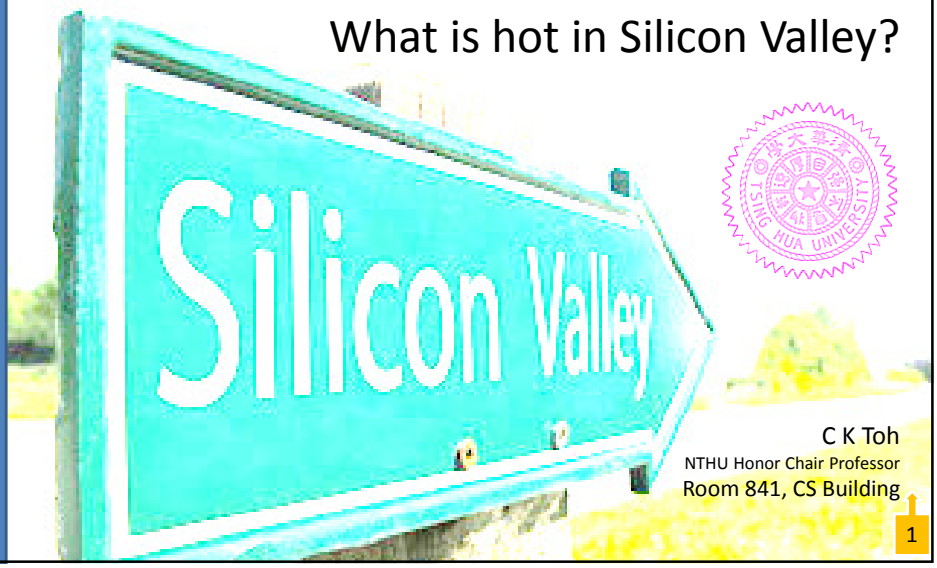
National Tsing Hua University

Department of Computer Science

What is hot in Silicon Valley?



C K Toh
NTHU Honor Chair Professor
Room 841, CS Building

1

What's Hot in Silicon Valley?

Seminar Outline – 3 Parts

1. The Silicon Valley in USA
2. Some hot companies and hot technologies
3. Start your new company, VCs, and funding
4. Conclusion

2

PART 1

3

Where is Silicon Valley?

ANSWER: It is in California, specifically northern California.

4

Where is Silicon Valley?

- Include the following cities in northern California:

- San Jose
- Santa Clara
- Mountain View
- Sunnyvale
- Palo Alto
- Redwood City
-

5

Where is Silicon Valley?

How to get there? TPE – SFO.

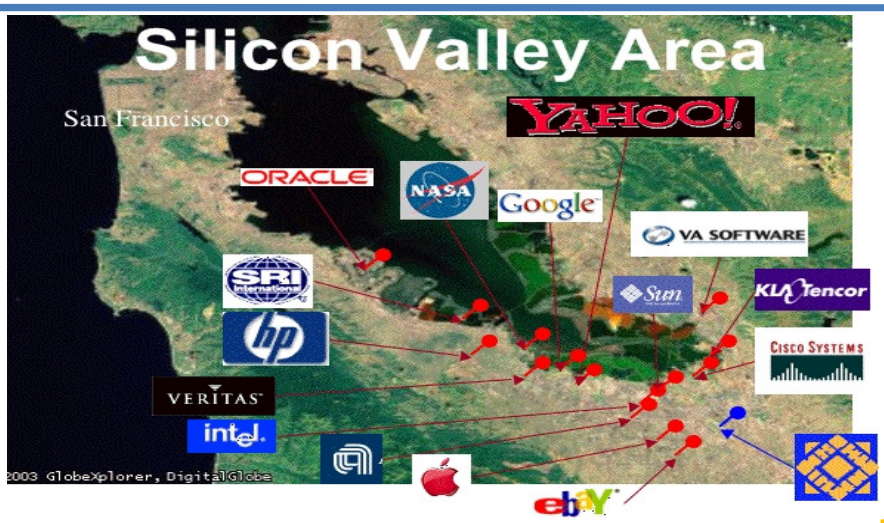
6

What reminds u of San Francisco?

- Is it “Golden Gate Bridge” or the 1967 song “San Francisco” by Scott MacKenzie?

7

Who is in Silicon Valley?



8

Who is in Silicon Valley?

