



Antwerp Diamond Innovation Opportunities

2024 | 5th edition

December 2024

CITY OF ANTWERP – SANDY CEULEMANS – DIAMOND & INNOVATION MANAGER
THIS REPORT WAS PREPARED BY VERHAERT NEW PRODUCTS & SERVICES BUSINESS

Contents

1 Programme introduction

2 Executive summary: six priority levers for innovation

- 2.1 Robotisation & automation
- 2.2 Digitalisation
- 2.3 Sustainability & ESG
- 2.4 Cross-industry networking
- 2.5 Data analysis
- 2.6 Financing

3 Interviews

- 3.1 Elliot & Ostrich
- 3.2 Dediam
- 3.3 Antwerp Polishing Technologies
- 3.4 Daems Group
- 3.5 Zlayet & Sons

4 Visual mapping Antwerp diamond ecosystem



1 Programme introduction



Antwerp Diamond Innovation Opportunities is a support programme initiated by the City of Antwerp in collaboration with Verhaert | Masters in Innovation.

Each operating year, the city calls on a committee of experts to **update the innovation opportunities** for the industry. The city also offers **individual innovation coaching** to three to five companies. Each innovation pathway is based on one or more priority themes that are discussed in this report. The intended outcomes can potentially **provide inspiration** and lessons learned for the diamond industry as a whole.

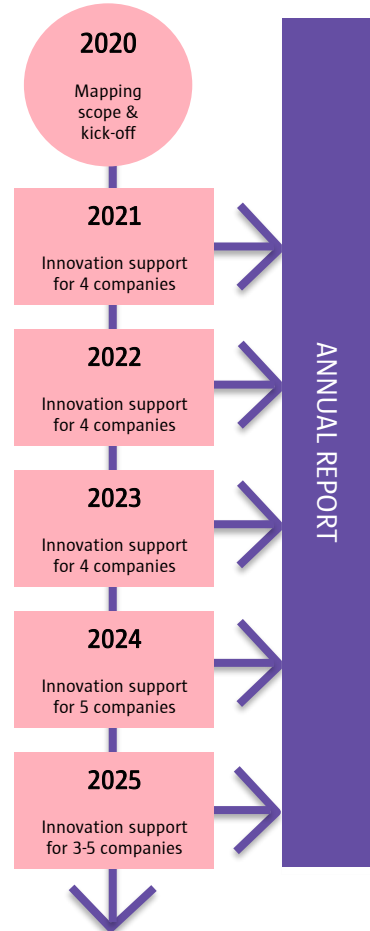
In a short interview, the entrepreneurs discuss the **challenges** they faced, as well as their **solutions**, and how the coaching helped them to innovate.

Are you **interested in starting** up an **innovation pathway** in 2025? Find out more about the selection criteria and process via the link or email below.

Find out more about the selection criteria and procedure via the link or email address below:

<https://www.businessinantwerp.eu/en/antwerp-world-diamond-capital>

Email: antwerpsmostbrilliant@antwerpen.be



FINANCING



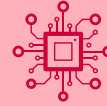
CROSS-INDUSTRY NETWORKING



ROBOTISATION & AUTOMATION



DIGITALISATION



DATA ANALYSIS



SUSTAINABILITY & ESG



2 Executive Summary: six priority levers for innovation

The world is evolving and changing at a dizzying pace. As a result, businesses are facing new challenges. The ability to meet them will define the future of the industry.

This executive summary outlines six key innovation themes. Embracing these opportunities will drive growth, improve sustainability and position Antwerp as a central player in the global diamond market.

1. Robotisation & automation

Integrating design software and diamond polishing machines is challenging, but customised solutions can streamline processes, minimise errors and reduce costs. Diamond polishing workshops can also invest in digital twin solutions to achieve greater accuracy and consistency. Collaboration with Flemish strategic research centres, subsidies and innovative business models can further drive automation efforts.

2. Digitalisation

Blockchain-based traceability solutions can improve pipeline transparency by demonstrating ethical sourcing and ESG ratings. Antwerp can establish standardised protocols and certifications to enable reliable software selection.

ERP software and digital KYC platforms will make businesses more efficient. Finally, embracing digital marketing, sales and online presence can extend reach, attract new customers, and showcase unique craftsmanship and provenance.

3. Sustainability & ESG

Antwerp is striving for a transparent and sustainable diamond industry worldwide by working towards a robust system of origin verification underpinned by traceability. But this leadership in trust and compliance can extend beyond provenance verification to communicate the industry's positive impact on society. The EU Corporate Sustainability Reporting Directive and collaboration with the Responsible Jewellery Council and other platforms can shape the future of a responsible diamond and jewellery industry.

