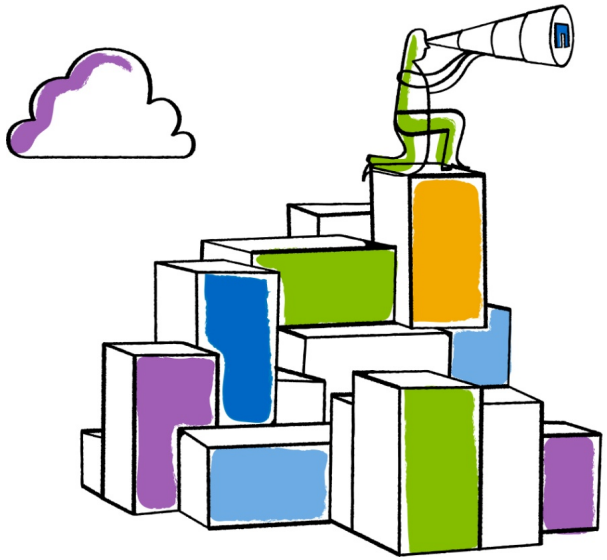
NetApp

openstack™

Go further, faster®

Top 10 Things We Learned Implementing OpenStack



Val Bercovici

Cloud Czar
NetApp

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What I hope to accomplish today...

Help gain perspective
beyond current hype cycle

&

Make OpenStack mainstream
via *Biz & Tech Context*

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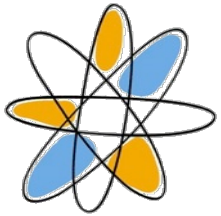
Inspiration → 360° Perspective

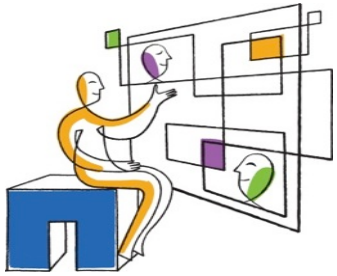
Customer



Industry

Workloads

Competition



Ecosystem

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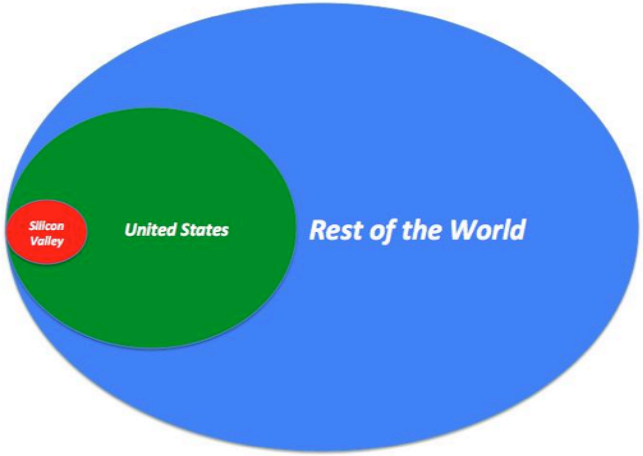
#10 Cloud Geography

- Silicon Valley(s)
- USA (Middle)
- The rest of the world
- http://it20.info/2012/09/cloud-and-the-three-it-geographies-silicon-valley-us-and-rest-of-the-world/



