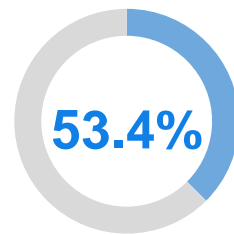
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Challenge

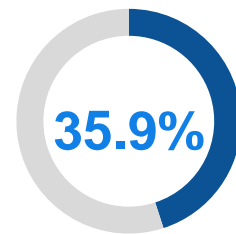
Monitor Complexity

MTTR 

一小時解決問題



2021



2022



如何擁抱現代化系統的不確定性？



Observability

可觀測性

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“Observability is a measure of how well internal states of a system can be inferred from knowledge of its external outputs. In control theory, the observability and controllability of a linear system are mathematical duals.” - wiki





阿鬼,你还是说中文吧

蒐集遙測數據

**"Observability is defined as
the ability to measure the
internal state of a system only
by its outputs" - lightstep**

什麼是慢的、什麼是壞的、需要做什麼來提高性能 (behavior)

發生什麼問題 (what)、為什麼會發生 (why)、要如何修復它

蒐集遙測數據

**"Observability is / defined as
the ability to measure the
internal state of a system only
by its outputs"** - lightstep

什麼是慢的、什麼是壞的、需要做什麼來提高性能 (behavior)

目的：更了解你的系統狀況

發生什麼問題 (what)、為什麼會發生 (why)、要如何修復它

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WHAT



Metrics

- Is my service healthy ?
- How much traffic do we have ?

WHY



Logs

- Why did this node crash ?
- Was function X on the node called ?

WHERE



Traces

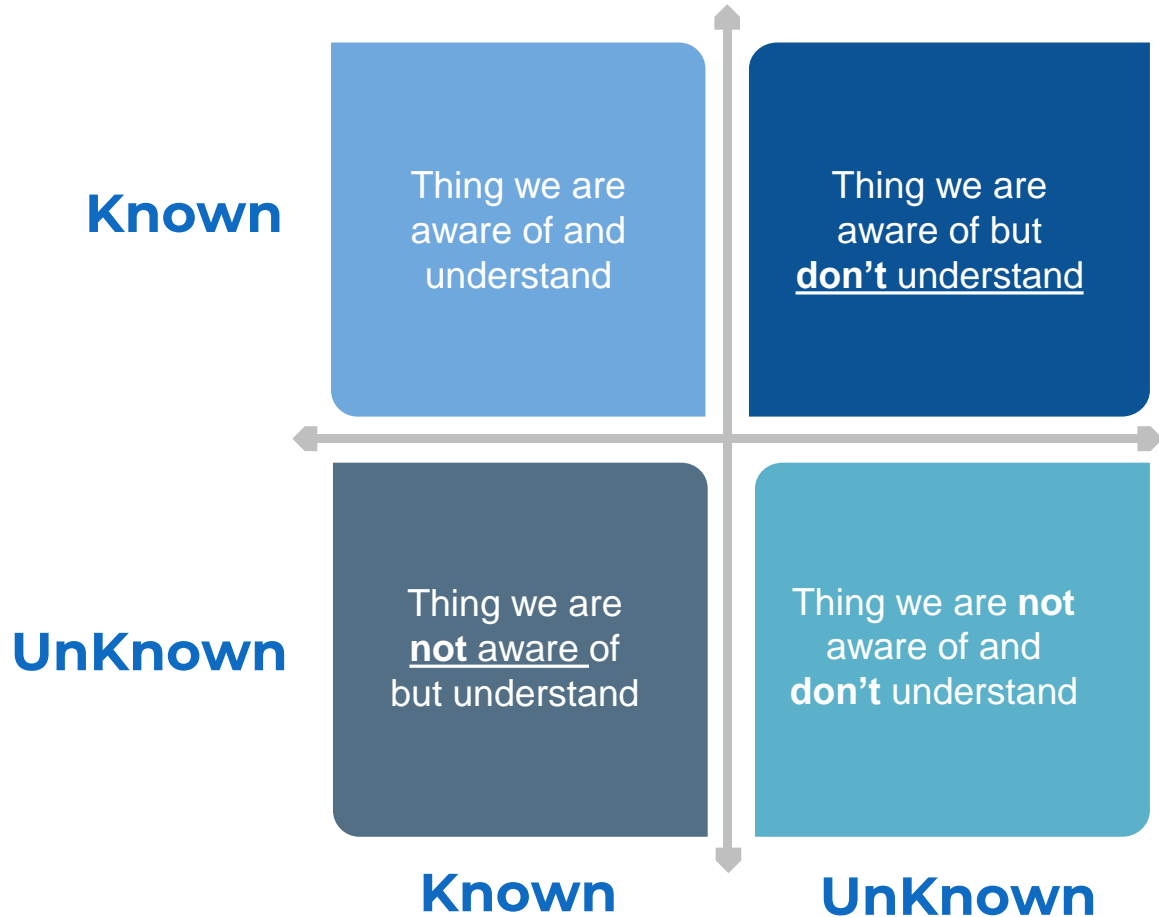
- Why was this request slow?
- Where should I optimize performance?
- Which services are involved?