- Famous Big "old" Companies like HP, YAHOO, ORACLE, SYMANTEC, DELL, APPLE, INTEL, VMWare, NOKIA, ERICSSON, etc
- Small "New" startup Companies like BIG SWITCH, NICIRA, EXTREME NETWORKS, INFOBLOX, etc

2011 Startup jobs

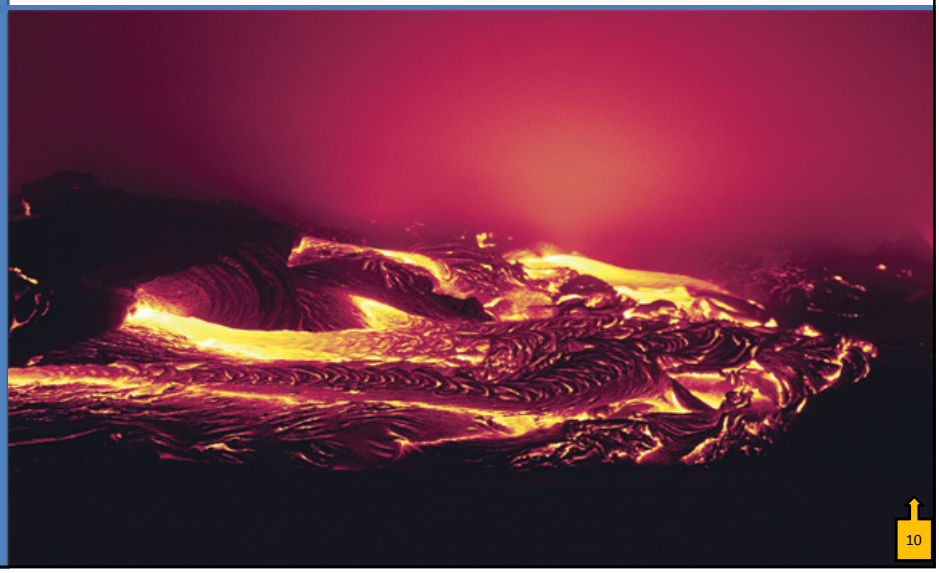
State	Jobs
California	12,916
Massachusetts	2,480
New York	2,646
Texas	1,581
Washington	1,410

extreme networks

Infoblox®

9

PART 2 – Some Hot Technologies



10

What are some hot technologies?

1. Cloud Computing
2. Server Virtualization
3. Network Virtualization
4. Storage Area Networks
5. Mobile Applications for APPLE/Android Phones
6. Data Center Design, Architecture, Mgmt
7. Big Data & Analytics
8. E-commerce
9. Next generation routers – "programmable networks" – "software defined networking"

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What are some hot technologies?

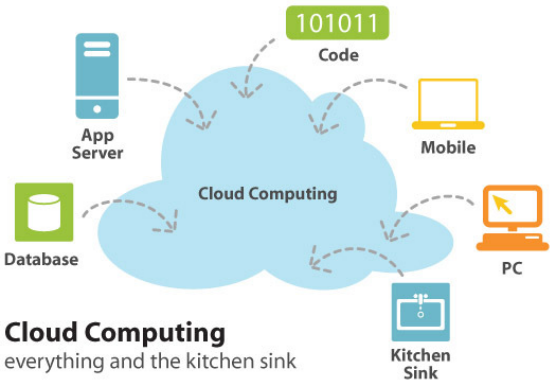
[1] Cloud Computing

What is it? – Some cloud in the sky? Wrong!

- It is = Utility Computing (IaaS, PaaS, SaaS)
- Software
- Platform
- Infrastructure
- Etc.

UNDERLYING:

- Storage
- Servers
- Networks
- Load Balancing
- Security



Cloud Computing
everything and the kitchen sink

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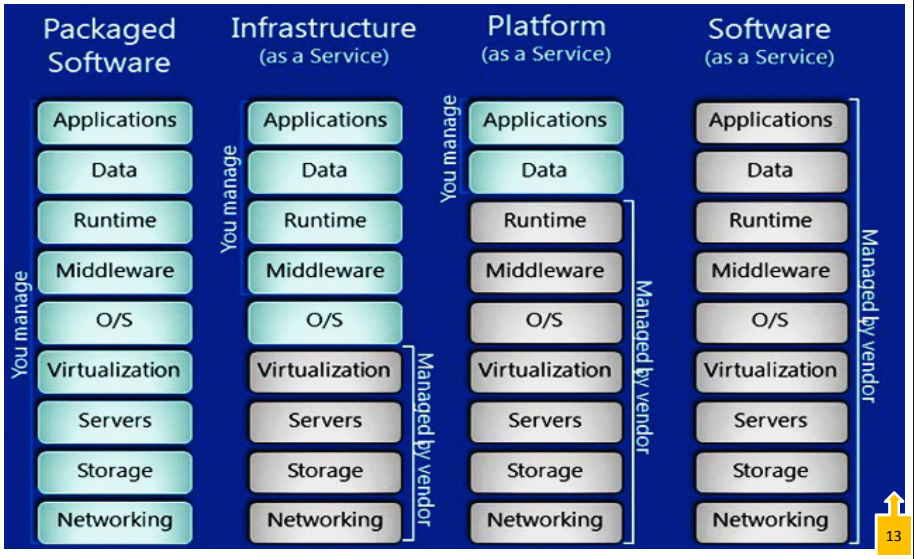
What are some hot technologies?

