



Lessons Learned From Evaluating Over 300 Public Sector Data Centres in Europe

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<https://www.dceureca.eu>



Project Overview

- Aim: Assist the public sector with the uptake of innovative energy efficient and environmentally sound data centre products and services.
- Project started on 1st March 2015 and runs for 36 months.
- Partners come from four main countries (Germany, Netherlands, UK and Ireland), with wider EU focus.



maki Consulting GmbH
Life cycle expert services



Greenit
amsterdam region



Carbon³ IT

€2,200B

EU Public Sector
Spending (19% of
GDP)



So far

- Supported projects in UK, Ireland, and Netherlands with further outreach activities in Latvia, Sweden, Spain, France, Italy and Germany
- Identified savings of over 15GWh per year in innovative consolidation, retrofit, and new build data centre projects,
- Organised 11 events across Europe, with three more to go in Ireland, Germany and UK.

So far

- Trained over 250 professionals, expecting to reach 500 by February 2018
- Provided input into standardisation, e.g. EN50600-99-2
- Impacted EU policies such as: EMAS, GPP, and Ecodesign.



Lessons Learned over the past 30 months

Challenges

- Cost of maintenance of facilities
- Maintaining uptime / resilience of services
- Rightsizing new builds

Challenges

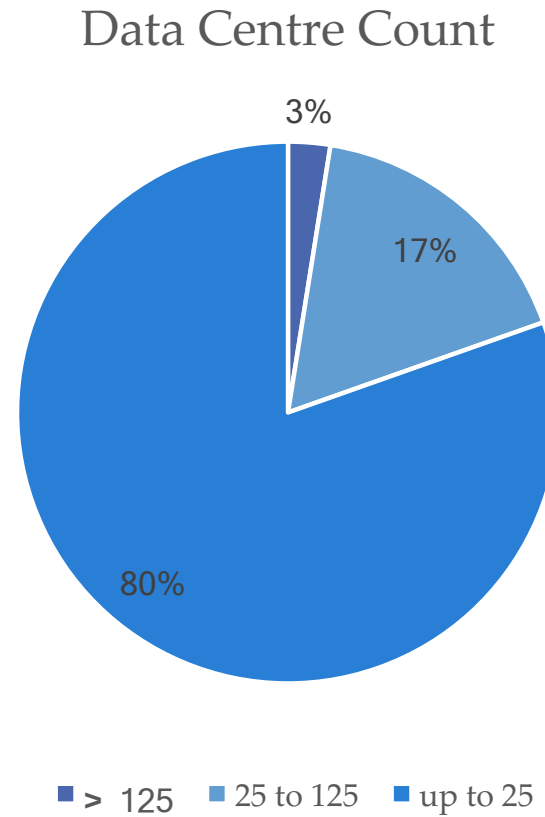
- Complexity of procurement
- Insufficient Priority
- Complexity of technical landscape

Stats

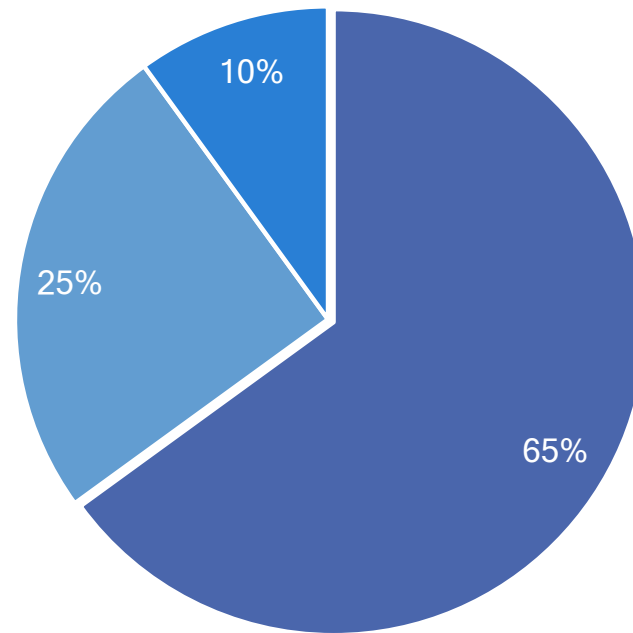
Power Utilisation Effectiveness

1.5 < PUE < 7+

DC Size (in rack count)



