

出國報告

晶片系統國家代表團

中加 SoC 國際雙邊會議及參訪行程

Canada-Taiwan System-On-Chip Session Delegation
(July 17th - 26th, 2004)

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■ 出團背景

緣起:

由於我國在半導體製程之晶圓代工產業技術居世界龍頭地位，加國在晶片電路設計之實力業已成為世界矚目之星，因此我國與加國在晶片系統的開發上是硬體與軟體的合作與相輔相成。

國科會多年來積極推動我國與加國之合作關係，因此加國友善地邀請參加 IEEE International SoC Workshop 並共同負責年會中之兩國 SoC 之雙邊會議，往後由雙方每年輪流當地主國舉辦此會議，互派產官學研各界代表共聚一堂以切磋研發心得，並尋找雙方可能之實質合作商機，達到雙贏之目標，共為促進兩國 SoC 產業而努力。

雙方合作籌辦單位:

加拿大駐台經貿辦事處

加拿大工業局

加拿大微機電協會組織(Canadian Microelectronics Corporation-CMC)

卡加利大學(University of Calgary)

亞伯塔大學(University of Alberta)

ATI Technologies, Toronto

Snowbush Microelectronics, Toronto

Diablo Technologies, Ottawa

Pultronics, Montreal

SiWorks, Calgary

MoSys Canada, Ottawa

PDF Solutions, San Jose

行政院國科會

工研院系統晶片中心(STC, ITRI)

台灣 SoC 推動聯盟(Taiwan SOC Consortium)

晶片系統國家型科技計畫辦公室(NSoC Program Office)

國家實驗研究院國家晶片系統設計中心(CIC)

雙邊會議規劃委員:

- Dr. Wael Badawy, Professor, University of Calgary, Calgary, Canada
- Dr. Yarsun Hsu, Professor, National Tsing Hua University, Taiwan
- Dr. Kris Iniewski, Professor, University of Alberta, Edmonton, Canada
- Mr. Keith Parsonage, Director General, Industry Canada, Ottawa, Canada
- Mr. Peter Stokes, Senior Manager, Canadian Microelectronics Corporation (CMC), Kingston
- Mrs. Marie-Louise Hannan, Deputy Director, Canadian Trade Office Taipei (CTOT)
- Dr. Jing-Yang Jou, Director of National Chip Implementation Center, Professor, Department of Electrical Engineering, NCTU

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■ 團員名單

* G for Government, A for Academy, R for Research Institute, I for Industry

No.	*	Name	Title	Institution	Remarks
1	A	黃 威 Dr. Wei Hwang	講座教授 Chair Professor Director	Dept. of E.E, National Chiao-Tung Univ. Microelectronics and Information Systems Research Center	Head of Delegation
2	A	李鎮宜 Dr. Chen-Yi Lee	系主任 Chairman	交通大學電子系 Dept. of Electronics Engineering, NCTU	
3	A	蘇朝琴 Dr. Chau-Chin Su	教授 Professor Executive Director;	Dept. of Electronic and Control Engineering, NCTU 晶片系統國家型科技計畫辦公室 National System-on-Chip (NSoC) Program Office;	
4	A	溫瓊岸 Dr. Kuei-Ann Wen	教授 Professor	交通大學 Dept. of Electrical Engineering, NCTU	
5	A	陳良基 Dr. Liang-Gee Chen	所長 Director	台灣大學 Graduate Institute of Electronics, National Taiwan University (NTU)	
6	A	許雅三 Dr. Yarsun Hsu	教授 Professor	清華大學 Dept. of Electrical Engi. National Tsing Hua University(NTHU)	
7	G	周景揚 Dr. Jing-Yang Jou	主任 Director	國家晶片系統設計中心 National Chip Implementation Center	
8	A	張克正 Dr. Keh-Jeng Chang	Associate Professor	清華大學 Dept. of Computer Science, National Tsing Hua University	IEEE SOCRT 發表論文
9	A	馬振茹 Ms. Cheng-Ju Ma	業務組長 NSoC Officer	晶片系統國家型科技計畫辦公室 National System-on-Chip (NSoC) Program Office	
10	I	楊丁元 Dr. Ding-Yuan Yang	主席 Chairman 董事長	台灣SoC推動聯盟 Taiwan SoC Consortium 源捷科技 FameG Sota	產業界代表
11	I	黃克勤 Mr. Hwung Keh-Chien	經理 Marketing Manager	智原科技 Faraday Technology, Hsinchu, Taiwan	
12	I	莫亞楠 Mr. Yanan Mou	副部長 Deputy Division Director of Design Support Division	聯電 UMC	
13	I	張彌彰 Dr. Mi-Chang Chang	處長 Director of Design Services	台積電 TSMC	
14	I	張榮輝 Mr. Chang, Michael Rong Whei	總工程師 Chief Architect	旺玖科技 Prolific Technology Inc.	
15	R	林寶樹 Dr. Bao-shuh Paul Lin	所長 General Director	工研院電通所 Computer and Communications Research Laboratories, Industrial Technology Research Institute (CCL/ITRI)	
16	R	周露華 Ms. Amy Chou	專案經理 Project Manager of International Program Center	工研院國際合作室 Industrial Technology Research Institute (ITRI)	
17	R	馬金溝 Dr. Gin-Kou, Ma	組長 Director	工研院系統晶片中心 Mixed Signal Design Technology Division, STC/ITRI	

