

Si Photonics & Photonic IC

Interactive Patent Landscape Dashboard - May 2026

The global IP race is accelerating: who are the key players, and which technologies are shaping the future of silicon photonics and photonic integrated circuits?

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- Type: Interactive Patent Landscape Dashboard
- Publication: May 2026
- Reference: KM26004



Deliverables

- Database (>13,300 patent families)
- Interactive dashboard

Pricing

- €4,990 – Database + Dashboard

KEY FEATURES

- **Interactive dashboard** enabling free and dynamic exploration of the patent landscape, allowing users to instantly drill down into key insights and tailor the analysis to their specific needs.
- **Global patenting trends**, including time evolution of patent publications, countries of patent filings, patent families and applications.
- **Main patent assignees** and **IP newcomers** grouped by geographical area and value chain position.
- **Players' IP position** and the relative strength of their patent portfolio.
- Focus on players' IP portfolios.
- Patents categorized by **technology segments**: PIC / SiPh Platforms, Active Devices, Optical Coupling, Optical Transceivers, Optical I/O & Interconnects, Packaging & Testing, Photonic Computing, and Photonic Sensing.
- Patents categorized by **material segments**: Si & SOI, InP, SiN, TFLN & LNOI, Polymer on Insulator, and BTO.
- For each segment: IP dynamics, ranking of main patent assignees, IP newcomers, key IP players and key patents.
- **Excel database** containing all patents analyzed, including patent segmentations and hyperlinks to an updated online database.

RELATED REPORTS

- [Co-Packaged Optics & Optical Interconnects 2026](#)

Evolving Competitive Landscape of Si Photonics & Photonic IC Technologies

Silicon photonics (SiPh) and photonic integrated circuits (PIC) sit at the heart of next-generation optical communication, datacenter interconnects, AI infrastructure and advanced sensing systems. By integrating optical functions such as waveguides, modulators, photodetectors, filters, resonators, couplers, light-source interfaces and optical I/O structures onto chip-scale platforms, PIC and SiPh technologies are enabling a new level of bandwidth density, power efficiency and system integration.

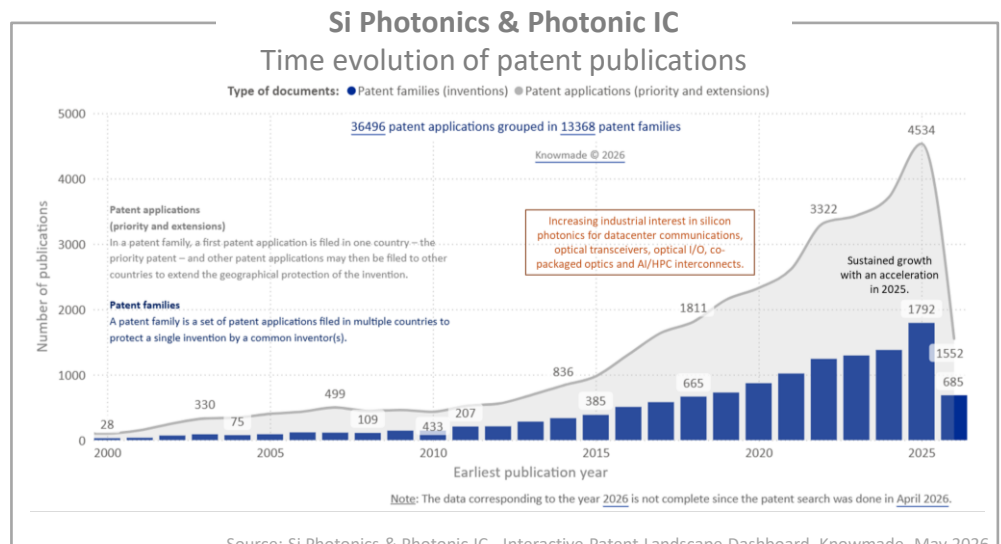
This interactive IP dashboard and database cover **36,400+ patent publications grouped into 13,300+ patent families**. The patent publication trend shows a strong and sustained acceleration from the mid-2010s onward, with publications rising to more than **1,700 patent families and 4,500 individual patents in 2025**. Although 2026 data is incomplete because the search was performed in **April 2026**, the early publication level suggests that patenting activity is expected to continue growing steadily throughout the year and should exceed 2,000 patent families.

