



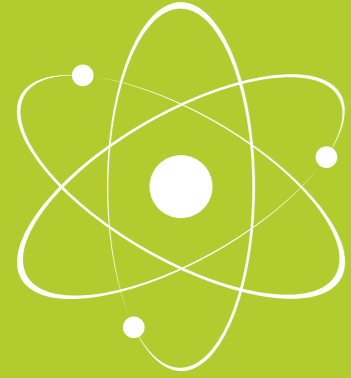
# EXCELLENCE FOR LIFE

EXCELLENCE DEDICATED  
TO NUCLEAR MEDICINE,  
HEALTHCARE & ENVIRONMENT



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## WHAT IS THE NATIONAL INSTITUTE FOR RADIOELEMENTS? HOW TO INTRODUCE ITS SUBSIDIARY, IRE ELIT RADIOPHARMA?

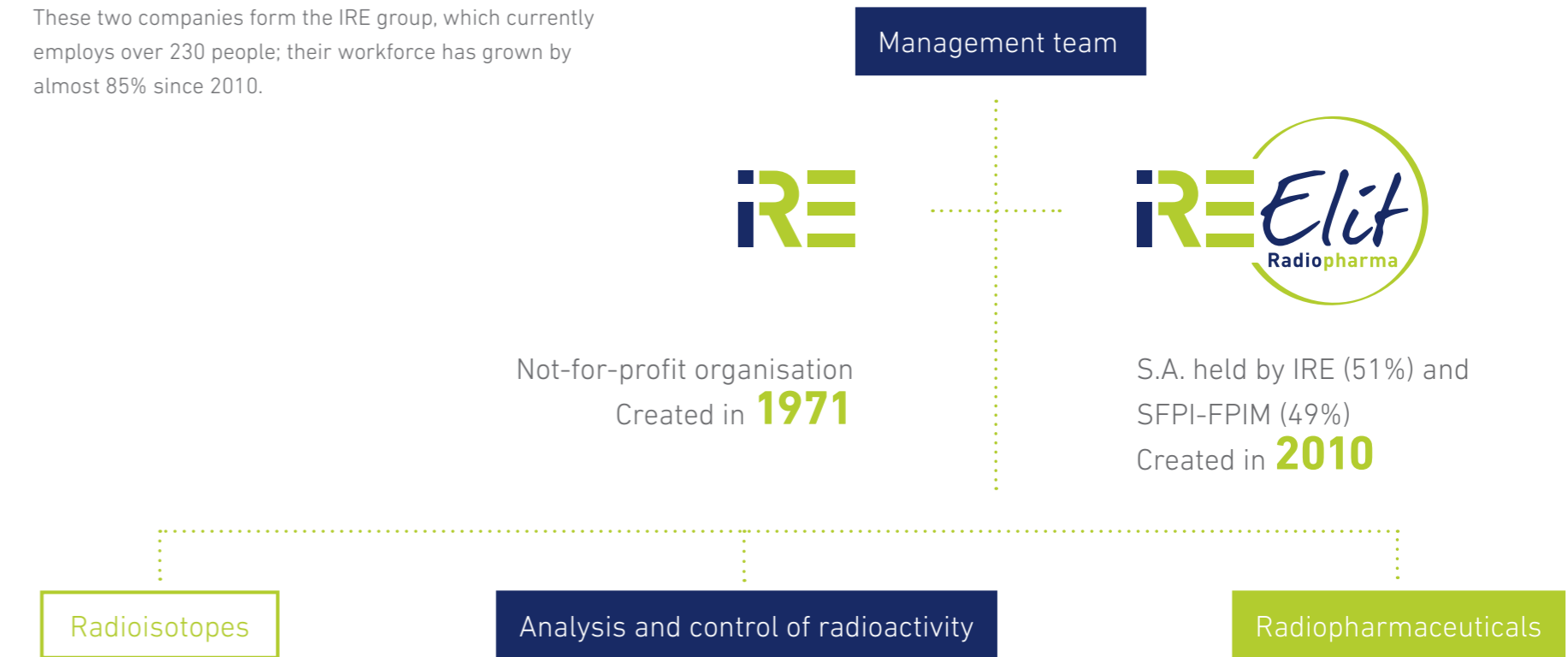
Both of these companies supply the global nuclear medicine industry with products that become methods of diagnosis or treatment for the medical field, and they use their expertise for the protection of our environment.