Cloud: IaaS vs PaaS vs SaaS



What are some hot technologies?

Who is doing Cloud Computing?

- Big names &
- Startups
- Microsoft is threatened!
- DELL is threatened!
- WHY?
  - Bcos we don't need to buy a copy of Windows software for each person. We just get it from cloud! We also need not buy hardware

amazon Microsoft appfog Google Parse Bromium ZillaByte cloudability CloudSigma SCALEXTREME nebula SOLIDFIRE heroku disruptive technologies SHMcloud SOFTWARE AS A SERVICE

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What are some hot technologies?

How they charge Cloud Computing?

Region: US West (Northern California)

	Linux/UNIX Usage	Windows Usage
Standard On-Demand Instances		
Small (Default)	$0.090 per Hour	$0.125 per Hour
Medium	$0.180 per Hour	$0.250 per Hour
Large	$0.360 per Hour	$0.500 per Hour
Extra Large	$0.720 per Hour	$1.000 per Hour
Micro On-Demand Instances		
Micro	$0.025 per Hour	$0.035 per Hour
High-Memory On-Demand Instances		
Extra Large	$0.506 per Hour	$0.626 per Hour
Double Extra Large	$1.012 per Hour	$1.252 per Hour
Quadruple Extra Large	$2.024 per Hour	$2.504 per Hour
High-CPU On-Demand Instances		
Medium	$0.186 per Hour	$0.306 per Hour
Extra Large	$0.744 per Hour	$1.224 per Hour
Cluster Compute Instances		
Quadruple Extra Large	N/A*	N/A*
Cluster GPU Instances		
Quadruple Extra Large	N/A*	N/A*

* Cluster GPU Instances are currently only available in the US East (Virginia) Region.

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What are some hot technologies?

How they charge Cloud Computing?

Internet Data Transfer

The pricing below is based on data transferred "in" and "out" of Amazon EC2.

Region: US West (Northern California)

	Pricing
Data Transfer IN	
All data transfer in	$0.000 per GB
Data Transfer OUT	
First 1 GB / month	$0.000 per GB
Up to 10 TB / month	$0.120 per GB
Next 40 TB / month	$0.090 per GB
Next 100 TB / month	$0.070 per GB
Next 350 TB / month	$0.050 per GB
Next 524 TB / month	Contact Us
Next 4 PB / month	Contact Us
Greater than 5 PB / month	Contact Us

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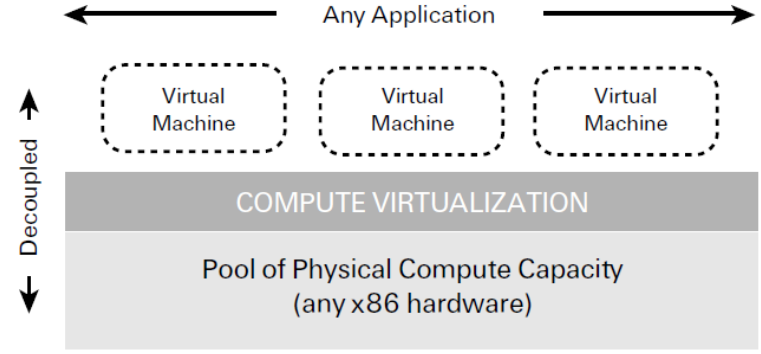
What are some hot technologies?

[2] Compute Virtualization

- What is that?



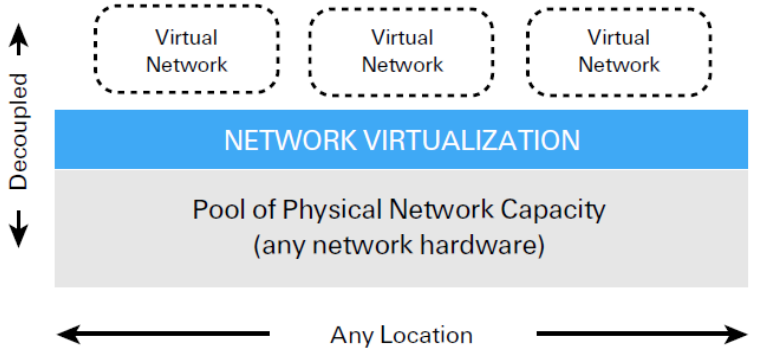
Microsoft redhat CITRIX vmware ORACLE VirtualBridges PROXMOX

17

What are some hot technologies?

