*Åke Sandberg and Fredrik Augustsson*

# Interactive Media in Sweden 2001

The Second Interactive Media, Internet and Multimedia Industry Survey

ARBETSLIV I OMVANDLING
WORK LIFE IN TRANSITION | 2002:2
ISBN 91-7045-628-3 | ISSN 1404-8426

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**ARBETSLIV I OMVANDLING**
**WORK LIFE IN TRANSITION**

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National Institute for Working Life,
SE-112 79 Stockholm, Sweden

ISBN 91-7045-628-3
ISSN 1404-8426
Printed at Elanders Gotab, Stockholm

# Foreword

Swedish interactive media production and other ICT-related industries were brought to international attention during the late 1990's. *Financial Times, Newsweek* and *Business Week* for example all run several articles focused on 'the Swedish IT-wonder'. *Newsweek*, for instance, ran the front cover article 'Stockholm. Hot IPOs and Cool Clubs in Europe's Internet Capital' (Feb 7, 2000). Government hearings have been held and dissertations published. Quantitative surveys on the national level of the field are however still rare. This is actually the first broad survey of Swedish interactive media producers, i.e. the Internet and multimedia industry, to be presented since our own first survey in 1997. These companies may give a hint of the 'network economy', and their products will effect all actors.

The study has been carried out at Arbetslivsinstitutet (the National Institute for Working Life) in Stockholm by Åke Sandberg, assoc.prof., and Fredrik Augustsson, doctoral student, in co-operation with the trade organisation Promise (Producers of interactive media in Sweden) and its director Hasse Samuelsson. The project was financed by the National Institute for Working Life and was also supported by Nutek/Vinnova as part of the News Media 2003 project, which was coordinated from the School for Arts and Communication at Malmö University.

Our present focus on IT and media is and expression of an enduring interest in technological development and workplace transformation. Our survey to interactive media companies is part of the broader MITIOR project (Media, ICT and innovation in organization and work). Another survey is presently carried out to a sample of Swedish companies and organizations to get a picture of their in-house interactive media activities, and a survey to workers within interactive media production, linked to the company survey, is planned for early 2002. A study directed to ICT companies and their employees in Kista and its Science park just north of Stockholm has just been financed by Vinnova (Swedish Agency for Innovation Systems) and will be carried out during the next couple of years. At the same time more analytical and theoretical reports will be written. More information about the MITIOR project can be found at our web-site: www.niwl.se/projektkatalog/en/, search for 'mitior'. This report is also available as TELDOK-report no. 41, ISSN 0283-5266, www.teldok.org.

Stockholm December 2001
*Åke Sandberg*

# Acknowledgements

Many collegues, managers and workers in the interactive media industry have made this study possible. First, we would like to thank those practitioners who filled in and discussed early versions of the questionnaire regarding both relevance and methods: Henrik Ahlén, Anna Backlund, Barbro Berg, Thomas Berglund, Bo-Erik Eriksson, Svante Fjällbäck, Håkan Henning, Rasmus Larsson, Sören Lindh, Anne Lintala, Leif Mettavainio, Annicka Pärson, Hasse Samuelsson, Oscar Uribe and Mikael Wittbäck.

We would also like to thank those researchers who, in various ways, have helped us to improve this study, and to avoid several pitfalls: Christofer Edling, Carl le Grand, Klas Levinsson, Ryszard Szulkin and Lennart Svensson and especially Casten von Otter who encouraged the study from the very beginning and gave us valuable comments, and Anders Wikman who shared his broad methodological competence with us. Special thanks also to the participants in an international network of researchers for letting us build upon their questionnaires and survey experience when modifying our own questionnaire form: Susan Christopherson at Cornell University, Roman Hummel at Univsersität Wien, Peter Leisink at Universiteit Utrecht and Lutz Michel at Michel Medienberatung in Essen. Thanks also to Erika Viklund for editing our English.

Those who assisted us with the practical issues always involved in empirical research are equally deserving acknowledgements: Tommy Lindkvist, and Petra Follrud, Patricia Mieres Zamora and all the interviewers from Jobfinder Student. Finally, our thanks to all those company managers who took their time to fill in our questionnaire. We are convinced this study, like its predecessor, will be useful within the industry and in research alike.

The preparations for this research were greatly facilitated by three international workshops sponsored by the National Institute for Working Life within the Worklife 2000 series. They were organised by Åke Sandberg in co-operation with Göran Ahrne, Ann-Katrin Bäcklund and Peter Leisink respectively, with practical assistance from Fredrik Augustsson and Sanja Magdalenic. Links to on-line versions of the scientific reports from the three workshops can be found at the end of this report, under ‘Publications from the MITIOR-project’.

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# Introduction

The first national survey of Swedish interactive media producers was conducted in 1997. Much has happened since then. Interactive media producers were suddenly at the centre of the largest stock market speculations since the late 1980s, and the value of any company starting with ‘e-‘ or ending with ‘.com’ skyrocketed. But what was labelled the ‘IT-bubble’ suddenly burst. Trust and belief in the ‘new economy’ decreased and all ‘venture capitalists’, ‘business angels’ and ‘IT-entrepreneurs’ who could do so sold their shares before the ‘dotcom-death’ resulted in plummeting stock values, layoffs and shutdowns. The period from 1997 until now has been one of buzzwords and financial speculations. But also a period of building solid companies, actually producing innovative and high quality interactive media solutions, and for a large number of employees, going to work each and every day. This study maps the actual situation for interactive media companies and employees in 2001, and presents a more accurate and detailed picture than is sometimes given in the media.

Interactive media producers may give a hint of how some future workplaces might look like in the ‘network economy’. Furthermore, the solutions created by these companies are implemented in business life in general and thereby affect all firms and employees. This makes them particularly interesting to study

This report is based on a questionnaire completed by the managements of roughly 350 companies producing CD-ROM/DVD, intranet and Internet solutions. The present questionnaire is based on the 1997 study, which has been modified and improved extensively. For a more detailed description of the design of the study, see the end of this report. It might be useful to read this description before turning to the findings. The majority of this report is purely descriptive, mainly consisting of commented figures. More analytical and theoretical analyses, and in-depth studies of specific topics, will be the focus of future works

The 1997 study answers presented an optimistic view with companies believing in great expansion and higher levels of turnover. And despite all the negative news reported in the media regarding IT-related industries, our study shows that interactive media producers still have an optimistic view of the future, although less so than in 1997. One should not deny that there are problems, but it seems that many companies in this industry are doing rather well in terms of continued growth. One aspect of what media labelled the ‘dotcom-death’ was the bursting of a stock market bubble, and also probably a case of rather natural dynamics of a maturing and consolidating industry. The core of the dotcom crisis was within e-commerce companies, and some of those interactive media producers that had them as their main customers. Growth in interactive media production was continuous from 1997 until 2000. The downturn is not over yet, but the sector is still larger than four years ago.

## Interactive Media in Brief

- Turnover is expected to grow by eleven percent in 2001, as compared to 2000. Roughly 55 percent of company turnover comes from interactive media.
- Typical companies have five employees, but a small number of larger companies bring the average up to just over 16 employees. three employees focus on interactive media production in typical firms, and in the average company eight.
- The industry is young, the average starting year is late 1992, the median 1996. In 1999, the number of new business start-ups experienced a rapid drop. The mean starting year for interactive media production is 1996, the median 1997.
- The geographical concentration of interactive media companies has decreased slightly. Still, it is largely a city phenomenon with one third in Stockholm.
- The most common products are company presentations, followed by advertising, information databases, education and e-business solutions.
- A majority of firms are also active in fields other than interactive media.
- The most common functions performed by interactive media producers are graphic design, programming, illustrations and graphic design.
- Internet is by far the dominating medium. Recent media, such as Interactive TV, broadband and mobile Internet are still very small.
- The main customers are other companies, who stand for 82 percent of turnover from interactive media.
- 65 percent of the companies outsource interactive media production and the average percentage of outsourcing is 19 percent of turnover from interactive media production.
- 53 percent of the companies produce interactive media as subcontractor and derive on average 25 percent of turnover from interactive media from this.
- 32 percent of the companies report that customers take an active part in interactive media productions.
- Female participation is less than 20 percent in interactive media production, and is especially low in programming.
- Most employees are young, nearly half being younger than 30 years of age.
- A majority of employees are offered more than one week annually for competence development, but only a minority use the total designated time.
- Competence development is undeveloped or managed ad hoc.
- Economic rewards apart from salaries, such as stock options, are rare.
- Most employees have written employment contracts, but only in one fifth of companies are interactive media workers covered by collective agreements.

## The Interactive Media Producers

Interactive media production is not an industry in the traditional sense of the word. It is rather a sector comprising a number of actors, both newly started companies focussing exclusively on interactive media production, and older companies with a long tradition in other areas, such as traditional media, advertising, graphics production, journalism, and computer consulting. Companies producing interactive media are often active in related fields as well. The sector is still young, mainly formed during the second half of the 1990s. The industrial dynamics are extensive, and constant structural changes the norm.

There is a certain segregation within the interactive media producing sector. Small companies constitute the absolute majority. But there is also a small number of 'giants', firms with hundreds or even thousands of employees (although not all working in the interactive media operations departments), with several offices both nationally and abroad.

The target of this study has been companies producing what is known as multimedia, new media, interactive media, digital media, etc. The sector has many names. For this study, the term 'interactive media producers' has been chosen. But more important than finding a correct label to stick on these companies is to determine what they actually do. In this study, 'interactive media' refers to companies developing interactive media products or services, integrating text, graphics, sound, vision and video (multimedia or multimodal products). This incorporates both companies producing entire interactive media solutions and those contributing parts of the production. Firms that only *use* such solutions (for example e-business companies) or sell them (such as computer game stores) are not included. Neither are firms working with digital content for use in traditional media only (e.g. digital photography for printed newspapers). The platform or information carrier is on-line (Internet, intranet), off-line (CD-ROM, DVD, information-kiosks, etc.) or wireless, mobile Internet (WAP, GPRS etc.).

This study specifically concerns companies producing solutions for customers outside the own company, including both end-users of solutions (consumers as well as other firms), and other firms to whom one is a sub-contractor. During the autumn and winter of 2001, a separate study within the MITIOR project will be dedicated to in-house production and the ordering of interactive media for internal purposes. The survey will cover a sample of all Swedish firms, organisations and government authorities with more than 200 employees. Both these studies focus on the firm level and questionnaires are sent to managements. During early spring 2002, we hope to be able to finance a survey among individual workers in interactive media production, linked to and close in time to the company survey.

For survey purposes, some 1,550 companies were identified, roughly 850 of which proved to be active in the sector of interactive media production. About 40 percent of these companies (348) completed the questionnaire. Unlike the 1997 survey, which took no notice of firms with less than five employees, this study has no lower limit. However, firms without employees (usually consisting of one person or a couple of joint owners) were given a somewhat different questionnaire, as several questions did not apply to them[1]. Based on a systematic examination of all firms identified, we have reason to believe that the respondents are representative of all 850 firms in the database in terms of turnover, number of employees and age. Whether the respondents are representative of the sector as a whole (i.e. the body of Swedish firms producing interactive media for external customers) is harder to determine, but there are no signs of any systematic bias in this respect. More details on the design and implementation of the study, response rates and analysis of non-respondents can be found at the end of this report.

## The Size of the Sector

Although extensive efforts were made to include all Swedish companies active in the production of interactive media solutions for external customers, it is possible that some firms were missed. Final checks have as yet not been conducted to determine that all remaining non-respondents are really active interactive media producers. Therefore, it is not possible to determine the precise number of interactive media producers in Sweden 2001 – however, this was not the focus of the study. Furthermore, the sector for interactive media is highly dynamic, which makes any precise figures only temporarily accurate. A qualified estimate would be that there are currently (winter 2001) somewhere between 750 and 1,000 active firms in Sweden, producing interactive media for external customers. This number does not include companies, government agencies and other organisations producing interactive media solutions for in-house use. Thus, figures regarding the total annual turnover and number of employees working in interactive media production in Sweden are certainly higher than reported here.

Does Sweden have a large interactive media sector compared to other countries? Several aspects complicate answering this question. First of all, there are few systematic national level surveys of other countries. Most surveys of interactive media production tend to be regional studies, or focus on big-city clusters (such as Amsterdam, Munich, New York, San Francisco or Toronto). Secondly, as studies go, the types of companies and activities included differ. The definitions of ‘interactive media’, ‘new media’, ‘multimedia’ etc, as well as the

[1] This is the reason why the absolute figures reported in figures drops from 348 to roughly 270 in the middle of the report. The results regarding firms without employees will be presented in a separate report when all analyses of their answers have been completed.

types of databases and methodology vary among studies. This makes comparison between studies and nations difficult. Still, it seems, given the size of Sweden, that the interactive media sector is larger than in many comparable countries. Whether this actually is the case has so far been impossible to determine.

One reason for carrying out studies of interactive media at the regional level is that the sector in most countries is highly clustered (Braczyk et al 1999). This pattern is also discernible in Sweden, where the Stockholm area accounts for 33 percent of all companies producing interactive media (measured as the location of the largest interactive media producing office). This is, however, a somewhat lower figure than in the 1997 study. To what extent this is due to differences in sampling or reflects an actual geographical relocation of the industry is not yet fully determined (see more below).

The results of the survey are presented below, thematically and in more detail, based on the areas covered by the questionnaire: companies, activities and markets; geography and possibilities for business development; co-operation and networks; personnel; competence and recruitment; organisation and reward-systems; work environment and agreements. Due to the previously mentioned polarisation in this sector with a large number of small firms and a few considerably larger companies, aggregate figures will in some cases be presented both as median and mean values[2].

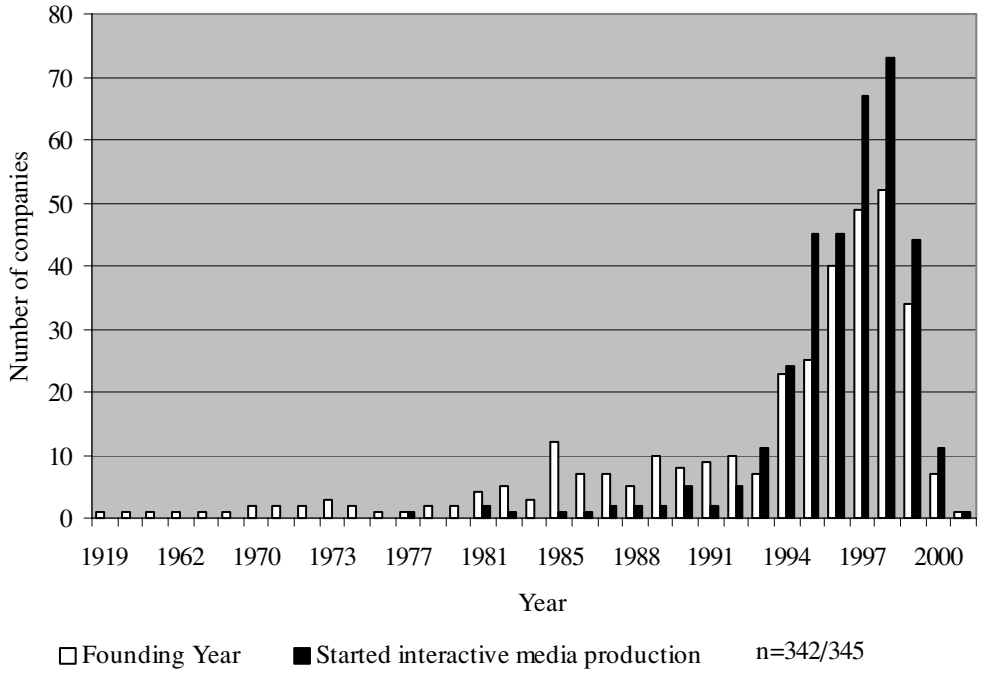
## Companies, Activities and Markets

As previously mentioned, interactive media production is a relatively new phenomenon. The survey results reveal this in two ways. Firstly, companies within this sector are extremely young. The mean founding year is (late) 1992 (see figure 1). However, since a few considerably older companies, especially from the traditional graphics and printing industry, were started in the first half of the 1900s, this figure does not capture the whole picture. The median firm was started as late as 1996. Secondly, the average firm did not start producing interactive media until the first quarter of 1996 (the median being 1997). The deviation from this figure (especially downward) is very slight, confirming the picture of interactive media production as a business activity emerging from practically nowhere and growing extremely fast in a couple of years during the second half of the 1990s.

The figures below show yet another important trend. Already in 1999, the number of new business start-ups dropped rapidly, and were by 2001 almost

[2] Median value refers to the middle value. The mean value is the sum of every reported value divided with the number of observations. When empirical findings are not normally distributed, the two figures differ considerably.

down to zero[3]. According to these figures then, the number of new business start-ups was decreasing rapidly already before the sector was hit by financial trouble. There are two possible explanations for this steady decline. One can be that the number of new start-ups actually did decrease in this period, i.e. that the figures show the actual development of the sector. Another explanation might be that companies started later have had a lower survival rate than older and more stable companies. It might be that the number of new start-ups was just as high in 1999 and 2000 as in 1996 and 1997, but that a larger proportion of firms that started late have gone out of business because they were not stable or profitable enough when the IT-sector ran into financial problems.




Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001

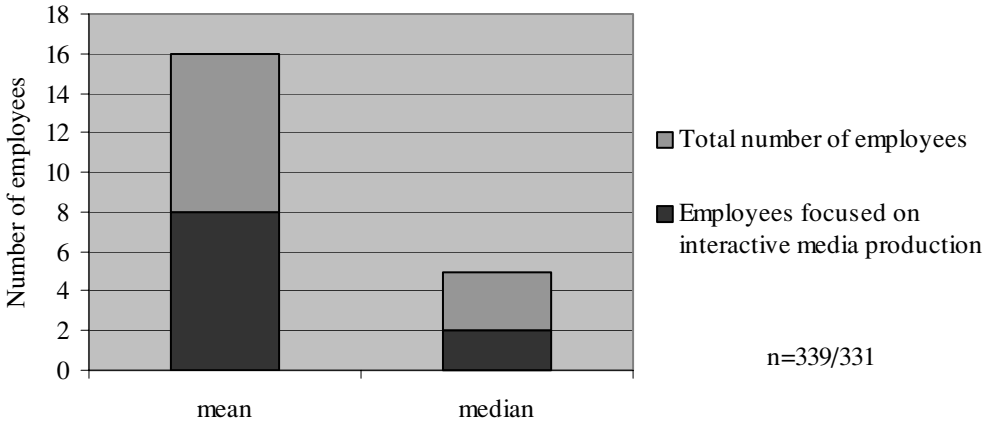
**Figure 1**. Founding year for enterprises, and starting year for production of interactive media.

The typical interactive media company is small, with a total of five employees in 2001. The mean workforce size is just above 16. This is lower than the figures reported in the 1997 survey, where companies had a median workforce of six and a mean of 20 (in 1997). This visible decrease in company size is partially explained by differences in the design of the two studies. For instance, the efforts

[3] See 'Design of the study' about possible non-respondents.

and possibilities to detect small companies have been greater in the present survey. This brings down the mean size somewhat[4].

The number of employees focussed on the actual production of interactive media is three in median, and eight in average. Thus, between 50 and 60 percent of employees are involved directly in producing interactive media. These figures show that interactive media production is an important and core activity for most companies in this sector. This might suggest that companies are starting to specialise and focus on their core area of business (see also figures on turnover below). It might also be due to differences in search procedure and creation of the population. Unlike the last survey, it has this time been feasible to examine the web pages of all firms in the sample and compare them to our definition of interactive media producers (see more on the design of the study at the end of this report). In 1997 many firms with only a small or marginal interactive media activity were included. These companies would most likely have been excluded from the present survey.




Source: MITIOR project, Arbetslivsinstitutet/ MIWL, Dec. 2001

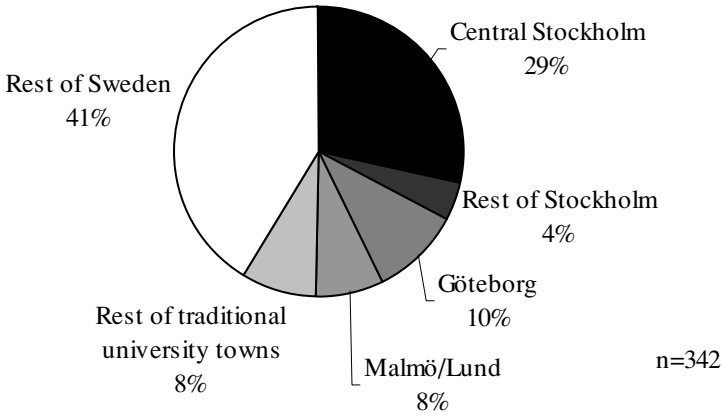
**Figure 2**. Total number of employees, and the number focussed on interactive media production.

Within an average company, less than 6 percent of the workforce involved in interactive media production are temporary employees. Given the low number of employees, temporary workers are more or less non-existent. The number of outside consultants currently working within the average company is 0.64. Given the fact that this figure does not include companies without employees (which would bring down the figures even further), the figure is extremely low. Taken

4 The survey was directed to firms, not business groups. This means that companies divided into several separate financial/ legal units can be included more than once. Each answer is for that particular unit only.

together, this suggests that the forms of employment in the interactive media sector are very similar to the general labour market (see more below).

Most interactive media producing companies have only one office in Sweden, and almost none has offices abroad. Of those companies counting more than one office, interactive media is mostly not produced in all of them. The numbers are however small, and definite conclusions difficult to draw. Geographically, interactive media is concentrated to a few areas in Sweden, mainly Stockholm, but also Gothenburg, Malmö and the rest of the traditional university cities and towns[5]. However, the geographical concentration has somewhat declined. In the 1997 survey, central Stockholm had one third of all Swedish interactive media companies, and, together with the larger Stockholm area, made up half the sector. Whether this change reflects increased 'industrial maturity' in other parts of Sweden, that companies have moved away from Stockholm, or that Stockholm suffered from over-establishment and now has had to pay for it, is not sure. The difference could also be due to differences in the design of the two studies. In the present study, the possibilities to locate companies outside Stockholm have been greater. Furthermore, in this study the geographical location of companies is determined by the location of their largest interactive media producing office and not by their head office, which was the case in the 1997 study. When all offices producing interactive media belonging to the companies in the survey are incorporated, the picture changes somewhat, although only marginally, since the number of offices per company producing interactive media is 1.28 in mean, with a median of one.

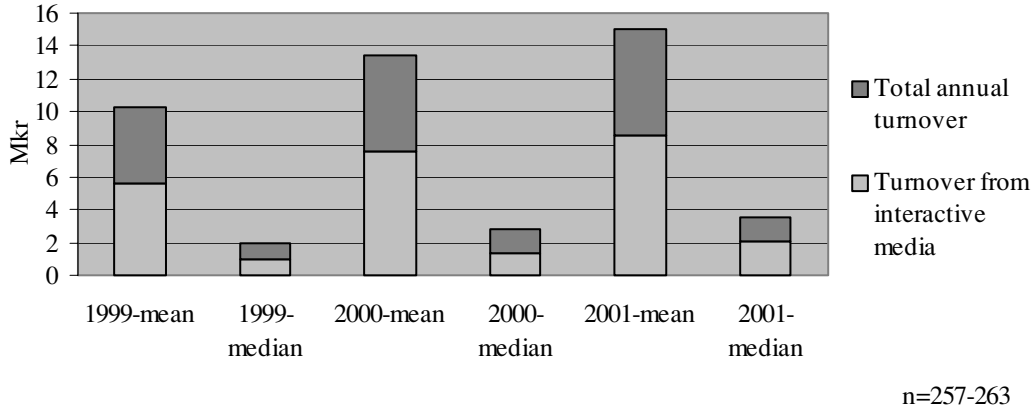



Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001

**Figure 3**. Geographical location of Swedish interactive media producers.

5 A number of colleges in Sweden received a University status between 1997 and 2001, the time between the first and second survey. For purposes of comparison, we have separated the traditional university towns except Stockholm and Gothenburg (Linköping, Lund, Umeå and Uppsala) from the newer ones.

The relative size of companies is also reflected in their average turnover. The production of interactive media, just as many similar activities within media, is characterised by a form of customised production and dependent on the input of skilled workers. It should come as no surprise then, that the average turnover is highly correlated with the number of employees[6]. The mean annual turnover for firms was 10.6 MSEK[7] in 1999, 13.6 MSEK in 2000, and expected to grow to 15.1 MSEK in 2001. The median annual turnover the same years was 2 MSEK, 3 MSEK, and 3.5 MSEK respectively. Thus, in the late spring and summer of 2001 companies believed that turnover would continue to increase[8]. Our results also show that newly started firms have a lower average turnover than older firms.




Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001

**Figure 4**. Total annual turnover. Figures for interactive media production 1999, 2000, and predictions for 2001 (mean and median).

Interactive media production makes up more than 50 percent of companies' total turnover all three years, and is expected to grow, although only modestly in terms of mean values. In 1997, only seven percent of total turnover came from interactive media production. Back then, many firms with only a small or marginal interactive media activity were included, firms that would probably have been excluded from the present survey. These figures support the above claim that this study has managed to capture the core interactive media producers. In 1997 our database contained many more companies that only to a small extent

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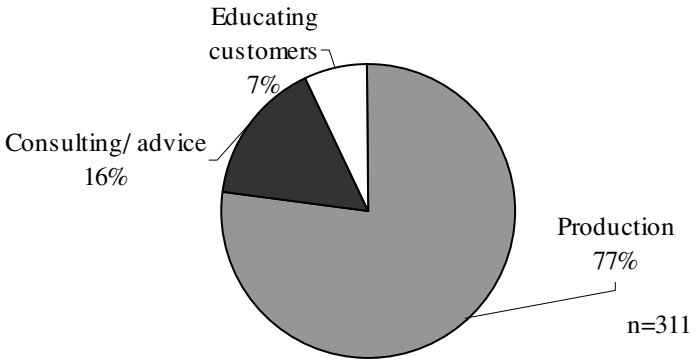
6 In the questionnaire, respondents were asked to report current number of employees. The correlation reported here, r=0.936, is with expected turnover in 2001, which is the most current number. The difference to the 2000 figures is however small (r=0.934). Both figures are significant at the 0,05 level.

7 MSEK is an abbreviation for Million Swedish Kronor. One Swedish krona is roughly 0,1 Euro.

8 Important to note is that these answers were given before the events that has affected the world economy during the fall of 2001. Still, half of 2001 had already passed when respondents made these predictions.

produced interactive media solutions. Newly started companies receive a higher proportion of their turnover from the production of interactive media. The situation is confirmed when examining the sources for turnover from interactive media production, and to some extent their markets. The actual production of interactive media solutions makes up more than three quarters of the total turnover from interactive media. As can be seen, the majority of the rest is from consulting, and only a fragment from customer training and education (figure 5).




Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001

**Figure 5**. Mean distribution of annual turnover of interactive media production from a selection of sources.

The same concentration can be found at the customer base for interactive media producers. Interactive media firms attain on average 82 percent of their turnover from business customers (other firms), and only 18 from the consumer market. The median figures are even more striking with 100 percent business customers and zero consumer market. The reason for this concentration is probably the relatively low number of Swedish companies specialising in computer games, educational CD-ROMs, DVDs and other mass consumer products. Furthermore, more resources are necessary for production for the mass market, complicating the establishment of small companies within this particular market segment[9]. This can be illustrated by determining the preferred information carriers or platforms. CD-ROM, DVD and other stored media add up to roughly 19 percent, while Internet and intranet productions make up more than three quarters of the annual turnover (the median is 5 and 90 percent, respectively). Figure 6 also shows that some of the recently most talked about forms of distributing interactive media (WAP, interactive TV etc.) so far are extremely small[10].

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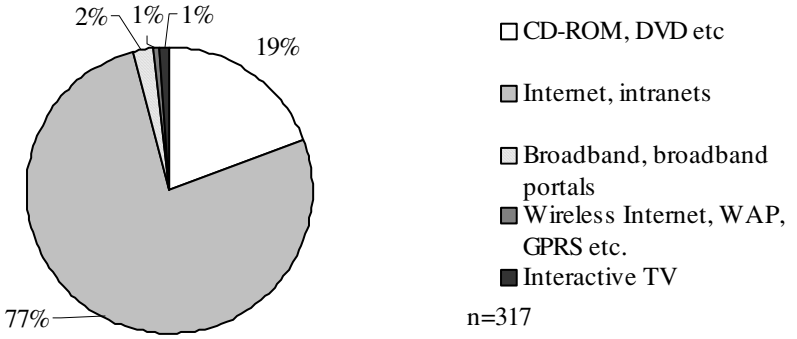
9 An example of this is computer games. Most small Swedish firms producing computer games are dependent on a large publisher who can finance, distribute and market the product.

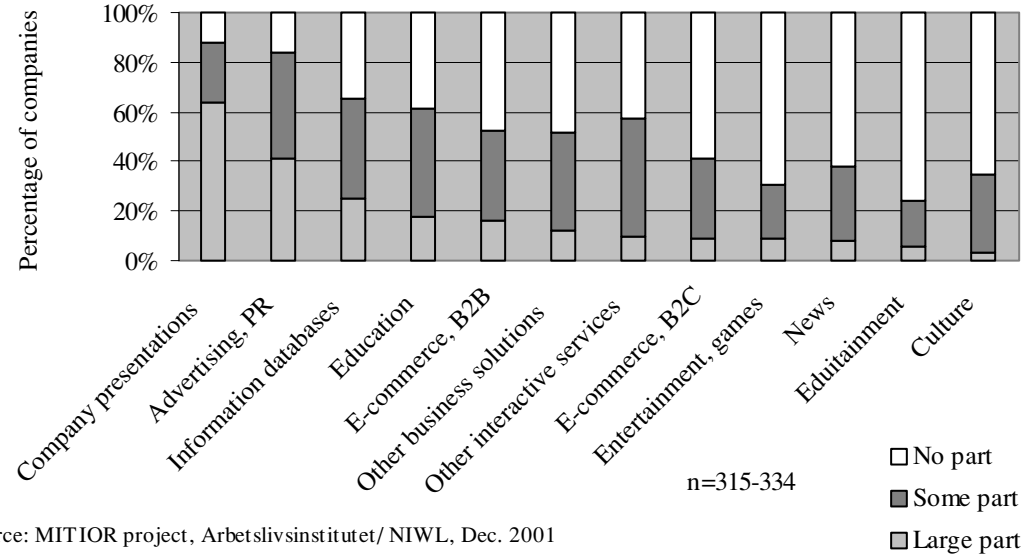
10 This was granted before the execution of the survey. The latter categories were included to facilitate tracking the development within this area from the very beginning.




Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001

**Figure 6**. Distribution of annual turnover from interactive media on assorted information carriers and platforms.

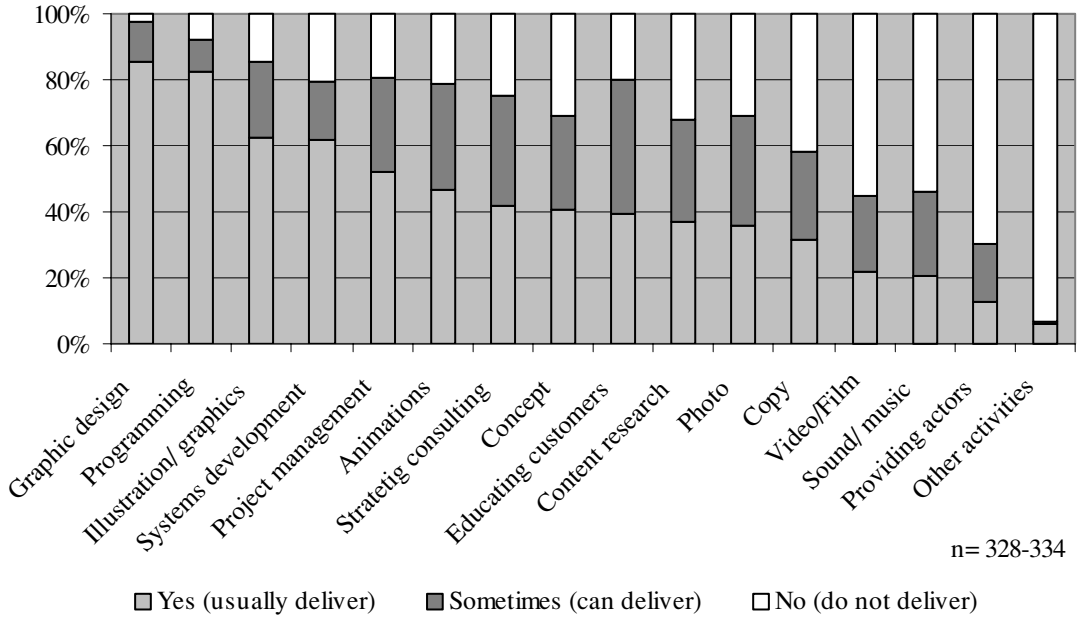
What kind of interactive media solutions are these firms producing, then? Respondents were asked to classify their productions according to 15 predetermined categories. The results show that the most commonly produced interactive media solution is presentations of companies and other organisations. This is followed by advertising and PR, information databases, and education. The least common categories are culture, 'edutainment' and news. Notable is that e-commerce, both Business-to-Business (B2B) and Business-to-Consumer (B2C), rank relatively low. This might explain why these interactive media producing companies seem to have gone relatively unscathed through the 'dotcom-death'.




Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001

**Figure 7**. Categorisation of interactive media production.

The production of any interactive media solution can be divided into a number of more or less definite functions, activities or tasks. On a more general level, they can be defined simply as programming, design and content production, and project management. In order to get a more detailed picture, it is necessary to go beyond this and look at specific functions. This is important for the understanding of the core activities of interactive media production. Furthermore, it helps explaining why certain functions are outsourced to other companies. In this study, respondents were asked to describe if, and to what extent, they performed 15 different functions which, taken together, make up interactive media production. The results are shown in figure 8.



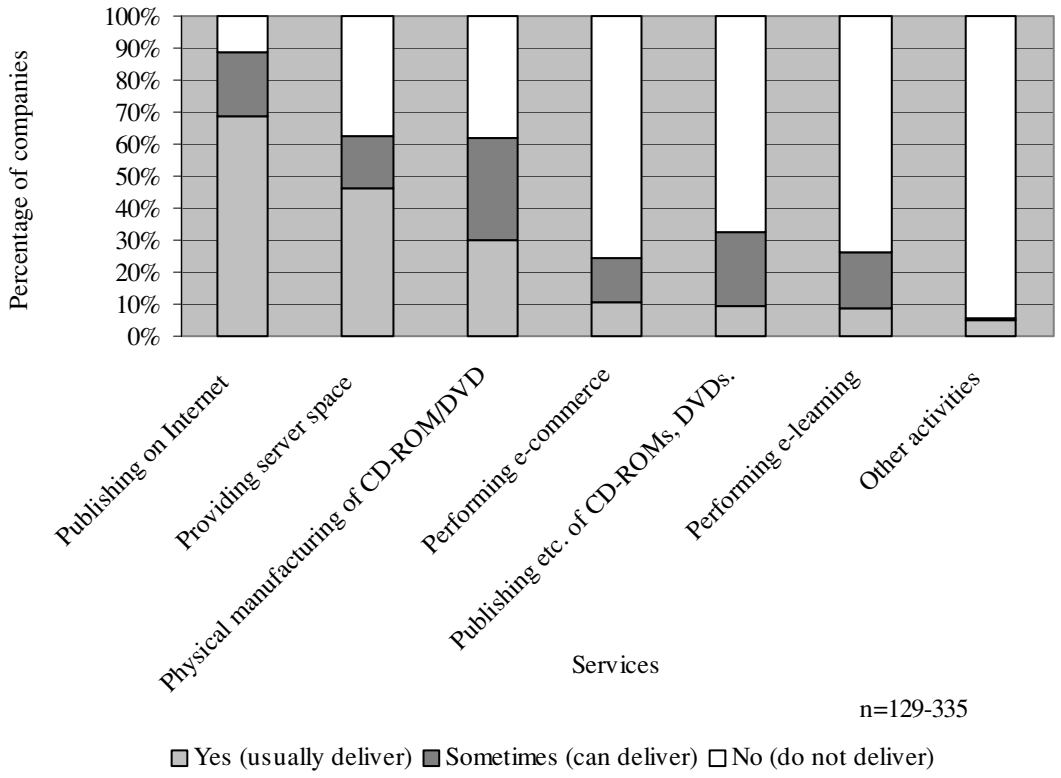

Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001

**Figure 8**. Performance of activities within interactive media production.

The most common activities performed by companies themselves are graphic design, web-design and programming. More than 80 percent of companies regularly deliver each of these services. The least common activities are video and film production, sound and music production and the provision of actors for sound and vision. Less than 20 percent of firms regularly deliver these latter types of services. Interesting to note is the variety in production. As seen in figure 8, there are several functions where the number of companies that sometimes deliver them is almost as great as that of those who deliver them regularly. These findings imply that most companies have the skills and competence needed to deliver a wider selection of services than they normally do. This might support the argument that interactive media producing firms are characterised by flexible specialisation, i.e. the ability to adapt the focus of production to the current

demands of the customer and to co-operate in production networks with other interactive media producers. In order to determine whether this really is the case, it is however necessary to make case study comparisons over time.

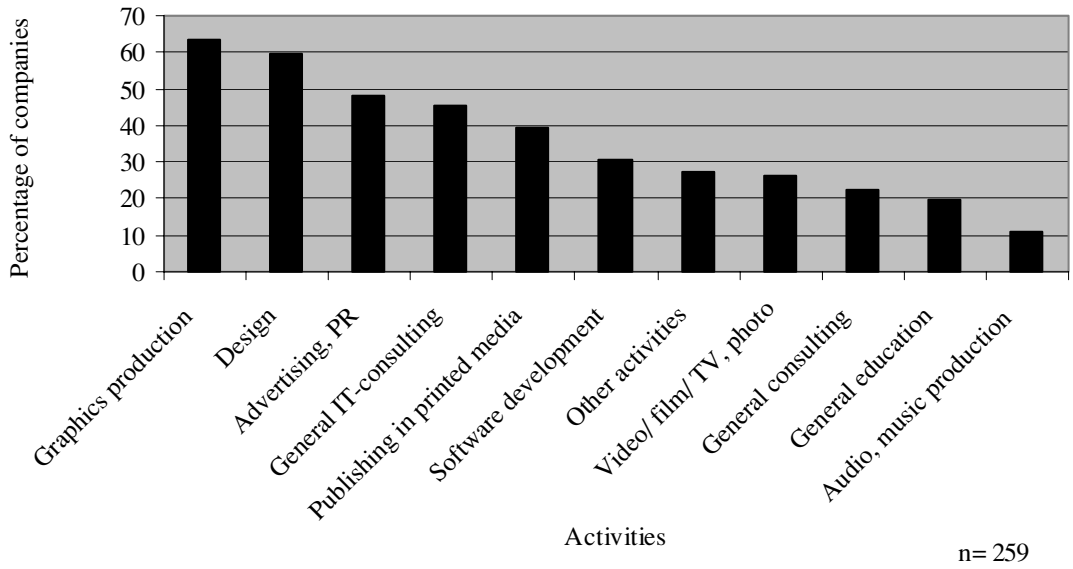
The results also show that a number of firms perform a range of additional activities that are important to make solutions work properly, activities that are not considered as part of the actual production of interactive media solutions (figure 9). Most common of these activities are publishing on the Internet or running a portal and offering space on a server (web-hosting).




Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001

**Figure 9**. Performance of other services related to interactive media production.

Furthermore, about 75 percent of firms producing interactive media are also involved in other activities (figure 10, next page). Most common among these are graphic production, design and advertising – content-related activities, all of them. IT-consulting and software development rank lower. This implies that interactive media firms are more closely related to design than they are to technology. An alternative explanation could be that firms focussing on technological aspects do not consider themselves interactive media producers (see further 'design of the study').




Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001.

**Figure 10**. Activities excluding interactive media production.

## Business Development – Opportunities and Constraints

Both researchers and politicians have become more aware of the fact that the overall business climate is important for the development possibilities of companies and industries. It is also necessary to pay attention to the specific needs, possibilities and constraints of distinct branches of industry, and of regions. In order to map the possibilities and constraints for growth in interactive media production, three sets of questions were posed. The first question set was aimed at detecting possible current constraints for, or impediments to, the development of interactive media producing firms.

Factors seen as the most important sources of constraint for development are customers' lack of knowledge and problems of communication, taxation of firms and individuals, and lack of venture capital. It is interesting to note that differences are small between the highest and lowest ranking problems, and more importantly: most problem factors score relatively low. This indicates that companies on the whole sense quite few structural obstacles to business development within the field of interactive media production. A striking finding is that customers' lack of knowledge is seen as a problem at the same time as customer training is but a fragment of total turnover from interactive media production (see figure 5). Are interactive media firms not offering customers training and implementation support, or are customers not asking for, or not willing to pay for, such training? To what extent are customers and end-users actively participating in the design and implementation plans?

A second aspect of development is geography. This becomes even more crucial in an industry as regionally unbalanced and clustered as interactive media production. When asked to what extent the present place of business manages to satisfy a number of factors, as well as how important these factors are perceived to be for the possibilities of running the company, the following pattern emerges.

The factors seen as best satisfied at the current location of business are communications, closeness to university or college, supply of competent personnel, closeness to customers and market, and supply of telecom infrastructure. What seems to be provided to a lesser extent are factors such as support and financial aid for localisation, and housing and office space at reasonable prices.

When managements are asked about the relative importance of different factors for companies' possibilities to conduct business at the present location, we obtain a better understanding of how they view their current location. The most important factors are supply of competent personnel, closeness to customers and market, and telecom infrastructure. Closeness to a university or college does not seem to have the same importance as has sometimes been stated[11]. Factors that appear to be less relevant are support and financial aid for localisation, community service and closeness to other IT and media-companies. These findings have important implications for policy makers trying to attract interactive media firms to their region. Firstly, firms do not seem to be very interested in the possibilities of getting support or financial aid for setting up in, or moving their operations to, other places. Secondly, the possibilities to attract interactive media companies with guarantees of high quality community and social services are small; these companies are primarily looking for other things. Thirdly, the importance of being located close to other firms involved in IT and media seems relatively small. Instead, what is important is closeness to the market and customers. This means that the possibilities of 'artificially' creating local clusters of interactive media firms are probably small if there are no major customers in the area. Given that the major customers for interactive media producing companies generally are other firms, it is likely that interactive media production will be found near (the headquarters of) large firms[12].

Still, there are possibilities for regions outside large cities to support clusters of interactive media producing firms even if there are no, or few, large firms as

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11 The questionnaire did not ask respondents to specify why it is important to be close to a university, but it might very well be that it is a way of securing the supply of competent personnel.

12 There might be even higher levels of concentration locally. In Stockholm, the area between Hötorget and Stureplan has a high concentration of interactive media producers, while there are practically no firms present in Kista, known for its high concentration of high-tech ICT firms. Gothenburg has a majority of firms at Hisingen. In Malmö, there is a concentration of firms around Lilla Torg. In Lund they are situated close to the university science park.

potential customers present. An example of this is the city of Visby on the Baltic island of Gotland where one has managed to build up and sustain a vital interactive media cluster in the absence of large customers (besides the games company Svenska Spel) by starting a university education focussed directly on interactive media and computer games, thereby creating a supply of competent personnel. Experiences from similar attempts in e.g. Germany (Braczyk et al 1999) show that such efforts are of limited value if they are not coupled with broader attempts to develop an attractive climate for this type of business and employees and by offering, among other things, suitable office buildings that facilitates co-operation between companies, education and customers.

## Co-operations and Networks

Interactive media production is often described as a sector characterised by high levels of inter-firm collaboration and different forms of individual and company-level networks and support structures within production, finance, innovation and competence development. This implies that individuals and firms producing interactive media are not focussed on potential final customers only, and seeing each other purely as competitors. They also have different forms of more or less stable co-operations with each other. The focus of this study has been on company-level networks among firms focussing on the production of interactive media solutions.

65 percent of companies outsourced part of their interactive media production to other companies or free lancers. On average, 18.5 percent was outsourced, nearly a fifth of turnover during the last 12 months. At the same time, about half of the companies (52 percent) function as subcontractors to other interactive media producing firms. On average, they derive 25 percent of their turnover from different forms of subcontracting. Furthermore, companies claim that customers be actively involved performing functions in nearly one third (32 percent) of all productions. Important to note is the pattern of the same companies both outsourcing, subcontracting and being involved in projects where the customer (firm) takes an active part in the production of interactive media. This supports the notion that the production of interactive media solutions can be understood as a network of companies performing various functions, and holding various positions, in different projects.

An image of what interactive media companies produce themselves (figure 8) may become clearer from looking at the functions companies outsource to other firms, functions they perform as subcontractors to other firms, as well as the activities performed by customer firms themselves. As can be expected, the distribution of functions left to other firms more or less mirrors the functions firms perform themselves. Thus, the most common functions outsourced are photo, sound and music production, actors for sound and picture and video and

film production. Content research, customer training and graphic design and web-design are the least common to be delegated to other firms. It is worth noting that advanced programming ranks rather high among outsourced functions. This corresponds to the notion that core interactive media firms often have more competence in the design aspects of interactive media production, while leaving complex programming and system development tasks to other companies, who do not necessarily label themselves as interactive media producers.

When companies work as subcontractors, most assignments are in the fields of graphic design and web-design, programming and advanced programming. The least common functions to be performed are sound and music, video and film and providing actors for sound and vision. Thus, the activities companies perform as subcontractors to other firms are more or less the same as their own core activities. The total volume of functions like sound and music production, video and film production and actors for sound and vision is likely to be low since subcontractor work is part of the total turnover from interactive media for each firm as reported in figure 4.

### The Role of Customers in Production

As previously mentioned, it is not uncommon that customer organisations are involved in the production of interactive media solutions. Keeping in mind that most productions are customised for specific use by the organisation purchasing the solution, this is not surprising. The parts of the production process customer firms are most often involved in, are content research, copy, and concepts and storyboards. These functions reflect areas where customer firms can be assumed to hold privileged knowledge and have a strong interest in contribution, especially to the most common interactive media solutions, i.e. company presentations. The customers can make key contributions to the knowledge about their own organisation, and might have an idea about how they want the interactive media solution to look (i.e. a concept and storyboard), and what message they want to put forward (copy). However, figures are low. Even in the 32 percent of projects where customer organisations are said to take an active part in the production of interactive media, they are involved in any of the areas mentioned in less than 30 percent of cases.

There are cases where the customer firm not only takes active part in the production of an interactive media solution, but also remains in charge, handing out various parts of the production to selected companies. It might be that one interactive media firm is responsible for providing the design of the content, another performs the programming and a third firm supplies video-clips and photos. 44 percent of responding interactive media firms are involved in co-operations of this kind, deriving an average of 23 percent of their interactive media turnover from them (the median value being 15 percent).

## Local Networks

The fact that firms tend to collaborate with other firms in interactive media productions does not in itself prove the existence of a network. It is also important to see whether relations between the actors are stable and lasting. When asked with how many other firms interactive media producing companies have stable relations, we found that on average they recurrently outsource interactive media production to 3.4 firms. Correspondingly, they had a stable subcontractor relationship to 4.4 firms. The median figures are lower, three and two, respectively. This is because a very small number of firms have very wide networks for co-operation with, at most, 40 firms. These figures show that most firms tend to work with the same companies over and over again.

In order to investigate where the firms they co-operated with are based geographically, respondents were asked to report the location of their collaborators (measured as amount of outsourced and sub-contracted turnover). The other firm was placed in the same municipality in roughly 72 percent of outsourced assignments (measured as turnover) and 67 percent of subcontractor assignments. In 22 percent and 28 percent of the cases respectively, the other firm was located somewhere in the rest of Sweden, which might be anything from the neighbouring municipality to the other end of the country (although the former is probably more likely). Assignments given to, or performed for, companies located outside of Sweden each totalled below five percent. These results indicate that collaborations and networks within interactive media production to a large extent are regional and even local phenomena. Furthermore, interactive media production seems to have a highly domestic character. Thus, the reported business geography mirrors not only a concentration of firms in a small area, it also reflects a geographically located cluster of interdependent firms producing certain goods within a network. Yet, in this study firms themselves claim that closeness to other interactive media firms is of relatively little importance[13]. The mechanism thus seems to be that networks of interactive media producers grow up around large customer firms.

The fact that interactive media production is characterised by inter- and intra firm networks, does not necessarily mean that there are no hierarchies between various actors. An empirical determination of hierarchies and relative dependencies between firms would be difficult. One way would be to see relative differences in size (usually measured as annual turnover or number of employees) between related firms. Another way is to determine the percentage of turnover

[13] Perhaps they take them for granted – where the main customers are, there are also other interactive media firms. There might also be differences in this respect due to regional location, however. Firms in Gotland, for example, claim that closeness to other interactive media producing firms is of importance and firms there have managed to establish a network of interactive media producers despite a shortage of large customers in the area.

originating from a specific customer. However, this objective measurement neglects the fact that the strategic importance of the knowledge of some companies might be independent of size[14]. Furthermore, it pays little attention to the perceived dependence of companies on other actors, as well as their estimate of other actors dependence on them. In reality, subjectivist notions of dependence might be more important to understand the strategic choices of companies. In this study, respondents were asked what they thought would happen to their company if the most important company or companies they outsource production to would seize to collaborate with them. They were also asked what they thought would happen to the other company or companies if they stopped giving them assignments. The same questions were also asked where the actors had the opposite relation (i.e. when the respondent firm was the subcontractor and the other company or companies outsourced production to them). The results show that firms generally view themselves as more dependent when in the role of subcontractor than when they themselves have the role of outsourcing production to other firms. The overall picture, however is that firms view both themselves and the other firm as quite independent, and thus part of relatively "egalitarian" networks.

