XOOTIC survey 1996

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In 1995, a large group of OOTI graduates entered the job market. The 1996 edition of the XOOTIC *survey, now an established tradition, explored what became of them and their predecessors. This article presents the survey results on ex-OOTIs' jobs and opinions with respect to OOTI curriculum and XOOTIC.*

The XOOTIC survey has become a traditional instrument to obtain information about ex-OOTIs (see Table 1). This information is used to provide the Designers Course Software Technology (OOTI) with a job profile of their graduates, and to collect feedback concerning the OOTI curriculum. The information is also used to determine industrial trends and additional education wishes. In addition, the survey is used by XOOTIC to evaluate its activities.

Survey date	# sent	# received	%
April 1993	22	17	77
August 1994	41	24	59
March 1996	88	43	49

Table 1: History of the XOOTIC *survey.*

For the XOOTIC survey 1996 a questionnaire, constructed by Henk Aarnink, Ronald Reinds, and Ed Knapen, was sent to all ex-OOTIs. A discussion of the results was held at the XOOTIC meeting of March 29, 1996. A summary of the results is presented here. The survey results are presented in four sections: job profile, function, OOTI curriculum, and XOOTIC. Since only 49% of questionnaires was returned, care has to be taken when studying the results. Furthermore, the group of ex-OOTIs who returned the questionnaire is largely dominated by the 'class of 1995', as can be seen in Table 2. In combination with results of previous surveys, however, general conclusions can be drawn.

Grad. Year	90	91	92	93	94	95	96
Resp. Share (%)	2	0	9	5	16	56	7

Table 2: Share of returned questionnaires per OOTI graduation year.

Job profile

Since 1994, the electronics industry has become the largest employer of ex-OOTIs, due to the continued decline of the share of the sectors *research and development* and *automation other* (see Figure 1).

Figure 1: Branch distribution (1994 figures shown between brackets).

Philips employs (in various divisions) 42% of the ex-OOTIs who answered the survey.

Large companies are favored by ex-OOTIs: 14% works in a company with 20 to 50 people, 20% in a company with 50 to 200 people, and the majority, 66%, in companies with more than

200 employees.

Job hopping is not (yet) common: only five ex-OOTIs are currently employed in their second job.

Function

Corresponding to the shift in branch distribution, the function distribution shows a shift from R&D scientist to system designer (see Figure 2).

Task	Current Job %		Next Job %	
information analysis	5	(5)	8	(8)
system analysis	11	(11)	12	(13)
system design	21	(19)	23	(18)
coding	20	(20)	9	(10)
testing	7	(9)	2	(4)
general/project mngmt	9	(9)	20	(18)
instruction/training	1	(2)	2	(2)
consultancy/support	2	(10)	7	(12)
fundamental research	2	(-)	3	(-)
applied research	12	(11)	12	(13)
marketing	2	(3)	2	(4)
other	8	(-)	0	(-)

Table 3: Ex-OOTI task distribution (1994 figures shown between brackets).

Figure 2: Function distribution (1994 figures shown between brackets).

An average day of an ex-OOTI has not changed much, though. The distribution of time over tasks, shown in Table 3, is similar to the result of the 1994 survey. Both system design (+2%) and research (+3%) show a slight increase. Although coding forms a large share, testing does not and even declined (-2%). A large decrease (-8%) is seen in the consultancy/support tasks.
In contrast to the shift in current ex-OOTI jobs, the desired next job shows a shift from project manager to system designer and system analist (see Figure 3).

The disciplines ex-OOTIs are most often confronted with are still Electrical Engineering and Computing Science. Most ex-OOTIs never or only seldom work abroad (except for four ex-OOTIs who do so permanently). 31% of the ex-OOTIs is in charge of a group of on average three or four employees.

Figure 4 shows the current and previous salary distribution. Only 24% of the ex-OOTIs is employed on a short-term contract (from one up to four years), compared to 50% in 1994. One ex-OOTI reported to have his own company.

Figure 3: Desired ex-OOTI next job.

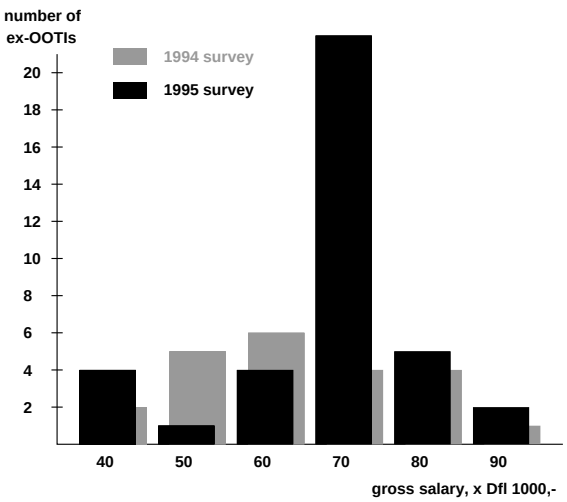

Figure 4: Ex-OOTI salaries.

