



SIMULA
Annual Report

2014

[simula . research laboratory]

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ISBN: 82-92593-14-4
Photo/portraits: Bård Gudim
Design and cover: Tyde, Bendik Schøien
Printed by: Flisa Trykkeri AS

This publication is produced according to the high environmental standards of the Swan ecolabel



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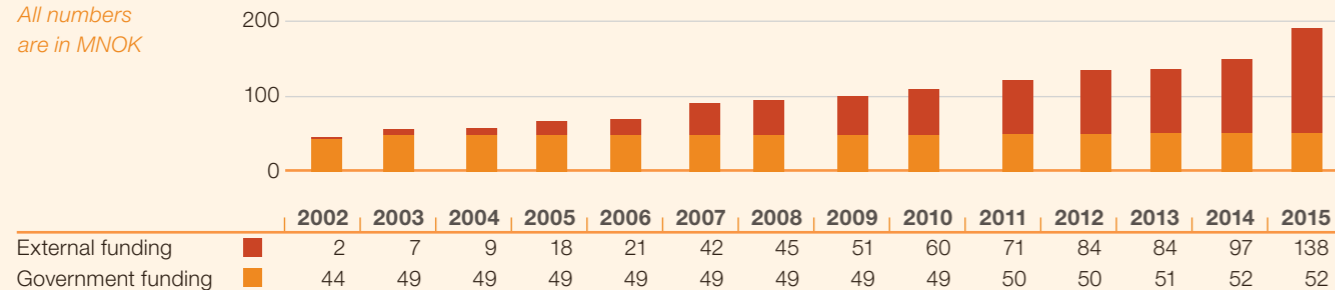
Managing Director's Report

Funding

When Simula Research Laboratory was started, more or less our entire income was based on a basic allowance provided by the Government. Gradually, the picture has changed, and in the budget for 2015 the basic allowance accounts for about 25% of our income. To some extent, this is the result of individual researchers wanting to increase their ability to solve important problems. They see that by securing funding, they get access to a workforce, which often is a key factor to addressing challenging problems. This is very well aligned with a growth strategy advocated by the management and by the board based on the simple realization that a very small institution is easier to close down than a large

and successful institution. And finally it is the result of very strong messages from the Ministry of Education and Research; in recent years the Ministry has not missed any opportunity to remind research groups in Norway that they have to seek funding from the EU. At Simula, we intensified the preparations for securing EU funding in 2014. The result of the growth strategy is summarized in the following figure.

All numbers are in MNOK



Professor Aslak Tveito
Managing Director



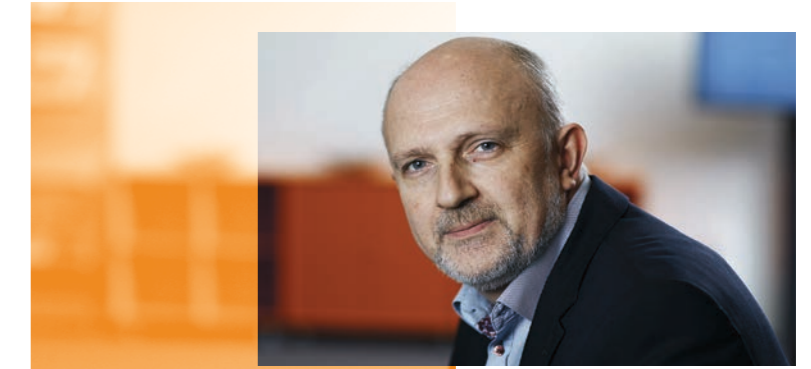
The EU program Horizon 2020 (H2020), which is the largest research program worldwide, relies heavily on innovation and on close interaction between researchers and industrial partners. To have success with research proposals in this setting, there is need for a change of each researcher's mindset. Rather than asking "Where can I find funding for my research?", did our researchers think "How can my competence be used to solve the challenge described in the call?"

Actually, Simula ended up submitting 10 proposals to LEIT ICT, of which we coordinated five. In the end, we were successful with four project proposals,

of which we coordinate three and are the technical coordinator for one. The success rate of 40% stands out from the European average of 12.8% success. This unprecedented result surprised us quite a bit.

In addition to steps taken to build a vital funding culture, we have introduced several new mechanisms. We have hired two strong scientists with one particular goal on their minds: to source new projects in their respective domains, communication systems and scientific computing. In addition to promoting their own proposals, these two have proved to be very valuable in pushing ideas through to proposals, and to support their fellow researchers in the proposal writing. Other measures include collaboration with a small, specialized consulting company in France, and the introduction of a bonus program for those being successful with external fundraising. Lastly, external funding has been on the top of the agenda over the last two years, stating clear expectations to all researchers' involvement. It should also be said that the initiative towards the LEIT pillar has been complemented by several proposals to ERC, FET, Societal Challenges and the Marie Skłodowska-Curie actions.

The efforts in increasing European funding at Simula have had substantial side effects when it comes to national funding. In 2014, we have also produced a large number of proposals to calls posted by the Research Council of Norway. This effort has been successful and resulted in achieving two regionally funded projects and five FRINATEK



Professor Are Magnus Bruaset
Section Director for Computing and Software

projects. In fact, Simula has since 2011 received a total of nine FRINATEK projects – on a par with the University of Bergen and surpassed only by the University of Oslo and NTNU. In addition, we have acquired one project from NORDFORSK, one from the Novo Nordisk foundation, and three FORNY projects to companies that have spun out of Simula. This unusually strong result was further complemented by the news stating that the trilateral educational collaboration between Simula, University of Oslo, and UCSD will be supported directly by the Ministry through an annual earmarked grant of 10 million kroner.

A common experience in management is to identify a problem, set up a strategy to solve the problem and then kick off a process to implement that strategy; then most often not very much happens, but something else comes up and the procedure is repeated. Our experience in intensifying the work for getting EU grants, however, is quite different and we are rather puzzled by the immense success that we can only attribute to extremely talented employees that solved a problem that for so long seemed unsolvable to us.

Professor Aslak Tveito
Managing Director

Professor Are Magnus Bruaset
Section Director for Computing and Software

The Board. From left: Joakim Sundnes (Deputy Member), Magne Jørgensen, Ottar Hovind (Director of Business Development), Ingvild Myhre (Chair of the Board), Aslak Tveito (Managing Director), Pinar Heggernes, Mats Lundqvist, Annik Myhre. Not pictured: Silvija Seres, Yngvild Wasteson, Ingolf Søreide, Ernst G. Gran



Report of the Board of Directors

2014

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 innovation and commercialization in society.

In its 13th operating year, Simula Research Laboratory AS and Simula Group achieved a turnover of NOK 122.9 million and NOK 148.5 million, and net results of NOK 2.8 million and NOK -0.5 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 of Kalkulo AS, Simula Innovation AS and Simula School of Research and Innovation AS. Kalkulo and Simula Innovation are wholly-owned subsidiaries, while Simula School of Research and Innovation is owned by Simula (56%), Statoil (21%), the municipality of Bærum (14%), Telenor (7%), the Norwegian Computing Center (1%), and Sintef (1%).

The parent company and its three subsidiaries cooperate closely, and are located at Fornebu, in the Municipality of Bærum.

Activities

Simula conducts fundamental long-term research on communications in computer and mobile networks, scientific computing, and methods for developing and testing software systems. 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 2014, Simula's research featured in 86 articles in international journals, four books, three chapters in books and 65 peer reviewed conference articles.

Over the course of 2014, Simula's scientific employees supervised 10 doctoral candidates and 34 Master's students to the successful completion of their degrees. The University of Oslo is an important partner and granted most of these degrees.

Personnel and HSE

At the end of 2014 the Simula Group had a total of 140 employees, with 107 in full-time positions and 33 in part-time positions. Of these, 108 were men and 33 were women, with 67 Norwegians and 73 foreign nationals. 55 people were employed as research fellows, with 21 postdoctoral positions and 34 PhD students.

At the end of 2014, Simula Research Laboratory had a total of 35 employees, with 22 in full-time positions and 13 in part-time positions. Of these, 28 were men and 7 were women, with 27 Norwegians and 8 foreign nationals.

The board aims to continue its focus on HSE for the long-term. Absence due to illness was under 1.2% in 2014, which is below average compared with similar companies. 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 now reported at each board meeting.

The results of a Working Environment Survey that was carried out in 2014 were consistently very good, and confirm that Simula has a good work environment, and that the employees enjoy working at Simula. Further work will be carried out in a follow-up of the results in each unit, and for Simula as a whole.

Simula's business activities do not pollute the external environment.

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 25 per cent by 2015. As known, this goal was achieved in 2013, with the proportion of female employees in scientific positions at 26 per cent, compared to 22 per cent in 2012, and 19 per cent in 2010. As we have already achieved our original goal for 2015, we have set a new target of achieving a proportion of 30 per cent female employees in scientific positions by year-end 2017.

Recruiting female researchers for permanent scientific position has been important for Simula, and we are pleased to note that the proportion of female researchers in permanent positions have increased from 0 per cent in 2010 to 20 per cent in 2014. Fluctuations in the gender balance among the research fellows affect the total proportion of female employees in scientific positions, and several of the female research fellows

finished their projects with Simula last year. As a result, the total percentage of female researchers in the group has decreased from 26 per cent in 2013 to 24 per cent in 2014. Simula continues to work actively to improve the gender balance in the group through goal-oriented planning. In order to meet our new target of 30 per cent female researchers by 2017, 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 30 different nationalities represented in Simula Group. Over 52 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

The Board considers financial risk, credit risk and liquidity risk to be low, and thus concludes that there are generally low risks to the organisation.

