

A 21st Century Approach to Motorsport Skills, Education and Training

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Overview

- UK motorsport industry – background and context
- 11 years of motorsport education at Oxford Brookes University (OBU)
- Deconstructing motorsport success – OBU's 'DNA'
- Deadly sins and deadly virtues – the '*issues*'
- The *Motorsport CPD Programme* at OBU
- Future developments

Background – UK motorsport industry

- 40,000 full-time employees, including 25,000 engineers
- Seven of the 11 F1 teams (eight of 12, from 2008) reside in the UK, the majority within a 25-mile radius of Oxford
- 60% of UK motorsport workforce based in the South East
- Home to world-class auto/motorsport consultancy companies (Menard, MIRA, Prodrive, Xtrac)
- Comprises 4000 companies – but 90% are ‘SMEs’, with large majority being ‘*small*’ (5-50) or ‘*micro*’ (<5)
- Contributes €9.0 billion to the UK economy (>1% GDP, four times *more* than the world-acclaimed UK music industry)
- Spends *circa* €6.0 billion *p.a.* on R&D

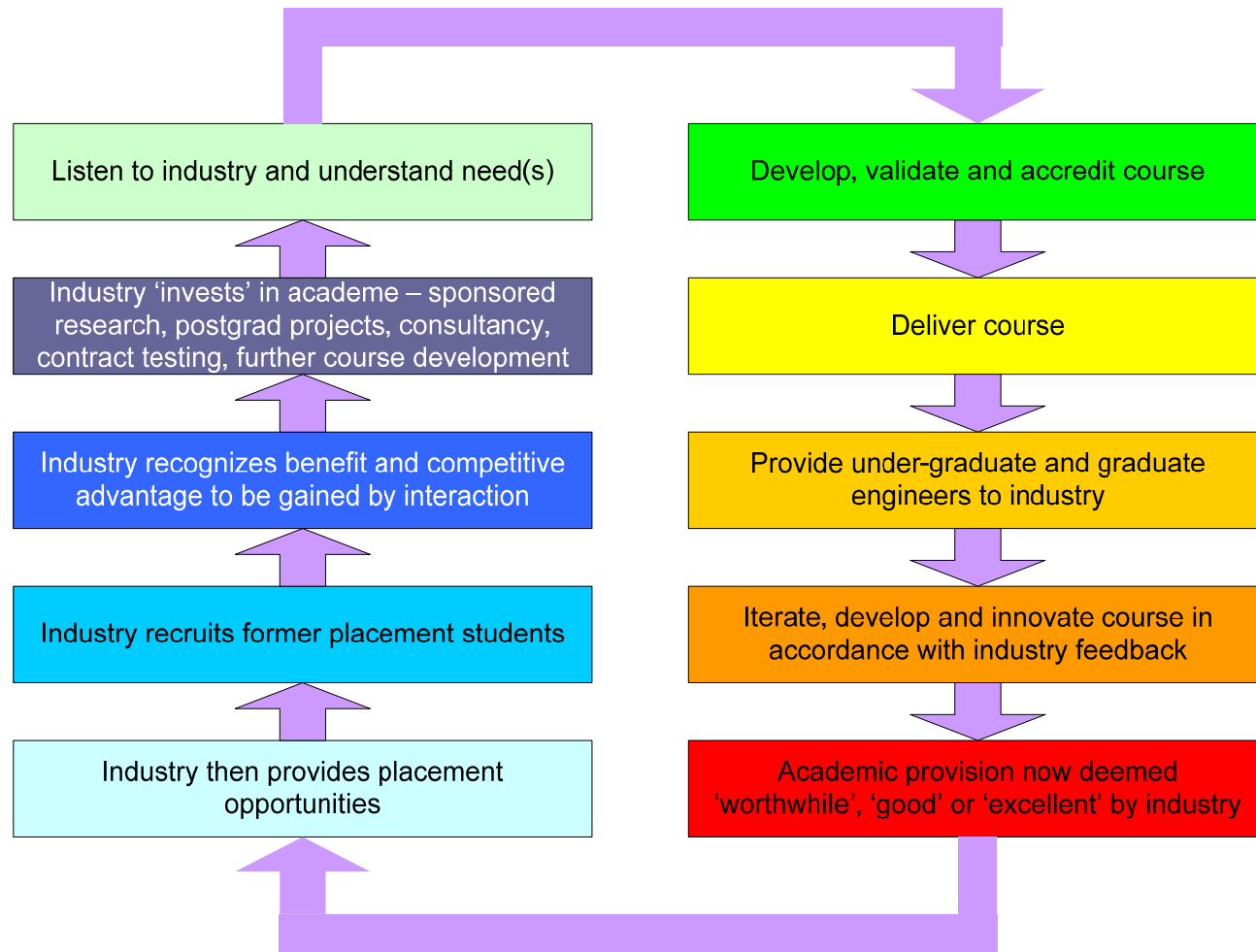
Motorsport success @ Oxford Brookes

- *Oxfordshire Motorsport Industry Forum*: market-driven courses win industry plaudits/support/sponsorship
- Regional Government '*Motorsport Academy*' work, DTI *Motorsport Competitiveness Panel* membership
- €4.2m Government funds leveraged – part-funding to build and equip a new, exemplar, state-of-the-art, €12m 4,500m² Motorsport Engineering Centre
- €3.1m+ motorsport industry in-kind pledges to project
- €2.5m Motorsport Knowledge Exchange 4-year project
- Best-performing UK Formula SAE team over last decade

Brookes' motorsport 'DNA'

- Listened to its customers (local motorsport companies)
- Began humbly, built realistically, but aimed HIGH
- Fully-engaged industry/other stakeholders *at the onset*
- Critically-evaluated institutional provision – receptive and visibly responsive to industry comment/critique
- **Didn't** oversell potential graduate destinations
- Understood its market well (*q.v.* the regional motorsport industry) and adapted to its changing requirements
- Industrial placements were key (but location of the institution - and the quality of student - proved crucial)
- Quality/timely academic response was absolutely key

DNA - more virtuous circle than double helix...



The Marketing Mix ('The 4 Ps') - how not to...

- Preachy
 - Staid, monologue, uninspired, academic delivery: learners not engaged; learning experience outdated; '*Ivory Towers*' ethos to teaching prevails; fundamental disconnect from the real world
- Pricey
 - Course cost bears no resemblance to programme quality
- Poor
 - Lacks industry focus, market relevance, delivery timeframe
- Past it
