



TELLMANN

executive advisors



Fra bøttekott til teknologisk høyborg

CIO Forum Datasenter – 26. November 2015

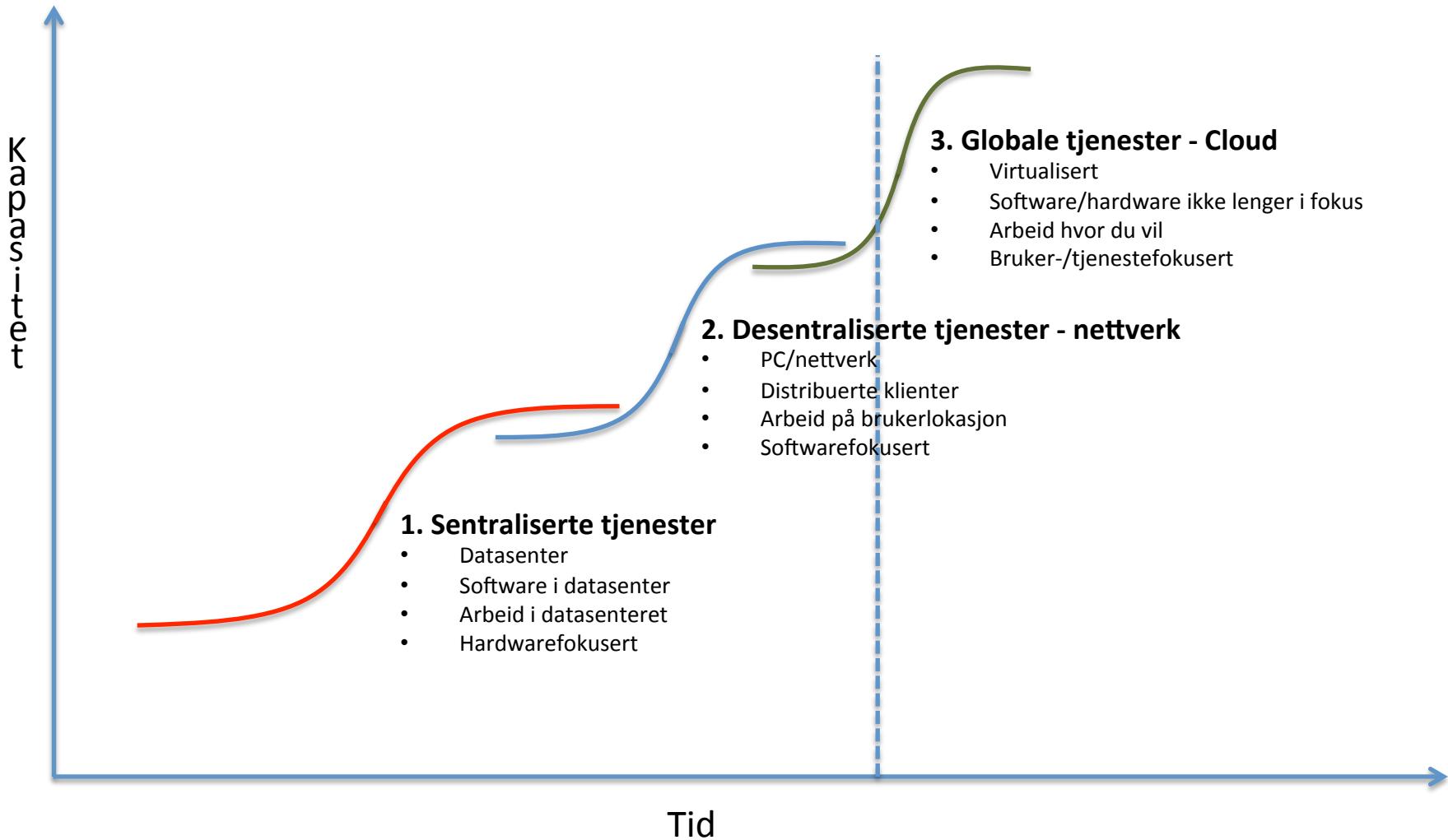


Harald Tellmann

- Etablerte ASP Norge i 1999
- Bistått kunder med strategisk forankring og kjøp av IT tjenester i 16 år
- Har bistått over 200 kunder med IT sourcing prosesser
- Selskape endret navn til Tellmann januar 2015, 21 ansatte







