
ON TRACK
POLE
IN COOPERATION WITH A-WELLE

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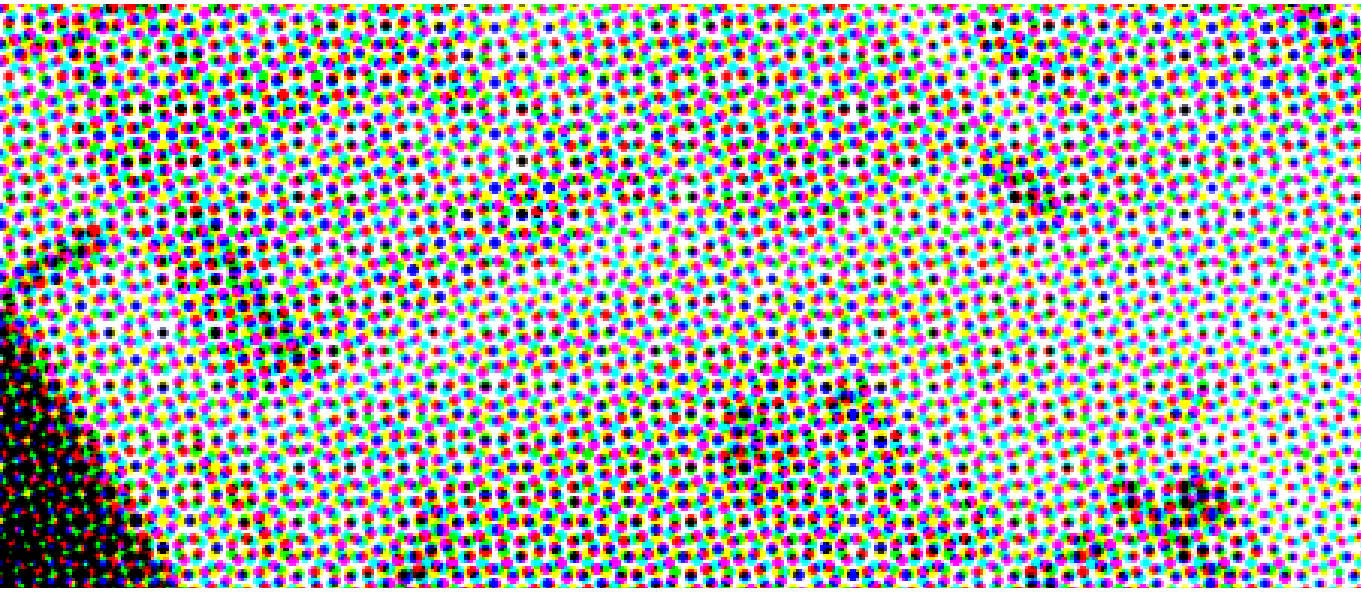
POLE - A Platform for Learning and Teaching

University students are nowadays increasingly challenged within their specific core disciplines; in addition however, they are also supposed to develop skills in order to apply this particular knowledge in practice. This ideally goes hand in hand with a sense of maturity of the individuals' characters vis-à-vis the social, cultural, and economical environment. The practical application of theoretical knowledge can thus only be implemented successfully if these three basic elements are taken into account.

In addition to university students' disciplinary knowledge, the ability to work efficiently within multicultural environments has become increasingly important. Universities are therefore looking to expand and deepen this particular aspect in order to provide the necessary expertise in this field. This realisation has led to universities becoming more proactive with regards to networking and offering joint courses, which is where POLE (Project Oriented Learning Environment) is actively involved in. In the course of this new collaboration, it has become apparent that the complementary aspect has gained in importance. An example for this is the liaising between strongly research-oriented and more practically oriented universities with the common goal of being able to implement the according results as soon as possible. Apart from contributing to more comprehensive and efficient process work, the POLE courses lay particular emphasis on improved cultural know-how. In order to do this, students are encouraged to contribute their experiences within international teams, regardless of geographical and language barriers.
POLE sees itself as a learning system cooperating with other European or international universities. It does so within a reflexive context, taking into account the various cultures involved in order to create new methods of resolution regarding teaching and learning methods. The students are at the core of this concept, and are given the option to develop process-oriented expert knowledge through interdisciplinary teamwork. Simultaneously, they learn to work independently and to deal with current problem cases through the use of modern information and communication tools.

