

XOOTIC Survey 2000

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In September 2000, the bi-annual Xootic questionnaire was sent out again to all Xootic members to ask them about their current and future work, and about their opinion of OOTI and Xootic. In the past months, the returned questionnaires were analysed and the results were presented to the Xootic members in March 2001. This article presents the survey results.

Introduction

The Xootic survey has become a two-yearly tradition. It provides valuable feedback to both the OOTI and the Xootic board on their program and their activities. Previous surveys were held in 1993, 1994, 1996 and 1998 (see Xootic magazine September 1993, September 1994, April 1996 and October 1999, respectively). In the beginning of 2000, Rian Wouters, Dietwig Lowet, Harold Weffers, Bernard Venemans and myself set out to organise the survey for 2000. The first thing we did, was to take the previous questionnaire and modify it according to suggestions for improvement that resulted from the previous survey.

The major changes as compared to the previous questionnaire are:

- The language: this was the first questionnaire in English.
- The OOTI questions: these were formulated by OOTI to ask for specific information needed to improve the OOTI program. In this survey, only the younger generations were asked to answer these questions.
- More predefined options were added: some extra answers, provided to us in the 'other' option-field of the questions from the previous survey, were added in the answer-lists.

Furthermore, the questions about current and future function/working environment have been combined, and the split in generations has been extended in the sense that the older generations did

not have to fill in the OOTI questions: the OOTI program has changed a lot since those generations followed the program, a.o. as a result of their answers to previous surveys!

You have to be careful not to change too much in a questionnaire, otherwise the results are difficult/impossible to compare with previous surveys. That is why the remainder of the questions were left (more or less) unchanged. The questionnaire, together with a memo from OOTI about the new Software Technology Training Program, was sent to every Xootic member early September 2000. Table 1 shows the number of surveys that were sent out and the number of surveys that were returned this year as well as previous years.

| Survey | Nr sent | Nr received | Percentage |
|--------|---------|-------------|------------|
| 1993 | 22 | 17 | 77% |
| 1994 | 41 | 24 | 59% |
| 1996 | 88 | 43 | 49% |
| 1988 | 155 | 69 | 45% |
| 2000 | 189 | 88 | 47% |

Table 1: History of returned questionnaires

Table 2 shows the returned questionnaires per generation. We see a large increase of returned forms for the generation "September 1996 - April 1998". The probable explanation for this is that this generation has a lot of non-Dutch members, who had difficulties filling in the Dutch questionnaire of 1998.

| Generation | 1998 | 2000 |
|---------------------|------|------|
| 1988 - Dec 1991 | 16 | 15 |
| Sep 1992 - Jan 1994 | 18 | 19 |
| Sep 1994 - Mar 1996 | 26 | 25 |
| Sep 1996 - Apr 1998 | 9 | 15 |
| Aug 1998 - Aug 2000 | | 12 |
| Unknown | | 2 |

Table 2: Number of returned questionnaires per generation

The questionnaire was returned this year by 76 ex-OOTIs and 12 OOTIs. In the results concerning professional career the answers from the 12 OOTIs have been excluded. Hence in these results, about every 1.3% is one person.

Employer

The questions about the current employer are intended to get an impression of the employers where Xootic members are working. Figure 1 shows the major branches where ex-OOTIs are currently working. Compared to the result of the previous survey, there are few changes. The most striking changes are: Automation consultancy has increased from 2% to 11% and Electrical industry has dropped from 15% to 7%.

