

Microservices

Interfaces

- standardise the gaps
- avoid coupling
- favour stateless services

Monitoring

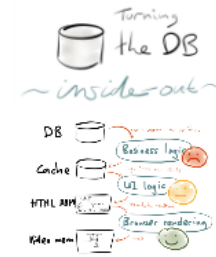
- monitor everything
- synthetic transactions
- correlation IDs

Deployment

- uniform deployment mechanism
- consumer defined tests
- continuous delivery

Architectural Safety

- fault tolerance and resilience
- the right thing is easy



Turning the database inside out
Martin Kleppmann



Work with clients to deliver and improve
Apache Cassandra based solutions



THE SCARFED CLASSIFIED WORLD



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Cyanite – Pierre-Yves Ritschard
FINN.no artwork – Christian Skipperud
Microservices – James Lewis & Sam Newmann
Turning the database inside out – Martin Kleppmann

Mick Semb Weaver

TWITTER @mck_sw
mick@thelastpickle.com



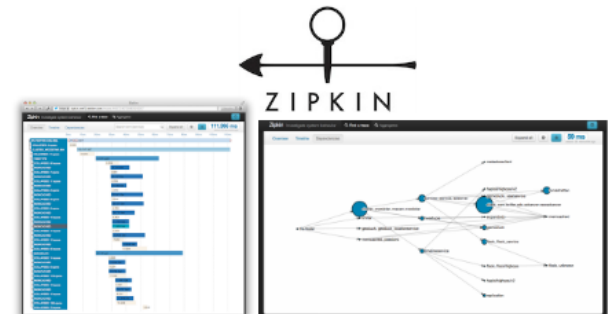
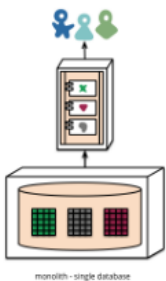
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Work with clients to deliver and improve
Apache Cassandra based solutions



Work with clients to deliver and improve
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THE SCHIBSTED CLASSIFIED WORLD

THE SCHIBSTED CLASSIFIED WORLD

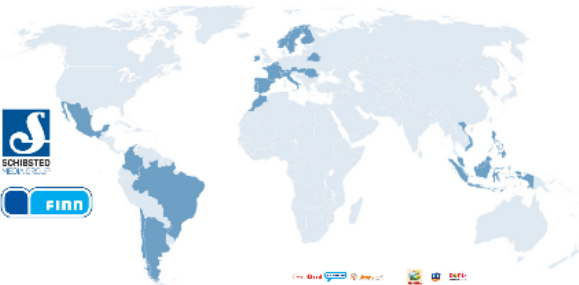


THE LAST PICKLE

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THE SCHIBSTED CLASSIFIED WORLD



THE LAST PICKLE



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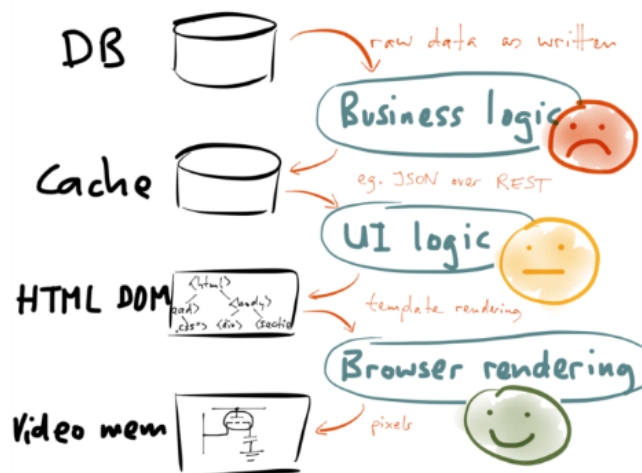
Architectural Safety

- fault tolerance and resilience
- the right thing is easy





Turning
the DB
~ inside-out ~



Turning the database inside out
Martin Kleppmann



applications and their microservices



needs stable scalable reproducible infrastructure

Example C* strengths...

- high/fast write throughput
- CQL schema design
- time-to-live and time-series
- size of data
- total load } scale out
- uptime
- tunable consistency vs availability

Users Search History

 Mulighetenes marked

Hei mck  [Sett inn annonse](#)

 Oppdrag

 Reise

 Torget GRATIS

 Jobb

 Eiendom

 Bil

 Båt

 MC

 Kart

 Bedrifter

 Næring

 Småjobber

 Sett inn annonse

Skal vi tipse deg neste gang det kommer en spennende stilling?

På FINN jobb kan du enkelt lagre et søk - og velg om du vil få resultatet på e-post.

[Kom i gang her!](#)



Mine siste søk

Tøm lista

- 'Stoler og krakker', Torget
- 'Skjenk', Torget
- 'solberg', Eiendom
- 'big data', Jobb
- 'data scientist', Jobb
- 'direktør teknologi', Jobb
- 'skibox', Torget
- 'rulleski', Torget

FINN foreslår



VOLLEN/BJERKÅS:
FAMILIEVENNLIG
ENEBOLIG I ROLIGE
OMGIVELSER MED FLOTT
UTSIKT - NÆ...



Heggedal/Øvre Hallenskog -
Lækker enebolig med
praktikantdel og fantastisk
utsikt!

Svindelforsøk via SMS

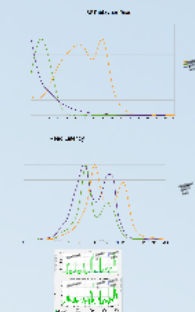
Vær oppmerksom på svindelforsøk der du får en SMS fra en merkelig avsender der du blir bedt om å trykke på en link eller ta kontakt på epost Flere tips for trygg handel.



Users Search History



Users Search History



Users Search History



```
CREATE TABLE users_search_history (  
  user_id      text,  
  search_id    timeuuid,  
  search_url   text,  
  description  text,  
  PRIMARY KEY (user_id, search_id)  
)  
WITH CLUSTERING ORDER BY (search_id desc);
```

Skal vi tipse deg neste gang det kommer en spennende stilling?

På FINN jobb kan du enkelt lagre et søk - og velg om du vil få resultatet på e-post.

