

IT enables Okinawa to Participate in WW Business - Digital Design Island -

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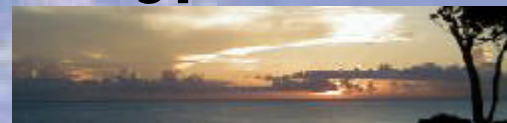
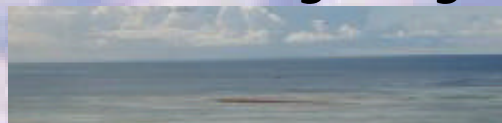
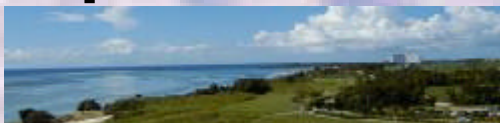
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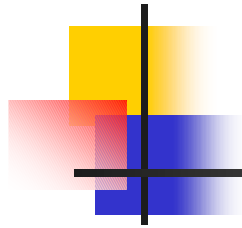
<http://bw-www.ie.u-ryukyu.ac.jp/~wada/>





My talk

- Many industrial promotion activities in Okinawa!
- IT technologies enable even small islands to take chance to be involved in the WW business.
- Today's talk
 - Semiconductor Industry
 - Still rapidly growing market size
 - One of the most highly technical
 - Why this high-tech industry is good for us



Outline

- What is semiconductor and LSIs
- LSI is the Key Device for IT infrastructure
- History of LSI industry
- Targeting business model
- Why the LSI business fits us
- Our activities
- Summary

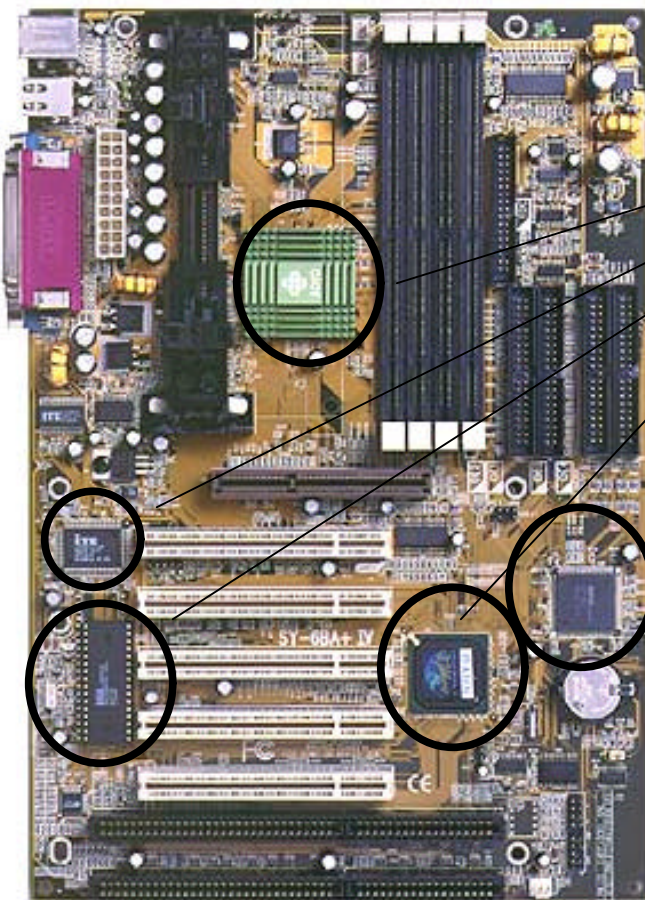


What is semiconductor and LSIs

- Huge number of transistors can be integrated in a small Si chip.
- The size of the chip is roughly the size of nails.
- Currently, 10M transistors can be integrated.
- 1000 times integration comparing to 20 yrs ago.
- The cost of the chip is roughly same.
- All electronic equipments are powered by LSIs.
- PCs, Cellular phones, 3D graphics, Internet.



