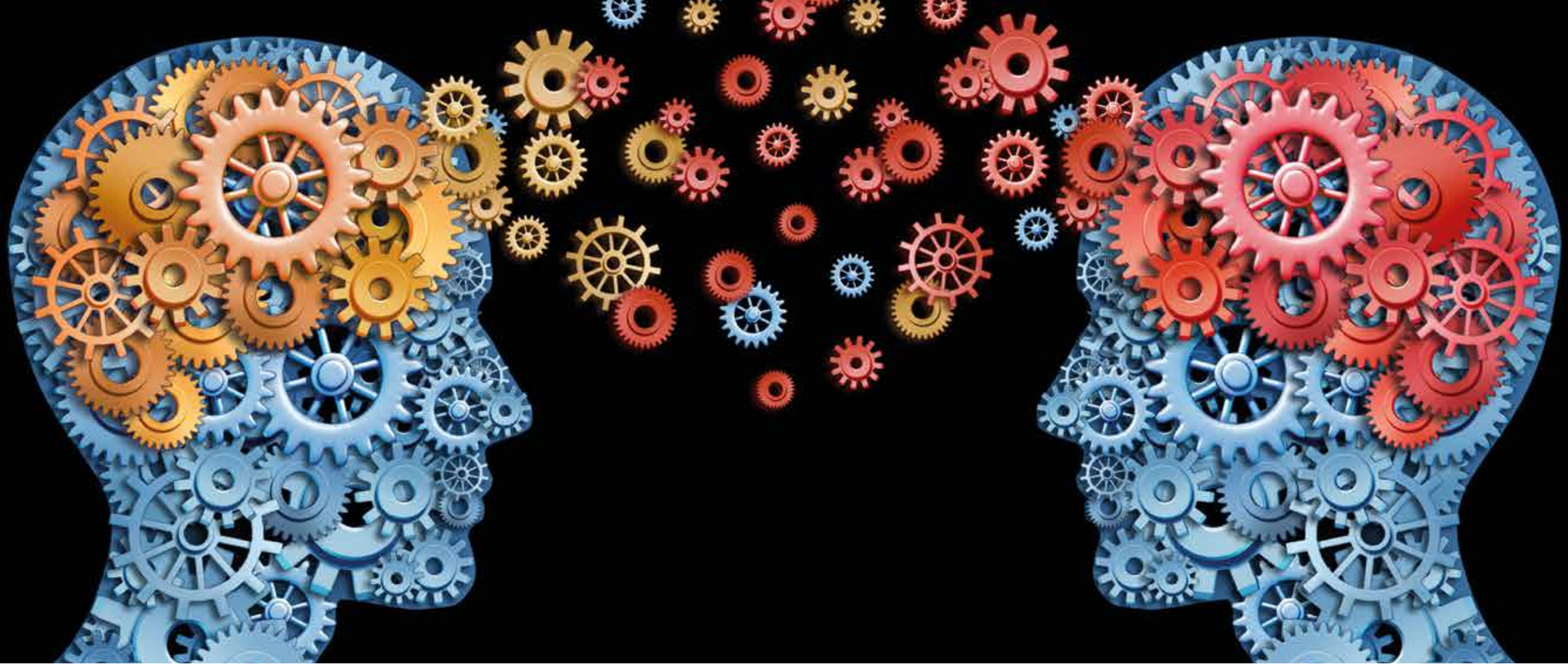


Picture by lightwise / 123RF

# Capturing sustainable value from technology: a case for strategic licensing

## *Licensing and trading intellectual property*

Michaël Kolk, Phil Webster, Koji Uchida, Just Jansz

Technology management used to be relatively straightforward. Figure out which technologies will be required to meet future market needs; build a portfolio of R&D projects; do the work, and then hand the results over to the business. Voilà, a job well done!

Businesses can no longer afford to simply protect their intellectual property (IP) and use it defensively to prevent competitors encroaching on their territory.

Unfortunately, many companies are now finding that this "linear" model of technology development is no longer sufficient. Industries and technologies are converging, and a manufacturing-based enterprise needs to play many different "technology games" at the same time if it wants to have a meaningful role in areas which cut across many different industries, such as smart metering, electric vehicles, patient-centric care, or precision agriculture. Simultaneously, shareholders expect faster returns and more rapid innovation cycles.

As emphasized by our article on page 12 of this edition of Prism, companies are expected to produce ever more breakthrough solutions, whilst simultaneously extracting greater value from today's and tomorrow's technology portfolio. They also need to think more "openly" about where they obtain technologies from, looking at a broader ecosystem of other organizations. Continually delivering this can represent a major challenge, and some businesses are being overtaken by their competitors because they are not mastering these new rules.

Moving to actively licensing IP is increasingly critical for open innovation, provides a powerful mechanism for revenue generation, and is a means of creating breakthroughs in innovation. In this article, the authors describe a multi-faceted approach to licensing, and set out some practical steps which describe how to use licensing to capture greater value from technology portfolios.

## How to not leave money on the table

We believe that the well-established concept of technology licensing can help a business deliver against these challenges, for several reasons. Firstly, licensing creates an additional potential route to capturing greater value from investment in research and innovation. For example, Qualcomm, a US-based mobile technology company, currently generates some $7 billion, or 30% of its revenues, each year from technology licensing[1]. Licensing can also substantially accelerate dividends from R&D investment, to satisfy more impatient shareholders or sweeten a merger or acquisition deal. Finally, licensing enables a business to build direct partnerships that allow it to penetrate fresh markets where it does not already have a presence, such as a new country or industry.

Despite these benefits, licensing is not used as much as you might expect. Today, only half of granted patents in the US are commercially exploited[2], whilst a recent European Commission survey indicates that only 56% of businesses in Europe conduct any out-licensing of their IP portfolios at all (Table 1)[3]. One reason for this is that IP protection is often used defensively to ensure freedom to operate and competitive advantage, by preventing other organizations from competing in a specific area. This has historically been the case in many businesses, particularly those in Japan. Yet some of these businesses, such as Panasonic and Toshiba, have seen that licensing can create substantial additional benefits, as described in Box 2.

We argue that many businesses are leaving money on the table and losing competitive advantage by not utilizing licensing to its maximum. However, licensing is an instrument which must be approached carefully, not as a one-size-fits-all approach for growth and value creation. Allowing a competitor to access a unique or core technology which is essential for differentiation in the marketplace would be unwise. Sometimes, the financial benefits of licensing – typically obtained through royalty payments – may not be worth the hassle and expense of defending intellectual property rights or keeping trade secrets. This means that a carefully designed approach is needed to establish a successful licensing program as a complementary, or even alternative, business model.

### Box 1: A definition of technology licensing

Licensing is broadly defined as granting certain rights of use for a piece of intellectual property (IP), such as a patent. This can be extended to the transfer of know-how, such as related to a manufacturing process or a product.

The purposes of licensing can include:

- Generating licensing income as a stand-alone business
- Creating a captive market for profitable complementary sales, e.g., catalysts
- Generating income to accelerate and/or expand R&D
- Allowing faster technology development through licensee feedback
- Securing access to complementary IP through cross-licensing arrangements
- Building an accelerated global market presence
- Creating partnerships and/or joint ventures to access critical resources and/or new markets.

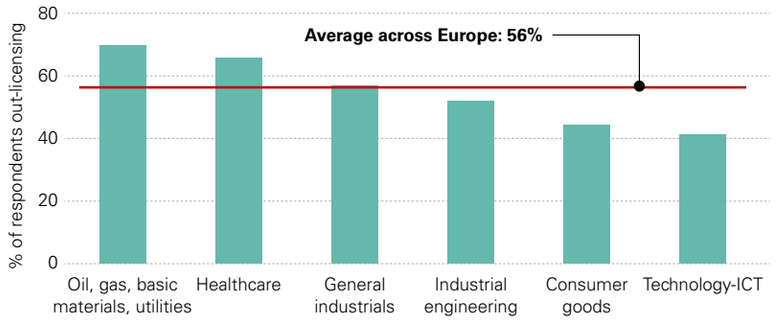



Table 1 **Patent out-licensing levels by industry in Europe, 2013**

*Source: European Commission (2013)*

[1] Qualcomm quarterly results, fourth quarter 2014.

[2] http://www.brunel.ac.uk/__data/assets/ file/0010/327592/JOHN-WALSH-PPT.pdf; Sample data from the RIETI/GT Inventor survey

[3] European Commission (2013), PATLICE Survey, Survey on patent licensing activities by patenting firms [Online]

**Box 2: Japanese electronics firms: a transition to strategic licensing**

Companies in Japan have historically relied on a very "closed" approach to IP licensing, using it as a defensive weapon to help to differentiate themselves from others. Most licensing revenue comes from direct investments overseas, often from subsidiaries and affiliates, notably in the automotive industry.

Japanese businesses have been very careful in licensing out underutilized IP because of the notion that such action may limit the future potential of their business. Yet the situation is starting to change. An increasingly "open" approach can be observed in the electronics industry, which has accumulated examples of cross-licensing and patent pooling in applications such as DVDs, Blu-ray discs, and smartphones. In those applications, IP needs to be integrated to make further development and breakthroughs happen.

Businesses in Japan were initially slow to adopt this approach. Even Hitachi and Canon, the two Japanese companies with the largest income from third parties through IP, earn only $200-300 million per year. This accounts for less than 1% of Canon's total revenues, and around 8% of its R&D budget. Although Canon once used licensing aggressively to earn a relatively high income in order to fuel its growth in the late 1970s and early 1980s in the photocopier businesses, it has since been overtaken by competitors in this area, making it difficult to maintain the practice.

Others have been more successful. In recent years, a more aggressive approach to monetizing IP can be observed among businesses such as Panasonic, now the world leader in patent registration. It established a subsidiary dedicated to IP management in 2014 and initiated a new approach towards monetizing IP by introducing a bespoke evaluation system for quantifying the economic benefits of licensing it. Toshiba established a separate IP section solely dedicated to its semi-conductor businesses in 2014 with targets of generating approximately $80 million in annual licensing revenue.

## Capturing self-sustaining value from technology

A good example of an effective licensing strategy generating significant value can be found in the chemical industry. In the 1980s Himont (a company set up by Hercules and Montedison) invented the then revolutionary Spheripol process for manufacturing polypropylene, with compelling scrap-and-build economics. They quickly realized that the company would not have the resources to invest in new capacity to keep up with fast growing global demand. Their active global licensing strategy, in combination with an ongoing development of the technology, has been successfully continued by successor companies Montell, Basell and LyondellBasell.

This example teaches us a powerful lesson – in order to capture greater and prolonged value from technology a company must evaluate all options to monetize its value. Additionally, it should develop a mechanism by which part of those proceeds are reinvested in further technology development.

Such a holistic approach, as shown in Table 2, takes into account a key decision point at the monetization stage: Should a technology continue to be developed internally, or should it (also) be "packaged up" and licensed to a third party? If the licensing route is chosen, then reinvestment of a part of the revenues, and feedback from licensees, is essential to drive this self-propelling loop forwards.

The benefits of leveraging such a "licensing loop" are substantial. Licensing technologies can help to drive the rapid penetration of new markets by providing access to a partner who may be able to

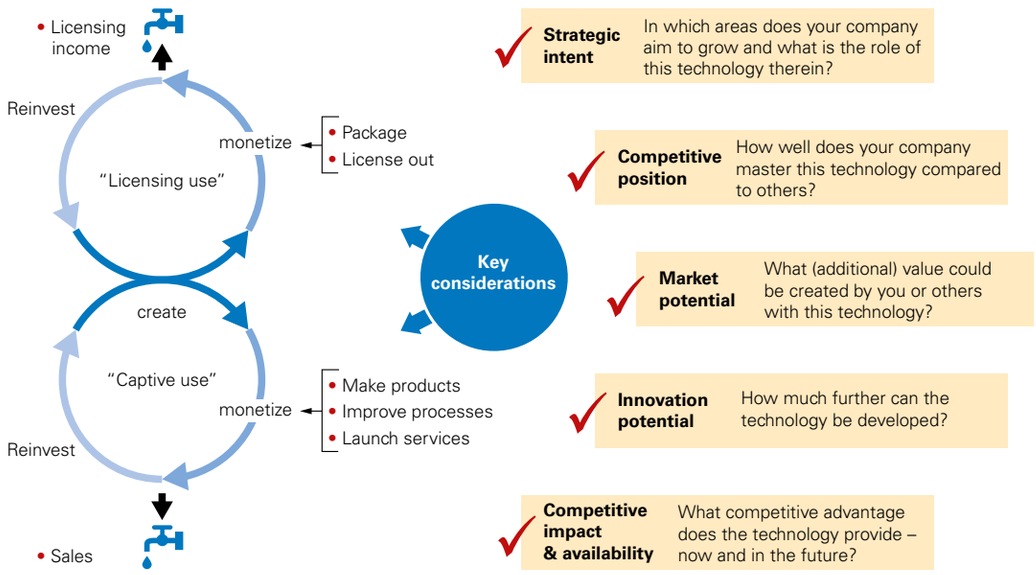



Table 2 **Licensing as a self-sustaining complementary approach to capture value from technology**

*Source: Arthur D. Little*

target a country or market where the licensor lacks a presence. It can allow for significant additional income to be generated, creating new resources for further R&D. Feedback from licensees also helps accelerate the learning curve by helping to understand what works well in the market, and what does not. Creating such a loop requires some important considerations to be made at each stage, as outlined below.

**Stage 1: Creating value**

Creating value through licensing begins by working out what value you can or could create today and in the future. This should be based on a thorough understanding of where value is now and where it will be created along the value chain – built on a good knowledge of likely technology developments and of who your (current and future) customers are, and what they need or want, today, and tomorrow.

A company should also develop a clear strategy and policy for deciding what needs to be protected by filing a patent or protecting a trade secret. This is an important starting point and helps to manage the costs of patent filings, which can quickly escalate if protection in many different countries is desired. It also helps to ensure that those creating the IP – often researchers – are aware of their obligations to ensure that IP is adequately protected before it is disclosed. Presenting the results of an important experiment at a conference before it is patented can be disastrous in terms of effective value creation.

Value creation then requires a decision to be made. Can the most value be obtained by licensing some IP out to other parties, or can value be better captured by developing it further in house? This involves weighing up the overall strategic intent of a business, its internal capabilities, the availability of competing technologies in the broader marketplace, and the appetite of other businesses to help develop the technology for you, if it lies outside your areas of core competence. Some considerations, and how these can be applied, are shown in Table 2.

**Stage 2: Monetizing value**

If you decide to license out a technology, the next step is to work out how, in practical terms, the most value can be realized, be it through royalties, fixed rate (often in milestone-based instalments), cross-selling of disposables (e.g., catalysts), up-selling of ancillary services, and so on.

Opportunities can be as simple as providing a patent license to ensure a licensee's freedom to operate, or to close a gap in its own IP and competence portfolio. Or it may involve licensing a complete technology package to a customer, as is commonplace in the chemicals industry, where the licensor of a technology may accompany the license with an engineering package, startup support, and process and product warranties.

A further approach is to establish a close partnership with the licensee, which may be important if a technology is not fully developed. This is particularly relevant if two adjacent industries are involved, such as the energy and telecommunications businesses in the development of "smart metering" for homes. A co-licensing arrangement can help to further develop licensed technologies, benefiting both partners.

**Stage 3: Reinvesting**

As with any tangible asset, a business needs to continuously reinvest in its key resources to offset their inevitable decline in productivity and competitiveness. Likewise, the model we describe above can only be sustainable and self-propelling if a company reinvests some of the proceeds from a successful licensing deal into the creation of new IP.

To do this, leading businesses often begin by identifying the technologies that are considered to be core to their business. For these technologies, they adopt a "generation building" approach, in which the next generation of a particular technology is being developed while funded by licensing and sales revenues from the current one. This approach is often applied in competitive

and rapidly growing markets, to drive down costs. The market for smartphones is one such example.

