



European Federation of  
Catering Equipment Manufacturers



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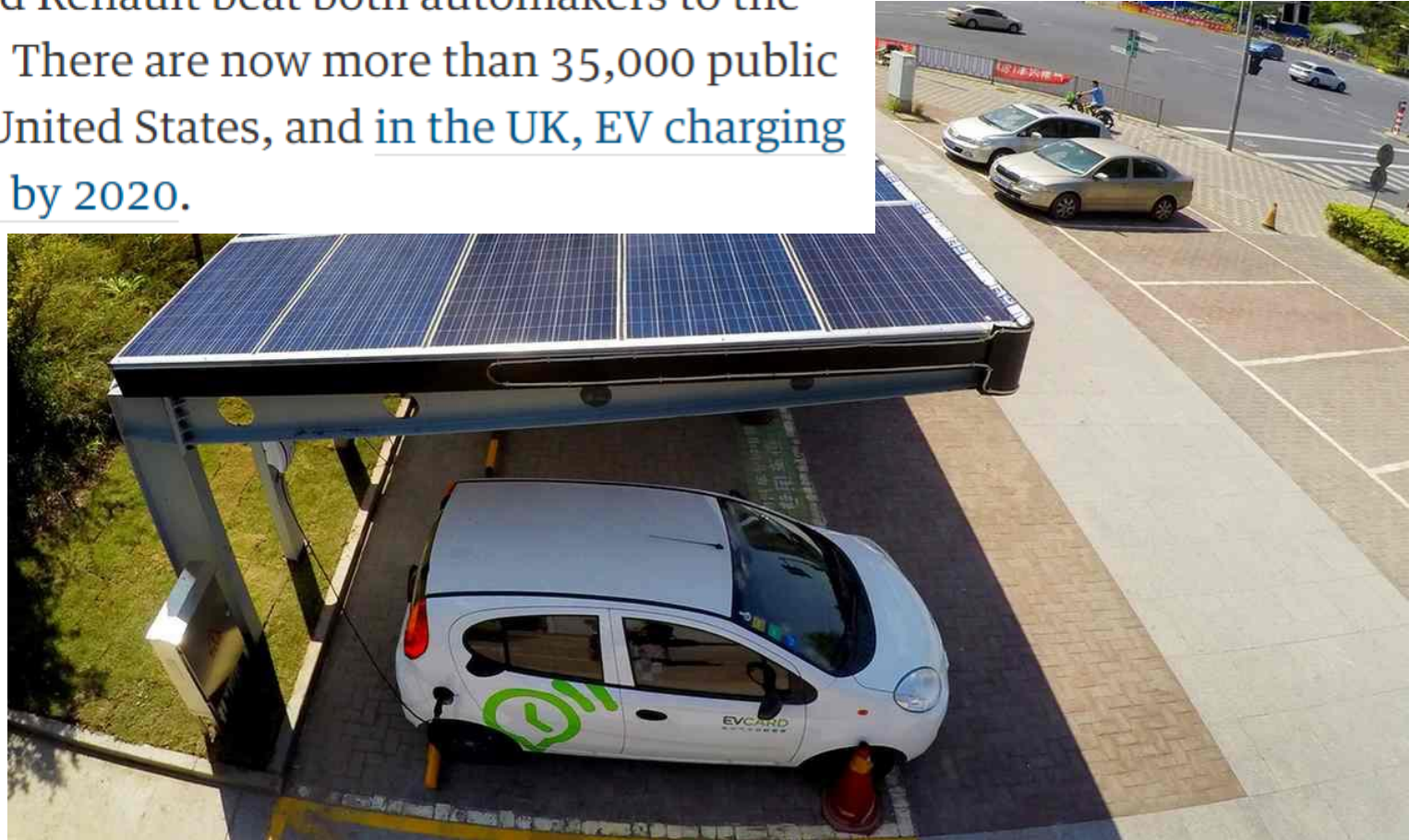


# Today's Vision – Tomorrow's Reality

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The Technical and Policy Framework  
*Policy, Directives, Standards*

The technology is advancing rapidly due to heavy research, with batteries produced at high-volume now costing 79% less than they did in 2009. [Chevrolet](#) and [Tesla](#) will soon release electric cars with 200 mile-per-charge range and before-rebate prices under \$40,000, and Renault beat both automakers to the punch with [the 250-mile, \\$28,000 Zoe](#). There are now more than 35,000 public and private EV charging outlets in the United States, and [in the UK, EV charging stations will outnumber petrol stations by 2020.](#)



# Five Megatrends....

Dr Prith Banerjee, Chief Technology Officer, Schneider Electric

- By 2040 population will increase by 2.5 bn.
- Electricity demand of buildings will increase by 80% - efficiency will need to DOUBLE.
- Internet of Things/Industry 4.0 – by 2020, more connected items than people on the planet.
- Improvement in electricity storage = 'tsunami' of renewable energy resources.
- Digitalisation and connectivity- more efficient design, build and operations across the value chain.

# Overload?

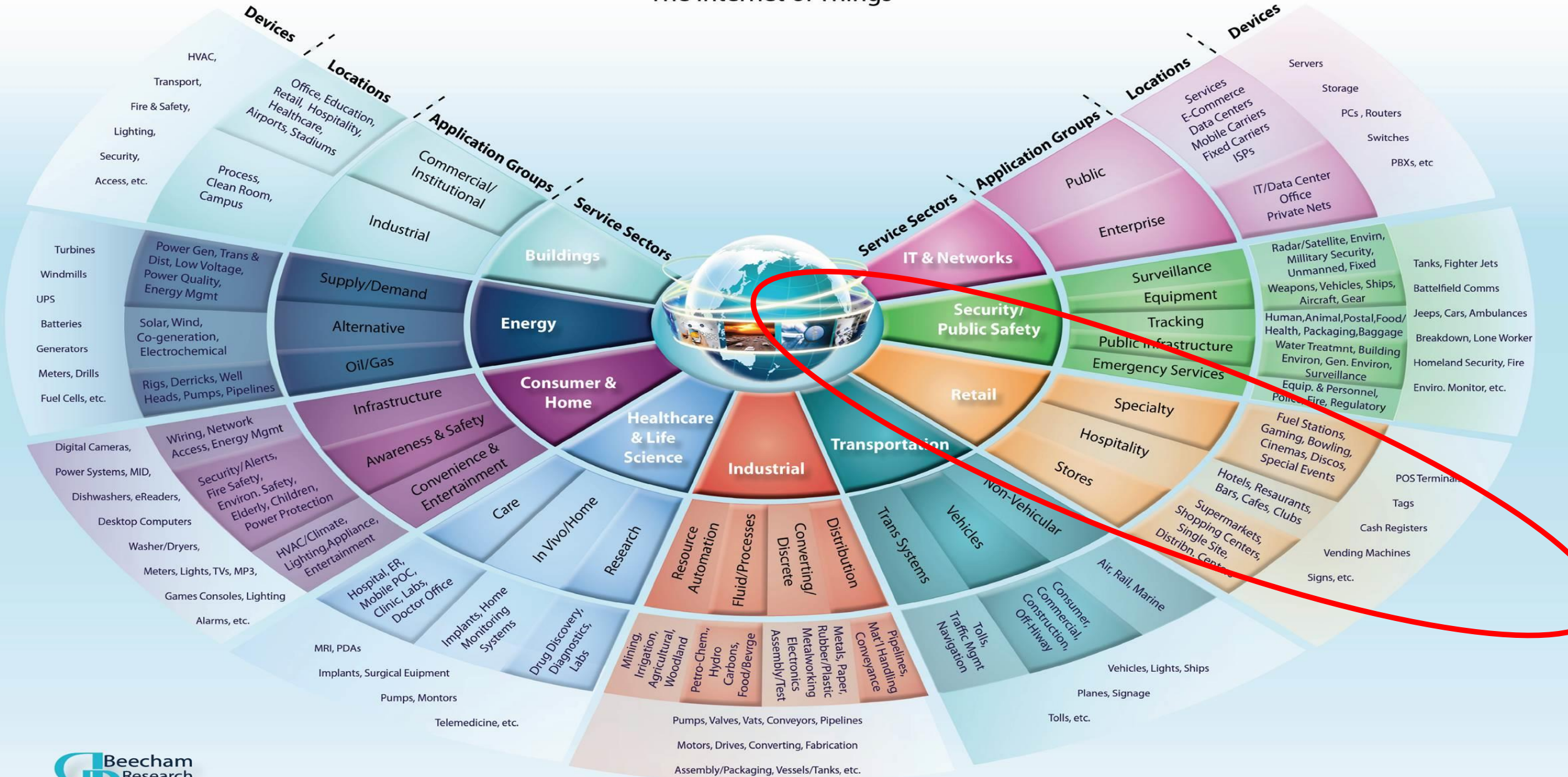
- *Internet 4.0*
- *The Internet of Things*
- *Big Data*