 - Addresses skills shortages of yesteryear; demonstrates inability to respond to industry advancements; individual academics cling to personal expertise rather than embracing contemporary technological advances which exemplify real-life situation

The 'Four Ps' (*A more conventional 'How to'...*)

- Product
 - Industry-focused, enthusiastically-delivered, employing process of continuous improvement to remain current and *real*
- Placement
 - Accessible to the target market (in terms of teaching **mode**, **medium** of delivery, and **timeframe** of study)
- Promotion
 - Aggressive marketing of product to industry (and students)
- Price
 - Market will (only) tolerate high prices for excellent product, but is happy to pay for a course that provides competitive advantage/will impact on bottom line company performance

What success looks like in 2007

- Motorsport portfolio now: *most diverse* in the world - eight undergrad. programmes, three postgrad. programmes, five CPD programmes, six PhD students (four with F1)
- Student numbers - 390 motorsport/auto under-grad. students, 42 Masters students, 6 PhDs, 30 CPD recruits
- €12m capital, €1.5m revenue Government investment for core motorsport activities/facilities (since 2002)
- Student employability – 16% direct into F1; 43% other motorsport formula; 13% automotive; 10% other engineering; 10%, post-grad motorsport; 10% – ‘MBD’
- Provider of choice now *without question* to many F1 teams
- First and only university *in the world* to achieve F1-driver-sponsored MSc Scholarships

***C.R.A.P* .: The New 'X'(creable) factor**

- C
 - Course content sub-standard, lacking in relevance
- R
 - Responsiveness to industry trends/needs absent
- A
 - Academic pace intolerably slow
- P
 - Promotion, placing, and price of product poor

A:/ IF: Seven Deadly Sins (Mk I)

- Academe response time (so-called *glacial progress* syndrome – *myth* or *real* industry perception)
- Lack of market focus and poor industrial content of many (most?) ‘motorsport’ academic programmes
- Over-selling, over-promising, and under-delivering
- Academic staffing difficulties (numbers/availability)
- Timetabling issues/impact of semesterization
- Perceived(?!) academic (public sector) pace
- Poor (or non-) marketing and promotion

A:/ IF: Seven Deadly Sins (Mk2)

- Quality of teaching/test facilities (aged equipment, *etc.*)
- Misplaced industry perception (particularly endemic in SMEs) of Universities as a provider solely of graduates (rather than of research, consultancy, testing, CPD *etc.*)
- Pressures of race calendar (thus availability to academe of key/empowered industry staff for strategic steer *etc.*)
- IP *Ownership* and IP *Leakage* concerns
- Contract/legal issues
- Cost of teaching, research, and consultancy service provision – often non-competitive, both as a result of UK Government-imposed finance models coupled to industry expectations/past experience of HEI costings