This acceleration reflects the industrial adoption of silicon photonics in optical transceivers, coherent optics and datacenter communications, as well as the rapid emergence of optical I/O, co-packaged optics, photonic interconnects, optical chiplets and 3D photonic integration. These technologies are becoming increasingly strategic as AI and HPC systems face growing constraints in bandwidth, latency and power consumption.

The competitive IP landscape is highly diversified. Leading applicants include **Intel, Nokia, TSMC, Cisco, Huawei, Samsung Group, NTT, GlobalFoundries, HP, Rockley Photonics, Corning, Marvell, ASE Group, IBM, imec, CEA, Meta, Fujitsu, University of California, OpenLight Photonics, Sumitomo Electric, Alphabet, ETRI and Ciena**. This confirms that Si Photonics & Photonic IC is not only a field for optical communication companies, but also a strategic battleground for semiconductor players, foundries, OSATs, advanced materials suppliers, R&D organizations, cloud infrastructure companies and specialized pure players.

The dashboard structures the patent landscape across eight key technology segments: **PIC / SiPh Platforms, Active Devices, Optical Coupling, Optical Transceivers, Optical I/O & Interconnects, Packaging & Testing, Photonic Computing, and Photonic Sensing**. It also tracks major material and platform families, including **Si & SOI, InP, SiN, TFLN & LNOI, Polymer on Insulator, and BTO**, when explicitly linked to integrated photonics or PIC applications.

Designed for dynamic exploration and competitive benchmarking, the interactive dashboard and Excel database enable users to analyze patenting dynamics, benchmark key applicants, identify IP newcomers, explore technology segments and materials platforms, access patent-level records, and detect emerging opportunities in one of the most dynamic areas of photonics and semiconductor innovation.



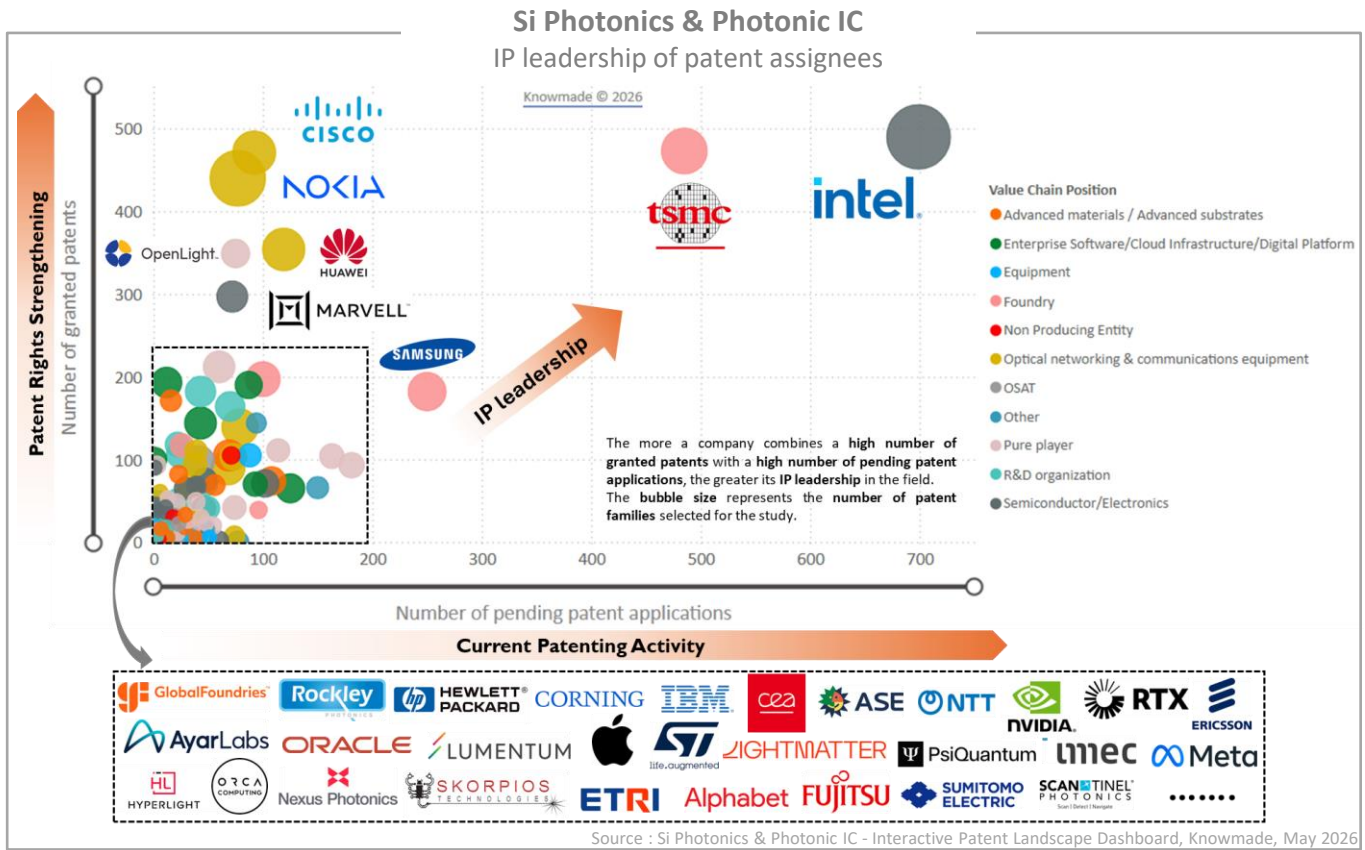
Competitive Positioning of Key Patent Players

The Si Photonics & Photonic IC patent landscape is shaped by **semiconductor companies, optical networking leaders, foundries, OSATs, R&D organizations, cloud infrastructure players, materials suppliers, and pure players**. This diversity reflects the strategic role of integrated photonics across PIC platforms, active devices, optical transceivers, optical I/O, CPO and advanced packaging.

Major players such as **Intel, Nokia, Cisco, Huawei, TSMC, Marvell, Samsung Group, NTT, and GlobalFoundries** hold strong IP positions, showing both the maturity of SiPh in optical communications and its growing importance for datacenter, AI/HPC and semiconductor roadmaps.

Specialized pure players such as **Rockley Photonics and OpenLight Photonics** also remain important innovation drivers, particularly in integrated photonic platforms, optical engines, active devices, sensing and heterogeneous integration.

Future IP leadership will depend not only on portfolio size, but also on the ability to scale photonic integration through advanced packaging, optical I/O, photonic chipllets, and 3D integration.



