The EuroPACS was founded in 1982 by a group of researchers in computer applications in radiology. The core interest of the Society is nowadays the workflow of storage, communications, and image processing/analysis of medical data. The Society welcomes members from all disciplines involved in the area of computer applications of medical imaging and aims to encourage research in PACS, Teleradiology, Computer Aided Diagnosis, 2D and 3D Image Processing, and to promote the interchange of ideas and practical experience.

Starting from 2012 the main focus of the Society will be in developing a specific teaching program for the practicing radiologist called EuroPACS Academy that will offer practical courses (hands-on), with direct training on workstations or tablets in different clinical applications. The 30th annual meeting of the Society, will take place with the CARS congress (www.cars-int.org) in Pisa on 27-30th June 2012.

I look forward to welcome you in the EuroPACS Society

Emanuele Neri
EuroPACS President
Diagnostic and Interventional Radiology, University of Pisa, Italy

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**European Society for the promotion of Picture, Archiving and Communication Systems in Medicine**

**FEBRUARY 2012**

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**ECR 2012**

- **March 1, 10:30–12:00, Room Z**
  - SS 105 Image processing (part 1)

- **Thursday, March 1, 16:00–17:30, Room Q**
  - RC 305 Image processing and computer-aided diagnosis (CAD)

- **Friday, March 2, 10:30–12:00, Room Z**
  - SS 505 Image processing (part 2)

- **Saturday, March 3, 10:30–12:00, Room Z**
  - SS 905 Computer assisted diagnosis (CAD)

- **Sunday, March 4, 08:30–10:00, Room F1**
  - SF 12 Radiology on the road: working when you are away from home

- **Monday, March 5, 08:30–10:00, Room Q**
  - RC 1605 New PACS architecture: decoupling image management from image navigation

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**30th International EuroPACS Meeting**

**Topics**
- PACS Architecture and Workflow
- PACS Workstation Design and Ergonomics
- PACS Integration in Surgical and Interventional Suites
- PACS-CAD Integration
- Open Source Software for PACS and Image Processing
- PACS beyond Radiology (Cardiology, Endoscopy, Ophthalmology, etc.)
- Image Distribution, Storage and Archiving Strategies
- Regional PACS and Teleradiology
- Standardization (DICOM, HL7, IHE)
- PACS and E-Learning in Radiology and Medical Sciences
- Tablets in Radiology
- Managing Dose Information in PACS
- Structured Reporting

**Scientific sessions**
- Regional PACS – Radiation Dose
- Teleradiology - eLearning
- Innovative Methodologies for PACS
- Collaborative projects

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**3rd EuroPACS Academy Course**

**WORKSHOP: CLINICAL APPLICATIONS OF COMPUTER AIDED DIAGNOSIS - July, 2-3, 2012 - PISA, IT**

Registration: [www.europacs.org](http://www.europacs.org)

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**4th EuroPACS Academy Course**

**WORKSHOP: CLINICAL APPLICATIONS OF COMPUTER AIDED DIAGNOSIS - October, 5-6, 2012 - PRAGUE, CZ**

Registration: [www.europacs.org](http://www.europacs.org)
The University of Pisa welcomes CARS 2012

Prof. Davide Caramella, President of CARS 2012

The University of Pisa is getting ready to host the 26th International Congress and Exhibition CARS 2012, that will take place in our little historical town in June (27-30).

The University was founded on September 3, 1343 by an edict of Pope Clement VI, although there had been lectures on law in Pisa since the 11th century.

Today, the University has about 57,000 students (53,000 in undergraduate and postgraduate studies, 3,500 in doctoral and specialization studies) and boasts eleven faculties and fifty-seven departments, with high level research centres.

The University of Pisa is part of the Pisa University System, together with the Scuola Normale Superiore and the Sant'Anna School of Advanced Studies.

The Faculty of Medicine is particularly active in research and has been involved in many research projects together with the University Hospital. The Endocas excellence center (www.endocas.org) was developed by linking together different expertises available in the Pisa University System and plays a key role in research projects in the area of advanced image processing, image assisted surgery, robotic surgery.

