

Getting a System to Production ... and keeping it there

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Content

- ✦ Introducing Production Systems
- ✦ What Goes Wrong in Production?
- ✦ Solutions for Production Systems
- ✦ Conclusions

Production Systems



What is a production system?



Any system
being used
for real work

Why is Productionisation Hard?

- ✦ No one teaches you about production
 - ✦ who do you talk to?
 - ✦ what do they want?
 - ✦ what is the definition of “done” ?
- ✦ Production is difficult for developers
 - ✦ hard to access, interrogate, debug, change, ...

A new cast of characters

Development



Developers



Users

A new cast of characters

Production



Auditors



Operations



Developers



Infrastructure



Business
Management



Users



Acquirers

Production is constrained

- ✦ Highly controlled
- ✦ Content is all valuable
- ✦ Change can be difficult



Production is unpredictable



© Alamy

Production is highly visible!



You don't own production

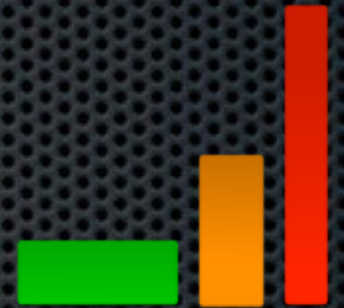


What goes wrong?



Performance surprises

- ✧ Interactive load
- ✧ Batch time surprises
- ✧ System abusers!
 - ✧ “all transactions this year”,
 - ✧ “average since 1967”, ...



Environment bombshells

- ✧ Constraints and contention



- ✧ Unexpected behaviour



- ✧ Integration points



Failures happen

- ✦ Software defects
- ✦ Platform failures
- ✦ Environment failures



Security tangles

- ✦ Security is **simple** in **Development**
- ✦ Much more **complex** in **Production!**



Finding Solutions



Key requirements for production

- ✦ Functionally **correct**
 - ✦ does what the business process requires
- ✦ **Stability**
 - ✦ behaves predictably in all situations
- ✦ **Capacity**
 - ✦ can process the workload required (at all times)
- ✦ **Security**
 - ✦ limits access to those who are authorised to have it

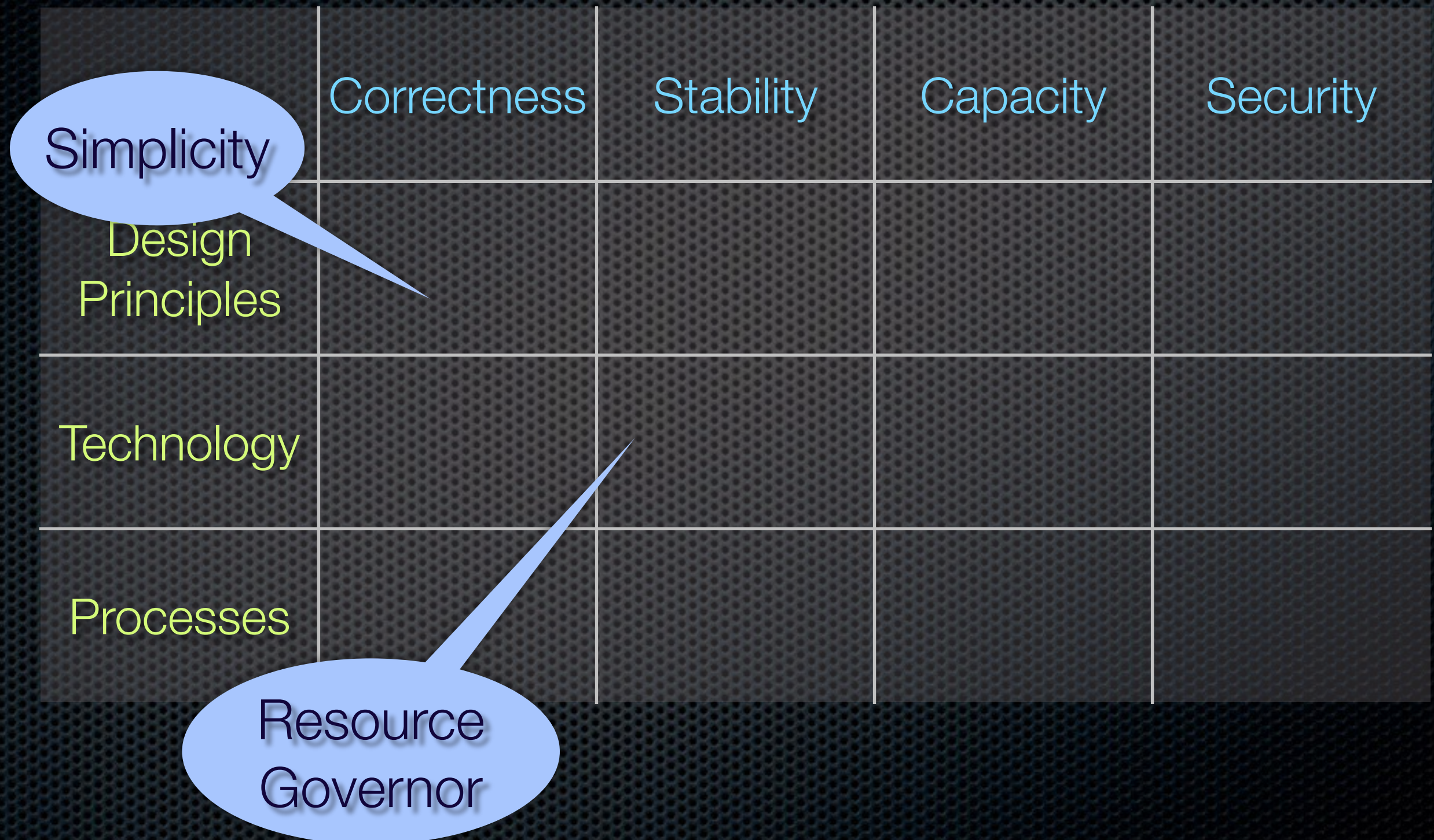
Solution Framework

	Correctness	Stability	Capacity	Security
Design Principles				
Technology				
Processes				