[Kom i gang her!](#)



Svindelforsøk via SMS

Vær oppmerksom på svindelforsøk der du får en SMS fra en merkelig avsender der du blir bedt om å trykke på en link eller ta kontakt på epost [Flere tips for trygg handel.](#)



Fraud detection

Annonsekontroll														
Meny Forside Ordliste Kategori Avvisningsmaler E-post-mal Flagging Statistikk Tilbake til Admin Hurtigtaster Laste annonser Regelrapport Rapporterte Annonser Søk etter annonse med FINN-kode Søk														
Regelrapport														
Fra Til Oppdater														
Rule	Times Triggered	Review1	Escalated	Review 2	Man. Rejected	Man. Fraud	Auto Accepted	Man. Accepted	Changed From Manually Accepted To Fraud	Changed From Manually Accepted To Rejected	Changed From Manually Rejected To Fraud	Changed From Manually Rejected To Accepted	Changed From Auto Accepted To Rejected	Changed From Auto Accepted To Fraud
HIDDEN_PHONE	9867	8649	67	1206	251	5	12	9599	1	45	3	23	1	0
[REDACTED]	973	537	4	195	30	4	241	698	1	4	0	6	1	0
SUSPICIOUS_EMAIL	252595	151183	1343	4445	2034	35	90964	153559	11	314	16	135	297	0
CONTENT_EMAIL	1094	40	0	938	14	0	116	964	0	0	0	2	0	0
[REDACTED]	400217	240589	1923	4500	2727	33	155124	242329	9	418	15	289	423	0
CONTACT_INFO_CHANGED	114	0	0	111	1	0	3	110	0	0	0	0	0	0
[REDACTED]	5592	2783	1	329	62	5	2480	3045	2	7	2	7	0	0
MISMATCHED_PHONE	9770	6319	19	696	130	6	2754	6679	2	25	2	13	20	0
USER_CHANGED	302559	157811	1430	5923	2164	48	138822	161522	15	311	16	141	415	0
FLAGGED_EMAIL	832	157	5	672	75	9	3	745	0	7	7	3	1	0
[REDACTED]	25023	5435	0	1280	77	5	18308	6633	2	9	2	34	14	0
[REDACTED]	23919	12417	47	439	91	0	17063	12765	0	20	0	10	46	0
NEWSPAPER	303	0	0	303	37	0	0	266	0	1	0	0	0	0
PRIVATE_USER	356064	213610	1850	4431	2865	33	138019	215343	9	406	15	147	417	0
[REDACTED]	895	465	6	0	6	0	430	459	0	0	0	0	0	0
REJECTED	7681	5813	341	460	746	6	1308	5621	1	19	5	50	128	0
SMS_VERIFICATION	2966	1420	2	1546	96	12	0	2856	6	20	0	30	0	0
PHONE_NUMBER_FLAGGED	1844	50	2	1774	145	11	20	1668	2	18	2	17	1	0
COOKIE	1699	729	4	905	86	12	5	1596	0	11	8	7	1	0
NEW_USER	13645	11135	627	1818	507	24	691	12422	7	40	9	65	0	0
TRUSTED_USER	175680	27587	87	155	159	0	147935	27583	0	56	0	1	307	0
EMAIL_MISMATCH	11321	1638	0	351	8	0	9132	2181	0	0	0	10	5	0
[REDACTED]	128255	77234	611	1390	566	16	49630	78042	7	87	4	67	125	0
[REDACTED]	4	4	0	0	0	0	0	4	0	0	0	0	0	0
[REDACTED]	12443	9492	112	364	227	8	2587	9621	0	15	4	11	3	0
[REDACTED]	111686	100274	869	3770	1306	19	7853	102719	6	231	6	99	67	0

Application writes

Application reads

Application writes
ad_status =35
ad_created =150

Fraud detec

Application writes

```
return Concretizer
    - constructor: fun create() {
        val m = M()
        val i = 1
        val j = 2
        val k = 3
        val l = 4
        val n = 5
        val o = 6
        val p = 7
        val q = 8
        val r = 9
        val s = 10
        val t = 11
        val u = 12
        val v = 13
        val w = 14
        val x = 15
        val y = 16
        val z = 17
        val aa = 18
        val bb = 19
        val cc = 20
        val dd = 21
        val ee = 22
        val ff = 23
        val gg = 24
        val hh = 25
        val ii = 26
        val jj = 27
        val kk = 28
        val ll = 29
        val mm = 30
        val nn = 31
        val oo = 32
        val pp = 33
        val qq = 34
        val rr = 35
        val ss = 36
        val tt = 37
        val uu = 38
        val vv = 39
        val ww = 40
        val xx = 41
        val yy = 42
        val zz = 43
        val aaa = 44
        val bbb = 45
        val ccc = 46
        val ddd = 47
        val eee = 48
        val fff = 49
        val ggg = 50
        val hhh = 51
        val iii = 52
        val jjj = 53
        val kkk = 54
        val lll = 55
        val mmm = 56
        val nnn = 57
        val ooo = 58
        val ppp = 59
        val qqq = 60
        val rrr = 61
        val sss = 62
        val ttt = 63
        val uuu = 64
        val vvv = 65
        val www = 66
        val xxx = 67
        val yyy = 68
        val zzz = 69
        val aaaa = 70
        val bbbb = 71
        val cccc = 72
        val dddd = 73
        val eeee = 74
        val ffff = 75
        val gggg = 76
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        val zzzzz = 95
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        val ddddd = 99
        val eeeee = 100
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        val rrrrr = 399
        val sssss = 400
        val ttttt = 401
        val uuuuu = 402
        val vvvvv = 403
        val wwww =
```

