techUK comments
Findings of the DG CNECT workshop on KPIs for Green Data Centres

September 2014

Introduction

techUK would like to thank DG CNECT for sharing the outcomes of the workshop on 1st April, which was much appreciated. We submit the following comments in response to the findings of the discussion on developing KPIs for green data centres and the resultant recommendations.

techUK represents the technology sector in the UK. Our members include data centre operators, both colocation and enterprise providers, companies who manufacture the IT and communications hardware that occupy these facilities and others in the data centre supply chain. The UK has the largest data centre market in Europe by a significant margin¹ and as a result we take a close interest in policy developments impacting our members.

Summary comments

In general we were very pleased to see that the workshop process made good use of the industry expertise available to it. We were particularly encouraged to see that our (and others) comments on the need to make use of existing tools have been adopted and that the discussions as recorded reflect industry perspectives. We also support the summary findings and almost all the detailed recommendations. We have reservations about mandating the Code and would like to reinforce the points made by participants about “green” power. We would like to draw to your attention a number of technical points relating to definitions and referencing and have also identified a policy process issue that needs to be addressed.

Detailed comments

General Findings: We strongly support:

- The recognition that the growth in data centres and associated services is the result of the drive for faster internet and that policies promoting growth in bandwidth need to take account of impacts on energy use.
- The recognition that there are many metrics and indicators and that filtering, harmonisation and promotion are required, not new metrics or indicators.
- The recognition that the EU Code of Conduct for Data Centres (EUCoCDC) is an important part of the solution.
- Moves by the EC to translate, promote and help to maintain its own tool, the EUCoCDC.
- The use of best practice guidance rather than policies to drive energy efficiency.

¹ DCD Intelligence 2013 Census, CBRE Market View, European Data Centres Q2 2014
General Findings: We agree

- That it is inappropriate to use PUE to compare data centres (it was designed to compare the performance of a single site against itself over time).
- That new policy measures on data centres are unlikely to add further incentives for efficiency in view of the energy intensity of data centres.
- That data centres should be viewed at system level.
- That new policies must not negatively impact the enabling effects of data centres on other parts of the economy.
- That the focus of energy efficiency activities should remain on the use phase for the time being.

Recommendations

Section 2: We fully support all the recommendations listed under point 2.4.

Section 3: We support the first three recommendations listed under point 3.4
The fourth and fifth points are not recommendations: they appear to record discussions rather than decisions. Moreover, the issues regarding the applicability of lifecycle approaches for data centres have not been resolved.

Section 4: We support the recommendations listed under point 4.4 in general. A data centre must be regarded as a system and a combination of component- and system-level approaches is appropriate for driving good energy stewardship.

We have reservations about mandating the Code

- While we agree that modest funds should be made available to maintain the Code we do not believe that the Code should be mandated at present. The Code is a voluntary tool and a mandatory requirement may create legal uncertainty. However, the adoption of relevant Code best practices could be mandated and participation should be included in award criteria in the procurement process. We also support moves in public procurement that require candidates to indicate whether or not they are code participants (such as the UK government’s Cloud Store where procurers can select bidders against this criterion should they so wish). We would also encourage relevant procurement frameworks to endorse and promote the Code.

We would reinforce the comments on “Green” energy

- Although not included in the recommendations the report indicates agreement among participants that the purchase of green power should be handled carefully to avoid greenwashing and prevent purchasing policy being used as a substitute for good energy stewardship. We would suggest that to be categorised as “green”, such purchases must demonstrate additionality (i.e. must genuinely drive additional investment in renewables). Efficiency must always be prioritised.
Policy Process issue

- Stakeholders have observed that the approach to consultation lacked transparency and the invitees appeared to be somewhat randomly selected. While the industry marshalled itself to try and ensure that those with relevant expertise attended, key technical and policy stakeholders were missing from the invitation list\(^2\). In complex, rapidly evolving and highly technical industry sectors like data centres it is absolutely essential that policy making is properly informed by open dialogue with individuals who are fully conversant with recent technological and market developments and who understand and can articulate the art of the possible in this field.

- We have therefore attached an annexe that identifies the largest data centre markets in the EU and those that are the fastest growing, since policy measures will be most relevant to these regions. We also identify the main representative bodies for the data centre industry in Europe. These include professional bodies, standards development organisations, trade associations and industry alliances. We hope it is of help in ensuring open and constructive stakeholder dialogue moving forward.

Issues of logic (non-sequiturs or failure to demonstrate cause and effect)

- The statement that EC involvement is needed because industry initiatives have not yet provided indicators suggests that the writers have significantly underestimated the scale, complexity and difficulty of the job, the immaturity of the industry and the fact that standards development is an iterative process. We would be interested to see evidence that the Commission is capable of producing better tools than those developed by industry. The logic of the statement is not proven.

