

# Trends and legislations in the data center industry



Pär Åberg - Business Development Manager - Swegon

# DC – Fastest growing industry in the world

**NETFLIX**



**You Tube**



 Microsoft®  
Office 365



# Fast and furious



# IT services in the driving seat of the energy costs





# Let's focus on the server room only!

**Midsized company, server room 30 kW IT load**



**$30\text{kW} \times 24 \text{ h} \times 365 \text{ days} = 31\,536 \text{ EUR / Year}$**

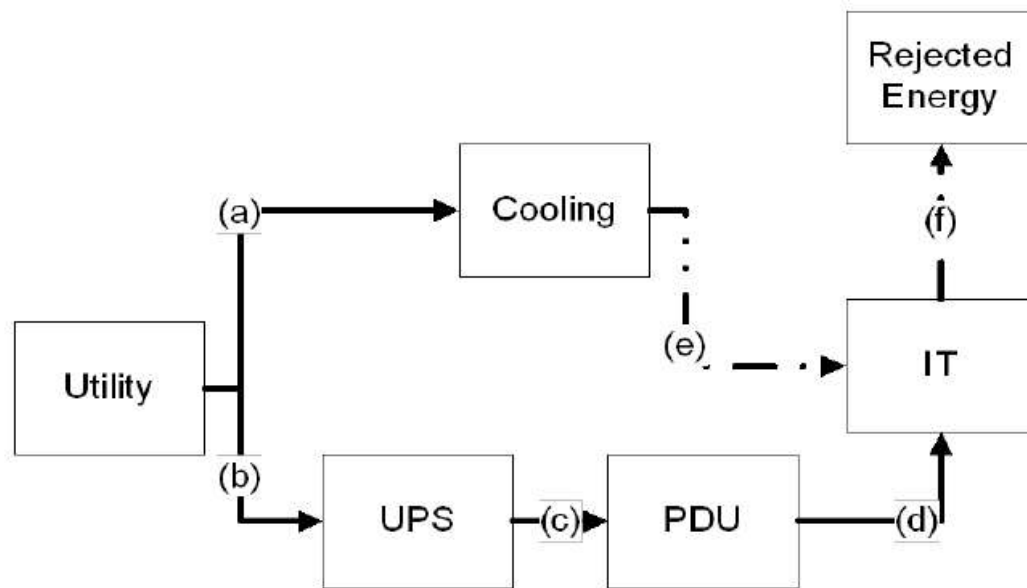
- EU-28 electricity prices for industrial consumers during the second half of 2014 averaged EUR 0.120 per kWh – Source Eurostat

# Not only the servers consume electricity!

Midsized company, server room 30 kW IT load



# Power Usage Effectiveness = PUE



$$PUE = \frac{\text{Total Energy}}{\text{IT Energy}} = \frac{\text{Cooling} + \text{PowerDistribution} + \text{Misc} + \text{IT}}{\text{IT}} = \frac{a + b}{d}$$

