

# A Perspective on Innovation

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# What is innovation

- **New technologies**
- **New business models**
- **Explosive growth, winner takes all sectors**



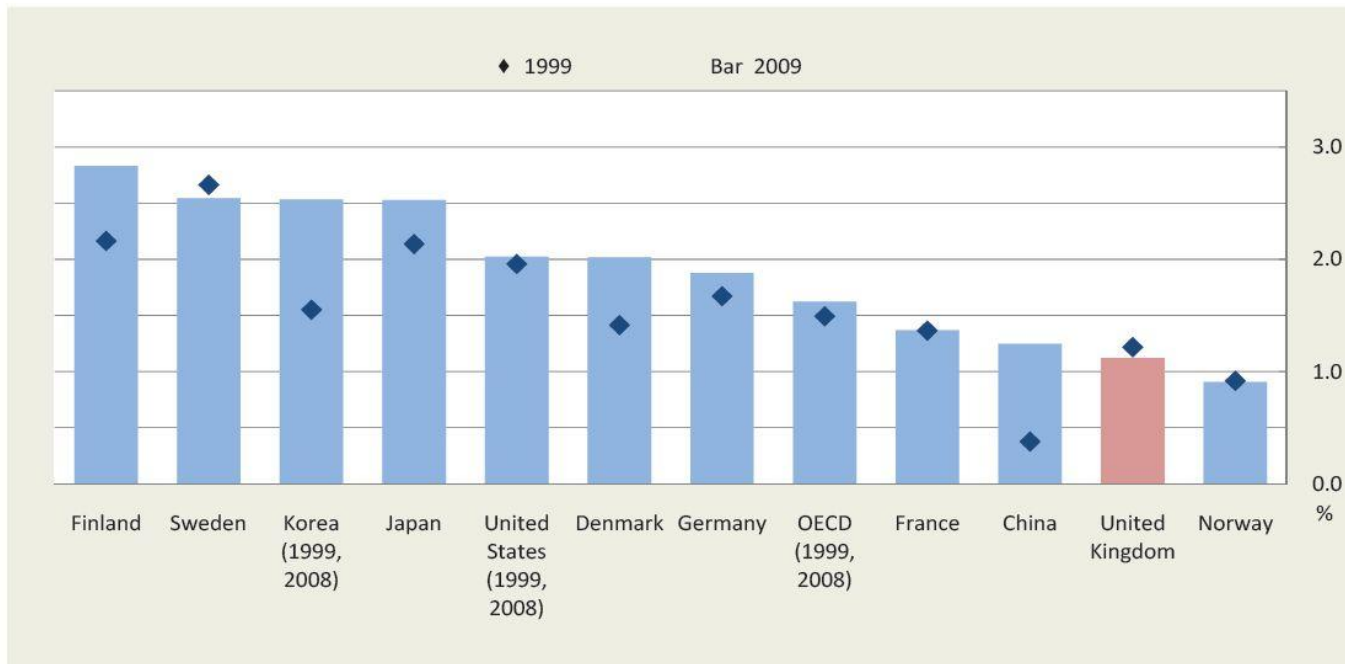
# Universities

- Culture very good
- Academic professor, entrepreneur professor
- Serving / disrupting / creating new industry
- Becoming institutional and less flexible
- Huge emphasis on commercialisation



# Industry

BERD: Business enterprise expenditure on R&D, 1999 and 2009 (as a % of GDP)

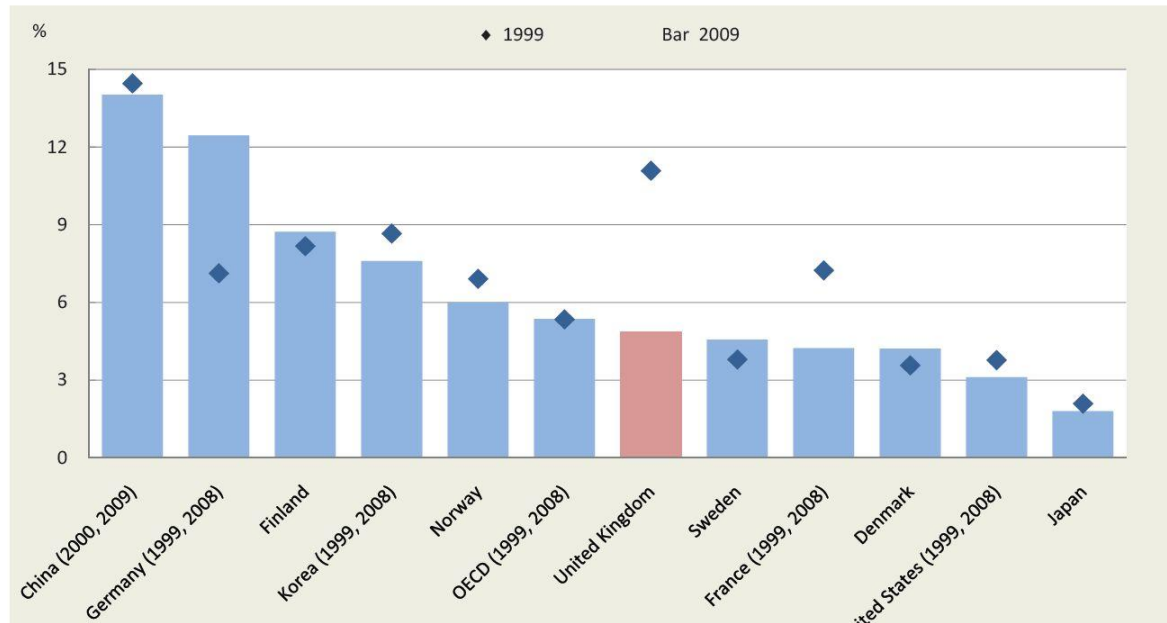


Alan Hughes & Andrea Mina, The UK R&D Landscape, CIHE UK-IRC, CBR, Cambridge

- **Business R&D low**
- **UK has small number of large companies doing R&D**
- **UK has large share of R&D by foreign firms**
- **UK has lowest share of govt support for independent SMEs (3.5%)**

# Industry

Business-funded R&D in the higher education and government sectors, 1999 and 2009 (as a % of R&D performed in these sectors (combined))



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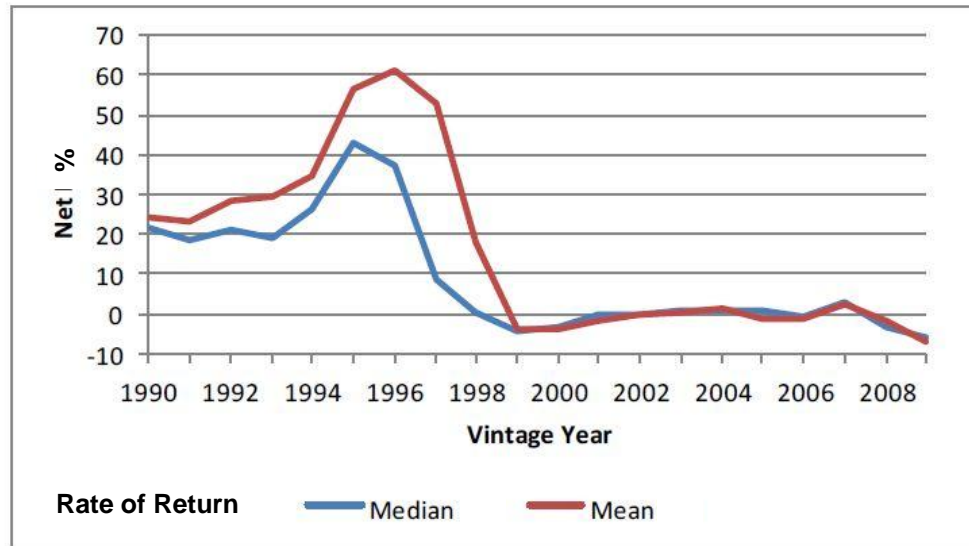
- **A substantive decline in funding of University R&D**
- **Loss of Corporate Labs**
- **Yet more business disruption across many sectors!**

# Intellectual Property

- **Patents, copyright, trade secrets**
- **Importance of each varies with sector and business model**
- **Patent world is complex, confusing, combative, unpredictable, expensive**
- **Some progress to improve situation**



# Capital



Kauffman Foundation, Lessons from 20 years of investments in VC Capital Funds

- **Money is an expensive product**
- **Traditional Venture Capital model is not working**
- **Angels and Super Angels appear to be doing well**
- **New models: Crowdfunding**

# Fiscal Policy and Tax

- **CGT Tax rate for entrepreneurs is (almost) ok**
- **R&D Tax Credits are all excellent**
- **Patent box idea is interesting**
- **System is complex, keeps changing**





# 1 – ARM

- **Microprocessor architecture - 30 years from first concept**
- **Technology rooted in symbiotic industry/university/finance situation**
- **Corporate spin-out**
- **Innovative business model and relentless execution**
- **Dominates low-power CPU architecture with 35Bn+ instances made**

