Ireland's Digital Success

David McAuley
dmcauley@me.com

8th March 2017

Data | Ireland | Infrastructure | Sustainability | Design

Data

1980

Virtual and Augmented Reality

Building Information Modelling (BIM)

DNA storage

THE DIGITAL CENTRE AT THE HEART OF EVERYTHING

PREDICTIONS FOR 2020

2015
The data centre is the brain of your operations, providing memory, processing and capacity. What about the future? Next-generation business requires next-generation infrastructure with faster connections, more secure networks and increased power.

2020
The Digital Centre reimagines the data centre, as a hyper-connected heart. Regulating and maximising the flows of innovation and performance. Integrating the latest technologies in a future-proofed digital ecosystem.

INTERNET OF THINGS

We're moving towards an era of always-on, on-demand connectivity. Which means unprecedented demands on networks and data centres.

SMART CITIES

The global population is expected to reach 7.7 billion, compared to 7.3 billion today. The majority will be living in urban areas, requiring a reimagining of infrastructure.

ARTIFICIAL INTELLIGENCE

A new wave of technological breakthroughs could accelerate evolution like never before. As long as next-generation digital ecosystems are in place.

THE CLOUD

The cloud industry will continue to mature as legacy systems are phased out. Increased workloads will lead to a rise in - and demand for - Everything-as-a-Service.

Host In Ireland

The Digital Disruption Has Already Happened

UBER

Worlds largest taxi company owns no taxis (Uber)

airbnb

Largest accommodation provider owns no real estate (Airbnb)

Largest phone companies own no telco infra (Skype, WeChat)

Alibaba Group

World's most valuable retailer has no inventory (Alibaba)

Most popular media owner creates no content (Facebook)

SocietyOne

fastest growing banks have no actual money (SccietyOne)

NETFLIX

World's largest movie house owns no cinemas (Netflix)

Google

Largest software vendors don't write the apps (Apple & Google)

#hostInIreland

For Ireland, the Data is the "Why" ,
The Centre is the "How"

Growth

Photos - 2 billion shared every day

Video - 300 YouTube hours added per minute

IPv6 - 340 undecillion addresses

Ireland

Data centres popping up everywhere

Apple's €850m data centre in Galway faces new Bord Pleanala hearing

Adrian Weckler
EMAIL

PUBLISHED
25/04/2016 | 15:50

SHARE

An artist's impression

A proposed €8
a challenge wit
into the projec

Facebook to start Meath data centre construction

0 1413

Monday 25 January 2016 23.16

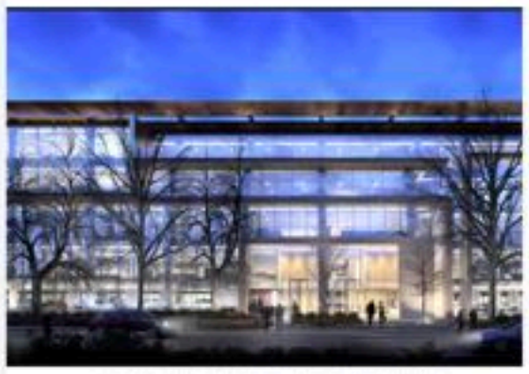
Image of proposed data centre at Clonee (Pic: Facebook)

Facebook has said it will begin building a data centre which will create hundreds of temporary construction permanent operations positions.

LIFE BUSINESS DISCOVERY siliconrepublic PORTFOLIO

Amazon to create 500 new technology jobs in Dublin

by John Kennedy



E-commerce and cloud giant Amazon is creating 500 new tech jobs across a number of its facilities in Dublin.

LIFE BUSINESS DISCOVERY siliconrepublic PORTFOLIO PEOPLE MORE

ENTERPRISE

Ireland is the data capital of Europe, says Google (video)

by John Kennedy

Cork data centres plan to create 150 jobs

BY POST REPORTER ON JUNE 10, 2016

HUB PAGES: FACEBOOK, IBM

mer Mitsui Denman site

attract multinationals

any has announced plans to build a number of data centres near Cork city,
plans to build the data centres as part of the redevelopment of the former Mitsui Denman site in Little Island.

LATEST NEWS

Why we need IP end-to-end for IoT explained in 3 minutes
1 MINUTE AGO

We need a vision for the future of technology in our schools
8 MINUTES AGO

Flash is on the outs, if you use Chrome
15 MINUTES AGO

MHC Tech Law: The EU's new rules on electronic identification and e-signatures
27 MINUTES AGO

a is now as cial as revenue investors

Why Ireland?

Why Ireland?

