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## VLSI-SOC: A TRADITION THAT WILL LAST FOREVER

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### **ABSTRACT:**

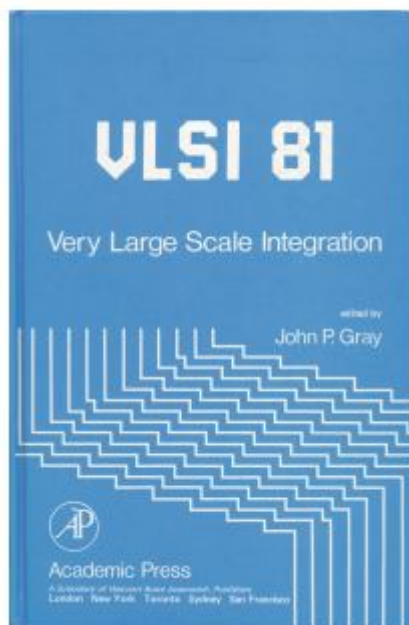
The first conference in the VLSI-SoC series took place in 1981, and the purpose of this website is to present a succinct review of the history of the conference. Since its inception, the conference has been hosted in a number of different venues all over the globe in order to showcase the most current discoveries from research undertaken in the disciplines of VLSI design, Systems-on-Chip design, and design automation. The tremendous expansion of the field over the period of the past roughly four decades may, in some ways, be observed in the information that is contained within books that are associated with sets of event editions.

***Keywords:** VLSI, SoC, EDA, Test, Microelectronics*

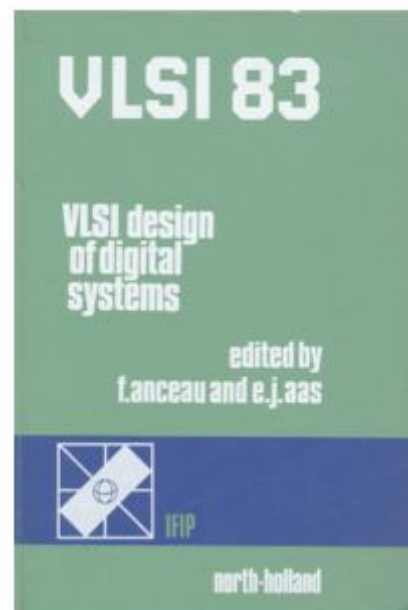
### **INTRODUCTION:**

The first conference in the VLSI-SoC series, which is officially known as the IFIP TC10/WG10.5 International Conference on Very Large Scale Integration, was held in the same year that Lynn Conway and Carver Mead were honoured with the "1981 Electronics Award for Creating a Common Design Culture for the LSI ERA." This award was presented in 1981. (started as VLSI). The first gathering took place in Edinburgh, United Kingdom, from August 18 to August 21. Sidney Michaelson and John Gray, both affiliated with the University of Edinburgh, served in the roles of General Chair and Program Chair, respectively. Prof. Sidney Michaelson was also the founder of a new Working Group on VLSI for the International Federation for Information Processing, which was known as the WG10.5 (<http://www.edinburgh.bcs.org/michaelson.htm>). In addition to this, Prof. Sidney Michaelson served as a professor at the University of Edinburgh. The WG10.5

has evolved into one of the most active groups within IFIP, routinely conducting conferences and seminars. In 1986, in honour of the contributions that Professor Sidney Michaelson had made to the operations of the IFIP, he was given the Silver Core award bestowed by that organisation. At the time of his passing, he was an active member of the organising committee for the tenth anniversary conference, which was scheduled to take place in Edinburgh later that year. The conference was called VLSI 91. The front cover of the very first proceedings, which were compiled into a book by Academic Press and edited by John Gray, is seen in Figure 1. There are thirty-five papers included in the book. Professor Carver Mead was the author of the first paper in the book, which is titled "VLSI and Technological Innovations," and it is included in the book (CALTECH, USA). The second edition was held from August 16–19, 1983 in Trondheim, Norway, and O. Landsverk from TU Trondheim served as the General Chair for the event. Professor Francois Anceau from TIM3/INPG in France served as the event's chairperson. The proceedings were also made available in book form, with North-Holland Publishers being the publisher (Fig. 2).



