



# Société de Compression d'Images en Réseaux et Applications

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## Presentation

**Infocament** is the first individual digital device for safeguarding and sharing diagnostic quality medical images and attaching prescriptions complying with CE Health requirements. The device is based on **WAIVES** technology.

Providing 10 to 50 Gigabytes image storage capacity, **Infocament** supplements national or regional e-health systems currently in use, which can barely store medical images. The device holds easily 5,000 chest X-ray images or a few scanner examinations.

In France **Infocament** retails for 6€ in pharmacy, making it a cost effective, patient friendly compelling solution.

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Infocament is the first solution for safeguarding and easy access of diagnostic quality digital medical images kept by the patient.

Infocament is economical and available in pharmacies. It provides 10 to 50 Gigabytes storage volume of medical images for 6 € SRP utilizing the compression technology WAIVES. The support is an injected multi-session CD-RW.

The patient retains Infocament making the data accessible only with the patient's consent. Moreover, password protection, determined by the patient protects access to the programs to ensure privacy of the content. Subject to patient agreement, the stored images and prescriptions are transferable and exploitable by medical software WAIVES compliance.

Infocament allows sharing data between doctors through seamless access to the stored images. Original data remain preserved by the doctor conducting the imaging examination.

Images are locally accessed, preventing late data delivery due to data transmission from a remote server. It solves latency time when accessing large amounts of data like the transfer of a full scanner exam through a limited network bandwidth.

Infocament provides protection, image compression, image viewer and burning. Programs run directly from the media avoiding risks related to the installation of new software in a computer.

To record new data, Infocament requires a computer equipped with a CD-RW or DVD-RW drive running Microsoft Windows® (versions 98, NT, 2000, XP). Exams are recorded in incremental mode avoiding content alteration.

To view data, Infocament requires a computer equipped with a CD-R or better drive running Mac OS X (versions 10.3 and following, including UB) or Microsoft Windows® (versions 98, NT, 2000, XP).

Thus, Infocament stores full imaging exams supplementing national projects such as French DMP (EHR), which save only some illustration images. First State integration (DMP-FC in Franche Comté) is already announced.

## Instructions

Data recording requires a computer equipped with a CD-RW or better running Microsoft® Windows® (versions 98, NT, 2000, XP).

Image display requires a computer equipped with a CD-R or better and running Mac OS X (versions 10.3 and following, including UB) or Microsoft® Windows® (versions 98, NT, 2000, XP).

No installation is performed on the hard disk.

If Infocament does not start automatically upon its insertion, start manually under Windows the application **Infocament.exe** located in the folder waaves and under Mac OS X **InfocamentOSX.dmg** located in the folder MacOSX.

### First launch

First time, you must initialize Infocament. Therefore, your doctor will fill the following fields Last Name, First Name and Password with the data you give him.

### Subsequent uses

Following uses, the application will ask your Last name, First Name and Password to start.

### Application choice

After clearing your access, the application will give you the choice between:

- Add an exam
- View an exam

### Add an exam

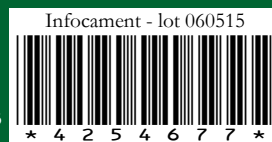
To add an exam, select the directory containing images to copy. The program will compress then burn on Infocament.

Quality index varies upon exam. In the interior page you will find some standard values.

### View an exam

Each exam is stored in a separate folder located under the root of the CD.

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## Standard values

Anatomic-pathology	40 - 80
Dental panoramic	40 - 60
Chest X-ray	80 - 100
Retinosis	10 - 15
Scanner	10 - 20

Index values are provided as an example only.  
Values are for natives standard digital images only.  
Note: Compression of already compressed images may significantly change the range of values.

## Assistance

Apicrypt provides technical support for its members and doctors.

You can also contact support by mail at [infocament@waaves.com](mailto:infocament@waaves.com)

### Legal mentions

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## Interest for health professionals

**Inrocament** simplifies and improves transfer of medical information by providing the doctor a digital copy of the imagery exam in diagnostic quality.

Image acts in medical practice total an astounding level of 400 million in France. Each citizen performed an average of 6.5 medical imaging act yearly.

