

Engines of collaboration

The US automotive sector was hit harder than most when the global financial crisis struck in 2008. But thanks to IP-enabled open innovation, its future is now looking a lot brighter

By Jack Ellis

In July 2013 the US city of Detroit, once the engine of the US economy, filed for Chapter 9 bankruptcy protection. The move not only makes the city the largest in the country in terms of population to declare itself insolvent, but also constitutes the largest municipal bankruptcy in American history as measured by debt, estimated at some US\$18 billion to US\$20 billion.

Motown's fate is inextricably linked to the trials and tribulations of the US automotive industry, which calls the city its home. Census data indicates that the population of Detroit shrank by almost 25% between 2000 and 2010, a symptom of the tough times in its primary economic sector. The 2001 recession, followed by the fallout from the 9/11 terrorist attacks and the subsequent 'War on Terror', dealt a body blow to the industry, compounded by soaring oil prices. By the time the credit crisis tightened its grip in late 2008, the 'Big Three' US automobile manufacturers – Chrysler, Ford and General Motors (GM) – were already in dire financial straits. Both Chrysler and GM filed for bankruptcy protection during 2009; and while Ford managed to avoid insolvency, its president and CEO Alan Mulally acknowledged that "the collapse of one of our competitors would have a severe impact on Ford" when speaking in support of federal bailouts for the industry at a US congressional hearing.

A growing realisation of the common challenges they face has since encouraged companies in the ailing auto industry to join forces in ways that would previously have been seen as anathema. "In 2009, car makers in the United States and globally were confronted with bankruptcy, an imploding market and massive lay-offs of engineering and facilities," says Jayson Pankin, president and CEO at AutoHarvest Foundation, a non-profit organisation that is developing an open innovation platform for the sector. "This 'sum of all fears' situation made them begin to think more about ways in which they could collaborate."

Building the vehicle of tomorrow

The shocks suffered leading up to and during the financial crisis have undoubtedly made industry players more willing to cooperate on R&D for their mutual benefit. But seismic shifts in the landscape in which they operate are also bringing competitors together to develop new technologies in response. "Between government regulations and consumer needs, there is now a need to create a new type of vehicle," says Pankin. "This is not yesterday's car, but one that is safe, green, internet connected and infused with rapidly evolving technology. All of the technologies required to create that vehicle do not reside within the millions of square feet of one of the larger OEMs' R&D facilities – they have to come from other companies, adjacent markets and innovators around the world."

Players in the auto industry – including parts makers and suppliers, as well as the large vehicle-building original equipment manufacturers (OEMs) such as the Big Three – have had to revise their corporate structures, business models and innovation processes to address these new consumer expectations head-on. Integral to this

has been a realignment of IP strategy; while automotive companies have always understood the value of IP rights (see “Ford’s trademark mortgage” boxout on p49), IP licensing and collaboration have now become even more crucial to the industry’s long-term survival. “From my perspective, the need to cooperate has increased dramatically,” says Christian Hahner, head of intellectual property and technology management at Daimler. “This is because the complexity of our products and the interaction of the different parts and devices in those products are increasing. In every aspect, you have hundreds of touching points where you have to integrate other fields of technology – and this is only possible with cooperation.”

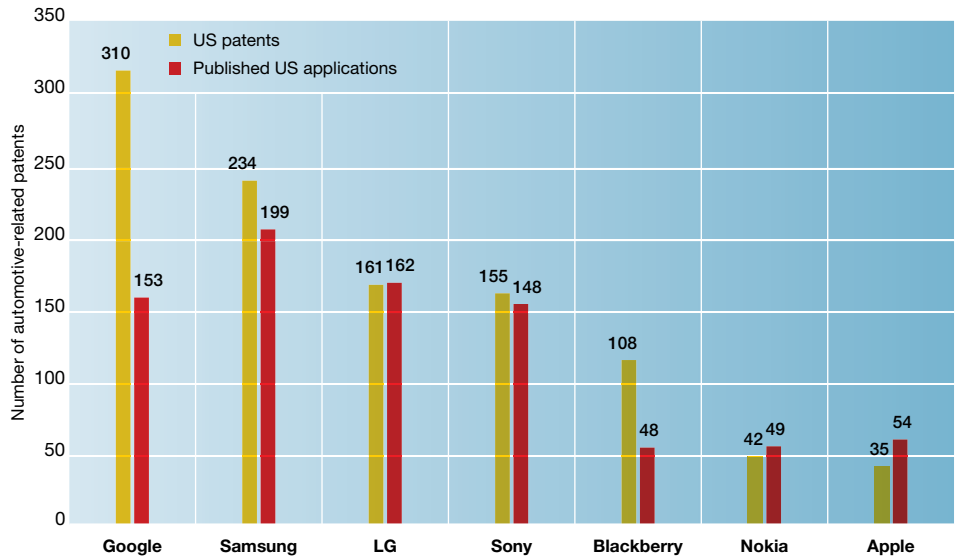
Industry stalwarts have also had to reassess their partnerships. Much of the intellectual property needed to build the ‘vehicle of tomorrow’ will be developed outside of the automotive sector. “Those industries which at heart are transportation driven – cars, robotics, planes, trains, ships, missiles and so on – are surrounded by adjacent markets such as medical devices, infrastructure, consumer electronics, security and defence,” Pankin explains. “They all strive for the same coatings, materials, buttons, LCDs [liquid crystal displays], electronics. Generally, development of these technologies takes place in a particular channel. The secondary and tertiary markets for those technologies and the improvements made to them are not robustly sought – they are more passively responded to. And this means that plenty of organisations could accelerate their adoption of innovation by licensing.”

Casting the net

As many of these technologies lie outside the automotive industry, car makers and their suppliers have needed to adopt new strategies for locating potentially relevant intellectual property. “We try to cast a fairly wide net,” says Tim Yerdon, global director of innovation and design at automotive parts company Visteon. His team studies current and future market trends and works closely with legal colleagues in order to detect external intellectual property that could be licensed to further Visteon’s strategic objectives – and to identify areas of Visteon’s own portfolio that could be monetised. “We are a very lean team and we are always looking for how we can achieve our objectives with such a small group.”

Yerdon’s team also cooperates with existing partners in the supply chain to

Figure 1. Automotive technology patent holdings of mobile device manufacturers, 2013
This chart demonstrates the increasing overlap between the automotive and mobile device industries, as leading smartphone and tablet computer manufacturers expand their portfolios of automotive-relevant patents.



Source: Envision IP LLC © 2013

find prospective new synergies. “Much like how our OEM customers have changed how they collaborate with us, we as a Tier 1 supplier in our industry have had to change the way we work with our Tier 2 and Tier 3 suppliers,” he says. “We have also had to change the way we approach some of the non-traditional suppliers, such as software start-ups that are typically creating apps for mobile devices. We have to think about how we look at those areas and incorporate them into automotive.”

IP landscape analysis is one way in which automotive companies can locate the owners of relevant technologies. Visteon was spun out of Ford in 2000 and originally consisted of seven discrete vertical businesses. Over the years, the company has sharpened its focus to two key areas, giving Yerdon’s team greater precision when searching for external intellectual property. “That focus now allows us to cast that net and look for things in those particular areas,” he says. “Previously, it was so wide and so broad that it was difficult to devote enough time to any one area to really reap the benefits of any intellectual property that might be out there.”

While many companies are actively seeking out intellectual property, they are also adopting strategies that make it easier for potential partners to find them at an earlier stage in the innovation process.

Ford's trademark mortgage

Strategic use of intellectual property is by no means new in the automotive industry. During the tough years of the 2000s and 2010s, automotive players have increasingly looked to their IP assets as a way of creating value to pick themselves up and return to profitability. Monetisation has been one route of choice; in one high-profile example, Ford used its intellectual property – including its iconic ‘blue oval’ trademark – as collateral to help secure vital funding for a reorganisation.

