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New technology deployment in SMEs: towards a process based approach

By

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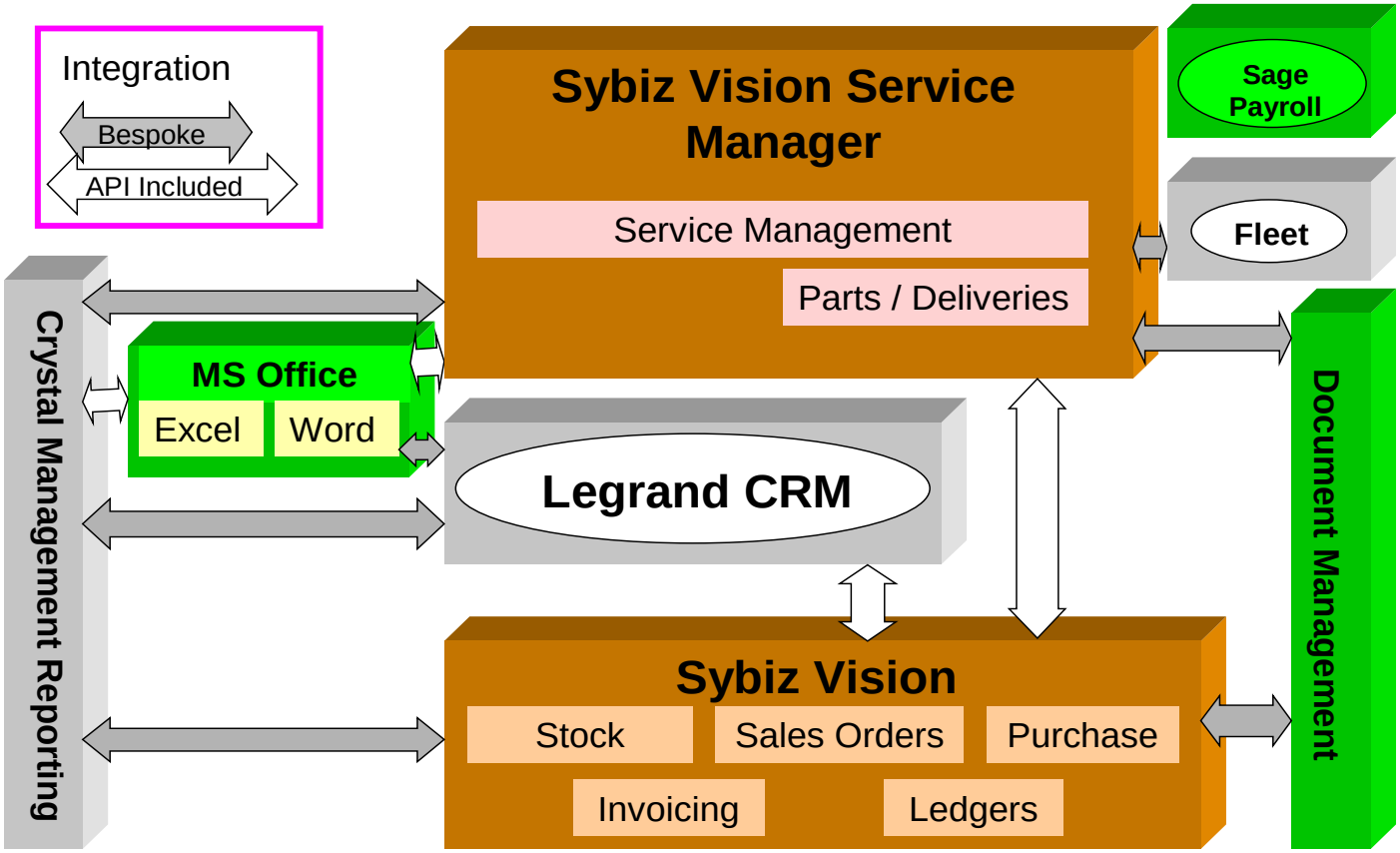
Typical SME IT/IS Strategy: TPG DisableAids 2010



The advent of the ‘new technologies’ – sometimes termed ‘disruptive technologies’

In 2015, IBM noted “cloud computing, mobility, social business, big data and analytics and IT security technologies are evolving very rapidly”, and that “as these technologies mature and converge, they are demanding a total re-examination of the underlying enterprise infrastructure”

To these six ‘new technologies’ we have added:
Internet of Things
Artificial Intelligence
3-D Printing

Research Questions:
To what extent are companies using these new technologies?
How can they best be incorporated into IT/IS strategy?