4. Cross-industry networking

Exploring technology transfer between the diamond industry and other sectors can be mutually beneficial. Traceability technologies can find applications in the medical field, while collaboration with the fashion and design industry can create successful partnerships. Establishing clusters in education can address the industry's need for skilled labour, while collaborative research with universities will foster innovation.

5. Data analysis

Data analytics applications can optimise pricing, supply chain management, sales strategies and customer engagement. Exploring the potential of data analytics, AI and machine learning can improve market insights and increase both efficiency and profit. Effective interpretation of all types of data will lead to informed decisions and improved outcomes.

6. Financing

Trust and transparency between the sector and financial institutions are essential to ensure access to financial services. Foreign banks and alternative financing can further diversify financial resources.

In conclusion, embracing these opportunities for innovation will position the Antwerp diamond industry at the forefront of technological advances, sustainability practices and international cooperation. By embracing innovation, the industry can enhance its global competitiveness and ensure a prosperous future.

2.1 Robotisation & automation (I)

In the world of diamond processing precision and efficiency are paramount. The integration of industrial automation and robotics has proven to be a transformative force and there is more to come.

The use of robotics and automated systems in diamond processing **boosts productivity** by completing tasks in less time, with a consistent output and minimised downtime.

One of the challenges faced today is the **integration of design software and diamond polishing machines**. When design software and polishing machines come from different vendors, it can be difficult to establish a direct link between them.

Diamond companies are taking the initiative to find customised solutions that reduce manual operations. One possible approach to link design tools and polishing machines is to use API's (Application Program Interface). However, these are often not offered in existing market solutions.

Another approach is to analyse data files used by software and use custom software development to convert files from one system to another. For such technologies it is common to use open source solutions to reduce the overall effort. This requires working with software developers or specialised IT teams to ensure the security aspects of the solutions. Diamond entrepreneurs who invest in custom software development have the opportunity to **monetize their developed solution** by offering the self-developed software to the market and selling these licences through an innovative business model.

Diamonds require extreme precision in their cutting, and the challenge in automation is to achieve the accuracy and consistency that skilled diamond cutters can provide manually. A **digital twin solution** can help by creating a virtual replica of the cutting process.

Using advanced algorithms and sensors, the digital twin can mimic the exact movements and parameters of experienced diamond cutters. The digital twin can also provide real-time feedback and optimisation suggestions to further improve the cutting process.

Modern diamond manufacturing facilities are increasingly using **automated laser cutting systems**. These innovative systems, some of which have been developed in Belgium, use advanced algorithms to determine the optimal cutting pattern while achieving greater precision, reducing human error and material waste.

The diamond market is becoming more dynamic as customers seek unique, bespoke cuts. As trends evolve and customer preferences become more diverse, adaptability becomes critical. Industrial automation and robotics provide the flexibility to **adapt to changing market demands**.

2.1 Robotisation & automation (2)

The quality achieved by Antwerp's diamond cutting ateliers is unparalleled in the world, thanks to a combination of manual craftsmanship and advanced automated techniques and processes for polishing large and exceptional stones. However, continuous innovation is crucial for the city to **maintain its position** as a key player and to compete effectively. The main drivers for workshops to adopt robotics are factors such as sufficient training and the developing of a long-term business vision.

To maintain the city's competitive position, the regulatory framework needs to be adapted to robotics and automation. In 2024, the rules governing the takeover of diamond workshops were adapted to the high-tech reality. A first step has also been taken with the abolition of regulated working hours. **More flexibility and consecutive shifts can facilitate** the employment of diamond machine operators.

On the other hand, when it comes to polishing large size diamonds, there is a significant opportunity for Antwerp players to work directly or even

exclusively collaborate with diamond-producing countries and to implement an integrated vertical pipeline with these countries of origin.

The increasing automation of the polishing process could create a win-win situation for both the countries of origin and Antwerp entrepreneurs, integrating raw material supply, manufacturing and access to the best sales market.

To support automation and design possibilities, the industry can work with strong innovation agencies and engineering & design companies such as Verhaert, Voxdale, Comate, Faktion and Dott Achilles. Services such as ideation, prototyping and go-to-market support can help turn ideas into reality.

The diamond industry can also rely on one of the Flemish strategic research centres: Flanders Make, which aims to improve the international competitiveness of the Flemish manufacturing industry. In addition, there are organisations such as Sirris, a non-profit initiative that helps companies with technical innovations.

These organisations can provide valuable support and resources to diamond entrepreneurs looking to implement automation and robotics.

By working with innovation agencies or external consultants, the industry can benefit from specific expertise, research and development capabilities to drive technological advances and stay at the forefront of innovation.