After several years of unprofitability, Ford announced a restructuring plan in 2006. As part of that plan, the company mortgaged its assets – including intellectual property – to raise a loan in the region of US\$23 billion to implement the restructuring process. Like other US car manufacturers, Ford was hit hard by the economic crisis that began in 2008; but the company was the only one of Detroit's Big Three to avoid filing for bankruptcy. By that point, Ford had already made moves to address the sustainability of its business – and the fact that it avoided Chapter 11 is thanks in no small part to the value of its brand.

In its Global 500 2012 report on the world's most valuable brands, Brand Finance valued the Ford brand – including trademarks and associated goodwill – at US\$18 billion. “Judging by the size of the secured restructuring loan, it is apparent that both Ford and its lenders had a clear understanding of the high levels of equity and value in the brand,” reflects Bryn Anderson, valuation director at Brand Finance. “Ford would have used a number of tangibles and intangibles as collateral, but it is evident

that its brand is a hugely valuable asset and one it was able to leverage in order to secure the loan.”

In its 2006 financial report, Ford states that the ‘eligible value’ for collateral was US\$41.6 billion, of which US\$7.9 billion – the second largest share – was accounted for by “intellectual property and US trademarks”. This then translated into a borrowing base of US\$22.3 billion, of which US\$2.5 billion was allocated to “intellectual property and US trademarks”. According to the report, these trademark valuations were based on the findings of a third party. If the eventual breakdown of collateral reflected these values, then a very significant portion of the loan was secured against Ford's trademarks.

Anderson argues that the true value of a company's intangible assets still remains poorly understood and underappreciated: “Many companies could be in a position to leverage their brand more effectively. That said, in most cases internally generated brands cannot be recognised on a company's balance sheet – only acquired brands can be accounted for.”

Ford was able to leverage its brand to help fund a profound restructuring of its business. But many – perhaps most – companies will have nothing near an accurate valuation of the trademarks, reputation and other intangibles that underpin their brand. This situation needs to change. As Ford's ‘brand mortgage’ demonstrates, the ability to put a value on brand could turn a business round – and even help save it from insolvency.

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“I would really rather be found,” says one technology scout at a leading automotive industry supplier. “In many cases I would ideally like to know about the existence of a new technology as soon as possible after the inventor has filed their first patent application and before the technology becomes public knowledge.” He thinks that small and medium-sized enterprises in particular stand to benefit from making first contact with a corporate partner. “There is something to be said for getting an industry partner in early on,” he suggests. “Once the inventor has developed the IP to the point where they feel confident enough to submit a patent application, that is often a better time to start the industry collaboration, as opposed to a year and a half down the line when something finally gets published

by the patent office. In that time, the inventor could exhaust their funds trying to internally develop the technology for application in industry and end up with something that is less attractive to potential industry partners.”

Trading tokens

Despite the advantages of early partnership, reaching out prematurely before effective IP protection is in place could scupper any chances of collaboration. Without the security that IP rights afford, companies will be far less willing to participate in open innovation environments with other entities that might include key competitors. “In the end, every instance of industry cooperation is a matter of give and take,” says Hahner. “Therefore, it is no contradiction to me that patents are involved in allowing open innovation to happen. They act as a trading token, because they ensure that you get something back in return for whatever technology you are contributing into the open innovation process.”

This is especially true for smaller open innovation participants seeking larger partners which can commercialise their inventions. “Once a potential partner has developed some intellectual property and has properly protected it, at that point they are going to start looking for industry partners which can industrialise that IP,” he explains. “Many of our partners don't have the desire to go to production themselves – to actually make and sell parts. So IP is very important to them; and for many of them, it is the only way they can provide a return on their investment.”

In some cases the owner of an invention may not have applied for patent protection or may have made a strategic decision to protect the technology as a trade secret. “That doesn't often happen; but when it does, there are obviously some key details about the invention that the partner will not be able to share with us,” says the technology scout. “But there is also going to be an amount of detail they can provide that is confidential, but is not disclosing too much about the invention to the point that someone else could file a patent application on it.” That said, patents still remain the gold standard: “We really prefer and urge other organisations to make sure they have got their IP properly protected. We want to make sure that ownership is clear from the very beginning of the collaboration, and that anything we develop together moving forward is separate from what has already been done prior to them partnering with us.”