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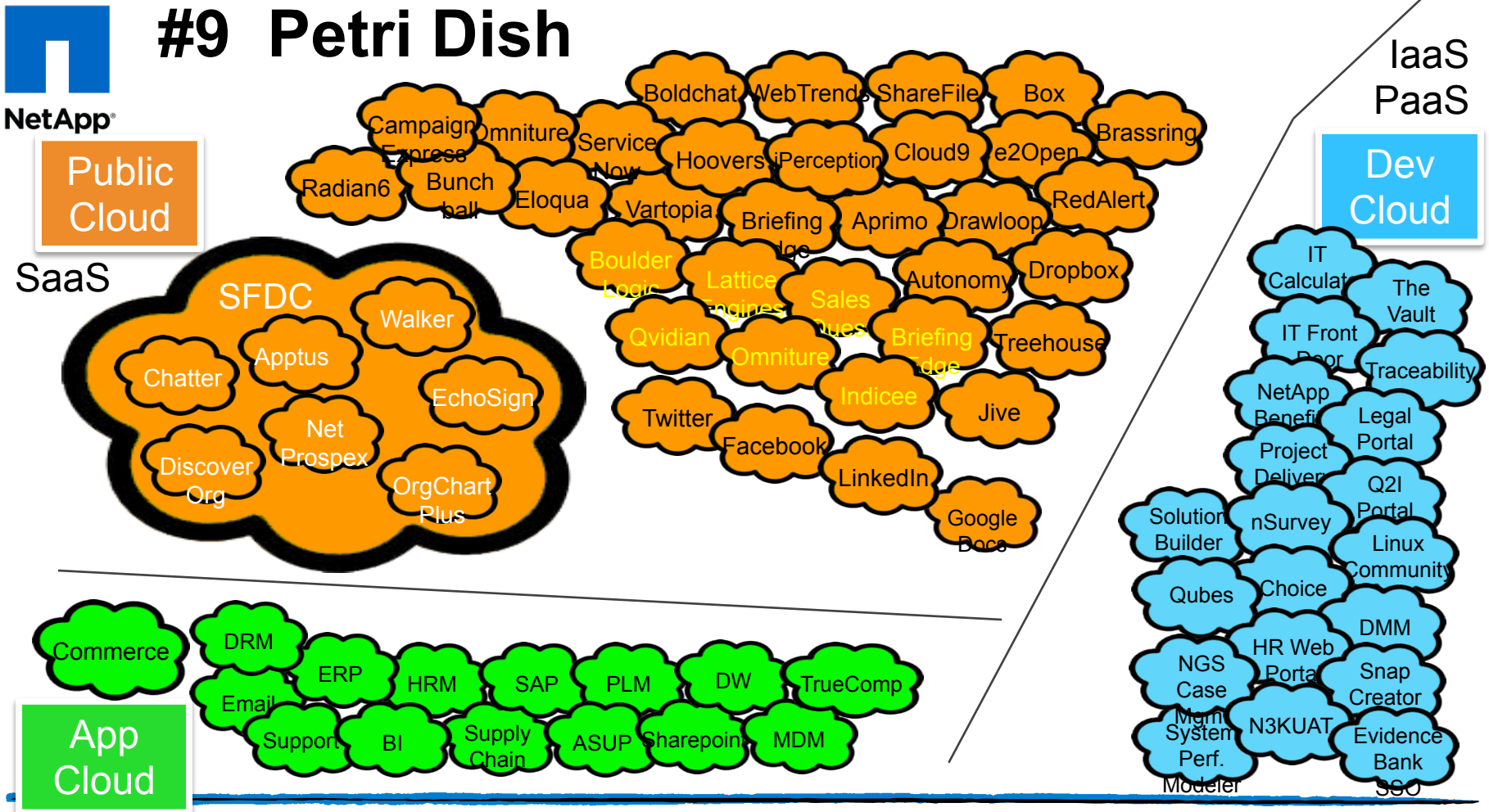
#9 Petri Dish



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#8 Industry Diversity: Biz → R&D Strategy

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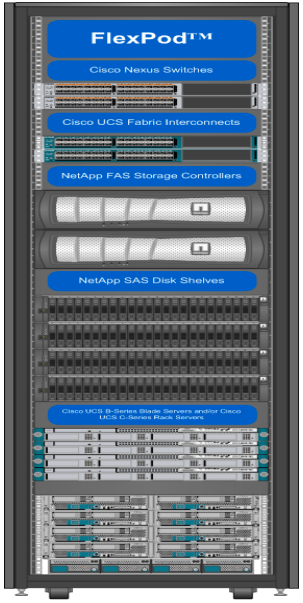
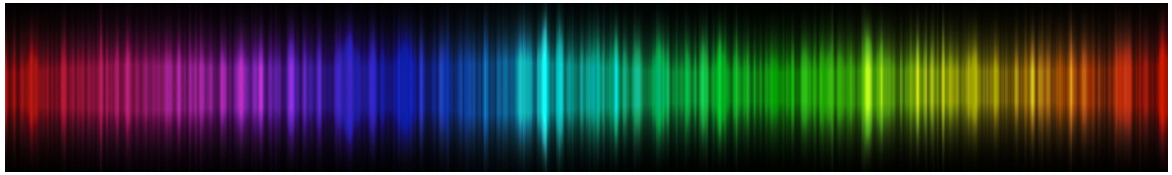
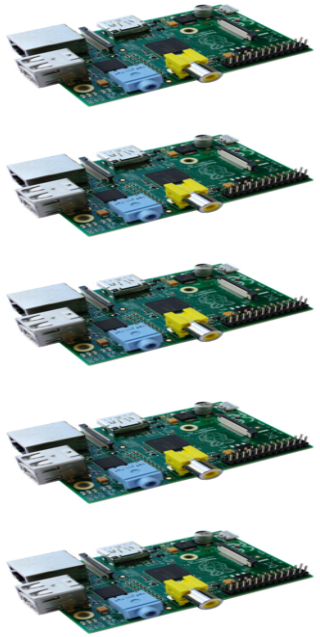
#7 Tech Diversity: Countervailing Forces



