

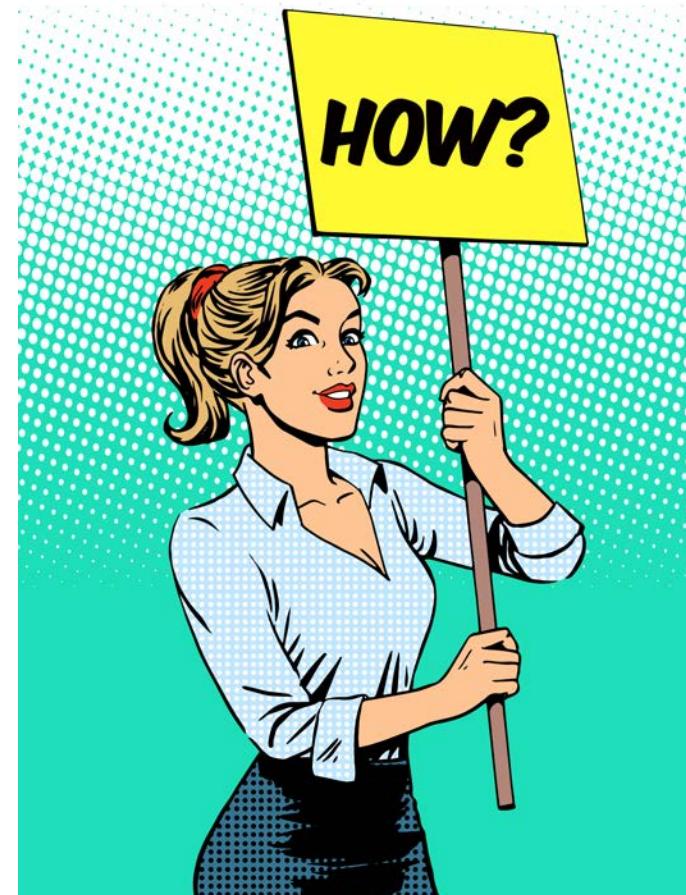
# SRE for Enterprises

David N. Blank-Edelman  
@otterbook



Photo by [Jens Rademacher](#) on [Unsplash](#)

# Two questions about SRE in Enterprises:



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# Google Cloud Platform Blog

Product updates, customer stories, and tips and tricks on Google Cloud Platform

## Introducing Google Customer Reliability Engineering

Monday, October 10, 2016

Posted by Dave Rensin, Director of Google Customer Reliability Engineering (CRE)

In the 25 years that I've been in technology nearly everything has changed. Computers have moved out of the labs and into our pockets. They're connected together 24/7 and the things we can do with them are starting to rival our most optimistic science fiction.

Almost nothing looks the same as it did back then — except customer support.

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# Two questions about SRE in Enterprises:



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Apache Tomcat/7.0.26 – Error report

192.168.33.10:8080

## HTTP Status 500 -

**type** Exception report

**message**

**description** The server encountered an internal error () that prevented it from fulfilling this request.

**exception**

```
javax.servlet.ServletException
    ralo.runtime.engine.CFMLEngineImpl.getConfigDirectory(CFMLEngineImpl.java:244)
    ralo.runtime.engine.CFMLEngineImpl.loadJSPFactory(CFMLEngineImpl.java:198)
    ralo.runtime.engine.CFMLEngineImpl.addServletConfig(CFMLEngineImpl.java:159)
    ralo.loader.engine.CFMLEngineFactory.getInstance(CFMLEngineFactory.java:141)
    ralo.loader.servlet.CFMLServlet.init(CFMLServlet.java:23)
    org.apache.catalina.valves.ErrorReportValve.invoke(ErrorReportValve.java:98)
    org.apache.catalina.valves.AccessLogValve.invoke(AccessLogValve.java:927)
    org.apache.catalina.connector.CoyoteAdapter.service(CoyoteAdapter.java:407)
    org.apache.coyote.http11.AbstractHttp11Processor.process(AbstractHttp11Processor.java:929)
    org.apache.coyote.AbstractProtocol$AbstractConnectionHandler.process(AbstractProtocol.java:657)
    org.apache.tomcat.util.net.JIoEndpoint$SocketProcessor.run(JIoEndpoint.java:307)
    java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java:1146)
    java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:615)
    java.lang.Thread.run(Thread.java:701)
```

