facebook

Focal Impact

The Service Pyramid

Mike Elkin

Production Engineer @ Facebook

Journey Guide

- Buildings-as-a-Service
- Hierarchy of Needs
- Service Pyramid
- Case Study: Datacenters @ Facebook

Datacenter Scale @ FB

- Prineville, Oregon
- Forest City, North Carolina
- Luleå, Sweden
- Altoona, Iowa
- Fort Worth, Texas
- Clonee, Ireland
- Los Lunas, New Mexico
- Odense, Denmark

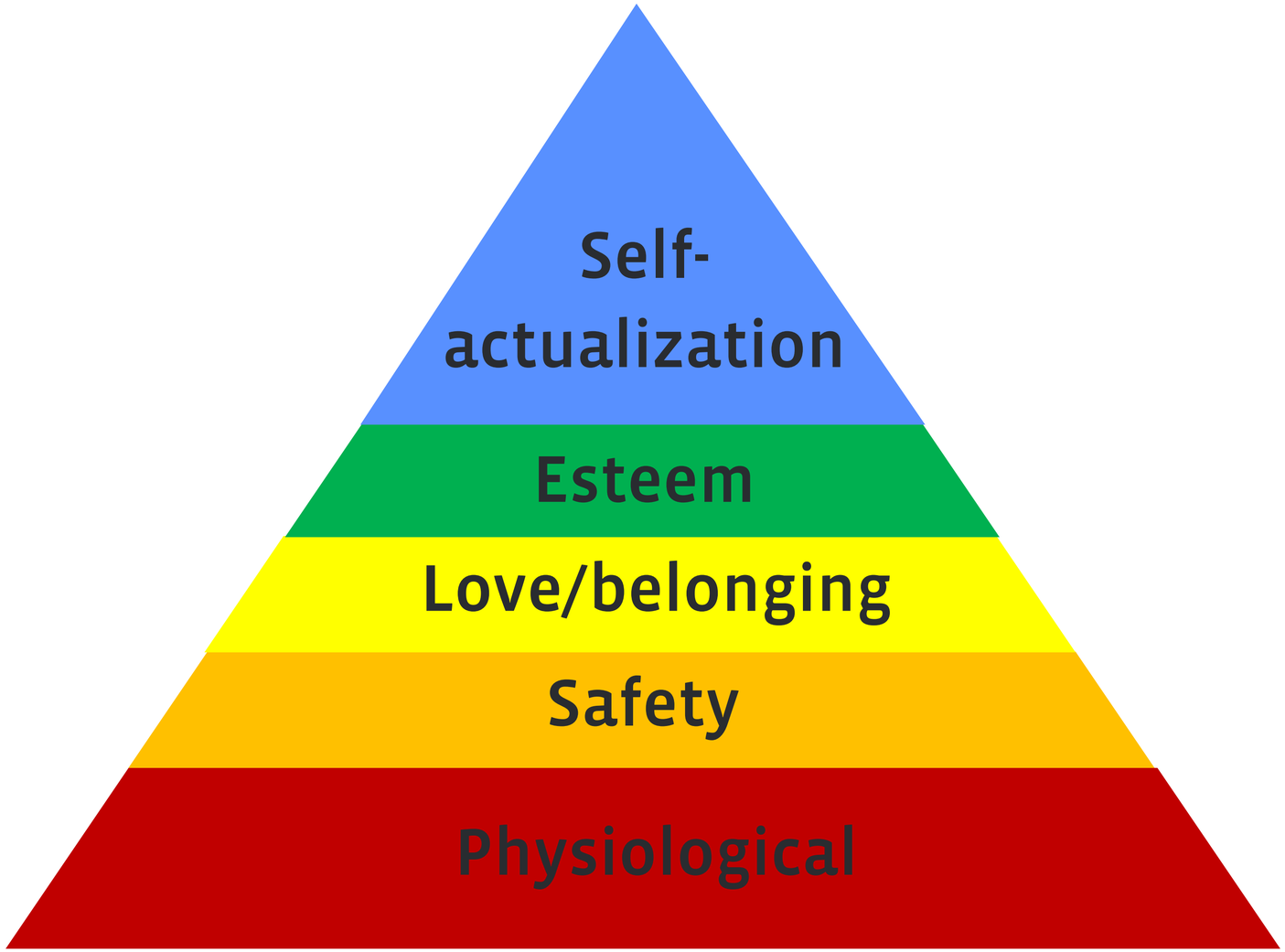
DC == ???