Subsidies are also available for diamond entrepreneurs who wish to invest in technological innovation. The Flemish Agency for Innovation and Entrepreneurship (VLAIO) offers various subsidy programmes for companies wishing to innovate.

It is worth noting that there are already companies in the diamond sector that have taken advantage of these funding opportunities to successfully integrate advanced technologies into their business.

2.2 Digitalisation (1)

Many of the solutions for a more efficient, transparent and sustainable industry today involve some form of digitalisation.

Today, there are several solutions on the market that address **the traceability of diamonds**, making it possible to verify their ethical origin, track the entire production process and include provenance.

Blockchain-based or other solutions have been on the market for a number of years, and in the diamond sector in particular, numerous companies are vying for market position. With multiple systems available, it is not easy for diamond traders to choose the best and most reliable solution. Currently, there is no certification or standard to which these solutions must conform.

One possible solution is to introduce ISO certification for these software solutions. However, obtaining such certification typically requires a significant investment of time and resources.

Another approach is to seek the involvement of European institutions involved in certification and standards.

Alternatively, consideration could be given to the development of a SWIFT-like protocol specifically tailored for this application. The protocol could include certain standards and specifications for data formatting, communication protocols, security and verification. It could also define how different technologies, such as blockchain or other traceability systems, could be integrated and used to capture and share the necessary information. Crucially, the success of such a protocol would depend on cooperation and adoption by the various stakeholders in the diamond industry. The adoption of standardised processes and technologies would be key.

Digitalisation also plays a critical role in improving business processes and meeting information reporting requirements for luxury jewellery brand houses. Software packages such as **Enterprise Resource Planning (ERP) solutions** are available to help run entire businesses efficiently.

However, diamond entrepreneurs often struggle to find the right suppliers. Mapping this ecosystem for the industry remains a significant opportunity. The sector is likely to require ERP packages that address its specific needs, such as traceability, ESG (environmental, social and governance) considerations, inventory management for rough diamonds undergoing the cutting process, certification management and quality control, among others. Agoria (the association that supports the Belgian technology industry) has already made progress in identifying relevant suppliers that can help make rapid progress in this area.

2.2 Digitalisation (2)

Efficient management of know-your-customer (KYC) requirements through a digital and automated system can help companies comply with anti-money laundering (AML) legislation and reduce the workload. Several vendors offer systems for building a **digital AML framework**.

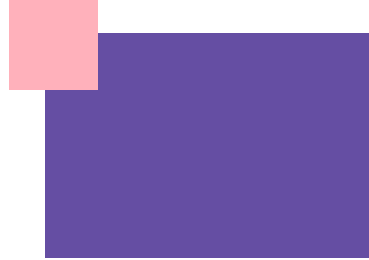
A fourth opportunity lies in improving companies' online presence. While having a professional corporate website or an active presence on professional social media networks may seem obvious today, there is still plenty of room for improvement.

The Internet serves as a critical source of information for all diamond stakeholders, including banks, customers, investors, suppliers and others. As such, all types of diamond companies can use the internet to increasingly showcase their values, unique craftsmanship and provenance.

In particular, lab-grown companies have already made commendable strides in embracing the digital realm, setting an example for the industry as a whole.

The potential for each individual company to influence, educate and grow the natural diamond industry through digital means is immense.

By strategically harnessing the power of digital marketing and online engagement, companies can extend their reach, attract new customers and enhance their valuable brand reputation.



2.3 Sustainability & ESG

Antwerp's diamond companies are an indispensable link in a more sustainable jewellery industry. Midstream players, such as diamond traders and polishers, are co-custodians of the industry and share the responsibility to protect, develop and build trust in the industry and the product category.

In terms of sustainability and ESG (Environmental, Social and Governance), the issues of **diamond provenance** and pipeline transparency are becoming increasingly important. In response to geopolitical disruptions, the G7, together with the EU, introduced a ban on the import of Russian diamonds into their markets as of 1 January 2024. Antwerp has taken a leading role in setting up a verification and certification scheme to verify the non-Russian origin of diamonds destined for the G7 and EU markets.

Antwerp has also been instrumental in enabling the legalisation of so-called 'grandfathered stock', goods of Russian or unknown origin purchased or held before the measures against Russia came into force.

Traceability can go **beyond provenance** to tell the positive story of the impact on the planet and its people. How do we protect the planet and how do local communities throughout the value chain benefit from the natural diamond industry? Communicating these positive impacts collectively and effectively should also be a key spearhead.

The forthcoming European legislation on '**Non-financial / Corporate Sustainability Reporting**' (CSRD) will soon affect a growing number of companies. As a result, large companies will need to prepare to publish a mandatory Corporate Sustainability Report in 2026, based on the principle of dual materiality. This will include conducting a due diligence risk analysis and implementing the necessary corrective measures and actions.

This leadership, combined with the world's most **comprehensive regulatory framework**, effective compliance monitoring and the daily efforts of

Antwerp's diamond companies, demonstrates that **Antwerp is the World's Most Trusted Diamond Centre**.

Fortunately, **various organisations** such as the Responsible Jewellery Council, AWDC, the Watch and Jewellery Initiative 2030, CIFAL Flanders and VOKA offer valuable opportunities to learn and share ESG and CSR expertise.

These platforms focus on integrating responsible business practices, accelerating positive impacts in critical areas such as building climate resilience, conserving resources and promoting inclusivity within the industry.

Engaging with support organisations and NGOs will not only help companies comply with new regulations, but also help promote good governance across the industry.

Finally, the ability to demonstrate ESG issues in order to attract investor interest and funding is an opportunity that will continue to grow.

2.4 Cross-industry networking

Cross-industry networking refers to the collaboration, integration or interaction between the diamond sector and other industries. Sharing knowledge, resources, practices and technologies can lead to new approaches, solutions and innovations. For this to happen, the industry needs to foster an open environment.

Diamonds are already widely used in **various industrial applications**, such as in the mining industry for drilling and cutting, in the medical field as surgical tools, and in high-end electronic devices, among others. However, diamonds as a product are not the only valuable exchange that can benefit other sectors. It is also important to explore what technology transfers can be of benefit to other industries.

For example, the diamond industry is currently investing heavily in **traceability software**. But what other sectors and applications could benefit from this solution? Could the medical sector, for example, map and document complex processes using such blockchain and AI?

And what other technologies could be shared with the space industry and others?

Conversely, the diamond industry can also **adopt technologies from other different industries**, such as spectroscopy applications. The Swiss company Synova first marketed its lasers for other industrial applications before introducing them to the diamond industry.

Knowledge can also be shared **through joint marketing and sales**. In addition to its reputation in the diamond industry, Antwerp is also world-class in fashion and design. The combination of diamonds, jewellery, design and fashion has already proven successful and is being further stimulated by the city through collaborative events. Recently, Baunat (jewellery) and Tesla, two digital native brands, have started collaborating on luxury events as they target the same audience, the smart buyer.

In the current context of an ageing workforce, it is essential that **the industry and education work together** to ensure a steady flow of young, skilled polishers, sorters and graders.

The Education Covenant, a Memorandum of Understanding between industry stakeholders, education and the city, aims to strengthen the future labour market.

Q-INSPEX, the R&D consortium of the University of Antwerp, is engaged in collaborative diamond research with private companies. It consists of 4 multidisciplinary research teams of physicists, chemists, computer scientists and engineers, each with their own expertise in imaging technologies (X-ray, infrared, terahertz and hyperspectral). From 4 to 7 February 2025, Antwerp will host the 14th International Conference on Industrial Computed Tomography, where the latest developments in diamond applications will be discussed.

In addition, Antwerp's open innovation centre for sustainable materials, BlueApp, helps companies to develop and prepare promising sustainability technologies for the market.

At IMO-IMOMEC, the integrated research institute of UHasselt and imec, international scientists conduct research on CVD diamonds for high-tech solutions such as quantum computing.

2.5 Data analysis

An effective level of digitisation is a prerequisite for successful data processing. Data analytics applications require sufficient and timely input. The types of data collected can include both industry and company level information.

The experts interviewed indicate that they are **not sufficiently familiar** with the possibilities of data analysis within the sector. This provides an opportunity for in-depth research into the potential of data analytics and relevant applications for the various stakeholders in the diamond value chain.

Carefully built databases of information can be used **within artificial intelligence (AI) systems** to create models that generate new insights. Diamond mining companies are embracing machine learning, which allows computers to quickly discover previously unknown drillable targets from vast geological data. The future potential of machine learning seems enormous.

Another notable change is the use of AI in diamond sorting and **grading reports**. Clarity grading, or sorting, is the most time-consuming part of gemstone testing. Technology can help laboratories increase efficiency and allow gemologists to focus more on high-leverage tasks. The use of AI technology based on large data sets can make diamond grading more accurate, accessible and affordable for businesses, leading to increased profits and consumer confidence.

Data on **market prices** already exists in the sector and is marketed through platforms such as Uni Diamonds, IDEX, Rapaport and Tenoris.

With these and other AI solutions, diamond retailers can track market prices in real time and optimise their pricing strategies and inventory management.

On the other hand, experts stress the importance of knowing one's niche market, and as the sector is relatively small, there is a perception that one already knows the market's performance and the prices of the competition.

Beyond market pricing insights, there are numerous data analytics applications **with significant untapped opportunities**. For example, sophisticated algorithms can help identify trends and patterns in customer behaviour, enabling personalised marketing and sales efforts that lead to increased profitability and customer loyalty. It can also help detect bottlenecks in the supply chain, identify suspicious patterns that may indicate fraud to strengthen the integrity of the industry, and enable predictive maintenance of production machinery, among other things.

Analysing the collected diamond data is only the starting point, as effectively interpreting the data and formulating relevant actions based on the insights gained are equally critical. The true value of data lies not only in its collection, but in how it is understood and used to drive informed business decisions and meaningful outcomes.

2.6 Financing

The Basic Banking Service is the right of every Belgian company to a minimum level of banking services, such as access to a bank account. This law, supported by AWDC, came into force last year when the Royal Decree was published. In 2024, adjustments were made such as speeding up the application process and limiting the maximum fee charged by banks.

Like a growing number of SMEs in other industries, diamond companies are finding it difficult to borrow money from banks. The erosion of personal relationships with bankers has made it more difficult for a complex industry such as the diamond business to obtain credit lines.

In order for the diamond industry to increase or regain the interest of financial institutions, it is essential to **increase banks' confidence and understanding of the sector**. This includes transparency at a company level and keeping all relevant compliance data easily accessible and up to date for banks.

When establishing new investor relationships, the main challenges revolve around collecting and accessing **Know Your Customer (KYC)** information and **transaction monitoring** data on new customers.

As part of the 2022 Antwerp Diamond Innovation Opportunities Programme, the AWDC has been exploring solutions to enable banks to more easily access all the essential documentation required to get to know a new diamond trader. Such a digital platform will not only reduce costs for banks, but also increase credibility, as organisations such as AWDC and FOD Finance (Federal Public Service Finance) could **automatically submit information** to the system.

On the other hand, diamond merchants will have to spend less effort to provide their bank with the necessary onboarding documentation. This creates a win-win situation that benefits all parties.

These days, foreign banks seem to be more open than Belgian institutions. Diamond companies may therefore consider looking for banks and investors outside the Belgian market.

In the light of stricter bank capital requirements and the withdrawal of some banks from financing the midstream of the diamond industry, diamond companies can explore how replacement financing can be obtained from new and innovative sources, such as fintech companies.

Diamond companies can also look for alternatives to traditional bank loans. One phenomenon that is clearly on the rise is receivables-based financing. The best-known form of this is factoring, the resale of outstanding invoices to a specialised company.

Other interesting formulas for optimising cash flow management include VLAIO subsidy programmes, crowdlending and the support of a business angel.

3 Interviews



3.1 Interview **Elliot & Ostrich**

3.2 Interview **Dediam**

3.3 Interview **Antwerp Polishing Technologies**

3.4 Interview **Daems Group**

3.5 Interview **Zlayet & Sons**

3.1 Interview Elliot & Ostrich

Elliot & Ostrich, founded in Antwerp in 2018 by Jennifer Elliot, designs timeless and sophisticated jewellery. In their hospitality showroom 'The Nest', customers receive a unique and personalised experience: a process focused on the gradual co-creation of an expressive jewel, telling a personal story. Each piece, linked to a meaningful personal moment, is custom-made and set with high quality diamonds and gemstones. In 2023, the jeweller was awarded the Antwerp Most Brilliant Label (*), a consumer label awarded by the City of Antwerp and the Antwerp World Diamond Centre.

Innovation challenge

Elliot & Ostrich is a young company with big ambitions, aiming for substantial growth while maintaining its unique customer experience. Its market positioning is a commitment to high levels of personalisation. In order to efficiently scale its personalised offering, the company is keen to explore ways of automating the design process for one of its bespoke jewellery pieces. As the design offers thousands of possible combinations, manually selecting the best one for each customer can be challenging. This complexity highlights the need for automation to streamline the design process and ensure that each ring is precisely tailored to individual preferences. As a result, the company is exploring the possibilities of AI to make personalised jewellery design scalable.

Solution developed

In the first phase, we examined the landscape of existing AI tools designed to automate the creation of graphical content.

Over the past year, a rapid influx of new AI tools has flooded the market, including notable names such as Midjourney, Vizcom, Krea and even Adobe's latest AI feature for Photoshop. These tools are designed to quickly generate visual imagery based on user input, which can include uploading existing images for modification. These tools excel in providing inspiration during the design process but their current level of control falls short of delivering finished designs.

As a result, it was concluded that current AI cannot fully address all the design needs, but it is possible to build a bespoke AI solution by training a model on different variants. This requires a significant investment.

