

ANNUAL REPORT

2017

Simula Research Laboratory conducts basic research in selected fields within scientific computing, software engineering, machine learning, communication systems and cryptography. Simula is organised as a limited company and is owned by the Ministry of Research and Education.

The annual report includes the director's report, financial statements, publications lists, as well as the report on social responsibility and work environment. More information can be found at Simula.no and in the 2018 version of "This is Simula".

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2017: ANNUS MIRABILIS

Some years are worth playing on repeat. If I could choose any year since Simula started in 2001, the year 2017 would be my favorite, and for many reasons:

4. We obtained agreements on remuneration for Simula employees that teach courses at the University of Oslo and the University of Bergen. These agreements enable our researchers to spend time on preparing and developing university level courses.

5. We established a new research collaboration with the Einstein Center Digital Future in Berlin. A memorandum of understanding was signed stating that the partners will attempt to develop a comprehensive collaboration in research and in educating PhD-candidates.

6. A record 17 PhD-candidates graduated.

7. A record 23 new projects were started in the Simula Garage.

8. Record growth of Simula co-owned start-up companies.

9. A lively strategy process was completed and a new vision for Simula was adopted: "To be an excellent research lab, solving important and fundamental problems of science and engineering, training highly-qualified experts and leaders, and developing commercial enterprises."

These reasons made 2017 a fantastic year for all of us at Simula and paved the way for some exciting and challenging years to come.

ASLAK TVEITO MANAGING DIRECTOR

1. We entered a new and very promising collaboration with OsloMet – the new university in Oslo. This collaboration takes the form of the Center for Digital Engineering (Simula@OsloMet), which will focus on educating MSc- and PhD-students and doing research in three selected fields: IT Management, Networks, and Data Science. The center will be led by our most prominent researcher, Professor Olav Lysne.

2. The report from the evaluation of Simula was published, and for the first time all three field at Simula were graded as *excellent*¹. This has been a goal for Simula from the beginning.

3. We received no less than nine new PhD positions from the Ministry of Education and Research. This represents a breakthrough in a process that has been going on for several years and comes as a result of the successful supervision of hundreds of MSc- and PhD-students at Simula.

¹ Definition of excellent research group according the Research Council of Norway: International front position, undertaking original research and publishing in the best international journals and presenting research at recognized international conferences with peer review. High productivity. Very positive overall impression of the research group.



REPORT OF THE BOARD OF DIRECTORS 2017

Simula Research Laboratory AS is part of the Simula Group and conducts fundamental long-term research on selected aspects of software and communications technologies, with the aim of contributing to creativity and innovation in business.

In its 16th operating year, Simula Research Laboratory AS and Simula Group achieved a turnover of NOK 161 million and NOK 215 million, and net results of NOK 6.2 million and NOK 9.4 million, respectively.

ADMINISTRATION AND ORGANISATION

Simula is organised as a limited company under the ownership of the Norwegian Ministry of Education and Research. The company combines academic traditions with recognised business management models. Simula Research Laboratory AS (Simula) is the parent company and has five daughter companies. Simula Innovation AS is a wholly-owned subsidiary, and the shares in Kalkulo were transferred from Simula to Simula Innovation in 2015 (Kalkulo remains a part of the Simula Group accounts). Simula School of Research and Innovation AS is owned by Simula (56 %), Statoil (21 %), the municipality of Bærum (14 %), Telenor (7 %), the Norwegian Computing Center (1 %), and Sintef (1 %). The limited company "Forskningscenteret for informasjons- og kommunikasjonsikkerhet AS" (short name "Simula@UiB") was established in 2016, with Simula and the University of Bergen owning 51 % and 49 %, respectively. At the end of 2017, the Centre for Digital Engineering (short name "Simula@OsloMet") was established, with Simula and Oslo Metropolitan University owning 51 % and 49 %, respectively.

The parent company and its subsidiaries cooperate closely. The majority of Simula's companies are located in the Municipality of Bærum, with the exceptions of Simula@UiB, which is located in Bergen, and Simula@OsloMet, which is located in Oslo (Bislett).

ACTIVITIES

Simula conducts fundamental long-term research on communications in computer and mobile networks, scientific computing, methods for developing and testing software systems, data science and cyber security. Our research focuses on fundamental challenges that combine technological development with

utility value for industry and society as a whole. Simula's research is published in international scientific journals and by leading non-fiction publishing companies. In 2017, Simula's research featured in 87 articles in international journals, 4 books, 4 chapters in books and 75 peer reviewed conference proceedings.

Over the course of 2017, Simula's scientific employees supervised 17 doctoral candidates and 39 Master's students to the successful completion of their degrees. From 2001 to the end of 2017, 115 doctoral candidates and 391 Master's students have been supervised at Simula.

The University of Oslo, which is an important partner, granted the majority of these degrees. Degrees have also been awarded from NTNU, UiT, Ludwig-Maximilian Universität München, Université de Lyon, and Delft University of Technology, among others.

PERSONNEL AND HSE

At the end of 2017, Simula Group had a total of 148 employees, with 132 in full-time positions and 16 in part-time positions. Of these, 106 were men and 42 were women, with 65 Norwegians and 83 foreign nationals. Fifty-seven people were employed as research fellows, with 24 postdoctoral positions and 33 PhD students. In addition, there were 14 external PhD students who are supervised by Simula's researchers.

At the end of 2017, Simula Research Laboratory had a total of 73 employees, with 64 in full-time positions and 9 in part-time positions. Of these, 48 were men and 25 were women.

The board aims to continue its focus on Health, Safety and Environment for the long-term. Absence due to illness was 1.7 % for the Group and 1.3 % for Simula in 2017. The Group will be working actively to keep sick leave at

continued low levels. There were no reports of occupational diseases or accidents during the year. HSE incidents are reported at each board meeting.

Simula's business activities do not pollute the external environment, beyond what is expected from a typical office business.

EQUAL OPPORTUNITY AND INTEGRATION

The boards of Simula and SSRI have earlier adopted an action plan that aimed to increase the proportion of female employees in scientific positions to 30% by 2017. By the end of 2017 the portion of female scientific researchers, meaning the average of PhD students, postdoctoral fellows and researchers in permanent positions, was 27%. The proportion of female researchers in permanent positions is 19%, and among PhD students and postdoctoral fellows, the portion is respectively 30 and 33%. Simula's strategy for the period 2018-2028 sets the goal of increasing the female proportion of the staff to 40% across the group by 2028 (as of the end of 2017, 28% of the entire staff were female).

Simula continues to work actively to improve the gender balance in the group through goal-oriented planning. In order to meet the target of 40 per cent female employees by 2028, Simula will continue to focus on initiatives for both recruiting new and talented female candidates, and developing and adapting work situations for qualified women already employed by Simula.

The Group is also working to promote the objectives of the Anti-Discrimination Act, to promote equality, ensure equal opportunities and rights and to prevent discrimination in the workplace. There are 33 different nationalities represented in Simula Group. Over 56 per cent of the Group's employees come from outside Norway. Simula offers courses in Norwegian, social events and assistance with regard to visas, taxes, living accommodations and other administrative issues.

ETHICS

Simula follows ethical guidelines as described in "The Simula Code of Ethics", which also comprises research ethics, based on the fact that Simula is an institution dedicated to truth and the pursuit of truth. The institution's reputation is dependent on others being able to trust that research results are correct and have been produced in a verifiable and

ethically responsible manner. For questions regarding research ethics, Simula's researchers are to adhere to the guidelines set by the National Committee for Research Ethics in Science and Technology (NENT). In addition, all employees must follow Simula's internal guidelines for scientific publishing, which are based on the Vancouver Convention.

RISK

Simula is exposed to a certain amount of financial risk in connection with the Group's stock investments. The value of the stock portfolio is continually assessed, and if there is considerable insecurity connected to the value of the investments, a write-down is performed. There is also some currency risk in connection with the EU projects in which Simula participates. In total, the Board nevertheless considers the financial risk as low. The credit risk and liquidity risk are also low, and the Board concludes that risks to the organisation are generally low.

FINANCIAL PERFORMANCE

In its 16th operating year, the Group had a turnover of NOK 215 million, an increase of 1% from the previous year. Operating results were NOK 12.5 million, with a net result of NOK 9.4 million.

Simula Research Laboratory AS had a total operating revenue of NOK 161 million in 2017. External project funding was a total of NOK 107 million. The net profit for the year was NOK 6.1 million, which was transferred to other equity. Equity in Simula Research Laboratory AS constitutes NOK 47 million, corresponding to an equity ratio of 42.5% of total assets.