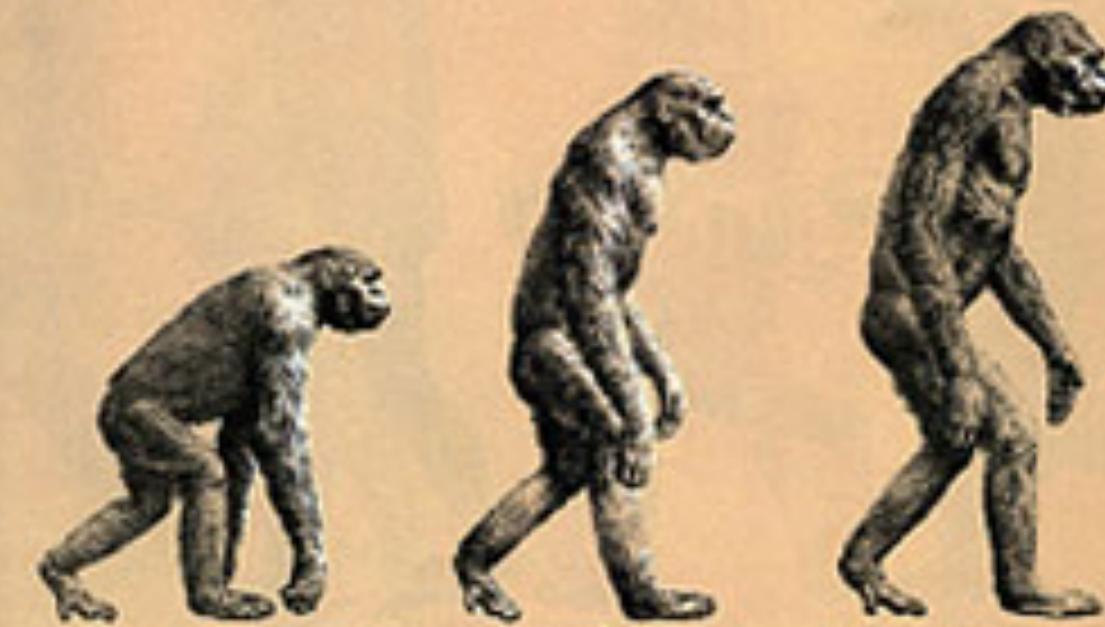
**note** The full stack trace of the root cause is available in the Apache Tomcat/7.0.26 logs.

Apache Tomcat/7.0.26





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Geometric Out

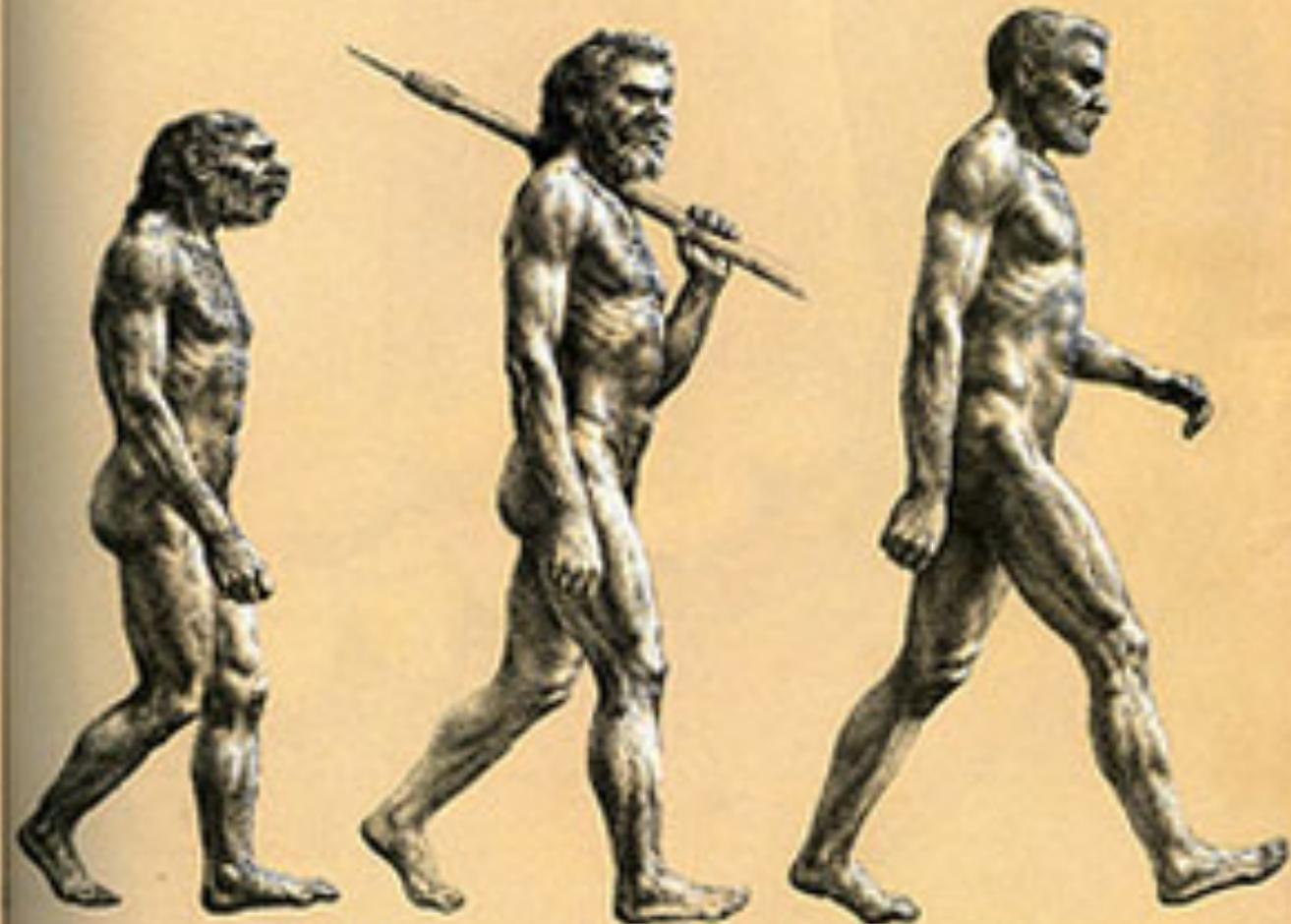
Bien que soit importante pour les managers, une prise en charge des risques de l'entreprise à propos de technologies et d'innovations est quelque chose d'autre. C'est le processus d'une grande entreprise qui va déterminer la réussite qu'il fera ses innovations. Il sera alors très important d'assurer une forte sécurité dans toute l'entreprise, au sein de l'Inde et en Chine.

