The CAD-Less Semiconductor Company
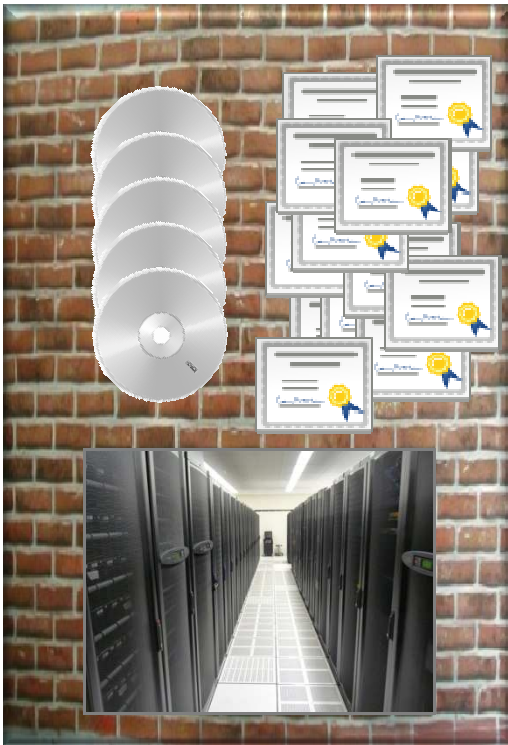
Where is the cloud for electronic design, and who will use it?

XUROPA®
Software Sales Cloud Platform™

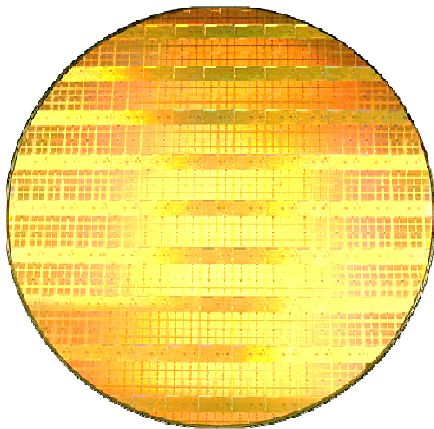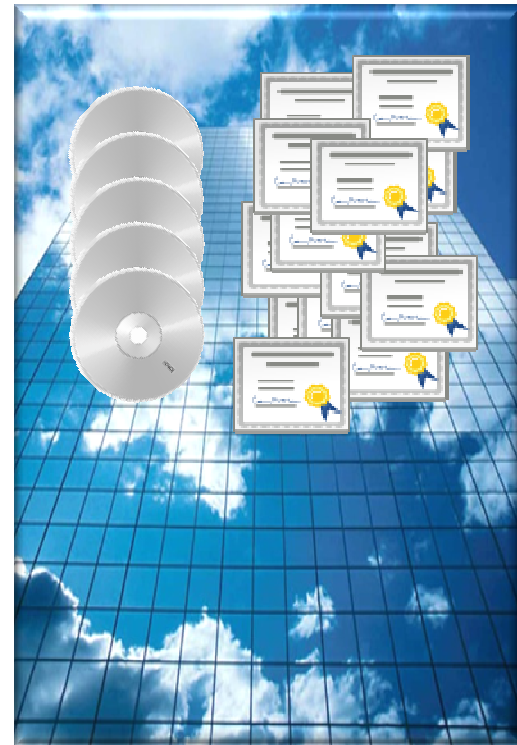# A CAD-Less Semiconductor Company