Financial performance

In its 13th operating year, the Group had a turnover of NOK 148.5 million, an increase

of 10% from the previous year. Operating results were NOK -0.8 million, with a net result of NOK -0.5 million.

Simula Research Laboratory AS had a total operating revenue of NOK 122.9 million in 2014. External project funding was a total of NOK 70.8 million. The net profit for the year was NOK 2.8 million, which was transferred to other equity. Equity in Simula Research Laboratory AS constitutes NOK 20.9 million, corresponding to an equity ratio of 48% of total assets.

Simula School of Research and Innovation AS had a total operating revenue of NOK 44.7 million in 2014, with a net result of NOK -3.6 million.

Simula Innovation AS had a total operating revenue of NOK 5.4 million, with a net result after tax of NOK -0.1 million in 2014.

In 2014, Kalkulo's total operating revenues amounted to NOK 17.4 million, with a net profit after tax of NOK 0.4 million.

Future Development

The board believes that our annual accounts provide a correct picture of Simula Research Laboratory AS and the Group. The focal point of 2014 has been on acquiring more research projects, with a strong focus on EU projects. This effort has resulted in several projects that start up in 2015. The Group is in a healthy economic and financial position. 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 has had four meetings and a board seminar in 2014. The cooperation between the board and management is good. The board would like to thank all employees for their strong contributions throughout the year.

Fornebu, 3 March 2015

Profit and loss statement

Simula Group		SRL AS		
2013	2014	Note	2014	2013
135 300 588	148 512 451		122 865 358	110 760 499
OPERATING REVENUES				
OPERATING EXPENSES				
91 079 841	103 324 944	5	77 508 038	68 028 044
1 979 236	1 891 438	3	1 695 879	1 728 824
39 248 310	44 108 648	5, 14	40 975 307	37 997 272
132 307 387	149 325 030		120 179 224	107 754 140
2 993 201	-812 578		2 686 134	3 006 359
FINANCIAL ITEMS				
464 796	393 397		219 301	294 796
2 104 210	367 384		176 092	1 989 698
366 383	-		-	-
339 077	275 592		263 111	320 421
819 697	32 744		16 878	702 802
1 043 849	452 445		115 403	1 261 271
NET FINANCIAL ITEMS				
4 037 050	-360 133		2 801 537	4 267 630
435 572	103 077		-	-
3 601 478	-463 210		2 801 537	4 267 630
-602 537	-1 608 635		-	-
4 204 015	1 145 425		2 801 537	4 267 630
TRANSFERS				
			2 801 537	4 267 630

Balance sheet

Simula Group		SRL AS		
2013	2014	Note	2014	2013
FIXED ASSETS				
Tangible fixed assets				
7 488 851	6 923 796	3	6 876 254	7 296 009
7 488 851	6 923 796		6 876 254	7 296 009
Financial fixed assets				
6 379 822	7 940 600	12	-	-
-	1 037 767		-	-
-	-	10	5 319 700	5 319 700
6 379 822	8 978 367		5 319 700	5 319 700
13 868 673	15 902 163		12 195 954	12 615 709
CURRENT ASSETS				
Receivables				
16 196 882	12 059 547		8 876 036	5 325 053
6 611 515	6 840 736		6 882 374	18 472 556
22 808 397	18 900 283		15 758 410	23 797 609
40 925 523	28 313 699	9	15 442 473	24 115 907
63 733 920	47 213 982		31 200 883	47 913 516
77 602 593	63 116 145		43 396 837	60 529 225
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
Earned equity				
28 415 785	29 561 210	8	19 773 249	16 971 711
3 421 171	1 812 536	8	-	-
31 836 956	31 373 746		19 733 249	16 971 711
33 036 956	32 573 746		20 973 249	18 171 711
LIABILITIES				
4 500 002	4 166 670		4 166 670	4 500 002
4 500 002	4 166 670		4 166 670	4 500 002
Accruals for liabilities				
172 267	135 440	13	-	-
172 267	135 440		-	-
Short term liabilities				
6 186 560	4 138 561		5 420 324	20 070 884
492 842	139 905	13	-	-
8 046 872	8 772 972		2 416 421	1 903 559
25 167 094	13 188 851		10 420 173	15 883 069
39 893 368	26 240 289		18 256 918	37 857 512
44 565 637	30 542 399		22 423 588	42 357 514
77 602 593	63 116 145		43 396 837	60 529 225

Notes to the accounts

Note 1

Accounting principles

The financial statements have been prepared pursuant to the regulations in the Norwegian Accounting Act of 1998. The statements have been drawn up in accordance with Norwegian accounting standards.

The main rule for the valuation and classification of assets and liabilities

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

Fixed assets are valued at acquisition cost and written down to their fair value, if the fall in value is believed to be permanent. Fixed assets are depreciated over the useful life of the asset. Long-term liabilities are recognised at nominal value on the date the liability was incurred. Long-term liabilities are not revalued to fair value with respect to interest rate fluctuations.

Current assets are valued at cost, or fair value, whichever is the lower. Current liabilities are recognised at their nominal values on the date they were incurred. Current liabilities are not restated to fair values with respect to interest rate fluctuations.

Certain items are valued according to other rules, 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 generally depreciated over the expected useful life of the asset. Depreciation is generally done on a straight-line basis over the expected useful life of the asset.

Receivables

Accounts receivable and other receivables are recorded at nominal amounts less provisions for anticipated losses from bad debts. Provisions for losses are based on individual assessments of the collectability of each receivable. In addition, if necessary, a general provision is made for anticipated bad debts on other receivables.

Pensions

A straight line earning profile is used to account for pensions and assumptions are made regarding expected salary upon retirement.

Taxes

The company has no tax expenses in the parent company accounts since its activities are not considered taxable.

Principles for income recognition

Revenue is accounted for when delivery has taken place.

Group

The group consists of the parent company Simula Research Laboratory AS and the subsidiaries Simula School of Research and Innovation AS (SSRI AS), Simula Innovation and Kalkulo AS. The group accounts are prepared as if the group is one financial unit. Transactions and balances between the companies in the group are eliminated.

Note 2

Financial market risk

The company has little exposure to financial market risk.

Note 3

Fixed assets

SRL AS

	Computer equipment	Furniture/ fittings, equipment	Total
Acquisition cost Jan. 1	5 433 651	15 884 665	21 318 316
Acquired in 2014	854 525	421 599	1 276 124
Acquisition cost Dec. 31	6 288 176	16 306 264	22 594 440
Acc. depreciation	5 478 086	10 240 101	15 718 186
Net book value Dec. 31	810 090	6 066 163	6 876 254
Depreciation for the year	423 470	1 272 409	1 695 879
<i>Depreciation %</i>	<i>20 – 50%</i>	<i>20 – 33%</i>	

Simula Group

	Computer equipment	Furniture/ fittings, equipment	Total
Acquisition cost Jan. 1	6 449 496	15 884 665	22 334 161
Acquired in 2014	854 525	471 858	1 326 383
Disposed of in 2014	-	-113 389	-113 389
Acquisition cost Dec. 31	7 304 021	16 243 134	23 547 155
Acc. depreciation	6 493 931	10 129 428	16 623 359
Net book value Dec. 31	810 090	6 113 706	6 923 796
Depreciation for the year	423 470	1 467 968	1 891 438
<i>Depreciation %</i>	<i>20 – 50%</i>	<i>20 – 33%</i>	

Note 4

Pension costs

The Group has a pension plan that covers all employees in the parent company and in the Group. The pension plan provides defined future benefits. Pension benefits depend on the individual employees' number of years of service, salary level upon retirement age, and social security benefits. The collective pension agreement is funded by building up pension funds under the management of the Norwegian Public Service Pension Fund.

Note 5

Cost of labour, number of employees, remuneration, etc.

Salary and social costs

	SRL AS		Simula Group	
	2013	2014	2013	2014
Salaries	21 577 058	23 677 159	70 800 080	80 258 327
Social security	3 313 228	3 892 074	10 726 327	12 636 717
Pension costs	3 125 545	2 094 675	5 732 376	5 661 692
Other benefits	3 138 312	3 724 962	3 821 060	4 768 208
Contribution to cover cost of labour at SSRI	22 643 339	24 849 446	-	-
Contribution to cover cost of labour at SI	14 230 562	19 130 586	-	-
Contribution to cover cost of labour at Kalkulo	-	139 136	-	-
Total	68 028 044	77 508 038	91 079 841	103 324 944
<i>Average man-years of labour</i>		<i>23</i>	<i>25</i>	<i>115</i>
			<i>115</i>	<i>114</i>

continued

Note 5 continued

Benefits to top management	SRL AS	Simula Group
Managing director	2 337 724	-
Other remuneration to managing director	161 852	-
Pension costs to managing director	391 674	-
Board of directors fees	400 000	590 000
Audit fees to Auditor	81 400	169 000
Other fees to Auditor	65 100	105 500

Government guidelines for management remuneration recommend the use of defined contribution pension plans rather than defined benefit plans. The pension scheme of the Managing Director has been altered to fit the guidelines, and NOK 2 214 064,- has been paid to a dedicated pension savings account.

