

Internationally coordinated practical projects

ALPS 2010

Active Learning Project Sequence



Graduate School of System Design and Management
Keio University



Stanford University Prof. Kurt. A. Beiter

Call for ALPS 2010 projects under theme of “safe, secure system design”

Are there any engineering, social, organizational or business problem that you wish to address? Something difficult that you can't take up in your normal, day-to-day activities? A medium or long-term task you need to accomplish? Would you be interested in working with our graduate students to find solutions?

The Graduate School of System Design and Management at Keio University (“Keio SDM”) is looking for projects related to the concept of “safe, secure system design.”

ALPS (Active Learning Project Sequence)

“ALPS” projects provide recommendations on the design of innovative products, services and other systems using system design and management approaches developed in collaboration among Keio University, Massachusetts Institute of Technology (MIT), and Stanford University.

We examine products and services related to a project, define the problems, learn the requirements of the interested parties, set system requirements, design concepts, propose architecture, repeatedly test and prototype, and then verify our recommendations. ALPS participants gain real-life experience in the design of totally new business models and innovative systems.



Massachusetts Institute of Technology Prof. Olivier L. de Weck

How ALPS works

Graduate students at the Keio SDM form small teams (five or six members) and spend about six months working on the selected projects. Teams come from a variety of industries, jobs, areas of expertise, and generations. They work synergistically to incorporate the perspectives and requirements of a broad range of stakeholders and account for the entire lifecycle of the system.

Faculty from MIT and Stanford make five two-day visits to the campus, (total of 10 days) to guide the projects.

Teams perform detailed analyses of projects and provide you with reports that define products and services and the development process to achieve them. Their goal is to provide an innovative solution that will affect society at large.

“ALPS 2010” received financial support from the Norinchukin Bank and assistance from the “Center for Education and Research of Symbiotic, Safe and Secure System Design,” a Global COE Program under the supervision of the Ministry of Education, Culture, Sports, Science, and Technology.

Proposers

The Keio SDM refers to the individuals and organizations suggesting projects as “proposers.” ALPS proposers can be from private companies, government institutions, NPOs, research institutes, or other organizations.

In 2010, ALPS projects will focus on the aspects of “safe and secure system design” with both industry and government.

Project Characteristics and 2010 Theme

The two words, Safety and Security, have very distinct meaning in the English language, and yet they complement each other.

Here is a list of sample topics and questions we feel might provide a good entry-way to ALPS 2010. The topic number is displayed in Figure 1. Topic 1 is a government-to-government topic, topic 2 is a business-to-consumer related topic, topic 3 is a government-to-consumer topic, topic 4 is a consumer-to-government topic, and topic 5 is a business-to-business topic.

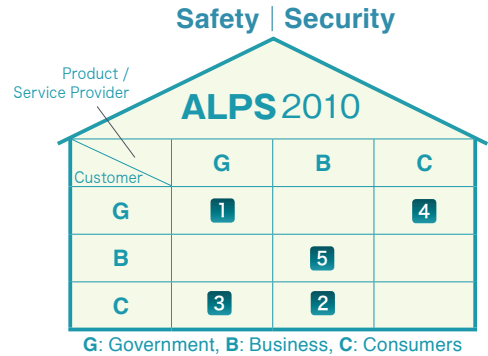


Fig.1: The House of Safety and Security: ALPS 2010

1 Terrorism-cell early warning system (G2G)

One of the biggest dangers to modern society is the existence of “sleeper” cells of terrorists that are embedded in society in small groups and are ready to strike at any time. Devise a system that allows governments to discover and share information about terrorism sleeper cells without infringing on civil liberties.

2 Eliminate the risk of electrocution from household products (B2C)

Every year many people die unnecessarily from electrocution by consumer products which are not properly grounded or which are mishandled (e.g. hair dryers dropped in bath tub). Devise a way to minimize or eliminate the risk of electrocution from household products.

3 Senior driver certification (G2C)

As the population in Japan and other countries continues to age, one of the most important questions is about the certification of senior drivers. It is known that some senior drivers are less proficient and more accident-prone, but mobility is a key aspect of maintaining quality of life. Investigate current senior driver certification rules and suggest improvements to the current system.

