



# R&D Management in Leading Firms: An International Comparison

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## Outline

- What are the factors driving R&D spend?
- What are the main changes in the ecology of industrial R&D?



## Unpacking growth

- Growth driven disproportionately by high-tech industry and service sector
- Rapid growth of venture capital for SME R&D was a driver esp. in USA but 73% decline from 2000 to 2001



## Revisiting causes of growth

- Wider technological opportunities?
- Increases in productivity of R&D?
- Increased competitive pressure to innovate?
- Greater ability to afford R&D during profitable period?
- Pro-patent era increasing returns to R&D?



## Unpacking decline

- Not yet evident in statistics because of attempt to preserve R&D in first year of recession
- Loss of markets in overheated ICT sector
  - Examples Ericsson cutting R&D 50% this year- Business Week November 4
- Japanese firms with corporate R&D levy automatically affected by decline in turnover
- Anecdotal evidence that product support being cut more heavily with some protection for breakthrough-oriented research
- Issue of whether disinvestment decisions follow same logic as investment decisions



## Environmental changes

- New industrial ecology with large firms accompanied by dynamic population technology rich SMEs
  - Will collapse of VC research upset the new ecology?
- Increasing outsourcing (from 5% to 15%)
  - Corporate labs as sellers as well as buyers
- Globalisation of R&D
- Networks and alliances

## R&D process changes – the TSF study Phase 1

- Study of 7 leading edge large firms (report via link on PREST website) focussed on research component of R&D (corporate labs)
- HP, IBM, 3M, Corning, Nokia, Philips, Johnson Matthey
- New phase of work through Technology Strategy Forum with DTI support and OECD cooperation – UK and other European companies plus East Asia – Samsung AIT, Asahi KASEI, Sharp and Hitachi

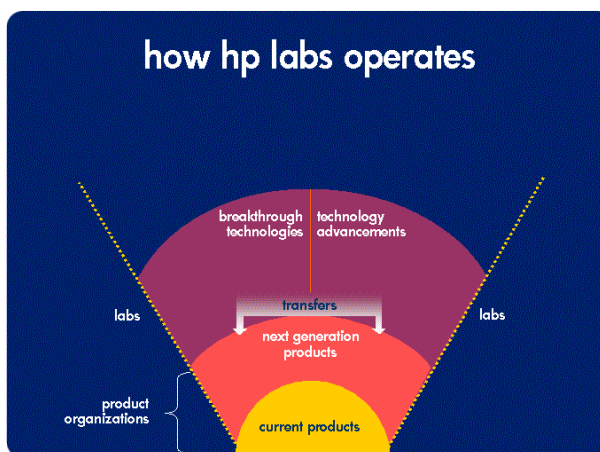


## Key findings from Phase 1

- Research is core to these corporations
- Nature of research has changed and timescales strongly compressed
- Timescales for strategy making also compressed
- New ways emerged to get alignment with business
- Targets set bottom-up as well as top down
- Scientific values preserved in incentive structures
- Portfolios not projects are the important steering tool
- Best practice lies in the alignment of corporate values with laboratory and individual incentives



## how hp labs operates



## Initial Findings from Phase 2

- Traditional Asian model of very broad technology strategy which can be picked up by highly diversified corporation under some pressure
  - Joining international trend to focus around major product targets
- Corporate funding under pressure both from declining revenue and from governance issues
- Different organisational needs of service oriented businesses becoming apparent and leading to full integration within business R&D labs



## Interim conclusions/ hypotheses

- Necessary to separate long terms trends from short-term effects of the business cycle
  - But public policy needs to work counter-cyclically
- Largest firms recognising need for breakthrough research and looking for new models to relate it to business
- Concern that next level down may be over-reliant on outsourcing and market for research

