Yole’s methodology for building market forecasts is different from other market research companies' methodologies:

- Our approach is to build a coherent model where the five year historical data from top product shipments, module sales, and bottom sensor production, with players’ market share is collectively linked with detailed assumptions.
- Forecast are performed by carefully carrying forward the five year growth rate with the analyst appreciation of each application market dynamics in mind.

We collect data from several sources, including:

- Primary information from direct contacts and surveys with equipment & materials suppliers
- Primary information from cost analysis and teardown reports conducted by System Plus Consulting
- Secondary information from Quarterly/Annual report/publications of key players
- Comparisons between publicly-available secondary data from WSTS, OICA, IFR etc.

As a result, we can present synthetic market metrics intrinsic to a specific industry:

- Our approach’s main advantage is the delivery of homogeneous data, ranging from unit shipments and system sales to players’ market share
- We quarterly update the market information presented in this monitor
COMPANIES MONITORED IN THIS PRODUCT

CIS Monitor

Sony, Samsung, OVT, ON Semiconductor, STMicroelectronics, Panasonic, Canon, SK Hynix
TABLE OF CONTENTS

- CIS MARKET OVERVIEW
  - CIS market dynamics
  - Revenue
  - Shipments
  - Pricing
  - Quarterly revenue: Near term
  - Quarterly revenue: Long term
  - CIS market share

- CIS MARKET DEMAND
  - CIS market demand overview
  - CIS market segment share
  - Mobile market
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- CIS TECHNOLOGY
  - CIS wafer demand, per segment
  - Per technology (VIS and NIR)
  - Shipments by technology node (XX nm)
  - Shipments by technology (FSI x BSI x Stack BSI x Multi-Stack)

- CIS SUPPLY
  - Industry wafer production (CIS Wafer production per foundry - Long/Near term – VIS and NIR)
  - Industry wafer capacity estimation

- CIS PLAYER
  - Sony – Revenue per quarter and per application, capacity, fab
  - Samsung – Market mix
  - OVT – Market mix
  - ON Semiconductor – Market mix
  - STMicroelectronics – Market mix
  - Panasonic – Market mix
  - Canon – Market mix
  - SK Hynix – Market mix
  - Others – Market mix
ABOUT THE AUTHORS

Biographies and contacts

Pierre Cambou

Pierre Cambou has been part of the imaging industry since 1999. He first took several positions at Thomson TCS, which became Atmel Grenoble in 2001 and e2v Semiconductors in 2006. In 2012 Pierre founded Vence Innovation, later renamed Irlynx, to bring to market an infrared sensor technology for smart environments and interactions. He has an Engineering degree from Université de Technologie de Compiègne and a Master of Science from Virginia Tech. Pierre also graduated with an MBA from Grenoble Ecole de Management. In 2014 he joined Yole Développement as Imaging Activity Leader.

Contact: cambou@yole.fr

Chenmeijing Liang

Chenmeijing Liang works as a Technology & Market Analyst within the Photonics, Sensing & Display Division at Yole Développement (Yole). As part of the Imaging team, Chenmeijing contributes daily to analyses of CIS markets, related technologies and market strategies of the leading semiconductor companies, as well as the quarterly monitor. Prior to Yole, she was engaged in the development of R&D projects: Chenmeijing was a member of Group PSA R&D department where she worked on Vehicle 3D Holography Imaging projects. In addition, she assisted with various technical and commercial projects.

Chenmeijing Liang holds a Master’s Degree in the field of Applied physics and Optical engineering from Paris-Saclay University and University Pierre and Marie Curie (UPMC) (Paris, France).

Contact: liang@yole.fr
QUARTERLY MARKET MONITOR SAMPLE – CMOS IMAGE SENSOR SERVICE
High growth until 2024 when market saturation could be reached.
This analysis will be updated on a quarterly basis to reflect changes in the market.
CIS should remain a market of last resort maintaining growth in the upper single digit.
MOBILE – CIS CAMERAS PER SMARTPHONE

- CIS camera per smartphone will increase at 6.2 % CAGR
- Proliferation of cameras for imaging and sensing is the key growth driver for mobile CIS
• CIS & LOGIC wafer production per technology node
## Cis Market Dynamics

CIS Market Monitor Q2 2019
Covering the entire CIS market: Mobile, Consumer, Computing, Automotive, Medical, Security, Industrial, Aerospace & Defense

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Imaging for Automotive 2019

Status of the Camera Module Industry 2019 - Focus on Wafer Level Optics

Status of the CMOS Image Sensor Industry 2018
Contact our Sales Team for more information

Mobile Camera Module Comparison 2019

Mobile CMOS Image Sensor Comparison 2019
Yole Développement

From Technologies to Market
Life Sciences & Healthcare
- Microfluidics
- BioMEMS & Medical Microsystems
- Inkjet and accurate dispensing
- Solid-State Medical Imaging & BioPhotonics
- BioTechnologies

Power & Wireless
- RF Devices & Technologies
- Compound Semiconductors & Emerging Materials
- Power Electronics
- Batteries & Energy Management

Semiconductor & Software
- Package, Assembly & Substrates
- Semiconductor Manufacturing
- Memory
- Software & Computing

Photonics, Sensing & Display
- Solid-State Lighting
- Display
- MEMS, Sensors & Actuators
- Imaging
- Photonics & Optoelectronics
4 BUSINESS MODELS

○ Consulting and Analysis
  • Market data & research, marketing analysis
  • Technology analysis
  • Strategy consulting
  • Reverse engineering & costing
  • Patent analysis
  • Design and characterization of innovative optical systems
  • Financial services (due diligence, M&A with our partner)

www.yole.fr

○ Syndicated reports
  • Market & technology reports
  • Patent investigation and patent infringement risk analysis
  • Teardowns & reverse costing analysis
  • Cost simulation tool

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○ Monitors
  • Monthly and quarterly update
  • Excel database covering supply, demand, and technology
  • Price, market, demand and production forecasts
  • Supplier market shares

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  • i-Micronews.com website
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  • Events: TechDays, forums,…

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6 COMPANIES TO SERVE YOUR BUSINESS

Yole Group of Companies

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OUR GLOBAL ACTIVITY

40% of our business

30% of our business

30% of our business
ANALYSIS SERVICES - CONTENT COMPARISON

High

Technology and Market Report

Leadership Meeting

Q&A Service

Meet the Analyst

Custom Analysis

Breadth of the analysis

Low

Depth of the analysis

High
SERVING THE ENTIRE SUPPLY CHAIN

Integrators, end-users and software developers

Device manufacturers

Suppliers: material, equipment, OSAT, foundries...

Financial investors, R&D centers
SERVING MULTIPLE INDUSTRIAL FIELDS

We work across multiples industries to understand the impact of More-than-Moore technologies from device to system.

From A to Z...

Industrial and defense

Medical systems

Energy management

Automotive

Transportation makers

Mobile phone and consumer electronics
Over the course of more than 20 years, Yole Développement has grown to become a group of companies. Together with System Plus Consulting and KnowMade, we now provide marketing, technology and strategy consulting, media and corporate finance services, reverse costing, structure, process and cost analysis services and well as intellectual property (IP) and patent analysis. Together, our group of companies is collaborating ever closer and therefore will offer, in 2019, a collection of over 125 reports, 10 new monitors and 120 teardowns. Combining respective expertise and methodologies from the three companies, they cover:

- MEMS & Sensors
- RF devices & technologies
- Medical technologies
- Semiconductor Manufacturing
- Advanced packaging
- Memory
- Batteries and energy management
- Power electronics
- Compound semiconductors
- Solid state lighting
- Displays
- Software
- Imaging
- Photonics

If you are looking for:

- An analysis of your product market and technology
- A review of how your competitors are evolving
- An understanding of your manufacturing and production costs
- An understanding of your industry’s technology roadmap and related IPs
- A clear view supply chain evolution

Our reports and monitors are for you!