[3] Network Virtualization

- What is that?



nicira vmware midokura big switch networks

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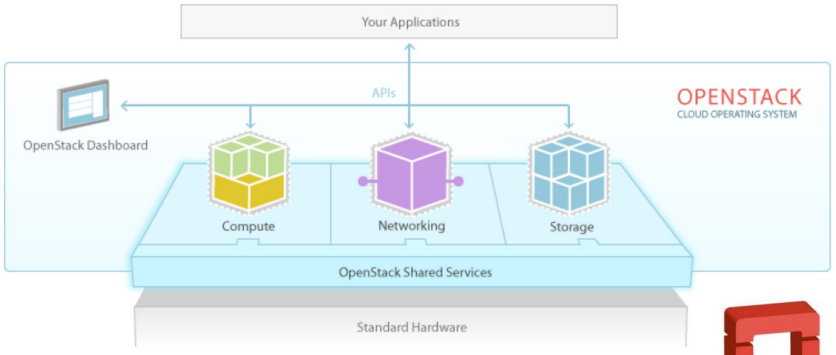
What are some hot technologies?

Compute, Network, and…….



openstack™

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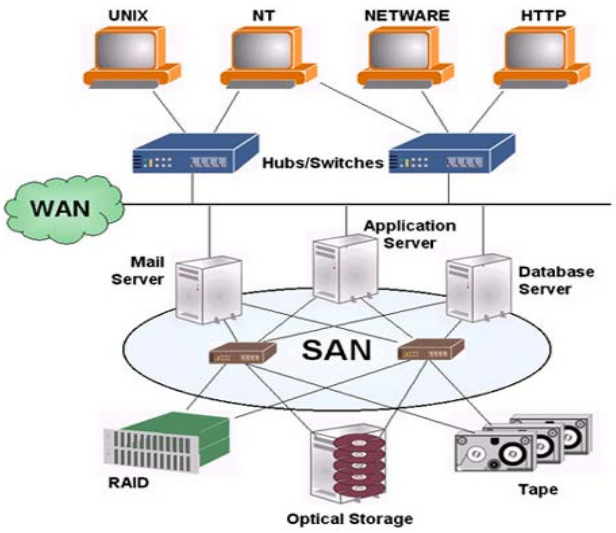
What are some hot technologies?

[4] Storage Area Networks (SAN)



DELL
EMC² where information lives®
HITACHI DATA SYSTEMS
NetApp
BLADE NETWORK TECHNOLOGIES
BROCADE

20

What are some hot technologies?

[5] Mobile Apps & Frameworks

Mobile Device Proliferation ➔ Mobile Apps Development

iOS based Mobile Apps and Android based Apps

APPLE Xcode4

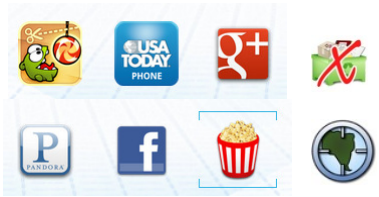
https://developer.apple.com/xcode/

ANDROID

http://www.android.com/apps/

Need Mobile Development Framework

Such as Zepto, DynamicX, Sencha, jQuery, jQTouch, iUI, Wink, etc.



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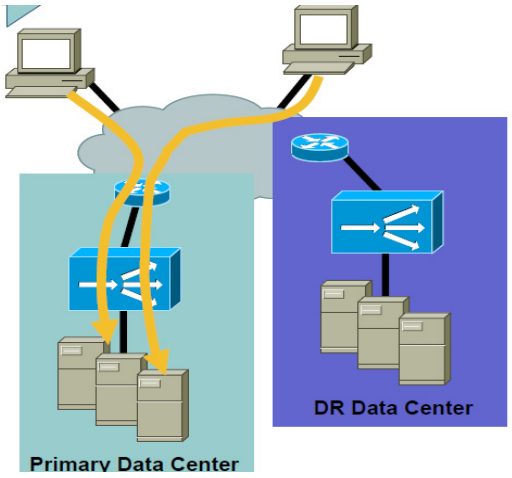
What are some hot technologies?