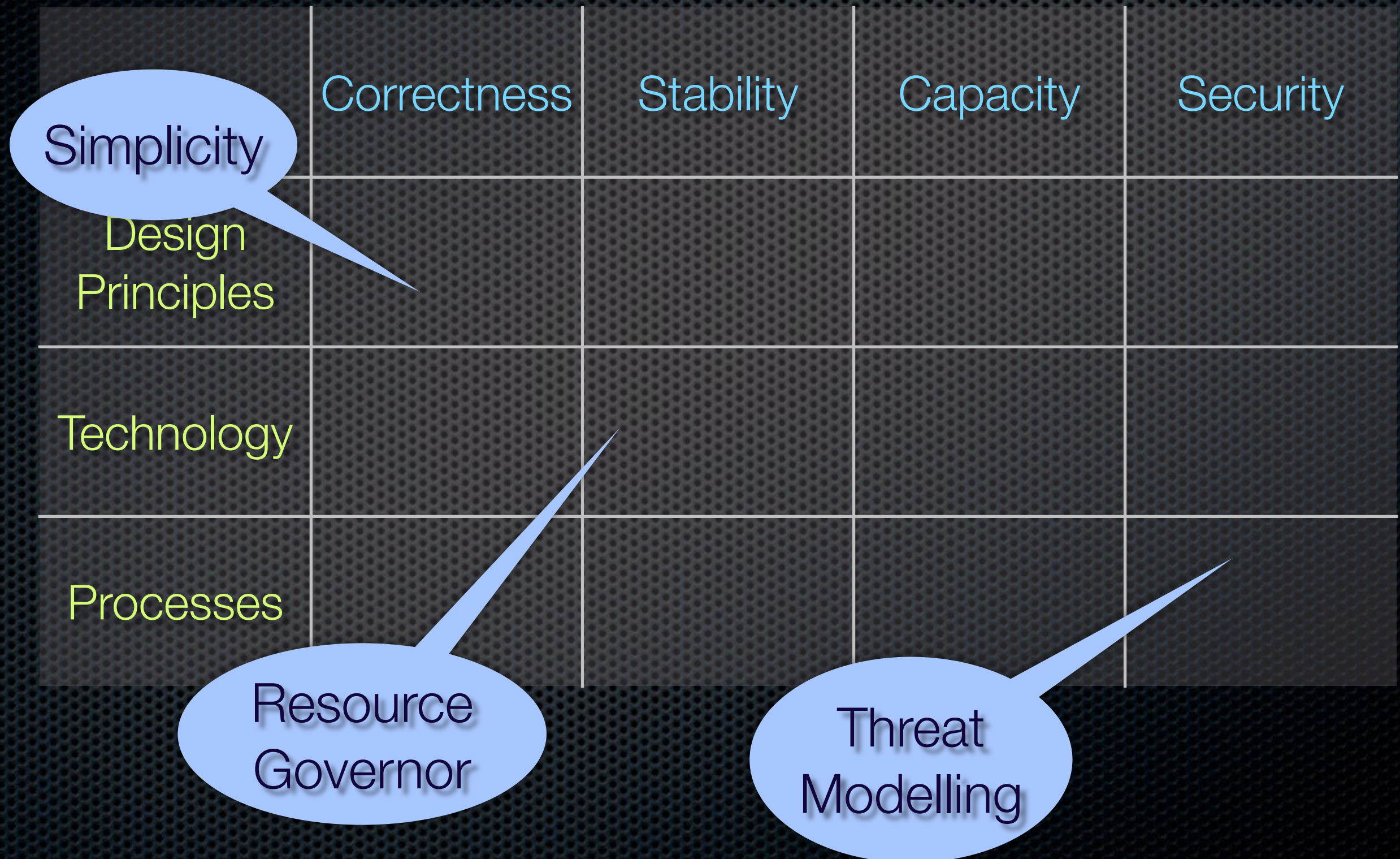
Solution Framework

	Correctness	Stability	Capacity	Security
Simplicity				
Design Principles				
Technology				
Processes				

Solution Framework



Solution Framework



General Principles

- ✦ One Team
- ✦ Automate
- ✦ Measure and Improve (feedback loops)
- ✦ Good Enough over Perfection