Internet of Everything



Internet of People

1,55B people on Facebook, Sept 2015



Internet of Things

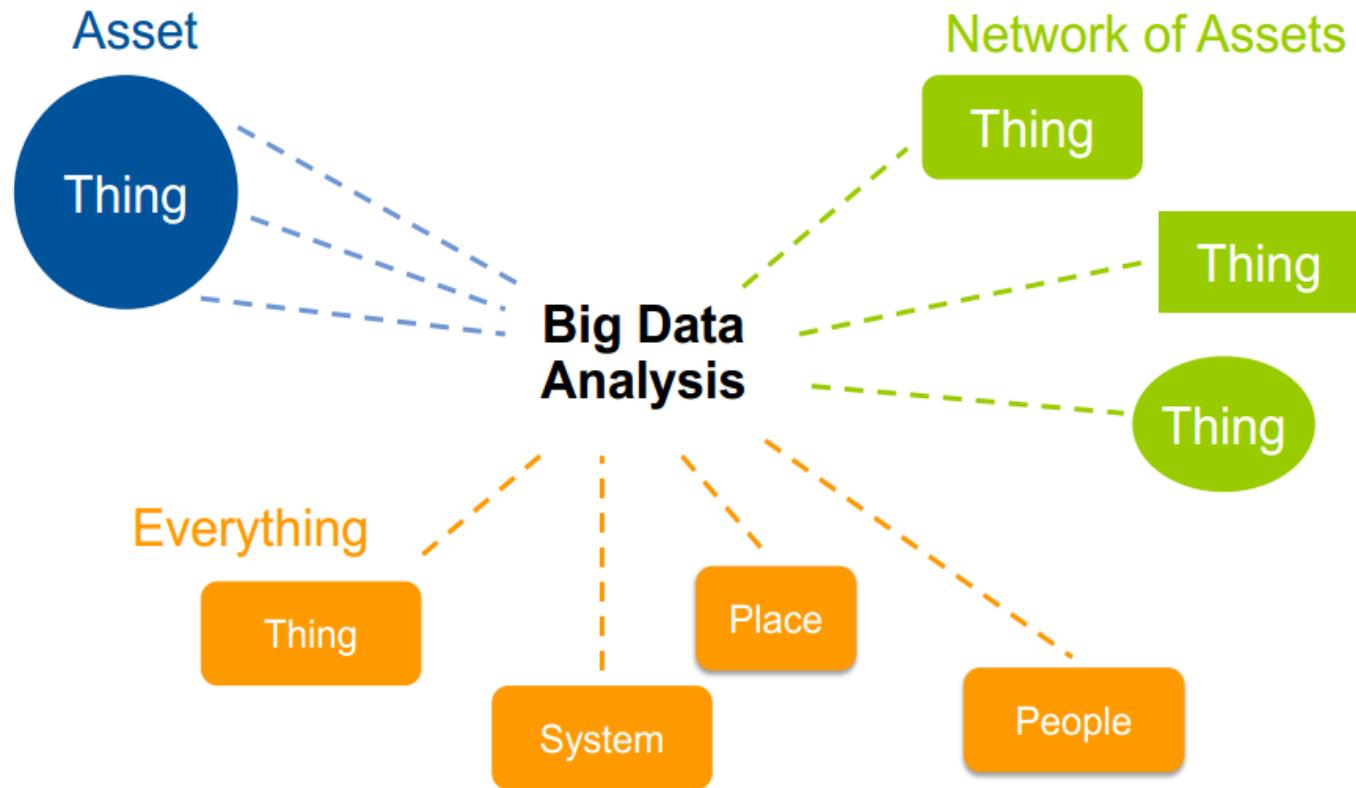
30T things by 2020

http://w

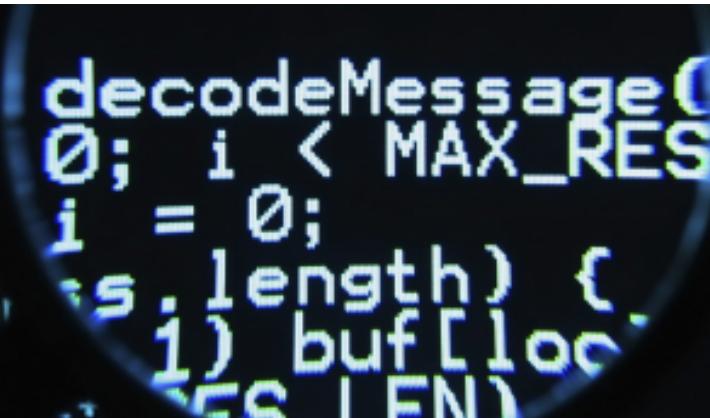
Internet of Information



Big Data



Algoritmenes tid er her



```
public void decodeMessage() {
    for (int i = 0; i < MAX_RES; i++) {
        buf[i] = 0;
    }
    if (buf.length > 0) {
        int e = buf[0];
        if (e == 0) {
            i++;
            if (i > buf.length - 1) {
                i = 0;
            }
            if (i < buf.length - 1) {