4 Internet-based disaster early warning system (C2G)

Many disasters such as large fires, tsunamis, volcanic eruptions, and large scale riots have early warning signs that can help either prevent disasters or at least mitigate their effects. Design and prototype a web-based system that allows the general population to act as a “sensor web” and early warning system for the government to reduce reaction time by several minutes in critical events.

5 Reduce the risk of using an offshore company for data center services (B2B)

Companies are beginning to use offshore foreign companies for data center services in order to reduce cost and maximize efficiency. However, there are safety and security issues with using offshore data centers, such as geopolitical influences, natural disasters, network latency, and network reliability. Propose a safe and secure data center service that can withstand the above-mentioned risks.

The above topics are merely suggestions made to illustrate the range of topics that fall under the ALPS 2010 umbrella. Keio SDM is intending to arrange occasions to discuss with private companies in wide variety of industries, government institutions, or other organizations in order to find more project topic alternatives for ALPS 2010.

Themes and projects to date

2008 theme: “Enhancing Senior Life”

Examples of projects

“Personal Mobility Services,” “Pet-Type Travel Navigation Robots,” “Senior Safety Jackets,” “Senior Life-Long Learning Programs” and “Second Life Simulation Games”

2009 theme: “Sustainable Community”

Examples of projects

“Use of Empty Urban Schools for State-of-the-Art Water Cultivation Facilities, and Implications for Agricultural Education and Restaurants,” “Falling Birthrates and Implications for Food and Health,” “Personal and Family Communication,” “Soccer Communities,” “Sake Promotion” and “Maintenance of Craftsman Communities”



Safety & Security = 安全 (AN ZEN) & 安心 (AN SHIN)

Safety

The condition of being safe from receiving or causing harm, injury or loss.

As such, the thinking on safety can be simplified to be the prevention of unintentional accidents. Accidents can include traffic accidents involving aircraft, trains, ships, cars, motorcycles, bicycles and pedestrians. Accidents also include the consequences of incorrect use of products and systems such as electrocution, slips and falls, fire and other artificial and natural causes of pain, injury and financial or emotional loss. We include in this category the mitigation of consequences from natural disasters such as droughts, earthquakes, tsunamis, storms, mudslides, and other large-scale events.

Safety-related incidents can have major financial and legal implications for corporations including warranty and liability claims. The government's role regarding safety is often to issue regulations and standards to increase safety, including monitoring of compliance with such regulations. What makes safety-related events distinct is that they are fundamentally unintentional. Thus, in a simplified way, we can think of increasing safety as the prevention of accidents.

Security

The quality or state of being secure, as in freedom from danger or freedom from fear and anxiety.

Security carries with it an element of artificially induced danger. Providing security means, essentially, shielding people from the effects of intentional attack or mischief. Security, first and foremost, includes physical security such as preventing physical harm from unauthorized access, for example, and physical injury from attackers and intruders, but also extends to other domains such as cyber-security. Information security includes preventing theft or falsification of data which is increasingly a major concern for many firms.

The government's role is to provide security for the nation as a whole (National Defense Forces) but also at the regional and local level through policing. Newer threats such as terrorism and cyber-security have been recognized but effective responses to these are still in the formative stages.

2010 ALPS schedule and venues

ALPS will be conducted on the Hiyoshi Campus of Keio University for a period of approximately six months from May to the end of November 2010.

April 16	Deadline for companies/organizations to submit proposed projects
-- April 30	Proposer companies/organizations and Keio SDM work together to finalize projects
May 8	Kick-off meeting for proposer companies/organizations and Keio SDM (Project pitches and team organization)
May 14-15	ALPS Workshop 1
June 25-26	ALPS Workshop 2
August 6-7	ALPS Workshop 3 and Interim Presentations
September 24-25	ALPS Workshop 4
November 19-20	ALPS Workshop 5 and Final Presentations

NEWS

Student project wins the Kanto Bureau of Economy, Trade and Industry Director-General's Prize in the 6th Campus Venture Grand-Prix and the Award of Excellence in the FY2009 Student Entrepreneur Grand Prix Finals

"Roppongi Vege & Fruit Corporation," a project launched by former Team-A2 in ALPS 2009 to use empty schools in Tokyo to grow hydroponic produce, was awarded the Kanto Bureau of Economy, Trade and Industry Director-General's Prize at the Tokyo Finals of the 6th Campus Venture Grand-Prix (sponsored by The Nikkan Kogyo Shimbun, Ltd.) A total of 106 plans were entered in the competition.