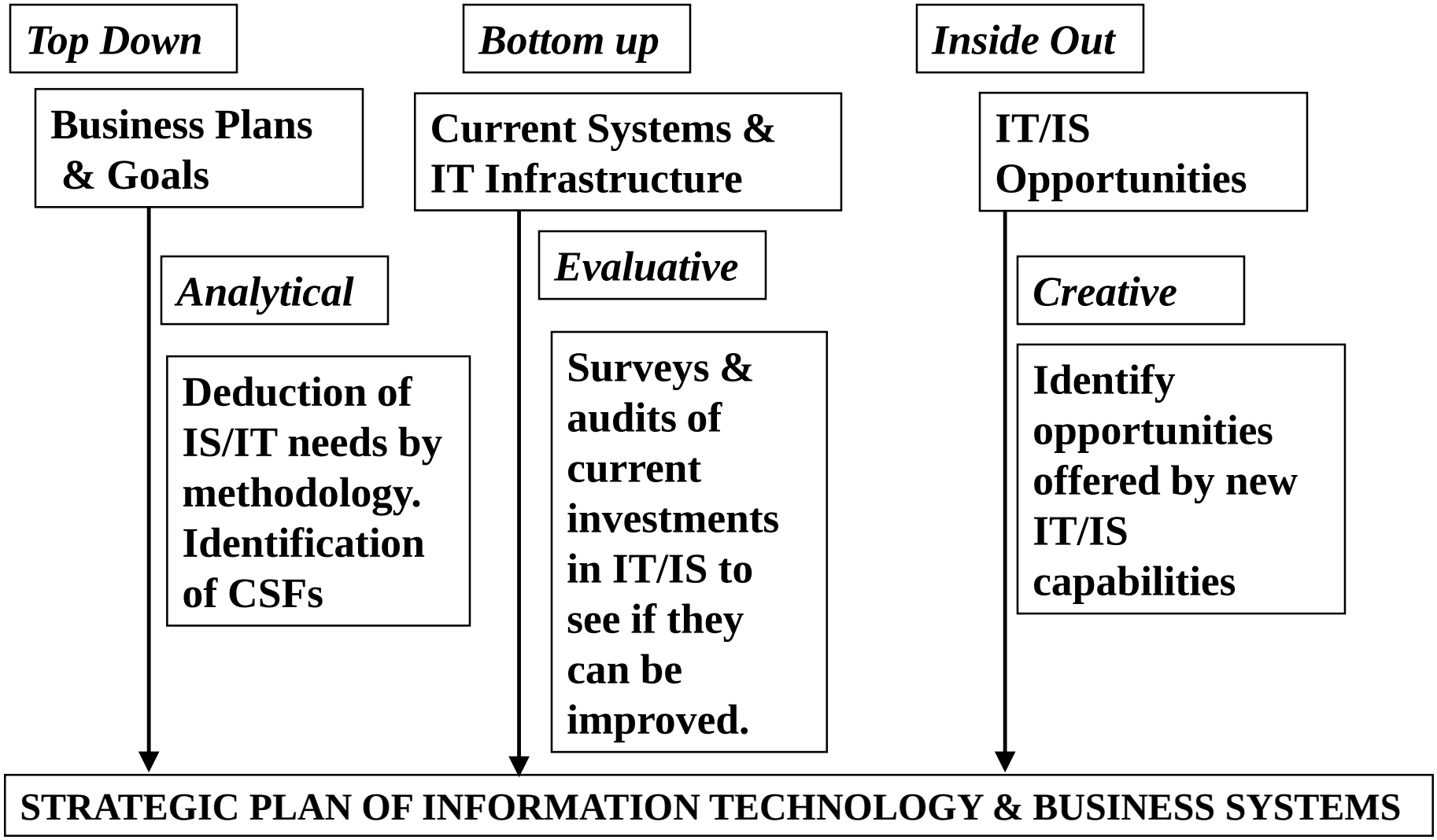
Pilot Study

Questionnaires were completed by three companies, asking how they used these technologies now, and how they might use them in the future (in a two year timeframe).

Respondents were also asked to identify their main business processes, to allow some analysis by process.