Our team of over 70 analysts, including PhD and MBA qualified industry veterans from Yole Développement, System Plus Consulting and KnowMade, collect information, identify trends, challenges, emerging markets, and competitive environments. They turn that information into results and give you a complete picture of your industry’s landscape. In the past 20 years, we have worked on more than 2,000 projects, interacting with technology professionals and high-level opinion makers from the main players of their industries and realized more than 5,000 interviews per year.

WHAT TO EXPECT IN 2019?

In 2019 we will extend our offering with a new ‘monitor’ product which provides more updates on your industry during the year. The Yole Group of Companies is also building on and expanding its investigations of the memory industry. Moreover, in parallel, the Yole Group reaffirms its commitment to a new collection of reports mixing software and hardware and is increasing its involvement in displays, radio-frequency (RF) technology, advanced substrates, batteries and compound semiconductors. Last but not least, System Plus Consulting is developing its teardowns service providing 120+ offers related to phones, smart home, wearables and connected devices. Discover our 2019 program right now, and ensure you get a true vision of the industry. Stay tuned!
18 fields of excellence combined with six markets to provide a complete picture of your industry landscape

**Market – Technology – Strategy – by Yole Développement**
Yole Développement (Yole) offers market reports including quantitative market forecasts, technology trends, company strategy evaluation and in-depth application analyses. Yole will publish more than 55 reports in 2019, with our partner PISEO contributing to some of the lighting reports.

The Reverse Costing® report developed by System Plus Consulting provides full teardowns, including detailed photos, precise measurements, material analyses, manufacturing process flows, supply chain evaluations, manufacturing cost analyses and selling price estimations. The reports listed below are comparisons of several analyzed components from System Plus Consulting. More reports are however available, and over 60 reports will be released in 2019. The complete list is available at www.systemplus.fr.

**Patent Reports – by KnowMade**
More than describing the status of the IP situation, these analyses provide a missing link between patented technologies and market, technological and business trends. They offer an understanding of the competitive landscape and technology developments from a patent perspective. They include key insights into key IP players, key patents and future technology trends. For 2019 KnowMade will release over 15 reports.

**The markets targeted are:**
- Mobile & Consumer
- Automotive & Transportation
- Medical
- Industrial
- Telecom & Infrastructure
- Defense & Aerospace

Linked reports are dealing with the same topic to provide a more detailed analysis.
OUR 2019 REPORTS COLLECTION (1/5)

18 fields of excellence combined with six markets to provide a complete picture of your industry landscape

MEMS & SENSORS
- **MARKET AND TECHNOLOGY REPORT**
  - Status of the MEMS Industry 2019 - Update 📊
  - Status of the Audio Industry 2019 - New 📊
  - Uncooled Infrared Imagers and Detectors 2019 – Update 📊
  - Consumer Biometrics: Technologies and Market Trends 2018 📊
  - MEMS Pressure Sensor Market and Technologies 2018 📊
- **STRUCTURE, PROCESS & COST REPORT**
  - Gas & Particle Sensors 2018 📊
- **PATENT REPORT**
  - MEMS Foundry Business Portfolio 2019 - New 📊
  - Miniaturized Gas Sensors 2019 - New 📊

PHOTONIC AND OPTOELECTRONICS
- **MARKET AND TECHNOLOGY REPORT**
  - Silicon Photonics and Photonic Integrated Circuits 2019 📊
  - LiDARs for Automotive and Industrial Applications 2019 - Update 📊
- **PATENT REPORT**
  - Silicon Photonics for Data Centers: Optical Transceiver 2019 - New 📊
  - LiDAR for Automotive 2018 📊

RF DEVICES AND TECHNOLOGIES
- **MARKET AND TECHNOLOGY REPORT**
  - 5G’s Impact on RF Front-End Module and Connectivity for Cell Phones 2019 – Update 📊
  - 5G Impact on Telecom Infrastructure 2019 - New 📊
  - Radar and Wireless for Automotive: Market and Technology Trends 2019 - Update 📊
  - Passive & Active Antenna Systems for Telecom Infrastructure 2019 - New 📊
  - RF Standards and Technologies for Connected Objects 2018 📊
- **STRUCTURE, PROCESS & COST REPORT**
  - RF Front-End Module Comparison 2019 - Update 📊
  - Automotive Radar RF Chipset Comparison 2018 📊
- **PATENT REPORT**
  - Antenna for 5G Wireless Communications 2019 - New 📊
  - RF Front End Modules for Cellphones 2018 📊
  - RF Filter for 5G Wireless Communications: Materials and Technologies 2019 📊
  - RF GaN 2019 – Patent Landscape Analysis 📊
OUR 2019 REPORTS COLLECTION (2/5)

18 fields of excellence combined with six markets to provide a complete picture of your industry landscape

**IMAGING**
- **MARKET AND TECHNOLOGY REPORT**
  - Status of the CIS Industry 2019: Technology and Foundry Business - Update
  - Imaging for Automotive 2019 - Update
  - Neuromorphic Technologies for Sensing 2019 - Update
  - Status of the CCM and WLO Industry 2019 – Update
  - 3D Imaging & Sensing 2018
  - Machine Vision for Industry and Automation 2018
  - Sensors for Robotic Vehicles 2018
- **STRUCTURE, PROCESS & COST REPORT**
  - Compact Camera Modules Comparison 2019
  - CMOS Image Sensors Comparison 2019
- **PATENT REPORT**
  - Facial & Gesture Recognition Technologies in Mobile Devices 2019 - New
  - Apple iPhone X Proximity Sensor & Flood Illuminator 2018

**MICROFLUIDICS**
- **MARKET AND TECHNOLOGY REPORT**
  - Status of the Microfluidics Industry 2019 - Update
  - Organ-on-a-Chip Market & Technology Landscape 2019 - Update
  - Point-of-Need Testing Application of Microfluidic Technologies 2019
  - Liquid Biopsy: from Isolation to Downstream Applications 2018
  - Chinese Microfluidics Industry 2018
- **PATENT REPORT**
  - Microfluidic Manufacturing Technologies 2019 – New
  - Nanopore Sequencing 2019 - New

**MEDICAL IMAGING AND BIOPHOTONICS**
- **MARKET AND TECHNOLOGY REPORT**
  - X-Ray Detectors for Medical, Industrial and Security Applications 2019 - New
  - Microscopy Life Science Cameras: Market and Technology Analysis 2019
  - Ultrasound technologies for Medical, Industrial and Consumer Applications 2018
- **PATENT REPORT**
  - Optical Coherence Tomography Medical Imaging 2018

**INKJET AND ACCURATE DISPENSING**
- **MARKET AND TECHNOLOGY REPORT**
  - Inkjet Printheads - Dispensing Technologies & Market Landscape 2019 - Update
  - Emerging Printing Technologies for Microsystem Manufacturing 2019 - New
  - Piezoelectric Devices from Bulk to Thin Film 2019 - New
  - Inkjet Functional and Additive Manufacturing for Electronics 2018
- **STRUCTURE, PROCESS & COST REPORT**
  - Piezoelectric Materials from Bulk to Thin Film Comparison 2019
OUR 2019 REPORTS COLLECTION (3/5)

18 fields of excellence combined with six markets to provide a complete picture of your industry landscape

BIOTECHNOLOGIES
- MARKET AND TECHNOLOGY REPORT
  - CRISPR-Cas9 Technology: From Lab to Industries 2018
- PATENT REPORT
  - Personalized Medicine 2019 – New

BIOMEMS & MEDICAL MICROSYSTEMS
- MARKET AND TECHNOLOGY REPORT
  - Medical Wearables: Market & Technology Analysis 2019 - New
  - Neurotechnologies and Brain Computer Interface 2018
  - BioMEMS & Non-Invasive Sensors: Microsystems for Life Sciences & Healthcare 2018
- PATENT REPORT
  - 3D Cell Printing 2019 - New
  - Circulating Tumor Cells Isolation 2019 - New

SOFTWARE AND COMPUTING
- MARKET AND TECHNOLOGY REPORT
  - Artificial Intelligence Computing For Automotive 2019 - New
  - Hardware and Software for Artificial Intelligence (AI) in Consumer Applications 2019 - Update
  - Image Signal Processor and Vision Processor Market and Technology Trends 2019
  - xPU (Processing Units) for Cryptocurrency, Blockchain, HPC and Gaming 2019 – New
- PATENT REPORT
  - Artificial Intelligence for Medical Diagnostics - New

MEMORY
- MARKET AND TECHNOLOGY REPORT
  - Status of the Memory Industry 2019 - New
  - MRAM Technology and Business 2019 - New
  - Emerging Non-Volatile Memory 2018
- STRUCTURE, PROCESS & COST REPORT
  - Memory Comparison 2019
- PATENT REPORT
  - Magnetoresistive Random-Access Memory (MRAM) 2019 - New
  - 3D Non-Volatile Memory 2018

ADVANCED PACKAGING
- MARKET AND TECHNOLOGY REPORT
  - Fan Out Packaging Technologies and Market Trends 2019 - Update
  - 3D TSV Integration and Monolithic Business Update 2019 - Update
  - Advanced RF SiP for Cellphones 2019 - Update
  - Status of the Advanced Packaging Industry 2019 - Update
  - Status of the Advanced Substrates 2019 - Update
  - Panel Level Packaging Trends 2019 - Update
  - Automotive Packaging Market & Technology Trends 2019 - New
  - Trends in Automotive Packaging 2018
  - Thin-Film Integrated Passive Devices 2018
- STRUCTURE, PROCESS & COST REPORT
  - Advanced RF SiP for Cellphones Comparison 2019

Update: 2018 version still available

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OUR 2019 REPORTS COLLECTION (4/5)
18 fields of excellence combined with six markets to provide a complete picture of your industry landscape

SEMICONDUCTOR MANUFACTURING
- MARKET AND TECHNOLOGY REPORT
  - Nano-Imprint Technology Trends for Semiconductor Applications 2019 - New
  - Equipment and Materials for Fan Out Packaging 2019 - Update
  - Equipment for More than Moore: Thin Film Deposition & Etching 2019 - New
  - Wafer Starts for More Than Moore Applications 2018
  - Polymeric Materials at Wafer-Level for Advanced Packaging 2018
- STRUCTURE, PROCESS & COST REPORT
  - Wafer Bonding Comparison 2018
- PATENT REPORT
  - Hybrid Bonding for 3D Stack 2019 – New

SOLID STATE LIGHTING
- MARKET AND TECHNOLOGY REPORT
  - Status of the Solid State Light Source Industry 2019 - New
  - Edge Emitting Lasers (EELS) 2019 - New
  - Light Shaping Technologies 2019 - New
  - Automotive Advanced Front Lighting Systems 2019 - New
- STRUCTURE, PROCESS & COST REPORT
  - VCSELs – Market and Technology Trends 2019 - Update
- PATENT REPORT
  - VCSELs 2018

DISPLAY
- MARKET AND TECHNOLOGY REPORT
  - Next Generation 3D Displays 2019 - New
  - Next Generation Human Machine Interaction (HMI) in Displays 2019 - New
- STRUCTURE, PROCESS & COST REPORT
  - Micro- and Mini-LED Displays 2019 - Update
- PATENT REPORT
  - MicroLED Displays: Intellectual Property Landscape 2018
### POWER ELECTRONICS

**MARKET AND TECHNOLOGY REPORT**
- Power SiC: Materials, Devices and Applications 2019 - Update
- Power Electronics for EV/HEV and e-mobility: Market, Innovations and Trends 2019 - Update
- Status of the Power Electronics Industry 2019 - Update
- Discrete Power Packaging : Material Market and Technology Trends 2019 - New
- Status of the Power ICs Industry 2019 - Update
- Status of the Passive Components for the Power Electronics Industry 2019 - Update
- Status of the Inverter Industry 2019 - Update
- Status of the Power Module Packaging Industry 2019 - Update
- Wireless Charging Market Expectations and Technology Trends 2018
- Power GaN 2018: Epitaxy, Devices, Applications and Technology Trends

**STRUCTURE, PROCESS & COST REPORT**
- Automotive Power Module Packaging Comparison 2018
- GaN-on-Silicon Transistor Comparison 2019
- SiC Transistor Comparison 2019

**PATENT REPORT**
- Power SiC : Materials, Devices and Modules 2019 - New
- Power GaN : Materials, Devices and Modules 2019 – Update

### BATTERY & ENERGY MANAGEMENT

**MARKET AND TECHNOLOGY REPORT**
- Status of the Rechargeable Li-ion Battery Industry 2019 - New
- Li-ion Battery Packs for Automotive and Stationary Storage Applications 2019 - Update

**PATENT REPORT**
- Battery Energy Density Increase: Materials and Emerging Technologies 2019 - New
- Solid-State Batteries 2019 - New
- Status of the Battery Patents 2018

### COMPOUND SEMI.

**MARKET AND TECHNOLOGY REPORT**
- Emerging Semiconductor Substrates: Market & Technology Trends 2019 - New
- Status of the Compound Semiconductor Industry 2019 - New
- InP Materials, Devices and Applications 2019 - New
- GaAs Wafer and Epiwafer Market: RF, Photonics, LED and PV Applications 2018

**PATENT REPORT**
- GaN-on-Silicon Substrate: Materials, Devices and Applications 2019 - Update

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Update : 2018 version still available

About Yole Développement | www.yole.fr | ©2019
Yole Développement, System Plus Consulting and KnowMade, all part of the Yole Group of Companies, are launching a collection of 10 monitors in 2019. The monitors aim to provide updated market, technology and patent data as well dedicated quarterly analyses of the evolution in your industry over the previous 12 months. Furthermore, you can benefit from direct access to the analyst for an on-demand Q&A and discussion session regarding trend analyses, forecasts and breaking news.

Topics covered will be compact camera modules (CCMs), advanced packaging, compound semiconductors, microfluidics, batteries, RF and memory.

**MARKET MONITOR** by Yole Développement

**A FULL PACKAGE:**
The monitors will provide the evolution of the market in units, wafer area and revenues. They will also offer insights into what is driving the business and a close look at what is happening will also be covered in it.

The following deliverables will be included in the monitors:

- An Excel database with all historical and forecast data
- A PDF slide deck with graphs and comments/analyses covering the expected evolutions

**ADVANCED PACKAGING – NEW**
This monitor will provide the evolution of the advanced packaging platforms. It will cover Fan-Out Wafer Level Packaging (WLP), Fan-Out Panel Level Packaging (PLP), Wafer-Level Chip Scale Packaging (WLCSP), Flip Chip packaging platforms, and 2.5D and 3D Through Silicon Via (TSV) integration. **Frequency: Quarterly, starting from Q3 2019**

**COMPOUND SEMI. – NEW**
This monitor will describe how the compound semiconductor industry is evolving. It will offer a close look at GaAs, InP, SiC, GaN and other compounds of interest providing wafer volumes, revenues, application breakdowns and momentum. **Frequency: Quarterly, starting from Q3 2019**

**CAMERA MODULE – NEW**
This monitor will provide the evolution of the imaging industry, with a close look at image sensor, camera module, lens and VCM. Volumes, revenues and momentum of companies like Sony, Samsung, Omnivision and OnSemi will thus be analysed. **Frequency: Quarterly, starting from Q3 2019**

**MEMORY – UPDATE**
For the memory industry you can have access to a quarterly monitor, as well as an additional service, a monthly pricing. Both services can be bought separately:

- DRAM Service: Including a quarterly monitor and monthly pricing.
- NAND Service: Including a quarterly monitor and monthly pricing.

**REVERSE TECHNOLOGY MONITOR** by System Plus Consulting

**SMARTPHONES – NEW**
To stay updated on the latest components, packaging and silicon chip choices of the smartphone makers, System Plus Consulting has created its first Smartphone Reverse Technology monitor. This year, get access to the packaging and silicon content database of at least 20 different flagship smartphones – more than five per quarter. Starting at the beginning of 2019, the monitor will include an Excel database report for each phone and a quarterly comparison.
OUR 2019 MONITORS COLLECTION (2/2)

Get the most updated overview of your market to monitor your strategy

PATENT MONITOR by KnowMade

A FULL PACKAGE:
Starting at the beginning of the year, the KnowMade monitors include the following deliverables:

• An Excel file including the monthly IP database of:
  • New patent applications
  • Newly granted patents
  • Expired or abandoned patents
  • Transfer of IP rights through re-assignment and licensing
  • Patent litigation and opposition

• Quarterly report including a PDF slide deck with the key facts & figures of the quarter: IP trends over the three last months, with a close look to key IP players and key patented technologies.

○ GaN for Power & RF Electronics
  Wafers and epiwafers, GaN-on-SiC, silicon, sapphire or diamond, semiconductor devices such as transistors, and diodes, devices and applications including converters, rectifiers, switches, amplifiers, filters, and Monolithic Microwave Integrated Circuits (MMICs), packaging, modules and systems.

○ GaN for Optoelectronics & Photonics
  Wafers and epiwafers, GaN-on-sapphire, SiC or silicon; semiconductor devices such as LEDs and lasers; and applications including lighting, display, visible communication, photonics, packaging, modules and systems.

○ Li-ion Batteries
  Anodes made of lithium metal, silicon, and lithium titanate (LTO); cathodes made of Lithium Iron Phosphate (LFP), Nickel-Manganese-Cobalt (NMC), Lithium Nickel Cobalt Aluminium Oxide (NCA), Lithium Nickel Metal Dioxide (LiNiM02), Lithium Metal Phosphate (LiMPO4), and Lithium Metal Tetroxide (LiMO4); electrolytes including liquid, polymer/gel, and solid inorganics; ceramic and other separators; battery cells including thin film/microbattery, flexible, cylindrical and prismatic; and battery packs and systems.

○ Post Li-ion Batteries
  Battery technologies including redox-flow batteries, sodium-ion, lithiumsulfur, lithium-air, and magnesium-ion, and their supply chains, including electrodes, electrolytes, battery cells and battery packs/systems.

○ Solid-State Batteries
  Supply chain including electrodes, battery cells, battery packs/systems and electrolytes, including polymer, inorganic and inorganic/polymer, inorganic materials, including argyrodites, Lithium Super Ionic CONductor, (LISICONs), Thio-LISICONs, sulfide glasses, oxide glasses, perovskites, anti-perovskites and garnets.

○ RF Acoustic Wave Filters
  Including Surface Acoustic Wave (SAW), Temperature Compensated (TC) SAW, Bulk Acoustic Wave- Free-standing Bulk Acoustic Resonator (BAWFBAR), BAW-Solidly-Mounted Resonator (BAW-SMR), and Packaging.

○ RF Power Amplifiers
  Including Low Noise Amplifiers, Doherty Amplifiers, Packaging, and Millimeter-Wave technology.

○ RF Front-End Modules

○ Microfluidics
  From components to chips and systems, including all applications.
To meet the growing demand for market, technological and business information, i-Micronews Media integrates several tools able to reach each individual contact within its network.

We will ensure your company benefits from this

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- Online display advertising campaigns
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