Semiconductor
Vendor

Public Cloud
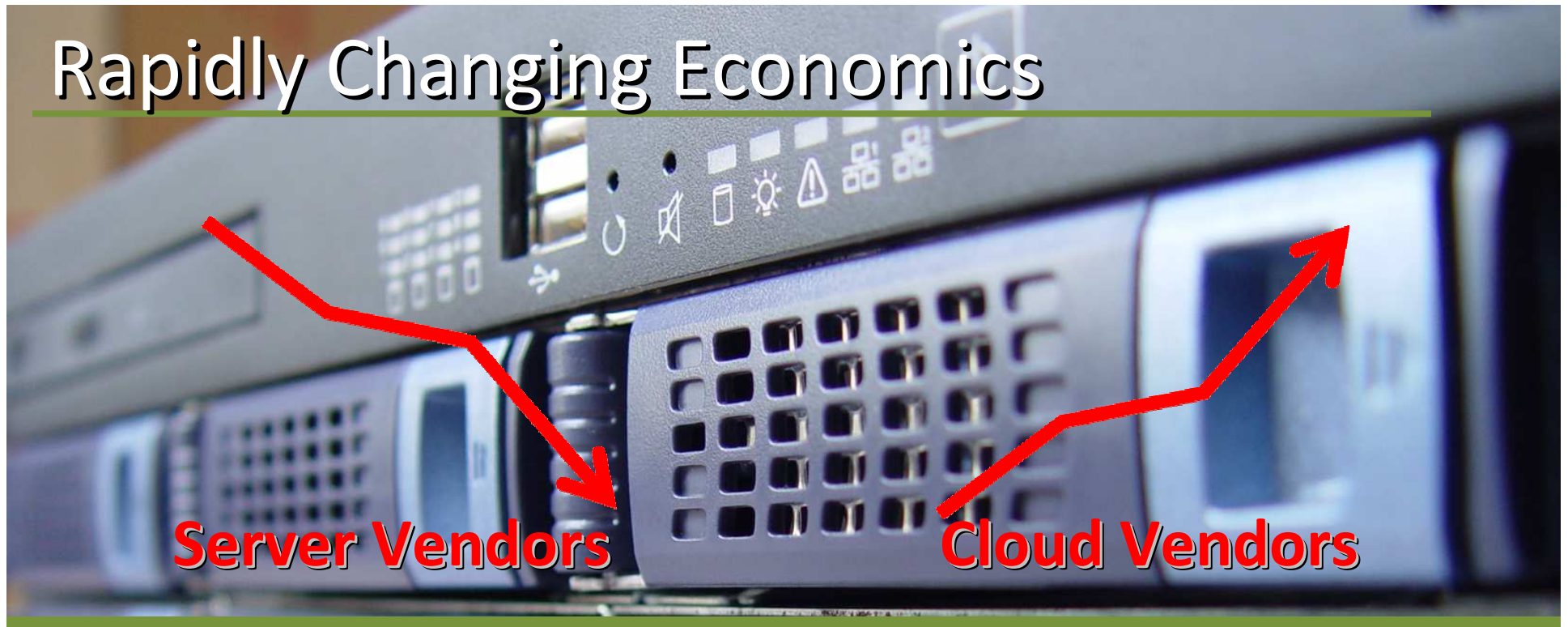Vendor