Simula School of Research and Innovation AS had a total operating revenue of NOK 42.1 million in 2017, with a net result of NOK 2.2 million.

Simula Innovation AS had a total operating revenue of NOK 3.3 million, with a net result after tax of NOK 0.6 million in 2017 (after recognition of dividend from Kalkulo AS of 2.3 million).

In 2017, Kalkulo's total operating revenues amounted to NOK 27.9 million, with a net profit after tax of NOK 2.3 million.

The operating revenue of Forskningscenteret for informasjons- og kommunikasjonssikkerhet AS (Simula@UiB) was NOK 12.6 million, with a net profit after tax of NOK 2.5 million in 2017.

The Centre for Digital Engineering (Simula@OsloMet) was established in November 2017. The company had no revenue or costs in 2017, as it will be active from January 1, 2018.

FUTURE DEVELOPMENT

The board believes that our annual accounts provide a correct picture of Simula Research Laboratory AS and the Group. The Group is in a healthy economic and financial position.

At the end of 2017, Simula was participating in 11 projects funded by the EU.

In accordance with section 3, paragraph 3a of the Norwegian Accounting Act, conditions for continuing operations are confirmed present, and the annual accounts are prepared accordingly.

THE WORK OF THE BOARD OF DIRECTORS

Simula's board had four meetings and a seminar in 2017. The board would like to thank all employees for their strong contributions throughout the year.



From left: Marianne M. Sundet (Director of Administration), Pinar Heggernes, Mats Lundqvist, Yngvild Wasteson, Joakim Sundnes (Employee Representative), Ingvild Myhre (Chair of the Board), Aslak Tveito (Managing Director), Elin Bache Christophersen (Secretary of the Board), Jan Helgesen (Deputy board member)

Not pictured: Sverre Gotaas, Ingolf Søreide, Annik Myhre, Silvija Seres, Valeriya Naumova (Employee representative)

COMPANY OVERVIEW

Simula Research Laboratory was established in 2001. Simula has since grown and now includes a mother company (SRL) and several specialized subsidiaries. The Simula group is headed by its managing director, Professor Aslak Tveito.

FORNEBU

SRL

Simula Research Laboratory

Deputy Managing Director: Kyrre Lekve

Dept. of Advanced Computing and System Performance

(Casper) - Dept. Head: David Ros

Certus Centre for Software Validation and Verification

(Certus) - Centre Leader: Arnaud Gottlieb

Dept. of Engineering Complex Software Systems

Dept. Head: Tao Yue

Dept. of Numerical Analysis and Scientific Computing

(SCAN) - Dept. Head: Simon Funke

Innovasjon: Gründergarasjen (Simula Garage)

Director: Christian Bjerke

Kalkulo

Kalkulo

Director: Are Magnus Bruaset

SSRI

Simula School of Research and Innovation

Director: Marianne Aasen

SI

Simula Innovation

Director: Ottar Hovind

OSLO (BISLETT)

Simula@Oslomet

Centre for Digital Engineering

Director: Olav Lysne

IT Management

Dept. Head: Magne Jørgensen

Centre for Resilient Networks and Applications

(CRNA) - Centre Leader: Ahmed Elmokashfi

Machine Intelligence Department

Dept. Head: Valeriya Naumova

Mobile Systems

Dept. Head: Özgü Alay

Innovasjon: Gründergarasjen@OsloMet

Director: Christian Bjerke

BERGEN

Simula@UiB

Forskningssenteret for informasjons- og kommunikasjonssikkerhet

Director: Kjell Jørgen Hole

Cryptography

Dept. Head: Håvard Raddum

Information Theory

Dept. Head: Eirik Rosnes

SIMULA RESEARCH LABORATORY (SRL)

The majority of Simula's research groups are organised under SRL. The departments at the mother company primarily perform high level research within advanced computing, software validation and verification, complex software systems, numerical analysis and scientific computing.

KALKULO

Kalkulo provides cutting edge software solutions for the energy sector. Their specialties are visualization, data analysis and numerical modeling.

SIMULA SCHOOL OF RESEARCH AND EDUCATION (SSRI)

The Simula School educates tomorrow's ICT researchers and specialists, in collaboration with both domestic and international academic institutions.

SIMULA INNOVATION (SI)

This is where research meets the practical demands of society. SI manages Simula's investment portfolio and supports entrepreneurs in the start-up phase through investments.

SIMULA@UIB

Specialising in cryptography and information theory, Simula@UiB is owned by Simula and The University of Bergen (UiB), and stationed at the Department of Informatics, UiB.

SIMULA@OSLOMET

New from 2018, the Centre for Digital Engineering will perform high level research on digitisation and contribute to the education of candidates with digital expertise. The Center is owned by Simula and Oslo Metropolitan University

INCOME STATEMENT

SRL		SIMULA GROUP		
2016	2017	NOTE	2017	2016
OPERATING REVENUES				
162 679 196	161 473 395		215 073 465	212 599 836
162 679 196	161 473 395		215 073 465	212 599 836
OPERATING EXPENSES				
85 130 828	90 481 341	5	130 725 364	116 842 293
2 283 068	2 132 344	3	2 240 649	2 364 592
66 723 642	62 102 562		69 653 970	76 394 801
154 137 538	154 716 247		202 619 983	195 601 686
8 541 658	6 757 149		12 453 482	16 998 150
FINANCIAL ITEMS				
62 312	133 903		223 487	205 004
445 332	754 290		1 437 863	946 782
0	0	12	2 489 038	1 199 740
257 544	297 376		387 947	279 937
621 283	1 198 638		1 227 222	649 968
-371 183	-607 821		-2 442 858	-977 859
8 170 475	6 149 327		10 010 624	16 020 291
0	0	13	563 817	807 591
8 170 475	6 149 327		9 446 807	15 212 700
0	0		2 178 700	2 288 006
8 170 475	6 149 327		7 268 107	12 924 694

ALLOCATION OF THE YEAR'S NET PROFIT

8 170 475	6 149 327	Transferred to other equity
8 170 475	6 149 327	Total allocated

BALANCE SHEET – ASSETS

SRL		SIMULA GROUP		
2016	2017	NOTE	2017	2016
FIXED ASSETS				
Tangible fixed assets				
6 462 507	5 126 174		5 225 222	6 675 141
6 462 507	5 126 174	3	5 225 222	6 675 141
Financial fixed assets				
5 523 700	21 967 350	10	1 868 650	0
9 000 000	0		4 512 663	2 439 479
0	0	12	17 323 198	16 364 718
0	0		800 000	0
14 523 700	21 967 350		24 504 511	18 804 197
20 986 207	27 093 524		29 729 734	25 479 338
CURRENT ASSETS				
Receivables				
11 362 117	11 344 129		15 645 735	14 033 298
1 062 863	14 729 211		20 983 451	4 003 174
12 424 979	26 073 340		36 629 187	18 036 472
49 121 041	57 796 972	9	86 420 307	74 094 086
61 546 021	83 870 312		123 049 494	92 130 558
82 532 227	110 963 836		152 779 228	117 609 896

BALANCE SHEET – EQUITY AND LIABILITIES

SRL			SIMULA GROUP	
2016	2017	NOTE	2017	2016
EQUITY				
Paid-in equity				
1 200 000	1 200 000	7,8	1 200 000	1 200 000
1 200 000	1 200 000		1 200 000	1 200 000
Retained earnings				
39 835 450	45 984 777	8	65 835 412	58 567 306
0	0	8	6 589 062	4 410 362
39 835 450	45 984 777		72 424 474	62 977 668
41 035 450	47 184 777		73 624 474	64 177 668
LIABILITIES				
Provisions				
0	0	13	15 439	76 606
0	0		15 439	76 606
Other long term debt				
3 500 006	3 166 674	15	10 166 674	3 500 006
3 500 006	3 166 674		10 166 674	3 500 006
CURRENT LIABILITIES				
16 098 948	19 634 577		13 450 764	8 092 636
0	0	13	624 984	830 472
3 418 879	4 613 495		10 130 557	8 499 335
18 478 945	36 364 313		44 766 335	32 433 173
37 996 772	60 612 385		68 972 640	49 855 616
41 496 778	63 779 059		79 154 753	53 432 228
82 532 227	110 963 836		152 779 228	117 609 895

FORNEBU, 31.12.2017 / 14.03.2018

The Board of Directors

Ingvild R. Myhre Chair of the Board	Aslak Tveito Managing Director	Mats A. Lundqvist Board member	Pinar Heggernes Board member	Ingolf Søreide Board member	Joakim Sundnes Employee representative
Yngvild Wasteson Board member	Silvija Seres Board member	Annik M. Myhre Board member	Sverre Gotaas Board member	Valeriya Naumova Employee representative	

NOTES TO THE FINANCIAL STATEMENTS

NOTE 1 – ACCOUNTING PRINCIPLES

The financial statements have been prepared in accordance with the regulations of the Norwegian Accounting Act of 1998 and generally accepted accounting principles.