# M2M World of Connected Services

## The Internet of Things

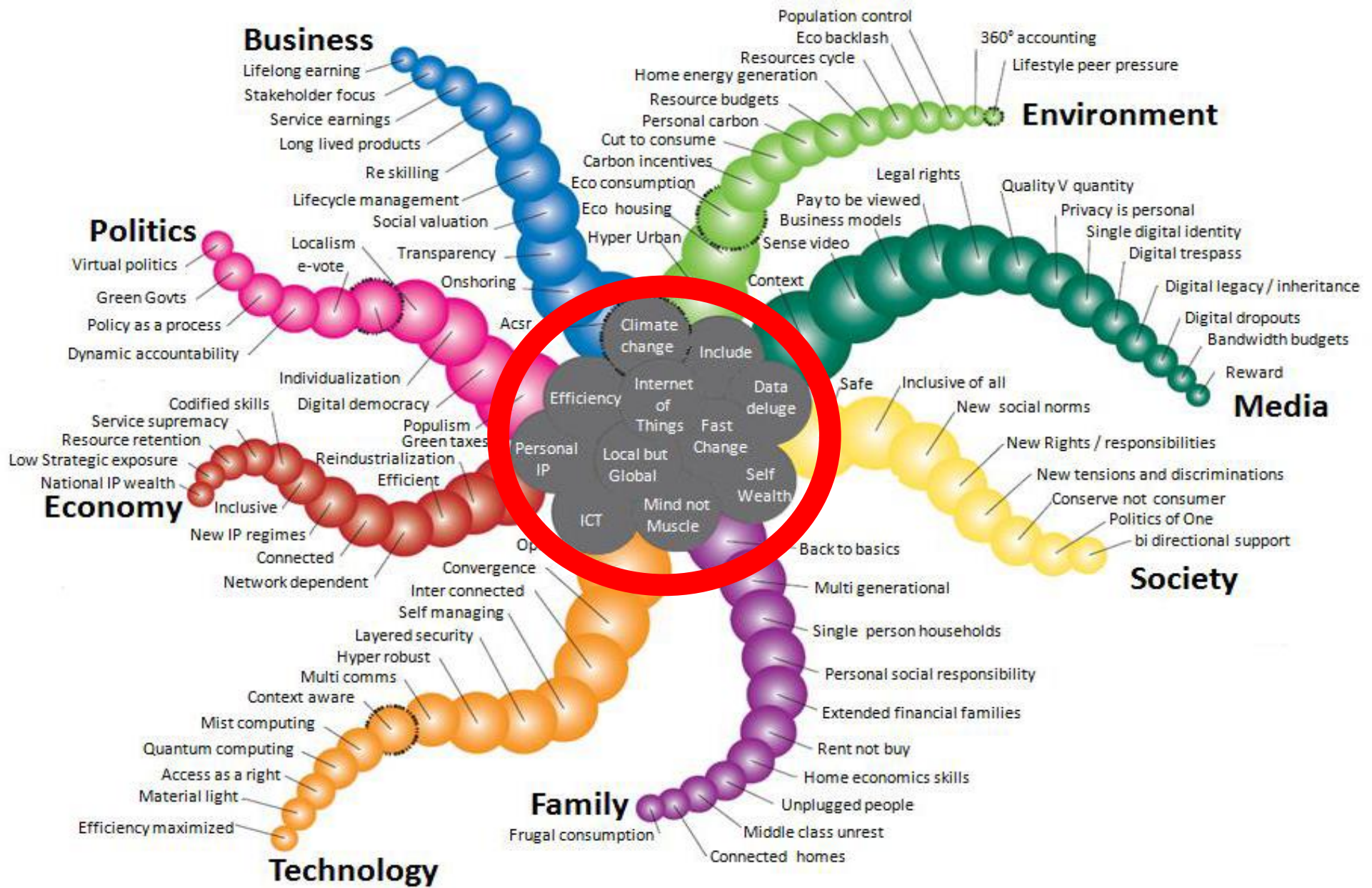












# Good for.....

- Business - R&D, jobs growth, managing work
- Government/Politics
- Banking
- Social Integration
- Education
- Authorities
- The environment
- Cutting costs
- The Planet



Making connected lives, easier, safer, more fulfilled, healthier 😊

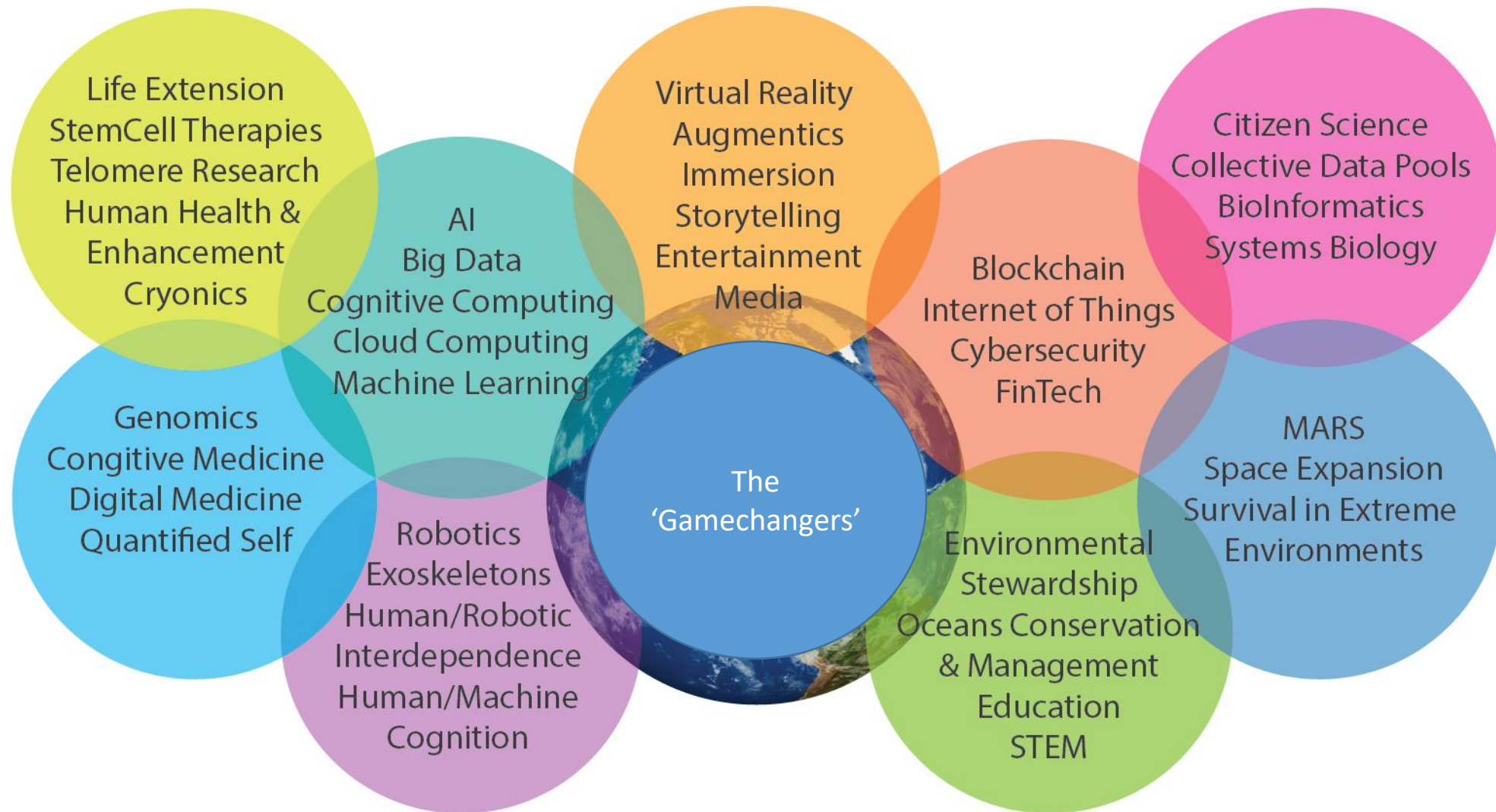
# Issues that will need to be addressed.....

- Snooping
- Paranoia,
- Fraud,
- Data protection
- Profile theft



.....Our management and reward of who knows what, when....  
and ***how*** they get it.









Black Friday and today's Cyber Monday. It features four clear booths, each kitted out with facial-recognition technology

results. Information converted from the data points is said to help "shoppers pinpoint the gift

Editorial Comment Page 16

# BA cabin crew will now serve your digital pill...

**Mark Blunden**  
Technology Reporter

**FUTURE** British Airways passengers might not just have their choice of chicken or beef noted by the cabin crew, but also their heart rate and stomach acid levels.

BA is investigating offering "digital pills" that wirelessly beam diagnostic health information from inside a customer's body. The "ingestible sensors" could work alongside in-cabin sleep monitors and data from wearables and

## 'Edible sensors' would monitor health and fight passengers' jetlag

smartphones to personalise each passenger's "travel environment".

The aim is to create technology that will determine a "timeline for the passenger's optimal wellness", and fight

jetlag by controlling their sleep, eating and exercise patterns.

BA's vision is revealed in a patent application for a "system and method for controlling the travel environment for a passenger" published by the Intellectual Property Office.

The patent application says BA's wellness system could indicate when the passenger is awake, asleep, hungry, nervous, hot, cold or uncomfortable.

Technology inside data-driven future cabins could include cameras tracking body movement and sensors monitor-

ing climate, lighting, humidity, sleep, eye movement, heart rate and body temperature. A cabin could adjust climate settings when the passenger is asleep and recline their seat, or suggest an exercise routine to prevent fatigue.

Among more radical ideas in the application are "digital pills or other ingestible sensors that detect internal temperature, stomach acidity and other internal properties and wirelessly relay this information outside the passenger's body". US firm Proteus Digital Health already offers a kit comprised

of an ingestible sensor that reacts on contact with stomach acid, a wearable patch, and smartphone app.

The airline hopes its systems will "provide information on the physiological state of the passenger and/or environment conditions in the vicinity of the passenger".

A BA spokeswoman said: "We are always looking to deliver new innovations for our customers, whether it be in design or digital transformation. As such, we develop many ideas and submit many patents."