*Fig. 1. Cover of the first VLSI conference proceedings published as a book by Academic Press [1].*



*Fig. 2. Cover of the second VLSI conference proceedings published as a book by North Holland [2].*

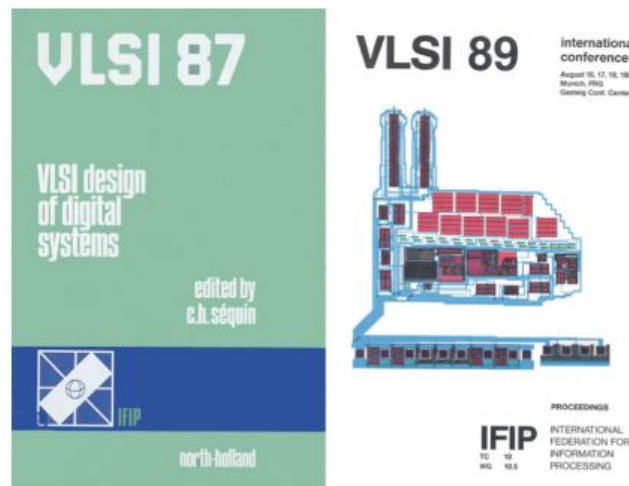
The 26th through the 28th of August 1985 saw the staging of the third edition in Tokyo, Japan. Professor T. Moto-Oka from the University of Tokyo served as the General Chair, while Dr. E. Horbst from the Central Research Division of Siemens Company in Munich, Germany, served as the Program Chair for the conference. North-Holland has once again made the proceedings available to the public in book form (Fig. 3).



*Fig. 3. Cover of the VLSI 1985 proceedings published as a book by North Holland [3]*

The 10th through the 12th of August in 1987 saw the holding of the fourth edition in Vancouver, Canada. D.R. Colton from CMC in Canada served as the General Chair, while Prof. C.H. Sequin from the University of California in the United States was in charge of the programme. North-Holland has once again made the proceedings available to the public in book form (Fig, 4).

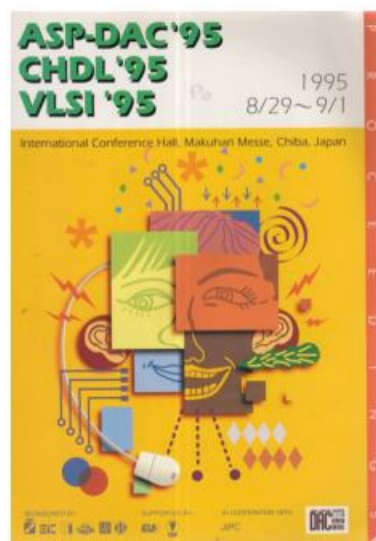
On the 16th to the 18th of August in 1989, the fifth edition was held in Munich, Germany. Professor R. Piloty from the Technical University of Darmstadt in Germany served as the General Chair, while Professor Gerald Musgrave from Brunel University in the United Kingdom served as the Program Chair. Once again, North-Holland was the publisher of the proceedings, which totaled 516 pages (Fig. 4).



*Fig. 4. Covers of VLSI 1987 and VLSI 1989 proceedings published by North Holland [4, 5]*

