



**At the mining and manufacturing ends automation is key,  
while at the consumer-end it's all about data**

**By Stéphane Fischler, Chair  
CIBJO Technology Committee**

Unlike most of the CIBJO Commissions and other committees and working groups, which largely are concerned with the development of standards, working principles and nomenclature in the areas in which they are concerned, the CIBJO Technology Committee

is more of think tank, which considers how the various sectors of the jewellery industry are likely to be impacted and changed by technologies coming down the pipeline.

More often than not, these are not technologies that have been developed specifically for the jewellery industry, but their introduction nonetheless is likely to have fundamental effects, which on occasion could change the way in which we operate and do business.



*Stéphane Fischler, Chair of the CIBJO Technology Committee.*

I welcome you to our 2024 report, and when I say “our” it because this is a team effort, for which I am very thankful to my colleagues – the members of our Technology Committee.

**An industry transformed by technology**

The past year have seen again great strides in technological developments and notably in the area of artificial intelligence (AI), driving potentially more efficient ways of using data to optimize the various processes in our industry.

Yes, many challenges remain, and there is a lot of “hype” for sure. Those are well known caveats that it’s important we appreciate, especially when incorporating or investing in any new technological strategy or use.

But we should focus on the positive, because we undoubtedly work in an industry that has been progressively and constructively impacted by the adoption of new technology-driven production and management systems.

*Members of the CIBJO Technology Committee, (top, from left): Thomas Baillod, David Block, Mahiar Borhanjoo, (bottom, from left): Elle Hill, Daniel Nyfeler and Emmanuel Piat.*

The gemstone sector has been almost completely transformed in a period of just decades. In mining, technological development drove the ongoing automation of previously manual processes, as it supported continuous improvements in health, safety and environmental management, and brought about increased energy efficiencies. Mineral scanning technologies made the processing of rough considerably more efficient and profitable, as did data analysis and information management. The polishing sector will soon close the 5 percent gap that remains before achieving full automation for high-grade goods, and grading is moving rapidly towards full automation. Technologically we also are making strides in the fast speed scanning out of even the smallest synthetic diamonds.

Jewellery design and manufacturing are supported by more and improved hardware and software, and most notably 3D-printing. According to Technavio, the global 3D printed jewellery market size is estimated to grow by USD 7.32 billion from 2024 to 2028.

But we remain technically challenged, in part we are a relatively small industry, with limited means and capacity to develop innovative technologies that meet our specific challenges. As mentioned, this means that we need to adapt and customize technologies that were developed for other disciplines.

But the objective absence of bespoke solutions is not the primary challenge for us being unready to reach our technological potential. That obstacle exists within us, and



it essentially in an inborn resistance to change, and a phobia about embracing that which is new and different. Rising above this is essential if we are ultimately going to enjoy solid returns on our technology investments.

So, are we ready to commit to the research and sustained commitment necessary to unlock all its potential?

Many analysts rightfully point to the “fear” factor when it comes to embracing new technologies and making changes in internal processes. It’s a very well-known phenomenon, and I would also warn about making an equally common mistake, and that finding comfort in the fact that your colleagues share the same static approach as you do. Rather look at and emulate those who have taken the brave leap.

And also, be prepared to delve into to the details, for it is there that the most exciting solutions can often be found. Remember, buyers of high-end digital camera typically only use the pre-programmed settings. But the really good photographers go deep in the “menu” and enjoy all the benefits.

### Use the data or lose it

For the remainder this report, I propose to focus on how technology is impacting the consumer-end of our supply chain. In is so many ways, I would suggest that this should be primary focus.

Beauty remains “in the eye of the beholder,” but taste and demand are shaped by creators and marketers. Contrary to popular perception, it is generally the tail that wags the dog and not the other way around. The most successful companies are those that lead and convince the market what it should be buying, rather than simply trying to satisfy existing demand.