## TECHNOLOGY

# Robots to help redefine the meaning of 'Made in China'

Plans to upgrade Chinese factories and production lines rest on automation. By **Nooman Merchant**

**T**he Canbot can say its name, respond to voice commands, and “dance” as it plays Michael Jackson’s “Billie Jean”. Other robots that China is displaying at the World Robot Conference can play badminton,

sand cell phone cases and sort computer chips.

China is showcasing its burgeoning robot industry at the five-day exhibition in Beijing, part of a national effort to promote use of more advanced technologies in Chinese factories and create

high-end products that redefine the meaning of “Made in China”.

Apart from the cool factor, China’s sweeping plans to upgrade its factories and production lines depend on the building and better use of advanced robots. Automation is crucial

i – 25<sup>th</sup> October 2016

# Change....

- Faster
- More complex
- Outside our control
- Outside our knowledge
- Outside our comfort zone

## Likely Game Changers

- Cheaper microchips
- Nanotechnology
- 3D printing
- Artificial Intelligence
- Quantum Computing

# UN International Conference on Climate Change

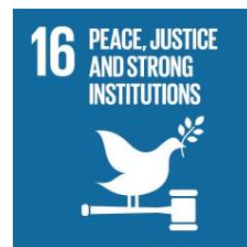
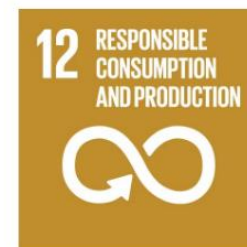
DECEMBER 2015



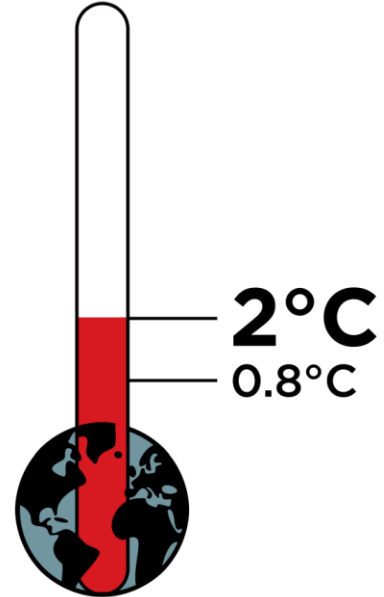




# SUSTAINABLE DEVELOPMENT GOALS



# 2°C



The threshold of danger.

# New climate era as carbon dioxide hits record high

By Emily Beament

The world is in a new era of "climate change reality", with carbon dioxide in the atmosphere reaching a symbolic threshold which it will not fall below for many generations, scientists have said.

In 2015, for the first time in human history, carbon dioxide levels in the atmosphere reached 400 parts per million (ppm) on average across the year as a whole, according to the annual greenhouse gas bulletin of the World Meteorological Organisation (WMO).

The longest established monitoring station in the world, at Mauna Loa in Hawaii, predicts that concentrations will stay above that level for the whole of 2016, and won't dip below again for many generations.

Petteri Taalas, secretary general of the WMO, said last year's Paris climate change agreement "ushered in a new era of optimism and climate action". But he said "it will also make history as marking a new era of climate change reality with record high greenhouse gas concentrations".

The Paris Agreement commits

countries to keeping temperature rises to "well below" 2°C above pre-industrial levels and to pursue efforts to limit increases to 1.5°C, by cutting greenhouse gas emissions to net zero in the second half of the century.

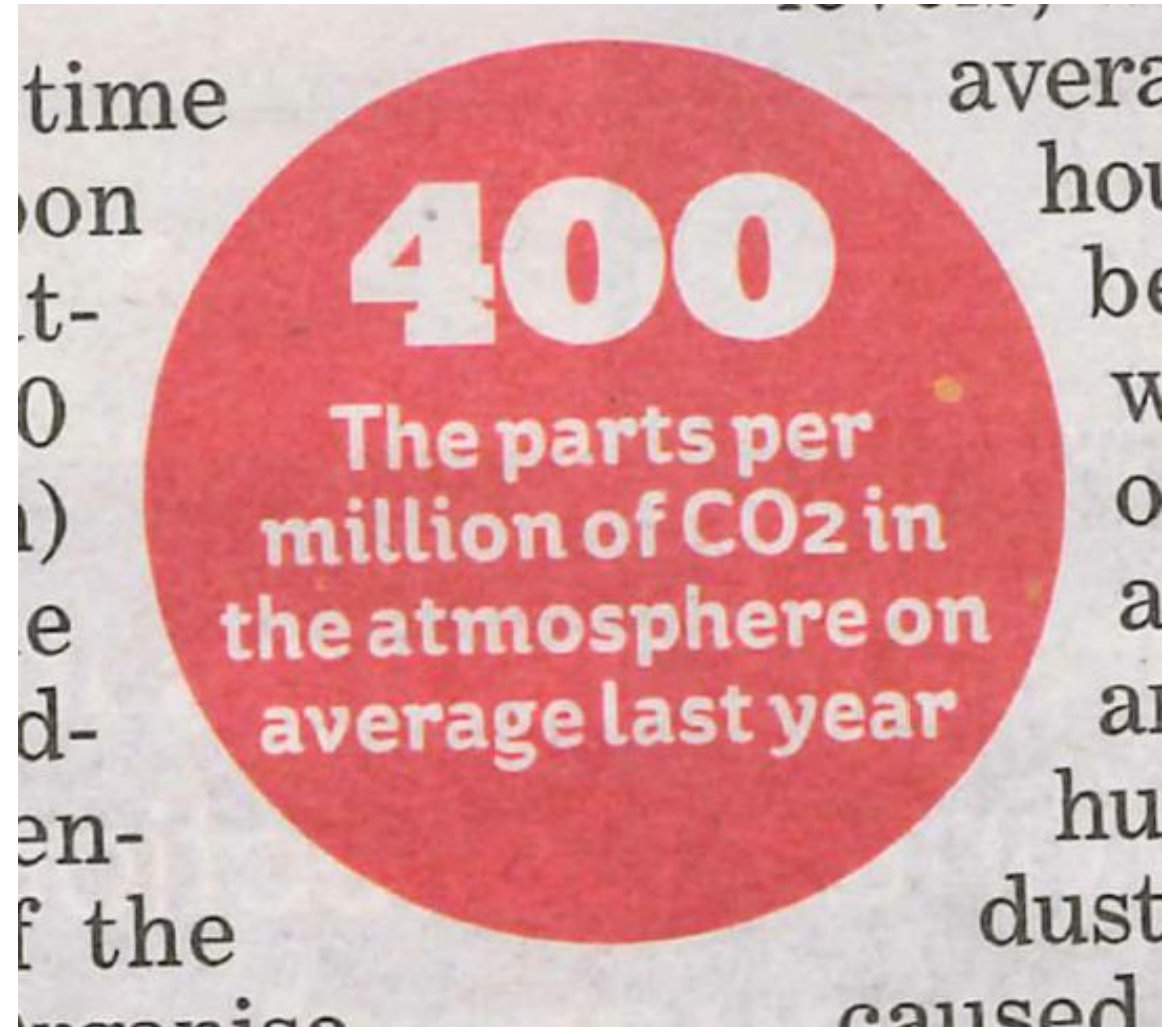
The growth in carbon dioxide levels, which saw a bigger-than-average increase in the greenhouse gas in the atmosphere between 2014 and 2015, was fuelled by the increase of greenhouse gases such as carbon dioxide, methane and nitrous oxide from human activity including industry and agriculture which caused a 37 per cent increase in the warming effect on the planet between 1990 and 2015.

Levels of carbon dioxide in the atmosphere stood at around 278ppm before the Industrial Revolution, which the WMO said represented a natural balance on Earth.

**400**

The parts per million of CO<sub>2</sub> in the atmosphere on average last year

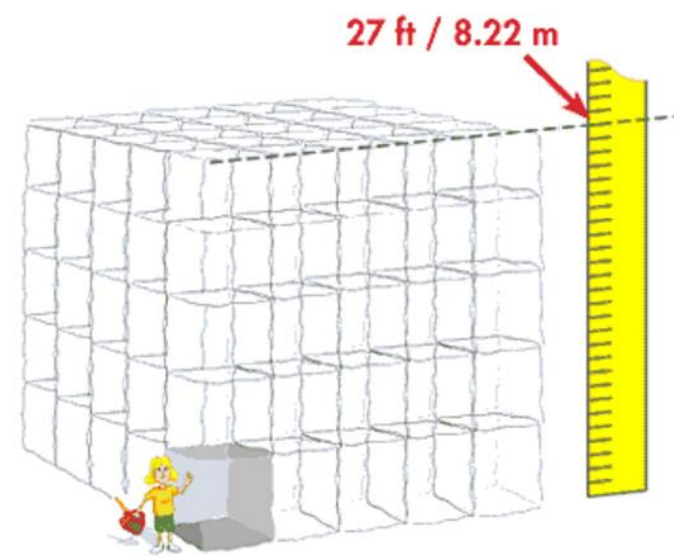
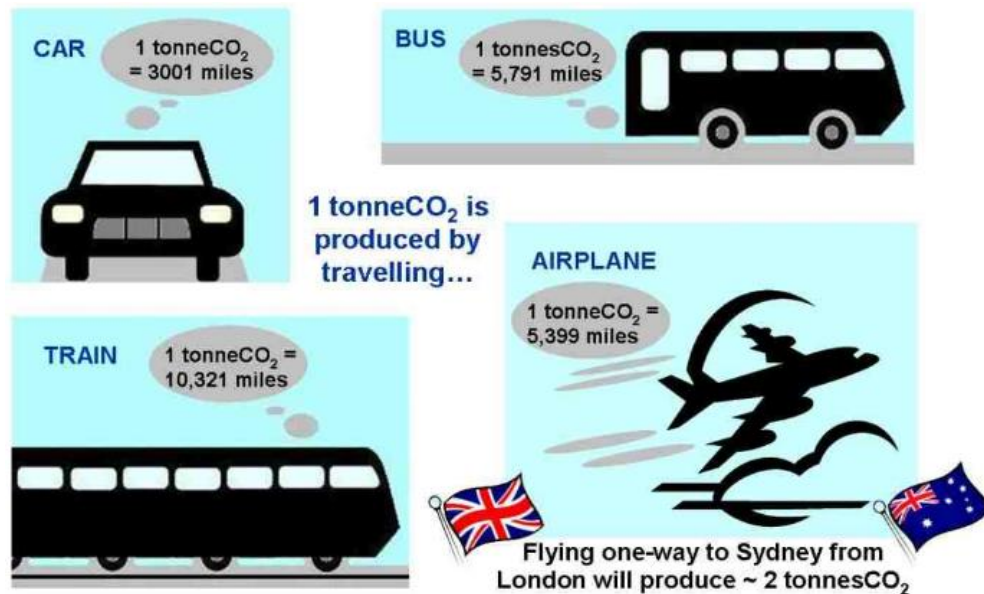
**{i}** The greenhouse gas bulletin was released ahead of the **next round of climate talks**, which will mark the early entry into force of the Paris Agreement.