Timeless principles ... today led by CD and DevOps

Example: Achieving Stability



Stability - design principles

- ✧ Fail quickly

- ✧ fail fast, timeouts

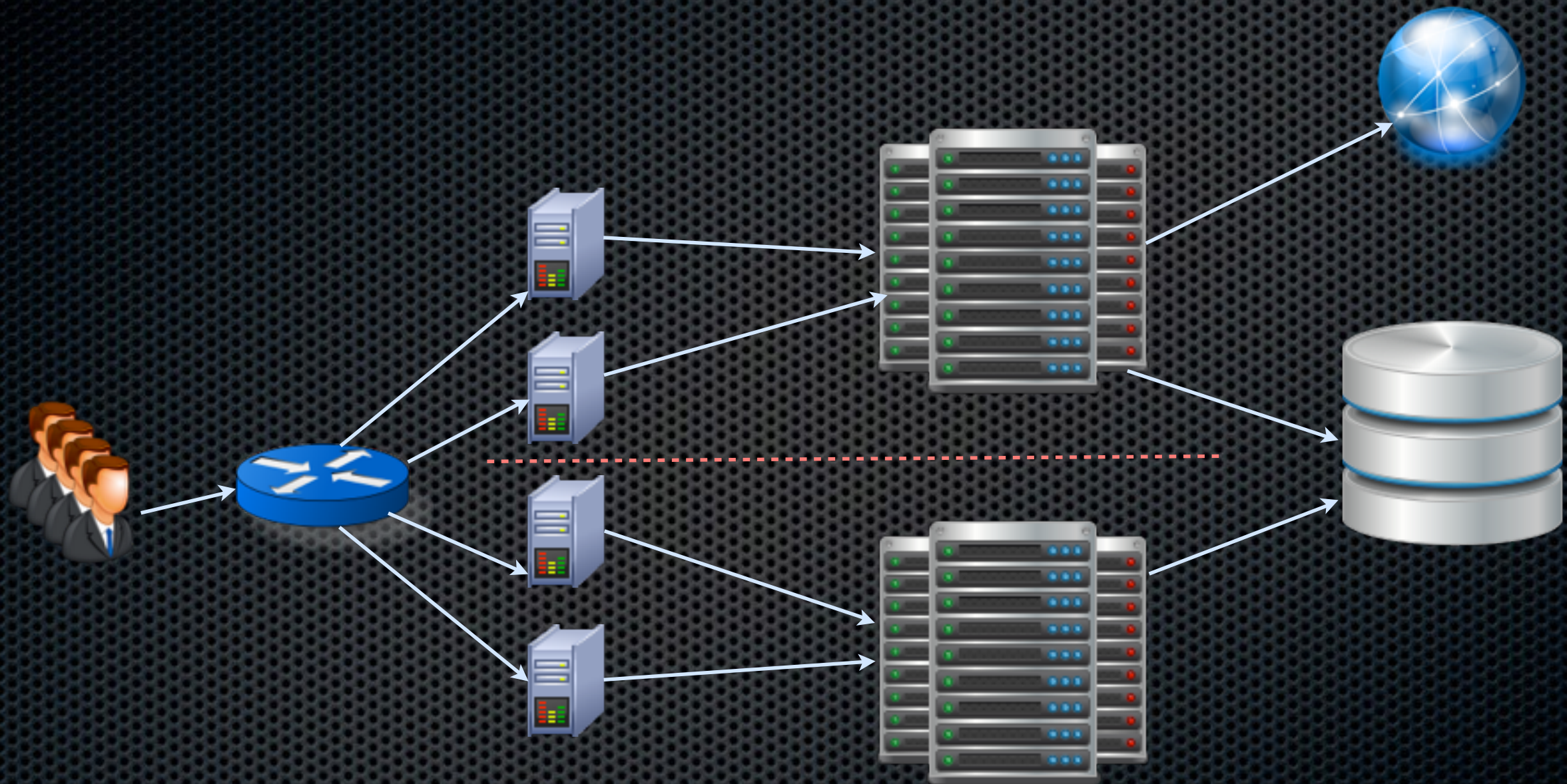
- ✧ Isolate problems