Other translational research is being carried out with the Faculty of Engineering and with the National Research Council (http://www.area.pi.cnr.it/) in the fields of computer applications in Radiology, teleradiology, and eLearning.

Here an outline of the program.

June 27–30, 2012

Wednesday, June 27

CARS Clinical Day
Tutorials/Workshops
IPCAI

Thursday, June 28

ISCAS
EuroPACS
CAD
CAR
CMI
Exhibition

Friday, June 29

ISCAS
EuroPACS
CAD
CAR
CMI
Digital Operating Room (DOR)
ISCAS Surgical Workshop
Exhibition

Saturday, June 30

ISCAS
CAR
JICARS
CARS
Workshops/Special Events

26th International Congress and Exhibition on Computer Assisted Radiology
Chairman: Stanley Baum, MD (USA)
Co-chair: Carlo Bartolozzi, MD (I)

16th Annual Conference of the International Society for Computer Aided Surgery
President: Kevin Cleary, PhD (USA)

14th International Workshop on Computer-Aided Diagnosis
Chairman: Kunio Doi, PhD (USA)
Co-chair: Ulrich Bick, MD (D)

18th Computed Maxillofacial Imaging Congress
Chairman: Allan G. Farman, PhD, DSc (USA)

30th International EuroPACS Meeting
President: Emanuele Neri, MD (I)

13th CARS/SPIE/EuroPACS Joint Workshop on Surgical PACS and the Digital Operating Room
Chairmen: Osman M. Ratib, MD, PhD (CH), Heinz U. Lemke, PhD (D)

4th EPMA / IFCARS Workshop on Personalized Medicine and ICT
Chairs: O. Golubnitschaja, MD (D), Heinz U. Lemke, PhD (D)
The Second EuroPACS Academy
Clinical Applications of Computer Aided Diagnosis

The EuroPACS Academy is aimed to provide a doctor-to-doctor training on workstation. In the 2nd EuroPACS Academy course (the first was held in 2009 in Italy), the participants have been trained in the use of CAD for the interpretation of lung, breast and colon cancer. Three corporate members of the EuroPACS Society (INFINITT, Im3D and AGFA) contributed to the success of the workshop with their workstations. This event is the first of 2012, in a series of courses that EuroPACS will hold with the same method of training.

Course program

Day 1
How to use CAD in CT Colonography

Session 1
Moderator: M. Fatehi
08:30-09:15 CT Colonography: preparation, insufflation, acquisition A. Laghi
09:15-09:45 What is a CAD? E. Neri
09:45-10:30 Reading CT colonography with a CAD: demo at the workstations D. Regge

Session 2
11:00-13:00 Colon CAD: Hands-on Training / Part 1: Cancer Cases

Session 3
14:00-17:00 Colon CAD: Hands-on Training / Part 2: Polyp Cases

Day 2
How to use CAD in Breast & Lung Cancer

Session 1
Moderator: D. Regge
08:30-09:15 The rationale of using CAD in cancer prevention D. Regge
09:15-09:45 Current Trends in CAD Applications other Than Colon, Lung and Breast. M. Fatehi
09:45-10:30 Tomosinthesys: Breast Cancer Detection with CAD A. Bert (Im3D, Italy)

Session 2
Moderator: E. Neri
11:00-11:20 CAD for Breast Cancer: Demo Presentation I. Berden, (AGFA, Belgium)
11:20-11:40 CAD for Breast Cancer: Demo Presentation H. Park (INFINITT, Korea)
11:40-12:00 CAD for Lung Cancer: Demo Presentation BH Lee (INFINITT, Korea)
12:00-13:00 Breast CAD: Hands-on Training / Part 1 (AGFA, Im3D)

Session 3
Moderator: M. Fatehi
14:00-15:30 Breast CAD: Hands-on Training / Part 2 (AGFA, Im3D)
15:30-17:00 Lung CAD: Hands-on Training (INFINITT)

Slides from the lectures
The Third Imaging Informatics Conference in Iran awarded the best scientific paper under the name of late Prof. Paolo Inchingolo

Report by Mansoor Fathei
Congress Organizer
and member of EuroPACS Board

The imaging informatics committee of Iranian society of radiology has organized training courses and events to promote computer applications in radiology since 2005. In addition to courses in annual meetings of the national society and seminars on IT in radiology, imaging informatics conferences has been a venue to provide training of digital radiology and present research in the field by the help of international experts mainly through EuroPACS society. The first and second imaging informatics had Bernie Huang and Heinz Lemke as honorary presidents and Davide Caramella and Peter Mildenberger as invited speakers.

