



Introduction to Innovation and Innovation Management

Lecture: Digital Innovation Fall 2021

Teaching Unit 1

Dr. Gabriele Schwarz

gabriele.schwarz@uzh.ch

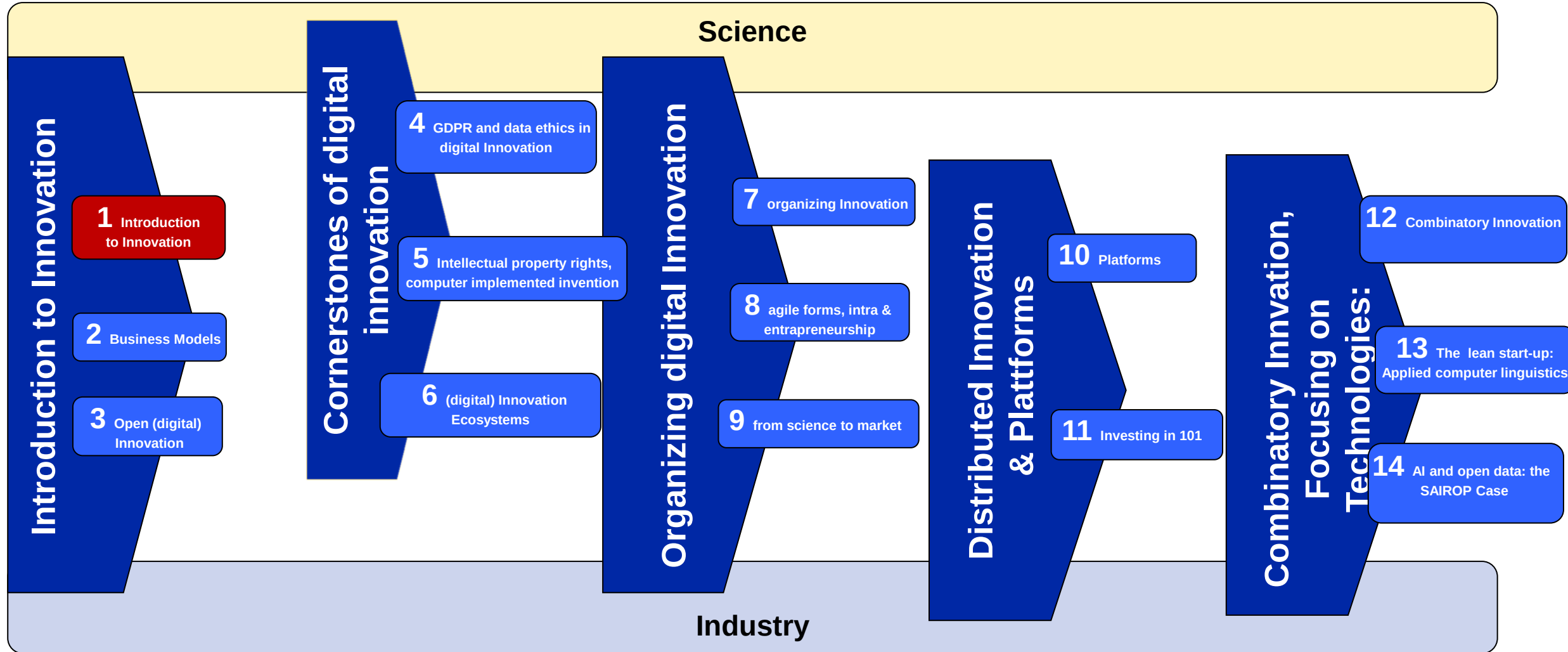




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Learning objectives

- You know the basic terms and concepts of innovation
- You learn the history of innovation and innovation management
- You understand and distinguish the different types of innovation and that Innovation isn't "pure" Science but applied Science



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The latest news, published on linkedIn . .