Variety of Consumption Models



Rack – Appliance – Controller – Software – Instance



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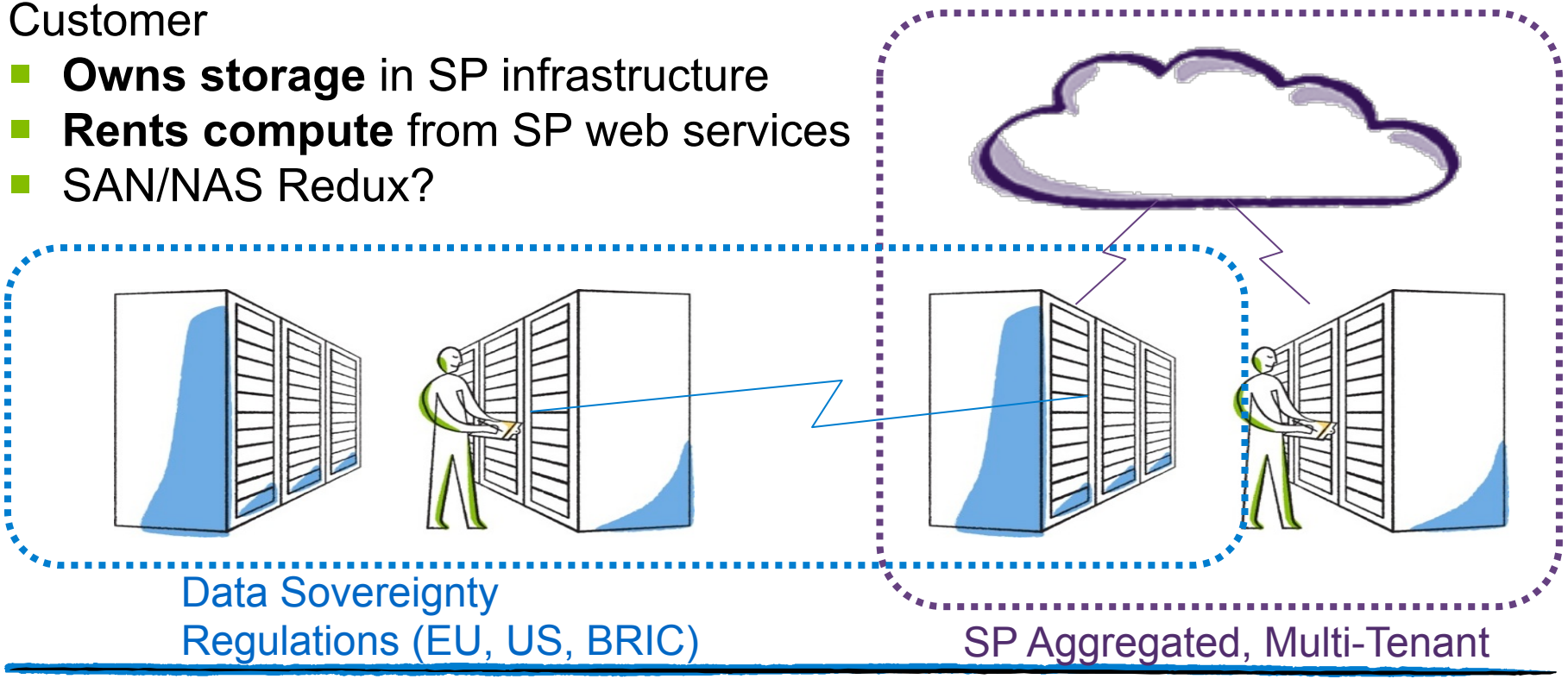
#6 Hybrid Cloud: Storage-Centric

Customer

- **Owns storage** in SP infrastructure
- **Rents compute** from SP web services
- SAN/NAS Redux?



Data Sovereignty
Regulations (EU, US, BRIC)

SP Aggregated, Multi-Tenant

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#5 Integration: Continuous vs Staged

- Sushi Fail Whale vs Gourmet Cooking

- Surgery
- Air{Plane|Traffic}
- Automotive Ctrl
- Military
- Nuclear Power
- Wall St

