

# Break Things on Purpose

*Kolton Andrus*  
*CEO, Gremlin*





*Pathemata mathemta:*

Guide your learning through pain

**Skin in the Game**

*Nassim Nicholas Taleb*



# Hormesis

*a favorable response to low  
exposures to stressors*



Inject something harmful, in order  
to build an immunity



# **Chaos Engineering:**

Thoughtful, planned experiments designed to reveal the weakness in our systems.



We test **proactively**, instead of waiting for an outage.





**Why Now?**

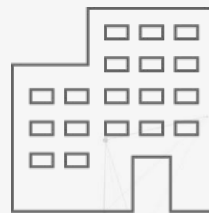




**Data Center**



**Internet**



**Data Center**



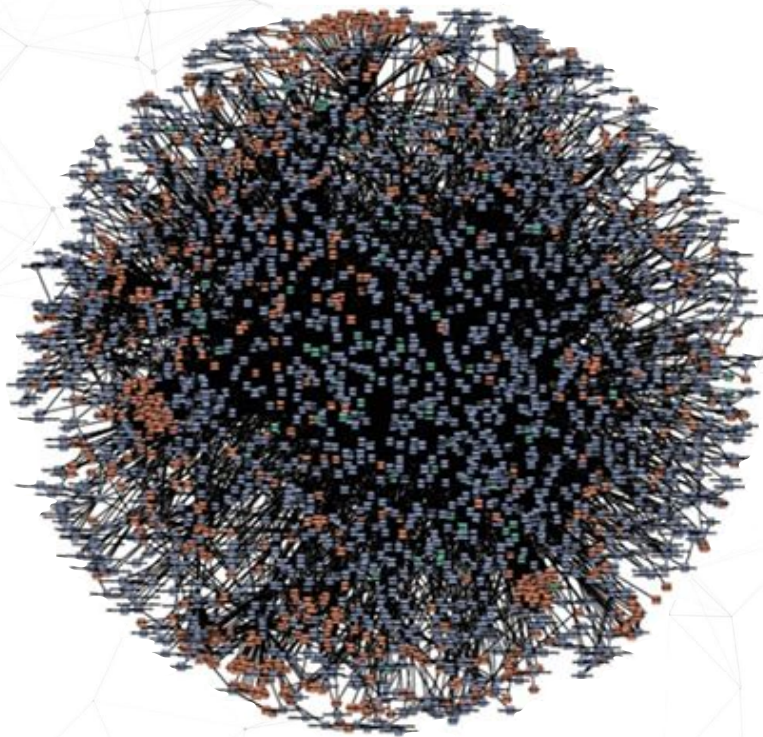