Switzerland remains #1 in the global innovation index 2021

Posted by **Gabriele Schwarz** • 9/23/2021 • Boost unavailable ⓘ



Innovista Management GmbH

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The Global Innovation Index is always eagerly awaited and it is all the more encouraging to see Switzerland in first place again. Indeed, we invest a lot in innovation projects and work hard to stay on the ball. From our experience, we have deduced, among other things, that the type of innovation projects matters (Incremental Innovaitonsprojekte vs. disruptive). In each case, the indication of whether Switzerland can maintain its position is the distinction between process innovations and product innovations. If we not only stay high on process innovations, which tend to be inremental in nature, but also actively try to support more disruptive innovation projects, we are on the right track.

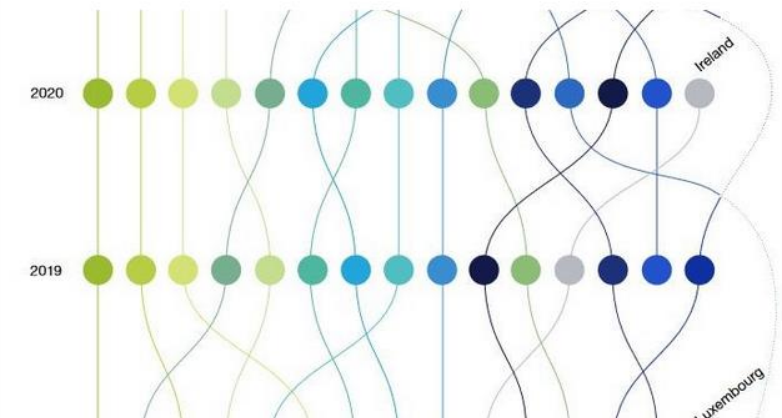
#innovation #innovationmanagement #swissinnovation #digitalinnovation



Innosuisse

29,428 followers
2d • 🌐

🇨🇭 Switzerland again ranks first 🏆 in the Global Innovation Index 2021 ahead of Sweden and the United States #GlobalInnovationIndex #switzerland #innovation #swissinnovation





The change has accelerated . . .

„ A boy who saw the Wright brothers fly for a few seconds at Kitty Hawk
could have watched Apollo 11 land
on the moon 1969“



Arthur Schlesinger, Historian

The New York Times Magazine, July 25, 1986
Slide from Prof. Roman Boutellier (former ETH Vice President)



Both pics from: https://www.nasa.gov/multimedia/hd/apollo11_hdpage.html 06.5.2020

Innovation. . .



... seen from an Innovation leader

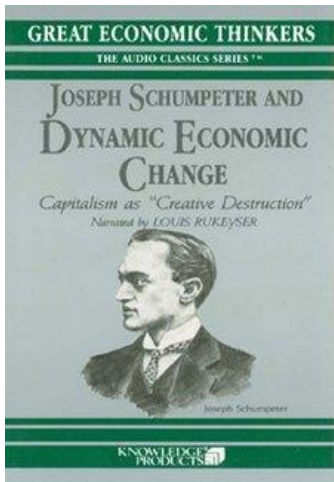
„Innovation has nothing to do with how many R&D dollars you have ... it's not about money.

*It's about the **people** you have, how you're led, and **how much you get it.**“*

Steve Jobs, Entrepreneur, Co-Founder, Chairman, CEO Apple Inc.

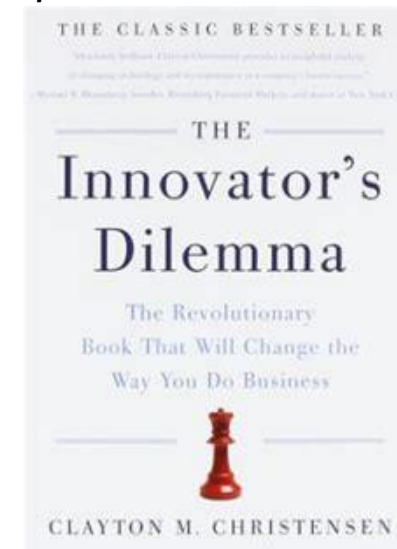
Disruptive Innovation seen from a humanities- & social-sciences perspective

*„Each **economic development** is based on the process of the **generative** resp. **creative deconstruction**. Through the deconstruction of **old structures** the production factors get – again and again – into new orders. Therefore, reconstruction is **necessary** (and not a system error) for the **establishment of new orders**.“*



Joseph Schumpeter
Economist

“. . . It's important to remember that disruption is a positive force. Disruptive innovations are not breakthrough technologies that make good products better; rather they are innovations that make products and services more accessible and affordable, thereby making them available to a much larger population.