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18	R	謝秀卿 Ms. Vivien Hsieh	經理 Business Officer	工研院系統晶片中心/台灣SoC推動聯盟 STC/ITRI and Taiwan SoC Consortium	
19	R	簡讚慶 Mr. Jzan-Ching Jeen	顧問 Consultant	工研院系統晶片中心 STC/ITRI	7/23加入
20	R	王揚文 Yang-Wen Wang	前維新科技副董 Private Investor	碩英企業唯新科技 Smartek Tecnology Corp/SegaTek Corp.	7/23加入

■ 出團行程

PROGRAMME

Date & Time	Event	Location	Remarks
July 17 (Saturday)			
	Flight Schedule:BR10 TPE-YVR 2355/1940 Arrival & check-in	Vancouver	
July 18(Sunday)			
	Flight Schedule:WS210 YVR-YYC 0900/1120	Vancouver --Banff	
July 19(Monday)			
08:30am-12.30pm	Canadian Workshop For System-on-Chip (CWSOC 2004) Preliminary Program	Banff Conference Centre, Banff	Contact person: Hugh W. Pollitt-Smith pollitt-smith@cma.ca
08:30am	Opening Remarks, SOCRN Overview (Peter Stokes, CMC)		
08:45am	SOCRN Upcoming Infrastructure (CMC)		
09:30am	UBC SOC Laboratory (Dr. Resve Saleh, UBC)		
09:50am	Rapid-Prototyping SoC for Multimedia Applications (Dr. Wael Badawy, University of Calgary)		
10:10am	The StepNP Multiprocessor Platform (Charles Pilkington, STMicroelectronics)		
10:30am	Coffee Break		
10:50am	SOC Verification: State-of-the-art and Proposed Solutions(Dr. Sofiène Tahar, Concordia University)		
11:10am	Open Discussion		
12:00pm	Lunch		
13:00pm-19:00pm	Canada-Taiwan System-On-Chip Session	Banff Conference Centre, Banff	Contact person: Dr. Yarsun Hsu yshsu@ee.nthu.edu.tw
13:00pm-14:40pm	Invited Talks (1) <i>Achieving Competitive Advantage through International Research Collaboration</i> Session Chair and introductory remarks: Dr. Brian Burge, President and CEO, Canadian Microelectronics Corporation(CMC) Welcoming remarks: Mr. Keith Parsonage, Director General, Information Technologies Industry Branch, Industry Canada <ul style="list-style-type: none"> ■ Mr. Peter A. Stokes, Senior Manager, CMC, "The Transition in Canada from SoCs to 		

