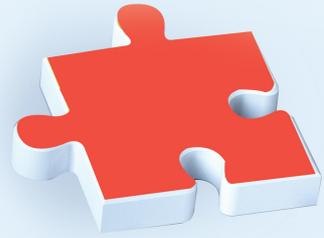




PHYSiCO

**PATIENT DOSE Module
Technical Datasheet**





PHYSiCO

A **unique** application for **collection, management, digital processing** and **archiving** of information, **always accessible via web**, with **modular** and **entirely customizable solutions**, PHYSICO represents the ideal instrument for the **Specialists in Medical Physics** and the **Experts in Radioprotection** for the **optimization of their own control and surveillance activities**.

For the first time it is possible to collect and store all the data within a **single database** and to **analyze and correlate all the pieces of information among each other**, fully enhancing the collected information assets, making them immediately and easily accessible to operators for consultations, processing, correlations and combined analyses, allowing considerable **efficiency and effectiveness saving**.

PHYSICO has been designed **FOR** the operator and **WITH** the operator.
A software **"tailored"** to users: **flexibility, concreteness and customization**.

The platform is composed of various Modules, configurable with different functionalities and architectures; each client can create their own perfect combination of applications and tools, for a new, "colorful", way of working!

It's a COLORFUL WORLD!



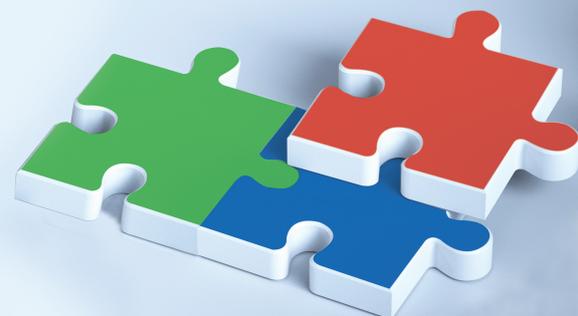
PHYSICO is a modular solution that allows the **computerized and dematerialized management of the entire workflow of Medical Physics and Radioprotection services and data monitoring at the various corporate governance levels, able to fulfil all the needs of a complex Physics Department: quality checks of the equipment for biomedical imaging, use and handling of radioactive sources for therapeutic and instrumental purposes, dosimetry surveillance of the environment, of patients and operators, company and multicorporate informative dashboard.**

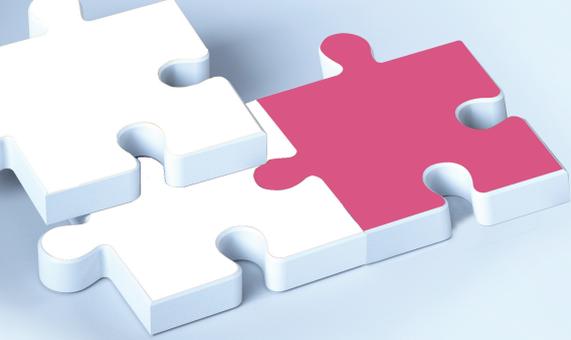
The complete PHYSICO suite is composed of 9 modules with different functionalities, able to computerize all the processes of a Medical Physics Service. Each Module can be used stand-alone but it can offer further added-value and synergy, integrating with other Modules of the suite: they can be combined together according to one's own needs and preferences.

-  **PATIENT DOSE Module**
-  **OPERATOR DOSE Module**
-  **ENVIRONMENT DOSE Module**
-  **INVENTORY Module**
-  **QUALITY CONTROL Module**
-  **SOURCE Module**
-  **RADIOPROTECTION REGISTER Module**
-  **PROTECTED HOSPITALIZATION Module**
-  **DASHBOARD Module**

The application suite **PHYSICO** gathers and memorizes all the data in a single database and allows to analyze and correlate all the pieces of information among each other, fully enhancing the collected information assets, making them immediately and easily accessible to operators for consultation, processing and combined analyses; the suite **PHYSICO** guarantees quality monitoring and assessment across the activities performed by Medical Physics and by the service of Radiodiagnostics.

The suite **PHYSICO** is characterized by the offer of **dematerialization of the Medical Physics workflow**, through the functionalities of **REMOTE DIGITAL SIGNATURE** and **LEGAL PRESERVATION**, in accordance with the Italian law.





PATIENT DOSE Module



In full conformity with **EURATOM 59/2003 Directive** and with **Italian Legislative Decree 101/2020**, it allows the Physicist and the Radiologist the **optimization of diagnostic procedures**, the **collection and registration of technical parameters and dosimetry data** of the provided services, the creation of the personal **Dosimetry File**, the **correct identification of the exposure class** and **consequent communication of the exposure level in the medical report**.

PHYSICO PATIENT DOSE Module is classified as **Class I Medical Device**, registration n. **R1386459**.

