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Oral Presentations

O1. Real-Time Data Standards for the Planetarium

Brian Abbott (*American Museum of Natural History*)

The American Museum of Natural History and the Hayden Planetarium have built the most accurate, comprehensive, 3-D atlas of the cosmos called the Digital Universe (DU). The DU enables one to journey from the mountains on Earth to the farthest quasars. The DU enjoys many distribution channels, including pre-rendered space shows and news bulletins, live planetarium programs, and a free version available on the Internet. Recently, we have partnered with three planetarium vendors to bring the DU to planetariums around the world. These partnerships necessitate the adoption or creation of standards for three-dimensional data and associated metadata. Many standards exist in the current Virtual Observatory framework and additional standards are being proposed as part of the VAMP program. We intend to identify additional standards necessary for 3-D, real-time rendering tools for full-dome and flat-screen environments.

O2. The Global ALMA EPO Program: Communicating Astronomy with the Public at Millimeter & Submillimeter Wavelengths

Mark T. Adams (*NRAO*), **Henri Boffin** (*ESO*), **William Garnier** (*JAO*), and **Daisuke Iono** (*NAOJ*)

The Atacama Large Millimeter/submillimeter Array (ALMA) is a major international science research facility of the 21st Century that will open new windows on celestial origins. ALMA construction is underway on the high-elevation Atacama Desert of northern Chile, and science operations will begin in 2010. Full science operations will be achieved in 2012. The ALMA Education and Public Outreach (EPO) Development Plan describes the path to a global EPO program that effectively communicates the excitement and value of the ALMA mission, science, and technology to international audiences. This EPO Development Plan is a collaborative effort of the Joint ALMA Observatory (JAO), the National Radio Astronomy Observatory (NRAO), the European Organisation for Astronomical Research in the Southern Hemisphere (ESO), and the National Astronomical Observatory of Japan (NAOJ). We present the existing and planned ALMA EPO program elements, including the development of visualization techniques for millimeter and submillimeter astronomical interferometry data, and ALMA's proactive participation in the IYA 2009.

O3. Viewing the Sky, A Multicultural Experience

L. Albanese, F. Brunetti, D. Galli, A. Gasperini, F. Mannucci, F. Pacini, G. Pastorini, E. Sani (*Arcetri Astrophysical Observatory-INAF, Firenze - Italy*) and **Tso Chung Kuen** (*Centro Gandhi - Comune di Firenze*)

We report on the development of an ongoing multicultural experience based upon astronomy and involving Italian and Chinese children (recent immigration, age range of the children 3-10 years). Initially, a portable Starlab Planetarium has been used in the Primary School of Brozzi (Firenze) to teach about the sky, the constellations and their myths, both in the Mediterranean and Chinese traditions. Thereafter, teachers and pupils have started to create new astronomical stories and animations, inspired by their respective cultural traditions. A final show, prepared by children and their teachers, is planned for early Fall 2007. The aim of the program is to stimulate curiosity and encourage mutual respect between different communities. A DVD will be available at the end of the project. Methods and techniques can be adapted to different contexts. We plan to expand this experience in the framework of the "Universe Awareness" program. After all astronomy is one of the most fascinating and immediately accessible sciences and thus very popular with all children of the world. The program is supported by the Arcetri Astrophysical Observatory (INAF), the City Council, the Tuscan Regional Government, the Marchi Foundation (Firenze), the Italian Ministry of Universities and Research.

O4. Communicating Astronomy with the Public in Cuba

Oscar Alvarez-Pomares (*Ministry of Science, Technology and Environment*)

Communicating astronomy with the public on TV, in a Third World Country is a difficult job, in order to produce attractive materials for a broad audience. A way to develop an effective communication in fields like Astronomy, Astrophysics, and Cosmology and connecting the professional astronomer in friendly relation with a broad majority of the people, is to combine the knowledge of the local scientist together with the most spectacular TV production of the first world countries, commenting, analyzing and conveying Astronomy science into the public debate of the common citizens. Here we present our ten years long experience of TV presentations in a program devoted to General Science outreach becoming in successful conveyor of Science information especially on Astronomy matters to the Cuban people. We also present advances on the construction of the "Planetario Habana" Cultural Centre for Science and Technology under construction, to be opened as part of the commemoration activities of the 2009 International Year of Astronomy, aimed at guiding the interest towards basic sciences and astronomical formation of the people, in the most populated and frequented area of the country.

O5. The IYA2009 in Belgium

Rodrigo Alvarez (*Planetarium of the Royal Observatory of Belgium*)

As far as astronomy public outreach is concerned, many planetaria, public observatories, amateur astronomical societies, science centers and world-leading astronomical institutes are present and active in Belgium. However, as in many countries offering a rich panel of cultural activities as well as numerous opportunities for sightseeing and many entertainment parks, people willing to promote astronomy have to draw the media attention continuously in order to keep attracting people. The International Year of Astronomy 2009 is the perfect opportunity to help Belgian people to really focus on astronomy and its achievements during a full year.

