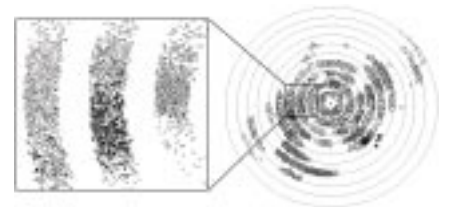
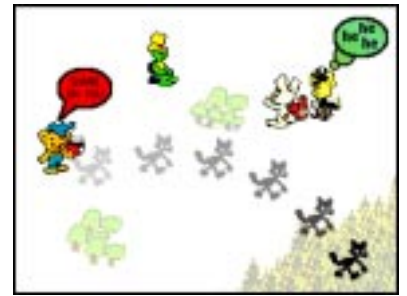
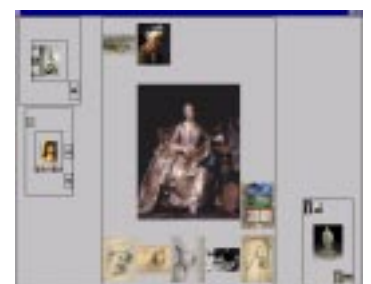


# Entertainment and Innovation

A studio in the Swedish Interactive Institute



**PLAY: Applied research on art and technology**  
The Viktoria Institute, Gothenburg  
<http://www.viktoria.informatics.gu.se/groups/play/>



## **Contents**

<b>Summary</b>	3
<b>Introducing the research theme: Entertainment and Innovation</b>	4
<b>Research approach: Innovate and Implement</b>	4
<b>Possible commercial and academic partners</b>	6
<b>The research group PLAY</b>	7
<b>Proposed staff</b>	8
<b>Budget, needs for special equipment, locales, other requirements</b>	9
<b>Potential stumbling blocks</b>	9
<b>Evaluation of the studio's success</b>	9
<b>Selected PLAY events</b>	10
<b>Selected PLAY publications</b>	11

**Appendix:** *Fun: A Condition of Creative Research*, IEEE Multimedia Vol. 5 No. 3, by Glorianna Davenport, Maureen Thomas and Lars Erik Holmquist.

### **Contact details:**

PLAY: Applied research on art and technology  
 The Viktoria Institute, Box 620, 405 30 Gothenburg, Sweden  
 Lars Erik Holmquist, group leader  
 Phone: office +46 31 773 55 33, mobile +46 708 43 07 44  
 leh@viktoria.informatics.gu.se  
<http://www.viktoria.informatics.gu.se/groups/play/>

### **Images on the title page**

The title page shows images from various PLAY projects developed in 1998, including: *Bamse-land*; a GameBoy-based *Hummingbird* prototype; various *Hummingbird* design prototypes; the *BoomBox*; Glorianna Davenport's lecture in conjunction with the *Future of Fun* workshop; *CyberGeo Maps*; *Flip Zooming Image Browser* on a PDA; original *Hummingbird* prototype; *TelepresenceBoy*; *WebStickers*; and *The Hierarchical Image Browser*. For more information on these projects, see our homepage.

## Summary

We argue that the research group *PLAY* at the Viktoria Institute in Gothenburg is an ideal candidate for forming a studio in the Swedish Interactive Institute, to pursue the research theme *Entertainment and Innovation*. We offer the following reasons as our main arguments:

- *A well-functioning research group already in place*

In the past months *PLAY* has carefully expanded the staff from two to eight members, with people from a variety of different disciplines successfully working together in research projects.

- *Proven academic track record*

During 1998 *PLAY* has presented original scientific works at a large number of conferences and workshops, including the major ACM-sponsored conferences CHI 98, SIGGRAPH 98, Multimedia 98 and CSCW 98, and published papers in several international journals.

- *Excellent international contacts*

*PLAY* has been very successful in initiating international research contacts with institutions such as Xerox PARC and the MIT Media Lab. Through the *Future of Fun* workshops, *PLAY* forms the centre of an international network of researchers in the emerging field of interactive entertainment.