The third Iranian imaging informatics conference was held in Tehran on January 20-22, 2012 where the honorary president was Emanuele Neri, the president of EuroPACS. The major international component of this event was the second EuroPACS academy dedicated to “clinical applications of CAD”. The academy was a two day program covering colon, lung, breast applications through hands-on training by Emanuele Neri, Daniele Regge and Andrea Laghi as guest speakers, locally directed by Mansoor Fatehi, and trainers from sponsoring companies.

The third Iranian imaging informatics conference was held in Tehran on January 20-22, 2012 where the honorary president was Emanuele Neri, the president of EuroPACS. The major international component of this event was the second EuroPACS academy dedicated to “clinical applications of CAD”. The academy was a two day program covering colon, lung, breast applications through hands-on training by Emanuele Neri, Daniele Regge and Andrea Laghi as guest speakers, locally directed by Mansoor Fatehi, and trainers from sponsoring companies.

The program of the third Iranian imaging informatics conference included 1- “State of the art imaging informatics” as an overview of up-date knowledge in the field, 2- “Digital imaging from A to Z” as a short course on basics of imaging informatics in Farsi language, 3- Scientific paper presentations (national) and also digital poster presentations by IPILAB-USC, kindly provided by Bernie Huang and Brent Liu. In addition, 17 focused workshops were part the program.

Agfa digital school was another international event in this conference to provide a basic training on CR, DR and PACS offered on the first day of the meeting.

The EuroPACS academy was internationally sponsored by INFINITT, AGFA and Im3D companies while the whole conference had 11 local exhibitors. The conference chairman was Alireza Shakibafard from Shiraz.

The best scientific presentation was awarded by Iranian society of radiology to Ms. Pooneh Roshani Tabrizi with a paper entitled “Three Dimensional Statistical Shape Modeling of the Hip Joint Cartilages in MR and CT Images”(Ms Tabrizi in the photo below with the co-author and Chairman Prof. RA Zoroofi).

Agfa Digital School
Tehran, January 20, 2012
Olympic Hotel – Meeting Room

CR 09:00 – 10:30
DR 11:00 – 13:00
PACS 14:00-16:00

Faculty
Jean Pierre Slabbaert
Ingrid Berden

The best scientific presentation was awarded by Iranian society of radiology to Ms. Pooneh Roshani Tabrizi with a paper entitled “Three Dimensional Statistical Shape Modeling of the Hip Joint Cartilages in MR and CT Images” (Ms Tabrizi in the photo below with the co-author and Chairman Prof. RA Zoroofi).

The award was given under the name of late Prof. Paolo Inchingolo (Trieste/IT), member of EuroPACS Board (in the photo above).

Ms Tabrizi received the award from Dr. Abdorrassol Sedaghat (President of the Iranian Society of Radiology).

The award includes all registration and travel costs of the presenter to attend in the next CARS meeting in Pisa.
The need for CAD-PACS integration

The main purpose in integration CAD with PACS for daily clinical operation is to utilize CAD as a second reader. CAD software can be implemented within a stand-alone CAD workstation (WS), a CAD server, or be integrated in PACS as PACS-based CAD. In order to utilize CAD results more efficiently and timely, it is commonly agreed that CAD should be integrated with the daily clinical PACS operation. Currently, several PACS and CAD companies have successfully integrating several CAD applications within the PACS operation, but these applications are either in a CAD-specific WS or in a closed PACS operation environment using proprietary software. For example, in mammography, CAD has become an integral part of a routine clinical assessment of breast cancer in many hospitals and clinics across the United States and abroad. However, the value and effectiveness of CAD applications are compromised by the inconvenience of the dedicated stand-alone CAD WS or server. The daily use of DICOM, PACS, and IHE technologies in the clinical environment may offer a clue as to how to work around these obstacles. The CAD-PACS integration has many distinct advantages:

1. PACS technology is mature. Integrating PACS with its powerful computers and high speed networks dedicated to the storage, retrieval, distribution and presentation of clinical images would facilitate the daily operations of healthcare providers,

2. PACS-based easy query/retrieve tools provide the user with images and related patient data obtained from CAD workstations.