Innovation . . .

...seen from a business administration perspective

Innovation = “Innovation is the embodiment, combination, and/or synthesis of knowledge in novel, relevant, valued new products, processes, or services.”



Dorothy Leonard Barton, William J. Abernathy Professor of Business Administration, Emerita, Harvard Business School

In Dorothy, Leonard and Swap Walter. 1999. *When Sparks Fly*. Boston: Harvard Business School Press, p.7

Core Themes:

- Generating new ideas
- selecting the good ones
- Implementing them within an organization
- development

Invention versus Innovation



something that has never
been made before, or the
process of creating
something that has never
been made before
*from: Cambridge
Dictionary*



more Info: Maximilian Boosfeld
maximilian.boosfeld@wingtra.com



more Info: Wim Ouboter;
Wim.Ouboter@micro.ms



more Info: Dr. Alexander Stuck
alexander.stuck@nano4u.net

The process of translating an idea or invention into a good or
service that creates value or for which customers will pay.
from: businessdictionary.com



Innovation is more than a buzzword . . .

Classical

Product Innovation

Process Innovation

Organizational Innovation
(Business Model Innovation)



mostly technical
Innovation

New

Service Innovation

Strategy Innovation

Business Model Innovation

Hybrid Value Creation

Frugal Innovation

Social Innovation

System Innovation

Etc.

A «one fits all» definition and classification of innovation efforts is still missing - because it's driven by science *and* industry . . .

Service Innovation «we don't sell the screws and the drilling machines, we sell the holes»

Strategy Innovation -«the way an organization thinks about innovation»

Business Model Innovation – «rethinking the way we interact with our customers and suppliers»

Frugal Innovation – «get back to the roots»

Social Innovation - «innovating the social ecosystem, not only for «classical» customers»

System Innovation - https://www.youtube.com/watch?v=HcFivihOp_E (Sep 2021)

Digital innovation - «defined by convergence and generativity»



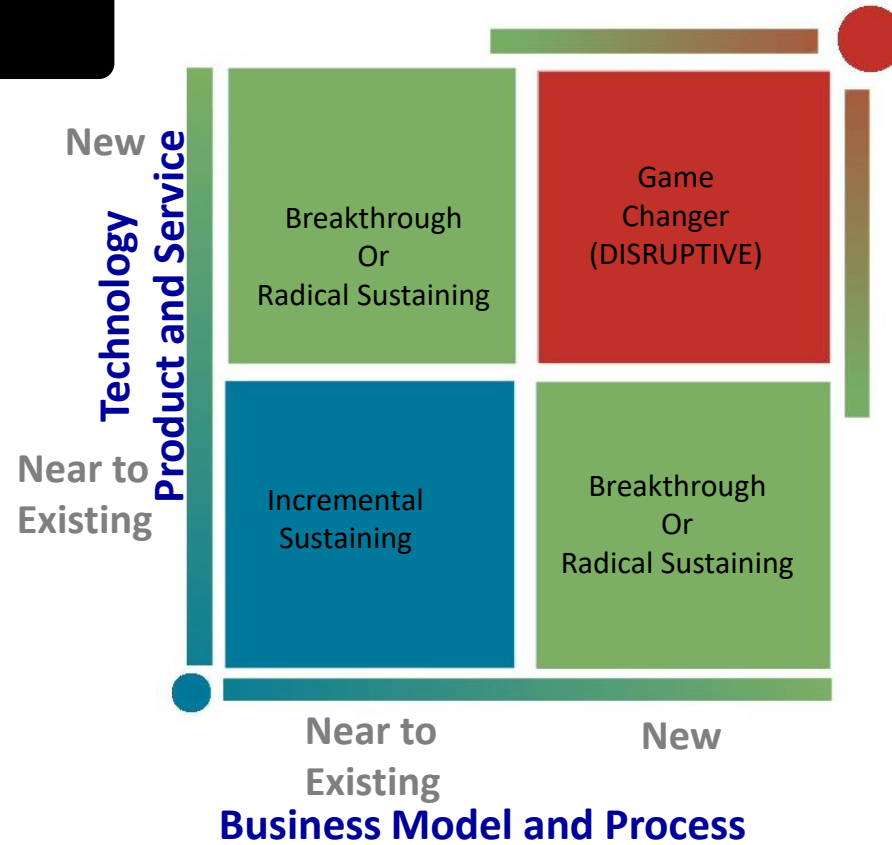
Examples from: Hilti, Google (www.forbes.com), P&G, Max Havelaar, airbnb, Nespresso (<http://www.espressopot.com/tag/george-clooney/>)

One of several ways to classify Innovation efforts

technology innovation



product & service
innovation



business model innovation



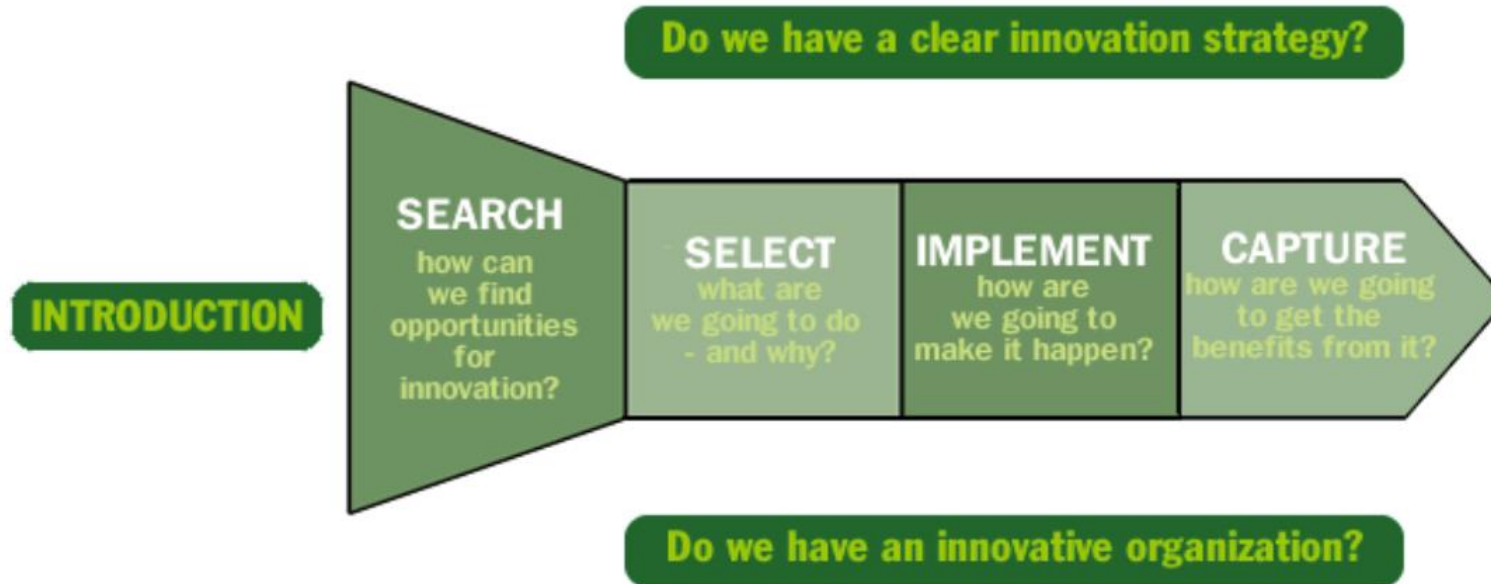
process innovation



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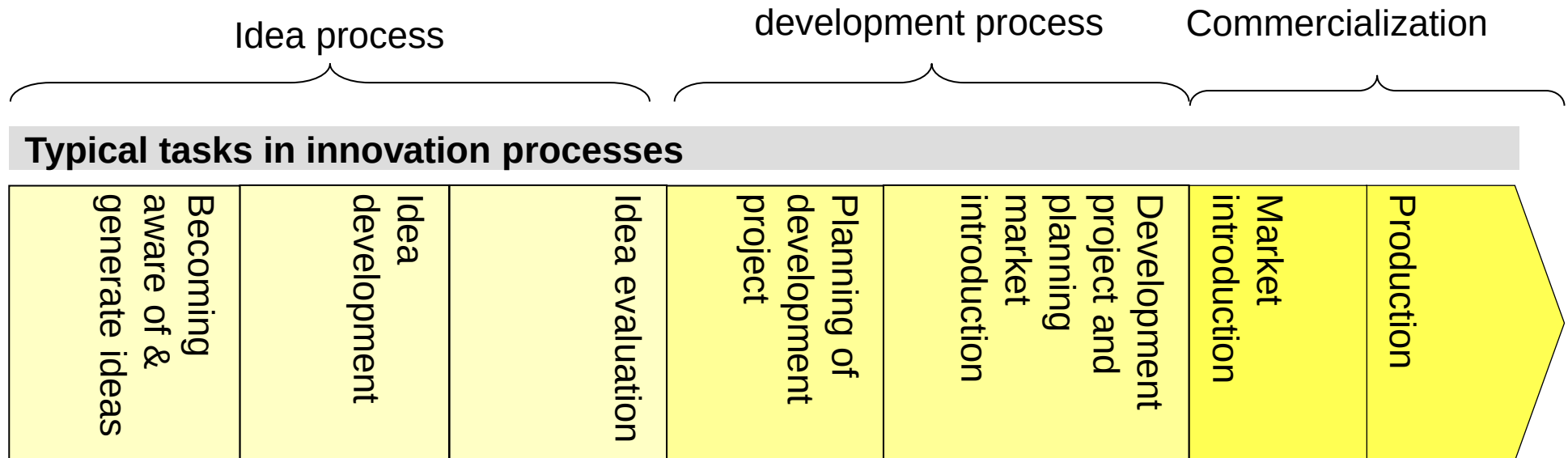
