European Society of Medical Imaging Informatics

2016 Newsletter
President’s Note

The European Society of Medical Imaging Informatics is in good health status and is enforcing its statement “linking research to clinical practice”. Such statement is the basis of the annual meeting that will be joint with the European Society of Oncologic Imaging (ESOI), under the main theme Imaging Informatics in Oncology. The Annual meeting will be held in Valencia, 6 to 8th October, under the local organization of Angel Alberich Bayarri and Luis Marti Bon Mati, both outstanding researchers in the field of Imaging Biomarkers.

The annual meeting in Valencia will open new horizons and scopes to our Society. It will highlight the importance of organizing joint meetings with societies based on clinical research, and will support the horizontal value of imaging informatics in medical imaging. In every clinical research and application there is a piece of imaging informatics, and our role is to support this matter of fact.

Among the main activities of 2016 I would like to highlight the recent start of a webinar series in imaging informatics, freely available to everyone. The registration page is available at http://www.anymeeting.com/pcexxboimv. The series includes webinars about “Computer aided diagnosis”, “Structured reporting”, “PACS”, “Social media”, “Personalized medicine” etc. All webinars are recorded and available on the EuSoMII youtube channel. Soon more webinars will be scheduled, but restricted to EuSoMII members, as a benefit of the membership.

EuSoMII is at ECR 2016 with a booth in the main entrance hall.

See you in Vienna, and Valencia!
EuSoMII Webinars and YouTube Channel

One of the goals of EuSoMII, the scientific society of medical imaging informatics of the ESR, is spreading the knowledge in all the domains concerning medical imaging in the current era of new technologies.

This goal can be achieved not only by organizing congresses or meetings, but also by a more regular means of webinars. The webinar is power point live presentation, which can be attended directly from wherever you are.

There are two possible ways of following a webinar. The first one, which is preferable if you are available at the time of the webinar, is attendance during the live presentation. If you subscribe in advance, you will get a reminder, which allows connecting to the webinar at the time when it starts. The advantage of this way is that you can not only listen to the talk together with other participants, but also ask questions directly after the talk. You write your question in the webinar interface, the presenter immediately sees it and at once provides you with the answer. In this way, you are able not only to follow the webinar, but also to be an active participant and adapt its content to your needs.

The other way of following the webinar is listening to it on YouTube, on your convenience, after the webinar has been broadcasted. All the previous webinars are accessible on the website any time, so that the entire lecture or only its fragments can be viewed repeatedly.

The subjects that are discussed on the webinars concern actualities of medical imaging informatics, in other words, all the radiology and medicine topics in our era of imaging 3.0. The webinar talks are presented by outstanding speakers, each one being an expert in one of the Society fields of interest.

On the first webinar, the Chairman of the EuSoMII Society, Prof. Emanuele Neri, talked about the goals of the Society, the upcoming congress of EuSoMII and the webinar projects. At the next EuSoMII congress, which will take place in Valencia in October this year, numerous topics of modern imaging will be discussed.

Each of the following previous webinars discussed a specific question. The first one was focused on computer-aided diagnosis (CAD). It was presented by Prof Daniel Regge, well known for his works in CAD for oncology imaging. The computer decision support having been made mandatory in US from 2017, CAD is no more the future but the present of medicine. In is important for us as radiologists to participate in this development and integrate it in our workflow. The webinar shows some ways of doing this efficiently.

The second thematic webinar was focused on the topic of structured report in the era of personalized medicine. This webinar was presented by Charles Kahn, Chair of the RSNA Imaging Informatics Society. He showed the importance of personalized medicine as a future integrative part of our field of expertise in connection with with ever growing genomic knowledge. In personalize diagnostics, precise information on each patient, based on his personal molecular fingerprints, is considered. In this context extracting relevant data from radiology reports becomes more and more important. Standardized language and codification, which became possible due to the Radlex vocabulary, are essential in achieving this goal. For better homogenization of the reports, the common RSNA-ESR initiative is working on creating the library of standardized radiology reports. Today, two libraries are already available: the radreport.org library, where you can find reports validated by experts and the openradreport.org, where each one of you can upload and suggest to the community a report using his RSNA or ESR login.