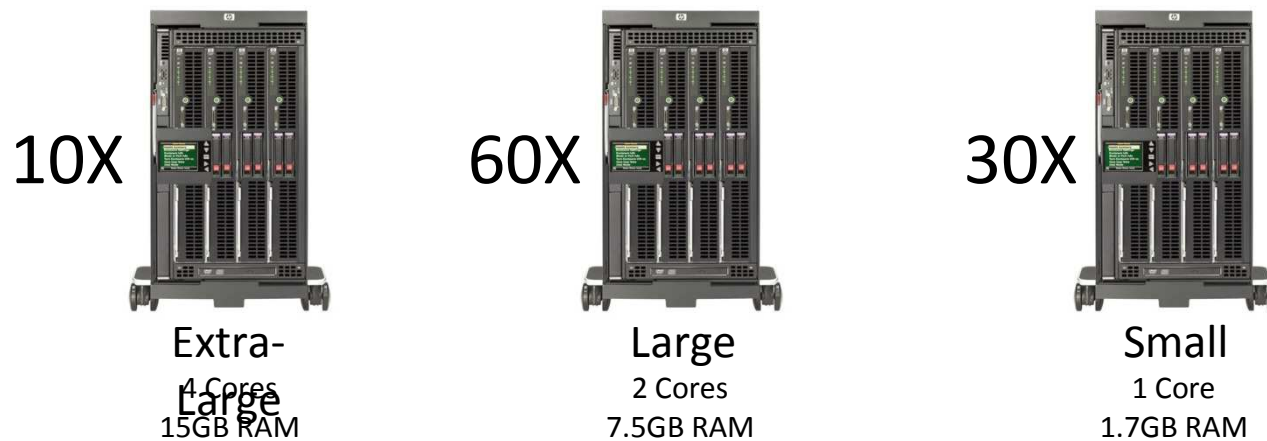
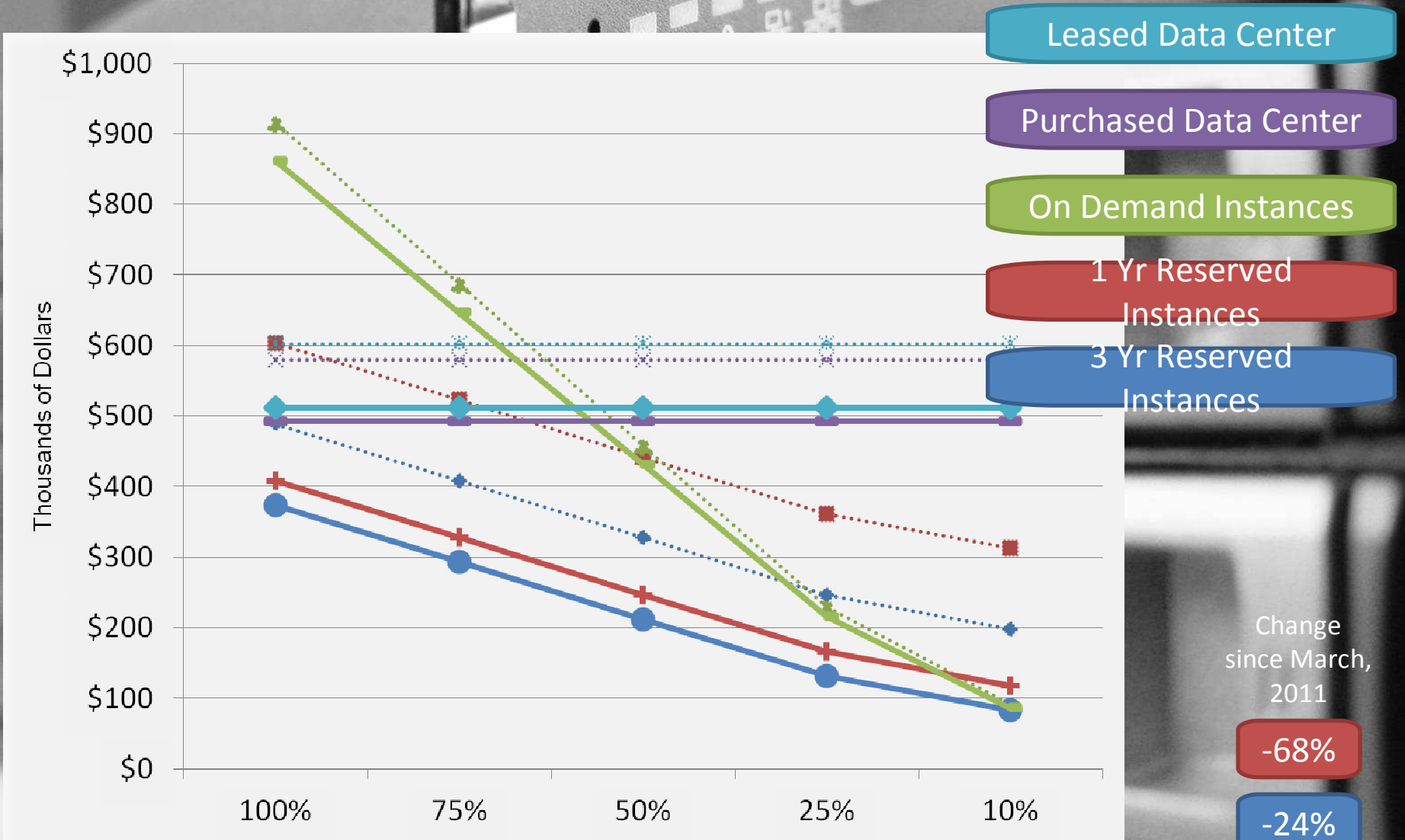# A CAD-Less Semiconductor Company

