Technology and Innovation Management

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To explore or to exploit? That's the question

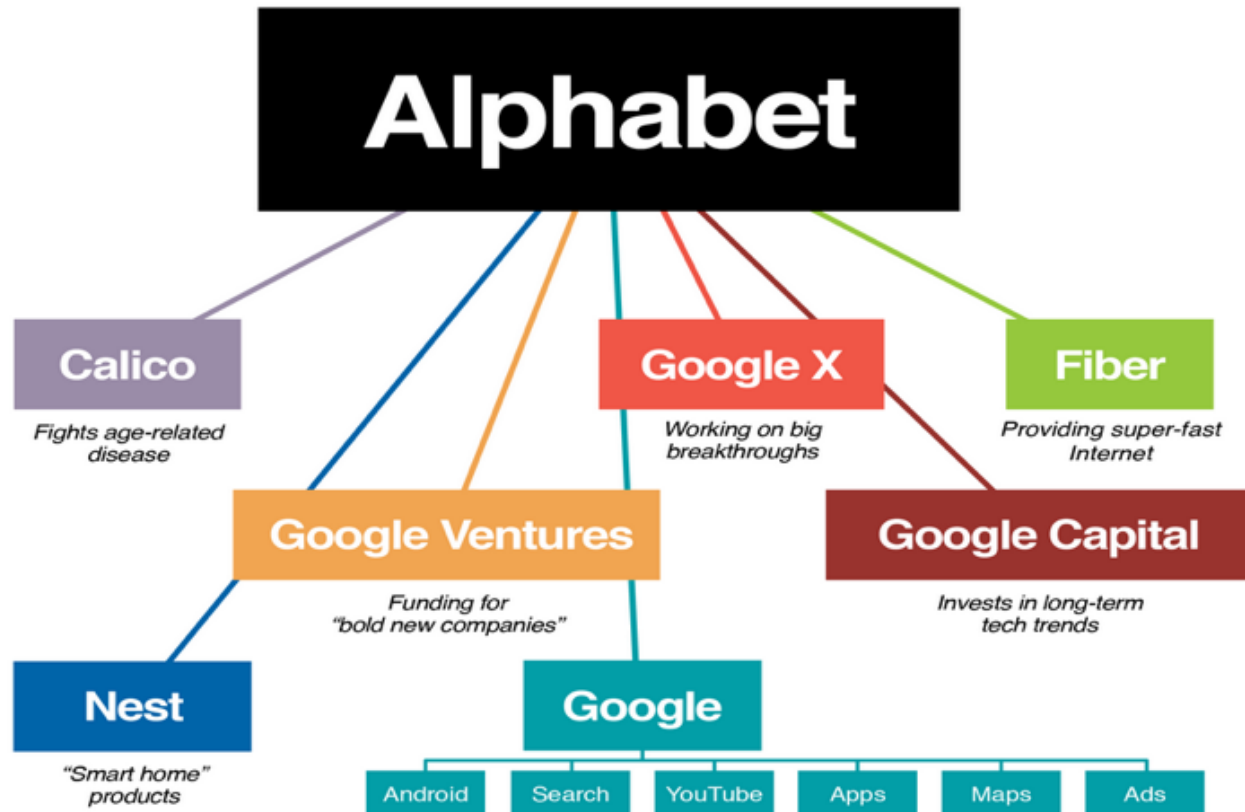# Google and IBM in Zurich

Google

IBM

- 100'000 employees
- 3'000 employees in ZH
- Established 2004
- Largest research and development site outside USA
- Plans for 5'000 employees until 2021

- 350'000 employees
- 350 employees in ZH
- Established 1956
- 4 Nobel prize winners are associated with the lab
- Many scientific achievements (e.g. Token Ring)

Alphabet, Google and Google X

Source: Internet

Google in Zurich – Structural Ambidexterity

Google in Zurich

*"Googlers in Zurich do important work across our technology groups, and our launches have included **Maps for EMEA, Search refresh, key Gmail features** like the priority inbox and account abuse protection, and content ID and **monetization products for YouTube**. Other key projects we have in Zurich include **Shopping, Ads, Calendar and Spam & Abuse"***

Source: Google Inc.