# 1.5°C

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1 ton of CO<sub>2</sub> easily fills up a 19,000 cubic feet / 556 cubic meters container.

***One ton of CO<sub>2</sub> occupies 556.2m<sup>3</sup> of volume.***

Volume calculation of one ton CO<sub>2</sub>

One ton = 1000kg

One cubic meter = 1000liters

One mole CO<sub>2</sub> = 44.0g (CO<sub>2</sub> = 12.0g + 32.0g = 44.0g)

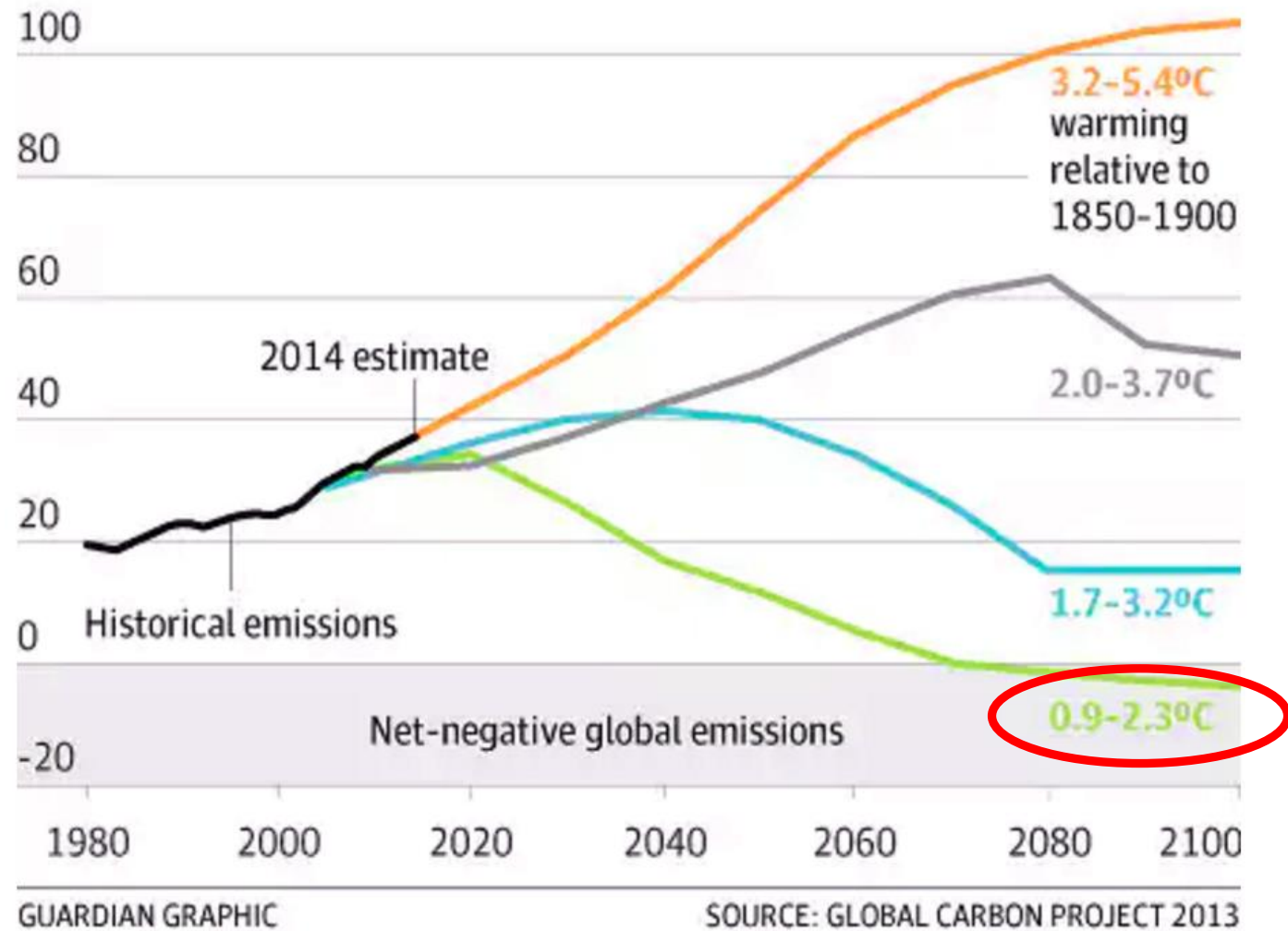
One ton contains 22730 moles of CO<sub>2</sub> (1,000,000g / 44.0g/mole)

One mole is 24.47L (Boyle's law at 25°C and 1 atmosphere pressure)

Volume of one ton CO<sub>2</sub> = 22730moles × 24.47L/mole = 556200L = 556.2m<sup>3</sup>

## The course of global emissions **Four scenarios**

Future scenarios for CO<sub>2</sub> emissions, gigatonnes/year



# Strasbourg, 4 October 2016

The **European Parliament has approved the ratification** of the Paris Agreement by the European Union today.

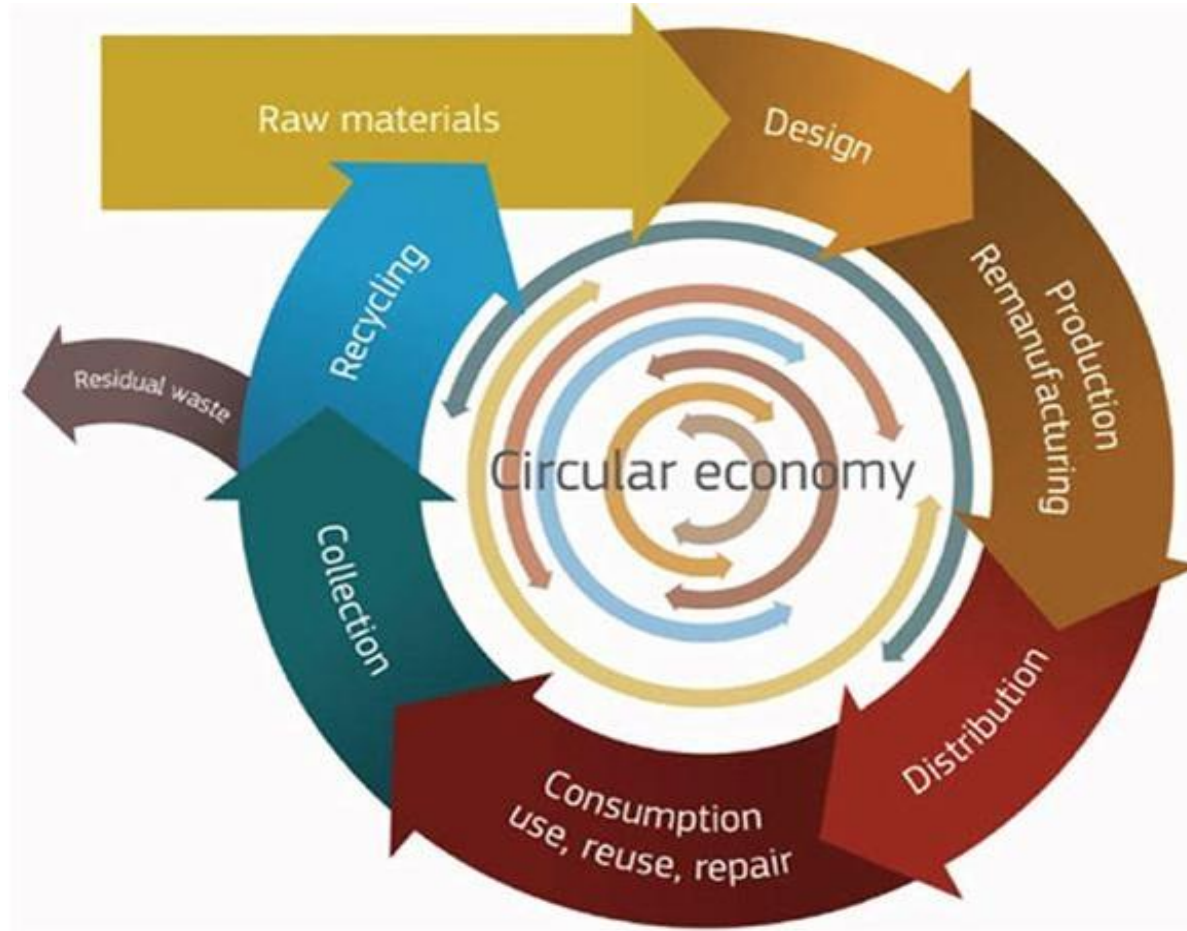
With today's European Parliament approval of the Paris Agreement ratification—**the last hurdle is cleared**. The political process for the European Union to ratify the Agreement is concluded. He said: "Slow delivery on promises made is a phenomenon that more and more risks undermining the Union's credibility. Take the Paris agreement. We **Europeans are the world leaders on climate action**. It was Europe that brokered the first-ever legally binding, global climate deal. It was Europe that built the coalition of ambition that made agreement in Paris possible.

