

Innovation Day 2010

Wednesday 21st April

Whistonbrook Technologies

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Technology Change Workshop Summary

- Introduction to Whistonbrook
 - history/capabilities/expertise
 - products and projects
- Technology Change or “clock-speed”
- Innovation using Technology Change
- Effects of Technology Change
- Problems?
- Discussion and Solutions?



Whistonbrook Technologies Limited

- We were founded in 1997 and based at The Spires, University of Luton
- Initially we specialised in the design and supply of Electrochemical Instrumentation
- Over the last 10 years we have been awarded several Government Grants (Smart, TCS, Global Secondment & R&D)
- The company diversified into general embedded microprocessor instrumentation and process control equipment.
- Our major customers are Corporate R&D, Academic, SMEs
- We now concentrate on custom design and products
- Moved to the Innovation Centre in 2007

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Capabilities/Expertise

- Electrochemistry/Electrochemical Systems and Sensors
 - Measurements technologies, electroplating, fuel cells
- Optical measurement sensors and imaging
- Remote logging and communications
 - Using RF/GSM
- Embedded microprocessors/firmware
- Measurement systems and signal conversion
- PC measurement and control software



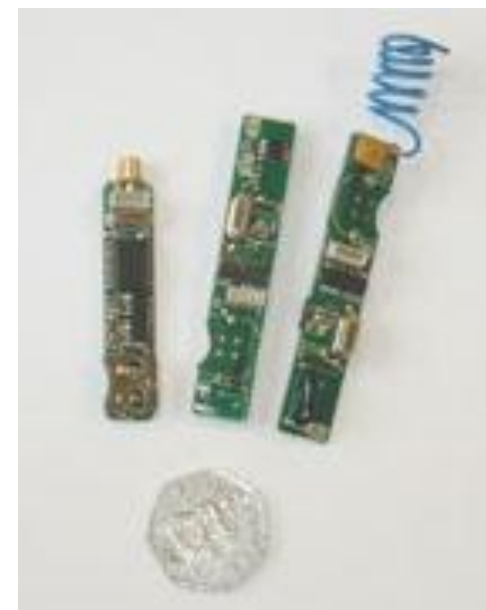
Generic Types of Projects

- complex, novel or custom pH meters, potentiostats and conductivity meters
- electrodeposition and plating control systems
- testing and quality control systems(manufacturing)
- remote and event loggers (market research)
- process control systems(R&D and manufacturing)
- fuel cell control and test units



Market Research Loggers

- the logger replaces the use of a hand written diary
- electronics are hidden in the trial product or packaging
- the logger is activated by events or a measurement value
- the data may be stored locally or transmitted to a remote base station
- 4-6 week battery life-time
- at the end of the trial data is downloaded to PC
- software automatically creates stats and tables



Fuel Cell Control and Test Units

- provide instrumentation for a fuel cell test facility
- automatically run complete test on test cells
- equipment controlled temperature, gas & liquid flow, voltage or current load
- measured temperature, gas & liquid flow, cell resistance, voltage and current
- researchers could write and change the method scripts (25days)
- data analysed and passed to researches across the network.



Quality Control and Test Station for an International manufacturer of pH electrodes

- speed up pH & Ref. electrode testing and save operator time – save costs
- system controlled test conditions using embedded test methods –increase quality
- used in the manufacturing line so it was important to have simple user interface
- automatically measured E07, slope etc, and produced SPC charts – no operator intervention
- for the quality manager it produced quality certificates and manufacturing stats
- for the customers it produced high quality traceable electrode with id#.



Technology Change or “clock-speed”

- defined as the rate of introduction of new technologies (PC clock speeds)
- this gives opportunities to
 - introduce new products
 - enter new markets
 - at lower cost
 - using new processes



Examples of “clock-speeds” in industries

- introduction rates Slow → Fast
 - aircraft industry
 - motor manufacture
 - moores law – PC clock speed
- analogue → digital change
 - fixed line → mobile telephones
 - digital photography and television
 - instrumentation



Innovation using Technology Change

Analogue → Digital change over gave the opportunity to introduce novel products

- Displays
 - Dials → LED Segment → LCD
- Circuit Design
 - Analogue design → A/D convert + software
- User interface
 - Paper charts → PC displays/memory

Typical product design breakdown

- measurement front end with signal conversion components
- digital control using an embedded microprocessor
- firmware as operating system and to manipulate data
- user interface using display technology and buttons
- PC software to control unit or display process data
- Internet to monitor data or diagnose problems in processes.

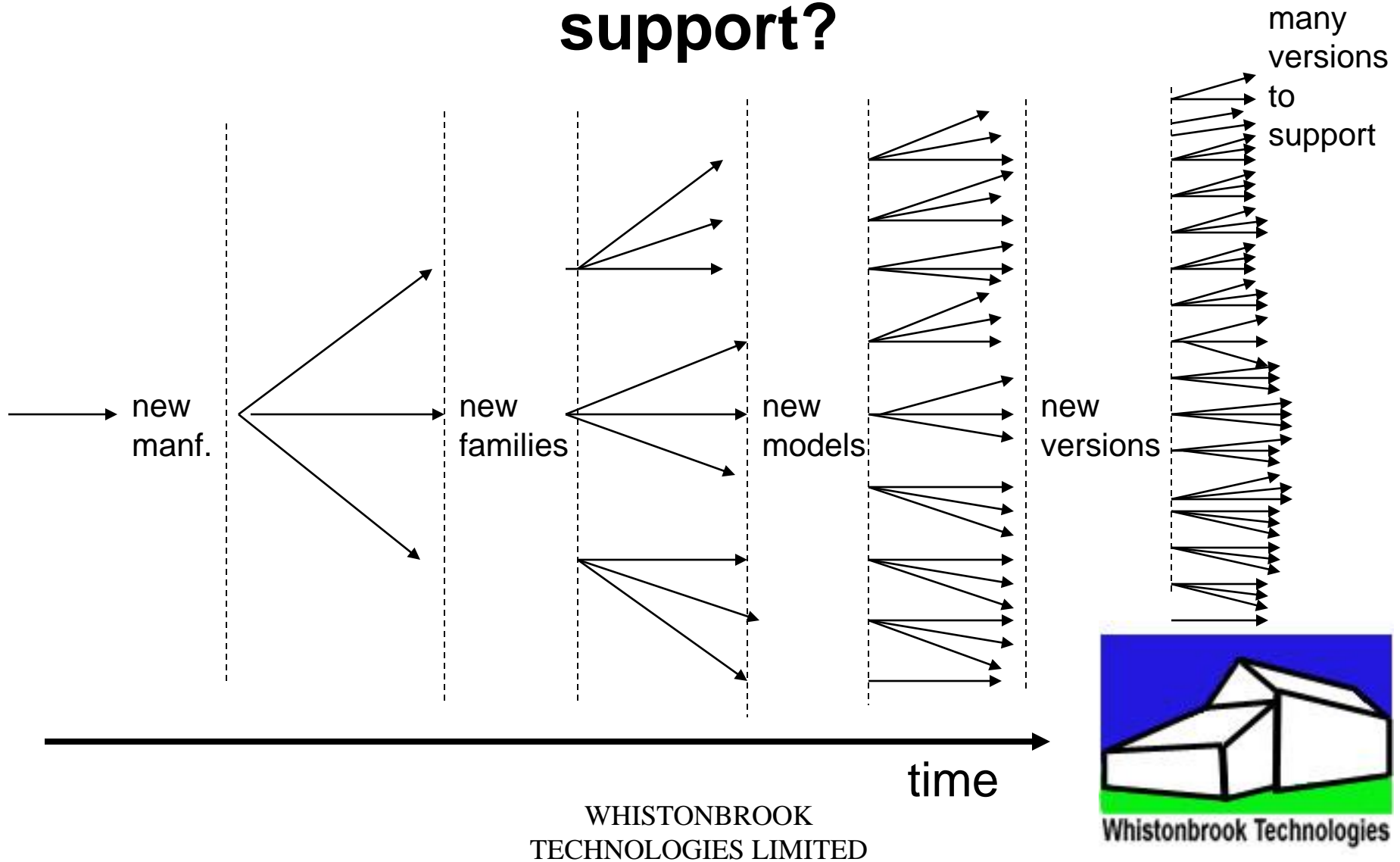


Effect of Changing Technology

- new A/D and DAC etc. introduced every year (faster,cheaper)
- microprocessors - few manufacturers in 1985 → ???? In 2010
- firmware – new processors, languages, new development systems
- TFT Displays and touch screens replacing hardware buttons
- PC software – languages updates & new OS XP/Vista/7
- changed form simple HTML pages to dynamic/web software



Growth of new technologies for possible new products – which do you support?