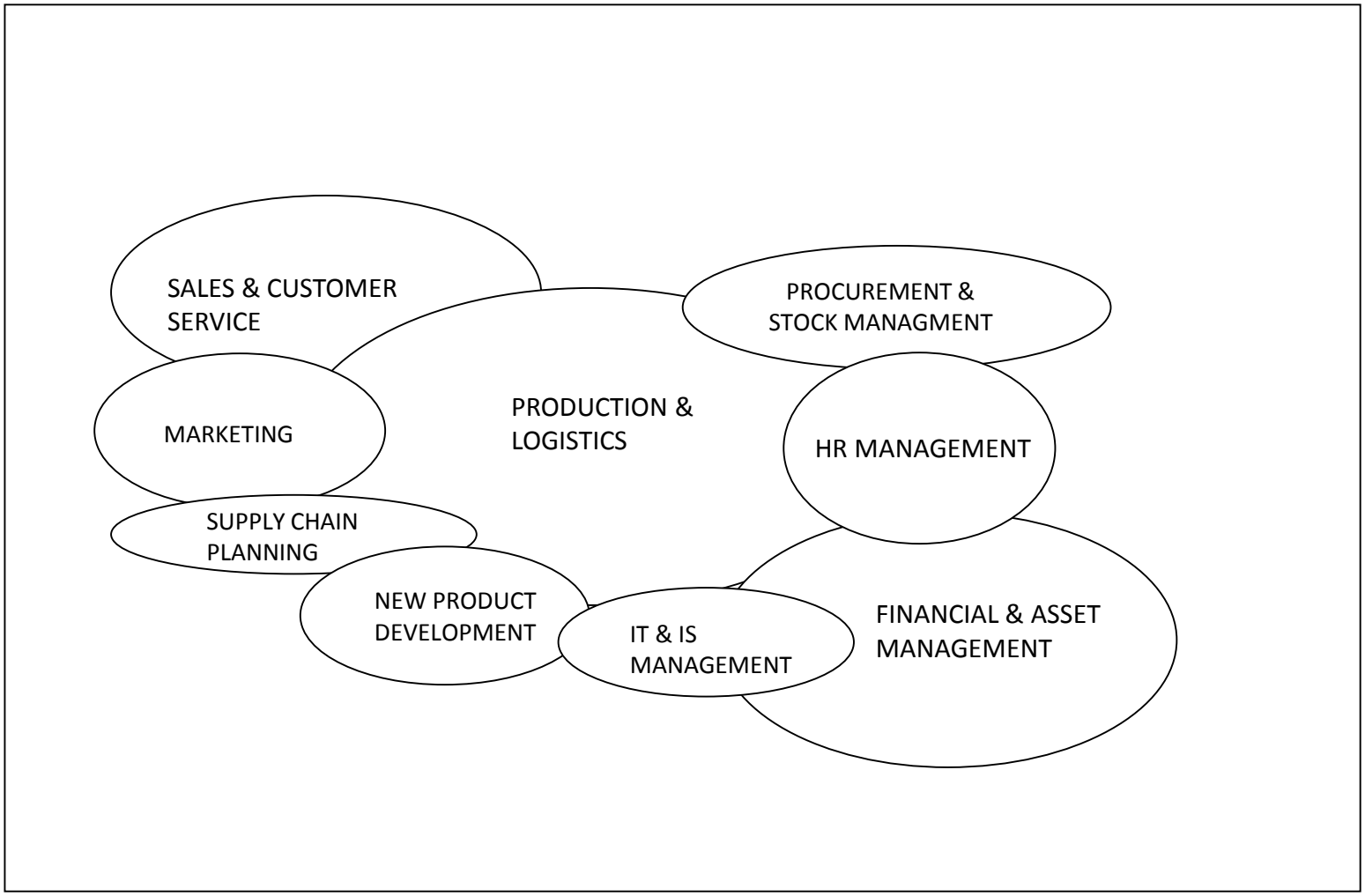
The three companies were significantly different in size and industry sector. (Aliases – DSG and QuoVad - are used for 2 of these companies)

IT/IS Strategy Formulation: How to assess New Technologies (after Earl)



DSG Top-Level Business Process Map

Staff: 146K Turnover: 35b. euro Industry sector: Global technology esp. automobile systems