- ✧ flow control, circuit breakers, bulkheads, asynchronous integration

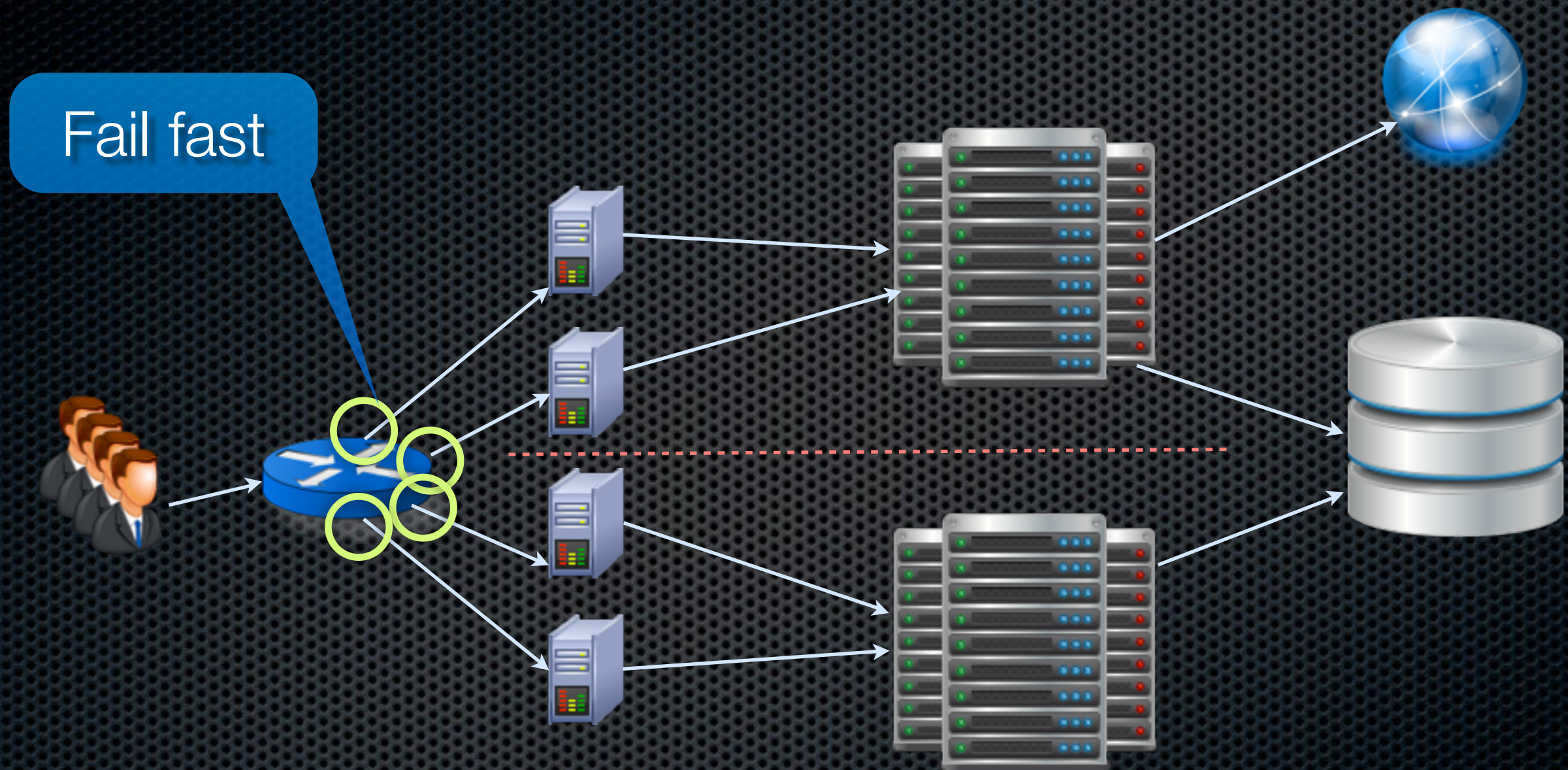
- ✧ Ensure steady state operation

- ✧ housekeeping, predictable resource allocation, governors, throttling

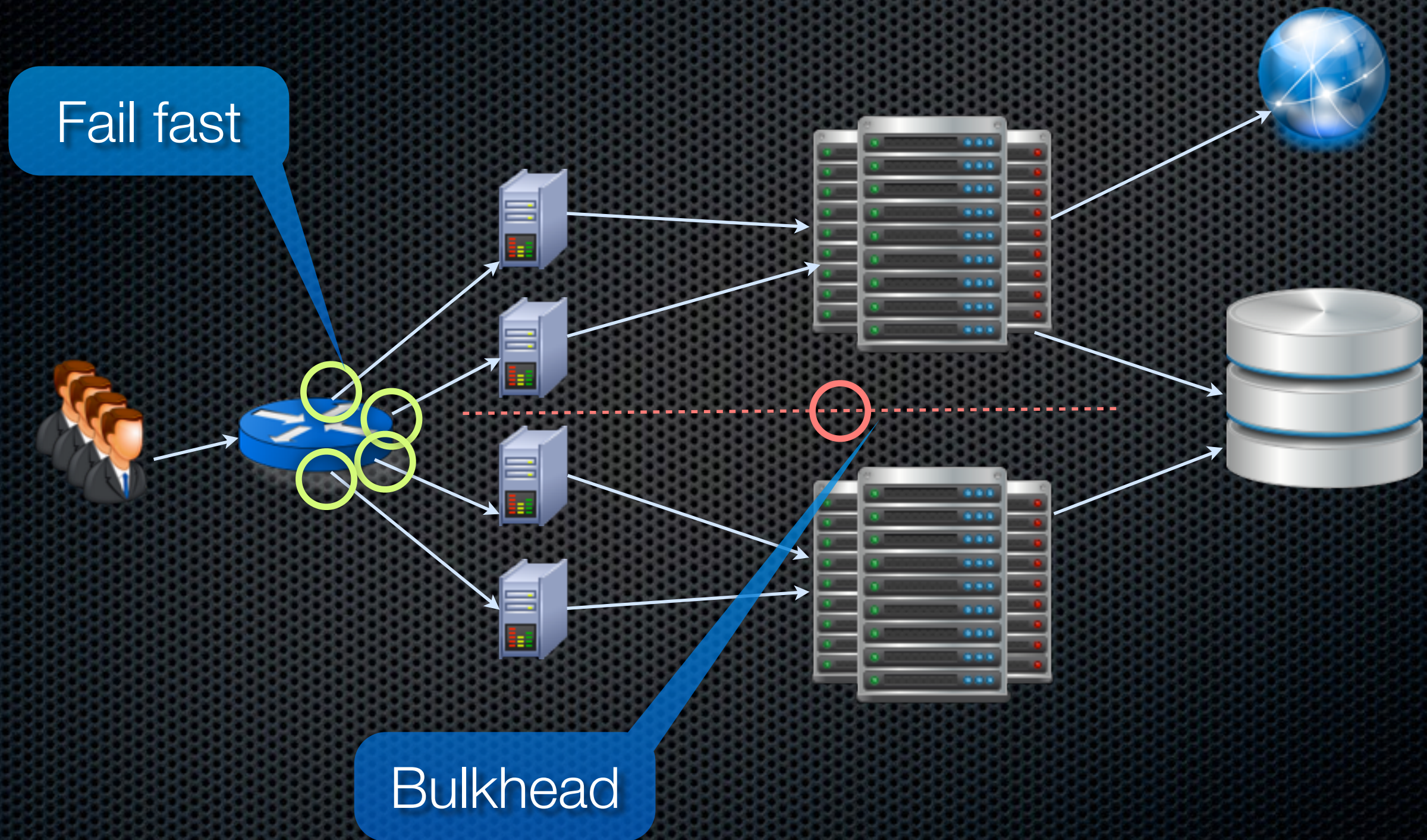