O6. An International Network of Observation for the International Year of Astronomy

J.-E. Arlot, A. Vienne (*Institut de Mécanique Céleste et de Calcul des Ephémérides, France*), **A.-C. Levasseur-Regourd**

The equinox on Jupiter will take place in 2009 and the French committee for IYA09 will take this opportunity to propose coordinated observations. The equinox on Jupiter will allow the occurrence of many events such as eclipses of the Galilean satellites by the planet Jupiter, occultations and transits and also mutual phenomena among the satellites themselves. These events are very easily observable, even with a small telescope, since the Galilean satellites are very bright. They are spectacular since the satellites will disappear within a few seconds. We propose that these phenomena be observed worldwide by amateur astronomers, students, pupils and that they send their observation to a central web site which will propose to every observer an analysis of his observation and provides a data base of all the observations. Many explanations could be provided as on the physics and the dynamics of the Galilean satellites themselves. The history of astronomy can also be touched by these observations as the Galilean satellites were the first celestial objects extensively observed from Earth and they became the first reliable clock available. At the end of the observational campaign, the results will be emphasized and the scientific benefits from these observations will be explained and published.

O7. Putting Europlanet on the News – The European Planetary Science Congress 2007 Case Study

Mariana Barrosa (*Europlanet, Portugal*), **Anita Heward** (*Freelance*)

Since its foundation in 2005 EuroPlaNet - the European Planetology Network - links planetary scientists from across Europe, promoting the collaboration and communication between partner institutions and supporting missions to explore our Solar System.

In August 2007, Europlanet hosts its second big international congress, in Potsdam, Germany. During this event, the most important discoveries and research in planetary sciences recently made in Europe will be presented and discussed by the scientific community. It will be the press office's task to try to put these discoveries on the news, following the directives of EuroPlaNet's Outreach and Communication Strategy as well as the commonly accepted best practices in communicating with the media: press releases, peer reviewing, embargoes, providing background information for journalist, facilitating interviews with scientists, arranging public events and press conferences.

Bearing in mind recent studies that show a deficient presence of European scientific research in the media, in the weeks following the Congress we will analyse the European media coverage of this event and draw the conclusions according to the results. How many journalists were accredited with the Congress? How many interviews with scientists were facilitated? Did our press releases make it to the press? Did they originate a significant number of articles/news? What was done right? What can be changed or improved?

O8. Using Astronomy's History to Engage New Audiences

Alison Boyle (*The Science Museum, London*)

While much astronomy communication focusses on the results and practices of contemporary astronomers, the history of astronomy can provide a useful tool to engage new audiences with the subject. The historical approach provides an opportunity to encourage science citizenship by exploring how the practices and impacts of astronomy have changed over time and across different cultures. This paper will explore how the Science Museum plans to communicate astronomy via its history in future planned gallery and web products, and the benefits of combining science education with a historical approach.

On a more fundamental level, tactile images of a universe that had until recently been invisible to all, sighted or non-sighted, is an important learning message on how science and technology broadens our senses and our understanding of the natural world. This session will look at the underlying philosophy that drove the development of the book, and will give participants an opportunity to experience the methods and challenges of tactile image transcription.

O9. The Oukaimeden Astronomical Observatory: An Example for the Development of Astronomy in the Developing Nations.

Benkhaldoun Zouhair

Astronomy professional pains to develop in the Third World countries. Indeed, it, unfortunately, is still regarded as a luxury by the scientific decision makers of these countries which prefer to center their financial effort on the sectors known as vital such as agriculture, health, energy... In these countries some initiatives are from time to time crowned with a certain success. We propose to report here one experiment having ends to the realization of an astronomical observatory in Oukaimeden in the Moroccan high atlas. This realization is the fruit of a co- operation which can be regarded as a model for its reproduction in other countries with economic low income. It federated the means of a Moroccan university of a Moroccan association and an association of astronomy amateur from one northern country.

O10. Astronomy in My Shopping Cart: Today I Buy Some Asteroids, Hundreds of Black Holes and Three Solar Systems

Caterina Boccato (*INAF - Astronomical Observatory of Padua, Italy*), **Elena Lazzaretto** (*INAF - Astronomical Observatory of Padua, Italy*)

The authors work at the Astronomical Observatory of Padua, one of the 19 Institutes which forms the Italian National Institute for Astrophysics –INAF - that, in our Country, promotes and coordinates the research activities in Astrophysics. Our Observatory, and in particular our working group, takes advantage of the long term experience in Astrophysics education, information and outreach gained in last 10 years of work in these fields.

