

MOT121A Course Schedule

	Time	Topic	Chapters	Professor
1	Wednesday September 4, 2023	10:00 – 12:00	Technology in Design and the course of history	IV
2	Wednesday September 6, 2023	10:00A	Optimizing for tomorrow	IV
3	Wednesday September 13, 2023	10:00A-12:00	Introduction days	IV
4	Wednesday September 27, 2023	10:00A – 12:00	Open Innovation Topics, Terms and	IV
5	Wednesday October 4, 2023	10:00 – 12:00	Open Innovation	IV
6	Wednesday October 11, 2023	10:00 – 12:00	Open Innovation	IV
7	Wednesday October 18, 2023	10:00 – 12:00	Open Innovation	IV
8	Wednesday October 25, 2023	10:00 – 12:00	Open Innovation	IV
9	Wednesday November 1, 2023	10:00 – 12:00	Open Innovation	IV
10	Wednesday November 8, 2023	10:00 – 12:00	Open Innovation	IV
11	Wednesday November 15, 2023	10:00 – 12:00	Open Innovation	IV
12	Wednesday November 22, 2023	10:00 – 12:00	Open Innovation	IV
13	Wednesday November 29, 2023	10:00 – 12:00	Open Innovation	IV
14	Wednesday December 6, 2023	10:00 – 12:00	Open Innovation	IV
15	Wednesday December 13, 2023	10:00 – 12:00	Open Innovation	IV
16	Wednesday December 20, 2023	10:00 – 12:00	Open Innovation	IV
17	Wednesday December 27, 2023	10:00 – 12:00	Open Innovation	IV
18	Wednesday January 3, 2024	10:00 – 12:00	Open Innovation	IV
19	Wednesday January 10, 2024	10:00 – 12:00	Open Innovation	IV
20	Wednesday January 17, 2024	10:00 – 12:00	Open Innovation	IV
21	Wednesday January 24, 2024	10:00 – 12:00	Open Innovation	IV
22	Wednesday January 31, 2024	10:00 – 12:00	Open Innovation	IV
23	Wednesday February 7, 2024	10:00 – 12:00	Open Innovation	IV
24	Wednesday February 14, 2024	10:00 – 12:00	Open Innovation	IV
25	Wednesday February 21, 2024	10:00 – 12:00	Open Innovation	IV
26	Wednesday February 28, 2024	10:00 – 12:00	Open Innovation	IV
27	Wednesday March 6, 2024	10:00 – 12:00	Open Innovation	IV
28	Wednesday March 13, 2024	10:00 – 12:00	Open Innovation	IV
29	Wednesday March 20, 2024	10:00 – 12:00	Open Innovation	IV
30	Wednesday March 27, 2024	10:00 – 12:00	Open Innovation	IV
31	Wednesday April 3, 2024	10:00 – 12:00	Open Innovation	IV
32	Wednesday April 10, 2024	10:00 – 12:00	Open Innovation	IV
33	Wednesday April 17, 2024	10:00 – 12:00	Open Innovation	IV
34	Wednesday April 24, 2024	10:00 – 12:00	Open Innovation	IV
35	Wednesday May 1, 2024	10:00 – 12:00	Open Innovation	IV
36	Wednesday May 8, 2024	10:00 – 12:00	Open Innovation	IV
37	Wednesday May 15, 2024	10:00 – 12:00	Open Innovation	IV
38	Wednesday May 22, 2024	10:00 – 12:00	Open Innovation	IV
39	Wednesday May 29, 2024	10:00 – 12:00	Open Innovation	IV
40	Wednesday June 5, 2024	10:00 – 12:00	Open Innovation	IV
41	Wednesday June 12, 2024	10:00 – 12:00	Open Innovation	IV
42	Wednesday June 19, 2024	10:00 – 12:00	Open Innovation	IV
43	Wednesday June 26, 2024	10:00 – 12:00	Open Innovation	IV
44	Wednesday July 3, 2024	10:00 – 12:00	Open Innovation	IV
45	Wednesday July 10, 2024	10:00 – 12:00	Open Innovation	IV
46	Wednesday July 17, 2024	10:00 – 12:00	Open Innovation	IV
47	Wednesday July 24, 2024	10:00 – 12:00	Open Innovation	IV
48	Wednesday July 31, 2024	10:00 – 12:00	Open Innovation	IV
49	Wednesday August 7, 2024	10:00 – 12:00	Open Innovation	IV
50	Wednesday August 14, 2024	10:00 – 12:00	Open Innovation	IV
51	Wednesday August 21, 2024	10:00 – 12:00	Open Innovation	IV
52	Wednesday August 28, 2024	10:00 – 12:00	Open Innovation	IV
53	Wednesday September 4, 2024	10:00 – 12:00	Open Innovation	IV
54	Wednesday September 11, 2024	10:00 – 12:00	Open Innovation	IV
55	Wednesday September 18, 2024	10:00 – 12:00	Open Innovation	IV
56	Wednesday September 25, 2024	10:00 – 12:00	Open Innovation	IV
57	Wednesday October 2, 2024	10:00 – 12:00	Open Innovation	IV
58	Wednesday October 9, 2024	10:00 – 12:00	Open Innovation	IV
59	Wednesday October 16, 2024	10:00 – 12:00	Open Innovation	IV
60	Wednesday October 23, 2024	10:00 – 12:00	Open Innovation	IV
61	Wednesday October			

Last time: The Structuring of Organizations

Today

- The nature of the R&D process
- Projects (ch.5 and ch.6)
- Open Innovation

The R&D Process

It is driven by corporate strategies and goals that cascade down to the R&D organization, whereupon premises are formulated for valuable new products, platforms or extensions.

