XOOTIC Survey 2002

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In October 2002, 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 have been analysed and the results have been presented to the* XOOTIC *members April 4th 2003. This article presents the survey results.*

Introduction

The XOOTIC survey has become a biannual 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, 1998, and 2000 (see XOOTIC MAGAZINE September 1993, September 1994, April 1996, October 1999, and April 2001, respectively). The survey committee, Lucian Voinea, Sergei Shumski, and myself set out to organise the survey for 2002. The first thing we did, was to take the previous questionnaire and modify it according to suggestions for improvement that were given during the previous survey and according to our own ideas. That mainly came down to changing the options in the answer-lists of a number of questions: adding and/or deleting options. Also, we added explanations to specific abbreviations.

We had to be careful not to change too much in the questionnaire, because otherwise the results are difficult/impossible to compare with previous surveys. That is why the general look of the questionnaire has been left (more or less) unchanged.

The questionnaire was sent to every XOOTIC member early October 2002. 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%
1998	155	69	45%
2000	189	88	47%
2002	210	69	33%

Table 1: History of returned questionnaires.

The questionnaire was returned this time by only 69 members. That was amazingly less than expected. As you can see, the number of returned questionnaires was vast growing until this year. That means that, in these results, about every 3% is one person. In 1998 this number was 1.4% and in 2000 even 1.1%!

Figure 1 shows the returned questionnaires per generation. We see that the large decrease of returned forms can mainly be assigned to the generations "September 1992 - January 1994", "September 1992 - March 1996", and "September 1996 - April 1998". An explanation could be, that the older generations feel less involved in the OOTI whereabouts. If this is true, there has to be done something about that!
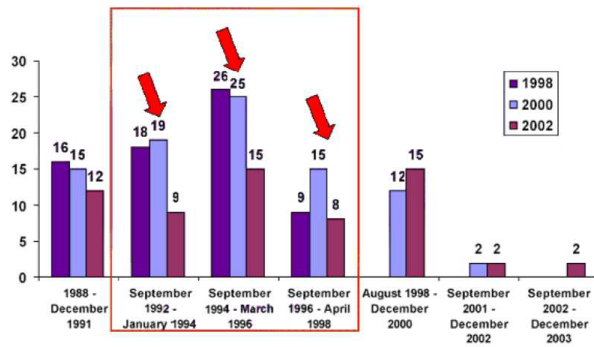
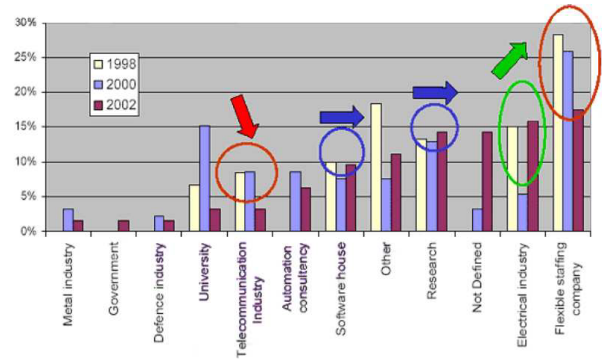Figure 1: Number of returned questionnaires per generation.

Figure 2: Branch distribution.

Figure 3 indicates how many jobs our generations have had since they started the OOTI course. It is striking how many of us are still working for their first employer. The best example for this is the generation Sep '96 - Apr '98. Most of them are still working for their first employer and only a few switched jobs. Another conclusion could be that within 2 years about half of this generation (Sep '96 - Apr '98) will change jobs.

Employer

The questions about the current employer are intended to get an impression of the employer where XOOTIC members are working. Figure 2 shows the major branches where ex-OOTIs are working now. Compared to the results of the previous survey, there are some significant changes. The top losers are: *Flexible staffing company*, *Telecommunication industry*, and *University* (less OOTIs filled in the questionnaire). The top gainer is *Electrical industry*, who was the top loser last time.

