



# COMBINING ENERGIES TO PROTECT OUR WORLD

YEARBOOK 2015

# Edito



**For Bertin, a leader in technological expertise and industrial innovation, 2015** was a year of significant consolidation in the field of instrumentation and information technology, with the acquisition of Saphymo, then AMI Software. Now more than ever, Bertin is growing in France and abroad, in close synergy with the rest of the CNIM Group, to meet the major challenges for energy transition as well as for the security of Nations and companies. With the integration of Saphymo, a major actor in nuclear radiation detection, into the Bertin Systems & Instrumentation division (p. 6), Bertin can now provide answers to all **chemical, biological, radiological and nuclear (CBRN) threats**. Following the example of Defense and Civil Security players, decision

makers in the Oil & Gas industry are now calling on Bertin's high-performance solutions to monitor and secure their facilities confronted with the risk of gas leaks.

Beyond the biodefense sector, in which Bertin Pharma regularly operates in support of Bertin Systems & Instrumentation, the pharmaceutical subsidiary has continued its growth with an ever-growing number of innovative services in Research & Development, in particular in the field of biotechnologies (p. 12).

As for AMI Software, a strategic intelligence software publisher, it integrated Bertin IT (p. 10), which can now fully meet the challenges of **cyber security and multimedia information analysis** (audio, video, text), for public bodies and private companies.

Thoroughly integrated into the CNIM Group, devoting two-thirds of its turnover to energy and environment, Bertin Technologies offers its innovative engineering and expertise to design state-of-the-art processes and technology in the field of **energy and waste management**, as illustrated by the different achievements in 2015 (p. 2).

Last but not least, supporting all the Group's activities, Bertin Ergonomics places **human factor** expertise at the heart of systems performance, from the control room to the design of an innovative object, with leadership acknowledged by major industrial customers and service operators (p. 4).

Agility must remain the Bertin trademark, capable of setting up top-notch multidisciplinary teams rapidly to accompany customers in the pre-project stages, from innovation consulting through to the supply of turnkey products and systems. In this Yearbook, you'll learn about various achievements expressing Bertin's energy and synergies as well as the wide range of projects and talents involved.

Enjoy reading all about us!

**Philippe Demigné**  
**CEO Bertin Technologies and subsidiaries**  
**Member of CNIM Executive Board**

# CNIM AND BERTIN: AN EFFECTIVE DUO

Together, CNIM and Bertin cover the whole innovation cycle: a genuine strike force which has allowed their teams to win over several markets jointly, particularly in the nuclear and defense industries, as illustrated by the examples below.



## Complex systems

### Six visual inspection systems for ITER chamber

ITER is an international, revolutionary reactor project that will, for the first time ever, make it possible to produce net energy gain by controlled nuclear fusion\*. In Europe, it is backed by the organization Fusion For Energy (F4E), which has called on the CNIM-Bertin consortium to design the In-Vessel Viewing System (IVVS): a remotely operated measurement and visual inspection device capable of being deployed in the reactor's vacuum chamber, between two plasmas, in other words in a very harsh environment. The IVVS will mainly be composed of an optic probe that will require optical, mechanical and electronic experts from Bertin, and a deployment system or «arm» that will mobilize CNIM teams. The teams' excellent synergy as well as their unique know-how in metrology and remotely-operated systems for the Laser Megajoule project (See Yearbook 2013) are what drew F4E's attention. CNIM, a leader in the study and production of complex systems, was therefore an obvious choice.

\* Fusion is the process which powers the sun and the stars.

#### ► ENERGY AND ENVIRONMENT

✉ +33 4 42 60 46 00, [bigscience@bertin.fr](mailto:bigscience@bertin.fr)  
🌐 [www.bertin-technologies.com/  
big-science-instrumentation.aspx](http://www.bertin-technologies.com/big-science-instrumentation.aspx)

## Command Control

### Long live CNIM's Motorized Floating Bridge!

Equipping the French Army for several years now, the motorized floating bridge (also called PFM) makes it possible to cross wide rivers. Composed of modules that integrate outboard motors, it is totally autonomous and provides continuous (bridge) or discontinuous (ferry) crossing. In 13 minutes, an 80-ton vehicle can cross a 100-meter bridge. So far, CNIM has sold 5000 meters of PFM worldwide for «domestic» operations such as the Seine River's once-a-century high waters that may flood Paris, or for operations in foreign fields. The DGA has entrusted CNIM with upgrading and renovating the PFM for a 20-year lifetime. That task entails reducing the staff required for each module thanks to a unique system controlling both motors via Hertzian waves. The project, which is to last 7 years, will call on CNIM, Bertin Systems and Bertin Ergonomics teams.