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	<p>Microsystems"</p> <ul style="list-style-type: none"> ■ Dr. Wei Hwang, Chair Professor, Dept. of E.E, NCTU "The National Si-Soft Initiative - Taiwan's Second High-Tech Revolution" ■ Mr. Terry Ludlow, Chipworks, "Presentation TBA" ■ Dr. Ding-Yuan Yang, Chairman, Taiwan SoC Consortium, " Cooperation in the SOC Era" 		
14:40pm-15:00pm	Coffee Break		
15:00pm-16:00pm	<p>Invited Talks (2) <i>Leveraging SOC Research to Succeed in a Competitive Global Market</i></p> <p>Session Chair and introductory remarks: Dr. Chau-Chin Su, Professor of the Dept. of Electrical and Control Engineering, NCTU</p> <ul style="list-style-type: none"> ■ Dr. Ramesh Senthinathan, Director, ATI Technologies, Toronto: "High-Speed Clock and Data Recovery Design for Consumer, Network, Communications and Storage" ■ Dr. Bao-Shuh Paul Lin, General Director, CCL, ITRI, "SoC/IP Development for ICT and Digital Video Applications at CCL/ITRI" ■ Dr. Ken Martin, President and Co-Founder, Snowbush Microelectronics, Toronto: "The Fastest Path to Production Starts with a Multi-Project Prototype; Optimum Design Methodologies and Examples of Analog and Mixed-Mode Cores" 		
16:00pm-16:15pm	Coffee Break		
16:15pm-18:30pm	<p>Short Presentation and Discussion <i>The Challenge: Taking SoC Research to Market</i></p> <p>Chair: Peter Stokes, Senior Manager Engineering Operations, CMC Format: Individuals made ten-minute presentations that identify research interests and possible collaboration topics. Participants:</p> <ul style="list-style-type: none"> ■ Mr. Riccardo Badalone, CTO, Diablo Technologies, Ottawa ■ Dr. Liang-Gee Chen, Director, Institute of Electronics, National Taiwan University, "Opportunities and Challenges of StarIP Development" ■ Mr. Sreedhar Natarajan, Director, MoSys Canada, Ottawa ■ Dr. Chen-Yi Lee, Chairman, Dept. of Electronics Engineering, NCTU, "IP Promotion : The way to Valu-Added SoC" ■ Dr. Kuei-Ann Wen , Professor, Department of Electrical Engineering, NCTU "Design for wireless SoC" ■ Dr. Kris Iniewski, Professor, University of Alberta, Edmonton, Canada ■ Mr. Mark Gonzales, Technical Advisor, PMC-Sierra ■ Mr. Huang Keh-Ching, Marketing Manager, Faraday Technology, Hsinchu, Taiwan "Breaking the Barriers of IP Business" 		

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	<ul style="list-style-type: none"> ■ Dr. Mi-Chang Chang, Director of Design Services, TSMC, ■ Mr. Chang, Michael Rong Whei, Chief Architect of Prolific Technology Inc. "Media streaming SOC development and application" ■ Mr. Yanan Mou, Deputy Division Director of Design Support Division " Challenges of RFSOC from foundry point of view" 		
19:30pm-21:30pm	<p>Networking Dinner</p> <p>The session concluded with a social event that provided ample opportunities to make business contacts leading to industry-to-industry and industry-university collaborations.</p>		
July 20(Tuesday)			