中原書局

Il soprannome vero banchiere italiano fu la figura dominante. Questo padrone aveva sempre avuto un gran potere sul popolo. Senza dubbio era stato questo suo controllo che aveva fatto in lui dominare il più grande orgoglio nei confronti dei suoi concittadini che l'avevano sempre considerato un essere superiore.

MANAGEMENT

Cette division offre immédiatement une situation spatiale qui convient le plus exactement à l'interprétation de la famille des Hémimérides. Autre point important : une telle division correspondrait à la figure hexagonale. Il n'est pas nécessaire que cette dernière forme soit réalisée, mais dans ce cas précis il conviendrait d'assurer que toutes les six directions hexagonales soient bien marquées.



330 JOURNAL OF CLIMATE

L'Institut de Neurosciences n'a pas pour objectif aucun but qu'il soit à profit, mondiale ou à l'échelle. Il propage les bonnes idées de la Neuroscience et s'inscrit dans toute l'Europe, en respectant certaines règles pratiques imposées à celle d'une bonne recherche. Il finance des recherches fondamentales et appliquées dans divers domaines.

60 Cetaceans

L'importance de l'Union de Cao-Magno et l'Union des deux, si l'on considère la situation. L'Union de Cao-Magno a bien été assez astucieuse pour faire des gains, mais pas assez astucieuse. Si on applique l'Union de Cao-Magno, il n'est pas nécessaire de produire un article à moins de

#### **4. TROUBLE SHOOTING**

Photographies J. H. Lemoine, musée national d'ethnologie de l'Université de Genève. L'un et l'autre sont également très bons modèles de vase, très élégants et possédant de nombreuses particularités de production extrêmement rares ou appartenant à des séries très limitées. L'ensemble fait une paire d'exceptionnelle hauteur totale de 16 cm.

