

X00TIC

magazine

Dezember 2008-Volume 13-Number 2

POST-MASTERS PROGRAMME SOFTWARE TECHNOLOGY

20 Years OOTI

TASS
software professionals

PT.S

TOPIC
TECHNOLOGY OF PRINTING

ASML

FEI COMPANY
TOOLS FOR NANOTECH

CENTRIC TSolve

océ
Printing for Professionals

Contents

Designing Deeply Embedded Systems 20

Years OOTI

editorial 3

Survey 2006 results

Tom Geelen, Roxana Frunza, Claudia
Peter 5

Interview with dr. Ad Aerts

Jorn Bakker 15

20 Years OOTI; a Retrospect

Menno.Lindwer@SiliconHive.com . . 17

XOOTI's: A Dream Team?

Hans Sassenburg 21

Advertorials

ASML 4

FEI 11

Verum 12

Verum 13

Topic 14

Tsolve 23

Tass 24

Colofon

XOOTIC MAGAZINE
Volume 13, Number 2
December 2008

Editors

Yanja Dajsuren
Panagiotis Georgiadis
Jorn Bakker
Chris Delnooz
Menno Lindwer

Address

XOOTIC and XOOTIC MAGAZINE
P.O. Box 6122
5600 HC Eindhoven
The Netherlands
board@xootic.nl
<http://www.xootic.nl>

Secretariat OOTI

Technische Universiteit Eindhoven
Department of Mathematics and Computer
Science
c.o. Ms. M. de Wert
HG 6.57, P.O. Box 513
5600 MB Eindhoven
The Netherlands
ooti@tue.nl
<http://www.ooti.win.tue.nl/>

Print production

WENS Creatie, Son en Breugel

Reuse of articles contained in this magazine
is allowed only after informing the editors and
with reference to "Xootic Magazine."



20 Years OOTI

editorial

October 1988 saw the founding of the OntwerpersOpleiding Technische Informatica (OOTI, literal translation: Designer's Course Technical Computing Science). And so, this autumn we are celebrating 20 years of OOTI.

The idea of OOTI was to provide additional academic training to already highly educated MSc graduates, resulting in the most highly educated software specialists in the country. The course focused on developing software for other technicians, e.g. electronic designers, power plant operators, and automated machining. OOTI had, and still has, a strong connection to industry. Feedback from industry is continuously sought and integrated into the curriculum.

The founding parents of OOTI were Prof. Martin Rem, Prof. Dieter Hammer, and Marloes van Lierop. The qualities of the founders are reflected in their later endeavours. Martin Rem became rector of the TU/e, Dieter Hammer became director of OOTI, and Marloes played an important role in setting up ESI (the Embedded Software Institute, at the TU/e).

Even though the OOTI curriculum is tough, very few students actually dropped out. This is due to a strong group bond and efforts of the coordinators (Marloes, later Harold, and now Ad) to motivate people and keep them involved.

In this issue of XOOTIC Magazine, we publish the results of the 2006 XOOTIC Survey. The Survey always provides a good retrospect on the recent history of the XOOTIC community. We apologize for the results being a bit outdated. But we felt they are worth publishing anyway.

Then follows an interview with the man who took over the role as OOTI Coordinator; Ad Aerts. He is the successor of Harold Weffers, who succeeded Marloes. Taking over from Marloes must have been hard. Marloes had gained a lot of credit with the students and the trainers. But Harold really became Mister OOTI, thereby raising the bar for his successor. We are convinced that Ad will make his own mark on OOTI and will grow the OOTI course further.

We also wanted to investigate to what extent OOTI played a role in the Dutch IT landscape. One may expect this to be the case from a school with such high claims. Thus, we interviewed some ex-OOTIs that we expected to provide some insight in the more external aspects of the course.

This XOOTIC Magazine also contains a very special and very personal retrospect by one of OOTI's former trainers, Hans Sassenburg. If anyone instilled an in-depth quality orientation in generations of OOTIs, it must be Hans.

Last, but not least, we want to thank Corry Kolk and Maggy de Wert for their devotion to OOTI. Their warm support still plays an important role in keeping OOTI together. As patronesses of XOOTIC, they continue to do so for us all.

As always, remains for us to wish you happy reading!

XOOTIC Magazine Committee

Yanja Dajsuren

Georg Panagiotis

Jorn Bakker

Chris Delnooz

Menno Lindwer

Morgen kunnen we 10-nm-chips maken. Vandaag mag jij bedenken hoe.

Bij de chipproductie werd tot nog toe Deep UV-licht gebruikt (193 nm). Om kleinere chips mogelijk te maken, werkt ASML nu aan de toepassing van Extreem UV-licht (13.5 nm).

In het vacuüm zijn vluchtige koolwaterstofmoleculen aanwezig. EUV-fotonen slaan deze organische moleculen uiteen.

EUV-fotonen

13.5 nm

-1%

Door het neerslaan van vrije koolstofatomen (0.5 nm) op de spiegels in het vacuümsysteem wordt de reflectie verminderd.

Een systeem van magnetisch gestuurde spiegels in een vacuüm 'kneedt' het EUV tot een constante bundel, sterk genoeg om het silicium te belichten, voor de chipproductie van 10-nm-structuren.

ASML zoekt naar oplossingen om het spiegelsysteem schoon te houden. Schoonvegen behoort niet tot de mogelijkheden.

Voor engineers die vooruitdenken

Profiel: Wereldwijd marktleider in chip-lithografiesystemen | Marktaandeel: 65% | R&D-budget: 500 miljoen euro | Kansen voor: Fysici, Chemici, Software Engineers, Elektrotechnici, Mechatronici en Werktuigbouwkundigen | Ontdek: ASML.com/careers



ASML

Survey 2006 results

Tom Geelen, Roxana Frunza, Claudia Peter

Xootic

The tradition of bi-yearly surveys goes on. At the end of 2006 another edition of the Xootic survey was sent out. The results have been processed and presented to Xootic members in a lecture in 2007. And here are the results again, but now on paper for everyone read as often as they like. . .

Introduction

The reason the survey is held, is to accomplish these goals:

- Give insight to current OOTIs and ex-OOTIs on possible future careers
- Give insight to ex-OOTIs on what their ex-OOTI-colleagues are currently doing
- Give insight to OOTI-management on how skills taught at OOTI are used in practice and what practical skills need to be taught at OOTI
- Give feedback to the Xootic board and members on our alumni organization

This time 66 Xootics filled in the survey, which is 37% of the total number of surveys sent out. This is comparable to the response rates of earlier years, but not as high as it used to be in the previous millennium. See Table 1 for all the numbers. Of the respondents, 38% are new ones (did not fill in the survey the previous time), which also means that about the same amount of people that did fill it in 2004 didn't do so anymore in 2006. Looking at the response rates by generation, we can see that all generations are reasonably represented in this survey. Considering earlier surveys, we can see that mainly the generations from Sept. 92 - Mar.96 were responsible for the high response rates before 2000 and that there is a negative trend in the number of responses from the genera-

tions from Sept. 96 - Dec. 2000.

An important theme for this survey was the difference (if any) between Xootics that had their professional education in the Netherlands and ones that had it abroad. About one out of four (24%) had their education abroad. Of course, this doesn't mean that exactly those are the Xootics with a non-Dutch nationality, although there will obviously be a strong correlation there. We don't know, however which option people filled in that had part of their education abroad and part of it in the Netherlands. As can be seen in Figure 1, the "internationalization" of OOTI is definitely a new trend, with over 60% of the youngest generations having been educated abroad.

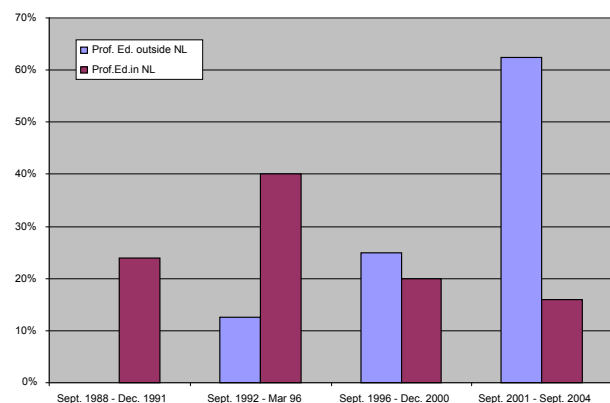


Figure 1: Professional education outside the Netherlands by OOTI generations

	2006	2004	2002	2000	1998
Sent	179	179	210	189	155
Received	66	65	63	88	69
Response	37%	36%	30%	47%	45%
1 Person =	1,5%	1,5%	1,6%	1,1%	1,4%

Table 1: Survey responses over the past years

Employer

Obtaining a job doesn't seem too difficult for Xootics: all respondents are employed. The number of part-time workers is 12%, which is quite an increase compared to the 8% in the previous survey. We also don't see many job hopppers: only 9% had more than three different employers after OOTI (and the people that are with their third employer are mostly from the earliest generations). Although job advertisements (26%) and open applications (18%) are the most common ways to obtain a job, the (ex-)OOTI network also plays an important role: 14% got their job via an ex-OOTI and another 12% via their OOTI Final Project. Remarkable here is that most of all the people educated abroad used ex-OOTIs to get their job. An explanation could be that they likely don't have many other networks yet and don't know the local industry as good as people that grew up here.

Job function

When we look at the function of employment, we see that almost half (48%) of the Xootics work in the field of automation. Research & Development take another 28% and 15% is active in managerial functions. If we look at the distribution per generation, we can see that the management functions are mostly taken by (no surprise here) the earlier generations. The people educated abroad mostly have engineering and research functions, while almost no one is active in architecting or management. This is easily explained by the fact the foreigners are mostly from the later generations and simply lack work experience for the latter functions.

When we compare the functions that people have over the years (Figure 2), we notice one big thing (besides that we didn't have any respondents from team leaders nor anyone from an executive board), which is a vast increase in system architects and a decrease in software architects. Was there really a big shift here, or is the same function getting a different label?

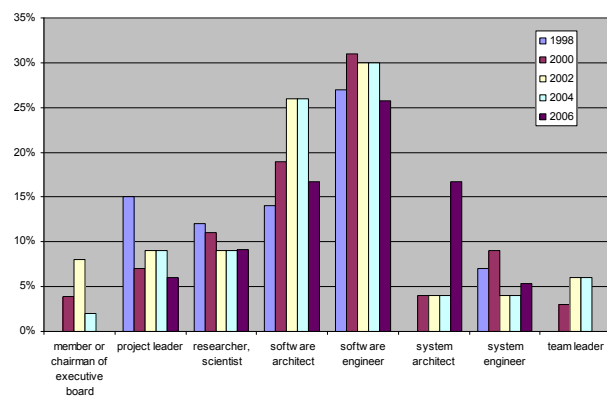


Figure 2: Current function, compared with earlier surveys

As for the industry of employment, we see that university, defense, metal, and telecom are minorities. The (bio)medical/healthcare industry was mentioned by several respondents, but it was not part of the standard answers. The big industries are electronics, research, software house/flexible staffing, and consultancy. The earlier generations are mostly into electronics and research, the later generations are mostly active in a software house/flexible staffing company. The foreigners again generally match the pattern of the later generations, but they are more in research and university areas than the Dutchies.

When we look at the expertise people need in their work, we can see that it is reasonably stable over the past years, but mechanical engineering and physics are clearly increas-

ing: multidisciplinary environments are becoming more common. It is also interesting to notice that there is a nice distribution over the activities within our jobs (requirements engineering, design, testing, support, etc.). It seems we are involved in everything.