Note 6

Operating revenue

	SRL AS	Simula Group
Research Funding	52 000 000	57 000 000
Subsidies from the Research Council of Norway and the EU	64 169 571	65 169 571
Services to subsidiaries	6 649 787	-
Other income	46 000	26 342 880

Note 8

Equity

SRL AS

	Share Capital	Other Equity	Total equity
Equity at Jan. 1	1 200 000	16 971 711	18 171 711
Profit for the year	-	2 801 537	2 801 537
Equity at Dec. 31	1 200 000	19 773 249	20 973 249

Simula Group

	Share Capital	Other Equity	Minority Interests	Total Equity
Equity at Jan. 1	1 200 000	28 415 785	3 421 171	33 036 956
Profit for the year	-	1 145 425	-1 608 635	-463 210
Equity at Dec. 31	1 200 000	29 561 210	1 812 536	32 573 746

Note 7

Share capital and ownership structure

The company's share capital consists of 800 shares with a nominal value of NOK 1 500 per share.

The shares are owned by the Norwegian state represented by the Ministry of Research and Education

Note 9

Bank deposits

The company had withheld funds of NOK 2 759 688,- in connection with rent of office space and NOK 1 274 082,- in withholding taxes. The Group is withholding employee taxes to the amount of NOK 5 341 495,-.

Note 10

Subsidiaries

	Office location	Ownership Dec. 31	Net book value	Company equity Dec. 31	Company result for 2014
Simula Innovation AS	Fornebu	100 %	4 356 300	9 185 695	-88 617
Kalkulo AS	Fornebu	100 %	406 000	3 633 831	402 091
Simula School of Research and Innovation AS	Fornebu	55,74%	557 400	4 100 672	-3 631 231

Note 11

Transactions within the Group

	2013	2014
Receivable on Simula Innovation AS	14 769 010	5 058 748
Payable to Simula Innovation AS	-	3 543 719
Receivable on Kalkulo AS	27 076	24 222
Payable to Kalkulo AS	-	1 319 987
Receivable on SSRI AS	428 387	-
Payable to SSRI AS	-	4 109 672
Receivable on Celerway Communications AS	-	8 330
Payable to Celerway Communications AS	-	201 500
Contribution to SSRI AS	21 912 393	24 784 927
Purchase of services from Simula Innovation AS	20 531 219	22 328 809
Purchase of services from Kalkulo AS	1 809 015	2 188 750
Purchase of services from SSRI AS	-	662 989
Sale of services to Simula Innovation AS	884 000	1 679 046
Sale of services to Kalkulo AS	1 771 155	1 770 000
Sale of services to SSRI AS	3 189 773	3 200 740

Note 12

Shares

	Number of shares	Nominal value per share	Purchase price
Expert Analytics AS	5 294	1,00	600 000
Testify AS	44 433	1,00	1 427 117
Expertware AS	30 000	1,00	31 914
Forzasys AS	49 500	1,02	50 490
Fabriscale Technologies AS	10 500	1,00	10 500
LABO Mixed Realities AS	538	100,00	1 199 740
Symphonical AS	1 005 528	0,10	1 325 151
Intelliview AS	15	500,00	1 000 000
Edgefolio AS	10 412	0,4785	600 048
Radytek, Polen	34		3 045
Insilicomed Inc, USA	131 945	USD 1,80	1 220 755
Celerway Communication AS	22 500	1	3 017 745
Writedown of shares			2 545 905
			7 940 600

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 and Kalkulo AS are both liable to taxation.

Taxation for the year consists of:

Tax payable	139 904
Change in deferred tax	-36 827
Net tax expense	103 077

Tax payable for the year is calculated as follows:

		Deferred tax liabilities/asset	31.12.14	01.01.14
Profit before tax	558 177	Assets	-73 657	-43 361
Permanent differences	19 917	Write down of shares	-1 220 754	-1 220 754
Change in temporary differences	136 398	Other differences	606 486	769 098
Group contributions paid	196 329	Net deferred tax basis	-687 925	-495 017
Taxable income	518 163	Net deferred tax assets	-185 739	-133 654
Tax payable	139 904	Deferred tax assets, not recognised	321 179	305 921
		Deferred tax, recognised	135 440	172 267

Note 14

Leases

The company has signed three leases for photocopiers that all expire in 2016, 2017 and 2018. The company also has a lease for coffee machines, which will expire in 2015. Leasing expenses amounted to NOK 782 300,- in 2014.

The company has signed a leasing contract for a car for the managing director, which expires in 2015. Leasing expenses amounted to NOK 139 977,- in 2014.

Note 15

Pledged securities

Assets pledged as security for liabilities in the parent company amounts to NOK 4 166 670,-. Plant and machinery is pledged to the amount of NOK 2 500 000,- and receivables to NOK 5 000 000,-. The book value of pledged assets amounts to NOK 15 752 289,-.

Cash flow statement

Simula Group**SRL AS**

2013	2014		2014	2013
		Cash flow from operating activities:		
3 601 478	- 463 210	Net profit for the year	2 801 537	4 267 630
2 345 619	1 891 438	Depreciation	1 695 879	1 728 824
6 382 556	2 870 347	Change in receivables	- 8 039 200	- 7 102 378
6 420 546	- 13 653 079	Change in current liabilities	- 19 600 594	12 599 146
18 750 199	- 9 354 504	Net cash flow from operating activities	- 7 063 978	11 493 222
		Cash flow from investment activities:		
- 699 036	- 1 326 383	Investments in property, plant and equipment	- 1 276 124	- 672 922
- 5 480 159	- 1 560 778	Investment in/sale of shares	-	-
- 6 179 195	- 2 887 161	Net cash flow from investment activities	- 1 276 124	- 672 922
		Cash flow from financing activities:		
- 333 332	- 333 332	Repayment of loans	- 333 332	- 333 332
- 57 270	- 36 827	Change in deferred taxes	-	-
- 390 602	- 370 159	Net cash flow from financing activities	333 332	- 333 332
12 180 401	- 12 611 824	Net cash flow for the year	- 8 673 434	10 486 968
28 745 122	40 925 523	Cash reserves at Jan. 1	24 115 907	13 628 939
40 925 523	28 313 699	Cash reserves at Dec. 31	15 442 473	24 115 907



Til generalforsamlingen i
SIMULA RESEARCH LABORATORY AS

REVISORS BERETNING FOR 2014

Uttalelse om årsregnskapet

Vi har revidert årsregnskapet for SIMULA RESEARCH LABORATORY AS som består av selskapsregnskap, som viser et overskudd på kr. 2.801.537,-, og konsernregnskap, som viser et overskudd på kr. 1.145.425,-. Selskapsregnskapet og konsernregnskapet består av balanse per 31. desember 2014, resultatregnskap og kontantstrømpstilling for regnskapsåret avsluttet per denne datoen, og en beskrivelse av vesentlige anvendte regnskapsprinsipper og andre noteopplysninger.

Styret og daglig leders ansvar for årsregnskapet

Styret og daglig leder er ansvarlig for å utarbeide årsregnskapet og for at det gir et rettviseende bilde i samsvar med regnskapslovens regler og god regnskapsskikk i Norge, og for slik intern kontroll som styret og daglig leder finner nødvendig for å muliggjøre utarbeidelsen av et årsregnskap som ikke inneholder vesentlig feilinformasjon, verken som følge av misligheter eller feil.

Revisors oppgaver og plikter

Vår oppgave er å gi uttrykk for en mening om dette årsregnskapet på bakgrunn av vår revisjon. Vi har gjennomført revisjonen i samsvar med lov, forskrift og god revisjonsskikk i Norge, herunder International Standards on Auditing. Revisjonsstandardene krever at vi etterlever etiske krav og planlegger og gjennomfører revisjonen for å oppnå betryggende sikkerhet for at årsregnskapet ikke inneholder vesentlig feilinformasjon.

En revisjon innebærer utførelse av handlinger for å innhente revisjonsbevis for beløpene og opplysningene i årsregnskapet. De valgte handlingene avhenger av revisors skjønn, herunder vurderingen av risikoene for at årsregnskapet inneholder vesentlig feilinformasjon, enten det skyldes misligheter eller feil. Ved en slik risikovurdering tar revisor hensyn til den interne kontrollen som er relevant for selskapets utarbeidelse av et årsregnskap som gir et rettviseende bilde. Formålet er å utforme revisjonshandlinger som er hensiktsmessige etter omstendighetene, men ikke for å gi uttrykk for en mening om effektiviteten av selskapets interne kontroll. En revisjon omfatter også en vurdering av om de anvendte regnskapsprinsippene er hensiktsmessige og om regnskapsestimaterne utarbeidet av ledelsen er rimelige, samt en vurdering av den samlede presentasjonen av årsregnskapet.

Etter vår oppfatning er innhentet revisjonsbevis tilstrekkelig og hensiktsmessig som grunnlag for vår konklusjon.

Konklusjon

Etter vår mening er årsregnskapet avgitt i samsvar med lov og forskrifter og gir et rettviseende bilde av selskapets og konsernets SIMULA RESEARCH LABORATORY AS' finansielle stilling per 31. desember 2014 og av resultatet og kontantstrømmen for regnskapsåret som ble avsluttet per denne datoen i samsvar med regnskapslovens regler og god regnskapsskikk i Norge.