Alternatively, non-AI solutions such as a 2D configurator, provide a scalable means of creating customised designs. Through selector options, these solutions allow for quick changes in stone colour and metal,

making it easier for customers to decide at the point of purchase. This not only helps customers navigate colour combinations, but also effectively informs the purchasing department and the goldsmiths involved in the production of the ring.

How did the coaching enable you to accelerate?

“We learned about the current capabilities of AI technology and were challenged to think about how AI can facilitate growth and what the potential investment requirements might be. We also came to understand how 2D can help to efficiently handle personalisation of creative designs.”

“Taking part in the programme helped us to envision the next phase in our growth story, where personal experience and advanced technology go hand in hand.”

www.elliotandostrich.com



Sylvie Arts & Jennifer Elliot

(*) Jewellers comply with nine quality requirements, addressing sustainability, reliability, transparency and company stability, reviewed biannually.

3.2 Interview Dediam

Diamond BVBA was founded in Antwerp more than 60 years ago. Itsik Hadaya and his son Eyale are trusted diamond experts and well connected within the industry. As a family business with strong values, the Dediam team prides itself on knowing its customers personally and offering them tailor-made diamond and jewellery solutions directly from Antwerp.

Many years of straightforward trading and excellent service to jewellers, goldsmiths and designers has resulted in a strong and loyal customer base in Scandinavia, the Netherlands, Germany and other markets. Products and services range from calibrated ranges of small stones to certified 5 carat stones.

Innovation challenge

In a market saturated with competition, both locally in Antwerp and beyond, Dediam faces the challenge of differentiating itself from other diamond traders.

As its customers have numerous supply options, Dediam must find ways to stand out. To ensure continued growth and success, a clear vision of the ideal customer profile and the associated needs is paramount.

Solution developed

Recognising the critical importance of differentiation and distinctive positioning in such a competitive landscape, Dediam initiated an innovation project together with the City of Antwerp and Verhaert. Their strategy started with an innovation scan to identify potential avenues for innovation. A quick win for Dediam was to answer the following research questions "How can Dediam improve its margins or attract a larger customer base?" To investigate this, Dediam selected ideal customer profiles and conducted in-depth one-on-one interviews with five customers from the international jewellery and goldsmith sector. These interviews provided valuable insights into the importance and satisfaction levels of Dediam's current value proposition attributes.

The process also revealed new and exciting opportunities by uncovering several unmet market needs. They also gained invaluable insight into their competitors, giving them a competitive edge.

Armed with this newfound understanding, Dediam is ready to brainstorm innovative solutions to improve its business offering. It also shed light on a remarkable observation: customers are often more likely to provide open feedback and suggestions to external parties than directly to the supplier.

How did the coaching enable you to accelerate?

"We have learnt a lot from the Verhaert team. Open communication and talking to customers is key. However, there are things that are left unsaid and a third party can help uncover your weaknesses and opportunities. Based on these insights, we are ready to refine our international strategy and implement the right tactics."

"The programme provides a unique opportunity for small businesses like ours to work closely with external business consultants."

www.dediam.com



Eyale Hadaya



Itsik Hadaya

3.3 Interview Antwerp Polishing Technologies

Antwerp Polishing Technologies, founded by Tom van Remortel, is a long-established service company for both Antwerp and international diamond cutting companies.

The company offers a complete range of services for the installation and maintenance of infrastructure in professional polishing workshops and training institutes worldwide. As a mechanical engineer, Tom has a profound knowledge and interest in the development of new machines and tools for diamond processing.

Innovation challenge

Antwerp is the world's unrivalled centre for polishing large and exceptional stones. To maintain this position, continuous innovation is essential.

Antwerp Polishing Technologies aims to combine the unique artisan tradition with cutting-edge technology, and authenticity with innovation. By re-evaluating and improving existing standards and tools, the Antwerp workshops can continue to achieve the excellence that defines them.

The redesign of traditional instruments such as the polishing wheel and polishing tang can significantly speed up the polishing process. For example, achieving a parallel descent of the tang can reduce the risk of rapid grinding and could be key to the success of new polishing techniques.

Solution developed

Several possible solutions were considered to achieve parallel descent of the polishing tang onto the polishing wheel. Both a linear guide method and a 4-bar linkage method were not recommended. In particular, the 4-bar linkage requires screws which can collect dirt.

In contrast, a compliant mechanism requires no screws and can maintain parallel descent with only one component. For compliant mechanisms, the "travel" - or the amount of movement required for the pin to move vertically while maintaining alignment - must be determined for each specific application.

This travel determines the distance the part can move, which is critical for effective and accurate polishing. In addition, the spring force of the compliant mechanism will directly affect the polishing pressure applied.