Job benefits

The majority of ex-OOTIs (56%) is working at a huge company (>2000 employees), while only 9% is working at a small company (<25 employees). The starting salaries for ex-OOTIs show a good trend: they are definitely higher for recently graduated OOTIs (see Figure 3). Of course, there is inflation, but that alone doesn't explain the increase. The right explanation is most likely the fact that in recent generations, many started the OOTI program with already some years of working experience, while in the past it was more common to do OOTI immediately after finishing your Masters. And companies reward working experience. Another aspect that plays a role is the foreigners. They need a residence permit to work and live here in The Netherlands. A relatively easy way (regarding bureaucracy) is the kennismigrant regulation, but it requires a certain minimum salary ($\pm 33k$). When we look at the people that had their education abroad, we indeed see a big peak for the 30.000 – 35.000 range.

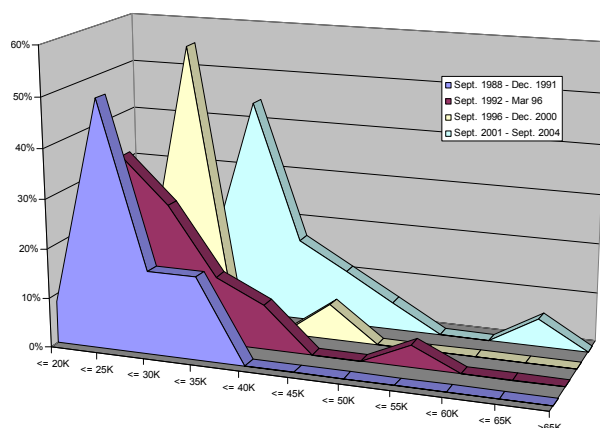


Figure 3: Starting salary per generation

When we look at the current salaries (Figure 4), we see a steady increase. The earlier gen-

erations seem to flatten out a bit, but this is likely caused by the fact that a significant part of them is moving off the scale (>65k), which makes it impossible to calculate a reliable average salary for the group. It is also visible in the graph that the people that started around 2000 had some difficulties moving up on the salary scale in the bad economy of the following years. When we relate the salaries to the functions, we can see that the architects earn well, but they are still beaten by the managerial functions.

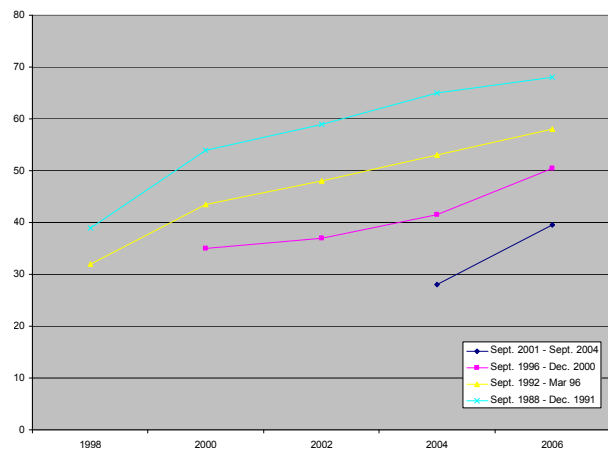


Figure 4: Salary development over the years

Another benefit (at least most people see it that way) are trips abroad. More than one third (37%) doesn't have any trips at all, while another 36% has more than three trips a year. Looking at job types it seems that the consultants and managers make by far the most trips.

Trips abroad are not that important to us, however, as they are at the bottom of the list of important factors in a job. Most important are the job activities, working atmosphere, and company culture. The salary only takes the 4th place on the list, so it's not all about the money. The other items that were rated (5th-8th positions, in order) were job security, days off, fringe benefits, and ethical. We are satisfied with all these aspects in our current jobs, but for the job activities and company culture not as much as we find them important.

One other job benefit is CANS (Complaints of arms, neck, and/or shoulders, formerly known

as RSI). Fortunately, although half of us sometimes has complaints, we see that the number of people that suffer often from these complaints is going down over the years (this year 2% has quite often complaints and 3% very often).

When we look at how we travel to work (which we almost all do: only 1% works at home), we see that going by foot or bike is most popular (43%), followed by the car (39%). The remaining 17% uses public transport. If we look at the differences between the Dutchies and the foreigners, we see that the foreigners use the car a lot more often (and public transport slightly more). All at the cost of bicycling... Didnt they learn cycling or is the Dutch weather simply too cold/wet/unpredictable?

Looking into the Future

Now that weve discussed the current work situation, its time to look ahead: what do we want to become? We see that the engineers and researchers among us mostly want to become software/system architect or manager (team leader, project manager, general manager). The consultants also want to become manager or simply stay consultant. More than half of the architects want to stay in their function. The rest has various ambitions, such as becoming a field specialist, manager, director/owner, or account/sales/marketing manager. The managers are quite predictable: they either want to stay or go up the ladder and become part of the executive board or director/owner. The latter could of course also mean they want to start their own company. See Figure 5 for the details.

Talking of own companies, this is popular among Xootic people: 43% is interested in starting one. Other numbers about our future are that one out of four would like to start working part-time, 45% of us would like to live and work abroad, and 26% isnt secure about their career path.

