

The disruptive impact of digitization on business models and the supply chain

Logistikmanagement Ringvorlesung: „Make or Buy“
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Audit.Tax.Consulting.Corporate Finance.



Is technology generally over-hyped?

«The trend to print everything at home will not take place.»

Dieter Woschitz, Head of the Institute for Rapid Product Development (IRPD) at Inspire AG (ETH Investment), August 2014

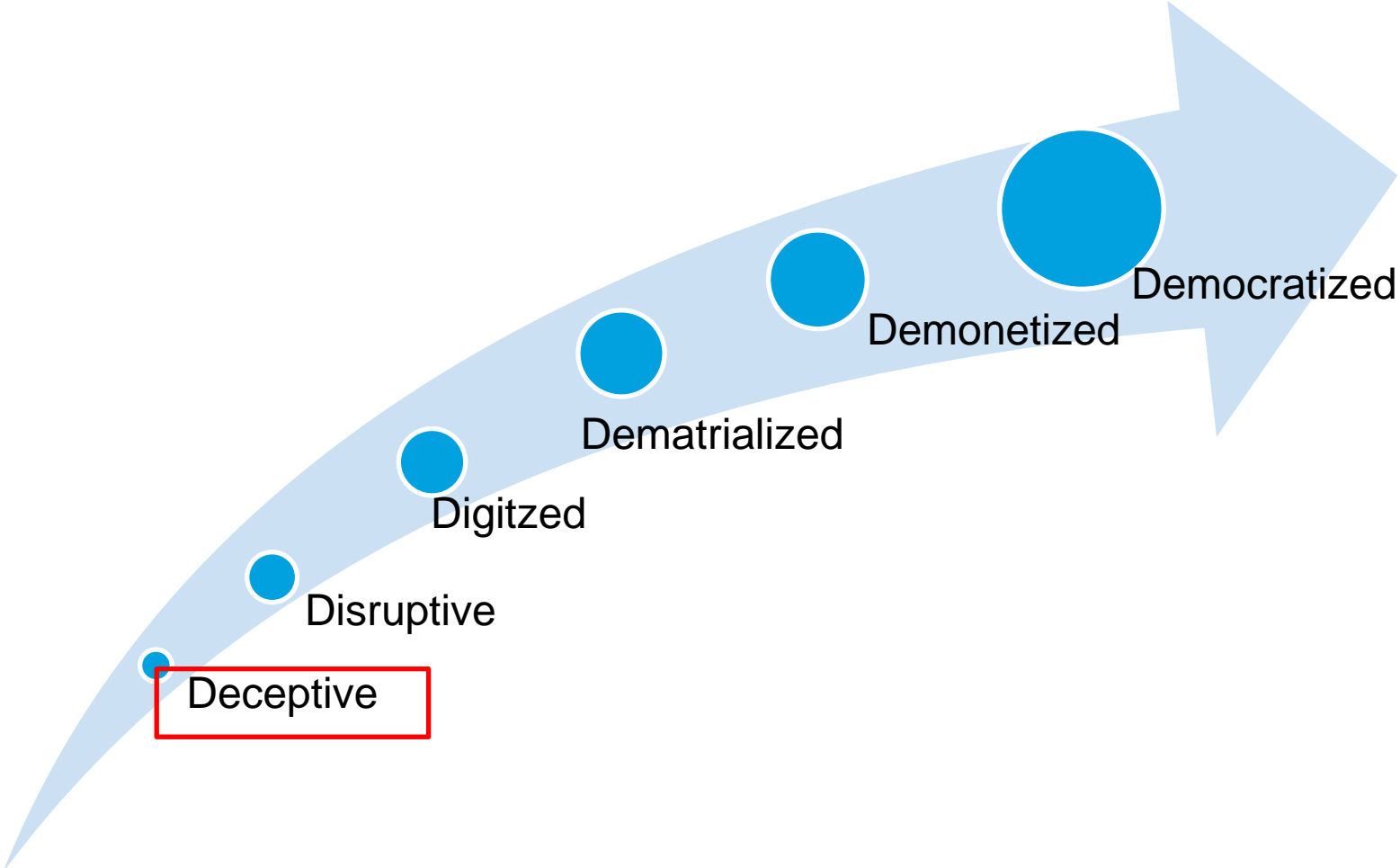
“There is no reason for any individual to have a computer in his home.”

