

# Data Centre Evaluation:

*The Right Approach*



## *DATA CENTRE EVALUATION: The Right Approach*

I have been thinking about this subject for a number of years now, it all started back in 2008 after the financial crisis, when many of the financial firms had their assets evaluated whether for chapter 11 purposes or for mergers/acquisitions.

Whilst many may argue the value of the financial firms lies within their balance sheet and client portfolio, there were significant real estate assets, including data centres that were evaluated and those were figures that could not be ignored.

The one that stood out for me, was the Lehman Brothers story, not only because it was the one that dominated the news and shook the world, but for me personally, they were one of my major clients and I knew their data centres well.

Rumours had started that Barclays would acquire Lehman Brothers, and although they were too late to save them, they still acquired their European and North American business including their assets, whilst the Asia Pacific arm of Lehman Brothers was acquired by Nomura.

Part of the acquisition were some very large data centres, some of which were new.

It is common practice for such large deals, that some of the big 4 consultancies are involved, especially in the evaluation process, where they evaluate the business as well as the assets.

Having dealt with the big 4, I know that data centres as far as they are concerned are another real estate asset, where they apply rules of thumb per sf or per m<sup>2</sup> to reach an approximate value of the asset.

This provides reasonable accuracy for commercial or residential real estate, however it may be very far off the actual value for technical real estate such as data centres.

When the deal was complete, Barclays had made a fantastic acquisition, for many reasons, but for me it was the data centres.

To understand why I felt that the data centre acquisition was a fantastic acquisition, I would like to explain how I evaluate data centres and what the data centre 'value' may be.

As an engineer, we have always been taught that Value = Function/Cost, thus you increase value by improving functionality or reducing costs. This is far too simplistic, and in many cases, is misinterpreted where cost reduction becomes the modus operandi for many organisations, especially the procurement teams.

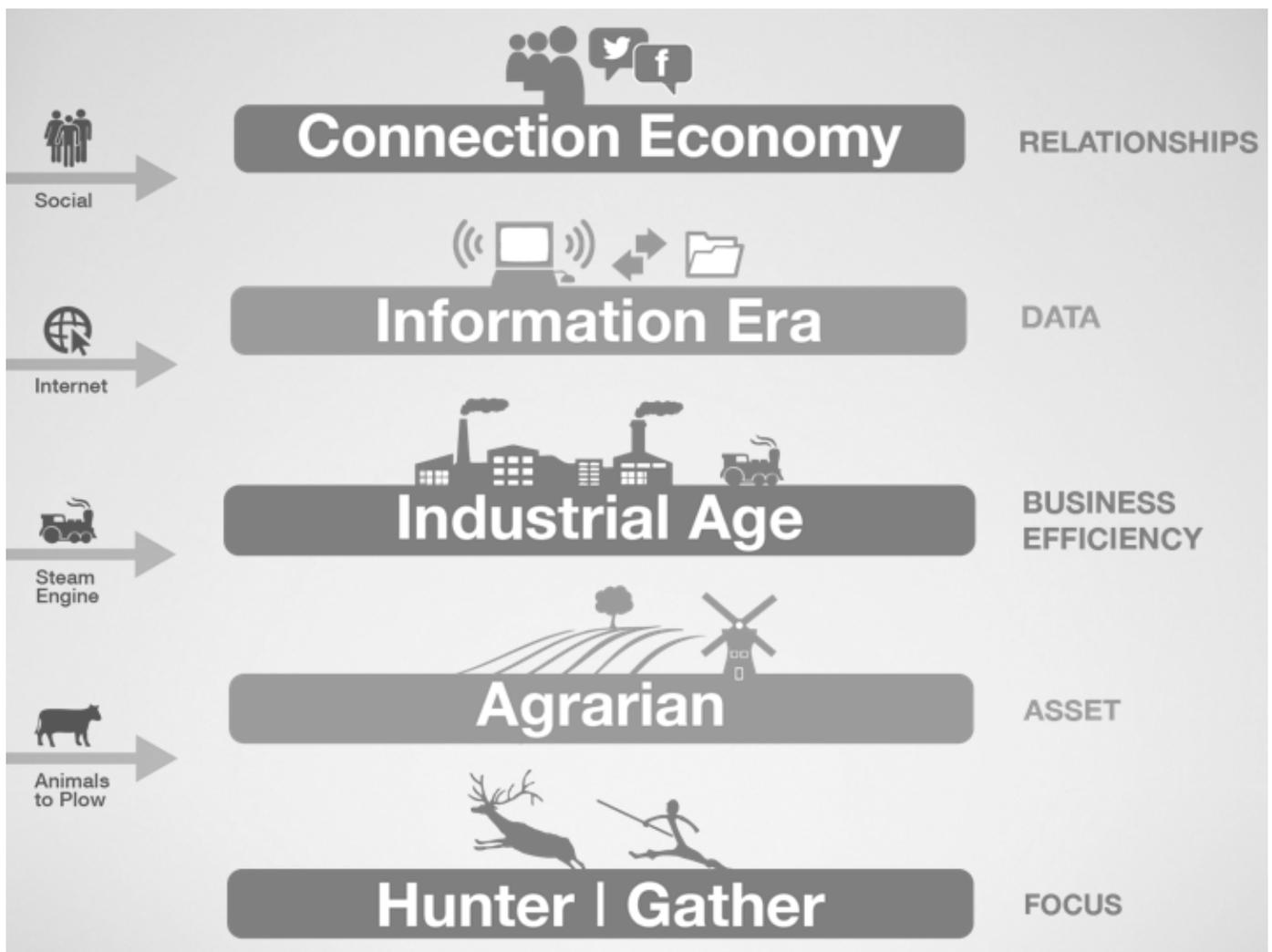
I have always been a fan of the definition of value that Adam Smith first coined and refined by Karl Marx, with the latter defining crucially two types of Value, 'Use-Value' and 'Exchange-Value'.