Uttalelse om øvrige forhold

Konklusjon om årsberetningen

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

Konklusjon om registrering og dokumentasjon

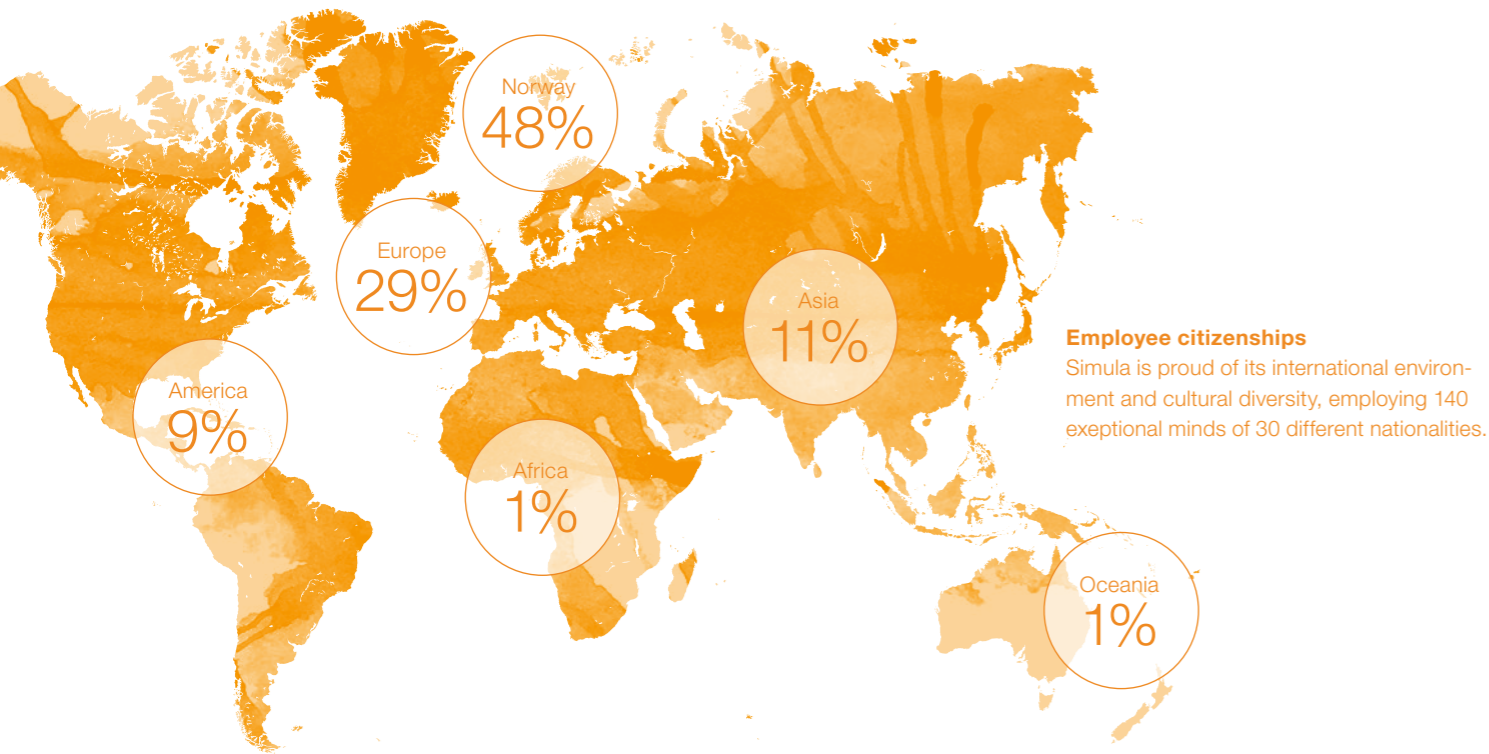
Basert på vår revisjon av årsregnskapet som beskrevet ovenfor, og kontrollhandlinger vi har funnet nødvendig i henhold til internasjonal standard for attestasjonsoppdrag (ISAE) 3000 «Attestasjonsoppdrag som ikke er revisjon eller forenklet revisorkontroll av historisk finansiell informasjon», mener vi 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 bokføringskikk i Norge.

Oslo, den 3. mars 2015


Erik A. Bell
Statsautorisert revisor

Social responsibility and working environment

Simula is a nonprofit public utility enterprise. The company contributes to society by engaging in basic long-term research within the fields of communication systems, scientific computing, and software engineering. In addition, Simula conducts education and fosters innovation on basis of the research.



To reach its goals, 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 both Simula and each individual employee is part of Simula's responsibility as a contributor to Norwegian society, and it is a fundament for trust from the outside world. Simula's code of ethics is developed with the

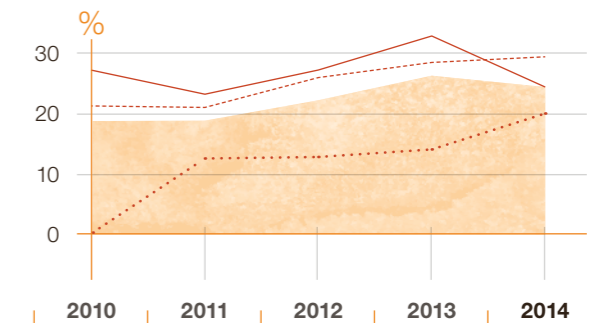
purpose to increase awareness of, and compliance with, the high ethical standards required of the employees. The code of ethics includes topics such as research ethics; the working environment and inclusion; gifts, enticements and corruption; confidentiality; and conflicts of interest.

Equality and diversity

It is an important objective for Simula to be a workplace where men and women are given the same opportunities for profes-

Gender Action plan

Simula is aiming to have at least 30 per cent female employees in scientific positions by 2017. Simula will continue to work actively and systematically to improve the gender balance within the organisation. To meet our target, we will be implementing concrete initiatives for retaining good female candidates already employed by Simula, as well as attracting new and talented female candidates.



	2010	2011	2012	2013	2014
PhD candidates	27%	23%	27%	33%	24%
Post docs	21%	21%	26%	28%	29%
Researchers (full time)	0%	13%	13%	14%	20%
Average	19%	19%	22%	26%	24%

sional and personal development. In order to strengthen the focus and to follow up on the promising results shown in our previous work on improving the gender balance, Simula will continue to focus on initiatives for both recruiting new and talented female candidates, and for developing and adapting work situations for qualified women. Simula will pursue the goal of a minimum 30 per cent female contingent among scientific staff by 2017.

Simula's workplace is diverse in both cultural and national origin, and currently more than 52 per cent of the employees are from countries outside of Norway. The employees represent 30 different nationalities. Simula takes different measures to make the transition to a Norwegian workplace effective and positive, including administrative support and Norwegian language training.

Working environment

Simula aspires to be an excellent workplace. This will be ensured through an internal inspection system that addresses health, safety and the working environment. The Working Environment Committee at Simula makes efforts to develop and maintain the quality of the working environment. It participates in planning, and follows up questions concerning the safety, health and welfare of the employees. The results of a working environment survey conducted

in 2014 are 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.

Simula has entered into 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, strengthen job attendance and improve the working environment, as well as avert exclusion and withdrawal from working life. An action plan with focus on how Simula addresses these matters is discussed with NAV annually.

Competence development and recruitment

Simula is dependent on competent and motivated employees with specific expertise in order to reach its targets. Simula works continuously to attract, develop and retain talented employees with varied backgrounds.

Simula's leaders play a key role with respect to Simula's results. Simula facilitates professional and personal development to enhance expertise, and provides a bi-annual leadership development program for current and potential leaders on different levels.

Conflict resolution and notification of censurable conditions

Simula will ensure a safe and secure working environment in accordance with the company's principles on workplace culture. Simula has developed guidelines for conflict resolution and notification, meeting all the requirements in the personnel guidelines and the Working Environment Act. These guidelines encourages 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. Simula has a program for employees that choose not to drive a car to the workplace, by financially supporting their use of public transport. In 2014, 57 per cent of the employees were signed up for the program. Additionally, Simula has set a goal of being paper-free by 2015, in the sense that all administrative processes will be digital and the current total consumption of paper per person in the lab will be halved. A preliminary status report shows that the introduced measures have contributed to a significant reduction in paper consumption since 2010, as well as an increased awareness among employees.

Doctorates and Master's Degrees

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

Master's student / Thesis Supervisor / Co-supervisor(s) University

Vegard Aalbu / MovieCutter: A system to make personalized video summaries from archived video content
Pål Halvorsen / *Håkon Kvale Stensland, Carsten Griwodz*
UiO/Department of Informatics

Aron Andersson / A Computationally Efficient Framework for Mesoscopic Modeling of Particle Laden Flows
Xing Cai / *Omar Al-Khayat*
University of Gothenburg

Kamyar Akhbari / Understanding network performance bottlenecks
Ahmed Elmokafshi / *Andreas Petlund, Paal Engelstad, University College of Oslo and Akershus (HiOA)*
UiO/Department of Informatics

George Bahij / Extending the Gotran framework: LaTeX and GPU acceleration
Johan Hake / *Joakim Sundnes*
UiO/Department of Informatics

Jan Anders Bremer / Optimization of video encoding for cloud gaming
Kjetil Raaen / *Carsten Griwodz*
UiO/Department of Informatics

Davlet Dzhakishev / NoSQL Databases in the Enterprise, An Experience with Tomra's Receipt Validation System
Sagar Sen / *Magne Jørgensen*
UiO/Department of Informatics

Forough Golkar / Measuring and Comparing the Stability of Internet Paths over IPv4 & IPv6
Amund Kvalbein / *Thomas Dreibholz*
UiO/Department of Informatics

Stig Magnus Halvorsen / Load Generation for Investigating Game System Scalability from Demands to Tools
Kjetil Raaen / *Carsten Griwodz*
UiO/Department of Informatics

Timo Koch / Coupling a vascular graph model and the surrounding tissue to simulate flow processes in vascular networks
Kent-André Mardal / *Natalie Schroder, Rainier Helmig (Stuttgart), André Massing*
University of Stuttgart

Ezhilmathi Krishnasamy / Hybrid CPU-GPU parallel simulations of 3D front propagation
Xing Cai / *Prof. Anders Klarbring*
Linköping University