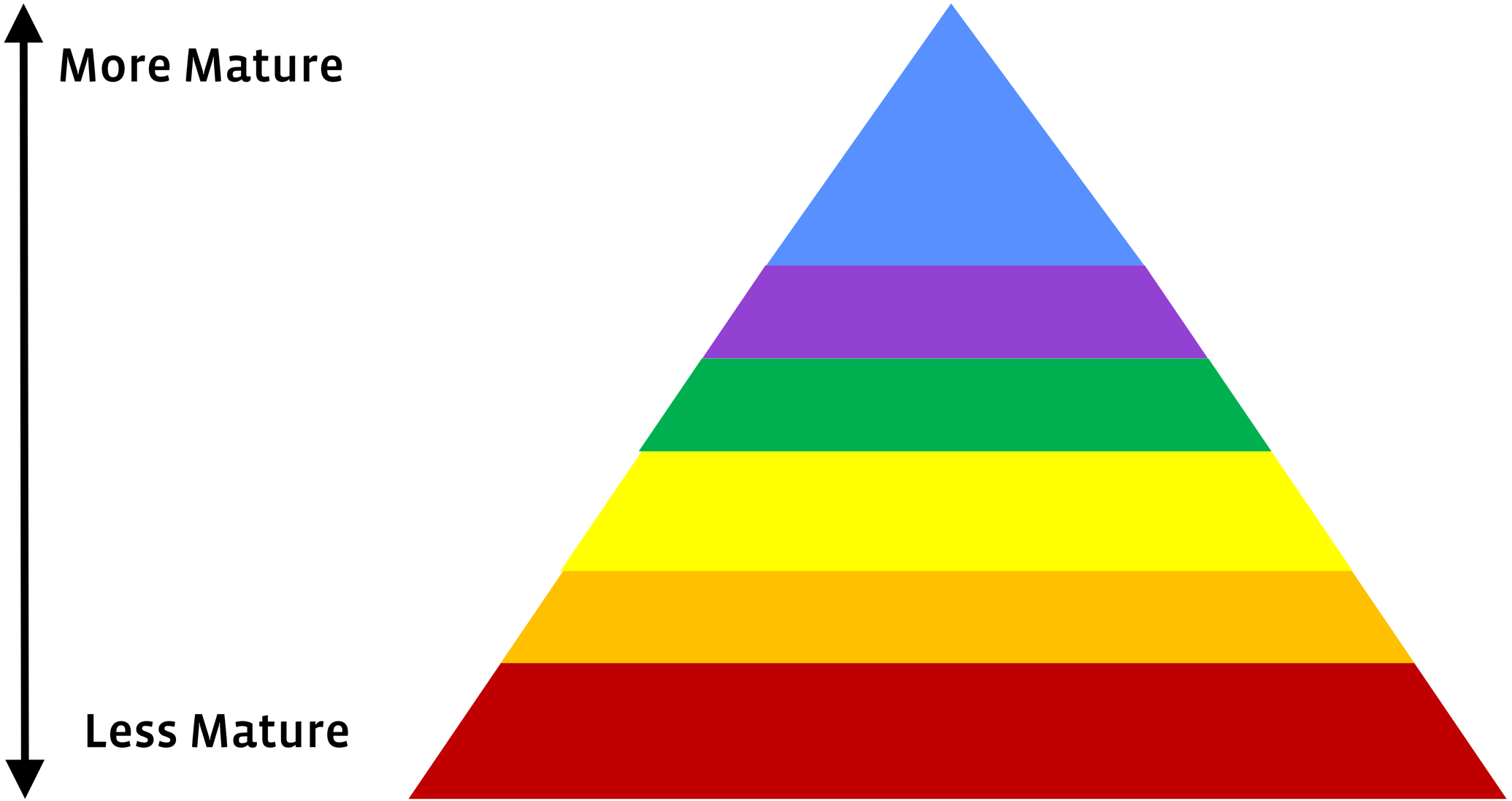


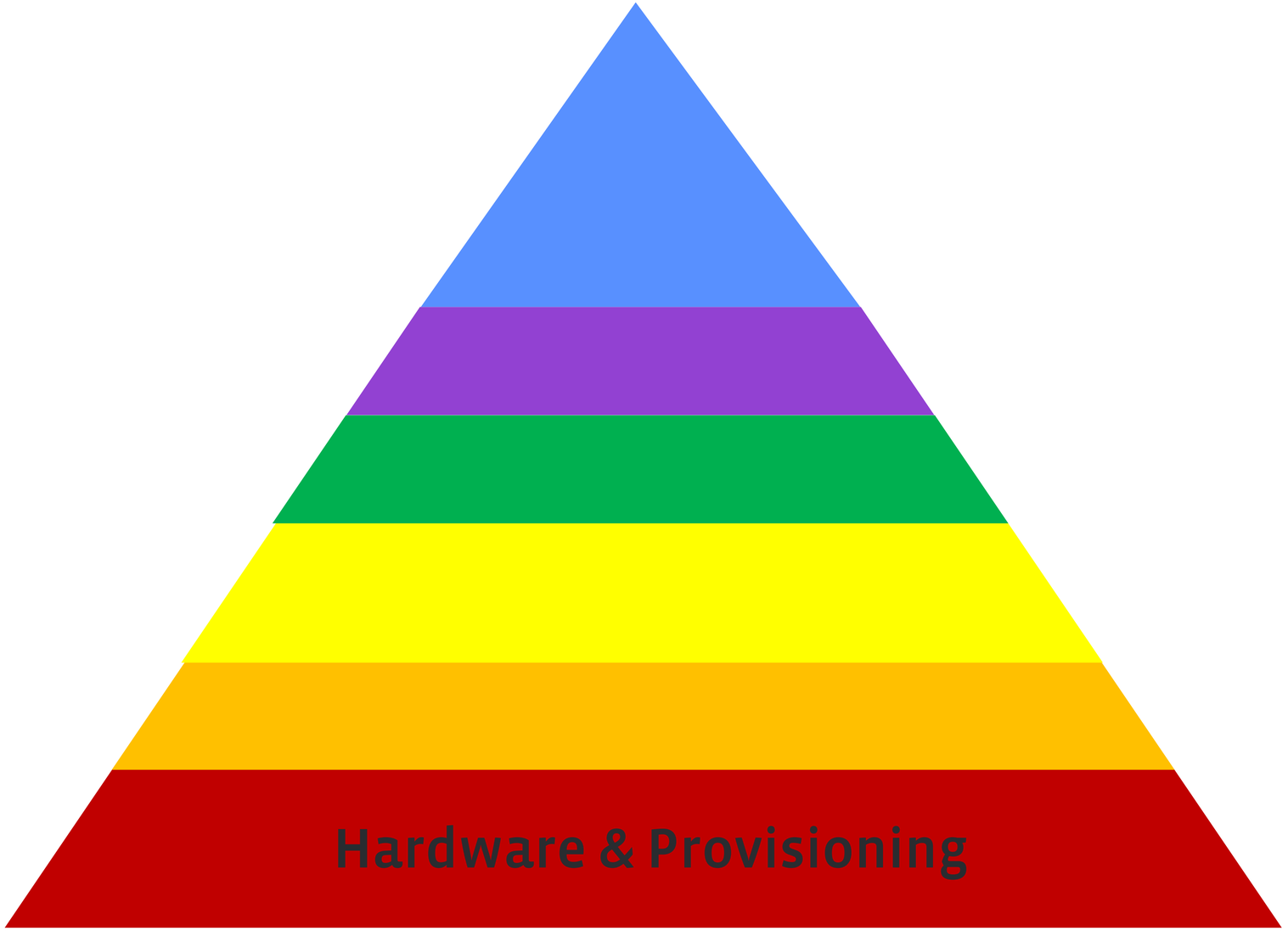
Source: Facebook – Tony Quinn & Mike Elkin