## Personnel

As previously stated, the majority of interactive media producing companies are small, although there are a few considerably larger firms active in the field. The mean number of employees is 16, and the median is five. Of these a mean of eight and median of three (i.e. 50-60 percent) employees focus on production of interactive media. To obtain a more precise picture of the kind of work performed by employees within interactive media production, we asked management to divide employees into three different groups according to their main tasks or functions. These were IT and programming, design and content production, and project management[15]. This division of field-specific tasks into three broad categories is, of course, quite general, but it enabled us to ask management about tasks, competence, salaries etc for different groups of employees[16]. The results are presented in figure 11 (see next page).

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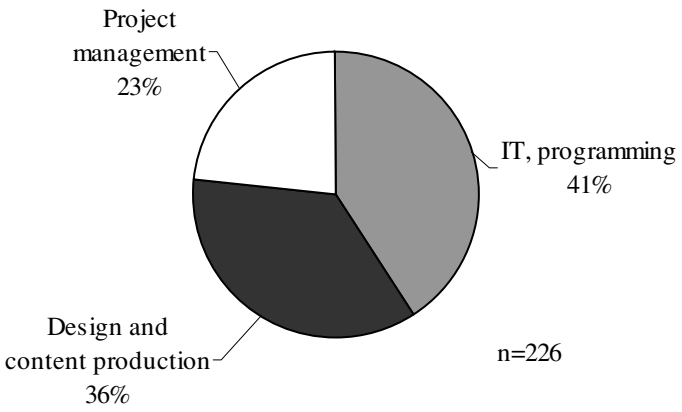
14 A small firm might have strategic competence of vital importance to a much larger customer firm, something that alters their relative inter-dependence.

15 Of course other functions are performed, like marketing, economic control and personnel management (perhaps to varying extent). These tasks, however, are not among the core activities specific to interactive media production, and in firms also producing other types of services, they may often be shared with the rest of the firm.

16 It would have been possible to ask the precise working title of employees. This is problematic though since working titles so far are not established in this sector and one would probably discover hundreds of titles. Furthermore, the correlation between a certain



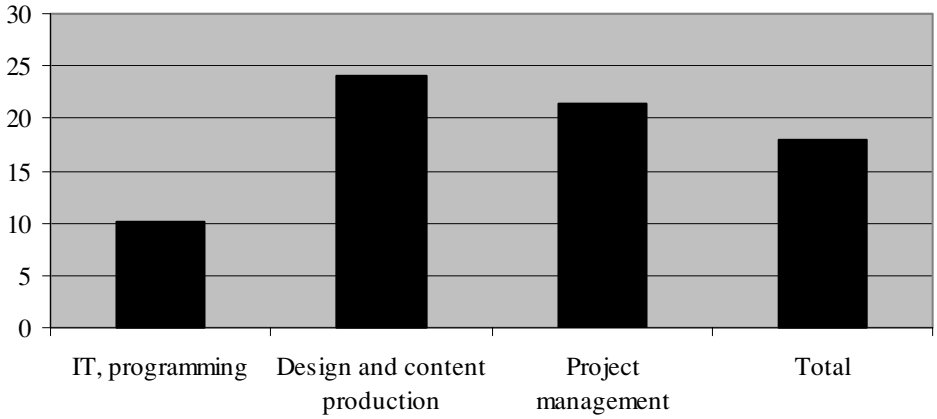

Source: MITIOR project, Arbetslivsinstututet/ NIWL, Dec. 2001.

**Figure 11**. Mean distribution of interactive media workers on specific working tasks within companies.

As shown in these figures, 41 percent of employees are involved in IT and programming, 36 in design and content-production and 23 percent are project managers. Important to note is that there is a large variation between companies, reflecting the overall focus of the firm. For example, firms concentrating on the technical aspects of interactive media production (measured by the activities within interactive media they most often are involved in) of course tend to have a larger percentage of employees working with IT and programming.

Respondents were also asked to estimate the number of female workers within each category (figure 12). The figures here indicate that female participation in interactive media production is mainly to be found within design and content production, where 24 percent of employees in the average firm are women. The overall figures are extremely low, however: the median percentage of female workers is zero in all three categories of workers.

title and what an employee actually does at work is low. Michel & Goertz (1999) and Leisink et al (2000) make the same classifications of functions into three groups.

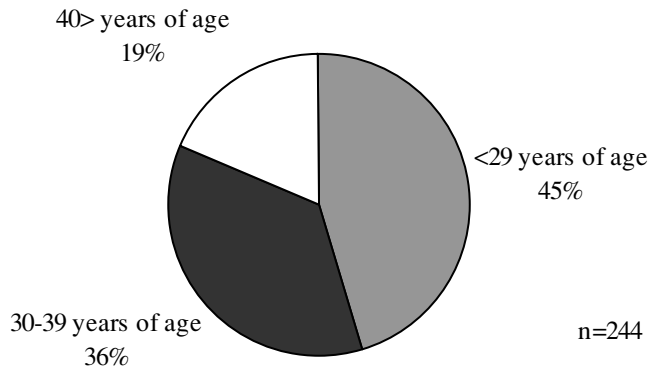



Source. MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001. n=238-41

**Figure 12**. Percentage of female participation in specific interactive media tasks.

There are a small number of firms, mostly very small ones, where women dominate in one or more of the categories. Overall, the proportion of female workers is the same independent of the size of interactive media production in each firm, and the size of the firm in total. Thus, the figures reported here are more or less identical to the proportion of female participants among all interactive media workers. Taken together, 18 percent of the interactive media producing workforce consists of women. The limited role of women in the production of interactive media is further highlighted by the fact that less than 14 percent of firms in the study have a woman as their highest-ranking director (mostly meaning the CEO). There is no correlation between the size of the company and the sex of the director.

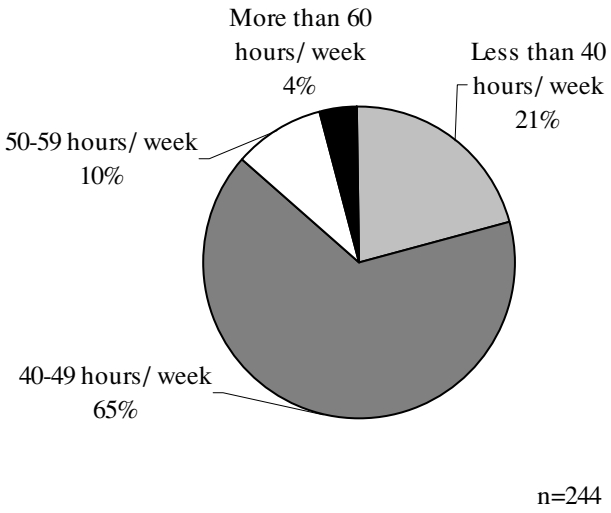
Except for being dominated by men, the IT-industry, of which interactive media is a part, is often thought of as consisting mainly of young people. Our findings support this picture, although far from all employees are in their twenties (figure 13). 45 percent of employees are below 29 years of age, 36 percent between 30 and 39 years old and roughly 19 percent above 40 years of age. Here, one should keep in mind that the time-span from 40 and onwards is larger than from 29 and down. That is, people in their 40s have a longer period of their (average) working life left than people below 29 work life have experience so far. This is especially clear when looking at the average education levels of employees within the firms in this study. Given the fact that more than 40 percent of employees have at least three years of university studies, and another 37 percent have some other kind of post secondary school education (see more below), a large proportion of the workforce has very limited work life experience.




Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001

**Figure 13**. Age distribution of employees focused on interactive media production. Mean values.

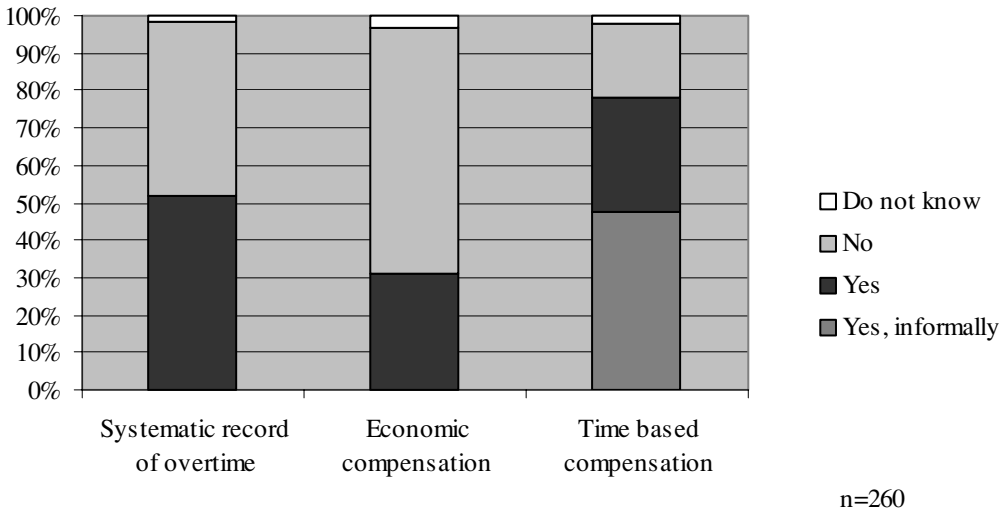
Long working days without compensation for overtime and a blurring of the borders between work and leisure is another characteristic of the image of work in interactive media production. When asking managers how many hours a week full-time permanent employees work in practice (rather than what is said in the employment contract), the following distribution occurs (figure 14). Within average firms, 21 percent of interactive media employees work less than 40 hours a week. The majority, 65 percent, work between 40 and 49 hours a week. Ten percent work between 50-59 hours a week and four percent work more than 60 hours a week. Thus, 80 percent of permanent employees work 40 hours or more a week, and at least 14 percent of employees within an average firm work a minimum of ten hours overtime every week. Since the reported figures are mean values within firms and the variation is extensive, it would be interesting to see whether there are certain groups of employees working more overtime than others. Such figures will be available from our forthcoming survey directed to individual interactive media workers.




Source. MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001

**Figure 14**. Average real working time of permanent full time employees focused on interactive media production.

When interpreting figures reported here, and elsewhere in this report, it should be remembered that it is the managers, not the employees themselves, who have completed the questionnaire. It is quite plausible that managers do not have the full overview of working hours of their employees. This is especially the case when it comes to work carried out outside the office (home-working, tele-work, work on customer premises etc). Given the insecurity in measuring actual working hours, and the levels of overtime reported among these firms, the systems for overtime compensation are of special interest. According to our results, 52 percent of firms keep systematic records of overtime among their employees. Thus, roughly half of companies lack complete information about the amount of overtime their employees work. With this in mind, there is little wonder that only 31 percent of firms give economic compensation for overtime. A total of 78 percent of firms compensate overtime in free time. In 48 percent of the companies it is up to employees to handle overtime compensation themselves informally (see figure 15).

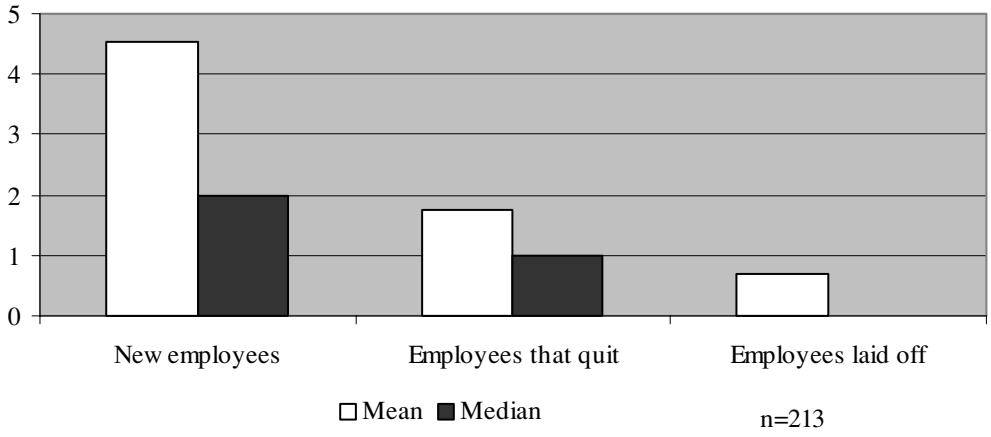



Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001.

**Figure 15**. Occurrence of systematic records of overtime, economic and time-based compensation.

The overall picture is that overtime is common within interactive media production, but that it is often not monitored. Economic compensation for overtime is not the rule, and it is generally up to employees themselves to balance their working time informally by taking time off.

The results in this study do not fully support recent newspaper reports of major layoffs and bankruptcies, or the longstanding concerns about high labour turnover within the IT-industry. However, the figures presented here are from late spring and summer 2001, and there are signs that layoffs may have accelerated during late summer and autumn. Still, most firms had grown during the twelve months prior to completing the questionnaire. The mean number of newly hired employees during these twelve months was 4.5. The number of permanent employees quitting during the same period was roughly 1.7, and of those only 0.7 was reportedly laid off. Due to uneven development within the industry and the ongoing intensive process of consolidation, mergers and closures, companies display large differences. For example, ten percent of the firms in the study account for roughly half of all newly hired employees during the last year. Figures are more evenly spread among firms concerning employees who quit or were laid off. The median number of newly hired is two, the number who has quit one and of those laid off zero (see figure 16).




Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001.

**Figure 16**. Labour turnover. Newly hired, employees who quit, and those laid off. Mean and median.

The numbers presented here, regarding the Internet-industry, clearly show the importance of paying attention to differences *within* sectors and industries. Although affected by the crisis in e-business, especially for the consumer market, the so called dotcom crisis, firms focussing on the development and production of interactive media are partially protected since they have a broader customer base. Not only do they develop also other types of e-business solutions (i.e. business-to-business, B2B), but also communication, co-ordination and logistics systems for major companies in all parts of the economy. Thus, rather than being part of the consumer e-business failure, they are mainly affected by general trends in the economy and in major customer companies' purchasing and outsourcing of ICT-based business solutions and of advertising and marketing. In 2001 failures and bankruptcies have accelerated in the IT-sector, but the level is now not higher than in e.g. retailing and lower than in publishing (www.uc.se).

The dotcom and customer e-business failures and dramatic bankruptcies is only part of the truth about consolidation and shake out in this new sector. Many interactive media producers, although struck by the general recession, continue at roughly the same level, as they work with key business ICT and Internet based processes. Even e-commerce flourishes but as part of traditional retailer and producer firms, rather than in new specialised e-commerce firms, or dotcoms. And, very crucially, several interactive media producers who 'disappeared' have in fact been bought by major 'old economy' corporations, and moved in-house. One example is ABB in Västerås who took over the local branch of Framfab, one of the major Internet consultants. Other traditional companies develop their own interactive media operations in-house (we are currently studying those activities). In a new field like interactive media development, the status as a specialised interactive media firm or as an in-house activity, and the movement between the

two, will be an essential factor in our investigations. The creation and destruction of sectors within industry are important aspects in a longitudinal study of development, as well as the division of labour within and between firms and of economies (Augustsson 2001).

## Competence and Recruitment

Competence levels and continuous competence development are of vital importance for the survival of firms as well as for individual workers' employability. In a wider context, the managing of competence and fostering of development is necessary if Sweden is to keep its position as an important and competent competitor on the international market for interactive media production. This is especially important in a sector such as interactive media where the technical development is rapid and innovations recurrent.

Here, we have tried to draw a comparative picture of the importance of, and different sources of specific competence for various groups of workers directly involved in interactive media production. Competence concerned is: deep knowledge within the own area of specialisation, broad knowledge of the whole process of interactive media production, social competence and network skills, and initiative. They are presented rather broadly in order to enable comparisons.

Since interactive media production is a relatively new industry, formal educational programmes directed specifically at aspects of interactive media work have existed only for a few years. Thus, many interactive media workers have not attended specialised interactive media courses, either at the university or elsewhere (cf. Augustsson & Sandberg, forthcoming). In this situation it is interesting to find out what competence sources managers view as most important for the different groups of employees in interactive media. Respondents were asked to rank the relative importance of four different sources: Formal education (secondary school, university etc.); experience from other companies (including training there); education paid by the current employer (e.g. courses); and personal learning at the current company and workplace (including practical experience and guidance). All sources were ranked from 'of crucial importance' to 'less important'.

### Project Managers

Initiative, social competence and networking skills are seen as the most important skills for project managers. Results are not surprising, given that these are skills traditionally required from managers. Knowledge of personal areas of expertise, or the interactive media process as a whole is, however, not as important. When asked about important skills other than those listed in the questionnaire, economic and business skills where mentioned (half of respondents marking

other skills than those listed mentioned this in similar words). The most important sources for the skills of project managers are personal learning and training, followed by experience. This supports the assumption that various aspects of leadership and knowledge of 'how to get the job done' are the most important skills for project managers.

### Design and Content Production

The most important skills for workers focussed on design and content production is in-depth knowledge of their own field. However, initiative is also seen as an important skill. This indicates that creative personnel are not only expected to deliver on demand, but actually take an active part in the planning of the production and direct the development of the content in interactive media solutions. Individual learning, followed by experience from the current employer is seen as important sources of competence. This reflects the image of content production as being a somewhat artistic activity dependent on the creativity of individual workers, and their ability to experiment with different techniques. It is also a result of the fact that there are few formal educational programmes focussing on digital and interactive design as well as content production.