Problems for small business

- lack of people, resources & time to support all new technologies
- keeping up with new technical knowledge & training
- cost to the business
 - people time's
 - capital expense of development systems
 - new software
- learning curve adds time to project timescales



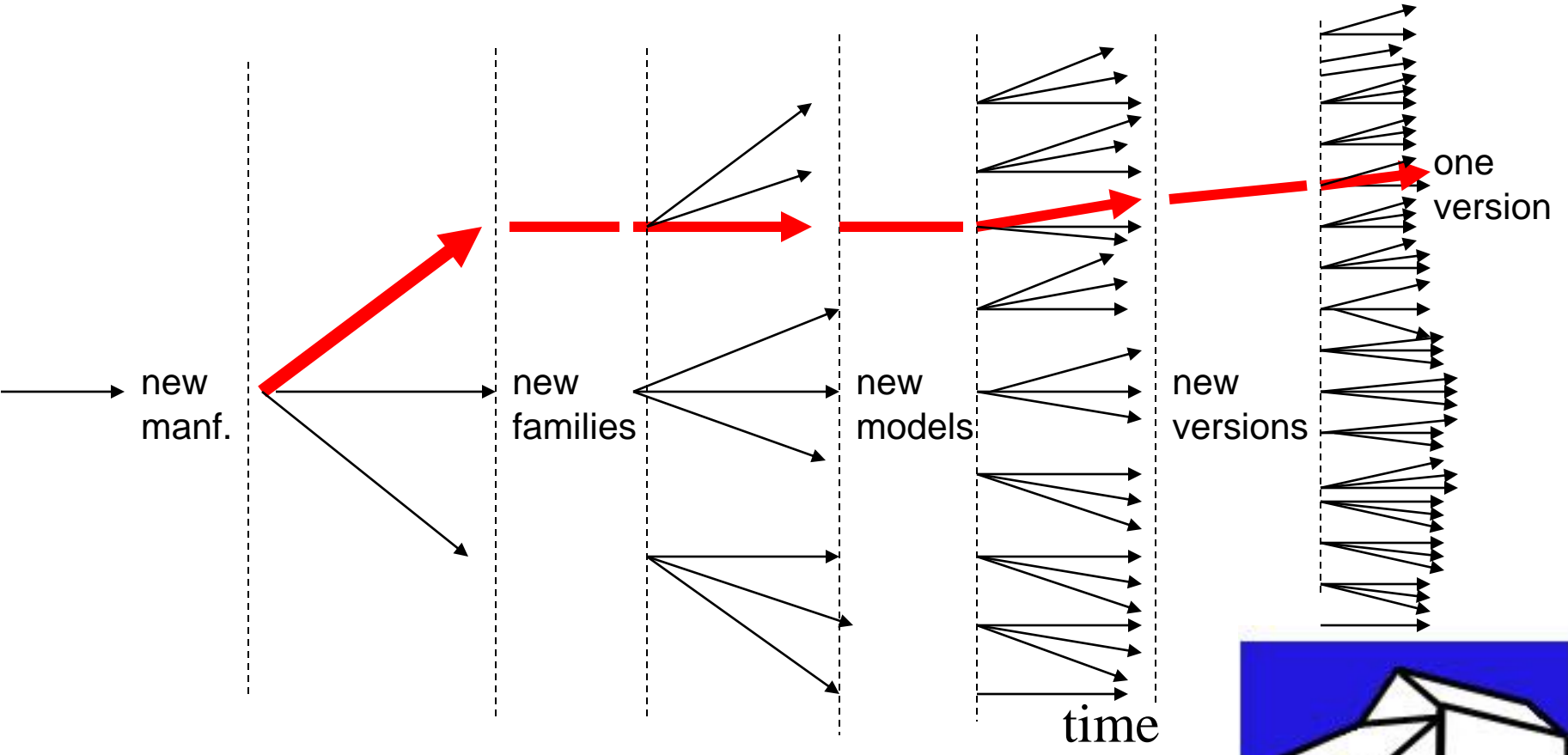
Solutions ?

- ????????

Solutions

- Specialisation, concentration, find a niche
- Collaboration find partners with different skills
- Use University researches or academics
- Outsource
- ????????

Specialize or find a niche



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