Energy Consumption breakdown by IT Equipment type

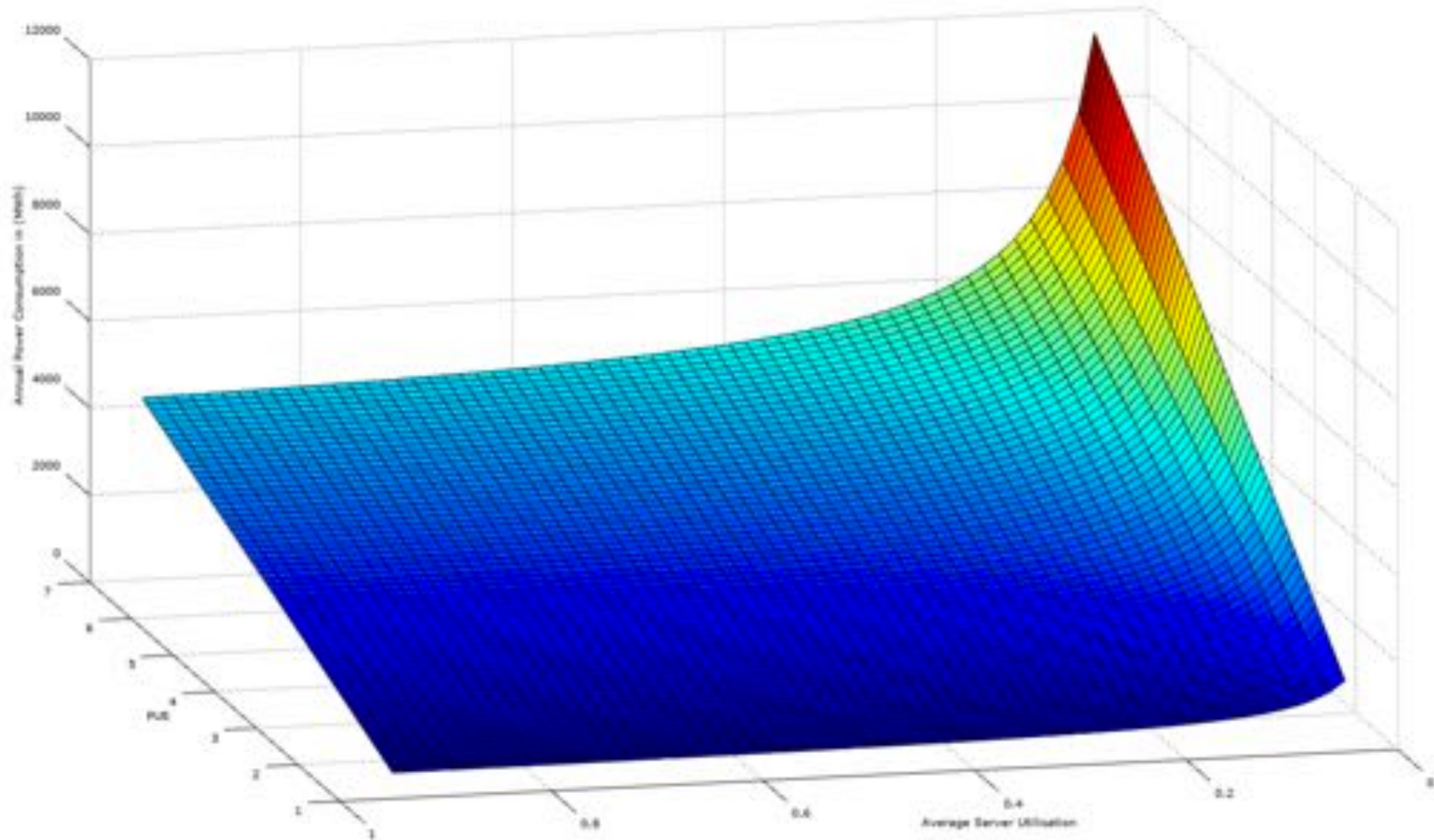


■ Servers ■ Storage ■ Networking ■

14,000 €

Server Utilisation

15% < avg < 25%

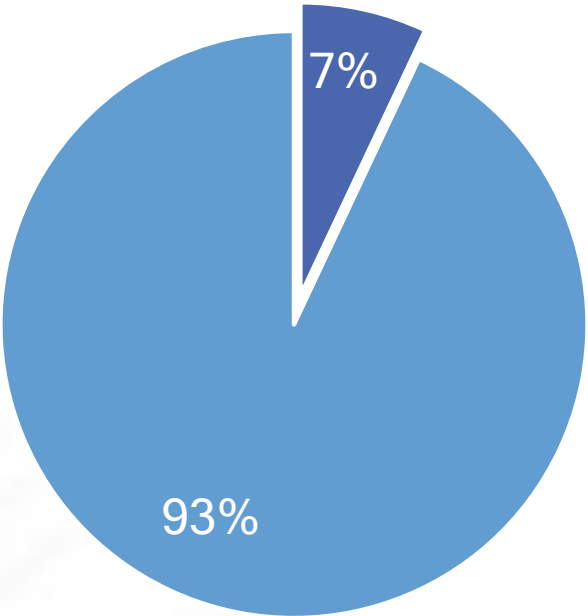


Points affecting server utilisation

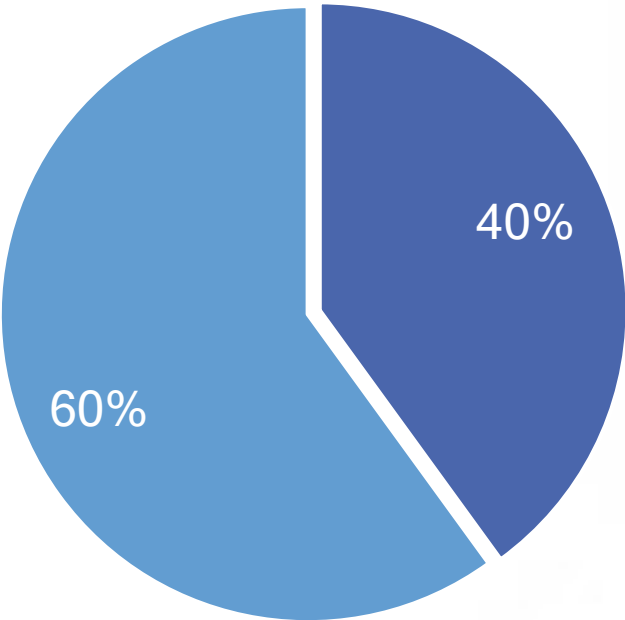
- Active – Active / clustering deployments
- Peak utilisation vs performance degradation
- Ensuring there is enough capacity in the system to cater for workload peaks
- Having the right server configuration for the workload