- *Strong commercial interest*

*PLAY* are focusing on applied IT research projects, which means that the step from research prototype to marketable product is often very short. Several *PLAY* innovations have already formed part of patent applications and/or are being turned into commercial products.

- *Support from innovative local companies*

*PLAY* has a strong commitment to smaller local companies, having participated in the formation of the non-profit society IMP, *Interactive Media Producers of West Sweden*. *PLAY* takes active part in a variety of IMP activities aimed at strengthening the region's position in new media development.

- *An ideal meeting place for the West Sweden region*

*PLAY* is currently based at the Viktoria Institute, which is jointly owned by Gothenburg University, Chalmers University of Technology and a number of local companies. From this position, *PLAY* has a unique potential to become a meeting point for people with many different backgrounds from the whole West Sweden area.

- *An original and important research theme*

The proposed research theme, *Entertainment and Innovation*, is important for both academic and commercial reasons. Interactive entertainment is emerging as an art form in its own right, making it important to incorporate the knowledge of traditional artists with technologists. On the consumer market, entertainment software outsells productivity software by a very large margin, but there is a constant need for innovation in the field - innovation which smaller companies have little resources to pursue. Because entertainment applications put extremely high demands on areas such as speed, reliability and usability, it has also been proven to be an excellent "driving force" in many research fields including computer graphics, artificial intelligence and human-computer interaction. We believe that a studio based around the theme of Entertainment and Innovation would be well suited to complement the other studios in the Interactive Institute.

### ***Introducing the research theme: Entertainment and Innovation***

*Entertainment* forms a large part of our existence, both directly and indirectly. People seek out entertainment not only to relax and enjoy themselves, but also to inform and enrich their lives. We believe that to consider entertainment as something less "important" than other human activities is an outdated prospect. Entertainment is such a wide-ranging concept that it can encompass everything from acknowledged works of art to the latest video game. Although many academic disciplines are dedicated to various forms of entertainment - art, literature, film, etc. - and investigate their production, artistic meaning and social importance, the area of new entertainment technologies is currently not well covered.

*Innovation* is an important element of the developments of new forms of human thought and expression. By inventing new technologies and finding new uses for existing technology, we can expand the palette available for the creation of art. The printing press, the motion pictures camera, acrylic color, and the electronic sound synthesizer are all examples of technologies that have enhanced existing art-forms or created new ones. Embedded microprocessors, sensors, RF- and IR-communication units and artificial intelligence are examples of new technologies which are as yet underutilized in artistic endeavors, but which have the potential to be as revolutionary as many earlier technologies.

By combining a focus on entertainment applications with a commitment to innovation, we intend to create an environment where new products and services can be invented, that will have an impact on the future of entertainment. But unlike a commercial R&D group, this work will be firmly grounded in academic research practices, and will produce ample scientific results, documented in papers and theses. In the following, we will further outline the suggested research approach and give arguments to support that the PLAY group is suitable for this task.

### ***Research approach: Innovate and implement***

This studio will be concerned with *creating the technological raw materials for the future of entertainment*. Such work can by its nature not be wholly theoretical - prototypes must be built and technologies must be developed and tested. But entertainment is a field where many well-known rules for systems development may not apply, and this will raise interesting problems and questions. Well-established methods such as participatory design, user-centered development and formal evaluations are not necessarily the best approach to use for products that are designed to have an artistic and entertaining, rather than functional, value. This means that we will have to adopt theories from other fields, such as art, film and literature studies. We will also have to develop new theories and models based on an understanding of fields such as human-computer interaction and traditional systems development, by combining them with an artistic approach.

Although there is a need for theories and design methodologies for interactive entertainment, we feel that it is also necessary to take a practical and implementation-oriented approach to this research. By producing workable demos to demonstrate concepts, we can communicate ideas quickly and effectively. In the PLAY group, we already have experience with constructing prototypes based on readily available technology. We have found that it is much more important to get prototypes demonstrating our ideas up and running quickly, and then refine the concept based on critiques and experiences derived from such a prototype, than to spend a long time refining a concept before doing an implementation. This also means that should an idea catch on, the time from research prototype to marketable consumer product can be very short. We feel that this makes us well positioned to invent and implement technologies that can have a major impact on the future of entertainment.