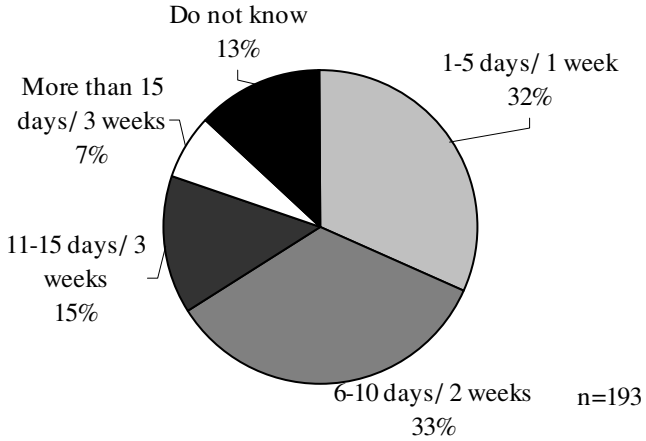
### IT and Programming

Workers focussed on IT and programming are quite naturally expected to centre on their area of expertise, programming and other technical aspects of making the interactive media solution operate as intended. However, the ability to take initiative is not seen as quite as important for this group as for workers focussed on design and content production. This might reflect the previously described focus on the design and content aspects (rather than IT and technology) among most firms in the study. However, the division between technical workers and content designers should not be overestimated. Most staff, especially in smaller companies, have at least some competence in both areas. Designers may for instance specialise in programmes like Flash.

Just as for the other groups, personal learning and experiences retrieved from the current company are the most important sources of relevant skills within interactive media production. The overall picture is that formal education is the least important factor for all three groups of employees, followed by training paid by the current employer. Although the mean age of employees is low, general levels of formal education high, and their knowledge thus rather recent, it is practical working experience, not formal education, that is seen as more important for employees' competence. The situation is further highlighted by respondents' view that, on average, 75 percent of learning takes place at work, and only 25 percent off work. One explanation has already been mentioned: the small number of available courses, both in formal and further education, focusing

on interactive media production. Other possible factors could be that existing courses are of bad quality, that the types of skills necessary for working with interactive media are difficult to teach without practical engagement in production, and that technology developments are fast, rapidly making knowledge obsolete. Although courses for interactive media workers given by private training companies are often expensive, managers tend to view them as a rather small source of their employees' competence within interactive media production. There might be a need for new forms of formal interactive media education, both in public and private training and education organisations – possibly in close relation to real work and development processes.

Results indicate that individual practical working experience is the main source of both current skills and further competence development. Of crucial importance to firms as well as to individual employees is the amount of time and resources devoted to competence development, and how it is organised at the company level. Our findings show that 72 percent of companies offer their employees a specified amount of time, intended for annual competence development. Only 14 percent of firms give equal time to all employees in interactive media production, and 58 percent of them decide the amount of resources based on individual competence plans. The amount of time given to employees differs between companies, although roughly two thirds (66 percent) get between one and ten days, which is less than five percent of total working time, or two hours a week[17] (see figure 17).

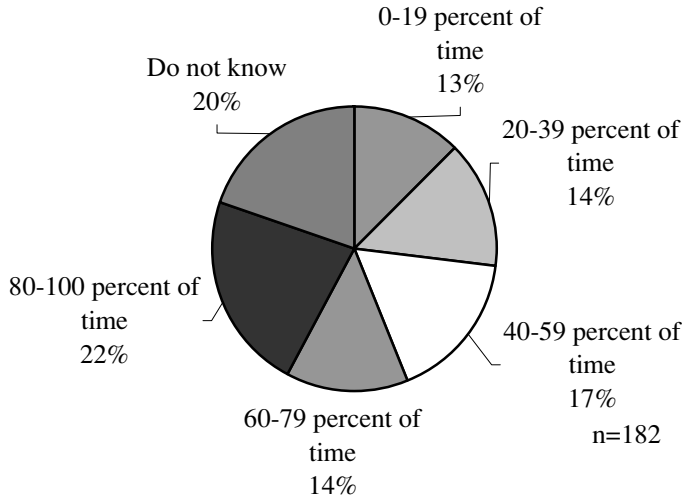



Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001.

**Figure 17**. Annual time designated for competence development.

17 Calculation is based on all employees having ten days, working 47 weeks a year and 40 hours a week. This is a (deliberate) over estimate, a more accurate estimate would probably be one hour a week.

The figures above, however, show only the amount of time employees are offered, not the time actually spent on competence development. To get a picture of this, respondents were asked to estimate the proportion of employees actually using the full time offered during the year 2000. The results, presented in figure 34, are quite striking. In 43 percent of the firms in the study less than 60 percent of employees used the possibility for competence development maximally, and only in 22.5 percent of firms, at least 80 percent of employees used all the time they were entitled to[18]. Another interesting finding is that managers seem to have little knowledge of the extent to which their employees actually use the time given to them for competence development: one fifth of respondents answer that they do not know. Keeping in mind the size of the average firm, which makes it possible for managers to have close contact with most employees on a regular basis, this is somewhat surprising.



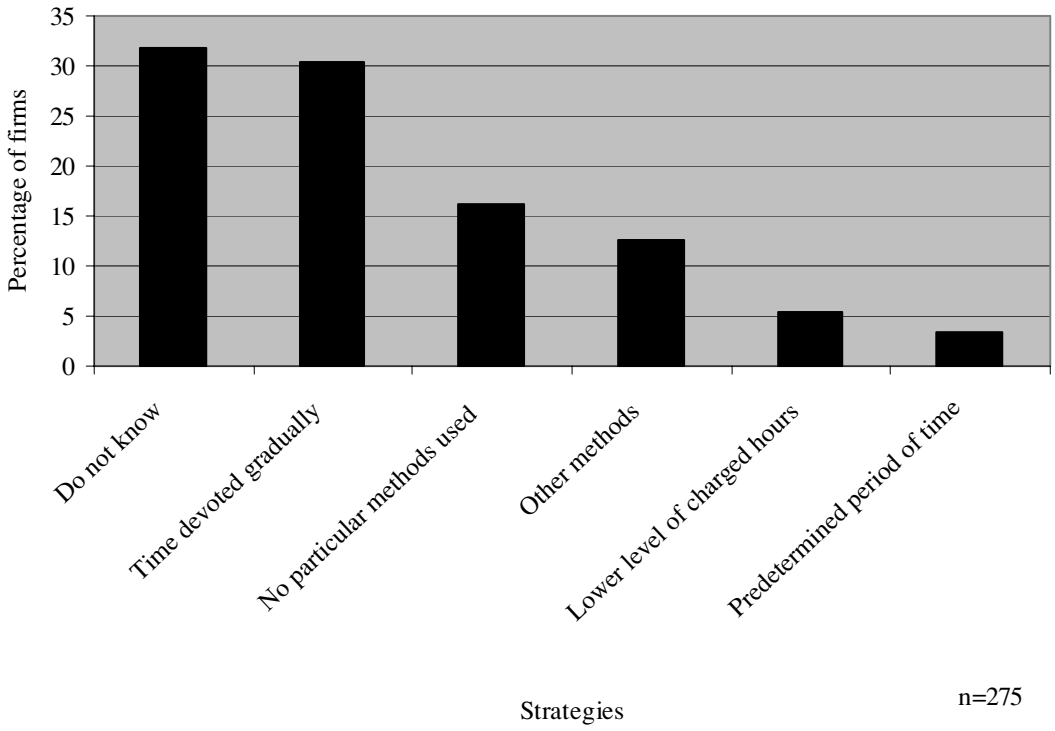

Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001.

**Figure 18**. Proportion of employees using the full time offered for competence development.

Based on the above findings, it is important to find out how competence development is actually organised in interactive media producing companies. When asked how firms ensure that employees get sufficient time for competence development, the answers reveal that competence development is mostly an ad hoc or unorganised activity within firms producing interactive media (figure 19). Less than ten percent of firms have specified time arrangements for competence development, or have set limits to time charged of customers lower than total working hours. 30 percent of firms use ad hoc planning of competence

[18] There is a low but significant positive correlation between the time offered and the time actually spent, indicating that in firms were employees are offered more competence development, the proportion of workers who actually spend the time is higher. The figures are low, however, and should be used with caution.

development, meaning that time is taken when perceived to be needed. This figure is actually higher since a large proportion of those who claim to use other methods to secure time for competence development say that time is taken when a project or customer demands a certain kind of skill. The other main answer given by those who use other means of securing time is: dialogues on education, competence, development or planning. This, however, is not a means of securing the necessary time. It is essentially a way of checking current skill levels and needs for competence development for individual workers. A further indication that competence development may have low priority among interactive media firms is the fact that 16 percent claim to use no specific method at all, and 32 percent – nearly one third – of respondents do not know how competence development is organised within the company.



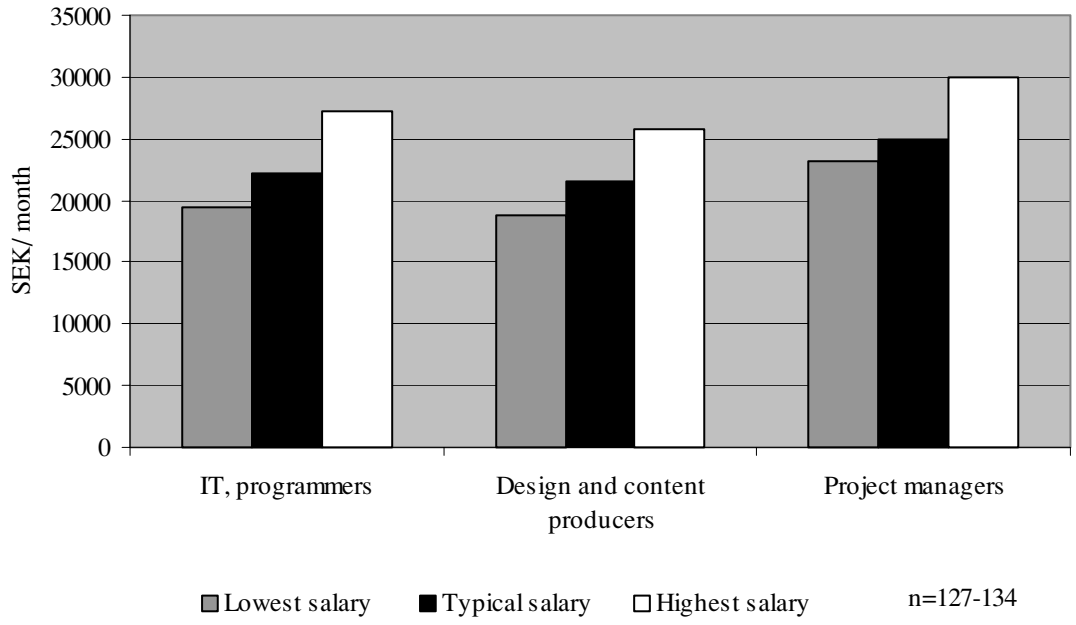

Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001

**Figure 19**. Strategies to secure necessary time for competence development among employees.

The overall picture is that in spite of the quick transformation of this sector and the rapid technological development many firms lack a consistent strategy to secure time for competence development, hence safeguarding the knowledge capital of the firm and the employability of all workers.

## Organisation and Reward Systems

The issue of salaries, options and other systems of reward and economic compensation have been greatly debated in relation to interactive media and the IT sector as a whole. This is partially due to a commonly held belief that workers in this sector have received extraordinarily high salaries as well as very beneficial stock option programmes. A reason for the persistence of this belief is probably that there are few reliable figures on actual levels of salaries in this sector. This is partially due to the low coverage of collective agreements (see more below). In most cases salaries are probably based on individual negotiations between employees and employer (and the result not always known to other employees within the firm). An indicator that salaries are still a rather sensitive question among interactive media producing firms is that this particular question in the survey had the highest level of non-respondents. Roughly half of companies to whom this question was posed either claimed not to know or refused to answer. As a result, the figures presented in table 36 are based only on between 127 and 134 companies (representing aggregates of roughly 1,080 employees focussed on interactive media production). Yet there are, to our knowledge, no results specifically focused on this sector based on a more substantial empirical material.

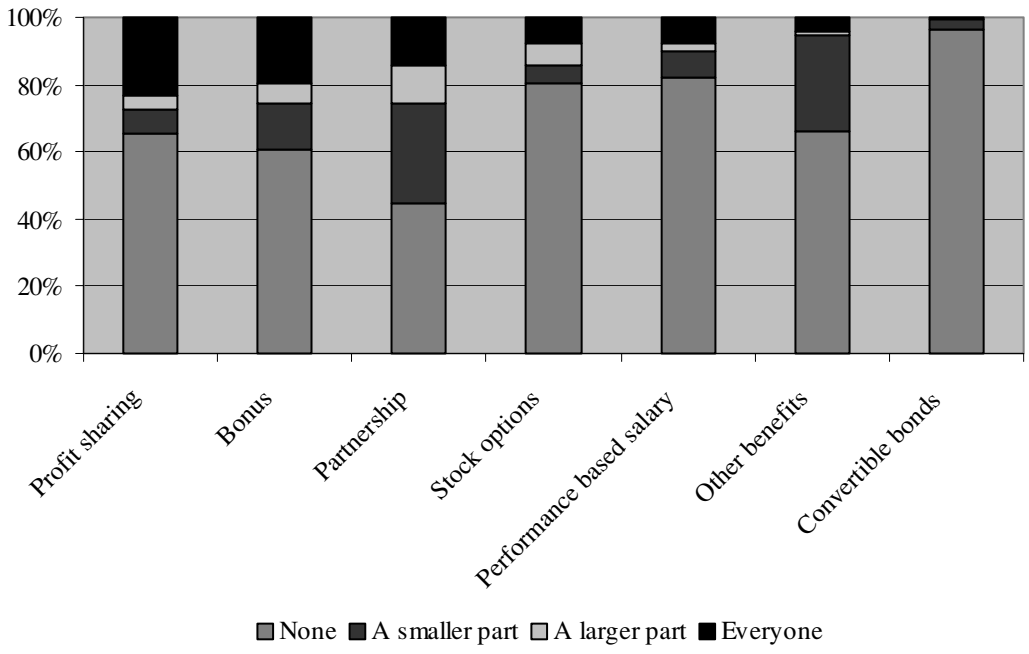



Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001.

**Figure 20**. Lowest, highest and typical monthly salaries (before tax) for specific groups of employees.

Average monthly salaries for different groups of interactive media workers range from 21,550 SEK for design and content-workers to 24,900 SEK for project managers, with IT and programmers in the middle with 22,200 SEK. As demonstrated in this figure, the span between the lowest and highest mean monthly salaries for IT and programmers is roughly 7,800 SEK, for design and content workers 7,000 SEK and for project managers 6,800 SEK. The total span within the study as a whole is, however, much greater, with the lowest salary found for programmers being 8,000 SEK and the highest 70,000 SEK, for design and content workers 7,000 SEK through to 50,000 SEK, and for project managers from 7,000 SEK to 85,000 SEK. The wage gap within single companies is considerably lower, though.

There are, however, several forms of economic compensation, reward-systems and fringe benefits other than wages. The most talked about in relation to interactive media firms and other parts of the IT-sector are no doubt stock options. A common view seems to be that nearly all employees have holdings and that these holdings have been a guaranteed road to fortune. This survey tries to draw a detailed picture of a number of different forms of reward systems and the proportion of employees to whom they are offered (figure 21).




Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001.

**Figure 21**. Reward systems in use, and the proportion of employees to whom they are offered.

As demonstrated, convertible bonds are the least common form of economic compensation, being virtually non-existent in firms focussed on interactive media. Other systems less frequently used are performance-related wages and stock options. In 80 percent of firms no employees have stock options. The occurrence of option systems is correlated to the size of firms measured both as number of employees and turnover. This is not surprising since stock options are only relevant for firms whose stocks are publicly traded, those firms being a minority of firms producing interactive media. Interesting to note is that there seems to be a positive correlation between strictly economic reward systems based on the performance of the firm: firms offering performance-related wages are quite often the same as those who use bonus systems and profit-sharing. Profit sharing and option programmes are further positively correlated with average wage levels within firms.

The most common reward-system is partnership or co-ownership. In roughly 25 percent of firms all or a majority of employees are partners or co-owners. This finding is not too surprising, given that the majority of firms producing interactive media are small and quite similar to advertising bureaux and consulting companies. There is (naturally) also a negative correlation between firm size and the proportion of employees that are partners and co-owners, that is, a larger proportion of employees are co-owners in small firms. The overall picture, however is that reward-systems are less frequent than is sometimes assumed.