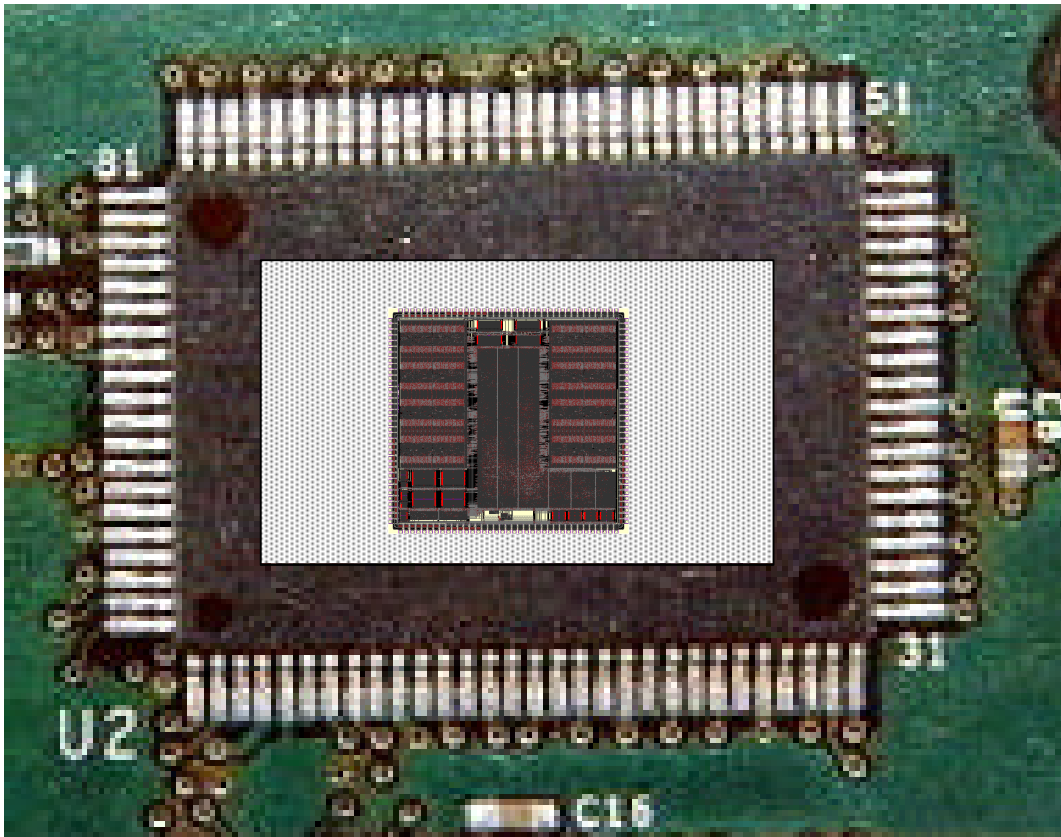
If you take a look at PC board...