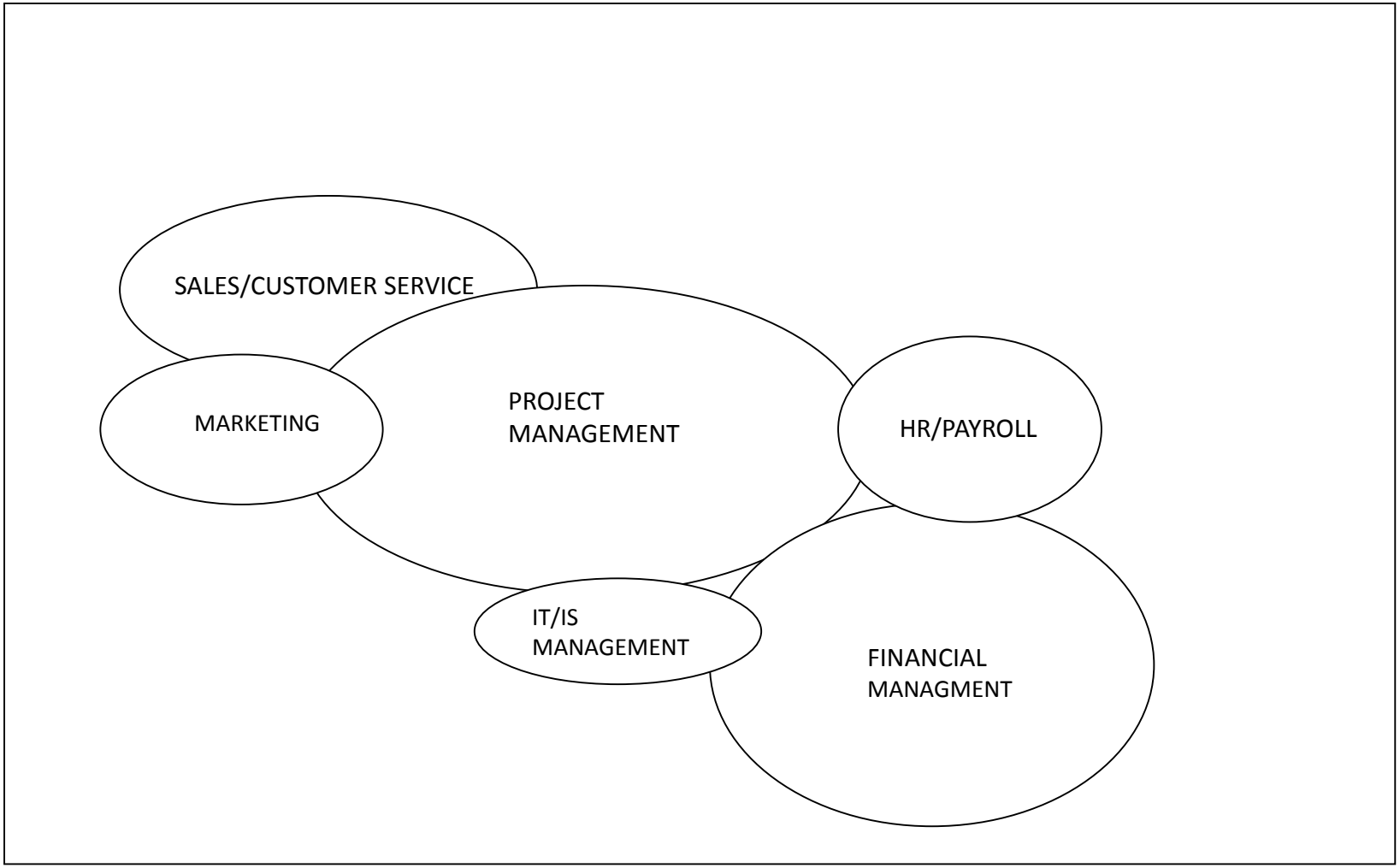


DSG: New Technologies by Process Area (RAG analysis)

Staff: 146K Turnover: 35b. euro Industry sector: Global technology esp. automobile systems

QUOVAD Top-Level Business Process Map

Staff: 150 Turnover: 40m euro Industry sector: IT project management and consultancy



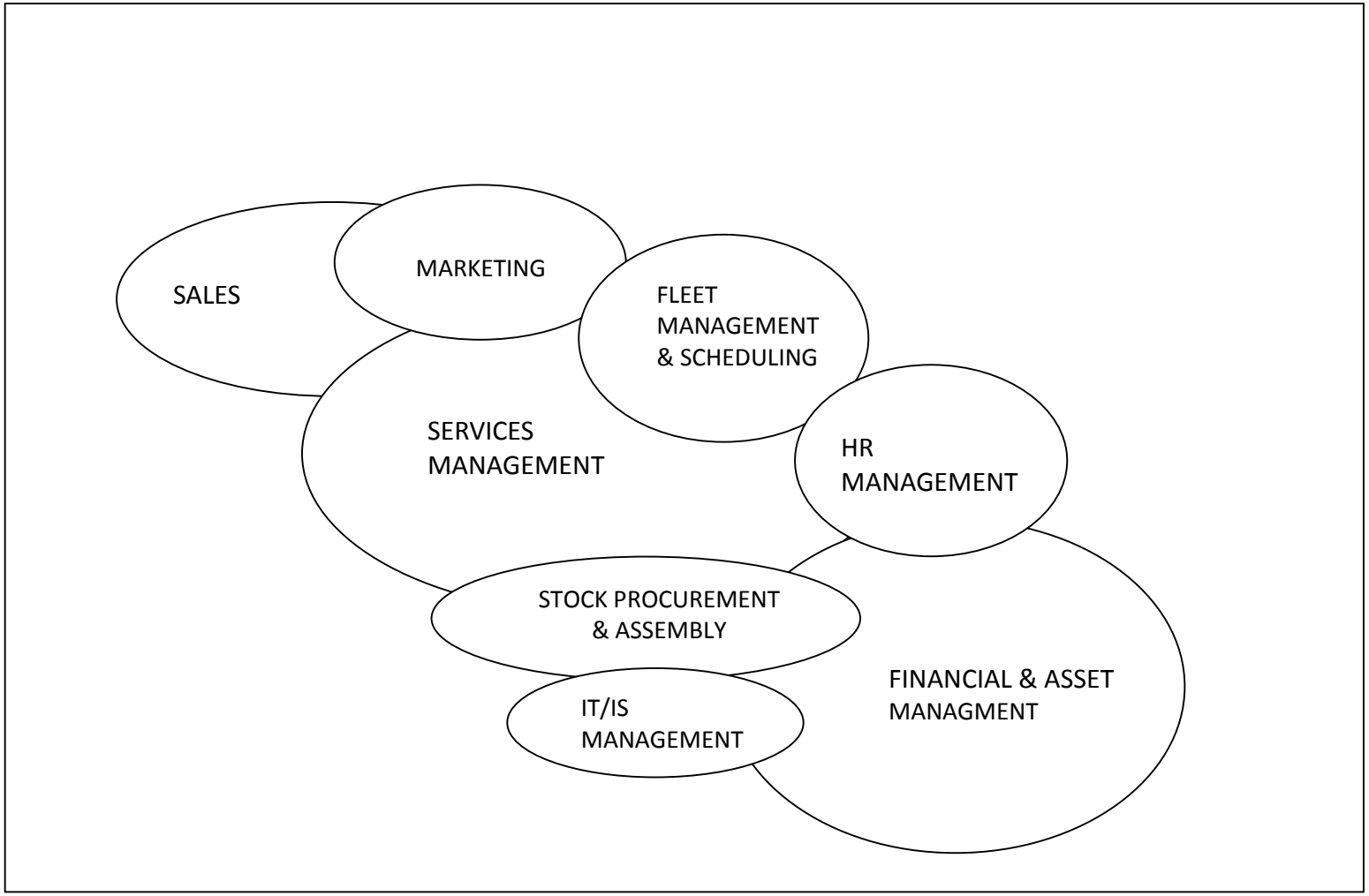
QuoVad: New Technologies by Process Area (RAG analysis)

Staff: 150 Turnover: 40m euro Industry sector: IT project management and consultancy

	Sales & Service	Marketing	Project Management	IT/IS	Financial Management	HR/ Payroll
Cloud Computing						
Social Media						
Mobile Computing						
Analytics						
Big Data						
Internet of Things						
Artificial Intelligence						
3-D Printing						
Cyber Security						

TPG - Top-Level Business Process Map

Staff: 50 Turnover: £4m. Industry sector: Equipment for Elderly & Disabled



TPG DisableAids: New Technologies by Process Area (RAG analysis)

Staff: 50 Turnover: £4m. Industry sector: Equipment for Elderly & Disabled

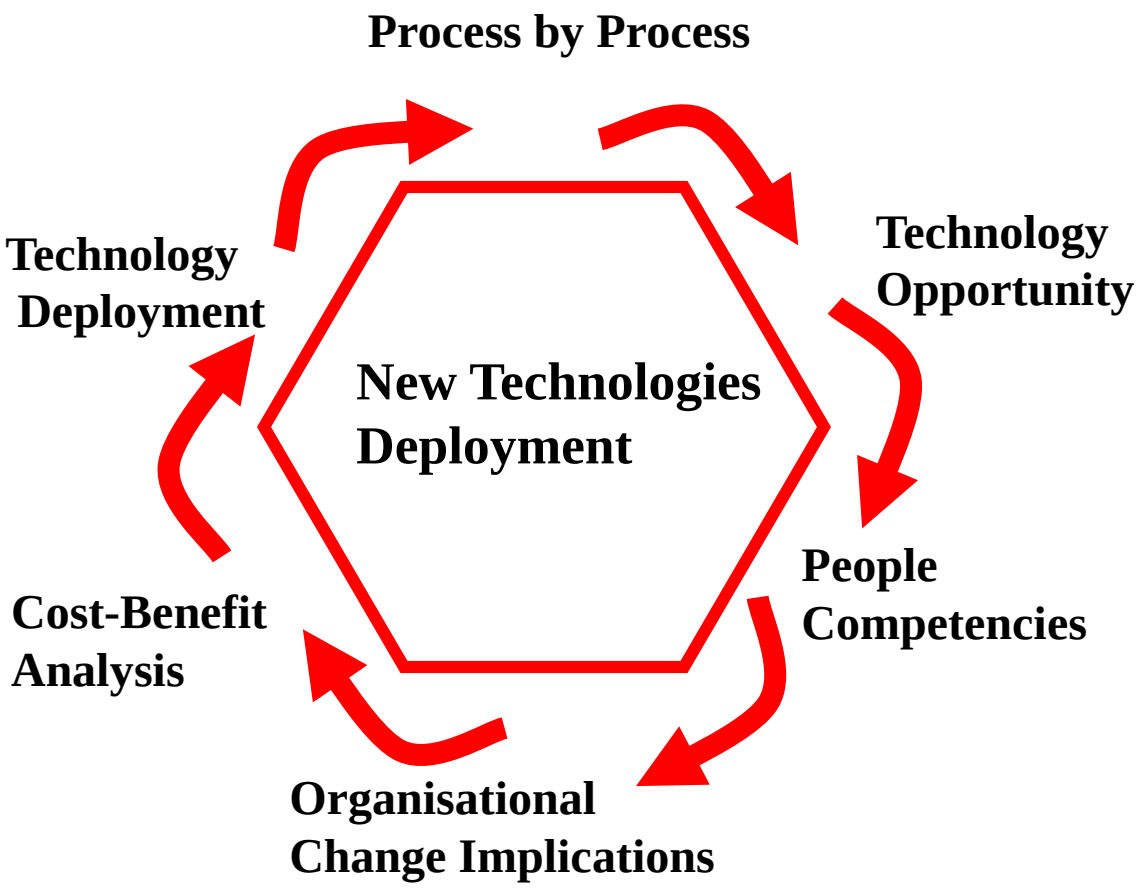
	Sales	Marketing	Services Management	Fleet Man & Scheduling	Stock Procment /Assembly	IT/IS	Financial Managment	HR
Cloud Computing								
Social Media								
Mobile Computing								
Analytics								
Big Data								
Internet of Things								
Artificial Intelligence								
3-D Printing								
Cyber Security								

Initial Findings: Suggested Guidelines for SMEs

- The technologies warranting a strategic top down assessment are: Cloud and Cyber Security technologies; and probably IoT (extension of network & internet strategies).
- For the other technologies, look at opportunities for tactical gain process by process. Start by looking at the company's core process, followed by Sales, Marketing and Finance for deployment benefits.
- Do not just focus on the technology. Plan for changes in people skills and competencies, and associated process change.