Application reads

```
return DataBuilder
    .select("id", "name")
    .drop("password")
    .where("age > 18 and 'M' = sex")
    .asTable(DataBuilder, "tbl")

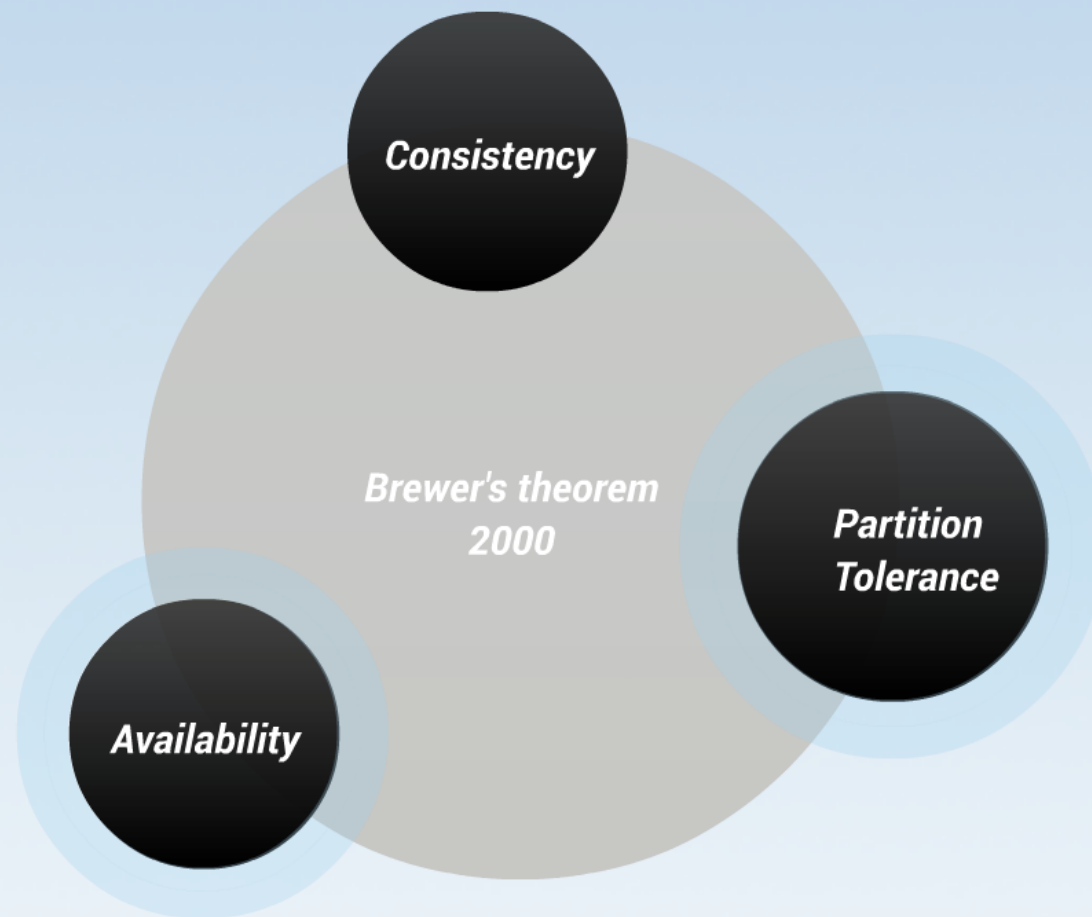
return DataBuilder
    .select("password")
    .drop("age", "name")
    .asTable(DataBuilder, "tbl2")
```

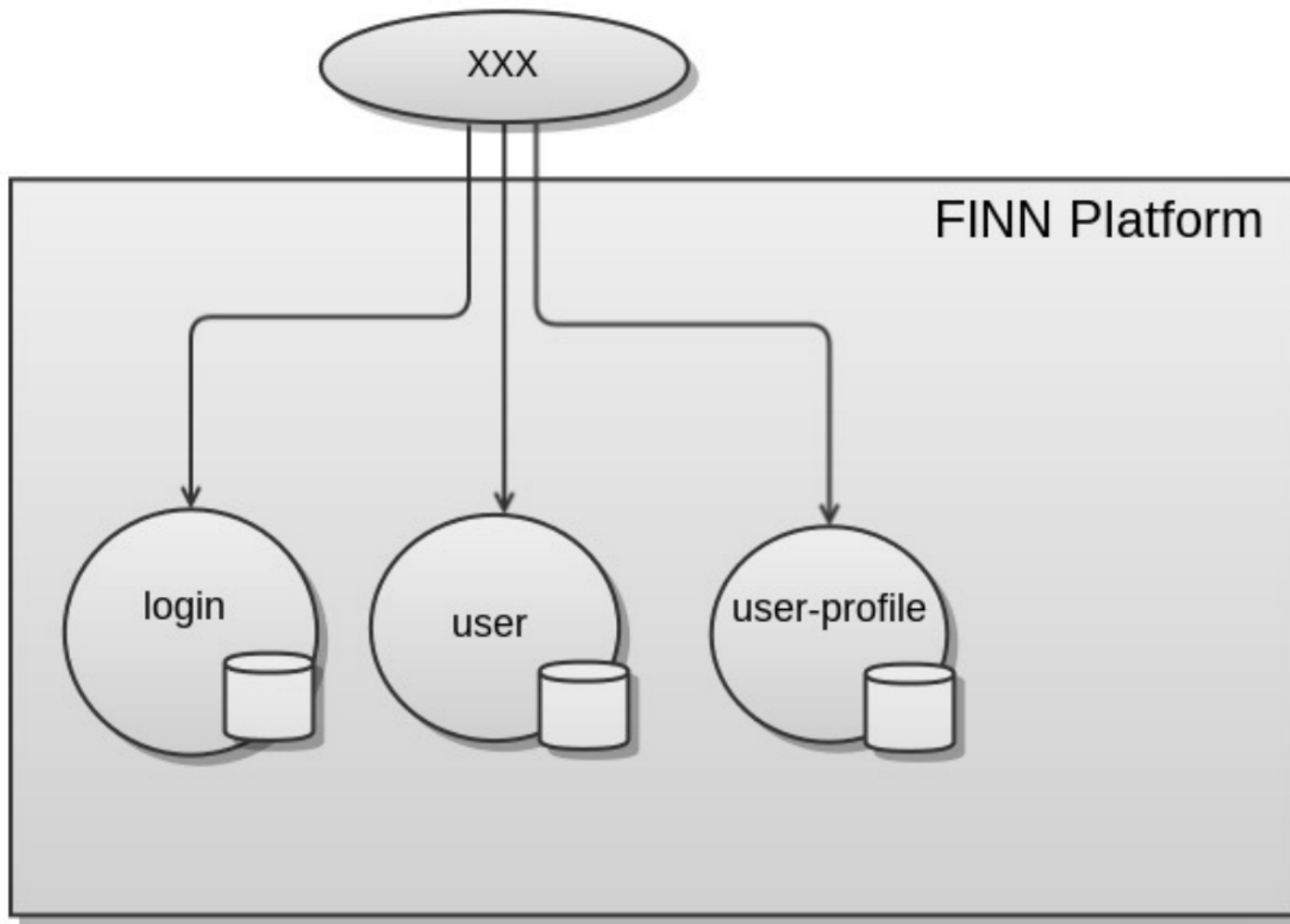
Fraud detec

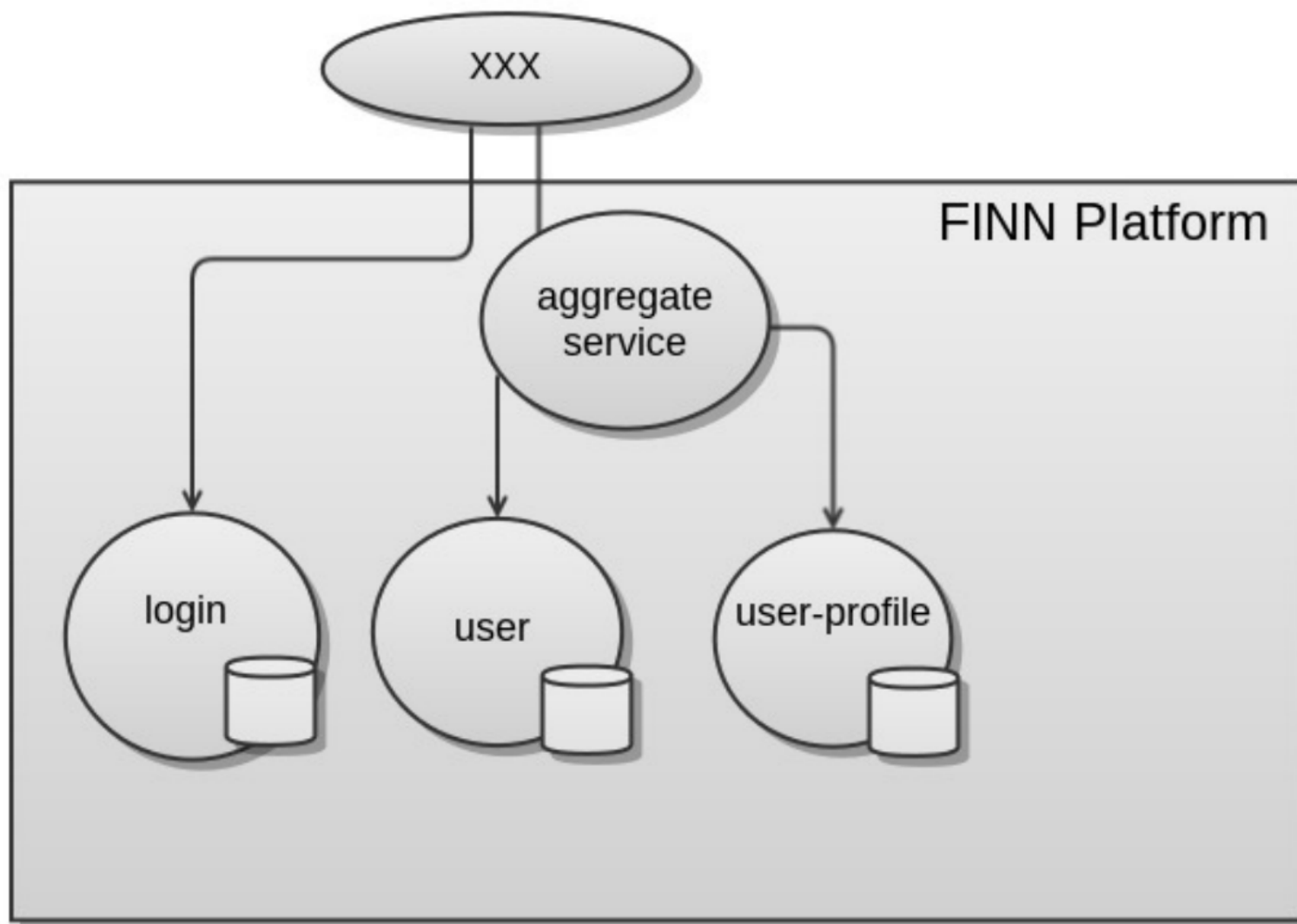
Application writes

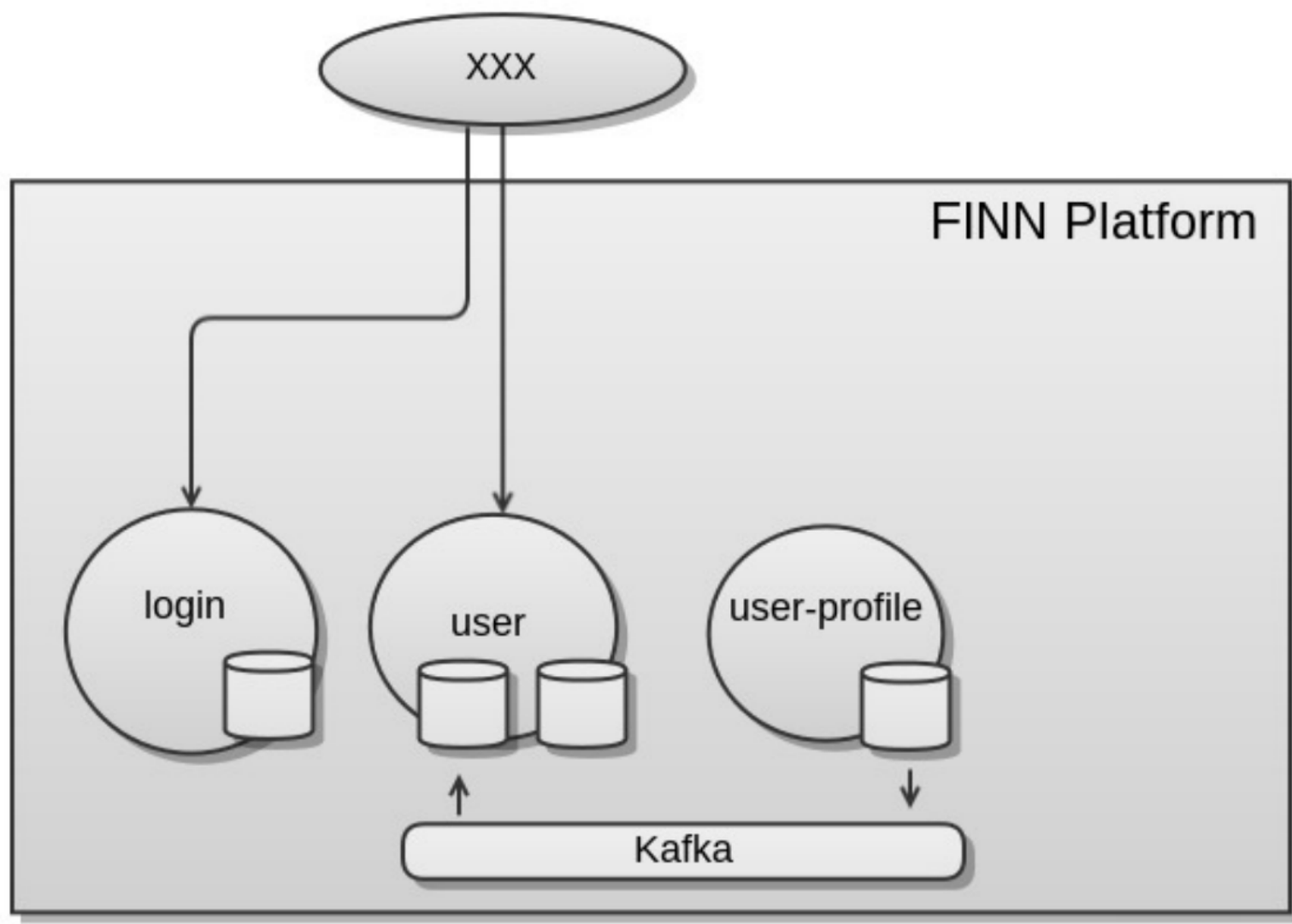
CF: Local White (Jan-June)