In the 8th Student Entrepreneur Grand Prix (sponsored by the Tokyo Metropolitan Government), the project was selected as one of the top 10 from among 230 entries. At the Finals held at Tomin Hall on Sunday, February 7, 2010, the former Team-A2 members won the "FY2009 Student Entrepreneur Grand Prix Award of Excellence" for their final presentation. "Mezamashi TV", Fuji Television Network's information program, covered the news and interviewed Mr. Yagita, the project leader, by telephone.



Call for projects

Benefits to proposers

BENEFIT 01 You are able to experience the system design techniques that have been developed and refined by the participating universities.

BENEFIT 03 At the conclusion of the project, you receive a final presentation and final report from the project team full of creative, innovative ideas.

BENEFIT 02 You have opportunities to work closely with the faculty at Keio University and the graduate students at the Keio SDM who represent the leaders of the next generation.

BENEFIT 04 You can continue to conduct joint research with the Keio SDM after the conclusion of ALPS, using the ideas and intellectual properties created in the project as a base from which to develop new businesses. (Please consult with us about your ideas and requirements.)

Supporter Program

Proposer companies can nominate members of their staff as project “supporters.” During the term of the project, supporters communicate with students and provide them with the information they require to conduct their research. They also facilitate collaboration on the project among different units within the company etc., and are invited to participate

in ALPS Workshops on the Hiyoshi Campus. Direct involvement in a project is extremely beneficial to supporters themselves and helps to improve the quality of the final report. (Proposer companies etc. are asked to bear the costs of any transportation and lodging expenses etc. incurred by their supporters.)

ALPS2010 Proposal Requirements

“ALPS2010” will focus on “safe, secure system design” for industry and government. Under this theme, we are looking for problems and issues that are suitable to the ALPS approach to analysis and research and that are difficult to address in the course of ordinary business. Students will consult with faculty members to select which of the proposed projects to pursue.

Submission period: March 1 to April 16, 2010

Fill in the required information on the attached submission form and return it by fax or e-mail.

Supporters are limited to one person per project.

Contact Professors Haruyama, Minato and Kim at SDM (Fax: 045-562-3502; E-mail: alps@sdm.keio.ac.jp) to inquire further about ALPS 2010 and to submit your “ALPS 2010 Project Proposal” (prescribed form).

Graduate School of System Design and Management, Keio University ▶ <http://www.sdm.keio.ac.jp/>

A graduate school with a one-of-a-kind concept

The Keio SDM examines three kinds of systems: product systems (automobiles, robots, mechatronic devices, biotechnology etc.), operations systems (space development and energy fields, including risk management and safety management) and social systems (marketing, supply chain, crisis management, human relations etc.). “System design and management” attempts to visualize the sophisticated, complex issues inherent in these systems and arrive at solutions that incorporate a variety of perspectives. We believe that it is necessary to have a proper balance between detailed analysis that “sees the trees through the forest” and overall conceptualization that “sees the forest through the trees.” The Keio SDM is the first of its kind in the world, a completely new concept that creates a “melting pot” of people from different industries, jobs, and areas of expertise in both the sciences and humanities, and attempts to achieve a true fusion of the two.

Creative systems designers and innovative project leaders

The Keio SDM trains people who will be world-class leaders, capable of articulating new, important concepts. Creative system designers are able to grasp, understand the uses of, and design large technology systems with an enormous number of parts and innovative technology systems that provide new functionality. Innovative project leaders manage complex, large-scale projects with numerous interested parties and recommend innovative social systems to address environmental and social issues that have high levels of uncertainty and flux. Both groups combine detailed analytical skills and overall conceptualization skills to create new systems for any number of fields in today’s increasingly complex society.



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