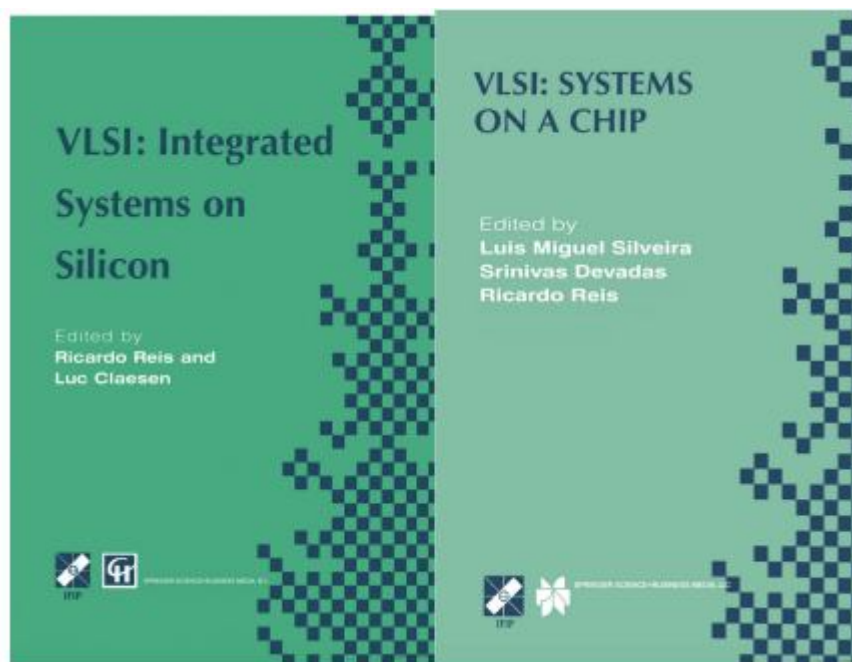
### YEARS 90'S:

The conference was held once again in Tokyo, Japan, from the 29th to the 1st of September in 1995. Professor Tatsuo Ohtsuki from Waseda University in Japan served as the General Chair, while Professor Wolfgang Rosenstiel from University of Tübingen in Germany served as the Program Chair for the conference. This edition was planned in conjunction with CHDL 95, which was the 12th International Conference on Computer Hardware Description Languages and their Applications, as well as the very first edition of ASP-DAC. IEEE was the organisation that ended up publishing the proceedings after they were combined with those of the other three conferences (Fig. 5)



*Fig. 5. Cover of the VLSI 1995 proceedings published by IEEE [8].*

In 1997, the continent of South America played host to the conference for the very first time. Gramado, a tiny tourist town located near to Porto Alegre in South Brazil, served as the setting for the event. It was arranged between the 26th and the 29th of August. Prof. Ricardo Reis from Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, Brazil served as the General Chair, while Luc Claesen from IMEC, Belgium served as the Program Chair for the conference. The proceedings, which totaled 588 pages, were compiled into a book that was published by Chapman & Hall Publishers, which is now known as Springer (Fig. 6).



*Fig. 6. Cover of the VLSI 1997 book published by Chapman & Hall and cover of VLSI1999 published by Kluwer Publishers [9, 10].*

In the year 1999, the conference was held in Lisbon, which is located in Portugal. Professor Luis Miguel Silveira and Professor José Monteiro, both of INESC in Lisbon, Portugal, served as the conference's General Chair and General Vice-Chair, respectively. Professor Srinivas Devadas of MIT in the United States served as the conference's Program Chair. Professor Peter Ivey from the University of Sheffield in the United Kingdom and Professor Joao Marques-Silva from the INESC in Portugal served as the program's co-chairs. The proceedings were compiled into a book that was published by Kluwer Publishers, which is now known as Springer Nature (Fig. 7)

**YEARS 2000'S:**

The conference was held at Montpellier, which is located in France, in the year 2001. Prof. Michel Robert, from LIRMM, France, served as the conference's General Chair. Christian Piguet, from CSEM, Switzerland, and Bruno Rouzeyre, both from LIRMM, France, served as the conference's Program Chairs. After the meeting, the proceedings were compiled into a book that was published by Kluwer Publishers (now Springer Nature). During the course of the conference, each participant was given a copy of the Digest of Papers (Fig. 7).