Year	CF: Local White (Jan-June)
1990	10
1995	20
2000	15
2005	10
2010	15





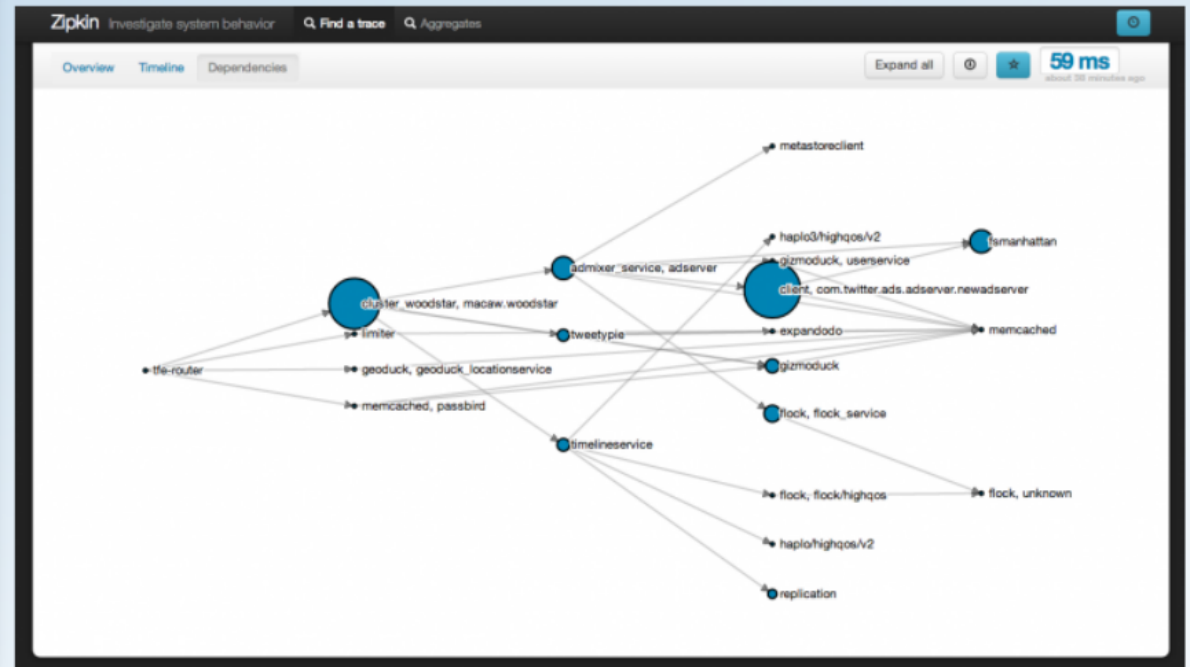
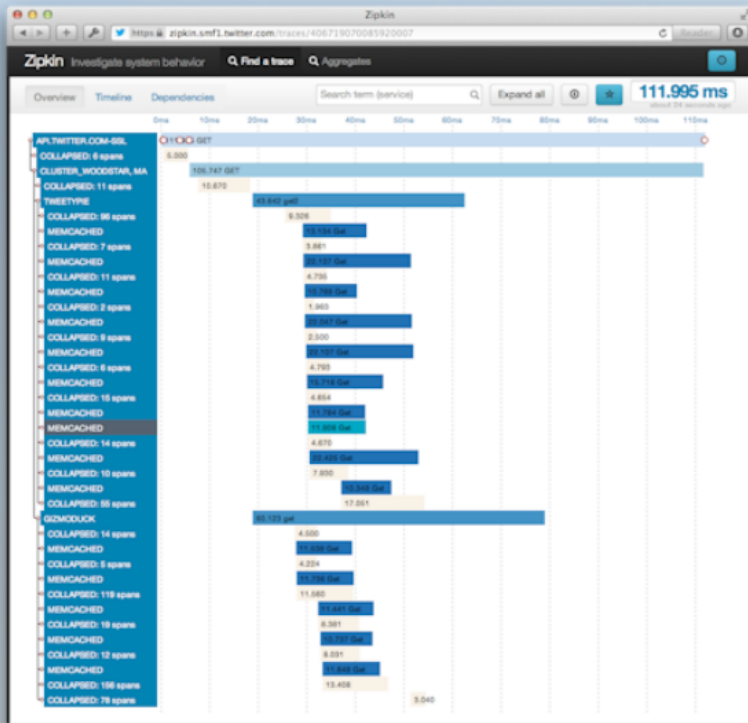