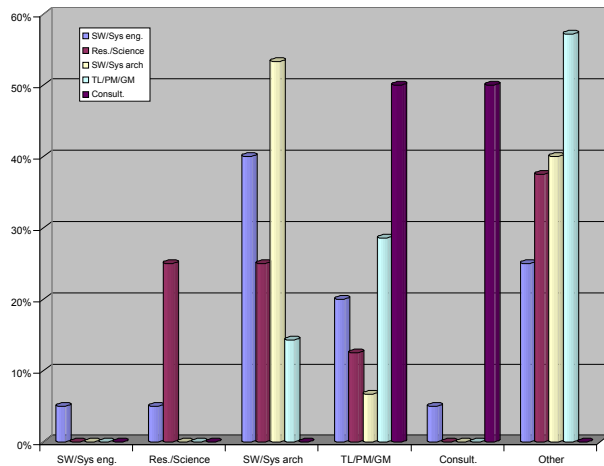


Figure 5: Our ambitions

The OOTI Program

Our program is quite well known in industry (61% known, 9% not known, 30% dont know/not filled in). However having done the OOTI program is that often explitley rewarded (35% rewarded, 23% not rewarded, 42% dont know/not filled in). Were not showing off with OOTI, at least not by using our title: only 24% uses it regularly and 32% uses it sometimes. Which means 44% of us doesnt use the title at all. But were very satisfied with the program: 98% of us would still have done OOTI when they could reconsider their choice in past. The choice of doing OOTI has moved in time these days though: in the past (generations up to March 1996) practically everyone started OOTI after finishing their Masters (no work experience). These days people join OOTI with an average working experience of almost two years.

All skills taught at OOTI are being used in practice, with the architecting course (SSHA) and Technical Writing and Editing being the top: they are used by almost everyone (>80%). Personal Software Process, FPGAs, and Formal methods are only used by a few (10%-20%). Especially the non-technical skills are

used a lot. Interesting is also what techniques people use that are not (yet) taught at OOTI (at the moment of the survey). In our survey at the end of 2007, the top list was:

1. Extreme programming (35%)
2. Agile methods (32%)
3. Other OO design methods (29%)
4. Rapid development (23%)
5. Web technology (21%)
6. SA/SD (9%)

In the survey there was also room for general remarks about the program. Here we received suggestions to add more practical projects, more agile, more embedded, more system approach, more business world connections, and more promotion of the program. Besides the suggestions for improvement, which almost all(!) have been implemented in the new OOTI program, there were quite some compliments.

Our association

Networking is the most important for the existence of our association, as 73% gives staying in touch with other Xootic members as a reason to be a member. Another important one is staying informed about the TU/e and/or OOTI (55%). Other reasons are the lectures (32%), magazine (21%), activities (20%), and various other reasons (17%), such as the survey or just because its cheap. Our internet page is clearly more popular than during the previous survey, but still a large amount of us (45%) never visits it.

The lectures are a valued activity for many of our members. Those that dont visit the lectures gave the following reasons:

1. Family situation (25%)
2. Not interested in the topics (18%)
3. Living too far from Eindhoven (16%)
4. No familiar faces (15%)
5. Not able on the particular day (14%)
6. Not feeling a connection with Xootic (9%)
7. Other (2%)

We also asked for subjects for future lectures

and magazines, to which we got many responses. A grasp from the suggestions: starting your own company, interviews with ex-OOTIs, Aspect Oriented Programming, Model Driven Architecture, Agile/XP, mobile/wireless, and (bio)medical/healthcare.

Its good to see that many members care about Xootic and its activities. Yet a bit more people feel they were less pleased (15%) about our association than one survey earlier than the amount of people feeling more pleased (3%). There was also a possibility for remarks to the board. Besides compliments, there were also remarks about the less active community (though no concrete plans to do something about it), creating a LinkedIn group (has been done), and many suggestions on lectures, magazines, and activities: more, less, better, different, ...

In conclusion, we would like to thank all XOOTIC members who returned their questionnaire for their co-operation. Also we would like to thank the XOOTIC Survey Committee 2004 for preparing and sending out the questionnaires.

The XOOTIC Survey 2006 Committee:

Tom Geelen

Roxana Frunza

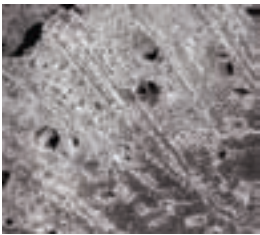
Claudia Peter

Empty Page

Page 10



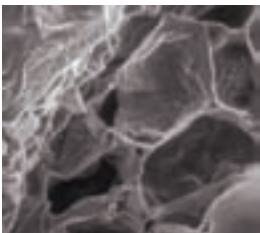
Be a part of the FEI experience!



FEI Company is looking for enthusiastic and dedicated professionals to strengthen its teams throughout Europe.



As the global leader in innovative tools for researchers and developers working down to the atomic level, FEI offers challenging and highly rewarding career opportunities.



FEI is interested in people with a background in physics, electronics, mechanics, or software for functions within all our business units including including R&D, manufacturing, sales and service, and product marketing.

For a complete overview of our careers please ask for the HR profile overview and learn more at **careers.fei.com**

We look forward to meeting you!

FEI Company: committed to our employees and to diversity and innovation in the workplace.



verum[®]

**Tools for building
mathematically
verified software**

Take control! Product deve

Verum's mission is to provide software architects and designers with mathematically verified software for complex embedded systems. Verum is a leading company in the field of software engineering and is seeking individuals able to contribute to the advancement of the company. If you have one or more of the following:

- At least 5 years experience in developing complex software applications
- Experience of C, C++ or C# and UML, UML R/T, DCOM or CORBA
- Knowledge of Windows, Linux, VxWorks or other RTOS
- Software product development experience: architecture, design, implementation, testing

Verum has a great offer for you including: an excellent working environment, a challenging job, a variety of customers in the business and innovative remuneration packages. For an informal discussion (in Dutch or English) call/SMS Paul Haerle on 06-43800000.

TAKE CONTROL! CONTACT VERUM TODAY.



Developers / C++ professionals

with accessible, easy-to-use products that enable them to build
Verum is growing rapidly at the cutting edge of software
enhancement of software design technology.

ications
A

and programming

environment, the chance to work with the best people and top
that allow you to create your own work/life balance.

ers on +31 (0) 620-992685 or email him at paul.haers@verum.com

www.verum.com



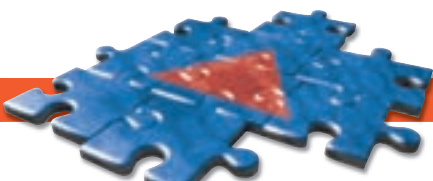
TOPIC Embedded Systems: embedded in your future?