How in practice?

How? (simplified linear model)

Strategy and Goals


```
graph LR; A[Knowledge Sources] --> B[Idea Generation]; B --> C[Decisions]; C --> D[Actions]; D --> E[Results]; E --> A;
```

The diagram illustrates a simplified linear model of the innovation process. It consists of five rectangular boxes arranged horizontally, connected by arrows pointing from left to right. The boxes are labeled: 'Knowledge Sources', 'Idea Generation', 'Decisions', 'Actions', and 'Results'. A feedback loop is shown by a line that starts from the bottom of the 'Results' box, goes down, then left, and finally up to the bottom of the 'Knowledge Sources' box.

Explicit
Codified knowledge found in documents, databases, etc.

Tacit
Intuitive knowledge & know-how, which is:
Rooted in context, experience, practice, & values
Hard to communicate - it resides in the mind of the practitioner
The best source of long term competitive advantage and innovation
Is passed on through socialization, mentoring, etc - is not handled well by IT

Sources (Kouzes et al. 2002)



Tacit (know-how)

- Experts
- Corporate knowledge
- Core competencies
- Customer perspective
- External information
- Data bases
- Hard Archives

Explicit (know-what)

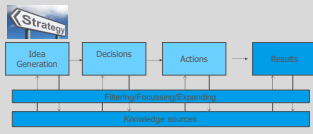
Knowledge flow is non-linear

Strategy and Goals

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graph LR; A[Knowledge Sources] --> B[Idea Generation]; B --> C[Decisions]; C --> D[Actions]; D --> E[Results]; E --> A;
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Knowledge flow is non-linear



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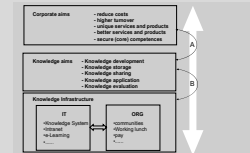
Questions R&D managers



1. What kind of structure and culture facilitates knowledge flow and how can it best be designed, incorporated and managed?
2. How can the knowledge of experts and people leaving the company be captured?
3. How can I speed up the idea generation process, the decision making process, the wider sharing of best practices?
4. ...etc.

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What is manageable?



How to control the uncontrollable

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Three critical features of innovation

1. Its dynamic, processual, practice-based nature
2. Its implications for managing knowledge and practice
3. Its relationship to context (social, organizational and national/institutional)
 - Technology development is not a matter of R&D alone
 - R&D management differs related to size, industry sector
 - Technology required for different phases in innovation process are likely to be accessed from different external sources (different preferred partners)

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An Overview of Projects

Project → A temporary endeavour undertaken to create a unique product, service, or result (Project Management Book of Knowledge, PMBOK)

Typically separated from rest of organization even though eventually output must be adopted by rest of organization

Learning boundary → Isolation between project and organization can hamper knowledge transfer – e.g. Kodak



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The Ecology of Innovation Projects

The project may be part of a **co-located** program (multiple projects run at one location)

It may be **distributed** (one project run from multiple locations with members from various organizations)

Or involving **multiple** projects at multiple locations at multiple moments in time



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Projects and Teams

Projects are different from teams per se; they rarely involve a stable group

There is a need for people from different backgrounds to engage in some kind of collaboration – **teaming** (Edmondson, 2012)

- Project management
- Team leadership

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Projects in relation to other groups

	Communities of Practice	Functional units	Project teams	Informal Networks
Purpose	Knowledge capability	Produce an output	Accomplish a specific task	Disseminate information
Boundary	Knowledge domain	Market, product or function	Assigned charter	Scope of relationships
Connection	Identity	Reporting relationships	Commitment to the goal	Interpersonal acquaintance
Time period	Enduring	Enduring	Temporary	Variable

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Project Management

Identifying requirements

Establishing clear and achievable objectives

Balance triple constraint of scope (what will be achieved), time (how long it will take) and cost (how much it will cost)

Adapting to expectations of stakeholders (later addition)



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Types of Projects

Complicated → Many different activities need to be completed but in general know in advance what needs to be done and how long it will take

Complex → Not even clear what activities need to be done (unknowns), how long each will take, and what implications are following completion of a particular activity



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Types of Uncertainty

Technical → How to develop the science for a particular project?

Market → How will the market respond?

Resource → Time, people, money needed for the project?

Organizational → Out-sourcing some parts, co-locating a team?

