



(Student) Enterprise and Entrepreneurship

The Case of Computing

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Overview

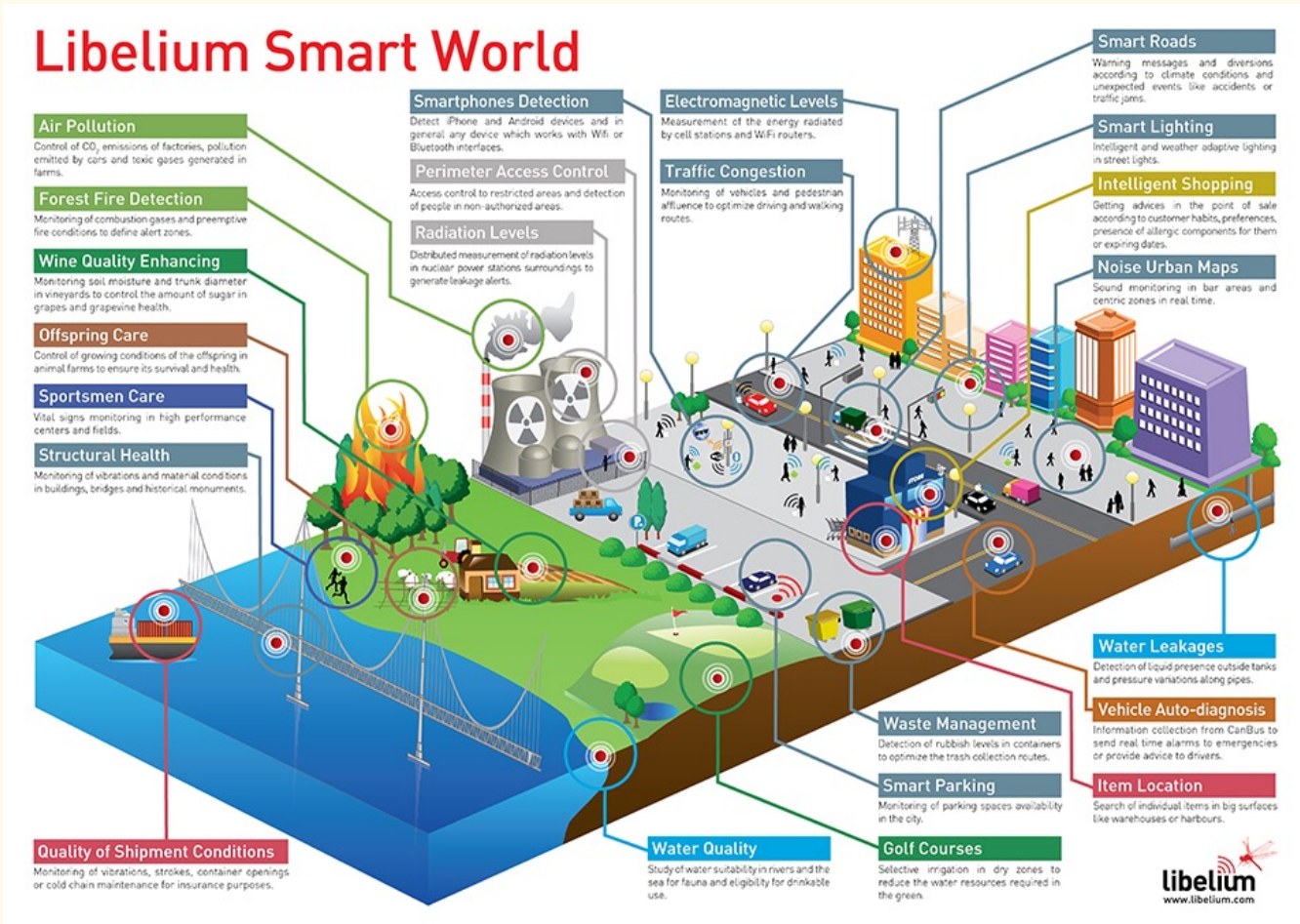


Over to you

- What is so special about computing as a subject area when it comes to enterprise and entrepreneurship?