The next webinar, presented by Erik Ranschaert from Netherlands, well known for his works in the fields of tele-radiology and social media, was focused on the role of social media in radiology. The place of social media is becoming more and more important in our everyday life, both personal and professional. In the field of radiology, social media can be used to exchange information about such events as conferences or workshops, to share ideas and actualities, to discuss interesting cases or even for e-learning. From this webinar you learn a lot about the best ways of getting advantage of these medias.

The second last webinars, which will take place before the coming ECR, will be focused on the “PACS replacement” (by Prof. Sergey Morozov) and on the Standards in eHealth (by Prof. Mildenberger).
After the ECR a large program of webinars is waiting for you. It will start with “Case-based eLearning in Radiology” by Dr. Peter Pokieser, to be continued with “Using Imaging Informatics for Personalized Clinical Decision Support” by Dr. E. Siegel.

The new program of webinars is available on the website of EuSoMII at [http://www.anymeeting.com/pcecxbom1vw](http://www.anymeeting.com/pcecxbom1vw) and will be constantly updated. You also have access to the past webinars browsing [http://eusomii.altervista.org/free-webinars.html](http://eusomii.altervista.org/free-webinars.html).

You can subscribe to upcoming webinars. This will allow you to get a reminder before the start of each webinar and access it directly online.

Webinars are currently opened to everyone, but in the future they will be exclusively available to the members of EuSoMII. However, do not worry, becoming a member takes only a few minutes on the website.

If you want to get involved further in these webinars and in the activities of the Society, you may also suggest a webinar on your favorite topic.
EuSoMII newsletter is published every year in February and distributed at CARS, ECR and EuSoMII meetings.

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Dear Colleagues,

If you are interested in Imaging Informatics and would like to join our community, we would be delighted if you apply for EuSoMII membership. Please find enclosed the membership application 2016 (25 euros); after the application you’ll receive a membership certificate.

Looking forward to your membership, we are pleased to announce the following EuSoMII activities in 2016:
- Annual meeting, joint with the European Society of Oncologic Imaging, Valencia, 6-8 Oct... See more
Standards in eHealth: what the radiologist need to know

IT support is well advanced in Radiology. Part of this success story is the availability and implementation of standards for data formats, workflow support, quality and interoperability.

DICOM - Digital Imaging and Communication in Medicine - has been introduced in 1993. It is one of the most successful standards in healthcare and mandatory in imaging devices worldwide.

The DICOM Standard addresses multiple levels of the ISO OSI network model and provides support for the exchange of information on interchange media. At the application layer, the services and information objects address five primary areas of functionality (1):

- Transmission and persistence of complete objects (such as images, waveforms and documents),
- Query and retrieval of such objects,
- Performance of specific actions (such as printing images on film),
- Workflow management (support of work lists and status information) and
- Quality and consistency of image appearance (both for display and print)

DICOM is organised as a joint initiative of users and vendors, actually the secretariat is hosted by NEMA (US Vendor organisation) with strong support by ACR. Many user organisations are members of the DICOM Standards Committee (ESR is one of them). 31 different Working Groups are dedicated for several issues, including radiology modalities (e.g. WG 21 for CT) and others for Physics (WG 28) or Education-Communication-Outreach (WG 29). DICOM has been adopted by many other disciplines outside Radiology, like Cardiology, Surgery, Ophthalmology, Veterinary Medicine or Pathology.