(Google) X

*"X is a diverse group of inventors and entrepreneurs who **build and launch technologies** that aim to improve the lives of millions, even billions, of people. Our goal: 10x impact on the world's most intractable problems, **not just 10% improvement**. Our projects have the **riskiness** and aspiration of research, and we approach them with the **focus, speed, and ambition of a startup"***
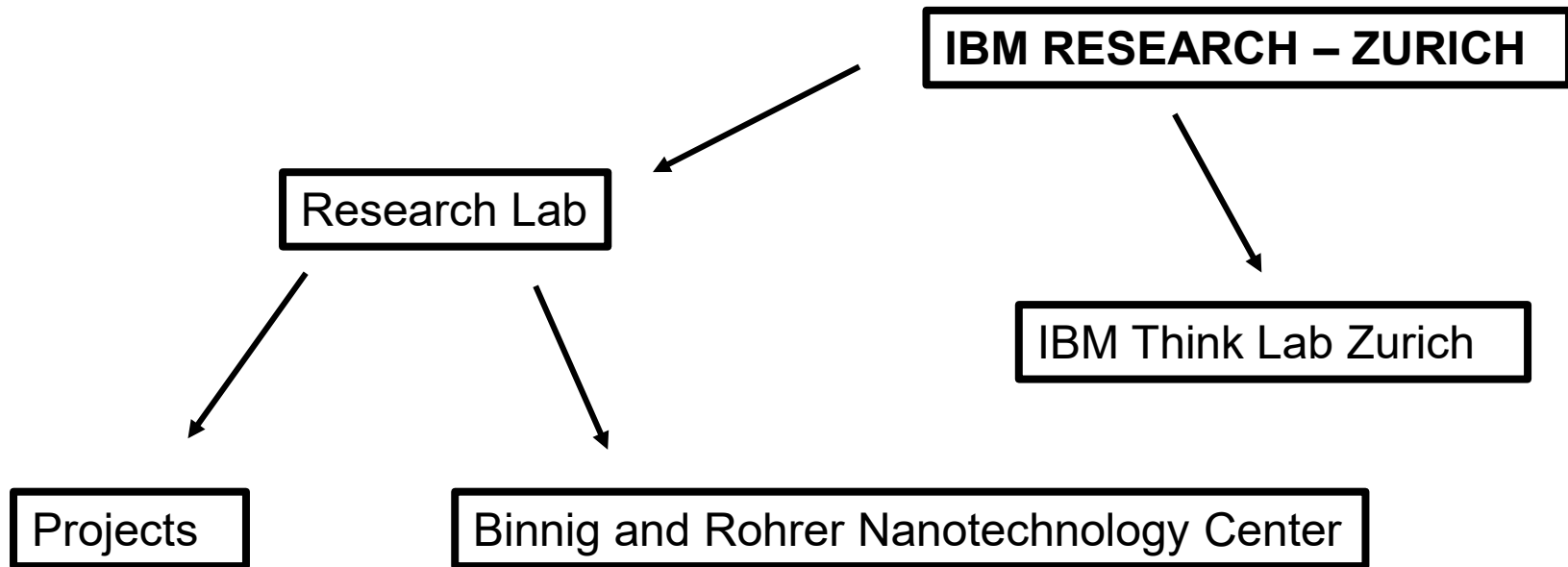
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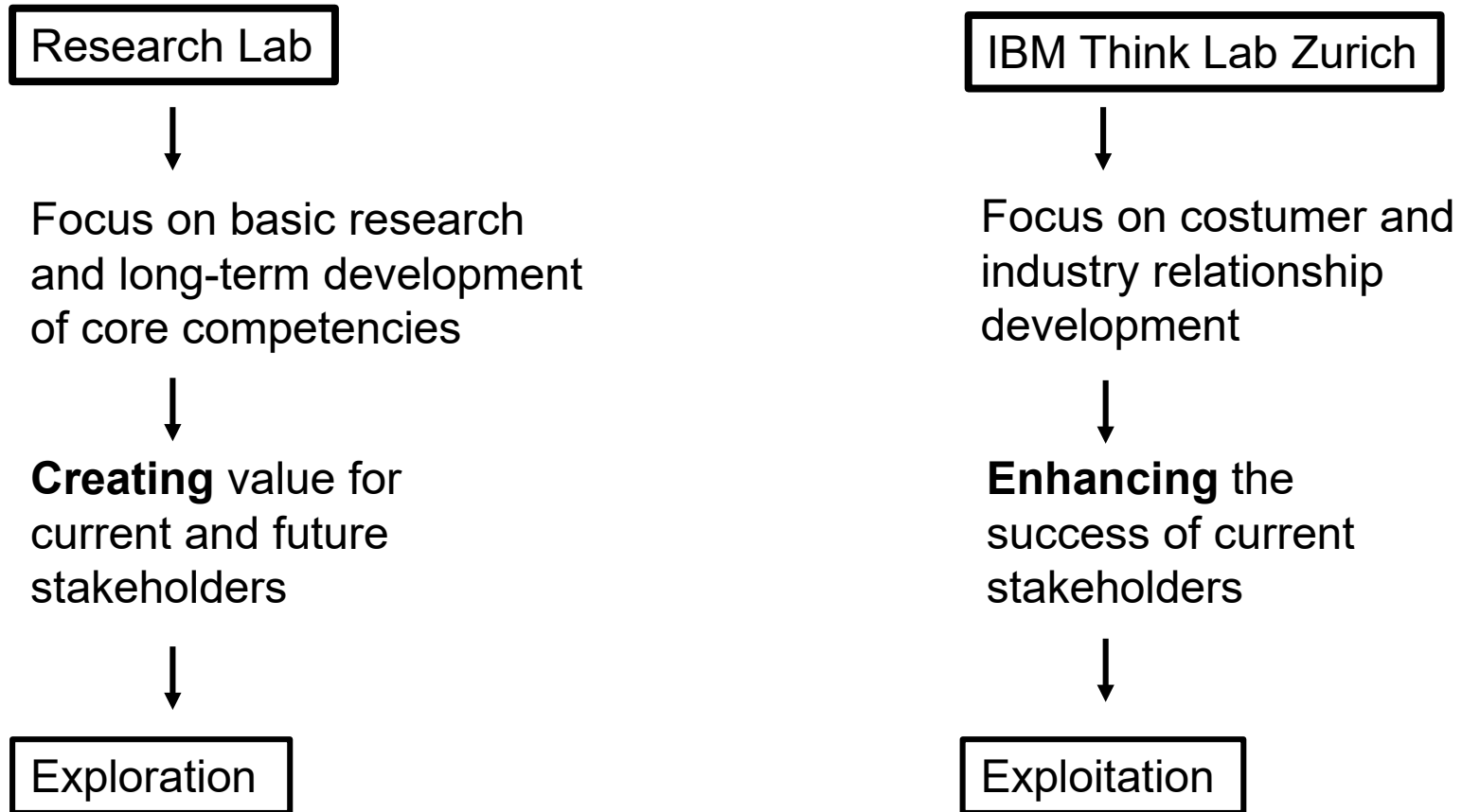
Google in Zurich – Structural Ambidexterity