Some areas where we would develop new technologies for entertainment purposes are outlined below. All of these areas require a combination of artistic and technical skills, making them ideal research topics for an Interactive Studio.

- *Interactive storytelling techniques*  
Currently, the main developers of interactive narrative are the software companies that are developing commercial computer games. Recent games like *Final Fantasy VII* can be considered to be very

successful, both commercially and in advancing the narrative form. But commercial computer games are inherently limited by their main audience (adolescent boys) and technological and commercial limitations. By approaching interactive narrative with the freedom afforded by being an academic research group, we believe that we can make new forms and new subject matters possible to use in interactive narrative.

- *Artificial life and artificial intelligence*  
The study of artificial intelligence is often either mainly theoretical (e.g. studying how computers can mimic human cognitive processes) or done for practical purposes (e.g. using AI to help solve problems in the real world). But surprisingly little has been done to examine how artificial intelligence can enhance and enrich our daily life. By combining established AI techniques with an open-minded aesthetic and artistic approach, many new possibilities for entertainment will appear. There are vast possibilities to let techniques from the AI field offer inspiration or help in day-to-day situations, whether it is generating ambient music, providing inspiration for creative work by uncovering unexpected avenues of thought, or simply aiding in choosing what TV show to watch. Similarly, the success of the *Tamagotchi* and the game *Creatures* shows that people are very interested in nurturing and interacting with artificial life-forms, at least if that interaction is made simple enough, and this can suggest many exciting possibilities for scientific inquiry.
- *Behavioral animation and virtual actors*  
Behavioral animation is already a well-known computer graphics technique, used in many popular movies. A natural extension of this field, virtual computer-generated actors, are starting to be used in both video games and feature films to great effect. But the major advances will come when the virtual actors receive a degree of AI-aided autonomy. By having virtual actors interact with real people, new avenues will open for both film and live theatre, and the possibilities for interactive entertainment are virtually limitless. Developing virtual actors will require an interesting mix of traditional animators, AI and computer graphics experts, filmmakers, etc.
- *New interface technology, including intelligent environments and ubiquitous computing*  
It is becoming increasingly obvious that the radical advances in human-computer interaction that were optimistically promised by virtual reality and related technologies in the early 1990s will not be happening any time soon. Instead, the international research community is increasingly turning to paradigms based on intelligent environments and ubiquitous computing (sometimes using the term "real virtuality", i.e. the opposite of virtual reality). By enhancing and augmenting the real environments where people live and interact, rather than confining all computer-based interaction to traditional computer displays (no matter how large or immersive), we can expand the scope of interactive entertainment to make it more directly integrated with our lives. We believe there are great possibilities that lie in thinking "out of the box" and applying ideas from current human-computer interface research to the entertainment field.

We already have several projects in various stages of development that illustrate how these areas can be used in entertainment, including:

- *Informally networked handheld terminals for multi-user entertainment*  
Using the Hummingbird platform developed at PLAY, which consists of a modified handheld video game equipped with a radio transceiver, we have the means to develop radically new forms of multi-user interactive entertainment. By establishing informal networks of electronic devices, and using AI techniques such as genetic algorithms, we are working to construct new forms of collaborative and competitive entertainment applications where we take into account emergent behaviors and the users' informal encounters in the real world. We believe this to be an important alternative to the long-distance connections through the Internet that currently dominate multi-user interactive entertainment.
- *Tangible storytelling*  
To demonstrate how new interface paradigms impact the art of storytelling, we developed a demonstration prototype, *Every Object Tells a Story*, where real-world objects were used to trigger portions of an interactive narrative, through the means of a simple bar-code reader. We believe that this kind of "tangible" interaction will be a major force in the future of entertainment.
- *Social conversational agents and the suspension of disbelief*

We have developed *Viktoria*, a conversational agent that is designed to guide visitors at the Viktoria web-page. By using simple techniques and emphasizing suspension-of-disbelief and entertainment rather than trying to achieve true AI, we demonstrated how it is possible to build an entertaining conversational agents with simple means. We have also constructed *Bamse-land*, as a demonstration of how using well-known characters (in this case taken from the popular Swedish comic book *Bamse*) as the basis for intelligent agents helps make interactive narrative applications more entertaining.

