Talk 3

SREcon 2022 EMEA recap

Some facts upfront

- SREcon is a gathering of engineers who care deeply about site reliability, systems engineering, and working with complex distributed systems at scale. SREcon strives to challenge both those new to the profession as well as those who have been involved in it for decades. The conference has a culture of critical thought, deep technical insights, continuous improvement, and innovation.

- Americas: 540 attendees (500 in-person, 40 virtual)
- 62% engineers, 18% managers, 13% tech lead

Attendees

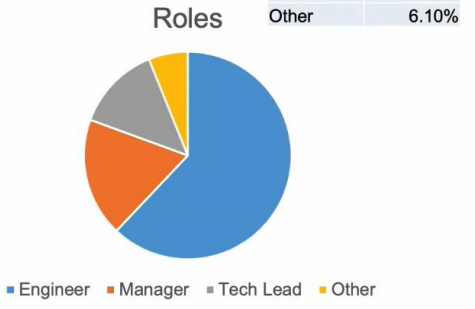
- ~540 attendees (~500 in-person, ~40 virtual)
- 37 countries
- 205 companies

Talks

- ~200 talks
- 47 accepts
- 58 speakers

Demographics

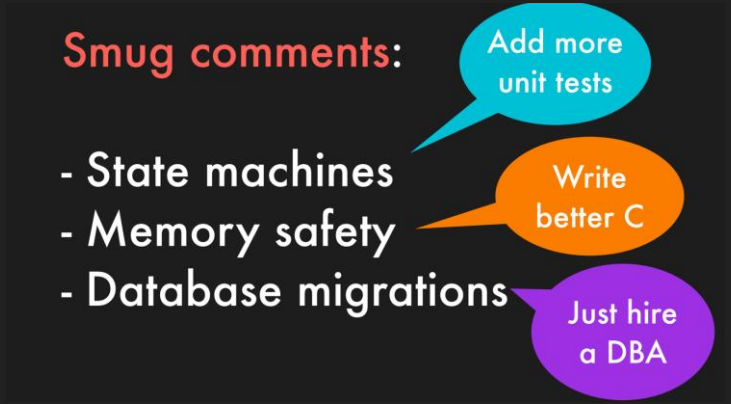
Engineer	62.00%
Manager	18.50%
Tech Lead	13.30%
Other	6.10%



Chris Sinjakli, PlanetScale

Making the Impossible Impossible: Improving Reliability by Preventing Classes of Problems

- That key strength of SLOs - viewing reliability as a percentage game - can also also be a weakness. Within that framing, there are certain solutions we're likely to overlook.
- This talk explores another lens for reliability - one that's complementary to SLOs: structuring software in a way that rules out entire classes of problem.



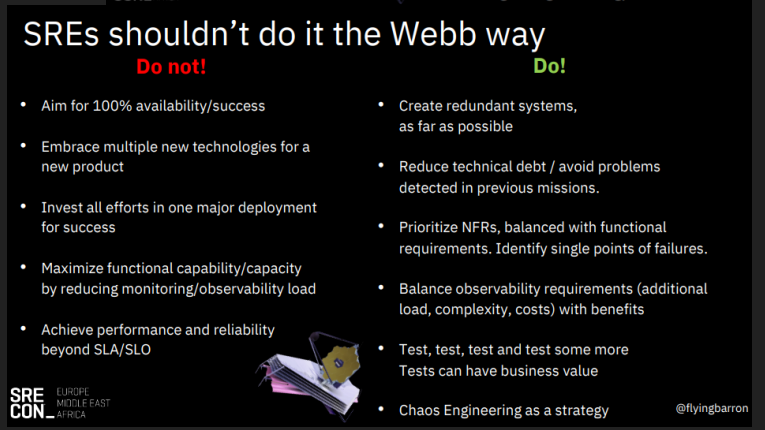
- https://www.usenix.org/conference/srecon22emea/presentation/sinjakli

Over Nine Billion Dollars of SRE Lessons - The James Webb Space Telescope

Robert Barron, IBM

- After only a few months of activity, the James Webb Space Telescope has already proven to be a spectacular engineering and scientific success. Webb's predecessor, the Hubble Space Telescope, famously required many astronaut visits to repair and upgrade it. But Webb was designed to fly further away from Earth, out of reach of repair by either astronaut or SRE. Any failure would be final and public.
- How did NASA succeed in building the confidence it needed to deploy a completely automated, self-healing, observatory?
- In this session you will learn SRE lessons through the lens of NASA's experiences in developing and launching exploratory probes.