Fig. 1: Organization of IHE-Profiles with three layers for Use-Cases - Actors - Transactions (which are defined based on international Standards)
Radiologists should be aware of such basic principles, but it is not mandatory or even necessary to have detailed knowledge on e.g. the DICOM standard, because there is another organisation, which is developing "Interoperability Profiles". This initiative named "Integrating the Healthcare Enterprise" (IHE) has been established by RSNA and HIMSS more than 15 years ago (2). IHE is meanwhile worldwide active and accepted, esp. in Radiology and in eHealth projects. IHE is organised in a matrix-like structure, which means, that there international domains for the different professions like Radiology, Cardiology, Pharmacy and many more, but also many international, regional and national committees, which are relevant for the deployment of IHE. IHE is -as DICOM- an organisation formed by users and vendors, in Europe ESR is the most important sponsor of IHE-Europe. There is a strong development cycle for new profiles, which are based on relevant, clinical use-cases. These profiles will be developed by the different domains based on international standards like DICOM, HL7, web-standards and others.

In Radiology, there are basic profiles for standard workflow, but also newer ones for building registries for radiation dose exposures (IHE REM profile), for Clinical Decision Support while ordering imaging studies and also for Structured Reporting (IHE MRRT).

There is one domain called IT-Infrastructure, which has developed the concept of cross-enterprise communication (a family of profiles starting with XD®). This IHE-concept for eHealth solutions has been adopted by several countries, e.g. in Europe there a national eHealth-concept based on that in Austria, Luxembourg and Switzerland, and also many regional projects in several other countries.

An unique aspect of IHE is the so-called ConnectAThon, which is a real-life testing of typically about 100 systems once a year for about five days, which attracts over 300 engenieer each year (this year it will be in Bochum, Germany, from April 7 to 11, 2016).

In July 2015, the European Commission has published a decision on the recommendation of IHE-Profiles for the use in public procurements, based on this decision 27 IHE profiles are now officially recognised by this political institution.

Literature:

![Fig. 2: Live-Testing for IHE-Profiles at the Connecthon 2015 in Luxembourg](image-url)
European Society of Medical Imaging Informatics

EuSoMII Annual Meeting 2016
Imaging Informatics in Oncology
October 6–7, 2016 | Valencia, ES

Membership application is available on the EuSoMII website www.eusomii.org

Educational Webinars 2016
www.anymeting.com/eusomii

Contact
myeusomii@gmail.com

EuSoMII channel
Radiological Structured Reporting by Portable Devices: An Iranian Experience

An effort to make modern electronic reporting feasible from anywhere

The role of smart phones is continuously growing in medicine by playing major roles including daily communication and personal information management. But smart phones can also play important roles to deliver professional services or to improve them. Smartphones and portable devices are becoming a reliable and flexible tool for training and refreshing knowledge and also getting professional advice and consultations.

As a communication tool smartphones are beneficial for calling a colleague to consult or to get patient clinical history, calling a technologist to apply a protocol, reviewing images with a clinician, teaching a trainee, producing a report, justifying an examination to a third-party payer.

Smartphones can also be used for specialty services like reporting. They can be easily used to record messages to be delivered to transcriptionist or to referring physician regarding a specific case, taking privacy issues into account.

We have been thinking how smartphones may be used to promote structured reporting! Although everybody has heard about structured reporting as modern method of electronic reporting, but there are some barriers in front of smooth and routine use of this reporting method.

One of these barriers is the user interface and data entry method. Platforms using portable personal information management devices like smartphones and tablets may increase willingness of radiologists to apply structured reporting in their practice because of touch-based interactions.

We have developed an Android-based structured reporting system for interpretation of musculoskeletal imaging procedures. The system is based on template library of Radiological Society of North America (RSNA) (Radreport.org). Keeping the concept of “modular structured reporting”, although these templates are applicable directly to define structured reporting platform but we categorized items included in each template into separate modules each activated through a touch menu.