# Example

Midsized company, server room 30 kW IT load



IT equipment 30 kW x 24 h x 365 days = 31 536 EUR / Year

Supporting equipment 15 kW x 24 h x 365 days = 15 768 EUR / Year

**PUE = 1,5**



# Fact

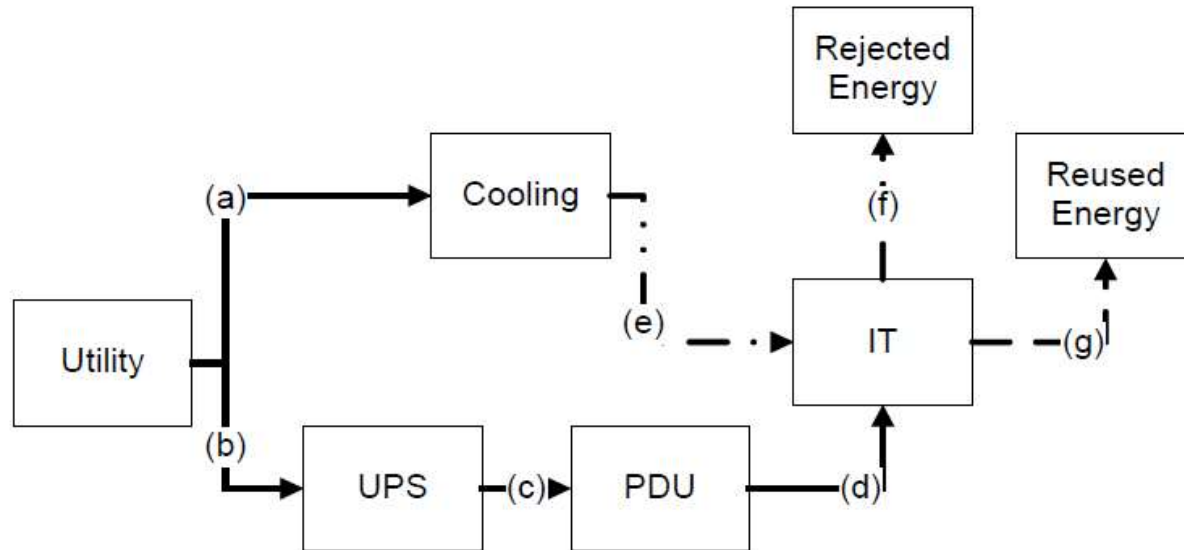
- Many datacenter / server rooms globally runs with PUE > 2.0
- The cooling system have the greatest impact of the PUE of the supporting equipment.
- Many Colo providers and cloud companies manage to run with PUE below 1.2. For example Facebook claims they run with PUE 1.07 at full load.
- In our example with the server room with 30 kW IT load - the difference between running with a PUE of 1.5 compared to 1.2 would be 9 460 EUR per year by using for example a free cooling system.
- Money talks!



**ASHRAE & friends (DOE, EPA,  
TGG, 7x24, etc..) do not allow  
reused energy in PUE & PUE is  
always >1.0.**

**Another metric has been  
developed by The Green Grid +;  
ERE – Energy Reuse Effectiveness.**

# Energy Reuse Effectiveness = ERE



$$ERE = \frac{\text{Total Energy} - \text{Reuse Energy}}{\text{IT Energy}}$$

$$= \frac{\text{Cooling} + \text{PowerDistribution} + \text{Misc} + \text{IT} - \text{Reuse}}{\text{IT}} = \frac{a + b - g}{d}$$

# Fact

- We have seen a very strong effort from some actors in the market to focus on the full picture and for example attach the datacenter to the district heating system - *Apple, Fortum, Eco Datacenter Falun*
- PUE will still be used to measure the efficiency of your Datacenter
- The market will come up with new methods to combine PUE and ERE into new standards.
- Money talks!



# But it is not all about the money!

**SECURITY / RELIABILITY**





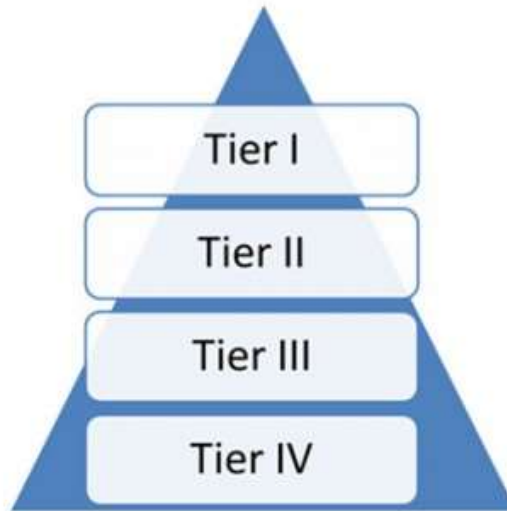
# TIER I – IV is an important standard for DC