Firms focussing on interactive media production are often characterised as ‘flat’ organisations, with few hierarchical levels between the lowest and highest position within the company. Our results indicate that the mean number of managerial levels is 1.77. In reality, this means that the absolute majority of firms (81 percent) have only one or two managerial levels, i.e. top management and sometimes one more level (probably project managers or the equivalent). Thus, organisation within these companies is generally flat, with a minimum of middle management levels. The results are partially explained by the relative size of companies: there is a natural limit to the number of hierarchical levels when the mean number of employees is 16 (and the median only eight). Still, the number of managerial levels within firms does not increase proportionally to the number of employees, which is shown by the fact that no company has more than four managerial levels, regardless of size.

Another important aspect of organisational structure is the methods employers use to ensure the realisation of the goals of the firm (in this case producing interactive media solutions for external customers). One division of the methods for directing and controlling the activities of the firm is into quantitative and qualitative methods. By the former is meant results-measuring, controls and follow-ups based on quantitative measures such as productivity figures, business ratios, etc., sometimes aided by or incorporated into the general information

structure of the organisation. Qualitative methods to secure the realisation of the goals of the firm include dialogues, ideas, visions and consultative meetings with employees. Our results indicate that, according to managers, qualitative methods are more frequently used than quantitative ones.

## Work Environment and Agreements

The novelty of the IT-industry and the workplaces of the 'new economy' have caused some worries regarding the working environment of employees. Concern has been voiced about how the lack of formal structures, of a clear separation between work and free time and of institutionalised labour agreements equivalent to working life in general, may affect the physical and psycho-social well-being of employees. These concerns are based on notions of the increased flexibility resulting from (among other things) the implementation of new forms of work and management, and of ICT in working life, which is thought to hamper individual employees control of their working situation. The negative effects of this can be stress, increased absence due to psychological factors, and, in the worst case, burnout. Most of these issues are better dealt with in surveys directed to individual employees, as it is practically impossible for managers to correctly determine the health status (especially concerning psycho-social aspects) of their employees. We have therefore decided to study these aspects in our forthcoming survey directed to individuals. However, the present survey studies some of the organisational and institutional determinants for the work environment and the individual employee's working situation.

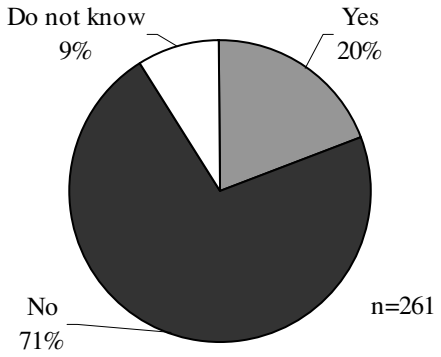
An image of the overall work environment is obtainable from the sick leave rates. Respondents were given the option of answering either as mean number of days per year and employee, or as a percentage of scheduled working time. The results where 3.5 days per year and employee, and 2.1 percent of working time respectively[19]. Noteworthy is that 24 percent, or nearly one in four managers, claim not to know the average level of absenteeism in the company. One reason might be the relative size of companies: it might be common for shorter periods of sick leave to be handled informally in this type of small companies. Another plausible explanation is that employees themselves do not report being sick. Instead, they might informally balance hours by working extra other days, or use their 'account' of accumulated overtime.

In sum, this indicates that formal ways of handling sick leave, as well as overtime, may be underdeveloped. Instead, various forms of informal strategies are used to balance the amount of hours worked over a period of time. Another indicator of the lack of formal work health strategies is that only 26 percent of

19 Respondents reported somewhat higher average figures when answering in percentage of working time, than when answering in number of days.

firms are connected to the Swedish company health care system. Among connected firms, 95 percent of agreements cover health controls and treatment only, and 61 percent also include advice on work environment and working situations. Twelve percent of respondents do not know what aspects the agreements covered. Our study did not include questions on alternative arrangements for health care, such as free or discount membership at gyms or workout, massage, spa etc, so to what extent these arrangements exist is presently unknown.

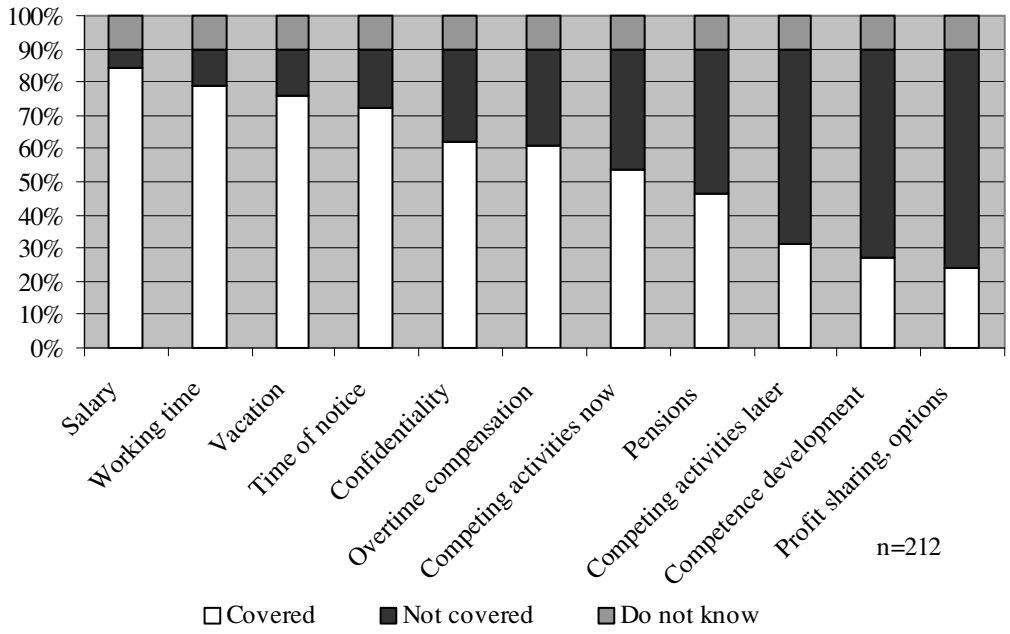
One aspect of the presumed flexibility of the IT-industry and the new economy has been fluidity in terms of work and employment contracts. The results from the survey indicate that in 78 percent of companies, all employees have written employment contracts. In another eight percent of firms, some employees have written contracts, and in 13 percent of firms no employees possess written contracts. A partial explanation for the lack of written contracts in these 13 percent, is that all employees are joint owners of the firm. Collective agreements for employees focussed on interactive media production, however, exist only in a minority of firms (see figure 22).




Source. MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001.

**Figure 22**. Existence of collective agreements for employees focussed on interactive media production among.

Roughly one fifth of firms have collective agreements covering their employees working with interactive media, while 71 percent lack such agreements. Interesting to note, once again, is that nine percent of managers do not know whether their employees are covered by collective agreements or not. This reflects the common picture of interactive media producing firms as having limited knowledge in the area of labour law. Still, a low proportion of collective agreements does not automatically mean the absence of detailed employment agreements in firms where employees are not covered by collective agreements.




Source: MITIOR project, Arbetslivsinstitutet/ NIWL, Dec. 2001.

**Figure 23**. Detailed specification of the contents of companies' employment contracts.

Roughly 50 percent of firms that are not covered by collective agreements use a standardised agreement for all their employees, and another 36 percent use varying individual agreements[20]. For a detailed picture of the scope of these employment contracts, respondents were asked to specify whether or not eleven various elements were or were not included in the contract. The results, presented in figure 23, indicate that the most common areas covered are (in descending order) salaries, weekly working time, and vacation, all specified in the employment contracts of at least 75 percent of firms that do not have collective agreements. The least commonly specified factors in employment contracts are profit-sharing and options, competence development, and limitations of the right to engage in competing activities after the end of employment within the firm. A reason for the low figures reported is that ten percent of respondents claim not to know the contents of the employment contracts used within the firm. Given that respondents are managers, and the employment contracts have been developed within the firm (sometimes with collective agreements as a basis), this is quite remarkable. When the 'do not know' category is excluded, the percentages of firms that include various factors in their employment contracts rises with between eight and ten percent.

20 The rest is divided equally between respondents who do not know what sort of agreement they use (seven percent), and those who use other sorts of agreements than those listed (seven percent), mostly meaning all workers are co-owners.

## The Design of the Study

### Questionnaire Design

The questionnaire used in this survey is based on the 1997 study (Sandberg 1998). However, it has been thoroughly modified, extended and improved. Certain improvements are based on experiences from the last survey, such as what sort of questions to ask to get meaningful answers. Little was known about interactive media production in 1997, and the pioneering survey was partly exploratory. The aim was to obtain a first picture of the industry. Some changes in the questionnaire consist of bringing the questions up-to-date with regard to the technical developments that has taken place. Other questions have been adapted from questionnaires used by colleagues investigating interactive media in other countries (Michels & Goertz 1999, Leisink et al 2000, Batt et al 2001) and by Swedish colleagues investigating work organisation more generally[21]. Draft versions of this second survey were tested for comprehensibility and relevance. As a result, the present study focuses on seven areas: Companies, activities and markets; possibilities for business development; co-operations and networks; personnel; competence and recruitment; organisation and reward-systems; work environment and agreements. A wide selection of actors interested in interactive media production saw all these areas as important.

### Sampling

'Interactive media production' is not recognised as an industrial classification in the official trade and industry statistics (the SNI-codes used by Statistics Sweden, SCB). Instead, firms focussing on interactive media are found in a number of different branches of trade, concentrated to advertising and PR, IT-consulting, computing, software production and graphics production. Thus, it is not possible to draw samples from existing databases[22]. We have as a result been dependent, just as for the 1997 survey, on a number of different sources to find and identify the companies we wanted to study.

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21 The Flex II study conducted by NUTEK, NIWL and Statistics Sweden (SCB) and the so called APU 2000 study conducted by SOFI at Stockholm University.

22 It would of course have been possible to incorporate all Swedish firms in the sample, or alternatively a sample of firms in the categories mentioned above. Such a research strategy might have given us an overview of the spread of interactive media production in the whole (or part of) the economy. We concluded that this strategy would not have been satisfactory since interactive media producing firms are in a minority within each category and interactive media production usually makes up but a small proportion of each company's activities. In retrospect, the strategy used here was preferable, given that we did not know where the firms we wanted to study would be placed. Our strategy is to supplement this survey of the core interactive media producers with a broad survey of in-house interactive media production in the Swedish economy as a whole.

The sampling frame for the study was a database consisting of roughly 1,550 firms, which is about twice as many as in the 1997 survey. Just as then, Promise's list of members and other firms in the industry made up the first basis. Promise is a trade organisation within Sinf, The Swedish Industry Association (Svensk industriförening). Promise is a non-profit organisation aiming to organise interactive media producers. The list provided by them was controlled against the definition above of interactive media used in this study by looking at the companies' web-sites (see chapter on interactive media producers).

The list from Promise was complemented by a systematic examination of a number of other on- and off-line sources: BitoS, Clockwork, Dataföreningen Sverige, Emfas företagskatalog, fetform, fuska.nu, Grafiska företagens förbund, Gula sidorna, Impact00, info Magasin, Interactive Island, Internetboken, Internetkatalogen, Mid Sweden Info Center, Multimediaakademien i Lund, Resumé Mediebyrå Special, Spray, Svenska IT-företagens Organisation, Swedish Game Industry, Vindue, Vision Branschbibel and Wipcore Partners. Some larger databases use a categorisation of inherent firms depending on activity. In these cases, all relevant categories were investigated. Beyond this, firms that we came into contact with through job-ads, newspaper articles, links on web-sites, etc. were also included. The review of different lists and the creation of a suitable database proceeded gradually between the autumn of 1999 and the spring of 2001. A final control and update of the database was made in April 2001, just before the data collection phase started.

The aim of this study has been the total investigation of Swedish firms focussing on interactive media production for external customers in 2001. Despite an extensive search, it is likely that some firms have not been included in the database, especially small local actors. Furthermore, the interactive media industry has been characterised by high dynamics since its start, a feature that was accelerated during the second half of 2000 and first half of 2001 (the so called 'dotcom-death')[23]. As a result, some information in the database has become inaccurate during the process of finding and classifying firms. Some firms have closed down, others have moved, changed name, merged, been bought by other firms or changed focus of business. Since the search for new firms ended around the turn of the year 2000/2001 (four months before the data collection started), it is possible that some firms starting up in that period have been left out. However, given the fact that the industry was characterised more by consolidation and closure than new business start-ups in the spring of 2001, this should be a rather insignificant source of bias (see further below).

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23 The dotcom-death, which received so much attention in the media, was mostly of concern to the companies *using* Internet for sales or education (e-commerce and e-learning), not for firms *producing* interactive media. Still, interactive media producing firms did not go unharmed.

## Labelling and Industrial Dynamics

The initial database consisted of all firms who, by themselves or by others, at some point have been classified or presented as interactive media producers. The exact number of firms investigated is not possible to determine since many companies were listed on several lists, and sometimes under different names. An estimate would be that over 5,000 presumed interactive media producers were investigated. There were two reasons not to make a simple random sampling directly from this list. First, as discussed previously, interactive media is not an agreed upon definition with a clear-cut meaning. There is a number of different labels used to describe the activities these firms perform: 'multimedia', 'digital media', 'new media', 'web-production', 'Internet consultants' etc[24]. The basis for inclusion of firms also differs between databases. Some include only those who produce for the Internet, some include all firms that in one way or another work with digital content, yet others include those who use the Internet as a channel for activity (such as e-business and e-learning firms). Some firms have wanted to present themselves as interactive media producers though not being so, since it has given them status and increased shareholder value[25]. In conclusion, this means that the possibility that all firms in the initial database would really correspond to the definition used is low (i.e. the correlation between the sampling frame and the population would not be perfect).

Secondly, as previously mentioned, the industry is characterised by high dynamics. Thus, it was likely that of the roughly 5,000 companies included in the initial list, a large number would not exist at the time of data collection. The fact that a company is not active does not necessarily mean that it has gone bankrupt. It simply means that it presently is not producing interactive media in the legal form it had when the data collection process started in May 2001. Four criteria have been used to identify an inactive firm. First, if firms themselves state that they are not active. Second: if the company has closed down according to official records. Third, if the firm has been bought up by, or merged with, another company and is no longer present as an independent legal person[26]. Fourth, if the

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24 Among the terms used are: Web designers, web bureaux, web producers, web developers, web design and HTML, Electronic commerce, web-promotion, packet solutions and budget web-pages, full-service bureaux, free-lancers, digital media producers, producing digital-printers, design bureaux, production bureaux, web and multimedia bureaux, PR/ info bureaux, multimedia producers, IT-consultants, e-business producers, new media producers, game developers, CD-ROM producers, Internet, intranets, and media bureaux.

25 This willingness to label oneself as interactive media producer has clearly decreased. Now, the situation is rather the opposite: some firms that we would consider as producing interactive media or Internet solutions do not want to be labelled as such due to the current crisis within this sector.

26 This criterion might seem odd, but is necessary in surveys where the unit of analysis are organisations rather than individuals. The case otherwise becomes illogic when two firms in the sample merge, since that reduces the sampling frame. The alternative is to count one of

company has not had any documented turnover since 1999[27]. In sum, a firm can still exist in legal terms, but not be considered to be active, when no business activity is performed.

A two-stage strategy was used to check for these possible errors, that is, the inclusion of companies not belonging to the industry, and or not being active at the time of data collection. In the first stage each possible company was controlled against their own web site. Except controlling for the above, this procedure enabled the updating of necessary contact information (address, telephone number, e-mail, etc.). Companies whose web sites did not offer the information sought were contacted by e-mail (and in a few cases by phone)[28]. 1,563 companies who were believed to be active, interactive media producers were left after step one of the strategy had been completed. Doubtful cases were kept in the database for further investigation, since the aim was to perform a total examination of interactive media producers in Sweden. The second step in minimising possible sampling errors was integrated in the actual questionnaire sent out (as well as in phone interviews). The first item asked whether respondents regarded the company as corresponding to our definition, which was included in the questionnaire. Thus, the definition of interactive media used in the study was constructed by the researchers, in co-operation with actors in the industry, and the researchers then made the first rough screening. It has been up to the companies themselves in the survey to finally identify themselves as interactive media producers.

**Data Collection**

The actual data collection was performed between May and September of 2001, with the major part being done during the first half of the period. The practical work was initially done by Jobfinder Student, a research company, and later by the MITIOR project at the Arbetslivsinstitutet/ NIWL. Based on the experiences from the 1997 survey (where half of those who responded to the survey did so by phone after several rounds of search on postal and mail questionnaires), it was decided to use a combination of phone interviews and mail-questionnaires from the start. All 1,563 firms listed where sought by telephone and an interview booked when appropriate. In connection with the first phone-call, interviewers investigated whether the company corresponded to the definition given, if they

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the two firms as a non-respondent (which brings with it the problem of who to count), or count answers twice.