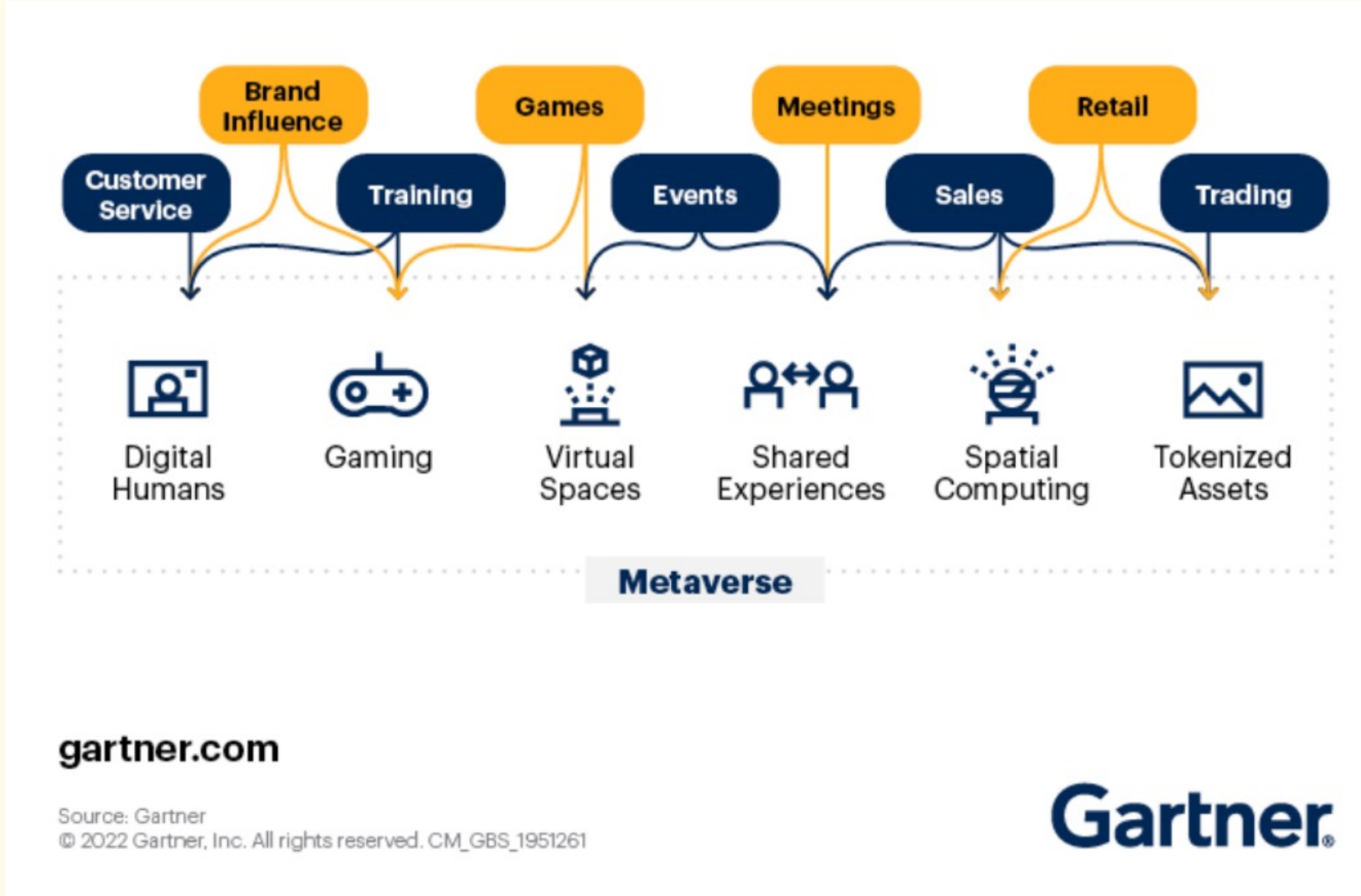
Opportunities ...

- Smart Cities
 - Smart Homes/ Buildings
 - Smart Car Parking
 - Smart Bins
- Smart Cars
 - Autonomous Vehicles
- Smart Agriculture
 - Supply Chains
 - Resource Monitoring
 - Targeted Fertilisation
- Smart Medicine
 - Precision Medicine
- Smarter Finance
- Smart Manufacturing



Perera C., Qin Y., Estrella J., Reiff-Marganec S., Vasilakos A. Fog computing for sustainable smart cities: a survey. ACM Computing Surveys 50 (3): 1-43, 2017

More opportunities ...



Even more opportunities ...

Deliberately left blank to inspire thinking

Key Building Blocks (1)

- Cloud Computing
 - Compute infrastructure that flexibly scales to demand; usually ‘resourced’ through data centres; comprises both hardware and ‘software stacks’; main enabler for ‘big data’
- Edge and Fog Computing
 - Moving activity away from the Cloud and distributing it to other devices
- Service Computing
 - The concept of encapsulating an activity in a software service that can be used on demand and can be composed with other services to achieve bigger tasks, ‘just-in-time’ vision
- Business Process/ Scientific Workflow
 - A sequence of tasks to achieve an objective; each task can be instantiated by a service and run on computer resource
 - Some game engine processes are programmed using this also!