Ireland's Data Centres

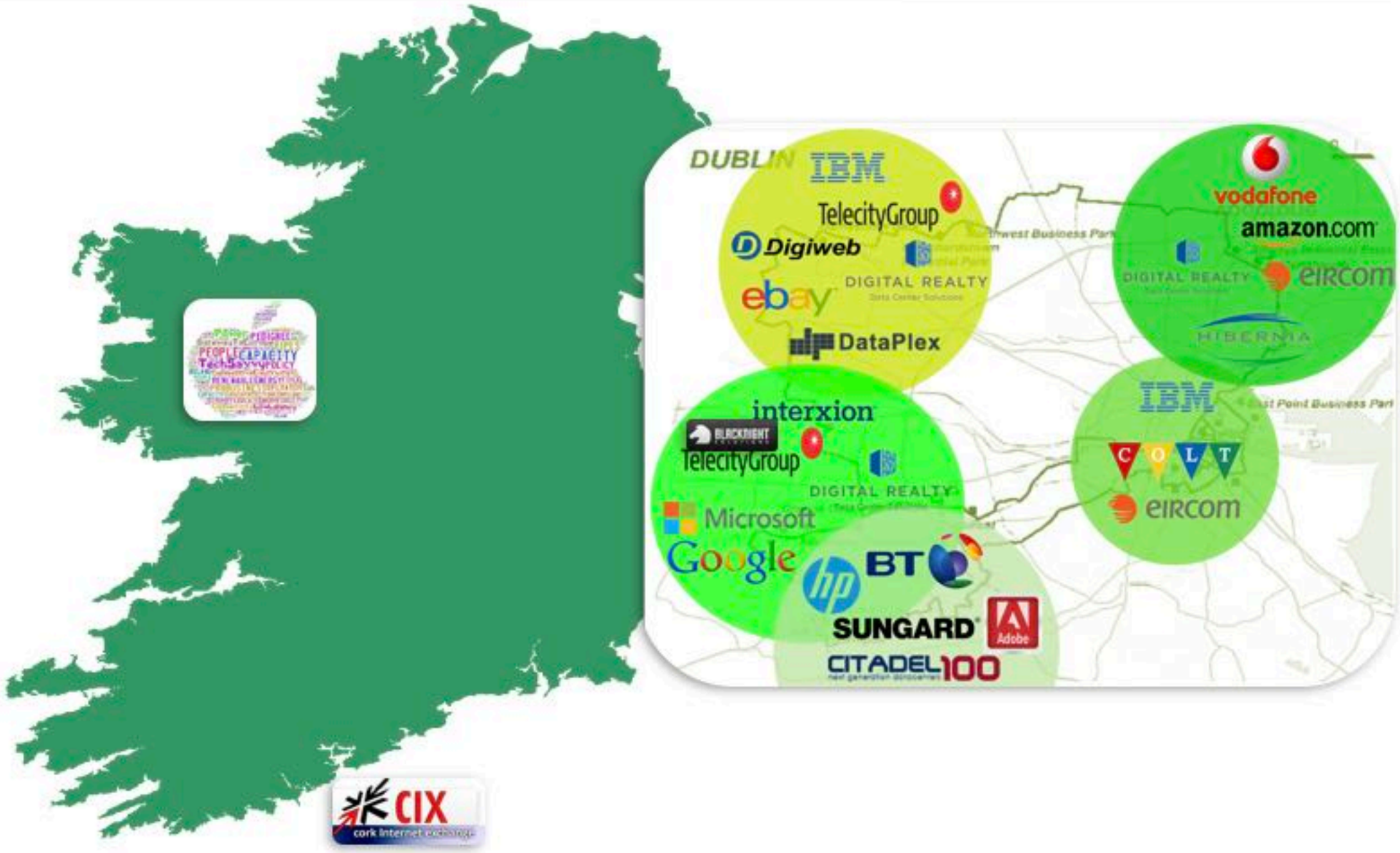
50 Sites:

- **Hyperscale** - Amazon, Microsoft, Apple, Google, Facebook
- **Colocation** - Digital Realty, Interxion, Equinix, Citadel100, Dataplex, CIX, JCD
- **Others** - ACI Worldwide, BT, eir, Vodafone, IBM, PlanNet 21, Aviva, Blacknight, EMC, Mentor Graphics, Servecentric, Sunward Availability Services, Digiweb.

Ireland's Data Centres

Amazon aws.amazon.com	Former GE Abrasives site	5	200,000	**Clonshaugh**	Leinster	
Amazon aws.amazon.com	Jacobs Site	5	100,000	**Tallaght**	Leinster	
Apple apple.com	Apple's proposed data centre for Athenry, Co Galway has yet to be fully approved as locals have appealed the decision. However, the plan is to invest a whopping €850m in a 263,000sq ft green-energy facility that will provide general data storage for Apple.	5	263,000	**Athenry**	Connacht	€ 850,000,000
Dataplex dataplex.ie	Dataplex's B10 data centre at Ballycoolin Business and Technology Park in Dublin supports over 20 international carriers across 75,347sq ft of real estate with a PUE rating of 1.15.	3	75,347	**Blanchardstown**	Leinster	
Digital Realty digitalrealty.ie	This fast-growing player opened its €150m campus in Profile Park, Dublin in 2014 with plans for phased development across four buildings, totalling 85,000sq ft. These 15.36MW facilities run entirely on renewable energy and have a PUE rating of 1.15. In June 2015, Sungard Availability Services announced an expansion in the Irish market through a partnership with Digital Realty at Profile Park. In addition, Digital Realty owns data centre properties in Blanchardstown and Clonshaugh (the latter of which is leased to Eir).	4	85,000	**Profile Park**	Leinster	€ 150,000,000
Eir eir.ie				**Citywest**	Leinster	
Eir						
equinix.com						
Equinix equinix.com	When Equinix acquired Telecity Group, it added four data centres dotted around west Dublin to its portfolio. These facilities range in size (35,951sq ft, 22,604 sq ft, 67,490 sq ft) and capacity (3.6MW, 6.9MW) and clients include Blacknight, Virgin Media, Vodafone, Eir and ESB.	2	35,951	**Profile Park**	Leinster	
Facebook facebook.com	A 220-acre in Clonee, Co Meath will be home to Facebook's €200m data centre, scheduled to open sometime between late 2017 and early 2018. The Irish data centre will handle the data of Facebook users from around the world using 100pc renewable energy. It will also feature the latest server, storage and network designs developed through the Open Compute Project.			**Clonee**	Leinster	€ 200,000,000
Google google.com	In August 2015, Google announced it would invest €150m to build a new data centre at Profile Park in Dublin. Google first opened a data centre at Profile Park back in September 2012, investing €75m to transform a warehouse into their third energy-efficient data centre in Europe.			**Profile Park**	Leinster	€ 150,000,000
Interxion interxion.com		2	20,000	**Grange Castle**	Leinster	
JCD	A €200m data centre that will be built on the outskirts of Cork city will result in the creation of 150 permanent jobs and hundreds of construction jobs, it has emerged. Commercial property company JCD Group is planning to build a major data centre on a 25,550sqm site at the former Mitsui Denman plant in Little Island.	2	25,550	**Cork**	Munster	€ 200,000,000
Mentor Graphics mentor.com	US-based multinational Mentor Graphics chose Shannon, Co Clare for the location of its multi-million-dollar EMEA data centre, officially opened in 2012. The regional data centre is built on a two-and-a-half-acre site in East Park, and construction of the Tier 2+ data centre with plant facilities and supporting office space cost €17.4m.			**Co. Clare**	Connacht	€ 17,400,000
Microsoft microsoft.com	Dublin's Grange Castle Business Park is home to Microsoft's 150,000sq ft data centre which, over the years, has amounted to a whopping $2bn investment in Ireland.	5	150,000	**Grange Castle**	Leinster	€ 2,000,000,000