New technologies deployment

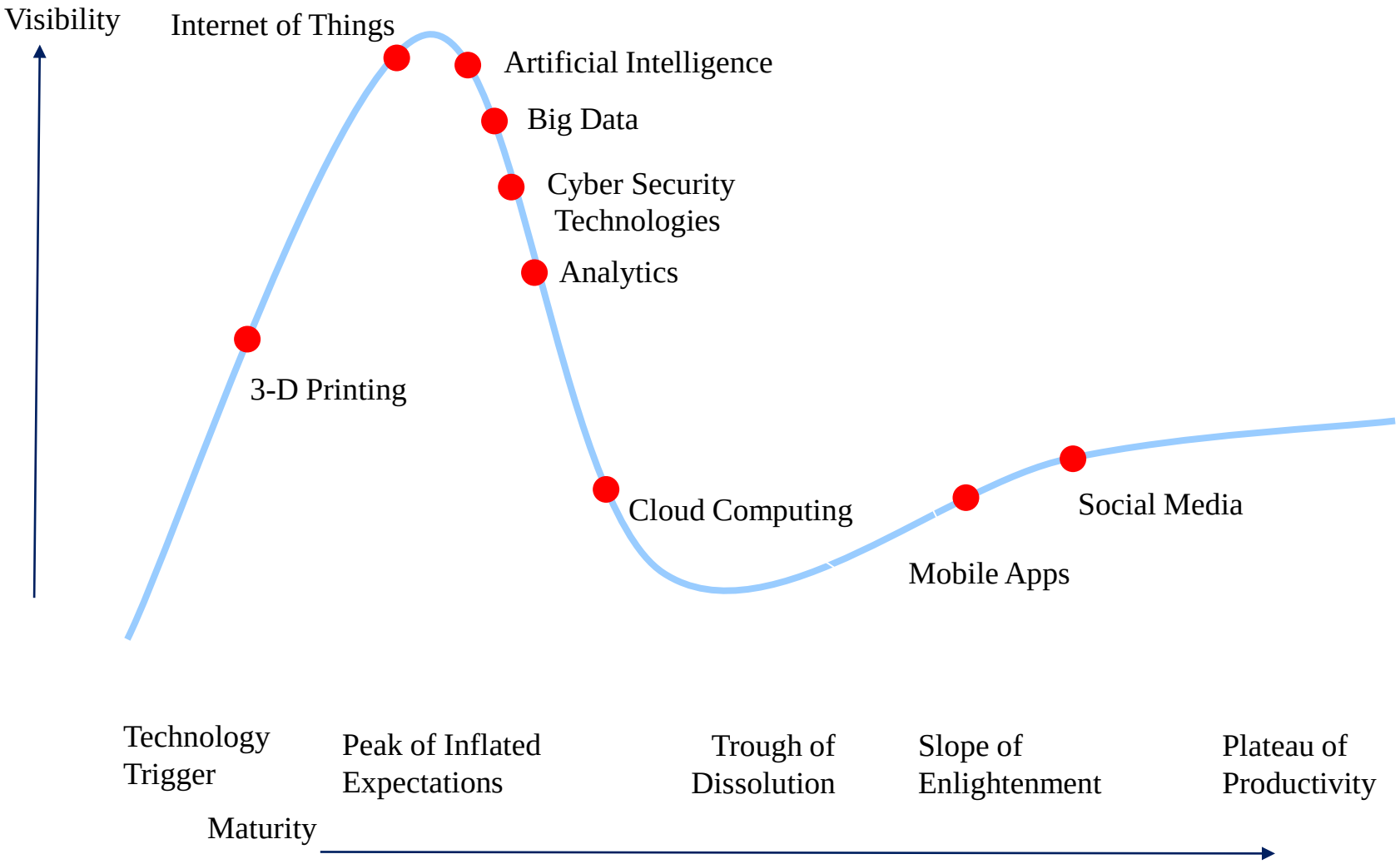
Tactical/opportunistic/bottom-up



Cyber Security: Establish the People, Process and Technology Dimensions (illustrative)