O'REILLY®

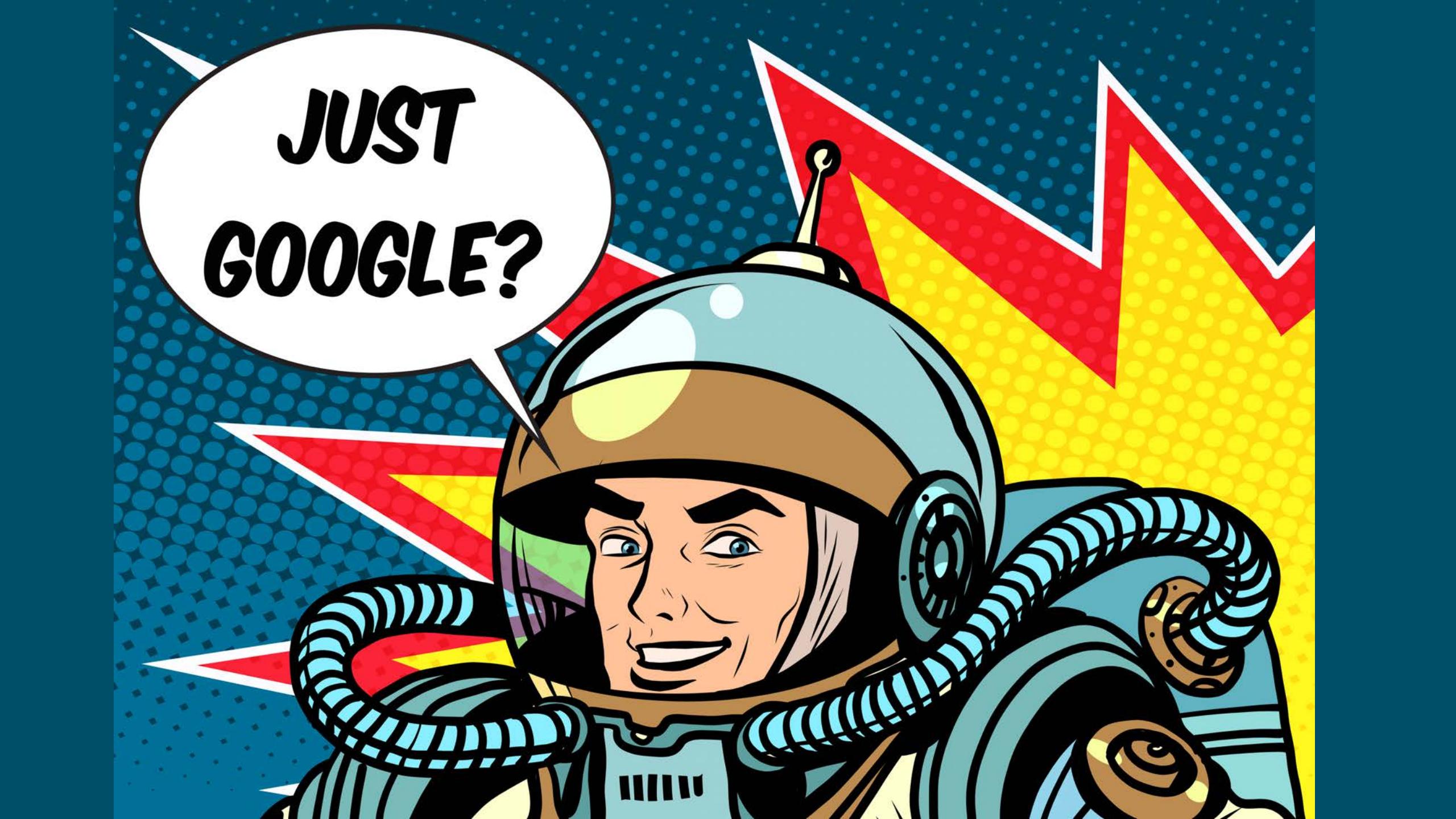


# Site Reliability Engineering

HOW GOOGLE RUNS PRODUCTION SYSTEMS

Edited by Betsy Beyer, Chris Jones,  
Jennifer Petoff & Niall Richard Murphy

@otterbook



**JUST  
GOOGLE?**

O'REILLY®



# Seeking SRE

CONVERSATIONS ABOUT RUNNING PRODUCTION SYSTEMS AT SCALE

Edited by  
David N. Blank-Edelman

@otterbook

# SREcon14

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## Keys to SRE

Ben Treynor

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#### Abstract:

Ben Treynor joined Google as Site Reliability Tsar in 2003. He is the founder of Google's Site Reliability team and grew it organically from an original core of 7 "production" engineers to its current ranks of >1200 software engineers. SRE is responsible for everything from Google's internal software infrastructure, to user services like Search, Gmail, Ads, and to the burgeoning Cloud Platform. Additionally, Ben is responsible for Google's worldwide internal and external network (since 2004), its data centers and hardware operations (since 2009), and is part of the Google Cloud Platform management team (since late 2013).