Where are they?



Host in Ireland

POLICY

Ireland applies a pragmatic, pro-business approach to policy issues including data protection and IP with a competitive corporate tax structure.

PEDIGREE

Ireland is the European "home" for over 1,000 global companies including more than 750 U.S.-based organizations.

PEOPLE

Ireland's readily available workforce is highly educated, experienced, tech-savvy, multifaceted and multilingual with 40% of the population under the age of 30.

POWER

Ireland has been aggressively exploiting its renewable energy resources, making strides towards a future of cleaner and more affordable power options and commitment to 40% of energy from renewables by 2020.

PIPES

Situated on the axis between the American and European continents, Ireland has a superior strategic global position to provide secure and resilient low-latency global connectivity.

Host In Ireland | www.hostinireland.com
Cloud
THE EVOLUTION OF DATA

Infrastructure

Fi

Host In Ireland
IRELAND
UNITED KINGDOM
1
2
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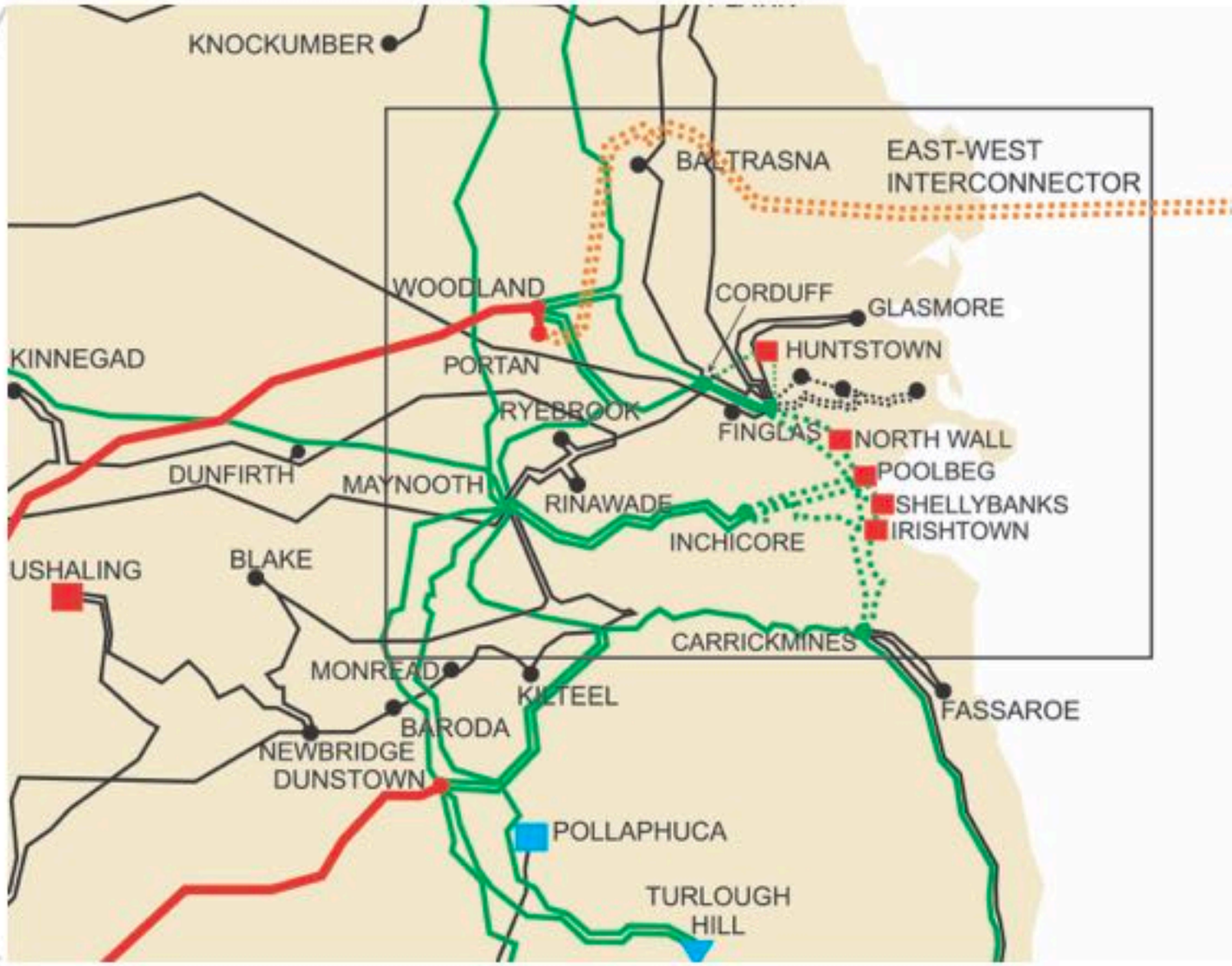
17
To US
1. HIBERNIA NETWORKS (A)
2. HIBERNIA NETWORKS (D)
3.HIBERNIA NETWORKS
4. AQUACOMMS
To UK
5. BT (SCOTLAND NI 2)
6. VODAFONE (LANIS 3)
7. VIRGIN MEDIA (SIRIUS NORTH)
8. BT (SCOTLAND NI 1)
9. HIBERNIA NETWORKS (C)
10. BT (ESAT 2)
11. VIRGIN MEDIA (SIRIUS SOUTH)
12. SEA FIBRE NETWORKS (CELTIC CONNECT)
13. GEO / ESBT (EXPRESS)
14. LEVEL 3 (PAN EURO CROSSING 2)
15. EIRCOM / VODAFONE (SOLAS)
16. LEVEL 3 (PAN EURO CROSSING 1)
17. BT (ESAT 1)