## USE-VALUE OF A DATA CENTRE

By definition, the use-value of a commodity (assuming data centres are also a commodity, which they are), is its usefulness based on its physical property.

Commodities and their value has changed through the times as societal and technological revolutions drove major paradigm shifts.

The illustration below depicts the main revolutions from hunter/gatherer through to the modern day 'Connection Economy'



Whilst many recognise the invention of the stationary steam engine as the key driver behind the industrial revolution, data centres are yet to receive the same recognition for the information era and the connection economy.

In an article written by Martin Banks in 2006, he referred to data centres as the new utility, an ITility if you wish, which is very fitting and analogous to the steam engine and the industrial revolution.

The industry is seeing more and more data centres become ITilities, with my forecast being that data centres will start to resemble power utilities even in the way that they are distributed.

With the dawn of IoT, driverless cars and even driverless drones for transport, which Dubai are testing for commercial use in 2017; information, data and compute will be required at the 'edge' of the logical network, reducing latency, whilst also having the need for major 'hubs' of data collation, interrogation etc. which everyone refers to as 'big data'.

I foresee mega builds of data centres in remote areas where real estate is not prime, and if feasible where heat rejection can be optimised, similar to the builds that global firms had already started in Iceland, Sweden etc. These will serve as the data hubs, with distributed data centres throughout the 'smart' cities serving as the 'edge' connections. Major re-haul of connectivity infrastructure will be done to connect these regional and global hubs to the distributed 'edge'. As the technological revolution continues, so will the data centre and infrastructure evolution, and the two must go hand in hand, otherwise the cost of failure will not just cost money, but it may cost lives.

The illustrations below depict the analogy between power utility and ITility.



Power Substation



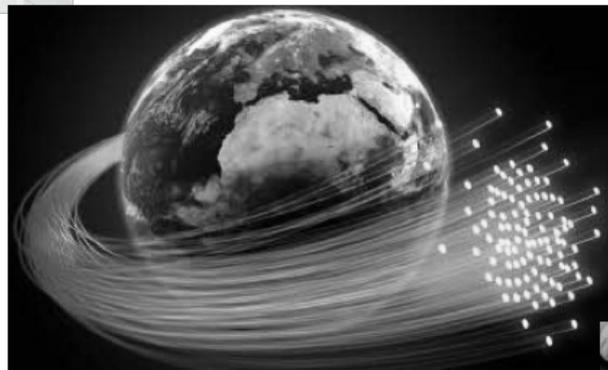
Transmission



Consumer Point



Data Hub



Transmission



Consumer Point/Edge

## EXCHANGE-VALUE OF A DATA CENTRE

The exchange-value of a commodity is ever changing with time and place, with the most common means these days of buying a commodity is through a monetary exchange.

Assuming that a monetary value is to be placed on a data centre as a commodity, then a correlation between the use-value of that commodity along with the time and place, must be drawn.

Data centres are usually classed as a real estate asset, however more astute investors have realised that they are a different asset class, a technical real estate asset.

Data centre use has been addressed at the strategic level earlier in this article, however distinction must be made between data centres built to serve their owners (DC A) and those built to provide services to its users such as colocation, cloud etc. facilities (DC B).

The distinction is necessary as the use-value of both types will vary, whence the exchange value.

A DC A data centre, will have value in its real estate as well as its technical infrastructure supporting it, with ageing (time) and location (place) impacting the value of the asset.

A DC B data centre will have the same value as the DC A data centre, however in addition it will also have value in the clients it serves and services it provides.

Thus, assuming that a DC A facility built at the same time and in the same location as a DC B facility, with the same infrastructure, real estate etc. will have an exchange-value lower than that of DC B.