Stability - technology solutions



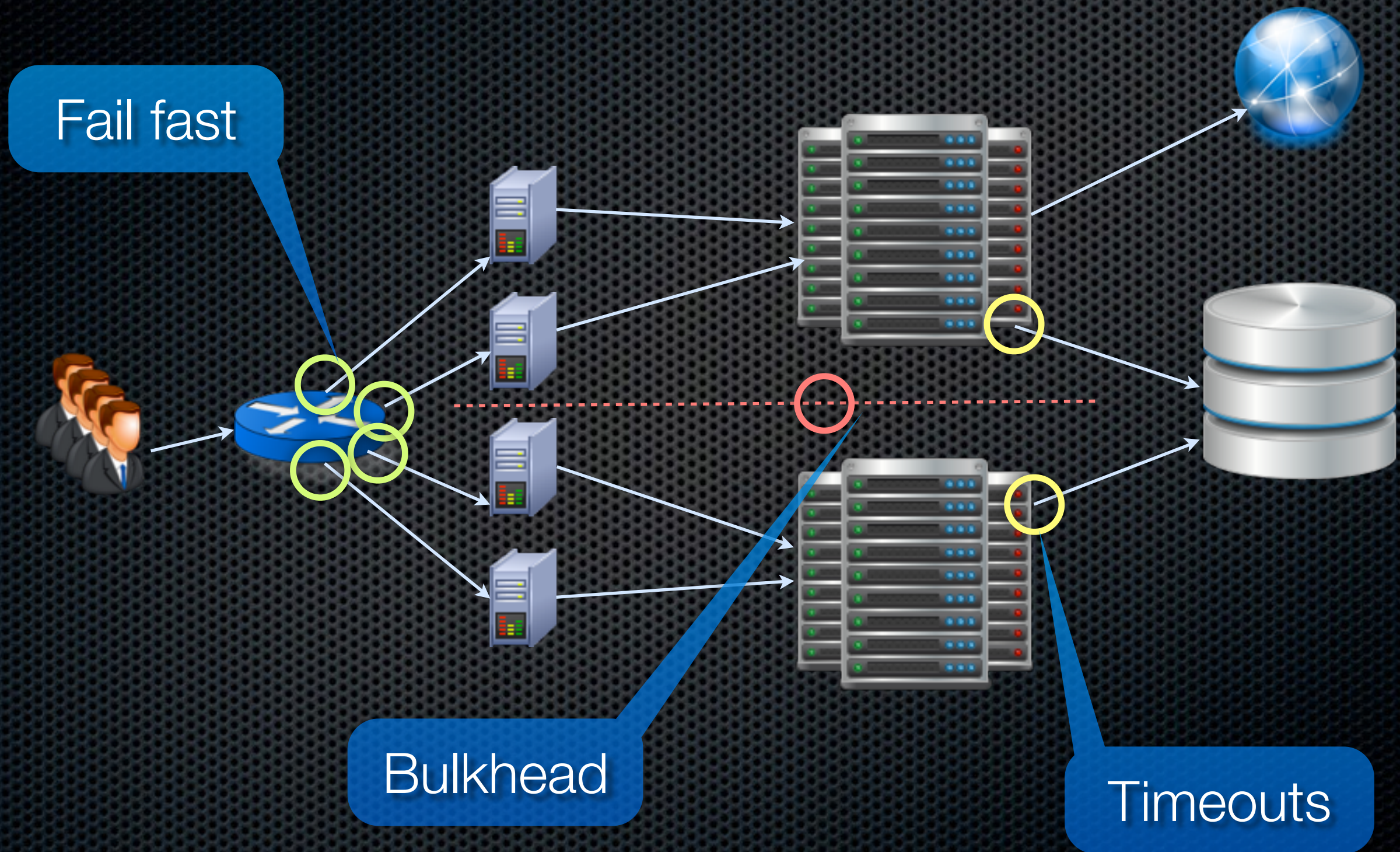
Stability - technology solutions



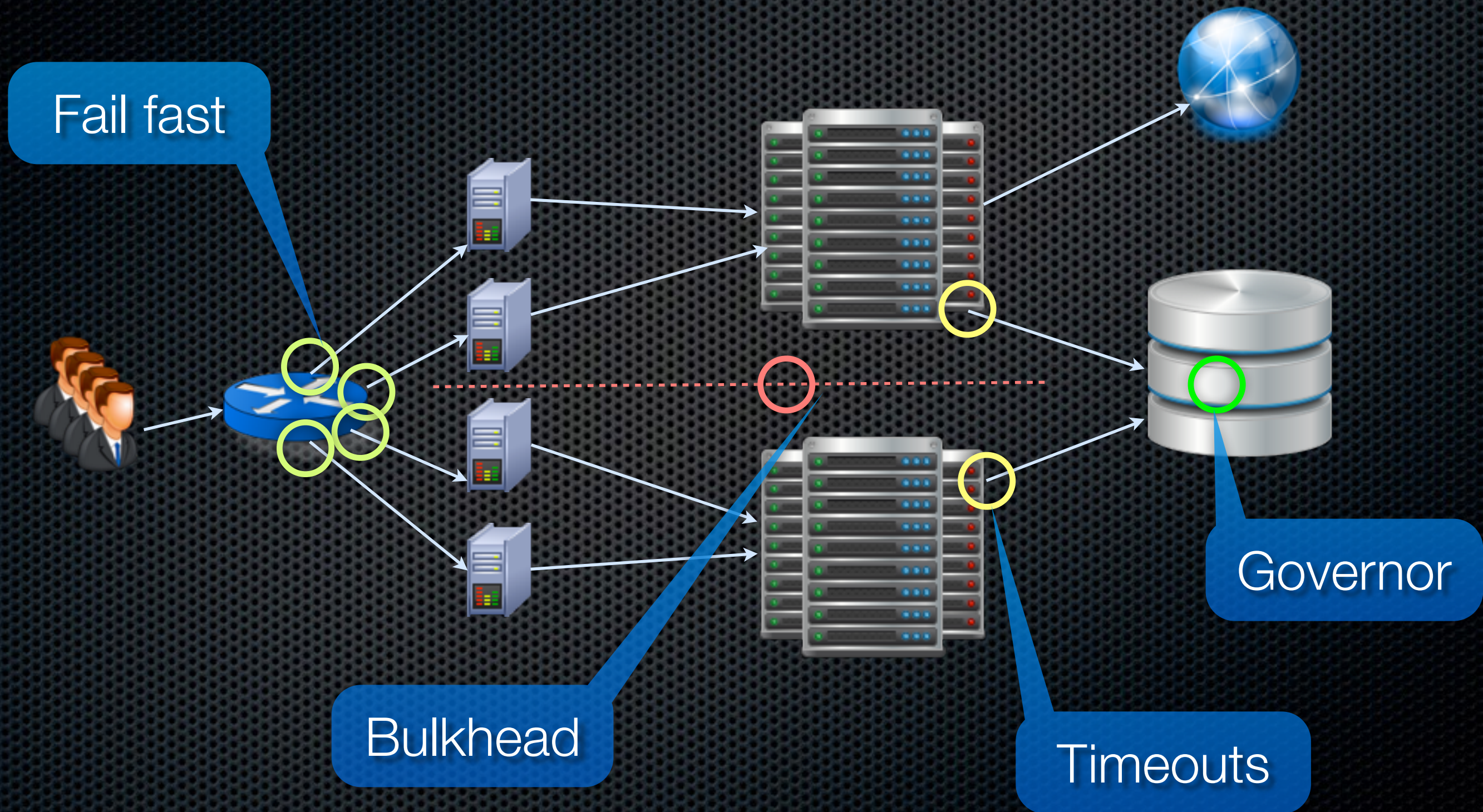
Stability - technology solutions



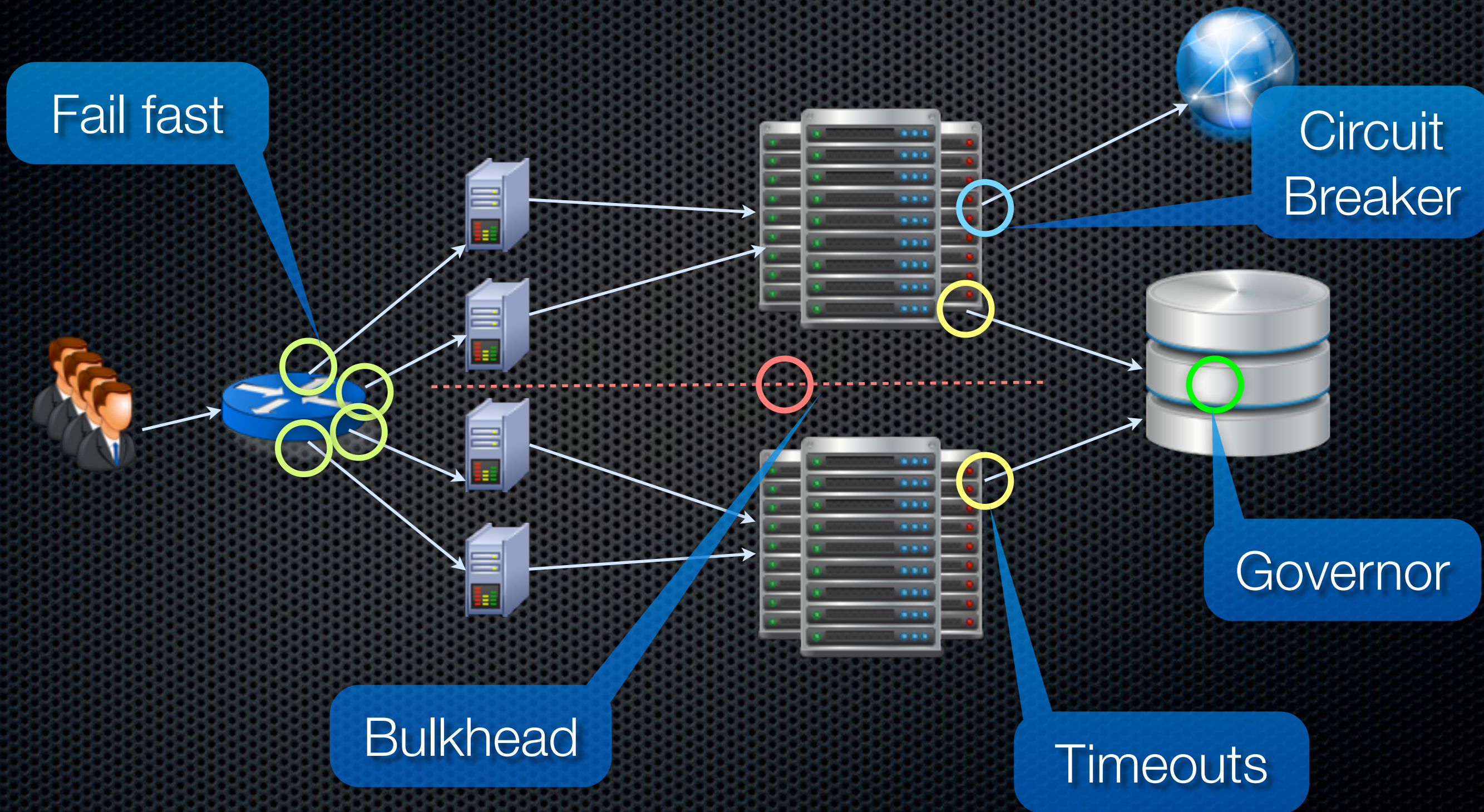