Processes within POLE are largely organised within the individual teams themselves. The according goals are set and committed to within the teams; in case of resulting conflicts, weight is given to iterative processes in order to find solutions. A further characteristic of POLE is an increasing tendency for the overlapping, or even amalgamation, of various lines of work in order to give way to new, holistic, and interdisciplinary perspectives. POLE is a comprehensive platform which gives students the opportunity to contribute their full potential. Each individual's attitudes, characteristics, and abilities are taken into account as a whole in order to allow as much space as possible for in-

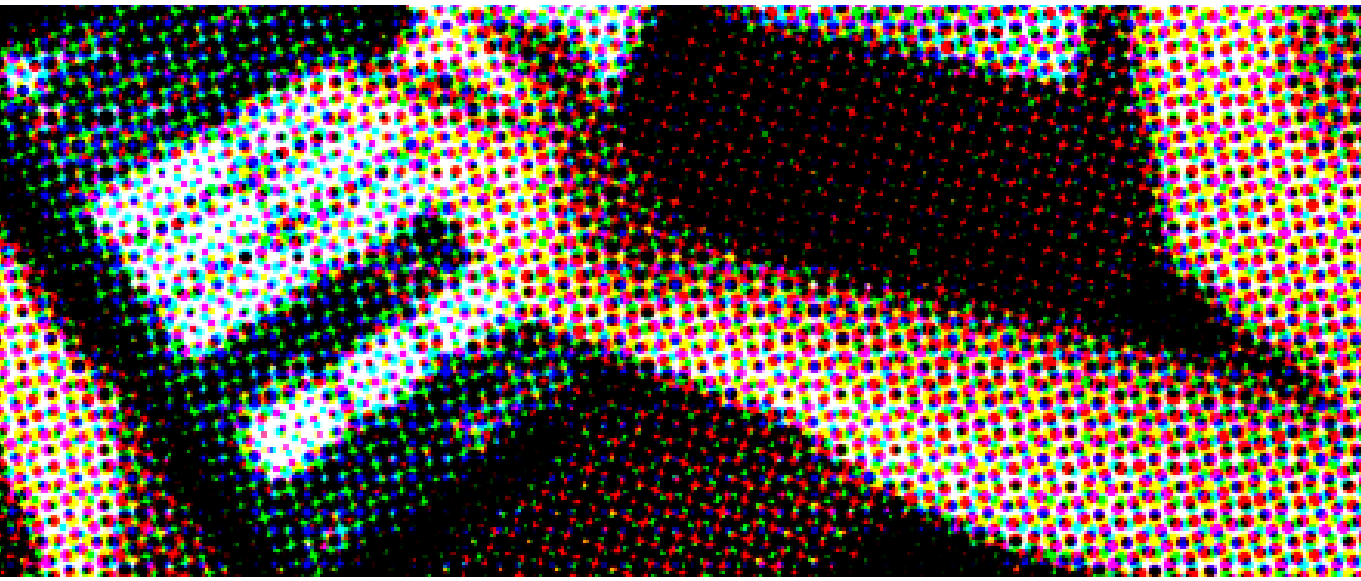


dependent development of students' responsibilities and skills. A contribution to the concept of 'Campus in Mind' is made by POLE in providing the multi-disciplinary teams with learning facilities that are based on experimental and interactive technologies.

The teamwork in the POLE courses allows the students to further expand their specific professional skills, on the other hand, it also gives them the opportunity to develop more generic competences, which nowadays is one of the key qualifications in order to be able to adapt to a continuously changing environment. The course also enables students to evaluate their ability to function in a team and to analyse their styles of communication. Through practical examples, students are given the opportunity to explore how well they are able to work in a team, and to what degree they are flexible to accept members' concerns from other disciplines, i.e. how they can integrate these into their own work and patterns of thinking.

Experts and mentors which do not form part of the university, but are active members of businesses and the industry in general, are an essential part of POLE courses. Their participation contributes a high degree of practical knowledge to the projects, pointing out the actual 'state of the art'. In this manner, POLE manages to link academic education and professional practice. The intensive interaction between these two elements guarantees a rapid transfer of technology, while at the same time ensuring that the students involved are motivated to a high degree. POLE is not only about to significantly remould the landscape of teaching and learning at universities, but it also intends to yield substantial influence concerning decision-making and the creation of practical work processes. In association with university teaching staff, the mentors are instrumental in contributing expert knowledge and regular feedbacks to the teams, while they are also actively involved concerning the evaluation of processes and related products. The latter will be of increasing importance in the future, as scientific research has been initiated in connection with reflections of certain POLE processes. It is the intention of this kind of research to support students with regards to the awareness of their personal learning styles. The findings will then be made accessible for future work in a broader context.