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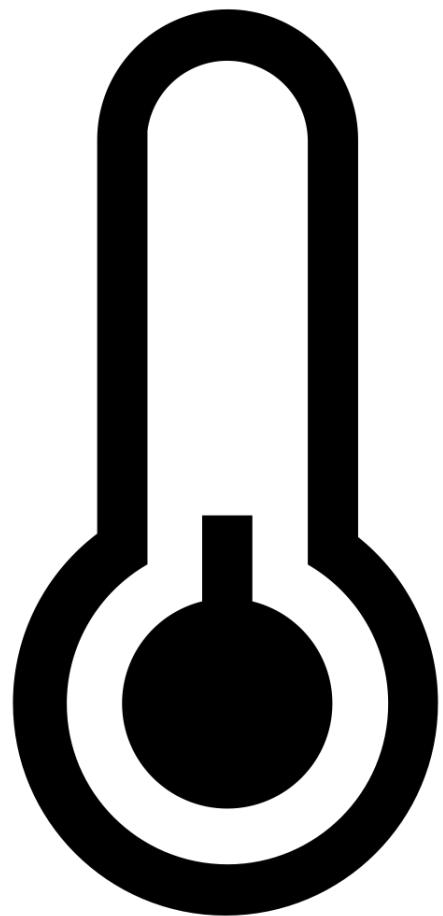
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# What Makes SRE, SRE (dramatic recreation)

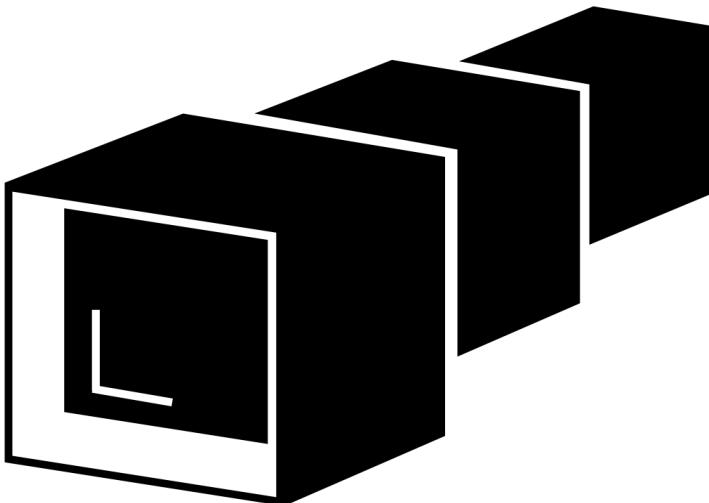
- hire only coders
- have an SLA for your service
- measure and report performance against SLA
- Use Error Budgets and gate launches on them
- Common staffing pool for SRE and DEV
- Excess Ops work overflows to DEV team
- Cap SRE operational load at 50%
- Share 5% of ops work with DEV team
- Oncall teams at least 8 people, or 6x2
- Maximum of 2 events per oncall shift
- Post mortem for every event
- Post mortems are blameless and focus on process and technology, not people

# What Makes SRE, SRE (dramatic recreation)

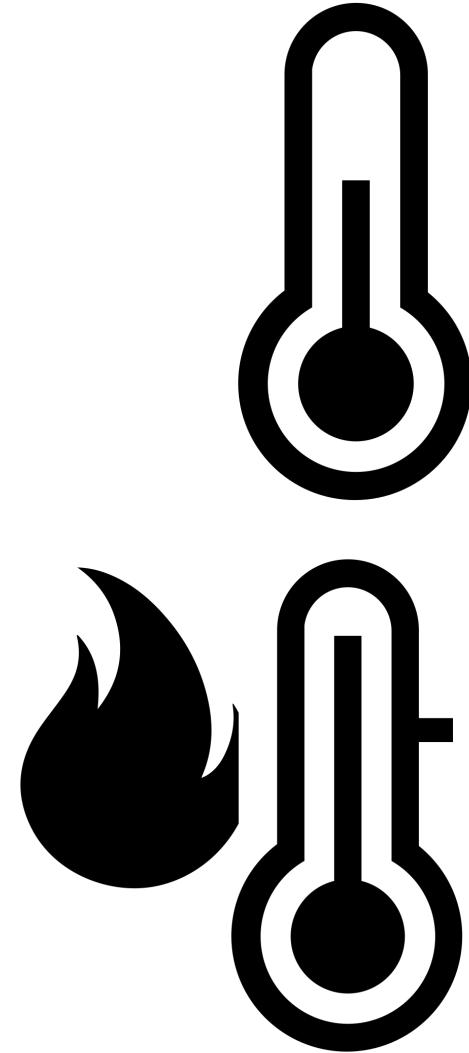
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SLO



monitor



decide

# Observation #1:

Create virtuous and reinforcing  
feedback loops



# What Makes SRE, SRE (dramatic recreation)

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## Observation #2:

You can't fire your way to reliable.