Host In Ireland

Apple Computer
BLACKNIGHT
SOLUTIONS
CIX

Electrical Power - Dublin



Electrical Power - Cork

Electrical Power - Supply v Demand?

2.2(d) Data Centres in Ireland

A key driver for electricity demand in Ireland for the next number of years is the connection of large data centres.

Whether connecting directly to the transmission system or to the distribution network, there is presently about 250 MVA of installed data centres in Ireland. Furthermore, there are connection offers in place (or in the connection process) for approximately a further 600 MVA. At present, there are enquires for another 1,100 MVA.

This possibility of an additional 1700 MVA of demand is significant in the context of a system with a peak demand in 2014/15 of about 4700 MW (where it would add 35%).

In forecasting future demand, we need to appreciate that data centres normally have a flat demand profile.

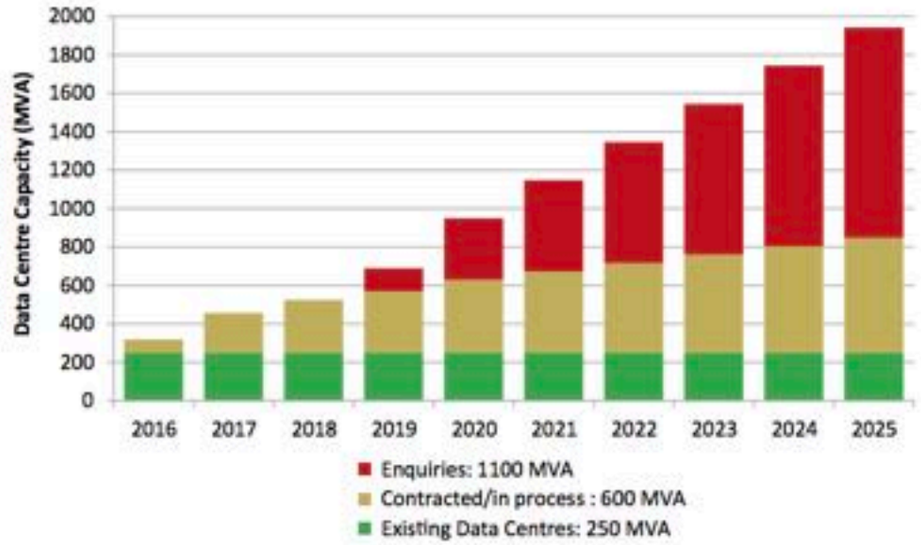
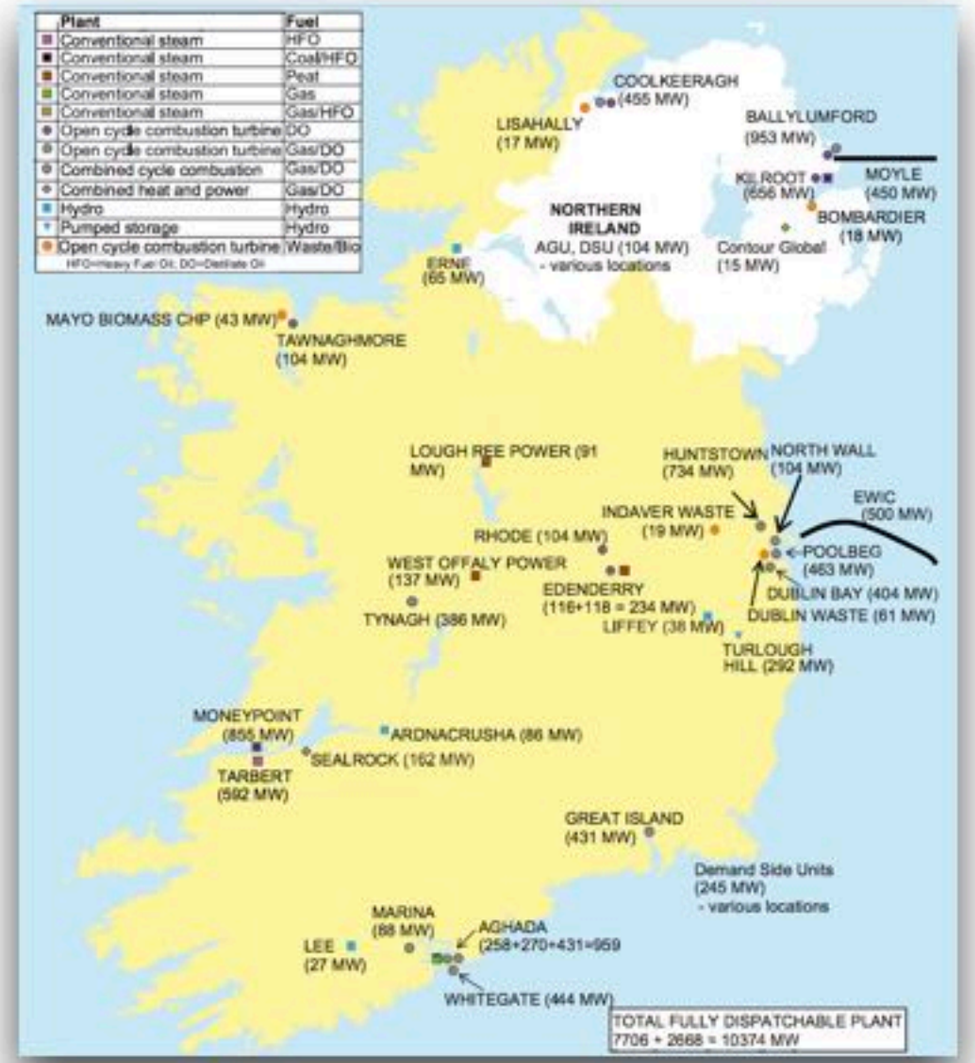