- https://www.usenix.org/conference/srecon22emea/presentation/barron

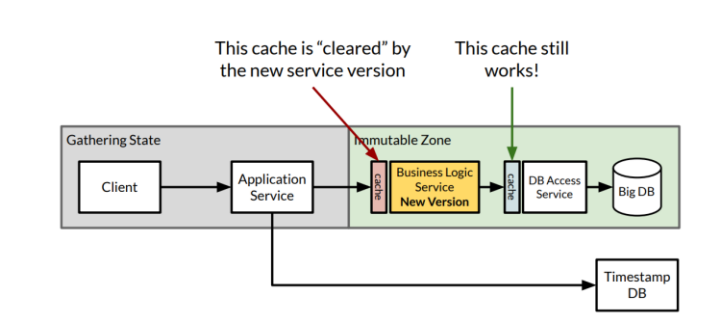


Caching Entire Systems without Invalidation

Peter Sperl, Bloomberg

- Caching is simplest when dealing with stateless components, so the solutions presented revolve around controlling for states that are sometimes not accounted for, such as user settings, software versions, dependencies, wall time, and database state.
- The "punch line" is that resolving state early in the request flow of your system will allow you to divide your system into two parts, the "state gathering" portion and the "immutable" or stateless portion. The immutable portion would have excellent cache characteristics, such as the ability to transparently cache responses throughout multiple service layers without an active cache invalidation strategy.

- https://www.usenix.org/conference/srecon22emea/presentation/sperl



Benefits of Timestamped Data Storage

Database reads can be cached as well as any service call that depends on it

Point-in-time access is trivially supported

Batch jobs can freeze the timestamp to ensure consistency, while updates continue unaffected

Rollbacks can be performed with a system-wide cap on timestamp

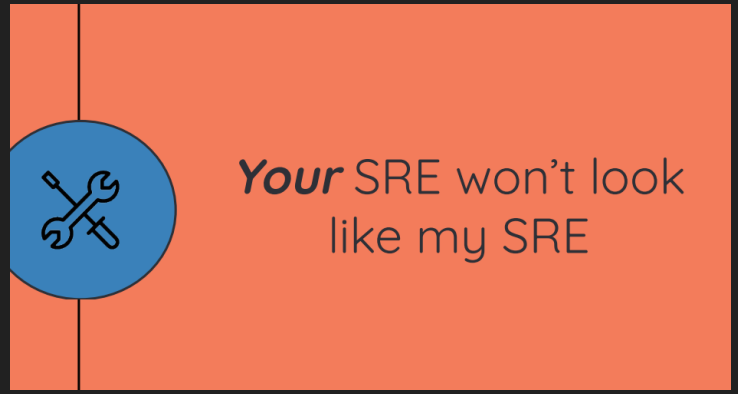
Timed releases are just future-dated timestamps

Alex Hidalgo, Nobl9

Diamonds with Flaws:
Examining the Pressures, Realities, and Future of Site Reliability Engineering

- The technology industry moves at an incredible pace. Innovation and change are always at the forefront of everyone's mind. Especially in the Site Reliability Engineering space, people feel pressured more than ever to keep up with all of the newest tools, processes, and philosophies.
- For many organizations, however, chasing all of the shiny things can end up being a detriment as opposed to a benefit. Let's examine these pressures, what the realities of most SRE organizations are, and how we can all best move into the future -- together, thoughtfully, and meaningfully.