GENERAL RULE FOR VALUATION AND CLASSIFICATION OF ASSETS AND LIABILITIES

Assets intended for permanent ownership or long-term use have been classified as fixed assets. Other assets have been classified as current assets. Receivables to be repaid within one year are classified as current assets. Similar criteria have been applied to the classification of current and long-term liabilities.

Fixed assets are valued at acquisition cost, but written down to fair value for any impairments that are not expected to be temporary. Fixed assets with a limited economic life are depreciated over the useful life of the asset. Long-term liabilities are recognised at nominal value in the balance sheet on the date they are incurred. Long-term liabilities are not revalued to fair value as a result of due to changes in interest rates.

Current assets are valued at the lower of cost and fair value. Current liabilities are recognised at nominal value in the balance sheet on the date they are incurred. Current liabilities are not appreciated to fair value as a result of changes in interest rates.

Certain items are valued according to other principles, as explained below.

FOREIGN CURRENCY TRANSACTIONS

Assets and liabilities in foreign currency are translated into Norwegian kroner at the mid-rates quoted by Norway's National Bank on the balance sheet reporting day.

TANGIBLE FIXED ASSETS

Tangible fixed assets are depreciated over the expected useful life of the asset. Depreciation is generally performed in a straight line over the expected useful life of the asset.

RECEIVABLES

Accounts receivables and other receivables are recognised at nominal value less provisions for anticipated losses from bad debt. Provisions for losses are based on an individual assessment of each receivable. In addition, if necessary, a general provision is made to cover expected losses on other receivables.

PENSIONS

Pensions are accounted for using a linear accrual profile and anticipated final salary as the accrual basis.

TAX

The company has not recognised tax expenses in the parent company's financial statements, since the operation is not considered to be liable for tax.

REVENUE RECOGNITION

Revenues are recognised when delivery has taken place.

THE GROUP

The consolidated financial statements comprise the parent company Simula Research Laboratory AS (SRL) and the subsidiaries Simula School of Research and Innovation AS (SSRI), Simula Innovation AS (SI), Kalkulo AS and Forskningscenteret for informasjons- og kommunikasjonssikkeret AS (Simula@UiB). Although the Group owns 60 % of Celerway Communication AS, 85 % of Rebasin Technology AS and 100 % of Simula Research Incorporated, they are not included in the consolidated financial statements. The Group owns 51 % of the Center for Digital Engineering AS, but as there was no activity in 2017 it is not included in the consolidated financial statements for 2017. The consolidated financial statements are prepared as if the Group were one economic entity. Transactions and balances between group companies are eliminated.

NOTE 2 – FINANCIAL MARKET RISK AND CURRENCY RISK

The company is to a certain extent exposed to financial market risks, by investing in start-up companies. The currency risk the company is exposed to is due to EU research funding.

NOTE 3 – FIXED ASSETS

SRL			
FIXED ASSETS	COMPUTER EQUIPMENT	FURNISHINGS, EQUIPMENT, ETC	TOTAL
Acquisition cost as of 01.01	7 545 589	18 724 767	26 270 356
Additions	556 895	239 116	796 011
Disposals	4 818 711	-	4 818 711
Acquisition cost as of 31.12	3 283 773	18 963 883	22 247 656
Cumulative depreciation as of 31.12	-2 507 389	-14 614 093	-17 121 482
Book value as of 31.12	776 384	4 349 790	5 126 174
Year's depreciation	494 108	1 638 236	2 132 344

SIMULA GROUP			
FIXED ASSETS	COMPUTER EQUIPMENT	FURNISHINGS, EQUIPMENT, ETC	TOTAL
Acquisition cost as of 01.01	8 737 138	18 843 323	27 580 461
Additions	593 901	239 116	833 017
Disposals	5 431 813	-	5 431 813
Acquisition cost as of 31.12	3 899 226	19 082 439	22 981 665
Cumulative depreciation as of 31.12	-3 090 207	-14 666 236	-17 756 443
Book value as of 31.12	809 019	4 416 203	5 225 222
Year's depreciation	569 481	1 671 168	2 240 649

The economic life of operating assets is calculated as:

- Computer equipment 2-5 years
- Furnishings, fixtures & equipment 3-5 years

NOTE 4 – PENSIONS

The Group has a duty to maintain an occupational pension scheme in accordance with the Mandatory Occupational Pension Schemes Act. The company's pension schemes fulfil the requirements of this legislation.

The Group has a pension scheme which covers all employees. The scheme entitles members to defined future benefits. These are primarily dependent on the number

of years of pension accrual, salary level at retirement and the size of the pension benefits received from the Norwegian National Insurance Scheme. The occupational pension scheme is financed through the build-up of funds in the Norwegian Public Service Pension Fund.

NOTE 5 – PAYROLL COSTS, NUMBER OF EMPLOYEES, REMUNERATIONS, EMPLOYEE LOANS AND AUDITOR'S FEES

SALARY AND SOCIAL COSTS	SRL		SIMULA GROUP	
	2017	2016	2017	2016
Salary	54 643 030	44 980 423	101 037 913	94 026 731
Social security	8 044 567	6 268 785	15 422 886	13 830 719
Pension costs	5 460 875	2 737 876	9 201 061	3 073 255
Other benefits	3 156 827	2 816 990	5 063 504	5 911 588
Contribution to cover cost of labour at SSRI	19 176 042	28 326 754	-	-
Total	90 481 341	85 130 828	130 725 364	116 842 293
Number of full-time equivalents	60	51	138	131

REMUNERATION PAID TO SENIOR COMPANY OFFICERS	MANAGING DIRECTOR	BOARD OF DIRECTORS
Salary	2 624 839	593 850
Pension expenses	114 628	-
Other remuneration	130 366	-
Total remuneration	2 869 833	593 850

No loans have been granted to, nor any guarantees made on behalf of, the Managing Director, the Board Chair or any other related parties. No loans or guarantees account for more than 5 % of the company's share capital.

AUDITOR

The auditor's fees break down as follows:

PARENT COMPANY:		SUBSIDIARIES	
Statutory auditing services	94 900	Statutory auditing services	88 400
Other services	42 800	Other services	56 100
Total auditor's fees	137 700	Total auditor's fees	144 500

The auditor's fee is stated exclusive of VAT.

NOTE 6 – OPERATING REVENUE

	SRL		SIMULA GROUP	
	2017	2016	2017	2016
Research funding	54 675 000	54 000 000	59 675 000	59 000 000
Subsidies from the Research Council of Norway, EU, etc	106 562 395	107 912 196	130 976 612	125 873 171
Other income	236 000	767 000	24 421 853	27 726 665
Total	161 473 395	162 679 196	215 073 465	212 599 836

NOTE 7 – SHARE CAPITAL AND SHAREHOLDERS

SRL			
SHARE CAPITAL	QUANTITY	FACE VALUE	BOOK VALUE
Ordinary shares	800	1 500	1 200 000
Total	800		1 200 000

THE COMPANY'S SHAREHOLDERS AS OF 31.12:	QUANTITY	SHAREHOLDING
The Norwegian state represented by the Ministry of Education and Research	800	100.0 %
Total	800	100.0 %

NOTE 8 – EQUITY

SRL			
	SHARE CAPITAL	OTHER EQUITY	TOTAL
Equity as of 01.01	1 200 000	39 835 450	41 035 450
Profit/loss for the year	-	6 149 327	6 149 327
Equity as of 31.12	1 200 000	45 984 777	47 184 777

SIMULA GROUP

	SHARE CAPITAL	OTHER EQUITY	MINORITY INTERESTS	TOTAL
Equity as of 01.01	1 200 000	58 567 306	4 410 362	64 177 668
Profit/loss for the year	-	7 268 107	2 178 700	9 446 807
Equity as of 31.12	1 200 000	65 835 413	6 589 062	73 624 475

NOTE 9 – BANK DEPOSITS

	SRL	SIMULA GROUP
Restricted tax withholdings total:	2 481 102	4 626 799
Restricted bank deposits relating to leasing contracts total:	3 059 852	3 059 852

NOTE 10 – SUBSIDIARIES, ASSOCIATES, ETC.