27 Since some firms use a broken financial year (from July to June), all firms had not presented their annual report for 2000 when non-respondents where investigated in October 2001. Therefore, the limit was set in 1999. It is possible, however, that some firms had no turnover in 1999, but started again in 2001.

28 All Swedish firms do not have their own web sites. But there are good reasons to believe that interactive media producers will have, since this is one of their core business activities.

were active, and if the contact information in the database was correct. A questionnaire was sent out to contacted respondents before the time of the actual interview, enabling them to prepare in advance. The strategy was later changed; questionnaires were sent directly and phone contact established later on to remind and urge companies to respond by mail. Both interviews and mail questionnaires were coded directly into Excel using a computer interface that was identical to the mail questionnaire, thus making it possible for interviewers and respondents to see the same thing in front of them at all times.

Unfortunately, Jobfinder Student shut down their operations halfway through the process of data collection. The work was then taken over by members of the MITIOR project at the NIWL. The two following reminders (both containing a new copy of the questionnaire, a pre-paid envelope and a form that gave respondents the possibility to answer that they where not active, did not belong to the industry, or refused to answer the questionnaire) were sent out by mail. The fact that Jobfinder Student was liquidated during the data collection phase probably led to a somewhat lower response rate than would have otherwise been the case, as replacing Jobfinder Student with other external resources was not an option, and the MITIOR project had to use its own personnel. The turbulence also led to reminders being delayed and some of the companies temporarily suffering an unclear status in the database. There are, however, no signs that the shift from telephone interviews to mail questionnaires, and from Jobfinder to NIWL, resulted in any systematic bias concerning how firms answered.

**Results and Response Rate**

421 of the 1,563 companies in the database proved not to be active. 244 identified themselves, or, in fewer cases where classified by us, as not being interactive media producers. twelve companies in the list were double entries in some form (some were listed twice under different names, in other cases one company in a business group answered for several inherent firms). 284 companies identified themselves as interactive media producers, but denied participation for different reasons[29]. 253 firms have not answered either phone-calls or replied to letters, and have not yet been possible to classify afterwards. 348 companies responded to the survey in its total, either by phone or mail. In conclusion, 84 percent of the companies in the database have been classified and given a status during the period of data collection. 65 percent responded to the survey, either by filling out the whole questionnaire or only the first few questions, stating that they were not part of the interactive media industry (by not being active or not producing interactive media). 40 percent of the companies belonging to the industry filled

[29] Among the most common reasons given for denying to answer the survey were (in no particular order): shortage of time, length of questionnaire, lack of interest and too many surveys in circulation.

out the whole questionnaire and make up the basis for the results presented in the study.

The accuracy of classification is clearly important with regards to response rates and attempts to measure aggregate figures regarding interactive media production is Sweden. If a company, for example, has been classified as not producing interactive media, but in reality does, this will affect response rates, as well as estimates of the total amount of firms, turnover and staff in Sweden. This has been systematically checked using a selection of methods. The design of the questionnaire makes it more or less impossible for firms who do not produce interactive media to be included in the results. Firms claiming not to be interactive media firms, or not active, have been checked against databases and web-sites (and in a few cases via phone). The same procedure has been done with those firms that have not responded in any way, as well as those firms who denied participation in the study. We are thereby quite sure that firms that explicitly denied to participate in the survey were actually interactive media producers but for some reason chose not to answer, since they could just as easily stated that there company did not belong to the industry or was not existent, and have been double checked against our definition.

### Analysis of non-respondents

As previously mentioned, all firms in our sampling frame that did not complete the whole questionnaire have been checked against regularly updated on-line databases[30]. Some of these databases include basic data about companies, such as geographical location, number of employees, starting year, annual turnover, main business activity etc. This made it possible to determine the absence of any systematic bias regarding what firms responded. That is, there are no statistically significant differences between the firms that responded to the survey and those who did not, based on what is reported in the databases[31]. This means that we have reason to believe that the 348 answers the analysis in this study are based upon are possible to generalise to the entire sampling frame, naturally while using normal statistical caution. Whether the answers are representative for all Swedish companies producing interactive media for external customers (the theoretical population) is harder to determine, since the actual population is not known.

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30 Mostly Affärsdata, Kredit.se, Bizbook, bolagsfakta and UC.

31 It would be possible to compare the answers given by respondents in the questionnaire with what is recorded for non-respondents in databases. But due to differences in reporting, this is not to recommend. There are some differences regarding the figures respondents give and what is recorded in the databases. But there is no reason to believe that there would be a systematic difference in recording procedure for a database based on our survey.

# Summary

Sandberg Å & Augustsson F (2001) *Interactive Media in Sweden 2001. The Second Interactive Media, Internet and Multimedia Industry Survey.* Work Life in Transition 2002:2. Arbetslivsinstitutet/ NIWL, Stockholm.

We conducted the first national survey of Swedish interactive media, Internet and multimedia producers in 1997. These firms were soon at the centre of investors' interest, but then the 'IT-bubble' burst. The period from 1997 until now has been one of buzzwords and financial speculations, but also one of building solid companies, and producing innovative and high quality solutions. This study maps the actual situation for Swedish interactive media companies and employees in 2001.

Interactive media producers have been regarded as the *avantgarde* of new forms of organization, with ICT and design in an interesting combination in entrepreneurial firms with flexibility and a young well-educated workforce. They may give a hint of how future workplaces might look like in the 'network economy'. Furthermore, the solutions created by those producers are implemented in business life in general and thereby affect all companies and employees. This makes them particularly interesting to study.

This report is based on a comprehensive questionnaire completed by the managements of roughly 350 companies producing CD-ROM/DVD, intranet and Internet solutions. Telephone interviews and mail questionnaires were combined and directed to some 1,500 companies in a database constructed by us. In total about 65 percent answered the questionnaire, many firms only the first few questions, as they were not active in the industry. Roughly 850 firms were interactive media producers. 40 percent of those filled out the whole questionnaire.

More analytical and theoretical analyses, and in-depth studies of specific topics, will be the focus of future reports. We also plan to conduct a survey to those working in the industry about work, competence and health, linked to this company survey. The main part of the present report is purely descriptive. Here are a couple of glimpses from our results:

- Typical companies have five employees, of which three focus on interactive media production. The average company has 16 and eight employees, respectively.
- The industry is young, the average starting year is late 1992, the median 1996.
- This is a big city phenomenon with one third of production in Stockholm.
- 65 percent of companies outsource, on average 19 percent of turnover.
- Female participation is less than one fifth, and especially low in programming.
- Most employees are young, nearly half being younger than 30 years of age.
- Competence development seems undeveloped or managed ad hoc.
- In one fifth of companies are employees covered by collective agreements.

# Sammanfattning

Sandberg Å & Augustsson F (2001) *Interactive Media in Sweden 2001. The Second Interactive Media, Internet and Multimedia Industry Survey*. Arbetsliv i Omvandling 2002:2. Arbetslivsinstitutet, Stockholm.

1997 genomförde vi den första nationella undersökningen av svenska interaktiva medie-, multimedie- och Internetproducenter. Dessa företag befann sig snart i centrum av investerarnas intresse, men den s.k. 'IT-bubblan' brast. Tiden från 1997 tills nu har varit en period av modeord och finansiella spekulationer, men också en period då solida företag byggts, producerade innovativa och högkvalitativa interaktiva medielösningar. Denna studie kartlägger den faktiska situationen för svenska interaktiva medieföretag och deras anställda år 2001.

Interaktiva medieföretag har setts som avantgarde ifråga om nya organisationsformer, med en intressant kombination av ICT och design i flexibla entreprenörsföretag med unga och välutbildade anställda. De kan ge en glimt av hur framtida arbetsplatser i 'nätverksekonomin' kan komma att se ut. Dessutom implementeras de lösningar som dessa företag producerar i arbetslivet generellt, och påverkar därmed alla företag och anställda. Detta gör dem särskilt intressanta att studera.

Denna studie är baserad på en omfattande enkät besvarad av ledningen i ca 350 företag som producerar CD-ROM/DVD, intranät- och Internetlösningar. En kombination av telefonintervjuer och postenkäter riktades till ungefär 1 500 företag från en databas vi själva konstruerat. Totalt 65 procent besvarade enkäten, många dock bara de inledande frågorna då de inte var aktiva i branschen. 850 företag visade sig vara aktiva interaktiva medieproducenter. 40 procent av dessa besvarade hela enkäten.

Mer analytiska och teoretiska analyser, liksom djupare studier av specifika områden, kommer i framtida rapporter. Vi planerar också att genomföra en studie om arbete, hälsa och kompetens riktad till dem som arbetar i branschen och kopplad till denna företagsenkät. Huvuddelen av denna rapport är främst deskriptiv. Här följer en del glimtar av våra resultat:

- Typiska företag har fem anställda, av vilka tre fokuserar på produktion av interaktiva medier. Motsvarande siffror för medelföretag är 16, respektive åtta.
- Branschen är ung. Genomsnittligt startår är 1992, medianåret 1996.
- Detta är ett storstadsfenomen med en tredjedel av produktionen i Stockholm
- 65 procent av företagen lägger ut verksamhet, i genomsnitt 19 procent av omsättningen.
- Färre än 20 procent av anställda är kvinnor, lägst är det inom programmering.
- De flesta anställda är unga, nästan hälften är yngre än 30 år.
- Kompetensutveckling verkar underutvecklat eller sker ad hoc.
- De anställda har kollektivavtal i endast en femtedel av företagen.

# Literature


Ahrne G & Sandberg Å (2000) Scientific Report. Worklife 2000: *New Management, Information and Communication Technologies, and the New Working Life*. Malmö 7-9 May 1999.

Augustsson F (2001) Division of Labour Within and Between Firms. *Critical Management Studies Conference, Manchester 2001*.

Augustsson F & Sandberg Å (forthcoming) Time for Competence? A Critical Analysis of the Role of Competence Development for Interactive Media Workers. In: Garsten C & Jacobsson K eds. *Learning to be Employable: New Agendas on Work, Responsibility and Learning in a Globalizing World*. Hampshire: Palgrave.

Batt R, Christopherson S & Van Jaarsveld D (2001) *Net Working. Work Patterns and Workforce Policies for the New Media Industry.* Washington: Economic Policy Institute.

Braczyk H-J, Fuchs G & Wolf H-G eds. (1999) *Multimedia and Regional Economic Restructuring*. London: Routledge.

Bäcklund A-K & Sandberg Å (forthcoming) New Media Industry Development: Regions and Net-works - Some Policy Implications. *Regional Studies* 2002. no 1.

Lesink P, Teunen J & Boumans J (2000) *Multimedia: Beyond the pioneering stage. Organiza-tional strategy and staff policy in the multimedia sector of the information and communi-cation industry.* Veenendaal: GOC.

Michel L P & Goertz L (1999) *Arbeitsmarkt multimedia: Trends und chancen. Qulifikationsprofile und Karrieewege in einer Zukunftbranche.* Berlin: Vistas Verlag GmbH.

Sandberg Å, Broms G, Grip A, Steen J, Sundström L & Ullmark P (1992) *Technological Change and Co-Determination in Sweden*. Philadelphia: Temple University Press.

Sandberg Å (1998) *New media in Sweden. The Swedish New Media and Internet Industry Survey*. Arbetslivsrapport 1998:37, Stockholm: Arbetslivsinstitutet.

Sandberg Å & Augustsson F (2000) Scientific Report. WorkLife 2000*: The New Media Firms: Work, Organisation and Employee Relations.* Stockholm 5-6 June 1999.

# Tables

**Table 1**. Functions inherent in interactive media production. Percentage of companies that usually or sometimes delivers them, and those who do not deliver them.

| | Yes (usually) | Sometimes (can) | No (do not) | Total | n |
|---|---|---|---|---|---|
| Concept, storyboard, script writing | 40,5 | 28,1 | 31,4 | 100 | 338 |
| Graphic and web design, interface design | 85,5 | 11,6 | 2,9 | 100 | 345 |
| Programming (HTML, Lingo) | 82,5 | 9,6 | 7,9 | 100 | 343 |
| Systems development, databases, programming (Java, ASP etc.) | 62,5 | 17,4 | 20,1 | 100 | 339 |
| Content research | 37,3 | 30,8 | 32 | 100 | 338 |
| Copy | 31,8 | 26,8 | 41,4 | 100 | 336 |
| Sound/ music production | 20,3 | 25,7 | 54,0 | 100 | 335 |
| Video/ film production | 21,4 | 23,5 | 55,1 | 100 | 332 |
| Photo | 35,5 | 33,1 | 31,4 | 100 | 341 |
| Animations | 47,1 | 31,5 | 21,5 | 100 | 340 |
| Illustrations, graphics | 62,7 | 23,1 | 14,2 | 100 | 338 |
| Providing actors for sound and vision | 12,3 | 17,7 | 70,0 | 100 | 333 |
| Educating customers in relation to an interactive media solution | 39,9 | 40,8 | 19,4 | 100 | 341 |
| Managing interactive media projects | 53,1 | 27,7 | 19,2 | 100 | 339 |
| Strategic advice concerning interactive media | 42,5 | 32,4 | 25,1 | 100 | 339 |

**Table 2.** Functions performed in connection to the actual production of interactive media. Percentage of companies that usually or sometimes delivers them, and those who do not deliver them.

| | Yes (usually) | Sometimes (can) | No (do not) | Total | n |
|---|---|---|---|---|---|
| Physical production of CD-ROMS, DVDs, etc. | 29,6 | 32,3 | 38,1 | 100 | 341 |
| Publishing, marketing, distribution of CD-ROMs, DVDs, etc. | 9,4 | 23,1 | 67,5 | 100 | 329 |
| Publishing on the Internet/portal | 69,2 | 19,6 | 11,1 | 100 | 341 |
| Providing access to server, space webhosting, etc | 47,4 | 16,3 | 36,3 | 100 | 207[a] |
| Perform e-business activity | 11,3 | 13,4 | 75,3 | 100 | 336 |
| Perform e-learning | 9,0 | 17,4 | 73,6 | 100 | 333 |

a. The low base numbers are due to an error in the construction of the computerised coding tool. The error did not render systematic bias. Distributions are therefore valid.

**Table 3.** Mean and median founding year of companies.

Comment: when several companies have merged, the starting year corresponds to the founding of the oldest inherent company.

| | Founding year |
|---|---|
| Mean | 1992,7 |
| Median | 1996 |

n=342

**Table 4.** Mean and median year companies started producing interactive media.

Comment: when several companies have merged, the starting year corresponds to the time when the oldest inherent company started producing interactive media.

| | Year |
|---|---|
| Mean | 1996,2 |
| Median | 1997 |

n=340

**Table 5.** Total number of offices with different addresses, and number of Swedish offices producing interactive media per company. Mean and median of companies.

| Offices | Mean | Median |
|---|---|---|
| Total in Sweden | 1,41 | 1 |
| Total outside Sweden | 0,11 | 0 |
| Producing interactive media in Sweden | 1,28 | 1 |

n=345

**Table 6.** Geographical location of interactive media companies.

Comment: Companies with more than one office are classified according to the location of their largest interactive media producing office, not headquarter.

| Location | Percent |
|---|---|
| Central Stockholm | 28,4 |
| Greater Stockholm | 4 |
| Göteborg | 10,1 |
| Malmö/ Lund | 7,8 |
| Rest of traditional University towns | 8,0 |
| Rest of Sweden | 41,7 |
| Total | 100 |

n=348

**Table 7.** Companies that have other activities besides interactive media production. Percentage of companies.

| Have other business areas | percentage |
|---|---|
| Yes | 74,5 |
| No | 25,5 |
| Total | 100 |

n=346

**Table 8.** Performance of activities excluding interactive media production. Percentage of compa-nies that have other areas, and of all companies surveyed.

| Type of activity | Yes | (% of all) | No | (% of all) | Total |
|---|---|---|---|---|---|
| Advertising, PR | 47,9 | (35,7) | 52,1 | (64,3) | 100 |
| Publishing in printed media | 39,3 | (29,3) | 60,7 | (70,7) | 100 |
| Graphic production | 62,7 | (46,7) | 37,3 | (53,3) | 100 |
| Design | 59,1 | (44) | 40,9 | (56) | 100 |
| Software development | 31,3 | (23,3) | 68,7 | (76,7) | 100 |
| Video/ film/ TV production, photo | 26,1 | (19,4) | 73,9 | (80,6) | 100 |
| Audio, music production | 10,7 | (8) | 89,3 | (92) | 100 |
| General IT-consulting | 45,6 | (34) | 54,4 | (66) | 100 |
| General organisation, management, business consulting | 22,8 | (17) | 77,2 | (83) | 100 |
| General education/ training | 19,2 | (14,3) | 80,8 | (85,7) | 100 |
| Other actvities | 27,1 | (20,2) | 72,9 | (79,8) | 100 |

n=263

**Tabell 9.** Total turnover, and estimated total turnover, per year (MSEK), and percentage from interactive media. Mean and median of companies.