#### ► DEFENSE AND SECURITY

✉ +33 4 94 10 30 00, [contact@cnim.com](mailto:contact@cnim.com)  
🌐 [cnim.com/en/motorized-floating-bridge-pfm.aspx](http://cnim.com/en/motorized-floating-bridge-pfm.aspx)



## BERTIN EXPERTISE & INNOVATIVE PROCESSES

Meeting the technology challenges for the security and performance of energy systems

- Innovation Strategy
- Engineering and Risk Management
- Industrial Demonstrations
- Expertise and modelisation



### Risk Management

#### Ensuring radiometer operating safety

For a military use of a radiometer detecting ionizing rays, developed by Bertin Technologies and Saphymo, the Operating Safety team has conducted studies covering availability, reliability, maintainability, security, integrated logistics support and regulatory compliance.

► DEFENSE AND SECURITY

#### Competitive, ecofriendly steel works facility

CELSA France, backed by Spanish engineering IDOM, was seeking to enhance its steel works with a hot rolling mill, to become one of the most competitive facilities in Europe. Because the facility is classified for Environmental Protection, Bertin Technologies has completed the regulatory application required to obtain the permit to operate, and supported CELSA throughout the administrative procedure.

► INDUSTRY AND SERVICES

- ✉ +33 1 39 30 60 00, [maitrisedesrisques@bertin.fr](mailto:maitrisedesrisques@bertin.fr)
- 🌐 [www.bertin-technologies.com/energy-environment-industrial-risks-analysis.aspx](http://www.bertin-technologies.com/energy-environment-industrial-risks-analysis.aspx)

### Systems Modeling

#### French nuclear plants strive for greater availability

Steam generators are heat exchangers feeding nuclear plant turbines. Some particles can, as they build up, cause the generators to gradually be clogged. For EDF, Bertin Technologies has simulated the thermohydraulics of steam generators based on dynamic models developed using Dymola/Modelica software. The findings have enabled Bertin to study the physical behavior of the generators and provide an assessment of their clogging.

► INDUSTRY AND SERVICES

- ✉ +33 1 39 30 60 00, [modelisation@bertin.fr](mailto:modelisation@bertin.fr)
- 🌐 [www.bertin-technologies.com/energy-environment-nuclear-equipment.aspx](http://www.bertin-technologies.com/energy-environment-nuclear-equipment.aspx)



## Energy innovation underway

The URABAILA® marine turbine designed by Bertin Technologies and inaugurated in 2015 produces electricity using estuary tidal or river currents. Intended for emerging countries, the marine turbine is one of many innovative solutions designed by Bertin Technologies: absorption heat pumps, intermittent energy supervision software, solar measurement stations, and energy performance services (engineering, audit and diagnostic tools). Bertin Technologies is OPQIBI certified.

### Preliminary designs of complex systems

#### A new launch vehicle for microsatellites

Since 2000, the number of small satellites triples every 5 years, essentially for observation and communication purposes. Thanks to an innovative methodology of multidisciplinary design optimization, Bertin Technologies has developed, within the framework of a study co-funded by the French Space Agency (CNES), a low-cost launch system named Roxane, dedicated to satellites weighing under 400 kg. In 2016, specifications for the different subsystems will be drawn up, in order to be ready for the market by 2020.

#### ▶ AEROSPACE

✉ +33 1 39 30 60 00, [contact@bertin.fr](mailto:contact@bertin.fr)  
🌐 [www.bertin-technologies.com/energy-environment-nuclear-equipment.aspx](http://www.bertin-technologies.com/energy-environment-nuclear-equipment.aspx)

### Consulting and Strategy

#### Innovation to boost the French shipbuilding industry

Revitalizing the French shipbuilding industry and its network of SMEs: that is the mission of the OCEAN21 program supported by GICAN\*. In 2015, Bertin Technologies Consulting teams have guided OCEAN21 by defining support organizations for export to Asia and providing operational go-to-market approaches for applications such as marine uses of liquefied natural gas or naval equipment. The outcome: a synergy of practical projects has been developed, involving the whole industry and aiming at cleaner ships in the future.