- The focus on comparing facilities at point of use is problematic both in terms of logic and application. The industry is already highly motivated towards energy saving but site characteristics vary, so a tool that allows a site to be compared with itself over time is much more useful than a tool that allows comparison between sites. In an energy intensive sector price is the most powerful indicator of efficiency because an inefficient facility simply cannot compete.

- The statement that the development of new policies is the only way to lower the ICT industry’s own footprint is not logically derived or evidenced. Policy tools have been effective in some areas, self governance tools in others. An intelligent balance is required.

Issues of provenance: statements without source, adequate explanation or attribution

- Statements that need further qualification: The definition of a data centre cites only “European standardisation” as the source. There are many definitions, some more widely used than others and this should be acknowledged.

- Statements that require further referencing: “Since 2012 the electricity consumption of data centres has reached 2% globally at high annual growth rates” is inadequately sourced and we suspect that the source data includes some exceptionally high levels of uncertainty that

\(^2\); for instance, the technical expert from the EU Code of Conduct for Data Centres, Mark Acton, was initially refused access to the meeting on the grounds of being “not technical enough” to attend. A formal invitation was issued only after the intervention of JRC and when it was too late for him to arrange travel.
are not reproduced here. The same applies to the statement “[data centres] show a strong exponential increase in global energy consumption and hence emissions: Data centres consume today more than 2% of global electricity (expected to double soon)” which is unreferenced and, moreover, unlikely to be accurate.

Technical issues: definitions, terminology

- The use of the term “exponential growth”. While exponential growth is technically simply cumulative growth, rather like compound interest, the way that it is generally perceived means that we have to be very careful when describing a growth curve as exponential. While the increase in demand for, and movement of, digital data is indeed increasingly exponentially as the illustration below shows, the impact on energy use by data centres is much more muted because of the effect of Moore’s Law. The additional effects of outsourcing and virtualisation are not accommodated in this chart but would further reduce the rate of increase in energy us, as would the impacts of efficiency measures articulated in tools such as the EUCoCDC.

![Graph showing data traffic, impact of improvements in processor technology, and consolidation, virtualisation, and improvements in cooling technology](image)

Note the black line indicates data traffic, which is indeed growing exponentially. The other two lines demonstrate the impact of improvements in processor technology on this growth curve (Moore’s law and actual increases in processor efficiency green and red respectively). Additional efficiency measures such as consolidation, virtualisation and improvements in cooling technology are not accommodated but would further reduce the gradient of the line.

Other issues

- We (naturally!) take issue with the statement that “the environmental benefit of the UK’s Climate Change Agreement (CCA) was doubted”. techUK administers this scheme and, considering that it had not started by the workshop date, it is unlikely that any participant was in a position to make an informed comment. There are compelling reasons why the CCA will improve energy stewardship in the UK sector in a measurable way. techUK has already issued an analysis of the efficiency measures that will be implemented as a result of the scheme and will be issuing further data at the end of 2014 and then again in 2015. We will be pleased to share this.

- We note and welcome the many FP7 and H2020 funded projects that involve data centres and would be very interested to understand more about the measurable benefits that have been delivered by these projects or that are emerging from the research, since this will be of value to the sector and help ensure a joined-up approach.
Much emphasis is placed on the energy intensity of the sector so we would like to understand why data centres are not listed under the relevant EUETS annexe along with other energy intensive sectors.

Conclusion
We are very pleased to see that the views of industry experts and relevant stakeholders are being accommodated in the workshop outcomes, that the importance of the EU Code of Conduct has now been recognised, that guidance rather than regulation is the preferred approach and that this guidance will build on existing approaches. This has to some extent mitigated industry anxiety about the low level of understanding regarding data centres demonstrated in the original report, the unrealistic expectations regarding development of KPIs for this complex and rapidly evolving sector and the lack of transparency in the policy process.

Data centres underpin the digital economy and enable the information society, both of which are Commission priorities. Data centres are critical to our economic wellbeing. They are highly complex, highly technical and evolving rapidly. They are location agnostic – especially those providing cloud offerings, where there is the greatest capacity for growth. We recognise that we are at a critical point on the climate change agenda, that it is essential that we meet our carbon reduction targets and that all sectors must contribute by improving efficiency. We also welcome the recognition that, appropriately applied, the ICT and ICT-enabled technologies that data centres deliver have an important role to play in reducing net carbon emissions. However, ill-informed policy tools have the potential to drive business out of the EU and unilateral carbon taxes can cause carbon leakage unless intelligently applied. We look forward to working together with policy makers on achieving balance on this problematic and important agenda.

Further information
We do hope these comments are helpful. If you need further information or clarification please do not hesitate to get in touch. Contact details are below.

**techUK** [www.techuk.org](http://www.techuk.org)

TechUK represents the technology sector in the UK. This includes information and communications technologies (ICT) and consumer electronics (CE) sectors, including defence and space-related IT. Collectively this sector now employs well over 1 million people and contributes around 10% of UK GDP. techUK has over 850 members ranging from start-ups to leading FTSE 100 companies. The majority of our members are SMEs.

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