So, the user can select the template, then the specific module or sub-part of the template relevant to the case being interpreted and then details of alteration is defined by just a few clicks. The reporting system is available not limited to the reading room and can be particularly used for interpretation of teleradiology and off-hour readings in emergency situations.
For using this application the physician should create an account first. This application contains different segments recording Patient Information, Imaging Technique, Finding, Recommendation.

One of the important features of the application is variety of methods of delivery to the potential recipient. Since the content of the report is structured in nature, it can be formulated to various shapes and communicated using commonly available messaging tools and routes.

Privacy issue should be kept in mind using such systems to capture and communicate health information.

Also practical issues of syncing the contents of messages delivered by this application with official radiological information systems in the enterprise are critical.
Making the best use of social media in radiology

Most of us walk with a smartphone in our pocket and are well acquainted with the so-called 'social media' or just the apps that we use to quickly send messages, pictures and videos to friends, family and colleagues. WhatsApp, Facebook Messenger, Instagram, Twitter, LinkedIn, Snapchat, etc. are part of the standard arsenal of cool apps to communicate. In the press and in the literature more and more articles are published proving that medical specialists - including radiologists - like to use social media, not only for private purposes, but also for professional reasons.

Recently, a large-scale survey was carried out on the use of social media by radiologists (RANSOM the survey) [1]. The study was conducted in collaboration with the EUSOMII, SIIM, ECR and ACR. The results showed that 76% of radiologists are using social media, both for private and professional reasons. The fact that radiologists want to keep abreast of the "innovations" in the field or radiology is reported as the participants' major reason for using social media professionally. American radiologists are using social media primarily to communicate with colleagues, to promote their services, to increase their influence and to bring radiology more under the daylight patients. In contrast with these findings, European radiologists use social media preferably to share interesting and difficult cases (second opinions). There are also significant differences in the popularity of social media apps that radiologists are using: Twitter stands in the first place for professional use with the Americans, while in Europe the most preferred professional platform is LinkedIn. The study also found that among radiologists there is a high demand for clear guidelines on the safe use of social media.

In Insights into Imaging a comprehensive article was published (free access) recently on the use of social media by radiologists [2]. It is an excellent starting point for those who want to know more about how they can use social media safely and usefully. It gives a complete overview of the most common forms of social media and their capabilities. Not only the dangers are discussed, but also the existing directives and regulations concerning the use of social media. Nice is also the list of the do's and don'ts radiologists should keep in mind. One of the do's is 'to be sure about any content you may want to share', in other words, you must also make sure that patient privacy is not violated.

<table>
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<th>Ranking of risks and disadvantages of using social media.</th>
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<tbody>
<tr>
<td>Insufficient legislation, guidelines and policies</td>
<td>75%</td>
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<tr>
<td>Risk for privacy of the patients</td>
<td>39%</td>
</tr>
<tr>
<td>Risk for privacy of radiologists</td>
<td>39%</td>
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<tr>
<td>Insufficient knowledge about SoMe among radiologists</td>
<td>37%</td>
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<tr>
<td>Distraction from clinical activities</td>
<td>28%</td>
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<tr>
<td>Deprivation from real social contact with others</td>
<td>18%</td>
</tr>
<tr>
<td>Danger of negative comments on our practice</td>
<td>13%</td>
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</table>
There is an interesting discussion about the growing role of social media in the evaluation of scientific publications through an open review process. Social media can even be used to calculate the impact factor of a researcher with a computer algorithm that is based, inter alia, on the degree to which his/her publications are read and cited by others. Such a scoring system already being used the ResearchGate platform (RG score). It is also shown that the use of social media during radiological meetings increases the active involvement of attendees (delegates) because through sending tweets they can indicate which sessions are interesting, or what statements are relevant to be mentioned. Increasingly, “tweet chats” are being organized during such meetings. These are online discussions via Twitter on a matter which is relevant to the meeting, and often the experts themselves are directly involved in these sessions. Important advantage of this formula is that even those who are not present at the meeting may participate in the discussion.

