Prospects for an Australian Semiconductor Industry.....

A Post Goldsworthy Perspective

by
Assoc. Prof. Karl Reed, FACS, FIEAust, MSc, ARMIT
School of Computer Science and Computer Engineering
Director, Aust. Computer Society Board for
Comp. Systems and Software Engineering
Governor, IEEE-CS
Consultant Editor, PCWeek
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1. **Why? A Statement of the obvious**

- Semiconductor technology is the base enabling technology for all IT product development,

- Currently, about 20% of global population use IT intensively,

- Semiconductors naturally included in many consumer products,

- Gaping crevices in current PC/IT product concepts,

- Major investment and profit-taking opportunity for Australian investors

- Several countries on Pacific Rim have made profitable investments which are boosting exports

- Produce product, or contribute to others bottom lines
1. Why? A Statement of the obvious (cont’d)

- International market


- In the 1960’s, Australia was the most industrially advanced country in the region.. have we REALLY given up?

- Australian Super funds have $100B’s to invest...why not IC’s?

- IT is currently about $37B p.a. of the Australian Economy.. we need large Australian presence in production
The IT Industry... broad picture...

COMPUTER RELATED IT (CRIT) ...

⇒ US$567B P.A.

⇒ Australian CRIT A$15B (US$12B)

⇒ All Australian IT... A$30B+ (US$24B)

☞ Ericsson’s total T.O. US$15B!!
2. **How? Examples from Overseas**

Airplane icon

*In most cases, major government initiatives have stimulated IC production*

**Korea**, national initiative, Gov’t funding, plus “market reservation”... now world leader in key IC technology...

**Japan**, succession of MITI initiatives in leading edge R&D, “national” labs...

**Europe**, ESPRIT lead to ARM, Germany, France, Sweden have had national projects...

**Singapore**, TECH Semiconductor, joint with Singapore EDB, HP, TI, Canon

**Even US gov’t initiatives**...
2. **How? Examples from Overseas** *(cont’d)*

Korea,

- began with bonding and packaging,
- moved to low-scale IC fab.
- **purchased** plants directly from US sources,
- **CURRENTLY ESTABLISHING PLANTS USING KOREAN TECHNOLOGY THROUGHOUT THE WORLD!!!**
- Many Korean IC activities are (very large) subsidiaries of (even larger) conglomerates...
  (Australian equivalent... BHP setting up in IC’s..)
- Korea... summary..

$\$ Master Plan for the creation of the Computer Industry (1982)
3. **What? Strategies for Market Entry... Some Issues**

- **Player or Spectator?...**
  supplier or buyer?

- **Bleeding Edge or Wave Follower?**
  Where did Daewoo, Hyundai, Proton, Volvo enter the car market, Japan the camera market?

- **Gate-count/speed for volume markets?**
  Not all applications need $10^7$ gates 200Mhz!

- **Impact of per capita GDP on product opportunity**
  Consider this in context of Pacific Rim countries

- **RESULT... multi-faceted approach leading to Australian owned, multi-billion $ companies by 2015**
3. What? Strategies for Market Entry... A Possible Program

✦ Select technology for maximum support for current industry, market prospects and optimum entry cost... Probably around 0.6 micron

✦ Buy plant, as joint venture between Australian and OS investors, Choose a medium sized partner in IC, who needs access to Pacific Rim, Draw Australian investors into the industry

✦ Expand teaching and Research in Univ’s.... Equip to world’s best practice, expand semi-con physics, device physics, electronic design...clean-rooms, etc.

✦ Establish national labs in semi-con physics, device physics, electronic design

✦ ESTABLISH ‘FUTURES’ PROJECTS Today’s products are “vendor-market dominance driven”.... Needed, off-the wall product-concepts demonstrated using current technology skunk-works
4. Who? The $.9B.p.a.IT Research Short-fall & Australian Investors

**IT Research is under funded**

**IT overall** $33B! (BIE)

*IT research is under-funded in two areas compared to primary sector…*

a) Government "funded" "Industry" directed R & D (Primary Industry research corps.) is 1% of turnover.

b) CSIRO divisional support is roughly 1 Divison for each $2B of T.O (10 Divisions, av. size $28M p.a.)
Basic IT Industry Stats...

IT overall $33B! (BIE)

Industry based R & D should be

$330Mp.a.

(PFD av R & D percentages < average for electronics and computing)

CSIRO IT activity, is below that for a comparable industry sectors

Based on 1996 budget, primary industry has about 1 Division for each $2B p.a. of T.O. (Primary Industry Divisions $..)

CSIRO should have 10 or more Divisions in IT!
The Case for major IC Research Initiative

At State level Primary Industry …  

✈ well supported by Govt.


✈ Non-IT CRCs have very heavy industry sub-sector specific focus supported by (primary) industry research corps.

✈ Indirect Vic-govt participation in IT CRC’s (2, not sub-sector specific… Res. Data Net., CITRI; Intel. Dec., AAII)

✈ Primary have two times no. CRC’s

✈ Multi-Media being encourage (Important start-up industry)

R & D Short fall due to CRC’s.. ~$400m p.a.
The Case for IC Research Initiative

Short fall in IT R & D…

Ind. R & D Corp.’s  ~$330M p.a.
CSIRO            ~$240M p.a.
CRC’s             ~$400M p.a.

TOTAL  ~$970M P.A.
The Case for an SEI (cont’d)

Short fall in Computer Related IT R & D...

Ind. R & D Corp.’s ~$150M p.a.
CSIRO ~$100M p.a.
CRC’s ~$200M p.a.

TOTAL ~$450M P.A.
In Summary...

The Problem...

An industry of national importance, and one critical to Victoria, is under-resourced in terms of industry specific R & D.

The Industry experiences a failure of current resource allocation in Australian factor markets... in this case, R & D, and capital

Potential difficulties in maintaining and expanding its competitive position over time.

The Solution...

A multi-tiered approach to R & D, and industry development, funded and promoted by Government

WHY?

WORLD’S BEST PRACTICE!
4. **Who? The $.9B.p.a.IT Research Short-fall & Australian Investors**

- Educate large-scale investors,
- Provide tax incentives and direct funds
- Choose foreign partners who need the breaks, and will transfer the IP..
- Reserve some market sectors for the new operations
- Convince Super funds and largest Australian companies to diversify.
5. **Impediments? Distractions, the Australian Disease-delusions of grandeur**

- The “big project” syndrome...
  care needed to avoid large, costly initiatives with simple titles appealing to politicians..
  e.g. HPCI

- “Nobel Prize” winning projects and centres..
  Of course, but the real commercial action is closer to the coal face..

  cf. WWW, Windows, RISC, ARM, NC, VHST, Space Office, MFP

- Attracting state-of-the-art fab facilities.
  Perhaps, but that wasn’t how Korea got to where it is..

- The risk of yet more reports and studies..
  Studies would be against Government’s firm commitment to take action.
In conclusion

- THE GOLDSWORTHY, BUCKERIDGE/ALLEN AND MORTIMER REPORTS CREATE A UNIQUE OPPORTUNITY...
- HIGHEST LEVEL OF POLITICAL COMMITMENT EVER,
- ENDORSE UNEQUIVOCALLY PREVIOUS SUBMISSIONS BY REPEATING THE OLD ARGUMENTS..

IN THE MEANTIME, THE INTERNATIONAL MARKETS GRADUALLY CLOSE TO UNSOPHISTICATED COUNTRIES...

THANK YOU!