**DISCOVER THE  
VALUES WHICH  
UNDERLIE THE  
COMMITMENT OF  
IRE GROUP.**

# THE HEALTH AND PROTECTION OF HUMANS AND THEIR ENVIRONMENT:

## AT THE HEART OF IRE'S EXPERTISE

These two companies form the IRE group, which currently employs over 230 people; their workforce has grown by almost 85% since 2010.






# OUR VISION

Together, we are convinced that every human being has the right to health in a sound environment and, every day, we contribute to saving lives.

Our priority is promoting the beneficial use of radioisotopes for medical purposes, whilst ensuring the absence of harmfulness.

This priority is reflected in our 3 activities:

-  • The **production of radioisotopes**, a raw material for the radiopharmaceutical industry;
-  • The research, development and production **of radiopharmaceutical products designed for use in hospitals**, for the diagnosis and treatment of patients;
-  • **The analysis and control of radioactivity**, as well as consultancy on the subject.

# OUR MISSION

By bringing nuclear medicine at the service of healthcare, we develop innovative products and services thanks to:

- A strict requirement for the **safety** of our patients and staff;
- Constant **reliability** for every client;
- **Expert** and **committed teams**.

We protect the population and the environment through our expertise in controlling and measuring radioactivity.

# OUR VALUES



## RESPECT

People are at the heart of our work. We are committed to treating every colleague, every partner and every client with consideration and diplomacy in their work, their choices and their expression.



## COLLABORATION

We work towards a healthier and more open world by pooling our skills, mutual assistance and sharing knowledge within IRE - IRE ELiT and with our partners.



## COMMITMENT

At IRE - IRE ELiT, we believe that it is trust that binds us to our partners and clients, and that gives a scope to our Vision. We engage with them to meet the daily challenges of our business.



## RIGOUR

The nature of our roles requires us to be strict with ourselves in order to interact professionally with our colleagues, partners and clients. At IRE - IRE ELiT, we are constantly striving to improve our individual and collective working procedures.



## OPENNESS

Every day at IRE - IRE ELiT, through sincere and free exchanges, we build a pleasant working environment, favourable to personal development and in which every colleague has a place.

# OUR BUSINESS



## NUCLEAR MEDICINE

Before treating, it is essential to have a clear understanding in order to provide the correct diagnosis and then administer the treatments.

To identify a thyroid dysfunction, heart anomaly, pulmonary embolism, or even a tumour or metastasis, the administration of radioactive substances - called radiopharmaceuticals - inside the body, either by injection, ingestion or inhalation, is essential and indispensable today. It allows doctors to provide or refine their diagnosis thanks to results given by imaging techniques, including scintigraphy with **SPECT** cameras (Single-photon emission computed tomography) or **PET** cameras (Positron Emission Tomography). The injected doses of radioactivity are extremely low. After the examination, the radioactivity in the body is quickly and naturally eliminated and is safe for the patient.



## USES

Nuclear medicine is used for **diagnosis and treatment**

Both techniques use **radioisotopes and their radiation**

50% of all people **will benefit from nuclear medicine during their lifetime**

## WHAT IS THE ROLE OF A RADIOPHARMACEUTICAL?

After receiving imaging for diagnosis, some patients are treated thanks to vectorized radiotherapy. This is a targeted therapy, without surgery, which is conducted by injecting the radiopharmaceuticals.

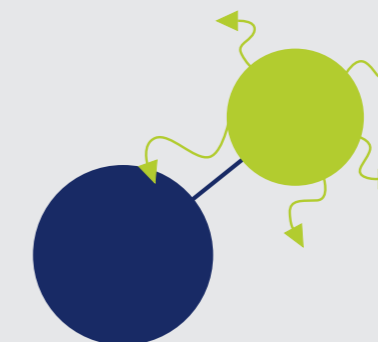
The radiation then destroys diseased cells whilst minimising the effects on healthy cells.

