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T4T Tech Partners

Opsydia

Technology for Transparency Report

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OPSYDIA

Company Information:

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11-50

MISSION

Opsydia is committed to providing a cutting-edge solution for the diamond, coloured gemstone, jewellery and watch industries. We envision a future in which valuable products are distinguished with tamper-proof inscriptions that ensure brand and product protection, and enhance traceability and transparency in the primary market, while adding protections against counterfeiting in the secondary market. As a result, Opsydia is empowering the entire life cycle of luxury goods and creating positive change.

VISION

We envision a future in which the entire diamond pipeline benefits from the implementation of Opsydia technology through our systems, identifiers, jewellery viewer and upcoming melée inscription system. With ultra precise, tamper-proof and permanent sub-surface inscriptions, manufacturers, brands and retailers can secure the identity and integrity of diamonds and coloured gemstones throughout the supply chain and provide enduring value, which has tangible benefits to the secondary market.

Company Description:

Opsydia specialises in innovative laser inscription technology for the diamond, gemstone, jewellery and watchmaking industries. Our world leading systems use laser technology to inscribe ultra-high precision, tamper proof inscriptions both on and beneath the surface of gemstones. Formed as a spin-out company from the University of Oxford, we specialise in creating high-volume industrial processes for practical applications based on cutting edge research. Our mission is to promote transparency, support provenance and traceability initiatives, and offer businesses a unique method of elevating their brands, authenticating premium products and creating enduring value in both primary and secondary markets.

Company's tagline:

Securing traceability, authenticity and brand in diamonds and precious gems. Forever.

Company's values:

Product Integrity – Opsydia draws upon cutting-edge research at the University of Oxford with a focus on academic excellence and innovative ongoing development. Our business is staffed by a high concentration of engineers and specialists educated to PhD level, many of whom are global leaders in laser technology and optics. This committed expertise ensures our systems are ready to be deployed globally to benefit businesses at all stages of the diamond and coloured gemstone pipelines.

Confidentiality & Security – We take client confidentiality and privacy seriously and are committed to maintaining trust. High level encryption techniques and software security ensure the integrity of proprietary logos, with access to brand and business information strictly controlled. Only authorised agents and third parties with Opsydia Systems can access logos and artwork to use on behalf of their clients. This is in-keeping with our absolute focus on authenticity, anti-counterfeiting and data protection.

Flexibility – Opsydia technology has been purposefully designed to be interoperable and agnostic. We work with all blockchain technology providers and seamlessly blend with a client's existing technical and digital processes for achievable integration. We prioritise client choice and do not advocate single solution options.

Customer Service – Providing unmatched support and technical assistance to clients globally no matter their requirements. Our team of laser and optics specialists, engineers, gemmologists and diamond experts can speak knowledgably to clients about their needs and supply chains, providing a responsive, global service. We strive to consistently and confidently respond to the needs of the diamond, coloured gemstone, jewellery and watchmaking industries as they seek to address contemporary market challenges, including traceability, transparency and anti-counterfeiting.

Solution I:

Solution Name

- Opsydia Systems D4000, D5000 and D6000

Solution Overview

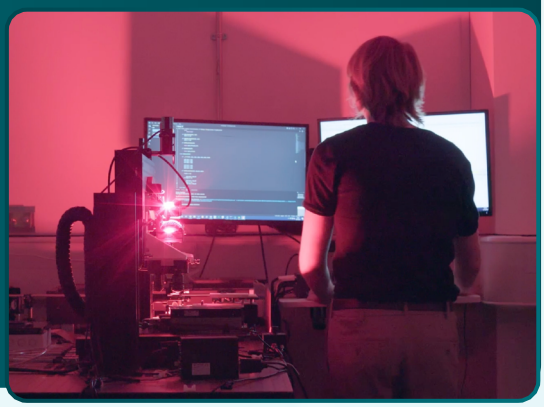
There are three commercially available Opsydia Systems that are ready to be deployed globally:

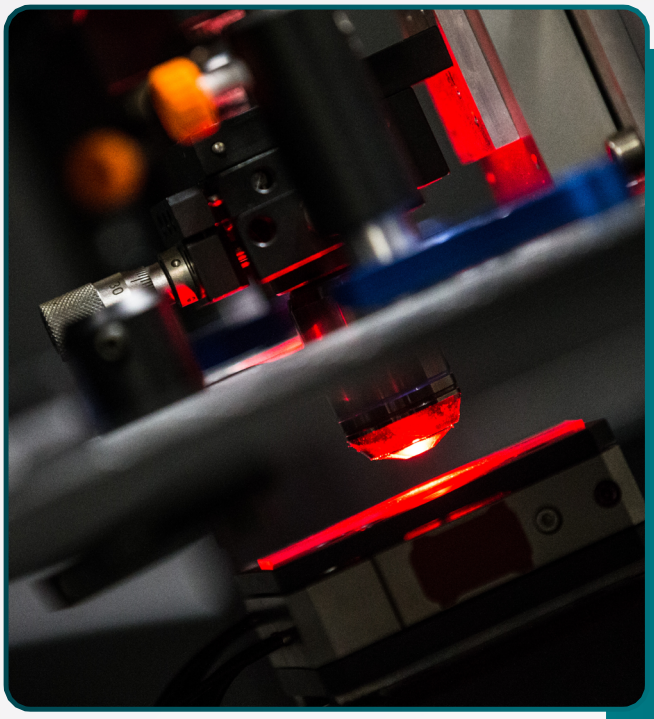
- the Opsydia Surface ID System (D4000)
- the Opsydia Sub-Surface ID System (D5000), and
- a third combined System that offers both capabilities, the D6000.

All three are suitable for use in factory, office and laboratory environments and share the same beneficial software, encryption, and high-volume processing power.

Description

- Our Systems can create Surface IDs, Loupe Visible IDs and Nano IDs or a combination of Sub-Surface and Surface IDs in one device. The D4000 only offers Surface IDs, while the D5000 – our inaugural System – focuses on sub-surface identifiers that vary by visibility. Finally, the D6000 incorporates all our technologies to offer Surface, Loupe and Nano IDs within a single device. Opsydia Systems are approximately one metre wide and are standard doorway accessible.
- **Our devices can process 100,000+ stones per year.**
- Jewellery Viewer – The Opsydia Viewer is an internet-enabled device designed with the luxury retailer in mind. Its on-screen appearance and visuals can be tailored to blend seamlessly with other brand touchpoints, ensuring a consistent look-and-feel in consumer-facing environments. The Jewellery Viewer allows users to see microscopic Sub-Surface Nano IDs in diamonds and coloured gemstones and captures macro and micro images that end consumers can share with their family and friends. The Opsydia Viewer integrates with blockchain, traceability and information management platforms to create a new kind of consumer experience and provide compelling evidence of provenance, authenticity and integrity.