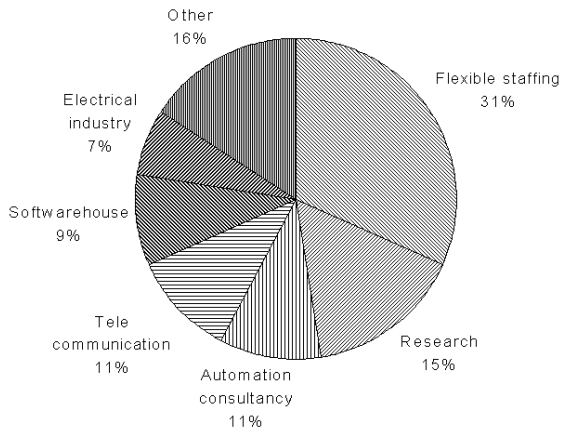


Figure 1: Branch distribution

It seems that switching jobs after 4 to 6 years is becoming a trend! If you compare the numbers between 1998 and 2000 (Table 3), you see that after 4 to 6 years, the majority of ex-OOTIs has left their first employer. Note that the percentage of persons at their first employer in the generation "1988

- December 1991" has increased from 25% to 27%, however both percentages represent four persons.

The main reason why the current employer was chosen is *nature of the work* (rated 7.9 on a scale from 0 to 10) followed by *career perspective* (6.2), *company culture* (6.1) and *salary* (5.8).

Figure 2 shows that the final project of OOTI and (nowadays) a direct approach by the company or a person working for the company are the most successful strategies for recruiting ex-OOTIs. The "open application" dropped from 47% in 1996, via 25% in 1998 to 14% in 2000!

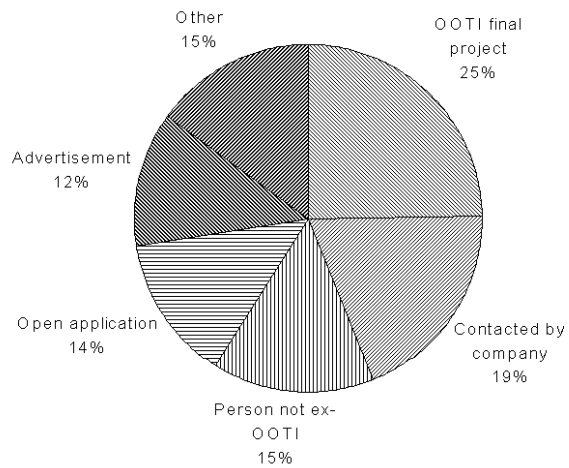


Figure 2: How did we get our current job?

Function

The results of the questions concerning current & future function and working environment tell us something about our daily work and our expectations. If you look at Figure 3, you will notice that the Xootic members currently still have very technical jobs: 73% are software/system engineer/architect or researcher, compared to 64% two years ago.

| Generation | 1st employer 1998 | 2nd employer 2000 | 3rd employer 1998 | 4th employer 2000 | 5th employer 1998 | 6th employer 2000 |
|---------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 1988 - Dec 1991 | 25% | 27% | 69% | 40% | 6% | 13% |
| Sep 1992 - Jan 1994 | 61% | 32% | 28% | 47% | 11% | 16% |
| Sep 1994 - Mar 1996 | 96% | 76% | 4% | 20% | | 4% |
| Sep 1996 - Apr 1998 | | 87% | | 13% | | |

Table 3: Number of employers

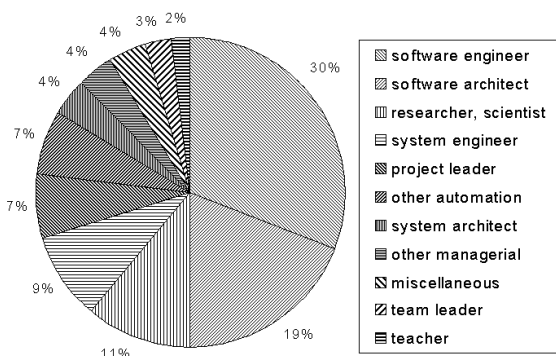


Figure 3: Current functions¹

The 'future' situation (i.e. the desired function within 5 to 10 years) is shown in Figure 4. Just as two years ago, nobody plans to be (or become) a *software engineer* 5 to 10 years from now. Approximately 44% wants to advance in technical functions. The managerial functions (team/project leader, other managerial and miscellaneous) have grown from 18% now to 42% within 5 to 10 years.