Stability - technology solutions



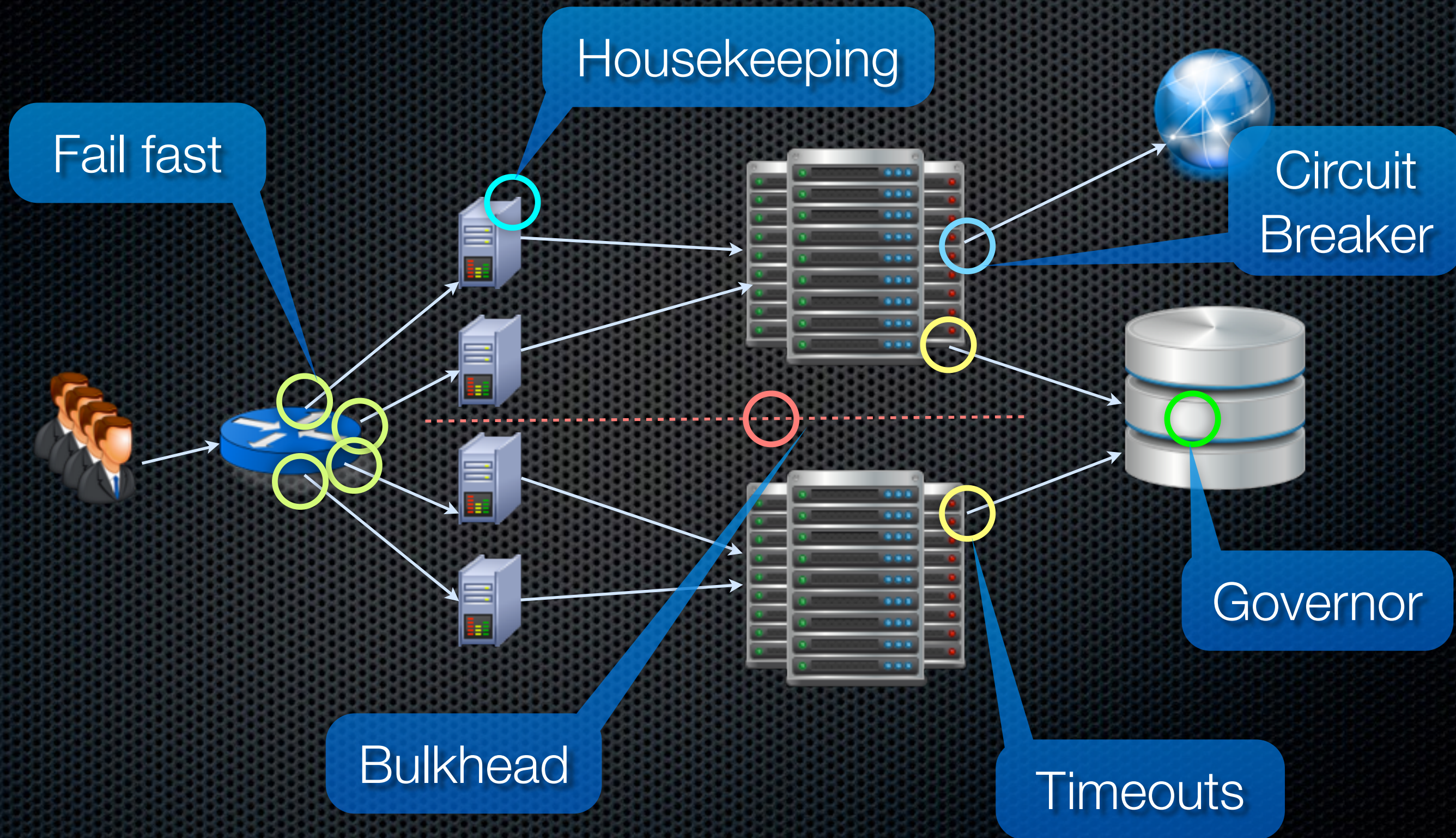
Stability - technology solutions



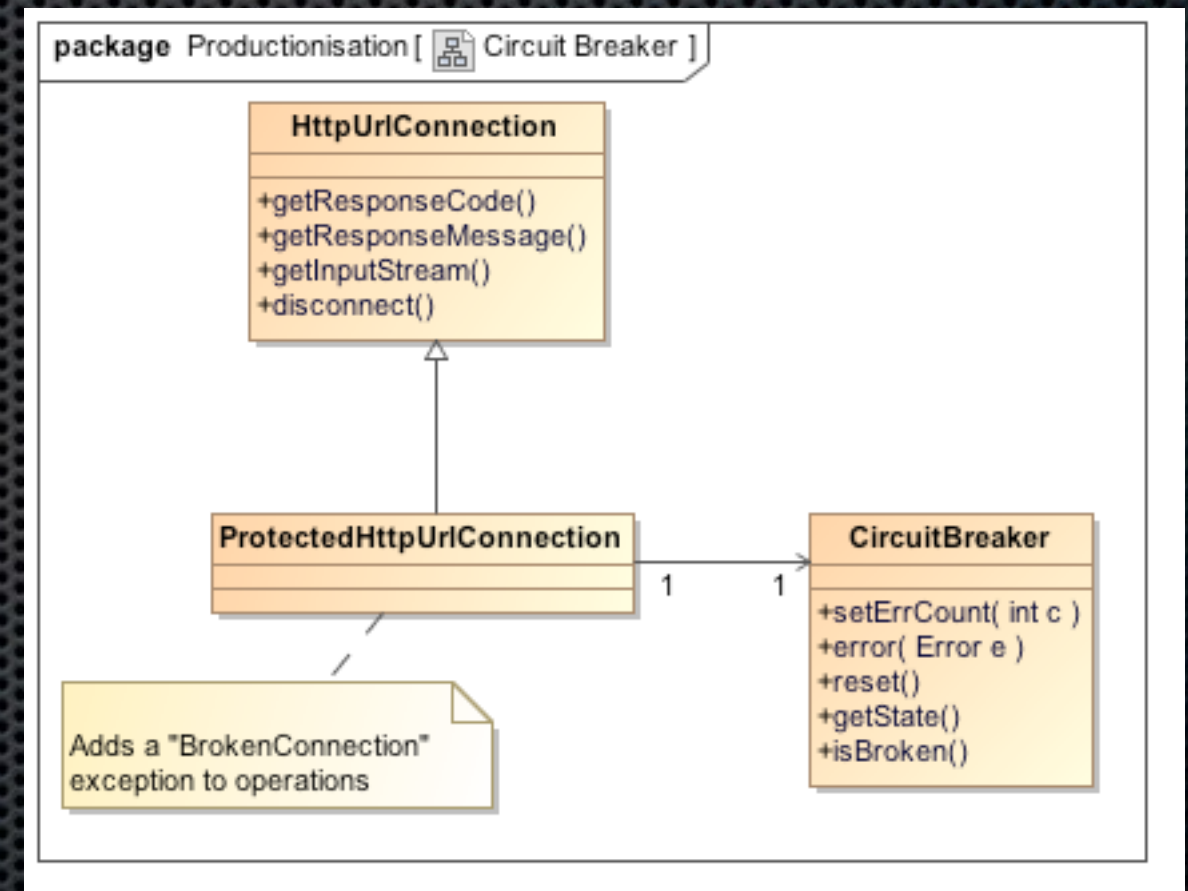
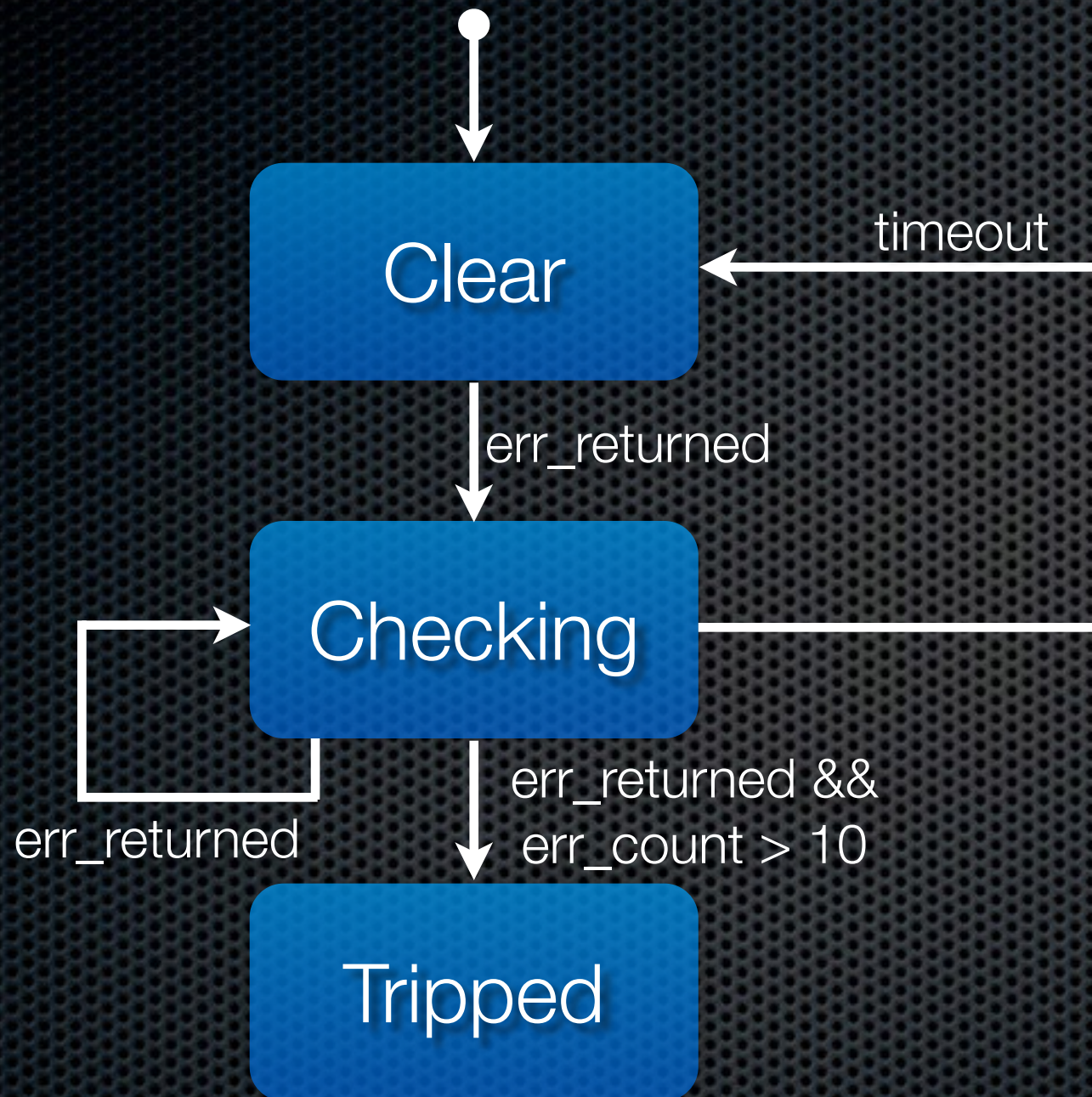
Stability - technology solutions



