Working in the dark...?

Optical Instrumentation for Precision Control in Super-harsh Environments
Oxsensis High Performance Instrumentation

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• How Oxsensis serves the Energy Industries
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1000 °C direct measurement of pressure and temperature – enabling technology for next-gen turbomachinery
Oxsensis, since 2003

- The idea
  - Harsh environment optical instrumentation to meet gas turbine needs
  - Combine opto-electronics from telecoms with materials science for sensor
  - Benefits – typically aiming for a power system energy saving of 1% or fuel flexibility or power enhancement or emissions reduction (threshold to run).
    - Initially aiming for GT sensor combustion market: size $0.5Bn pa
  - Company Spins-In to STFC Rutherford Appleton facility
    - Investor, collaborator, technical + physical + political backer
    - Excellent early-stage business environment
- Building the technology
  - In stages, using core team plus partnerships (from consultant to contract), using key technical facilities often from others

*Technology focussed development, in right environment for young business*
Oxsensis, since 2003

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• Building the Customer commitment/ match Investor commitment
  • Takes forever – Plan for it to do so
  • Enormous effort to ID/assess real needs/build awareness and step through the try/believe/‘return for more’/’build programme’ cycle.

• Investment base
  • Initially founders used personal money, then adding Angel, then early investment from groups (incl STFC CLIK) then VC’s in a series of tranches. Total to date ca £9m.

• People
  • 18 people currently. Some change over 10 years. Key to retention is belief in the vision for the Company, and share in the rewards.
Oxsensis, since 2003 (3 of 3)

Now we are....

- Profitable and generating cash
- In two major Aerospace development and manufacture programmes:
  - Aero Engine OEM/Oxsensis – developing and manufacturing engine flight instrumentation systems.
- Teamed with Airbus for an EU (FP7) avionics project and active in two TSB projects incl Siemens, and GE Oil and Gas.
- Developing applications-specific Land Based Gas Turbine product (with target customer) – our original target market – still a target, but its late....
- 4 years into an auto OEM funded instrumentation development

Increasing customer engagement – with path to growth

Surprise was – aero came first...
Technology to Business

- Company formed by technology business founders who located within STFC Rutherford Appleton Laboratory facility Q2 2003
- Proof of Concept to aero OEM Dec 2004
- Series of small TSB and EU funded projects, with large Co partners along the way (Siemens, R-R, Turbomeca, Airbus). Helps early development and build networks.
- Standards committees – great for building valuable networks – over years. They are now crystallising value, some after half a decade.

*Recognise that you are the best in the World at early stage Technology Development – all larger Companies are envious of what you can do.*
Building Partnerships

**Start Early**

Make friends, lots of friends

- Use KTNs, Trade bodies, Standards Committees, publish papers
- Use TSB, EU, and other part funding to support financially, target industrial partners, build networks
- Be very clear about who is learning from you and who can/may spend money with you
- Never too soon to begin a deep exploration of your Customers’ souls
- Actively get to know, from Day One, those who compete and those who may eventually acquire – do not stand back from them.

**Understand your Investors**

- Get on the same page (timing, value proposition, flexibility, risks)
- Learn what is *not* real about potential investors/supporters
- Your business plan may (will) evolve significantly, so expect it and work with this reality.

**Use Universities to strengthen your business**

- Build lifelong bridges with research and teaching organisations. From here come credibility, ideas, recruits, referrals, support, partners.

**Collaborate with other Startups**

- You are in the same boat, same mindset – help each other.
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