- *Theories for interactive narrative*  
As a basis for further work in interactive narrative, we have developed a set of models (*Loose Scripts* and the *Influence Engine*) that solves many problems which occur when controlling multi-actor interactive narratives where human actors or players mix with computer-controlled agents. Based on this, we believe it is possible to find a satisfying trade-off between artistic freedom for the creators and a degree of freedom of action for the user or reader in interactive narratives.
- *Introducing interactive entertainment to real-life task*  
As an example of how interactive entertainment can make a larger impact on our life, we are developing the *DishJockey* concept, where interactively generated music enhances tedious real-life tasks, such as doing the dishes. We believe that this approach holds great possibilities for introducing entertainment into unexpected areas of our lives.

The topics of research outlined above are already being investigated at international institutions including the MIT Media Lab, Xerox PARC, New York University Media Research Lab, Carnegie Mellon University, Stanford University, GMD-IPSI, NFTS-CREATEC, Fraunhofer Institute for Computer Graphics, Köln Kunsthochschule für Medien, etc., often with a clearly stated focus on producing technologies that can be used in entertainment and artistic work. The research agenda would therefore fit well into an emerging international research approach, but with a unique focus formed by the competence, experience and working methods of the proposed studio staff. Other studios in the Interactive Institute will also touch on the above topics, albeit from different perspectives, which means that there can be a fruitful cross-pollination of ideas between this and other studios in the Interactive Institute.

### **Possible commercial and academic partners**

Bluntly stated, entertainment is big business, and we believe that the work of this studio would generate interest from a great variety of potential commercial partners. The most obvious would be makers of interactive software, services and toys. Internationally, obvious examples are Sony, Sega, Nintendo, Bandai, Lego, Electronic Arts, GT Interactive, etc. Nationally, we have Brio/Alga, Bonniers, SVT, the Gothenburg and Stockholm Film Festivals, and so on. In addition to this there are of course all kinds of smaller software producers: Vision Park, Daydream Software, Digital Illusions, etc. Locally, we have good contacts with the relevant smaller companies through our involvement with the newly formed organization *IMP: Interactive Media Producers of West Sweden*.

It is however important to remember that entertainment is a wide concept, and that many other types of companies should take an interest. Providers of infrastructure (Telia, Tele2, cable TV providers, etc.) and builders of home terminals (Ericsson, Nokia, Philips, etc.) will also be interested in new innovations and new ways to utilize existing technology. Additionally, providers of services and products not usually associated with entertainment (Volvo, Saab, SAS, etc.) may want to find new ways to entertain their customers.

In the academic world, PLAY has already been engaged in preliminary talks with researchers from several European institutions the various possibilities for cooperation concerning projects and fundraising. These include:

- Fraunhofer Institute for Computer Graphics, Darmstadt, Germany
- GMD-IPSI, Darmstadt, Germany
- Kunsthochschule für Medien, Köln, Germany
- University of Karlsruhe, Dept. of Telecommunications, Karlsruhe, Germany
- University of West of England, Bristol, UK
- University of Salford, Salford, UK

- University of Edinburgh, Edinburgh, UK
- NFTS CREATEC, London, UK

We also have established contacts with several research institutions outside Europe, to exchange results and ideas. Institutions that have already expressed interest in using technologies developed by PLAY include Xerox PARC, MIT Media Lab and Carnegie Mellon University.

Finally, from a local point of view, many of the proposed staff members have an educational background in Gothenburg, and have well-established contacts with many departments at Gothenburg University and Chalmers University of Technology. This includes the departments of Computer Science, Computer Engineering, Mathematics, Linguistics and Computational Linguistics, Philosophy, Chemistry, Physics, Informatics, Literature Studies and Musicology, plus Valand School of Fine Arts and HDK School of Design and Crafts. This will make it easy to establish cooperation with local academic institutions.