Technology Segmentation

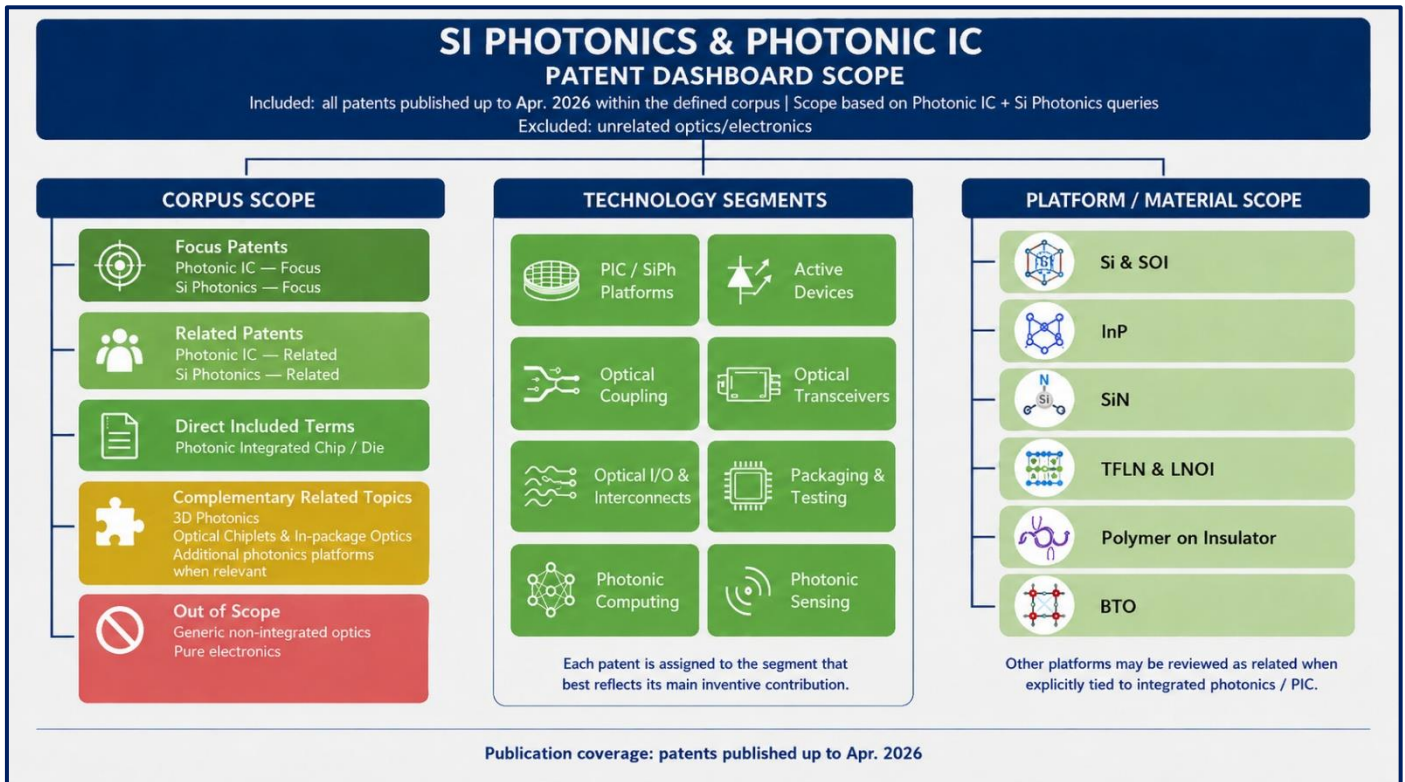
The dashboard segments the Si Photonics & Photonic IC patent landscape into **eight technology areas: PIC / SiPh Platforms, Active Devices, Optical Coupling, Optical Transceivers, Optical I/O & Interconnects, Packaging & Testing, Photonic Computing, and Photonic Sensing**.

It also includes **material segmentation** covering **Si & SOI, InP, SiN, TFLN & LNOI, Polymer on Insulator, and BTO**. This dual segmentation helps users quickly identify where innovation is concentrated, compare players' positioning, and track emerging technology and platform trends.

Technical Segment	Definition
PIC / SiPh Platforms	Foundational PIC/SiPh platform technologies, including passive photonic structures, platform architectures, and platform-level fabrication or integration processes.
Active Devices	Active or tunable PIC/SiPh components that modulate, detect, switch, tune, amplify, or generate optical signals. This includes modulators, photodetectors, phase shifters, optical switches, integrated lasers, light sources, and optical amplifiers.
Optical Coupling	Coupling light into, out of, or between PIC/SiPh chips. This includes fiber-to-chip coupling, edge couplers, grating couplers, spot-size converters, mode converters, lenses, mirrors, facets, connectors, and optical alignment methods.
Optical Transceivers	PIC/SiPh-based optical transmitters, receivers, transceivers, optical modules, or optical communication links. This includes coherent modules, pluggable transceivers, WDM/PAM4 systems, and datacom or telecom optical communication applications.
Optical I/O & Interconnects	PIC/SiPh-based optical connectivity between chips, dies, packages, boards, processors, memories, accelerators, or systems. This includes optical I/O, photonic interconnects, silicon photonic interconnects, optical chipllets, photonic interposers, optical engines, co-packaged optics, in-package optics, 3D photonic interconnects, and photonic fabrics.
Packaging & Testing	Packaging, assembly, testing, calibration, monitoring, thermal control, or reliability of PIC/SiPh chips, photonic dies, optical engines, or photonic modules.
Photonic Computing	Using PIC/SiPh or integrated photonics to perform or accelerate computation, signal processing, AI inference, matrix/tensor operations, neural-network processing, photonic fabrics, or quantum photonic processing.
Photonic Sensing	Using PIC/SiPh or integrated photonics for sensing, detection, ranging, imaging, spectroscopy, or measurement applications. This includes LiDAR, fMCW LiDAR, optical phased arrays, beam steering, biosensing, chemical/gas sensing, spectrometers, and integrated photonic sensors.

Companies mentioned in this analysis (non-exhaustive)

Intel, Nokia, TSMC, Cisco, Huawei, Samsung Group, NTT - Nippon Telegraph & Telephone, GlobalFoundries, HP - Hewlett Packard Development, Rockley Photonics, Corning, Marvell, ASE Group, IBM, Meta, Fujitsu, OpenLight Photonics, Sumitomo Electric, Alphabet, Ciena, PsiQuantum, Ericsson, Lightmatter, Apple, Oracle, RTX Corporation, NVIDIA, Shanghai Xizhi Technology, Lumentum, STMicroelectronics, Ayar Labs, Coherent, Hisense, Honeywell, Innolux, Renesas Electronics, Dow Chemical, NEC, Bosch, Kyocera, Aurora, Innolight Technology, Mitsubishi Electric, Carl Zeiss, US Navy, AMS-OSRAM, Sony, Skorpis Technologies, AMD, Orca Computing, Resonac, Broadcom, Fujikura, Nayuan Technology Singapore, Nexus Photonics, SMART Photonics, Analog Photonics, Volkswagen Group, HyperLight, Oki Electric, Panasonic, Scantinel Photonics, Toshiba, Accelink Technologies, Lockheed Martin, SPIL, CETC - China Electronics Technology Group Corporation, Hitachi, Xilian Optical Fiber, AT&T, ASML, Celestial AI, SEFFECT Photonics, Hangzhou Guangzhiyuan Technology, JBD, MACOM Technology Solutions, Shinko, Texas Instruments, AEVA, Canon, Lightwave Logic, Micron, 3M, Nano Photonics, Ranovus, Thales, United Microelectronics Centre, Ajinomoto, GS Yuasa, NCAP, Scintil Photonics, Teramount, Unimicon, Applied Materials, BAE Systems, Furukawa Electric, and more.

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Yanni works at KnowMade in the field of RF Technologies, Sensing, and Imaging. She holds a Ph.D. in RF and Wireless Communication from INSA Lyon, INRIA, and an Engineer's Degree in Electrical Engineering from INSA Lyon, France. Yanni previously worked at Nokia Bell Labs, Strategy & Technology, focusing on RF front-end systems and advanced sensing technologies. She is the inventor of over 20 patents and has authored more than 10 scientific publications in the field.

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ABOUT KNOWMADE

KnowMade is a technology intelligence and IP strategy firm specializing in the analysis of patents and scientific publications. We assist innovative companies, investors, and research organizations in understanding the competitive landscape, anticipating technological trends, identifying opportunities and risks, improving their R&D, and shaping effective IP strategies.

KnowMade's analysts combine their strong technology expertise and in-depth knowledge of patents with powerful analytics tools and methodologies to transform patent and scientific data into actionable insights to support decision-making in R&D, innovation, investment, and intellectual property.

KnowMade has solid expertise in Semiconductors and Packaging, Power Electronics, Batteries and Energy Management, RF and Wireless Communications, Photonics, MEMS, Sensing and Imaging, Medical Devices, Biotechnology, Pharmaceuticals, and Agri-Food.

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Si Photonics & Photonic IC

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Ref.: KM26004

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To pay your invoice via PayPal, you must first register at www.paypal.com. You can then send money to KnowMade S.A.R.L. by entering our email address contact@knowmade.fr as the recipient and entering the invoice amount.

PRODUCT ORDER

4,990 EUR – Dashboard ⁽¹⁾ + Database ⁽²⁾

For price in dollars, please use the day's exchange rate.

For French customer, add 20% for VAT.

The Excel database and access to the interactive online dashboard will be delivered electronically upon receipt of payment.

⁽¹⁾ Access to the interactive dashboard is granted to an **unlimited number of authorized users** within the purchasing organization. Access codes must not be shared with any third party. The dashboard must not be used to produce analyses or reports that are resold, sublicensed, or otherwise made available to any external user or entity outside the purchasing organization.

⁽²⁾ The Database is provided under a **multi-user license and can be shared internally** among employees of the purchasing organization. Subsidiaries and joint ventures are excluded from this license.

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E-mail: contact@knowmade.fr

Mail: KnowMade S.A.R.L. 2405 route des Dolines, Le Drakkar, 06560 Valbonne Sophia Antipolis, FRANCE

I hereby accept KnowMade's Terms and Conditions of Sale
Signature:

TERMS AND CONDITIONS OF SALES

Definitions

“Acceptance”: Action by which the Buyer accepts the terms and conditions of sale in their entirety. It is done by signing the purchase order which mentions “I hereby accept KnowMade’s Terms and Conditions of Sale”.

“Buyer”: Any business user (i.e. any person acting in the course of its business activities, for its business needs) entering into the following general conditions to the exclusion of consumers acting in their personal interests.

“Contracting Parties” or “Parties”: The Seller on the one hand and the Buyer on the other hand.

“Intellectual Property Rights” (“IPR”) means any rights held by the Seller in its Products, including any patents, trademarks, registered models, designs, copyrights, inventions, commercial secrets and know-how, technical information, company or trading names and any other intellectual property rights or similar in any part of the world, notwithstanding the fact that they have been registered or not and including any pending registration of one of the above mentioned rights.

“License”: For the reports and databases, 2 different licenses are proposed. The buyer has to choose one license:

1. Single user license: a single individual at the company can use the report.

2. Multi user license: the report can be used by unlimited users within the company. Subsidiaries and Joint Ventures are not included.

“Products”: Reports are established in PowerPoint and delivered on a PDF format and the database may include Excel files.

“Seller”: Based in Sophia Antipolis (France headquarters), KnowMade is a technology intelligence company specialized in the research and analysis of scientific and technical information. We provide patent landscapes and scientific state of the art with high added value to businesses and research laboratories. Our intelligence digests play a key role to define your innovation and development strategy.

1. Scope

1.1 The Contracting Parties undertake to observe the following general conditions when agreed by the Buyer and the Seller. Any additional, different, or conflicting terms and conditions in any other documents issued by the buyer at any time are hereby objected to by the seller, shall be wholly inapplicable to any sale made hereunder and shall not be binding in any way on the seller.

1.2 This agreement becomes valid and enforceable between the Contracting Parties after clear and non-equivocal consent by any duly authorized person representing the Buyer. For these purposes, the Buyer accepts these conditions of sales when signing the purchase order which mentions “I hereby accept KnowMade’s Terms and Conditions of Sale”. This results in acceptance by the Buyer.

1.3 Orders are deemed to be accepted only upon written acceptance and confirmation by the Seller, within [7 days] from the date of order, to be sent either by email or to the Buyer’s address. In the absence of any confirmation in writing, orders shall be deemed to have been accepted.

2. Mailing of the Products

2.1 Products are sent by email to the Buyer:

- within [1] month from the order for Products already released; or

- within a reasonable time for Products ordered prior to their effective release. In this case, the Seller shall use its best endeavours to inform the Buyer of an indicative release date and the evolution of the work in progress.

2.2 Some weeks prior to the release date the Seller can propose a pre-release discount to the Buyer.

The Seller shall by no means be responsible for any delay in respect of article 2.2 above, and including in cases where a new event or access to new contradictory information would require for the analyst extra time to compute or compare the data in order to enable the Seller to deliver a high quality Products.

2.3 The mailing of the Product will occur only upon payment by the Buyer, in accordance with the conditions contained in article 3.

2.4 The mailing is operated through electronic means either by email via the sales department. If the Product’s electronic delivery format is defective, the Seller undertakes to replace it at no charge to the Buyer provided that it is informed of the defective formatting within 90 days from the date of the original download or receipt of the Product.

2.5 The person receiving the Products on behalf of the Buyer shall immediately verify the quality of the Products and their conformity to the order. Any claim for apparent defects or for

non-conformity shall be sent in writing to the Seller within 8 days of receipt of the Products. For this purpose, the Buyer agrees to produce sufficient evidence of such defects.

2.6 No return of Products shall be accepted without prior information to the Seller, even in case of delayed delivery. Any Product returned to the Seller without providing prior information to the Seller as required under article 2.5 shall remain at the Buyer’s risk.

3. Price, invoicing and payment

3.1 Prices are given in the orders corresponding to each Product sold on a unit basis or corresponding to annual subscriptions. They are expressed to be inclusive of all taxes. The prices may be reevaluated from time to time. The effective price is deemed to be the one applicable at the time of the order.

3.2 Payments due by the Buyer shall be sent by cheque payable to KnowMade, PayPal, or by electronic transfer to the following account:

Banque Populaire Méditerranée, CAP 3000 Quartier du lac, 06700 St Laurent du Var

BIC or SWIFT code: CCBPFRPPMAR

IBAN : FR76 1460 7003 6360 6214 5695 139

To ensure the payments, the Seller reserves the right to request down payments from the Buyer. In this case, the need of down payments will be mentioned on the order.

3.3 Payment is due by the Buyer to the Seller within 30 days from invoice date, except in the case of a particular written agreement. If the Buyer fails to pay within this time and fails to contact the Seller, the latter shall be entitled to invoice interest in arrears based on the annual rate Refi of the «BCE» + 7 points, in accordance with article L. 441-6 of the French Commercial Code. Our publications (report, database, tool...) are delivered only after reception of the payment.

3.4 In the event of termination of the contract, or of misconduct, during the contract, the Seller will have the right to invoice at the stage in progress, and to take legal action for damages.

4. Liabilities

4.1 The Buyer or any other individual or legal person acting on its behalf, being a business user buying the Products for its business activities, shall be solely responsible for choosing the Products and for the use and interpretations he makes of the documents it purchases, of the results he obtains, and of the advice and acts it deduces thereof.

4.2 The Seller shall only be liable for (i) direct and (ii) foreseeable pecuniary loss, caused by the Products or arising from a material breach of this agreement

4.3 In no event shall the Seller be liable for:

a) damages of any kind, including without limitation, incidental or consequential damages (including, but not limited to, damages for loss of profits, business interruption and loss of programs or information) arising out of the use of or inability to use the Seller’s website or the Products, or any information provided on the website, or in the Products;

b) any claim attributable to errors, omissions or other inaccuracies in the Product or interpretations thereof.

4.4 All the information contained in the Products has been obtained from sources believed to be reliable. The Seller does not warrant the accuracy, completeness adequacy or reliability of such information, which cannot be guaranteed to be free from errors.

4.5 All the Products that the Seller sells may, upon prior notice to the Buyer from time to time be modified by or substituted with similar Products meeting the needs of the Buyer. This modification shall not lead to the liability of the Seller, provided that the Seller ensures the substituted Product is similar to the Product initially ordered.

4.6 In the case where, after inspection, it is acknowledged that the Products contain defects, the Seller undertakes to replace the defective products as far as the supplies allow and without indemnities or compensation of any kind for labor costs, delays, loss caused or any other reason. The replacement is guaranteed for a maximum of two months starting from the delivery date. Any replacement is excluded for any event as set out in article 5 below.

4.7 The deadlines that the Seller is asked to state for the mailing of the Products are given for information only and are not guaranteed. If such deadlines are not met, it shall not lead to any damages or cancellation of the orders, except for non-acceptable delays exceeding [4] months from the stated deadline, without information from the Seller. In such case only, the Buyer shall be entitled to ask for a reimbursement of its first down payment to the exclusion of any further damages.

4.8 The Seller does not make any warranties, express or implied, including, without limitation, those of saleability and fitness for a particular purpose, with respect to the Products. Although the Seller shall take reasonable steps to screen Products for infection of viruses, worms, Trojan horses or other codes containing contaminating or destructive properties before making the Products available, the Seller cannot guarantee that any Product will be free from infection.

5. Force majeure

The Seller shall not be liable for any delay in performance directly or indirectly caused by or resulting from acts of nature, fire, flood, accident, riot, war, government intervention, embargoes, strikes, labor difficulties, equipment failure, late deliveries by suppliers or other difficulties which are beyond the control, and not the fault of the Seller.

6. Protection of the Seller’s IPR

6.1 All the IPR attached to the Products are and remain the property of the Seller and are protected under French and international copyright law and conventions.

6.2 The Buyer agreed not to disclose, copy, reproduce, redistribute, resell or publish the Product, or any part of it to any other party other than employees of its company. The Buyer shall have the right to use the Products solely for its own internal information purposes. In particular, the Buyer shall therefore not use the Product for purposes such as:

- Information storage and retrieval systems;
- Recordings and re-transmittals over any network (including any local area network);
- use in any timesharing, service bureau, bulletin board or similar arrangement or public display;
- Posting any Product to any other online service (including bulletin boards or the Internet);
- Licensing, leasing, selling, offering for sale or assigning the Product.

6.3 The Buyer shall be solely responsible towards the Seller of all infringements of this obligation, whether this infringement comes from its employees or any person to whom the Buyer has sent the Products and shall personally take care of any related proceedings, and the Buyer shall bear related financial consequences in their entirety.

6.4 The Buyer shall define within its company point of contact for the needs of the contract. This person will be the recipient of each new report in PDF format. This person shall also be responsible for respect of the copyrights and will guaranty that the Products are not disseminated out of the company.

7. Termination

7.1 If the Buyer cancels the order in whole or in part or postpones the date of mailing, the Buyer shall indemnify the Seller for the entire costs that have been incurred as at the date of notification by the Buyer of such delay or cancellation. This may also apply for any other direct or indirect consequential loss that may be borne by the Seller, following this decision.

7.2 In the event of breach by one Party under these conditions or the order, the non-breaching Party may send a notification to the other by recorded delivery letter upon which, after a period of thirty (30) days without solving the problem, the non-breaching Party shall be entitled to terminate all the pending orders, without being liable for any compensation.

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All the provisions of these Terms and Conditions are for the benefit of the Seller itself, but also for its licensors, employees and agents. Each of them is entitled to assert and enforce those provisions against the Buyer.

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The Seller may, from time to time, update these Terms and Conditions and the Buyer, is deemed to have accepted the latest version of these terms and conditions, provided they have been communicated to him in due time.

9. Governing law and jurisdiction

9.1 Any dispute arising out or linked to these Terms and Conditions or to any contract (orders) entered into in application of these Terms and Conditions shall be settled by the French Commercial Courts of Grasse, which shall have exclusive jurisdiction upon such issues.

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