From «muddling through» to stage gate to open innovation to «muddling through» . . ? John Bessant



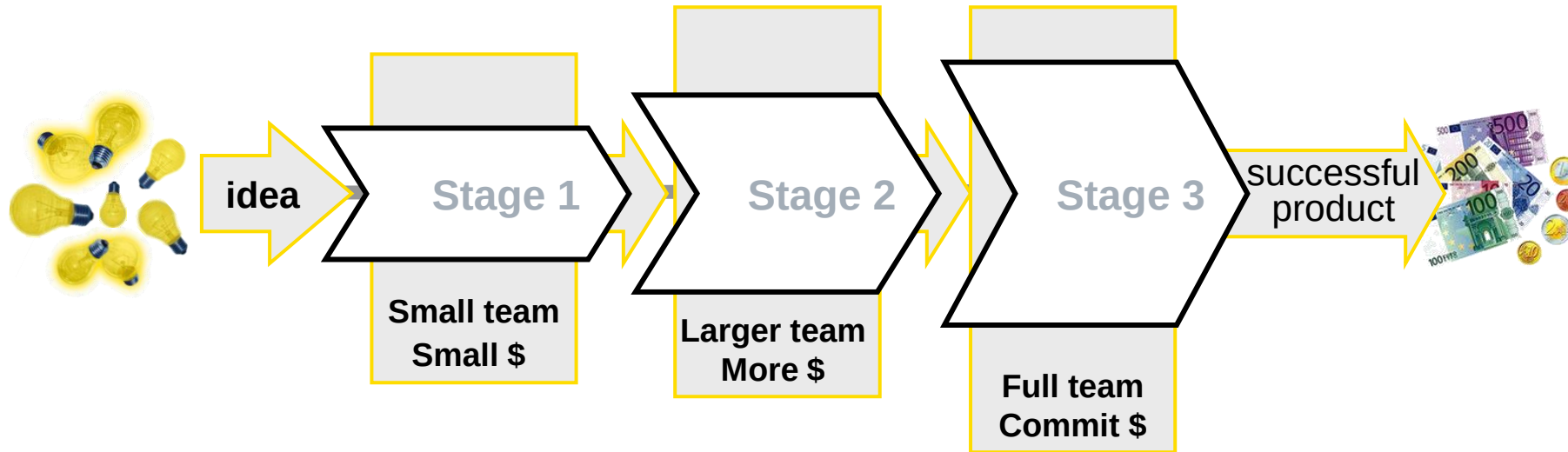
For more examples and cases look at www.managing-innovation.com Joe Tidd & John Bessant

