

Racing For Radical Innovation

How motorsport companies harness network diversity for discontinuous innovation



Written by:

Rick Delbridge, AIM Senior Fellow, Cardiff Business School

Francesca Mariotti, AIM Associate, University of Stirling

The Advanced Institute of Management Research (AIM) develops UK-based world-class management research. AIM seeks to identify ways to enhance the competitiveness of the UK economy and its infrastructure through research into management and organisational performance in both the private and public sectors.

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- Expand the size and capacity of the active UK research base on management
- Engage with practitioners and other users of research within and beyond the UK as co-producers of knowledge about management

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AIM research themes

Current AIM research projects focus on:

UK productivity and performance for the 21st century.


How can UK policymakers evaluate and address concerns surrounding the UK's performance in relation to other countries?

National productivity has been the concern of economists, government policymakers, and corporate decision-makers for some time. Further research by scholars from a range of disciplines is bringing new voices to the debates about how the productivity gap can be measured, and what the UK can do to improve the effectiveness of UK industry and its supporting public services.

Sustaining innovation to achieve competitive advantage and high quality public services.

How can UK managers capture the benefits of innovation while meeting other demands of a competitive and social environment?

Innovation is a key source of competitive advantage and public value through new strategies, products, services and organisational processes. The UK has outstanding exemplars of innovative private and public sector organisations and is investing significantly in its science and skills base to underpin future innovative capacity.



Adapting promising practices to enhance performance across varied organisational contexts.

How can UK managers disseminate their experience whilst learning from others?

Improved management practices are identified as important for enhancing productivity and performance. The main focus is on how evidence behind good or promising practices can be systematically assessed, creatively adapted, successfully implemented and knowledge diffused to other organisations that will benefit.

This report summarises the research findings from a study into how the successful introduction of innovation in motorsport is organised and managed.

The motorsport industry is a good example of how creativity, engineering, manufacturing and support services can be combined to produce world class innovations. As such it offers potential lessons for other organisations seeking to become more effective at the kind of radical innovation that provides sustainable competitive advantage.

The primary focus of the research was the way the motorsport industry harnesses the power of diverse networks – networks outside the usual sphere that a firm operates within – to generate radical innovations. Over 50 in-depth interviews were conducted in motorsport organisations, including seven race car manufacturers, in France, Germany, Italy and the UK.

Key findings

The research explored specific examples of radical innovation being successfully brought to the race track and identified the key characteristics of how this happened. The findings show the importance of managing a diverse network and seeking to draw on a range of diverse or distant sources of knowledge.

Successful innovators:

- Engage in wide exploratory innovation search activities, looking beyond their own knowledge base and domain of expertise;
- Identify the advantages offered by new combinations of existing knowledge, through the application of technologies and materials initially developed elsewhere;
- Often partner with 'unusual' firms – firms that operate beyond the usual sphere of collaboration, in the motorsport industry;
- Collaborate with partner companies to establish a close working relationship – strengthening personal ties and promoting more general reciprocity and trust;
- Encourage lateral thinking within their existing web of partners.

The research also identified a number of obstacles that motorsport firms struggle to overcome and that prevent them from building and increasing the network diversity that our research shows contributes to discontinuous innovation:

- Limited time and resources to try new things or build new relationships;
- Lack of dedicated staff to carry out exploratory activities;
- Existing relationships that dominate the network and restrict diversity and novelty;
- The restricting effect of the high risks, high uncertainty, and high costs involved, which act to limit engagement with new partners;
- Concerns about the leakage of intellectual property breeding an inward looking conservatism amongst firms;
- A parent firm strategy to use the race team for 'in-house' research and development;
- FIA regulations which are intended to promote stability of design to reduce costs but can also restrict innovativeness.

Some specific priorities for the UK motorsport industry identified by our research include:

- Promoting lateral thinking within the industry;
- Building search capability in the identification of technological opportunities and the development of activities that span the boundaries of the motorsport industry;
- Building collaborative capability in the development of inter-sector relationships, such as those between the aerospace and motorsport industries;
- Developing network management capabilities both in terms of search and collaboration building;
- Working to ensure regulatory changes do not undermine innovative activity.

Finally, we have a number of recommendations for policymakers:

- Widen the focus of policy intervention to related sectors in order to promote connectedness and sustain radical innovation in motorsport and the spillover of innovations across sectors;
- Support firms in network development activities, both along the supply chain and horizontally, through the provision of information on successful innovation and network building practices;
- Assist firms in the identification and mapping of suppliers and institutional expertise;
- Assist firms in the identification of potential technological opportunities both within the motorsport industry and in other sectors;
- Promote the development of skills through the provision of a dedicated infrastructure.

introduction: the UK motorsport industry

The motorsport industry is a significant part of the UK economy. According to industry estimates approximately 4,500 companies are involved in the UK Motorsport and Performance Engineering Industry and its wide-ranging support activities. The industry has an annual turnover of £6.0 billion, and contributes £3.6 billion worth of exports. The Motorsport Industry Association estimates that the support side of the sector alone – involving events management, public relations, marketing, sponsorship and a host of other support functions – accounts for approximately £1.7 billion of the yearly industry total. And in terms of employment, UK Motorsport supports 38,500 full and part-time jobs, including 25,000 engineers.

