The Internet of Things – Innovation, convergence, and business implications

Course aims

This seminar prepares you for your Master’s thesis. You will choose a topic in one of the given topic areas or an adjacent topic area (see below “Choosing your topic”) and develop a research question that you seek to answer in your seminar paper. You will write a seminar paper, present your work in class, and discuss a fellow student’s seminar paper.

The goal of the seminar is to practice relevant skills for your Master’s thesis. These skills include among others: framing a topic, identifying the relevant conversation in the literature, critically reviewing the literature, practicing empirical methods of research through case studies or interviews, and reflecting on your own work. You will practice scientific writing, presenting, and discussing. Students will deepen their knowledge of innovation management in general and attain specialist knowledge on their selected topic.

Assessment

Grading is based on a written seminar paper (60%), the presentation of the seminar paper (30%), and a presentation reviewing another participant's paper (10%).

In order to receive a grade, you will need to complete all three obligatory assignments. Extra points may be earned through active and constructive participation in in-class discussions.

Preliminary course outline

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<td>Submission of your outline via moodle</td>
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Choosing your topic

Once you have received a confirmation for a seat in the seminar, you may indicate your two preferred topic areas. You may also suggest your own topic idea outside of the given topic areas. Please restrict your suggestions to topic areas adjacent to the general theme of the seminar. This will allow for a lively in-class discussion and valuable feedback to you by the other participants of the course.

The topic areas given below are rather broad, which gives you a lot of freedom to develop an interesting research question in the respective topic area you choose. The literature provided for each topic area provides a starting point for various possible research questions within the respective topic area.

The Internet of Things – Background and motivation

The topic of the Internet of Things (IoT), the connection of all sorts of heterogeneous objects, is omnipresent in the media. Recently, increasing concerns relating to the security\(^1,2\) of IoT applications and devices have attracted even more attention to this concept.

The connection of heterogeneous objects, such as household appliances, vehicles, and aircrafts, implies that there is a convergence process taking place. This convergence brings along new opportunities, for instance for start-ups working in the field, but also some significant challenges such as cultural and procedural issues. Hence, there is a need for various firms to gain an understanding of the background, technologies, and requirements of firms from other industries. In addition, some firms decide to establish new business units, or significantly change existing ones, in order to meet new market needs or further the development of new technologies.

This seminar aims at shedding light on four aspects of the IoT and the inherent convergence processes taking place. The first topic area focuses on business opportunities arising from the new technologies, while the second examines the (potential) gap between the supply of and the demand for IoT-related products. As previously mentioned, the emergence of the IoT also brings along organisational challenges for many firms. Finally, we will also look at the implications of convergence on intellectual property rights policies.

Topic Area 1: Convergence as an enabler for the emergence of new ventures

Naturally, the IoT gives rise to new business ideas\(^3\) at the interface of different industries. This topic area aims at exploring how and why these new ventures come to be and how they may or may not have an impact on industry structures and technological development. You can approach this topic in various different ways, for instance by conducting interviews with start-ups or collecting and analysing secondary data on new ventures.

You can start with:


3 http://iot.ieee.org/startups.html
Topic Area 2: Business opportunities in IoT vs. consumer readiness

Since IoT technologies open up a wide range of business opportunities for various firms, many of them invest resources into the development and testing of novel ways of connecting many kinds of objects. One example is the Amazon Echo\(^4\) device, which is a voice-controlled home assistant. Thus, many firms rely on an approach of technology push, and they aim at exploiting what is technologically feasible. However, the majority of (private) consumers tends to be hesitant when it comes to adopting new kinds of devices and applications, also due to security and privacy concerns\(^5\). So this topic area aims at exploring the gap between the supply and demand side with regards to IoT offerings.

Some starting points in the literature are:


Topic Area 3: Organisational and strategic implications of the IoT

Technological developments in the realm of the IoT force managers to reconsider their organisational structure and strategic direction. For instance, some firms set up entirely new departments in order to exploit new technological opportunities or to be able to face new competitors, potentially from other industries. Other firms tend to put more emphasis on partnering and forming alliances. One possible way of approaching topics in this area could be a thorough analysis of press releases or other company announcements.

Interesting background information can be found in:


Topic Area 4: IoT and intellectual property rights

In many established industries, there are tried and tested ways of handling intellectual property, which most industry participants adhere to. In some industries, major industry players stick to implicit rules or conventions which have been established over the course of several years or decades. However, once industries converge, firms with different backgrounds may be forced to negotiate new ways of dealing with intellectual property. In the realm of the IoT, this challenge is not just confined to IT and telecommunications, but also affects industries such as automotive and aviation.

Ideas to start with can be found in: