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Annex 3. Project assignment description

# **SERVICES FOR THE DEVELOPMENT AND INTRODUCTION OF THE CUSTOM MADE ICT BUSINESS SOLUTION**

## 1 DEFINITION OF PRODUCT

Procurement subject are services for the development and introduction of custom made ICT business solution (hereafter “software”) for online ordering, review and exchange of key information, automated storage, sending and analysis of patient x-rays.

Contracting Authority has a network of partners /end users, mostly dental practices, that need online access to dental x-rays and other diagnostic services.

The new *software* will significantly optimize the current business processes, integration of business functions, contribute to more efficient workflows, improve the interaction between the Contracting Authority and its clients and associates. Dental practices and their patients will be provided with a holistic review, accurate processing and availability of images and data, which will speed up the process and quality of treatment.

The service includes:

- a) development, installation, programming, testing and configuration of ICT solutions and coordination;
- b) training of the Contracting Authority employees.

## 2 KEY FUNCTIONALITIES

- Collaborative dental practices will be able to place the referral on the requested diagnostic examination (e-referral) directly into the system, without the patient physically brings written record of the same. When selecting the requested diagnostic service, an informative price will be automatically generated, which will be able to be delivered to the patient upon referral. It will be possible to choose the payer of the service (dental practice or patient);
- X-ray images of the patient will be automatically stored in the system (archive creation and automatic backup of images), which will be automatically available to collaborating practices and dental institutions by entering the system via the online application at any time (The system will be available 0-24h as a web solution supporting iOS, Android, Windows; MacOS and other). In doing so, the highest standards of data security will be ensured (user passwords will be generated, which will be delivered in a secure manner, after agreement with the doctor) and full compliance with the provisions of the General Data Protection Regulation (GDPR) will be ensured;
- The program will offer dental practices the ability to process images in high quality that has not been available to some surgeries so far (by changing the contrast of gamma and brightness), which will significantly increase the quality of service - enable more accurate diagnosis and treatment planning;
- All activities and information entered by administrators and users (dental practices) will be automatically stored in the system (number of referred patients per doctor, number of referrals, type of work), which will enable centralized review, printing of data and download of stored documents at any time and outside the office;
- The program will also integrate a space where doctors will be able to get acquainted with current benefits, innovations in the form of expanding the range of diagnostic examinations. In this way,

the patient will be informed in a much shorter period of time about the further course of his treatment without the need for subsequent appointments, telephone calls and the like;

- The Company's cash register will be integrated into the software solution, which will enable much more precise statistical data and analyzes according to the desired parameters. The cashier application, which is not part of the procurement subject, will:
  - It will enable electronic issuance, automatic export and sending of pro forma invoices, offers and invoices, which will ensure speed and transparency of service billing;
  - There will be the possibility of "opening an account" of dental practices and reviewing orders and debts;

### 3 TECHNICAL SPECIFICATION FOR SOFTWARE

The contractor must develop a custom ICT business solution that will be in-line with these basic requirements:

#### **User management module:**

- Basic functionalities: create user, manage user profile, change password functionality, lost password functionality;
- Advanced functionalities: managing and restricting access rights to content and data by role and organization;

#### **Patient record management module:**

- For each patient, the system must record a set of basic patient demographic data, a history of completed orders linked to related diagnostic materials and enable to control access to orders / images and related patient data;

#### **Order management module:**

- For each order, the system must record some basic information, a set of metadata, information about the referring institution, track workflow progress and allow for image access rules and limitations; Doctors can share access to specific orders;

#### **Display of radiology images;**

- Based on user permissions, DICOM (.dcm) (*Digital Imaging and Communications in Medicine*) images will be open in an integrated web-based DICOM viewer;
- The integrated solution must allow the physician or dental technician to manipulate the image.

#### **Access and sharing of diagnostic materials between physicians:**

- Sharing should be possible between registered users listed in the user directory.