Maslow & His Hierarchy


Self-
actualization
Esteem
Love/belonging
Safety
Physiological

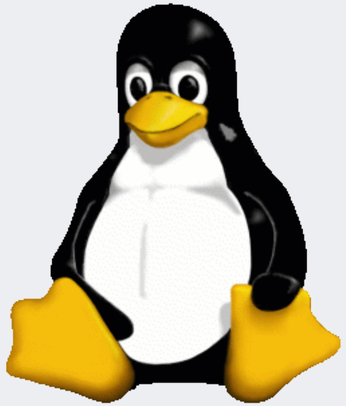
The Service Pyramid


More Mature
Less Mature


Hardware & Provisioning

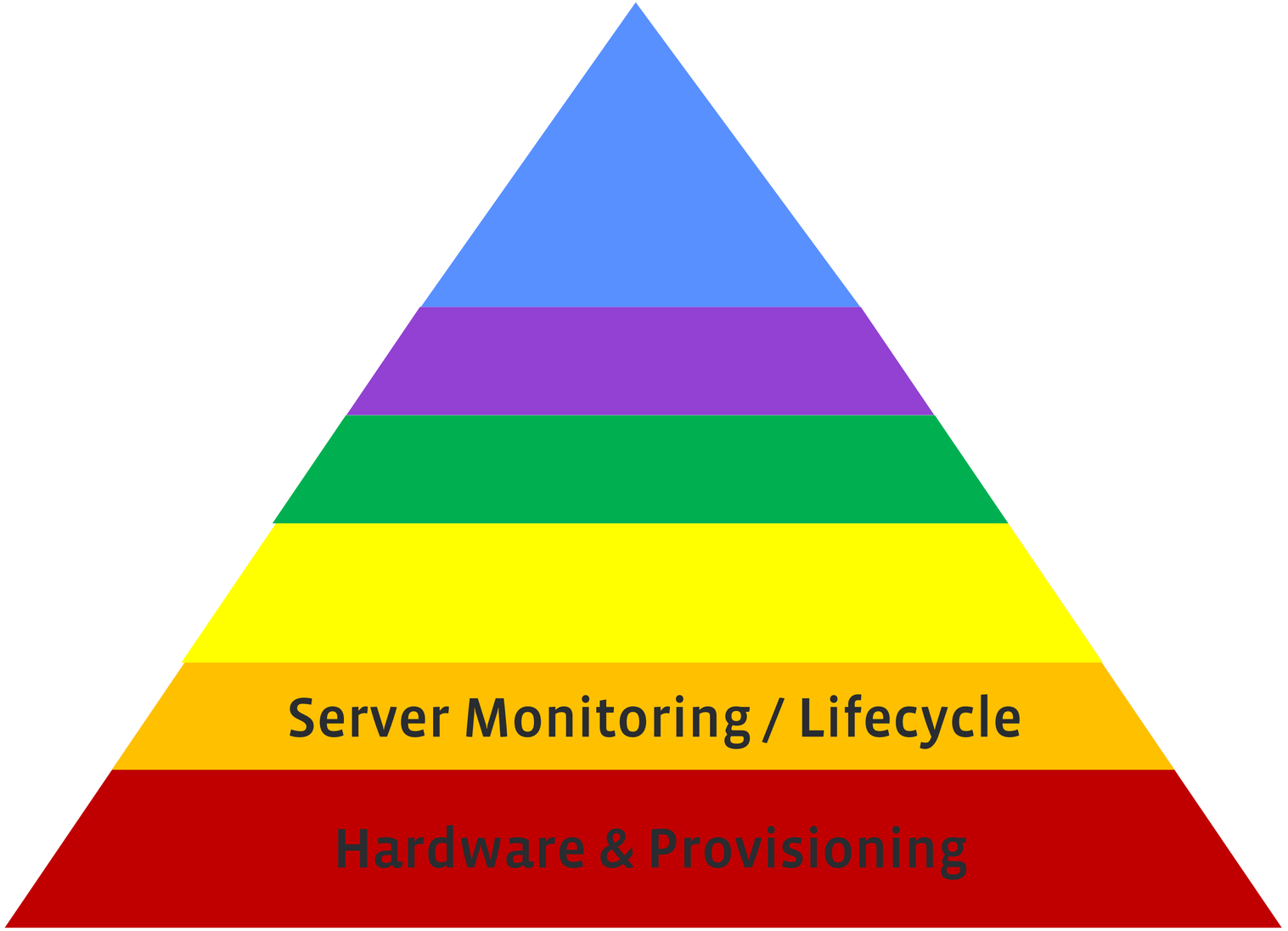
Hardware & Provisioning



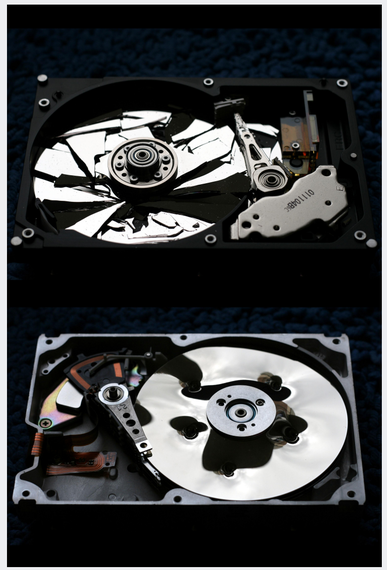




Source: OpenRack - https://www.flickr.com/photos/ramereth/ || Tux Logo: lewing@isc.tamu.edu || Construction Site: https://www.flickr.com/photos/rberteig/

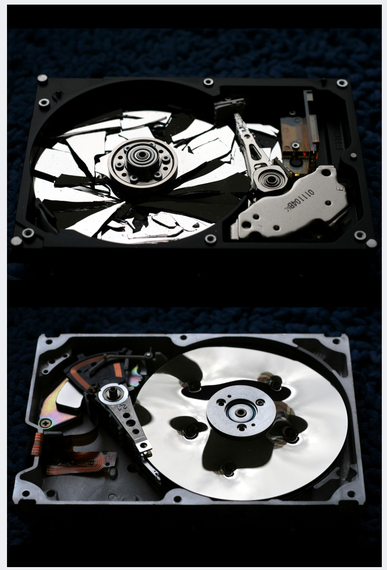

Server Monitoring / Lifecycle
Hardware & Provisioning

Server Monitoring & Lifecycle



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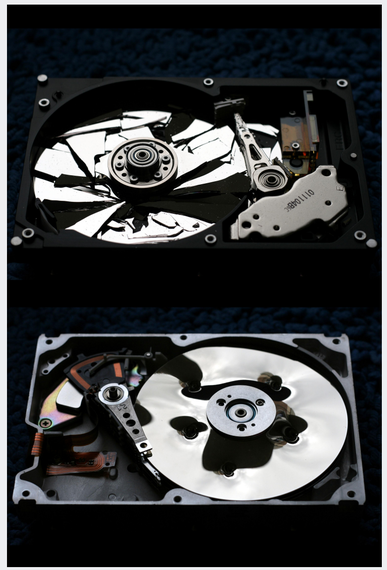
Server Monitoring & Lifecycle



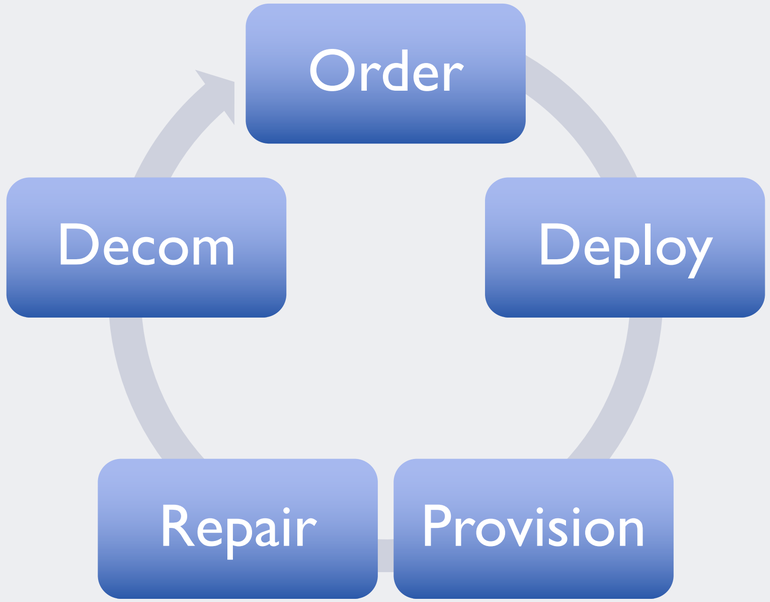


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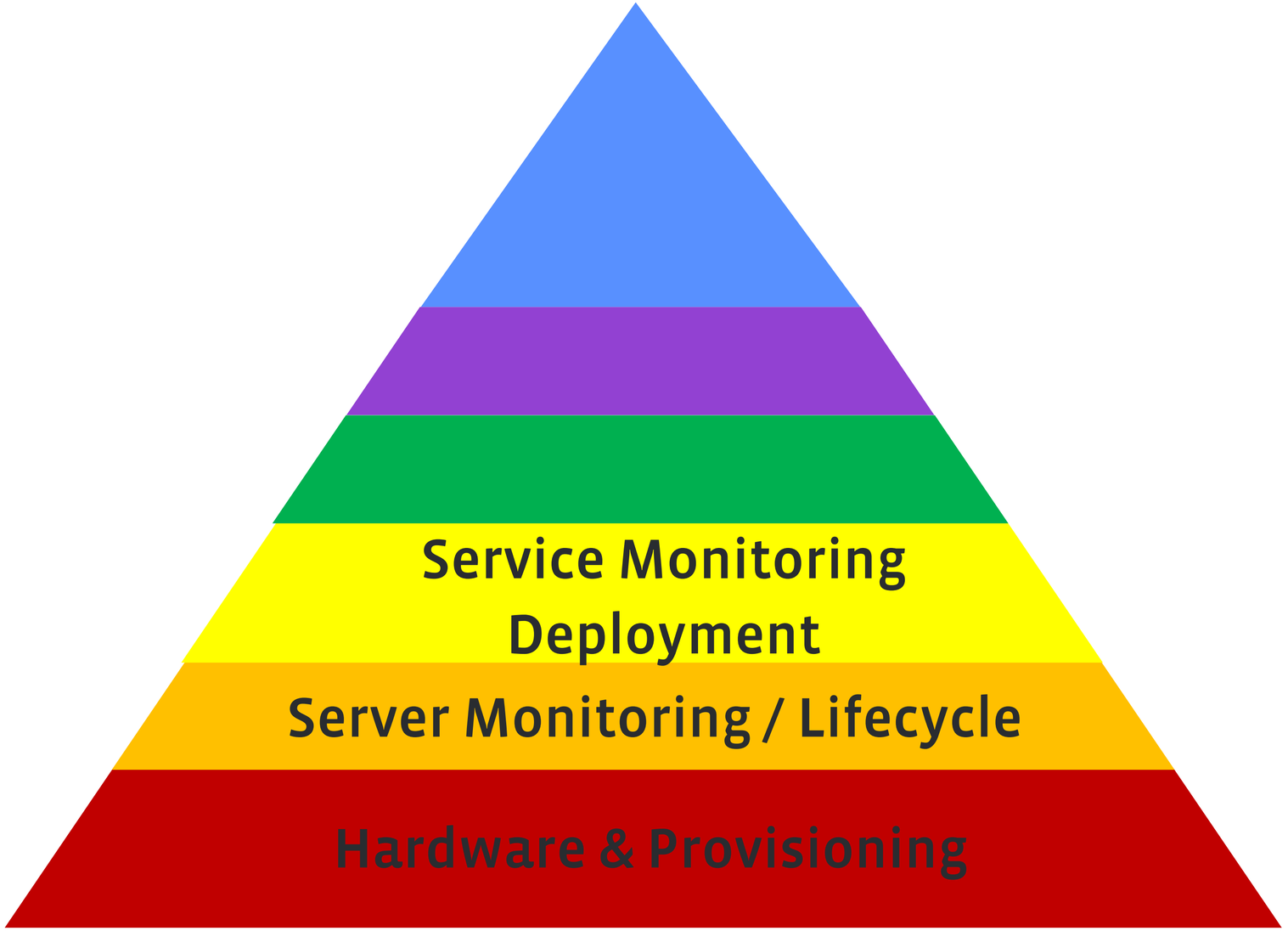
Server Monitoring & Lifecycle



