Innovation Processes, Techniques, and Tools

Course Description:

This course provides a hands-on comprehensive study of mainstream innovation concepts, processes, techniques, and tools. Through the various sessions, students will learn how to manage innovation to support the creation of solutions that can be effectively monetized. They will also learn how to create and leverage environments, and solutions, that foster and enable innovation. Through hands-on assignments and programming projects, students will learn how to harness innovative thinking and develop end-to-end innovative solutions with agility and monetization in mind.

Topics Covered:

1. Managed Innovation Overview
   - Challenges and need to innovate
   - Innovations vs. inventions
   - Innovation strategies
   - Managed innovation frameworks
   - Enterprise Architecture guided innovation
   - Top down strategy
     - Managed innovation techniques and tools
     - Innovation management systems
     - Other top-down strategy approaches
   - Bottom up strategy
     - Managed innovation measurement
     - Innovation gamification process
     - Other bottom-up strategy approaches
   - Innovation as a culture
   - Managed innovation standards
   - Assignment: Conclusions based on review of research and industry papers on managed innovation

2&3. Innovation Strategy Processes and Techniques
   - Inventive problem solving
   - Four lenses of innovation
   - Orthodoxies and why they matter
   - Four lenses of innovation at work
   - Prioritizing a problem statement
     - NASSCOM Boston Consulting Group (BCG) matrix
     - IFF (Importance – Frequency – Frustration) approach
   - Related standards
• Innovation strategy mainstream offerings
• Ongoing course project (part I) – Innovation environment and project setup

4&5. Idea Generation Processes and Techniques

• NIJ structured brainstorming
• Six thinking hats
• Scamper
• Brain writing
• Other ideas generation processes and techniques
  • TRIZ and Innovation
  • Innovation opportunity management
• Idea generation mainstream offerings
• Ongoing course project (Part II) – Ideas generation and documentation

6&7. Ideas Evaluation Tools and Techniques

• Filter ideas
• Validate ideas
• Establish an idea proposal
• Other ideas evaluation processes and techniques
  • Innovative solution engineering
  • Innovation incubation approaches
• Idea evaluation mainstream offerings
• Ongoing course project (part III) – Ideas evaluation

8. Proof of Concept Execution

• PoC implementation processes and techniques
• Proof of concept (PoC) execution
• Feedback gathering
• PoC/Pilot Review
• Ongoing course project (part IV) – Innovative solution PoC execution

9&10. Innovative Solution Implementation

• Innovative solution implementation processes and techniques
  • Applying known patterns
  • Minimum Viable Product (MVP)
• Select candidates for implementation
• Cost and time budgeting
• Innovative solution implementation offerings
• Ongoing course project (part V) – Innovative solution implementation
11. Innovative Solution Catalogs

- Innovation catalog dimensions
- Domain specific research catalogs
- Industry specific solution catalogs
- Workshop on Innovative solutions recommender systems

12. Innovative Solutions Monetization

- IP protection
- Approaches to innovative solutions monetization

13. Final Project Reviews

References:

Industry publications on managed innovation, online textbooks, and research papers on various topics connected to the various sessions.