### ***The research group PLAY***

*PLAY: Applied research on art and technology* is a research group at the Viktoria Institute. Viktoria was formed in 1997 through an initiative of a number of local IT companies, and the institute is now jointly owned by the Gothenburg University, Chalmers University of Technology and a number of private companies. PLAY was started in January 1998, and has carefully expanded from two to eight members during this time. The group has worked through the year with various innovative projects, parts of which might form an initial basis for this interactive studio. The main projects that we have pursued during 1998 are:

- *Innovative Interface Design for Mobile IT Devices* (part of the Mobile Informatics program, funded by SITI / KK-Stiftelsen)
- *Effective Display Strategies for Small Screens* (part of the Mobile Informatics program, funded by SITI / KK-Stiftelsen)
- *Intelligent Environments* (part of the PROMODIS research program, funded by NUTEK)

In addition to this, several members of the group have a strong interest in entertainment and interactive narrative, which has been pursued through attending and arranging various international workshops.

We find it very important to disseminate research results through publications at international conferences, workshops and journals. The group's work has already appeared at several high-profile events, including:

- CHI 98, Los Angeles, USA (the major international conference on human-computer interaction) - *refereed poster presentation*
- SIGGRAPH 98, Orlando, USA (the major international conference on computer graphics) - *refereed application sketch presentation*
- Multimedia 98, Bristol, UK (the major international conference on multimedia) - *refereed poster presentation*
- CSCW 98, Seattle, USA (the major international conference on computer-supported cooperative work) - *refereed demonstration*

Most of our presentations during 1998 were of shorter works (posters, sketches, etc.), which is natural due to the extremely limited time we have had available to prepare papers and complete projects. It is worth noting that having a short presentation accepted at these high-profile conferences can be considerably harder than publishing a full paper in many less well-regarded fora. At both SIGGRAPH 98 and CSCW 98 PLAY were the only representatives from Sweden presenting new and original scientific work, and at Multimedia 98 we were awarded the prize for best poster presentation. As we move into our second year of operation, and our projects become more mature, we expect a greater portion of our publications to be in the form of longer papers.

The members of PLAY have also been very active in participating in workshops and other gatherings, which has served to expose our work and strengthen our contacts with the international research

community. Major workshops include *SAGAs Writing Interactive Fiction* (Munich, Germany), *AI/A-life and Entertainment* (Bristol, UK) and *Handheld CSCW* (Seattle, USA). We have also arranged our own workshop, *The Future of Fun*, hosted by Glorianna Davenport of the MIT Media Lab (USA) and Maureen Thomas of the National Film and Television School (UK). We are currently planning at least two follow-ups to this successful workshop, which attracted a wide international audience.

Finally, we have performed study visits and/or held presentations at many international institutions, including the MIT Media Lab (USA), Xerox PARC (USA), GMD-IPSI (Germany) and NFTS CREATEC (UK).

### **Proposed staff**

The core staff of the studio would consist mainly of current members of the PLAY group. This is a group which has already proven itself to work effectively together, and it is therefore natural to base the proposed studio on this existing group of people and their various competence areas. The proposed core staff would include:

- Lars Erik Holmquist, M.Sc., Computer Science, Ph.D. candidate, Informatics
- Staffan Björk, M.Sc., Computer Science, Ph.D. candidate, Computer Science
- Jennica Falk, M.Sc., Informatics, Ph.D. Candidate, Informatics
- Peter Ljungstrand, M.Sc., Informatics, Ph.D. candidate, Informatics
- Johan Redström, B.Sc., Cognitive Science, Ph.D. candidate, Philosophy
- Joakim Wigström, M.Sc., Chemistry, prospective Ph.D. candidate, Computer Engineering