Today, nuclear medicine is tending towards the combined use of two approaches, diagnosis and therapy, which is referred to as the «**theranostic**» approach.

$$\text{Radiopharmaceutical (TRACER)} = \text{Radionuclide (MARKER)} + \text{Biologically active molecule (VECTOR)}$$

### VECTOR

- Affinity of the labelled vector to an organ, tumour or function
- Specific biodistribution of the tracer in the body



### MARKER

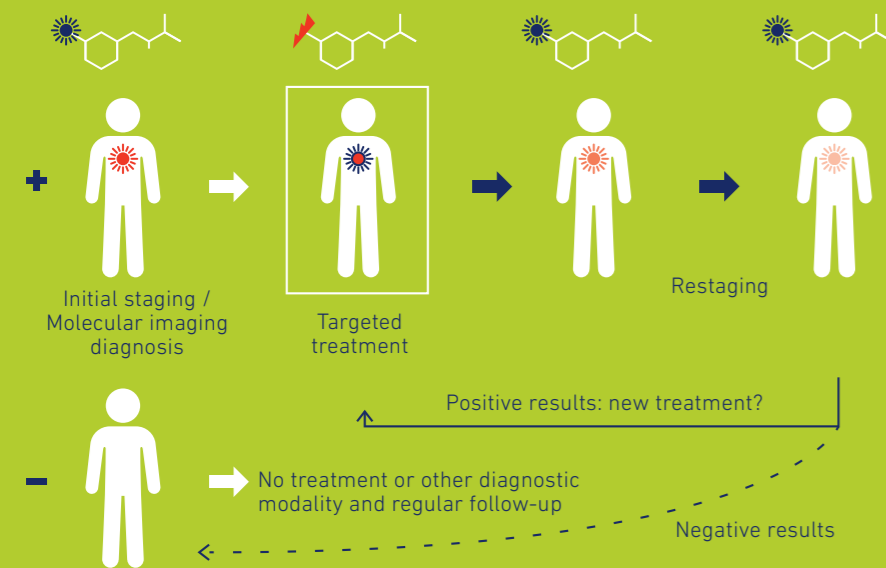
- Spatial identification of the radionuclide by a camera
- $\gamma$  rays: Scintigraphy
- $\beta^+$  rays: PET
- $\beta^-$  et  $\alpha$  rays: Therapy

#YOUTREATWHATYOUSEE #YOUSEEWWHATYOUTREAT

## WHAT IS THE THERANOSTIC APPROACH?

This new approach uses imaging to track cancerous cells in the body and treat them in a targeted way.

Isotopes can be associated with molecules, for example peptides or antibodies, which will recognise and bind to cancerous cells. The SPECT - or PET with Ga-68 for example - examination enables tumours or metastases to be located. It is decisive in choosing which treatment will be the most suitable. Today, we can use the same peptide, antibody or other cancerous cell tracer used in imaging, but this time with a powerful radioactive isotope (for example Lu-177) which will directly irradiate the tumour.



The medical uses of radiopharmaceutical compounds enable early and precise diagnosis where other methods would not reveal anything. They also enable targeted treatments to be carried out without surgical intervention. Every year, more than 40 million people in the world resort to this treatment for almost 60 different diseases.

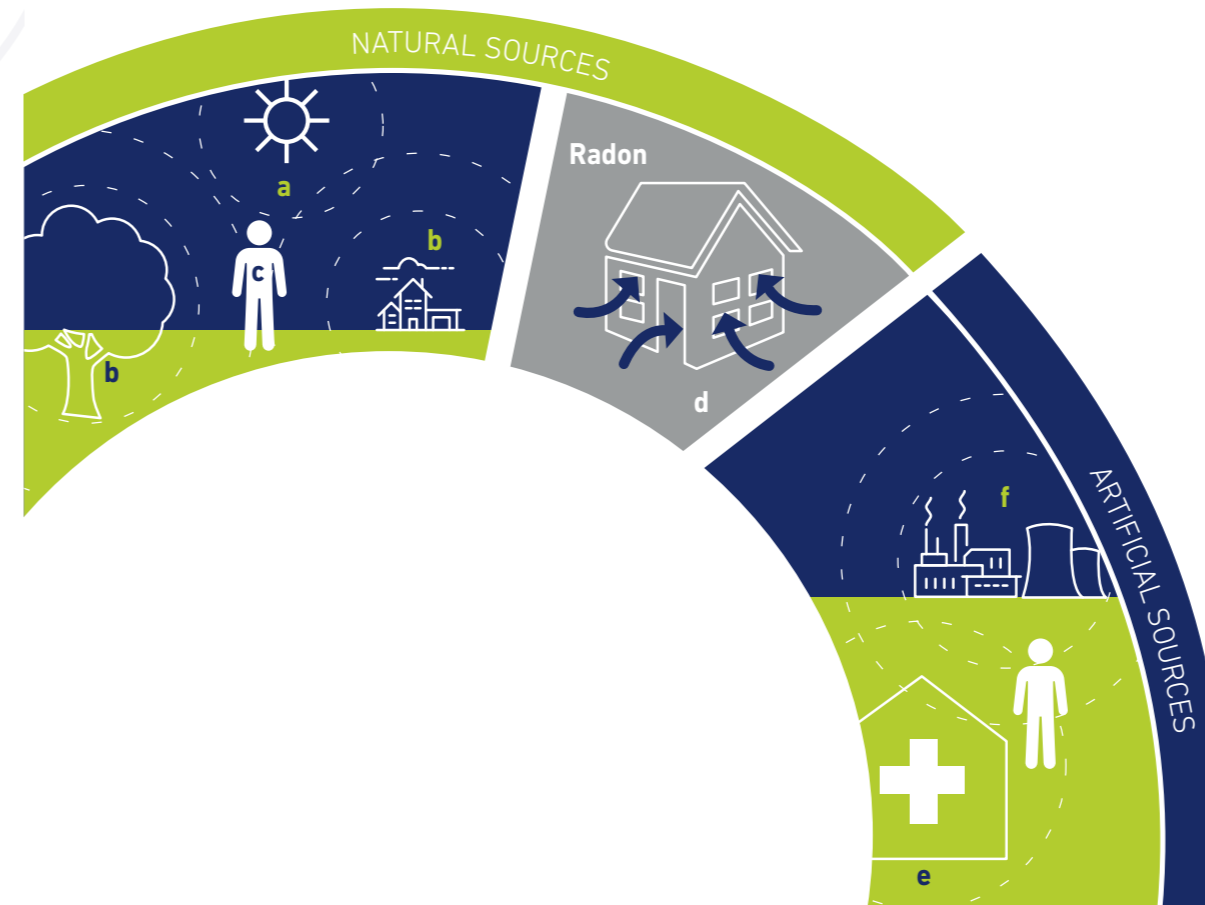


## CONTINUOUS MONITORING OF RADIOACTIVITY

Around 45% of exposure to ionizing radiation comes from medical applications and 55% from natural irradiation.

While 45% of the average dose received by the population comes from the medical sector, this only concerns people who have undergone diagnosis or treatment.

The goal, and indeed the responsibility, of a nuclear operator is to keep the dose to its workers and the public as low as reasonably achievable (ALARA).



It is therefore necessary to control the impact that radioactive substance could have on the population. This is done through continuous monitoring of gaseous effluents released to the atmosphere, monitoring of radioactivity that may be present in watercourses, and taking samples in the vicinity of nuclear establishments.

The continuous monitoring of radioactivity is carried out in all areas of the environment: air, water, soil, fauna, flora and the food chain.

In the case of a site such as IRE, this monitoring is carried out in the work structures, on employees and on the industrial effluents from production.

