

Innovation and Entrepreneurship in **Multi-invention Contexts**

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The Multi-invention Phenomenon

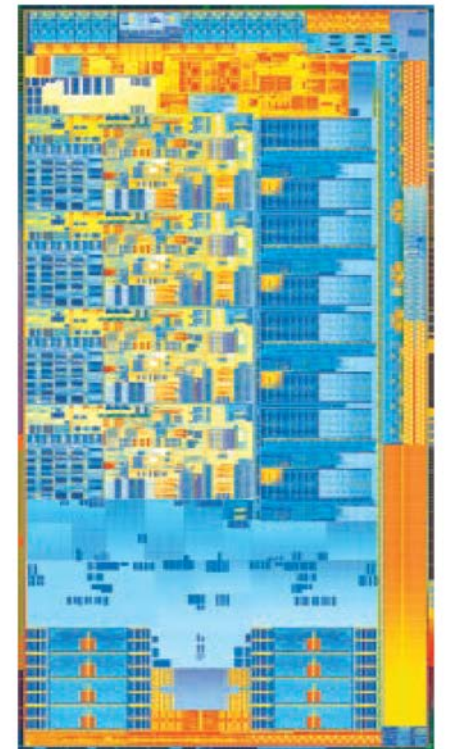
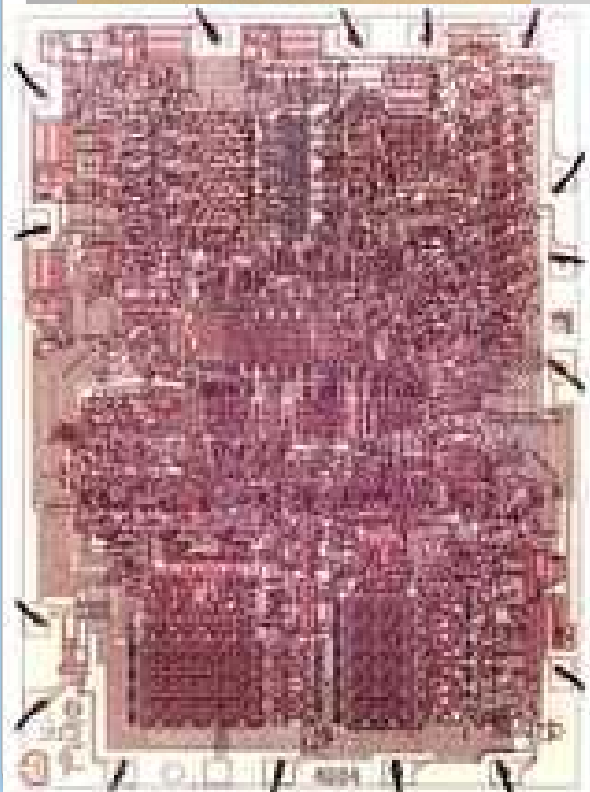
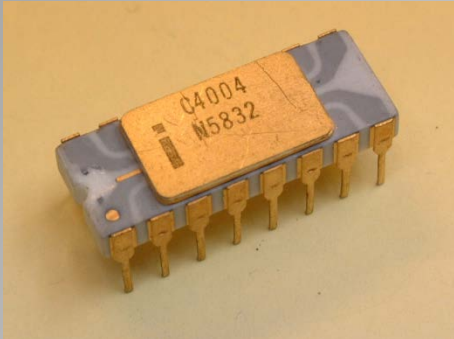
Microprocessor Evolution

Intel 4004 (1971):
2300 transistors

Intel Pentium (1993):
3.1 Mn. Transistors
(1350 x)

3rd Gen Intel Core
(2012): 1.4 Bn.
Transistors (600k x)

**10000s X
INNOVATION
PACKED INTO A
SINGLE PRODUCT!**



Another Example ...



HOME BUDGET, 1979			
MONTH	NOV	DEC	TOTAL
SALARY	2500.00	2500.00	30000.00
OTHER			

INCOME	2500.00	2500.00	30000.00

FOOD	400.00	400.00	4800.00
RENT	350.00	350.00	4200.00
UTIL	110.00	110.00	1320.00
HEALTH	100.00	100.00	1200.00
TRAVEL	100.00	100.00	1200.00
SAVINGS	1000.00	1000.00	12000.00
ENTERTAIN	100.00	100.00	1200.00
MISC	100.00	100.00	1200.00
CAR	300.00	300.00	3600.00

EXPENSES	2460.00	2470.00	29775.00

REMAINDER	40.00	30.00	1225.00
SAVINGS	30.00	30.00	3600.00

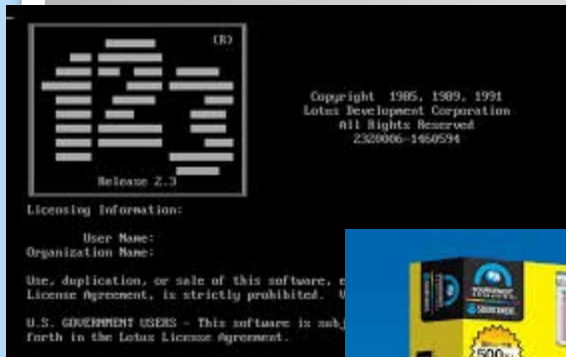
Software Evolution:

VisiCalc: 100,000 lines of code

1-2-3: 400,000 lines of code

Office: 30-60 million lines of code

Windows Platform: much more innovation packed in ...



Multi-invention Products ...



NANOTECHNOLOGY



... are everywhere

The Multi-invention “Problem”

- Very large numbers of inventions in end products
 - Innovation proceeding at a very rapid pace
 - And typically coming from many sources
- So?
 - Many challenges ... highlight four

Challenge 1

- **Incredible complexity**
 - Many moving parts, many interactions

Solutions / Opportunities

- **Managing Complex Coordination**
- **Interface Standards**
- **Orchestrating Ecosystems**

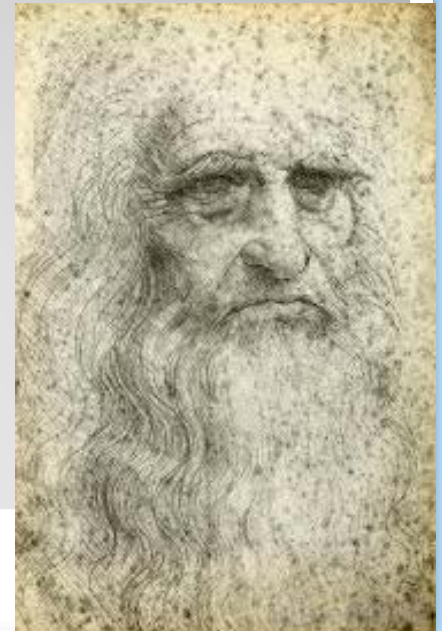


Challenge 2

- **“All-round” innovative inadequacy**
 - Very hard to be a “renaissance firm”, a cutting edge innovator in everything

Solutions / Opportunities

- **Open Innovation**
- **Strategic focus**



Challenge 3

- **Innovation-to-solution translation**
 - Innovation involves specific breakthroughs, but customers want complete solutions

Solutions / Opportunities

- **Choosing the right integration mode (i.e. business model)**
- **Strategic use of licensing and component markets**