The sector's influence and significance extends beyond its scale. Motorsports and performance engineering also has a significant place in the UK as a best practice example of how creativity, engineering, manufacturing and support services, can be combined to produce world class innovations.

Carbon fibre wheel-chairs, non-slip boots, hi-tech fishing line and the influence of pit-stop crews on the efficient transferral of patients from the operating theatre to intensive care, are all innovations which have their origins in the motorsport industry. Moreover, the sector in general, and the Motorsport Valley in particular, have long been regarded as a beacon of the UK's creativity, engineering and innovation capabilities. This makes the industry an ideal focus for understanding better how firms can organise themselves and their networks to produce innovations.

The specific purpose of this research is to explore and explain how radical innovations come about. The research focus has been on diversity in the networks of firms in the motorsport industry. Here, diversity refers to the variety of information, resources and contacts associated with having a network which combines both local and distant relationship formation. Our primary interest in conducting the research is to identify key innovations, and build an understanding of how these have been achieved.

The Research

This project forms part of the AIM initiative that has examined the role of collaboration in innovation¹. In fields where technology is developing rapidly, and the sources of knowledge are widely distributed, no single firm has the necessary skills to remain competitive on its own. In such cases, networks become the setting for learning and innovation. The establishment of inter-firm relationships, in particular, can facilitate access to complementary knowledge and the development of new skills. A firm's capabilities in both managing network relations and internal knowledge management are therefore potentially crucial aspects in achieving successful innovation.

The research reported here was conducted in the European motorsport industry, with interviews in France, Germany, Italy and the United Kingdom. This study builds on previous research which explored the nature of relationships between racing car manufacturers and their suppliers, and the processes of knowledge sharing and learning which occur in the British and Italian motorsport industriesⁱⁱ.

In particular, the earlier research examined how racing car manufacturers developed different types of network relationships, and how they learned to collaborate and share knowledge in the network. The study showed that, in both countries, racing car manufacturers have progressively abandoned arm's-length arrangements and have established closer ties with preferred suppliers. The manufacturers have promoted network formation and supplier participation in the network activities through the development of a network identity and rules for knowledge sharing. Hence, racing car manufacturers, through building their networks, learn not only how to orchestrate their relationships with supplier companies, but also how to create and share knowledge.

The findings showed that the dominant racing car manufacturer in Italy had made significant progress in establishing and managing a portfolio of ties with supplier companies. In this aspect of activity it appeared more advanced than its British competitors. Further findings highlighted that some racing car manufacturers search not only for suppliers that can offer complementary knowledge, but also for suppliers which can provide access to unrelated and diverse knowledge, that is, knowledge not directly related to the motor racing industry. In this case, a key role is performed by technological gatekeepers.

Technological gatekeepers expose themselves to outside sources of technological knowledge and play an important role in sifting and disseminating that knowledge. This aspect of innovation is the major focus of the current research.

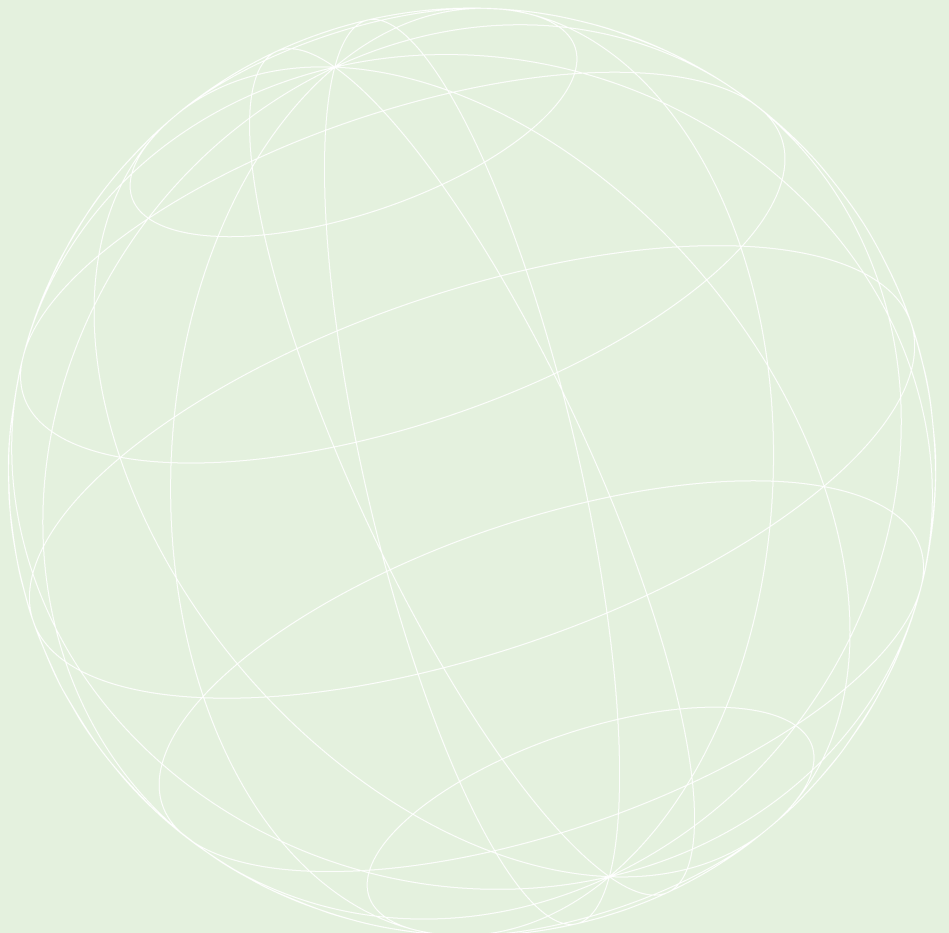
Over 100 companies were contacted about their research and development activities, and a total of 41 were visited as part of this phase of the research. Fifty-seven interviews were conducted with the average length being one and a half hours.