Figure 2-2 Data centre connections already existing in Ireland, in the connection process and enquiries



Natural Gas

Scotland
Moffat
Entry Point
Beattock Compressor
Twynholm AGI
SNIP
Brighouse
Bay Compressor
Pwr Station
Isle of Man
Interconnector 2
Interconnector 1
Corrib Gas Field
Derry City
Pwr Station
Coleraine
Ballymone
Limavady
Ballymena
Antrim
Lurgan
Craigavon
Portadown
Armagh
Belfast
Banbridge
Newry
Lough Egish
Coolehill
Carrickmacross
Dundalk
Ballieborough
Kingscourt
Virginia
Kells
Navan
Drogheda
Gormanston
Mullingar
Trim
Athlone
Loughshinny
Abbotstown
Enfield
Kilcock
Dublin
Prosperous
Naas
Kildare
Blessington
Bray
Eustace
Wicklow
Arklow
Ballinasloe
Tullamore
Portarlington
Monasterevin
Portlaoise
Ballymore
Kilcullen
Athy
Carlow
Ballyragget
Kilkenny
Cashel
Tipperary town
Cahir
Carrick-on-Suir
Great Island
Wexford
Waterford
Tramore
Ardfinnan
Mitchelstown
Mallow
Fermoy
Cork
Midleton
2 Pwr Stations
Inch Entry Point
Kinsale Head Gas Field
Seven Heads Gas Field
Macroom
Bandon
Ballineen
Lehenaghmore
Kinsale
Ballina
Crossmolina
Castlebar
Westport
Ballinrobe
Claremorris
Headford
Tuam
Galway
Craughwell
Gort
Loughrea
Tynagh
Pwr Station
Ennis
Shannon
Limerick
Askeaton
Aughinish
Pwr Station
Charleville
Nenagh
Sixmilebridge
Ballina
5 Pwr Stations
Brownsbarn
Existing Pipelines
Planned/Under Construction
Pipelines Owned by Others
City
Town
Town (proposed)
Entry Points
City Gate Entry Points
Landfall Station
Power Station