Ken Olson, Co-Founder and CEO of Digital Equipment Corp., 1977

Note: The Apple Macintosh II was introduced in 1980

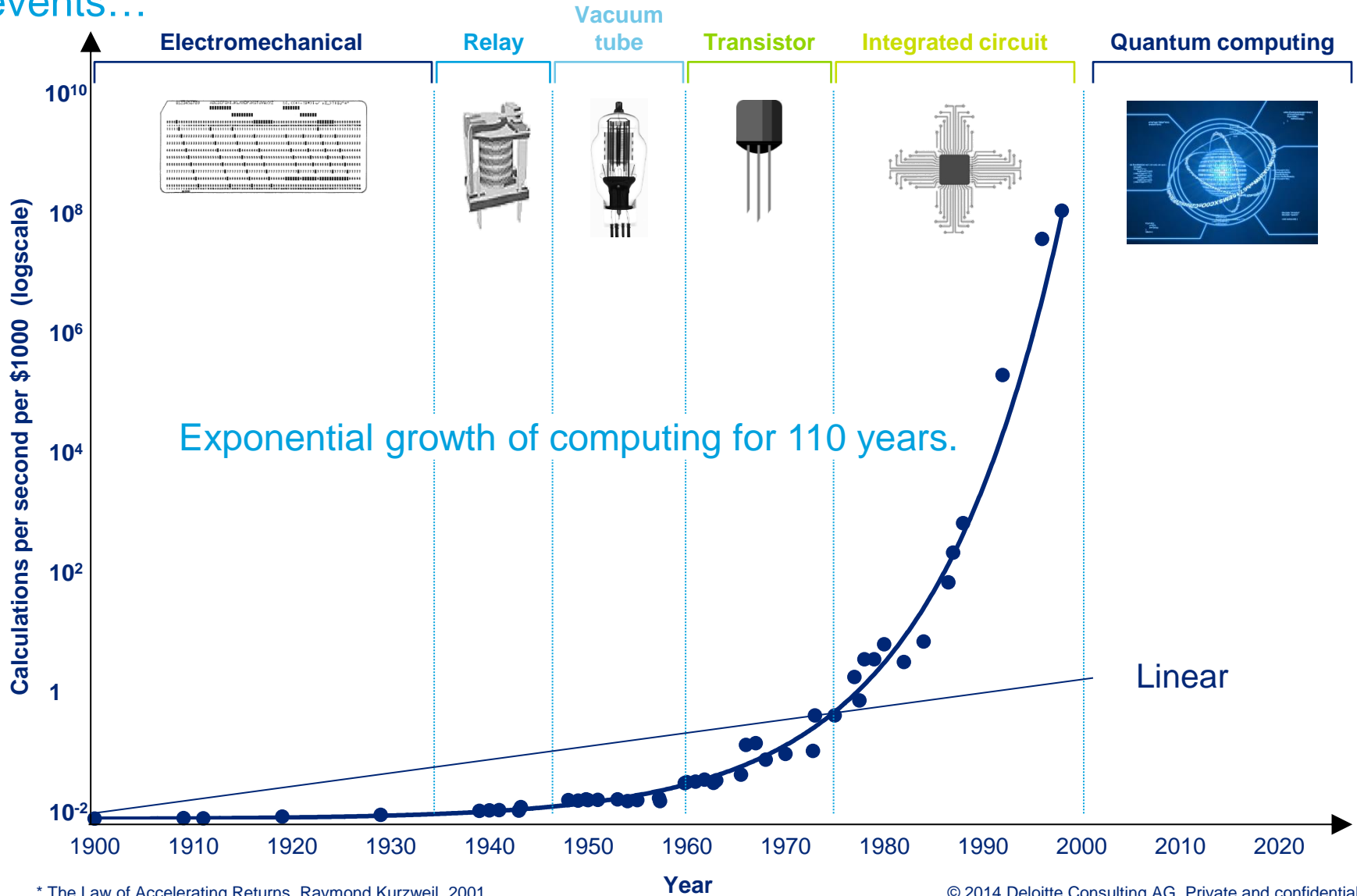
The six D's of Digitation

The six D's of Digitation



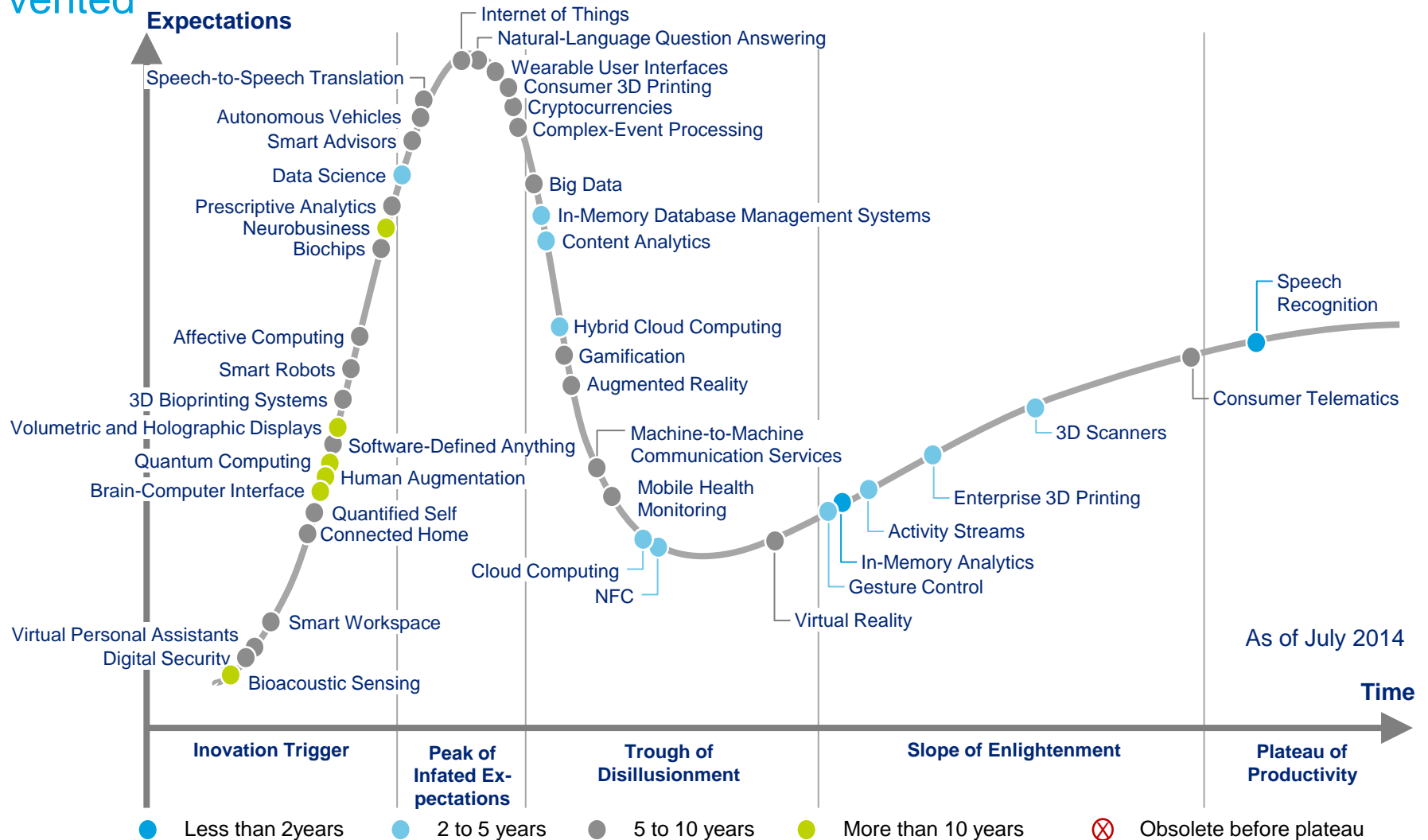
Moore's law applies to all technologies*

A steadfast trend that defies wars, economic depressions, catastrophic events...



Gartner rates emerging technologies in a hype curve

Technologies which dominate today were invented some 20-40 years ago. Most technologies which will dominate the next 20-40 years are already invented