For technologies with sufficient 'innovation headspace' to further develop unit cost reduction, this can be a strong investment focus for many years. Many licensing agreements even contain clauses whereby all IP resulting from further technology development, even by the licensee, remain the property of the technology licensor.

In other situations, companies recognize that development of their current core technology platform will soon plateau and efforts are better spent developing technologies in new and emerging areas beyond their core.

The Fraunhofer Institute in Germany, as described in Box 3, has developed an excellent approach for doing this by reinvesting revenues from licensing its blockbuster MP3 patents in novel areas of science and technology.

**Box 3: The Fraunhofer Institute: reinvesting licensing revenues through the Fraunhofer Future Foundation**

Fraunhofer, a German research organization comprised of 66 research institutes, was a key player in the development of the MP3 standard[4], with licensing revenues from MP3s peaking at around $114 million in 2005[5]. Although many MP3 patents have now expired or are approaching expiry[6], in 2013 Fraunhofer generated around $132million from licensing its portfolio of technologies, and continues to file an average of two patent applications every working day[7]. In 2008 The Fraunhofer Future Foundation was set up solely using revenue generated from MP3 patents. Its aim is to redirect licensing revenues towards projects with IP potential in order to protect future competitiveness[8].

[4] Facts and Figures, [Online] Available: http://www.fraunhofer.de/en/about-fraunhofer/facts-and-figures.html
[5] The Fraunhofer Society, (2007), [Online] Available: http://webarchive.nationalarchives.gov.uk
[6] Patent Portfolio, [Online] Available: http://mp3licensing.com/patents/index.html
[7] Fraunhofer, (2014), Living in the Digital World, Annual Report 2013, [Online]
[8] Fraunhofer, We Invent the Future, [OnlineFraunhofer_We-invent-the-future_tcm63-52364.pdf

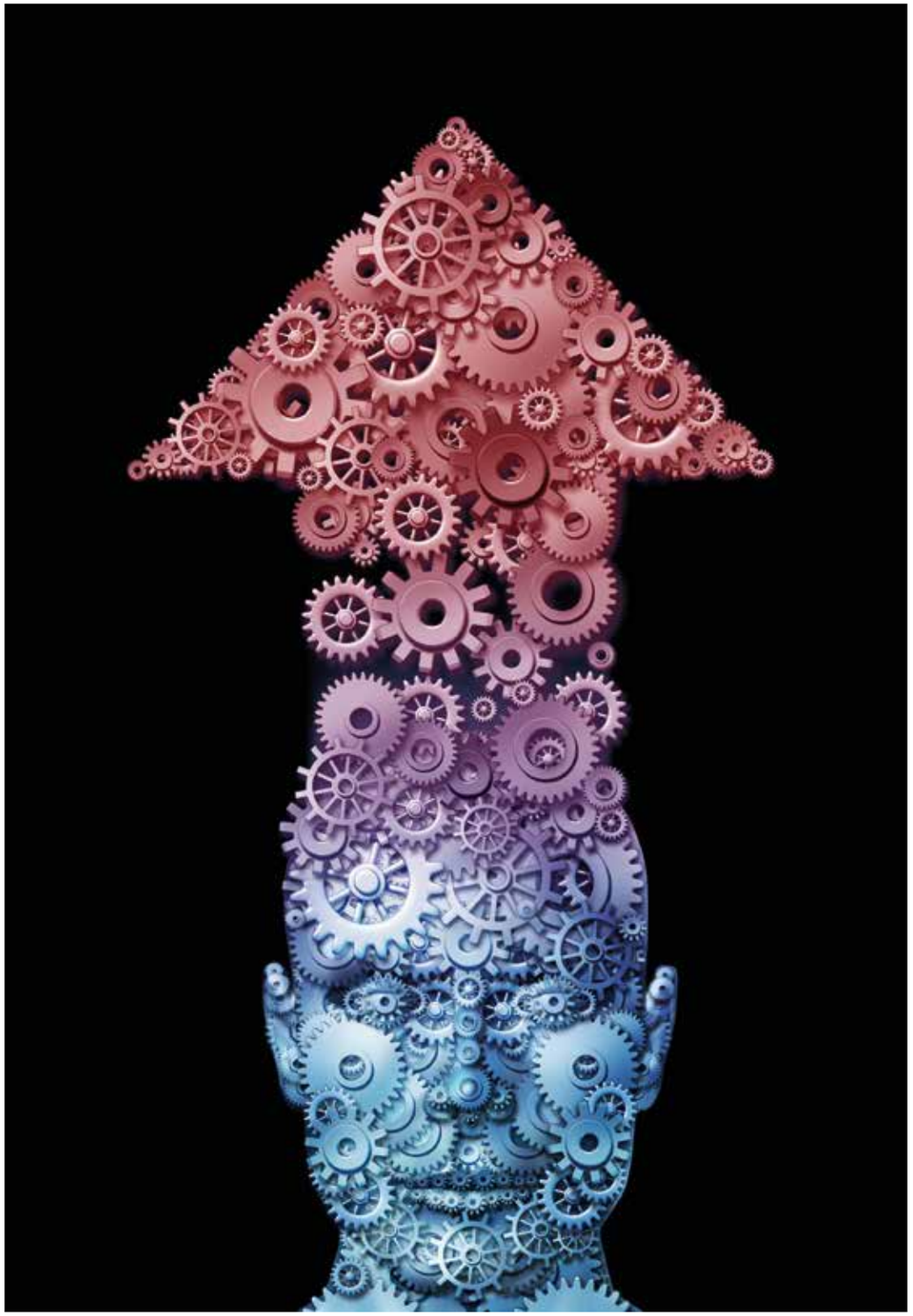
Regardless of which approach is adopted, obtaining feedback from the strong partnerships and repeat business identified in the value realization step is essential. It enables a business to understand what has worked well, what has not, and where future efforts should be directed. This suggests that for many businesses, the value of licensing is not restricted to financial revenues – it is also about stimulating new ideas and innovation.