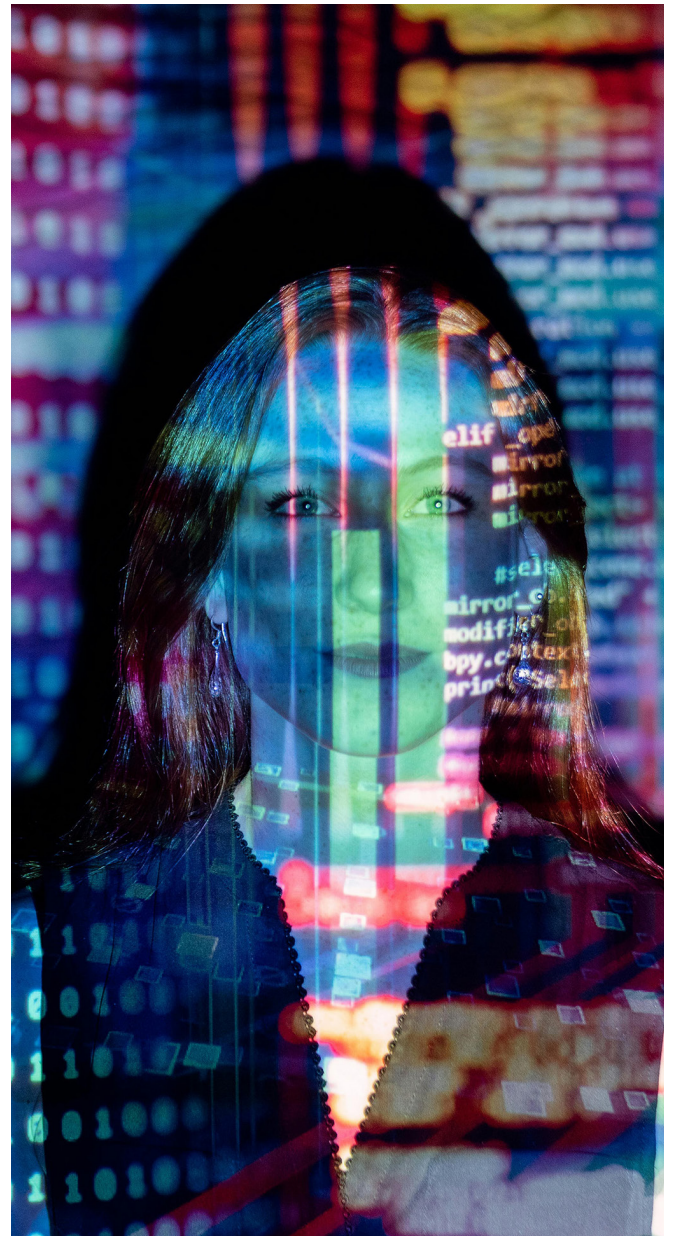
What had changed dramatically in recent years, however, is how we study and understand the marketplace, and then how we develop, package and position our products, and pinpoint and communicate with the consumers we seek to supply. Digital data collection, analysis and delivery systems enabled the introduction of a highly effective golden bullet approach, as opposed to the hit, miss and adjust coordinates model that had been used beforehand.

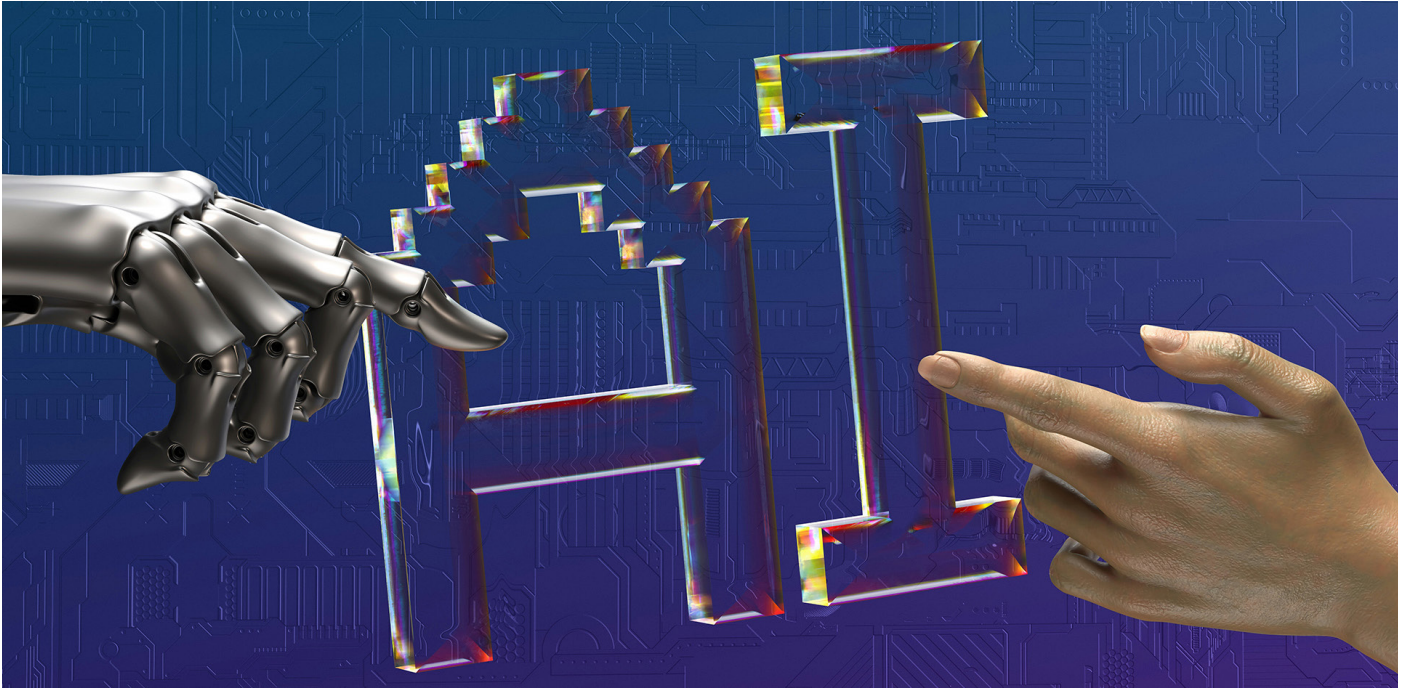
As businesses, we are consistently collecting data, and much it is discarded without realizing its importance. “Use it or lose it” is a rule that counts for all participants in our supply chain. Those who commit themselves to learn and invest in data analysis and management are emerging as successful companies. But still, there are many who for diverse reasons have not yet make a step towards a data-driven business.

There is a huge amount of relevant information out there

that requires monitoring and could benefit you and your business. Social media, market research, academic papers are all relevant sources. Learn who really is your consumer, and who willingly shared so much information.

What we also need to appreciate is that effective data-driven technologies have to be considered with the same eminence and gravitas as we typically regard electronic systems employing, robotics, optics and other finely engineered mechanics. Raw data is a commodity that is as valuable as any other, and the development of systems that can analyse and learn from it are worth our investment and attention. When we properly manage the data derived from the consumer experience, we will allow for the greatest efficiencies and returns.





## The promise of AI and the threats

The good news is that improvements in software using AI and “machine learning” will hopefully generate greater gains. But we need to introduce such technology carefully, and step by step.

The intelligence may be artificial but to optimize its introduction we need to nurture the right human resources. Finding the necessary expertise to manage these technologies is not only essential, but is becoming a serious challenge.

Verifying the viability of the data being used to power AI systems would also seem to be a pre-condition for their success. When considering AI, one should first ask oneself about the quality of the data used in shaping the algorithms that drive it. One has to trust the data in order to trust the AI. Keeping a critical mind is necessary.

But if the data is good, AI should enable us to optimise outcomes at the consumer level. It will do so by:

- Identifying trends

- Understanding customer behaviour, ensuring retention and loyalty
- Optimising supply chain and inventory management
- Supporting dynamic marketing and pricing strategies
- Optimising the in-store and online customer experience
- Improving the management of risks and opportunities.

All this, of course, will have to be supported by a strong commitment to data security and privacy.

I believe that we all agree that business success rides on our ability to create excitement for products, enhancing the purchasing experience and so retaining customers. All this requires that we properly understand the consumer’s purchasing drivers.

For most of us, much of that information is out there, ready to be recorded and used. Only by investing in capacity, both human and technological, can we step up, compete and ultimately be successful.



## PHOTO CREDITS

Cover photo by Shubham Dhage on Unsplash.com

Page 3 photo by ThisIsEngineering on Pexels.com

Page 4 photo by Igor Omilaev on Unsplash.com

ALL RIGHTS RESERVED

© The World Jewellery Confederation (CIBJO) 2024

[www.cibjo.org](http://www.cibjo.org)