How to be smart and still fail

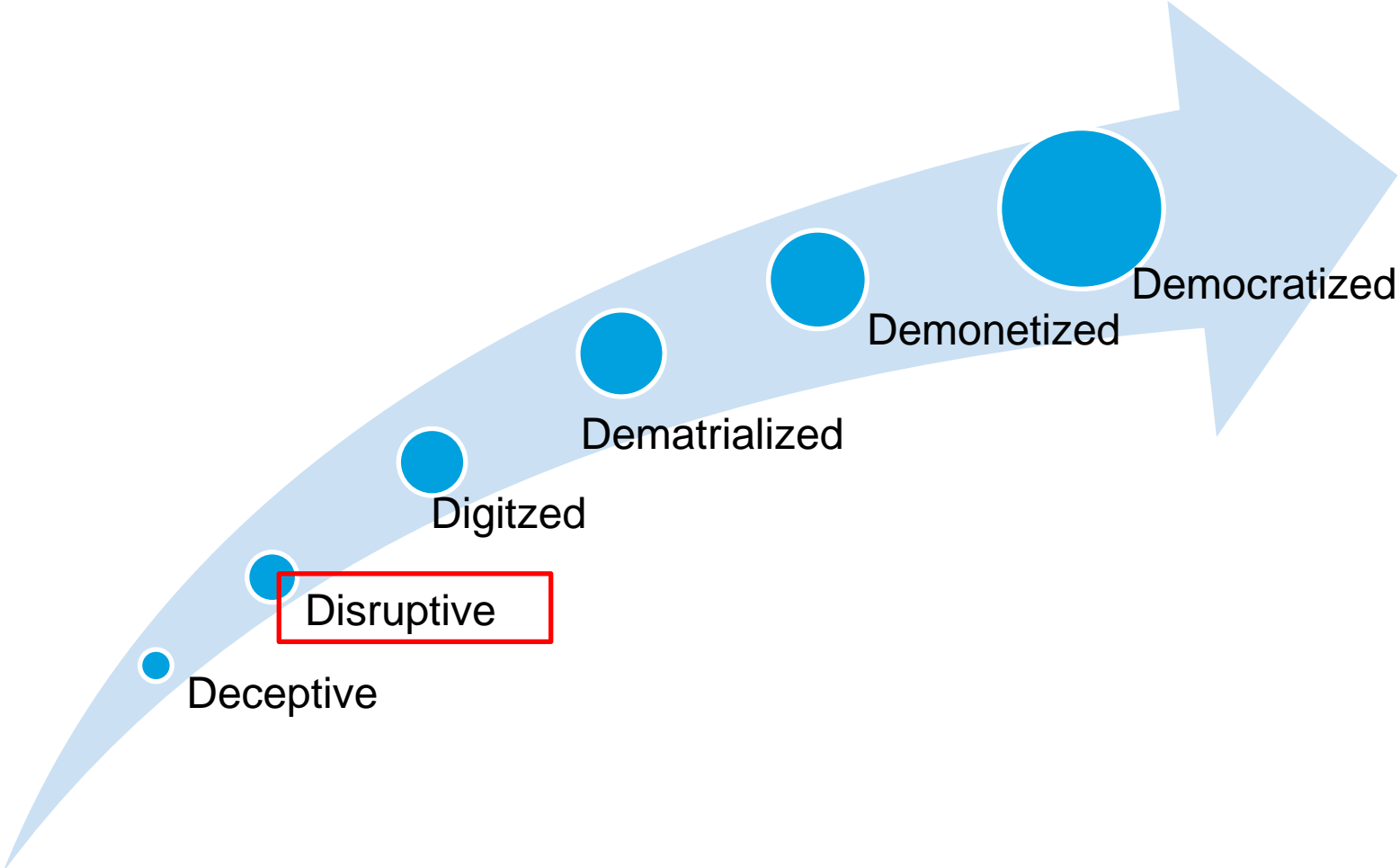
1975



2013



The six D's of Digitation



Disruption is comprehensive and accelerates



~~Taxi Fleets~~



~~Long Distance~~



~~Book Stores~~



~~Video Stores~~

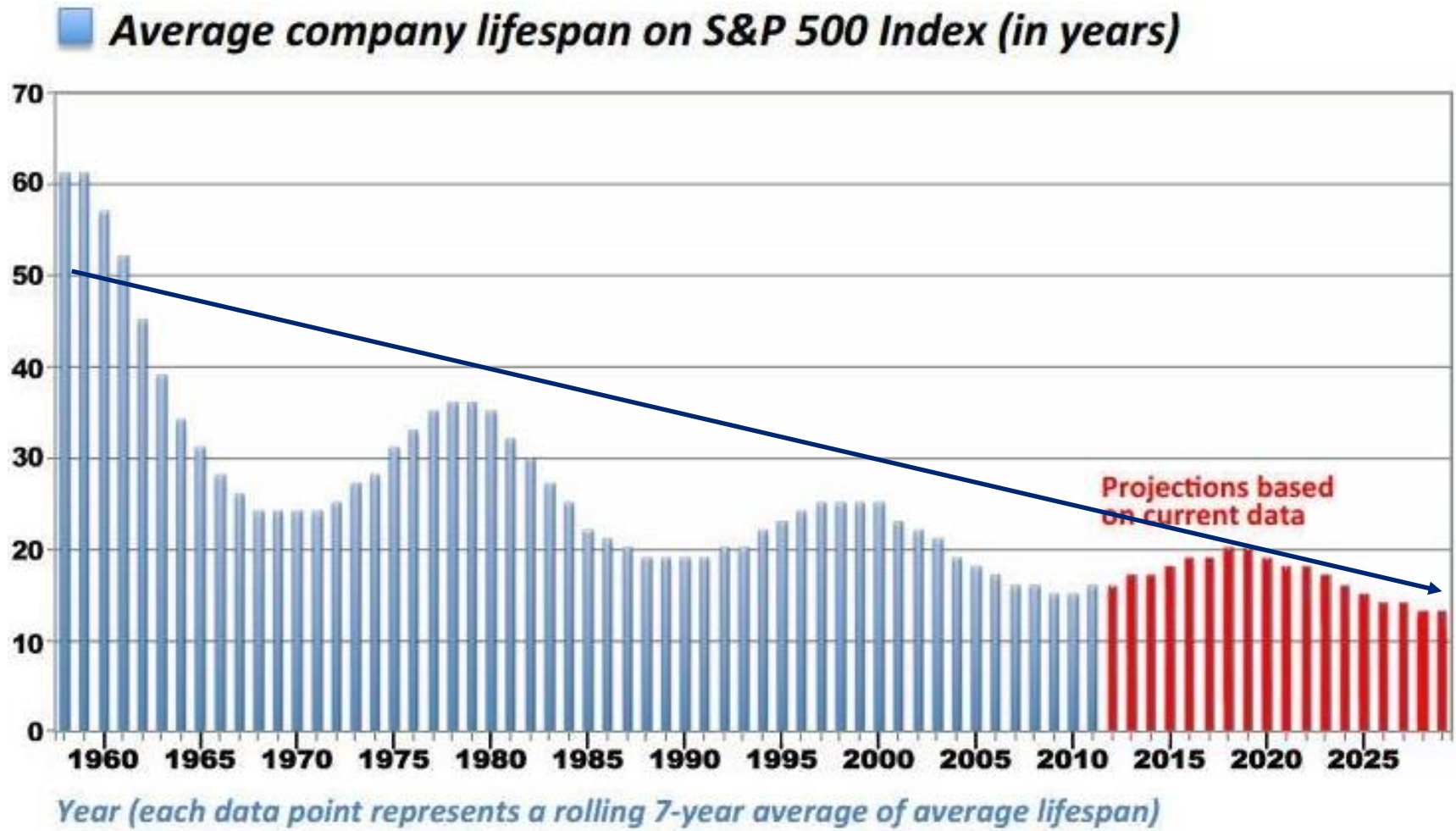


~~Research / Libraries~~



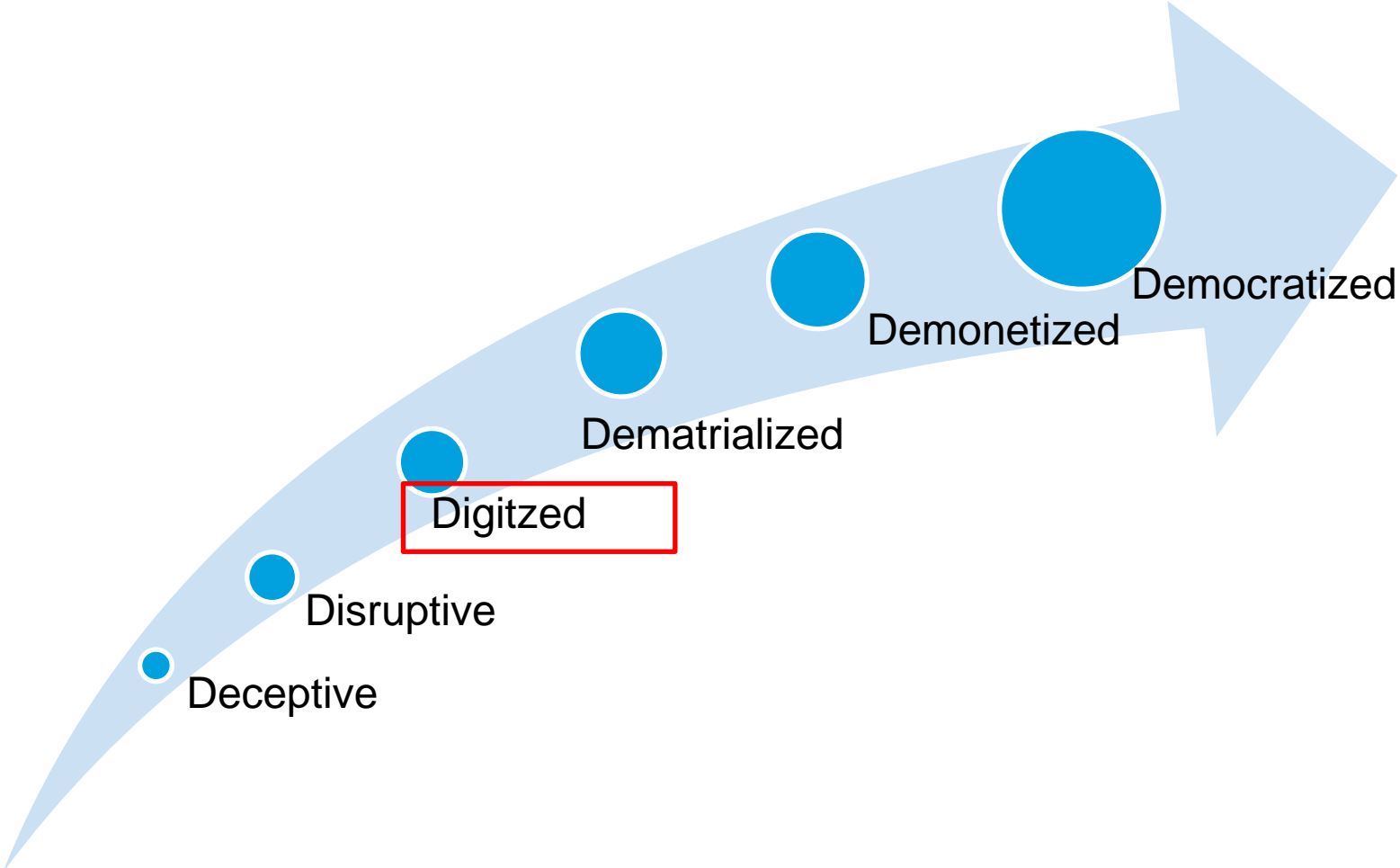
iTunes?