                buf[i] = buf[i + 1];
            } else {
                buf[i] = 0;
            }
        }
        if (e < 0) {
            extractMessage(res);
        }
    }
}
```

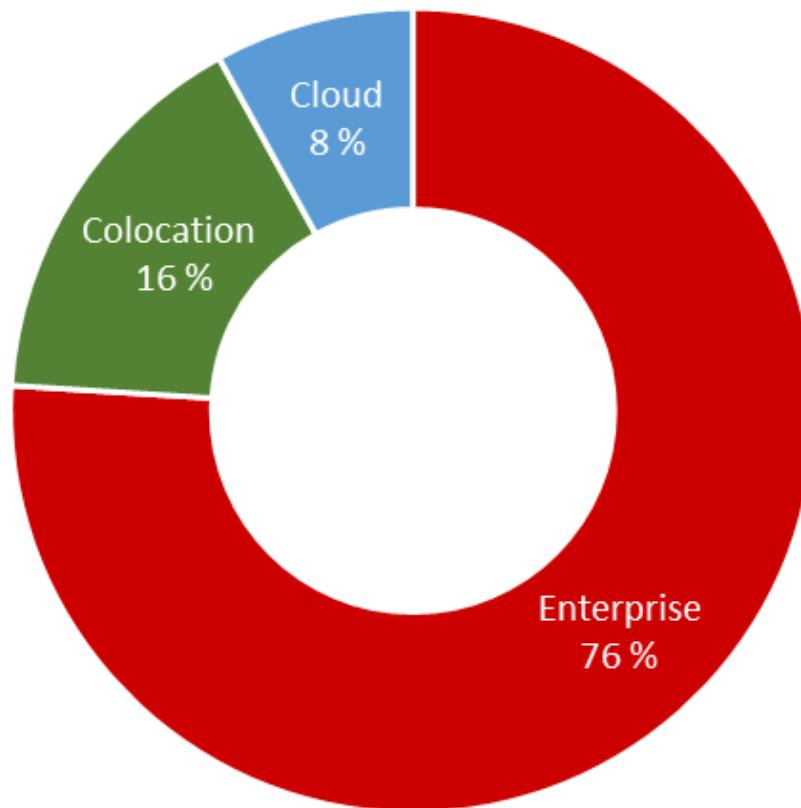






Global Datacentre footprint

(type of DC %)



Colocation vs. Cloud

- Det er også slik at Colocation datasentrene leverer skyløsninger – «private clouds».
- Per i dag er det ca. 40% - 60% dvs. 60% er tradisjonell dedikert teknologi, mens 40% er skyløsninger.
- Dette forventes å være 50%-50% i løpet av neste 2 år. Veksten er på skyløsninger.