*Fig. 7. Cover of the VLSI2001 published by Kluwer Publishers [11]*

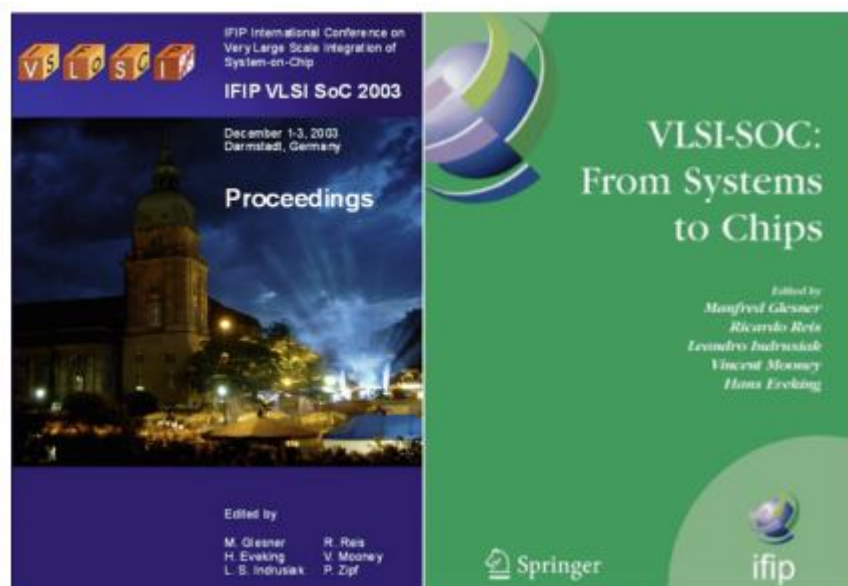
The conference was held at Darmstadt, which is located in Germany, in the year 2003. Prof. Manfred Glesner from TU Darmstadt in Germany served as the General Chair of the conference. Hans Evekling from TU Darmstadt in Germany and Prof. Vincent Mooney from Georgia Tech in the United States served as the Program Chairs. During the conference, participants were given copies of the proceedings to take home with them. Then, taking into consideration the presentations that were given during the conference, for the first time ever, a book was compiled with expanded versions of the top papers presented at the conference (with Springer Publishers) (Fig. 9). At the time, Leandro Indrusiak was working toward obtaining a double PhD at TU Darmstadt in Germany and UFRGS in Brazil. He was the one who developed the logo for the VLSI-SoC series, which is still in use to this day (Fig. 10). A new



conference call for papers template was also suggested by Leandro Indrusiak, and it has been utilised in the majority of editions ever since it was introduced (Figs. 11 and 12).

The conference was held in 2005 in Perth, Australia, on October 17–19 of that year. Prof. Adam Osseiran from ECU in Australia served as the event's General Chair. Stefan Lachowicz, who was also affiliated with ECU, served as the General Vice Chair. Professor Steve Kang from the University of California, Santa Cruz, and Professor Hans-Joerg Pflleiderer from the University of Ulm in Germany served as the programme chairs for the conference. Springer has once again produced the book that contains the outstanding articles in their expanded forms (Fig. 13).

Since 2005, the conference that was formerly held once every two years has transitioned to being held once every year. Prof. Ricardo Reis is the one who first suggested holding the VLSI-SoC Conference on an annual basis. This choice was made for the most part owing to the fact that the VLSI-SoC evolved into a worldwide conference that travelled to various locations across the globe. Because it was organised only every two years, it was impossible to return to the same part of the globe for an extended period of time.



*Fig. 8. Cover of the VLSI2003 proceedings and cover of the book with extended versions of best papers published by Springer Publishers [12]*



*Fig. 9. Logo of the VLSI-SoC series developed by Leandro Indrusiak.*

Salvador Mir from TIMA in Grenoble, France served as the event's General Chair. Professor Giovanni De Micheli, who is based at EPFL in Switzerland, served as the program's chair. Springer has once again produced the book that contains the outstanding articles in their expanded forms (Fig. 14). The conference was held in Atlanta, Georgia, United States, on October 15–17, 2007, at that time. Prof. Vincent Mooney from Georgia Tech in the United States served as the General Chair. Professors Yung-Hsiang Lu and Paul Hasler, both from the United States' Purdue University and Georgia Tech, respectively, served in the roles of Program Chairs. Springer has once again produced the book that contains the outstanding articles in their expanded forms (Fig. 14).

The conference was held in Rhodes, Greece, from the 13th through the 15th of October in the year 2008. Professor Dimitrios Soudris from the University of Thrace in Greece served as the conference's General Chair. Professor Thanos and Christian Piguet, both of CSEM in Switzerland, served as programme chairs for the conference.