Michael Krog / PISA – The Platform Independent Sensor Application
Frank T. Johnsen, Norwegian Defense Research Establishment (FFI) / *Trude Hafsøe Bloebaum (FFI), Carsten Griwodz*
UiO/Department of Informatics

Nina Kylstad / Simulating the viscoelastic response of the spinal cord
Marie Rognes / *Kent-André Mardal*
UiO/Department of Mathematics

Mustafa Mahamid / Adaptive Routing in InfiniBand
Sven-Arne Reinemo / *Ernst Gunnar Gran*
UiO/Department of Informatics

Jonas Sæther Markussen / Experimentally finding the right aggressiveness for retransmissions in thin TCP streams - How hard can it be?
Andreas Petlund / *Carsten Griwodz*
UiO/Department of Informatics

Ghaemi Mohsen / Performance analysis and dynamic reconfiguration of a SR-IOV enabled OpenStack cloud
Evangelos Tasoulas
UiO/Department of Informatics

Baha Naaminih / PbQuery: Query Language For Protocol Buffers
Amund Kvalbein / *Ernst Gunnar Gran*
UiO/Department of Informatics

Tom Andreas Nærland / Geometry decomposition algorithms for the Nitsche method on unfitted geometries
André Massing / *Kent-André Mardal*
UiO/Department of Mathematics

Øystein Skonseng Landsverk / Investigating the performance and applicability of object tracking in a real-time distributed video pipeline
Håkon Kvale Stensland / *Pål Halvorsen, Vamsidhar Reddy Gaddam, Carsten Griwodz*
UiO/Department of Informatics

Ragnar Langseth / Implementation of a distributed real-time video panorama pipeline for creating high quality virtual views
Pål Halvorsen / *Vamsidhar Reddy Gaddam, Håkon Kvale Stensland, Carsten Griwodz*
UiO/Department of Informatics

Sigurd Ljødal / Implementation of a real-time distributed video processing pipeline
Håkon Kvale Stensland / *Pål Halvorsen, Carsten Griwodz*
UiO/Department of Informatics

Haakon Løchen Nore / Understanding network performance bottlenecks
Ahmed Elmokafshi / *Andreas Petlund, Bjarne Emil Helvik (NTNU)*
Norwegian University of Science and Technology (NTNU)

Mehraj Pakmehr / TCP Congestion Control Characteristics and Their Impacts in QoS over Mobile Broadband Networks
Simone Ferlin-Oliveira / *Paal Engelstad, Özgü Alay*
UiO/Department of Informatics

Geir Yngve Paulsen / GPU Computing for Efficient Sedimentary Basin Simulations
Xing Cai / *Michael Hanke, KTH*
KTH Royal Institute of Technology

Alexandre Pétilion / Test Suite Minimization Using Constraint Programming
Arnaud Gotlieb / *Dusica Marijan*
Université de Poitiers

Fredrik Eksaa Pettersen / Multi scale modelling of diffusion processes in dendrites and dendritic spines
Hans Petter Langtangen
UiO/Department of Physics

Sami Sarinc / Partitioning of parallel simulations with OMNeT++
Sven-Arne Reinemo / *Tor Skeie*
UiO/Department of Informatics

Doctorates / Thesis Supervisors

Bartosz Bogdanski / Optimized Routing for Fat-Tree Topologies
Sven-Arne Reinemo, *Tor Skeie, Olav Lysne*

Ragnhild Eg / Preserving temporal integration in multimedia: Perceived synchrony across audiovisual content and quality distortions
Alexander Eichhorn, *Knut Inge Fostervold (UiO), Dawn M. Behne (NTNU)*

Håvard Espeland / Processing Cyclic Multimedia Workloads on Modern Architectures
Pål Halvorsen, *Carsten Griwodz*

Ernst Gunnar Gran / Congestion Management in Lossless Interconnection Networks
Olav Lysne, *Tor Skeie, Sven-Arne Reinemo*

Torbjørn Seland / Mathematical analysis of epidemic systems – comparison of different models
Kent-André Mardal / *Hans Petter Langtangen*
UiO/Department of Mathematics

Ram Shrestha / Designing a prototype of Telemedicine system utilizing multiple Mobile BroadBand (MBB) networks
Özgü Alay / *Paal Engelstad (HiOA)*
UiO/Department of Informatics

Henrik Vest Simonsen / A Demonstration Scenario for the NorNet Core Multi-Homed Network Testbed
Thomas Dreibholz / *Ernst Gunnar Gran*
UiO/Department of Informatics

Yuba Raj Siwakoti / Measuring Performance of Mobile Broadband Networks under Mobility
Özgü Alay / *Ismail Hassan (HiOA)*
UiO/Department of Informatics

Wei Lin Guay / Dynamic Reconfiguration in Interconnection Networks
Sven-Arne Reinemo, *Tor Skeie, Olav Lysne*

Øyvind Hjelle / A Hamilton-Jacobi Framework for Modeling Geological Folding and Deformation
Jacob T. Fokkema (Delft University of Technology), *Steen A. Petersen (Statoil/Delft University of Technology)*

Rainer Nerlich / Analysing two potential outlets of a shrinking Pacific mantle reservoir: The Scotia Sea and the Caribbean
Stuart Clark, *Hans-Peter Bunge (LMU Munich)*

Jarle Sogn / Stabilized Finite Element Methods for the Brinkman Equation on Fitted and Fictitious Domains
Kent-André Mardal / *André Massing, Øyvind Evju, Martin Sandve Alnæs*
UiO/Department of Mathematics

Ingeborg Sauge Torpe / An in-depth study of one-shot optimization with applications to magnetic resonance elastography
Marie Rognes / *Kent-André Mardal*
UiO/Department of Mathematics

Geir Ola Vaagland / Improvements of the Linux SCTP API
Ernst Gunnar Gran / *Thomas Dreibholz*
UiO/Department of Informatics

Martin Alexander Wilhemsen / Real-Time Interactive Cloud Applications
Håkon Kvale Stensland / *Pål Halvorsen*
UiO/Department of Informatics

Bernardo Lino de Oliveira / Computational models of Cardiac Electromechanics
Joakim Sundnes, *Samuel Wall, Rodrigo dos Santos*

Karen-Helene Støverud / Relation between the Chiari I malformation and syringomyelia from a mechanical perspective
Kent-André Mardal, *Hans Petter Langtangen, Victor Houghton, Mikael Mortensen*

Hung Quoc Vu / Permutation Based Routing for Increased Robustness in IP Networks
Amund Kvalbein, *Olav Lysne, Paal Engelstad*

List of publications

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Other Publications	2

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 with Simula, and has contributed to the publication as specified in Simula's publication guidelines. Publications from people in part-time positions at Simula are generally not counted unless the research is specifically performed as part of their employment at Simula. Such exceptions from the main rule are very few and must in all cases be approved by the head of department.

Articles in International Journals

[1] **Unified Form Language: a Domain-Specific Language for Weak Formulations of Partial Differential Equations** / M. S. Alnæs, A. Logg, K. B. Ølgaard, M. E. Rognes and G. N. Wells / *ACM Transactions on Mathematical Software*, vol. 40, 2014

[2] **Periodic table of the Finite Elements** / D. Arnold and A. Logg / *SIAM News*, vol. November issue, 2014

[3] **Architecture-Level Configuration of Large-Scale Embedded Software Systems** / R. Behjati, S. Nejati and L. C. Briand / *ACM Transactions on Software Engineering and Methodology*, vol. 23, 2014

[4] **Traceability and SysML Design Slices to Support Safety Inspections: a Controlled Experiment** / L. Briand, D. Falessi, S. Nejati, M. Sabetzadeh and T. Yue / *ACM Transactions on Software Engineering and Methodology*, vol. 23, 2014

[5] **The Immersed Body Supermeshing Method for Modelling Reactor Physics Problems With Complex Internal Structures** / A. G. Buchan, P. E. Farrell, G. J. Gorman, A. J. H. Goddard, M. D. Eaton, E. T. Nygaard, P. L. Angelo, R. P. Smedley-Stevenson, S. R. Merton and P. N. Smith / *Annals of Nuclear Energy*, vol. 63, pp. 399–408, 2014

[6] **CutFEM: Discretizing Geometry and Partial Differential Equations** / E. Burman, S. Claus, P. Hansbo, M. G. Larson and A. Massing / *Int. J. Numer. Meth. Eng.*, pp. 1–36, 2014

[7] **Demand Response Management With Multiple Utility Companies: a Two-Level Game Approach** / B. Chai, J. Chen, Z. Yang and Y. Zhang / *IEEE Transactions on Smart Grid*, vol. 5, 2014

[8] **Rapid South Atlantic Spreading Changes and Coeval Vertical Motion in Surrounding Continents: Evidence for Temporal Changes of Pressure-Driven Upper Mantle Flow** / L. Colli, I. Stotz, H.-P. Bunge, M. Smethurst, S. R. Clark, G. Iaffaldano, A. Tassara, F. Guillocheau and M. C. Bianchi / *Tectonics*, vol. 32, 2014

[9] **Non-equilibrium reactivation of Na⁺ current drives early afterdepolarizations in mouse ventricle** / A. G. Edwards, E. Grandi, J. E. Hake, S. Patel, P. Li, S. Miyamoto, J. H. Omens, J. H. Brown, D. M. Bers and A. D. McCulloch / *Circulation: Arrhythmia and Electrophysiology*, 2014

[10] **Revisiting BGP Churn Growth** / A. Elmokashfi and A. Dhamdhare / *Computer Communication Review*, vol. 44, pp. 5–12, 2014