Observability V.S Monitor

可觀測性

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Unknown Unknown



20

Unknown Unknown



Reference : [The Future of Monitoring \(2/2\): The Rise of Observability](#)

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Unknown
Unknown

系統有沒有
正常工作

系統為甚麼
不工作

監控

可觀測性

Unknown



PROBLEM

■ 監控

■ 可觀測性

ALERTING

OVERVIEW

LOGGING

PROFILING

DEBUGGING

DEPENDENCY

ANALYSIS

DATA



Вторник
22:38:37

Изображения



IRON MAN

Троицк, Россия
Осадки

Погода

3°

STARK INDUSTRIES

СИСТЕМА	
CPU Использовано	36%
RAM Использовано	30%
SWAP Использовано	16%

Reference : [source](#)

Сосняком по откосам
кудрявится
Пограничный скупой
кругозор.
Принимай нас, Суоми -
красавица,
В ожерелье
прозрачных озёр!

Ломят танки широкие
просеки,
Самолёты кружат в
облаках,
Нельское солнышко
лосни.

Блокнот

Апрель
02

Полный объем: 450 G
Свободно: 209 G

Полный объем: 0
Свободно: 0

0:00 0:00

Энергия
100%
Высокая

510 Файлов
19.9 GB

Время
работы: 4 ч. 33 мин

UP
0.0KB
DOWN
0.0KB

98.205.188.123

Почта Нет соединения

- Игры:
- Crysis
- Crysis 2
- Harry Potter 7
- Warcraft II

- Выключение
- Перезагрузка

SYSTEM DIAGNOSTICS

22:38

FLIGHT

54%

100%

DBK STATUS

USB INFORMATION

100%

- В контакте
- Mail.ru
- Одноклассники
- Яндекс
- Turbobit
- Twitter
- Facebook
- YouTube
- Кинопоиск
- Википедия
- 3d box
- Only Paper

Новости

Google

Дочь Джона Кеннеди
может стать представит...

Янукович обнародовал
декларацию о доходах - ...

Оппозиция намерена
блокировать работу Рад...

Поврежденную от обвала
плиту на станции Вышг...

Чехия разрешила
медицинскую марихуан...

Telemetry Everywhere

Tele (Remote) + Metron (Metrics)