OOTI curriculum

Appreciation of the use of OOTI curriculum modules in the current jobs of ex-OOTIs is shown in Table 3. The number of ex-OOTIs who answered the questions for a specific optional module gives an indication of the popularity of the module. Also given are the average appreciation of the use of the module in the current job and the use for multi-disciplinary development (both on a scale of 1 to 5).

OOTI curriculum module	**#**	**Use**	**Multi disc.**
software engineering	41	4.5	-
formal methods	42	2.5	-
designers project	42	4.1	3.8
logistics	20	3.0	4.2
VLSI	26	2.7	3.
laboratory automation	3	2.3	4.0
discrete manufacturing	21	2.2	3.5
homologation	6	3.8	3.7
general development	42	4.4	-

Table 4: Appreciation of OOTI curriculum modules (scale of 1 to 5).

Although the results show a greater spread then those of the survey of 1994, they present the same preferences of the ex-OOTIs.

Software Engineering scores the highest appreciation for its use in ex-OOTIs' current jobs. This appreciation is due to the workshop, and the positive attitude of companies with respect to software engineering methods. In the courses there should be more emphasis on Capability Maturity Model, e.g., planning and tracking, requirements engineering, and configuration management.

Formal Methods scores a very low appreciation mark. 55% of the ex-OOTIs reports that their company uses no formal specification languages at all. It is suggested that the courses should focus on larger, more relevant examples (including implementation activities), instead of on the syntax of the languages used.

Logistics scores the highest appreciation among the optional modules. The *Quick Scan* of this module, was suggested, should be external, performed in combination with people from the post-graduate course in Logistics and more relevant to the subject of the module.

Discrete Manufacturing has the lowest appreciation mark, but the first reactions on the new module *production automation* were more positive. A general suggestion was to include more post-graduate ('second phase') courses and less 'first phase' courses and examinations.

The *VLSI* module is criticized for being too theoretical and focussed on computer/computing science. The concluding project should be more like the course 'Designing Large ICs'; there should be more discussion of new developments (e.g., 3D chips, DSPs).

The final design project is highly appreciated, but comes second to the Software Engineering workshop. Possible explanation is the lack of teamwork in the final projects, as reported by many ex-OOTIs.

The *general development* courses are appreciated almost as highly as the software engineering module. Especially *Technical Writing & Editing* and *Project-Oriented Work Methods* were valued; *Management* ('leiding geven') was most often named as an unuseful course. Several ex-OOTIs suggested the addition of a course on presentation skills.

To determine the need for additional education, ex-OOTIs were asked which courses they would be interested in. 40% to 50% named courses in the categories computing science (design methods, embedded/real-time systems, new developments), management (planning, management of large projects) and skills. A large group of ex-OOTIs wishes to increase skills of negotiating and dealing with conflicts. In other technical sciences and career development, only 15% showed an interest.

In general, 58% of the ex-OOTIs reported a 'very positive' attitude of their company to the OOTI programme, 26% a 'positive' attitude and 16% said OOTI was unknown, too technical, or of no importance to a company not counting computing science as a core-business.

49% of the ex-OOTIs will not use the proposed title for graduates of designers courses (RTD, Registered Technological Designer). Most important reasons for not using the title are its lack of official status and familiarity. A large group of ex-OOTIs also argumented that they did not use any academic titles at all.

XOOTIC

Social contacts and keeping in touch with the OOTI programme are the most important reasons for being member of XOOTIC. X-Day, the trip abroad, and the New Year's reception were considered to be the most important XOOTIC activities (in that order). In general, activities rated 3.7 and frequency of use of XOOTIC 3.0 (both on a scale of 1 to 5).

The majority of ex-OOTIs (49%) is not interested in excursions to other companies, organized by XOOTIC. Other suggestions for future XOOTIC activities were the organization of (free) courses and lecture/discussion evenings or colloquia, combined with social meetings. Other suggestions included sporting events, presentations by XOOTIC members of their work/company, keeping a database of employment opportunities, and a better XOOTIC network.

Conclusion

Several changes in the ex-OOTI job profile were discovered, and feedback for OOTI and XOOTIC was collected. Both are discussed at an XOOTIC meeting, and at the External Advisory Board of OOTI. □

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