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Project Liminality Liminal Space

Temporality → People are team members for a limited time period only

Ambiguity → Liminal space is a risky place with opportunities to create something truly novel

Freedom → People are free from structural and institutional constraints and obligations

Community → You share the experience with your team members only. It can create a divide with those 'on the outside'

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Challenges of Liminal Projects

Too much out-of-the-box → The technology or idea the team decided to implement may be too radical / different for the mother organization → tensions!

Us vs. them → The sense of community between the team members became so strong that they alienated themselves from the mother organization → tensions!



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Projects Not Always The Answer

Outcome of projects not always easily accepted by those who have not been involved in a particular project

Project management seems especially difficult in contexts of complexity in science, technology or regulatory environment

Project management methodologies still have a symbolic role (to legitimize and indicate progress)



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Agile method

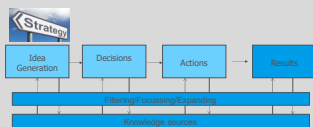
While traditional project planning (sometimes described as waterfall method) may be difficult in complex and even complicated projects.

New methods have been developed to try and take account of the uncertainty – agile methods.

Many different variants (e.g., Scrum, Kanban) of agile but all share same idea.

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Trend: External sources of knowledge have become increasingly relevant



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Trends



Globalization: virtual teamwork
Outsourcing of R&D
Early supplier integration
User innovation
External commercialization of technology (patents as a strategic asset)

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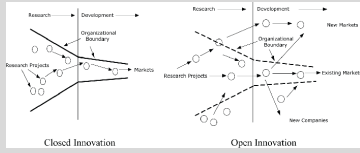
Examples of the use of external sources of knowledge ?

Agreements with competitors
Collaboration with customers
Collaboration with start-up companies
Collaboration with universities, knowledge institutes

Connectivity and depending in the knowledge of others

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1. What is Open Innovation?



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2. What are the benefits of Open Innovation for companies?

Outside-in	Inside-out
Reduce costs	Create a value chain
Save time	Attract people
	Earn royalties with your technologies
	Making R&D more econ. sustainable

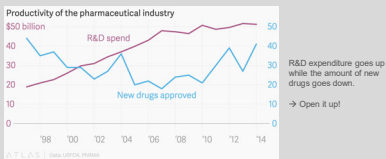
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2. What are the benefits of Open Innovation for companies?

Outside-in	Inside-out
Reduce costs	Create a value chain
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	Earn royalties with your technologies
	Making R&D more econ. sustainable

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3. Challenges of Open Innovation for the Pharmaceutical industry?



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Factors that undermine the logic of (traditional) Closed Innovation

- ❖ Dispersion of scientific and technological knowledge due to the mobility of highly skilled workers
- ❖ The growing presence of venture capital
- ❖ The increasing role of user groups in the innovation process
- ❖ The shortening of technology lifecycles

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4. What are the leadership challenges associated with Open Innovation?

- Major culture change (another mind-set)
- 'Not all smart people work for us!'
- Collaboration is vital yet risky

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5. What are the implication of Open Innovation for Talent Management?

- New rewards systems
- Celebration of achievements
- (again) Collaboration is vital yet risky

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6. Inside-out versus Outside-In?

Outside-in	Inside-out
More common because less disruptive for the rest of the organization	Much more radical changes are needed in organizations
	Also a fear that technologies will become successful outside of your own company.
	Reciprocity is needed (taking seems easier than giving)

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7. Differences between Open Innovation and Open Source software development?

There are commonalities but the notion of business models seems radically different.

Open source initiatives avoid business models whereas as Open Innovation is very much focused on creating business opportunities.

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8. Why is the innovation of new Business Models (especially for services) important?

- ❖ Very much Inside-out
- ❖ A business model may be more successful than technology itself.
- ❖ A growth area (e.g. financial services)

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9. The future of Open Innovation?

- ❖ The notion of Open Innovation has been around for more than 15 years now?
- ❖ Ideas are abundant and maybe some public policies in relation to the protection of ideas should change in order to stimulate collaboration (or enable Open Innovation).

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Additional reading



Waking the sleeping beauty:
Swarovski's open innovation journey



Dabrowska et al. (2018)

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For next time: mandatory articles

1. Criscuolo, P., Salter, A., & Wal, A. L. J. T. (2014). Going Underground: Bootlegging and Individual Innovative Performance. *Organization Science*, 25(5), 1287-1305.
2. Mohammadji, A., Broström, A. and Franzoni, C. (2017). Workforce Composition and Innovation: How Diversity in Employees' Ethnic and Educational Backgrounds Facilitates Firm-Level Innovativeness. *Journal of Product Innovation Management*, 34, 406-426.
3. Khanagha, S., Volberda, H. W., Alexiou, A., & Annosi, M. C. (2022). Mitigating the dark side of agile teams: Peer pressure, leaders' control, and the innovative output of agile teams. *Journal of Product Innovation Management*, 39(3), 334-350.

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Thank you !

The MOT 1524 Course Team

Robert Verburg, lecturer
Nikos Pachos, lecturer,
Sander Smit, moderator group assignment



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