[6] Data Centers Architecture: Design & Hosting

- Design, Deployment, Distributed Systems
- Design Factors:
  - Speed
  - Reliability
  - Scalability
  - Distributed
  - Accessibility
  - Security
  - Load Balancing
  - Cooling
  - "Green"



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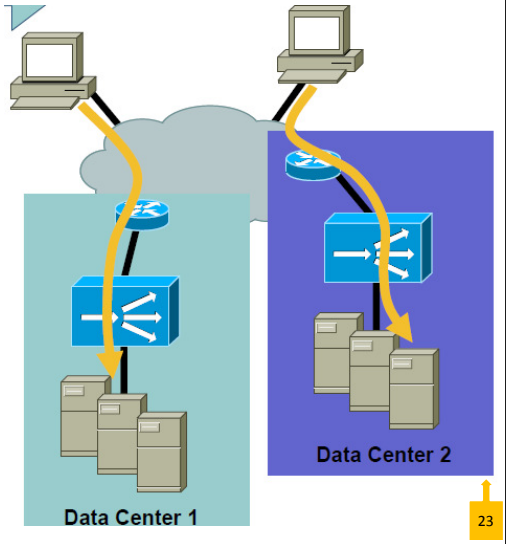
What are some hot technologies?

[6] Data Centers Architecture: Design & Hosting

- Geographic load B.
- Data center Infrastructure mgmt
- Data center mgmt Companies



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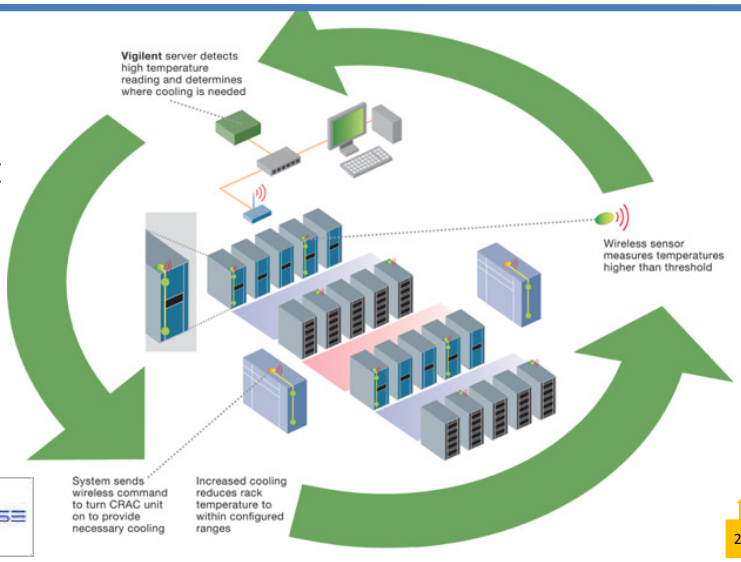
What are some hot technologies?

[6] Data Centers Architecture: Design & Hosting

Cooling

Green Internet



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What are some hot technologies?

[7] Big Data & Analytics

Handling big data is a challenge

Analyzing traffic is another challenge

What is BIG DATA?

= Large & Complex Data Sets

How BIG is BIG DATA?

= Petabytes 10^{15} to Zettabytes 10^{21}

Needed: Capture, Storage, Search, Sharing, Analysis, Visualization, Parallelism, etc

BIG DATA SUMMIT

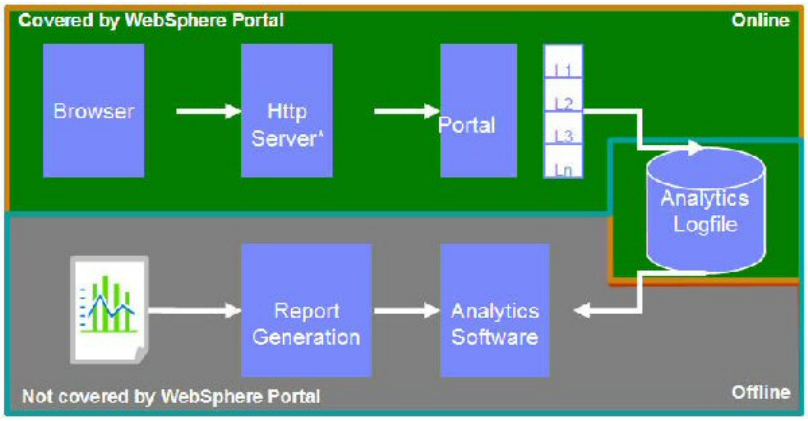
sas kaggle JUICE analytics cloudera splunk> bigml hi5 dynamo BI SAP

25

What are some hot technologies?