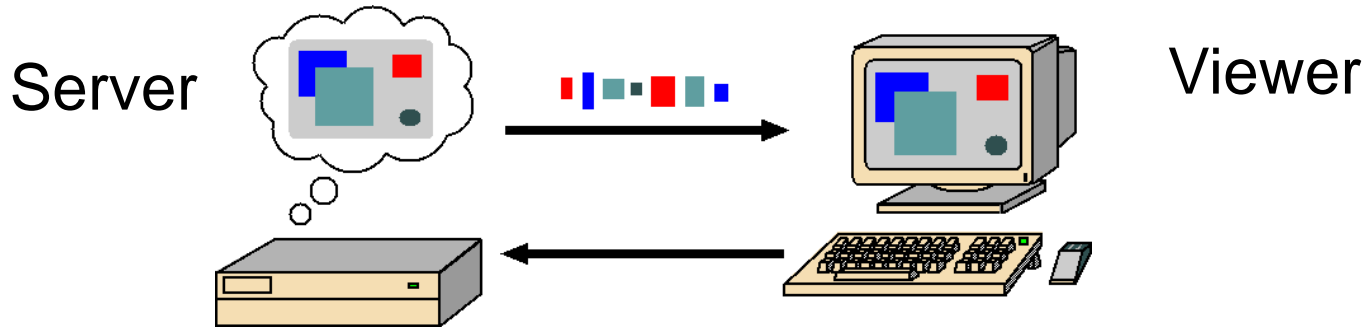


# 2 – Xen

- **Virtualisation software**
- **Technology based on long-term university practical expertise**
- **Xen.org open-source “hypervisor” developers platform**
- **Xen Source Inc start-up with \$6M of US VC money**
- **Sold after 3 years in 2007 for \$500Mio on small revenues**
- **Now a widely used technology in the cloud**



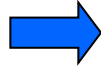
# 3 - VNC



- Remote graphical access
- Technology based on long-term industry/university expertise
- Open Source release
- RealVNC start-up organically grown



# RealVNC – new products



Access *from* Tablet and Smartphone



“Help!”



Fix



Access *to* Tablet and Smartphone



Access through the cloud



Access built into processor



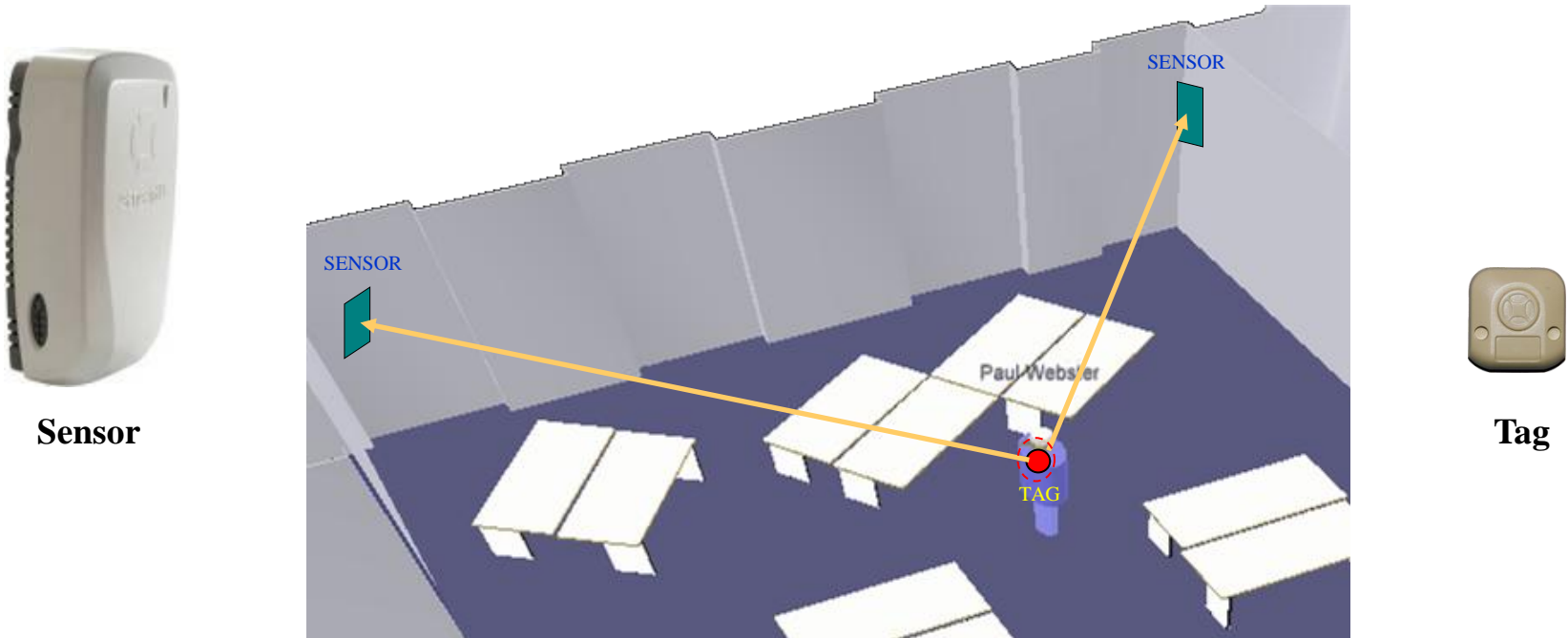
Automotive

# RealVNC

- **250M+ open source licences, 100K paying customers**
- **Any device, across any network, in any combination**
- **The worlds most ported piece of software?**
- **Profitable from day one, 90% of revenues from export**
- **Business model to match unique circumstances**