How did the coaching enable you to accelerate?

"It is very beneficial to work closely with experts from outside the diamond industry. It stimulates out-of-the-box solutions that can be further developed."

"Antwerp's polishing ateliers have an unmatched expertise in cutting large and exceptional stones.

With this project the city reinforces the industry's innovative nature."



Tom van Remortel

www.tomvanremortel.be

3.4 Interview Daems Group

For more than 20 years, Daems Group has been producing jewellery for premium jewellery brands. What Giovanni Daems started in 2003 as a workshop creating unique, handmade pieces, has now become a renowned centre for the fully automated production of (diamond) jewellery using patented technology. The company is challenged to explore new ways of sourcing and operating in a more sustainable way, and is re-examining its environmental impact on the planet. Recycling of materials and better, more circular waste management is paramount.

Innovation challenge

Every day, Daems Group loses gold because small particles of gold adhere to workers' clothing and hands and are often washed down the drain when hands are washed. Recognising this problem, Giovanni Daems proposed a recirculating system to recover the gold residue from sink waste water, recognising the potential benefits to both his company and the wider jewellery industry. Despite building and using a prototype, the company faced significant challenges related to the inefficient gold recovery of the current filtration system and the rapid clogging of the fine filter.

As a result, further research focused on integrating a medium filter and optimising the layering of these filtration elements.

Solution developed

Following a site visit, the main focus of this desk research project was to determine the optimum composition of the filter mechanism. The first step was to examine existing filters on the market for coarse (50µm), medium (10µm) and fine (1µm) particles. These options were mapped using a morphological chart, with initial analysis favouring the use of hydrocyclones.

For each application it is essential to evaluate which cyclones are best suited. A hydrocyclone uses centrifugal force to separate particles in a liquid suspension according to their size, shape and density, and is commonly used in wastewater filtration by directing denser particles to the periphery for settling, while lighter materials are carried away in the overflow. Although there are various methods for calculating performance and required dimensions, they often require considerable theoretical study.

In this proposed scenario, a more practical approach may be to prototype different versions of hydrocyclones and test them in the specific application. The decision to purchase or manufacture cyclones in-house is a strategic one.

How did the coaching enable you to accelerate?

“Having a morphological map of possible technical solutions allowed us to capture the required functionalities in a more analytical and systematic way. The next step is development and testing.”

“As the Daems Group is committed to the key sustainability goals, we continue to invest in innovations that have a positive impact on our planet.”



Giovanni Daems



Tom Bronders

www.daemsgroup.com

3.5 Interview Zlayet & Sons

Zlayet & Sons is a small diamond trading company founded in 1994 by Rouben Zlayet, whose 3 sons Alain, Guy and Daniel later joined the company and expanded the business to include rough and polished diamonds. Today, Alain is the sole owner while the company focuses on offering the perfect diamond jewellery through its website Belgium Diamonds. The company's hallmark is personal contact and advice when choosing a unique and high quality piece of jewellery.

Innovation challenge

The first step in this innovation project was an open innovation scan to identify opportunities for innovation. As a small SME, it quickly becomes apparent that there is often not enough time to think about innovation due to the many daily operational tasks. Alain jumped at the opportunity to have experts help Zlayet & Sons look at the company through an innovative lens.

During the innovation scan, the different steps of the value chain were analysed: purchase of semi-finished jewellery, jewellery production, marketing, sales and customer service. At each step, different aspects of the business were examined, including productivity, authenticity, risk, customer experience and ESG.

An initial analysis revealed a significant hotspot centred on the organisation's customer experience and marketing. The key question emerged: how do we create a differentiator in the marketplace while ensuring we can offer a competitive price to the consumer? Should we develop a differentiated collection or launch a differentiated brand?

Solution developed

We organised a co-creative strategic branding workshop around the consumer website. To explore differentiation, the following research questions were discussed: Which market should we target in the future? What is the ideal customer profile of the future? What aspects do they value most? What are their motivations and fears? Using the Brand Identity Framework, we mapped out the key brand characteristics. During this exercise, we looked for an archetype that best fits Zlayet & Sons. Some brands want to project strength through innovation, a sense of control and excellent service.

Others, like Chanel, want to create a strong connection with the consumer by conveying passion and sensuality. Zlayet wants to position itself as a trustworthy and competent business partner in the Antwerp diamond sector, because its customers value security, trust and honesty. The DNA of this archetype has also been translated into Zlayet's new website.

How did the coaching enable you to accelerate?

“The journey has helped to formulate a clear brand identity and go-to-market strategy. Today, we know exactly who to target with the new jewellery brand we are about to launch.”

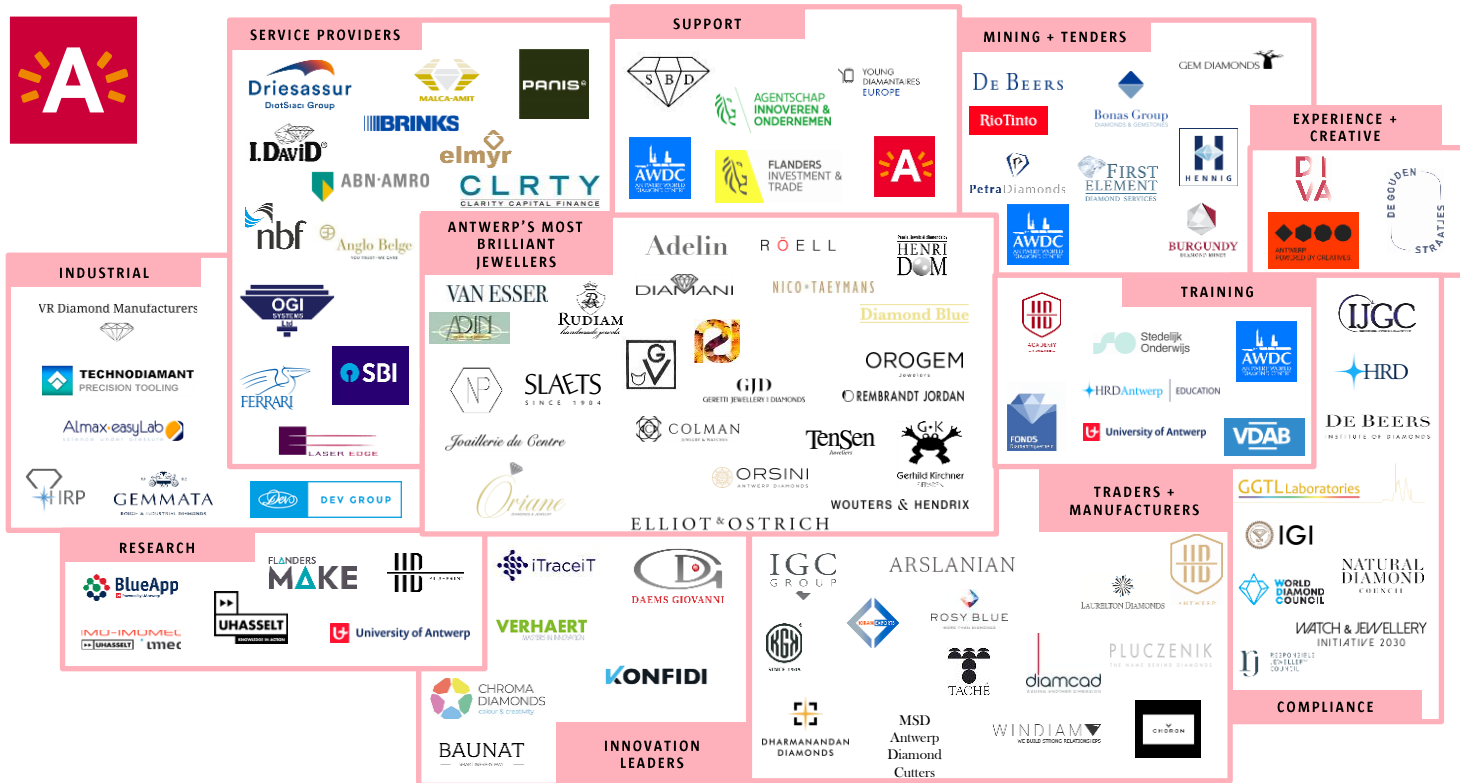
“As a small-size company we do not often participate in strategic workshops. We fully seized the opportunity to make use of the available tools and expertise.”

www.belgiumdiamonds.be



Alain Zlayet

4 Visual mapping Antwerp diamond ecosystem



We would like to thank these experts for sharing their personal business experiences.



Melissa Smet
Executive Director
Syndicate of the Belgian
Diamond Industry



Didier Backaert
Manager
Bonas Couzyn



Serge De Bruyn
Partner
Clarity Capital Finance



Ann Peeters
Project Leader
Agoria



Dominique Roose
Head of Global Operations Management
Diamond & Jewellery Clients
ABN Amro Bank



Vijay Goel
Sr. Relationship Manager
Diamond & Jewellery Clients
ABN Amro Bank



Karen Rentmeesters
CEO
AWDC



Bart De Hantsetters
General Manager
Diamcad



Elisabeth Levrau
Valorization Manager
University of Antwerp