- Google in Zurich
- Focus on applied research for **improving** existing Google products and services

- *Exploitation*

- (Google) X
- Focus on **creating** breakthroughs and commercializing new technology

- *Exploration*

IBM in Zurich – organizational structure

IBM RESEARCH – ZURICH

Research Lab

IBM Think Lab Zurich

Projects

Binnig and Rohrer Nanotechnology Center

IBM in Zurich – Structural Ambidexterity

Research Lab

↓

Focus on basic research and long-term development of core competencies

↓

Creating value for current and future stakeholders

↓

Exploration

IBM Think Lab Zurich

↓

Focus on costumer and industry relationship development

↓

Enhancing the success of current stakeholders

↓

Exploitation

Google in Zurich – Contextual Ambidexterity

"You have a good foundation in computer science which allows you to consistently **come up with new ideas**, as well as to strive for a deep understanding of **our products and services** in order to continually **improve** upon them"

Source: Google Inc.
Job description for software engineering intern,
July 2019

"Whether the answer is a bespoke solution to solve a unique problem, or a **new tool that can scale across Google**, everything we do aims to ensure our customers benefit from the **full potential** of **Google products**"

Source: Google Inc.
Job description for product technology manager,
July 2019

→ Individual responsibilty for radical product innovation ("exploration") and adjustment ("exploitation")

To explore or to exploit? That's the question

Learning objectives

Core concepts

- Exploitation vs. Exploration
- Ambidexterity

Methods

- Discussion, analysis of ‚realistic' situations to identify an ‚innovation model'

Abilities

- Interpret, simplify, separate to critically assess a given organizational set up

Required Readings for today

- O'Reilly, Charles A., III, and Michael L. Tushman (2004) 'The Ambidextrous Organization' *Harvard Business Review,* 82, 4, pp. 74-81

- Birkinshaw, J. & Gibson, C. (2004) 'Building Ambidexterity Into an Organization' *MIT Sloan Management Review*

- Hargadon, Andrew & Robert, Sutton. (2001). Building an Innovation Factory. *Harvard Business Review*, *78*(3), 157-66.