For radiologists social media are particularly attractive because they make it possible to rapidly exchange images for second opinions, without much additional investment in equipment and infrastructure. A study conducted at the Albert Schweitzer Hospital in the Netherlands has revealed that 40% of specialists uses WhatsApp frequently to discuss case histories with a colleague [3]. A survey of 2013 has shown that a large majority of Dutch radiologists (93%) there is a great need for digital image sharing, mainly for obtaining second opinions [4]. From this survey it appears that 77% of Dutch medical specialists are still compelled to send DVDs by regular mail or courier if they want to obtain a second opinion. By using mobile devices and social media (by using public cloud computing) two innovative technologies are combined, resulting in a simple and efficient technique to share medical images digitally. This can be called a disruptive innovation since the technique is used to fill in the remaining gap on ‘secure’ image transmission between hospitals in the Netherlands. In other words, a publicly available disruptive technology such as WhatsApp wins it from the missing XDS network, which is more secure but also more expensive and more complex to implement.
Reasons for Radiologists to use social media professionally

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<th>Reason</th>
<th>Total %</th>
<th>Europe %</th>
<th>USA %</th>
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<tr>
<td>1. To stay informed about the latest news &amp; developments in radiology</td>
<td>65</td>
<td>64</td>
<td>63</td>
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<tr>
<td>2. To communicate with colleagues about radiology-related topics</td>
<td></td>
<td></td>
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<tr>
<td>(national and international)</td>
<td>49</td>
<td>35</td>
<td>66</td>
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<tr>
<td>3. To share and discuss interesting or difficult cases/images with</td>
<td></td>
<td></td>
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<tr>
<td>colleagues</td>
<td>34</td>
<td>32</td>
<td>21</td>
</tr>
<tr>
<td>4. To increase my influence and promote my ideas/vision among</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>radiologists</td>
<td>29</td>
<td>24</td>
<td>50</td>
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<tr>
<td>5. To make our profession more visible for patients</td>
<td></td>
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<td>6. To make my expertise and knowledge available for teaching</td>
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<td>purposes</td>
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<tr>
<td>7. To market our team and services</td>
<td>19</td>
<td>16</td>
<td>31</td>
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<tr>
<td>8. To become more &quot;social&quot; with both patients and clinicians</td>
<td>18</td>
<td>16</td>
<td>29</td>
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<tr>
<td>9. To enable patients to communicate with radiologists</td>
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<td>16</td>
<td>26</td>
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<td>10. To inform patients about the examinations they will undergo</td>
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<td>11. To get feedback from patients (both positive and negative)</td>
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<td>12. To discuss radiological images with patients</td>
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<tr>
<td>13. To apply for a job or to be visible for recruiters</td>
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However using public social media for these purposes cannot guarantee the patient privacy. It is still possible to identify a person based on the context or metadata attached to the information (e.g. picture) that is sent with the message. Moreover, WhatsApp pictures are stored on servers outside the EU, which is not adhering to the existing European Directive on patient privacy. Because of the lack of confidentiality, usage of social media for such purposes is still discouraged, even though it may be of benefit for the quality benefit. In a paper on the legal aspects of social media the legal experts Hooghiemstra and Nouwt are pretty clear on the use of social media: "If you would like to discuss a patient case via social media, then the patient should thereby remain anonymous or must have given explicit consent "[5].

Meanwhile more and more dedicated social media are appearing in which attention is paid to the protection of the patient’s privacy. An example of such an application is the Kanta-messenger, which is currently being tested at the Bronovo hospital in The Hague, the Netherlands. Another example of a secure dedicated app for physicians is the app "Figure1" who also "Instagram for doctors‘ is mentioned (Figure 1). However, there still must be sought solutions that make it possible to integrate these applications with existing IT infrastructure, which would be the most ideal solution for efficient communication in health care improving the quality of care and fully respecting the patient’s privacy.