Further, it looks like there is a trend to switch to a job at a company that is bigger and perhaps more safer in this economic climate. Was in 2000 still upwards of 13% of the members working for a small company (0..25 employees), this time that number is decreased to 6%. The opposite happened at the other side of the list. Large companies (>20.000 employees) are suddenly more popular: 8% this time against a good 2% last time. Apart from that, companies with a size of 100-500 employees are still the most popular (27%).
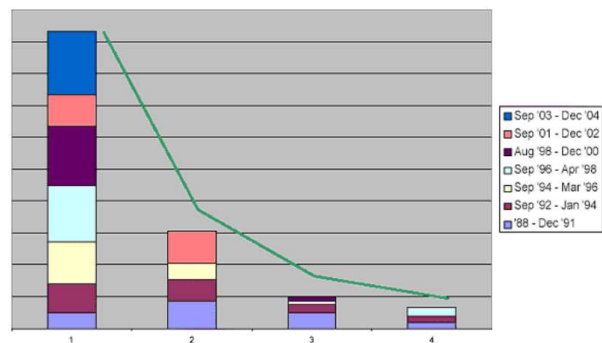

Figure 3: Number of employers.

The main reason why the current employer has been chosen is, like in 2000, *nature of the work*, followed by *geographical location*, *career perspective*, and *company culture*. *Salary* is not such a hot topic any more. Striking is the growth of almost all the options (except *products of the company*). Are we becoming more critical?

Figure 4 shows that the *final project of* OOTI and a direct approach by the company or a person working for the company (ex-OOTI or not) are still successful strategies of recruiting ex-OOTIs (55%). But, this time less OOTIs

found a job via an ex-OOTI and more found a job via a non-ex-OOTI. The *open application*, which became more and more unpopular over the years, gained a few percent this time: the option dropped from 47% in 1996, via 25% in 1998 to 14% in 2000, but climbed to 19% this time.
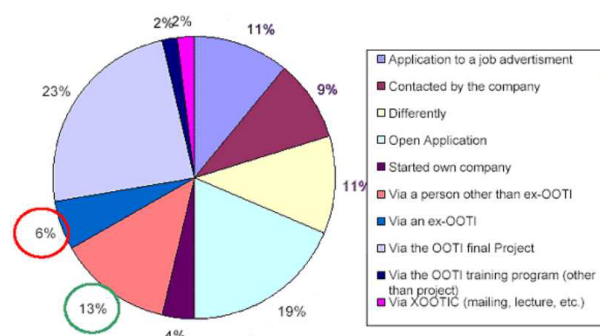

Figure 5: Current functions.

Figure 4: How did we get our current job?

Function

The results of the current & future function and working environment tell us something about our daily work and our expectations. If you look at Figure 5, you will notice that the XOOTIC members currently still have very technical jobs: 71% are *software/system engineer/architect* or *researcher*, compared to 73% in 2000 and 64% in 1998. But there is also a trend in moving to more leadership functions like *board member*, *project leader*, and *team leader*. And again *software architect* is the big winner. Further, this distribution can be found in all generations. It is not true that, the longer we work, the more leading function we get. When we asked which future function the members preferred, the picture looked the same: 29% preferred *software engineer*, 25% *software architect*, 9% *project leader*, and 9% *researcher/scientist*.
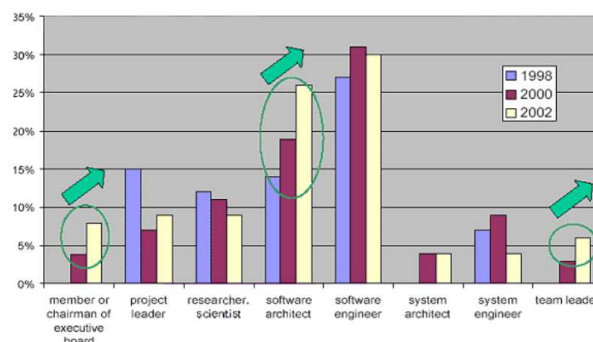
The distribution of disciplines in the current function shows a striking growth in the *computing science* and *information technology* sectors. There is a big shift from related disciplines (*physics*, *logistics*, *telecommunication*, *economics*, *electrical engineering*, and *business engineering*) to pure informatics. In 2000, this trend already started, But now it is extremely more clear.
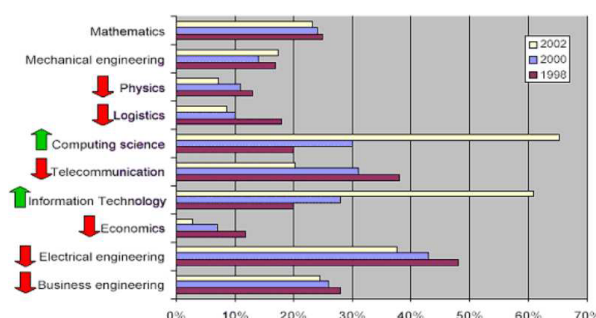

Figure 6: Disciplines of current function.

Skills

There were several questions concerning the tools and methods that are being used around the working place of an ex-OOTI. Like two years ago, **formal methods** are being used: 15% of the returned questionnaires indicated that methods like Chi, Spin, Promela, YAPI, and EXPECT were used in their direct working environment.

We are also happy to see that **design methods** are being used more and more. *Design patterns* grows from 51% (2 years ago) to 67%,

OMT grown from 33% to 48%, and *architectural patterns* from 21% to 43%. Poor *ROOM* is again being used only by one person. But there is also a downside. Design methods do not have our interest any more. The interest in *design patterns* has been halved from 40% to 21% and *architectural patterns* falls from 44% to 33%. *ROOM* is a big winner here: although almost nobody uses it, 21% of the members is interested in it (against 7% 2 years ago)!

The same trend, we observed in the use of and interest in **programming languages**. Languages like *C*, *JAVA*, *Scripting languages*, and *Visual Basic* are used more and more, but we loose our interest in them. The exception to this rule is *C#*. This was, by the way, a new option in the choice-list of this survey. With *C#* there are more people that are interested in it (24%) than use it in the working environment (14%) and that is not the case with any other language.

Windows NT is used most as a host **platform** (88%), directly followed by *Unix* (65%) and *Linux* (44%). The dominant used target platforms are: *Windows NT*, *Unix*, and *Linux*, directly followed by *Java Platform* and *pSOS+*. Note that *Unix* and *Linux* are more than doubling their use in 2 years! (see Figure 7) The answers given show that the interest in platforms is decreasing except for the interest in *Linux* and *Palm OS*.
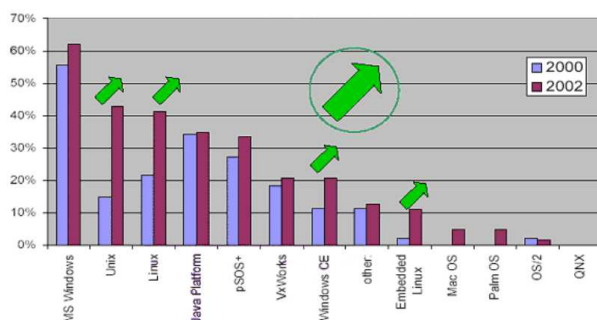

Figure 7: Target platforms used.

XML, *Automated testing*, *Distributed-* and *Component technologies* are very popular on the work floor of ex-OOTIs: on the average 45% uses these **technologies**. But only half of the ex-OOTIs are interested in them... The

only technology that is popular, is *.NET* (27% is interested and 21% uses it).

The usage of the *waterfall model* is fast growing (58% in 2002 against 34% in 2000) and again the most used **process model**, followed by *Rational Unified Process* (37% in 2002 against 7% in 2000) and *Extreme programming* (30% in 2002 against 19% in 2000). XOOTIC members are, like in 2000, most interested in *Extreme Programming* (40%), so we can conclude that this is not a hype.

Then the big question rises where the interest in **skills** of the XOOTIC members lays. This is a considerable different picture than 2 years ago. See for yourself in Figure 8 what has happened.
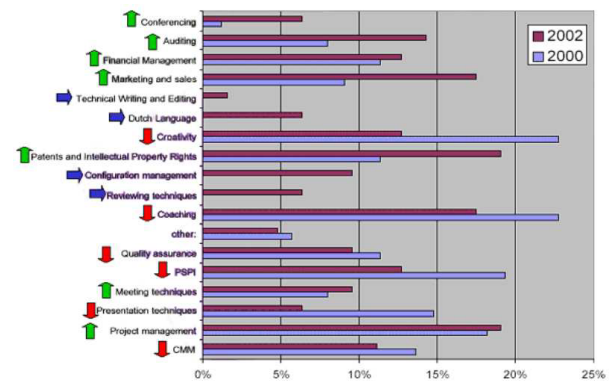

Figure 8: Interesting skills.