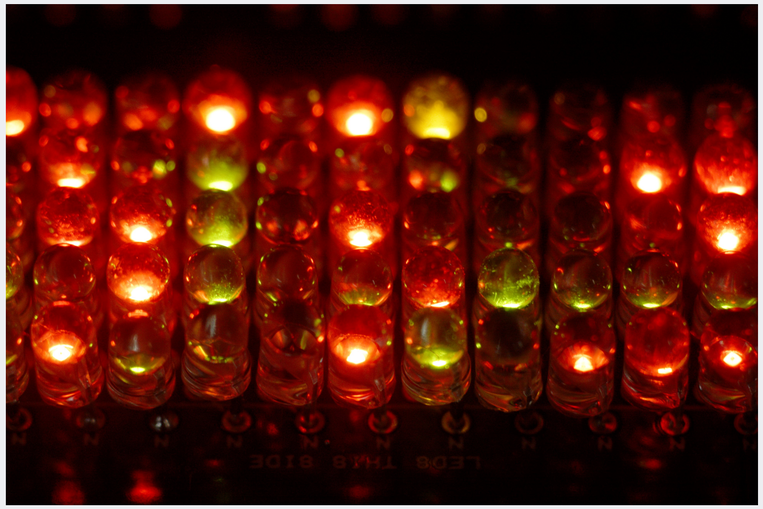


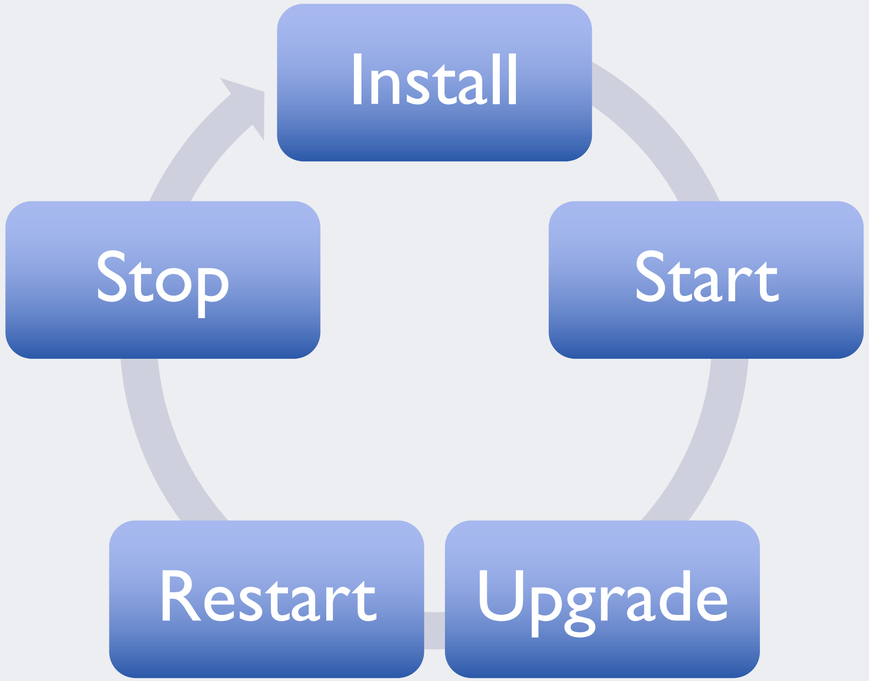


Source: https://www.flickr.com/photos/doegox/ || https://www.flickr.com/photos/wwarby/

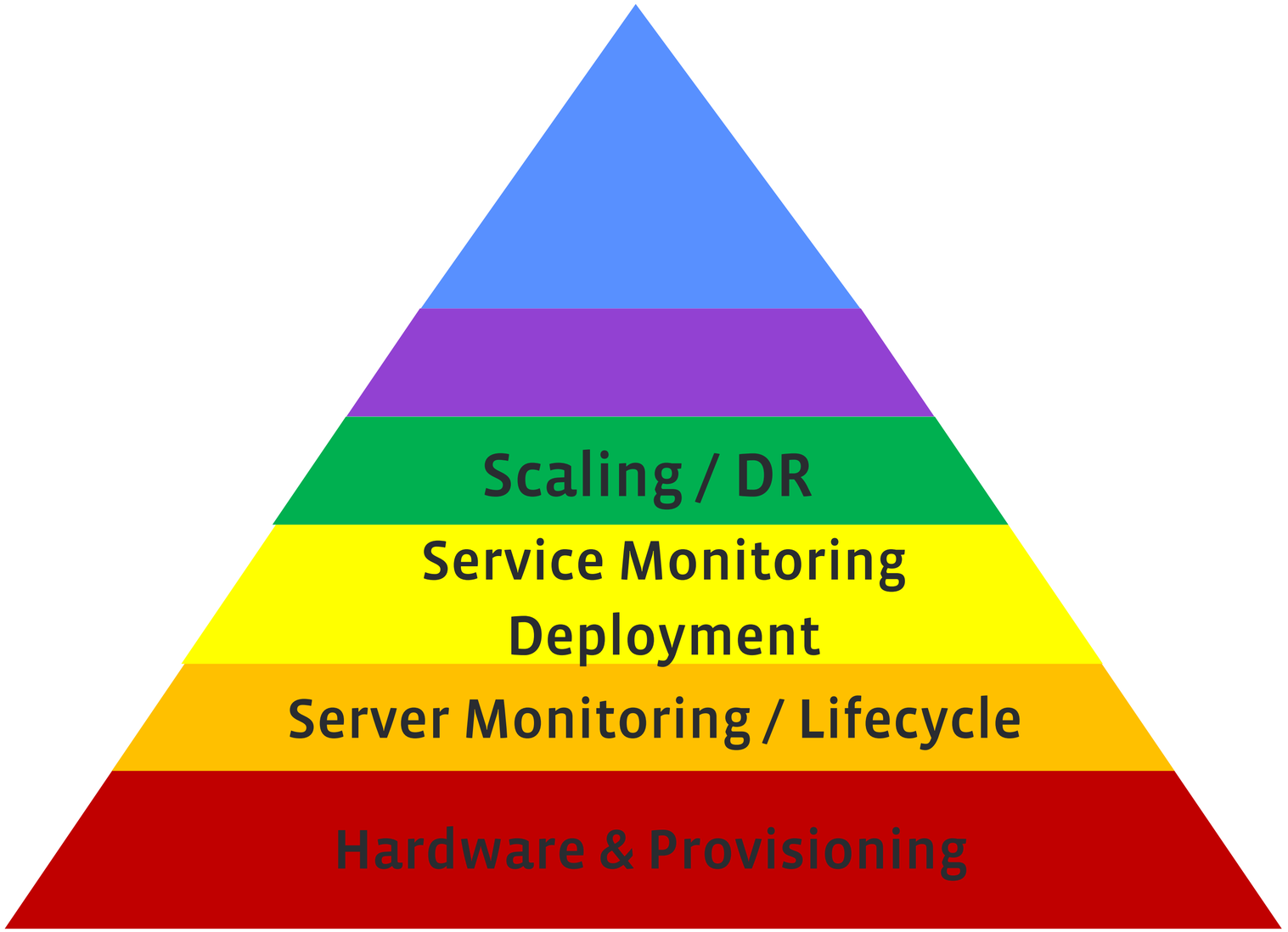

Service Monitoring
Deployment
Server Monitoring / Lifecycle
Hardware & Provisioning