	ACQUIRED	OFFICE	COUNTRY	SHAREHOLDING
Simula Innovation AS	04.05.2004	Fornebu	Norway	100%
Simula School of Research and Innovation AS	08.05.2007	Fornebu	Norway	55.74%
Forskningssenteret for informasjons- og kommunikasjonssikkerhet AS	17.12.2015	Bergen	Norway	51%

	RESULT	EQUITY 31/12
Simula Innovation AS	640 942	30 912 822
Simula School of Research and Innovation AS	2 176 267	8 764 944
Forskningssenteret for informasjons- og kommunikasjonssikkerhet AS	2 478 804	5 531 132

NON-CONSOLIDATED SUBSIDIARIES:	COST	RESULT	EQUITY 31/12
Rebasin Technology AS, owned 85 % by Kalkulo AS	425 000	-11 679	488 321
Center for Digital Engineering AS, owned 51 % by SRL	1 020 000	81	2 000 081
Simula Research Laboratory Inc, owned 100 % by SRL	423 650	0	USD 50 000
Total investments non-consolidated subsidiaries	1 868 650		

In 2017 Kalkulo AS, which is wholly owned by Simula Innovation AS, posted a profit of NOK 2 291 467. Recognised equity as of 31.12.17 totals NOK 4 160 499 after provisions for a dividend payment of NOK 2 290 000. Dividend is taken as income in the parent company in 2017.

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19

NOTE 11 – BALANCES AND TRANSACTIONS
BETWEEN GROUP COMPANIES
AND ASSOCIATES

	2017	2016
Receivable from SI AS	3 031 215	11 403 044
Receivable from Kalkulo AS	16 756	-
Receivable from SSRI AS	317 830	529 459
Receivable from Celerway Communications AS	-	610 871
Receivables from Forskningscenteret for informasjons- og kommunikasjonssikkerhet AS	5 942	187 500
Payable to SI AS	931 950	1 731 859
Payable to Kalkulo AS	274 798	404 272
Payable to SSRI AS	8 126 201	7 838 527
Payable to Forskningscenteret for informasjons- og kommunikasjonssikkerhet AS	-	1 819 109
Salary costs refunded from SSRI AS	713 305	1 053 559
Salary costs refunded to SSRI AS	19 742 275	29 280 992
Sale of services, etc, to SI AS	400 000	-
Sale of services, etc, to Kalkulo AS	1 100 000	600 000
Sale of services, etc, to SSRI AS	400 000	85 176
Sale of services, etc, to Celerway Communications AS	453 730	1 004 000
Sale of services, etc, to Forskningscenteret for informasjons- og kommunikasjonssikkerhet AS	300 000	2 370 355
Purchase of services, etc, from SI AS	2 915 600	2 906 205
Purchase of services, etc, from Kalkulo AS	1 119 988	1 109 067
Purchase of services, etc, from SSRI AS	3 000 000	2 650 000

NOTE 12 – SECURITIES AND SHARES IN
OTHER ENTERPRISES, ETC.

OTHER SHARE INVESTMENTS	QUANTITY	FACE VALUE PER SHARE	SHAREHOLDING	COST PRICE
Expert Analytics AS	5 294	1	15.0 %	600 000
Testify AS	44 433	1	30.0 %	1 427 117
Truegroups AS	76 923	13	3.5 %	999 999
Forzasys AS	32 991	0.34	30.0 %	1 528 075
Fabriscale Technologies AS	20 789	1	46.1 %	4 510 514
LABO Mixed Realities AS	538	100	35.0 %	1 199 740
Symphonical AS	1 005 528	0.1	5.0 %	1 325 151
Intelliview AS	94	79.79	18.8 %	1 000 000
Edgefolio UK Limited	40 763	GBP 1.00	8.9 %	1 633 454
Radytek Sp z o o . Polen	34	PLN 50	33.3 %	3 045
Insilicomed Inc. USA	131 945	USD 1.8		1 220 755
Imerso AS	841	10	12.5 %	913 925
EYR Medical AS	16 350	0.3	8.1 %	730 845
Celerway Communications AS	22 500	1	60.0 %	3 017 745
Quine AS	5 534	1	13.3 %	450 018
MemoScale AS	6 250	1	4.7 %	1 000 000
Skala Technologies AS	750 000	0.01	7.0 %	997 500
Write-down of shares				6 234 685
Total investment in associates				16 323 198

PRE-SEED INVESTMENTS ON BEHALF OF
INNOVASJON NORGE AS

Truegroups AS	76 923	13		999 999
Total investment in associates				17 323 198

NOTE 13 – TAX

The activities of Simula Research Laboratory AS and its subsidiary Simula School of Research and Innovation AS are not considered taxable. The subsidiaries Simula Innovation AS og Kalkulo AS are liable for tax. The subsidiary Simula@UiB is liable to taxation from commissioned research.

SIMULA GROUP			SIMULA GROUP		
TAXATION FOR THE YEAR CONSISTS OF:			TEMPORARY DIFFERENCES:		
	2017	2016		2017	2016
Tax payable	624 984	830 472	Other differences	2 370	402 653
Change in deferred tax	-61 167	-22 881	Fixed assets	91 337	-55 070
Total tax expense	563 817	807 591	Loss carryforward	-	-114 086
			Write-down of shares	-1 220 754	-1 220 754
TAX PAYABLE FOR THE YEAR IS CALCULATED AS FOLLOWS:			Total basis for deferred tax asset		
	2017	2016		-1 127 047	-987 257
Profit before tax	3 522 806	5 466 413	Deferred tax liability/asset	-281 762	-236 942
Permanent differences	-1 058 498	-2 337 557	Unrecognised deferred tax asset	-298 541	-313 546
Change in temporary differences	139 790	78 946	Recognised deferred tax liability	15 439	76 606
Loss carryforward SI	-	114 086			
Taxable income	2 604 098	3 321 888			

NOTE 14 – RENTAL AND LEASING CONTRACTS

The company has entered into 6 leasing agreements with respect to photocopiers that expire in 2018 and 2020. This year's cost is kr. 251 366.

NOTE 15 – RECEIVABLES AND LIABILITIES

Non-current liabilities maturing more than 5 years hence	SRL		SIMULA GROUP	
	2017	2016	2017	2016
Debt to credit institutions	3 166 674	3 500 006	3 166 674	3 500 006
Pre-seed funds from Innovasjon Norge AS	-	-	7 000 000	-
Total	3 166 674	3 500 006	10 166 674	3 500 006
Secured debt	3 166 674	3 500 006	3 166 674	3 500 006
Assets pledged as securities:				
Accounts receivables	5 000 000	5 000 000	5 000 000	5 000 000
Operating assets	2 500 000	2 500 000	2 500 000	2 500 000
Total	7 500 000	7 500 000	7 500 000	7 500 000

CASH FLOW STATEMENT

SRL		SIMULA GROUP	
2016	2017	2017	2016
		CASH FLOW FROM OPERATING ACTIVITIES	
8 170 475	6 149 327	9 446 807	15 212 700
2 283 068	2 132 344	2 240 649	2 364 592
-	-	2 489 038	-
-1 415 682	4 648 361	-21 465 899	2 467 831
7 861 843	22 615 613	19 117 024	15 590 487
16 899 704	35 545 645	11 827 619	35 635 610
		CASH FLOW FROM INVESTING ACTIVITIES	
-2 625 392	-796 011	-790 733	-2 848 912
-204 000	-16 443 650	-5 316 166	-4 555 213
-2 829 392	-17 239 661	-6 106 899	-7 404 125
		CASH FLOW FROM FINANCING ACTIVITIES	
-333 322	-333 322	6 666 668	-333 322
-	-	-	196 000
-	-	-61 167	-22 881
-333 322	-333 322	6 605 501	-160 203
13 736 990	17 972 652	12 326 221	28 071 282
35 384 051	49 121 041	74 094 086	46 022 804
49 121 041	57 796 972	86 420 307	74 094 086



Til generalforsamlingen i
SIMULA RESEARCH LABORATORY AS

UAVHENGIG REVISORS BERETNING

Uttalelse om revisjonen av årsregnskapet

Konklusjon

Vi har revidert SIMULA RESEARCH LABORATORY AS' årsregnskap som viser et overskudd for selskapsregnskapet på kr. 6.149.327,- og et overskudd for konsernregnskapet på kr. 9.446.807,-, og etter vår mening:

- er årsregnskapet avgitt i samsvar med lov og forskrifter
- gir selskapsregnskapet et rettviseende bilde av den finansielle stilling til SIMULA RESEARCH LABORATORY AS per 31. desember 2017 og av selskapets resultater og kontantstrømmer for regnskapsåret som ble avsluttet per denne datoen i samsvar med regnskapslovens regler og god regnskapsskikk i Norge.
- gir konsernregnskapet et rettviseende bilde av den finansielle stilling til konsernet SIMULA RESEARCH LABORATORY AS per 31. desember 2017 og av konsernets resultater og kontantstrømmer for det avsluttede regnskapsåret i samsvar med regnskapslovens regler og god regnskapsskikk i Norge.