Private Cloud



Hva forventer «Private cloud» kundene?

Det vi legger størst vekt på når vi bistår kunder:

Datasenterleverandøren må:

- Være en troverdig profesjonell aktør
- Garantere oppetid for leveransen
- Sikre produkter og tjenester
- Levere gode produktytelser
- Ha lokal teknisk know-how og ekspertise





Hyperscale Data Center

- Datasenter med relativ enkel teknologisk arkitektur der alt utstyr er standardisert og optimalisert til et spesifikt formål.
- Benyttes av skyleverandører som Facebook, Google, Apple m.m.
- Bygger ofte sin redundans i en global sammenheng ved samspill mellom flere datasentre.
- Disse sentrene er som regel gigantiske i størrelse og begrepet «Hyperscale» blir ofte brukt.
- Stort energibehov – grønn fokus



Industrial Design Data Center

- Colocation eller Multi tenant (flerkunde) datasenter
- Bygges for å betjene mange kunder
- Stor fokus på “grønt design”
- Måles ofte på virkningsgrad
- PUE og DCiE
- Sertifiseres av Uptime Institute



Datasenter effektivitet

PUE = Total Facility Power / IT Equipment Power

DCiE = IT Equipment Power / Total Facility Power

PUE	DCiE	Level of Efficiency
3.0	33%	Very Inefficient
2.5	40%	Inefficient
2.0	50%	Average
1.5	67%	Efficient
1.2	83%	Very Efficient



PUE **1.2** DCiE **83%**

www.42U.com

Efficiency
Information

DOE EPA

2009 Efficient Data Center
4.0 MW IT Equipment Power
4.8 MW Total Facility Power

Estimated Annual Electricity Costs Savings: >\$1 Million !
for a 20% improvement in Efficiency @ \$0.10 kWh w/4MW of IT Load

Actual Efficiency will vary with options,
efficient business strategies, end-user
habits and facility's condition.

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Uptime Institute



- **Tier I: Basic Capacity** A Tier I data center provides dedicated site infrastructure to support information technology beyond an office setting. Tier I infrastructure includes a dedicated space for IT systems; an uninterruptible power supply (UPS) to filter power spikes, sags, and momentary outages; dedicated cooling equipment that won't get shut down at the end of normal office hours; and an engine generator to protect IT functions from extended power outages.
- **Tier II: Redundant Capacity Components** Tier II facilities include redundant critical power and cooling components to provide select maintenance opportunities and an increased margin of safety against IT process disruptions that would result from site infrastructure equipment failures. The redundant components include power and cooling equipment such as UPS modules, chillers or pumps, and engine generators.
- **Tier III: Concurrently Maintainable** A Tier III data center requires no shutdowns for equipment replacement and maintenance. A redundant delivery path for power and cooling is added to the redundant critical components of Tier II so that each and every component needed to support the IT processing environment can be shut down and maintained without impact on the IT operation.
- **Tier IV: Fault Tolerance** Tier IV site infrastructure builds on Tier III, adding the concept of Fault Tolerance to the site infrastructure topology. Fault Tolerance means that when individual equipment failures or distribution path interruptions occur, the effects of the events are stopped short of the IT operations.





Note: Click on the marker for more information. Scroll or double click your mouse to zoom in and out.

Legend: Design Documents, Constructed Facility, Operational Sustainability, Multiple client locations, Exact location is not specified



Green Mountain



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MG 32 TERABYTES





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