The EU ratification and deposit will cross **the 55% emission threshold and therefore trigger** the entry into force of the Paris Agreement.

EU's commitment is to reduce emissions in the European Union by at least **40% by 2030**.



# The EU Response = Circular Economy Package



Its all about  
**CARBON**

# Further integration & complexity of EU policy objectives and legislation

- Design - Eco design and labelling, RoHS, H&S Directives
- Specification of product – Green Public Proc., Energy Efficiency Dir.
- Distribution – Datasheets, BIM
- Use – Life Cycle Costs
- Repair – CE?, Design, Warranty, Liability?
- Reuse – increase
- End of life – Waste Framework Dir. , WEEE.
- Resource from what was ‘waste’ – Metals, Plastics, Food, FOG etc.....



GLOBAL FOODSERVICE  
EQUIPMENT & SUPPLIES  
LEADERSHIP GROUP

- White paper on 'Circular Economy Principles'
- Research sharing and development
- Internationalisation of equipment standards
- Harmonisation of energy standards/recognition
- Education
- BIM
- Web site





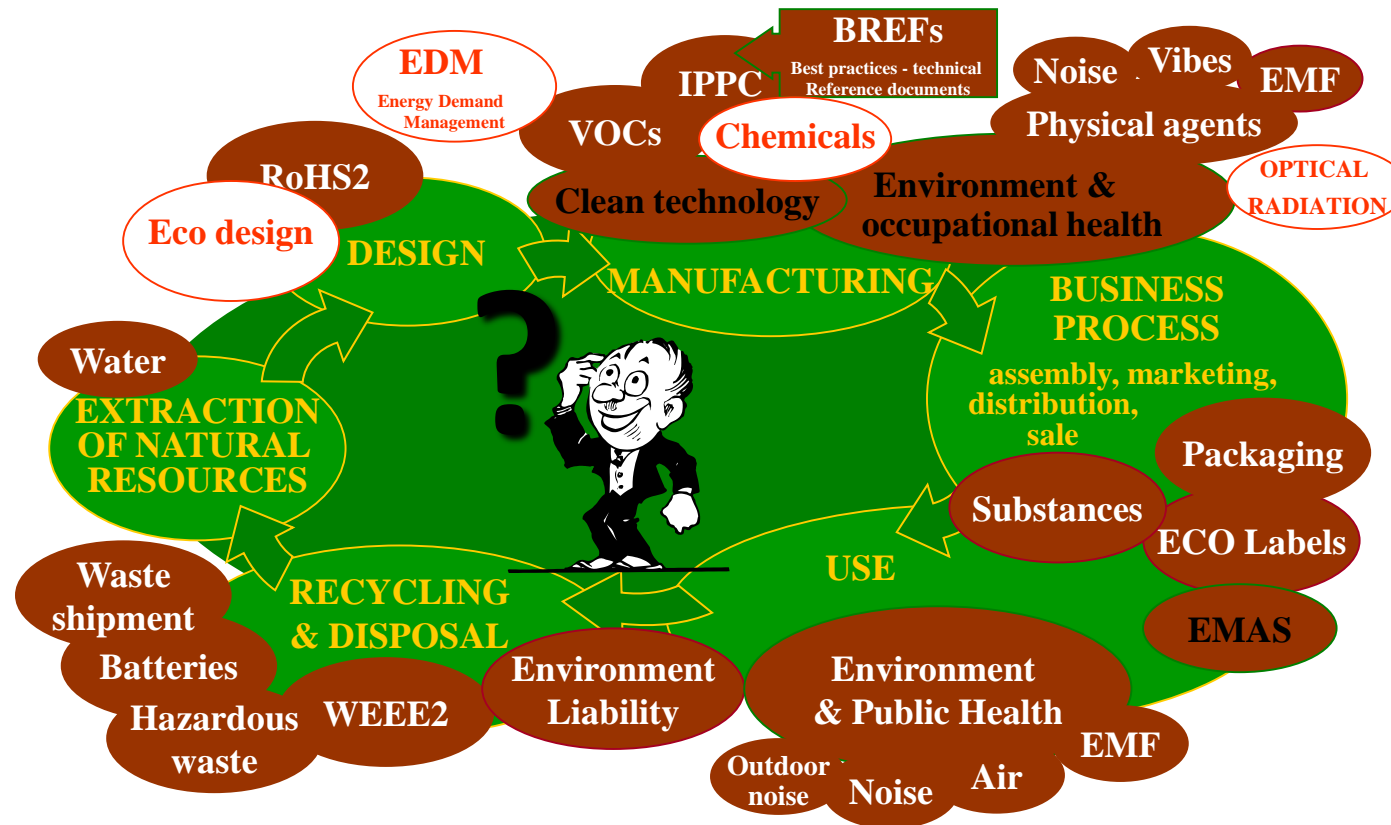
## *Industry White Paper on the Implementation of Circular Economy Principles*

March 2016

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# The Environmental Challenge



# Directives and Foodservice Equipment

## HEALTH & SAFETY

- Machinery Safety Directive
- Low Voltage Directive
- Gas Appliance Regulation
- Pressure Equipment Directive
- Construction Products Regulation
- Electro Magnetic Compatibility Directive
- Outdoor Noise Directive
- Construction Products in contact with Drinking Water
- BT TC 197 & GasQual Study
- F Gas Regulation
- Materials in Contact with Food
- Consumer Product Safety Directive

## ENVIRONMENTAL

- Eco Design
- Energy Labelling Directive
- Waste Electrical and Electronic Equipment Directive
- Restriction of Hazardous Substances

*Supported by over 150 standards*



# Eco Design & Energy Labelling

## REFRIGERATION

### PROFESSIONAL CABINETS

MEPS – Minimum Energy Performance Standards

1<sup>st</sup> July 2016

### COMMERCIAL CABINETS

Standard Under Development

Autumn 2016

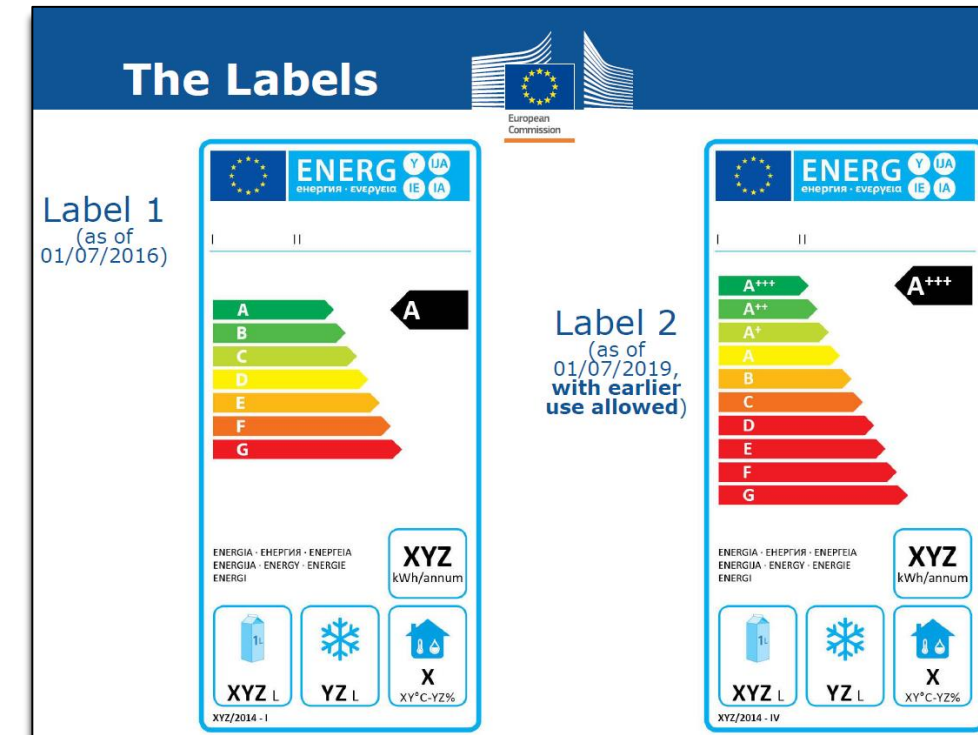
Implementation – Spring 2018??