Årsregnskapet består av:

- selskapsregnskapet, som består av balanse per 31. desember 2017, resultatregnskap og kontantstrømoppstilling for regnskapsåret avsluttet per denne datoen og noter, herunder et sammendrag av viktige regnskapsprinsipper, og
- konsernregnskapet som består av balanse per 31. desember 2017, resultatregnskap og kontantstrømoppstilling for regnskapsåret avsluttet per denne datoen og noter, herunder et sammendrag av viktige regnskapsprinsipper.

Grunnlag for konklusjonen

Vi har gjennomført revisjonen i samsvar med lov, forskrift og god revisjonsskikk i Norge, herunder de internasjonale revisjonsstandardene (ISA-ene). Våre oppgaver og plikter i henhold til disse standardene er beskrevet i Revisors oppgaver og plikter ved revisjon av årsregnskapet. Vi er uavhengige av selskapet slik det kreves i lov og forskrift, og har overholdt våre øvrige etiske forpliktelser i samsvar med disse kravene. Etter vår oppfatning er innhentet revisjonsbevis tilstrekkelig og hensiktsmessig som grunnlag for vår konklusjon.

Øvrig informasjon

Ledelsen er ansvarlig for øvrig informasjon. Øvrig informasjon består av årsberetningen, men inkluderer ikke årsregnskapet og revisjonsberetningen.

Vår uttalelse om revisjonen av årsregnskapet dekker ikke øvrig informasjon, og vi attesterer ikke den øvrige informasjonen.

I forbindelse med revisjonen av årsregnskapet er det vår oppgave å lese øvrig informasjon med det formål å vurdere hvorvidt det foreligger vesentlig inkonsistens mellom øvrig informasjon og årsregnskapet, kunnskap vi har opparbeidet oss under revisjonen, eller hvorvidt den tilsynelatende



inneholder vesentlig feilinformasjon. Dersom vi hadde konkludert med at den øvrige informasjonen inneholder vesentlig feilinformasjon er vi pålagt å rapportere det. Vi har ingenting å rapportere i så henseende.

Styrets og daglig leders ansvar for årsregnskapet

Styret og daglig leder er ansvarlig for å utarbeide årsregnskapet i samsvar med lov og forskrifter, herunder for at det gir et rettviseende bilde i samsvar med regnskapslovens regler og god regnskapsskikk i Norge. Ledelsen er også ansvarlig for slik intern kontroll som den finner nødvendig for å kunne utarbeide et årsregnskap som ikke inneholder vesentlig feilinformasjon, verken som følge av misligheter eller utilsiktede feil. Ved utarbeidelsen av årsregnskapet må ledelsen ta standpunkt til selskapets evne til fortsatt drift og opplyse om forhold av betydning for fortsatt drift. Forutsetningen om fortsatt drift skal legges til grunn for årsregnskapet så lenge det ikke er sannsynlig at virksomheten vil bli avviklet.

Revisors oppgaver og plikter ved revisjonen av årsregnskapet

Vårt mål er å oppnå betryggende sikkerhet for at årsregnskapet som helhet ikke inneholder vesentlig feilinformasjon, verken som følge av misligheter eller utilsiktede feil, og å avgi en revisjonsberetning som inneholder vår konklusjon. Betyggende sikkerhet er en høy grad av sikkerhet, men ingen garanti for at en revisjon utført i samsvar med lov, forskrift og god revisjonsskikk i Norge, herunder ISA-ene, alltid vil avdekke vesentlig feilinformasjon som eksisterer. Feilinformasjon kan oppstå som følge av misligheter eller utilsiktede feil. Feilinformasjon blir vurdert som vesentlig dersom den enkeltvis eller samlet med rimelighet kan forventes å påvirke økonomiske beslutninger som brukerne foretar basert på årsregnskapet.

For videre beskrivelse av revisors oppgaver og plikter vises det til <https://revisorforeningen.no/revisjonsberetninger>

Uttalelse om øvrige lovmessige krav

Konklusjon om årsberetningen

Basert på vår revisjon av årsregnskapet som beskrevet ovenfor, mener vi at opplysningene i årsberetningen om årsregnskapet og forutsetningen om fortsatt drift er konsistente med årsregnskapet og i samsvar med lov og forskrifter.

Konklusjon om registrering og dokumentasjon

Basert på vår revisjon av årsregnskapet som beskrevet ovenfor, og kontrollhandlinger vi har funnet nødvendig i henhold til internasjonal standard for attestasjonsoppdrag (ISAE) 3000 «Attestasjonsoppdrag som ikke er revisjon eller forenklet revisorkontroll av historisk finansiell informasjon», mener vi at ledelsen har oppfylt sin plikt til å sørge for ordentlig og oversiktlig registrering og dokumentasjon av selskapets regnskapsopplysninger i samsvar med lov og god bokføringsskikk i Norge.

Oslo, den 14. mars 2018

Erik A. Bell

Statsautorisert revisor

SOCIAL RESPONSIBILITY AND WORKPLACE ENVIRONMENT

Simula Research Laboratory is a non-profit enterprise for the benefit of the public. The company contributes to society by conducting basic long-term research within the fields of communication systems, scientific computing, machine learning, software engineering, and cyber security. In addition, Simula conducts education and fosters innovation on basis of the research. To achieve all this, Simula has prioritized a number of successful initiatives.

Simula is continuously working to ensure good working conditions. The following summary highlights some of the topics Simula is addressing in order to maintain and develop its standards within ethics, gender balance, and general working conditions.

ETHICS

Maintaining high ethical standards has a value in itself for Simula and its employees, as contributors to Norwegian society. High ethical standards create a fundament of trust in collaboration with the outside world. Simula's code of ethics is developed with the purpose to increase awareness of, and compliance with, the high ethical standards required of the employees. The code of ethics includes topics such as research ethics; the working environment and inclusion; gifts, enticements and corruption; confidentiality; and conflicts of interest.

EQUALITY AND DIVERSITY

It is important for Simula to be a workplace where everyone has equal opportunities for professional and personal development, regardless of gender or ethnic background. Simula's diverse workforce currently represents 33 different nationalities, and more than 56 % of the employees come from outside of Norway (see *fig 1*). Simula takes several measures to make the transition to a Norwegian workplace effective and positive, including administrative support and Norwegian language training.

As a result of previous strategic initiatives at Simula, the female proportion¹ of the scientific staff is 27 % (see *fig 2*). Simula

will continue to focus on recruiting new and talented female candidates, and on developing and adapting working conditions for qualified women, with the goal of increasing the female proportion of the staff to 40 % female within the next ten years. Presently, the female proportion of all Simula staff is 28 %.