3. The DICOM Structured Reporting (SR) and IHE workflow profiles can be readily applied to facilitate the CAD-PACS integration.

4. CAD-PACS integration results can be directly viewed and utilized at the PACS WS together with the PACS database.

5. The very large, dynamic, and up-to-date PACS database can be used by CAD to improve its diagnostic accuracy.

Structured Reporting: Modules or Templates
By Mansoor Fatehi, MD, CIIP

Structured reporting (SR) is one of the modern trends in electronic reporting with lots of challenging issues. SR is simply defined as "creation, storage, communication and display of reports containing defined sub-parts". The advantages of SR may be summarized as comprehensiveness, high potential for data-mining and therefore being used for research purposes, language-independent interpretations, educational use through concepts like ePACS (combination of PACS archive with automated assessment of report by SR) and exchanging data in DICOM-SR format. Of course there exist many limitations in structured reporting. Time consuming process of report generation, less flexibility for description of unusual findings, lack of a general consensus on the structure and the lexicon, less familiarity of referring physicians are well known.

Structured reporting still needs further developments both in clinical concepts as well as technical tools to integrate this approach in daily radiology practice. There has been international effort to prepare and circulate structured reporting templates. Many societies have collected SR templates. The most comprehensive one has been the RSNA report repository although not strictly structured but tending to have predefined subparts applicable to speech recognition reporting systems.

The concept of developing structured reporting templates is based on the clinical application of reporting software primarily as text editor and the traditional method of having a template for each imaging procedure. But every radiologist is aware of limitations of templates. Not only the regions of interest in each template should be tailored to the specific case being interpreted but also the length of each section depends on the specific clinical condition. Practically a single template for a specific procedure cannot be used for all cases and experienced radiologists minimize and maximize the sections of a report to address the most relevant data to clinical question and therefore justify the length and content of the whole report.

The concept of "modular structured reporting" is based on the fact that each template consists of multiple sections or modules which can be "detailed" or "brief" or even be "deleted" from the final report. In addition, each procedure may need description of anatomical areas out of primary sites, for example findings of proximal arm in a chest x-ray. So, in real practice, the radiologist will need to be able to add new modules to standard template. One more benefit of modular approach to structured reporting is to make the module available for multiple anatomical sites. For example, for a hand imaging procedure, one module to describe a single joint or bone will suffice for all skeletal elements, so there is no need for a lengthy complex template to cover all anatomical subparts of hand.

I believe, development of repository of structured reporting modules will be a more flexible approach to promote this concept compared to template collections. Also, SR modules will be more appropriate to develop software tools to practically integrate SR with electronic reporting systems. So, EuroPACS may run an initiative of developing and circulating multi-lingual structured reporting modules by the help of professional subspecialty societies as well as national associations through ESR.

The RSNA initiative: an example of template for MRI of the Elbow (http://www.radreport.org)
Frits Barneveld Binkhuysen (Radiologist, member of the EuroPACS Board; The Netherlands)

**European Teleradiology now and in the future: results of a survey**

By Erik Ranschaert and Frits Barneveld Binkhuysen

With support of the ESR, an electronic survey was made using the SurveyMonkey web-based tool, which was online during 1 month. The purpose of this survey was to attempt to map the current use of teleradiology in Europe and to evaluate the respondents’ current and future vision about this technique. It was hoped that from the analysis of the results the authors would be able to give some recommendations about the further usage and deployment of teleradiology services within Europe.