Companies reporting an example of radical innovation were particularly targeted in the research, and multiple interviews were conducted within the networks of those organisations wherever possible in order to build a picture of how this innovation had been achieved from the perspectives of those involved.

Interviewees included seven racing car manufacturers and a range of different supplier companies. In addition, a number of industry association representatives and industry experts were interviewed to build an understanding of the context of operations. A wide range of secondary data was also consulted.

The research centred on the following questions:

1. What factors contribute to radical innovations in motorsport?
2. What are the distinguishing features of organisations which successfully achieve radical innovation?
3. How do diversity of knowledge and contacts at the network level help firms deliver radical innovations?
4. What obstacles to innovation are there in motorsport?
5. What role can policymakers play in supporting firms in these activities?



section one: lining up on the innovation grid

Over the past 60 years the motorsport industry has witnessed many radical changes in the design and construction of racing cars including mid-engine layout, composite materials and new aerodynamic features. These have resulted from the motorsport companies' constant drive to improve existing products, solve technical challenges and explore new ideas in an industry characterised by a high degree of sophistication and complexity.

A key challenge in promoting these radical developments relates to the extent to which motorsport companies engage in innovation activities and collaborate with external partners. The findings reveal that exploratory search activities vary considerably, and have a number of different outcomes in terms of innovation output, race performance, and collaborative learning.

Some motorsport companies confine their search for new ideas to the local environment and prioritise relationships with longstanding partners. This allows them to rely on a stable network of experts and then continuously innovate in small incremental steps. New partners are sought only if they can help in extending and improving current knowledge and innovations.



Although important in reinforcing existing competences and networks of relationships, these sorts of search activities are less likely to deliver more radical innovations. It is contact with distant (diverse) sources of knowledge that seems to trigger more significant or discontinuous innovations – innovation which constitute a break with previous products, materials or practices. For example, the aerospace and aviation industries have provided many ideas that have found applications in motor racing. Diversity is achieved both through the forging of new relationships with companies belonging to different industrial sectors, and also the promotion of lateral thinking with a close network of partners.

section two: routes to radical innovation

The research identified a number of specific innovations that were reported as radical by the respondents. The routes to these radical innovations can be defined as detailed in the table below:

Table 1: Routes to radical innovation

| | With existing ties | With new ties |
|--|--|---|
| Similar knowledge (Incremental) | Build on existing knowledge re-combinations | Extending existing knowledge through new combinations |
| Diverse/distant knowledge (Radical) | (a) New or extended existing knowledge through re-combinations | (b) Novel knowledge combinations |

(a) New or extended existing knowledge through re-combinations

One route to radical innovations is via the advancement and/or alteration and extension of existing knowledge re-combinations with a network of longstanding partners. By knowledge re-combination we are referring to the translation and application of knowledge outside the domain of its initial creation.

This case is exemplified by the advancement of diesel engine technology and its application to racing.

The use of diesel engines for racing the 24 hrs Le Mans was pioneered by a German racing car manufacturer in partnership with a selected and highly expert group of proven suppliers that had previously collaborated on the advancement of gasoline engine technology.

Although this was a breakthrough idea, there was a high risk of failure due to the complexity of the task and the number of technologies involved. Both the German racing car manufacturer and its partners had limited knowledge of diesel technology and had to engage in search activities aimed at advancing their understanding.

By working on diesel technology, the German racing car manufacturer was able to develop an engine block made out of aluminum, something nobody had done before. At the same time, its partners developed specific components designed to fit in the engine block. Some of these components were incremental improvements of existing technologies used in gasoline engines, while others involved new developments, such as the use of synthetic fuel, a motronic system to control the engine, an innovative diesel particle filter system, and a new process for casting pistons.

Hence, collaboration between the racing car manufacturer and its long-established partners allowed them to use, alter and advance their existing knowledge about gasoline engine technology and apply it to diesel engines.

(b) Novel knowledge combinations

Another route to radical innovations is via new knowledge re-combinations achieved with the help of new partners, applying distant (diverse) knowledge to advance existing motorsport technologies.

A number of examples illustrate the search and development activities undertaken by motorsport companies: the use of carbon fibre for monocoque construction (the part of the car where the driver sits) and the use of titanium in the construction of gearbox cases, for example.

Carbon fibre is a good example of innovation based on novel knowledge re-combinations since its use implied a radical departure from traditional materials and construction techniques used in motor racing.

Originally, aluminium was used as the main material for the bodywork and inner parts of racing cars, although it had serious drawbacks in terms of resistance and performance. However, in the 1970s, John Barnard, a leading F1 designer, started to search for alternative materials, and discovered that while carbon fibre had been used for many years in fighter aircraft construction it had not been used in motor racing.

Deciding to explore the possibility of building an F1 car using carbon fibre Barnard's F1 team found an aerospace supplier willing to collaborate on this project and together they developed a type of carbon fibre suitable for the car monocoque. To aid this process, the team also employed a number of engineers originally trained in aerospace and familiar with the properties of the material.

The result was the first F1 car made out of carbon fibre. From these early developments, carbon fibre has been applied widely in motorsport and the sector has led the way in the use of the material. In turn, developments in motorsport have contributed to the wider application of carbon fibre in products as diverse as fishing rods and wheelchairs.

Another example of novel knowledge re-combinations is the development of an innovative process for casting titanium, and then using the process to construct gearbox cases from the metal. This was achieved by an Italian F1 team, together with a longstanding supplier of transmission components, but only with the help of an American company that specialised in the manufacture of golf clubs, and provided specialised technical knowledge of working with titanium.

These radical innovations demonstrate how searching out partners that are distant in terms of industry sector and geographical location can pay dividends in terms of accessing areas of new knowledge and from that creating radical innovation opportunities.

section three: what do successful innovators look like?

Given our research evidence on how the types of search activity and network collaboration inform innovation outcomes in motorsport, it is possible to identify some of the characteristics of the firms that have successfully brought radical innovations to the track.

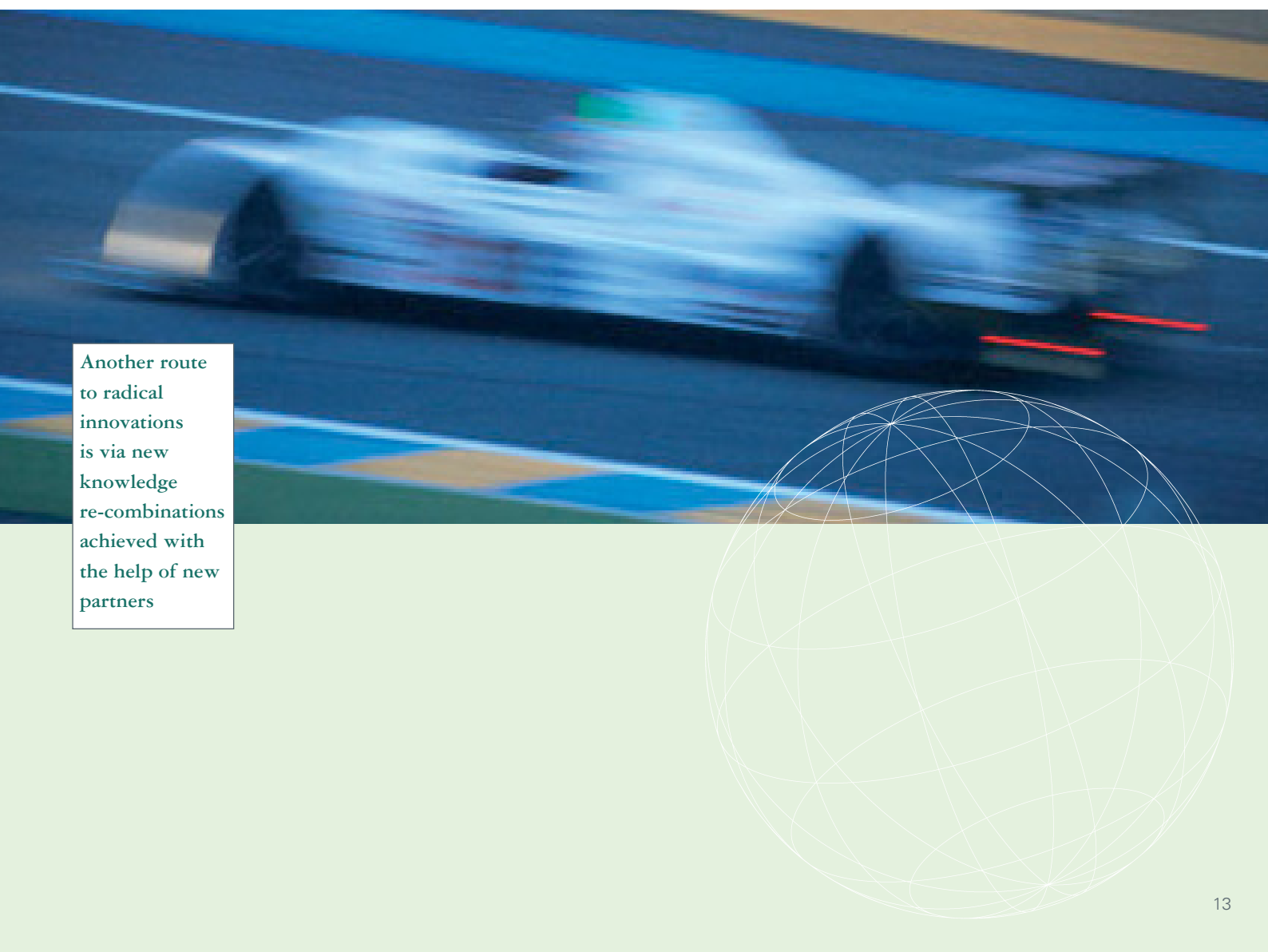
(i) Successful innovators

Successful innovators in the motorsport industry exhibit a number of specific features. In particular they:

a) Engage in wider exploratory search activities. While recognising the benefits of maintaining close relationships with a number of expert partners for the continuous improvement of established technologies, successful innovators also realise the value of searching for new partners outside their immediate network. These outsiders may provide access to diverse sources of knowledge which could prove fruitful in enhancing innovation outcomes when combined with existing knowledge.

b) Identify the advantages offered by particular novel knowledge re-combinations.

Successful innovators are able to discern between external sources of knowledge and detect the ones which can potentially contribute to generating radical innovation.



Another route
to radical
innovations
is via new
knowledge
re-combinations
achieved with
the help of new
partners

Successful innovators are aware that finding potential new collaborators is not enough to deliver the benefits of new ideas and solutions.

c) Often partner with 'unusual' firms. As a result of their wider exploration for new ideas, motorsport companies often encounter firms which operate in completely dissimilar sectors and are able to offer different perspectives. While firms often find it difficult to develop ties with such 'alien' organisations, partnering with these firms provides motorsport companies with the potential for generating radical innovations.

d) Engage with partner companies to establish a close working relationship.

Successful innovators are aware that finding potential new collaborators is not enough to deliver the benefits of new ideas and solutions. So once a possible new partner is found, they work towards strengthening and developing a close working relationship in order to promote intensive interaction and the sharing of knowledge and ideas.

e) Promote lateral thinking within an existing web of partners. Alongside searching for distant contacts, some motorsport companies make significant efforts in nurturing existing partnerships and try to engender an environment which promotes variety and diversity of ideas. This allows motorsport companies to challenge current knowledge and technologies, and come up with alternative and potentially radical solutions.

It is clear that research provides considerable evidence to support the idea that diversity in networks contributes to discontinuous innovation. This kind of innovation is not achieved through a single best practice model and firms may undertake one or more of these activities. However, these search and network management capabilities are distinctive characteristics of the examples of radical innovation examined in the project.

(ii) Innovation limitations

It was also clear from the research, however, that even in a dynamic, competitive and high-tech environment, there are limitations to individual firm's innovativeness and network diversity. These include the following:

a) A tendency to focus on incremental improvements. Motorsport companies generally spend very large sums on research and development work, though it rarely produces breakthrough innovations.

This is partly because motorsport companies are understandably preoccupied with current performance and consider it extremely risky to expend significant amounts of time and resources on research activities and development work which may never translate into on-track improvements.

Instead, much more value is placed on short-term results and so motorsport companies tend to focus on the improvement of proven technologies and components. This, in turn, stifles experimentation with new ideas and concepts.

'It's [innovation] probably incremental. I think research is looking at radical aspects, but unless there can be perceived an immediate performance gain nobody is going to go down that route because they're judged on today's performance. Motorsport is all about what happened yesterday and today, not about what you're going to do tomorrow.' (Industry expert).

b) An aversion to risk on the part of motorsport teams. A number of teams and industry experts reported that fear of failure undermined a willingness to experiment on the part of high-profile racing car manufacturers in particular.

"I would say in many ways that we are relatively conservative. You can't afford to have reliability failures on the track, because of the embarrassment from a brand point of view. You can't win the race unless you finish it, so we do tend to be a little tempered in what we do, albeit that we are pushing it to the edge of the known envelope, for want of a better phrase, but we don't go beyond that."
(F1 team, Chief Executive)

c) Concerns to limit costs and ensure quick returns leads to a reliance on proven concepts. The motorsport sector is highly competitive and teams were seen as reluctant to invest in longer-term and more experimental developments at the expense of short-term gains.

"Motorsport doesn't like pursuing new technologies. It likes to buy in mature technologies. So if there's a new material, or a new process, or a new technology, they would be cautious about it at first because it could take a very long time to turn that into a useable process or a useable material, a useable technology, so they tend to be wary of that. They'd much rather see a technology matured in another sphere like in aerospace or whatever else and then just buy that in and apply it using the expertise that's already been generated. So the end uses tend not to be very innovative." (Industry journalist).

d) A tendency to keep in-house all the R&D work. Because of their fear of losing critical know-how to competitors through the sharing of information with suppliers, a good number of motorsport companies seem to rely primarily on their internal expertise and conduct development activities in-house. This strategy, however, does not always guarantee the best results in terms of innovation output as it tends to isolate motorsport companies from the external environment.