WORKING ENVIRONMENT

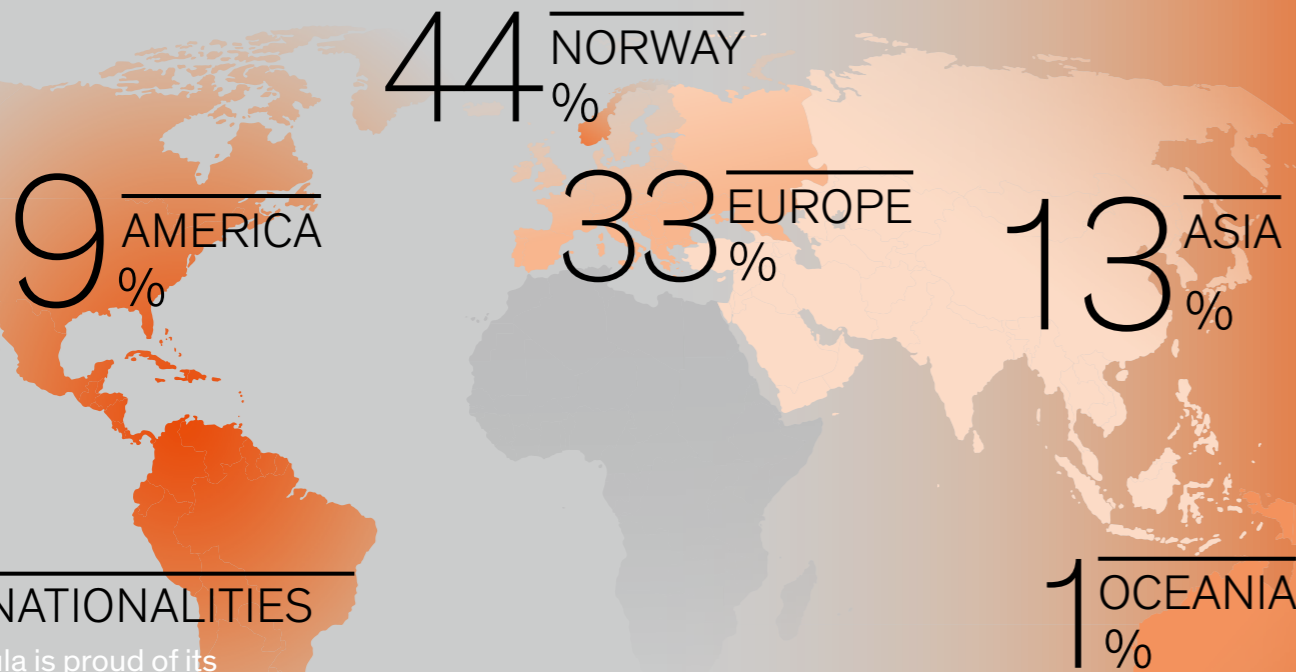
Simula prioritizes providing an excellent workplace for its employees. This is ensured through an internal inspection system that addresses health, safety and the working environment. The Working Environment Committee at Simula endeavors to develop and maintain the quality of the working environment, and follows up questions concerning the safety, health and welfare of the employees.

Absence due to illness is in general low at Simula, and the illness absence rate per 31.12.2017 was 1.7 % in Simula Research Laboratory, Simula School of Research and Innovation, Simula Innovation, Simula@UiB, and Kalkulo combined.

The results of a working environment survey conducted in 2014 were overall very good and confirm that the working environment at Simula is in a good condition and that the employees thrive. Efforts continue to follow up the results in the individual units and in Simula as a whole, and the workplace survey is scheduled to be repeated in 2018.

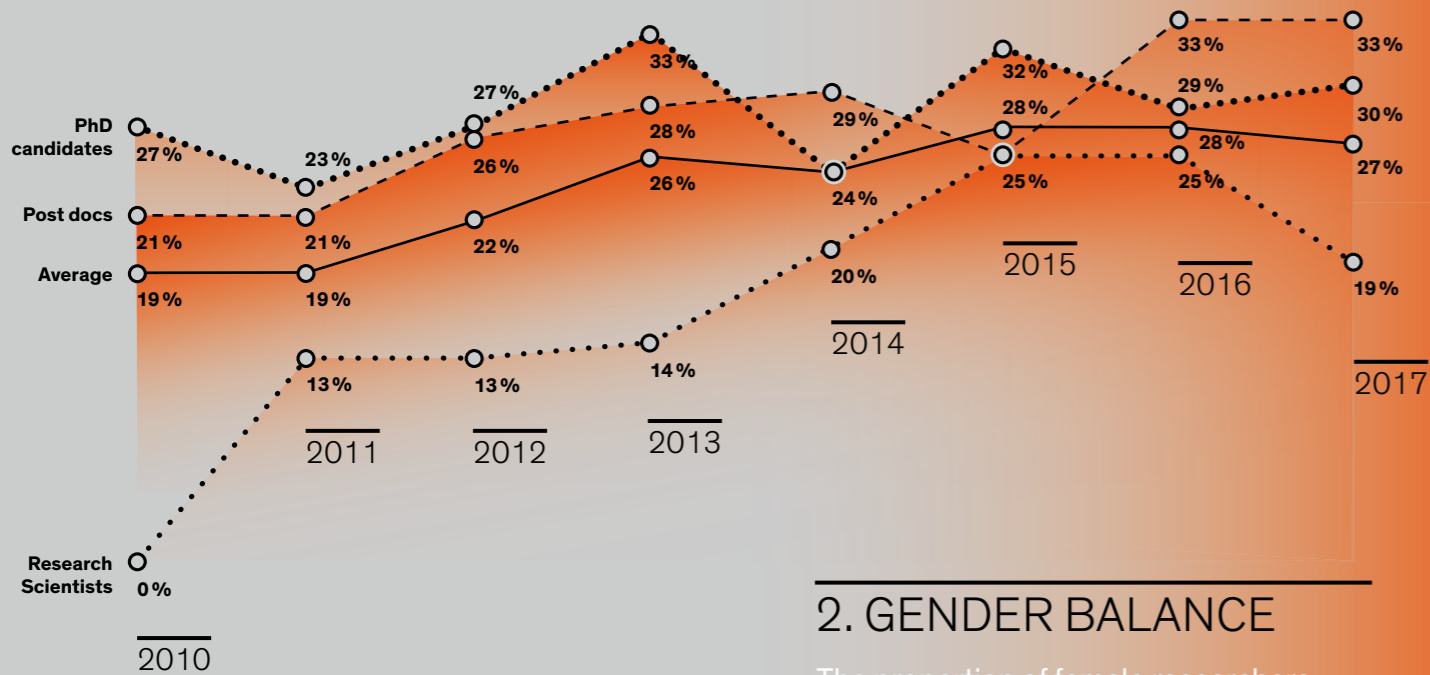
Simula has an agreement with NAV (the Norwegian Labour and Welfare Organisation) concerning "the inclusive workplace". The purpose of the agreement is to prevent and reduce absence related to illness, improve job attendance and the working environment, and avert exclusion and withdrawal from working life. An action plan with focus on how Simula addresses these matters is discussed with NAV annually.

¹ Previous counts focused exclusively on scientific staff (PhD students, postdoctoral fellows, and research scientists), and excluded other support staff (research engineers, programmers, administrative staff). From 2018, all staff will be included in the calculations for gender balance.



1. NATIONALITIES

Simula is proud of its international environment and cultural diversity, employing 148 exceptional minds of 33 different nationalities.



2. GENDER BALANCE

The proportion of female researchers has increased from 2010 to 2017. Simula aims to increase the proportion of female staff to 40% within the next 10 years.

COMPETENCE DEVELOPMENT AND RECRUITMENT

Simula is dependent on competent and motivated employees with specific expertise in order to reach its targets and works continuously to attract, develop and retain talented employees with varied backgrounds. Simula facilitates professional and personal development to enhance expertise, and in 2017 more than 40 employees participated in a series of seminars for project managers that was arranged internally. Simula's leaders play a key role with respect to Simula's results. In 2017, several of Simula's project leaders took part in leadership training programs at internationally renowned institutions, including Harvard and the London Business School.

developed guidelines for conflict resolution and notification, meeting all the requirements in the personnel guidelines and the Working Environment Act. These guidelines encourage employees to take an active role in creating a working environment in which conflict is handled in an open, honest and constructive way, and in trying to prevent destructive forms of conflict from arising.

EXTERNAL ENVIRONMENT

Simula's activities do not pollute the external environment. In addition, Simula encourages environmentally responsible behavior through the way the company is run. To encourage employees to commute to work via public transport rather than by car, Simula developed a program to subsidize the cost of monthly public transport tickets; 59% of employees took part in this program in 2017. In addition, Simula continues to promote paper-free processes and has digitized administrative process, greatly reduced paper consumption and increased awareness among employees since the initiative began in 2010.

CONFLICT RESOLUTION

Simula will ensure a safe and secure working environment in accordance with the company's principles on workplace culture. Simula has

DOCTORATES AND MASTER'S DEGREES

As of December 31, 2017

This list presents PhD and MSc degrees awarded by the University of Oslo and other degree awarding institutions in Norway and abroad in 2017. The degrees are obtained by candidates that are supervised throughout their projects by Simula researchers.