The innovation process

Innovation processes have **different phases** and **aim to renew** the product and service portfolio and/or the way this portfolio is brought to the customer. The innovation process contains organizational, technological and qualification **methods** and **approaches** to support innovation.



Stages in the Stage-Gate® System



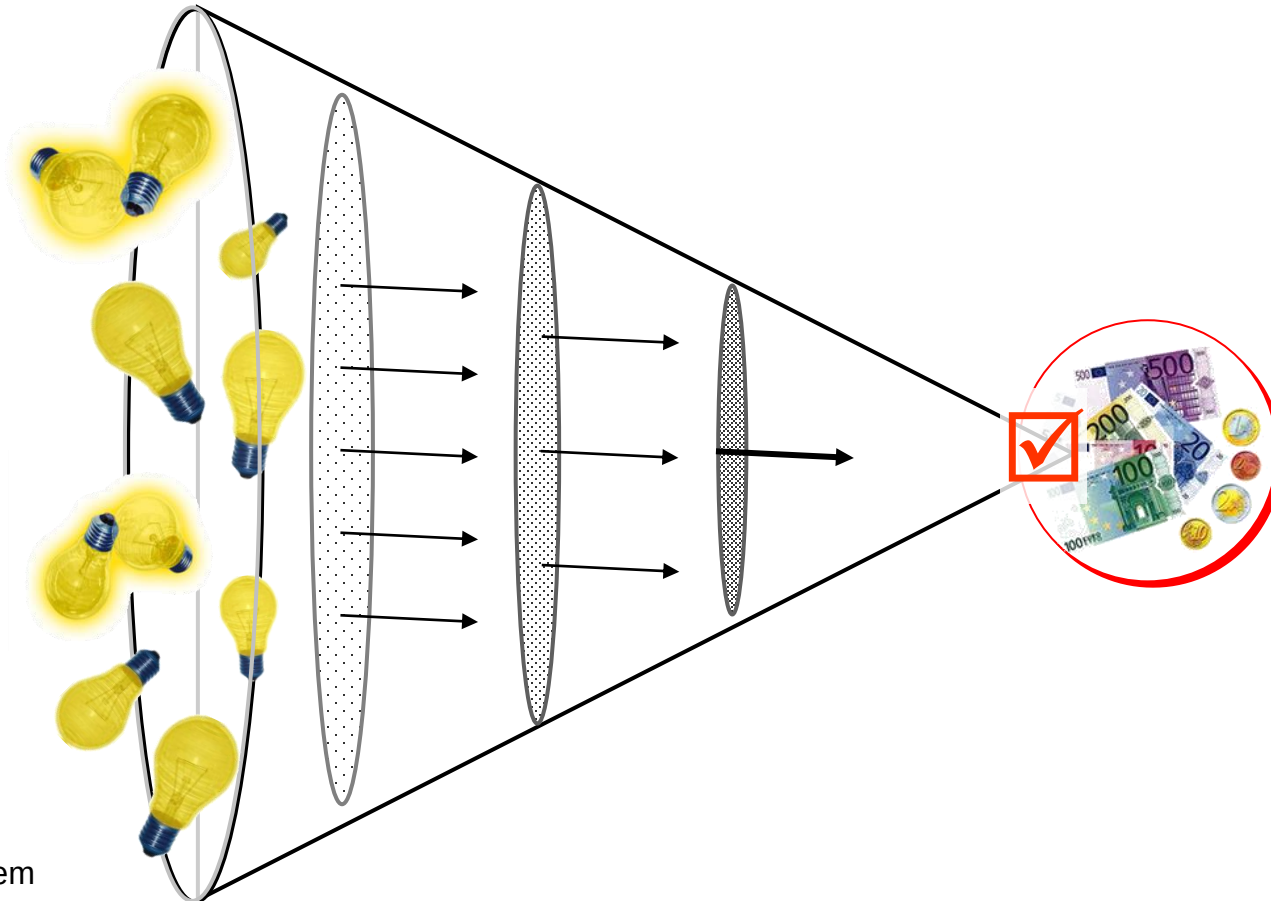
Adapted from Robert Cooper, The Stage Gate System