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Observability 實踐

Observability in Practice

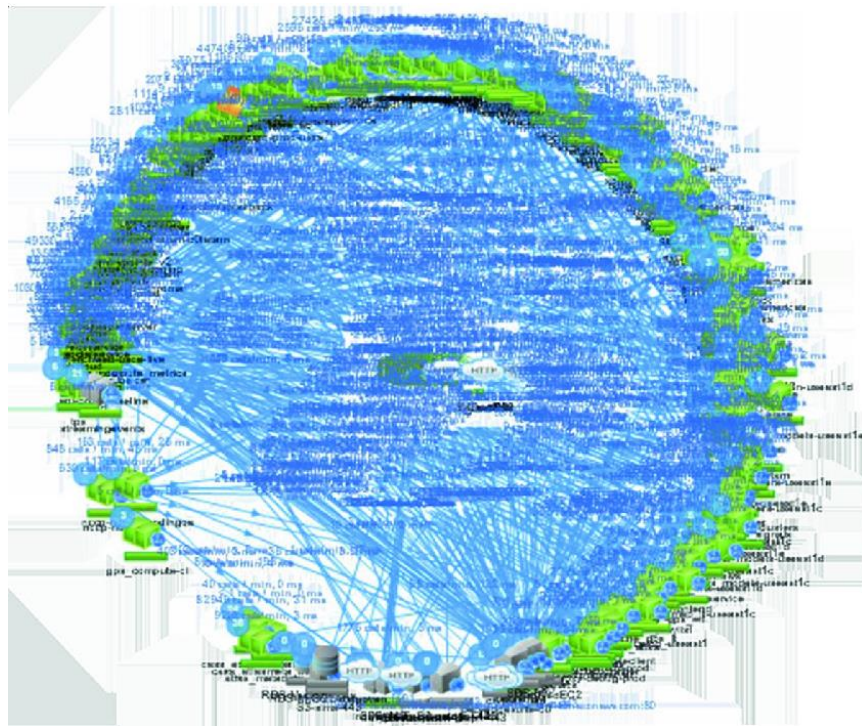


Challenge

導入挑戰

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Challenge



Netflix



Tools



Staff

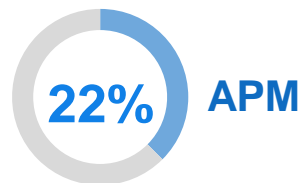
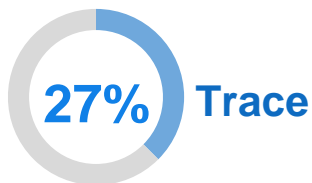
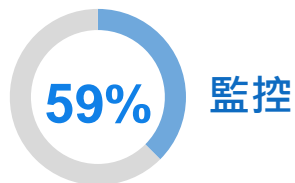
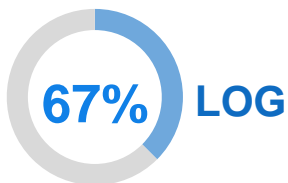
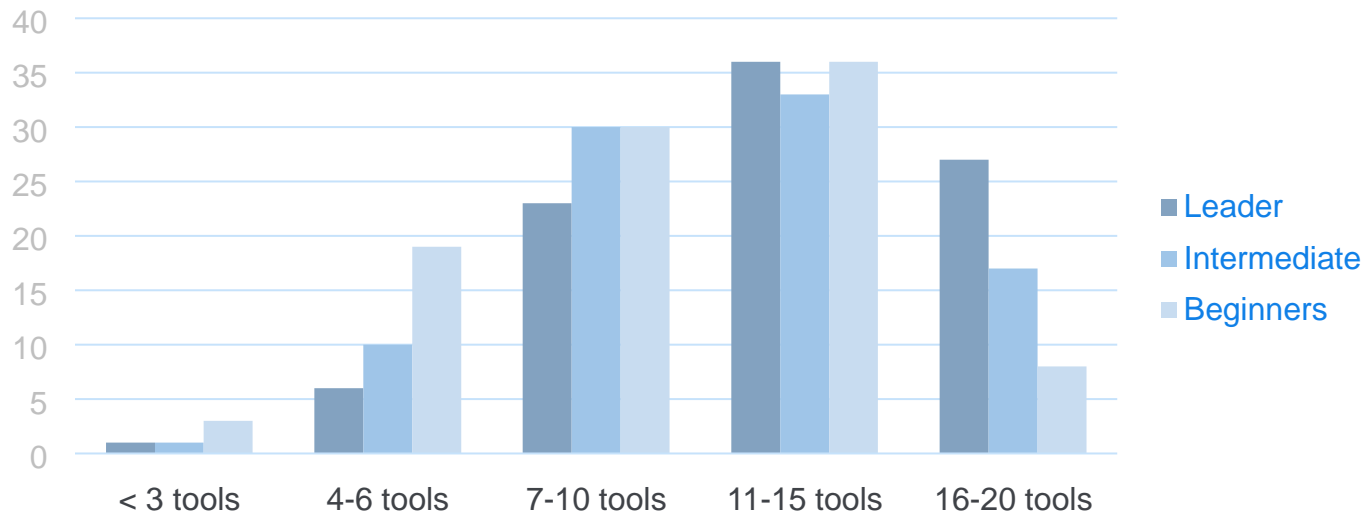