*Fig. 10. VLSI-SoC 2003 CFP, that defined a new CFP template and VLSI-SoC 2009 and VLSI-SoC 2010 CFPs using a template based on the 2003 one.*

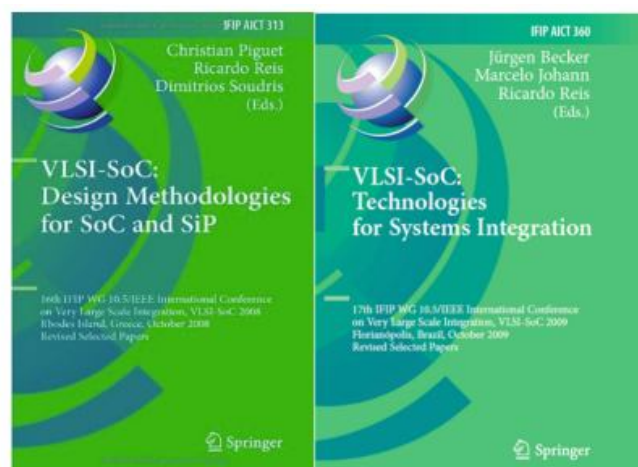




*Fig. 11. Some other CFPs using the CFP template: and VLSI-SoC 2011, VLSI-SoC 2012 and VLSI-SoC 2013.*

Stouraitis, a professor at the University of Patras in the United States Springer has once again produced the book that contains the outstanding articles in their expanded forms (Fig. 15).

The conference was held in the Brazilian city of Florianópolis on the 12th through the 14th of October in 2009. Professor Ricardo Reis from the University of Rio Grande do Sul (UFRGS) in Brazil served as the conference's General Chair. Professor Juergen Becker from KIT in Germany served as the event's Program Chair. Professor José Günzel from the Federal University of Santa Catarina in Brazil served as the Local Organizing Chair for this event. Springer has once again produced the book that contains the outstanding articles in their expanded forms (Fig. 15). As a part of the conference, a PhD Forum was arranged for the very first time and it was a success.



*Fig. 12. Covers of the VLSI2008 and VLSI2009 books with extended versions of best papers published by Springer Publishers [16, 17].*

**YEARS 2010'S:**

The conference was held in Madrid, Spain, from the 27th through the 29th of September in the year 2010. David Atienza, who is affiliated with EPFL in Switzerland, served as the General Chair. Professor Rajesh Gupta from UC San Diego in the United States and Professor Andrea Acquaviva from Politecnico de Torino in Italy served as the programme chairs for the conference. Springer has once again produced the book that contains the outstanding articles in their expanded forms (Fig. 16). The event was held in Hong Kong from October 3rd to the 5th of the same year (2011). Professor Chi-Ying Tsui served as the General Chair, while Salvador Mir from TIMA, INPG, Grenoble served as the Program Chair for the conference.

The conference was held in Santa Cruz, California, in the United States of America, from October 7–10, 2012. Prof. Matthew Guthaus from UC Santa Cruz in the United States served as the General Chair. Professor Andreas Burg from EPFL in Switzerland and Professor Ayse Coskun from Boston University in the United States served in the roles of Program Chairs. Springer has once again produced the book that contains the outstanding articles in their expanded forms (Fig. 17). The event took place in Istanbul, Turkey, on October 7–9, 2013, and it was arranged that year. Professor H. Fatih Ugurdag from Ozyegin University in Turkey and Professor Luis Miguel Silveira from Technical University of Lisbon in Portugal served as the conference's General Chairs. Professor Alex Orailoglu from UCSD in the United States and Professor Luigi Carro from UFRGS in Porto Alegre, Brazil served in the roles of Program Chairs. Springer has once again produced the book that contains the outstanding articles in their expanded forms (Fig. 13).

The conference was held at Playa del Carmen, Mexico, on October 6–8, 2014, as it has been in previous years. Arturo Sarmiento Reyes from INAOE in Puebla, Mexico, and Professor Ricardo Reis from UFRGS in Porto Alegre, Brazil, served as the General Chairs for the conference. Professor Luc Claesen, who is affiliated with the University of Hasselt in Belgium, and Professor Mara Teresa Sanz.



