CSE480 Syllabus

FACULTY OF ENGINEERING AND ARCHITECTURE

SPECIAL TOPICS: SOFTWARE ENTREPRENEURSHIP

(2021 SPRING SEMESTER)

SOFTWARE ENTREPRENEURSHIP aims to provide managerial guidelines and key topics for Undergraduate and postgraduate Students who are potential leaders in their future software companies.

The course will cover various topics for students who are aiming to become leaders in their future courier both in a company or self-owned start up. The course intends to provide an entrepreneurial perspective to attending students.

A software product or a solution is like any other product in high value generating industries such as Automotive, Airlines, Biology, Mechanical manufacturing and other similar. The leaders in software engineering industry are expected to make the right decisions at the right time. This is essential for designing, marketing and selling innovative products to reach a better success with high customer penetration.

Such decision process is a quite sensitive and needs various key points to be considered. In a typical life cycle of a software company, leaders are expected to tailor the company with their decisions during different stages both from business and technical perspective.

This course is considering that the student have already passed the standard and advanced software engineering courses preferably including SDLC and programming for a better understanding of the topics.

SDLC and Programming topics covered in this course are aiming to look at these topics from a leader and business perspective and not intending to provide any technical software engineering perspective.

COURSE OBJECTIVES

At the end of the course, Software Programming Students who are willing to understand a typical life cycle of a software company will be able to:

- Gain key business aspects of becoming a software engineer

- Have better view of start-up companies typical issues

- Discover their own entrepreneurial views

- Plan better guidelines for their future carrier

INSTRUCTIONAL METHODS

During the classroom lecturing hours CSE480 the teaching content will be provided with a set of power point slides, handouts and sample real life case examples provided as case study documents.

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As additional activities classroom discussions and role playing case studies are also included. Each student is expected to be part of at least one activity and play a role either in the role playing or discussion.

TEXTBOOK & MATERIALS

Following text books are recommended as reading books :

Textbook 1: The Startup Owner's Manual ISBN-13: 978-0984999309

Textbook 2: The Lean Start-Up by Eric Ries

THE COURSE SCHEDULE

1. THE SOFTWARE BUSINESS IDEA

In the 1st chapter different approaches are discussed such as how an idea should be shaped up for turning an idea into a self-project. The chapter will mainly cover how software engineers should proceed with their initial idea and find out potential customers and projects. This approach is considered as business idea as every technical idea and innovation turns into a business idea during commercialization phase. Business ideas which take customer needs into account and formed as lean ideas have a chance to survive financially. Different startup ideas will be discussed during this chapter.

2. TARGET MARKETS & CUSTOMER SEGMENTATION IDENTIFICATION

This chapter covers important topics and methods for discovering the potential of your business idea. Upon discovering a new business idea software engineers are expected to find target customers and potential projects. For a better future planning and securer investment more market research is required Software Engineers need to use various tools, methods such as digital and social media for the initial planning and marketing of the business idea before going into a serious investment.

3. STRATEGIC SOFTWARE DEVELOPMENT

Software engineering are well-equipped with programming skills after graduating from their engineering programs. Being part of a company for developing various software solutions and becoming a key member of a start-up company are quite different. Start-Up members, key contributors are expected to make key business and technical decisions in additions to their software development skills. This chapter covers important aspects of software development approach such as designing ideal software architecture, choosing the right programming languages, quality, tools which will help software engineers to develop better quality software.

4. VALUE BASED MARKETING & SALES

Every software product is expected to provide a value to the customers. The value is sometimes about some special unique features that helps to accelerate customers' business or sometimes to help customer generate savings in different areas. Software products without less or minimum value are proven to survive much shorter. For a better success business value plays a big role. In order to sell such a value companies need to find the right teams who can discover and sell those values with right tools, methodologies and strategies to the customers.

5. EXCELLING CUSTOMER MANAGEMENT

After successful execution of product development, sales and marketing strategies, start-up companies concentrate on improving existing customer experience to increase customer life (CLV) time value. It is key to understand various topics such as customer support process, product innovation concept, customer life time value to reach a mature company level.

6. SOFTWARE ENTREPRENEURSHIP

Entrepreneurship is unique for everybody. Not every person has entrepreneurial skills. For a real start-up success, entrepreneurship is a must. During the life cycle of a typical software company different entrepreneurial skills are needed. The most important is to use those skills at the right time for making the right decisions. This chapter is one of key chapters of the CSE480 and concentrates on different life cycle stages of a software company to build your unique story, address key decision points, topics and needed entrepreneurial skills.

7. SOFTWARE MARKET TRENDS

One of the important topics for a software startup company is to act quickly to market needs and changing market conditions. The ideal approach to become a successful startup is to watch the key market trends in ICT and Telecom domains. The last chapter will mainly concentrate on new market trends in ICT and Telecoms sector such as Blockchain, Big Data, Internet of Things, Industry 4.0, Artificial Intelligence and how to handle new opportunities with these new trends.

8. CASE STUDY 1 (Week 3) (15%)

   a. An actual Case study which aims to address a decision process for a start-up company that will allow the company to move to the next phase in the company's life cycle

   b. Students are expected to choose a case study from a real-life company example

   c. The company might about to fail or not performed well in their early life stage in one of cases:

        i.Product is built with insufficient technologies

        ii.Product roadmap does not reflect sufficient market, customer needs

        iii.Customers are not happy about the initial product

   d. In order to provide a success to the chosen company, the students are expected to cover their own decision and supporting reasons for that.

   e. The case study assumes that either you are the CEO or key decision maker of the executive committee

9. CASE Study 2 (week 6) (15%)

   a. An actual Case Study which aims to address a decision process for a successfully established company which is now starting to challenge the competition with their products and services.

b. However the company has issues in one of the areas:

   i. Designing New products or new product enhancements

   ii. Company cannot scale as expected

   iii. Sales figures are far below market growth rates

   iv. The company has profitability issues

c. In order to address one of the above topics, the students are expected to provide their own solution and supporting reasons for that solution.

d. The case study assumes that you are head of the related department and will present a solution to the executive committee

10. **Group Case Study/Role Playing (3 students, Week 5, 6, 7) (30%)**

a. An actual Case Study which aims to address a decision process for a start-up company which is now asked to provide a business plan for venture capital/investor who wants to invest into the company to increase sales growth

b. The company has following status and issues:

   i. The product/solution has been built in one of the new software market trends Customer Experience Management, Big Data, Cloud Computing, Advanced Analytics, Internet of Things, Complex Event Processing, Digital Marketing

   ii. Product has scalability issues for processing mass data

   iii. The product is built on .NET platform and has expensive license costs

   iv. There are couple of customers who are using the product, however there is no unique story which can accelerate new customer acquisitions

   v. Existing sales strategy is built on direct customer sales (B2C)

c. Each group member should use one of the 3 executive roles of typical company and provide investors a presentation in these areas:

   i. Why should they invest into the product (Chief Executive Officer)

   ii. What would be the future Go To Market Strategy after investment(Chief Sales & marketing Officer)

   iii. What kind of technologies and Product features should be built to make the product more scalable and robust

   iv. Each student is expected to prepare 5-8 slides supporting their ideas and present this during the class in 10 minutes as part of the companies presentation to the investors

11. **Final Exam (%40)**