The innovation funnel

Risk
Management:

Spend a little on
a lot of projects,
in early phases

... to select the
most promising
projects to
spend a lot on,
later.



Adapted from Robert Cooper, The Stage Gate System

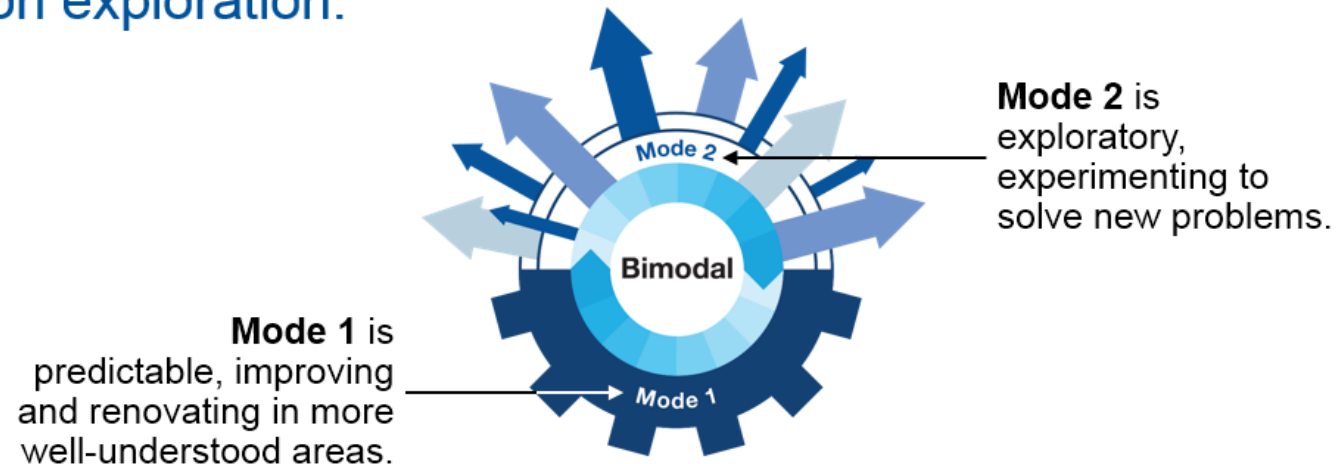


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Innovation is different from classical Development (or R&D); you must be able to manage TWO Modes

Bimodal is the practice of managing two separate but coherent styles of work — one focused on predictability and the other on exploration.



