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 ...

**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 ...

... 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?