**Web Server**



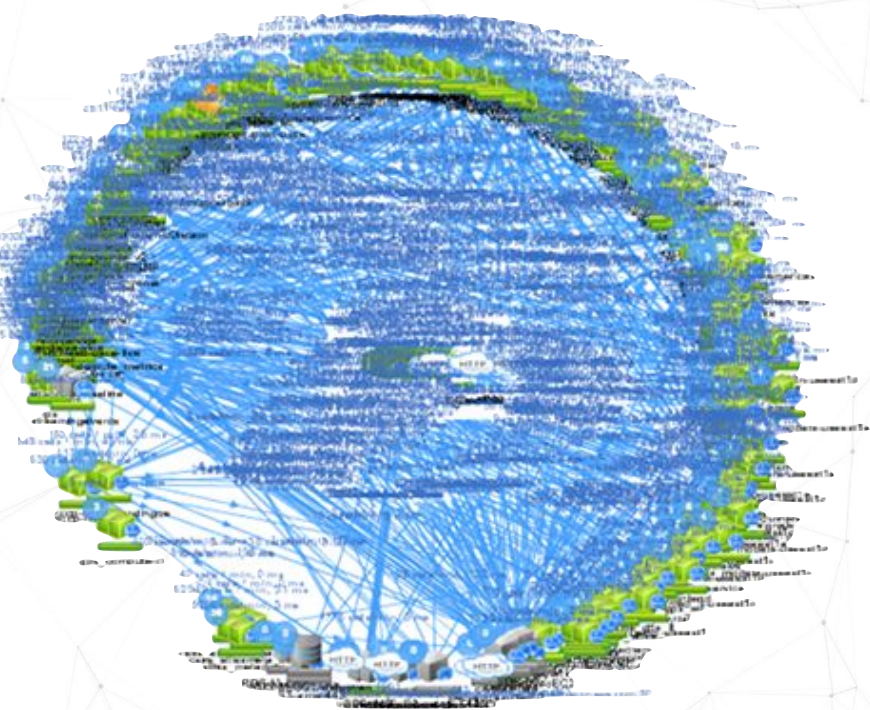
**Business Logic**

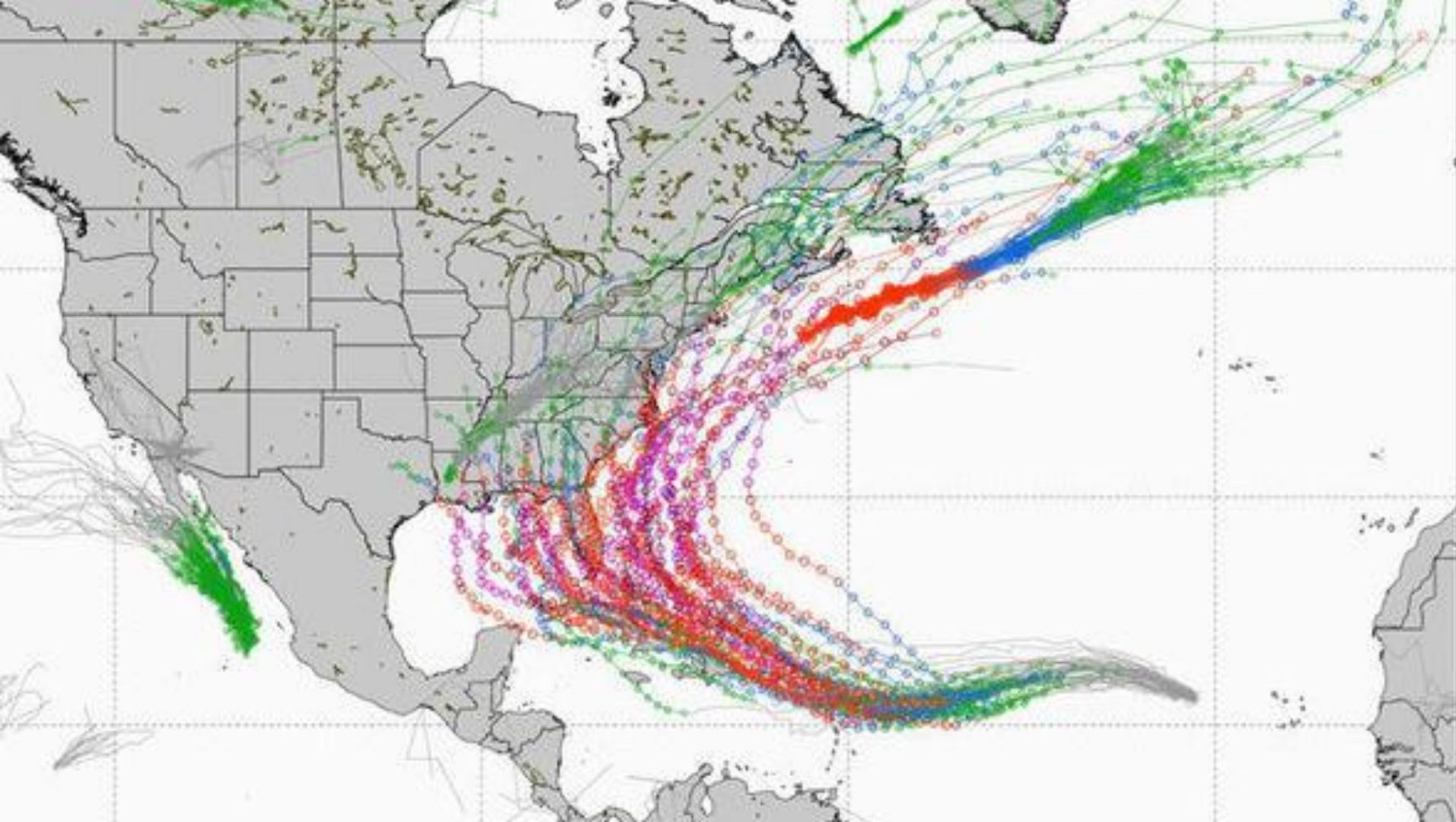


**Database**



amazon.com<sup>®</sup>



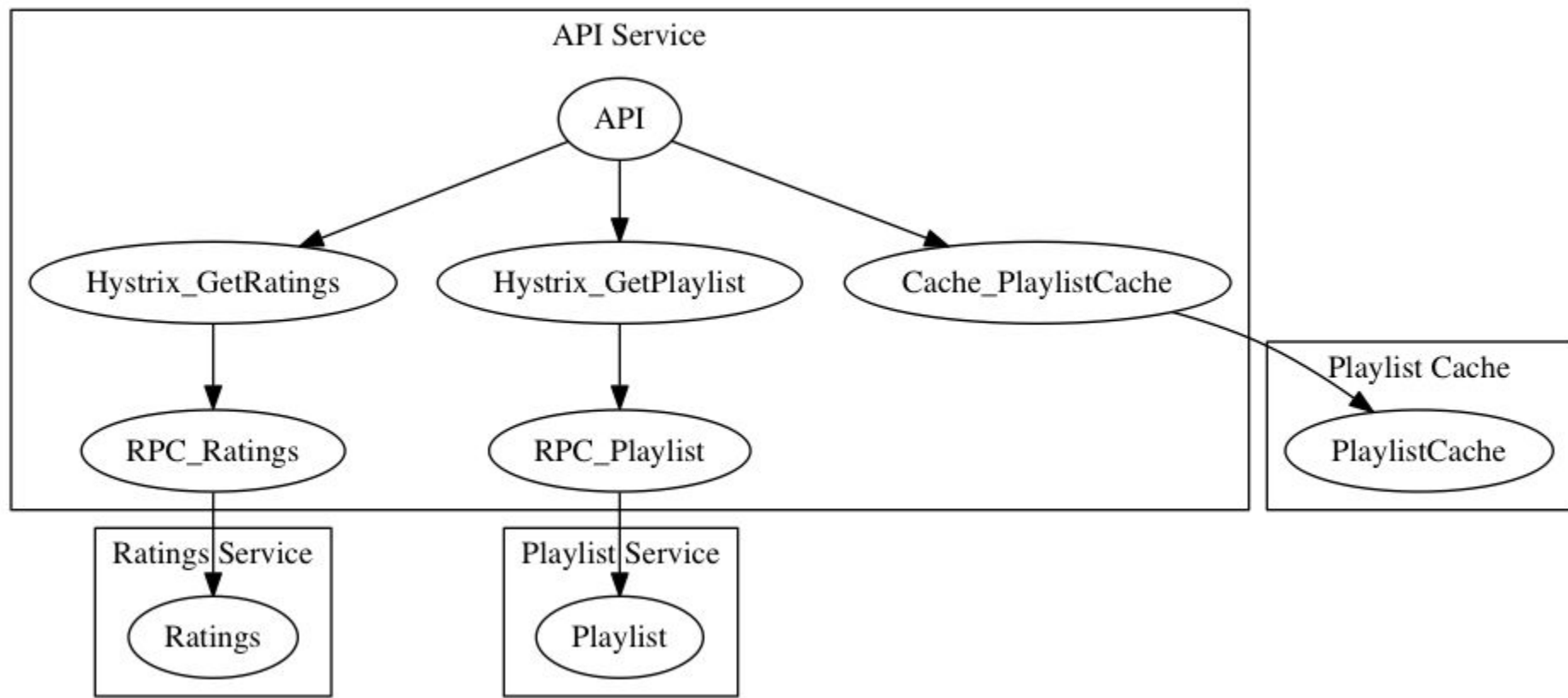


# Effective Experimentation





“What could go wrong?”





“How likely is this to occur?”





“What is the cost of being wrong?”