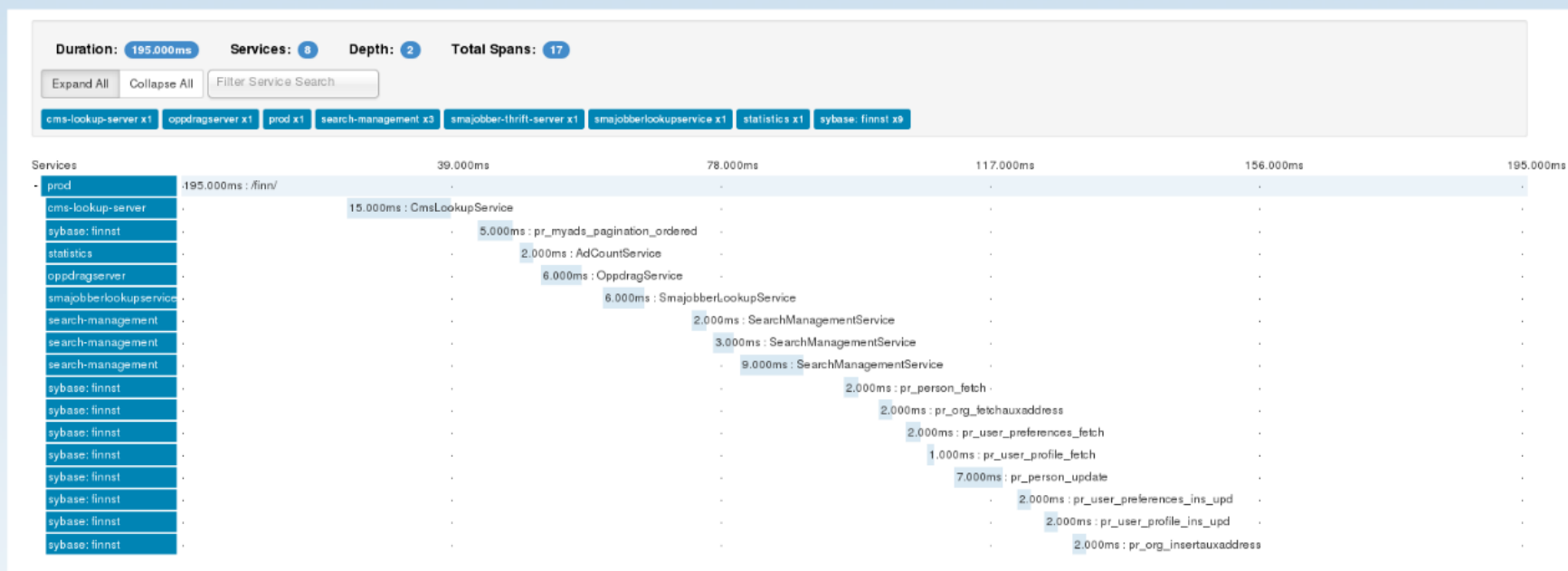


applications and their microservices



needs stable scalable reproducible infrastructure







FINN.no / Torget / Annonser / Hage, oppussing og hus / Hage og uteområder / Grill