### BLAST CHILLERS/FREEZERS

Standard under development

For information purposes only

National temperature/time complications



# Eco Design & Energy Labelling

## OTHER

### COFFEE MACHINES

EFCEM Working Group

### COOKING EQUIPMENT

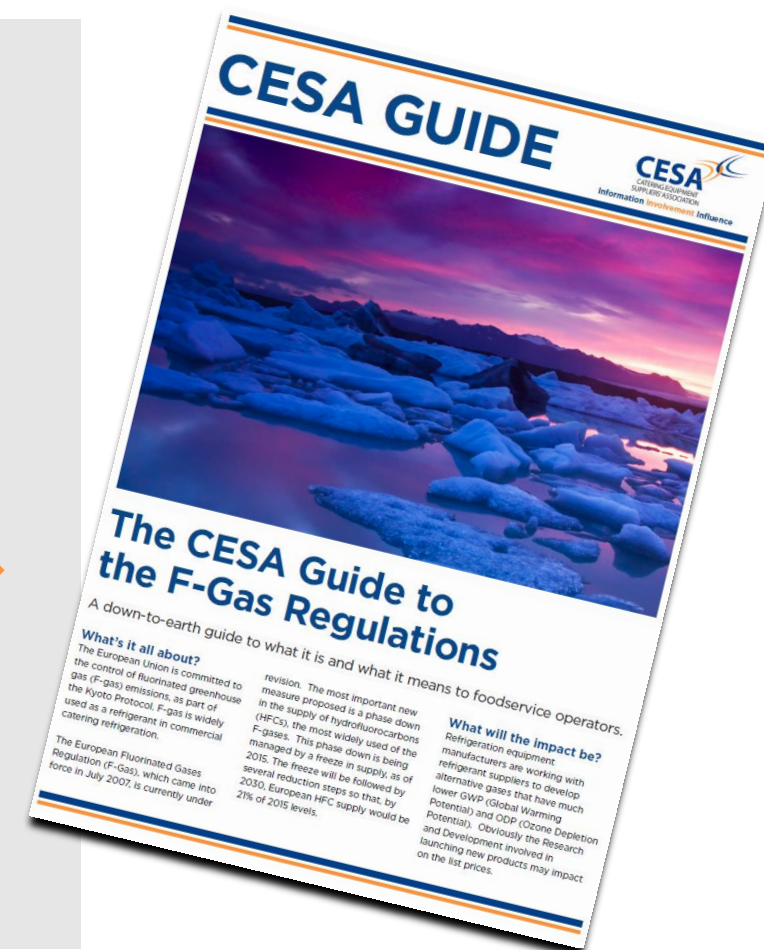
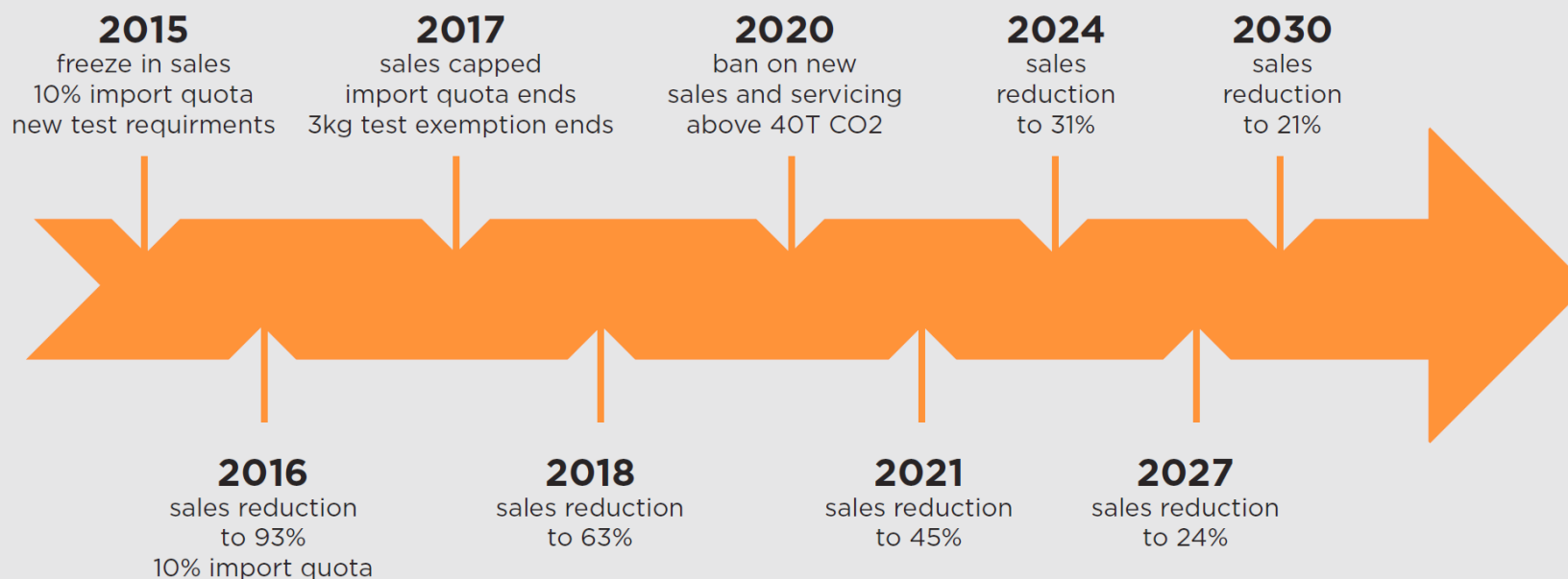
EFCEM ENERGY EFFICIENCY STANDARDS

VENTILATION

WORKING PLAN 2015-2017 - published in October 2016

# F-gas

## Timeline for reduction of F-gas with GWP above 2500

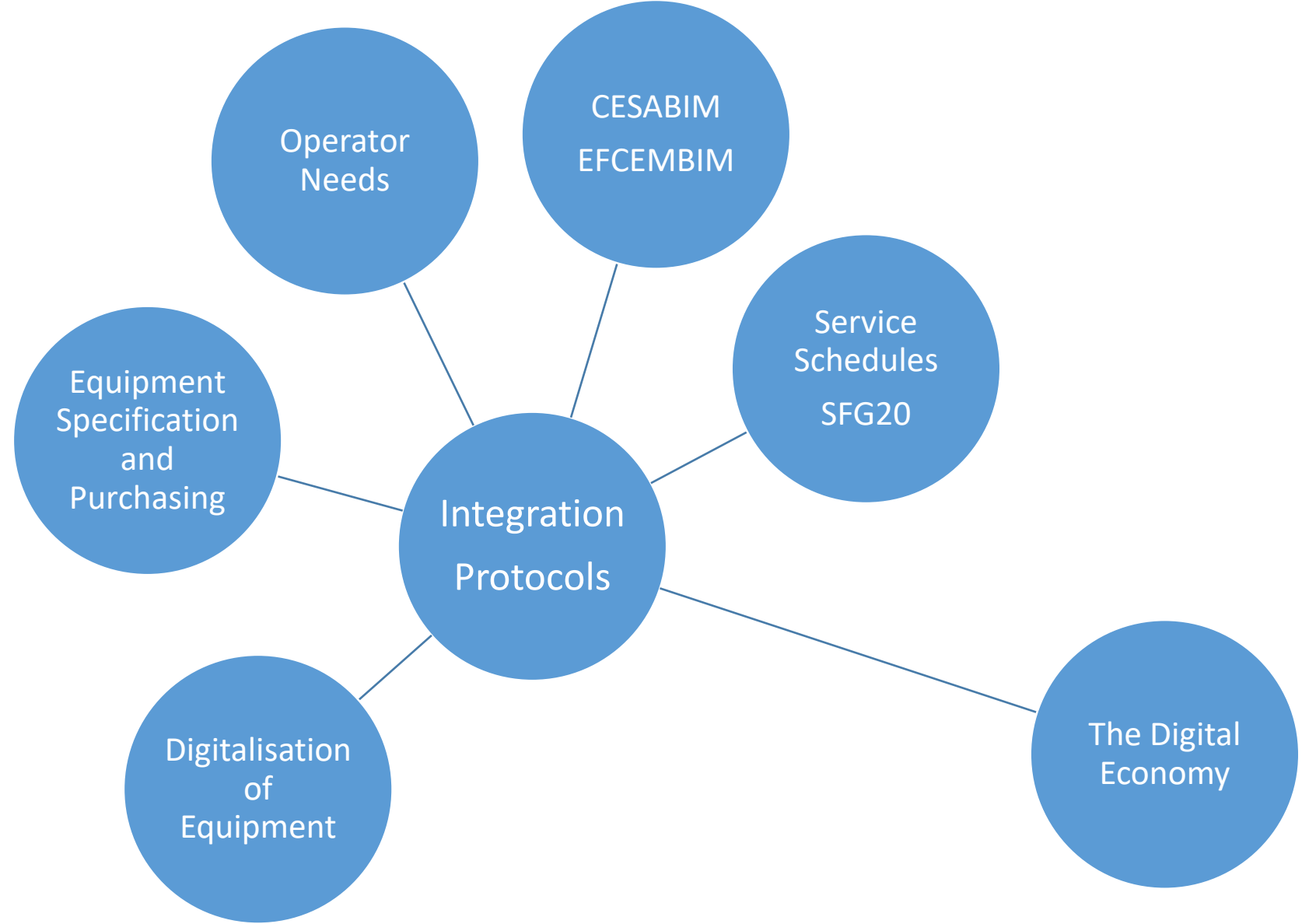




# Green Public Procurement

- Commission's Joint Research Centre – developing plans
- The importance of equipment – EFCEM engagement
- Increase in equipment role in achieving government objectives when issuing tenders.
- Combines EED, Ecodesign, Labelling, resource reuse etc.....
- Significant opportunity for foodservice equipment and its management.
- SGF20

# CONNECTED FOODSERVICE



# “Blue Book”

## Food Processing Equipment Technical Guide

First Published 1992  
Revised 1996, 2005, 2007, 2009, 2012, 2015

Members' guide covering  
National Regulations, Standards & Deviations.