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08:30am-16:25pm	Business Opportunities Session	The Banff Center, Banff	
08:30am-08:35am	Opening Introduction & Welcome (Event Chair) David Antoniuk – Director, Electronics/Microelectronics and Nanotechnology – Alberta Innovation & Science		
08:35am-08:40am	Introduction & Welcome Dr. Wei Hwang - Chair Professor and Director - Department of Electronics Engineering /Microelectronics & Information Systems Research Centre Dr. Ding-Yuan Yang, Chairman of Taiwan SoC Consortium		
08:45am-09:05am	Introduction & Welcome / Presentation on Canada's ICT Sector Keith Parsonage - Director General, Industry Canada-ICT Branch		
09:10am-09:30am	Presentation – Scanimetrics Steve Slupsky - CEO		
09:35am-09:55am	Presentation – FameG Sota Dr. Ding-Yuan Yang, Chairman		
10:00am-10:20am	Presentation – SiWorks Mr. Mike Lee, Director		
10:25am-10:40am	Networking Break		
10:40am-11:00am	Presentation – Silicomotive Solutions Mr. Jerzy Swic - Senior Principal Engineer		
11:05am-11:25am	Presentation – Prolific Technology Inc. Mr. Chang Zon-Huei, Manager		
11:30am-11:50am	Presentation – Non Elephant Encryption (NE2) Brian Mackie, President		
12:00pm-13:30pm	Lunch - Keynote speakers Dr. MA, GIN-KOU: Overview of the SOC Technology Center (STC) Amy Chou: Opportunities and Advantages of establishing an innovative R&D Centre in Taiwan		
13:35pm-13:55pm	Presentation – Faraday Mr. Huang Keh-Ching, Marketing Manager		
14:00pm-14:20pm	Presentation – Diablo Technologies Mr. Riccardo Badalone, Chief Technical Officer		
14:25pm-14:45pm	Presentation – UMC Mr. Yanan Mou, Deputy Division Director		
14:50pm-15:00pm	End of Event -Prepare Room for Individual Company Meetings		
15:00pm-16:25pm	one-on-one Discussion • IEEE International Workshop on SoC for Real-Time Applications (for Academia) Keynote Speech: Title: SoC Integration Challenges Speaker: Russell Klein, Mentor Graphics		
July 21(Wednesday)			
08:30am- 17:00pm	Individual Visit (for Industry) or • IEEE International Workshop on SoC for Real-Time Applications (for Academia)	Calgary	
July 22(Thursday)			
09:00am-	• Visit TRILabs in Calgary	Calgary-	

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12:00pm	Suite 280, 3553 - 31 Street NW, Calgary T: 403.289.3140, F: 403.282.5870	Vancouver	
July 23(Friday)			
09:00am- 10:30am	• Visit PMC-Sierra in Vancouver PMC Sierra Office Operations Headquarters 105 - 8555 Baxter Place, Burnaby	Vancouver	
July 24(Saturday)			
	• Back to Vancouver • Individual Visit to Companies • Meeting with other companies for special topic	Vancouver	
July 25(Sunday)			
	Flight Schedule:BR09 YVR-TPE 0220/0510+1	Vancouver--Taipei	
July 26(Monday) • Arrival in Taipei			

■ 會議紀要

July 18 pm-- Meeting of NsoC & Canada-Alberta

Attendee:

Taiwan: Wei Hwang, Chau-chin Su, Jing-Yang Jou, Cheng-Yi Lee

Canada: David Antoniuk, Dan Djukich, Graham Jullien, Dave Murphy, Wael Badawy

Summary:

- Two sides both agreed to
 1. Sign Letter of Intent
 2. Identify suitable research group
 3. Setup a research meeting in Taiwan/Canada to define the research topics and the format of cooperation (6 months)
 4. Apply for research funding in each own country. Ministry of Innovation and Science of Alberta and NsoC of Taiwan will help in allocating and obtain funding on each sides.
 5. Detail cooperation format discussed in 2005 IWSoc (July 2005).
 6. Sign MOU 2005 Fall in Taiwan.
- SoC is a common interest, the cooperation can be
 1. Research Exchange
 2. IP
 3. MEMS
 4. System Technology
- NSC-NRC research cooperation MOU is more on Nanotechnology related topic. Prof. Lee need to inform NSC to raise microelectronic issue to NSC official in next week NSC-NRC meeting.
- Antoniuk: Taiwan-Canada can cooperate in MEMS area with Alberta's strong design

capability of MEMS (Micralyne) and strong manufacturing capability of Taiwan.