Lagre annonsen

FINN-kode: 53886629 Endret: 1. des 2014 00:24

Outback grill til salgs



Elin Beate
Forthun

Mobil

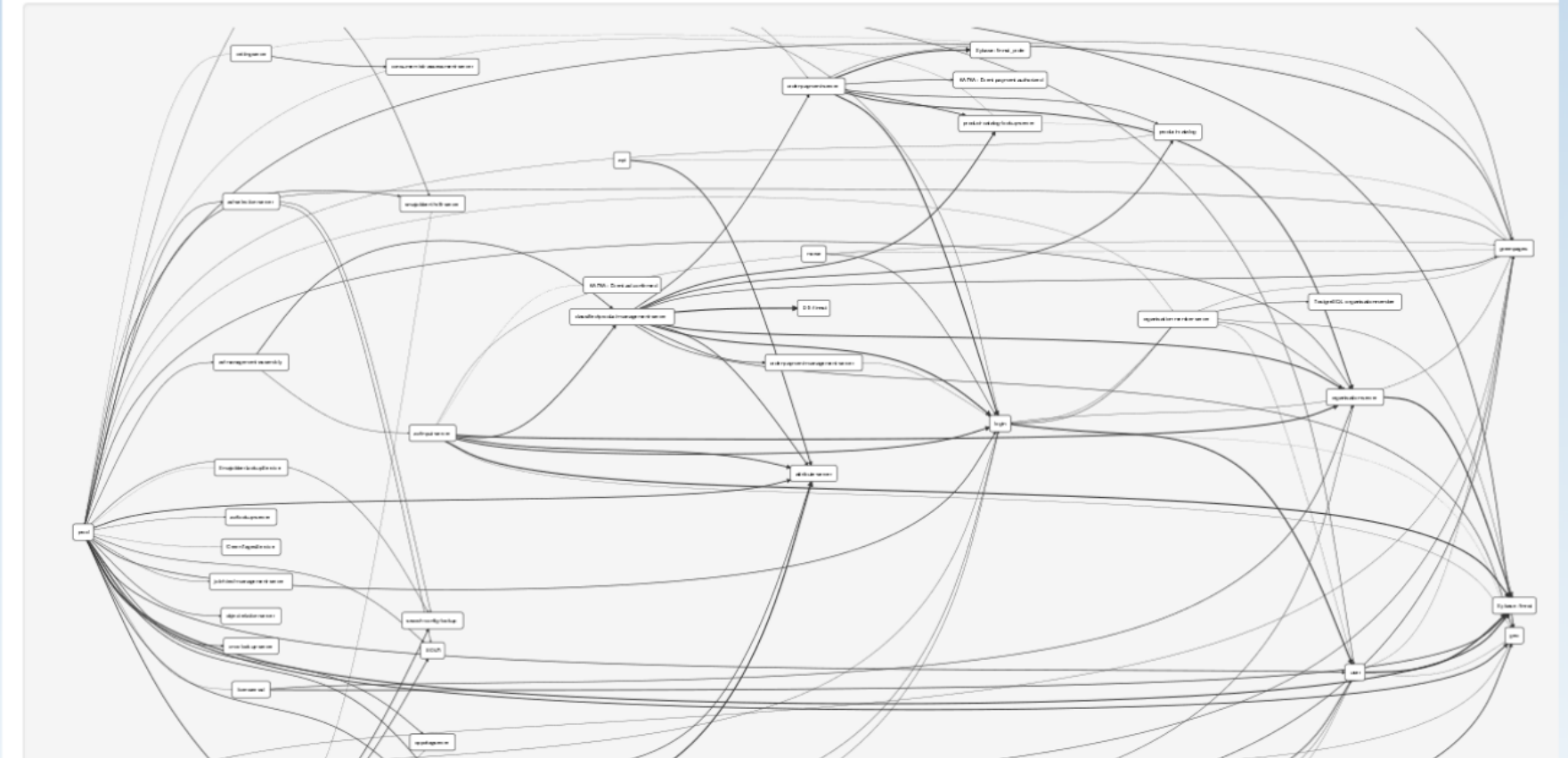
Vis mobilnummer

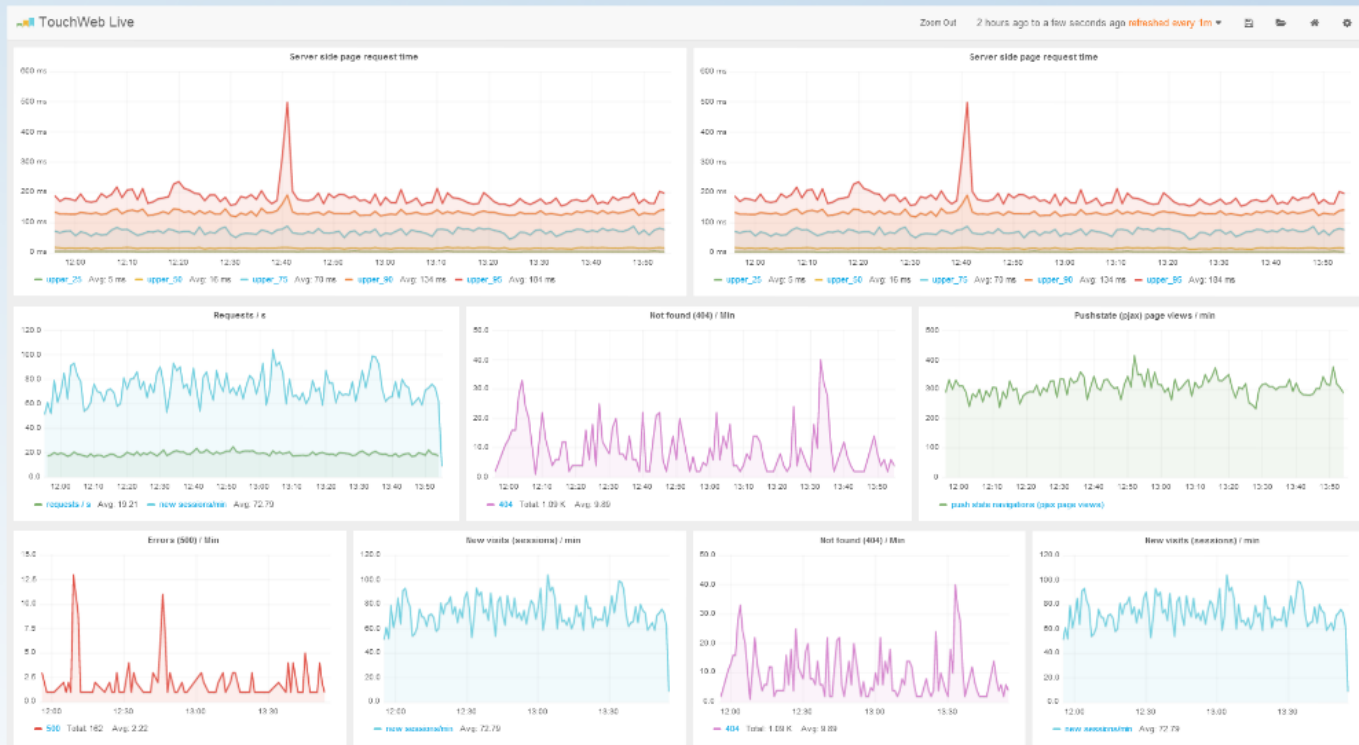
Kontakt selger på e-post

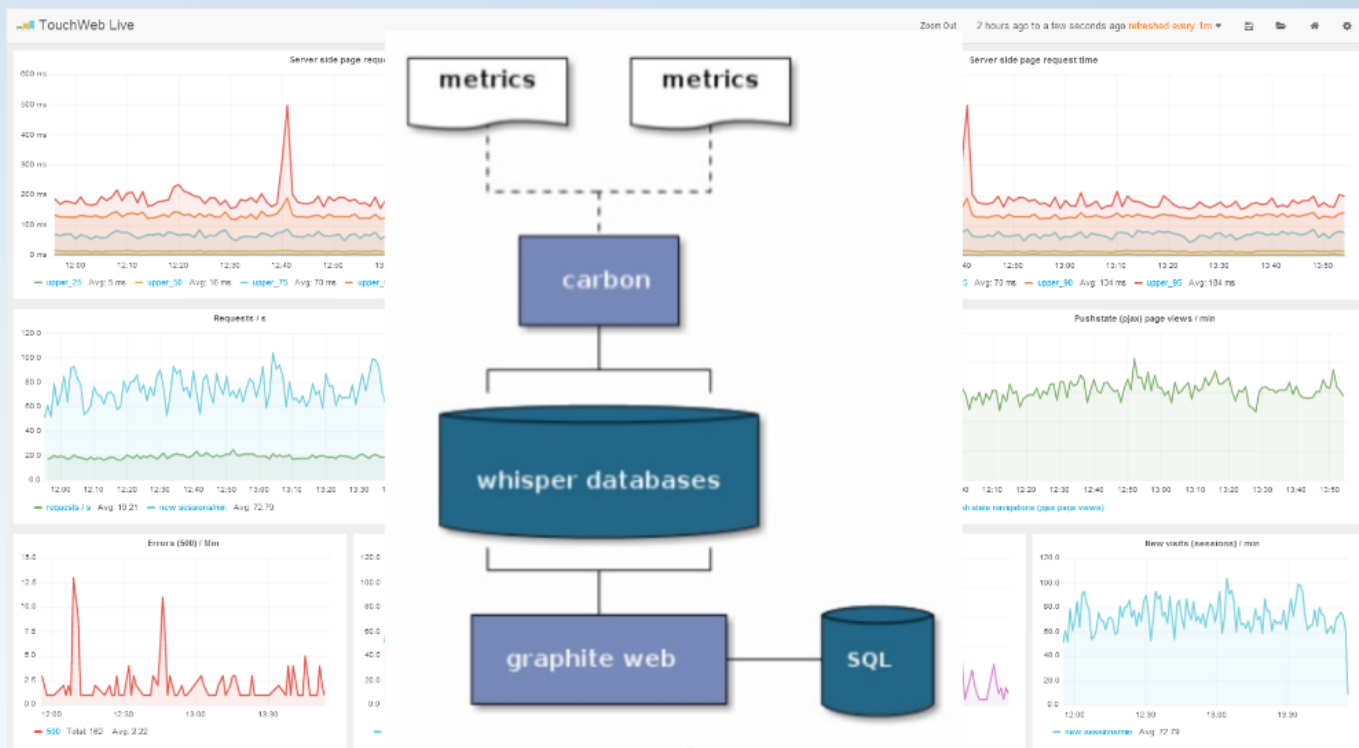
Console HTML CSS Script DOM Net Cookies Zipkin

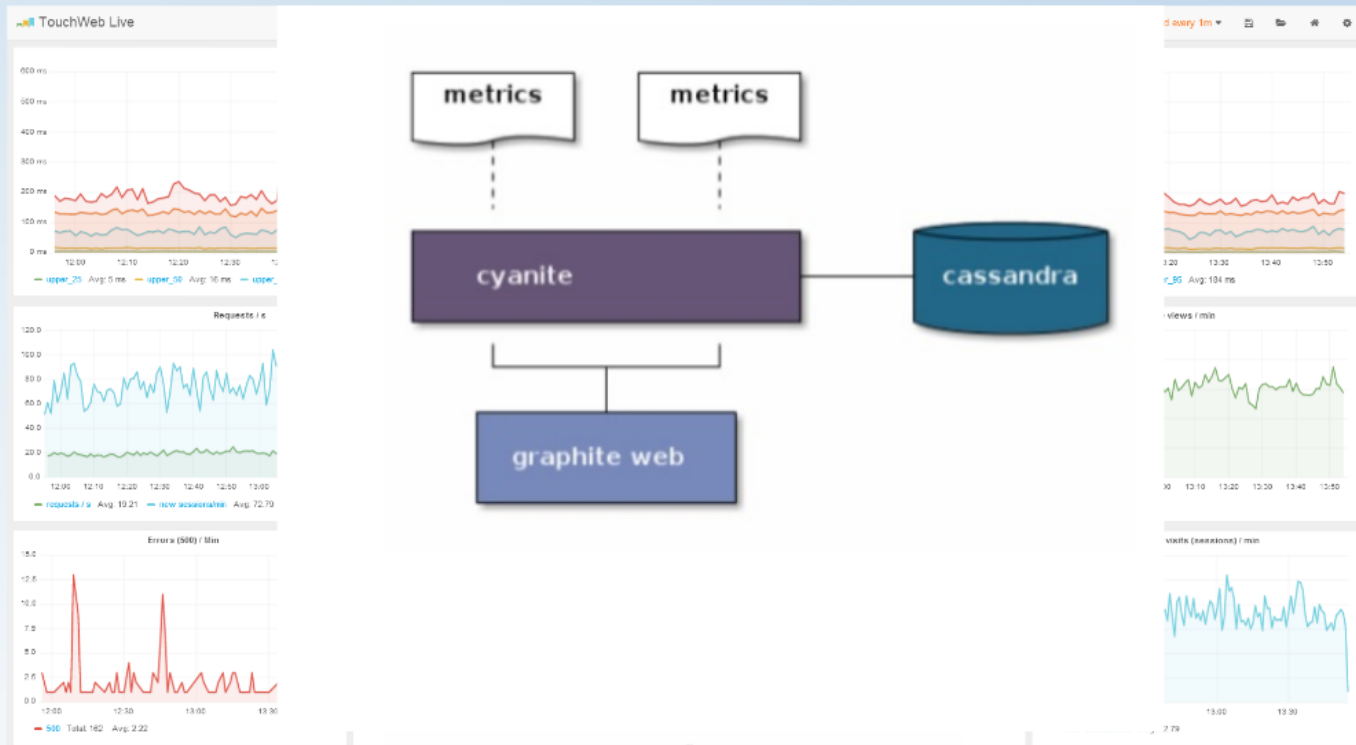
Time	Trace ID	Zipkin URL	Request URL
12/1/14 - 10:12:42am CET	b18640d3e1ec000	http://st.zipkin.finntech.no/traces/b18640d3e1ec000	http://st.finn.no/finn/torget/annonse?finnkode=53886629

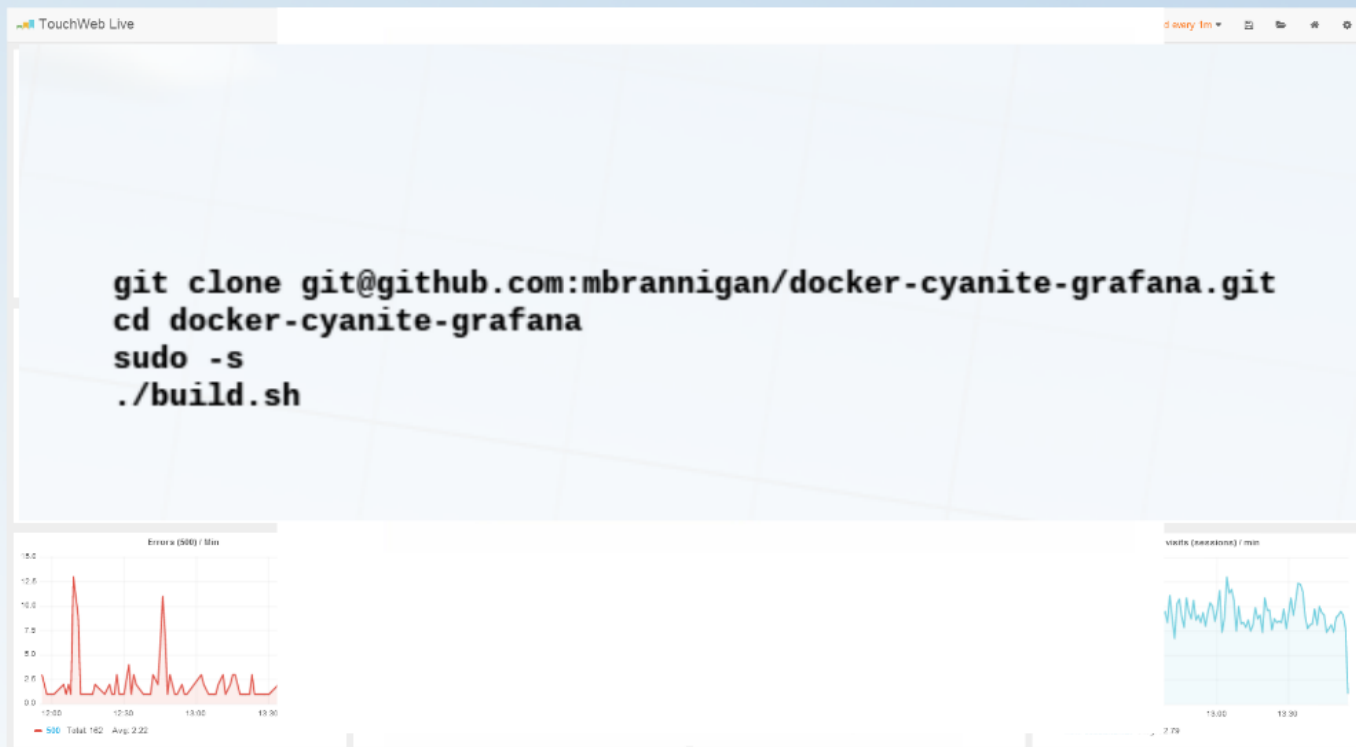
1704ms











applications and their microservices



needs stable scalable reproducible infrastructure



Applications and their microservices

needs stable reliable reproducible infrastructure

Cyber
FINN no an

Microservices

Interfaces

- standardise the gaps
- avoid coupling
- favour stateless services

Monitoring

- monitor everything
- synthetic transactions
- correlation IDs

Deployment

- uniform deployment mechanism
- consumer defined tests
- continuous delivery

Architectural Safety

- fault tolerance and resilience
- the right thing is easy



Turning the database inside out
Martin Kleppmann



Work with clients to deliver and improve
Apache Cassandra based solutions



Credits / Copyright
Cyanite – Pierre-Yves Riitschard
FINN.no artwork – Christian Skipperud
Microservices – James Lewis & Sam Newmann
Turning the database inside out – Martin Kleppmann



Mick Semb Weaver

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mick@thelastpickle.com



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