Server Distribution

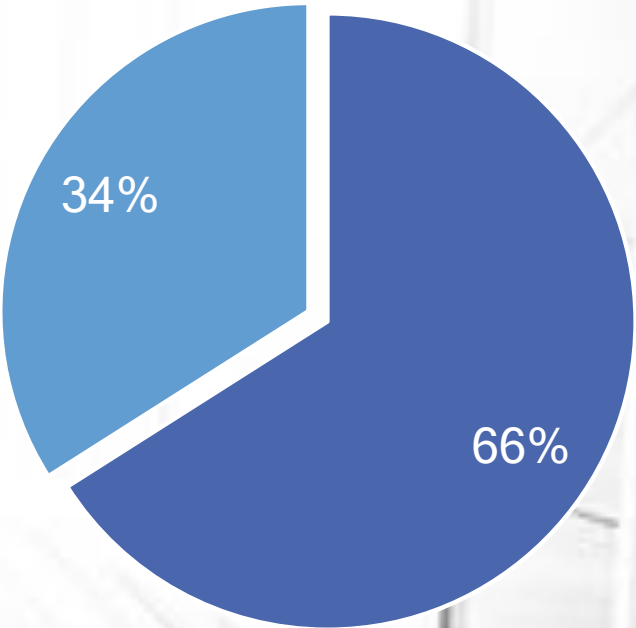
Compute Capacity



Age



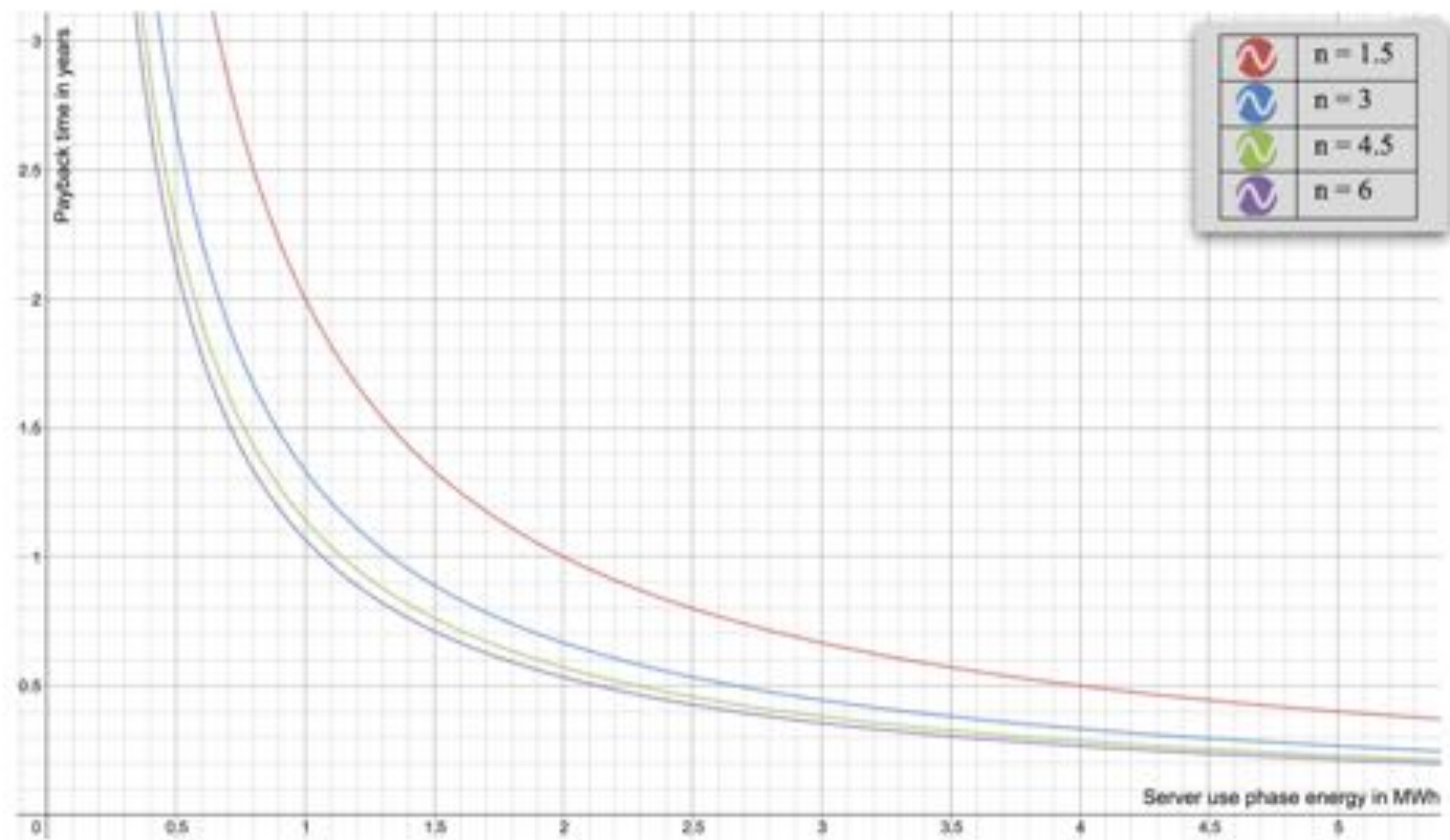
Energy Consumption



■ > 5 years old

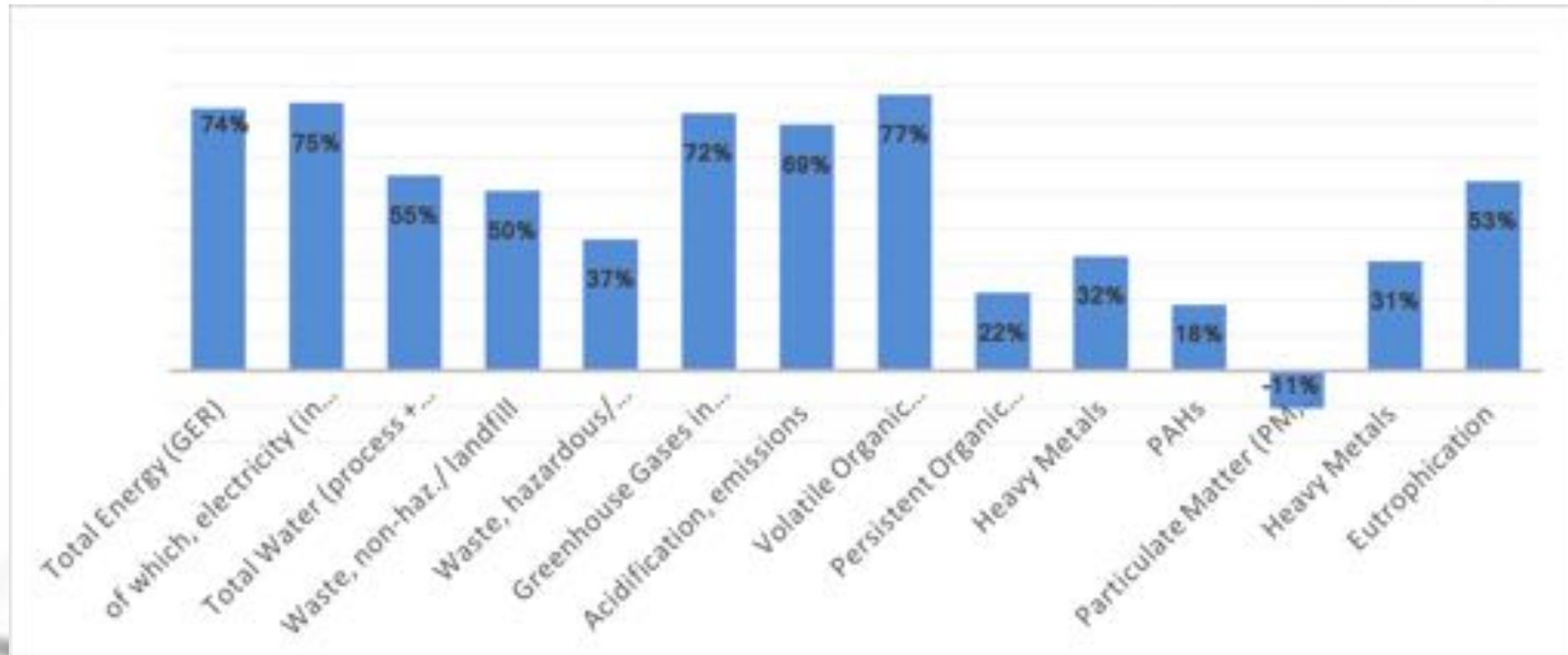
	Scenario	PUE	β	Annual Use Phase Energy in KWh (for running workload ω)					
				Hardware 1 (7.5Y old)	Hardware 2 (6Y old)	Hardware 3 (4.5Y old)	Hardware 4 (3Y old)	Hardware 5 (1.5Y old)	Hardware 6 (Current)*
On-Premise (non-virtualised)	Worst	3	5%	51,372,685	15,414,061	12,840,312	6,257,229	2,453,698	2,093,779
	Average	2	10%	17,708,754	5,533,001	4,617,433	2,356,780	952,302	820,422
	Best	1.5	25%	5,838,699	2,015,383	1,688,826	950,967	406,652	356,373
Colocation (non-virtualised)	Worst	2.5	5%	42,810,571	12,845,052	10,700,260	5,214,358	2,044,749	1,744,816