Disruption is comprehensive and accelerates



DATA: INNOSIGHT/Richard N. Foster/Standard & Poor's

The six D's of Digitation



Example Neuroscience

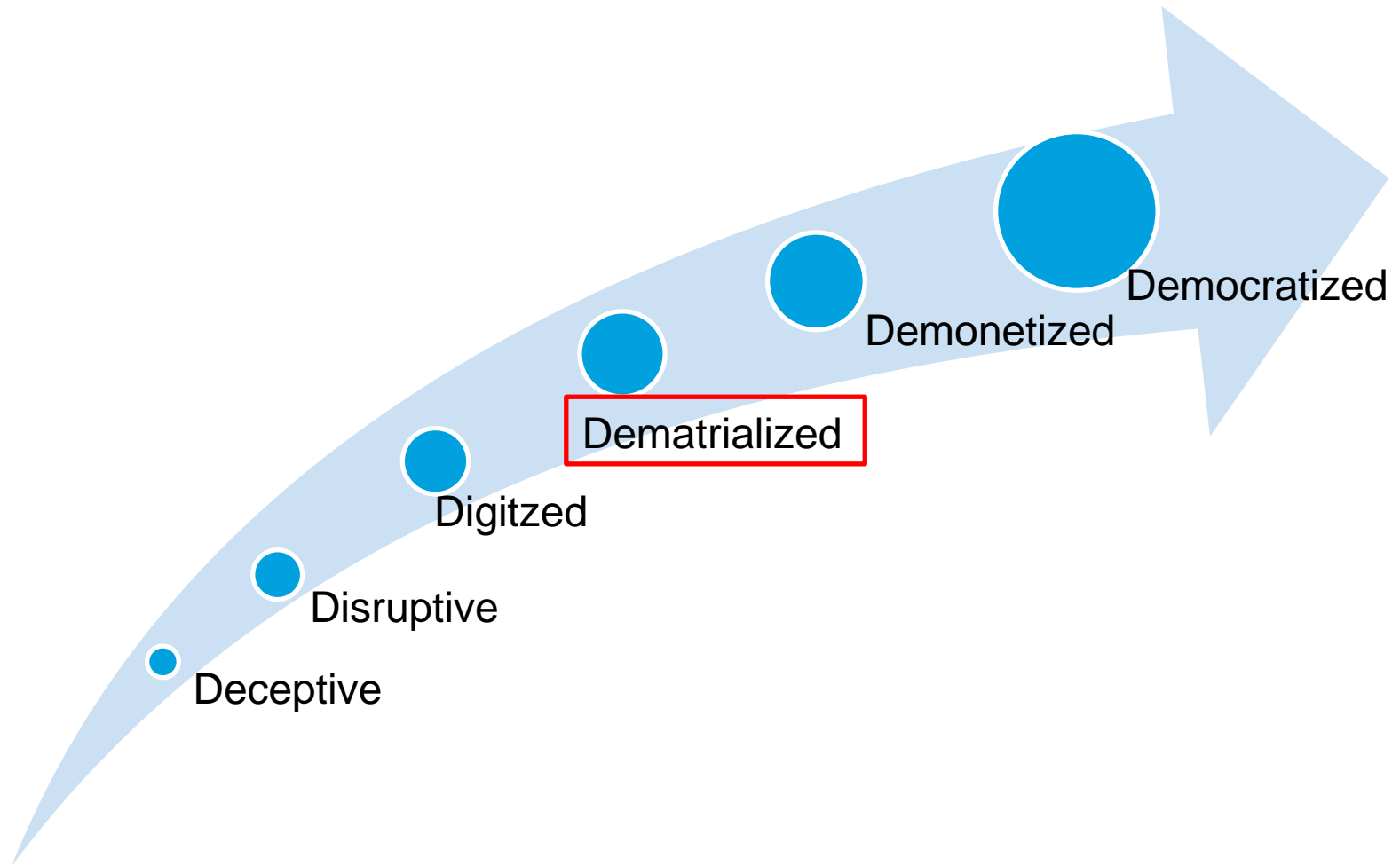


Example driverless Cars







- 1920** quasi-autonomous demonstration vehicle
- ...
- 1980** Driverless car (Mercedes Benz / Bundeswehr University)
- ... All major car manufacturers and Google have prototypes
- 2010** Four driverless cars drove from Italy to China
- 2014** Several US states have passed legislation to allow autonomous vehicles
- 20??** The car as an advertising media?

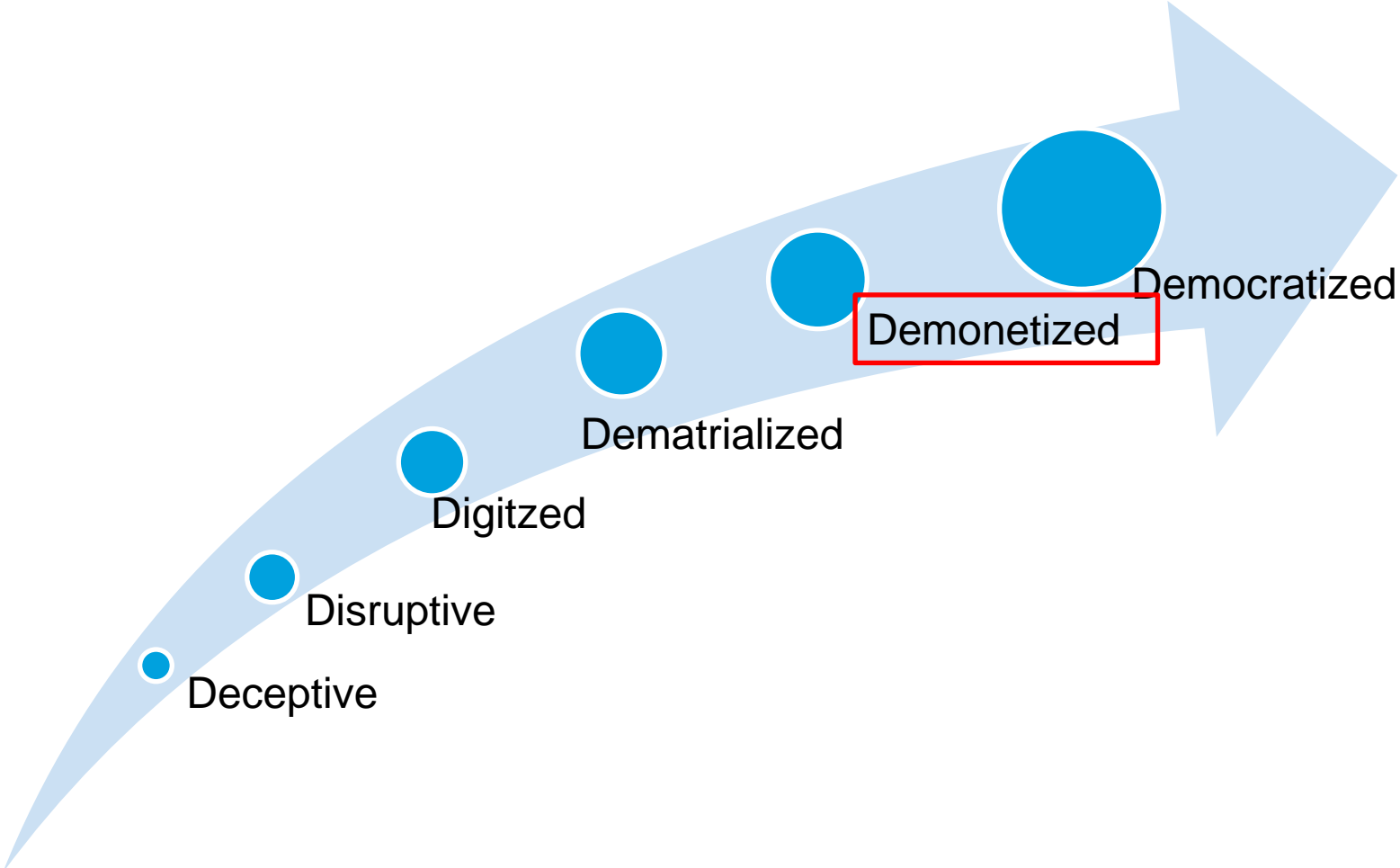
The six D's of Digitation



Physical Assets are no longer needed

	Age years	Rooms #	Hotels #	Countries #
	9	2,500,000		207
	4	650,000		192
	65	645,000	4,400	100
	93	610,000	3,800	88

The six D's of Digitation



Examples of exponential cost decline

Robots



Pneumatic robots can cost as low as USD 35

Drones



“A toy drone of USD 17 today has the same gyro capacity as the space shuttle had 30 years ago (and would cost USD 100 million)”

Dan Barry, Astronaut

Solar Panel



The price per KWh has decreased from USD 30 (1984) to below USD 0.16 (now)

Example DNA

The perfect fruit just got better

Yummy, good for us, varieties galore. We all love apples! Until they turn brown, that is. Arctic[®] apples are everything you love about apples, without the "yuck" factor that you don't. (Now if we could just get rid of the seeds!)

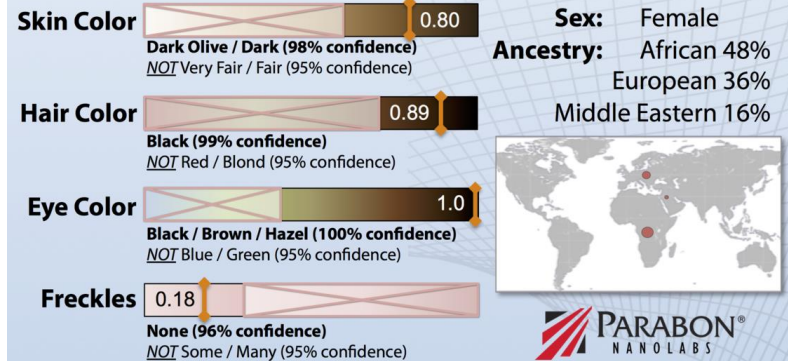


DNA Phenotyping with Parabon[®] Snapshot[™]

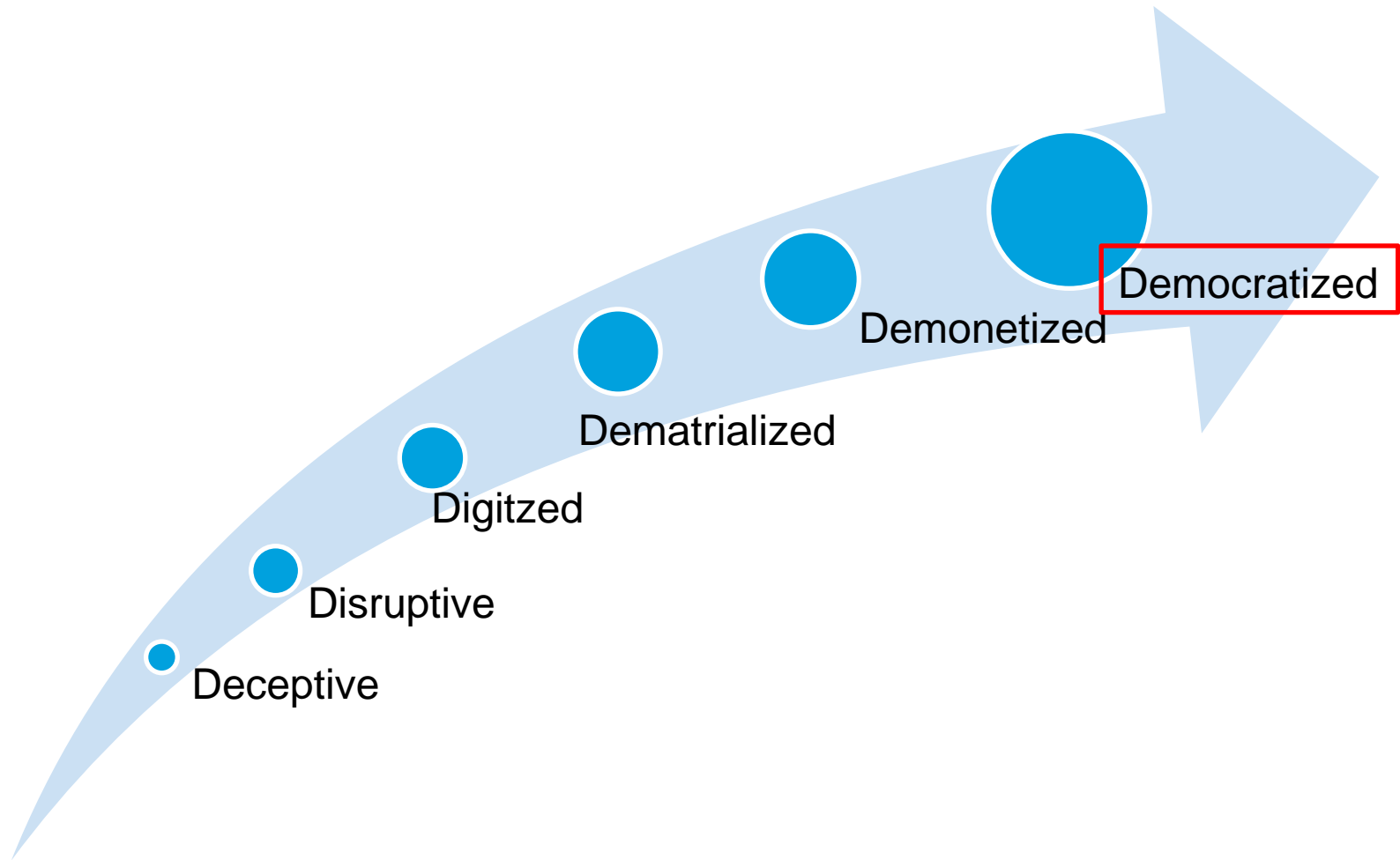
Customer Case # D06A19B74E



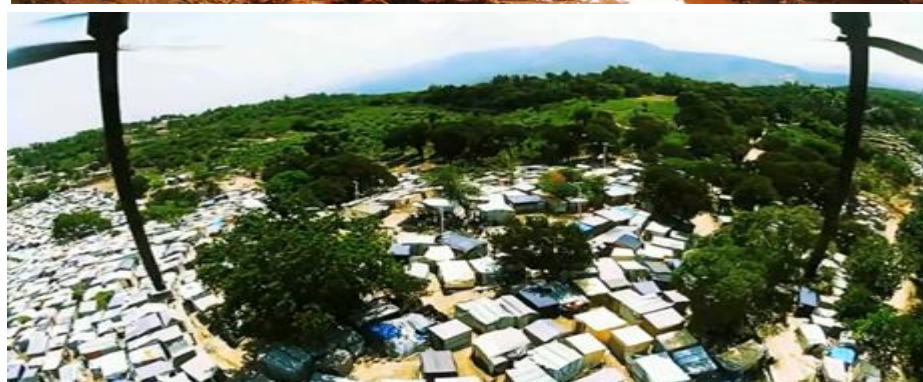
Predicted (■) & Excluded (⊠) Phenotypes



The six D's of Digitation



Example Drones



Example Health (move from sick care to real health care)