■

July 19 a.m. -- Canadian Workshop For System-on-Chip (CWSOC 2004)

上午場為加方國內產學研共同舉辦的 CSWOC 2004 workshop, 由 Canadian Microelectronics Corporation (CMC) 介紹 The System-On-Chip Research Network (SOCRN) 。SOCRN 擁有來自加拿大 30 所大學的研發團隊, 致力於 Advanced computer-aided design tools, intellectual property blocks (system-on-chip components), and methodologies 。其他學界如 UBC、Calgary 大學及 Concordia 大學亦分別介紹其目前 SoC 實驗室現況與 SoC 相關技術之發展。

July 19 p.m. -- Canada-Taiwan System-On-Chip Session

此部份方正式進入由台灣與加方兩國為 SoC 產業透過雙邊技術研發討論以共同取得國際競爭優勢之「中加 SoC 雙邊會議」。參加者超過 70 人, short presentation and discussion 部分, 並引發雙邊產學研界熱烈討論, 先摘要加方簡報如下: (對方未提供電子檔)

1. ATI – short talk on “ high speed clock and data recovery design for consumer , network communication and storage” by Dr. Ramesh Senthinathan
 - 6Hhz Serdes project of his former starup company
 - six sigma design
 - Horizontal : jitter
 - Vertical : ISI , Xtalk,
 - MDLL 1.73ps rms,
 - Pre-emphasis and equalization to be used to resolve ISI problem
2. CMC (Canadian micro-electronic co.)
 - Company to coordinate university projects of national fund.
 - SOC – use micro-system to interpretate the SOC concept
 - Focus on MEMS, micro fluid, optical, electronics, bio
3. Chipwork – company introduction
 - Main business: knowledge provider thru. Reverse engineering
 - Reverse engineering can help to gain competitive advantage
 - Learning from others – recognized by paten office
 - Encouragement of patent filing – knowledge sharing
 - In return, patent protection for 20 years of monopoly
 - Intel always be the 2nd for new technology adoption
 - SOI
 - Copper

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- Strained silicon
 - Low K
4. Snowbush microelectronics – Ken martin (IEEE fellow, former professor of UCLA and co-founder of broadcom)
- Leading provider of Analog IC design service and related IP
 - OSC.
 - AD/DA
 - DVI TX
 - SerDes
 - Give tech and ckt away – unique business model
 - Think analog synthesis not feasible
 - Would like to develop further close relationship with UMC

綜合結論：

加方代表熱烈討論台灣成功模式，與加方相對於政府策略、優惠措施、學界計劃等之比較。我方亦回應台灣半導體環境初始有政府高層的全力支持是一關鍵，及後整體產業鏈上中下游完整的發展，再加上世界級的 foundry 廠，成為 SoC 產業最大的 support 與助力。不過，從對方簡報中習得，加方學研不惜成本、不以賺錢為目的的致力於基礎研發與創新研發，其技術紮根甚深，尤其是 analog 方面的設計，皆是台灣最需學習的關鍵。他們弱在成本太高，及 foundry 與 process 之不足，而我方以營利為目的，所研發出來的產品技術相對的較無創新之價值。此為我方與加方在排除競爭利益之外，應可互補之技術合作之處。此會議相信已在中加兩方之參加者中，留下雙方技術能力及合作意願之印象與媒合機會，並期盼所引出一些未來可能之合作項目供雙方參加者評估與後續之回應。

July 20 -- Business Opportunities Session

此會議純以中加雙方產業界為主體，為媒合兩國 business units 之技術合作機會目的而召開之商談會。共有台灣 5 家廠商、加方 5 家廠商提供公司簡報。現場參加者約有 50 位，會後並有 one-on-one 之對談，對談表如下：

15:00-15:25	UMC meeting with Diablo(2)	Faraday meeting with NE2 (4)	TSMC meeting with Scanimetrix (1)	Prolific meeting with SilicoMotive	FameG Sota meeting with NE2 (3)
15:30-15:55	UMC meeting with Scanimetrix(2)	Faraday meeting with Diablo	TSMC meeting with NE2(1)	Prolific meeting with NE2	FameG Sota meeting with SilicoMotive
16:00-16:25	UMC meeting with NE2(2)	Faraday meeting with SilicoMotive	TSMC meeting with Diablo	Prolific meeting with	FameG Sota meeting with

加方之公司簡報摘記如下:

1. Scanimetrics – Contact less testing solution provider

- Contact-less testing
- RF probe card, power can be induced or use separate power
- Glass + silicon to form the probe card
- RF cell build into the DUT in the free space
- \$200K for the price of probe card
- To seek co-op opportunity with UMC.
 - Introduce to TPES (paul Chen) and follow up with tele-conf..