# Two questions about SRE in Enterprises:



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# One Way you Don't

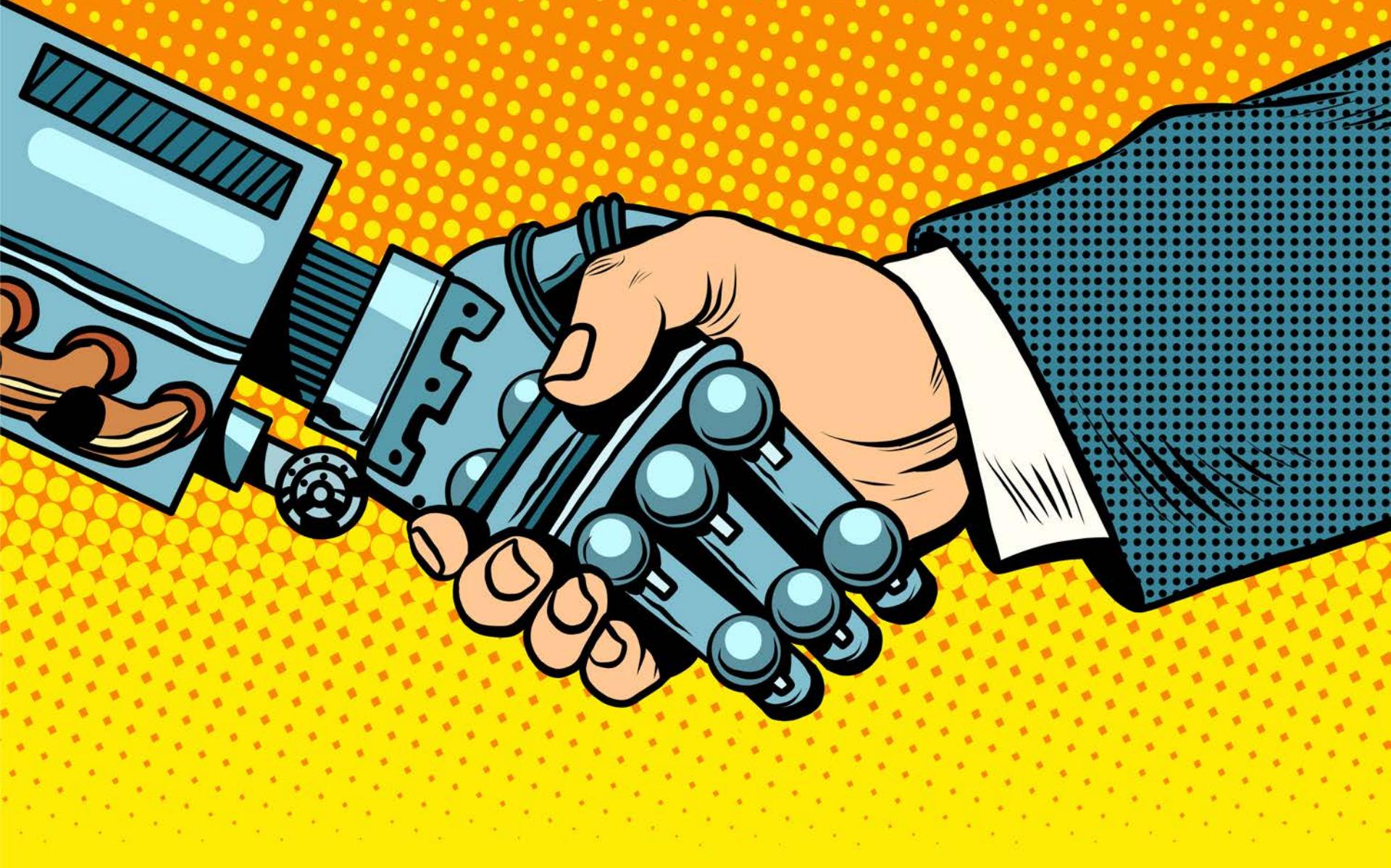
## System Administrator Job Summary

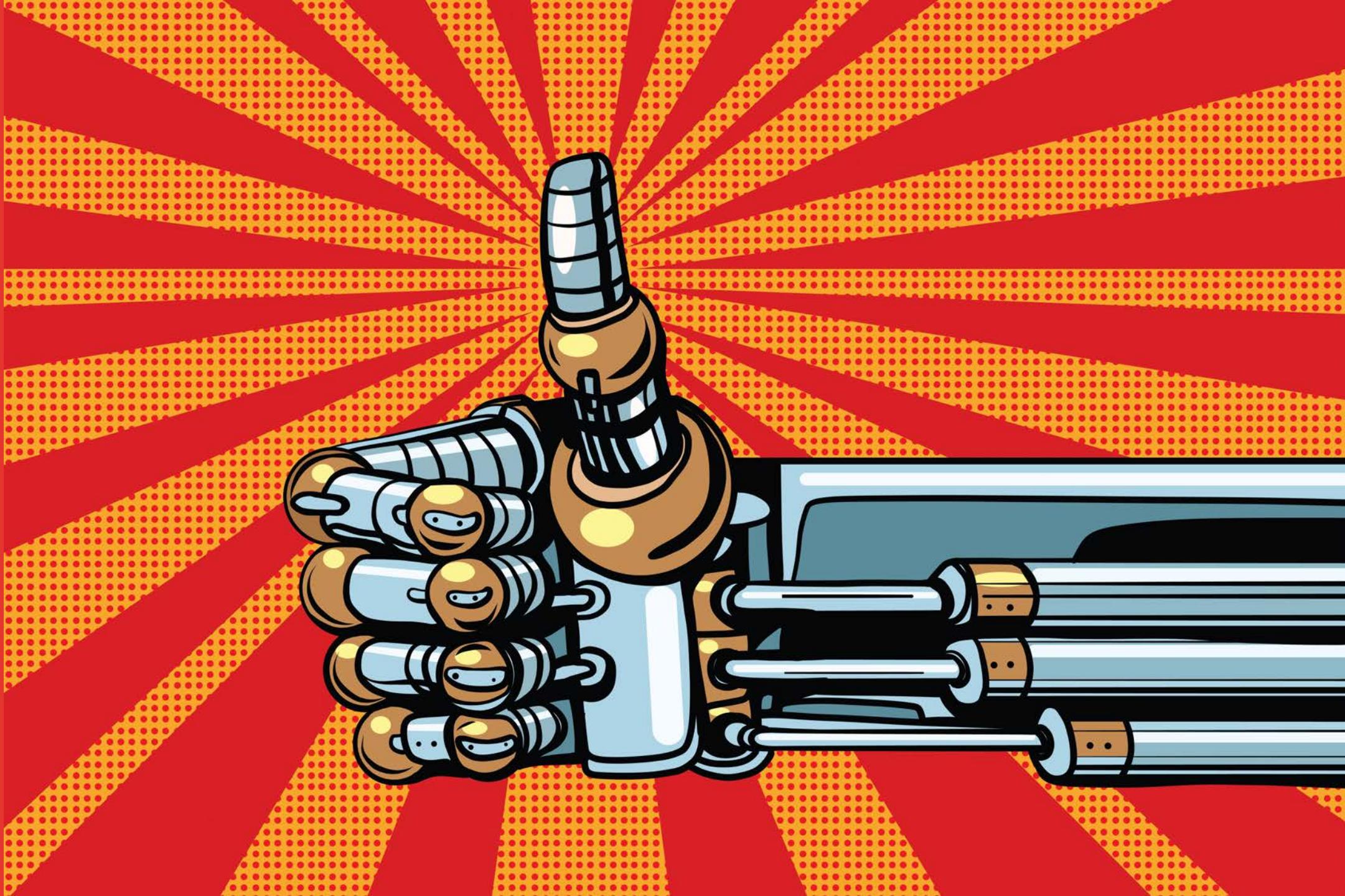
We are currently seeing an experienced System Administrator to join our team. The System Administrator must have a deep and broad knowledge of computer software, hardware and networks. S/He will be responsible for designing, organizing, modifying, and supporting our company's computer systems.

The System Administrator will design and oversee local area networks, wide area networks, and network segments. Daily tasks may include installing, upgrading and monitoring software and hardware. The System Administrator will maintain the essentials such as operating systems, business applications, security tools, web-servers, email, laptop, and desktop PCs.