Questions were asked about the types of services used, the potential advantages, disadvantages, threats and opportunities of teleradiology services. In the open questions the participants were asked to express their opinion about the current and future role of teleradiology. A total of 368 persons participated in the survey (from 35 countries). Analysis of the results makes the authors conclude that teleradiology has become a technique that is widely used throughout Europe, mostly for distribution of work within the same institution and for on-call purposes. Usage of commercial teleradiology services is still relatively limited, mostly for solving capacity problems during night calls and to obtain subspecialty readings. Among the European radiological community there is no wide support for teleradiology with cross-border image distribution. To gain more acceptance some key issues should be solved, such as a clearer pan-European legislation, measures to safeguard patient privacy, a quality assurance framework and price regulations. The ability to reduce the shortage in radiologist and to obtain expert opinions are considered the main driving factors for teleradiology to grow, followed by the ability to provide readings for emergency services, to support of small practices and hospitals, and to create platforms that facilitate collaboration between radiologists.
Open source software, lightweight thin-client mobile programs for on-the-fly visualization and basic processing of medical images, and new, powerful mobile devices for image viewing are becoming more and more common in the medical community. Pooled together, these novel technologies allow displaying a large amount of medical images from several imaging modalities without the need for dedicated standalone workstations. In particular, tablet PCs are emerging as promising tools for mobile visualization of images from cross-sectional modalities (such as multislice Computed Tomography and Magnetic Resonance Imaging), owing to their good screen resolution, larger display size compared with conventional PDAs, and excellent power-to-weight ratio. To this aim, tablet PCs can be advantageously used for preliminary reading of several imaging studies (such as CT colonography, chest CT, CT angiography, and musculoskeletal MRI datasets), as well as for teaching purposes and for sharing key images with other colleagues whenever a regular desktop workstation is not readily available. The introduction of increasingly portable, powerful, and versatile devices will likely further expand this kind of applications, with some surgeons even already using tablet PCs in the operating room to assist interventions (see for example: http://youtu.be/n5nbN1qpdAY).

New software tool for tablets are yet on the market. In the example the logos of GE Centricity, Fujifilm Synapse, Merge EFilm, INFINITT Mobile and Aycan Mobile, that can be found on the Apple Store.

Open source software as OSIRIX-HD allow to visualize DICOM images in the IPhone and IPAD. The transmission of images from the PACS to the tablet or the mobile phone is performed through the Apple Bonjour protocol.

An example of CT Colonography reading with an IPAD through OSIRIX-HD.

Lorenzo Faggioni, MD, PhD
University of Pisa, Italy

In the upcoming ECR meeting in Vienna our research group will present 1 scientific paper and 3 EPOS about the use of IPAD for images:

- SS Imaging Informatics 1805. Monday Mar 5 2012, 14:00 - 15:30, Room: Z
- Electronic Poster (EPOS)
  - EPOS #4262 - Usage of the iPad2® for preliminary 2D reading of CT pulmonary angiography studies: preliminary experience.
  - EPOS #4644 - Usage of the iPad2® for preliminary 2D reading of CT colonography studies: preliminary experience.
  - EPOS #4939 - Usage of the iPad2® for preliminary 2D reading of musculoskeletal MRI studies: preliminary experience.

EUROPACS NEWSLETTER
The great success of participation in the IHE-Europe Connectathon in Pisa pushes integration in e-Health

We have just completed the eleventh edition of the IHE-Europe Connectathon, that was held this year at the Leopolda historic Pisa. For the first time, punctuated by an intense program of satellite events, the event has attracted a critical mass of engineers, health professionals and managers responsible for the promotion of e-Health in Europe.

Satellite meetings and parallel workshops were able to collect unprecedented participation of national and regional e-Health from all over Europe, as well as international standards groups, opinion leaders and decision makers for IT in healthcare. Among the satellite events, the seminars on the integration of information on the dose of X-ray and robotic surgery, both promoted by Professor David Caramella, were of great interest. Other workshops of the leading European e-Health projects were: HITCH, Renewing Health and epSOS.

The core business remains the IHE-Europe Connectathon, an intense 'connectivity marathon', where for five days in the vast hall of the Stockholm Leopolda, over 430 engineers have verified and validated the interoperability of systems used in over 110 applications health information across Europe. This year for the first time, the IHE-Europe Connectathon hosted a parallel event of a second test, called Projectathon, where health information systems in 13 European countries have been tested in a simulated cross-border trade "patient summary" and "ePrescription" promoted by the EU under the epSOS.