2. SiWork – IP company (focus on MAC)

- Wireless IP
 - Uwb, 80211, ..
- Wirelined IP
 - Giga

3. Silicomotive

- IP company
- Digital IP in telecommunication area
- Mux, dmux , sonnet, access area

4. NE2

- IP company
- Both software and hardware approach
- Cryptosystem, cryptographic IP
- Symmetry vs. asymmetry encryption
 - Symmetry: single key – fast but less security
 - Asymmetry: public / private key – slow, AES, RSA
- To offer AES with no key exchange
- Show Interest to join UMC gold IP program

綜合結論：

此部份提供兩國廠商一個導引合作的開端，會後是否會有繼續的交流與合作，仍需一段時間，才能了解是否能成為真正技術合作的商業夥伴。感謝 TSMC 與 UMC 的參與，吸引對 foundry 需求甚高之加方廠商之參與。加方 IP 公司也希望參考 Faraday, FameG Sota 等 design service 模式，期跳脫競爭對手思維，尋找出共同的合作模式。從此會議中，台灣產學研也開始重新思考，國內廠商應能團結，找出自身專精的 market 與 research 境域，相互區隔與相互相輔相成，團結進入國際市場，方能於國際 SoC

技術市場上佔有關鍵之席地。

■ 參訪紀要

TRLabs 訪問摘要：

TRLab (17 years of history) – R&D Lab in Canada

- platinum membership- 400k. plus 260k (indirect contribution)
- 5 labs - 260 People. 50% students
- 54 members (Samsung, Nortel..). Focus on comm.(optical. Wireless)
- non exclusive free royalty model to members who access its technology
- 240/800 projects transfer to industry.
- ROI – 30%
- Nano technology (quantum dot) majority gate instead of logic gate design approach (quantum dot)
- Would like to invite twain industry to join their membership

TRLabs 的經營模式頗為特殊，其以類似聯盟模式，招收會員，收取會費。research team 中，也涵蓋學生，且會員間，技術移轉不再收取royalty 費用，此種模式，已整合產學研資源，可為台灣借鏡。

PMC-Sierra訪問摘要：

- Foundry mainly in TSMC
- focus on communication and Consumer
- 940 people. 16 locations
- 3 product lines : micro-processor. Telecomm., . storage network
- 0.2%UI at 3.125 ghz serdes
- TSMC low k info. (0.13um)3.6, (90nm)2.9, (65nm)2.4
- 90nm 2004. 65nm 2006
- Internal 600 digital IP. 200 analog IP
- External IP needed in the future
 - RF
 - ✓ Bluetooth
 - ✓ 802.11
 - ✓ GSM/CDMA
 - Analog
 - ✓ Audio ADC/DAC
 - ✓ Video ADC/DAC

■ 追蹤事項

此次會議後，兩國對口聯繫單位皆讚許此雙邊交流效益，已初步確認明年將再回邀加方產官學研至台灣延續舉辦此雙邊會議，時間預定於明年 IEEE VLSI-TSA 會議(Apr. 27-29) 前後，地點待定。

雙方聯絡窗口：

加方為 Dr. Wael Badawy/University of Calgary

台灣為 Dr. Yarsun Hsu, National Tsing Hua University

■ 總結

此次 NSoC 辦公室黃威主任能主導此中加 SoC 雙邊會議，聚集學界台大、交大、清大與國家晶片系統設計中心，及研發界工研院 CCL 與 STC 等之 SoC 技術教授與專家等之齊聚一堂之參與。並由台灣 SoC 聯盟邀請業界: foundry 廠台積電、聯電，Design Service 智原與源捷，IC Design 旺玖科技等共襄盛舉。不僅造就此團產官學研團員間內部溝通與整合意見之機會，並結合力量共同為台灣赴加拿大打了一場高科技外交的漂亮戰役。