Data

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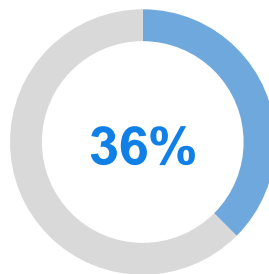
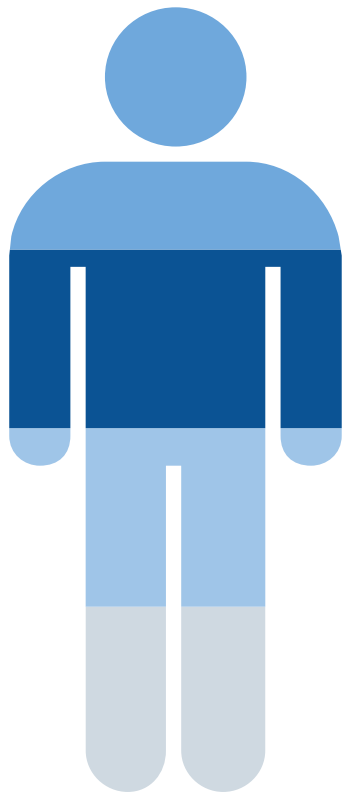
Challenge - TOOLS

工具未整合：10+ observability tools.



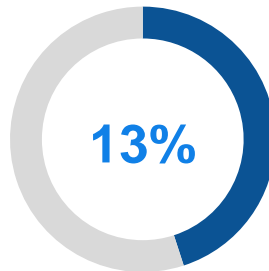
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Challenge - ORG



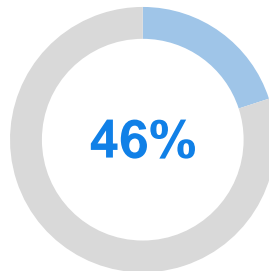
足夠的員工

Employee.



合適的技能

Skill.