DOCTORATES

Student	Title of thesis	Supervisors	Co-supervisor(s)	Institution
GABRIEL BALABAN	Adjoint Data Assimilation Methods for Cardiac Mechanics	MARIE E. ROGNES	JOAKIM SUNDNES	UiO - Department of Informatics
DŽIUGAS BALTRŪNAS	On Reliability in Mobile Broadband Networks	AHMED ELMOKASHFI	OLAV LYSNE	UiO - Department of Informatics
SAREH BEHDADFAR	Contribution to patient-specific stress assessment in the human left ventricle using image-based finite-element analyses	STÉPHANE AVRIL	JOAKIM SUNDNES	Université de Lyon, Ecole des Mine St Etienne, France
DEEPAK DWARAKANATH	Robustness of Feature Based Calibration in New Age 3D Applications	CARSTEN GRIWODZ	PÅL HALVORSEN, ALEXANDER EICHHORN	UiO - Department of Informatics
ØYVIND EVJU	Computational hemodynamics in cerebral aneurysms: Robustness of rupture risk indicators under different model assumptions	KENT-ANDRE MARDAL	MARTIN SANDVE ALNÆS, KRISTIAN VALEN-SENDSTAD, ANGELIKA SORTEBERG, HANS PETTER LANGTANGEN	UiO - Department of Informatics
SIMONE FERLIN-OLIVERIA	Making Multipath TCP Work over Heterogeneous Wireless Networks	ÖZGÜ ALAY	MICHAEL WELZL	UiO - Department of Informatics
SIRI KALLHOVD	Computational tools for clinically driven models of cardiac electro-mechanics	JOAKIM SUNDNES	SAMUEL WALL, MARY M. MALECKAR	UiO - Department of Informatics
ALESSIO LAVECCHIA	Continental rift formation and transition to oceanic seafloor spreading: a case study of the Afar triple junction	SIERD CLOETINGH, FRED BEEKMAN	STUART CLARK	Utrecht University, The Netherlands
MUHAMMAD OWAIS KHAN	Numerical characterization of high-frequency flow fluctuations in intracranial aneurysms	DAVID STEINMAN	KRISTIAN VALEN-SENSTAD	University of Toronto
MARCUS MICHAEL NOACK	New Theoretical and Numerical Methods for Wave-Motion Modeling and Optimization	STUART CLARK	ARE MAGNUS BRUASET	UiO - Department of Informatics
MAGNE ANDRE NORDAAS	Operator preconditioning for PDE-constrained optimisation and multiscale problems	KENT-ANDRÉ MARDAL	BJØRN FREDRIK NIELSEN	UiO - Department of Informatics
MICHAEL ALEXANDER RIEGLER	EIR – A Medical Multimedia System for Efficient Computer Aided Diagnosis	PÅL HALVORSEN	CARSTEN GRIWODZ	UiO - Department of Informatics
THOMAS GRAMSTAD ROLFSNES	Improving History-Based Change Recommendation Systems for Software Evolution	LEON MOONEN	RAZIEH BEHJATI, MAGNE JØRGENSEN	UiO - Department of Informatics
KRISTOFFER ROBIN STOKKE	High-Precision Power Modelling and Optimisation of the Tegra K1 Heterogeneous Multicore Architecture	PÅL HALVORSEN	HÅKON KVALE STENSLAND, CARSTEN GRIWODZ, TOR SVERRE LANDE	UiO - Department of Informatics
EVANGELOS TASOULAS	Towards High Performance Dynamic Cloud Environments	ERNST GUNNAR GRAN	TOR SKEIE, KYRRE BEGNUM	UiO - Department of Informatics
FEROZ ZAHID	Network Optimization for High Performance Cloud Computing	ERNST GUNNAR GRAN	TOR SKEIE, OLAV LYSNE	UiO - Department of Informatics
HUIHUI ZHANG	Research on Aspect-Oriented Real-Time Requirements Modeling and Supporting Techniques for Requirements Inspection	CHAO LIU	TAO YUE, SHAUKAT ALI	Beihang University

MASTER'S DEGREES

Student	Title of thesis	Supervisors	Co-supervisor(s)	Institution
ANDREAS OVEN AALSAUNET	Implementation of a virtual reality design review application using vision-based gesture recognition technology	CARSTEN GRIWODZ	PÅL HALVORSEN, OLE CHRISTIAN ASTRUP, OVIDIU DRUGAN	UiO - Department of Informatics
NERINGA ALTANAITE	Hybrid CPU-GPU computing for simulating calcium handling in the heart	XING CAI	PAAL ENGELSTAD	UiO - Department of Informatics
SALMAN ASSKALI	Polyp Detection: Effect of Early and Late Feature Fusion	PÅL HALVORSEN	MICHAEL RIEGLER	UiO - Department of Informatics
MAGNUS ELDEN	Implementation and initial assessment of VR for scientific visualisation: Extending Unreal Engine 4 to visualise scientific data on the HTC Vive	SIMON FUNKE	MARTIN SANDVE ALNÆS, CARSTEN GRIWODZ	UiO - Department of Informatics
ATLE NÆRUM ERIKSEN	Pure User Mode Deterministic Replay on Windows	TROND ARNE SØRBY	PÅL HALVORSEN	UiO - Department of Informatics
MINA FARROKHIA	Predicting Execution Time of HPC Applications	XING CAI	PAAL ENGELSTAD	UiO - Department of Informatics
SJUR FREDRIKSEN	Designing an InfiniBand Metric Collector and Exploring InfiniBand Management Overhead and Scalability	SVEN-ARNE REINEMO	ERNST GUNNAR GRAN, TOR SKEIE	UiO - Department of Informatics
SEBASTIAN GJERTSEN	Development of a Verified and Validated Computational Framework for Fluid-Structure Interaction: Investigating Lifting Operators and Numerical Stability	KRISTIAN VALEN-SENDSTAD	ASLAK WIGDAHL BERGERSEN, MIKAEL MORTENSEN	UiO - Department of Mathematics
DANIEL GYNNILD-JOHNSEN	Collecting activity data using the Open mHealth platform	PÅL HALVORSEN	HÅVARD D. JOHANSEN	UiO - Department of Informatics
JANIS GROBOVS	Simulating Sleep	MARIE ELISABETH ROGNES	ELEONORA PIERSANTI	UiO - Department of Mathematics
KARI ELISABETH SKAAR HASUND	Topology Optimization for Unsteady Flow with Applications in Bio-medical Flows	AUGUST JOHANSSON	ANTON EVGRAFOV	NTNU - Norwegian University of Science and Technology
FREDRIK LUND HENRIKSEN	Polyp Detection using Neural Networks - Data Enhancement and Training Optimization	PÅL HALVORSEN	MICHAEL RIEGLER	UiO - Department of Informatics
TORBJØRN HØILAND	Automatic Analysis of Endoscopic Videos	PÅL HALVORSEN	MICHAEL RIEGLER	UiO - Department of Informatics
LARS-ERIK HOLTE	Collecting activity data using the Open mHealth platform	PÅL HALVORSEN	HÅVARD D. JOHANSEN	UiO - Department of Informatics
RUNE JENSEN	Polyp Detection using Neural Networks - Data enhancement and Training Optimization	MICHAEL RIEGLER	PÅL HALVORSEN	UiO - Department of Informatics
ØYVIND JULSRUD	A Performance Evaluation of a Structured Heart Simulation	XING CAI	GLENN TERJE LINES, JOHANNES LANGGUTH	UiO - Department of Informatics
KRISTER STRÆTE KARLSEN	Effects of Inertia in Modeling of Left Ventricular Mechahnics	JOAKIM SUNDNES	MARIE ELISABETH ROGNES	UiO - Department of Mathematics
WILHELM KARLSEN	Simple Volume Exploration on Unstructured 3D Meshes	MARTIN SANDVE ALNÆS	XING CAI, ANDERS HELGELAND	UiO - Department of Informatics
HALVOR KIELLAND-GYRUD	Virtualized SISCO	HÅKON KVALE STENSLAND	CARSTEN GRIWODZ	UiO - Department of Informatics