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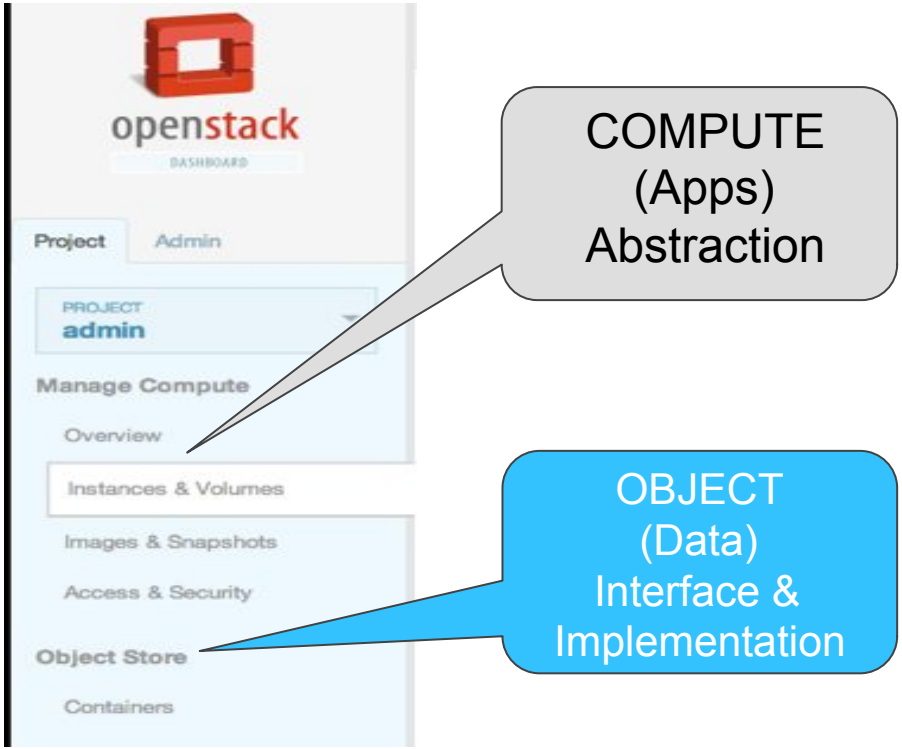
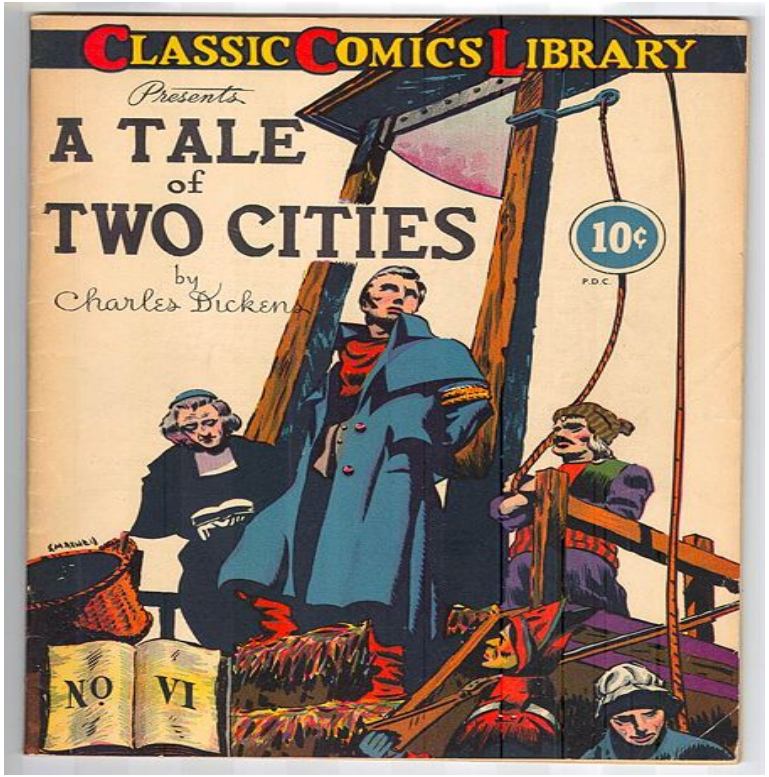
#4 OpenStack Storage Duality