**Inrocament** simplifies the task of storing qualified images by automating the various recording steps from converting images to burning them in the CD.

**With more than 10,000 medical specialists equipped, WAAVES is the most popular medical format in diagnostic quality among doctors.**

WAAVES is available within various medical software including Picture Archiving and Communication System (PACS) for hospital and radiology cabinets, medical exchange systems in client server mode or secured mail and liberal practice management system. WAAVES is also the image format in the DMP-FC (Franche-Comté, France).

**Inrocament** meets the objectives of the French law *patients' rights and health system quality* (March 4, 2002) regarding access to information and the cost of copy of the patient medical file at his request.

Article L. 1111-7 "Any person has access to the whole of the information concerning her health held by professionals and establishments of health, which are formalized and contributed to the development and the follow-up of the diagnosis... The local consultation of information is free. When the applicant wishes the delivery of copies, whatever is the support, the expenses left to him cannot exceed the cost of the reproduction and, if necessary, their mailing ones."

**Inrocament** meets the objectives of law 2004-810 (August 13, 2004), which introduces the concept of telemedicine by providing an imagery examination to doctors in different locations all enabling the patient and the doctor to be in separate location.

Article 32 "The telemedicine allows, among others acts, to perform medical acts in the strict compliance with the rules of deontology but remotely, under the control and the responsibility for a doctor in liaison with the patient by means of communication suitable with the realization of the medical act"

Article 33 "The regional medical organization integrates the telemedicine. Each organization defines the operational modes to fulfill the public health requirements and of the access to the care"

**Inrocament** valorize national and regional e-health projects currently in early stage of deployment, based on the central storage of patient electronic record and its availability among doctors: DMP (Personal Medical Record), DCC (Cancer Communicating Record)...which barely integrate medical imagery.

DMP envisions medical image only as an option, in illustration mode as a complement of the prescription.

And for the DCC the exchange specifications of the minimum record do not include image.

## About WAAVES technology

WAAVES technology brings many unique benefits to the patient and to the doctor utilizing the medical tele-imagery.

WAAVES is the most popular French medical format in diagnostic quality used among doctors with different specialties conferring together. More than 10,000 doctors were equipped with at least a viewer by December 31, 2005.

WAAVES strongly reduces the weight of the images without introducing bias to the diagnosis. The clinical study *Image compression in chest radiography: To the limit and beyond* Pr Guy Frija, Dr. Catherine Lefort *et al.* (HEGP) showed that in chest radiology, an image can be compressed on average 80 times [and consequently the weight of the file to be reduced from 10 Mo to 125 KB], without introducing bias to the diagnosis.

The same study indicated that the average compression rate obtained with WAAVES was 2 to 9 times higher than the other solutions.

WAAVES works in quality level. This approach enables each image to reach an optimal quality and to optimize its weight while carrying out an automatic process. The medical study based on WAAVES technology *Quantitative and visual evaluation of medical image compression with wavelets: Development of an optimized compression approach*. Dr. Didier Heudes, Seraya Maouche (University Paris VI) showed that the usage of WAAVES index quality defined classes of equivalence, which ensures a total reliability of the result of compression.

All other evaluations conducted in various medical fields provide the same results.

They were obtained by developing algorithms based on an improved version of the mathematical theory of the wavelets. This method analyzes the whole image seeking surfaces and borders, whereas the other techniques apply a local treatment to the image averaging contiguous points.

It provides images without pixel effect or artifact in diagnostic quality levels. Moreover, WAAVES format preserves the images' original characteristics: quality, resolution and depth.

Not only does WAAVES provide the best compression solution, but it is also the most effective solution in production.

Thanks to the high compression rates, WAAVES solution allows the full image to be sent where the other solutions transfer only illustration image in thumbnail size.

Moreover, WAAVES format takes advantage of the scalability display, solution patented by CIRA. Thus, the same file will be displayed on various resolutions optimizing the monitor resolution and the memory available. This exclusive approach in imagery ensures that the addressee always has the information necessary to view an image in diagnostic quality.

Infocament provides the health professional with the first standardized solution of images exchange.  
[conclusion à améliorer]