Student	Title of thesis	Supervisors	Co-supervisor(s)	Institution
ASIF QAYYUM KHAN	A Medical Multimedia Real-Time Polyp Detection System using Low Computational Resources	PÅL HALVORSEN	MICHAEL RIEGLER	UiO - Department of Informatics
GUTTORM MAGNUS LEIEL KVAAL	Numerical Simulations of Pharmaceutical Particles Depositing in the Human Respiratory System	KRISTIAN VALEN-SENDSTAD	ASLAK WIGDAHL BERGERSEN, MIKAEL MORTENSEN	UiO - Department of Mathematics
ANNE SILJE LØVHAUGEN	Mining hidden patterns in cervical cancer development	SAGAR SEN	JAUME BACARDIT, MARI NYGÅRD	Newcastle University, UK
POOJA CHANDRAKANT MORE	Crowd-driven Systematic Literature Review	SAGAR SEN	MAGNE JØRGENSEN	UiO - Department of Informatics
IMAD MUNIR	A Large-Scale OCL Constraint Repository and Comprehensive Analysis for Supporting Automated Cancer Registry System	SHUAI WANG	TAO YUE, SHAUKAT ALI	UiO - Department of Informatics
SIMEN RØSTE ODDEN	Recommendation System for Sports Videos	PÅL HALVORSEN	PÅL HALVORSEN	UiO - Department of Informatics
ÁKOS PAP	Crowdsourced noise mapping	YAN ZHANG	STEIN GJESSING	UiO - Department of Informatics
MOZHGAN POURABEDIN	Security wModeling of Cyber-Physical Systems: A Case Study of Smart Grid	PHU NGUYEN	SHAUKAT ALI, TAO YUE	UiO - Department of Informatics
STEFFEN SAND	Video Recommendation Systems Finding a Suitable Recommendation Approach for an Application Without Sufficient Data	PÅL HALVORSEN	HÅKON KVALE STENSLAND	UiO - Department of Informatics
THOMAS SCHWITALLA	A Rule-Based Framework for Supporting Automated Change Impact Analysis in the Cancer Registry of Norway	SHUAI WANG	TAO YUE, SHAUKAT ALI	UiO - Department of Informatics
PEDRAM SHERAFAT	A medical multimedia real time polyp detection system using low computational power	PÅL HALVORSEN	MICHAEL RIEGLER	UiO - Department of Informatics
EIGIL SKJÆVELAND	Identifying Higher-Level Semantics in Football Event Data	PÅL HALVORSEN	KENNETH WILSGÅRD	UiO - Department of Informatics
MARIUS LØRSTAD SOLVANG	Video Recommendation Systems - Finding a Suitable Recommendation Approach for an Application Without Sufficient Data	PÅL HALVORSEN	HÅKON KVALE STENSLAND	UiO - Department of Informatics
HENRIK STEEN	Destruction Testing: Ultra-Low Delay using Dual Queue Coupled Active Queue Management	BOB BRISCOE	ANDREAS PETLUND	UiO - Department of Informatics
ANDREAS SLYNGSTAD	Verification and Validation of a Monolithic Fluid-Structure Interaction Solver in FEniCS	KRISTIAN VALEN-SENDSTAD	ASLAK WIGDAHL BERGERSEN, MIKAEL MORTENSEN	UiO - Department of Mathematics
ANDREAS THUNE	Parallel in Time Method for Optimal Control	SIMON FUNKE	KENT-ANDRÉ MARDAL	UiO - Department of Mathematics
FINN-HAAKON TUFT	MCL: Multi Cuda Library	XING CAI		UiO - Department of Informatics
SIMON DAVIES WANYAMA	Targeted Probing During Disasters	AHMED ELMOKASHFI	ANIS YAZIDI	UiO - Department of Informatics

LIST OF PUBLICATIONS 2017

As of December 31, 2017

Simula only reports publications where a significant part of the research has been funded by Simula. This means that at least one of the authors of the reported publications must have his/her main affiliation and has contributed to the publication as specified in Simula's publication guidelines. Publications from people in part-time positions are generally not included unless the research is specifically performed as part of their employment at Simula.

ARTICLES IN INTERNATIONAL JOURNALS

- 01 A cell-based framework for numerical modelling of electrical conduction in cardiac tissue**
Aslak Tveito, Karoline Horgmo Jæger, Miroslav Kuchta, Kent-Andre Mardal, Marie E. Rognes, Frontiers in Physics, Computational Physics, vol. 5
- 02 A Centerline Based Model Morphing Algorithm for Patient-Specific Finite Element Modelling of the Left Ventricle**
Sareh Behdadfar, L. Navarro, Joakim Sundnes, Molly Maleckar, Stian Ross, Hans Henrik Odland, S. Avril, IEEE Transactions on Biomedical Engineering
- 03 A computational framework for testing arrhythmia marker sensitivities to model parameters in functionally calibrated populations of atrial cells**
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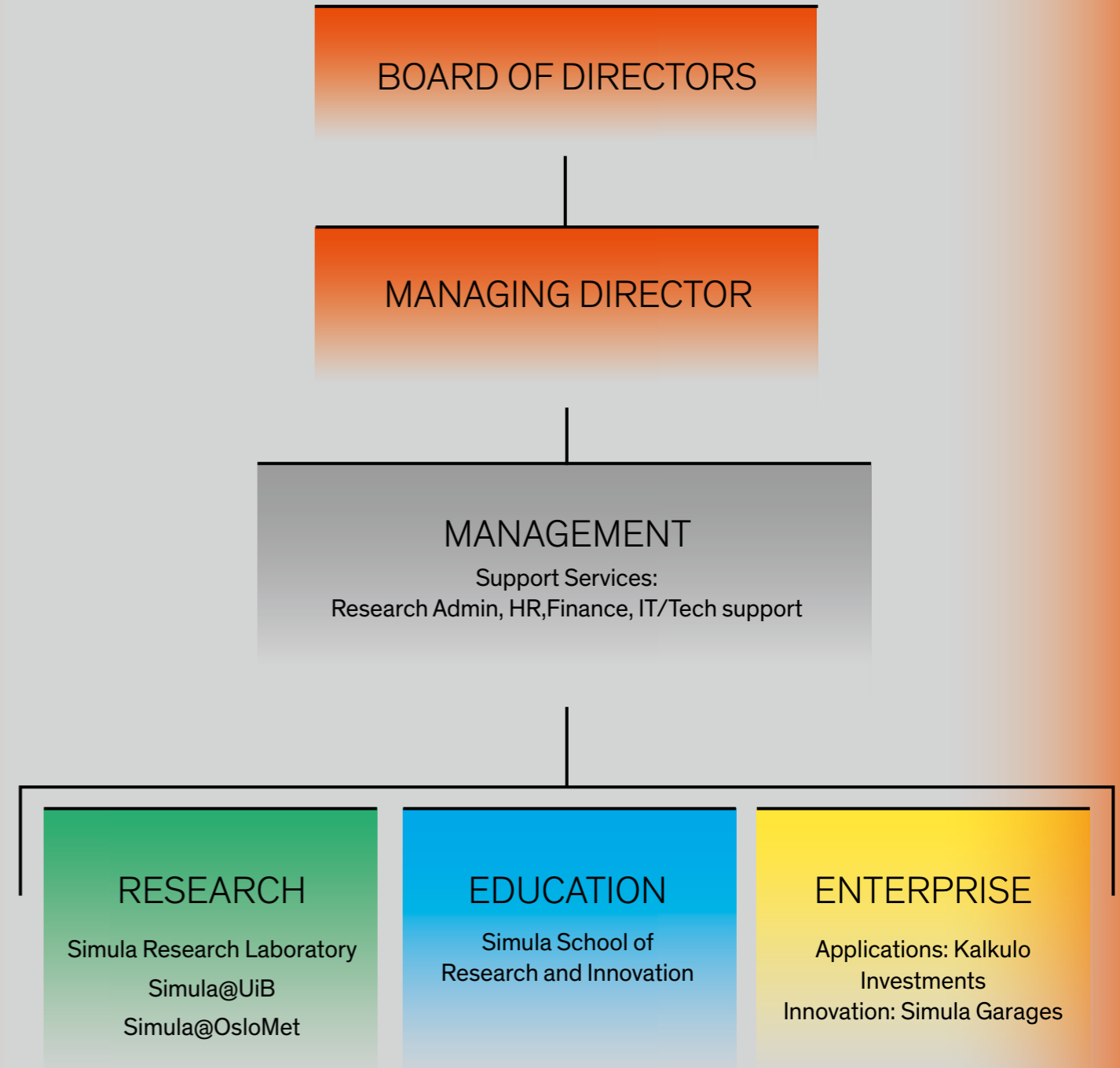
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