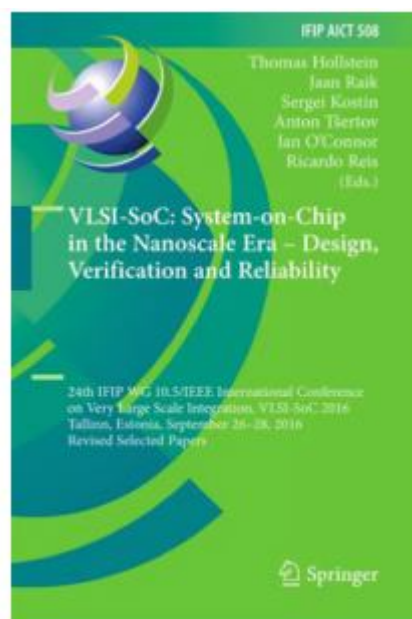
*Fig. 14. Covers of the VLSI2010 and VLSI2011 books with extended versions of best papers published by Springer Publishers [18, 19].*

INAOE, México. Springer has once again produced the book that contains the outstanding articles in their expanded forms (Fig. 18). On October 5–7, 2015, the event was held in Daejeon, which is located in the Republic of Korea. Naehyuck Chang from KAIST in Korea and Professor Kiyong Choi from Seoul National University in Korea served as the conference's General Chairs. Youngsoo Shin from KAIST in Korea and Professor Chi-Ying Tsui from HKUST in Hong Kong served as the programme chairs for the conference. Springer has once again produced the book that contains the outstanding articles in their expanded forms (Fig. 18).

The conference was held in Tallin, Estonia, from September 7–10, 2016, and it was planned in 2016. Professor Jaan Raik of Tallinn University College in Estonia and Professor Ian O'Connor at ECL Lyon in France served as the conference's General Chairs. Professors Thomas Hollstein from Tallinn University of Technology in Estonia and Michael Hübner from Ruhr University in Bochum, both located in Germany, were in charge of the programme. Springer has once again produced the book that contains the outstanding articles in their expanded forms (Fig. 19). In 2017, the event was held in Abu Dhabi, United Arab Emirates, during October 7–10 of that year. Professor Brahim (Abe) M. Elfadel from the Masdar Institute of Science and Technology in the United Arab

Emirates and Professor Fatih Ugurdag from Ozeyegin University in Turkey served as the conference's General Chairs. Professor Mihalis Maniatakos from New York University in Abu Dhabi, United Arab Emirates, and Professor Matteo Sonza Reorda from Politecnico di Torino in Italy served as the programme chairs for this conference.

In 2018, the VLSI-SoC conference was held in Verona, Italy, during October 8–10 of the same year. Professor Graziano Pravadelli from the University of Verona in Italy and Professor Todd Austin from the University of Michigan in the United States served as the conference's General Chairs. They were the Program Chairs.



*Fig. 15. Cover of the VLSI2016 book with extended versions of best papers published by Springer Publishers [24].*

Professors Nicola Bombieri and Masahiro Fujita, both from the University of Verona in Italy and the University of Tokyo in Japan, respectively.

The conference is scheduled to take place in 2019 from October 6–9 in Cusco, Peru. The General Chairs are Professors Carlos Silva-Cardenas and Ricardo Reis, both of whom are affiliated with the Pontifical Catholic University of Peru (PUCPeru). Professor Giovanni De Micheli of EPFL in Switzerland and Professor Pierre Emmanuel Gaillardon of Utah University in the United States will serve as the programme chairs, respectively. The conference will be held in

Salt Lake City, Utah, in the United States in the year 2020, and then it will move to Singapore the following year, in 2021.

### CONCLUSIONS:

In the subject of Very Large Scale Integration Systems and Systems on a Chip, VLSI-SoC is a genuine worldwide event that takes place every year. It travels to different parts of the globe every year in order to debate and share the findings of various studies on the state of the art. The books that have been published over the last 38 years are a valuable testimony to the development of VLSI design technology and SoC design technology throughout the globe.

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