- a. Cosmic radiation
- b. Radiation from the ground and buildings (construction materials)
- c. Radiation from the human body
- d. Radon
- e. Medical examinations and treatments
- f. Industry and other sources

# OUR LEADERSHIP, PRODUCTS AND SERVICES



## IRE, WORLD LEADER IN THE PRODUCTION OF RADIOISOTOPES

Our clients, radiopharmacies and radiopharmaceutical laboratories across the whole world recognise that: the radioisotopes that IRE supplies to them are of very high quality for diagnostic and therapeutic purposes in nuclear medicine.

**IRE is one of the leaders in the production of molybdenum (Mo-99) enabling them to produce technetium-99 (Tc-99m) generators.** Tc-99m is used in 80% of diagnostic procedures in nuclear medicine (scintigraphies that examine bone, heart, kidneys, liver... defects.).

**IRE is also one of the world leaders in the production of iodine 131 (I-131),** an indispensable and irreplaceable product for some thyroid treatments, especially cancers and some hyperthyroidisms.



## IRE LAB «KEEPING RADIATION SAFE», IRE'S PREVENTIVE DIVISION

IRE Lab contributes to the protection of the environment, workers and the population thanks to its advice and customized solutions in the radiation measurement and monitoring sector.

IRE Lab is a flexible, dynamic and multidisciplinary structure that benefits from modern and innovative equipment, as well as comprehensive advice and expertise in the field of radioactivity monitoring: measurement, risk prevention, improvement of performance and training.

Using its recognised industrial experience, IRE Lab offers a unique approach to measuring radioactivity by offering a range of tried and tested solutions in the following areas:

- The analysis of radioactivity in a variety of samples: environmental, biological, drinking water, agro-food products, industrial, etc.
- The radiological characterisation of waste, effluents and contaminated substances;
- The development of equipment for the continuous monitoring of radioactivity;
- The implementation of national and international projects in various fields linked to radioactivity;
- The dismantling of sealed radioactive sources.



## IRE ELIT RADIOPHARMA, A LABORATORY OF IDEAS AND ACTIONS FOR RADIOPHARMACEUTICAL INNOVATION

IRE ELiT connects ideas and action. Its aim is to create methods of diagnosis and treatment that are increasingly effective and beneficial for public health.

It provides adapted, innovative and sustainable solutions that meet the quality requirements for radiopharmaceuticals administered to patients.

In order to meet this objective, IRE ELiT Radiopharma works closely with its clients in a «test & learn» spirit as well as with globally recognised universities and research centers.

Today, IRE ELiT is one of only two global suppliers **of germanium-68 (Ge-68) / gallium-68 (Ga-68) generator** to be approved for use as a drug in Europe and as an active pharmaceutical ingredient (API) in the USA.

Ga-68 is mainly used in the field of oncology, due to the development and availability of new molecules labelled with Ga-68 such as, for example, for the diagnosis of neuro-endocrine tumours or the detection of recurring prostate cancer.

IRE ELiT is also a vast network of distributors across the world that continues to expand in order to facilitate access to our products and to offer the best service to our clients. This geographical expansion results in continuous investment in the production capacity of the radiopharmaceutical division in order to guarantee the availability of products.

# WHAT MAKES US UNIQUE?

Belgium is a major player in the field of nuclear medicine. Pioneer in research, 2nd in the production of medical radioisotopes and a major player in the transport and distribution of radiopharmaceutical products across the world, its expertise has an international reputation.

One in three of the world's hospitals specialised in nuclear medicine uses Belgian technology.