## System Administrator Duties and Responsibilities

- Support LANs, WANs, network segments, Internet, and intranet systems
- Ensure design of system allows all components to work properly together
- Make recommendations for future upgrades
- Maintain network and system security
- Troubleshoot problems reported by users and analyze and isolate issues
- Monitor networks to ensure security
- Evaluate and modify system's performance
- Maintain network facilities in individual machines, such as drivers and

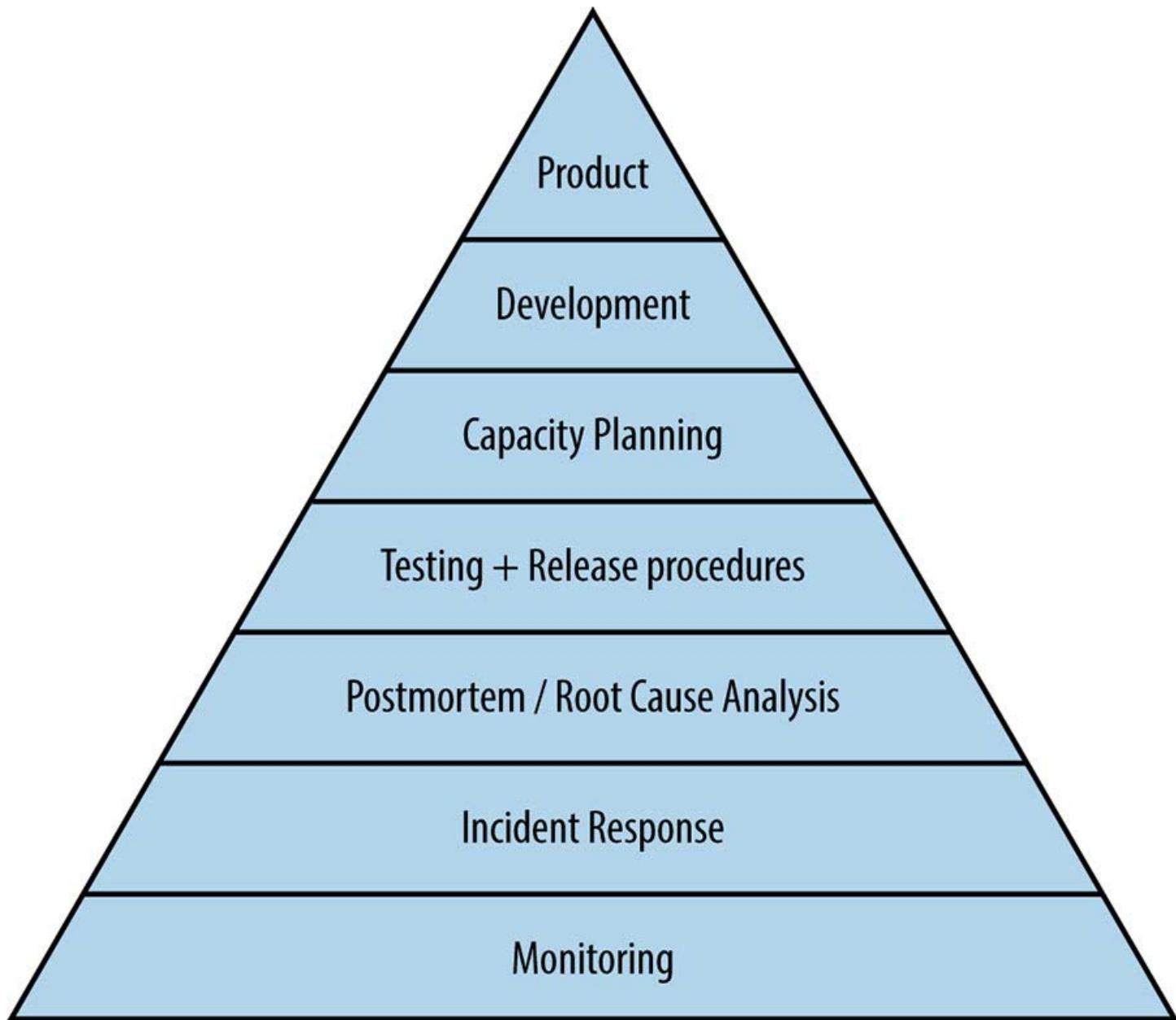




# Technical: You Know Most of This Already



- Automation
- Provisioning
- CI/CD
- Monitoring





# People/Culture Requirements

- Values
- Engineering culture (or at least a bubble) / resources
- Toil-intolerant culture
- Ownership structures
- Org structure

# Observation #3:

SRE requires management support at the highest levels.



# Observation #4:

There is no one right way to build an SRE team. But there are wrong ways.



# How Do You Start?

- Have a problem/downtime/epiphany
- Get management support lined up
- Read the book(s) critically
- Hang out with other SREs
- Dip your toe into SLOs and error budgets

# Let's talk...

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- [@otterbook](https://otterbook.com)
- [/in/dnblankedelman](https://in/dnblankedelman)



# As per Gene's request...

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- @otterbook
- /in/dnblankedelman