"It was a great opportunity and privilege to host the IHE Connectathon Europe in Italy," said Lapo Bertini, Dedalus Spa and Vendor Co-Chair of IHE Italy. "This Connectathon in Pisa will be remembered not only for the wonderful, beautiful location but also because of the massive participation of companies and systems from every corner of Europe that will contribute significantly to the advancement of interoperability in e-Health."

"After 10 years of steady progress, the Connectathon is now seen as the right place at the right time for companies and individuals to share experiences on the implementation and interoperability in e-Health", according to Peter Kuenecke, Siemens Healthcare and Vendor Co-Chair of IHE Europe.

Organized by IHE Italy in collaboration with the University of Pisa, the week of test sessions and satellite events took place at the Stazione Leopolda in Pisa, a former train station converted into a multipurpose center, hosting more than 110 systems of 75 companies and organizations. Further information is available on the IHE-Europe website: www.ihe-europe.net

Next Connectathon will be in Berne (CH)
EuroPACS then and now...

Osman Ratib
Professor and Chair of Department of Medical Imaging and Information Sciences
University Hospitals of Geneva (CH)

Since its early years our society has maintained a spirit of scientific “club” of passionate members that believed in the new developments in image archiving and communication in medicine.

It is interesting to see that over thirty years, some of the early founders were still actively supporting our society, such as Heinz Lemke, Davide Caramella, Erwin Bellon and others who continued to believe in our original mission to promote new technological developments and contribute to the education of the medical and scientific community about these developments. I even had the privilege to serve twice as president of the society which granted me a unique trophy of the “president who liked our society so much that he did it twice”. This trophy was handed to me at the end of the second mandate in June 2010 by president-elect Emanuele Neri. It was indeed a privilege to see the progress of our society and to measure how it adapted to the change in the environment and the evolution of technology. From the time of pioneer work of home-built PACS to the commodity of data archiving in the cloud, major changes in IT environment have taken place. With it the changes in the scope and orientation of our society has also made some major steps toward new directions. In particular our society started focusing of stronger emphasis on education, computer assisted diagnosis and in image communication. It is exciting to observe these changes together with closer links with other societies and groups such as ECR, CARS and medical informatics societies. The major asset of EuroPACS is its unique group of members. It includes the elite with members that were pioneers in the field and are the most knowledgeable about PACS and imaging informatics since the early days. With their broad expertise and know-how most members of the society are high ranking academics with international reputation and extensive network of professional and scientific connections. Besides, they are all highly praised educators and eloquent teachers. With such asset, EuroPACS society can reshape its image and easily acquire an international brand of a leading body of experts in the field of imaging informatics and PACS. It could become again the reference body that conveys complex state-of-the-art concepts in forms that are more widely accessible to the clinical and scientific community.

Several new initiatives have re-shaped the role of EuroPACS and its activities. Among them the growing number of education events under the new scope of “EuroPACS academy” have gained momentum and under a new leadership have raised the interest of the scientific community and industrial partners.

I am really proud to be part of this long and successful journey and will certainly continue to engage in the support of our new mission of “linking research to clinical practice”

Osman Ratib
EuroPACS Website (www.europacs.org)

**EuroPACS Board**
- **President**: Emanuele Neri (IT)
- **Past President**: Osman Ratib (CH)
- **General Secretary**: Erwin Bellon (BE)
- **Treasurer**: Josep Fernandez Bayo (E)
- **Head Office**: Arnold Stipits (A)

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**EuroPACS at ECR**

**ECR 2012**
**Computer Applications Committee**
- **Chairman**: O. Ratib; Geneva/CH
- **Members**:
  - U.W. Engelmann; Heidelberg/DE
  - B. Gibaud; Rennes/FR
  - T.G. Maris; Iraklion/GR
  - M. Onu; Bucharest/RO
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  - L.N. Sutton; Halifax/UK

**ECR 2013**
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- **Members**:
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  - B. Gibaud; Rennes/FR
  - M. Onu; Bucharest/RO
  - P. Sogner; Feldkirch/AT
  - L.N. Sutton; Halifax/UK
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