The composition of the current staff of PLAY is obviously biased toward technical skills (programming and prototype construction), which is due to the needs of the projects we are currently working on. If PLAY becomes an Interactive Studio, we would like to extend the staff with people with more artistic capabilities, in areas such as film, design and fine arts. These would in most cases be employed on a part-time or project basis to complement the skills of the core staff. Most of the people proposed below have already worked with PLAY members in one capacity or another. These proposed additional people include:

- Jona J. Bjur, M.F.A. candidate, Industrial Design, HDK School of Design and Crafts
- Gunilla Grahn, M.F.A., Jewelry Design, HDK School of Design and Crafts
- Magnus Helander, B.F.A., Film, Media and Telecommunication, New York University and Tisch School of the Arts, New York, USA
- Andreas Roth, M.F.A., Valand School of Fine Arts
- Ella Tallyn, M.F.A., Film and Video at Central St. Martins School of Art, London, Ph.D. Candidate in Character Development in Interactive Narrative at the University of West of England in conjunction with Hewlett Packard Labs, Bristol, UK

Taken together, this group of people has experience in software development, film production, multimedia development, visual design prototyping, electronic construction, etc. etc. Since the group is composed of young people, there is a wide-ranging and up-to-date knowledge of popular culture including films, music, literature and video games, knowledge that would be crucially important for the work at hand. There is also extensive experience with a large number of readily available technologies that will be needed in the studio work, including: Video game platforms such as Nintendo Game Boy and Sony PlayStation Yaroze; Lego Cybermaster, Lego Control Lab and Lego Mindstorm; RF- and IR-transceivers; various forms of sensor technology, and bar-codes and other electronic tagging technology.

To ensure the quality of the studio's work, there will also be a number of senior researchers associated with the studio. Initially, the seniors will be people already associated with the Viktoria Institute, but we expect to soon be able to complement these with researchers from prominent international institutions. Seniors initially associated with the studio would be:

- Bo Dahlbom, Professor, Informatics, Gothenburg University, Managing Director, The Viktoria Institute

- Staffan Truvé, Ph.D., Computer Science, Chalmers University of Technology, Managing Director, Carlstedt Research and Technology

### ***Budget, needs for special equipment, locales, other requirements***

The PLAY group is currently located at the Viktoria Institute. As an inter-rim solution the current locale serves us well, but it may be necessary to find a new space if PLAY becomes an Interactive Studio, independent from the Viktoria Institute. So far we have found little need for expensive special equipment or facilities. The projects we are working on mostly require the construction of rough-and-ready prototypes based on inexpensive consumer technology such as video games and standard electronic components. Apart from regular office space we need some room for a prototyping and design lab, but this can be arranged in almost any type of locale.

We believe that the size of the studio should be in the region of 8-10 staff, some working part-time as outlined above. Based on our current cost of operation we expect an initial yearly requirement in the region of 4,5 MKr per year. This amount should be gradually complemented with other funding, including private sponsors and Swedish and EU-based research grants. Roughly, the division of yearly funds would be as follows:

- Staff (totaling ca. 8 full-time salaries): *3,000,000 SEK per year*
- Equipment, travels, literature, etc.: *750,000 SEK per year*
- Rent, administration, overhead: *750,000 SEK per year*

### ***Potential stumbling blocks***

We can see a possible stumbling block in the lack of senior researchers, i.e. experienced Ph.D.:s with a long previous history of related research. Due to the emergent nature of the field, this is a problem that would face any endeavor of this kind, because people with an academic background in entertainment technology research are much sought-after, and it is doubtful if any suitable people could even be found in Scandinavia at this point. Most members of the current PLAY staff are Ph.D. students at various university departments, and will be able to turn to their supervisors at these departments for academic guidance, but there is still a need for more seniors to be permanently connected to the group. We have increasingly been able to turn to our international contacts for much-valued help and guidance, and have good hopes for being able to tie some of our international contacts to the proposed studio. All in all, we believe that we can overcome this problem, at least until we find the right persons or have worked long enough to become regarded as "seniors" ourselves. Furthermore, since one of the goals of a studio such as this must be to develop new seniors in the field, we believe that the act of developing current PLAY staff to become senior researchers will in itself be an important contribution.