## Insights for the executive

Technology licensing is a critical, but often neglected, tool for the successful Chief Executive or Chief Technology Officer to use in creating greater value. A self-propelling licensing cycle of value creation, monetization and re-investment can be an important complement to an internal "captive" technology development approach. It works in any technology-driven industry, where a business needs to cope with a new innovation environment which requires highly complex challenges to be addressed, whilst also generating a substantial return on investment. This licensing cycle needs to be carefully designed around three main stages:

- **Create value:** Develop and execute a robust technology strategy based on a thorough understanding of where value will or may be created from technology in your market and value chains, and by whom. Then work out a matching IP strategy to protect what is core and to enable licensing where that makes sense. Ensure that the overall "business case" of your technology strategy reflects the full value creation potential of your portfolio, not just that from internal deployment. Realize that timing is often critical to outpace commoditization, outsmart competitors and new entrants, and accelerate technology adoption.

- **Monetize this value:** Work out in what way, and with which customers and business partners, can be optimized licensing income in the shorter and longer term. There is an entire spectrum of licensing arrangements available, from a simple one-off patent licensing transaction to comprehensive technology transfer or intricate cross-licensing deals.



Picture by lightwise / 123RF

- **Reinvest the proceeds:** Siphoning back part of the revenues from licensing back into the R&D program is generally required to ensure sustainable value creation. Decisions on where to reinvest should be based on your technology strategy, striking a balance between reinforcing the core technology platforms of today and building those of tomorrow in new and emerging areas.

**Michaël Kolk**
is a Partner in Arthur D. Little's Amsterdam office and a member of the Technology & Innovation Management Practice and the Chemicals Practice.

**Phil Webster**
is a Principal in Arthur D. Little's London office and a member of the Technology & Innovation Management Practice.

**Koji Uchida**
is a Principal in Arthur D. Little's Tokyo office and a member of the Strategy & Organization Practice.

**Just Jansz**
is an independent consultant and former President of the Technology Business at LyondellBasell.

The author team would like to thank Alasdair Higgins, Johanna Juhl, Oscar Petersson and Laurie Guillodo for their contributions to this article.