Particularly damaging is the 'not invented here' syndrome, which precludes the acceptance of external ideas, and thus drastically reduces the possibility of re-combining knowledge in new ways. The research shows that a significant number of motorsport companies seem to fall in this trap and produce at best incremental innovations.

e) Exploratory activities are not followed-up and external contacts are kept at arm's-length. In many cases motorsport companies reported not having the time or resources to either engage in search activities or follow up potential new ideas. Again this reflects their preoccupation with current performance, and their focus on incremental improvements.

section four: innovation potholes

As well as revealing some routes to innovation success, our research also identified a number of obstacles that motorsport firms struggle to overcome. Obstacles that prevent them from building or increasing network diversity and that can rule them out of the innovation race:

a) Limited time to try new things or build new relationships. As mentioned earlier, motorsport companies tend to have an incremental and conservative mentality and spend a lot of time and resources on improving what they already do best in an attempt to increase performance. This diverts them from experimentation with new ideas and partners.

b) Lack of dedicated staff to carry out wider exploratory activities. Many motorsport companies, even large ones surprisingly, have limited or no staff dedicated to exploratory activities. This is because they consider such activities a waste of resources that can be better employed in current day-to-day activities.

c) Existing relationships and ties dominate the network and restrict diversity and novelty. Working with long-term partners is beneficial in terms of deepening knowledge and understanding of existing technologies, but it has the side effect of limiting the ability of motorsport companies to come up with breakthrough ideas. This effect can be minimised if diversity and lateral thinking are promoted.

“They [motorsport companies] tend to be very focused on one objective, which is going racing. Certainly at a higher end, motorsport seems to be very insular and to the extent where very often they don’t see what goes on around them [...]; so often they’re so focused on what they’re doing that they can’t see collateral development in other industries that would benefit them.” (Industry journalist).

d) The high risk, high uncertainty, and high costs involved, act to limit engagement with new partners. Engagement with new developments and partners is always risky and expensive and carries with it high uncertainty in terms of outcomes and performance. This is something most motorsport companies are not prepared to face; instead, they tend to delay experimentation until when initial ideas become more concrete – a competitor introduces a new technology, for example.

e) Concerns about the leakage of intellectual property breed an inward looking conservatism amongst firms. Fear of the loss of proprietary knowledge to competitors means that many companies do not engage in widespread joint development activities and this can ultimately have a negative effect on innovation as external collaboration is limited to ancillary activities.

f) The parent firm strategy is to use the race team for in-house R&D. Some racing car manufacturers are used to aid internal learning and development as a kind of in-house R&D arm of the parent company. However, this strategy tends to insulate racing car manufacturers from their surroundings and prevents collaboration with external companies.

"A lot of our technology is developed in house ... because [the parent company] wants to learn and is prepared to invest for the long run, it wants to win obviously... if it was a marketing exercise then obviously there wouldn't be any other principle target, but our principle target is one of learning for ourselves." (F1 race team CEO).



Motorsport companies tend to have an incremental and conservative mentality and spend a lot of time and resources on improving what they already do best...

g) FIA regulations that restrict innovativeness. Motorsport is highly regulated in order to ensure safety and relatively close competition.

Over the last 60 years motorsport rules have become much tighter and have either constrained the advancement of technology – some materials or technologies have been banned for safety reasons, for example – or channeled development into particular areas in order to create design stability and encourage road car relevant developments, such as smaller and more efficient engines, the recovery of braking energy, and recovery of heat.

More recently, the FIA has further tightened the rules of competition to curb escalating costs in F1. This has received mixed responses from motorsport companies. In particular, a number of companies in the study were critical of the FIA for setting rules which restrict valuable innovations and often do not bring significant cost savings. They were also sceptical of the likely success of the cost reduction agenda, though the interviews were conducted before the FIA announced plans to cap race team expenditure.

“I think the philosophy [of cost reduction on the part of the FIA] is flawed really because ... this is a competitive industry, it is a global showcase for our partners, it is a global TV spectacle that will always generate income as a market.

That market cannot be skewed by artificial forces such as regulations that try to dictate costs. The market will generate a certain revenue that is available to the teams to deploy to differentiate to win, to showcase their ability. So you can try to constrain costs, but what you don't directly constrain is income, so the money will get spent somewhere else, unless you constrain it to such a degree that you actually reduce the spectacle, reduce the attractiveness of the whole sport, which surely cannot be a good objective. But that is possible. You could actually destroy the sport by reducing the income, and that would have the effect of reducing costs, but I don't believe that that is the right objective, so I therefore think that it is a flawed philosophy.” (F1 race team Engineering Director).

The obstacles to innovative activity in motorsport, as revealed by our research findings, threaten to significantly limit future innovations by race teams and may also undermine the future impact of innovation undertaken in motorsport across the wider economy and society.

conclusion: maintaining pole position

With an annual turnover of £6.0 billion, and supporting 38,500 full and part-time jobs, motorsport and performance engineering is one of the UK's industrial success stories. Beyond its immediate contribution to the UK economy the motorsport industry is also a best practice example of how creativity, engineering, manufacturing and support services can be combined to produce world class radical innovations that have an impact well beyond the confines of motor racing.