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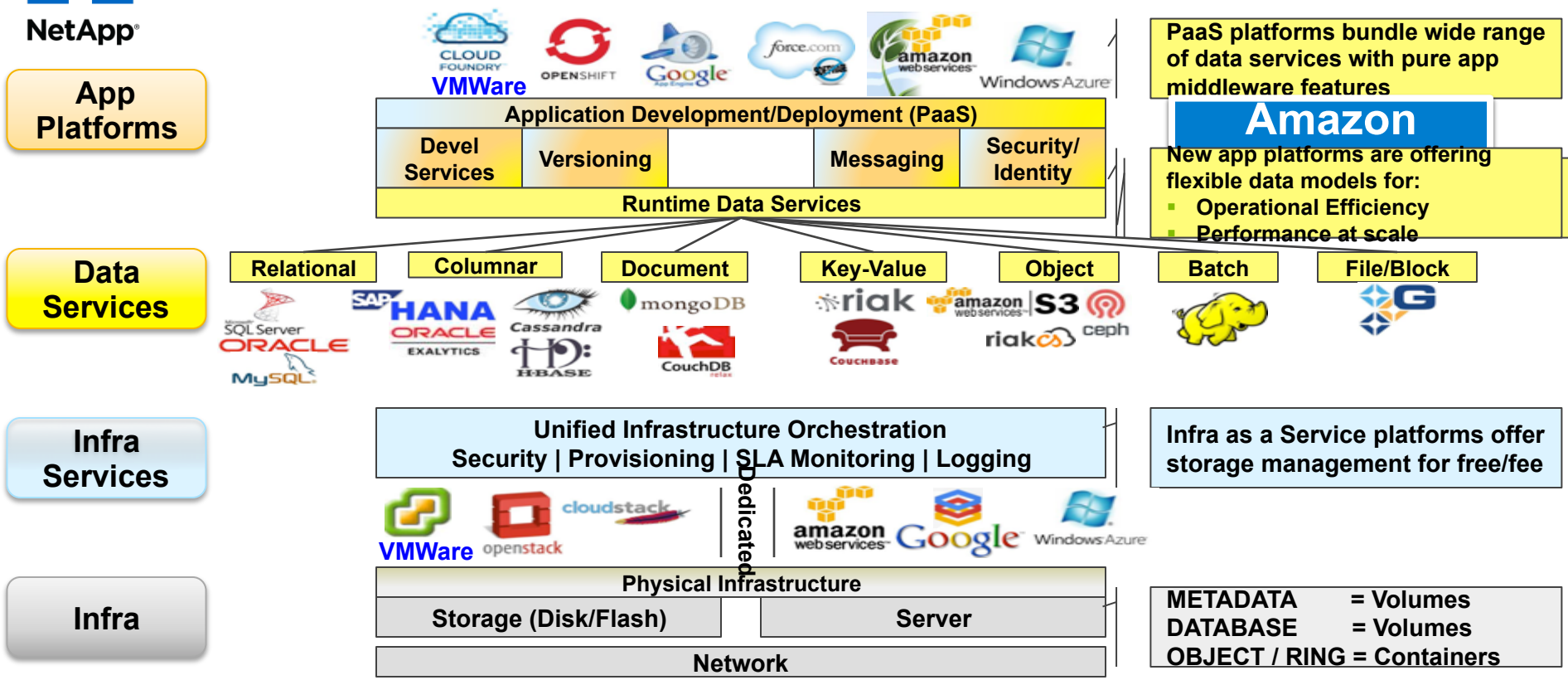
#3 – Diversity of Dev & Ops



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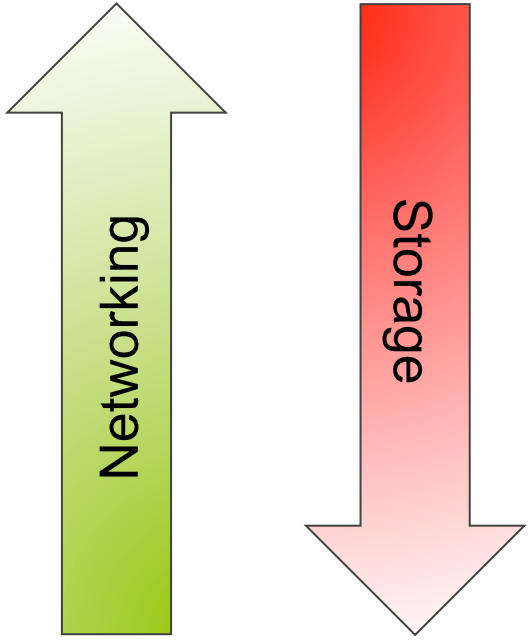
#2 Distributed vs Centralized Control



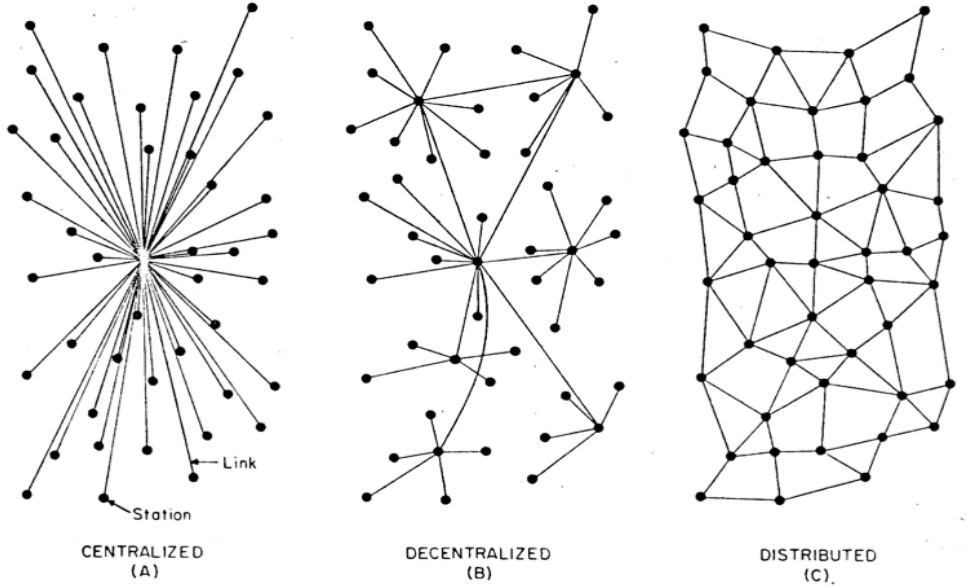


FIG. 1 — Centralized, Decentralized and Distributed Networks

Paul Baran, RAND Corporation (1962)