[7] Big Data & Analytics

Web Analytics



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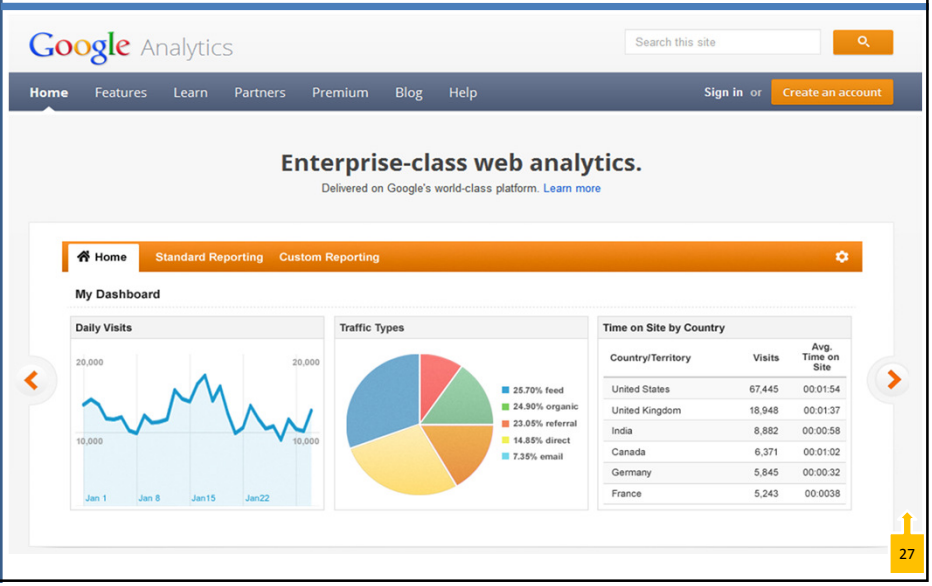
What are some hot technologies?

[7] Big Data & Analytics



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What are some hot technologies?

[7] Big Data & Analytics

Process & Analyze lots of Data never before possible

Ask New & More Questions

Get faster, clearer, answers + insights

Understand customer behavior better

Co-related data better

Verify data and facts

Make better business decisions!

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What are some hot technologies?

[8] Networks: Routers, WRouters

- Routers, Switches, Wireless Routers, etc.
- CISCO is not always going to dominate
- Same for JUNIPER Networks Inc.,
- New "smart" router companies will evolve

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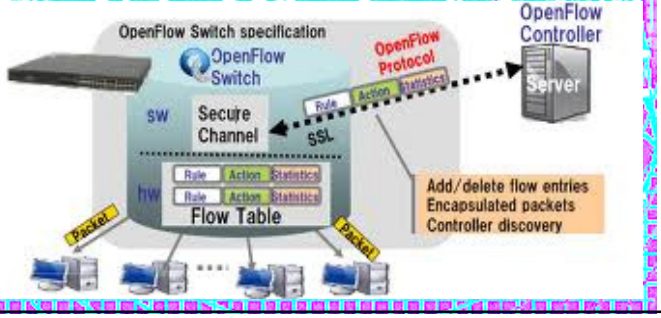
What are some hot technologies?

[8] Networks: Programmable, Open & Software Defined

- Programmable Switch
- Open Switch
- Open Flow / Open API
- Software Defined..



riverbed Think fast.
IBM
ARISTA
big switch networks
NEC
JUNIPER NETWORKS
Facebook Google Microsoft Verizon Yahoo Deutsche Tele
ONF OPEN NETWORKING FOUNDATION
➔Unify server and Network mgmt

30

What are some hot technologies?

[9] E-Commerce

- Getting Hot!
- New Forms of Payment…!
- "Bill Me Later" – allow purchases without using a credit card.
- Mobile Wallet – e.g. Starbucks mobile application – generate bar code to scan & pay
- Replace credit card with Phone…

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What are some hot technologies?

[9] E-Commerce

- Various Payment Methods Today

☑ PayPal	PayPal
☑ Credit card (through PayPal)	VISA, MasterCard, DISCOVER, AMERICAN EXPRESS
☑ eCheck (through PayPal)	eCheck
☑ E-currency *	e-gold, eBullion, pecunix, GoldMoney, 1MDC
☑ Mobile Phone	

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What are some hot technologies?

[9] E-Commerce

- Pay anywhere, using Your phone & CC.

Square

33

What are some hot technologies?

[9] E-Commerce

- Payment Processing

sagepay

- Payment Settlement

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What are some hot technologies?

[9] E-Commerce

- CHASE – "Person-to-Person" ePay

- CHASE – Quick Check Deposit
  - Use your phone camera
  - Connect to bank app

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What are some hot technologies?

[9] E-Commerce

- eBay bought over several startups…..

October 6, 2008	Bill Me Later	Electronic Commerce	United States	$1,200,000,000
October 6, 2008	dba.dk & bilbasen.dk	Classified advertising	Denmark	$390,000,000
January 8, 2009	Positronic Inc.	Machine learning	United States	
March 15, 2010	Magento	Electronic Commerce	United States	$22,500,000
June 23, 2010	RedLaser	Mobile applications		
December 2, 2010	Milo.com	Shopping Engine	United States	$75,000,000
March 28, 2011	GSI Commerce	Marketing/Fulfillment	United States	$2,400,000,000
March 28, 2011	WHERE Inc.	Local Search and Recommendation	United States	$135,000,000
July 7, 2011	Zong	Payments through mobile carrier billing	United States	$240,000,000

- Q for u: what is next after CC and Checks?