- https://www.usenix.org/conference/srecon22emea/presentation/hidalgo

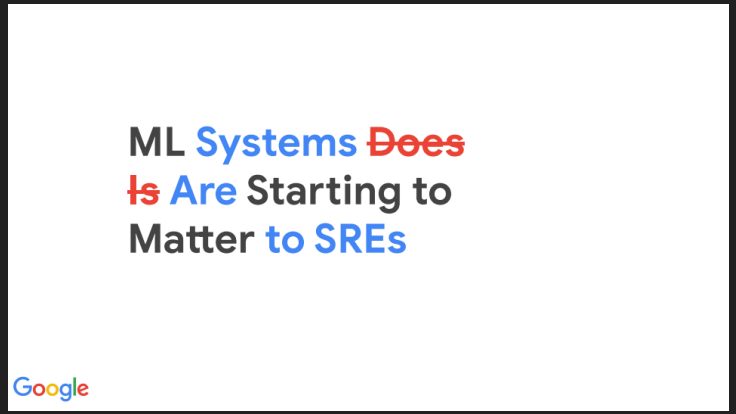


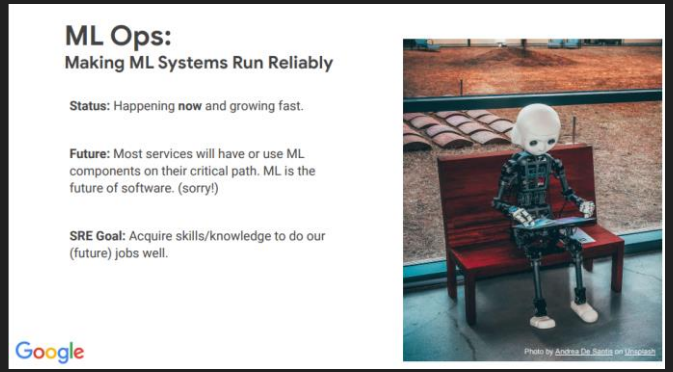
SRE and ML: Why It Matters

Todd Underwood, Google

- Machine Learning is an incredibly hyped set of technologies. It seems that ML is becoming an important part of distributed computing. I'll review whether SREs need to know anything about ML yet (probably you do—sorry!).
- And since ML reliability is challenging, I'll suggest some changes required for most SREs and even some significant changes to our profession. Finally, I'll review the state of using ML to automate production with an extremely skeptical eye.

- https://www.usenix.org/conference/srecon22emea/presentation/underwood





What SRE Could Be: Systems Reliability Engineering

Laura Nolan, Stanza

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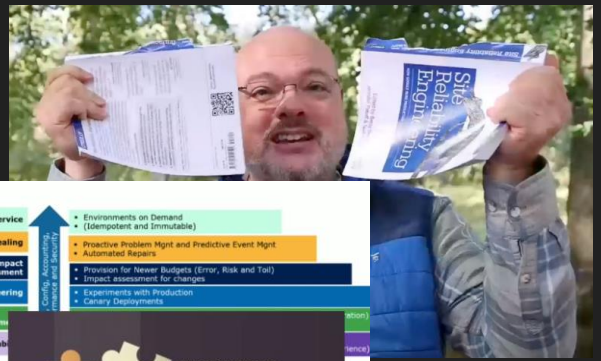
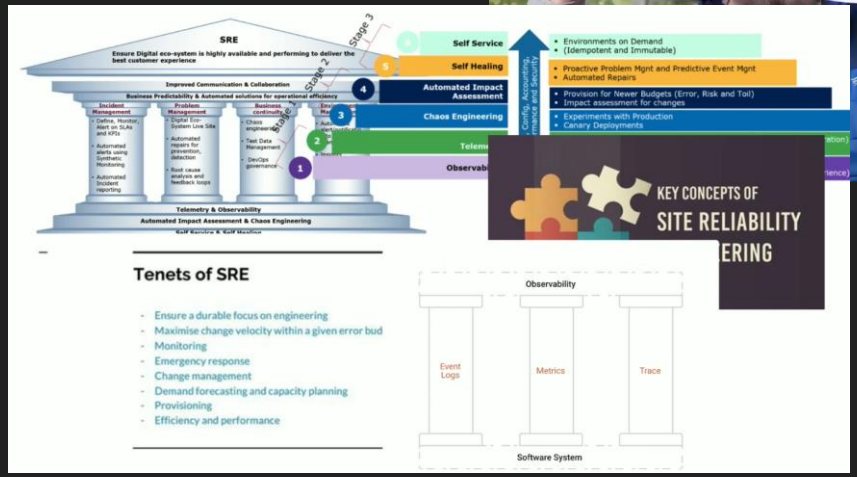