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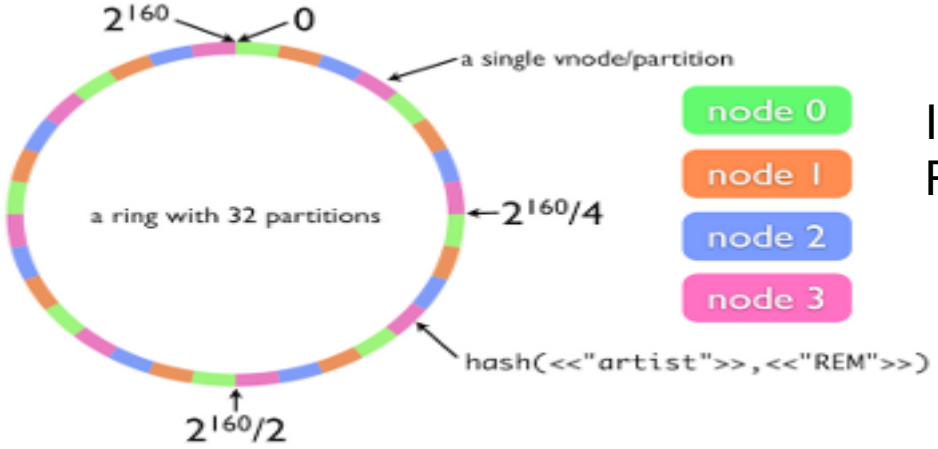
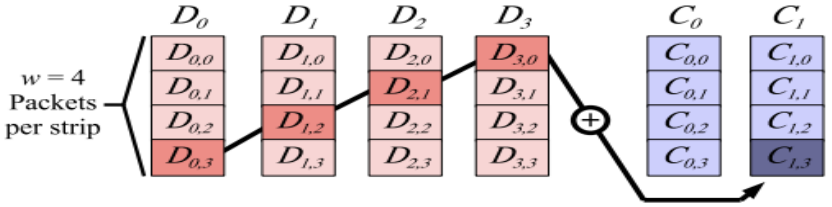
#1 Resiliency: Erasure Coding vs? RAID



Ideal for Cross-Node Resiliency



Ideal for Disk-shelf Resiliency

Figure 2. An example of one stripe where $k = 4$, $m = 2$ and $w = 4$.

https://communities.netapp.com/community/netapp-blogs/exposed/blog/2012/12/11/erasing-misconceptions-around-raid-erasure-codes

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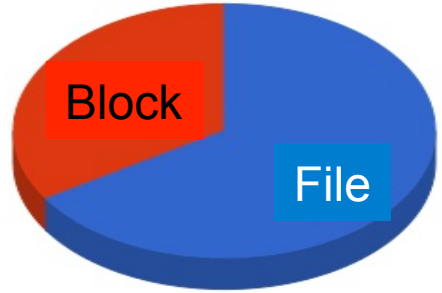
#0 Shares Service

Proposal / Blueprint

IDC
27 ExB
(2012)