Semiconductor
Vendor

Public Cloud
Vendor

Rapidly Changing Economics

Server Vendors

Cloud Vendors

Cost of Running 100 Servers over 3 Years?

10X

Extra-
Large
4 Cores
15GB RAM

60X

Large
2 Cores
7.5GB RAM

30X

Small
1 Core
1.7GB RAM

Cost Comparison vs Utilization (2012)

Leased Data Center

Purchased Data Center

On Demand Instances

1 Yr Reserved Instances

3 Yr Reserved Instances

Change since March, 2011

-68%

-24%

Data Sources: Amazon, Advanced Systems Group, Xuropa

Cost Comparison at Scale

80% Utilization of Servers
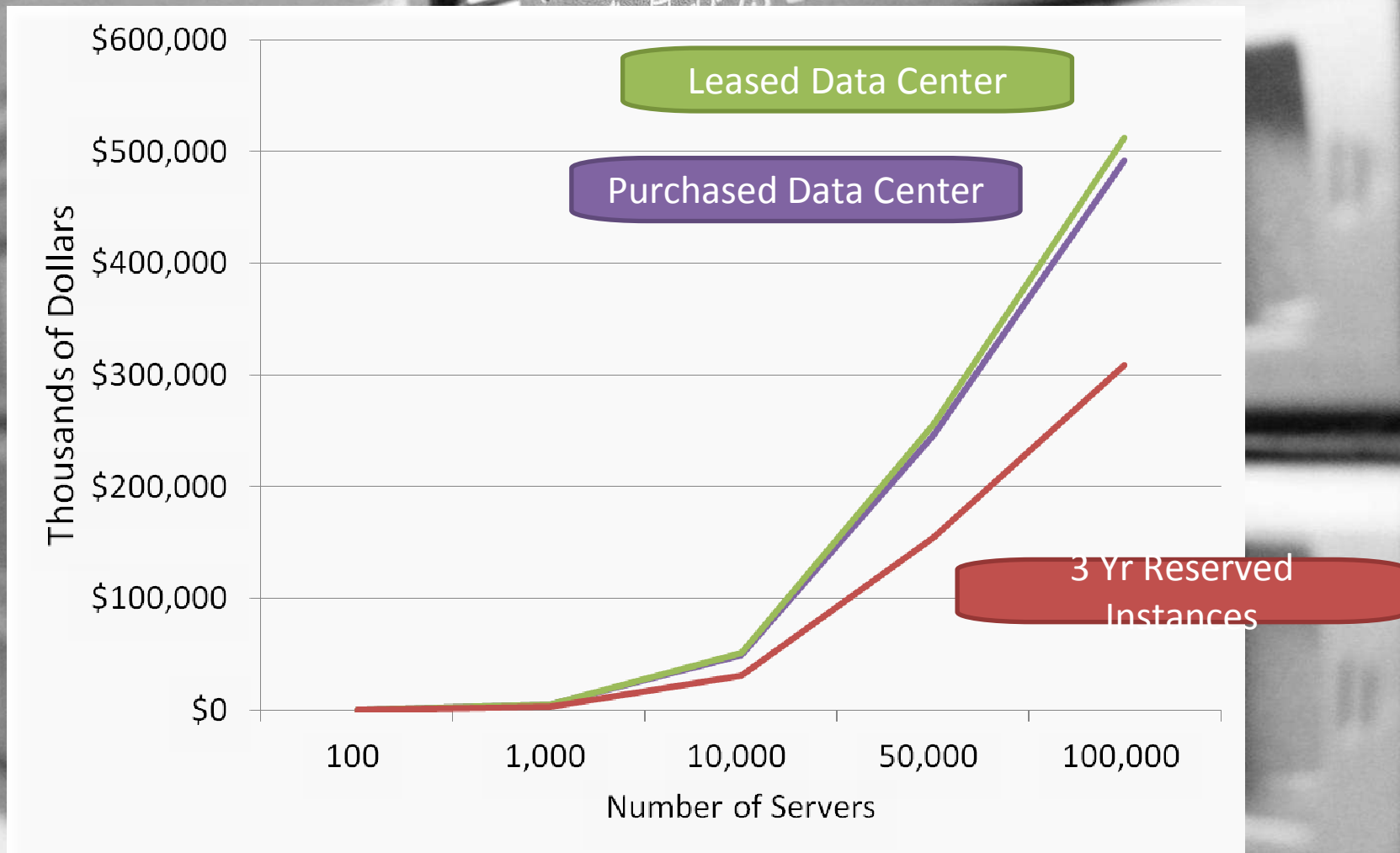
Cost Over Time at Scale
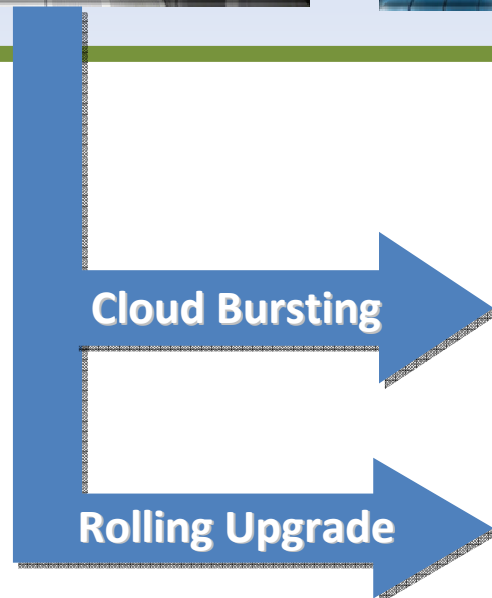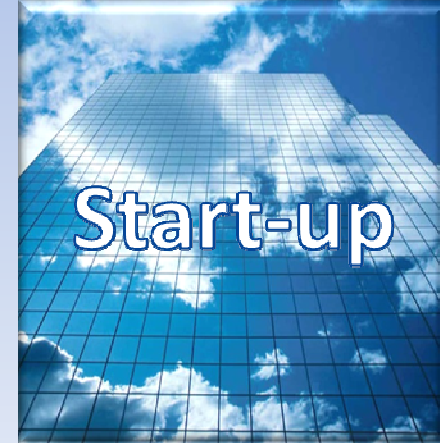
100% Utilization of 50,000 Servers
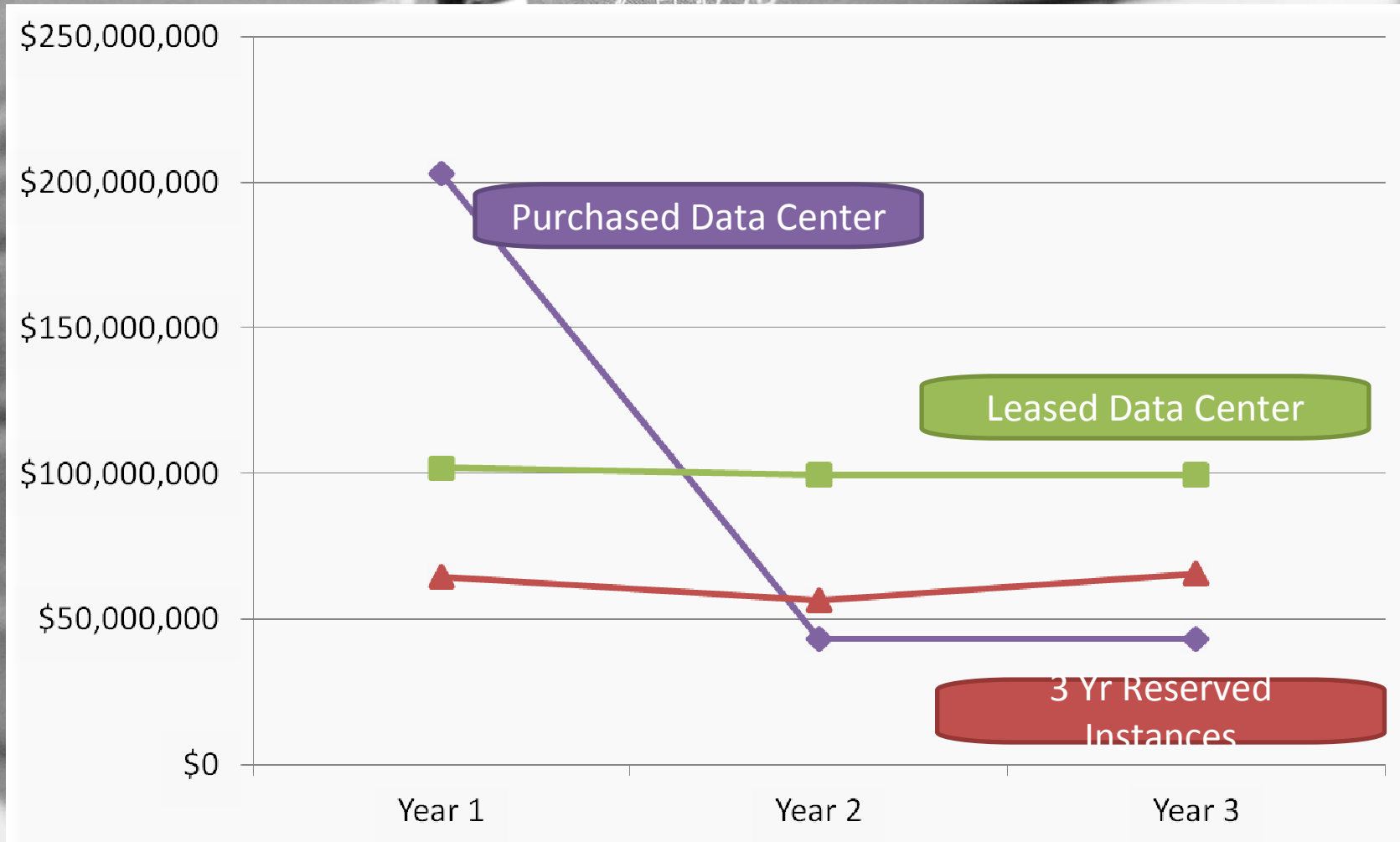
Data Sources: Amazon, Advanced Systems Group, Xuropa