Further POLE research issues include for example the creation of knowledge databases, which will serve as a tool for more rapid evaluation of solutions and decision making processes in the future. These efforts are based on the knowledge that a large part of creational, construction, and design processes are substantially shaped by re-design.



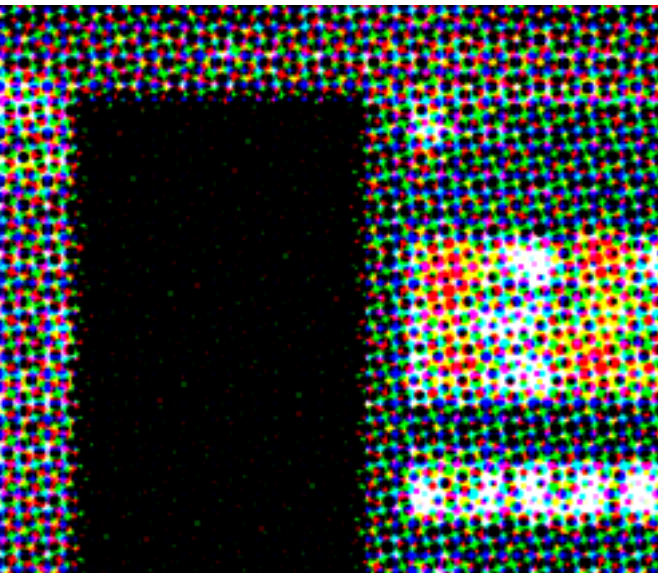
The initial POLE courses had been launched as a result of the ever increasing demands in the current building trade, which is of a highly complex, segmented, and competitive nature. Experts from the fields of architecture, civil engineering, and construction management are clearly demanding a broader education, along with more diversified core skills for engineering students. The POLE learning environment and its associated methodology is not limited to this initial context, but allows students from practically any discipline to apply their theoretical knowledge in practical cases. Through collaboration in interdisciplinary teams guided by process management students, students from fields such as architecture, urban planning, civil engineering, interior design, plastics engineering, mechanical engineering and economics were given the opportunity to cooperate in POLE projects and thus better understand the individual processes involved and acknowledge their relation to the social, economical, and political dimensions.

In 2012, when POLE goes into its 12th year, it becomes an integrated part of iCompetence. iCompetence is an interdisciplinary program of studies in computer science with a strong focus on design and management. iCompetence is hosted by the computer science department at the University of Applied Sciences North Western Switzerland. The POLE projects that are carried out in collaboration with iCompetence take place in the autumn term (September to January). They propose projects with an impact in the field of human-computer interaction and bring together the disciplines of computer science, design (namely interface design, industrial design), psychology as well as management. POLE invites students and faculty from Tecnológico de Monterrey (Mexico), Savannah College of Art and Design SCAD (USA), University of Colorado at Boulder (USA), Blekinge Institute of Technology, Karlskrona (Sweden), Merz Akademie, Stuttgart (Germany) and the University of Applied Sciences North Western Switzerland (as leading house).

Responsibilities of POLE and its Partner Universities

POLE considers itself as a learning platform which enables and facilitates interdisciplinary processes. It has also proven to offer an excellent test bed for research in the field of modern teaching and learning as well as in the field of evaluation of novel learning spaces. At the same time it is important to put on record that the responsibility for the disciplinary supervision of the students remains with the sending home universities. This relates also to the grading of the students' contribution. POLE on the other hand will provide a qualification on the team processes and on their interaction patterns. (It is suggested that students who successfully participate in POLE projects receive academic credits based on the ECTS.)

The experience during the previous POLE courses has revealed that this double responsibility of the student towards his or her POLE team and towards the home university and professors, respectively, may also bear conflicts. POLE demands that team decisions be re-



spected what the approach and the agreed objectives is concerned; POLE leaders are convinced that within this frame work there is still ample tether to adhere to high academic standards in the disciplinary work.