Current



Quantified self

- Heart Rate
- Steps
- Calories
- Distance

Clinical trials



Quantified health

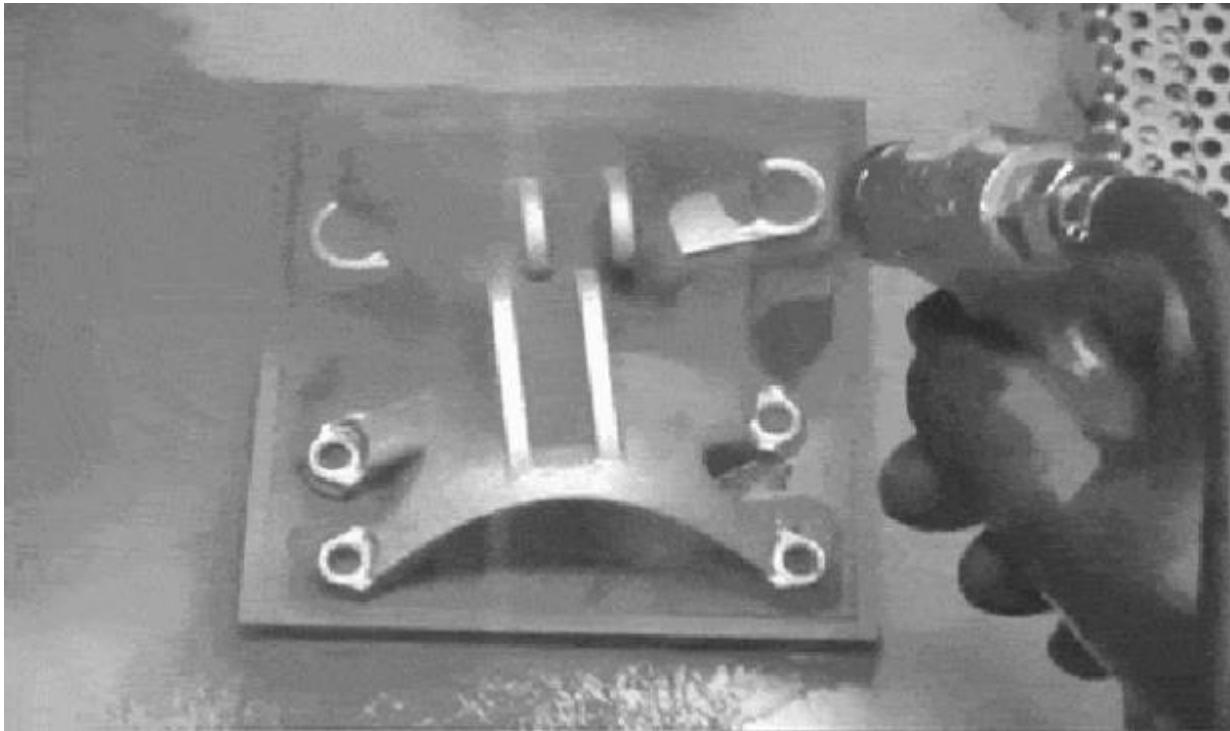
- Electrocardiogram
- Temperature
- Blood oxygenation
- Blood pressure indicator

3D Printing

Introduction Video into 3D Printing

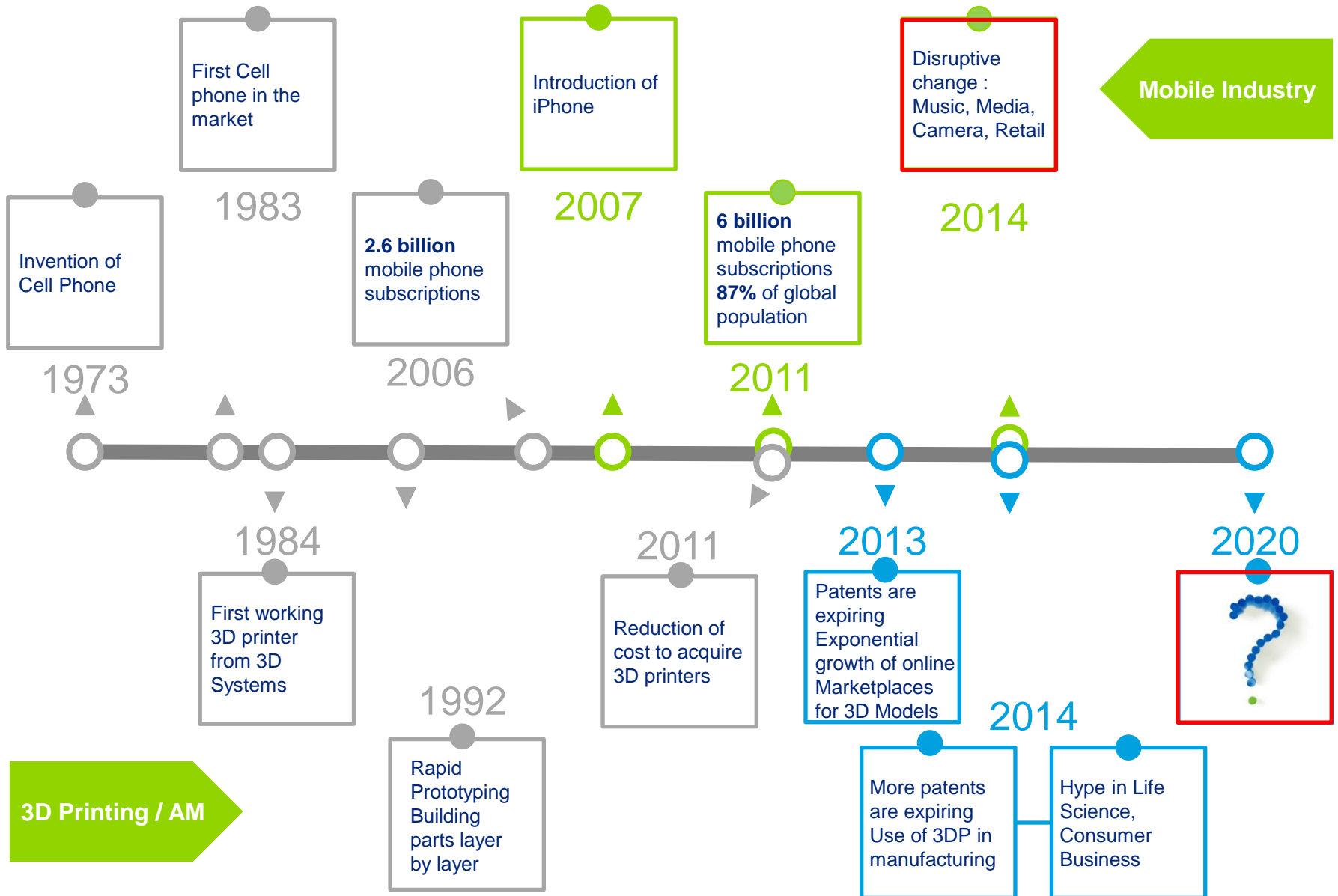
WILL
3D PRINTING
CHANGE
EVERYTHING?