**Uptime**  
Institute™



# All about availability

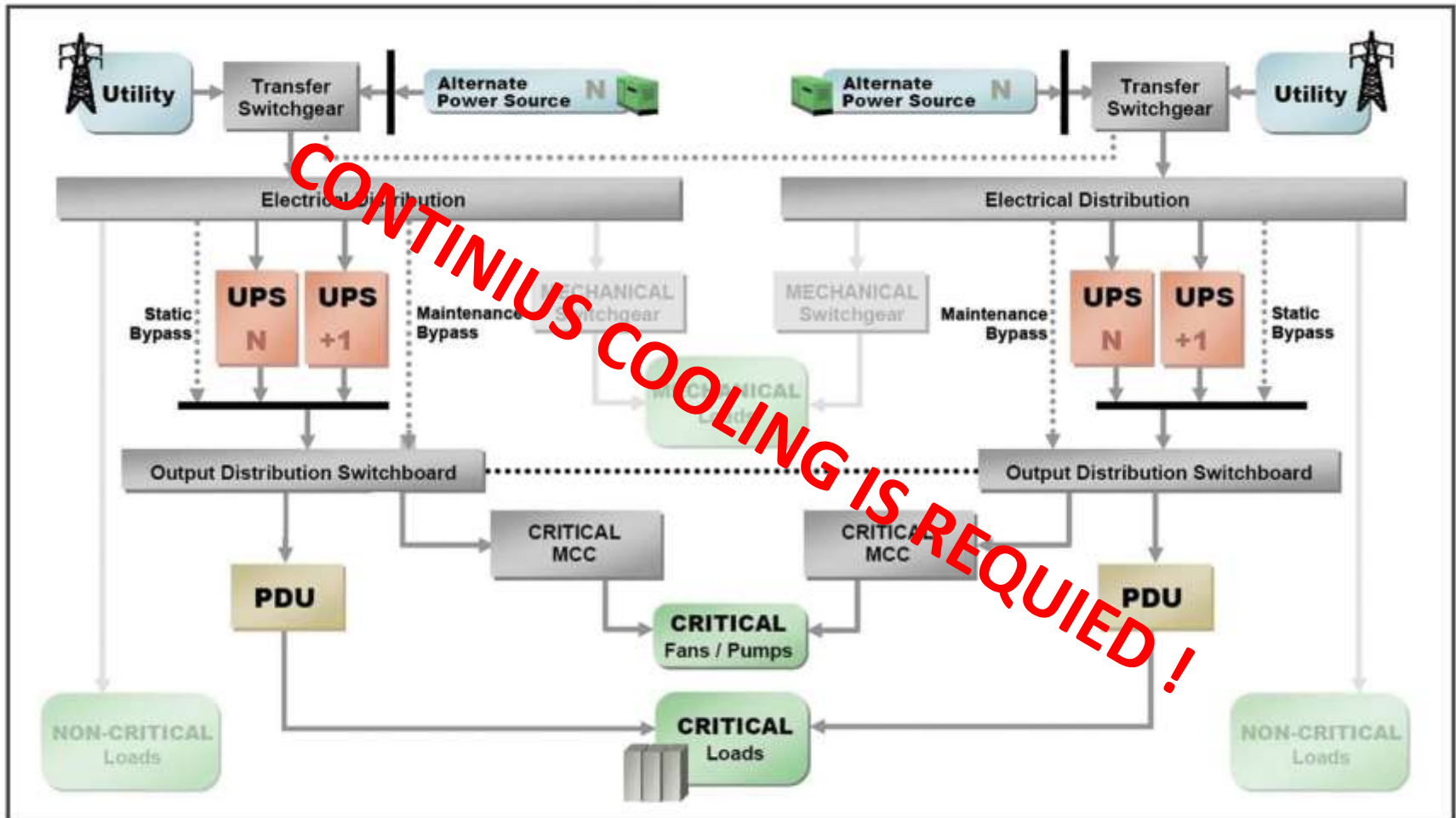
## Datacenter Classification



- No redundant capacity, single path to power with 99.671% availability.
- Tier I + Redundant capacity + 99.741% availability.
- Tier I + Tier II + dual power systems + 99.982% availability.
- Tier I + Tier II + Tier III + dual power systems + HVAC Systems + 99.995% availability.

Availability	Downtime		
	per Year	per Month	per Week
90.00%	36.5 days	72 hours	16.8 hours
95.00%	18.25 days	36 hours	8.4 hours
99.00%	3.65 days	7.2 hours	1.68 hours
99.90%	8.76 hours	43.8 minutes	10.1 minutes
99.99%	52.56 minutes	4.32 minutes	1.01 minutes
99.999%	5.26 minutes	25.9 seconds	6.05 seconds

# TIER IV example



# Fact

- **A higher demand for redundancy will effect your carbon footprint**
- **Not all standards are able to use for 24/7. For example some standards saying you put out a fire with water.**
- **A standard take long time to be accepted**
- **The IT industry are moving FAST!**
- **Sometimes standards can hold back innovation**



# But it is not all about the security!





# What is the EU code of conduct for Data Centers?



- **Increased Resiliency**
- **Improved Operational Efficiencies**
- **Reduced Energy Cost**

# What is about ?

**All people in the datacenter industry are aware of the growing need of energy consumption inline with the growing need of computing power.**

**The EU Code of Conduct was established to help to mitigate the effect of this increase in energy consumption with regard to environmental, economic and energy supply impacts**

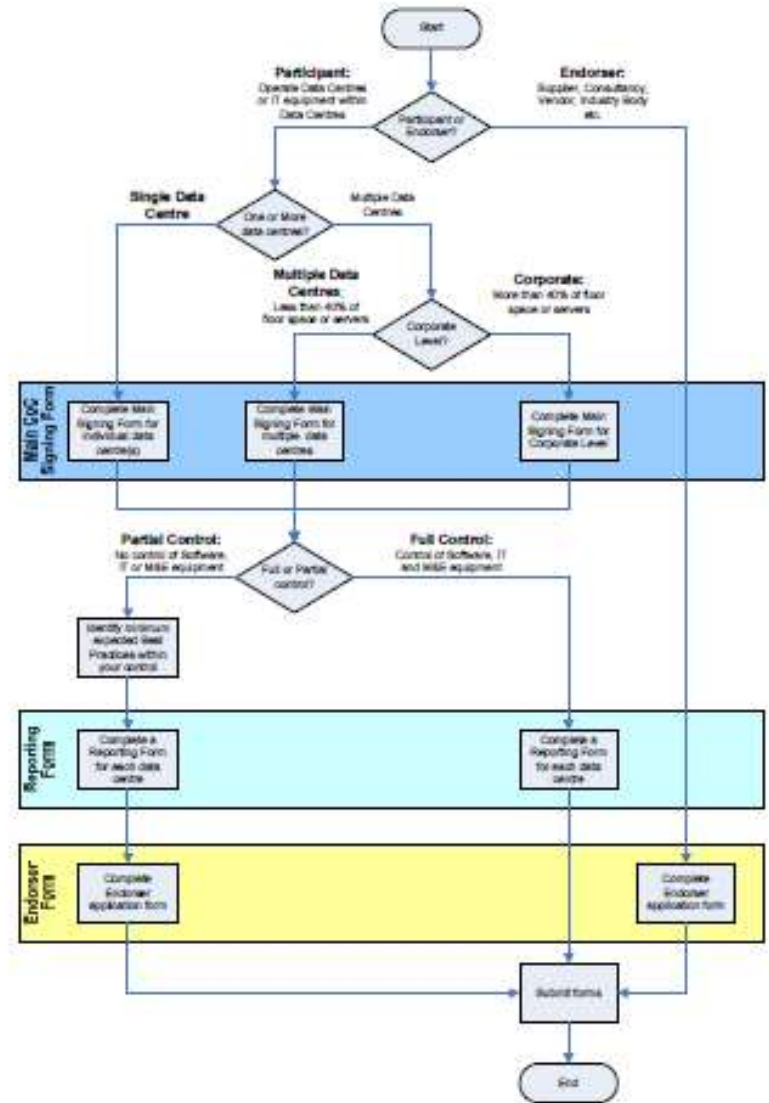


# What does the EU C.O.C do for data centres?

- **Inform and encourage datacenter operators and owners to reduce energy consumption in a cost-effective way.**
- **It sets out to achieve this by improving the understanding of energy demand within the datacenter, by raising awareness, and by recommending best practice and targets for energy efficiency**
- **Participation also helps datacenters to reduce their carbon footprints**



# Endorser or participant ?



# How will this new standard effect the datacenter industry ?

- **When people and companies starts to be aware of EU Code of Conduct For Data Centres - datacenter providers will be asked if they using the standard**
- **Manufactures of equipment to the datacenter need to educate them self of the standard and be able to answer how they following the standard with their products and solutions**
- **New consultant services for already existing consultant companies to help customers to participate in the EU COC**
- **EU financed projects will demand compliance with EU COC**





# How much IT will we use in 3 years ?



# Challenge to build to last for 15-20 years!



- **Build in steps – Modularity, pay as you grow**
- **Cloud services will have a great impact of the IT industry**
- **The interconnection will be even more important in the future**
- **Environmental and Security issues**
- **Regulations**

THANK YOU