Service Monitoring & Deployment



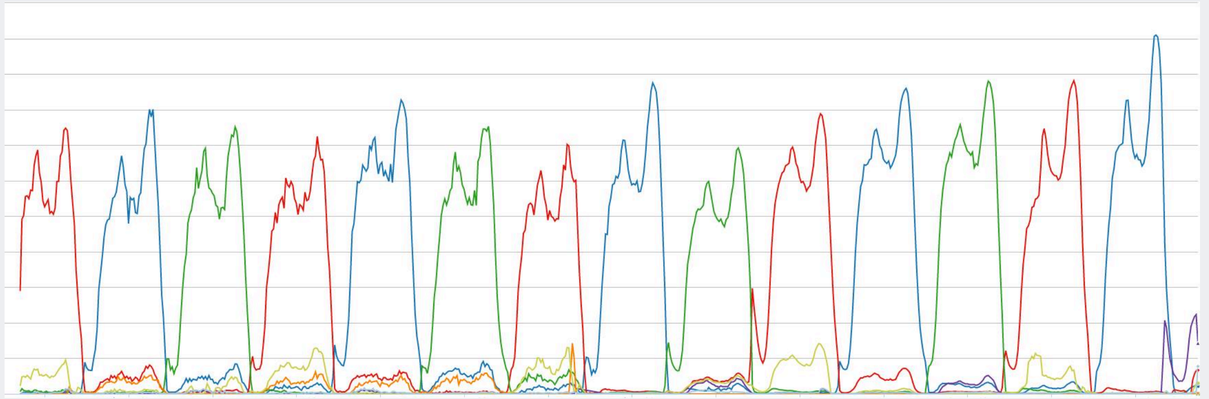


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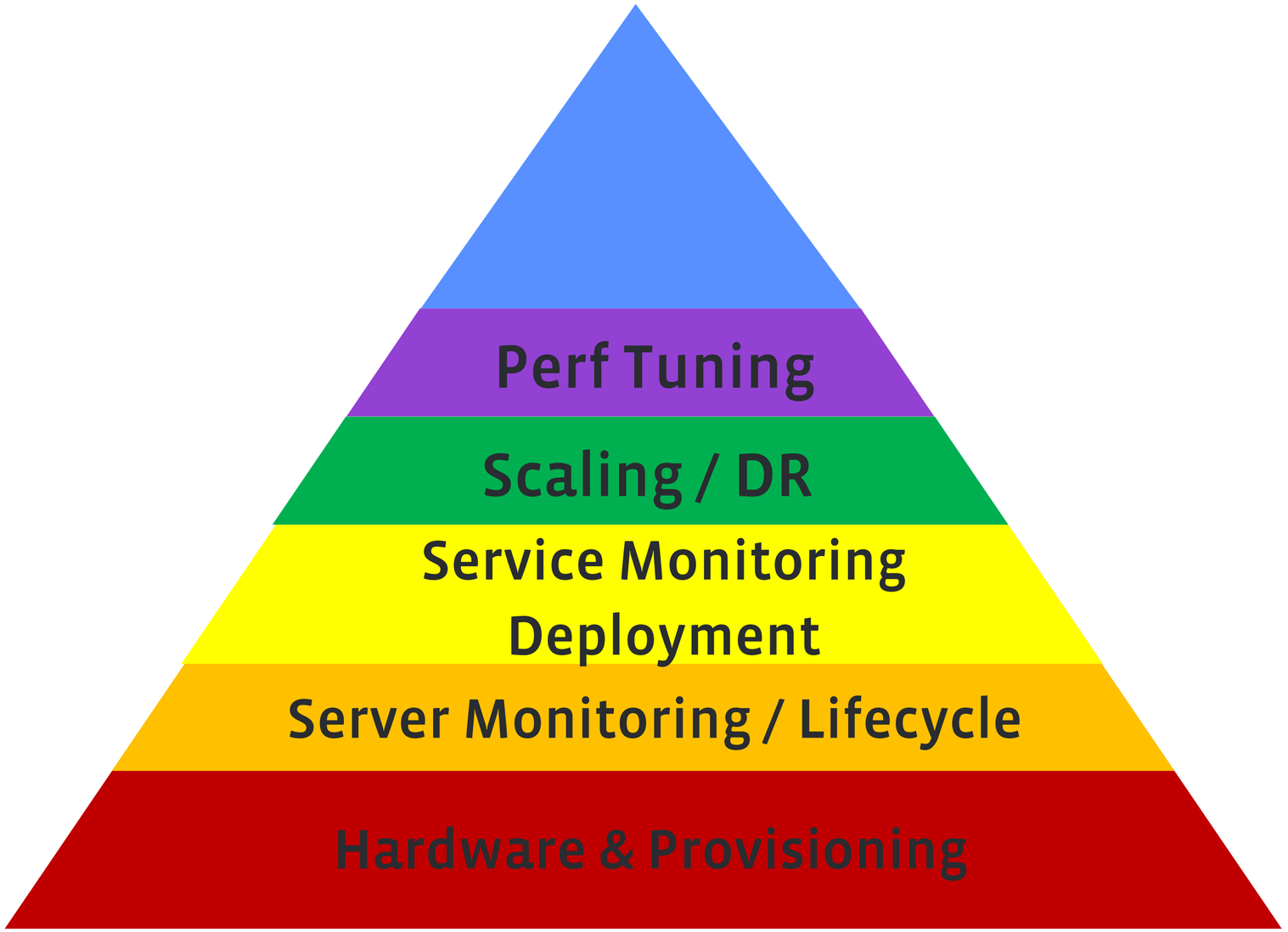

Scaling / DR
Service Monitoring
Deployment
Server Monitoring / Lifecycle
Hardware & Provisioning