Research Infrastructure

IC4 The Irish Centre for Cloud Computing & Commerce

CONNECT

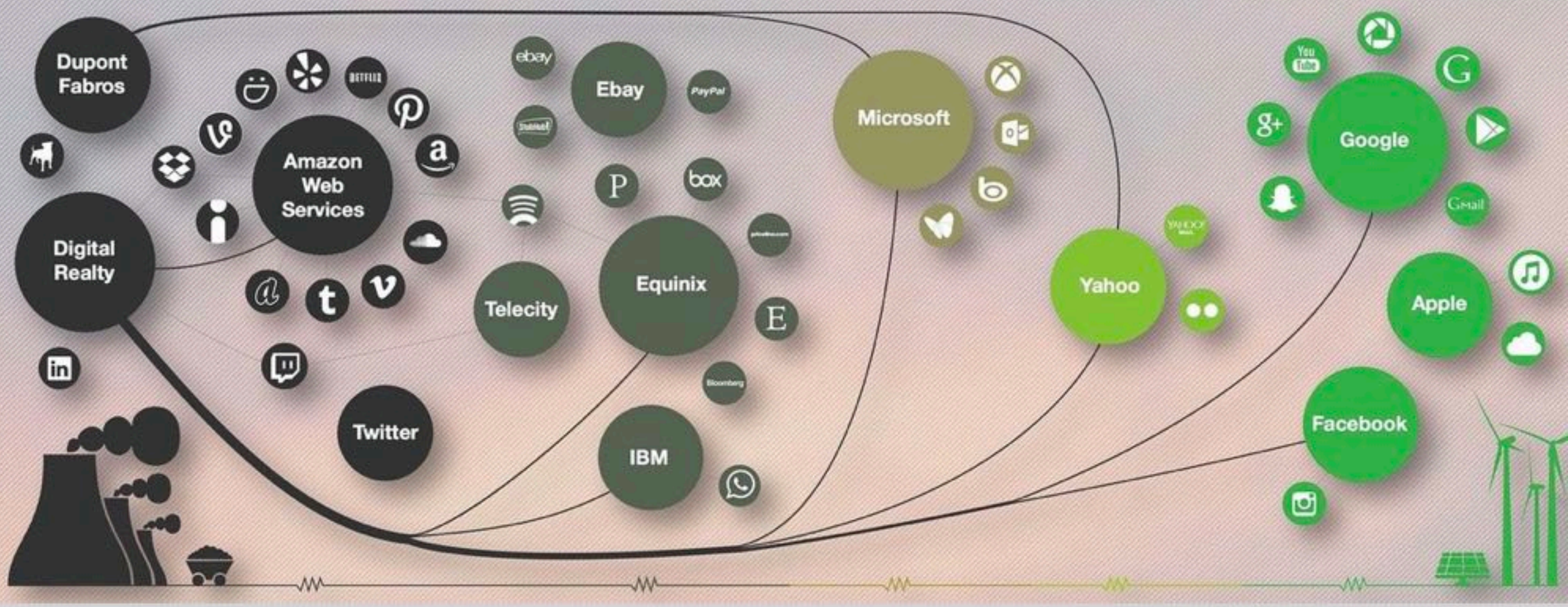
iERC International Energy Research Centre

ADAPT

Sustainability & Standards

Pressure

Your Online World:
Green IRL, or #dirty?



Accountability

CLEAN ENERGY INDEX 83%

NATURAL GAS 4% / COAL 5% / NUCLEAR 5%

Facility Location	Estimated Nameplate Power Capacity	% of Clean Energy Supply to Data Center	Resource Mix of Local Utility		
			Natural Gas	Nuclear	Coal
Athenry, Ireland	7	100%?	45%	0%	34%
Maiden, NC	25	100%	12%	51%	33%
Mesa, AR	13	1			
Newark, CA	15	1			
Prineville, OR	4	1			
Reno, NV	5	1			
New Colocation (Chicago)	6				
New Colocation (Virginia)	8				
Existing Global Colocation	18				

CLEAN ENERGY INDEX 67%

NATURAL GAS 7% / COAL 15% / NUCLEAR 9%

Facility Location	Estimated Nameplate Power Capacity	% of Clean Energy Supply to Data Center	Resource Mix of Local Utility		
			Natural Gas	Nuclear	Coal
Prineville, Oregon	70	13%	15%	0%	62%
West Coast Colocation	21	40%	48%	0%	9%
Forest City, North Carolina	70	1%	12%	51%	33%
			32%	33%	31%
			13%	40%	37%
			45%	0%	7%
			48%	11%	28%
			1%	38%	1%
			0%	13%	39%

Google CLEAN ENERGY INDEX 56%

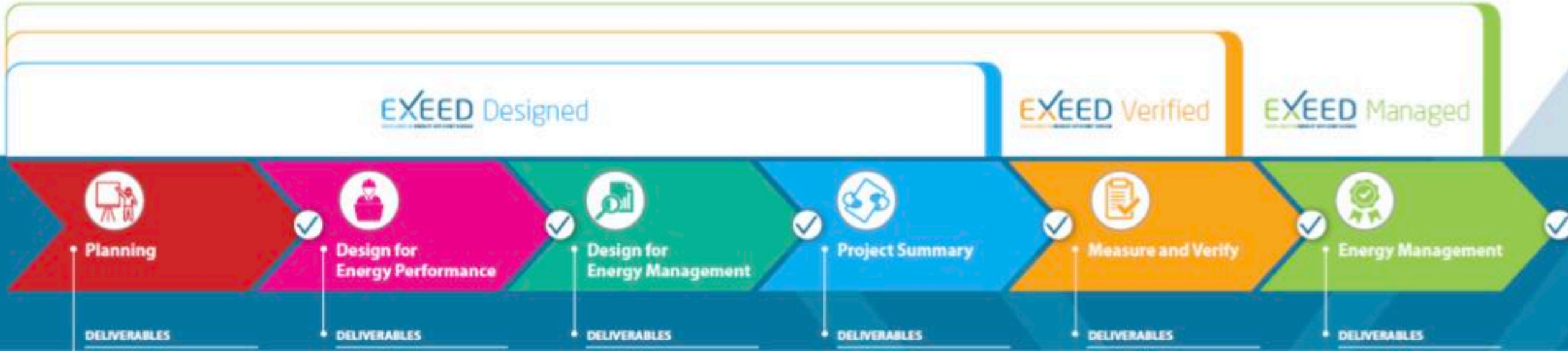
NATURAL GAS 14% / COAL 15% / NUCLEAR 10%