Additive manufacturing is happening - today

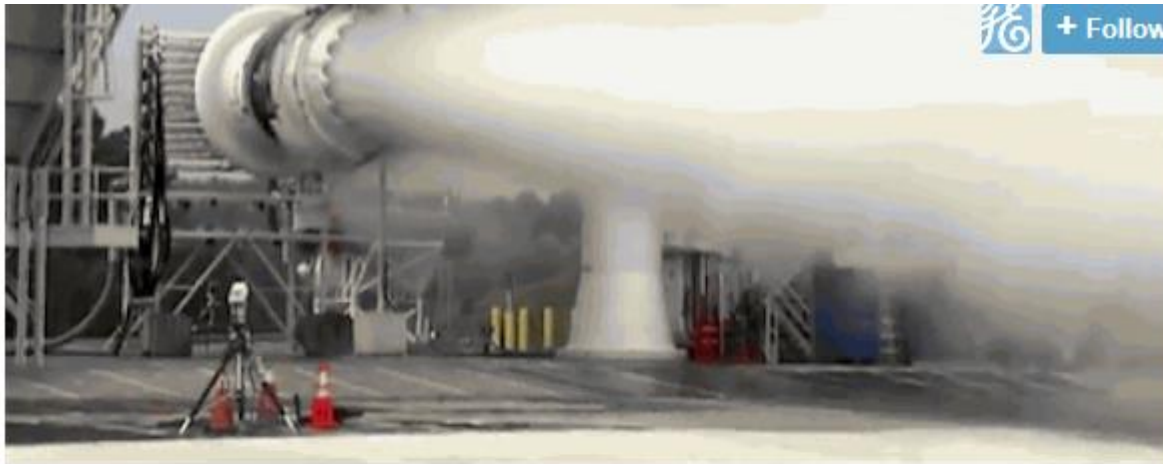


This jet engine bracket was one of the ten finalists in GE's 3-D Printing Design Quest challenge, which called on the maker community to design stronger but lighter brackets. The finalists' brackets were 3-D printed at GE Global Research. The winning bracket was more than 80 percent lighter than the original bracket. Read more at [The New York Times](#)

Disruptive Change Pattern?



Additive manufacturing will take off – next year



 + Follow 

World's First Plant to Print Jet Engine Nozzles in Mass Production

July 15, 2014



GE is taking mass production to a lofty new level. The company is pulling 3D printing out of the lab and installing it at the heart of the world's first factory for printing jet engine fuel nozzles in Auburn, Ala.

The company has spent the last several years developing technologies ranging from **data analysis** to machine monitoring and preventive maintenance to get 3D printing ready for