Copies – soft copy



# Conclusion

- Be aware of the BIG issues – opportunities in disguise
- Its all about CARBON
- Digitalisation
- There is no opt out
- Need to embrace and lead change
- Supply chain to Value chain transition





# Questions

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Technical Committee Chairman - EFCEM

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European Federation of  
Catering Equipment Manufacturers



www.**EFCEMBIM**.eu

## Europe's free independent BIM resource library

Developed by the European Federation of Catering Equipment Manufacturers (EFCEM) with the support of:-



### **Keith Warren CFSP**

EFCEM Technical Committee Chairman

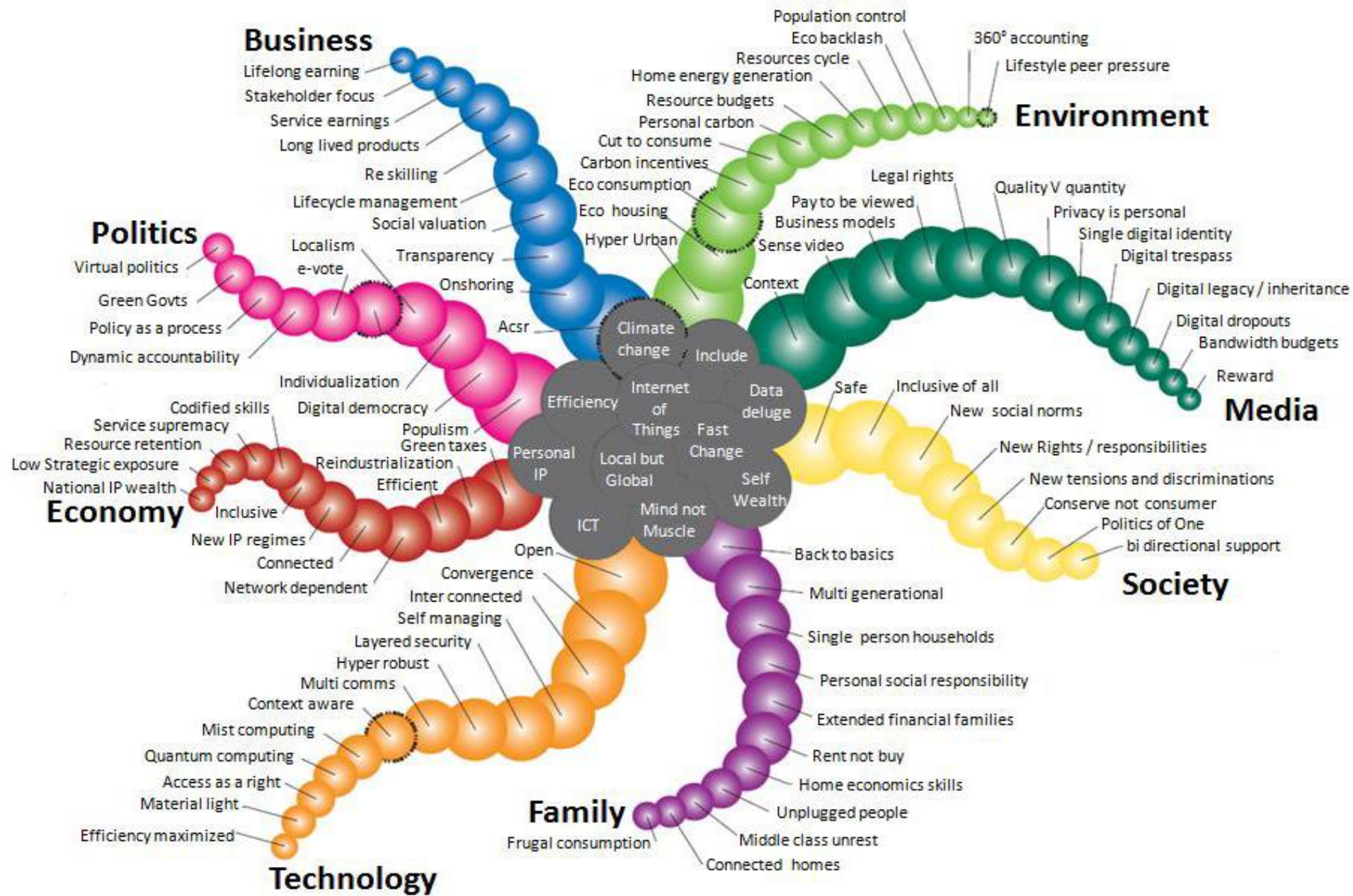
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# Building Information Modelling











# EU votes 'yes' to BIM-friendly procurement shake-up

“The **European Parliament** voted to **support** a package of reforms to the EU Public Procurement Directive, which includes clauses designed to encourage all European countries to recommend the use of electronic tools, **including BIM**, on public works contracts.”

“Reforms included in the Directive cover all aspects of **procurement** and must be implemented into national law **within two years** of their publication in the OJEU.”

# Public Procurement Directive



4. *For public works contracts and design contests, Member States may require the use of specific electronic tools, such as of building information electronic modelling tools or similar. In such cases the contracting authorities shall offer alternative means of access, as provided for in paragraph 5, until such time as those tools become generally available within the meaning of the second sentence of the first subparagraph of paragraph 1.*

# Wikipedia definition

‘Building information modelling (BIM) is a **process** involving the generation and management of **digital representations** of physical and functional characteristics of a facility. The resulting building information models become **shared knowledge** resources to support decision-making about a facility from earliest **conceptual stages**, through **design and construction, through its operational life** and eventual **demolition**.’



# What is BIM.....

.....a **PROCESS** for managing data

.....a **TOOL** to hold the data (Model)

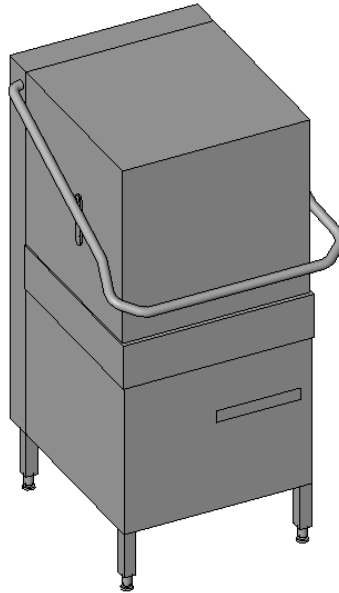
.....a **METHOD** of exchanging the data (Product Data Template)

# 3D CAD v BIM

- 3D CAD model – represents objects as a series of lines
- BIM Models – represent objects as actual products, with properties, values and attributes.



# The Model + the Product Data Template



Family Types

Name: Hood Dishwasher

Parameter	Value	Formula	Lock
<b>Electrical</b>			
Wattage	7750.00 W	=	
Phasing	3	=	
Amperage	13.00 A	=	
<b>Mechanical</b>			
Waste outlet	54.0 mm	=	<input type="checkbox"/>
Cold water inlet	22.0 mm	=	<input type="checkbox"/>
<b>Identity Data</b>			
URL	www.example.com/product_ex2015	=	
Model	EXAMPLE	=	
Manufacturer	EXAMPLE DISHWASHER	=	
Item number (default)		=	
Dimensions	625x740x1460	=	
Description	Passthrough Dishwasher, 500mm x 500	=	
Cost	4350.00	=	
Keynote		=	
Type Comments		=	
Assembly Code		=	