Scaling, DR, Advanced Monitoring





Source: https://www.flickr.com/photos/fischler/ || vmauge@fb

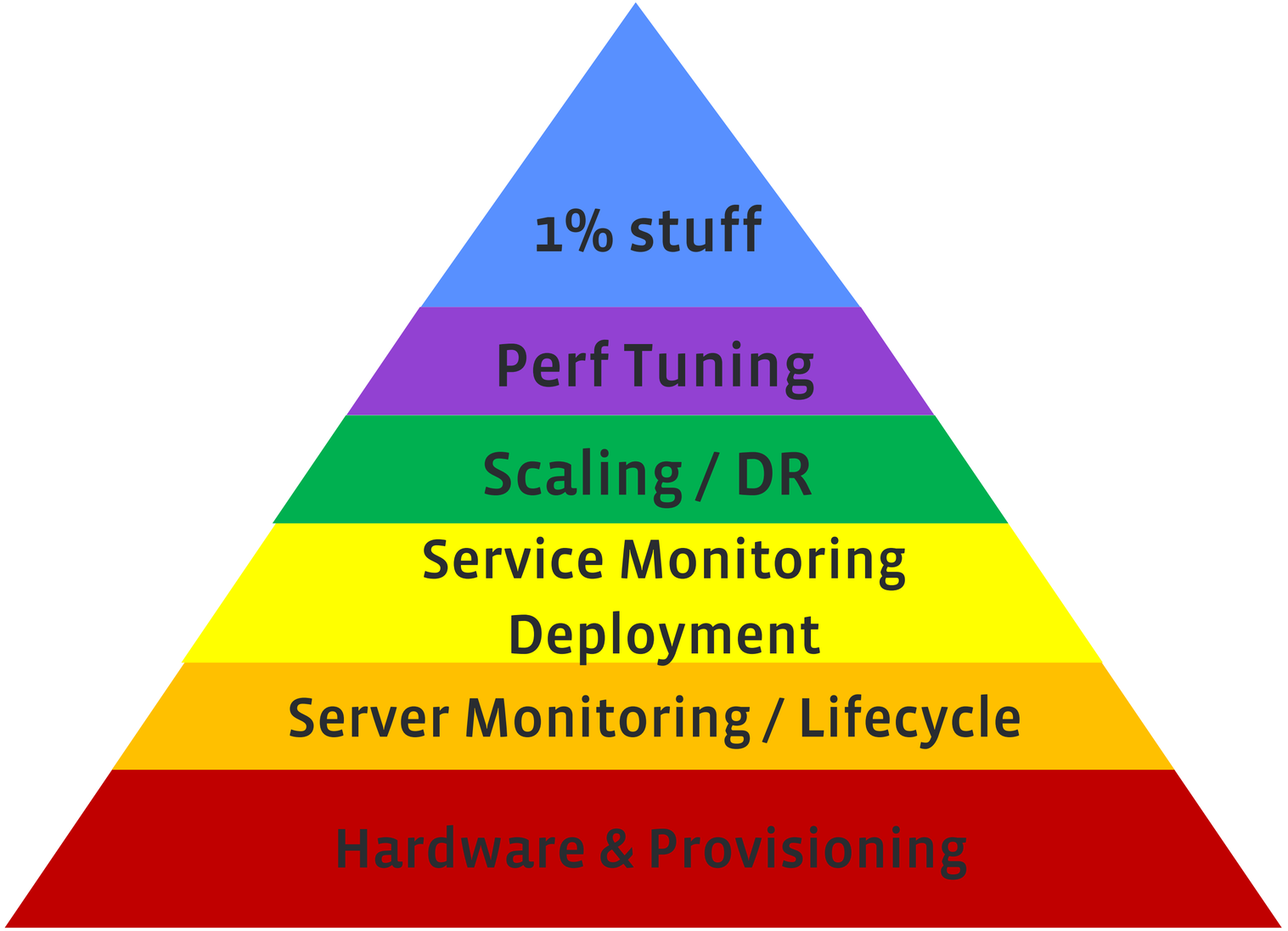

Perf Tuning
Scaling / DR
Service Monitoring
Deployment
Server Monitoring / Lifecycle
Hardware & Provisioning

Performance Tuning & Capacity





Source: https://www.flickr.com/photos/fischler/ || https://www.flickr.com/photos/hawk684/


1% stuff
Perf Tuning
Scaling / DR
Service Monitoring
Deployment
Server Monitoring / Lifecycle
Hardware & Provisioning

1% stuff

WEIRD STUFF

P99

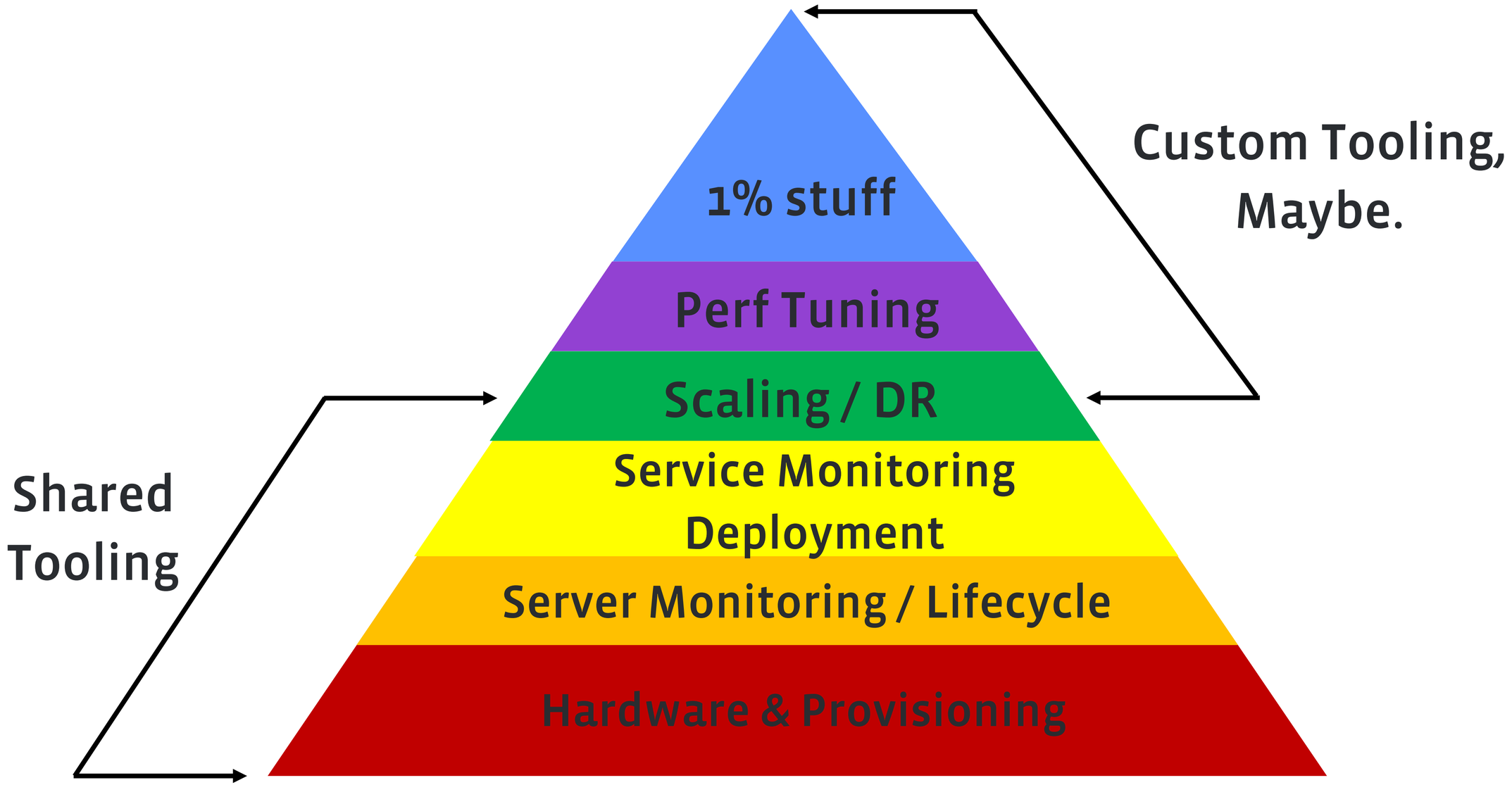
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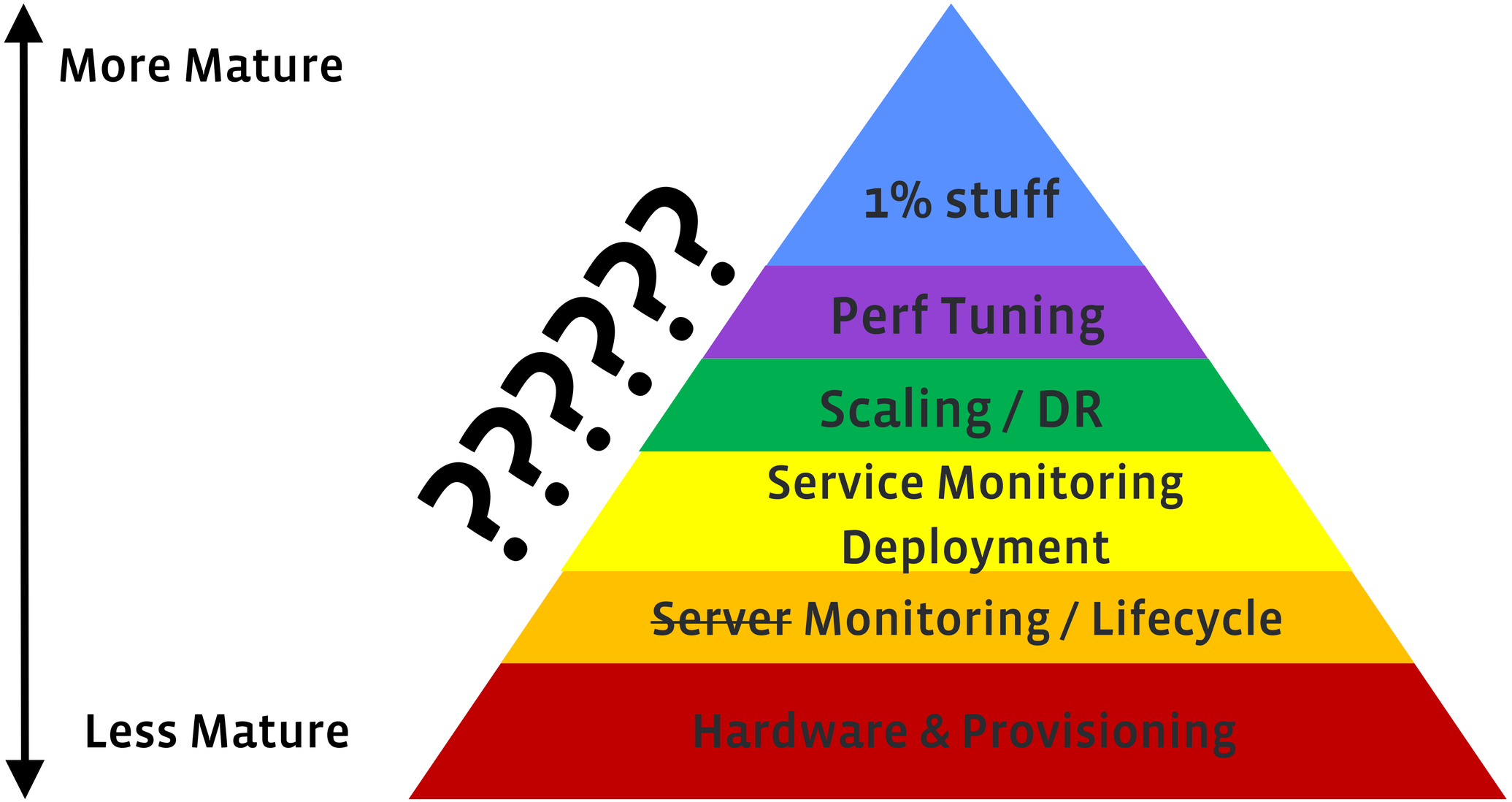