會議之後，引發國內需積極思考如何整合 SoC 產業整合運作之議題，應加速進行。台灣目前在全球半導體產業完整產業鏈之利基下，如何快速於 SoC 技術發展趨勢脫穎而出，須靠產官學研，各領域的專業分工，整合資源，尋找共通運作模式，方可於國際舞台共同領先商機與攻佔主導地位。

NSoC 辦公室、工研院與台灣 SoC 聯盟將以此為出發點，近期將規劃召開相關產學研合作整合運作會議，期能早日推動台灣 SoC 產業打響名號於國際舞台。

■ 附錄

- 加方廠商出席名錄

* by alphabet

Company	Description	Website
ATI Technologies, Toronto Dr. Ramesh Senthinathan, Director,	Products: Gamer, Multimedia, Mobile, Workstation, Handheld, Integrated, Digital TV, Embedded, Mac, Software	http://www.ati.com/
Canadian Microelectronics Corporation(CMC) Dr. Brian Burge, President and CEO Mr. Peter A. Stokes,	The Canadian Microelectronics Corporation The CMC-university-industry-government partnership helps to produce individuals with the finest knowledge and skills in microelectronics, related areas of photonics, optoelectronics and micromachining, and progressively in nano-scale technologies.	http://www.cmc.ca/

中加 SoC 國際雙邊會議及參訪行程 出國報告

Senior Manager		
Cogent Chipware	Cogent ChipWare Inc. is a fabless semiconductor company focused on the exploding market for Software Defined Radio (SDR) technologies. Cogent's Digital Signal Processing (DSP) ICs provide the industry's highest density processing solutions, while preserving the programmability and flexibility required to work in fast-paced, ever-changing communications markets. Founded with more than 15 years of intellectual property development at Simon Fraser University's VLSI Laboratory, Cogent's DSP products are based on extremely small and low power silicon building blocks.	http://www.cogentchipware.com/
Diablo Technologies, Ottawa Mr. Riccardo Badalone, CTO	Diablo Technologies is a mixed signal semiconductor company that is developing a family of 12.5 Gb/s Smart Serial Interconnect devices called SmartLink. (SerDes devices)	http://www.diablo-techologies.com/
Image Power	Image Power develops and markets powerful image compression technologies for still and multimedia images, for use in a range of applications from consumer desktop use to implementation in embedded controllers systems, ASICs (Application Specific Integrated Circuits) and FPGAs (Field Programmable Gate Arrays). Products: Desktop Products, Embedded Controller Products, ASIC/FPGA Products, DSP	http://www.imagepower.com/index.html
Mentor Graphics Russell Klein, Director Dr. Ashraf Salem	A electronic design automation (EDA) company, providing software and hardware design solutions	http://www.mentor.com
Mosys Sreedhar Natarajan, Director	Founded in 1991, MoSys develops, licenses and markets innovative memory technology for semiconductors. The single transistor bit cell used in 1T-SRAM technology results in the technology achieving much higher density than traditional four or six transistor SRAMs while using the same standard logic manufacturing processes. 1T-SRAM technology also offers the familiar, refresh-free interface and high performance for random address access cycles associated with traditional SRAMs. In addition, this technology can reduce operating power consumption by a factor of four compared with traditional SRAM technology, contributing to making it an ideal technology for embedding large memories in System on Chip (SoC) designs. 1T-SRAM technology is in volume production both in SoC products at MoSys' licensees as well as in MoSys' standalone memories. MoSys is headquartered at 1020 Stewart Drive, Sunnyvale, California 94085.	http://www.mosys.com/
NE2 Encryption Mr. Brian Mackie, President	focused on securing communications, using the right people and tools to ensure the protection of your wireless enterprise initiative.	http://www.ne2encryption.com
PDF Solutions, San Jose Dr. Andrzej Strojwas, CTO	PDF Solutions, Inc. (Nasdaq: PDFS) is a leading provider of Process-Design Integration technologies for integrated circuits (ICs). PDF's software, methodologies and services enable semiconductor companies to create more manufacturable IC designs and more capable manufacturing processes. Headquartered in San Jose, California, PDF operates worldwide with additional offices in Europe and Japan.	http://www.pdf.com
PMC Sierra	PMC-Sierra (NASDAQ: PMCS) provides an extensive	http://www.pmc-sierra.com