Working conditions

This section gives us an indication of the conditions of employment. Table 2 shows the current **salaries** of the 56 ex-OOTIs who filled in the question.

Currently 5 ex-OOTIs (equals approximately to 8%) are **working part-time** and 22 ex-OOTIs (34%) would like to work part-time.

54% of the ex-OOTIs reported to have *no signs* of **RSI**, 35% responded *sometimes*, 5% *quite often* and 6% *very often*. Those numbers are almost the same as last time.

59% of the ex-OOTIs give **guidance** to *1..5 persons*, 25% give guidance to *6..10 persons*, no one gives guidance to *15..50 persons*, and 5% of us guide *more than 50 people*.

Generation	≤ 20	≤ 30	≤ 35	≤ 40	≤ 45	≤ 50	≤ 55	≤ 60	> 60
1988 - Dec 1991						2	4		6
Sep 1992 - Jan 1994					1	3	3	1	1
Sep 1994 - Mar 1996					2	5	4	1	1
Sep 1996 - Apr 1998			1	4	1	1	1		
Aug 1998 - Dec 2000	1	2	3	6	1				1
Dec 2002 - Dec 2003									

Table 2: Salary distribution in EURO 1000 (absolute numbers of ex-OOTIs).

OOTI training program

The questions about the current Software Technology program only have to be filled in by the OOTIs who started their program after August 1994. The current courses were listed and the trainees of OOTI were asked to indicate their value/usefulness of the individual courses and whether they have applied the knowledge from the course during their work. Finally, they were asked to indicate the amount of time OOTI should allocate to each course.

The top 5 of *most useful* courses are:

1. Software Process Improvement (SPI) Basics [2000: not in top5]
2. Technical Writing and Editing [2000: place 4]
3. Workshop Software Engineering [2000: place 2]
4. Industrial Design and Development Project [2000: place 1]
5. System and Software Architecture [2000: place 5]

The top 5 of *least useful* courses are [same order as in 2000]:

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

The top 5 of *most applicable* courses are:

1. Technical Writing and Editing
2. Workshop Software Engineering
3. Industrial Design and Development Project
4. System and Software Architecture
5. Software Process Improvement (SPI) Basics

The top 5 of *least applicable* courses are:

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

XOOTIC

Again, the main reason to be a member of XOOTIC is to *stay in touch with other* XOOTIC *members* (28%). To *stay informed about the TU/e and/or* OOTI (21%) is the second reason. The XOOTIC MAGAZINE (19%) and *lectures* (15%) are the most appreciated XOOTIC activities.

We also asked the members to imagine they were unemployed. We then asked the question if they think XOOTIC could help them find a new job. 32% of the members thought *yes*, 21% thought *no*, and 47% *didn't know* or *wouldn't say*. That's a good score!

Suggestions for lectures are:

- Series of lectures on a single theme, giving room for technical depth and comparison.
- Knowledge transfer sessions about new technologies (e.g. Bluetooth).
- Organize a seminar with a guru (CMG like).
- Lectures on Saturdays, in large cities (Rotterdam, Amsterdam), with lunch.
- Regular lectures about the latest developments in the field of computer science.
- Organize a symposium on embedded sys-

tems.

Suggestions for activities are:

- Company visits/excursions to a company of one of the members.
- Major XOOTIC event.
- Organize study groups with the industry on hot topics.
- Excursions to countries where OOTIs come from.
- More social events like Paintball, BBQ, and midget golf.

Other suggestions are:

- Larger XOOTIC magazine and bring it out more often.
- Advertise MTD (e.g. via logos on t-shirts).
- Lower membership fees.

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 results have been given to the OOTI and XOOTIC boards.

The survey committee also received some recommendations:

- Use survey results to build the spending policy.
- Use the survey results to check if ex-OOTIs satisfy the goals of OOTI.
- Use the survey results to check if changes in the curriculum have the intended result.

We would like to pass these recommendations to the XOOTIC Survey 2004 Committee. We would like to thank all XOOTIC members who returned their 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 and 2000 Committees for their support and useful input. One word of special thanks goes to Harold Weffers.

The XOOTIC Survey 2002 Committee: Lucian Voinea, Sergei Shumski, and Marinelle van Dongen.