### ***Evaluation of the studio's success***

We can see two main aspects from which to evaluate the success of this studio: the *commercial* aspect; and the *academic* aspect. From a commercial point of view, we would consider the studio successful if it generates research prototypes that can be turned into successful products, either by the companies that provide support and collaborate with the studio, or by new companies formed as a result of the studio's work. From an academic point of view, we believe that frequent publication of results in major international academic fora is the most important goal. By publishing our results, we also make the work of the studio known to an international audience of companies and researchers. Another important academic consideration is the production of Ph.D. theses, and most of the proposed staff should be pursuing doctorate degrees in various topics.

The frequency and detail of evaluations are of course also a concern. Forms for short-term evaluations should eventually be determined, but at this stage we would prefer to offer this as a basis for an overarching evaluation of the studio:

- If, within the 4-year period initially located for basic funding, the research at the studio has resulted in a number of potentially successful commercial products, several accepted Ph.D. theses and a large body of internationally published academic work, the studio is a success. Otherwise, it is a failure.

We are confident that this goal will be met.

### **Selected PLAY events**

For a complete and updated list, see the *Up-Coming Events* and *Archives* sections on PLAY:s homepage: <http://www.viktoria.informatics.gu.se/groups/play/>

In 1998:

#### **The Future of Fun: Tomorrow's Technological Entertainment**

*The Viktoria Institute, Gothenburg, Sweden, May, 1998*

An international workshop hosted by Glorianna Davenport of the MIT Media Lab, USA, and Maureen Thomas of the National Film and Television School, UK. The workshop attracted an international audience of close to 30 participants (a further 20 applicants had to be turned down) from Scandinavia, Europe, USA and Japan. For more details, see the PLAY homepage and the follow-up article in *IEEE Multimedia* vol. 5 no. 3.

#### **"The Media of Tomorrow" - Public lectures during Gothenburg Science Festival**

*The Viktoria Institute, Gothenburg, Sweden, May, 1998*

In conjunction with the Future of Fun workshop, Glorianna Davenport and Maureen Thomas gave public lectures that attracted an audience of over 200 people.

#### **"The Interactive Institute" meeting**

*Teknikbrostiftelsen, Gothenburg, Sweden, August, 1998*

This meeting, arranged by Teknikbrostiftelsen, attracted a wide audience interested in the prospect of an Interactive Studio in Gothenburg. PLAY presented current work and future plans, along with representatives for the Gothenburg University, Chalmers, and several local companies. For details, including a list of participants, see: <http://www.tbsg.sshn.se/ii/>

#### **Formation of IMP - Interactive Media Producers in West Sweden**

PLAY was actively involved in the formation of this non-commercial organization for smaller local companies in the web-design and interactive media sectors. IMP is an extension of *Onsdagsklubben* ("The Wednesday Club"), an informal network of people working in this area. For more information, see: <http://www.onsdagsklubben.org/>

#### **Selected international visits:**

- **MIT Media Lab, Boston, USA:** PLAY researchers that have visited the Media Lab at various times include Lars Erik Holmquist, Staffan Björk, Roberto Busso, Jennica Falk, Joakim Wigström and Peter Ljungstrand. Groups visited include *Interactive Cinema*, *Tangible Media*, *Gesture and Narrative Language*, *Software Agents*, *Epistemology and Learning*, *Sociable Media* and *Synthetic Characters*.
- **Xerox PARC, Palo Alto, USA:** Visit and presentation by Lars Erik Holmquist
- **NFTS-CREATEC, London, UK:** Visited by Lars Erik Holmquist and Staffan Björk
- **GMD-IPSI, Darmstadt, Germany:** Visited by Lars Erik Holmquist

Planned for 1999:

#### **IMPAct 99**

*Gothenburg, Sweden, March, 1999*

Arranged by IMP: *Interactive Media Producers of West Sweden*, this event will be aimed at both professionals in the web and interactive media field, and the general public. PLAY has invited two MIT Media Lab researchers, Brygg Ullmer and Freedom Baird, to give presentations at this event.