SRE's Identity Crisis

Standardisable Practices
- SLOs
- Incident Management
- Some kinds of Automation

Non-Standardisable Practices
- System Design
- Anomaly investigation and incident review
- Risk Analysis
- Building safe control planes
- Design service-specific monitoring and altering
- System-specific disaster testing



SRE Philosophy (cf. DevOps Philosophy)
SRE is: Understanding systems and making appropriate interventions to make them function better.

Technical Systems Intervention: Delaying before re-replicating data; Cellular Design Pattern; Start incrementing counters close to their maximum value to test wraparound
Socio-systems interventions: Minimum on-call team size to avoid burn-out; SLOs and error budgets to prioritize work; Blameless IR; Automating Toil

Systems Thinking: Describing and understanding systems behaviour; Evaluating Risks; Analyzing Incidents

Outage Track

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Deep Analysis and Learning from past incidents

Deep Dive: Azure Resource Manager Outage
Benjamin Pannell and Brendan Burns, Microsoft

Commas Save Lives, or at Least LinkedIn
Todd Palino, LinkedIn

Disaster Recovery Testing at Booking.com
Yoann Fouquet, Booking.com, and Paola Martinucci, Mollie.com

Slack's DNSSEC Rollout: Third Time's the Outage
Rafael Elvira, Slack

How We Drained Every Backbone Router Simultaneously
Francois Richard, Meta

Honey, I Broke the Things: Debugging Gray Failures in Production!
Radha Kumari, Slack Technologies

Navigating in the Dark
Nati Cohen, AWS

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How to get prepared for failure

Everything can fail, all the time
- Communication Platforms
- Monitoring / Paging
- SDLC / Collaboration

Not just outages
- No data
  - Permissions, network partitions, agent failures
- Partial data
  - Docker awslogs max-buffer-size issues
- Too much data
  - Too many notifications / alerts / logs (log level)

Auxiliary systems
- Shared infrastructure
- Automation

Auxiliary system to Auxiliary system
- Autoscaling -> monitoring
- Gradual deployment / rollback -> monitoring
- ChatBots to Instant messaging
- GitOps -> Source Control Management
- Customer communication -> Collaboration
- Service Health Dashboard -> Internal Networking

What to do ?

Alarm for “no data”
- Treat missing data as bad
- Absent()

Internal Status Page (for auxiliary systems)

External health-check page that lightly touches our services

Global Playbook (who to call, post-incident procedure)

Bookmark secondary systems (have them ready at hand)

Know your Customers

Prepare CLI commands

Multiple Alarm Targets (or logs), i.e. Docker Dual-Logging

Run Gamedays with “Flying Blind”

Program / Reflections on SREcon 2022

- Full program with slides and recordings:
  - https://www.usenix.org/conference/srecon22emea/program
- Reflections (summary) by Niall Murphy
  - https://blog.relyabilit.ie/reflections-on-srecon-emea-2022/
- Next SREcon 2023 Americas
  - 2023-02-21 to 23 in Santa Clara
  - https://www.usenix.org/conference/srecon23americas
  - Proposals for lightning talks are still open till later today!

Thanks for coming!

Please give Feedback for this session: