Panel Discussion

4 PRINCIPLES TO REALIZE THE BENEFITS OF OCP

Robert Bunger

Stijn de Kruijf

15 March 2019

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Introducing the Panelists

Mike Edie

Mechanical Engineer, Strategic Engineering, Facebook

Stijn de Kruijf

Data Centre Facility Developer, Royal HaskoningDHV

Russ Lindsay

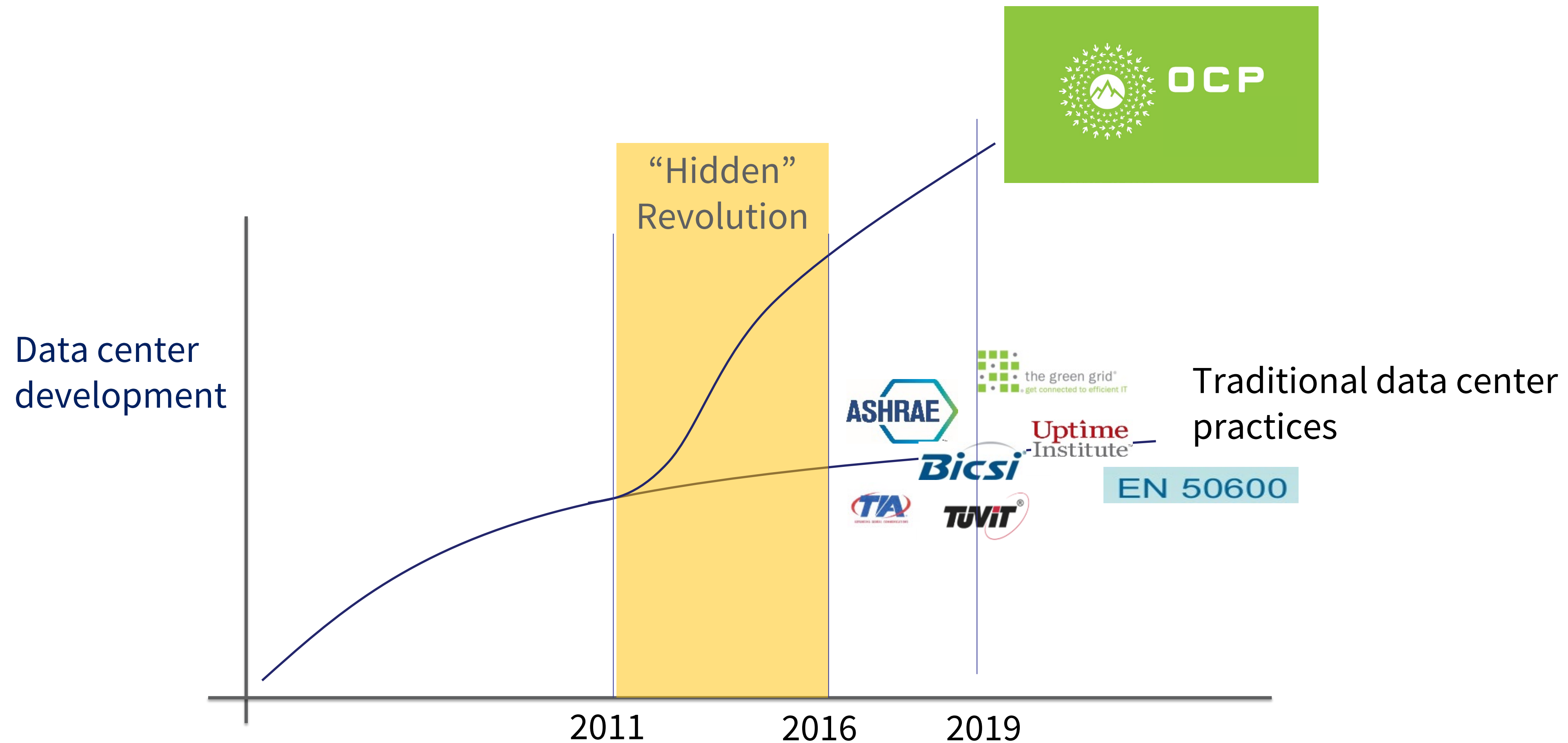SVP Infra Engr - Salesforce

Mike Moore

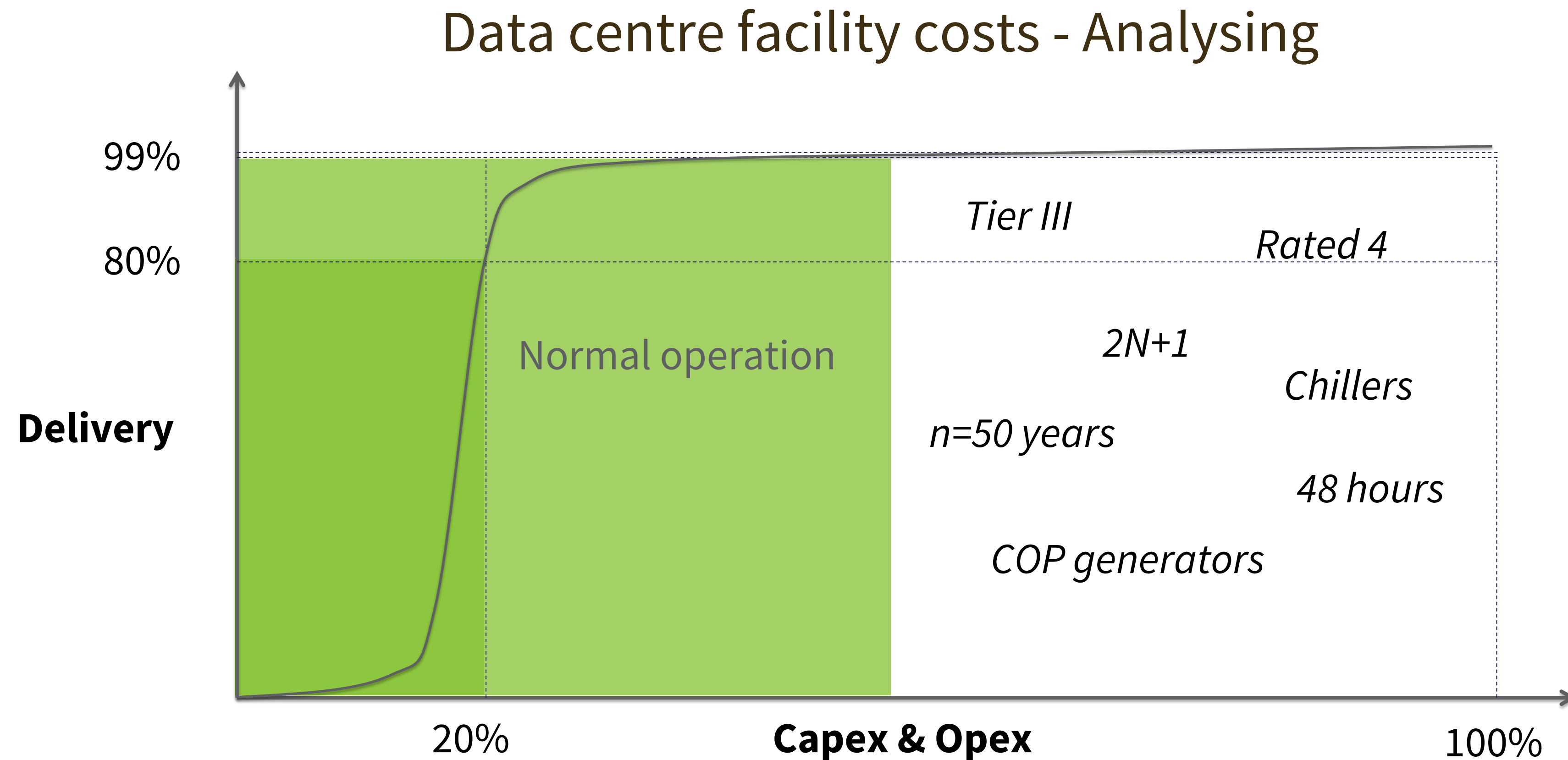Region Product Manager - Data Center Solutions, Nokia

Dale Sartor

Staff Engineer, Building & Industrial Applications, Lawrence Berkeley National Laboratory

Data center revolution continues…

Get rid of the 50%

Data centre facility costs - Analysing

50% of the data centre facility costs are for < 1% of the operation

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Opportunities?

What part of your data centre IT environment is really critical?

Uncontrolled shutdown of IT equipment causes 20% to fail automatic restarting

The maximum power of a rack and a row a racks can be controlled already in OCP. Why not use this possibility?

If you ramp down the your data storage access. Your data is not lost!

Geo-redundancy can take care of local capacity limitations

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Questions & Audience Polling

4 Principles Panel Discussion - Panel questions

Version 15 Feb 2019

Q1 OCP Temperature (BR) Environmental conditions

One of the key items is the temperature (and fuzz) around inlet temperature limits and what IT hardware can handle. Also a grey area is the temperature measured in the data centre facility, the temperature measured by the sensors in the IT hardware and the setpoints where automatic protection of hardware pops up by shutting down or capping processor capacity. Key item of OCP hardware is it can handle high inlet temperatures.

Question: What is your view on a new definition of temperature excursions allowed in the data centre facility using OCP hardware?

Q2 Generator farm

One of the key expenditures in the data centre is the generator farm. Although the availability of the electrical grid can be extreme high, still the data centre facility should supply 100% + 1 or 2 emergency power generators. Being aware not all of the data centre processes are that critical and within OCP power management is developed.

Question: What is your view on the idea to limit the amount of generators in the data centre, so the data centre has to have less power available in case of longer outage (e.g. > 5 minutes)?

Q3 OCP data centre facility

Current OCP facility guidelines are focussed on deploying OCP hardware in as many existing facilities. Being aware not all benefits using OCP gear are 100% used. See https://www.youtube.com/watch?v=rhVlg57O3P8&feature=youtu.be for the video of Robert Bunger. OCP gear deployments are growing. Also reuse of OCP racks is currently a hot topic.

Question: Would there be a market in the near future for OCP colocation facilities with in rack UPS?

Q4 OCP rational/principles beyond the rack

The OCP rational is, that one server in a rack can fail and in some cases the whole rack with servers, saving a lot of redundant equipment in the server and in the rack. For the data centre facility a lot of costs are related to provide 2N (live live) power feeds to each and every rack.

Question: What is your view of redefining the power redundancy to the rack, row of racks or pods?

Q5 Chinese wall (BR) Divide between IT hardware (data) and facility

(SdK) In the data centre from the past there is a chinese wall between IT hardware and Data Centre facility. The data centre facility could operate more efficient (PUE) if information data is disclosed from the IT hardware. E.g. all sensor data (temperature, flow, pressure, fan speed) in the rack. Google has already trained neural networks for data centre facility operations. Machine Learning Applications for Data Center Optimization - Jim Gao, Google https://research.google.com/pubs/archive/42542.pdf

Q6 GAP between OCP and guidelines

(BR) Traditional standards and guidelines published by industry organizations and referenced by data center designers and developers do not necessarily support OCP principles of Efficiency, Scalability, Impact, and Openness. Data centers designed, constructed, and operated outside of these traditional methods have had significant impact on the industry.

Question: How should we deal with the GAP between OCP and the guidelines on the market (Uptime, TIA 942, BICSI)?

Q7 OCP gear in colocation data centre facility

4 Principles Panel Discussion - Audience questions

Version 15 Feb 2019

QA1. If the hardware can handle it, would a max. server inlet temperature condition 35 degrees Celsius / 95 degrees Fahrenheit acceptable for you?

Yes, why not	No, don't go there

QA2. Can you imagine operating in 5 years, a data center facility without emergency generator backup?

Yes, we can something workable without	No, don't go there

QA3. Would there be a market in 5 years for OCP colocation facilities with in-rack UPS only?

Yes, let's do it	No, no market for this

QA4. Are the power distribution paths to a row of racks of N acceptable in large scale deployments?

Yes, no problem	No, don't go there

QA5. Is there a need for a blank sheet guidelines for OCP?

Yes, Blank sheet OCP guidelines is required	No, we can work with the current guidelines Uptime Institute, TIA-942, BICSI

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1: OCP Environmental Conditions

DATA CENTER FACILITY

Would it be acceptable for the design of your data center to have a maximum server inlet temperature condition of 35 degC (95 degF)?

YES, NO PROBLEM   NO, DON'T GO THERE

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2: Emergency Generator Capacity

DATA CENTER FACILITY

Can you imagine operating a future data center with an emergency power generator capacity < 80% of the normal operating load capacity?

YES, NO PROBLEM   NO, DON'T GO THERE

3: OCP Data Center Facility

Would there be a market in the near future for OCP colocation facilities with in-rack UPS?

DATA CENTER FACILITY

YES, LET'S DO IT

NO, THERE IS NO MARKET FOR THIS

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4: OCP Principles Beyond the Rack

DATA CENTER FACILITY

Is the power distribution to a row of racks of N acceptable in large scale deployments?

YES, NO PROBLEM   NO, DON'T GO THERE

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5: OCP and Industry Guidelines Gap

DATA CENTER FACILITY

Do you reference industry standards or guidelines (S&G) in your design such as Uptime Institute, TIA-942, BICSI, etc?

YES, REFERENCE EXISTING S&G IN DESIGNS

NO, EXISTING S&G DO NOT MATCH NEEDS
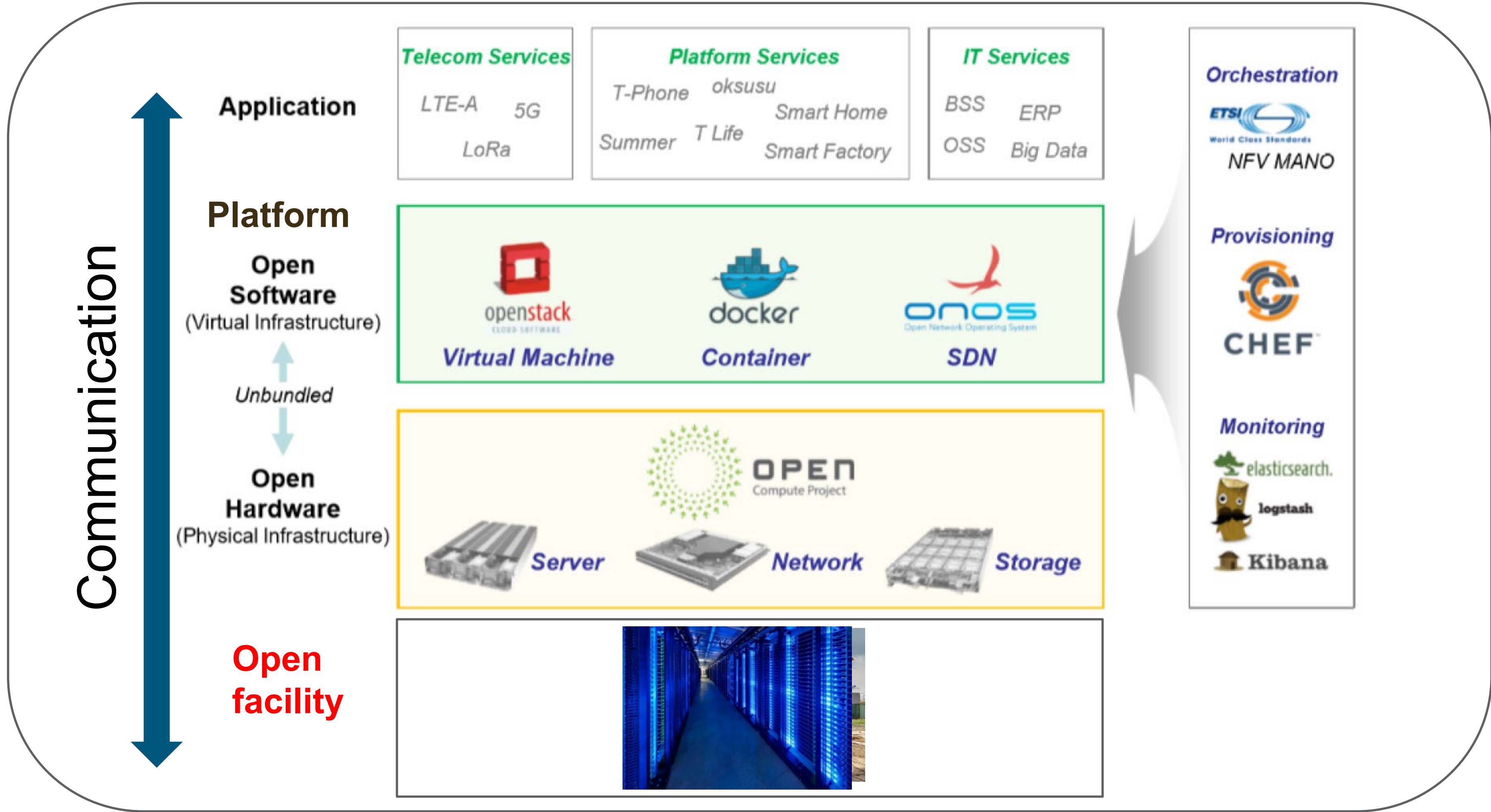
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6: Divide Between IT and Facility

Is communication allowed between facility and IT to improve overall energy performance of facility and IT?

YES, FACILITY IS INTERGRATED PART

NO, FACILITY SHOULD BE SEPARATE

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OCP integrated data center?

Question and Answer

- Raise your hand if you have a question or comment

- Microphone will be brought to you

- Speak clearly into microphone to ensure your input is captured in the recording of the session

DATA CENTER FACILITIES

Testimonials Seminars

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Interested to contribute OCP Data Center Facility Project?

Please join

Data Centre Project Mailing List

- https://ocp-all.groups.io/g/OCP-DCF

Data Centre Facility Project Wiki

- https://www.opencompute.org/wiki/Data_Centre_Facility

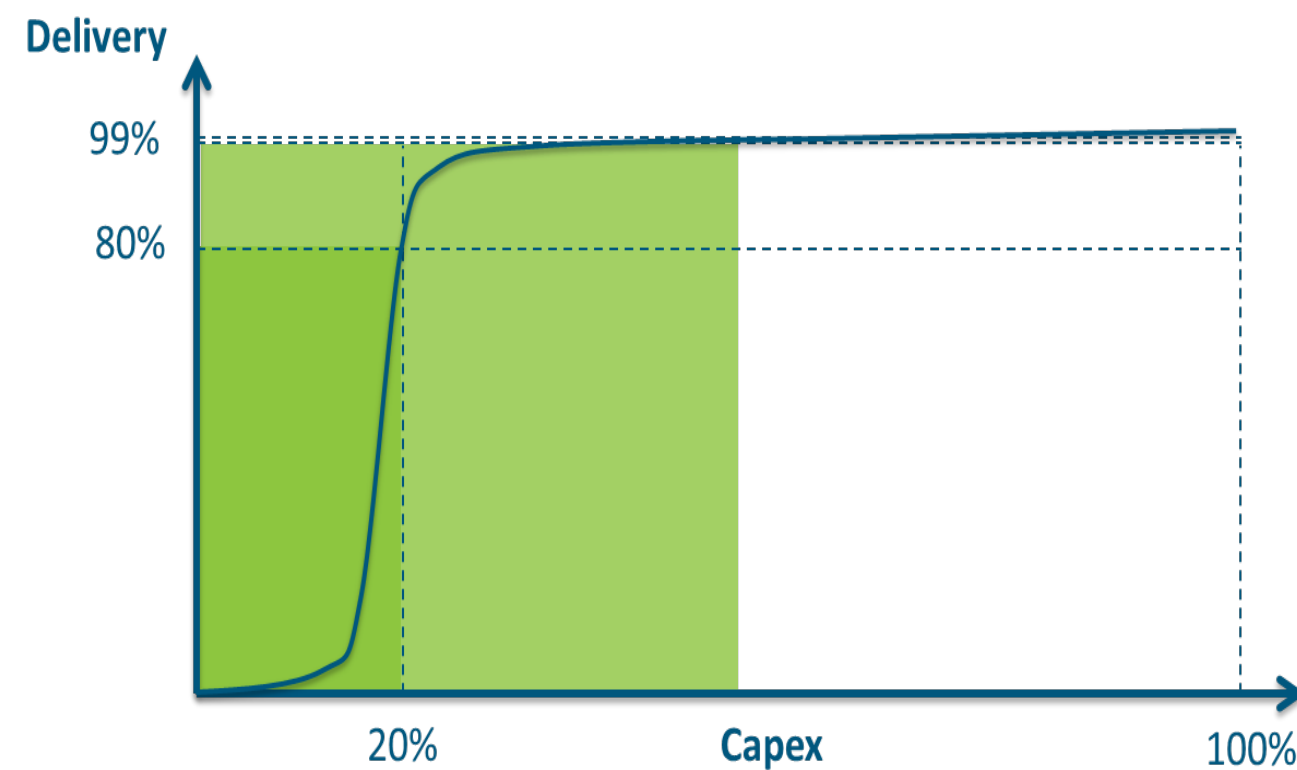**Colo Facility Guidelines for OCP Racks**

- https://www.opencompute.org/wiki/Open_Rack/SpecsAndDesigns

Colo Facility Guidelines Checklist

- https://www.opencompute.org/wiki/Data_Centre_Facility/colosp

4 principles open for new ideas

1 Get rid of the 50%

2 Blank sheet guidelines

3 Event response

4 Integrated DC Communication

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