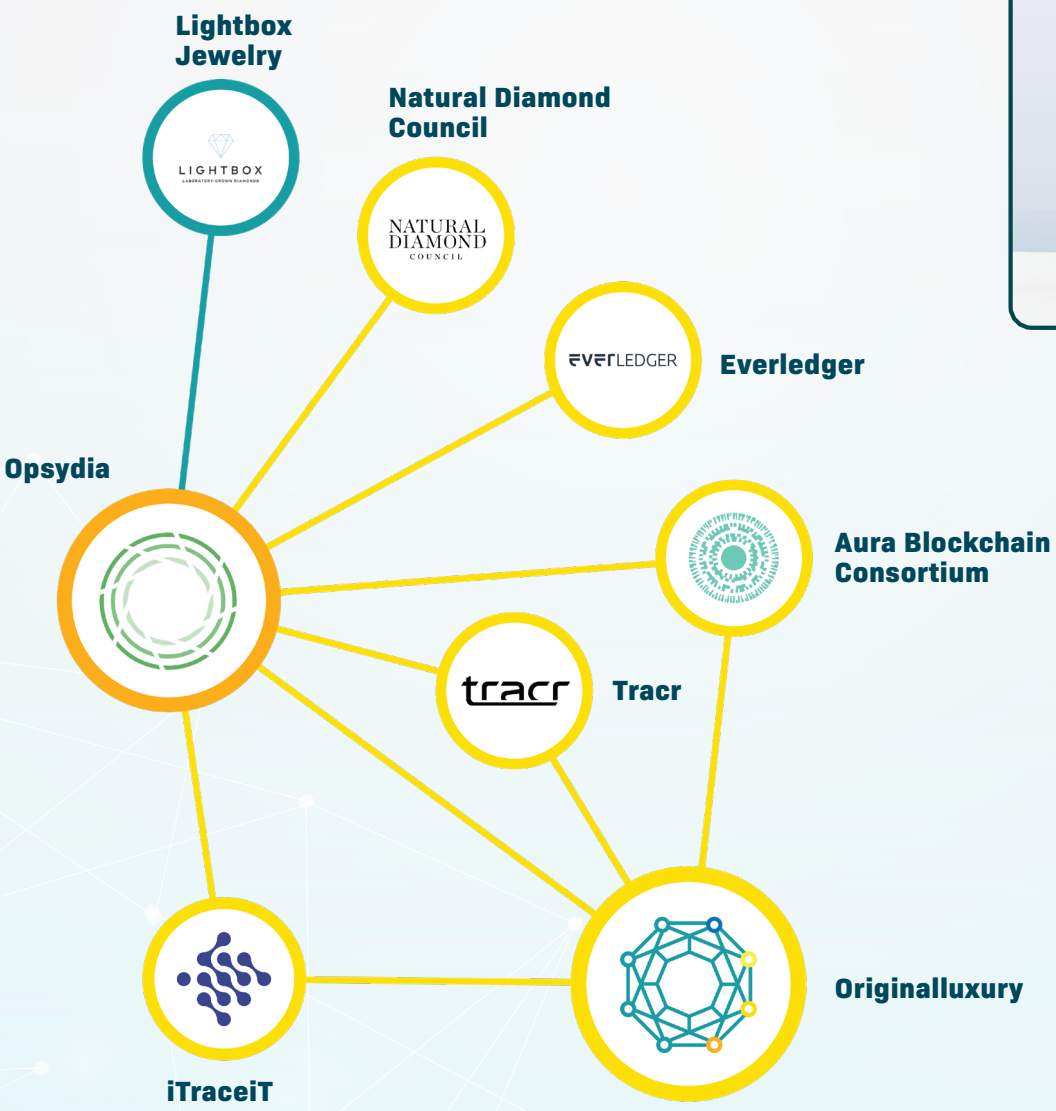
The device gives retailers the opportunity to present tangible evidence of origin, supply chain provenance and CSR initiatives, while also enhancing the storytelling around these important concepts in-store. This first-of-its-kind viewer is an innovative and experiential way to establish trust and elevate brand values.

Target Audience

- Opsydia Systems are suitable for a wide range of businesses at all stages of the diamond and coloured gemstone pipeline, including miners, manufacturers, gem certification laboratories, melée producers/setters, luxury jewellery brands and retailers and premium watch businesses.

Geography:

- Global



Legend:

- Core Organization
- Partnerships
- Clients

Traceability & Transparency Enhancement:

Specific traceability & transparency challenges that our solution address:

Tamper-Proof Inscriptions – Current industry-standard diamond identification is achieved by surface marking the girdle of diamonds which can be easily polished away or fraudulently replicated. There are many examples of inferior and laboratory-grown diamonds being marked with false grading report numbers to mask their true identity. Opsydia laser technology creates a tamper-proof physical link between a specific diamond or coloured gemstone and its blockchain record or grading report. Our Nano ID and Loupe ID features can be placed beneath the surface of a gemstone in a way that can't be polished away or removed without re-cutting a stone, making efforts to do so uneconomical.

Record of Origin/Provenance – Customisable sub-surface inscriptions can provide a record of origin and product provenance, while also creating a physical link to blockchain records, grading reports or traceability initiatives (through logos, serial numbers or other features).

Authenticity and Anti-Counterfeiting – Uniquely securing brand identity in physical products, whether through a single diamond, coloured gemstone, multiple melée diamonds or sapphire crystal glass. This adds another layer of security and anti-counterfeiting protection for large luxury brands.

Supporting the Secondary Market – As the secondary market continues to grow for luxury fine jewellery and premium timepieces, Opsydia inscriptions add enduring value to a brand and product by confirming its identity and branded origins.

Agnostic Technology – Our agnostic technology is interoperable with all blockchain and IM systems. This accessibility addresses the challenges of a fragmented marketplace, extending choice and flexibility to clients.

The Opsydia Viewer – Internet-enabled luxury retail jewellery viewer allows users in a store environment to view Sub-Surface Nano IDs in diamonds and coloured gemstones. This serves as irrefutable evidence of innovative methods being used to secure the identity and authenticity of precious stones, thus elevating trust and brand reputation among consumers.

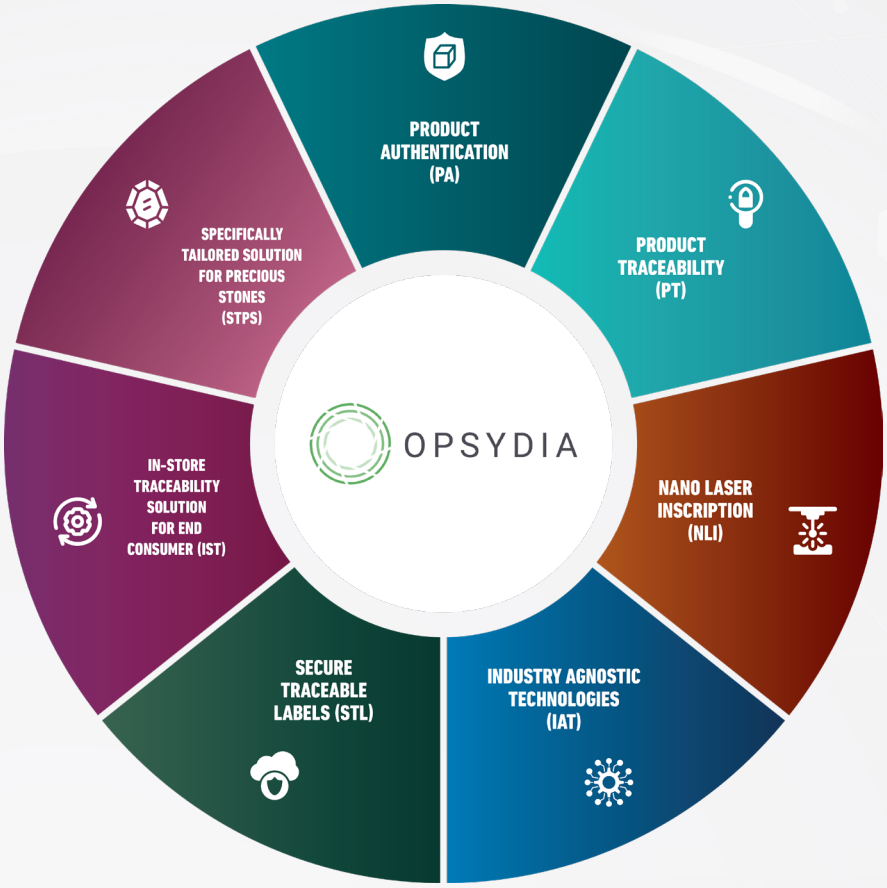
Data Collection and Inventory Management – Sub-surface identifiers provide data for inventory control and reconciliation, which can be particularly important if inscriptions are undertaken by authorised third parties. Each inscription is evidenced by a quality control image, with the time and date stamped and the operator noted in a ledger – this is suitable for high-volume workflows in busy manufacturing environments.

Consumer perspective:

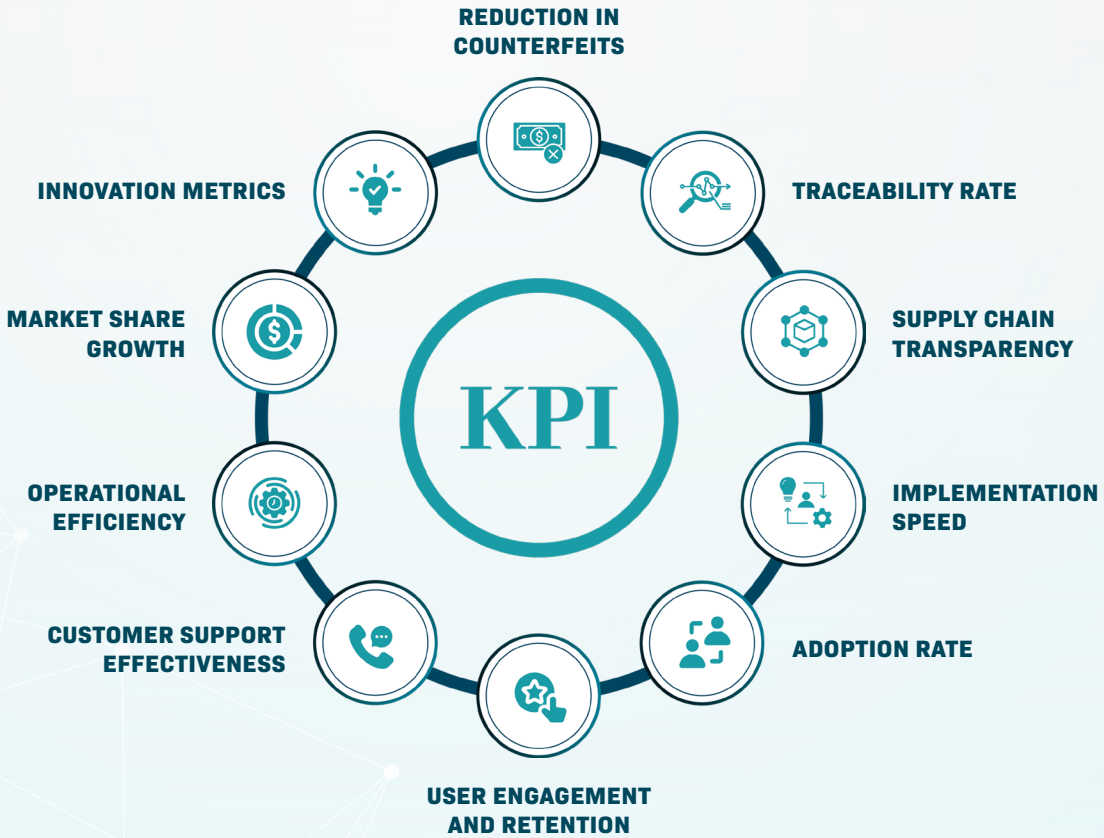
Key traceability and transparency challenges that our solution help customers overcome?

- **Fraudulent Girdle Inscriptions** – Opsydia Sub-Surface Nano IDs and Loupe IDs cannot be easily polished away or fraudulently replicated. This overcomes the challenges associated with the current method if inscribing the girdle of polished diamonds, alleviating pressures on gemmology laboratories and protecting the consumer.

Technology Features:



KPIs used to measure the effectiveness of our solution:



Client Testimonials:

"We are honoured to have been able to collaborate with Opsydia in refining the criteria for a Nano ID so that it can be integrated into diamond grading practices. Diamond traceability and security are important issues in the diamond supply chain, and it is important that such scientific techniques be developed for the trade and to ultimately strengthen consumer confidence,"

Dr. Michael S. Krzemnicki, Director of the Swiss Gemmological Institute SSEF, Basel

"Opsydia's technology has proven itself to be a highly effective method of including a quality mark and tamperproof tag into our laboratory grown diamonds. Our customers value the ability to easily loupe a stone and see our inscribed logo-mark to distinguish between LGD diamonds that have been grown in our laboratory, and natural diamonds. The logo mark, while easily identifiable under magnification, does not impact the visual beauty or grading characteristics of the stones, and as it sits beneath the surface, our customers can be assured that it will not easily be removed or altered,"

Nick Smart, Commercial Director, Lightbox Jewelry

"Myne London, (now incorporating Myne USA), are proud and pioneering partners with Opsydia. Acquiring the Swat Valley emeralds that are the hallmark of their collection demanded heavy investment in order to secure a mine-to-market supply route that met the founders' strict ethical criteria. With an exclusive and bespoke jewellery range that targets a young and discerning audience Myne London has been proud to further inspire consumer trust with Opsydia's subtle sub-surface identifiers setting them apart from all competition. Linking the work of their all-woman team cutting emeralds in Pakistan with their goldsmiths in California, Opsydia provides the ultimate seal of trust for Myne London customers,"

Charles Evans, Gemmologist, Myne London

Future Developments :

Upcoming Features - planned updates or new features that will further enhance traceability & transparency.

One of the greatest reputational risks currently facing the diamond industry and luxury retailers is providing assurances on the **provenance of melée diamonds**. Given their relative low cost, there is a disinclination to invest in proof of origin or traceability measures to enhance provenance. Opsydia is currently developing a system that can inscribe melée (to a minimum size of Ø 0.8mm) at volume. This system will inscribe up to 500,000 stones per annum and gems from any given parcel will all bear the same code. This will solve significant industry challenges and provide an option for large-scale manufacturers and brands looking to secure the identity and integrity of melée.

Vision - Our long-term vision for traceability and transparency is that these concepts become more than buzzwords and develop into rigorous and quantifiable initiatives that place as much emphasis on the upstream as they do the downstream. Opsydia technology is wholly blockchain compatible and is the ideal companion tool to ensure that these future goals are met.

- Identifiable diamonds and coloured gemstones
- Proof of origin encoded at the manufacturing level
- Quantifiable evidence of traceability initiatives
- Anti-counterfeiting for luxury brands in the primary and secondary markets
- Brand storytelling centred around provenance, traceability and transparency

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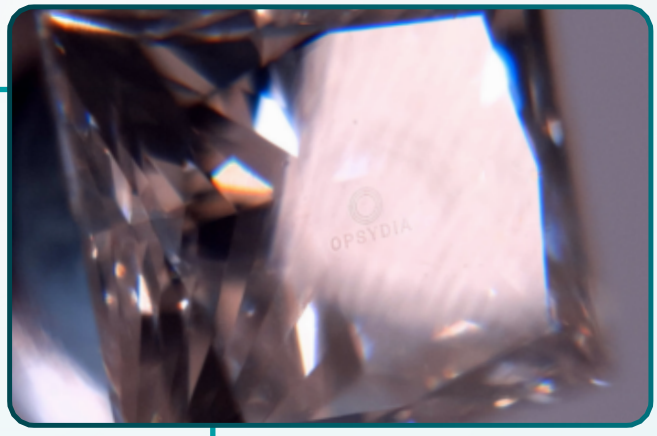
Partnerships - key partnerships or collaborations that support our solution.

- Opsydia is an agnostic technology provider, meaning our systems and software can be integrated into pre-existing workflows and solutions. Our technology is blockchain compatible with Sarine, Everledger, Aura, iTraceiT, Synova and Tracr, among others.



Support Contact

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