兩者都有

Both 小朋友才選擇

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Challenge - DATA

數據蒐集

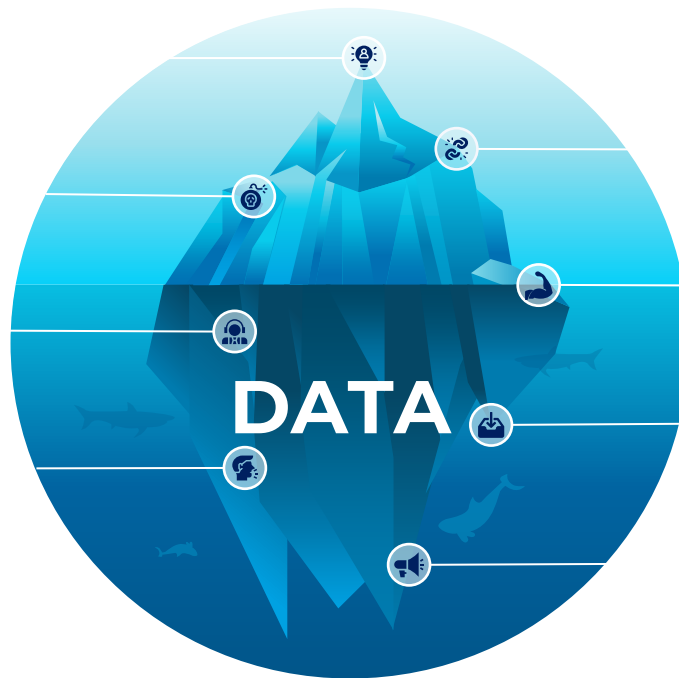
Data Collection

數據關聯

Data Associations

安全性

Security



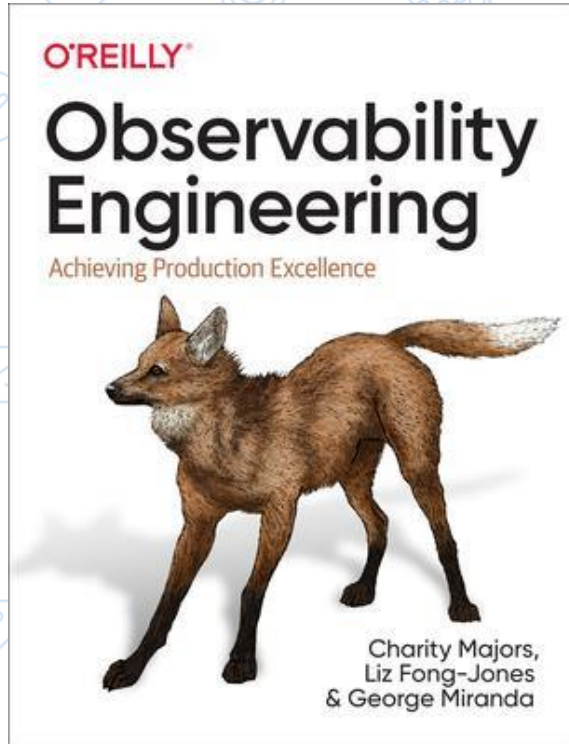
成本

Cost

效能

Performance

AI Ops



Applying Observability Practices in Your Team

- ▶ Start with the Biggest Pain Points
- ▶ Buy Instead of Build
- ▶ Join a Community Group

<p>Amazon CloudWatch MCap: \$1.4T Amazon Web Services</p>	<p>APPDYNAMICS Funding: \$364.5M AppDynamics</p>	<p>Application High Availability Service MCap: \$242.3B Alibaba Cloud</p>	<p>ManageEngine Applications Manager Applications Manager ManageEngine</p>	<p>AppNeta Funding: \$63.2M AppNeta</p>	<p>appoptics MCap: \$1.4B SolarWinds</p>	<p>AppSignal AppSignal</p>	<p>Aternity Funding: \$28.4M Riverbed Technology</p>	<p>Azure Monitor MCap: \$2T Microsoft</p>	<p>beats * 11,258 MCap: \$8.6B Elastic</p>	<p>bluematador Funding: \$3.1M Blue Matador</p>	<p>catchpoint Funding: \$49.8M Catchpoint</p>	<p>centreon * 565 Centreon</p>	<p>checkmk * 788 tribe29</p>	<p>chronosphere Funding: \$254.4M Chronosphere</p>	<p>CloudHealth Funding: \$85.7M CloudHealth Technologies</p>
<p>Epsagon Funding: \$30M Epsagon</p>	<p>Falcon * 8,981 MCap: \$34.4B Xicomi</p>	<p>FLOWMILL Flowmill</p>	<p>FONIO Funding: \$37 Cloud Native Computing Foundation (CNCF)</p>	<p>Google Stackdriver MCap: \$1.5T Google</p>	<p>Gradle Funding: \$54.7M Gradle Inc.</p>	<p>Grafana Funding: \$339.2M Grafana Labs</p>	<p>Grafana Mirir Funding: \$284 Grafana Labs</p>	<p>Graphite * 5,530 Graphite</p>	<p>Guance Cloud Funding: \$70.6M Guance Cloud</p>	<p>Honeybadger Honeybadger</p>	<p>Hubble * 2,226 Funding: \$3M Cloud Native Computing Foundation (CNCF)</p>	<p>icinga * 1,782 icinga</p>	<p>InfluxData Funding: \$119.9M InfluxData</p>	<p>INSTANA Funding: \$57M Instana</p>	<p>IRONdb Funding: \$16.8M Circonus</p>
<p>LogicMonitor Funding: \$142.9M LogicMonitor</p>	<p>logz.io Funding: \$121.9M Logzio</p>	<p>M3 * 4,233 MCap: \$65.9B Uber</p>	<p>mackerel Mackerel Hitena</p>	<p>Nagios * 1,153 Nagios</p>	<p>NETDATA * 40,569 Funding: \$34.7M Netdata</p>	<p>Netis * 917 Netis Technologies</p>	<p>New Relic MCap: \$4.3B New Relic</p>	<p>NexClipper * 558 NexCloud</p>	<p>Nightingale * 5,323 Did Labs</p>	<p>NODESOURCE Funding: \$33.4M NodeSource</p>	<p>OPENMETRICS * 1,845 Funding: \$3M Cloud Native Computing Foundation (CNCF)</p>	<p>OPENTSOB * 4,725 OpenTSDB</p>	<p>opstrace * 1,199 Opstrace</p>	<p>OverOps Funding: \$49.5M OverOps</p>	<p>PIXIE * 3,775 Funding: \$3M Cloud Native Computing Foundation (CNCF)</p>
<p>ROOKOUT Funding: \$28.4M Rookout</p>	<p>Sensu * 807 Funding: \$12.9M Sensu</p>	<p>SENTRY * 31,951 Funding: \$21.7M Sentry</p>	<p>SignalFx MCap: \$15.2B Splunk</p>	<p>Skooner * 968 Funding: \$3M Cloud Native Computing Foundation (CNCF)</p>	<p>SOSIVIO Funding: \$6.2M Sosivio</p>	<p>StackState Funding: \$13M StackState</p>	<p>sysdig * 6,997 Funding: \$709.9M Sysdig</p>	<p>Thanos * 10,914 Funding: \$3M Cloud Native Computing Foundation (CNCF)</p>	<p>Tingyun Funding: \$135.6M Tingyun</p>	<p>trickster * 1,746 Funding: \$3M Cloud Native Computing Foundation (CNCF)</p>	<p>VECTOR By Timber.io * 11,145 Funding: \$8.8M Vector</p>	<p>VICTORIA METRICS * 7,088 VictoriaMetrics</p>	<p>virtasant Virtasant</p>	<p>WAVEFRONT by VMware MCap: \$49.9B Wavefront</p>	<p>weave scope * 5,522 Funding: \$6.14M WeaveWorks</p>