Saying this makes it obvious that a close accompaniment and monitoring of the project by the faculty of the partner universities is essential and highly welcomed by POLE. The involved faculty will receive full access to all documents of the POLE project. Their participation during the kick-off events, the reviews and the final presentations will add to the interdisciplinary depth and thus to the quality of the project and to further developments of POLE.

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Assessment

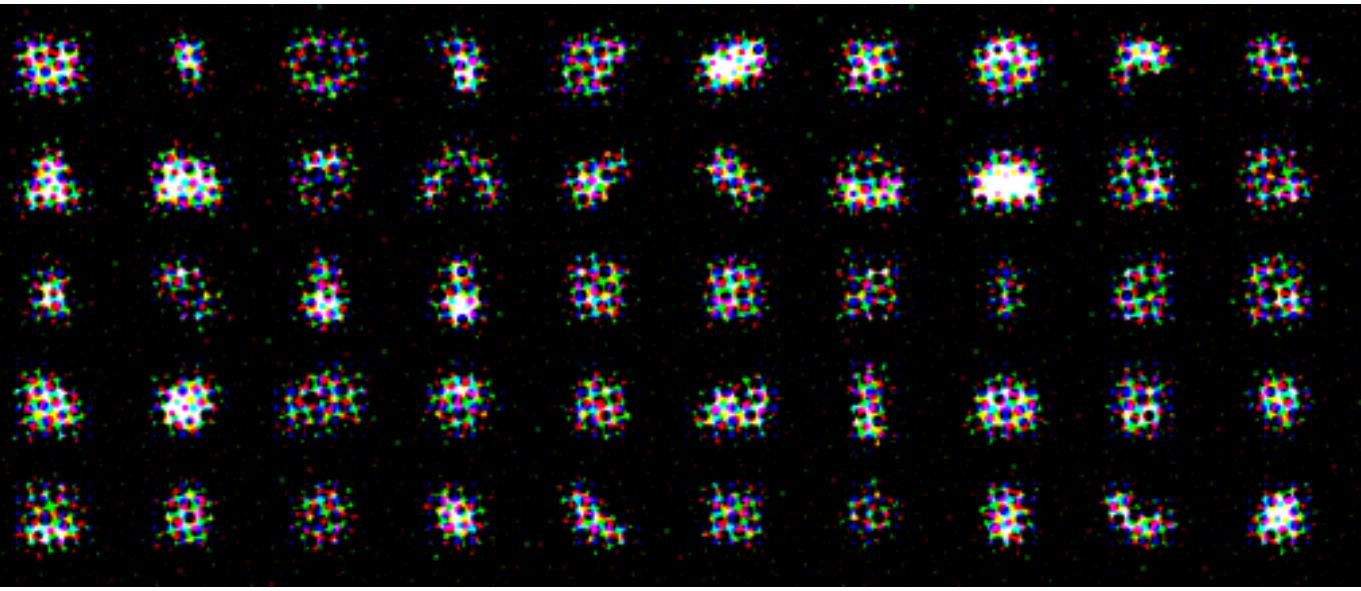
POLE has the ambition to continuously improve its learning and teaching platform. One step to do so is by integrating an external assessor into the process, who will participate in as many of the POLE design activities. POLE has cooperated in this field of evaluation and assessment with the Department of Education of the University of Applied Sciences Northwestern Switzerland and with Stanford University since the very beginning in the year 2000. The participatory assessment will focus on the effectiveness of the design processes and the adequate use of collaborative communication technologies.

Project Task: The Future of Ticketing

Railway pioneers constructed spectacular and adventurous railway networks around the world more than 100 years ago. Travellers used to buy tickets at the railway station, made of cardboard, and waited for the ticket inspector to punch it. Those days are gone, upcoming technologies have changed this field fundamentally. Ticketing machines with touch-based displays as well as mobile apps have appeared a few years ago and introduced new business models. Instead of being attended personally, customers have to buy a ticket on their own. On one hand, this brings great advantages: No long waiting queues in front of the counter, purchase of tickets from home and, therefore, reduction of costs. On the other hand, these improvements go along with difficulties in terms of usability: people get lost within the user menu, ticketing machines are out of order and customers find themselves upset.

The recent years have allowed for gaining experience in this field. It is now time to look into the future: How will we buy a ticket for the train tomorrow? How can we improve existing interfaces and interaction solutions? The POLE project 2012 will develop new concepts for ticket vending systems.