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Part 3: Start your Own Company

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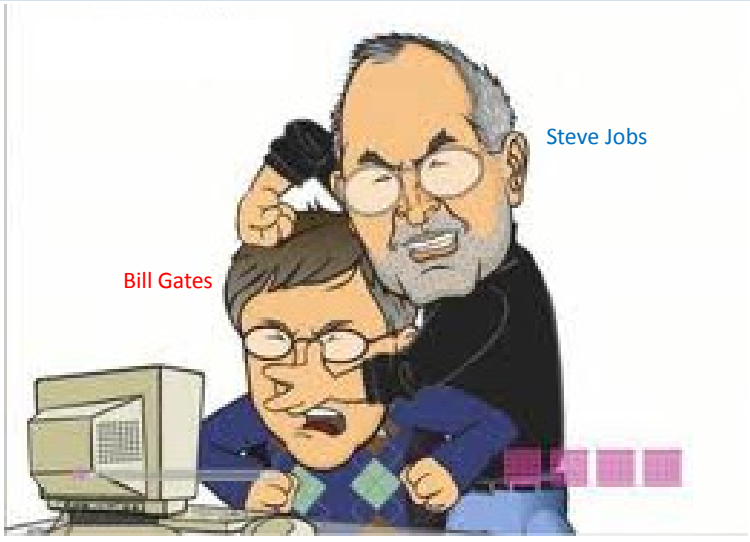
Start your own company

The Old



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Start your own company

The New

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Start your own company

The News…..

Bloomberg Businessweek
Small Business

Global Economics | Companies & Industries | Politics & Policy | Technology | Markets & Finance | Innovation | Lifesty

Small Answers

Startup Rates Surge in the U.S. and Abroad

By Karen E. Klein on January 19, 2012 | 0 Comments

Rates of early-stage entrepreneurial activity surged around the world in 2011, jumping nearly 60 percent in the U.S., according to a survey released this week by the Global Entrepreneurship Monitor. More than 12 percent of U.S. adults reported starting a business or running new businesses last year, up from just below 8 percent in 2010.

40

Start your own company

Why do a Startup?

ANSWERS:

- Bring your ideas to reality
- Buddy up with your best friend
- Impact the lives of zillions of people
- Get rich
- Or for lots of "fun"
- Or to learn what business is all about
- Or time to be your own boss
- Exercise your leadership
- Exervise your "Entrepreneurship"

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Start your own company

Funding: Angels & VCs

- The Venture Capitals in Silicon Valley
  - Very rich individuals and groups of people
  - Angels
  - Partners
  - Invest $$ in multiple new companies
  - In return for "shares" of the companies (i.e., ownership of the companies)
  - E.g. invest $500,000 and may get $2billion in return when a company IPO (Initial Public Offering)

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Start your own company

Funding: Angels & VCs

- Who are Angels?
- Who are the VCs?
- Rounds of Funding:
  - Seed Funding
    - Usually $200K
  - Series A Round
    - Usually >$1M
  - Series B Round
    - Usually >$5M
  - Series C Round
    - Up to $10M

RED ROCK VENTURES
sequoia capital
NewVenture Partners LLC
BLUE CHIP VENTURE COMPANY
MOHR DAVIDOW
sunbridge
MENLO VENTURES
Big Ideas. Realized.
band OF ANGELS
intel Capital
RUSTIC CANYON PARTNERS
TECH COAST ANGELS
INVESTORS' CIRCLE
DRAPER FISHER JURVETSON
KPCB
iw INTERWEST PARTNERS
LABRADOR VENTURES
SIGMA+ PARTNERS
khosla ventures
venture assistance, strategic advice, venture capital
true ventures

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Start your own company

When you approach the VCs..

- You need a Business Plan !
- Contain: "executive summary (high level layman)", "business description (sell your idea)", "market strategies (is there a market?)", "competitive Analysis (who are your competitors?)", "development plan (will u develop it?)", "management plan (will u manage it 100%)", "finance (did u put in $$?)"