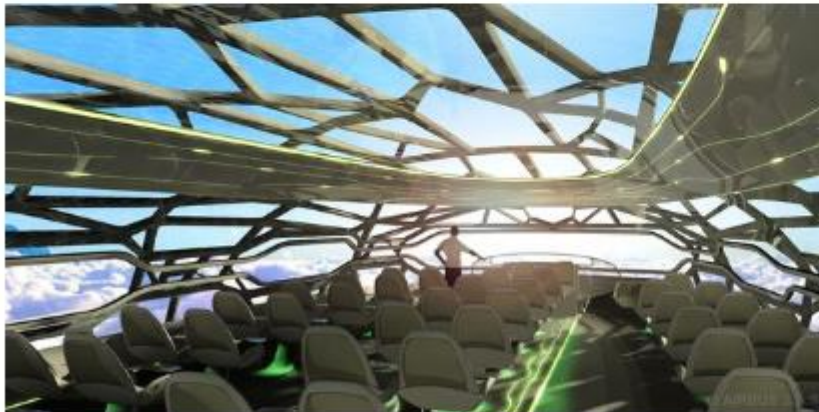


Additive manufacturing will take off - soon

TECH 7/11/2012 @ 6:44PM | 36,436 views

Airbus Explores Building Planes With Giant 3D Printers - Updated With Video

+ Comment Now + Follow Comments

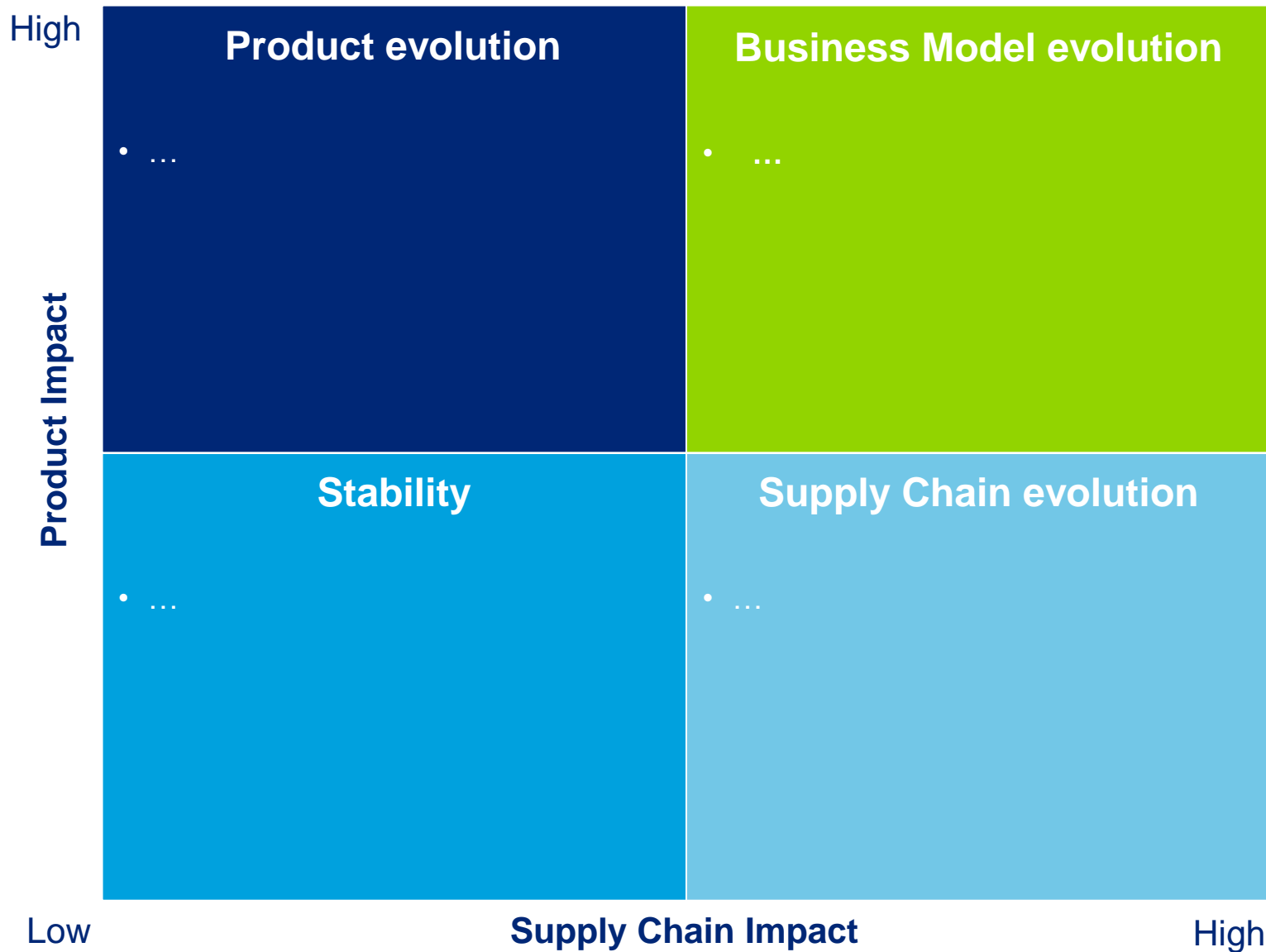


The concept plane by Airbus to be made circa 2050 with a 3D printer

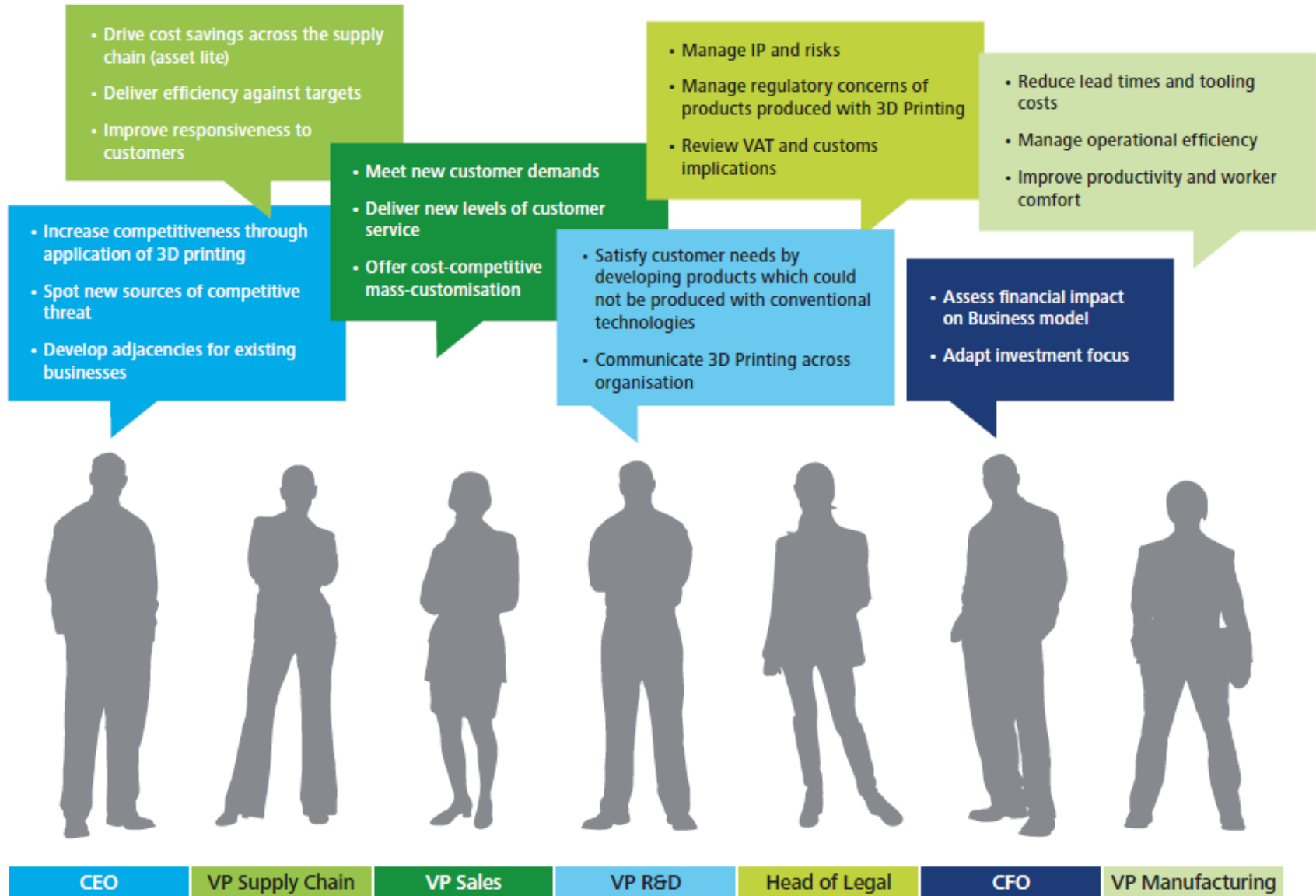
[Updated with video, below]

We already know that 3D-printing has revolutionized the way we can make everyday objects from [Lego pieces](#), to [guitars](#), and from [car bodies](#) to [artificial livers](#). But the scale of this change could be much, much bigger if the “printers” themselves scale up enough to incorporate structures as large as airplanes.

How to achieve performance, growth and innovation goals



All senior management has an interest in 3D Printing



Innovation

Innovation beyond products allows for disruptive growth

The 10 Types of Innovation

Network

Which connections and co-operations create value?

Process

How are competitive advantages and unique selling points achieved through processes and methods?

Product System

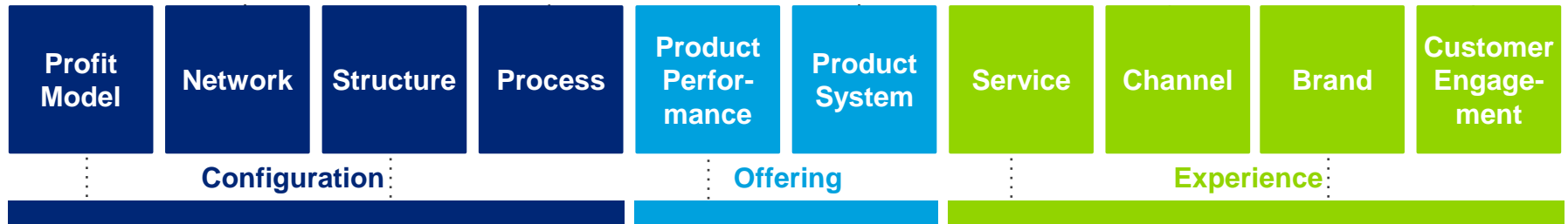
How are products and services complementing each other?

Channel

How is the offering delivered to customers?

Customer Engagement

Which distinctive interactions are fostered?



Profit Model

What is the way to make money?

Structure

How is value created through the alignment of talent and assets?

Product Performance

What are the characteristic features and functionalities resp. competitive advantages?

Service

Which service, support and enhancements surrounds the offering?

Brand

How is the offering and the business represented?

There are different layers of innovation which needed to managed

Innovation Management



- **Competitors:** What are competitors doing in order to differentiate themselves, and how are they doing it?
 - **Customers:** What are current and future market needs?
 - **Company capabilities:** Do we have the appropriate know-how to satisfy future market needs, while being competitive and differentiable?
-
- **Roles and Responsibilities:** What should be the roles of headquarter and segments on a global and local level?
 - **Prioritisation framework:** How is the budget and people allocation being governed and applied?
 - **Tax:** Is your intellectual property (IP) structure aligned to future tax requirements?
 - **IP Management:** How do you make your IP available across your whole group?
-
- **“Make or Buy” framework:** How are potential portfolio gaps being addressed?
 - **Innovation Return of Investment (ROI):** How are investments in R&D structured and monitored (KPIs)? Are risks being tracked?
 - **Product Lifecycle Management (PLM):** Is the product portfolio being managed from a holistic perspective?
-
- **HR:** What incentive plans and people development schemes are in place?
 - **Supplier integration:** Are suppliers used as a source of innovation?
 - **Controlling:** Are “Design to cost” principles applied in product development?
 - **IT:** Is IT used as an “accelerator” to R&D (e.g. documentation)?

Conclusions

The strategic considerations of technology

Strategic impact

- Performance pressure (individuals, organizations)
- Acceleration of change
- Increasing uncertainty of extreme events



Strategic imperatives

- Re-Frame Innovation
- Transformational change

Key takeaways

- **The only constant is change and the rate of change is increasing. Don't ask what will change but what will not change**
- **You either disrupt your own company/products, or someone else will. Standing still = death**
- **Your competition is no-longer the multinational overseas. It is the explosion of exponentially empowered entrepreneurs**
- **Your mindset matters (a lot).. What's yours? Why increase by 10%, if you can try to increase 10x?**



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