Passie voor techniek? Wij dagen je uit!

In je carrière wil je groeien. Het beste uit jezelf halen en je ambities verwezenlijken. Dat begrijpen wij bij TOPIC maar al te goed. Als high-tech systeemhuis, gespecialiseerd in embedded systeemontwikkeling, dagen wij je uit. Iedere dag opnieuw. Sterker nog: uitdaging is bij ons een arbeidsvoorwaarde!

Bij ons werk je aan afwisselende en uitdagende projecten in technische software-ontwikkeling, test-, integratie- & configuratiemanagement en digital hardware design voor embedded systemen. Bij gerenommeerde klanten in consumenten-electronica, medische- en professionele systemen. Werk dat past bij jouw ambities. Ook biedt TOPIC je gedegen en persoonlijke coaching, het Personal Improvement Program en uitdagende secundaire arbeidsvoorwaarden.

Ben jij die **Embedded Software Engineer, Digital Hardware Designer, Test Specialist of Configuration Manager** op zoek naar een nieuwe uitdaging? Mail dan snel je motivatie met CV naar recruitment@topic.nl of bel eerst voor meer informatie (0499) 336 979.



WWW.TOPIC.NL

Interview with dr. Ad Aerts

Jorn Bakker

Xootic

As of september this year Ad Aerts has taken over the role of manager from Harold Weffers. In the light of reflecting over the history of OOTI and the future perspective on the program, we asked Ad to introduce himself to the community and share his thoughts on the program.

Since recently you have been the new OOTI manager, could you introduce yourself to our readers?

My name is Ad Aerts and my academic career started in the field of Particle Physics. After receiving my PhD at the University of Nijmegen, I worked as a postdoctoral researcher for six years. After these six years I got the opportunity to work at the Eindhoven University of Technology in the field of computer science. During the last twenty years here at the TU/e I have been involved in research and teaching in the field of databases and information systems. Apart from the experience in science I also participated in the educational reform of the computer science department. At some point I was asked to take on the role of program manager here at OOTI and I accepted.

What is your opinion on the current program?

As you might know, the program has been transformed during the last year. Originally, the program was organized on a course-based structure, i.e. a period of a year of courses followed by a three month project and the end project at a company. Because of this structure, there was a large time gap between the acquisition of knowledge and its application. Now, the program consists of five blocks of three months in which the trainees do a project on a particular topic and/or domain. These blocks start with a course of one or more weeks after which the theory can be applied immedi-

ately. This structure narrows the gap between the moment knowledge is acquired and the opportunity to apply it.

Naturally, this new approach needs a good feedback mechanism. Our industrial partners supply the topics and knowledge for the projects and, since the industry is changing constantly, the projects also need to be revised every once in a while. Also, there are regular informal meetings with e.g. Harold Weffers to discuss the current status. And the teachers of the projects provide reviews on the way things are going. Overall, my opinion is that the current OOTI program is a great program that needs close attention because of the novelty of the structure.

What is the value of the PDEng degree compared to that of Msc?

In my present view (as OOTI coordinator) I like to maintain that the 90% of our students that will go to work in industry should prepare for it properly. At present, many students opt for a Master thesis project executed at a company. My recommendation for such a preparation would be to do a Master project with one of the research groups (to deepen and strengthen their academic qualifications such as critical attitude and ability to think abstractly by direct exposure to basic research) and then do the OOTI program to prepare them for technical leadership in industry projects. It is not that the MSc program is not scientific enough. What

is there can be used to more advantage. Of course there will always be students who do not want to continue for a PDEng or PhD degree and do their Master project in a company. One of my activities now is to point out to master students the OOTI way of preparing for industry. Too many of them are not aware of the possibility.

The value of the OOTI way, is that upon receiving the PDEng degree, a student has proven experience in at least six industrial projects. For people that are ambitious and are looking for a way to develop their personal and professional skills, the OOTI program offers the means to develop these. The choice for OOTI after receiving your MSc degree is a tradeoff. You can start working in industry or choose the value that OOTI has to offer in exchange for spending two more years at the university. Lately, we have seen that Dutch students tend to choose the former, resulting in a smaller number of Dutch students in the program. Foreign students, however, see OOTI increasingly as an opportunity to leverage themselves into the hightech industry. We are aiming for a higher inflow of qualitatively good students. This would lead to higher exposure and ultimately a higher number people that know the PDEng degree and what it stands for.

There is no homologation phase anymore?

We chose to restrict access to the program to people that have a solid background in computer science. I would say that at least 80% of the courses followed by a student should be computer science courses in order to be eligible.

In your opinion, does the OOTI program influence the embedded systems industry?

Its hard to say whether the program has an impact on the industry. Our graduates have been trained in the field of embedded systems, specifically because embedded systems pose many constraints. When doing a MSc pro-

gram you are typically not constrained by resources. In the industry, however, there are many constraints, some of which are not negotiable. By training the students in such a highly constrained domain, they are aware and prepared for these kind of projects.

What do you think makes the OOTI program so successful?

The program is a unique combination of academic education and industrial projects. The industry provides nice and interesting projects and a translation from theory to practice. The university provides the skills and theory needed to tackle hard design problems. Traditionally, there is a gap between the two because of the research oriented education in the latter and the need for practice-driven approaches in the former. The combination of the two in a program like OOTI can be seen as a successful symbiosis of theory and practice.

What is your vision on the program?

Since the transformation of the program is still very recent, there are no major changes expected in the foreseeable future. I would say the biggest task will be to monitor the quality of the program, since there is little material for comparison. The way to monitor the quality is to assess the achievements of the candidates in the challenging end projects. If the companies are still happy then the program works.