<p>Alibaba Cloud Log Service MCap: \$242.3B Alibaba Cloud</p>	<p>DataSet Funding: \$27.6M Scalyr</p>	<p>elastic * 91,087 MCap: \$6.6B Elastic</p>	<p>fluentd * 11,454 Funding: \$3M Cloud Native Computing Foundation (CNCF)</p>	<p>Grafana Loki Grafana Labs</p>	<p>graylog Funding: \$27.4M Graylog</p>	<p>Humio Funding: \$1.8M Humio</p>	<p>Loggie * 738 MCap: \$58B NetScout</p>	<p>LOGGLY Funding: \$47.4M Loggly</p>	<p>LOGIQ Funding: \$1.8M Logiq</p>	<p>logstash * 13,043 MCap: \$6.6B Elastic</p>	<p>MEZMO Funding: \$108.4M Mezmo</p>	<p>OpenSearch * 5,645 MCap: \$1.47 Amazon Web Services</p>	<p>Pandora Funding: \$396.9M Ginzu</p>	<p>Rishiy Funding: \$1.14M Rishiy</p>	<p>sematext Sematext</p>
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Open Source

<p>Aspecto Aspecto</p>	<p>EaseAgent * 456 MegaEase Inc.</p>	<p>elastic apm * 1,020 MCap: \$6.6B Elastic</p>	<p>Grafana Tempo Funding: \$53.2M Grafana Labs</p>	<p>Honeycomb Funding: \$85.4M Honeycomb</p>	<p>Jaeger * 16,968 Funding: \$9M Cloud Native Computing Foundation (CNCF)</p>	<p>LightStep Funding: \$70M LightStep</p>	<p>OpenTelemetry * 517 Funding: \$9M Cloud Native Computing Foundation (CNCF)</p>	<p>OPENTRACING * 3,992 Funding: \$3M Cloud Native Computing Foundation (CNCF)</p>	<p>PINPOINT * 12,580 Pinpoint</p>	<p>SkyWalking * 20,189 The Apache Software Foundation</p>	<p>SOFATracer * 1,003 MCap: \$242.3B Ant Group</p>	<p>Spring Cloud Sleuth * 1,624 MCap: \$49.9B VMware</p>	<p>tracetest * 222 KubeShop</p>	<p>ZIPKIN * 15,640 Zipkin</p>
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Open Source Tools