\* GICAN (Construction Industries and Naval Activities Group) brings together French manufacturers in the naval and maritime sector.

#### ▶ ENERGY AND ENVIRONMENT

✉ +33 1 39 30 62 28, [contact@bertin.fr](mailto:contact@bertin.fr)  
🌐 <http://www.bertin-technologies.com>



## BERTIN ERGONOMICS HUMAN FACTOR

Making people the added value of innovation

- IT application ergonomics
- Technological uses and innovation (UX Lab)
- Workplace and workstation ergonomics
- Socio-organizational and human factors for safety

### Digital transformation

#### UXLab: the lab for the future of uses

Bertin Ergonomics has opened a new innovative place, UXLab, based on the Paris-Saclay technology park and dedicated to the digital transformation of uses focusing on the user experience. From generating ideas to experimenting mock-ups, its multidisciplinary team made up of specialists in cognitive ergonomics, UX, design, sociology and IT, accompanies the digital transformation of aeronautical and automobile systems, among others, as well as control-command systems, general public services and service industry business applications.

#### ► INDUSTRY AND SERVICES

✉ +33 1 39 30 62 56, [contact.ergonomie@bertin.fr](mailto:contact.ergonomie@bertin.fr)  
🌐 [www.bertin-ergonomie.com](http://www.bertin-ergonomie.com)

### IT applications

#### « Pizza team » inventing a new interface for customer service at La Poste

As part of the «pizza team», in other words, the small brainstorming team set up by the design studio at La Poste (French postal service), Bertin Ergonomics contributed to research on an innovative application that tracks packages for Colissimo customers. The process went from identifying « customer pains » and call center agent needs up to evaluating the new concept. It became a reality with the creation of a more graphic package tracking application. It is based on a timeline allowing disparities in the package journey to be identified and customer complaints to be anticipated, resulting in improved responsiveness.

#### ► INDUSTRY AND SERVICES

✉ +33 1 39 30 62 56, [contact.ergonomie@bertin.fr](mailto:contact.ergonomie@bertin.fr)  
🌐 [www.bertin-ergonomie.com](http://www.bertin-ergonomie.com)



## Human-Machine Interfaces

### The user experience at the heart of innovation

For Bertin Ergonomy, technological innovation is no longer enough, user experience is now considered an innovation objective. In early 2013, the department landed an initial contract with French car manufacturer PSA for advanced engineering work. The objective: integrate user experience in the design of the future generation of multimodal interfaces for automobile cockpits (vocal, tactile, visual, etc.)

At the same time, PSA entrusted Bertin Ergonomy with creating and piloting a platform entirely dedicated to Human-Machine Interface ergonomics. The mission includes evaluating the ergonomics of the cockpits to be integrated into the vehicles by 2020 and beyond. It also includes research and development related to innovative embedded systems: new driving uses for “connected” and “autonomous” vehicles. The manufacturer also wants to enhance the overall driving experience, improve safety and increase customer loyalty.

#### ► INDUSTRY AND SERVICES

---

✉ +33 1 39 30 62 56, [contact.ergonomie@bertin.fr](mailto:contact.ergonomie@bertin.fr)  
🌐 [www.bertin-ergonomie.com](http://www.bertin-ergonomie.com)  
<https://youtu.be/VZf8MiB9fjQ>

## Product ergonomics

### Innovating for professionals in L'Oréal group

Bertin Ergonomics has been exploring a new field: hair salons. As in industry, each gesture in a hair salon is important and humans are a key factor of success. To create this top-secret product designed for professional hairdressers, Bertin Ergonomics has a trade secret: an innovative design methodology centered on user practices. Based on an iterative, participative approach, the ergonomists succeeded in lining up both the requirements of the various actors concerned (end users, engineers, ergonomists and designers) and the regulatory restrictions. Innovation coming soon to a hair salon near you...

#### ► INDUSTRY AND SERVICES

---

✉ +33 1 39 30 62 56, [contact.ergonomie@bertin.fr](mailto:contact.ergonomie@bertin.fr)  
🌐 [www.bertin-ergonomie.com](http://www.bertin-ergonomie.com)



## BERTIN SYSTEMS & INSTRUMENTATION

Developing and marketing measurement instruments and state-of-the-art systems

Accompanying our customers throughout the system life cycle: from preliminary design to in-service support.

### Gas Cloud Tracking System

#### Petrofac awards contract to Bertin Technologies for innovative refinery gas leak tracking system

Petrofac, a leading service provider for the international Oil & Gas industry, awarded a contract to Bertin Technologies to supply, install and commission a pioneering gas leak tracking system, Second Sight®, at the Saudi Aramco-owned Jazan refinery. To enhance the level of safety on site, Bertin Technologies will provide a turnkey solution that detects and monitors explosive gas clouds. This system opens up a new era in risk management and gas detection methods for the Oil & Gas industry.

#### ► INDUSTRY AND SERVICES

✉ +33 1 39 30 60 00, [secondsight@bertin.fr](mailto:secondsight@bertin.fr)  
🌐 [www.secondsight-gasdetection.com](http://www.secondsight-gasdetection.com)

### Radiation monitoring

#### Egypt entrusts Saphymo to set up national radiation monitoring network

In late 2015, Saphymo delivered an initial radiation monitoring network to the Egyptian government. In the event of a radiological incident, water and air alert stations, set up at strategic locations, will enable rapid crisis management, even in poor environmental conditions. This contract is a major, first achievement in the Middle East. The project, which involved Saphymo teams working at 4 major sites, is also a good example of the joint efforts between the Bertin Technologies and Saphymo teams. Saphymo is a leader in the field of radiological monitoring networks, with more than 2000 sensors and 100 monitoring networks installed in over 30 countries.

#### ► DEFENSE AND SECURITY

✉ +33 1 69 53 73 00, [nuclearsales@saphymo.com](mailto:nuclearsales@saphymo.com)  
🌐 [www.saphymo.com](http://www.saphymo.com)

## Biological sample homogenizer

From Precess 48 to Precellys Evolution: A 10-year success story!

Initially developed upon request of BioRad laboratory during the Mad Cow Crisis (BSE), Precess 48 was aimed at increasing the yield and reproducibility of biological sample preparations. Drawing on that experience, Bertin Technologies then launched a full range based on the same technology. Ten years later, the Precellys brand is still highly appreciated by laboratory technicians:



**over 3000**  
homogenizers sold  
worldwide

**several million**  
tubes used for the  
preparation of all types  
of samples

**over 30,000**  
users in the most  
prestigious research  
labs (NIH, Institut  
Pasteur, Sanofi, etc.)

► LIFE SCIENCES

✉ +33 1 39 30 60 00, [precellys@bertin.fr](mailto:precellys@bertin.fr)

🌐 [www.precellys.com](http://www.precellys.com)

Copyright © Bruce Power

## Gamma dose monitoring

### In Bruce Power nuclear power plant, Canada

Located on the Lake Huron shoreline, the Bruce Power nuclear facility is one of the most powerful in Canada and the largest in the world. Saphymo GmbH was entrusted with delivering a new radiological monitoring system for emergency response. The system had to be designed based on the knowledge gained from the Fukushima event. The aim was not only to measure gamma doses, but also to determine nuclide composition remotely. For this project, Saphymo delivered and installed 49 stationary and 10 mobile SpectroTRACER Air/Soil measuring stations, all around the power plant. In the project's second phase, Saphymo delivered 8 spectroscopic air monitors for measuring aerosol, iodine and noble gas activities.

► ENERGY AND ENVIRONMENT

✉ +33 1 69 53 73 00, [nuclearsales@saphymo.com](mailto:nuclearsales@saphymo.com)  
🌐 [www.saphymo.com](http://www.saphymo.com)

## Rapid action force

### Autonomous probes for major radiological accidents

Based on lessons learned following the Fukushima disaster, the FARN (French Nuclear Rapid Action Force) was created as one of EDF's solutions in response to major accidents. In case of an incident or accident in an EDF nuclear power plant with loss of the radiometric network, FARN can restore "KRS" radiometric monitoring network, provided by Saphymo, in less than 26 hours. Consequently, 164 autonomous probes, measuring the gamma Dose Equivalent Rate, were ordered from Saphymo. The GammaTRACER Spider is an upgrade of the product already supplied to the German Army and the French Radioprotection and Nuclear Safety Institute (IRSN). The probes use the Iridium network to guarantee the transmission of data and allow the system to operate in perfect autonomy.

► ENERGY AND ENVIRONMENT

✉ +33 1 69 53 73 00, [radioactivite@saphymo.com](mailto:radioactivite@saphymo.com)  
🌐 [www.saphymo.com](http://www.saphymo.com)



## BERTIN SYSTEMS & INSTRUMENTATION

Designing technological developments and systems on demand for defense, aeronautics and space, big science, nuclear, environment and life sciences



### Environment and Space

#### Bertin designs optomechanical bench to test German Space Agency satellite

Monitoring and characterizing the Earth's environment on a global scale: that is quite simply the objective of the German mission EnMAP, which stands for Environmental Mapping and Analysis Program, and which foresees the launch of an earth observation satellite in late 2018.

EnMAP prime contractor, OHB System AG, awarded Bertin Technologies with the responsibility of designing, manufacturing, testing and delivering the high-precision optical test bench required to qualify and calibrate the ultra-complex EnMAP Hyperspectral Instrument. The instrument is the cornerstone of the whole EnMAP mission, and puts Bertin at the heart of its success. This contract for a high-precision optical test bench is the first export project for Bertin Technologies space-related activities.

#### ▶ AEROSPACE

✉ +33 4 42 60 46 00, [aerospace@bertin.fr](mailto:aerospace@bertin.fr)  
🌐 [www.bertin-technologies.com/aerospace.aspx](http://www.bertin-technologies.com/aerospace.aspx)

### Meteorology and Space

#### Three onboard optical fiber systems for Airbus Defence & Space

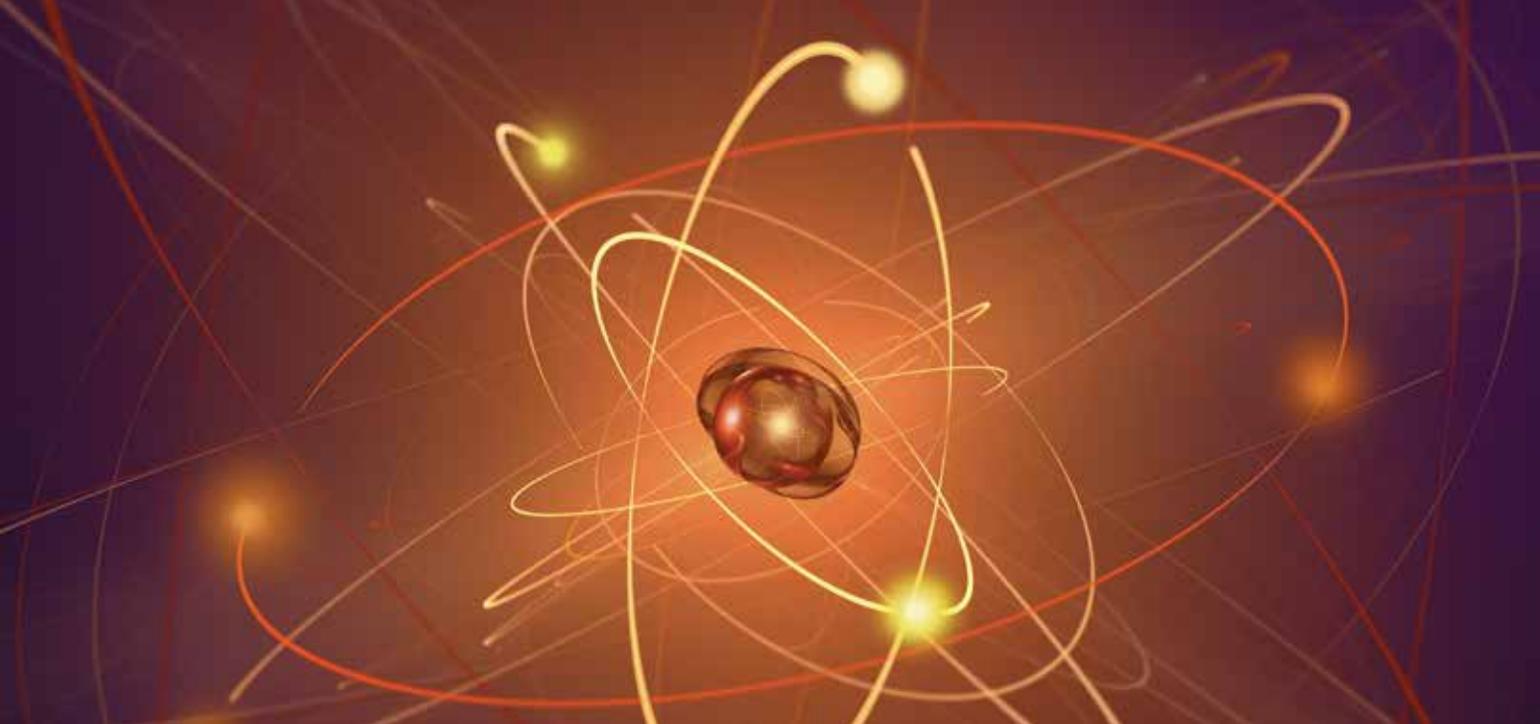
Airbus Defence & Space has entrusted Bertin Systems & Instrumentation with the design and development of an onboard space system. This optical fiber system will be integrated into IASI-NG, an atmospheric sounder, provided by Airbus Defence & Space to CNES, for the METOP-SG program. This European program is a follow-up to the first generation series of MetOp (Meteorological Operational) satellites, which will provide operational meteorological observations for numerical weather prediction and climate monitoring in the 2020 to mid-2040 time frame.

Bertin will be responsible for the delivery of one engineering model and three flight models of its fiber system. The system will shape and collect laser beams dedicated to the metrology of the IASI-NG instrument.

This contract highlights the position of Bertin Technologies as a unique European expert in onboard optical fiber systems for space.

#### ▶ AEROSPACE

✉ +33 4 42 60 46 00, [aerospace@bertin.fr](mailto:aerospace@bertin.fr)  
🌐 [www.bertin-technologies.com/aerospace.aspx](http://www.bertin-technologies.com/aerospace.aspx)



## Image processing

### Analyzing plasma parameters during nuclear fusion reaction via visible/infrared cameras

The European agency Fusion For Energy, in charge of a substantial part of the ITER scientific research project aimed at developing an experimental nuclear reactor by 2025 (cf. p.1), has signed a contract with a European consortium in which Bertin Technologies is a major player. The objective is to design the diagnostic system using the ITER equatorial visible/infrared wide-angle camera, which will enable the analysis of plasma parameters for better ITER machine protection.

Beyond viewing the inside of the machine, the visible measurements will provide data related to the impurities that melt on the plasma edge. As for the infrared measurements, they will help in developing the internal temperature map related to the components exposed to the plasma and automatically identifying the hot spots. This project offers Bertin Technologies the opportunity to strengthen its position on the ITER program thanks to its understanding of software issues and image processing.

#### ► ENERGY AND ENVIRONMENT

✉ +33 4 42 60 46 00, [bigscience@bertin.fr](mailto:bigscience@bertin.fr)  
🌐 [www.bertin-technologies.com/  
big-science-instrumentation.aspx](http://www.bertin-technologies.com/big-science-instrumentation.aspx)

## Bertin Technologies - Systems & Instrumentation

Parc d'Activités du Pas du Lac  
10 bis, avenue Ampère  
78180 Montigny-le-Bretonneux  
France  
P: +33 1 39 30 61 60

[www.bertin-technologies.com](http://www.bertin-technologies.com)    [www.saphymo.fr](http://www.saphymo.fr)  
[www.bertin-corp.com](http://www.bertin-corp.com)    [www.secondsight-gasdetection.com](http://www.secondsight-gasdetection.com)  
[www.coriolis-air-sampler.com](http://www.coriolis-air-sampler.com)    [www.sterilwave.fr](http://www.sterilwave.fr)  
[www.precellys.com](http://www.precellys.com)

Pôle d'Activités d'Aix-en-Provence - 155, rue Louis-Armand  
CS 30495 - 13593 Aix-en-Provence Cedex 3 - France  
P: +33 4 42 60 46 00

Saphymo - Parc d'Activités du Pas du Lac - 10 bis, av. Ampère  
78180 Montigny-le-Bretonneux - France  
P: +33 1 39 30 61 60

Saphymo GmbH - Heerstrasse 149 - D-60488 Frankfurt am Main  
Germany - P: +49 69-976 514-0

Saphymo Italia - Vico C. Paggi, 4/11 - 16128 Genova - Italia  
P: +39 10 25 12 978

Bertin Corp. - Washington DC - 155 Gibbs Street  
20817 Rockville, MD - USA - P: +1 301 339 8103



## BERTIN IT

Meeting major challenges of digital trust and multisource data exploration with innovative software solutions

Software products, business solutions and professional services

- Cyber security
- Cyber threat intelligence
- Strategic intelligence
- Automatic speech processing

### Cyber security

PolyXene®, the very high-security software platform, receives EAL 5+ certification

Developed by Bertin IT, PolyXene® was the first and unique French security hypervisor to receive the EAL 5(\*) certification in 2009. With the criteria for systematic correction of errors, its recently-evaluated Version 2 offers a higher level of security, earning it a higher EAL 5+ certification. PolyXene® has consequently been reaffirmed as the solution of reference for the security of sensitive information systems and critical infrastructures. A position also boosted by the France Cybersecurity label awarded in January 2015.

\*Based on an international standard, the CC certification - Common Criteria for Information Technology Security Evaluation - testifies to the level of assurance, on a scale from 1 to 7, provided by software or equipment in response to defined security requirements.

#### ► DEFENSE AND SECURITY

✉ +33 1 39 30 60 00, [contact@bertin-it.com](mailto:contact@bertin-it.com)  
🌐 [www.bertin-it.com](http://www.bertin-it.com)

### Call centers

Speech-to-Text transcription solution by Vecsys serving Customer Relations at Canal+

Canal+ selected MediaSpeech® in view of improving its Customer Relations and optimizing the performance of its call centers. Associated with a semantic analysis software, MediaSpeech® makes it possible to shed light (satisfaction, trends, etc.) on phone conversations between agents and subscribers, and to issue alerts in the event of anomalies. Consequently, Vecsys has strengthened its ambition of becoming a leader in vocal technology dedicated to Speech Analytics.

#### ► INDUSTRY AND SERVICES

✉ +33 1 39 30 60 00, [contact@bertin-it.com](mailto:contact@bertin-it.com)  
🌐 [www.bertin-it.com/vecsyst/](http://www.bertin-it.com/vecsyst/)



## AMI Software joins Bertin IT, creating a major player in digital intelligence

On May 18th, Bertin IT acquired AMI Software, a strategic intelligence software publisher. Uniting Bertin IT's expertise in the analysis of multilingual video & audio content with AMI's expertise in textual information processing and research enables even more accurate extraction of content broadcast on the Web, in order to detect threats and opportunities, and reinforce capacities for anticipation.

### Strategic intelligence

#### MINERVA: a centralized solution for Deutsche Telekom subsidiaries

By equipping itself with one central platform, Deutsche Telekom has instituted a joint process with its subsidiaries to provide easier access to all data sources (free and fee-based). AMI Enterprise Intelligence, a tool of reference, was chosen to develop a company portal providing colleagues and partners with strategic data in different fields. Several hundred users throughout Europe make use of the information analyzed by the platform.

##### ► INDUSTRY AND SERVICES

✉ +33 1 42 97 10 38, [contact@bertin-it.com](mailto:contact@bertin-it.com)  
🌐 <http://www.amisw.com/en/>

#### Agribusiness leader, Avril Group, chooses AMI Software to develop its intelligence practices

With the AMI Enterprise Intelligence platform, Avril group, a major industrial player in the oils and proteins sector, has provided itself with a complete system to carry out the group's different intelligence projects. Since the launch of the project in June 2015, 1182 sources have already been referenced, over 100 scenarios created and some 20 theme newsletters developed for over 300 recipients. Over time, the AMI solution will be deployed in the Group's various European subsidiaries as well as worldwide.

##### ► INDUSTRY AND SERVICES

✉ +33 1 42 97 10 38, [contact@bertin-it.com](mailto:contact@bertin-it.com)  
🌐 <http://www.amisw.com/en/>



## BERTIN PHARMA

Innovating and pushing back the limits of technology to imagine tomorrow's healthcare

Products and studies for R&D

- Assay kits and bioreagents
- Pre-clinical and clinical studies
- Pharmaceutical development
- Analysis of drug candidates and bioanalysis
- Biosafety



### Generic brands

#### Partnership to develop drugs for hospital market

Bertin Pharma has signed an agreement with an industrial partner to launch four niche products on the hospital market over the next three years.

They are second-line drugs, essential for patients with treatment failure, in particular those suffering from cancer, heart disease or chronic kidney failure.

In this agreement, Bertin Pharma brings its know-how and skills, from product development to industrialization and marketing. In return, Bertin Pharma will receive royalties ensuring recurrent income for several years.

#### ► LIFE SCIENCES

✉ +33 1 39 30 62 60, [info@bertinpharma.com](mailto:info@bertinpharma.com)  
🌐 [www.bertinpharma.com](http://www.bertinpharma.com)

### Over-the-counter drugs

#### Dualtab®: from customer requirements to innovative concept

Dualtab® is the brand name of a technology developed by Bertin Pharma making it possible to provide a tablet composed of a chewable layer and an orodispersible layer. The aim is to combine active substances and excipients to improve patient compliance to the treatment. For example, a sensory effect can be used to hide a bad taste.

In over-the-counter drugs, Dualtab® is particularly aimed for sore throat, cough and cold and ENT treatments.



#### ► LIFE SCIENCES

✉ +33 1 39 30 62 60, [info@bertinpharma.com](mailto:info@bertinpharma.com)  
🌐 [www.bertinpharma.com](http://www.bertinpharma.com)



## Biomarkers

### Bertin Pharma and LXRepair: understanding DNA repair by measuring activity of enzymes responsible for it

In partnership with LXRepair, a start-up spin-off from the CEA\*, Bertin Pharma has conceived a kit designed for cosmetic and pharmaceutical companies which will be distributed worldwide via its distribution network.

This tool enables better comprehension of mechanisms causing certain type of cancers. It is also involved in the development of new treatments in neurology, genotoxicity (cancer) and even in ageing.

\*French Alternative Energies and Atomic Energy Commission, a major actor in research, development and innovation, including in life sciences

#### ► LIFE SCIENCES

✉ +33 1 39 30 62 60, [info@bertinpharma.com](mailto:info@bertinpharma.com)  
🌐 [www.bertinpharma.com](http://www.bertinpharma.com)

## Industrial transfer

### Adventures and metamorphosis of an anti-inflammatory tablet

In the pharmaceutical industry, manufacturing transfers from one site to another are frequent. Over the past two years, Bertin Pharma has conducted no less than twenty international transfers, playing the role of a genuine project manager. As a case study, a non-steroidal anti-inflammatory tablet intended for the Swedish market, and previously manufactured in Italy, was transferred to a French production site. Phase 1: a product reformulation allowed to simplify the manufacturing process. Key issue was to eliminate an intermediary stage in the tablet production. Phase 2: for Swedish registration purpose, an in vitro dissolution study was performed instead of a clinical study. Result: easier to manufacture and more resistant, registered at less cost, the new made-in-France tablet has led to a significant decrease of the industrial cost.

#### ► LIFE SCIENCES

✉ +33 1 39 30 62 60, [contact@bertinpharma.com](mailto:contact@bertinpharma.com)  
🌐 <http://bioreagent.bertinpharma.com>

# MASTERING SPEARHEAD TECHNOLOGY TO MEET MAJOR CHALLENGES



Bertin is celebrating 60 years of experience in technological expertise and industrial innovation. The company is at the heart of concerns expressed by customers and partners faced with complex issues or major challenges. In this Yearbook, you'll find a few excerpts from the passionate adventures experienced in 2015, particularly in the following fields:

- ▶ **DEFENSE AND SECURITY**
- ▶ **AEROSPACE**
- ▶ **ENERGY AND ENVIRONMENT**
- ▶ **LIFE SCIENCES**
- ▶ **INDUSTRY AND SERVICES**

With 750 partners, including two-thirds who are engineers and high-level managers, and a 2015 turnover of €90M, the company works in four major fields: systems and instrumentation, consulting and engineering, information technology and expertise in pharma and biotech.

Bertin is a subsidiary of the CNIM Group, a French company listed on the Euronext Stock Market - Paris. The CNIM turnover in 2014 was €720.0M, including 61.3% on the export market. Headquartered in the Paris region, Bertin is growing very actively internationally, branching out from the different CNIM Group locations around the world.



Bertin Technologies  
Parc d'Activités du Pas du Lac  
10 bis avenue Ampère  
78180 Montigny-le-Bretonneux, France  
P: +33 1 39 30 60 00

Offices and subsidiaries contacts listed inside  
the brochure

[www.bertin.fr](http://www.bertin.fr)

A company of



CNIM  
35 rue de Bassano  
75008 Paris, France  
P: +33 1 44 31 11 00  
[www.cnim.com](http://www.cnim.com)