Facility Location	Estimated Nameplate Power Capacity	% of Clean Energy Supply to Data Center	Resource Mix of Local Utility		
			Natural Gas	Nuclear	Coal
Douglas County, Georgia	30	5%	55%	8%	29%
Berkeley County, South Carolina	84	0%	23%	9%	48%
Jackson County, AL	7	7	16%	23%	55%
Lenoir, North Carolina	84	16%	12%	51%	33%
Council Bluffs, Iowa	105	100%	0%	13%	39%
Dalles, Oregon	140	85%	1%	10%	0%
Pryor, Oklahoma	140	100%	29%	0%	52%
Eemshaven, Netherlands (Google Owned)	31	100%	42%	3%	35%
Eemshaven, Netherlands (Colocation)	30	13%	42%	3%	35%
Dublin, Ireland	41	14%	45%	0%	34%
Singapore	0	0%	91%	0%	1%
Taiwan	42	8%	35%	16%	38%
Hamina, Finland	19	100%	0%	23%	0%
St. Ghislain, Belgium	24	5%	29%	57%	0%
Quilicura, Chile	11	100%	15%	0%	41%

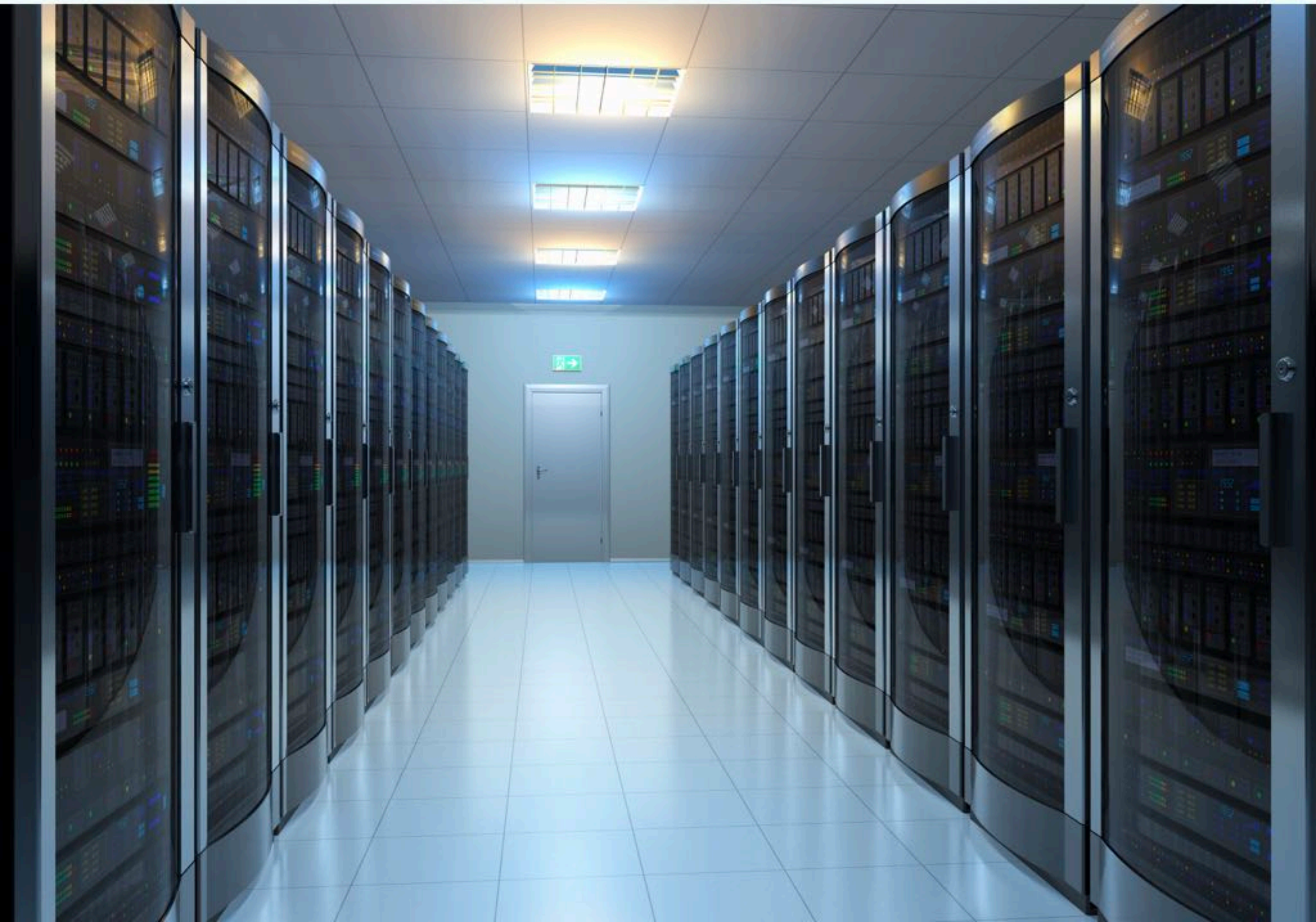
Standards for Digital Asset Hosting

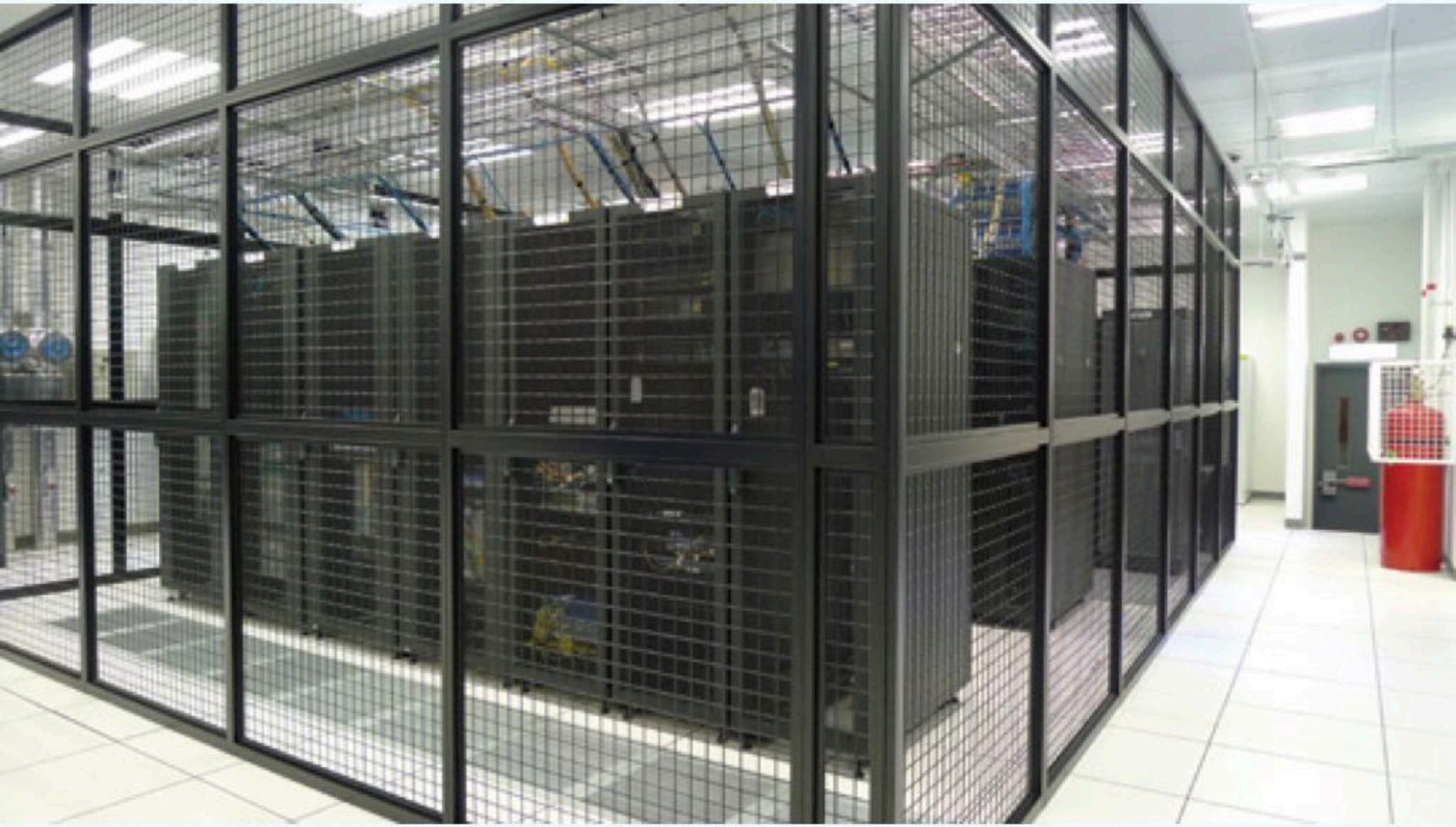
- ISO 27001
- EN50600 - CENELEC
- Uptime Institute
- TIA-942
- ASHRAE TC 9.9
- LEED
- PuE / DCiE
- ISO/IEC JCT1 SC39
- EU Code of Conduct
- ISO 50001
- EnergyStar
- Whatever the customer wants

Efficient Design - SEAI EXEED



Design & Innovation





Recipe for a Data Centre

Ingredients

- Finance
- Tenants
- Building / Site
- Energy Source(s)
- Power / Backup
- Cooling systems
- Fibre / Comms
- Floors / Racks
- Servers / Storage

Steps for Success...

1. Planning and Permitting
2. Grid Connection Application
3. Design
4. Build
5. Configure / Commission
6. Compliance Audits
7. Operate & Optimise
8. Ongoing upgrades

Hazards / Tips

- Power MIC
- Sustainability

People & Things

- Project Managers
- IT Engineers
- Power Engineers
- Suppliers
- Compliance
- Environmental
- Design Knowledge
- Construction Teams
- Commissioning

Design

Ingredients

- Project objectives
- Project drivers
- Commercial strategy
- IT strategy
- Deployment strategy
- Growth projections
- Solutions & product knowledge
- Local standards & codes – yours and theirs

Steps for Success...

- Stakeholder engagement
- Gain a full understanding of your clients' commercial & technical strategies
- Park your preconceptions
- Start with a "plain sheet of paper"
- Challenge your clients
- Design from the inside out
- Focus on "buildability"
- Engage with operations team/resource

Hazards / Tips

- Innovation that works
- Vendor neutrality
- Future proofing

People & Things

Data Centre Specialists:

- Commercial & Strategy Interpreters
- Electrical Design Engineers
- Mechanical Design Engineers
- Network Design Engineers
- BMS Design Engineers
- Revit MEP & Architecture
- **Peer review**

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