**An exceptional supply chain,** which has enabled uninterrupted production for years.



**Products of impeccable quality** which always meet the required specifications and delivered on time.

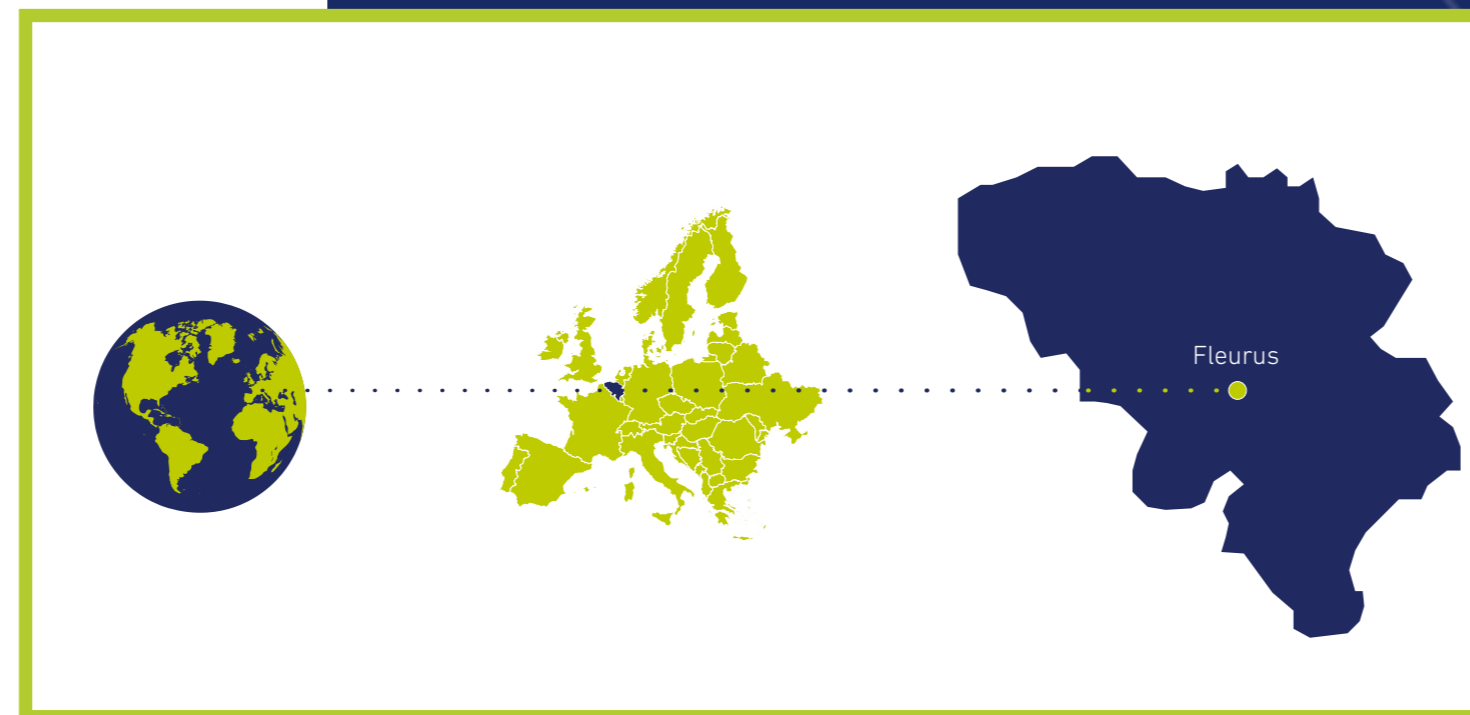


**A partnership with a highly reputable transport company** Transrad, located on our site.



**An ideal strategic location for logistics:**

Fleurus is located at the heart of a road network, within 350km of 4 international airports and within 1000km of 4 research reactors.



**7M patients**

can benefit from a medical examination each year thanks to radioisotopes produced at IRE

**100M€+**

revenue in 2018

**230**

employees of whom 30 at IRE ELiT

**18%**

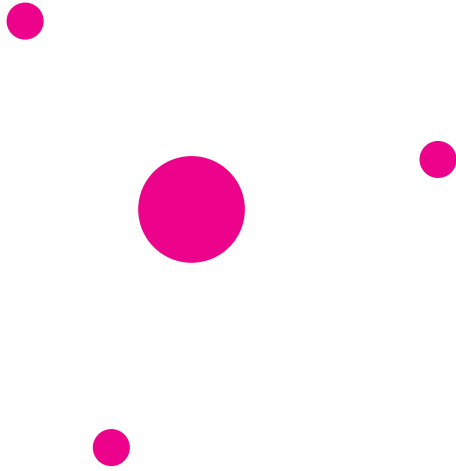
of revenue invested in R&D



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