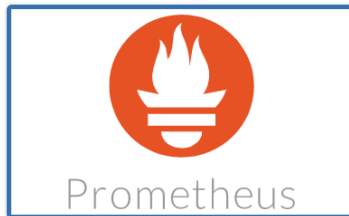
Tools with Observability



Logging



Monitor




Tracing



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Cloud native Telemetry

 OpenTelemetry	Tracing	Metrics	Logs
Instrumentation on APIs	All languages		
Canonical implementations	All languages		
Data infrastructure	collectors		
Interop formats	w3c trace-context, write formats for observability		

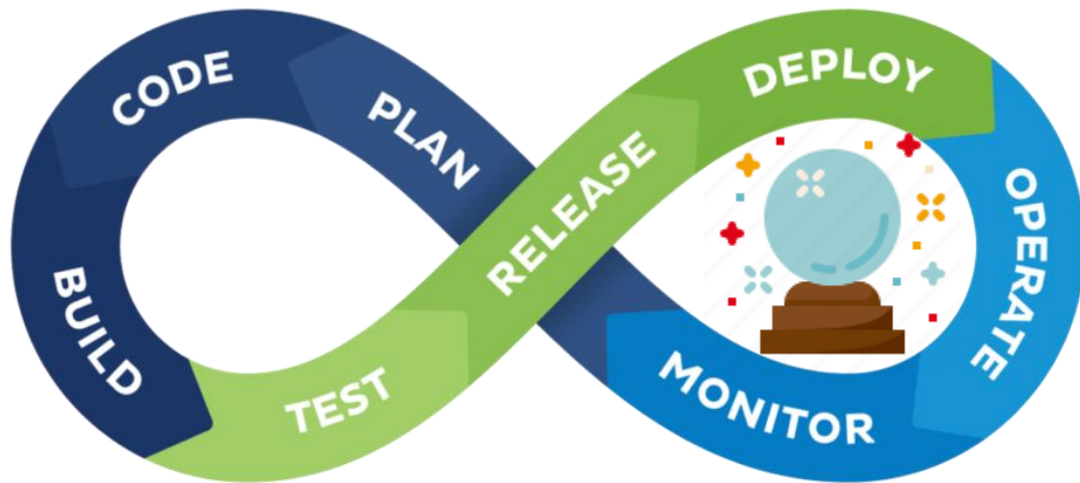
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Take Away

總結

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TAKEAWAY



Observability

- 什麼是 Observability
- 可觀測性 vs 監控



Practices

- 三個挑戰：Tools、Staff、Data
- 三個建議：痛點、工具、社群
- 擁抱 OpenSource

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補充議題

- ▶ Observability Isn't About Logs, Metrics, and Traces
- ▶ O.D.D (Observability-Driven Development)
- ▶ O11y
- ▶ OpenSLO 、 r9y.dev

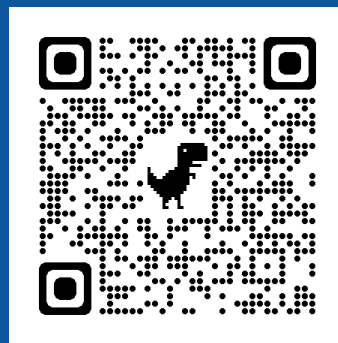


MAYO Light Up Your Talent



MAYO Human Capital

MAYO 鼎恒數位科技是以全雲端開發的 SaaS 軟體商，提供雲端人資系統、員工福利整合平台及 AI 面試與測評工具，即時因應各大產業及規模的企業需求。另外，經銷全球第一人才發展解決方案 Cornerstone 強化人才發展培訓與招募管理解決方案，彈性制定專屬招募流程，成為企業最佳 HR 策略夥伴，讓人才發揮真正價值，大幅提升企業競爭力！



.NET 後端開發工程師

React 前端開發工程師

QA 測試工程師

Devops 工程師

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Thank You !

{ Devops Days • Everyone }

Does anyone have any questions?



[Reference Link list](#)



[OpenTelemetrySample](#)



[Marcus 的學習筆記](#)



[marcus tung](#)