中加 SoC 國際雙邊會議及參訪行程 出國報告

	<p>range of MIPS-based™ processors, high speed mixed signal and communication semiconductors. These products are used in enterprise, access, metro transport, wireless, and storage area network equipment. The company's MIPS-based processors are also designed into printers and other advanced consumer electronic applications.</p> <p>Product Families: MIPS-based™ Processors, Advanced Clock Management, Storage Devices, SERDES Devices, Networking Devices, Wireless BSC/BTS</p>	com/
<p>Pultronics, Montreal Dr. Bozena Kaminska, CEO</p>	<p>Develop high-frequency switch matrices. Telecommunications, Automotive Engineering, Low Power Design</p>	http://www.pultronics.com
<p>Scanimetrics Steve Slupsky - CEO</p>	<p>Scanimetrics was incorporated in Alberta, Canada on January 10, 2001 with the mission to develop and sell micron-scale wireless telemetry technology that enables the wireless, non-contact testing of semiconductors. Scanimetrics is supported in part by the Alberta Ingenuity Fund, the National Research Council of Canada Industrial Research Assistance Program (IRAP), and Western Economic Diversification.</p>	http://www.scanimetrics.com
<p>SilicoMotive Inc. Jerzy Swic, President</p>	<p>Silicomotive Solutions Inc. is a privately held and funded integrated circuit design services firm, specializing in providing cutting edge System-on-Chip expertise to the global semiconductor industry.</p> <p>Our result oriented team of experienced IC design, verification as well as software engineers has a valuable record of achievements in helping organizations achieve competitive advantages by focusing on time-to-market effectiveness and design quality.</p>	http://www.silicomotive.com/index.shtml
<p>SiWorks, Calgary Mr. Mike Lee, Director,</p>	<p>A wireless semiconductor intellectual property company. Wireless Lan IP, Digital signal processing IP, Encryption/Decryption IP, Analog/Mixed-signal IP</p>	http://www.siworks.com
<p>Smart Camera Technologies Inc</p>	<p>Researcher developed a low-cost tracking technology using live-cameras and infra-red sensors. New technique to track and code moving objects that features lower complexity, higher accuracy and lesser bit representation. Smart Camera Technologies Inc. (a Calgary-based company incorporated in March 2003) is a spin-off from the University of Calgary. The new startup will commercialize applications that use camera systems to identify video objects based on their relative apparent speed.</p> <p>The company has been Incorporate as of March 26,2003 and it is currently mentored by the InnoCentre Alberta</p>	
<p>Snowbush Microelectronics, Toronto Dr. Ken Martin, President and Co-Founder,</p>	<p>A supplier of analog and mixed signal intellectual and design servies. Data Converters, Reference Circuits, Clock & Data Recovery, Filters, Communications AFE, Drivers & Amplifiers</p>	http://www.snowbush.com
<p>TRLabs in Calgary</p>	<p>A not-for-profit information and communications technology research consortium Products: Wireless Communications, Data Networking, Network Access, Photonics, Network Systems, Research Tools</p>	http://www.trlabs.ca/

- 照片選輯



7/18 相見歡 左起:馬金溝、林寶樹、楊丁元、黃威、溫瓊岸 (敬稱略)



7/19 旺玖科技張榮輝總工程師present "Media Streaming SoC Development and Application"



7/19 Short Presentation and Discussion 中間兩位為交大李鎮宜主任與溫 岸教授



7/20 源捷楊丁元董事長與加方廠商NE2的一對一對談



7/20 商談會後的大合照



7/20 會議結束後慶功宴

中加 SoC 國際雙邊會議及參訪行程 出國報告



所有產業界的參加者：

左起聯電莫亞楠副部長，旺玖科技張榮輝總工程師，台積電張彌彰處長，智原黃克勤經理，台灣 SoC聯盟主席及源捷董事長楊丁元博士，台灣SoC聯盟/工研院系統晶片中心謝秀卿經理



7/22 拜訪TRLabs



7/23 拜訪PMC-Sierra



happy trip!