Exploration and exploitation as a central innovation dilemma for organizations and managers

And now … a truly entrepreneurial story

A Bug's Life (1998)

Video used in class:
https://www.youtube.com/watch?v=CeRjUZJxGHk&list=PL2IydkLJxoKotnuxGXIeuTchAY1ncb5Fd (scenes 1 and 2)

Bugs video

- Event 1: the leaf as an obstacle
  - The routine is broken
  - Panic!
  - The controller has to intervene
  - A second-level routine is implemented

- Event 2: there is a gap in the 'production' line
  - The routine is broken
  - Panic!
  - The senior has to intervene and transfer experience

- Event 3: failure in the harvesting machine – hit the princess
  - Technology was working
  - The leader is able to explore, but not to exploit

Exploitation

Exploitation

Exploration

Exploitation and exploration

- Exploitation
  - Refinement, production, efficiency, implementation …

- Exploration
  - Variation, risk taking, experimentation, play, flexibility …

- Returns from **<u>exploration</u>** are uncertain, more remote in time, and organizationally distant from the locus of action and adaptation
  - **E.g. the R&D lab!! Or 'the harvesting machine' strategy**

- Returns from **<u>exploitation</u>** are reliably linked to the time and place in which they take place.
  - **E.g. the manufacturing unit. Or 'It's our lot in life'**

Rules, and their functions

- Embody 'the way we do things here'
  - **The Queen**

- Problems solved in the past generate solutions which are stored in rules and procedures
  - **Form a line, follow the ant in front of you**

- Such rules and procedures are used any time a similar situation ensues
  - **The leaf and the '1993 twig'**

- Rules (and roles) are hierarchically structured
  - **Enter the 'professionals'**

- They define roles and 'proper' organizational behaviour
  - **The controller and the inventor**

- They define control mechanisms
  - **There is a gap in the line**

Source: all images from Internet

From exploitation to inertia

- Ossification of structure around existing knowledge
    - Communication channels are built around existing technologies
        - **(e.g. the line)**
    - Information filters – enables firms to immediately identify what it is crucial from what is not
        - **(e.g. there is a gap!)**
    - Problem solving strategies
        - **(e.g. follow me!)**
    - Structural inertia
        - **(e.g. It's our lot in life!)**

- Norms, values,
    - Cultural inertia stories
        - **(The harvesting machine)**
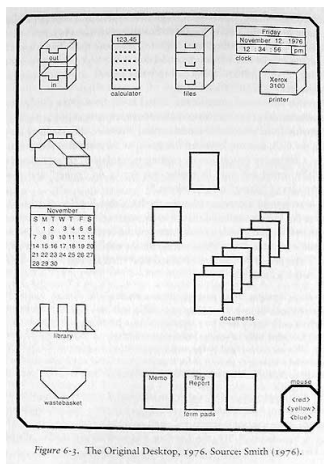
But…

Courtesy of Xerox PARC

Figure 6-3. The Original Desktop, 1976. Source: Smith (1976).

Source: all images from Internet

Ambidextrous organizations

Definition: Ambidexterity

"The ability to simultaneously pursue both incremental and discontinuous innovation and change results from hosting multiple contradictory structures, processes, and cultures within the same firm" (Tushman & O'Reilly, 1996: 24)
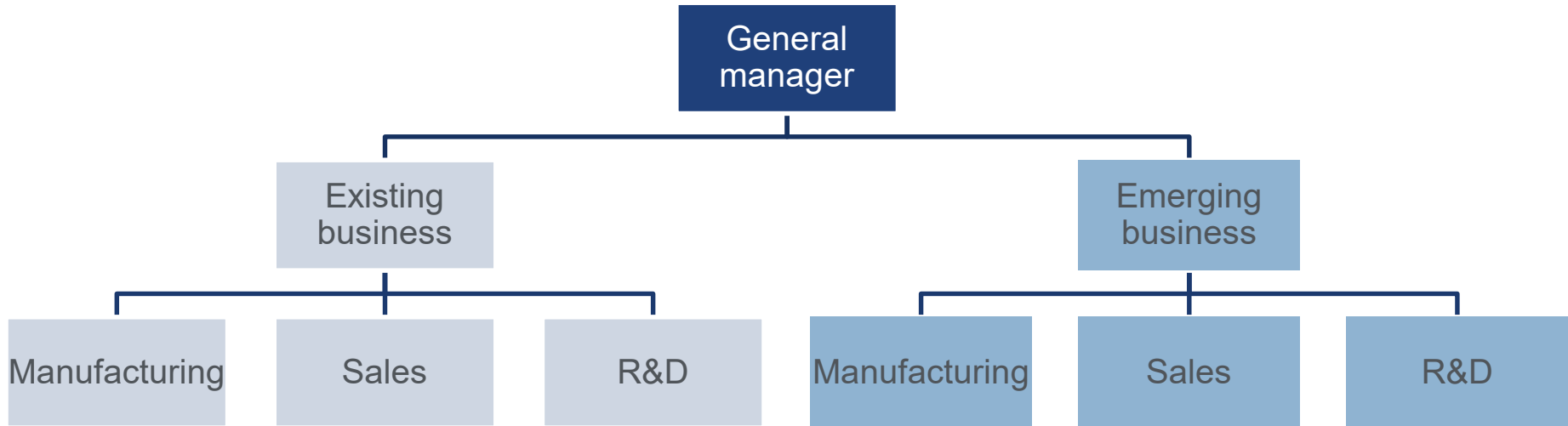
Source: all images from Internet