My vision is we should keep on examining what makes the architect an architect. What makes the architects skills stand out against those of an engineer? What key skills does an architect need in order to be successful? How can we shape the educational program in such a way that all of the needed skills will be addressed? For this we need feedback from the XOOTIC community. The coming period we will be fine-tuning the program together with our enthusiastic lecturers such that it reflects this need as closely as possible.

Thank you very much for your time.

20 Years OOTI; a Retrospect

Menno.Lindwer@SiliconHive.com

This paper is a digest of interviews with a number OOTIs from earlier generations. It attempts to gauge the impact that OOTI has had on them and on the Dutch IT landscape in general. For that purpose, we selected a number of interviewees and asked them about their definition of professional success, situation on the Dutch job market for OOTIs, their own influence and the influence that other OOTIs have had on IT developments.

Introduction

As ex-OOTIs, most of us do feel a bit like members of a select group of individuals. I remember being drawn from Enschede to Eindhoven on the promise from an early OOTI brochure, that I would become one of the highest educated computing scientists (or is it computer scientists?) in the Netherlands.

Now being 300 such highly educated specialists, did we make our mark? When listening to other ex-OOTIs, for many it is clear that OOTI has had an impact on their careers and lives. However, did these people also have a noticeable impact on their professional environments? What processes did they set in motion? What has the impact of OOTI been on these processes? Did they provide major contributions to certain innovations that can be attributed to their education at OOTI?

When selecting the interviewees, we used the following criteria:

- *'Seniority'*: the OOTI generation. We expect older generations to have a better view on the achievements of subsequent generations,
- *Position*: the extent to which their work would influence their environments,
- *Spread*: in terms of the kinds of companies they are currently working for.

After a meticulous ☺ process within the XOOTIC Magazine Committee, we selected the following ex-OOTIs:

- Harold Weffers, Business Director, 3TU.NIRICT Research Laboratories, TU/e
- Martin Diepstraten, Principal Scientist, NATO
- Martien Kuunders, Senior Strategic Marketeer, KPN
- Robert Deckers, Senior Software Architect, Sogeti
- Bram Stappers, Technical Director, Tiobe Software

Next to that, this article is also shaped through an interview with Angelo Hulshout, independent consultant, lecturer at OOTI and various other institutes, and columnist at Bits&Chips.

The questions that we asked were broadly the following:

- What does '20 years OOTI' mean to you?
- What are your personal criteria for professional success?
- What are you looking for in your work?
- To what extent did the OOTI programme influence your career?
- What does the job market for OOTIs currently look like?
- What was the OOTI influence on the Dutch IT landscape?

These questions served as guidelines, not so much as a questionnaire that had to be dutifully filled out.

Impact of OOTI on Career

The impact of OOTI is highest in the early years of people's careers. In those years, an OOTI's career is observed to develop faster than the careers of other software professionals. OOTI instills a conscious and structured way of thinking about requirements and systems, which has a lasting effect on OOTIs' careers. The reason is that this way of thinking is universally applicable. When OOTIs move out of the traditional software engineering profession, this background proves to be very valuable. For example, in business contexts, this is manifested in the ability to quickly assess whether something technically makes sense.

Many ex-OOTIs are currently working as senior architects or similarly specified jobs. Ex-OOTIs also seem to be successful in merging some level of management role with a high level of technical involvement. Since ex-OOTIs feel there is value in their technical capabilities, they rather see themselves as technology innovators than managers.

Thus, even though the interviewed OOTIs currently have roles with some degree of management responsibilities, they measure their own success primarily in technical terms. Some of the criteria for success that were mentioned were: academic progress, applying new technology, degree to which formal approaches were used, achieving systems interoperability, integrating features without loss of quality.

However, even other measures of success which are less technical, are still mostly driven from personal motivation, such as: have interesting and meaningful work, determine your own direction, instill growth in people.

The more traditional criteria for success, as measured outwardly are also mentioned, however, perhaps considered important, such as: continuously returning customers, successful adoption of products by customers, influencing IT technology suppliers, and ultimately in-

fluencing the direction of the company.

How do people currently regard OOTI?

As is clear from the previous section, early OOTI generations do place high value on their OOTI background. However, they seem to loose touch with OOTI and their fellow ex-OOTIs. They do regret that this happens and would like to have some level of involvement. However, this rarely seems to happen.

The reason is probably that, after a number of years, people move on to using more soft skills and other generic capabilities, such as abstraction and generalization. This means that they have little need for additional technical background, to be obtained through OOTI or networking with other ex-OOTIs.

However, we purposely selected our interviewees with different occupations and affiliations. Most of them moved out of the Eindhoven region. This makes it harder to stay involved with the OOTI community. As we will see later, most other ex-OOTIs primarily stick around the Eindhoven area, and so our selection may have been atypical.

Current job market for OOTIs

From their positions, some of the interviewees have a good overview of the job market for software engineers. So it seemed interesting to us to get their ideas on what the position of OOTIs is on this market.

First of all, many remarked that, when they graduated OOTI, the school was already well-known and being an ex-OOTI provided an advantage over other applicants. People have the distinct impression that this is still the case.

We also did a little background research on the job history of our applicants. On average, they graduated from OOTI some 15 years ago. In the mean time, they switched companies three times. These moves were usually the result of an inner drive to change. Apparently, the job market offered opportunities in many different

directions, and that the job market was strong in the past.

Another sign of still increasing interest from employers is that they are providing more OOTI graduation projects than can be fulfilled. OOTI recently started short intermediary industrial projects. The industrial interest for those projects is increasing. And, more importantly, companies that provided such projects continue to submit them.

Another sign of a vibrant OOTI job market is that that all current OOTI graduates have at least one job offer already available. (It must be noted that these observations pre-date the latest developments on the financial markets.)

At this time, there are a number of organizations who have a need to make many different systems interoperate. This should translate in many opportunities for OOTIs.

Last but not least, certain companies specifically state in their job descriptions that an OOTI or PDEng degree is a definite advantage.

Impact of individual OOTIs

In particular in this section the observations are derived from the overview that the interviewees have on the roles of ex-OOTIs in general, not on just their own roles.

Many ex-OOTIs have influential roles as system architects. It was observed that they play that role efficiently, probably because OOTI puts particular focus on project management and other soft skills.

However, in order for software architecture to be taken seriously, it is important to understand the dynamics of the organization. Architects need to get managers to understand that it is important to invest in development, maintenance, and adherence to a proper software architecture. These are polite ways of saying that, in many organizations, some dose of politics is required. It was remarked that this is something that ex-OOTIs generally lack.

Even though architects in general may find it difficult to get their ideas accepted at all levels in their organizations and projects, OOTIs and

ex-OOTIs did have proven influence on some interesting developments:

- After years of resistance, an OOTI graduate managed to introduce Model-driven Design at Océ Nederland BV.
- It's due to the hard work of a few ex-OOTIs that UML is finally picking up within ASML.
- Several ex-OOTIs played important software architecting roles at the Information and Software Technology sector within Philips Research. Within this sector, they were largely responsible for some successful set-top box and television set middleware stacks.
- Several ex-OOTIs have achieved chief technical levels within their respective companies.

Impact of OOTI on the Software Architecture Landscape

The focus of OOTI on the practical application of formal methodologies, specification, and abstraction plays an important and lasting role in people's careers. OOTI put the role of software architecture as such on the map. In the first years of OOTI's existence, software architecture was not seen as a discipline. If the result of software development led to be a solid construction, it was considered the result of the process that was followed. It was not seen as the merit of a conscious effort to construct a solid architecture. OOTI was one of the first courses to recognize the importance of a proper architecture, including structural reasoning about requirements and methodologies.

Another impact of OOTI on the Dutch IT landscape is the influx of foreign talent. OOTI currently attracts many foreigners. After graduation, most of them stay in The Netherlands, in particular in the region around Eindhoven. Those that do leave the country do so mostly because of family circumstances. Some of them get hired by Dutch multinationals who then send them to work in their countries of origin.

Several people remarked that the success of

OOTI is also partly caused by the high admission criteria and quite strict selection. This means people who enter OOTI already have quite a high potential and a tendency towards proper software architecture. And thus, perhaps the impact of OOTI as a school is not as high as it seems. At least OOTI plays an important role in attracting foreign talent and retaining them for Dutch companies.

Conclusions

In this article, we set out to find the ways in which OOTI and its graduates influenced the Dutch IT landscape.

For one, it was found that the impact of OOTI is mostly concentrated in the area around Eindhoven. Most OOTIs actually remain in this region. If we would have selected our interviewees from this region, it is likely that we would have found more evidence to support the thesis.

Also, it is quite clear that OOTI plays an important role in attracting foreign talent and keeping them engaged in the Dutch economy. This could be considered as a more quantitative

than qualitative impact. For the quantitative aspects of the impact of OOTI, we refer to the results of the latest XOOTIC survey, also presented in this magazine.

OOTI definitely helped to put software architecture on the map. As a recommendation to OOTI, we can conclude that OOTIs need more "political" skills to drive the architecture discipline and its results through to all layers of the organization.

When you try to find evidence for a certain thesis, you are bound to find it. Thus, it was clear that evidence would be found. Could OOTI have had a bigger impact? Should we not see more frequent developments in which OOTIs played a positive role? Should we not see more authoritative books and articles by ex-OOTIs?

So, this article remains a bit inconclusive. As ex-OOTIs, at least our interviewees can look back on interesting technological developments. In general ex-OOTIs have vibrant careers and good prospects. Questions about the more global impact of OOTI remain. In itself, this is not a bad thing. It leaves some questions to be answered in subsequent issues of XOOTIC Magazine.

XOOTI's: A Dream Team?

Hans Sassenburg

It is a cold evening here in the Black Forest (Germany). I just finished a draft version of the report and I am making myself a cup of tea. I needed it. The current assignment is not an easy one. I execute this assignment together with an XOOTI: Lucian Voinea, an expert in the area of source code and evolution analysis, who started his own business. We are analyzing a large project in deep in trouble, and its difficult to find a way out. But it is also challenging. Any helpful, underpinned advice will probably be implemented. Yes, I know a solution, but it is probably not feasible. Fly in a team of the 10 best XOOTIs I know, for a period of 6 months, and I am sure we would get the project back on track. Call it the "Dream Team"!

Yes, XOOTIs are special, very special. I remember well that I gave my first lecture, somewhere in January 1996. It was a lecture about SPI and SW-CMM, four Tuesday evenings, on invitation by Marloes. Not only OOTIs, also some XOOTIs were present, and even members of the staff. Needless to say, I was very nervous. Imagine, an electrical engineer giving software lectures at the Eindhoven University of Technology for such an audience. . . But it went well, and I gained more confidence after each lecture. Sure, they were bright people, but relatively human though.

In June 1996, I had the possibility to give a presentation to some OOTIs, close to finishing their program. I told them about the plans for my new company, still to be founded: AAS. Thank you again, Marloes, for giving me that opportunity! Two OOTIs decided to join the company, Franois Vonk and Paul Janson. Our first employees! In the years after, I became more and more involved in the OOTI curriculum. Besides the SPI/CMM course, I also introduced the PSP course, a short but enjoyable course, forcing the students to deliver defect-free software (do you remember, Sander Kooijmans?). Yet later, I was asked to teach Project Management as a preparation for The Work-

shop. And before, in between and after those lectures, I enjoyed talking to Corrie and play cards (rikken) with some of the students.