Figure 2. Worldwide patenting activity in the automotive sector, 2012



Source: Thomson Reuters Derwent World Patents Index (DWPI)

Subsectors	2012 volume (patent grants and published applications)	2010 volume (patent grants and published applications)	% change in volume, 2010-2012
20% – Alternative powered vehicles	22,688	15,913	42.6
6% – Security systems	5,686	5,752	-1.1
12% – Navigation systems	11,594	12,060	-3.9
10% – Safety	10,286	10,263	0.2
3% – Entertainment systems	2,734	3,052	-10.4
6% – Steering systems	6,862	6,327	8.5
8% – Seats, seatbelts and airbags	8,614	7,769	10.9
4% – Braking systems	4,247	3,908	8.7
12% – Transmission	11,859	11,577	2.4
6% – Suspension systems	6,393	5,924	7.9
5% – Engine design and systems	5,201	5,336	-2.5
8% – Pollution control	7,262	8,376	-13.3

Top layer differentiation

Of course, there will be always situations in which the participants in an open innovation project will want to keep certain relevant intellectual property confidential from their partners. Despite the benefits of collaboration, automotive companies also need to maintain a competitive edge and distinguish their offerings on a crowded market. Thus, even as the vehicle industry becomes more receptive to partnerships, IP, R&D and product development professionals will in many cases still have to

fight hard to convince senior management of the virtues of cooperating with rivals. Nonetheless, Pankin thinks that there is a growing awareness in the C-suites of the world’s automotive companies that IP-based collaboration is ultimately beneficial for all market participants. “There definitely is a more robust dialogue about what is pre-competitive among auto makers –meaning that there are some areas where they realise that they do not each have to create base technologies in a duplicative manner,” he

Providing a platform

As car manufacturers seek to build vehicles that meet the demands of today’s consumers, they increasingly need to incorporate technologies that are typically developed outside of their own industry. One technology scout at an automotive parts manufacturer acknowledges that many potential partners operating outside the sector might not necessarily know who best to approach to explore the possibility of collaboration: “That is a bit of a challenge for us, because when people have a technology they have developed that could potentially be used in an automobile, they might automatically think of the well-known OEMs [original equipment manufacturers], like Ford, Daimler, BMW and so on. They often won’t think of a supplier such as us, because they just don’t know the inner workings of the industry and that most of the OEMs don’t make their own parts and components.” This has led to the development of online spaces where prospective collaborators can post details of their

technological needs or the intellectual property they would like to monetise. AutoHarvest is one such platform, founded to serve the open innovation needs of the automotive manufacturing industry and adjacent sectors. “The concept is that competitors can team up to create this platform, but then compete on it as nimble rivals,” explains AutoHarvest Foundation president and CEO Jayson Pankin. “Perhaps at the same time they can redefine some old business practices, change some cultural notions and find new ways to cooperate.” According to Pankin, AutoHarvest’s primary objective is to increase the flow of intellectual property between the automotive industry and other advanced manufacturing sectors. “The industry needs to create velocity and transactional movement between all of these groups,” he says. “To do that, it needs a go-to place, a single trusted location to get everybody under one tent.” Chrysler, Ford and GM are

all members of the platform, with numerous suppliers including Visteon, universities and government institutions also participating. AutoHarvest’s online network is currently in beta and is slated for full launch later this year. But it already has around 1,200 registered users and features details of almost 1,000 different pieces of technology, demonstrating the demand that exists for such a platform. “We used to have an entire full-time team scouting for technology,” says Tim Yerdon, global director of innovation and design at Visteon. “But we just weren’t able to financially sustain that over time. Now we are starting to reap those same benefits through AutoHarvest without all the overhead costs. In addition, the AutoHarvest team has been able to bring together areas of technology that we didn’t have access to previously – or if we did eventually stumble across these areas, it took months, if not years to find. I think this will be a key enabler for us going forward.”