In CAP2007 we are going to present our pilot project: “Astronomy in my shopping cart” that will be tested and developed throughout 2007/08 in view of the “International Year of Astronomy”.

Why putting astronomy in the shopping cart? The aim of the project is to spread astrophysics at a popular level choosing a place that best matches the meaning of the word “popular”: the shopping mall. Other considerations have led us to this choice:

- thanks to our long term experience, we understood that if we want to bring science to the public (and no vice versa), we have to follow the public first! That’s why we go where our potential visitor usually goes and where the population is reflected as a whole (it has been recently demonstrated that “shopping centers-goers” match closely with local demographic profiles);
- these new peripheral spaces are getting, at least in Italy, a sort of favoured “meeting points” for all kind of people: shopping centres are drastically changing their social roles assuming an high enrolment, communication and experience value. Under these points of view, a shopping mall is a real breeding ground of “science consumers”.

With this project we want to arouse consumers’ interest in science making use of the superstore inside any shopping mall which is a place people are familiar to and where they find common consumer goods. We’ll adopt, at a first instance, an advertising language that resembles the one which is typically used within big markets. At this level, our science consumer will find a sort of exposition of simple, short and curious concepts regarding astronomy and astrophysics. These concepts, self consistent and correctly exposed, will stimulate consumer’s scientific curiosity. To satisfy this curiosity we’ll place a stand just outside the superstore in the shopping mall gallery. Once there, all the visitors will be given the opportunity to meet an astronomer ready to answer their questions using a language that suits their age and school level. The final purpose is giving our science consumer the possibility to bring home shopping bags filled not only with consumer goods but also with a piece of knowledge about astronomy, astrophysics and the way astronomers work and think to understand the universe and its phenomena.

This pilot project will be carried out locally in Autumn 2007, and will be studied, implemented and proposed again with a well structured format and in a wider area in 2009, under the aegis of the International Year of Astronomy.

The shopping centre in which our pilot project will take place, located near Padua, recorded about 6.200.000 presences in 2006: that’s why we expect to have a very large number of potential “science consumers”!

O11. Exploring the Cold Universe – A European Planetarium Show for the IYA 2009

Henri Boffin (*ESO, Germany*) and **Agnès Acker** (*Observatoire Astronomique, Université Louis Pasteur de Strasbourg, France*)

ALMA, the Atacama Large Millimeter/submillimeter Array, is one of the largest ground-based astronomy projects of the next decade and is presently under construction on a 5000m high site in the Atacama Desert in Chile. This first truly global astronomical enterprise, involving four continents, will start partial operations in 2010. It will be the most sensitive instrument of its kind and will open a completely new vista in the study of both the cold- and the young-universe. ESO in collaboration with the Association of French Language Planetariums (APLF) and the German Planetarium of Augsburg is preparing a new planetarium show that will be available initially in 6 languages. The show will be showcased all across Europe from Autumn 2008 as an important activity of the International Year of Astronomy 2009, whose main idea is to bring astronomy closer to the society at large. The ALMA Planetarium show will thus be a unique initiative to associate European planetariums to this major international event. In this talk, we would like to present the planetarium show in the making and demonstrate how this will contribute uniquely

to the IYA 2009. The planetarium show will emphasise the need for astronomy to go outside the optical domain of the spectrum, illustrate the unique insight millimetre waves provide, and focus on the science that ALMA will pursue, with an emphasis on the detection of very distant galaxies opening a view of the primordial phases of the universes, and the formation of stars and planets, leading to the question of life in the Universe.

O12. Astronomy and Science Facilities for Basic Education at Universidad De Guanajuato

Hector Bravo-Alfaro (*Departamento de Astronomía, Universidad de Guanajuato*)

During 2006, the {it Departamento de Astronomía} has successfully carried out the modernization of a rustic astronomical observatory, on top of the main building of Universidad de Guanajuato, in Mexico. This site (known as "La Azotea" (The Roof)), now totally refurbished and equipped, started in January 2007 a new program of activities including: (1) Hosting more than four hundreds visitors every month, for astronomical observing sessions. (2) A very successful event of five Public Talks on Astronomy, held at "La Azotea", last May. (3) The 1st Summer School for Teachers on Astronomy Topics, will take place by the end of June. (4) A very ambitious program devoted to scholar groups, on daytime visits to the Observatory, will start by the end of August. We show how, with relatively low funds, professional astronomers and graduate students (with the support of local science councils) might succeed on organizing astronomy activities of high impact among students and a wide public.