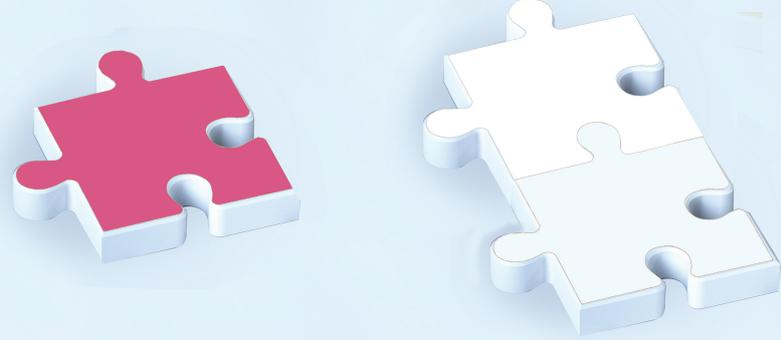
It permits the registration, analysis, management and archiving of information related to **exposures to radiations** of each single patient, allowing the **analytical and global evaluation of X-ray exposures**.

PHYSICO can be integrated, **inbound and outbound, through DICOM 3.0 and HL7 standards in a direct and simultaneous way, both with diagnostic modalities and with RIS/PACS systems, for retrieval / automated receipt of exposure data**; moreover it **can be integrated with RIS** for the receipt of numerous information on the patient and on the procedures (for example, personal data records, the service provided, the reporting physician, the radiology technician, etc.) and for communication of dosimetry data to the patient in a personalized way which can also be configured by the user by choosing the parameters of interest.

The system is able to manage and archive the dosimetry information obtained from **all typologies of diagnostic modalities, regardless of type and brand, obsolescence and manufacturer**:

- Computed Tomography (CT, MSCT)
- Dual Energy Computed Tomography (DECT)
- Interventional, Angiographic and Fluoroscopic Radiology (XA, RF)
- Mammography and Tomosynthesis (MG, DBT)
- Computed Radiography (CR)
- Digital Radiography (DR, DX) also with Wireless Detector
- Dental Radiography (OPT)
- Cone-Beam Computed Tomography (CBCT)
- Nuclear Medicine (NM, PET)
- Hybrid Imaging (CT-SPECT, CT-PET, MR-PET)
- Radiotherapy (RT)
- Bone Densitometry (BSD)

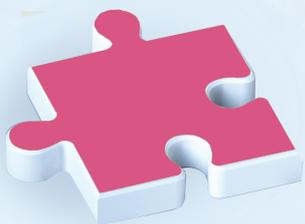
Thanks to its structure, PHYSICO is able to manage **manifold parameters, both dosimetry indexes and technical parameters of acquisition**, for all the above listed equipment and also for examinations generated by modalities which do not involve the use of ionizing radiations, for example **Nuclear Magnetic Resonance, Ultrasounds etc.**



The main processing, evaluation and estimation functionalities of PHYSICO Patient Dose are the following:

- To ensure conformity to **art. 161 of Italian Legislative Decree 101/2020**, PHYSICO allows the classification of diagnostic procedures according to **multiple transcoding logic, customizable by the users** in charge, considering also the conditions and the modalities in which procedures are executed. Users will be able to configure the system in order to classify autonomously the studies based either on **study descriptions, acquisition protocol** or **dosimetry and exposure data** to calculate the class on the basis of the actual performance conditions. The Module is **set up for communication** to the RIS system of the exposure class assigned to each performed service, and for the input of the medical report text.
- In full compliance with **art. 168 of Italian Legislative Decree 101/2020**, PHYSICO allows the **registration and archiving** of all **dosimetry data** and exposure parameters of diagnostic performances, with the **possibility of sending** to the Region or Autonomous Province the stored information about the parameters indicated in attachment XXIX of the Decree and according to the required subdivision.
- PHYSICO allows users to extend and **personalize** the dataset retrieved from DICOM images or from RDSR compared to default configurations (**MAPPING SUITE Tool**).
- With dedicated tools, it is possible to customize, boost and modify the quantities managed by the system, be they coincident with the collected data or derived quantities obtained by the application of algebraic operations (**DOSE EDITOR Tool**). Thanks to this functionality it is possible to **harmonize** units of measurement across the various equipment in order to bridge any possible differences.
- The support for IBA **DAP chambers** is natively integrated in PHYSICO, allowing – through integration with the worklists – to record the data coming from the chambers and associate them to the correct performance; besides the **DAP** value, this integration is able to record also the **exposure time**.
- For those devices that cannot be integrated in any way, PHYSICO allows – by exploiting the worklist integration – the **manual input** of the values of interest and their correct association with the performance.
- Estimation of the **Effective Dose** for all modalities.
- PHYSICO natively contains a function for the **estimation of the Dose to Organs (for CT and XA) based on anthropomorphic phantoms obtained with “Montecarlo” simulations**.