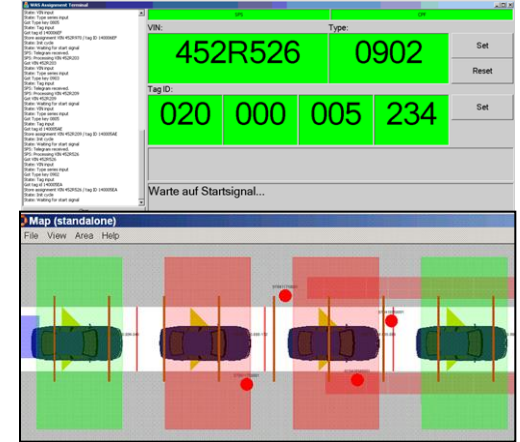
# 4 - Ubisense



- Real-time 3D location system based on ultra-wideband radio
- Up to 15cm accuracy at fully managed reliability levels
- Scalable in coverage and scope of application

# BMW Car Plant, Germany

(Final Assembly Tool Assistance)



- Tracking tools on complex production line
- Automatically programs tools for each car
- Eliminates barcode scanning

## Quick facts

Installed area: 1.7km of line

Sensors: 350

Accuracy: <30cm in 3D

Reliability: 99.9998%

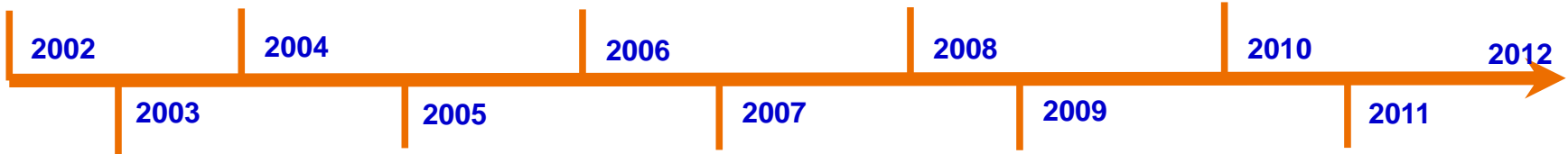
# Ubisense Funding



July : Founded



June : IPO on AIM



F&F £1.6m Equity	F&F+ £1.6m Equity	F&F++ £1.6m Equity	F&F++ £2.0m CL	F&F £1.0m CL	HSBC £1.0m Loan	Pre-IPO £5.0m	IPO £5.0m
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F&F – friends and family

CL – convertible loan



# Ubisense

- **Rooted in 20 years of Industry / University research**
- **Setting standards for Real Time Location Systems**
- **Sells to the largest manufacturing companies**
- **Intersection of computing / manufacturing**



# The University/Industry Interface

- **Collaboration**
  - Low barrier, low cost (revolving door)
  - High barrier, high cost (turnstile)
- **Should there be a market?**
  - Companies stepped back
  - Universities conflicted
- **Simple rules and practices**
  - Universities to make publically funded IPR available at no extra cost
  - Would incentives be required?
  - Example rules for shareholding or licence: 5%, 1% Dilution Protected, 1%DP+1%DP Gift
  - Qualifying companies
- **Technology transfer offices to be privatized and compete on value added**
  - Implementing turnstile
  - In difficult position and measured on surrogates
  - Privatise, no privileged access, compete, raise money, assess on real contribution



# Industry: Innovative Organisations

- **Create private but independent industrial innovation centres**
- **Two companies anticipating industrial landscape changes**
- **Create strong teams in one place**
- **Do what you cannot do right now with people who will not work for you**
- **Innovate business models as well as technology**
- **Olivetti/Oracle/AT&T Cambridge was a previous example**



# Funding of University Research

- **Research Assessment**
- **Research Councils**
- **Universities**



# The Engineer in Government

- **How do we ensure decisions are well informed and wise?**
- **Create the post of Chief Engineering and Technology Advisor - a CTO for UK plc**
- **Always have at least one engineer or technologist in the Cabinet**



# In Conclusion

- **Great Universities**
- **Great companies big and small**
- **Great engineering and technology tradition**
- **Great role models**
- **A Great Professional Body – The IET**
- **The future looks great**