And the company? Well, despite tensions on the labor market, other OOTIs that finished their program and XOOTIs with industry experience joined AAS. Michiel Kamps, Rian Wouters, Bjrjn Bon, Heleen Hollenberg, Bas Bergevoet, Bert Atzema and a lot more. As their employer, I was more than happy with this. I came to know these people as smart, well-educated, and committed to deliver good work. And we found an excellent secretary, Hettie Lindenboom, married to XOOTI Menno Lindwer. They all contributed to making AAS a successful company in a relatively short period of time. We started a special interest group in the area of Software Architecture, and delivered many courses. Several employees became part-time trainers, something they liked although in-company trainings could be a real challenge (Do you remember Michiel? Remember Franois and Bas?). In 2000, when AAS was sold, the company employed 25 people, amongst which 14 XOOTIs.

Back to the OOTI curriculum. Famous part of it is THE workshop. Three months of fun and stress. In 2000, I became the coordinator as

successor of Peter van der Stok. He explained to me in detail possible tricks and shared many experiences from the past. I was prepared, or so I thought. The first workshop I coordinated took place Spring 2000, and the second one Spring 2001. In both workshops, we organized ourselves as a company, me being the Managing Director, the OOTI team being the project team. The assignment was to write an application, enabling users to record a video or TV program on a hard disk. External customer in both workshops was Philips, represented by Marcel Bijsterveld. Both projects basically followed the same pattern. In the first week(s), most people were quite excited and busy with organizing the team: phase "Excitement". It was not always easy to influence who would become the project leader, but with the support of Corrie. . . Then the team would work out processes and templates: phase "Definition". Too much theory (from whom had they learned this?), limited practicality. Something they would soon find out themselves. . . The next phase was "Analysis & Design", in which requirements were analyzed and the first version of the architecture became visible. During this phase, the customer started to come into play by asking for the impossible. In addition, the project leader would start to visit and phone me more frequently: first frustrations coming up! The first time, I had to deal with Bernard Venemans, the second time with Michael Hartkamp. Yes, they did have a hard time! This phase smoothly transitioned into the "Escalation" phase. The authority of the project leader and his closest supporting colleagues was questioned, some team members wanted

to stop; others just did their own thing. During this phase, I really start to enjoy the workshop! There were more frequent visits to the project room, a lot of coffee with Corrie, and trying to give the right advice. And in the end, things always calmed down, because another problem became higher priority: the deadline! So, the next phase was entered: "Coding". Well, what about documentation? Reviews? No! Just let us implement the damned thing! Okay, okay, . . . Although not best practice, it was an understandable thing and in this phase, teams really reached high momentum. Normal working hours were replaced by abnormal working hours, looks became very determined, although we all knew that only the impossible could help us out. In both workshops, we spent the last weekend before product delivery working. We? Well, staying at home made me nervous, so I joined the teams every now and then. And so both workshops ended with "Delivery," a presentation, and demonstration at the customers site. And both times, they were appreciated, because they did the impossible!

I am looking out of the window and finish my tea. The first snow is arriving. What shall I do? Try to set up the "Dream Team", flying from one challenging project to the other? Always on the run? No, not feasible. People have families and social networks. Its a shame, because I am convinced we could write history! Wait, someone is knocking on my door. . . it is Lucian. I look at my watch: 21:30. Yes, we decided to have a refreshing walk and drink a local beer. Well, sometimes dreams just have to stay dreams, I suppose. . .

THE RIGHT DIRECTION IN IT



TSolve



CENTRIC

Centric TSolve: embedded excellence

As part of Centric, Centric TSolve is a professional services company based in the Netherlands and Germany. Centric TSolve provides generic services (secondment, consulting, projects and near-shoring) and product development. Regional teams of enthusiastic employees deliver these services to customers in the Wireless, Automotive, Healthcare and Multi-Core Embedded domains, like Philips, Nokia, NSN, Sony Ericsson, ASML, NXP, Infineon, Bosch, Siemens, Johnson Controls, Visteon, Centric Logistics, Centric Retail and Centric Healthcare.

The core element of our approach to solve a problem is to take responsibility for it and apply our experience and knowledge to "get it right the first time".

Values

We do this by having strong values, for our customers, as well as for our employees:

- Looking for an optimal solution, solving problems in stead of making them bigger;
- Doing things right, by doing the right things;
- Delivering results by taking responsibility and applying our knowledge.

We implement these values, thereby providing added value and benefits to our customers.

Added value simply means realising shared ambitions, co-creation, and creating effective solutions. Adding value also implies the use of partners, smarter ways of doing business and shared risk, realising cost reduction and/or effective use of customers' workforce.

Expertise

Centric TSolve services encompass the complete product lifecycle and includes project, requirements, test, integration and configuration management, (system) architecture, (embedded) software development, hardware design (digital, analogue, mixed board level design, ASIC, FPGA), functional and reliability testing, integration, type approval, logistics and production support services. We take overall responsibility and subcontract to partners if required.



Interested?

We always have interesting opportunities for talented and motivated people, especially OOTIs, looking for a challenging job in a high-tech environment. Please visit our Centric TSolve website www.centric.eu/embeddedexcellence for more information about the vacancies and send your CV with detailed information to work.ee@centric.nl.



Dedicated to find the shortcut.

Dagelijks zijn duizenden automobilisten op weg naar hun bestemming. Daardoor is het druk op de wegen en is de kortste weg lang niet altijd de snelste. Navigatiesystemen houden daarom rekening met steeds meer factoren die invloed hebben op onze reistijd. Dat maakt de software die ze aanstuurt steeds complexer. Juist in die complexiteit schuilt de uitdaging die de software professionals van TASS graag aangaan. Dat doen ze met de toewijding en passie, die nodig zijn om te komen tot de meest intelligente en betrouwbare oplossingen.

De software professionals van TASS kunnen ook bijdragen aan het succes van úw product. Wilt u meer informatie? Bel dan met: 040 250 32 06 of ga naar tass.nl

TASS
software professionals

Dedicated to make it work.