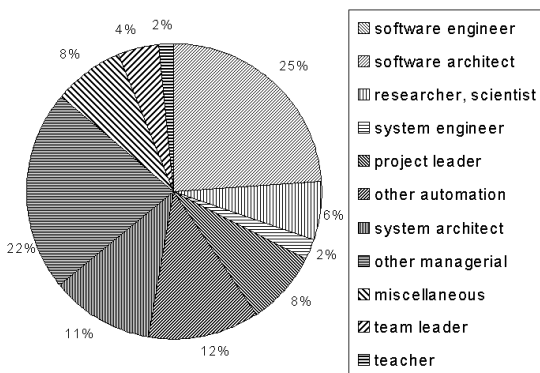


Figure 4: Future functions

Ex-OOTIs are working in a less multi-disciplinary environment! All areas of expertise showed a drop in percentages (*Logistics* dropped most from 18%

to 10%). The top-three of disciplines that ex-OOTIs come into contact with in their daily work (not including *Computing science*) is as follows: *Electrical engineering* (43%), *Telecommunication* (31%) and *Information technology* (28%).

Skills

There were several questions concerning the tools and methods that are used in the workplace of ex-OOTIs. One positive side to OOTI: formal methods are now being used! 16% of the returned questionnaires indicated that Chi, (Process) Algebra, Spin/Promela, State machines, START, Petrinets in Expect/Cosa, MSCs, IDL, OCL or process Networks were used in the direct working environment.

Object-oriented techniques are used more often: UML is used by 64% (was: 32%) and OMT is used by 33% (was: 37%). Design Patterns are used by more than 50% of the Xootic population. C++, C and Java are still the main implementation languages being used (63%, 57% and 50% respectively, versus 65%, 58% and 43%, two years ago). One third indicated to work with scripting languages such as VB Script, Perl, Python or Tcl/Tk.

Windows NT is used most frequently as a host platform. The dominant target platforms are: Windows NT (56%), Unix (43%), Java platform (34%) and pSOS (27%). Linux is being used as a target platform by 22%.

Distributed - and Component technologies are very popular amongst ex-OOTIs: around 40% uses these technologies and the same percentage of Xootic members are interested, and around 10% has taken courses in these technologies. 74% uses HTML, 35% is interested in XML.

The waterfall model is still the most widely used process model (34%), followed by RUP (30%).

Xootics are most interested in Extreme Programming (32%) (hype?) and RUP (30%). Xootic members want to know more about the following skills: Coaching, Creativity (both 23%), PSP/TSP (19%) and Project Management (18%).

Working conditions

This section gives us an indication of the conditions of employment. Table 4 shows the current salaries of the 72 ex-OOTIs that filled in the question.

In this survey, we added questions about part-time work and RSI. Currently, 6 ex-OOTIs (equals approximately to 8%) are working part-time (32, 36 and 38 hours a week answered by 3, 2 and 1 persons, respectively) and 22 ex-OOTIs (29%) would like to work part-time (24, 32, 34 and 36 hours a week reported by 1, 15, 1 and 5 persons, respectively). 47% of the ex-OOTIs reported to have no signs of RSI, 42% responded "sometimes", 3% "quite often" and 8% "very often".

OOTI training program

The questions about the current Software Technology program had a completely new form. The current courses were listed and the trainees of OOTI that started their program after August 1994 were asked to indicate the value/usefulness of the individual courses and whether they have applied the knowledge gained from the courses in their work. Finally, one was asked to indicate the amount of time OOTI should allocate to each course.