[11] **A New Proposal to Deal With Congestion in InfiniBand-Based Fat-Trees** / J. Escudero-Sahuquillo, P. J. García, F. J. Quiles, S.-A. Reinemo, T. Skeie, O. Lysne and J. Duato / *Journal of Parallel and Distributed Computing*, vol. 74, pp. 1802–1819, 2014

[12] **Adaptive Media Streaming to Mobile Devices: Challenges, Enhancements, and Recommendations** / K. Evensen, T. Kupka, H. Riiser, P. Ni, R. Eg, C. Griwodz and P. Halvorsen / *Advances in Multimedia*, vol. 2014, pp. 1–21, 2014

[13] **SAMM: an Architecture Modeling Methodology for Ship Command and Control Systems** / Z. Fan, T. Yue and L. Zhang / *Software and Systems Modeling*, pp. 1–48, 2014

[14] **A Framework for the Automation of Generalised Stability Theory** / P. E. Farrell, C. Cotter and S. W. Funke / *SIAM Journal on Scientific Computing*, vol. 36, pp. C25–C48, 2014

[15] **Tidal Turbine Array Optimisation Using the Adjoint Approach** / S. W. Funke, P. E. Farrell and M. D. Piggott / *Renewable Energy*, vol. 63, pp. 658–673, 2014

[16] **Spectrum and Energy Efficiency Evaluation of Two-Tier Femtocell Networks With Partially Open Channels** / X. Ge, T. Han, Y. Zhang, G. Mao, C. Wang and J. Zhang / *IEEE Transactions on Vehicular Technology*, vol. 63, 2014

[17] **Parallel Solutions of Static Hamilton-Jacobi Equations for Simulations of Geological Folds** / T. Gillberg, A. M. Bruaset, Ø. Hjelle and M. Sourouri / *Journal of Mathematics in Industry*, vol. 4, 2014

[18] **NorNet Core - A Multi-Homed Research Testbed** / E. G. Gran, T. Dreiholz and A. Kvalbein / *Computer Networks*, vol. Special Issue: Future Internet Testbeds, pp. 75–87, 2014

[19] **CaMKII comes of age in cardiac health and disease.** / E. Grandi, A. G. Edwards, A. W. Herren and D. M. Bers / *Frontiers in pharmacology*, 2014

[20] **Experiences in Engineering a Video-based System to Improve Sports Analytics for Soccer** / C. Griwodz / *IEEE MMTC R-Letter*, vol. 5, pp. 11, 2014

[21] **Investigating the Trade-off in Allocating Bits to Texture or Depth Information in Rate-constrained Multiview Video Coding** / C. Griwodz / *IEEE MMTC R-Letter*, vol. 5, pp. 9–10, 2014

[22] **An Improved Method for Adding Depth to 2D Images and Movies** / C. Griwodz / *IEEE MMTC R-Letter*, vol. 5, pp. 5–6, 2014

[23] **System Level Performance of IEEE 802.22 With Sensing-Based Detection of Wireless Microphones** / P. R. Grøn-sund, P. Pawelczak, J. Park and D. Cabric / *IEEE Communications Magazine*, vol. 52, pp. 200–209, 2014

[24] **Computational modeling of sub-cellular transport and signaling** / J. E. Hake, P. M. Kekenos-Huskey and A. D. McCulloch / *Curr Opin Struct Biol*, vol. 25C, pp. 92–97, 2014

[25] **Locking Free Quadrilateral Continuous/discontinuous Finite Element Methods for the Reissner-Mindlin Plate** / P. Hansbo and M. G. Larson / *Computer Methods in Applied Mechanics and Engineering*, vol. 269, pp. 381–393, 2014

[26] **Variational formulation of curved beams in global coordinates** / P. Hansbo, M. G. Larson and K. Larsson / *Computational Mechanics*, vol. 53, pp. 611–623, 2014

[27] **Finite element modeling of a linear membrane shell problem using tangential differential calculus** / P. Hansbo and M. G. Larson / *Computer Methods in Applied Mechanics and Engineering*, vol. 270, pp. 1 – 14, 2014

[28] **A cut finite element method for a Stokes interface problem** / P. Hansbo, M. G. Larson and S. Zahedi / *Applied Numerical Mathematics*, vol. 85, pp. 90 – 114, 2014

[29] **An Enhanced Public Key Infrastructure to Secure Smart Grid Wireless Communication Networks** / D. He, S. Chan, Y. Zhang and M. Guizani / *IEEE Network*, vol. 28, pp. 10–16, 2014

[30] **Lightweight and Confidential Data Discovery and Dissemination for Wireless Body Area Networks** / D. He, S. Chan, Y. Zhang and H. Yang / *IEEE Journal of Biomedical and Health Informatics*, vol. 18, 2014

[31] **How Effective Are the Prevailing Attack-Defense Models for Cyber Security Anyway** / D. He, S. Chan and Y. Zhang / *IEEE Intelligent Systems*, vol. 29, 2014

[32] **Numerical Simulations of the Pulsating Flow of Cerebrospinal Fluid Flow in the Cervical Spinal Canal of a Chiari Patient** / A. Helgeland, K.-A. Mardal, V. Haughton and B. A. P. Reif / *Journal of Biomechanics*, vol. 47, pp. 1082–90, 2014

[33] **Assessment of Spurious Mixing in Adaptive Mesh Simulations of the Two-Dimensional Lock-Exchange** / H. R. Hiester, M. D. Piggott, P. E. Farrell and P. A. Allison / *Ocean Modelling*, vol. 73, pp. 30–44, 2014

[34] **Applying UML/MARTE on Industrial Projects: Challenges, Experiences, and Guidelines** / M. Z. Iqbal, S. Ali, T. Yue and L. C. Briand / *Software and Systems Modeling*, pp. 1–19, 2014

[35] **What We Do and Don't Know About Software Development Effort Estimation** / M. Jørgensen / *IEEE Software*, vol. 31, pp. 37–40, 2014

[36] **Failure Factors of Small Software Projects at a Global Outsourcing Marketplace** / M. Jørgensen / *Journal of Systems and Software*, vol. 92, pp. 157–169, 2014

[37] **Na+ Current Expression in Human Atrial Myofibroblasts: Its Identity and Functional Consequences** / J. Koivumäki, R. Clark, D. Belke, C. Kondo, P. Fedak, M. Maleckar and W. R. Giles / *Frontiers in Physiology*, vol. 5, pp. 275, 2014

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[39] **The Nornet Edge Platform for Mobile Broadband Measurements** / A. Kvalbein, D. Baltrunas, K. R. Evensen, J. Xiang, A. Elmokashfi and S. Ferlin / *Computer Networks*, 2014

[40] **On Parallel Push-Relabel Based Algorithms for Bipartite Maximum Matching** / J. Langguth, A. Azad, M. Halappanavar and F. Manne / *Parallel Computing*, vol. 40, pp. 289–308, 2014

[41] **Effect of Cranio-Vertebral Decompression on CSF Dynamics in Chiari I Malformation Studied With Computational Fluid Dynamics** / S. Linge, K.-A. Mardal, A. Helgeland, J. Heiss and V. Haughton / *Journal of Neurosurgery*, vol. 21, pp. 559–564, 2014

[42] **Role-Dependent Privacy Preservation for Secure V2G Networks in the Smart Grid** / H. Liu, H. Ning, Y. Zhang, Q. Xiong and L. Yang / *IEEE Transactions on Information Forensics & Security*, vol. 9, pp. 208–220, 2014

[43] **How Fast Can You (possibly) Do It, Or How Long Will It (certainly) Take? Communicating Uncertain Estimates of Performance Time** / E. Löhre and K. H. Teigen / *Acta Psychologica*, vol. 148, pp. 63–73, 2014

[44] **A Stabilized Nitsche Fictitious Domain Method for the Stokes Problem** / A. Massing, M. G. Larson, A. Logg and M. E. Rognes / *Journal of Scientific Computing*, vol. 61, pp. 604–628, 2014

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[7] **Analysing Two Potential Outlets of a Shrinking Pacific Mantle Reservoir: The Scotia Sea and the Caribbean** / R. Nerlich, Ph.D. Thesis, Ludwig-Maximilians-Universität, 2014

[8] **Computational models of Cardiac Electromechanics** / B. L. d. Oliveira, Ph.D. Thesis, University of Oslo, 2014

[9] **Relation Between the Chiari I Malformation and Syringomyelia From a Mechanical Perspective** / K.-H. Støverud, Ph.D. Thesis, University of Oslo, 2014

[10] **Permutation Based Routing for Increased Robustness in IP Networks** / H. Q. Vo, Ph.D. Thesis, Faculty of Mathematics and Natural Sciences, University of Oslo, 2014

Talks and Outreach

[1] **Does the End-User Really Have Benefits From Using Multipath Transport?** / H. Adhari / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[2] **Mobile Broadband Networks Under Mobility** / Ö. Alay and Y. R. Siwakoti / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[3] **Multipath Transport Over Heterogeneous Networks** / Ö. Alay, S. Ferlin and T. Dreibholz / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[4] **Worst-Case Scheduling of Software Tasks - a Constraint Optimization Model to Support Performance Testing** / S. D. Alesio / Principles and Practice of Constraint Programming (CP 2014), 2014

[5] **High level abstractions for finite element methods – The Unified Form Language and the FEniCS project** / M. S. Alnaes / CBC/Uppsala workshop, Simula Research Laboratory, 2014

[6] **The Unified Form Language – Features, implementation and future** / M. S. Alnaes / PRISM Workshop, Imperial College London, 2014