Share R&D
between
Guests 1 & 8

File Share Service

Shares Provider

Fin

R&D

Mktg

openstack
CLOUD SOFTWARE

Nova

Compute Node

1 2 3 4
5 6 7 8

https://wiki.openstack.org/wiki/Shares_Service

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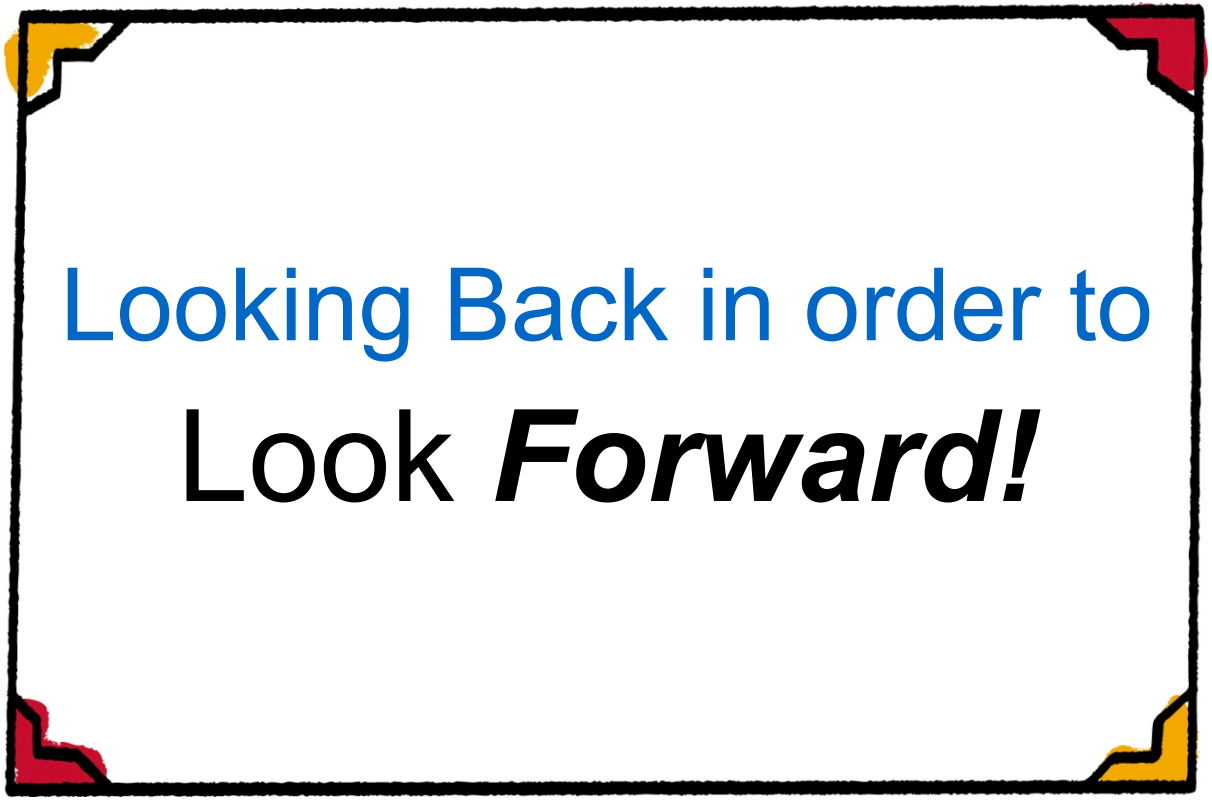

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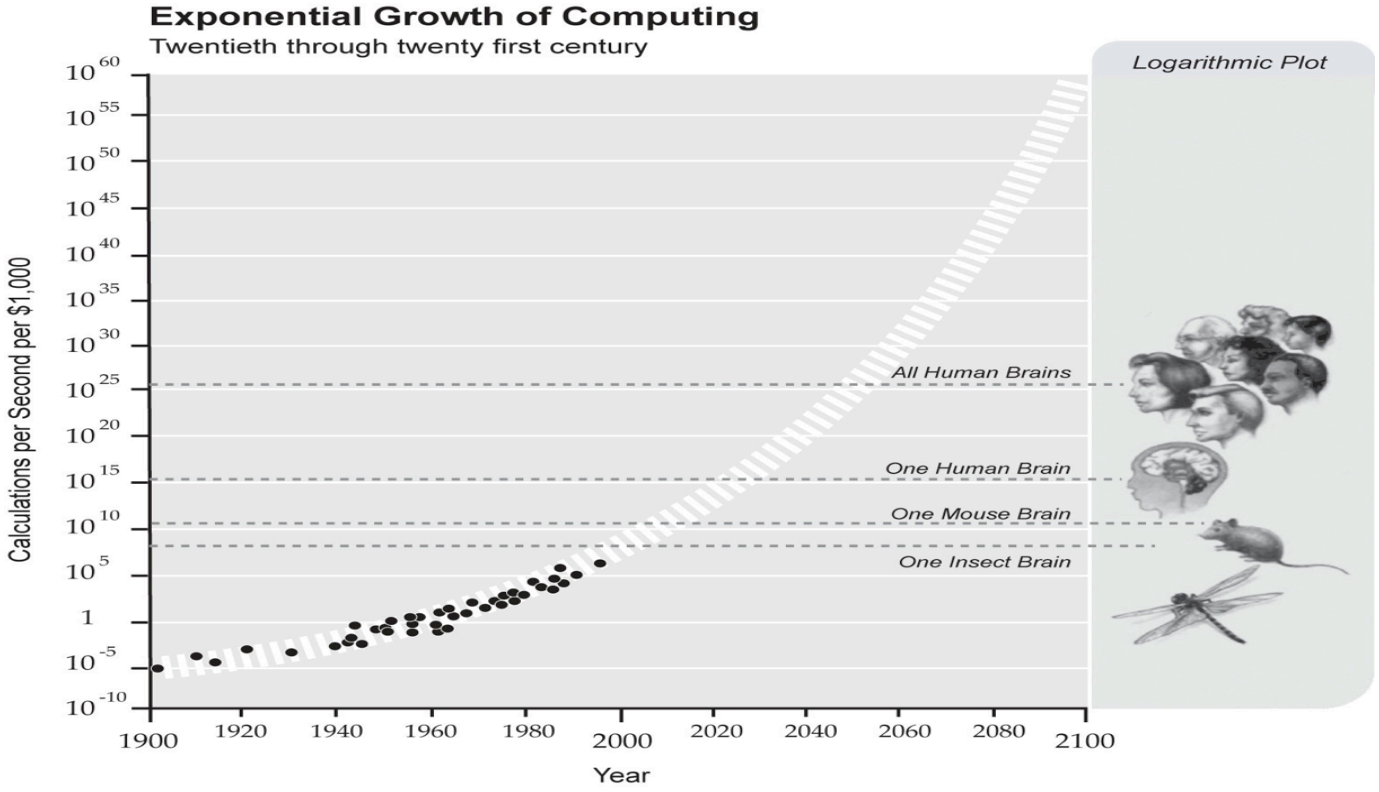
Science (Fiction?)

http://www.singularity.com/charts/page70.html



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A B C D E F G H ... I?