By studying the way that the motorsport industry approaches innovation it is possible for organisations in both the public and private sector to become more effective at supporting and developing radical innovation.

To successfully develop and deploy radical innovations in the motorsport industry firms have to be able to manage diversity in terms of both knowledge and contacts. This capability allows networks to become more open and enables firms to reach a wide range of perspectives, skills and resources.



The research reported here highlights the importance of search and network management capabilities in radical innovation. These activities are likely to benefit firms operating in a wide range of industry sectors, but especially those where expertise is widely dispersed and competition is intense, dynamic and founded in knowledge-intensive products and processes.

Our research has confirmed the highly innovative nature of motorsport, and identified a number of examples of how extensive search for innovation opportunities and collaboration with distant partners has led to successful discontinuous innovation.

However, our research has also found that these capabilities are not as widely distributed through the sector as might be expected. It has also highlighted a number of obstacles to current and future innovation activity. In particular, recent changes in the regulation of the sport to contain costs and maintain competition may have the unintended consequence of restricting innovation.

In addressing its weaknesses and the challenges it faces with respect to promoting innovation activity, we suggest a number of specific priorities for the UK motorsport industry:

- Promote lateral thinking within the industry;
- Build capability in the identification of technological opportunities and the development of boundary spanning activities;
- Build capability in the development of inter-sector relationships, between the aerospace and motorsport industries, for example;
- Develop network management capability, both in terms of innovation search and collaboration building;
- Work to ensure that regulatory changes do not undermine innovative activity.

Equally there are several things that we suggest policymakers should focus on in order to support the industry:

- Widen the focus of policy intervention to related sectors in order to promote connectedness and sustain radical innovation in motorsport and the spillover of innovations across sectors;
- Support firms in network development activities, both along the supply chain and horizontally, through the provision of information on successful innovation and network building practices;
- Assist firms in the identification and mapping of suppliers and institutional expertise;
- Assist firms in the identification of potential technological opportunities both within the motorsport industry and in other sectors;
- Promote the development of skills through the provision of a dedicated infrastructure.

the report authors

Professor Rick Delbridge is Associate Dean for Research and Chair in Organisational Analysis at Cardiff Business School and a Senior Fellow of the ESRC/EPSRC Advanced Institute of Management Research. His research interests include the organisation and management of innovation. He is the co-author of *The Exceptional Manager* (Oxford University Press).

Dr Francesca Mariotti is a lecturer in Organisational Behaviour and Strategic Management at the University of Stirling and a research associate of the ESRC/EPSRC Advanced Institute of Management Research. Her research interests include the dynamics and evolution of inter-firm networks and the management of innovation. She is lead author of the AIM Report *Networks of Learning: How Motorsport Companies Collaborate and Share Knowledge* which was produced jointly with the Government Motorsport Unit (GMU) and Cardiff Business School and summarises her doctoral work on how British and Italian motorsport companies collaborate and share knowledge.

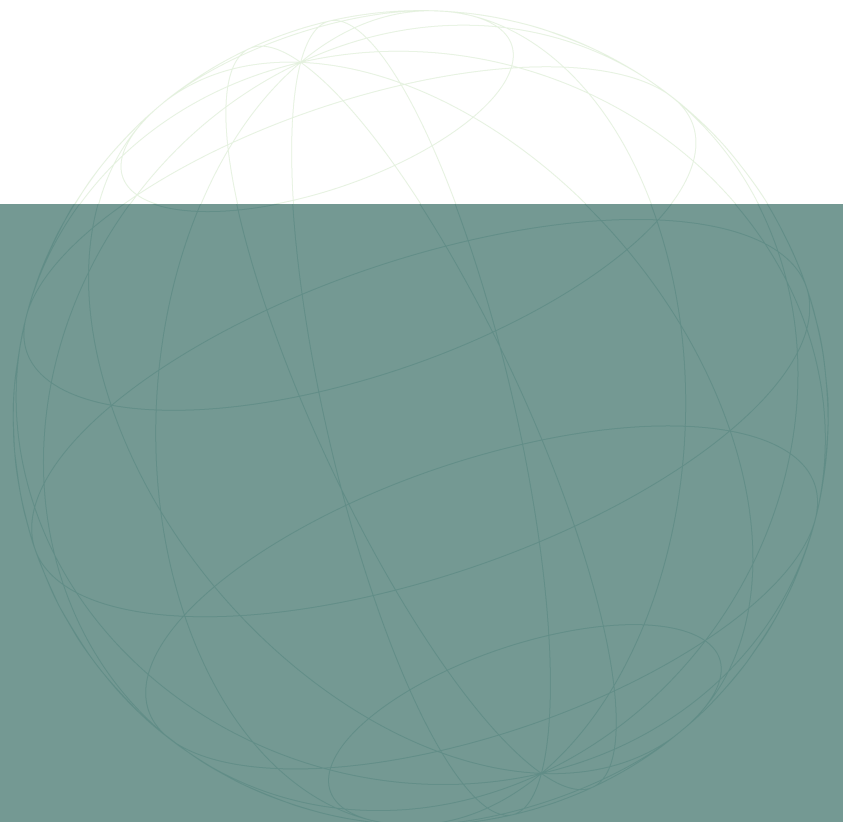
Contact:

Rick Delbridge

Cardiff Business School

Tel: 02920 876644

Email: delbridger@cardiff.ac.uk



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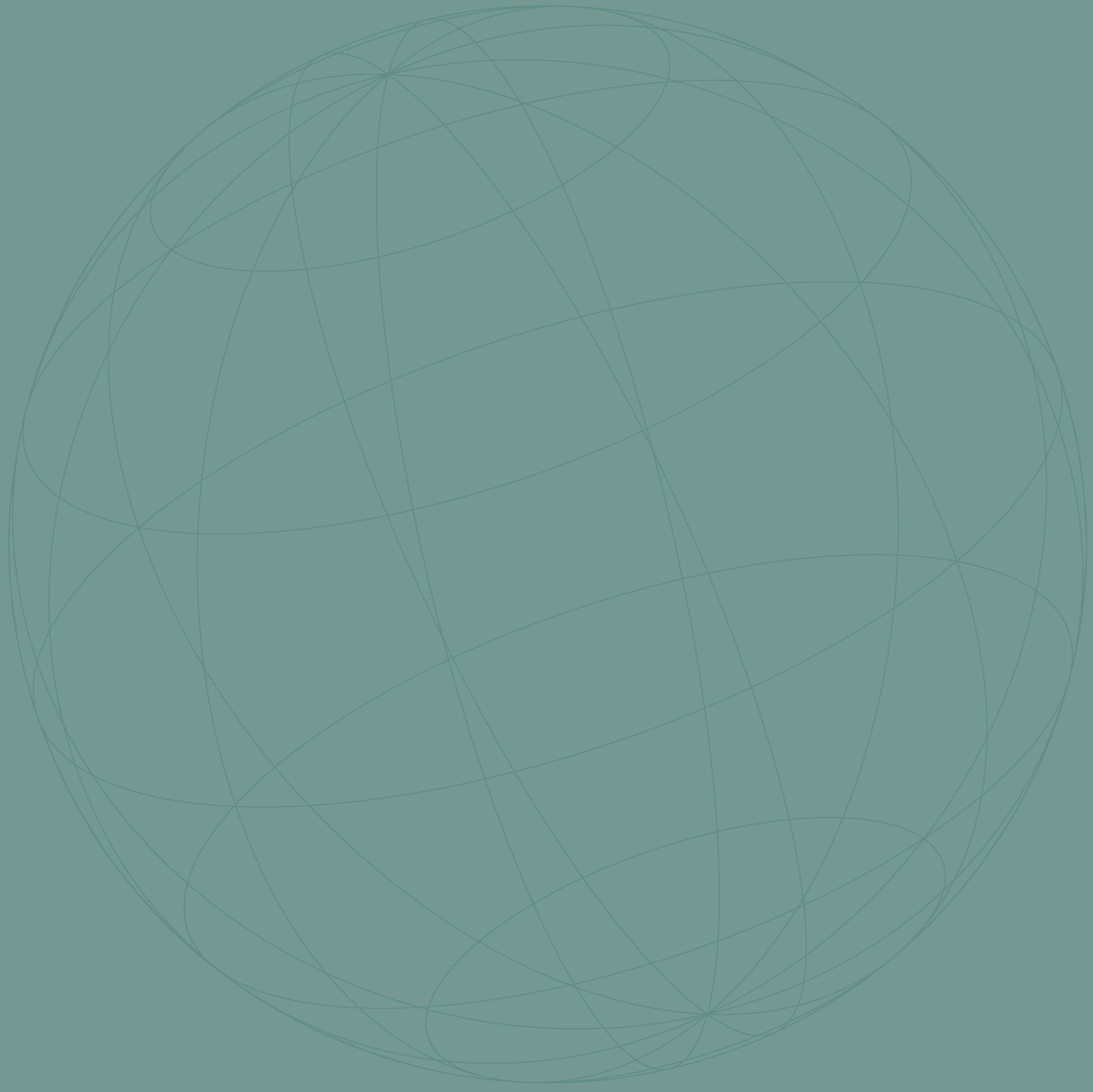
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ⁱ See AIM Report *Competing on Knowledge: The UK's Global Innovation Challenge*, www.aimresearch.org

ⁱⁱ See AIM Report *Networks of Learning: How Motorsport Companies Collaborate and Share Knowledge*, www.aimresearch.org



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For all enquiries please contact:

Advanced Institute of Management Research (AIM)
4th Floor, Stewart House
32 Russell Square
London WC1B 5DN

Tel: +44 (0)870 734 3000

Fax: +44 (0)870 734 3001

Email: aim@wbs.ac.uk

Web: www.aimresearch.org

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