The project ON TRACK will be organized in cooperation with A-Welle, a Swiss public transportation consortium based in Aarau. Their business is the organization of public transportation within a tariff network of cities like Baden,



Aarau and Olten, but also historical landmarks like the Habsburg Castel or the town of Kaiserstuhl. In 2009, new display-based ticket vending machines were introduced. But recent customer surveys clearly showed that there is a need for improvements.

The task of the present project ON TRACK will be to conceive and design new, innovative ideas and concepts for ticketing solution. The outcome will be a new user centered design solution for the existing system. In a first step, the trans-disciplinary teams will gather ideas for visionary concepts. In a second step, they will integrate these concepts into interface and interaction prototypes that shall provide a new user experience.

Considering these goals, it is clear why such an endeavor can only be tackled by multi-disciplinary teams consisting of designers, computer scientists, psychologists and managers. Only an trans-disciplinary discourse will allow for meaningful solutions, that make the seemingly impossible – namely, the creation of an interface that simplifies our life and that generates an appealing user experience – possible!

Process Design

POLE as a platform for learning and teaching not only focuses on the product but puts strong emphasis on the structuring of the design process. The following list of deliverables shall facilitate the work process for the teams as a back bone.

Deliverables

At the end of the physical kick-off week (September 26, 2012):

- Written statement of team's objective(s)
- Distributed collaboration and information management framework
- Description of the expected contributions of each team member

Stopover One
(October 19, 2012):
Detailed list of prioritized product requirements, complete with requirement categories, rationale, metrics, and target ranges for each requirement (Draft version); must be uploaded to the team's intranet platform.

Design Review I
(Videoconference; October 23, 2012):
(duration of presentations 20 minutes/team;
discussion 30 minutes)

- Discussion of product requirements
- Discussion of initial product concepts (guided by the product requirements)
- Discussion of ideation process
- Reflection on distributed collaboration and information management framework (including the role of each team member)
- Project timeline and milestone check

Note:
FINAL versions of all of the materials that will be used

in the design review presentation (PowerPoint presentations, spreadsheets, sketches, etc.) must be uploaded to the team's intranet platform 1 day prior to the review to make sure that all sites have access to them.

Stopover Two
(November 13, 2012)
Detailed list of prioritized product requirements, complete with requirement categories, rationale, metrics, and target ranges for each requirement (Final version); must be uploaded to the team's intranet platform.

Design Review II
(Videoconference; November 27, 2012)
(duration 20 minutes/team plus 30 minutes discussion):

- Discussion of 2 to 3 down-selected product concepts (in accordance with the product requirements)
- Discussion of final product concept (if one has been selected)
- Discussion of decision-making process
- Reflection on distributed collaboration and information management framework (including the role of each team member)
- Project timeline and milestone check (including identification of remaining tasks and deliverables for project completion)

Note: FINAL versions of all of the materials that will be used in the design review presentation must be uploaded to the team's intranet platform 1 day prior to the review.

Final presentation
(January 9, 2013)
All relevant final deliverables must be uploaded to POLE's ON TRACK Project intranet portal by January 7, midnight.

A.) Oral presentation of project outcomes for colleagues, faculty and jury (duration: 30 minutes/team)

- Proof of concept demonstration (functional and visual via "works-like" and "looks-like" prototypes)
- Discussion of why and to what extent the proposed design fulfills product requirements
- Discussion of potential for future research and development of ON TRACK
- Reflection on distributed collaboration and information management framework (including the role of each team member)
- Discussion of individual learning insights

B.) Oral presentation of an executive summary for a delegation of A-Welle's directorate (duration: 7 minutes/team)

C.) Physical deliverables (due at final presentation)

- Prototypes of proposed design
- Copies of renderings of proposed design
- 5 copies of a comprehensive final project report, which should include the following sections:
    1. Executive summary clearly outlining the key points of the proposed design and why A-Welle should pursue it.
    2. Background research section documenting any relevant background research that was conducted.
    3. Requirements section documenting the final list of design requirement the team generated and the key stakeholders the requirements target.
    4. Design development section documenting the different ideas that were generated and the decision making process that was used to select the final concept (with rationale).
    5. Design specification section documenting the specifications of the proposed design (detailed engineering drawings, including materials information should be placed here).
    6. Design Process section documenting the overall design development and interdisciplinary processes that were used by the team (including reflection on the multi-cultural and interdisciplinary aspects of the project).