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Start your own company

The Startup Financing Process

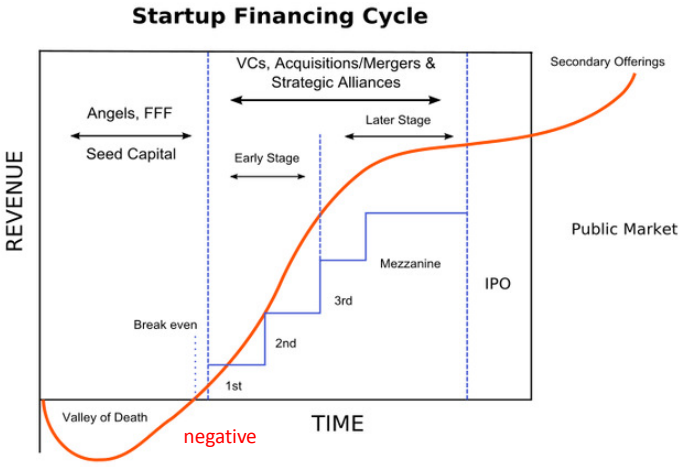
STARTUP
- Your $$

First
- Then

"angel" $
- Then

VC $
- Then

IPO



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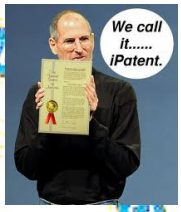
Start your own company

Startups need Patents!

- Why file Patent?
  - Protect your new ideas, your invention
  - A patent is worth a lot of "$$"
  - A patent is supposed to be "practical", i.e., can be later made into a usable product
  - Companies need patents to protect their rights and ownership of technologies and hence products



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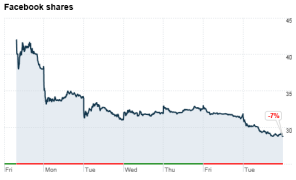
Start your own company

About Company Shares

- How share/stocks are created?
- How are stocks distributed?
- What happens when VCs put $$ in your company?
- What happens when your company IPO?
- Publicly traded shares – prices per share



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Start your own company

About Company Shares

EXAMPLE – ROUND #1 FUNDING – FOUNDERS' SHARES ARE NO LONGER 100%

Click to Activate Spreadsheet

	A	B	C	D	E	F	G	H	I	J	K	L	M
1					Capitalization Table								
2													
3					Round 1 - Series A								
4	Price/Share						$0.87						
6					Invest-		# of		Owner-				
7	Shareholders				ment		Shares		ship				
9	Management				-		1.500		50.0%				
10	Investor 1				$1.7		1.500		50.0%				
11	Investor 2				-		0.000		0.0%				
12	Investor 3				-		0.000		0.0%				
13	Total				$1.7		3.000		100.0%				
14													
15	Post-Money Valuation						$3.0						
16	Pre-Money Valuation						1.3						

Round1 | Round2 | Round3 | DownRound

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Start your own company

About Company Shares

EXAMPLE – ROUND #2 FUNDING – FOUNDERS' SHARES GOT FURTHER DILUTED (reduced)

Click to Activate Spreadsheet

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Capitalization Table																	
2																		
3					Round 1 - Series A						Round 2 - Series B							
4	Price/Share						$0.87						$3.61					
6					Invest-		# of		Owner-		Invest-		# of		Owner-			
7	Shareholders				ment		Shares		ship		ment		Shares		ship			
9	Management				-		1.500		50.0%		-		1.500		32.2%			
10	Investor 1				$1.7		1.500		50.0%		$2.0		2.054		44.1%			
11	Investor 2				-		0.000		0.0%		$4.0		1.108		23.8%			
12	Investor 3				-		0.000		0.0%		-		0.000		0.0%			
13	Total				$1.7		3.000		100.0%		$6.0		4.661		100.0%			
14																		
15	Post-Money Valuation						$3.0						$16.8					
16	Pre-Money Valuation						1.3						10.8					

Founders' Share Diluted..

Investor 1 = 1.5 m shares + (2M/3.61) = 2.054M shares

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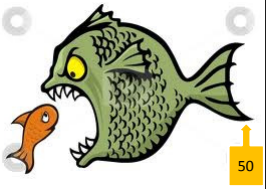
Start your own company

IPO, or Get Bought?

Next slides is last slide!

- Who bought who?
  - ORACLE BOUGHT SUN ($7.4Billion)
  - HP BOUGHT COMPAQ ($25B)
  - GOOGLE BOUGHT YOUTUBE ($1.65B)
  - CRITIX BOUGHT XEN ($500M)
  - ERICSSON BOUGHT REDBACK NETWORKS ($2.1B)
  - JUNIPER BOUGHT NETSCREEN ($4B)
  - And so on…
  - Your startup could be one of them!



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Start your own company

Conclusion

- Silicon valley is worth a lot of $$
  (I am not talking about the land ☺)
- A place where many important technologies were created
- A heaven for engineers, entrepreneurs, and investors
- Near to top Us - Stanford and Berkeley
- Many **new startups** evolved from there
- **You could possibly start one too!**
- Thank you! Any Questions?

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