Conceptual Design and Development of Innovative Products (CDDIP)

by
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Agenda

- Background for summer school
  - Overview of the summer school
  - What do Bang & Olufsen gain from the Innovation Camp?
  - Experiences from 8 camp
What’s it all about?
Motivation for summer school

- Competitiveness of companies depends upon creating new innovative concepts faster in globalized world – exponential organisations
- Outsourcing of tasks to different countries
- Precise requirements for development teams required
- Time to market is often essential
- Complexity of products increase
- Understanding design constraints for other disciplines is essential
- Need for new competencies and skills for engineers
  - Virtual distributed organizations
  - Understanding cultural differences
  - Maneuvering in innovative fields of uncertainty
Learning Objectives for course

- Cooperate in multidisciplinary team activities;
- Demonstrate interpersonal skills during team development;
- Propose and justify the value of new innovative technical solutions;
- Conduct disciplinary analysis of a real-life industrial problem;
- Present disciplinary analysis to stakeholders with different disciplinary backgrounds;
- Designs disciplinary interface to other disciplinary products.
Participants

- Aalborg University, Denmark
- Art Center College of Design, USA
- Cracow University of Technology, Cracow, Poland
- Danish Media and Journalist School, Denmark
- Design School Kolding, Denmark
- Hanze University Groningen, The Netherlands
- Royal Academy of Architecture, Design & Conservation, Denmark
- Shanghai Jiao Tong University, China
- Aarhus University
- Bang og Olufsen a/s, Struer, Denmark
- Struer Statsgymnasium, Science Class

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www.bang-olufsen.com
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Course Characteristics

- **Team-oriented activities**: The students work collaboratively in teams to develop an engineering product.

- **Multidisciplinary approach**: The teams are composed of students with different disciplinary backgrounds, whose skills, knowledge, and experience are important to combine in order to achieve the project’s goal.

- **Multicultural approach**: The teams are composed of students from different countries.

- **Problem-based learning**: Learning is centered on the students, using open assignments with several possible valid solutions, and the teachers act as tutors of the assignments.

- **Intensive schedule**: The summer school lasts for a relatively short period of time, and students work exclusively on their projects during five days a week.

- **Industry-oriented**: The summer school takes place in an industrial setting and the assignments are closely connected with the requirements of the industrial partner.
Program

- **Stage 1**: students practise and expand creativity and teamwork skills;

- **Stage 2**: students elaborate on the idea of a concept for a product;

- **Stage 3**: students work on the product, mainly on the prototype, its design, and its technical documentation.
The physical layout
Team Assignments (briefs)

Considerations include:

1. **Areas of genuine interest.** The company is looking at these areas (amongst others) and was genuinely interested in the result of these projects;

2. **Projects were selected that would require an even mix of engineering input,** i.e. physical products that have mechanical movements and screen/software elements (for example, a media centre or limited functional object such as TV stand would focus on software or design and thus limit the summer school intention); and

3. **Balance of openness and constraints.** The design briefs attempted to give enough constraints that a strong direction could be seen, however enough freedom for the students to explore within their own discipline. For example, just asking for a new stereo would require the student to spend more time in the early concept phase (what kind of stereo, what range of positions, etc).
Team Assignments

In 2008:
- Re-birth of the Portable Stereo
- Content Explorer
- B&O Interoperability

In 2009:
1. B&O Outdoor experience
2. B&O Living room experience
3. B&O Luxury car experience
Final presentation
Example of final presentation video
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What do Bang & Olufsen gain from the Innovation Camp?

**Image**
- Competitors
- Universities
- Research community
- Society

**Technology/knowledge for break-through products, Patents, publications**

**Knowledge (in-depth) of standard technology**

**Recruitment**
- Scientifically trained personnel
  - Visiting researchers
  - Conferences
  - Collaboration
  - EU, Eureka, companies

**B&O research**

**Continous development of personnel (quality check)**

**Networking**
- Conferences/papers

**New projects**
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Experiences from 8 camps

It is important to have:

- Detailed planning of the pedagogical and technical programme
- Precise briefs
- Good layout of the physical working area
- ”online” pedagogical and technical supervision
- Planned social activities
- Strategy for handling the press
- Feedback in the form of questionnaires from both teachers and students
- High quality accommodation for students and teachers