| | Total | | Percent interactive media | |
|---|---|---|---|---|
| Year | Mean | Median | Mean | Median |
| 1999 | 10,7 | 2 | 54,4 | 50 |
| 2000 | 13,6 | 3 | 58 | 67,5 |
| Estimated 2001 | 15,1 | 3,6 | 57,9 | 60 |

**Table 10.** Companies' mean distribution of turnover from interactive media on different types of commissions.

| Commission | Percent |
|---|---|
| Production | 77,1 |
| Consulting/ advice | 16,3 |
| Educating customers | 6,6 |
| Total | 100 |

n=317

**Table 11.** Companies' mean distribution of turnover from interactive media on different types of information carriers/ platforms.

| Information carrier | Percent |
|---|---|
| CD-ROM, DVD etc. | 19,1 |
| Internet, intranets | 77,2 |
| Broadband, broadband portals | 1,8 |
| Wireless Internet, WAP, GPRS | 0,8 |
| Interactive TV | 1,1 |
| Total | 100 |

n=323

**Table 12.** Companies' mean distribution of turnover from interactive media on different markets and customers.

| Market/customer | Percent |
|---|---|
| Consumer market | 17,5 |
| Corporate customers | 82,5 |
| Total | 100 |

n=328

**Table 13.** Categorisation of companies' interactive media productions as part of turnover.

| Category | Large part | Some part | No part | Total | n |
|---|---|---|---|---|---|
| Company/ organisational presentations | 63,6 | 24,5 | 12,3 | 100 | 340 |
| Advertising, marketing | 41,1 | 42,6 | 16,2 | 100 | 337 |
| Education | 17,9 | 43,8 | 38,3 | 100 | 328 |
| Eduitainment | 5,8 | 18,6 | 75,5 | 100 | 320 |
| Entertainment, games | 8,8 | 22,0 | 69,2 | 100 | 326 |
| Culture | 3,6 | 31,8 | 64,6 | 100 | 326 |
| News | 7,9 | 30,1 | 61,9 | 100 | 324 |
| Information databases | 25,8 | 39,2 | 35 | 100 | 328 |
| E-business for private consumers (B2C) | 9,8 | 32,4 | 57,8 | 100 | 323 |
| E-business, B2B | 17,0 | 36,5 | 46,4 | 100 | 333 |
| Other interactive services | 11,0 | 47,4 | 41,7 | 100 | 316 |
| Other business solutions in digital environment | 13,4 | 38,8 | 47,8 | 100 | 319 |

n=345

**Table 14.** Total number of permanent employees, and employees focussing on interactive media production. Mean and median of companies.

| Permanent employees | Mean | Median | n |
|---|---|---|---|
| Total | 16,2 | 5 | 345 |
| Focused on interactive media production | 8,1 | 3 | 339 |

**Table 15.** Percentage of workers focussing on interactive media production with fixed time contracts. Mean and median of companies.

| | Mean | Median |
|---|---|---|
| Fixed time employees | 5,7 | 0 |

n=253

**Table 16.** Number of consultants focussing on interactive media production presently active within company. Mean and median of companies.

| | Mean | Median |
|---|---|---|
| Consultants | 0,6 | 0 |

n=262

**Table 17.** Distribution of workers focussing on interactive media production on different types of activities. Mean percentage in companies.

| Activity | Percent |
|---|---|
| IT, programming | 40,9 |
| Design and content production | 35,9 |
| Project management | 23,2 |
| Total | 100 |

n=226

**Table 18.** Percentage of women and men within different types of activities in interactive media production. Mean of companies.

| Activity | Women | Men | Total | n |
|---|---|---|---|---|
| IT, programming | 10,2 | 89,8 | 100 | 240 |
| Design and content production | 24,1 | 75,9 | 100 | 241 |
| Project management | 21,4 | 78,6 | 100 | 238 |

**Table 19.** Gender of highest ranking manager within companies producing interactive media.

| | Percent |
|---|---|
| Man | 86,1 |
| Woman | 13,9 |
| Total | 100 |

n=239

**Table 20.** Age distribution of workers focussing on interactive media production.

| Age | Percent |
|---|---|
| =29 years | 45,2 |
| 30-39 years | 36,2 |
| 40= | 18,6 |
| Total | 100 |

n=244

**Table 21.** Average real weekly working time of permanent full-time employees focussing on interactive media production.

| Hours a week | Percent |
|---|---|
| <40 | 21,0 |
| 40-49 | 65,4 |
| 50-59 | 9,6 |
| 60= | 4,0 |
| Total | 100 |

n=244

**Table 22.** Occurrence of systematic documentation of overtime. Mean of companies.

| | Percent |
|---|---|
| Yes | 51,7 |
| No | 46,7 |
| Do not know | 1,6 |
| Total | 100 |

n=261

**Table 23.** Occurrence of economic compensation for overtime. Mean of companies.

| | Percent |
|---|---|
| Yes | 30,8 |
| No | 66,2 |
| Do not know | 3,1 |
| Total | 100 |

n=345

**Table 24.** Occurrence of compensation for overtime in free time. Mean of companies.

| | Percent |
|---|---|
| Yes, based on formal documentation | 30,4 |
| Yes, handled informally by employees | 47,7 |
| No | 20,0 |
| Do not know | 1,9 |
| Total | 100 |

n=260

**Table 25.** Number of newly hired permanent employees, employees that quit, and those thereof laid off the last 12 months. Mean and median of companies.

| Category | Mean | Median |
|---|---|---|
| Newly hired | 4,5 | 2 |
| Quit | 1,7 | 1 |
| Laid off | 0,7 | 0 |

n=213

**Table 26.** Highest level of formal education among employees. Mean of companies.
Comment: The figures are based on all companies surveyed.

| Level | Percent |
|---|---|
| University or equivalent, 3 years minimum | 41,1 |
| Other post-secondary school education | 36,5 |
| Secondary school | 20,3 |
| Elementary school | 2,1 |
| Total | 100 |

n=236

**Table 27.** Offers of certain time annually for employees' competence development.

| Level | Percent |
|---|---|
| Yes, equally. Certain number of days annually, or equivalent sum of money | 14,0 |
| Yes. Number of days decided in individual competence plans | 58,0 |
| No | 23,5 |
| Do not know | 4,5 |
| Total | 100 |

n=264

**Table 28.** Average annual time offered employees for competence development.

Comment: Only companies offering time for competence development.

| Time | Percent |
|---|---|
| 1-5 days/ 1 week | 31,6 |
| 6-10 days/ 2 weeks | 34,2 |
| 11-15 days/ 3 weeks | 14,5 |
| More than 16 days/ 4 weeks | 6,7 |
| Do not know | 13,0 |
| Total | 100 |

n=193

**Table 29**. Average proportion of employees within companies that used the time for competence development offered to them maximally in 2000.

Comment: Only companies offering time for competence development are included.

| Proportion | Percent |
|---|---|
| 0-19% | 12,6 |
| 20-39% | 14,3 |
| 40-59% | 17,0 |
| 60-79% | 13,7 |
| 80-100% | 22,5 |
| Do not know | 19,8 |
| Total | 100 |

n=182

**Table 30.** Strategies used by companies to ensure employees have sufficient time for competence development

Comment: Only companies offering time for competence development are included.

| Strategy | Percent |
|---|---|
| Pre decided time put off | 3,4 |
| Time planned in gradually | 30,4 |
| Customer charged hours set lower than full-time | 5,5 |
| Other methods | 12,6 |
| No particular strategy used | 16,2 |
| Do not know | 31,9 |
| Total | 100 |

n=261

**Table 31.** Amount of competence development, measured as working time, spent on the job (in connection to daily work) and off the job (formal training, courses, etc).

| Learning situation | Percent |
|---|---|
| On the job | 74,5 |
| Off the job | 24,5 |
| Total | 100 |

n=255

**Table 32.** Lowest, highest and typical monthly salary before tax in SEK for different groups of employees.

Comment: The figures are based on all companies surveyed, not weighted according to number of employees in companies.

| Group of employees | Lowest salary | n | Highest salary | n | Typical salary | n |
|---|---|---|---|---|---|---|
| IT, programming | 19,471 | 135 | 27,272 | 137 | 22,222 | 138 |
| Design and content production | 18,741 | 140 | 25,723 | 137 | 21,566 | 138 |
| Project management | 23,206 | 132 | 30,048 | 138 | 24,900 | 135 |

**Table 33.** Existence and occurrence of various economic reward systems among employees in companies. Mean percentage of employees included within companies.

| Reward | No one | A smaller part | A larger part | Every-one | Total | n |
|---|---|---|---|---|---|---|
| Result based salary | 82,3 | 7,4 | 2,6 | 7,8 | 100 | 252 |
| Profit sharing | 65,5 | 7,3 | 3,9 | 23,3 | 100 | 253 |
| Bonus | 60,8 | 13,4 | 6,5 | 19,4 | 100 | 253 |
| Convertible bonds | 96,5 | 2,6 | 0,4 | 0,4 | 100 | 250 |
| Stock options | 80,2 | 5,6 | 6,5 | 7,8 | 100 | 253 |
| Partnership | 44,9 | 29,7 | 11,4 | 14,0 | 100 | 257 |
| Benefits like car, house cleaning, etc. | 66,1 | 28,6 | 1,3 | 4,0 | 100 | 248 |

**Table 34.** Mean levels of sick leave within companies measured as percentage of scheduled working time and annual number of days per employee, and percentage that did not know.

| | Absenteeism | n |
|---|---|---|
| Annual number of days/ employee | 3,6 % | 149 |
| Percent of working time | 2,1 days | 98 |
| Do not know[a] | 24 % | 78 |

a. Respondents where given the option to answer either as annual number of days/ employee or percent of working time. 78 respondents (24%) could not answer in either way.

**Table 35.** Companies with agreement with the Swedish company health care.

| | Percent |
|---|---|
| Yes | 26,3 |
| No | 69,8 |
| Do not know | 3,9 |
| Total | 100 |

n=258

**Table 36.** Aspects covered in agreement with the Swedish company health care. Percentage of companies.

Comment: Only companies that state they have an agreement with Swedish company health care are included.

| | Included | Not included | Total | n. |
|---|---|---|---|---|
| Health care and treatment | 95,1 | 4,9 | 100 | 61 |
| Advice on work environment and work conditions | 61 | 39 | 100 | 59 |

**Table 37.** Proportion of employees with written employment contracts. Mean of companies.

| | Percent |
|---|---|
| All | 78,8 |
| Some | 8,1 |
| None | 13,1 |
| Total | 100 |

n=263

**Table 38.** Percentage of companies having collective agreements covering employees working with interactive media production.

| | Percent |
|---|---|
| Have collective agreement | 19,5 |
| Do not have collective agreement | 71,6 |
| Do not know | 8,9 |
| Total | 100 |

n=261

**Table 39.** Measures to regulate work and employment contracts when there are no collective agreements covering employees working with interactive media production.

Comment: Only companies without collective agreements that cover interactive media workers are included.

| Measure | Percent |
|---|---|
| Standardised agreement for all employees | 49,3 |
| Varying individual contracts with different employees | 36 |
| Other | 7,6 |
| Do not know | 7,1 |
| Total | 100 |

n=211

**Table 40.** Aspects covered in local agreements when there are no collective agreements covering employees working with interactive media production.

Comment: Only companies without collective agreements that cover interactive media workers are included. Do not know category left out.

| Aspect | Covered | Not covered | Total | n |
|---|---|---|---|---|
| Salary | 94,2 | 5,8 | 100 | 211 |
| Profit sharing, options etc | 27,1 | 72,9 | 100 | 210 |
| Competence development | 30,0 | 70,0 | 100 | 212 |
| Pensions | 51,6 | 48,4 | 100 | 212 |
| Working time (weekly) | 88,4 | 11,6 | 100 | 212 |
| Overtime compensation | 67,9 | 32,1 | 100 | 212 |
| Free time, vacation | 84,7 | 15,3 | 100 | 212 |
| Time when laid off | 81,0 | 19,0 | 100 | 211 |
| Secrecy regarding company specific knowledge | 68,9 | 31,1 | 100 | 212 |
| Possibilities to engage in competing activities during employment | 59,5 | 40,5 | 100 | 212 |
| Possibilities to engage in competing activities after employment | 34,9 | 65,1 | 100 | 211 |

MITIOR

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# Publications from the MITIOR project

**MITIOR Books, Reports and articles**


Bäcklund A-K & Sandberg Å (2002) New Media Industry Development: Regions, Networks and Hierarchies – Some Policy Implications. In: *Regional Studies, Vol. 36, No 1* (forthcoming)

Sandberg Å ed (2002) *Ledning för Alla? Perspektivbrytningar i företagsledning.* 4th revised ed. Stockholm: SNS förlag (forthcoming).

Sandberg, Å (2002) New forms of management – New democratic participation? In*: Essays in Honour of Litsa Nicolaou*. Athens: University of Piraeus (forthcoming)

Magdalenic S (2001) *Journalistik och Internet i ett medieföretag. En explorativ fallstudie av omvandlingar inom ETC Produktion AB.* Arbetslivsrapport. Stockholm: Arbetslivsinstitutet.

Sandberg Å & Augustsson F (2002) *Interactive Media in Sweden 2002. The Second Swedish Interactive Media, Internet and Multimedia Industry Survey*, Worklife in Transition 2002:2. Stockholm: National Institute for Working Life.

Ekström M & Buskqvist U (2001): *Nyheter på nätet. Organisering, arbetsformer och teknik*. Örebro och Stockholm: Örebro Universitet och MITIOR, Arbetslivsinstitutet.

Von Otter C & Sandberg Å (2001) Call Centre Jobs and Regions in the New Economy. Editorial Introduction. *Special Issue of Economic and Industrial Democracy.* Vol. 22. No 1, feb. 2001. pp 5-11.

Sandberg Å et al (2001) *Medier, IT och innovation i organisation och arbete. Underlag för ett forskningsprogram*. Stockholm: MITIOR, Arbetslivsinstitutet.

Sandberg Å et al (2001) *Media, IT and innovation in organisation and work*. Stockholm: MITIOR, Arbetslivsinstitutet.

Augustsson F (2000) Vi eller dom, här eller där?. In: *Samtida Gränser – Framtida Gränser*. Stockholm: SCORE.

Skiöld L (red) (2000) *A look into modern working life*. Summary of WorkLife 2000 workshops, among them, three workshops arranged by MITIOR. Stockholm: Arbetslivsinstitutet

The researchers reports from the three workshops below on interactive media, management and working life may be downloaded at www.niwl.se/wl2000/workshops/list_infosociety_en.asp:

*New Management, ICT and the New Working Life. Work Life 2000 workshop.*

*New media industry development: regions, networks and hierarchies. Work Life 2000 workshop.*

*New Media Companies: Work, Organisation and Employee Relations. Work Life 2000 workshop.*

Ehn P och Sandberg Å (1999) *Nya medier, arbete, design och lärande*. International Research conference. Stockholm: Malmö Högskola and Arbetslivsinstitutet.

Sandberg Å (1999) The Multimedia Industry in Sweden and the Emerging Stockholm Cluster. In: Fuchs G, Braczyk HJ & Wolf HG eds.(1999) *Multimedia and Regional Economic Restructuring*. London: Routledge.

Sandberg Å (1998) *New Media in Sweden. The Swedish New Media Internet Industry Survey*. Arbetslivsrapport 1998:37. Stockholm: Arbetslivsinstitutet.

Sandberg Å (1998) *Nya Medier. Rapporten om multimedie- och Internetföretagen i Sverige*. Stockholm: Arbetslivsinstitutet.

Sandberg Å (1998) Good work and productivity. Editorial introduction. *Special issue of Econoic and Industrial Democracy*. Vol 19. No 1, pp. 5-16.

**MITIOR Working Papers**

Augustsson F (2000) Division of Labour within and between firms. *Critical Management Studies Conference, Manchester, 2001.*

Augustsson F (2000) *The Organisation of Work in New Industries: The case of the Swedish Interactive Media Industry*. Stockholm: MITIOR, Arbetslivsinstitutet.

Persson M & Sandberg Å (1999) *Nya medier, interaktiv design, organisations- och företagsutveckling. Förslag till forskning och utveckling utifrån en studieresa till "Silicon Alley", New York.* Stockholm: WM-Data Education & MITIOR, Arbetslivsinsttutet.

Sandberg Å (1999) *Newspapers in Media Companies – Strategy and Innovation for Profit*. Rapport från studieresa till USA med Tidningsutgivarna (TU). Stockholm: MITIOR, Arbetslivsinstitutet.

Sandberg Å & Leisink P (1998) Participation in network organizations. *Paper presented within RC 10 of the ISA World congress, Montreal, Canada, July*.

*Updated Dec. 2001*