Ambidexterity: a few challenges

Alignment of:	Exploitative business	Explorative Business
Strategic intent	Cost, profit	Innovation, growth
Critical tasks	Operations, efficiency, incremental innovation	Adaptability, new products, breakthrough innovation
Competencies	Operational	Entrepreneurial
Structure	Formal, mechanistic	Adaptive, loose
Control, rewards	Margins, productivity	Milestones, growth
Culture	Efficiency, low risk, quality, customers	Risk taking, speed flexibility, experimentation
Leadership role	Authoritative, top down	Visionary, involved

(Source: O'Reilly and Tuhsman, 2004)

Structurally ambidextrous organizations

(Source: O'Reilly and Tuhsman, 2004)

Polaroid, and digital imaging
(Tripsas and Gavetti, 2000)

Organizing for ambidexterity

Video used in class: https://www.youtube.com/watch?v=W6EgoiPxNDs&t=53s

Exploration and Exploitation in IDEO

Exploration	Exploitation
…	…
…	…
…	…

Exploration and Exploitation in IDEO

Exploration	Exploitation
Intense Brainstorming (Deep Dive)	Well defined methodology
Intensive market research (anthropology)	Structured with distinct Phases
Build on unusual ideas / Demand unusual ideas	Active client management
Relatively flat, little hierarchy / Status comes from ideas / few titles	Clients are "trained" in conference room
Diverse teams (psychology, biology, engineering, design, MBA)	Simple rules (on the wall)
Failure is accepted	
Lead by example	
Low key / Informal	
Self-motivated / based on trust	

Ambidexterity at IDEO

Ambidexterity
"Enlightened trial and error"
"Fail often to succeed sooner"
Prototype driven
Small organizational units
Short distance between team members/prototype shop
Crazy and messy but disciplined
Communication through pictures
Builds on sharing of ideas and learning

The role of Adults:

- Refocusing brainstorming phases
- Interfering when change is needed

➢ Responsible for the switch between exploration and exploitation

Structural vs. Contextual ambidexterity

	Structural Amb.	Contextual Amb.
How is ambidexterity achieved?	Explorative- and exploitative activities are done in separate units or teams	Individual employees divide their time between explorative and exploitative activities
Where are decisions made about the split between exploration and exploitation?	At the top of the organization	On the front line — by salespeople, plant supervisors, office workers
Role of top management	To define the structure, to make trade-offs between exploration and exploitation	To develop the organizational context in which individuals act
Nature of roles	Relatively clearly defined	Relatively flexible
Skills of employees	More specialists	More generalists

Adapted from Birkinshaw & Gibson 2004

Learning objectives

Core concepts

- Exploitation vs. Exploration -> **Definition and Differences**
- Ambidexterity

Methods

- Discussion, analysis of ‚realistic' situations to identify an ‚innovation model' → **rules and roles in the ant colony**

Abilities

- Interpret, simplify, separate to critically assess a given organizational set up → **'see' exploitation and exploration in action**

This week in context:

Block 2 of TIM course HS2019: Decision-making and discovery

4. Exploration and Exploitation (this lecture)

- **Why organizations struggle to be good at both**
- **Introduction to routines and different forms of ambidexterity**

5. Exploration and Exploitation in individuals

- **Tracing decision-making back to individual traits**
- **A close look at how individuals actually switch between exploration and exploitation**

6. Socialization and Spinouts

- **Solving the exploration-exploitation dilemma**
- **How companies prevent over-exploitation through open innovation solutions**

7. Guest Lecture: TIM in practice

- **Dr. Alan Cabello (Founder of Blockchain Business Lab)**
- **An example of what adaptation to new technology looks like from the inside**

Next week …

Source: Google images