[7] **A Distributed Infrastructure to Analyse SIP Attacks in Internet Using the NorNet Testbed** / A. Aziz / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[8] **Computing at a Million of Mobiles Per Second** / S. Baden / Rutgers University, 2014

[9] **Embedded domain specific languages: How everyone can be an expert performance programmer** / S. Baden / Stony Brook University, Dept of Biomedical Informatics, 2014

[10] **Engineering for High Performance through Domain Specific Translations** / S. Baden / Royal Institute of Technology, Stockholm, Sweden, 2014

[11] **Engineering for High Performance through Domain Specific Translations** / S. Baden / Computer Science Department, University in Uppsala, 2014

[12] **Passive Cardiac Mechanics Calibration Using Reduced Order Unscented Kalman Filtering** / G. Balaban / Uppsala-Simula Scientific Computing Seminar, 2014

[13] **Cut Finite Element Methods for Multi-Physics Problems (in FEniCS!)** / E. Burman, S. Claus, P. Hansbo, M. G. Larson and A. Massing / 18th European Conference on Mathematics for Industry, 2014

[14] **The Status of MPTCP Deployment and Evaluation in the NorNet Testbed** / T. Dreibholz / 89th IETF Meeting, 2014

[15] **The NorNet Testbed for Multi-Homed Systems - Overview and Status** / T. Dreibholz / University of British Columbia (UBC), 2014

[16] **The NorNet Testbed for Multi-Homed Systems - Introduction and Status** / T. Dreibholz / Princeton, New Jersey, USA, 2014

[17] **The NorNet Testbed - Overview and Selected Results From Multi-Path Transport Research** / T. Dreibholz / New York University (NYU), Polytechnic School of Engineering, 2014

[18] **The NorNet Testbed - an Overview for the GENI Meeting** / T. Dreibholz / Kungliga Tekniska högskolan (KTH), 2014

[19] **NorNet – An Open, Large-Scale Testbed for Multi-Homed Systems** / T. Dreibholz / Swinburne University, Centre for Advanced Internet Architectures (CAIA), 2014

[20] **The NorNet Testbed at Qiongzhou University - A Large-Scale Experiment Platform for Real-World Experiments With Multi-Homed Systems** / T. Dreibholz / Qiongzhou University, 2014

[21] **The NorNet Testbed at Tsinghua University - a Large-Scale Experiment Platform for Real-World Experiments With Multi-Homed Systems** / T. Dreibholz / Tsinghua University, Department of Computer Science, 2014

[22] **The NorNet Testbed at Hainan University - a Large-Scale Experiment Platform for Real-World Experiments With Multi-Homed Systems** / T. Dreibholz / Hainan University, College of Information Science and Technology (CIST), 2014

[23] **The NorNet Core Testbed - Introduction and Status in August 2014** / T. Dreibholz / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[24] **Towards an Effective Formally Certified Constraint Solver** / C. Dubois and A. Gotlieb / 'Verification meets CP' 2014 workshop, Lyon, France, 2014

[25] **Mobile Broadband Measurements Using NorNet** / A. Elmokashfi / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[26] **The NorNet Edge Testbed for Mobile Broadband Measurements** / A. Elmokashfi / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[27] **Impact of Bufferbloat in MPTCP Over Heterogeneous Wireless Networks** / S. Ferlin, 2014

[28] **PDE-Constrained Optimisation in Hilbert Spaces** / S. W. Funke and M. Nordaas / FEniCS'14 Workshop, University of Chicago center in Paris, France, 2014

[29] **Lecture on PDE-constrained optimization with FEniCS** / S. W. Funke / Zhjiang University, Hangzhou, China, 2014

[30] **Arrhythmogenic Mechanisms and Therapeutic Targets for Catecholaminergic Polymorphic Ventricular Tachycardia: A Simulation Study in a Human Ventricular Myocyte** / N. Gaur, L. Qiang, X. Cai and Y. Rudy / Simula Research Laboratory, 2014

[31] **Mathematical Modeling of Ca Handling and Computational Studies of Ca-related Arrhythmogenesis in Heart** / N. Gaur, Q. Lan, X. Cai and Y. Rudy / National University of Defense Technology, China, 2014

[32] **A generic right ventricle model for simulating patient-specific pacing procedures from echocardiography data** / S. U. Gjerald, S. Sarvari, H. H. Odland and S. Wall / Workshop on Models for surgical decision support at VPH2014 in Trondheim, 2014

[33] **Measuring and Comparing Internet Path Stability in IPv4 and IPv6** / F. Golkar / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[34] **Challenges in Constraint-Based Testing** / A. Gotlieb and V. Ganesh / 'Verification meets CP' workshop 2014, Lyon, France, 2014

[35] **Grønnere Cloud Computing** / E. G. Gran / Finansavisen, 2014

[36] **Using MPTCP to Reduce Latency for Cloud Based Mobile Applications** / K.-J. Grinnemo / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[37] **Performance Benefit of Single Assignment Languages for Parallel Execution** / C. Griwodz / 4th Bay Area Multimedia Forum, 2014

[38] **Bagadus - Layered Panorama Streaming for a Personal Football Experience** / C. Griwodz / ADSC Workshop on Immersive Telepresence and Adaptive Streaming, 2014

[39] **Shared Bottleneck Detection Evaluation With NorNet** / D. A. Hayes and S. Ferlin / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[40] **Shared Bottleneck Detection for Coupled Congestion Control for RTP Media** / D. A. Hayes, S. Ferlin and M. Welzl / IETF contribution: draft-hayes-rmcat-sbd-00, 2014

[41] **Performance and Availability of Application Servers in NorNet** / S. Jakobsson / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[42] **Erfaringer fra it-prosjekter. Fokus på kompetanse og kvalitet, som basis for å levere et forventet resultat** / M. Jørgensen / Invited talk: Computerworld Round Table, 2014

[43] **Hvordan unngå skuffelser i IT-prosjekter og ellers i livet** / M. Jørgensen / Presentation at Miles seminar, 2014

[44] **Den gode kunden - viktigere enn du kanskje tror** / M. Jørgensen and S. Grimstad / Invited talk: Digitaliseringskonferansen (repeated for NSB), 2014

[45] **Fra myter og moter til evidensbasert IT-utvikling** / M. Jørgensen / Presentation at TEKNA-seminar, 2014

[46] **Estimering av IT-prosjekter: Hvordan bli bedre til å treffe med estimater, planer, budsjetter og pris?** / M. Jørgensen / Presentation at Teleplan-seminar, 2014

[47] **Usikkerhetsestimering av IT-prosjekter** / M. Jørgensen / Presentation at seminar for Kongsberg FMC Subsea, 2014

[48] **Estimering av IT-prosjekter: Hva vet vi virker?** / M. Jørgensen / Presentation at Thales seminar, 2014

[49] **From Myths and Fashions to Evidence-Based Software Engineering** / M. Jørgensen / Keynote at: Lindholmen Software Day, Gothenburg, Sweeden, 2014

[50] **Ten Years With Evidence-Based Software Engineering. What Is It? Has It Had Any Impact? What's Next?** / M. Jørgensen / Keynote on 22nd ACM SIGSOFT International Symposium on Foundations of Software Engineering, 2014

[51] **Things You Were Never Told, Did Not Understand, Forgot, or Chose to Ignore in Statistics** / M. Jørgensen / Keynote at 1st Conference on Advanced Probability and Statistics in Information Systems (AP SIS), 2014

[52] **Skumle IT-prosjekter og sorte svaner** / M. Jørgensen / Keynote at CIO Forum on Project Management, 2014

[53] **Myths, Over-Simplifications and Unconfirmed Claims in Software Engineering** / M. Jørgensen / Keynote at: EUROMICRO DSD/SEAA, Verona, Italy, 2014

[54] **Offshoring av IT-utvikling: Hva er viktig for å lykkes?** / M. Jørgensen / Presentation at DIGIN-seminar, 2014

[55] **Prosjektstyring: Ikke mye nytt siden pyramidene** / M. Jørgensen / Article in Computerworld Norge, 2014

[56] **Praedico ergo sum** / M. Jørgensen / Article in Computerworld Norge, 2014

[57] **Hvor ofte og når lykkes IT-prosjekter?** / M. Jørgensen / Article in Computerworld Norge, 2014

[58] **Visdommen til små grupper** / M. Jørgensen / Article in Computerworld Norge, 2014

[59] **Når vi har bestemt oss, ser mye annerledes ut** / M. Jørgensen / Article in Computerworld Norge, 2014

[60] **Lønner det seg med mer utdannelse?** / M. Jørgensen / Article in Computerworld Norge, 2014

[61] **Hvordan gjøre statistikk mer overbevisende?** / M. Jørgensen / Article in Computerworld Norge, 2014

[62] **Hva er et kostnadsestimat?** / M. Jørgensen / Article in Computerworld Norge, 2014

[63] **Kommunikasjon av kostnadsestimater** / M. Jørgensen / Article in Computerworld Norge, 2014

[64] **Mshr - Mesh Generation in FEniCS** / B. Kehlet / FEniCS'14 Workshop, University of Chicago center in Paris, France, 2014

[65] **Action Potential Repolarisation in Healthy and Fibrillating Human Atria: Contribution of Small Conductance Calcium-Activated Potassium Channels** / J. Koivumäki, L. Skibsbye, T. Christ, M. Maleckar and T. Jespersen / Conference of the Scandinavian Physiological Society, 2014

[66] **Computational Models of Cardiac Electrophysiology in Healthy and Fibrillating Human Atria** / J. Koivumäki / Seminar at the Institute of Experimental and Clinical Pharmacology and Toxicology, UKE, Hamburg, 2014