The Motorsport CPD programme

- Market-driven/industry-focused - born out of prime findings from UK Govt.'s DTI Motorsport Competitiveness Panel
- Three target markets – *Matching Section* for CEng; route to provide employee upskilling; higher qualification pursuit
- No limit to student numbers (nor country of domicile)
- Funded through Higher Education Innovation Fund (€225k) and industry (pledges of staff time – value €200k – from total in-kind pledges to OBU valued *circa* €3.1m)
- Strong collaboration between industry, OBU and the OU
- First course – *Data Acquisition* – developed with key input from senior motorsport staff (Dr. Pat Symonds, RenaultF1; Peter Jackson, General Manager, MoTeC Euro)



How does it work

- Employs (in the vernacular) '*roll-on/roll-off*' delivery model
- Delivered entirely through the online, virtual-learning-environment, but has optional MoTeC-supported, industry-relevant boot-camp-style intensive 3-day practical session
- 20 CATS points (200 hours equivalent) of post-graduate study, over a period of up to two years (MATLAB licence)
- Course pack includes 200-page workbook, MATLAB application, relevant supporting articles and papers, DVD
- DVD uses interviews and case studies, professionally-filmed at actual motorsport companies (RenaultF1, James Watt Automotive) to reinforce teaching points in Workbook
- Course progress achieved by completing sequential online exercises (requires 100% pass at each assignment stage)
- End-of-course assignment in form of project dissertation, but based on current industry data/ real-life problems

What's next?

- *Motorsport Chassis Dynamics* - 40 CATS points course
- Developed with key input from senior staff at RenaultF1, Williams F1, Avon Tyres, Intec (SIMPAK), other industry
- Six Course Workbooks, with comprehensive *Tyres* module, (included at industry's behest), as well as a DVD/ wide selection of contemporary industry Case Studies
- Extensive ADAMs and SIMPAK simulation exercises
- Optional practical session uses fully-instrumented Formula Renault car, first raced, then tested, using industrial-scale Multimatic 4-post rig and high-spec. damper dyno.
- Variety of course options to appeal to different learner types/student aspirations/industry markets

But there's more...

- *Business for Motorsport* – 20 CATS points (initially), then full Post-Grad. Cert. (and ultimately, Executive MBA)
- Fundamentally, *not* another Business School '*business*' course: rather a well-conceived *motorsport* course about *business, innovation, entrepreneurship, and management*
- Predominantly online, but three seminars moderated by industry experts, provide critique/contemporary relevance
- Developed to address a key finding of DTI '*Panel*' process – a need for courses designed *by* the motorsport industry *for* the motorsport industry (particularly SMEs/busy pros)
- Designed to facilitate transition from *Engineer* to industry-ready Engineering or Business Development *Manager*

Much more...

- A complete industry-focused, market-driven motorsport MSc achievable solely through distance/blended learning
- Expanding the module number/course portfolio to include in future '*Material Science for Motorsport*', '*Motorsport Aerodynamics*', '*Race Engineering*', and '*Racing Engine Design*' courses, amongst others
- Franchising of courses to overseas institutions, particularly in the US (initially, Indiana State University) and Japan (initially, Kanagawa Institute)
- Further enhancement of motorsport teaching and research environment through investment of course revenue streams/ increased industry interaction, to provide new facilities

The future

- Expand academic alliances internationally
- Capitalise on strategic alliance with SAE-UK, SAE-I
- Grow portfolio of online, market-focused short courses, developed with close industry input, to provide full MSc
- Franchise courses to overseas providers, and facilitate inter-country/inter-continent student and staff exchanges
- Build capacity to develop an international learning, teaching, and R&D motorsport engineering consortium
- Identify synergies apparent in other high-performance engineering industries – marine, aerospace, defence – to develop further markets for courses and tech. transfer opportunities (research, consultancy, contract testing)

Summary

- Major on quality from '*qualifying*' – more than ever before, academia now is a cut-throat business: reputations are *hard-won, easily-lost* and bad news *travels fast*
- Respond in timely manner to industry intelligence, act accordingly, but **be seen actively to do so**
- Be realistic of provision – undertake frank/brutal SWOT analysis of programmes (use industry panels as absolute arbiters of quality and relevance) and evolve course content quickly and accordingly
- *Under*-promise, *over*-deliver, and constantly innovate
- Compete where necessary, but collaborate where the Skills, Education & Training solution makes this expedient

Don't take our word for it – an industry view of Motorsport CPD prog. development thus far...



‘Very good – makes me want to be back at University’

Dr. Pat Symonds, *Exec. Director of Eng., RenaultF1*, after evaluating the *Data Acquisition* course material

And finally...

‘When you’re racing, it’s life. Anything else that happens before or after is just waiting’.

Steve McQueen