Ford and open innovation

Partnerships with automotive industry suppliers and universities have long been part of Ford's R&D strategy. However, like other car manufacturers, Ford had to rethink its approach to collaboration in the wake of the 2008 financial crisis. "We now have a focus on being more nimble in working with non-traditional partners," says Bill Coughlin, president and CEO of Ford Global Technologies. "The crisis was a wake-up call for everybody and helped to accelerate openness in the industry, and as connectivity between vehicles and other devices increases there will be a lot more work being done in this open environment."

One way in which Ford has engaged in such collaboration is by leveraging open source software. "We are dedicated to open source from a software standpoint," he says. "It allows the industry to set standards more easily so that people can connect to our cars through their mobile devices." The company has run a number of contests inviting developers to create apps using open source code. These include apps that help car owners to measure the fuel efficiency of their vehicles

and that inform drivers of traffic congestion.

In addition to cooperating on industry standards, Ford has partnered with its closest competitors on a number of research projects. In January 2013 Ford, Daimler and Nissan agreed to jointly develop a fuel cell system for 'zero-emission' vehicles. And outside of the automotive industry, Ford teamed up with Dow Chemical in April 2012 to explore low-cost methods for using carbon fibre in large volumes to cut vehicle weight and improve fuel efficiency. "Our IP team helps to write and negotiate all of these agreements to some extent, so we see ourselves as an enabler of collaboration," says Coughlin.

Ford has also set up its Joint Technology Framework in an effort to help its suppliers locate intellectual property that they may need for their own projects. "The concept is that Ford may have technology that could help a supplier, and we might not be best placed to exploit that technology fully ourselves," Coughlin explains. "It is an outreach programme we are trying with our suppliers to offer them potential technology solutions."

automotive industry will be central to its recovery. But the industry that is emerging from the global financial crisis looks quite different from that which went before. Today, car manufacturers and their suppliers are more willing to collaborate – not just with one another, but also with organisations in other industry sectors – to create, develop and market innovative products that fulfil the needs of the modern consumer. "If you want to have state-of-the-art features and elements included in your vehicle, you cannot develop them all on your own," says Hahner. "You have to cooperate and distribute risk – with other OEMs, with suppliers, with different companies in different fields. If your company is not cooperating, the business model is under heavy pressure, because the resulting costs will eat you up."

As Yerdon looks to the future, he believes that this trend is set to continue. "This is a cyclic industry, in financial, economic and technological terms," he says. "I think that the crisis really brought the supply chain closer together and led to a lot of positive things – and as the market gets better, we need to make sure we don't go back to the bad habits of the past. We need to make sure we continue these collaborative relationships and other initiatives that are mutually beneficial to all of us market participants."

Pankin suggests that the auto industry is setting an example that others should follow: "In a changing world, when entrepreneurship, innovation and collaboration have all of a sudden become corporate mantras, global leaders need to create results that perpetuate a change in culture and that make the world a better place. And if you can be that, you will become iconic to the new economy." Car manufacturers have certainly achieved iconic status in the past; maybe, by continuing their progressive approach to leveraging their intellectual property for the common good, they can become business icons once again. **iam**

Action plan



Companies in the automotive sector are increasingly turning to open innovation to help them create safe, eco-friendly, web-connected vehicles that match the modern consumer's expectations:

- Much of the intellectual property needed to build the 'vehicle of tomorrow' is located outside the automotive industry, requiring manufacturers to cooperate more closely with companies in other sectors.
- This means that automotive companies face a significant challenge in finding the technology solutions they need.
- Online platforms dedicated to open innovation – such as the transport and vehicle industry-focused AutoHarvest – are helping to solve this problem and improve the flow of intellectual property between industries.

says. "Instead, they can license among themselves and still preserve a top layer where the things that the consumer sees – the vehicle's features, the pricing, the comfort and so on – are differentiated by different OEMs based on other technologies, styling and design assets that they have."

Furthermore, Pankin points out that the value created by collaboration – whether in the form of IP licensing revenues or cost savings due to faster innovation and time to market – can free up funds for further R&D. In turn, this can lead to the development of technologies which eventually manifest as differentiating features that the company may choose not to share with others. "This is not about trying to eliminate competitive advantage," he says. "Open innovation and enabling platforms such as AutoHarvest are about trying to provide a more fluid marketplace to let these technologies flow from sector to sector. And at the end of the day, if something saves you money, frees up more of your staff's time and gets your product to market more quickly, it makes sense to do it."