The top 5 of *most useful* courses:

1. Industrial Design and Development Project
2. Workshop Software Engineering
3. Object-Oriented Analysis and Modeling
4. Technical Writing and Editing
5. System and Software Architecture

The top 5 of *least useful* courses:

1. Workshop on Declarative Method (PVS)
2. Workshop on Constructive Method (SPIN)
3. Formal Methods in the Software Life Cycle
4. Seminars with Industry (FM)
5. Control and System Theory

According to the ex-OOTIs, the program should allocate *more time* to:

1. Design Basics (+202%)
2. Development Environments (+56%)
3. Requirements Engineering (+41%)
4. Personal Software Process (PSP) Basics (+41%)
5. Software Process Improvement (SPI) Basics (+37%)

The results of the survey indicate that the OOTI program should allocate *less time* to:

1. Workshop on Constructive Method (SPIN) (-46%)
2. Workshop on Declarative Method (PVS) (-46%)
3. Formal Methods in the Software Life Cycle (-41%)
4. Seminars with Industry (FM) (-27%)
5. Modeling Performance of Computer Systems (-26%)

Xootic

Just like last time, the main reason to be a member of Xootic is to stay in touch with other Xootic members. To stay informed about the TU/e and/or OOTI is the second reason. Lectures are the most appreciated Xootic activity. Suggestions for possible topics are about emerging technologies, such as .Net, C#, XML and Embedded Linux. Xootic should organise lectures more often, or organise "X4X" lectures (Xootic-4-Xootic, like CMG's "Pro-4-Pro").

Suggestions for activities are:

- Company visits/excursions (e.g.: nuclear plant, logistics centre, mobile phone centre)
- Trips (one weekend/one week to Italy, Spain, ...)
- Short courses
- Golf clinic
- 'Wadlopen'
- Visit museums/theatre
- Regular dinner/drinks to keep in touch
- A (yearly) meeting for the "older" generations
- Panel discussions/discussion groups

Other suggestions are:

- Easy access to OOTI/Xootic publications

| Generation | ≤ 60 | ≤ 70 | ≤ 80 | ≤ 90 | ≤ 100 | ≤ 110 | ≤ 120 | ≤ 150 | > 150 |
|---------------------|------|------|------|------|-------|-------|-------|-------|-------|
| 1988 - Dec 1991 | | | | | 5 | 3 | 1 | 2 | 4 |
| Sep 1992 - Jan 1994 | | | | 3 | 5 | 8 | | | 3 |
| Sep 1994 - Mar 1996 | 1 | | 4 | 12 | 6 | | | | |
| Sep 1996 - Apr 1998 | | 4 | 6 | 3 | 1 | 1 | | | |

Table 4: Salary distribution in HFL 1000 (absolute numbers of ex-OOTIs)

- Organise activities on a more central location in the Netherlands

Conclusion

The results of this survey are very valuable for OOTI and Xootic. It allows them to measure the quality of the program, steer the program and verify whether changes to the curriculum have the desired effect. The results can also be used to identify trends and interests of Xootic members and to take advantage of this information. This report only gives a summary of the survey results. More detailed information has been given to the OOTI and Xootic boards. The survey committee received some questions to correlate e.g. function with salary and signs of RSI and function. However, due to the small number of Xootics, these correlations do not present any reliable or significant information. For instance, one person with a managerial function, indicating to have signs of RSI very often, could lead to the 'conclusion' that 10% of people with man-

agerial functions frequently have signs of RSI.

The survey committee also received some recommendations:

- The questions about the OOTI program were difficult to answer by ex-OOTIs who did not follow the courses, or could not remember the content of a course by name only (the course ID did not help much!)
- Use the web to do the survey

We would like to pass on these recommendations to the Xootic Survey 2002 Committee.

We would like to thank all Xootic members who returned the questionnaire for their co-operation. Without their effort, we could not have presented these results! Also, we would like to thank the Xootic Survey 1998 Committee for their support and useful input. One word of special thanks goes to Lettie Werkman, who helped us to improve the quality of the English language of the survey.

The Xootic Survey 2000 Committee: Rian Wouters, Dietwig Lowet and Gertjan Schouten.