- LSIs and Sockets

- Key functions are all implemented by LSIs

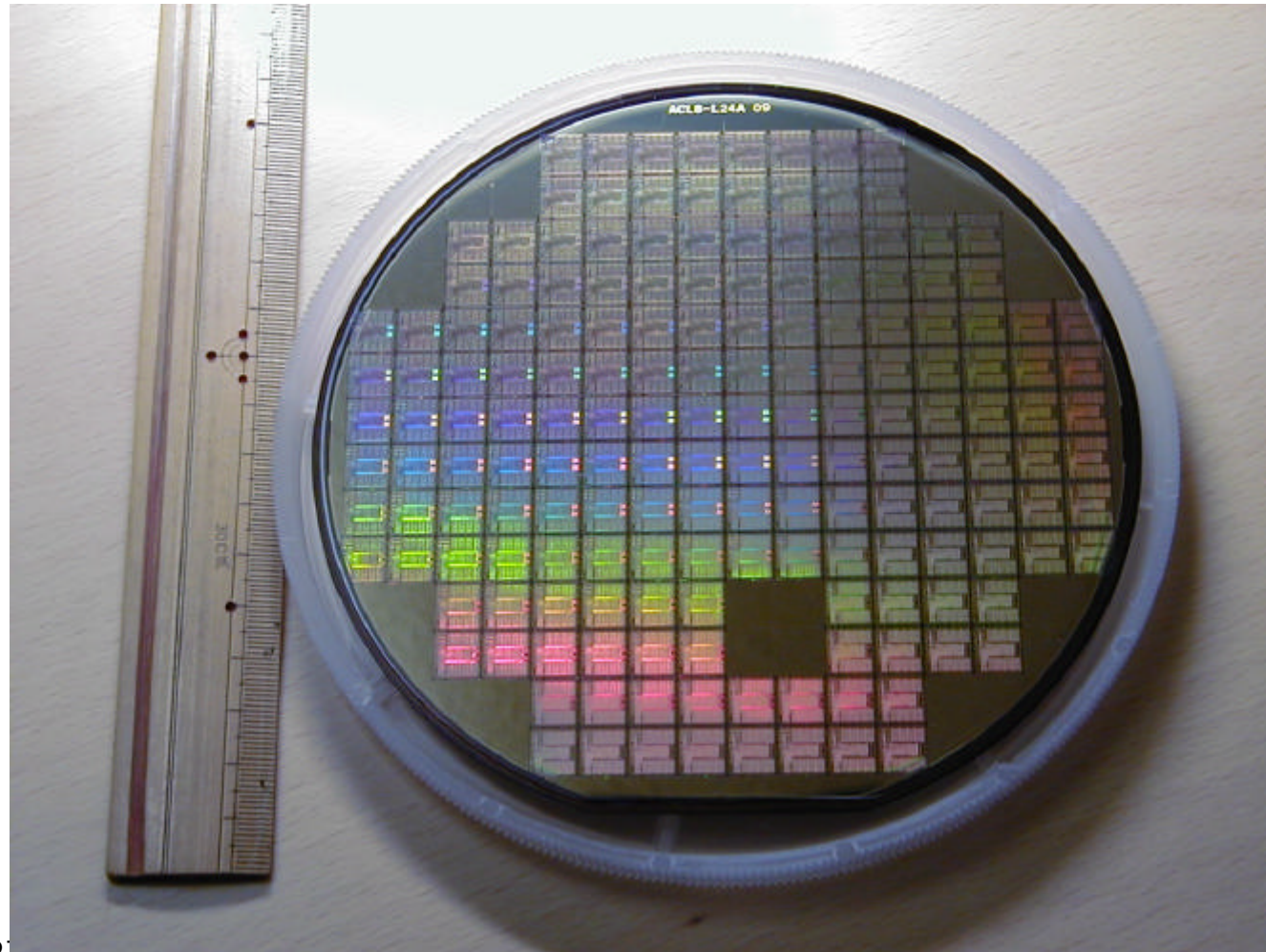
Si chip is housed in Package



The chip is for
High Definition
TV camera!

It integrates over
2M transistors!

Silicon wafer





Two big impacts of IT

- Old business style have to be changed by IT such as Global internet communication.
 - Information transfer cost approaches to free.
 - You can sell information anywhere in the world.
 - You can cooperate with anywhere in the world.
- IT related new business chances
 - IT infrastructure is big market.
 - There will be lots of IT investment in future.

Key Devices of IT infrastructure are LSIs.



Brief history of LSI industry

- 1970 s USA dominated IC industry.
- 1980 s Japan dominates DRAMs.
 - DRAM was the computer main memory.
 - Japan was lower cost by Yen/dollar rate.
- 1990 s horizontal work division started.
 - Design & IP at USA
 - Foundry & Test at South America & Taiwan

Even high-cost Si valley company is profitable by work division.
Japan is already high cost area!
Okinawa has to Join Design & IP business.



Horizontal LSI work division

WORK	WHERE
System & IP Development	USA
Algorithm & Architecture Design	USA
Circuit & Layout Design	Taiwan & S.USA
Wafer processing	Taiwan & S.USA
Testing	Taiwan & S.USA



1980 s situation

WORK	80's Situation
System & IP Development	Weak IP protection
Algorithm & Architecture Design	Easy, not important
Circuit & Layout Design	JAPAN dominated
Wafer processing	JAPAN dominated
Testing	JAPAN dominated



Why I promotes LSI business

- Still growing by 10-20% every year.
 - Easy to expand business.
- LSI industries are well horizontally divided.
 - We can make use of TAIWAN factories.
- Rapid change since 2x integration every 18 months.
 - Lots of business chance for new comer.
- LSI Design work needs less investment.
 - Intelligence and experience are Key for design work.
- A few good people can design competitive LSI.
 - Get a few good experienced engineer then start.
- Sales amount is not proportional to the size of company.
 - Even small company can be very profitable.



Pros and Cons of Okinawa

- Bad news

- Higher cost for manufacturing
- Higher transportation cost
- Small number of high-tech engineers

- Good news

- Good environment for living
- Lower office cost, communication cost
- Close to Taiwan & Asia (Low cost manufacturing)
 - Physically close & Dense human relation
- University's help

Okinawa should focus
small-sized profitable high-tech design business.



LSI design business fits Okinawa

- LSI design & IP business with Taiwan foundries.
 - Design needs small investment.
 - Not many experienced engineer is needed.
 - All design data can be transferred via Internet.
- Focus IT infrastructure related LSIs.
 - Most rapidly growing target
- Get experienced engineer from Japan main land by Okinawa s fascination.
 - Natural-full environment, good place to live
- LSI is small, light but high price!
 - No transportation handicaps!



Activities at the Univ. of the Ryukyus

- LSI related education using real industry tools.
 - Produce experienced students.
- Yearly LSI design contest held for students at all Japan & Asia.
 - Promote our activity in Japan & Asia.
 - We have to cooperate with other countries.
- Several IT & LSI related Research.
- Support & cooperation for Venture company
 - One LSI Venture company will born early/2001.



Summary

- There are many regional merits and demerits at small island.
- IT enable Okinawa to participate in the WW business.
- We have to understand international business situation and trends.
- Focus good business by make best use of the merits.
- Mitigate the demerits by IT.
- I believe LSI design is one of the best target of Okinawa.