#### **Notification system based on e-mails:**

- Notify users when new diagnostic material is available;

#### **Audit trail module:**

- The system should log all types of activities: view, read, write/update and delete;
- The audit trail module must have a user interface;
- ATNA (*Audit Trail and Node Authentication Integration Profile*) compatibility is preferred;

## Setup of a central dedicated PACS server (*Picture Archiving and Communication System*) and integrated web viewer;

- PACS server specifications:
  - Compliant to the IHE specification (*Integrating the Healthcare Enterprise*) “Image Archive and Report Repository”;
  - Capable to store and retrieve DICOM objects;
  - Support for GSPS (*Grayscale Presentation States*);
  - Support for Key Objects (KO);
  - Support for Structured Reports (SR);
  - Support from multiple modalities;
  - Support for Web Access to DICOM or WADO (Web Access to DICOM Persistent Objects);
  - A user interface for system configuration;
  - A user interface for monitoring;
  
- DICOM web viewer
  - Support for desktop and mobile applications;
  - HTML5 based viewer;
  - Windowing - Apply windowing changes to all the images of the series by default;
  - Add a context menu item for deleting a single measurement selected;
  - Multiple AET (*Application Entity Title*) server configurations;
  - Local storage & retrieval of images (browser dependent);
  - Thumbnail preview of the query result;
  - Query auto-refresh;
  - Login security;
  - Tools and features in the viewer:
    - Vertical & Horizontal flip;
    - Left and Right rotate;
    - Pan & Zoom;
    - Zoom to fit the screen;
    - Invert;
    - Stack navigation of images on mouse drag;
    - Reset image;
    - Text Overlay;
    - Tiled layout;
    - Tiling the particular series in multiple frames;
    - Comparison of multiple series side by side;
    - Synchronized image scrolling of multiple series;
    - Scout / localizer lines;
    - Display meta-data;
    - Measurement;
    - Display image orientation;
    - Change image orientation while horizontal / vertical flip;
    - Three different thumbnail series view options with current image indicator;
    - Slider to change images.
  - Provision to download images as Dicom or Jpeg.

### DICOM Modality Work List Integration (DMWL)

- A worklist can be constructed based on the scheduling information;

### Integration of the existing client POS (point of sale) system (cashier)

- A “loose” integration is foreseen.

## GENERAL SOFTWARE REQUIREMENTS AND GUIDELINES:

- The provider must use well-proven and reliable technologies with a good developer base;
- The provider must use open-source and publicly available technologies and solutions;
- All used software solutions and software libraries must be well on-line documented;
- The final solution should not include any chargeable or licensed software and therefore hidden costs.

## 4 PROJECT PHASES

### Project phases:

1. (T0) Analysis of business, functional and technical requirements and preparation of the project plan;
2. (T1) Development of core functionalities - design and development of software product:
  - (a) Infrastructure set-up (development, test/staging, production);
  - (b) Development and deploy of the audit trail management module,
  - (c) Development and deploy of the user management module,
  - (d) Development and deploy of the portal for ordering and reviewing diagnostic materials,
  - (e) Create a DMWL integration interface and
  - (f) Setup and integrate the PACS and web image viewer system;
3. (T2) Perform the QA (Quality assurance) cycle including end-user testing;
4. (T2.1) Roll-out of the system;
5. (T2.2) Education on the use of the system for end users, min. 6 employees of the Contracting authority (min. duration: 2h).

## 5 HORIZONTAL PRINCIPLES

### 1. Promoting gender equality

Within the textual part of the system, it is necessary to avoid addressing faces to men and women (he and/or she), but it is necessary to use Gender-Neutral Pronouns to promote equality and prevent prejudice of more pronounced communication with one of the groups;

### 2. Accessibility of information and communication

- Accessibility measures need to be provided for simple and easy use of the software solution, which includes customizing the display and interaction with the content for people with disabilities who could use it internally (as patients when receiving diagnostic, informational

and promotional materials) or externally (external collaborators) - employees of dental offices and institutions);

- The formats of texts and draft documents within the system must be accessible in such a way as to make them accessible and perceptible, operable, comprehensible and stable, including the adaptation of the display and interaction with the content. Content design should be avoided in a way that is known to cause it;
3. Reasonable customization and universal design
- The software must be designed in such a way that it can be used by people with different needs without additional workload, without changing the functionality of the system and the work performed by it. Software design must provide warnings of danger or possibility of error;
  - Use of the software must not require high physical effort;
  - The solution must not use missing or inadequate markings for links and buttons that may cause problems for people with disabilities:
    - (a) content with unknown terms and abbreviations;
    - (b) keys and connections must be marked clearly and legibly;
    - (c) font sizes must be reasonable and easy to read on large screens and mobile devices;
    - (d) The content must be focused on clear and concise reading that will not tire the reader.

The Bidder shall sign and certify the Annex 10. Statement of compliance with required minimal technical characteristics defined in Annex 3. of this invitation to bid submission.