Gartner Group: Swanton, Bill, product-centric-works-for-bimodal 2017



Reasons for forstering innovation

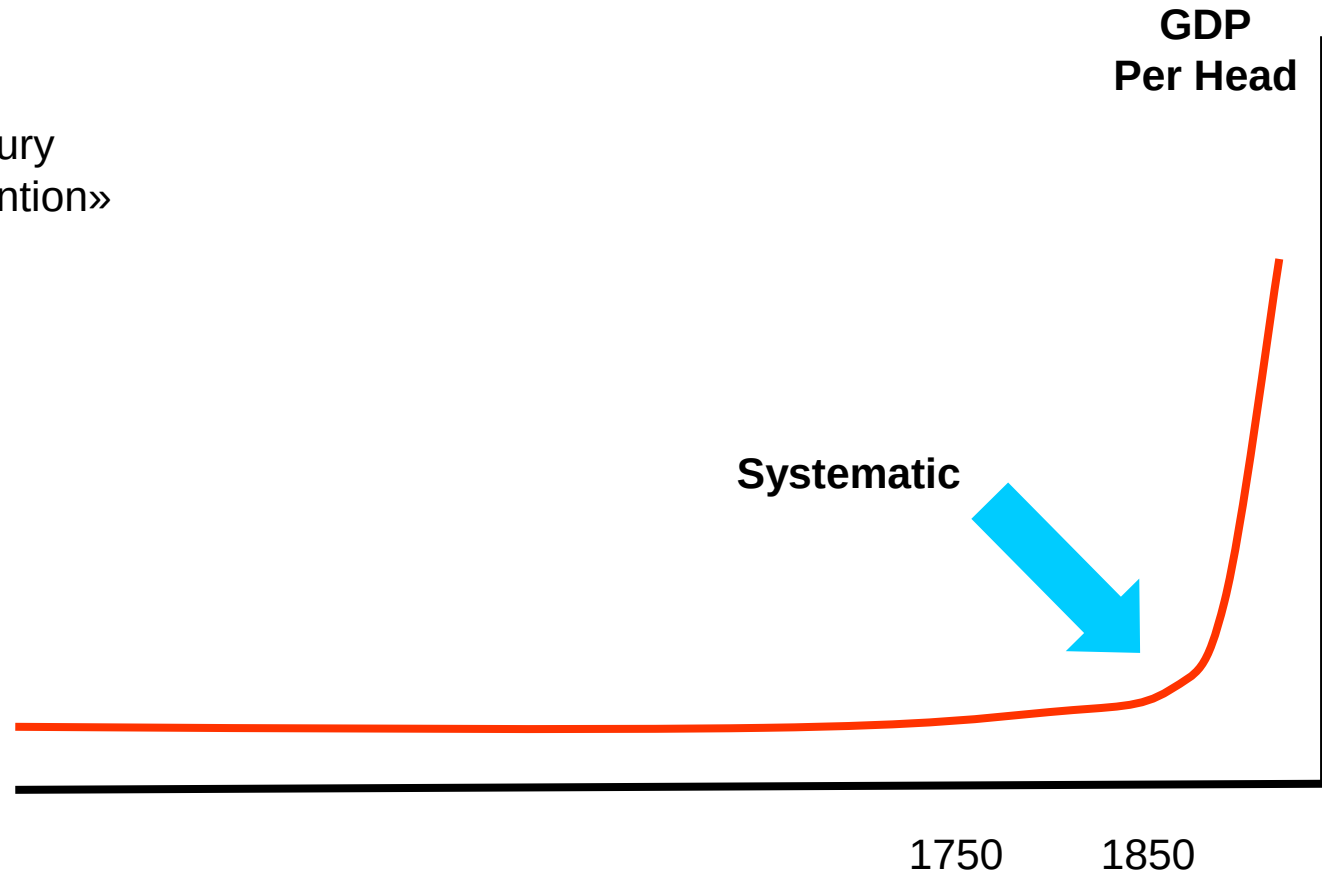
- Innovation is a source of competitive advantage (new market entrance threats, new substitutes, new value chains; cf. Porter Five Forces)
- High wages in western countries often call for a product differentiation strategy that is based on product innovations
- Continuous business opportunities through technological progress
- Networked organizations (cf. IT and Organization): New structures, new roles (partners, competitors)

To become wealthy, a country needs Engineers and Capital”

Gu Binglin, Präsident Tsinghua University Peking, ETHZ 2006

«The greatest invention of the 19th century
was the invention of the method of invention»

Alfred North Whitehead



Slide: Prof. Roman Boutellier, ETHZ



Innovation Management

Innovation management = all strategic, mid-term and operative tasks to lead, plan, organize and control innovation processes in organizations

(Source: Sabisch, 1991)



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