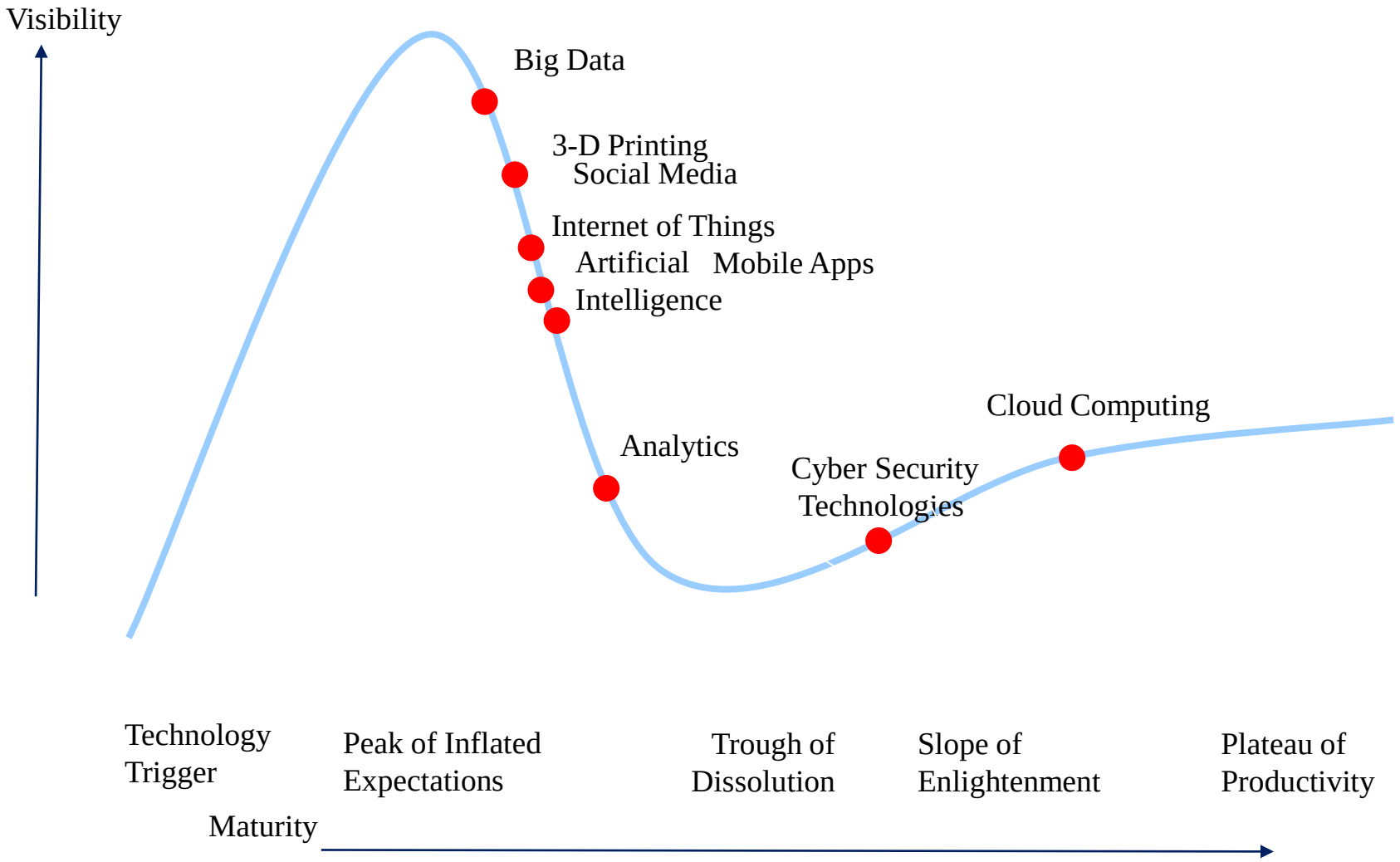
	People	Processes	Technology
Applications security	System access privilege for University systems such as SITS, Agresso, Moodle or even SharePoint	Documentation of the application and the policy for user guide. software procedures	Authentications and access control
Information security	Ability to communicate effectively with non-technical staff to educate staff understand why they shouldn't do certain things. When something goes wrong. Such as receiving pishing emails	Confidentiality, Integrity and availability	Physical security such as protecting physical assets and workplace from various threats including unauthorized access
Disaster Recovery planning	Management responsibility for applications, such as SITS, Moodle, Agresso.., networking and data centers, information security and cyber treat such as pishing and spoofing emails, account breaches, Ransomware attacks….	Prevention (defining the problems, make initial assessment, communicate the problem) ,detection (develop the possible solution) , response (recover the systems and report the recommendations	Database recovery back up
Network security	Admin right privilege and awareness of cyber threat (educate users about the threat), network administrator daily tasks	Password, VPN configuration , email server configuration	Firewall, antivirus program or encryption programs.