S3 **\$150M**

Delta **\$100M**

US Annually **\$700B**





**It's Gameday**



**Picard Tips** @PicardTips · 20 Dec 2015

Picard management tip: Run crisis drills when all is well. A real calamity is not a good time for training.







Minimize the  
blast radius.



Form a hypothesis.



Run an experiment.



Abort Conditions



Failure



Success



Find and fix issues.



Scale up and repeat.





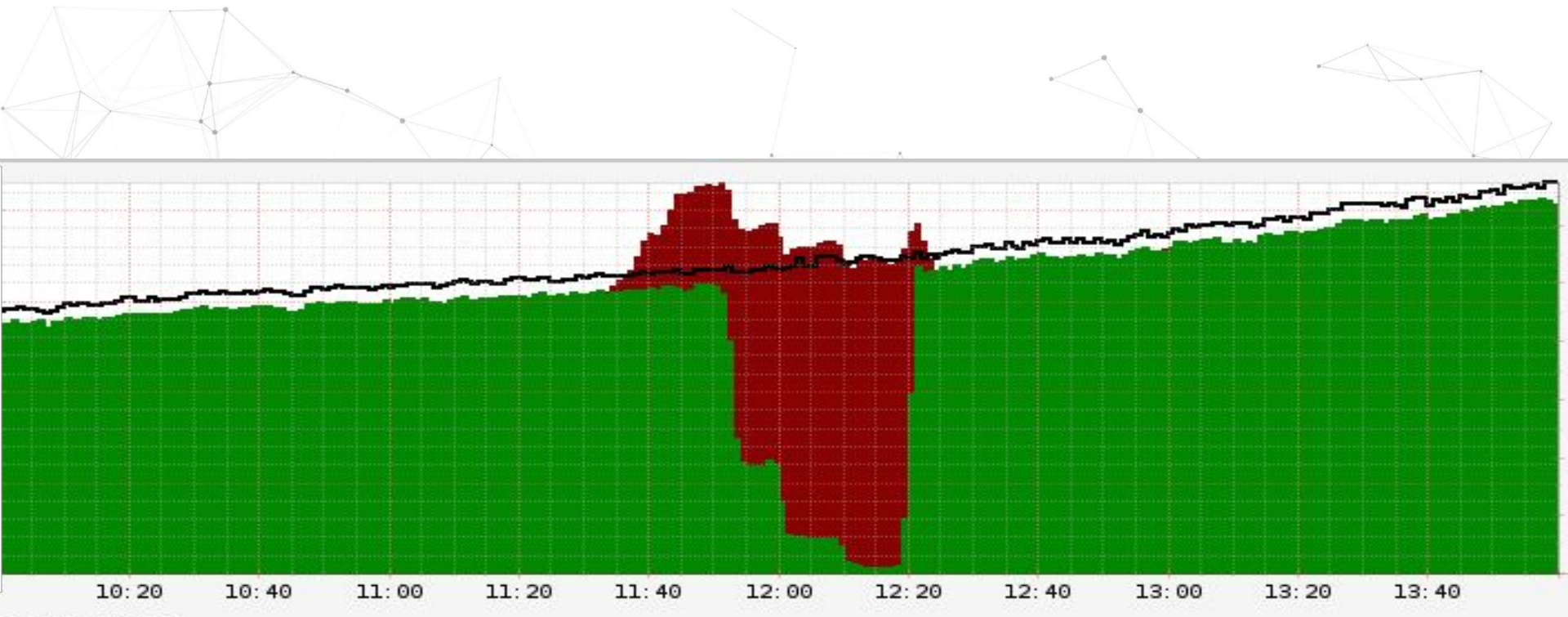
Those unwilling to test in production aren't yet confident that the service will continue operating through failures.

And, without production testing, recovery won't work when called upon.