#### **The Future of Fun II: Local Fun**

*The Viktoria Institute, Gothenburg, Sweden, May 1999*

A continuation of the successful 1998 event; details to be determined.

### **The Future of Fun III: Ubiquitous Fun**

*University of Karlsruhe, Germany, October 1999*

Arranged in conjunction with the *First International Symposium on Handheld & Ubiquitous Computing*, at the University of Karlsruhe in collaboration with the Department for Telecommunications and ZKM (Center for Art and Media).

### **Selected PLAY publications**

This list includes journal publications, refereed appearances at international conferences, and major workshop submissions. For a complete list with additional publications and updates, see the pages for our various projects on PLAY:s homepage. Full versions of all publications are available for download from this address: <http://www.viktoria.informatics.gu.se/publications/>

1. **Bjur, J.J.** Auditory Icons in an Information Space. In *Proceedings of Hör Upp! WFAE Conference on acoustic ecology*, Stockholm, Sweden.
2. **Björk, S.** Making Guides Entertaining. Workshop paper, *ECAI Workshop on AI and Entertainment*, Brighton, UK, 1998.
3. **Björk, S. and Holmquist, L.E.** Formative Evaluation of a Focus + Context Visualization Technique. Poster at *HCI'98*, The British HCI Society, Sheffield, UK.
4. **Björk, S. and Holmquist, L.E.** Showing Overview and Details in Digital Variants. In *Proceedings of Literature, Philology and Computers*, Edinburgh, UK, 1998.
5. **Bohlin, P., Nilsson, V. and Siverbo, M.** Bamse-land: A Virtual Theatre with Entertaining Agents Based on Well-Known Characters. In *Extended Abstracts of CHI '98*, Los Angeles, CA., USA, ACM Press.
6. **Holmquist, L.E.** Loose Scripts and the Influence Engine: A Model for Controlling Multi-Actor Interactive Narratives. In *Proceedings of Writing and Computers 10*, The Writing and Computers Society, Brighton, UK.
7. **Holmquist, L.E.** Supporting Group Awareness with IPAD:s - Inter-Personal Awareness Devices. Workshop paper, *Workshop on Handheld CSCW*, CSCW '98, Seattle, WA., USA.
8. **Holmquist, L.E.** The Zoom Browser: Showing Simultaneous Detail and Overview in Large Documents. In *Human IT* vol. 2 no. 3, ITH, Sweden.
9. **Holmquist, L.E. and Björk, S.** A Hierarchical Focus+Context Method for Image Browsing. In *SIGGRAPH '98 Conference Abstracts and Applications*, Orlando, FL., USA, ACM Press.
10. **Holmquist, L.E., Fagrell, H. and Busso, R.** Navigating Cyberspace with CyberGeo Maps. *Proceedings of IRIS 21*, Sæby, Denmark.
11. **Holmquist, L.E., Falk, J and Wigström, J.** Hummingbirds: Pocket-Sized Awareness. To appear in *Personal Technologies: Special Issue on Handheld CSCW*, ed. Hans-Werner Gellersen, Springer Verlag.
12. **Holmquist, L.E., Wigström, J. and Falk, J.** The Hummingbird: Mobile Support for Group Awareness. Demonstration, *CSCW '98*, Seattle, WA., USA.
13. **Redström, J.** The DishJockey: Integrating Multimedia into Everyday Activities. Poster presentation, *ACM Multimedia 98*, Bristol, UK, ACM Press.

### **Appendix: "Fun: A Condition of Creative Research"**

We have enclosed the article "Fun: A Condition of Creative Research", published in *IEEE Multimedia* Vol. 5 No. 3, July-September 1998. It was written to document PLAY:s *Future of Fun* event by workshop hosts Glorianna Davenport, MIT Media Lab (USA) and Maureen Thomas, National Film and Television School (UK) together with workshop arranger and PLAY group leader Lars Erik Holmquist and the workshop participants. It gives an insight into some of PLAY:s working methods, and many of the ideas generated at the workshop will provide further inspiration for topics to explore in an Interactive Studio based on the theme *Entertainment and Innovation*.