- Only 17 more letters to go!?
  - We just started the journey... time to consider Khmer
    - it has 74
- What does OpenStack look like in 2 years?
  - Are we building / planning for it?
  - 6 months is a long sprint, but how do we contemplate / incent the projects that take 18?

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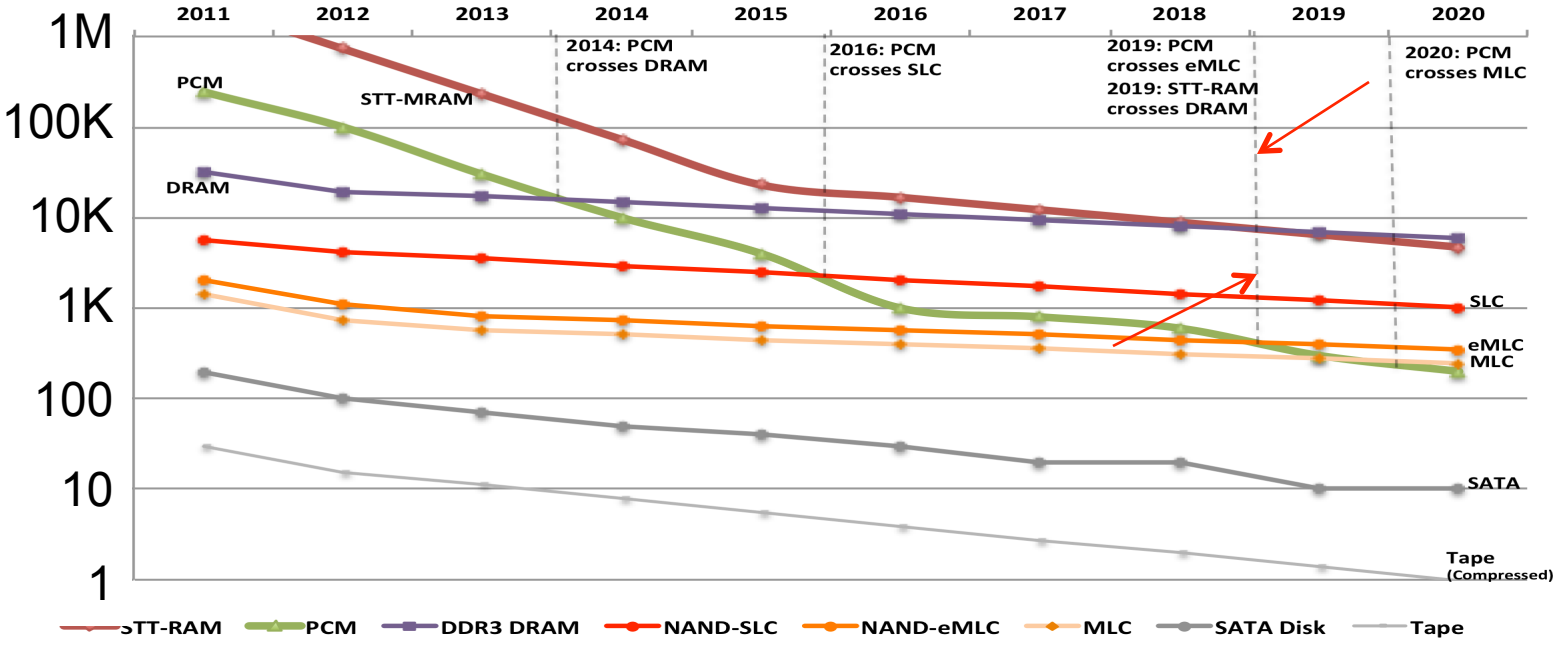
Wither Disk ? and later Wither Flash ??



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Thank you

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- Austin: The first design summit took place in Austin, TX
- Bexar: The second design summit took place in San Antonio, TX (Bexar county).
- Cactus: Cactus is a city in Texas
- Diablo: Diablo is a city in the bay area near Santa Clara, CA
- Essex: Essex is a city near Boston, MA
- Folsom: Folsom is a city near San Francisco, CA
- Grizzly: Grizzly is an element of the state flag of California (design summit takes place in San Diego, CA)
- Havana: Havana is an unincorporated community in Oregon

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