Staying in the habit

As Detroit tries to overcome the economic woes it has faced in recent years, the

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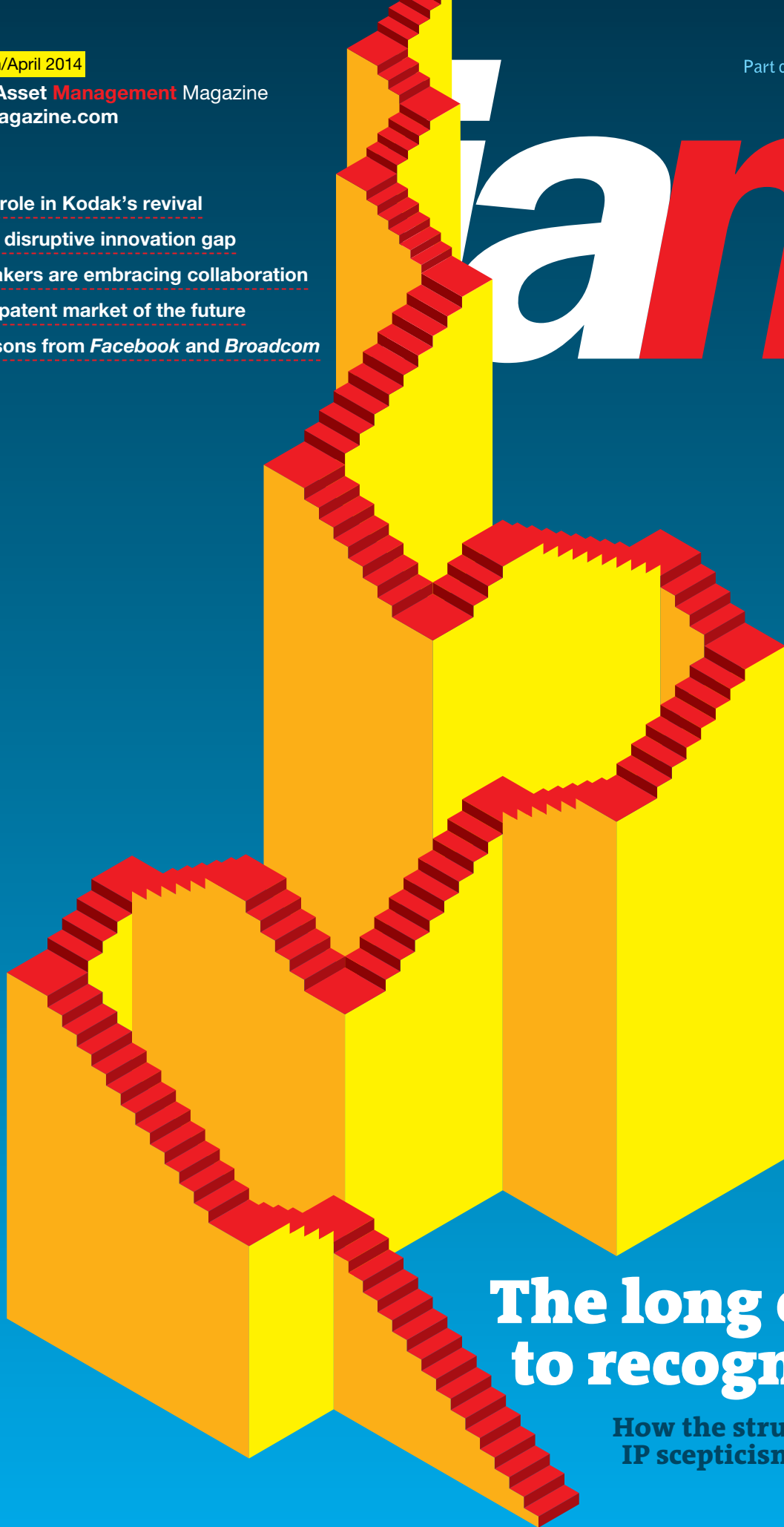
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