In simplistic terms:

$$\text{DC A} = \text{Real Estate Value} + \text{Technical Infrastructure Value}$$

$$\text{DC B} = \text{DC A} + \text{Client(s)/Service(s) Value}$$

For those familiar with data centres, will understand that typically data centres are defined by their resiliency, reliability and availability. One of the first publications on this subject was by The Uptime Institute, where they defined four types of data centres with each being classed as a Tier, with Tier I providing the lowest 'availability' and Tier IV providing the highest 'availability'.

To achieve the higher availability, better resiliency and reliability, additional investment in infrastructure is required to provide redundant components and even plantroom spaces.

Whilst the Uptime Institute's standard allowed for differentiation between the data centres, it only considered the cooling and electrical infrastructure of the facility, however there are additional costs when considering a holistic build, with security systems, other mechanical systems,

architectural and structural costs etc. as well as operations and maintenance costs, as after all, research has shown that most failures in data centres (circa 70%) is due to human error.

It is imperative then that the 'Tier' of the data centre should also include all of these aspects, thus a full technical evaluation of the data centre must be conducted, to enable for a financial evaluation to be conducted.

## A NEW APPROACH

At C-sulTe consulting, we developed a system and a tool DC-sulTe (patent pending) that allows us to assess what we like to refer to as 'The Whole Nine Yards'. The system/tool utilises enhanced criteria over the known standards in the market such as The Uptime Institute and TIA-942 to further identify two intermediate classifications represented by a 'minus' (-) and a 'plus" (+).

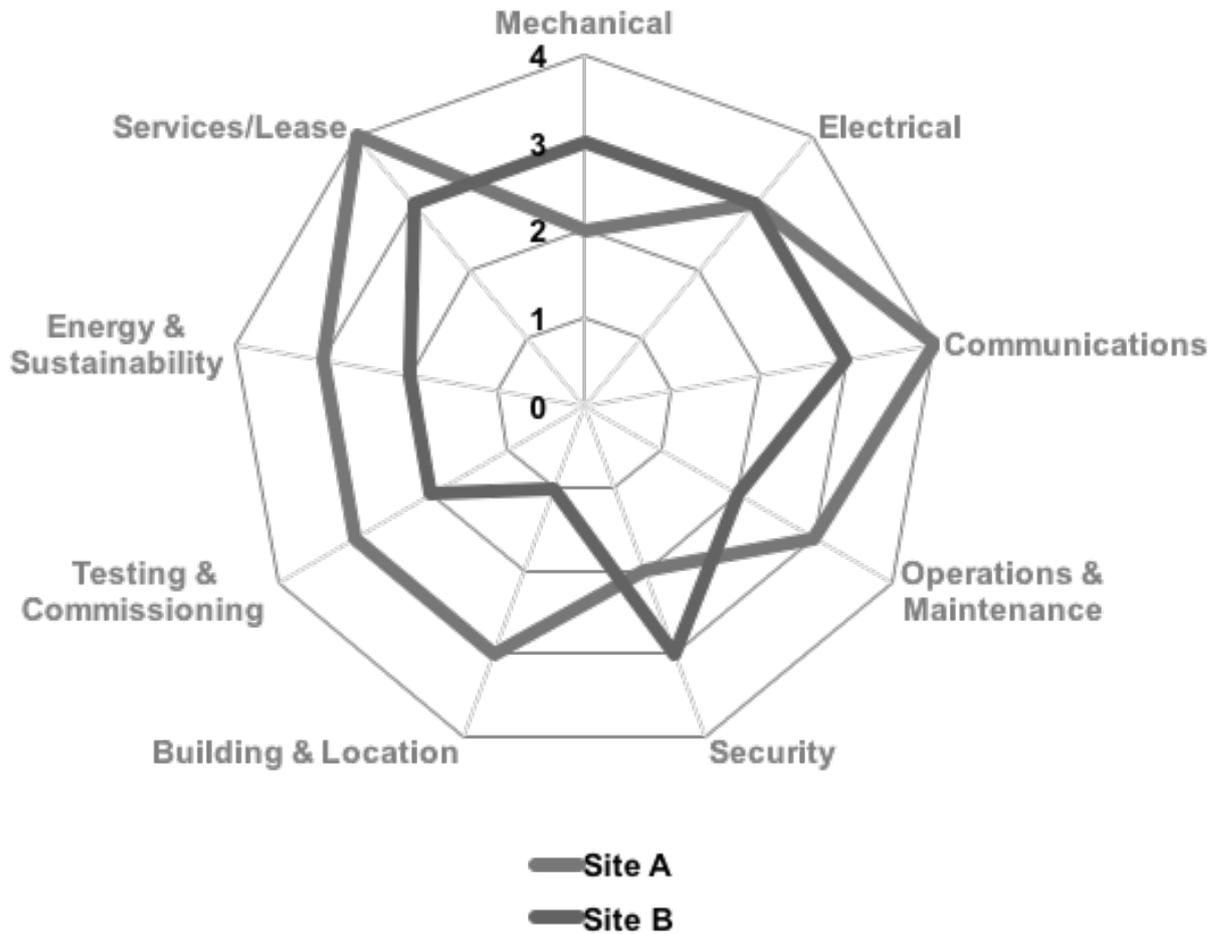
Through our system, we assess 9 distinct modules:

1. Mechanical,
2. Electrical
3. Communications
4. Operations & Maintenance
5. Security
6. Building & Location
7. Testing & Commissioning
8. Energy & Sustainability
9. Services/Lease<sup>1</sup>

The modules are represented graphically as depicted below, to provide a rating for each module as well as an overall site rating.

---

<sup>1</sup> Only applicable to colocation, hosting, cloud etc. data centres



These ratings allow a technical evaluation of the facility to be understood and benchmarked against other facilities, which will enable an initial cost per kW benchmark cost to be allocated to the facility.

It should be noted that, whilst real estate is typically evaluated on a cost per sf or cost per m<sup>2</sup>, data centres are best evaluated on a cost per kW basis.

Below are some typical global benchmarks for cost per kW for a data centre build<sup>2</sup>, all of which are technically similar and classed as a Type 3 data centre in DC-sulTe.

<sup>2</sup> This excludes the land cost, which should be accounted for separately

## Global Benchmark for Cost/kW for Type 3 DC



It can be seen that we have already approached the asset evaluation differently and attained a budgetary figure that is most likely different to what would have typically been provided in the 'standard' approach for chapter 11 or mergers/acquisitions.

A further verification step for refinement of the evaluation may be taken by reviewing the asset register of the facility (not always up to date) or my preferred approach, is to create a new Bill of Quantities (BoQ) for the facility.

The BoQ may then be completed with unit rates and a total figure calculated for the facility, which in principle will be within +/-10% of the estimate based on the global benchmark.

If required, asset depreciation may also be conducted based on 'age' of the facility and the equipment, with consideration given to perspective cost outlays expected for major re-hauls, preventative maintenance etc.

Assuming this facility is a DC A type of facility then, by establishing the cost of land in addition to the above, the 'exchange-value' of that facility has been established, however for a DC B, further analysis is required to evaluate the additional 'exchange-value' of the services and client portfolio housed within the facility.

The most common approach for this is to apply a discounted cash flow method to take into consideration the revenue generated through the provision of services (hosting, colocation, cloud etc.) as well as potential earnings anticipated during the duration of the investment. This is then calculated at net present value (NPV), to establish the additional 'exchange-value' to be considered.

Some organisations, the likes of Amazon and Dropbox, have been astute by utilising their own data centre infrastructure to provide external client services, thus not only changing an overhead into a revenue generating stream, but also increasing the inherent value of that asset by adding the external client services portfolio which will contribute to the overall asset evaluation.

## SUMMARY & CONCLUSION

As the data centre buying/selling market is becoming more active, a rigorous evaluation methodology must be adopted globally to ensure that the 'exchange-value' of these valuable commodities is correctly evaluated.

With recent big data centre 'players' such as Equinix acquiring 29 data centres from Verizon and CenturyLink spinning off the colocation business to raise capital to acquire Level 3 Communications, much as it stake with proper evaluation of the data centre assets as well as the data centre business being sold, bought or acquired.

With the approach devised by C-sulTe Consulting, we believe that this is as close you can get to 'kicking the tyres' and 'looking under the hood' of the data centres before multi-million or multi-billion decisions are made.

The name C-sulTe Consulting (C-sulTe) was inspired to reflect the company's mission in providing Consultancy services that appeals to the decision authorities at the CXO or C-Suite level.

Almost all decisions for expanding, constructing, purchasing, upgrading, demolishing, or even retrofitting any building, especially in the mission critical industry is signed off or approved by a few or at least one representative of the C-Suite level.

The challenge most consultancies in the market face is mostly due to the very technical pitch and approaches that do not cater for the varying background or specialty of an entire C-Suite at the client end.

C-sulTe Consulting is not only focused on IT related services, although the emphasis of the letters 'IT' is intentional to illustrate that in this era, all mission critical facilities host critical IT services in one form or another, whether that is in terms of services access or data storage.

[www.c-suiteconsulting.com](http://www.c-suiteconsulting.com)

Business Center, Dubai World Central, PO Box 390667, UAE Tel: +971- (0)-55-2834-202 / +971-(0)-50-1114-912

Email: [info@c-suiteconsulting.com](mailto:info@c-suiteconsulting.com) Skype: c-suiteconsulting