Observations & Conclusions

IDM

Existing Data Center

openstack™

vmware®

Tier 2 to SMB?

Start-up

Cloud Bursting

Rolling Upgrade

Where?

EDA Cloud Requirements?

- Security
  - Real & perceived

- Guaranteed Service Level Agreements
  - Server availability
  - Performance & latency
  - Fat pipe

- Legal Sign-off
  - Liability coverage
  - Insurance

- Trust

Where is the Cloud for "Top 20" IDMs?

Vendor Cloud ✓ — cadence, Mentor Graphics, SYNOPSYS

Community Cloud? ✓ — CloudSigma, tsmc

Generic Public 🚫
- ~~Guaranteed SLA~~
- ~~Legal sign-off~~

Where is the Cloud for "The Rest"?

Vendor Cloud 🚫

Community Cloud? ❓

Generic Public ✅

How is the cloud to be used?

Vendor Cloud

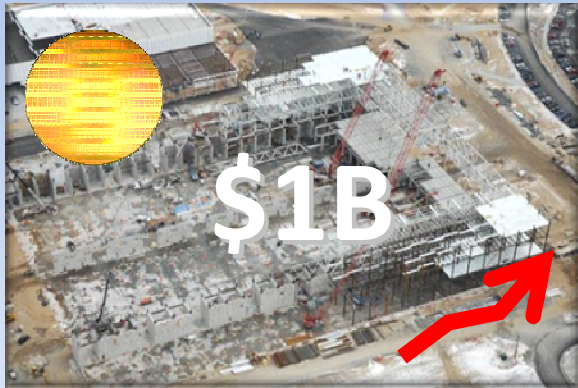- Front-end
- Point tools
- Services
- Limited scope

Community Cloud

- Front-end
- Point tools
- Mixed flow
- Fab sign-off
- Long-term Potential

Evolution of Economics

Per 10,000 wafers @ 28nm

1,000 Large Servers for 8 hours = $2,560

The environment is highly disruptive…..

…..where should IDMs be investing?