	Average	1.8	10%	15,937,879	4,979,702	4,155,690	2,121,102	857,072	738,380
	Best	1.3	25%	5,060,206	1,746,666	1,463,650	824,172	352,433	308,857
On-Premise (virtualised)	Worst	3	6%	43,102,834	13,042,542	10,868,925	5,349,876	2,111,950	1,806,064
	Average	2	30%	6,682,286	2,370,976	1,988,917	1,146,976	496,637	436,802
	Best	1.5	60%	2,944,252	1,185,352	998,841	633,394	287,041	255,673
Private Cloud	Worst	2.5	7%	30,996,498	9,457,166	7,883,993	3,918,139	1,556,537	1,333,795
	Average	1.8	30%	6,014,058	2,133,878	1,790,026	1,032,279	446,974	393,122
	Best	1.3	60%	2,551,685	1,027,305	865,662	548,941	248,769	221,583
Public Cloud	Worst	2	7%	24,797,198	7,565,733	6,307,194	3,134,511	1,245,229	1,067,036
	Average	1.5	40%	3,977,983	1,481,792	1,245,265	746,813	329,759	291,637
	Best	1.1	70%	1,942,527	807,147	680,852	440,725	201,546	179,958

* As of 2016



Points affecting hardware refresh

- Budget availability and accounting practices
- Misconception about environmental impact



The major impact areas

- Facility
 - Right-sizing DC capacity
 - Right-sizing availability/redundancy
- IT
 - Optimise hardware refresh
 - Increase utilisation

Working together

- Market place
- Share success stories
- Benefit from the EURECA Services available (tools, knowhow, etc.)
- Contribute to shaping the project
- Further details on: <https://www.dceureca.eu>

Training Certificates

- 1) Register/login: <https://www.dceureca.eu>
 - 2) Scan code below and request certificate
- PS: Ensure you've signed the attendance sheet



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