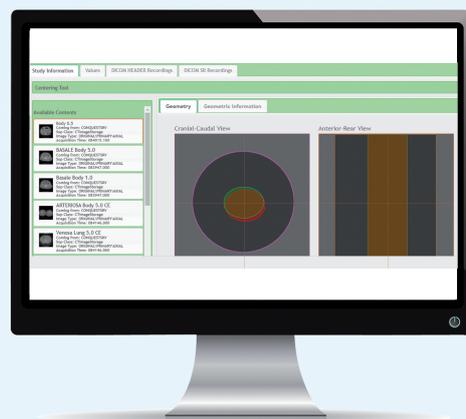




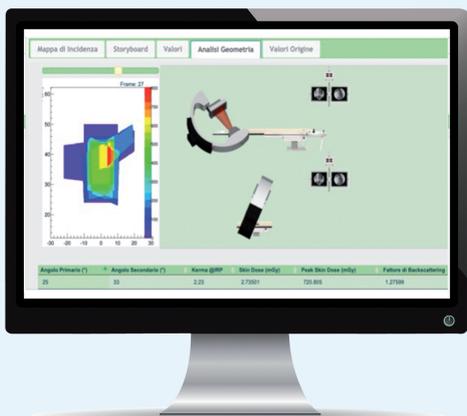
- In the sphere of CT, PHYSICO allows the calculation of the Size-Specific Dose Estimation (**SSDE**): the calculation of the Effective Diameter (DE) can be performed both on **scout acquisitions** and of **axial images**. It is also possible to carry out **manual segmentations**.



- In order to understand better the execution conditions of a CT investigation, PHYSICO is able to supply information related to the **correct centering** of the patient (vendor independent functionality).

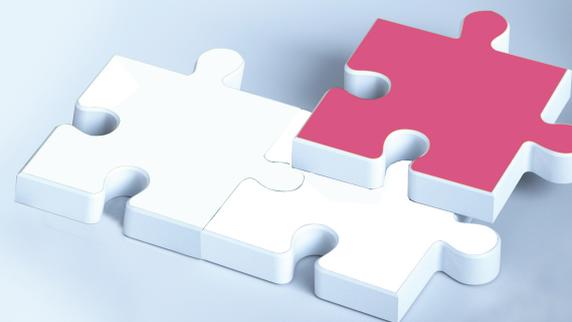


- For nuclear medicine studies, PHYSICO allows the calculation of the **Committed Effective Dose** deriving from the administration of radiopharmaceuticals by using conversion coefficients from "Activity" to "Effective Dose" taken from reference publications (ICRP 128).



- For interventional studies, PHYSICO can supply the **Peak Skin Dose** value and the **distribution maps of the dose in cutis**, with **temporal and geometric evolution of the equipment position**, of the incidence maps and of the calculated values.

- Tools and configurations specifically designed to carry out periodical evaluations, data extractions and control of the **Diagnostic Reference Levels (DRLs)** which can be configured in terms of extractable quantities, percentile value and data aggregation logic (by protocol, anatomical area, age at the examination, sex, etc.).
- Advanced functionalities for the **management of equipment exposure protocols**, in order to monitor their use and the employed parameters.
- From the point of view of exposure and of data examination, PHYSICO provides countless approaches, both graphical and analytical; it will be possible to visualize graphs and charts that constitute interactive tools to access further in-depth analyses (such as the progress of mA values).
- All data are made available for **processing and exportation** into PDF, csv ed Excel (xls,xlsx) format, also in the form of reports, graphs, lists and statistics.
- PHYSICO allows the total customization of overview reporting, containing both the data of interest retrieved from equipment, the information collected / received from the RIS/PACS system, and the chronology (exact and cumulative) of radiological information relating to exposures, as well as any other evaluated quantity about the dose.
- In the system there are **advanced modules of statistical analysis of exposure parameters and dosimetry data**, which allow to draw up **personalized** statistics by using any parameter imported in the system or processed with the dosimetry editor; these modules include graphical areas which are completely interactive, point by point, with the possibility of further investigations at the level of all categories and dosimetry descriptors: the generated graphs are not only a tool of exportation and visualization, but also of navigation because by clicking on a point of interest the user can interact with the examination related to the selected parameter.
- The system includes a module of **SPC (Statistical Process Control) analysis** which allows to determine the behavior of a variable (dosimetry or exposure indicator, or any other parameter registered in PHYSICO) and ascertain its random or systematic nature, according to predefined rules (e.g. Nelson).
- PHYSICO allows the **unencrypted and anonymous management of personal data, simultaneously**. In case of communication of the datum to third systems, PHYSICO can perform an operation to make it anonymous on the basis of rules defined by the end-user, in compliance with the regulation for the treatment of sensitive data. PHYSICO is **natively designed for integration and communication of dosimetry feedbacks to national and/or international registers** for population and epidemiological studies, with advanced statistical analyses.
- In the system there is an **Inventory** section where all the devices present in each medical facility will be input, providing a lot of information: identification data, technical characteristics, location of the equipment in one of the facilities previously registered in the system. For each device it is possible to upload supporting documentation.
- Throughout the application and across the single functionalities, a **system of notifications and alarms** is available.





**“Innovations stem from man,
with man,
for man”**



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