

A Case Study in Commercialising Nanotechnology

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- Introduction to CAP-XX Ltd
- Brief history
- Examples: value proposition for mobile phones and solid state drives
- Issues encountered
- Lessons learnt
- What's next?
- Q&A



Overview of CAP-XX Ltd

- Australian "Born Global" supercapacitor manufacturer
- Founded 1997
- IPO on LSE (AIM) in April 2006
- A unique technology position World's best thin prismatic supercapacitors with strong IP
- Focused on space-constrained electronic devices
- Sold over 3 million devices
- Non-exclusive licence to Murata Manufacturing Co.
- Achieving mobile phone and solid state drive design wins



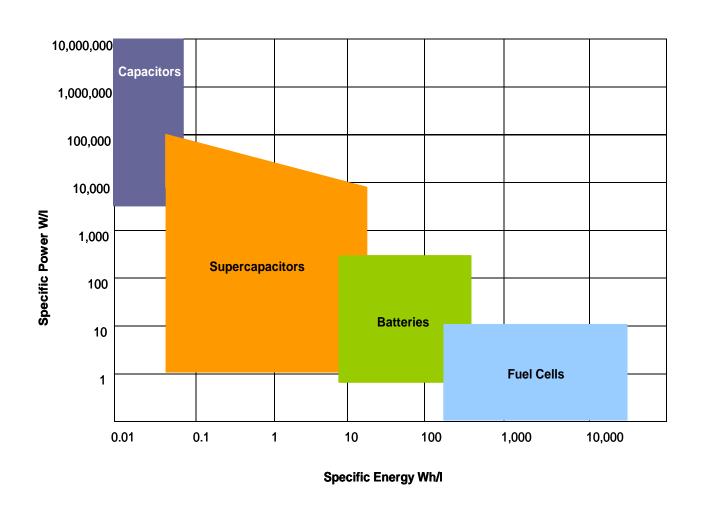
and distributors

CAP-XX Worldwide





What is a Supercapacitor?



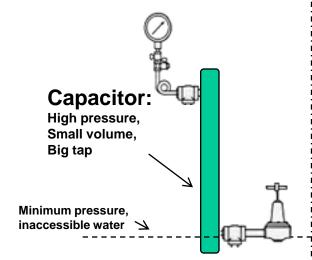


What is a supercapacitor?

Capacitor



- Stores a small amount of electrical energy
- Static electricity
- Releases energy very quickly i.e. very high power

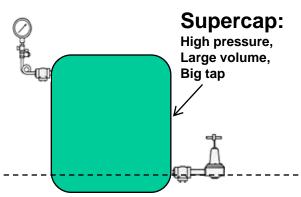


Supercapacitor



- Stores a moderate amount of electrical energy
- Static electricity
- Releases energy quickly i.e. high power

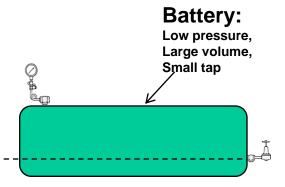
The water tank analogy



Battery

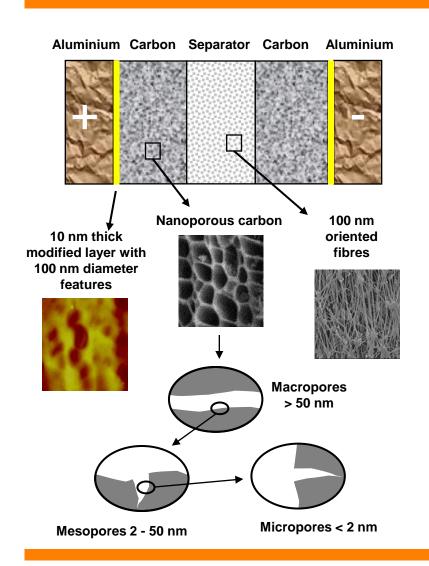


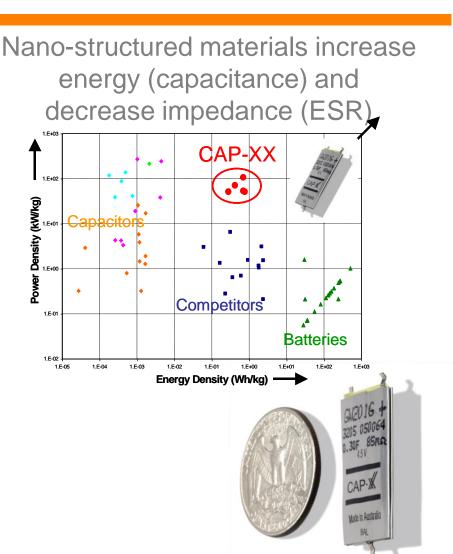
- Stores a large amount of electrical energy
- Chemical reaction
- Releases energy slowly i.e. low power





Role for nanotechnology at CAP-XX









- 1994-99 Partner with CSIRO to research supercapacitors; US\$2.5m in seed capital & grants
- 2000 Raise US\$6.6m from VCs; First mobile wireless product; Business agreement with Intel for Notebook PCs
- 2001 Raise US\$17m from Intel, Acer & VCs;
 Develop pilot production plant with Invetech;
 US\$3.2m R&D grant
- 2002 Focus shifts from Notebook PCs to wireless;
 Open US & Taiwan sales offices



Brief history of CAP-XX (continued)

- 2004 Establish contract manufacturing in Malaysia;
 Shipping production quantities; Nokia contacts us re LED flash; First distributors appointed
- 2005 Toshiba demos CAP-XX at 3GSM; Focus moves to camera phones
- 2006 US\$31m IPO on London Stock Exchange (AIM)
- 2007 Open UK office; Close Taiwan Office;
 BriteFlash™ camera phone solutions released
- 2008 Sell manufacturing license to Murata for small prismatic supercapacitors



- Brilliant flash photographs BriteFlash™
 - Xenon performance
 - Ultra thin, small size flash solution
 - Familiar "true flash" appearance
 - Simple integration into camera phone Industrial Design
- Captivating audio performance BriteSound™
 - Louder, cleaner music, speakerphone and ringtones
 - Robust audio with less noise issues
 - Extensive audio power headroom for processing or special effects
- Better power management BritePower™
 - Supports existing batteries to drive power-hungry features
 - Extracts more energy from batteries to increase battery life
 - Enables use of alkaline & next generation battery technology



BriteFlash™: The best flash option



Standard Nokia N73



BriteFlash™ N73 (N73 refitted with CAP-XX Supercapacitor)__



SonyEricsson K800i (xenon strobe)









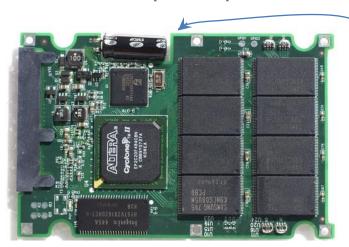
Electrolytic or supercapacitor





BritePower™: The best SSD option

- SSDs (Solid State Drives) are replacing HDDs (Hard Disk Drives) in computers etc., offering faster access, improved reliability & smaller size
- Market size estimated at close to 100m units by 2010
- Problem is that if power fails (battery or mains) the cache memory will be lost.
- Need a supercapacitor to provide backup power



- Early after-market 128GB SSD modification in an Apple MacBook Pro.
- CAP-XX to replace bulky cylindrical supercapacitor used for power backup
- Why CAP-XX? Thinner form factor & superior operating temperature range (-40°C to +85°C).

CAP-XSome of the issues encountered so far

- Raising capital seed / VC / public
- Dealing with "Investment Bubbles"
- Time taken to find the right people
- Turning R&D into a product ready for mass production
- Building custom production processes & lines
- Selling a new technology into a new application
- Changing the direction of the business
- Changes in Government Policy

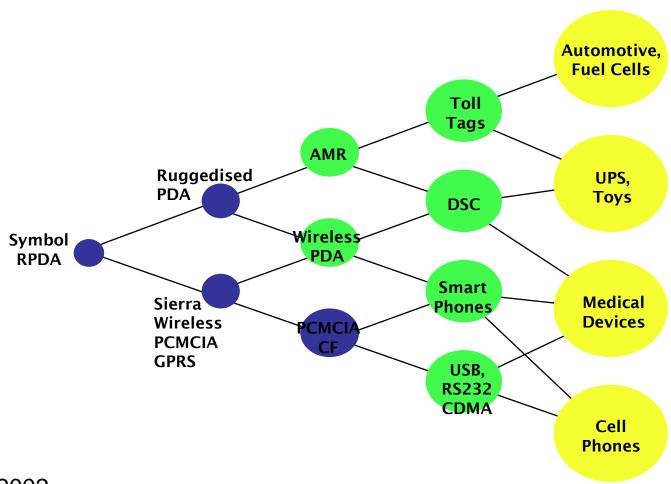
Lessons learnt



- 1. R&D is just a v small part of the effort required for commercialisation
- 2. Focus on an end market Don't push a technology
- 3. Keep the business plan simple & flexible
- 4. It will take longer & cost more than forecast
- 5. Take the <u>funding</u> when offered it may not be available when you want it
- 6. Government money is expensive even when its "free"
- 7. The <u>right team</u> is more important than the business plan
- 8. Be realistic about the capabilities of the business partner as appropriate



Focus – The Bowling Alley Concept



circa 2002



CAP-W Why the LSE: AIM Stock Exchange?

- Australian Stock Exchange is dominated by resource & financial stocks – poor coverage of technology
- Cost of NASDAQ prohibitive post-SOX
- AIM is the largest technology exchange in terms of available capital & analyst coverage after NASDAQ
- Cost of listing on AIM & ongoing compliance is significantly less than NASDAQ



The partnership with Murata

The Deal in Brief

- Non-exclusive licence
- Licence is for small prismatic supercapacitors only
- Term is for life of current patents
- Cash up-front
- Royalty fee as a % of sales plus a share of operating profit over a threshold
- On-going cooperation thru R&D and cross sales

KEY POINTS - The partnership with Murata addresses two major issues: It provides integrity of supply to our mobile handset customers, & materially de-risks the process of scaling output for CAP-XX



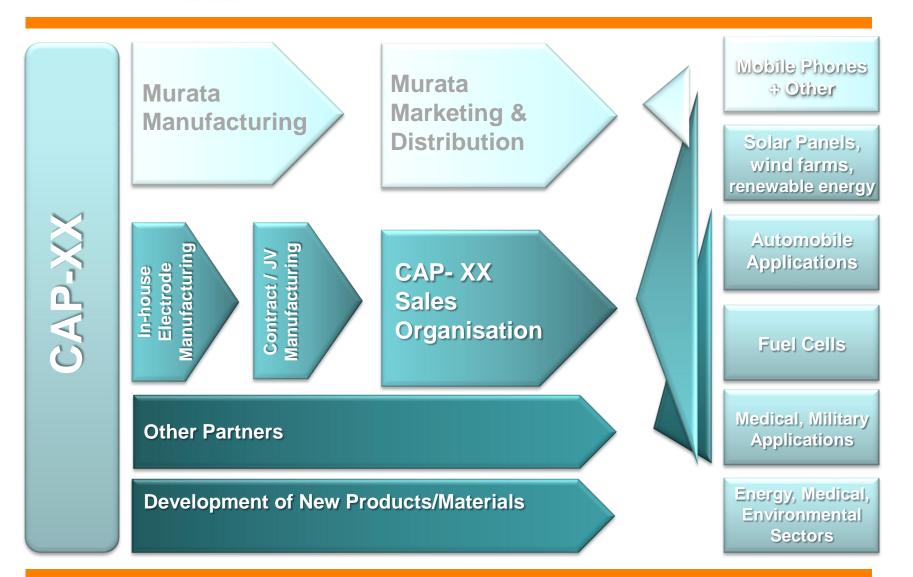
The partnership with Murata

The partnership with Murata secures CAP-XX's future

About Murata		
•	Established	1944
•	Listed on Tokyo & Singapore Stock Exchanges	
•	Market Capitalisation	£5.8b
•	Sales	£2.4b
•	R&D expenses (p.a.) - as % of sales	£200m 7%
•	Capacitors produced / day	1.3B
•	Employees	29,000

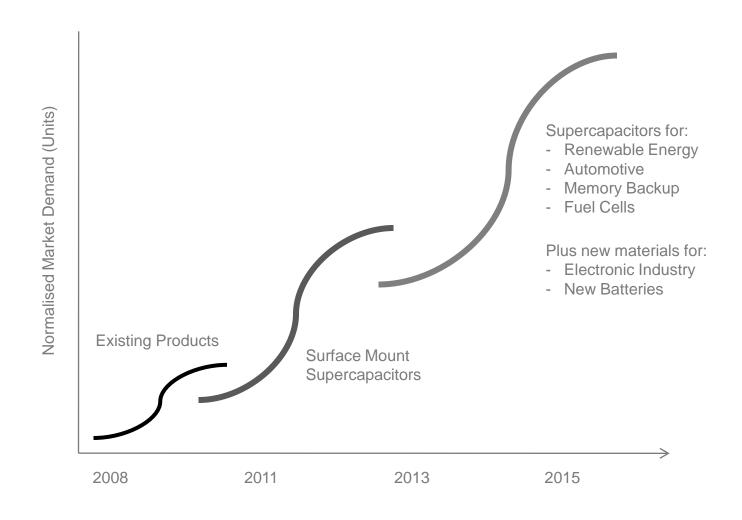


What's next? - the business model





What's next? – 3 engines of growth





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