Stability - technology solutions



Example - Circuit Breaker



Stability - process principles

✧ Repeatability

- ✧ defined processes, practice scenarios, prelive environments

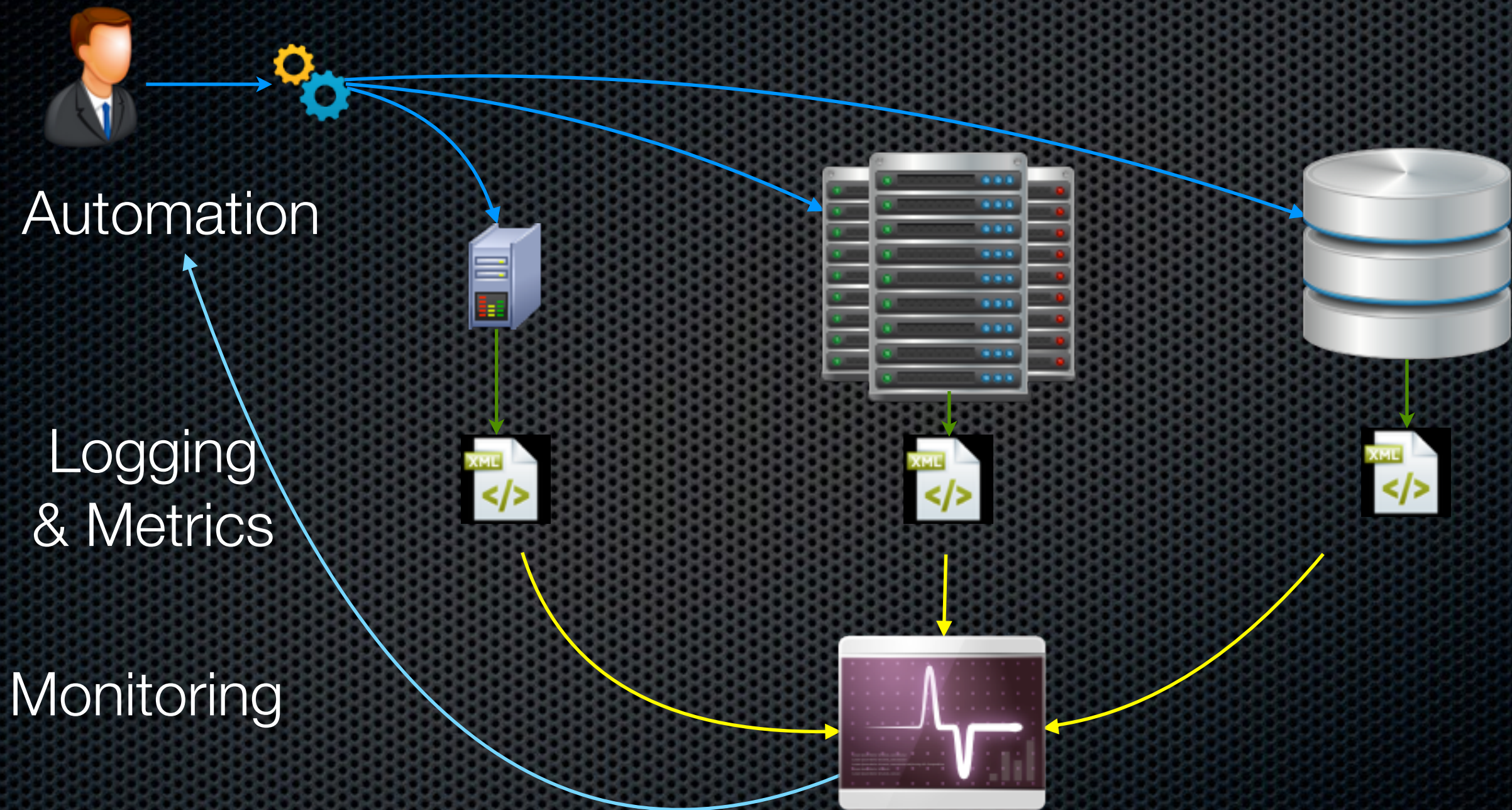
✧ Automation

- ✧ automate the routine, automate the difficult
- ✧ allow the human back in the loop on demand