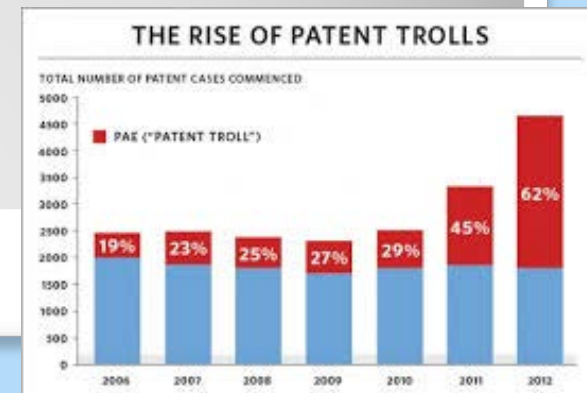


Challenge 4

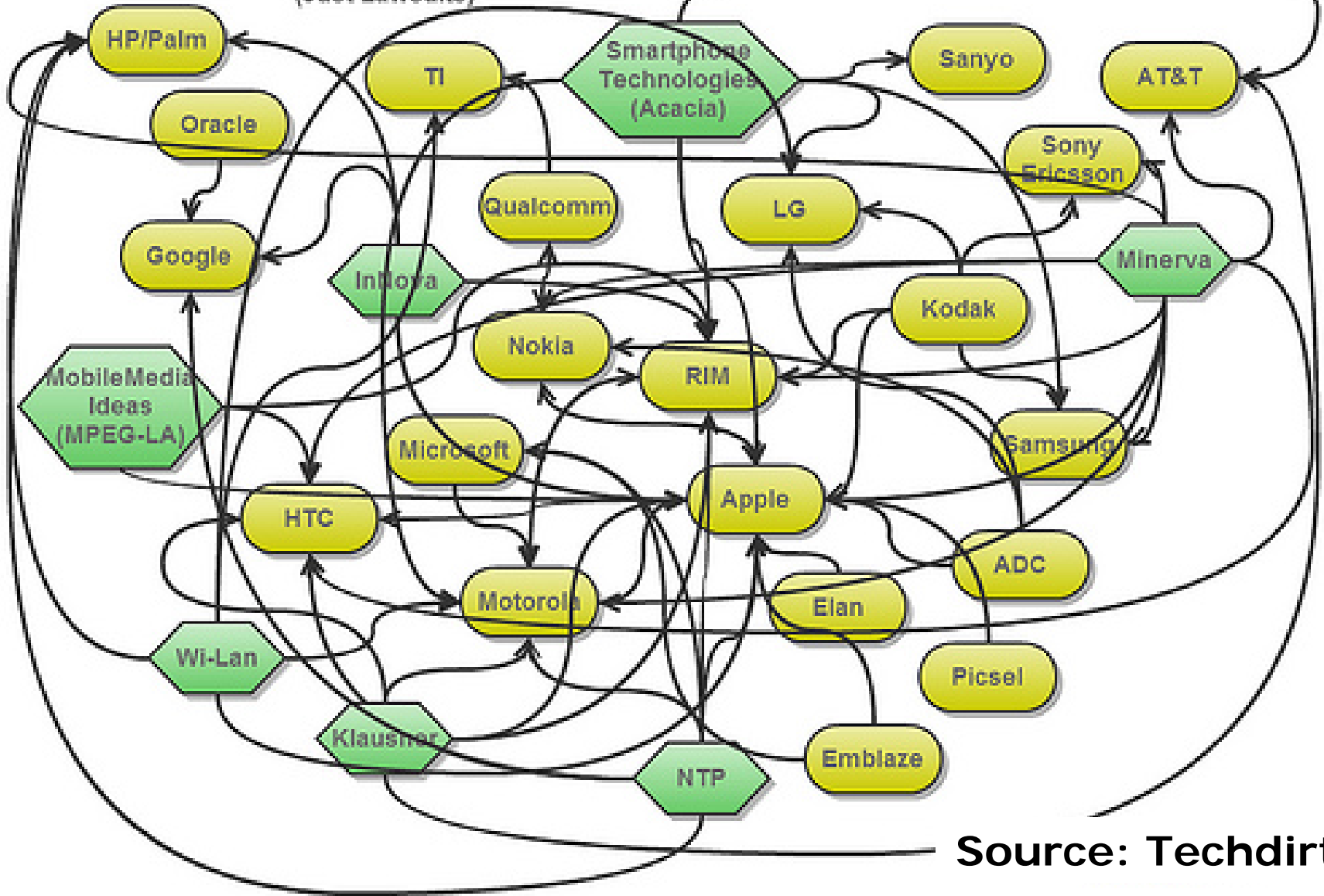
- **Managing IP (patents)**
 - For capturing value and avoiding hold-up (e.g. “patent trolls”)

Solutions / Opportunities

- Proactive IP/patent strategy
- Aligning IP/patent strategy with integration mode (business model)



Smart Phone Patent Litigation (2012)



Source: Techdirt

Conclusions

- Multi-invention contexts are proliferating
 - With rapid innovation & widespread patenting
- Big innovation challenges (& opportunities):
 - **Incredible complexity**
 - **“All-round” innovative inadequacy**
 - **Innovation-to-solution translation**
 - **Managing IP (patents)**
- **Comments? Questions?**