Gartner's peak of inflated expectations for new IT/IS business technologies: QuoVad view



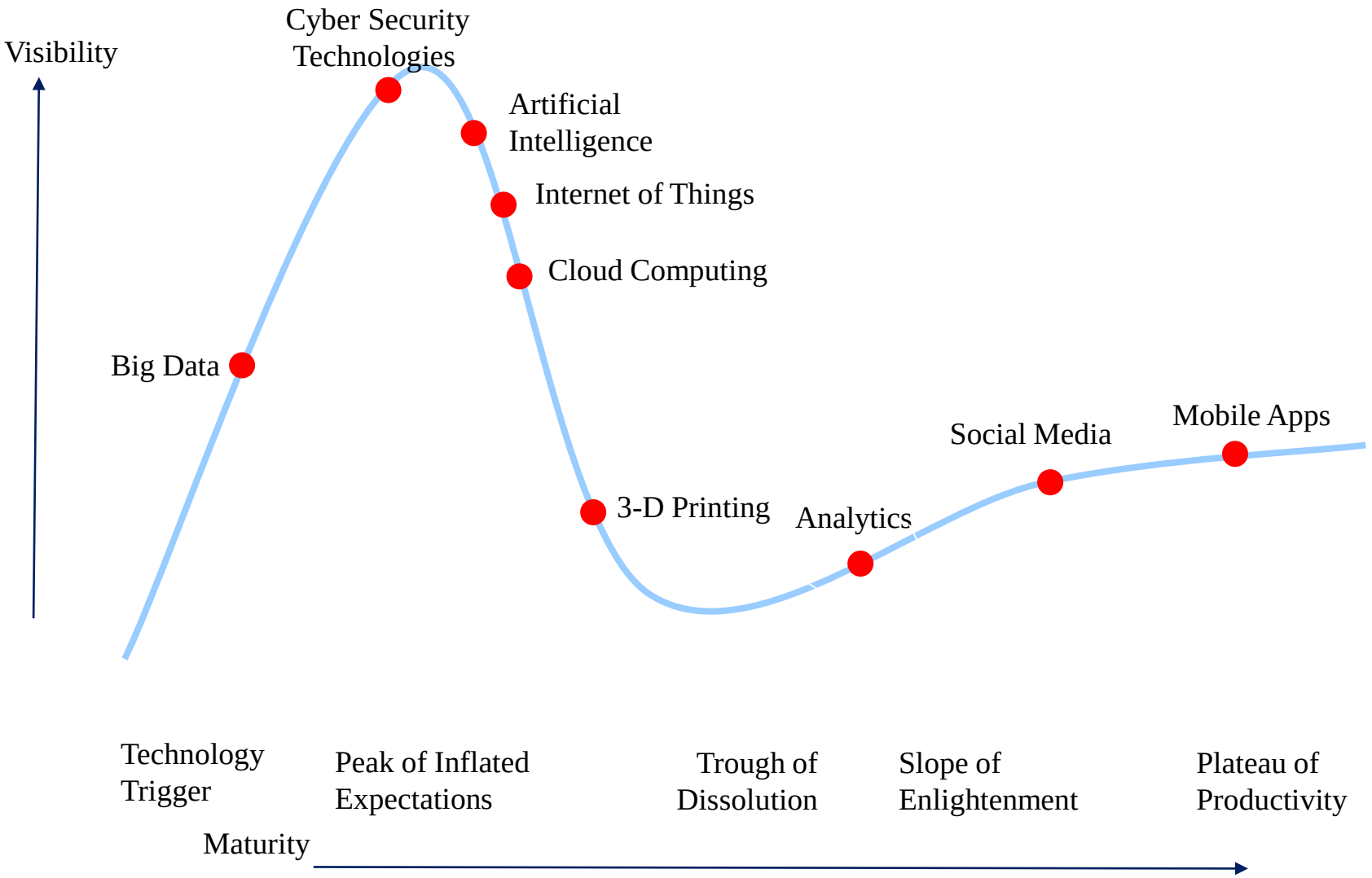
Source: Gartner, 2002

Gartner's peak of inflated expectations for new IT/IS business technologies: DSG view



Source: Gartner, 2002

Gartner's peak of inflated expectations for new IT/IS business technologies: TPG view



Original Source: Gartner, 2002

Law of Disruption (after Thomas Mucha)

"Social, political & economic systems change incrementally, but technology changes exponentially"

"Results in dramatic shifts in the possible application of technology in industry"

BUT: Non-Disruptive Creation

“Most companies remain stuck in the mind set that in order to create you must disrupt or destroy. The time has come to fully embrace the idea that you can create without destroying. Non-disruptive creation breaks the existing frame on innovation and growth and allows for a much broader view of how they are generated. It expands the conversation about where real opportunities reside”.

Chan Kim, W. and Mauborgne, R. (2019). Non-disruptive Creation: Rethinking Innovation and Growth. *Sloane Management Review*. Spring

Technology Concepts

Cloud Computing: accessing your systems located externally via the internet.

Social Media: websites and applications that enable users to create and share content or to participate in social networking e.g. Facebook, Twitter

Mobile: using ‘apps’ running on i-pads or smart-phones

Internet of Things: the use of devices and monitors linked to the internet to record data, which can then be stored in your main business systems and data bases.

Analytics: using advanced business intelligence tools to analyse past, present or future situations and possibilities

Big Data the use of large amounts of data usually obtained from external sources to support company reporting and analysis

3-D Printing: using a form of printer to make a physical object from a three-dimensional digital model, typically by laying down many thin layers of a material in succession. A form of industrial production technology

Artificial Intelligence: the use computer systems to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, or decision-making

Cyber Security: the technologies for protecting computers, networks, programs and data from unauthorized access or attacks that are aimed for exploitation