✧ Transparency

- ✧ logging, monitoring, alerts, trends

Stability - process automation



Summary

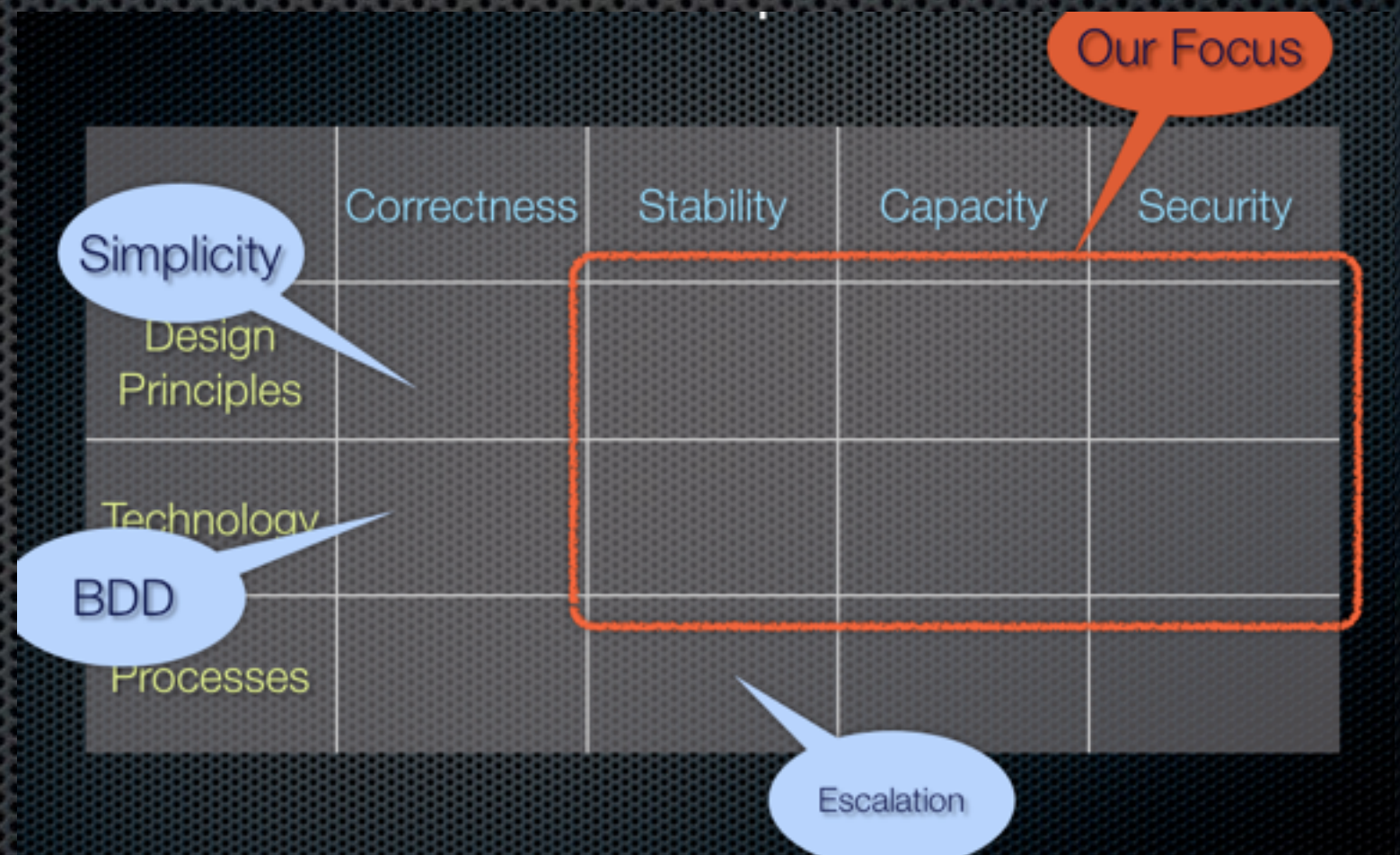


Summary

- ✧ Production is just different
 - ✧ it's not yours and you need to respect that
- ✧ Production is demanding
 - ✧ Correctness
 - ✧ Stability
 - ✧ Capacity
 - ✧ Security

Summary (ii)

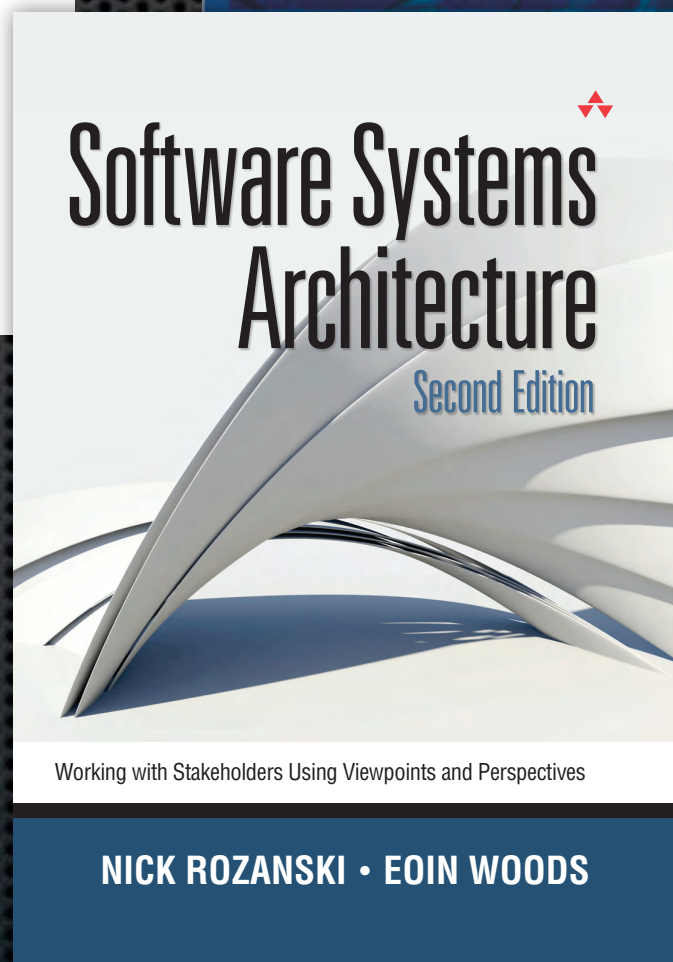
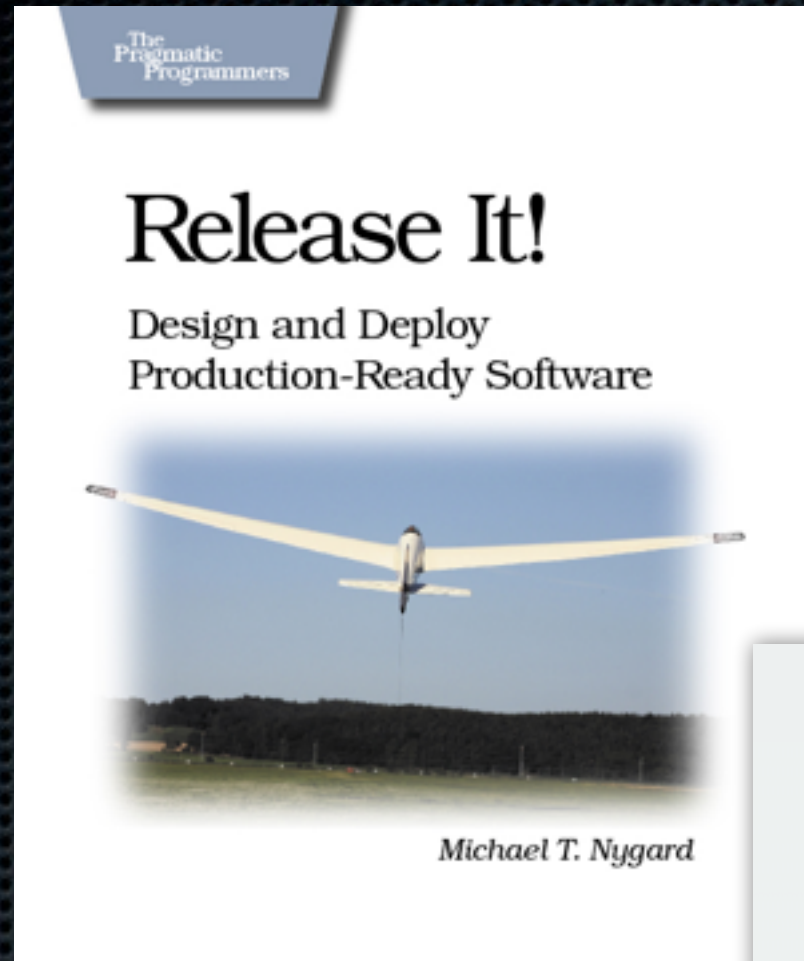
- ✦ Solutions for each requirement by area
 - ✦ principles
 - ✦ technologies
 - ✦ processes



Summary (iii)

- ✧ Production requirements and principles go back to the age of the mainframe
- ✧ CD and DevOps the latest incarnation
 - ✧ welcome attention from developers
 - ✧ new tech enabling new possibilities
 - ✧ breaking down silos to make it happen

Books





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Thank you!

Thanks !

Acknowledgements

<http://www.icons-land.com>

<http://www.alamy.com/>

<http://www.42u.com>