[67] **UNINETT Quality Measurements in Streaming Media** / O. Kvitem / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[68] **How to Easily Implement Sophisticated Tailored Algorithms in Computational Turbulence** / H. P. Langtangen / Department of Mathematics, University of Oxford, UK, 2014

[69] **Code Generation for High-Level Problem Specification and HPC** / H. P. Langtangen / London University College, London, UK, 2014

[70] **Leveraging IPv4 and IPv6 Multi-Connectivity** / I. Livadariu / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[71] **CCFEM implementation in FEniCS** / A. Logg / Simula multiphysics workshop, 2014

[72] **Automated Solution of Differential Equations** / A. Logg / Computer science and engineering seminar, Chalmers University of Technology, Gothenburg, Sweden, 2014

[73] **A Finite Element method for the Einstein-Vlasov system** / A. Logg / Biocomp lunch seminar, Simula, Oslo, 2014

[74] **Periodic table of the Finite Elements (part I)** / A. Logg / Computational and Applied Mathematics seminar, Chalmers University of Technology, Gothenburg, Sweden, 2014

[75] **Automated Solution of Differential Equations** / A. Logg / Hyperfit seminar, University of Copenhagen, Denmark, 2014

[76] **Periodic table of the Finite Elements (part II)** / A. Logg / Computational and Applied Mathematics seminar, Chalmers University of Technology, Gothenburg, Sweden, 2014

[77] **Periodic table of the Finite Elements (part III)** / A. Logg / Computational and Applied Mathematics seminar, Chalmers University of Technology, Gothenburg, Sweden, 2014

[78] **Multimesh FEM in FEniCS** / A. Logg / FEniCS'14 Workshop, University of Chicago center in Paris, France, 2014

[79] **Automated Solution of Differential Equations** / A. Logg / Svenska matematikersamfundets höstmöte, 2014

[80] **Periodic table of the Finite Elements** / A. Logg / Biocomp lunch seminar, Simula, Oslo, 2014

[81] **Vad går at berekna, vad går inte? Om fraktaler - matematiske fantaskapelser - och kaos** / A. Logg / Talk at Senioruniversitetet in Stockholm, 2014

[82] **On Numerical Methods for Transitional Flow - Application to Blood Flow in Aneurysms** / K.-A. Mardal, O. M. Khan, K. Valen-Sendstad and D. A. Steinman / Quality and Validation of Computational Cardio-vascular Biomechanics, WCCM-EC-CM-ECCOM, 2014

[83] **Cerebrospinal Fluid Flow in Association With the Central Nervous System - Chiari and Drug Delivery** / K.-A. Mardal, K.-H. Støverud, M. Mortensen, K. Jain, B. Martin and S. Pahlavian / MS on Computational Biomechanics, WCCM-ECCM-ECCOM, 2014

[84] **Er zombier en trussel mot menneskeheten?** / K.-A. Mardal, T. Seland, H. P. Langtangen and P. Røtnes / Upop aften - Det norske student samfund, 2014

[85] **On the Assumption of Laminar Flow in the Modeling of Physiological Flow** / K.-A. Mardal / Anvendt og beregningsorientert matematikk, Bergen, 2014

[86] **On the Assumption of Laminar Flow of CSF in Chiari Patients** / K.-A. Mardal, A. Helgeland, V. Haughton, B. A. P. Reif and K.-H. Støverud / International Chiari Research Group, 2014

[87] **CSF Flow at Foramen Magnum** / K.-A. Mardal, K.-H. Støverud, G. Ringstad and P. K. Eide / International Hydrocephalus Imaging Working Group, Montreal, Canada, 2014

[88] **On the Modeling of the Central Nervous System in Chiari Patients - Transitional Flow, Poroelasticity and Porous-Viscus Flow Couplings** / K.-A. Mardal / Gordon Conference on Flow & Transport in Permeable Media, 2014

[89] **Cut Finite Element Methods for Fluid and Fluid-Structure Interaction Problems** / A. Massing / Advances in Fluid-Structure Interaction, Tokyo, 2014

[90] **Multi-Scale Modeling of the Failing Heart: From Mouse to Man** / A. D. McCulloch / Simula-UiO-UCSD Summer School in Cardiac Modeling, 2014

[91] **Metamodelling of Structural Abnormalities in the ARVC Heart** / K. S. McLeod, K. Tøndel, S. Wall and J. Saberniak / VPH conference workshop on Metamodelling methodology for easing model construction and validation, 2014

[92] **Mobile Capacity Measurements and Estimation** / F. Michelinakis / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[93] **Supporting Certification and Evolution of Cyber-Physical Product Families** / L. Moonen / BENEVOL 2014 - Software Evolution in Belgium and the Netherlands, Amsterdam, the Netherlands, 2014

[94] **Assessment and Evolution of Safety-Critical Cyber-Physical Product Families** / L. Moonen / SATTOSE 2014 - Summerschool on Advanced Techniques & Tools for Software Evolution, L'Aquila, Italy, 2014

[95] **Model-Based Information Flow Analysis to Support Software Certification** / L. Moonen / VSSE 2014 - Validation Strategies for Software Evolution, Grenoble, France, 2014

[96] **FEniCS - A Free Software Framework for Efficient Solution of Differential Equations, with Applications in Mechanics** / M. Mortensen / Prague, 2014

[97] **Meta-Learning Approach to the Image Denoising Problem** / V. Naumova / SIAM Conference on Imaging Science, 2014

[98] **Minimization of Multi-Penalty Functionals by Alternating Iterative Thresholding and Optimal Parameter Choices** / V. Naumova / SIAM Conference on Uncertainty Quantification, 2014

[99] **Meta-Learning Based Blood Glucose Predictor for Diabetic Smartphone App** / V. Naumova / SIAM Conference on Imaging Science, 2014

[100] **Robust Preconditioners for PDE-Constrained Optimization With Limited Observations** / M. Nordaas / European Multigrid Conference, 2014

[101] **An Adjoint-Enabled Simulation Framework for Cardiac Electrophysiology** / M. E. Rognes / FEniCS'14 Workshop, University of Chicago center in Paris, France, 2014

[102] **An Adjoint-Enabled Simulation Framework for Cardiac Electrophysiology** / M. E. Rognes / CBC and CCI Workshop on Cardiac Modelling at Simula Research Laboratory, Fornebu, 2014

[103] **Perspectives on the Current State of the Art of Computational Modelling of Fluid Flow in the Brain Parenchyma** / M. E. Rognes / CBC and CINPLA Workshop on Modelling Liquid Transport in the Brain, Simula Research Laboratory, Fornebu, 2014

[104] **Adaptive Finite Elements: Practice and Implementation** / M. E. Rognes / Centre for Mathematics for Applications, University of Oslo, 2014

[105] **In Silico Physiological Flows** / M. E. Rognes / Seminar in connection with Villani visit at Simula Research Laboratory, Fornebu, 2014

[106] **High-Level Advanced Abstractions and Techniques in Finite Element Software** / M. E. Rognes / CBC Workshop on Computational Modeling with Applications in Biomedicine and Geophysics at Simula Research Laboratory, 2014

[107] **Automated Goal-Oriented Error Control and Adaptivity** / M. E. Rognes / RCN site visit to the CBC, Simula Research Laboratory, Fornebu, 2014

[108] **Sedimentation Rates in the Coastal Basins of Southern and Eastern Africa: a Bimodal Pattern** / A. Said, C. Moder, B. Ghorbal and S. R. Clark / EGU 2014, Vienna, Austria, 2014

[109] **Future Internet in Germany - the German-Lab Project and ToMaTo Testbed** / D. Schwerdel / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[110] **Glimpses From the History of Software Testing** / S. Sen / Open Course Slides, 2014

[111] **Efficient and Robust Architecture for Big Data Cloud** / T. Skeie / Hemavan, Sweden, 2014

[112] **Resilient Multi-Path Transport Using Geographic Routing** / J. P. G. Sterbenz / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[113] **Computational Models of Electro-Mechanical Interactions in the Heart** / J. Sundnes, S. Wall, S. Pezzuto, J. E. Hake and B. L. d. Oliveira / the European Conference for Mathematics in Industry, Taormina, Italy, 2014

[114] **Patient Specific Models of Cardiac Electro-Mechanics** / J. Sundnes, S. Wall, S. U. Gjerald, J. E. Hake and B. L. d. Oliveira / Seminar at Ecole des Mines, St Etienne, France, 2014

[115] **Computational Models of Electro-Mechanical Interactions in the Heart** / J. Sundnes / The Nordic Seminar on Computational Mechanics, Stockholm, 2014

[116] **Verbal Probabilities: A Pragmatic Perspective** / K. H. Teigen / Research conference on uncertainty, the DICE lab, University of Bergen, 2014

[117] **It's not the size, but what you do with it: CFD solver settings trump model resolution.** / K. Valen-Sendstad, O. M. Khan, M. Piccinelli and D. A. Steinman / Zurich, 2014

[118] **Coding for Multipath TCP: Opportunities and Challenges** / Ø. Ytrehus / Proceedings of the 2nd International NorNet Users Workshop (NNUW-2), 2014

[119] **Cyber-Physical Smart Grid Systems** / Y. Zhang / The 8th International Conference Interdisciplinarity in Engineering (INTER-ENG 2014), 2014

Other Publications

[1] **An Experiment Tutorial for the NorNet Core Testbed at Hainan University** / T. Dreibholz, 2014

[2] **An Experiment Tutorial for the NorNet Core Testbed** / T. Dreibholz, 2014