Key Building Blocks (2)

- Internet of Things (IoT)/ Cyber Physical Systems
 - IoT essentially Sensors and Actuators connected to internet
 - ... billions of them
 - ... in all sorts of devices
 - SCADA/ICS taking to a global level
- Artificial Intelligence, Machine Learning, Semantically enhanced data
 - BigData: the V's: Veracity, Velocity, Volume, Variety
 - Semantically enhanced data
 - Learning of Patterns
 - Extracting Information (Data Value chain)
 - Making automatic decisions on data/ information
 - Risks of learning bad behaviour
 - Interesting applications need to combine data

Key Building Blocks (3)

- xR
 - Augmented, virtual and immersive realities
 - Development tools are games engines



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The beauty of the computing building blocks

- One key challenge for start-ups: cash flow
- Most businesses need resources to get of the ground
 - (imagine starting a new car factory ...)
- Computing start-ups can be done on a budget
 - Key ingredient needed at onset is time
 - Cloud resources are cheap
 - Development tools are often available for free
 - In case of success: cloud scales up
 - In case of subsequent failure: cloud scales back

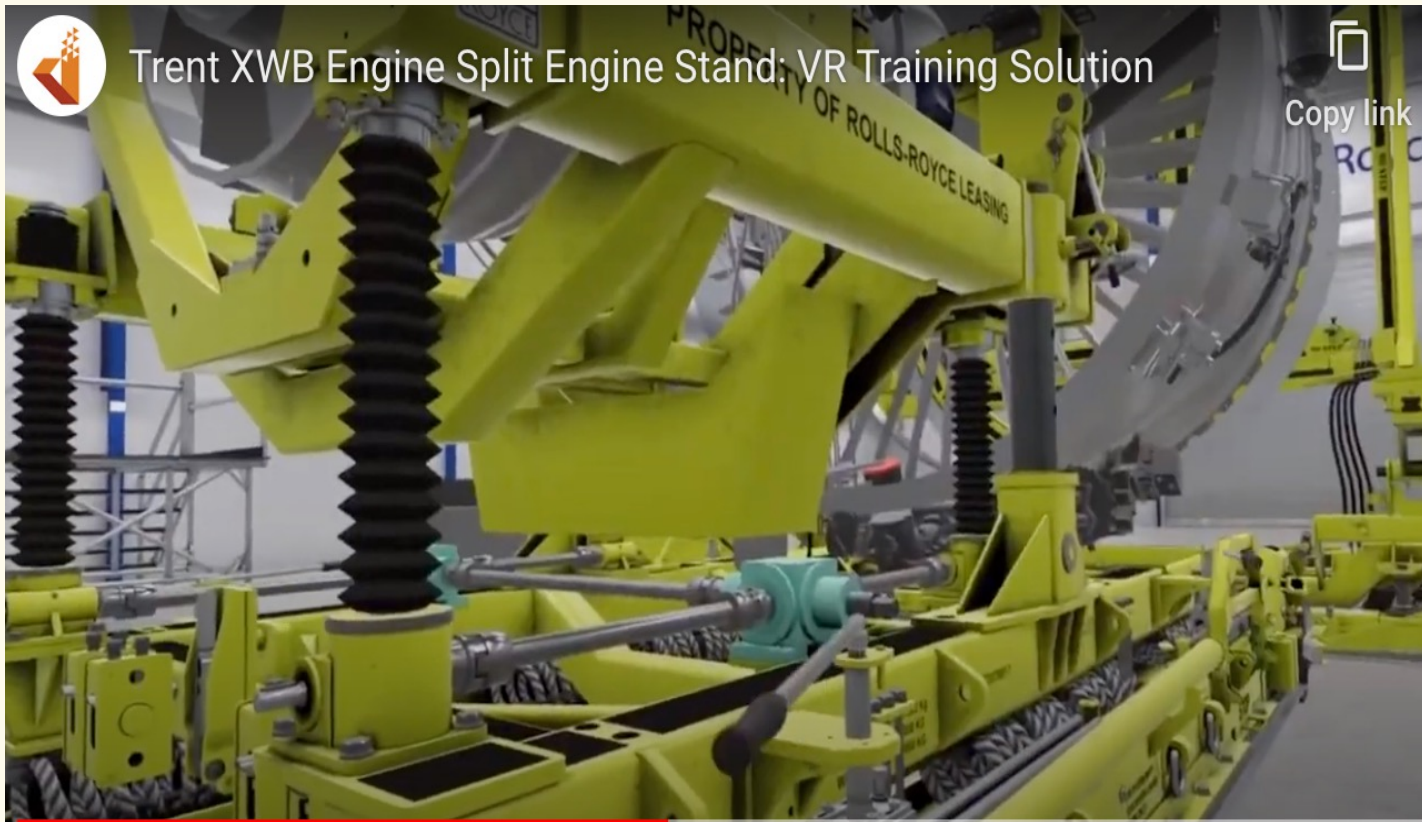


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[ok VR stuff costs money, but not millions and its bound to get cheaper]

A case study: Bloc Digital

- Derby based SME (co-located in University, remember ...)
 - <https://bloc.digital/>



Part of our wider enterprise ecosystem:

- They give talks to students
- Employ students on placements
- Work with us on research (e.g. KTPs on automatic artefact generation and data sciences)
- Feed into our curriculum
- Tell us what they think industry needs from future grads
- Provide inspiration of what can be done
- Hire graduates
- Give project ideas

Over to you

- Tech development is fast, we cannot foresee where it is taking us, so how do you prepare students for something we don't yet know?

End of Part 1

...tea? ... coffee?



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