*James Hamilton  
Distinguished Engineer, AWS*



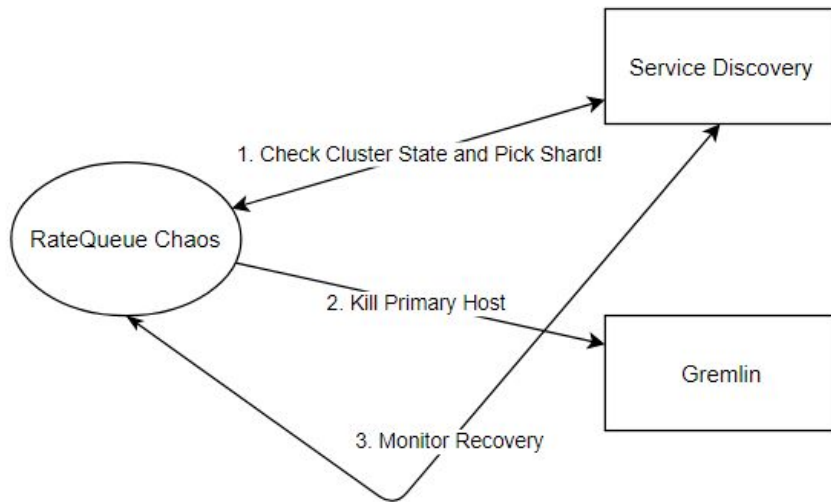
Prepare for  
**Real World Scenarios.**



**CDN Selection**

**NETFLIX**

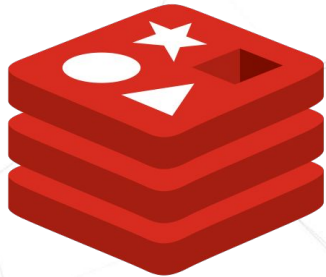
# Never lose a message



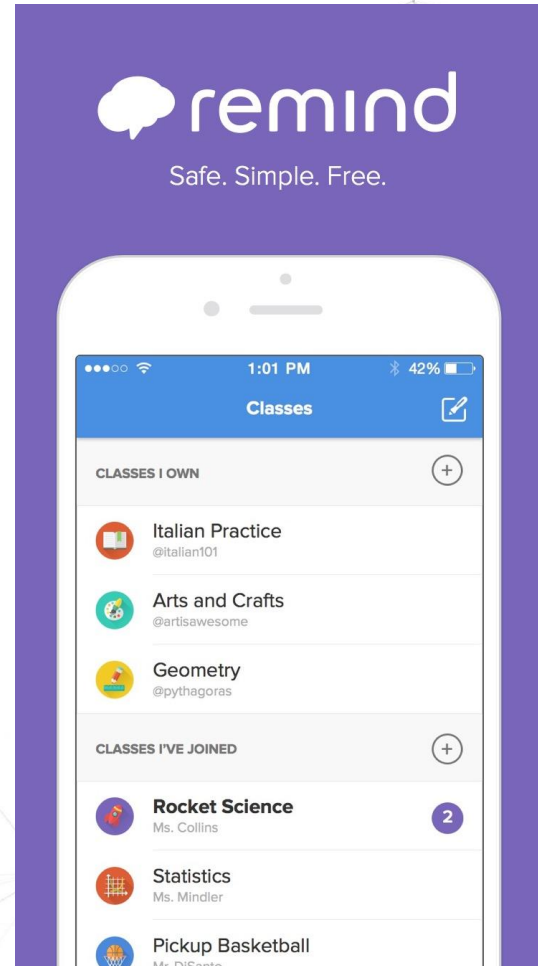
## Ratequeue



# Gracefully degrade



# redis



# Automation

The background features a dark blue field with a subtle network of white dots and lines, resembling a molecular or data structure. On the left side, there is a vertical gradient from green at the bottom to blue at the top, with several overlapping, semi-transparent geometric shapes in shades of blue and green.

The background of the slide is a light gray network of interconnected nodes and lines, resembling a complex web or a molecular structure. The nodes are small dots, and the lines are thin, creating a mesh-like pattern across the entire slide.

# **“What is Tier 1?”**

Finding the Critical Services



# Automating Failure Testing Research at Internet Scale

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**How do I get started?**

Chaos Engineering Community

**CHICAGO**

[gremlin.com/community](https://gremlin.com/community)

# Thanks!

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[www.gremlin.com](http://www.gremlin.com)





*Please*

**Remember to  
rate this session**

*Thank you!*