Source: https://www.flickr.com/photos/travelwayoflife/

Risk: Premature Custom Tooling


1% stuff
Perf Tuning
Scaling / DR
Service Monitoring
Deployment
Server Monitoring / Lifecycle
Hardware & Provisioning
Custom Tooling,
Maybe.
Shared
Tooling

Case Study: Datacenters @ FB


More Mature
Less Mature
?????
1% stuff
Perf Tuning
Scaling / DR
Service Monitoring
Deployment
~~Server~~ Monitoring / Lifecycle
Hardware & Provisioning

Remote Monitoring

Data Processing

Asset Tracking

Production

BMS

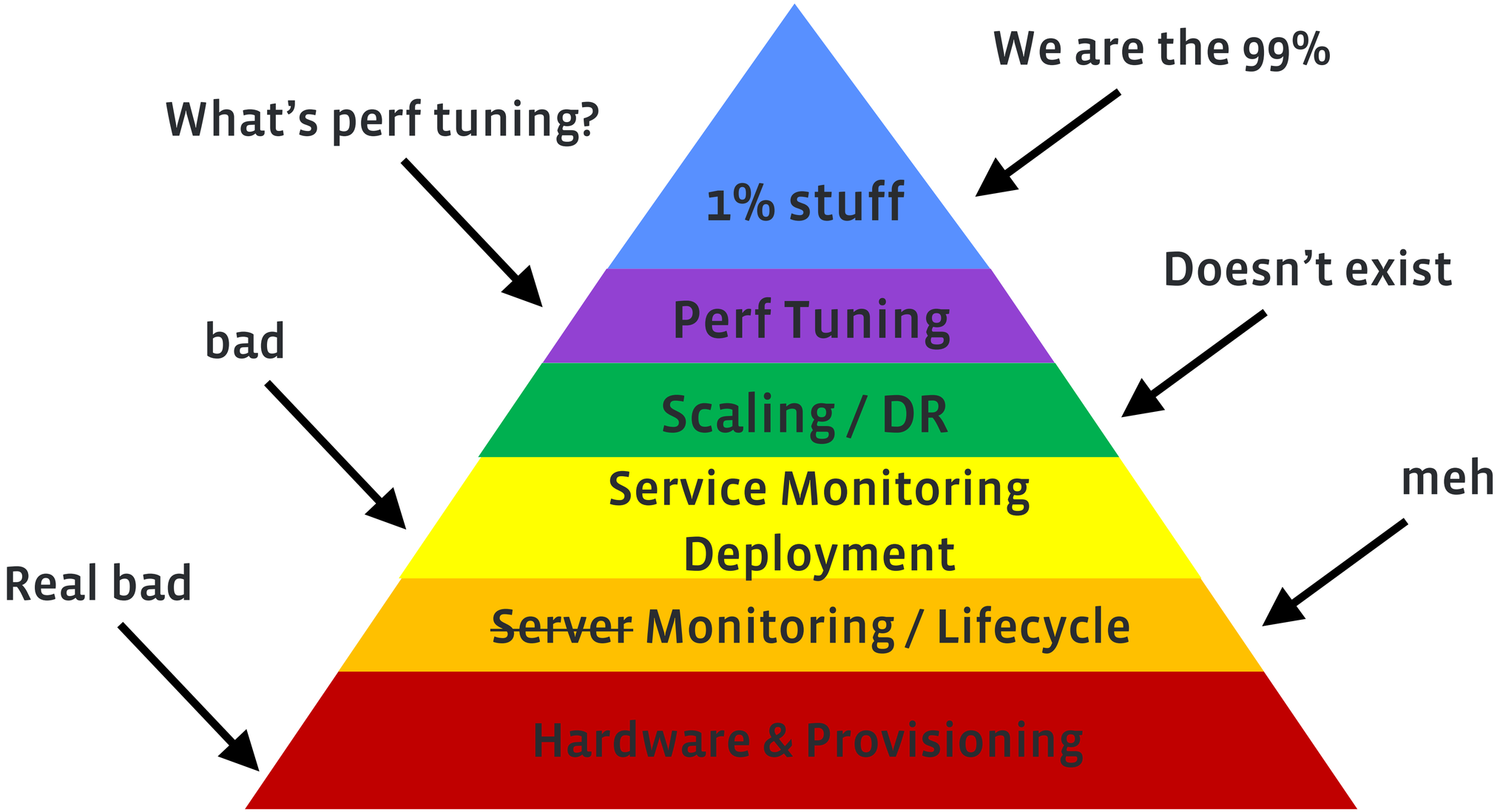
Electrical Equipment

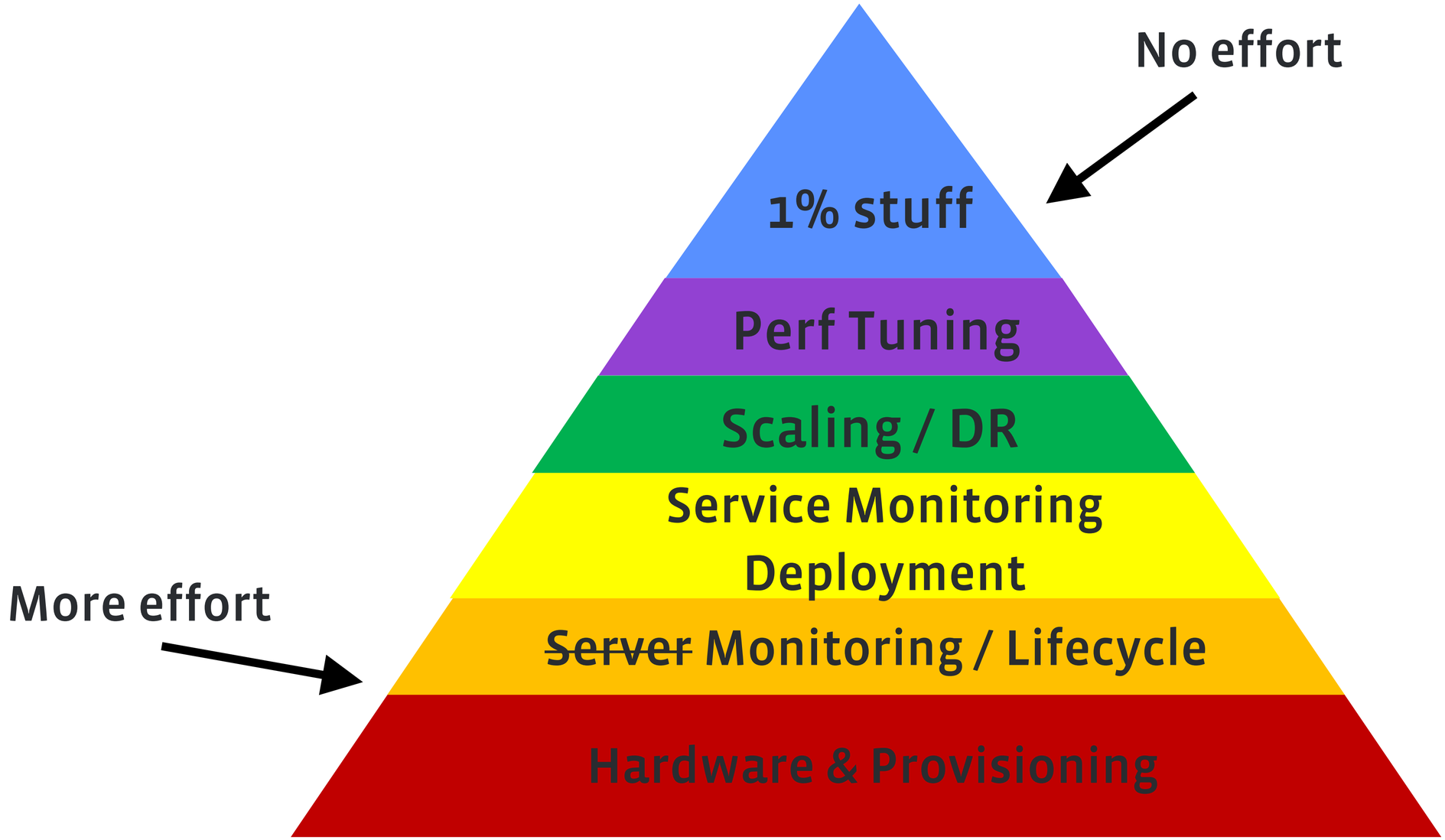
Mechanical Equipment

Facilities

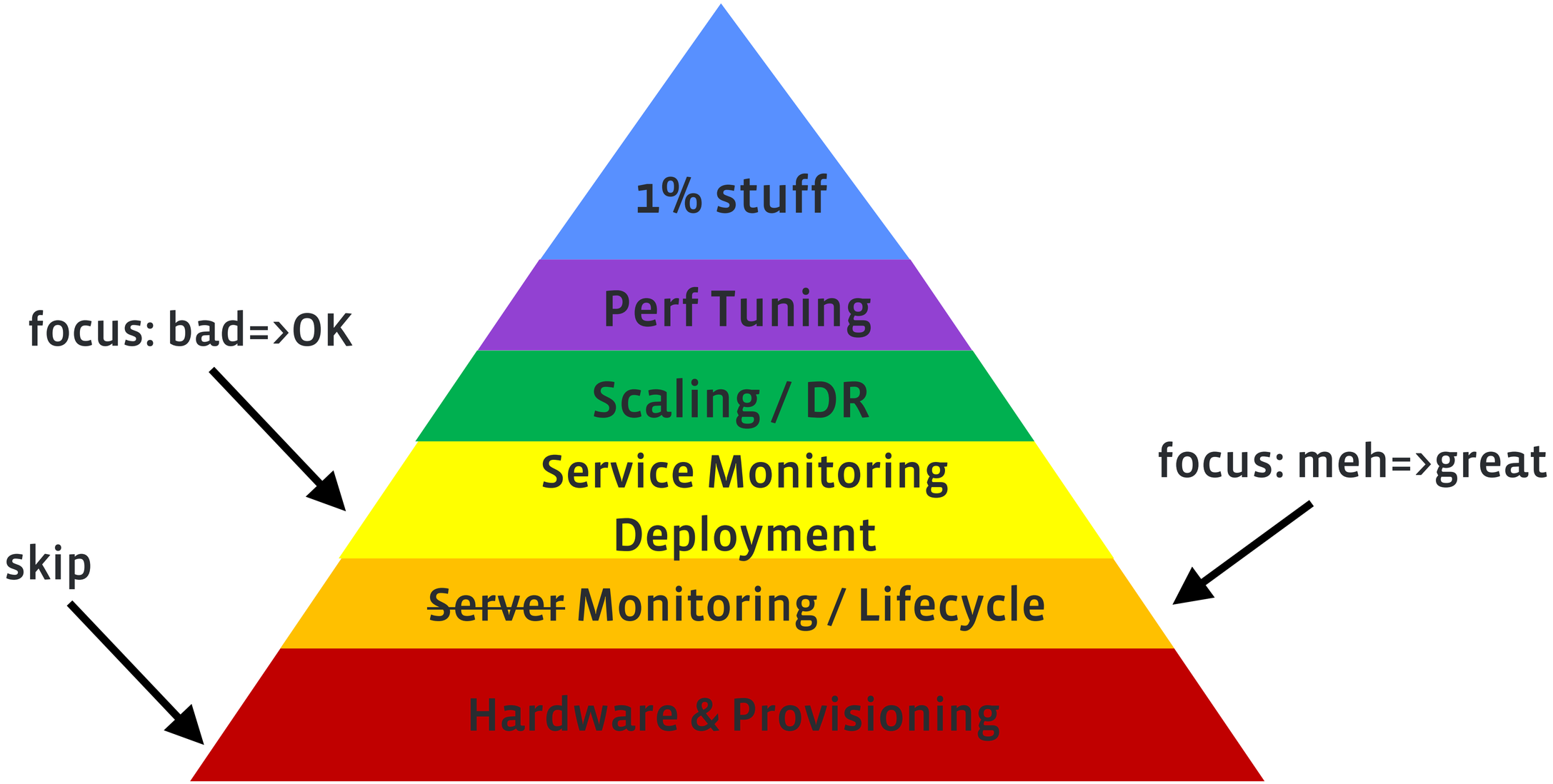
Source: I made this

Guidance, Not Prescription


What's perf tuning?
We are the 99%
1% stuff
Perf Tuning
Scaling / DR
Service Monitoring
Deployment
~~Server~~ Monitoring / Lifecycle
Hardware & Provisioning
bad
Doesn't exist
meh
Real bad


No effort
1% stuff
Perf Tuning
Scaling / DR
Service Monitoring
Deployment
~~Server~~ Monitoring / Lifecycle
Hardware & Provisioning
More effort

Deliver Impact Quickly


1% stuff
Perf Tuning
Scaling / DR
Service Monitoring
Deployment
~~Server~~ Monitoring / Lifecycle
Hardware & Provisioning
focus: bad=>OK
skip
focus: meh=>great

Speak The Same Language

Package

Alert

Switch Board

Life Safety

Monitoring

Acronyms

Alarm

Canary

Device

Deploy

Service

Load Bank

SME

“Despite being built for a different engagement than what we have, it adapted to help us have focal impact. A++++ would use again.”

— mikeelkin2, right now

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