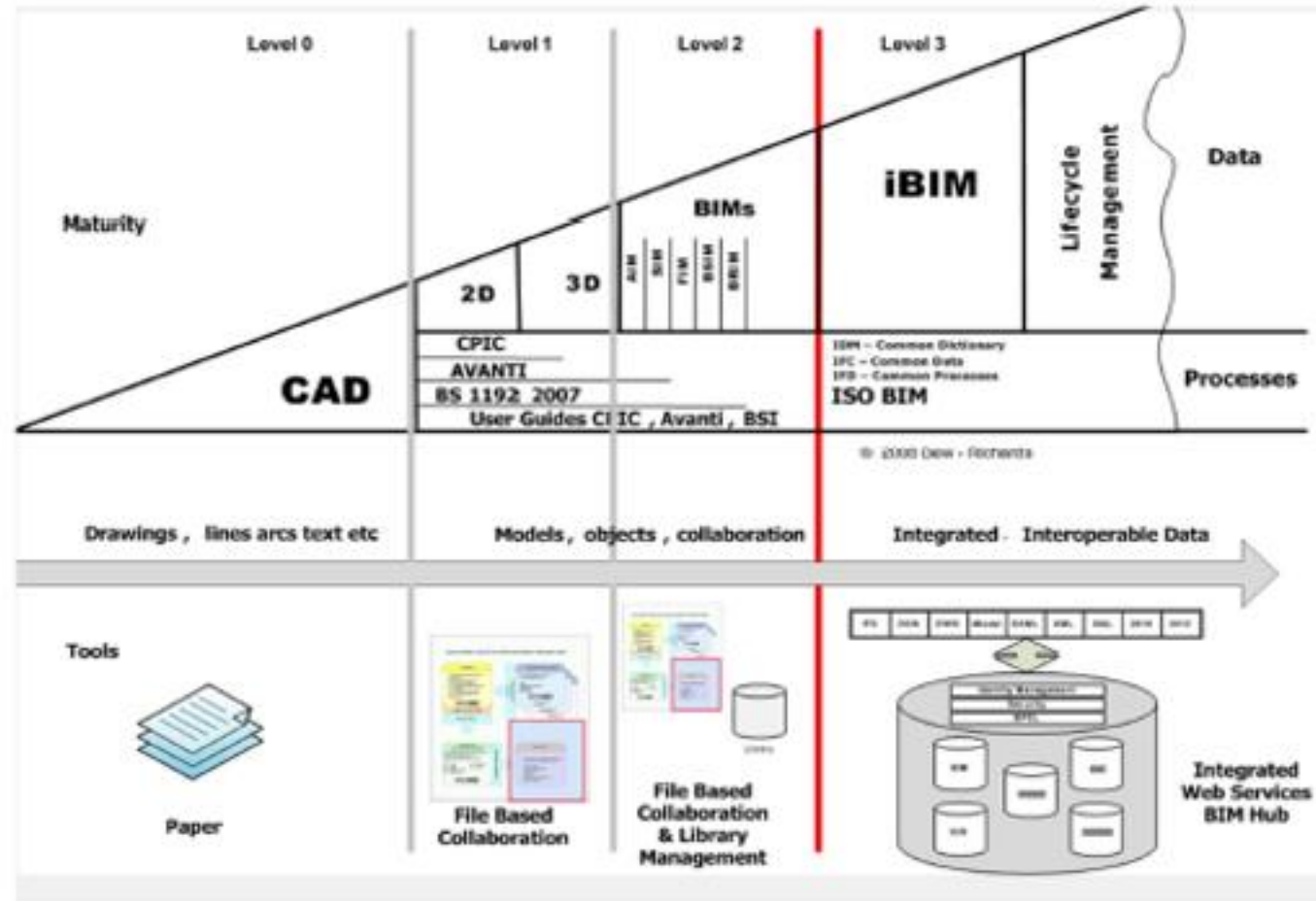
Family Types: New..., Rename..., Delete

Parameters: Add..., Modify..., Remove

Lookup Tables: Manage...

OK Cancel Apply Help





# Some of the Drivers

- Procurement costs
- Data management
- EU Directives/initiatives
  - Energy Efficiency Directive
  - Energy related Products Directive
  - Carbon Footprinting
  - Eco design, Energy Labelling Directive .....etc.
- Trade development

# Benefits

- **Effective** decision making in the procurement/operation process.
- **Informed** decision making.
- The level of **information grows** as the project progresses.
- **Save 20%** of procurement cost through improved efficiency

## Re-usability

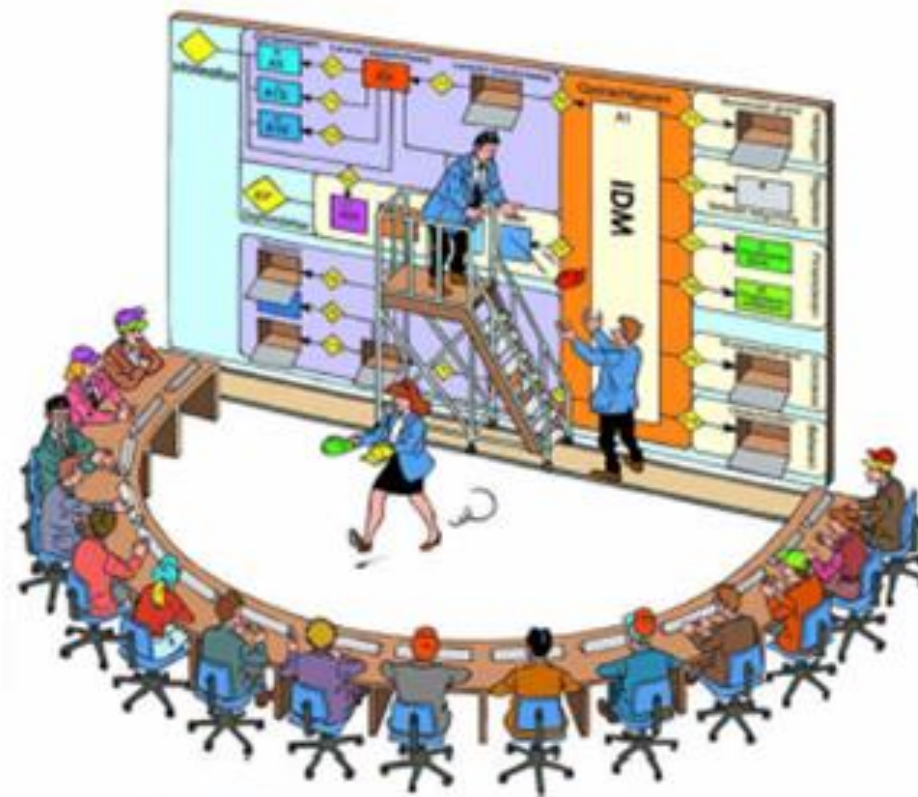
- One input, many outputs

## Checkability

- One input, many checks







































## Interoperability

- One format, many paths





# BIM Technologies/Software

BRIEFING	  
DESIGN	            
ANALYSE	     
MANAGE	            
REVIEW	  

# Building Information Modelling



www.**EFCEMBIM**.eu

## THE PROCESS

- THE MODEL
  - A rendered representation

IFC

Revit

ArchiCAD

etc.

- THE DATA
  - Product Data Template (PDT) Spreadsheet



## THE SOFTWARES -163 in total

**ALL 163 BIM Software**

Revit

ArchiCAD

etc.

For generic/user drawn representation



## Featuring:-

IFC models

Proprietary model formats e.g. Revit, ArchiCAD, SketchUp

Product variant configurator to save model creation cost for IFC files

Free for manufacturers to upload\*

Free for designers to download

\*requires membership of an EFCeM national association

# Its Use

The library will be free to access globally; for architects, consultants and designers	✓ Maximising its value and use
It will be unified in its categorisation and searchability	✓ Making product easier to find and specify
A configurator prevents the need for a model for every variant	✓ Significantly reducing costs to manufacturers
EFCEM will work to develop parameters on behalf of the industry	✓ Futureproofing developments
EFCEMBIM is FREE & reduces the cost for manufacturers	✓ Increasing their profitability

An independent, future-proofed solution – by the equipment industry, for the equipment industry.  
**EFCEMBIM** is an **EFCEM** initiative to provide European manufacturers with an open access, single, unified library of data useable on all BIM software.



# Other things to know...

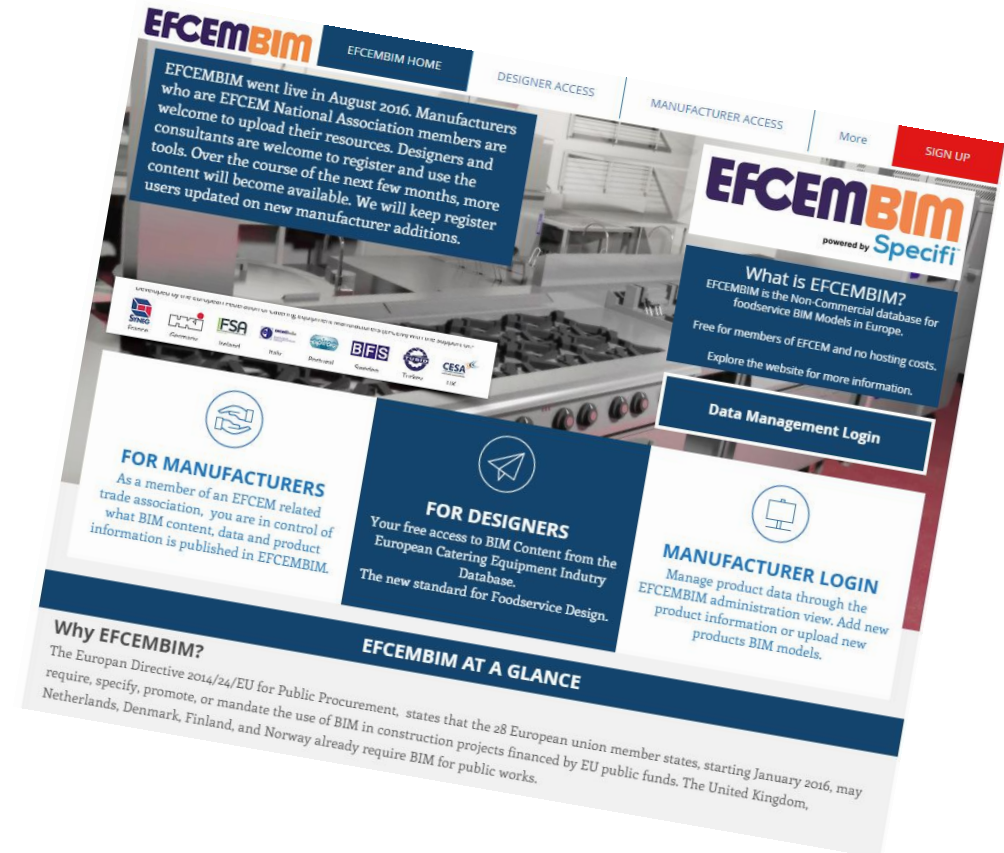
- Model – ifc or proprietary
- Parameters- what gets measured and how.
- Origination and development
- On-going work.





# Next Steps

- Promote and Use EFCEMBIM [www.efcembim.net](http://www.efcembim.net)
- Manufacturers
- Distributors
- Designers



# Thank you for listening

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