Information and Collaboration Technologies ICT

POLE is offering a modern infrastructure with respect to information and communication technologies (ICT). POLE encourages the partner universities to support their students with respect to ICT as much as possible, in particular granting them access to their own information technologies. The following list of ICT tools characterizes the minimum and necessary standards:

- 24 hours per day access to work stations, so students can work on their tasks and are able to communicate at all times
- Access to telephones with international access for conference calls
- Video conferencing facilities (available at least 2 hours per week and team)
- Suitable IT support (firewalls, basic support)
- Broad band internet access
- MS-Office including PowerPoint, Acrobat Reader, ZIP and FTP programmes

During the kick-off sessions POLE will provide instruction in the use of data transfer tools for the sharing of the use of

video conferencing as well as in disciplinary applications. Restriction: It must be noted that for synchronous communication there is only support provided by POLE for operating systems Windows 2000 (and higher). The POLE ICT experts will also assist the teams in terms of security of internet interactions in the confidentiality context.

Team Composition

The POLE ON TRACK course 2012 is based on the partnership of the University of Applied Sciences Northwestern Switzerland (with its faculties of industrial design, applied psychology and computer science), Tecnológico de Monterrey (Mexico), SCAD Savannah (USA), University of Colorado, Boulder (USA), Blekinge Institute of Technology, Karlskrona (Sweden) and Merz Akademie, Stuttgart (Germany).
Approx. 30 students in five (possibly six) interdisciplinary teams will work on the design and development of a novel concept for an improved interface under the guidance and supervision of more than 10 faculty members.

Evaluation Criteria

The evaluation of the project results will be in the duty of an international jury. It will consist of one member of each discipline and two members of the POLE directorate as well as of members of A-Welle. Each team will receive a report with an acknowledgement of the contributions according to the following criteria: (1) fulfilment of A-Welles's requirements (a list of specifications will be handed out during the kick-off week by the patron), (2) usability, (3) innovative potential of solutions, (4) presentation of product, (5) general impressions.

Confidentiality Agreement

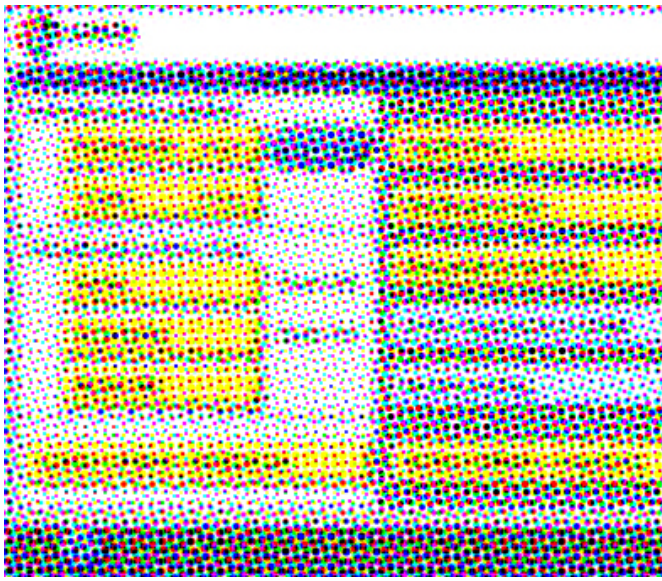
Due to the high potential of such a novel product A-Welle and POLE have agreed to respect a confidentiality agreement which in turn has to be signed by all partners involved in the project. Individual copies for each participant will be sent to the selected students in advance and shall be ready for signature at the kick-off event.

Budget for Production Costs

Each team is granted a budget of max. € 500 for material and production expenses. Payments can only be made by POLE against bills or (signed) receipts.

Cost of Living and Accommodation

Thanks to the financial support of sponsors and the industry partner A-Welle, POLE is able to partially subsidize the cost of living and those for the



documentations and hand-outs for the participating students.

Insurance

Note: Each participant is responsible for her/his own insurance matters.

Project Agenda

Virtual Kick-Off
(by Videoconference from Home Universities):
September 11, 2012

Physical Kick-Off
at University of Applied Sciences North Western Switzerland FHNW, Campus Windisch
September 21 (evening) **– September 26, 2012**

Review 1
(by Videoconference from Home Universities)
October 23, 2012

Review 2
(by Videoconference from Home Universities)
November 27, 2012

Final Presentations
(all teams, faculty, jury, industry partners)
January 9, 2013

www.pole-project.ch

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