Further Readings

Digital image quality standards: Gaps to cover in Russian radiology

During the last years Russian radiology made a large leap forward – hundreds of CT, MR, MI and AX modalities were installed in healthcare institutions. This includes the most advanced examples of dual energy CT and 3T MR. Several specialized centers of high technology medicine were organized in different regions of the country, increasing its availability. A list of high technology medical services financed by the state was announced by the government. This was part of the healthcare modernization program and national project “Health”, supported by the state in the early 2010th. Informatization project led to implementation of local and even regional radiology archiving solutions. As claimed by the Ministry of Healthcare, all this resulted in the positive demographic balance trend (MoH Russia “A report on peoples’ health status and healthcare organization in 2014”).

The huge number of modern modalities supplied to central and remote healthcare institutions raised a question of medical staff readiness to utilize the equipment and exchange the resultant data in an effective way (MoH Russia, “Concept of healthcare informatization”). And this is where a large gap is still to be filled in the nearest future. Due to lack of clear guidelines in radiology diagnostics the modalities in some cases lack specialized work stations, or the monitors does not support DICOM calibration. Mammography reading might be done on inappropriate screens. It is widespread that highly sophisticated modern diagnostic equipment is supported by staff not certified or approved by the equipment manufacturer. In order to tighten the quality standards the process of medical device registration was restructured recently. Nevertheless, it is too general by its nature and cannot serve as a comprehensive basis of radiology diagnostic quality on its own.

Though DICOM, HL7 are already accepted as national standard in Russia and IHE profiles are extensively referred in official documentation, the rules of medical image archiving are still regulated by a Ministry of Healthcare’s order dated back to 1991. The most recent draft describing also archiving of digital images is yet to be considered by the Ministry. At the same time, radiology workflows in general and image post-processing in particular remain in the grey area of regulation. There is lack of rules to ensure reliable quality of the resultant images, which is the true final step of diagnostics in radiology. In contrast, European Commission’s documents (e.g. European guidelines on quality criteria for diagnostic radiographic images and computed tomography) set clear standards for image quality in regard to different viewing conditions, radiation dose, and projections. A number of independent associations regularly publish standards and white papers, which are widely appreciated by the international radiology society (Royal College of Radiology, American College of Radiology, American Society of Radiologic Technologists, American Association of Physicists in Medicine, Radiological Society of North America, and many others).
The issue of insufficient standardization and regulation is understood by the Russian healthcare authorities and mentioned in the concept of the development of the unified state information system in healthcare until 2020.

Even though the number of radiology modalities grew up substantially, the gap in workflow and image quality approaches should be covered in order to guarantee reliable diagnostic results in the long run. The following documents are proposed to be developed and released in this regard.

- The new rules of radiology images archiving
- Quality criteria for radiology diagnostic images
- Technical standard for performance assessment and maintenance of radiology diagnostic equipment
- Guidelines for workflow organization in radiology diagnostics

It is also necessary to:

- consider and localize the international white papers and guidelines in radiology diagnostics
- strengthen the role of independent radiology and para-radiology associations in development and implementation of radiology standards and guidelines.
FUJIFILM constantly sets new standards for diagnostic imaging technology.

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First Class is an accredited CME Provider approved by the Italian Ministry of Health and from the UEMS/EACCME. The accreditation allows First Class to organize residential and online continuing education courses in both Italy and Europe. First Class is also specialized in the organization of educational courses, workshops and international master classes for specialist physicians, hosted within the most prestigious University and Hospital Centres in the world.

European Society of Medical Imaging Informatics EuSoMII

The vision of the Society is the integration of information and communication technology with diagnostic and therapeutic medical imaging.

• The mission is to foster the transition from research to clinical application and education in the following fields:
  • Intelligent infrastructures and processes for image and knowledge management in medical diagnosis and therapy
  • Clinical computer application of medical images
  • Seamless information sharing for healthcare delivery and for clinical research purposes
  • Standards and quality assurance methods and tools.

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