O13. Public Outreach Activities and IYA 2009 in Slovakia

Drahomir Chochol (*Astronomical Institute of the Slovak Academy of Sciences, Slovakia*)

To coordinate the celebration of IYA 2009, we appointed the committee, whose members are from the leading astronomical institutions in Slovakia in the area of research, education and outreach. The activities of the Astronomical Institute of the Slovak Academy of Sciences, Slovak Astronomical Society, Universities in Bratislava and Kosice, Slovak Union of Amateur Astronomers, Slovak Central Observatory in Hurbanovo and other public observatories and planetariums in Slovakia are presented. The projects granted by the Science and Technology Assistance Agency provides necessary funds for our goals in regards of IYA 2009.

O14. Video Podcasting Hands-On Guide

Lars Lindberg Christensen (*ESA/Hubble*) & **Robert L. Hurt** (*Spitzer Science Center*)

Video Podcasting, or Vodcasting, is the latest evolution of the podcast revolution of the past few years. Now on-demand content is shifting from headphones and commutes to portable devices, computers, and televisions in the form of video. The appeal of accessing video content at will is growing and attracts especially the young demographic segment.

With the success of a stunning array of amateur productions of all formats, this revolution brings the consumer and producer closer together. Broad acceptance of production values well below the mark for broadcast bring high-quality results within reasonable reach of modest E/PO budgets.

The vodcast landscape changes quickly, with the rapid success of sites like iTunes and YouTube creating new content markets where none existed months before. From iPod screens to high definition TVs, the formats and interest are constantly evolving.

We will examine the production of two successful video podcast series: "Hubblecast" and "Hidden Universe: Spitzer Space Telescope" as case studies in the logistics of producing your own series:

- Studio hardware & software needs
- Manageable production design
- Formats: HD vs. full HD vs. standard definition, NTSC vs. PAL, framerates, interlacing ...
- Script writing
- Video and audio recording
- Green screen/effects
- Music
- Editing
- Distribution

Attendees will learn how to make (or improve) video podcasts for science education. Discussions should help evolve collaborations amongst vodcast producers and better help everyone stay on top of the latest developments in this rapidly-evolving field.

O15. Art@loa

Carolin Crawford (*Institute of Astronomy, Cambridge University, United Kingdom*)

I will talk about the Arts-Astronomy events that we are developing at the Institute of Astronomy in Cambridge as part of our programme of outreach activities. In particular I will cover: our annual sculpture exhibition in the grounds of the loA; creative arts workshops for local families run by both an astronomer and an artist; projects on the Sounds of Space with a composer and local secondary-school students; projects with two sound artists on 'In/visibility' leading to creative arts workshops with secondary

school students, and a soundscape exhibition in the telescope domes at Cambridge. I will show how such collaborative projects present a different way to inform and educate across traditional science-art boundaries, and to engage a much wider (and traditionally, less scientific) audience with astronomical ideas and concepts.

O16. Brazilian Planning For IYA 2009

Augusto Daminieli (*Inst. de Astron. Geof. e Ciencias Atmosfericas da USP, Brazil*)

We present the Brazilian plans for IYA2009. In addition to the activities planned for many places scattered around all over the country, we discuss outreach activities we are preparing for the IAU General Assembly in Rio de Janeiro. In particular, we propose, as part of the international activities, a live music show in Rio, in open space, with international broadcasting. The idea is to show popular and classic compositions based on astronomical themes. Since music has a universal language, we believe that people from different ages and education level can have a sense of what kind of inspiration people from different cultures got from the skies.

O17. IYA in the United States

Susana Deustua (*American Astronomical Society, USA*), **Doug Isbell** (*National Optical Astronomy Observatory, USA*)

To coordinate the U.S. celebration of IYA 2009, the American Astronomical Society (AAS) appointed two committees whose members are drawn from leading organizations that engage in astronomy education and public outreach in the United States, Canada and Mexico. The Program Committee is charged with developing themes and activities that spread awareness of astronomy's rich scientific and cultural role throughout human history; the Development Committee will work to secure funding to support these activities.

The U.S. IYA 2009 program's goal is to offer an engaging astronomy experience to every person in North America through events and activities organized along six themes. These are: Looking Through A Telescope; Dark Skies are a Universal Resource; Arts, Entertainment & Storytelling; Student-Teacher Research Experiences; Telescope Building & Optics Challenges; and, Sharing the Universe Through New Technology. Each theme will be coordinated by one or more working groups of 6-8 people each, of interested professionals and amateurs, and supported by a centralized Web portal.

We will present our efforts to date, and plans leading up to and through 2009 and beyond.

O18. G-HOU in the IYA 2009

Rosa Doran, Roger Ferlet (*Institut d'Astrophysique de Paris, France*), **Carl Pennypacker**

Global Hands-on Universe started a few years ago with the main purpose of renewing the teaching and learning of science. It gathers teachers, educators, scientists and students in more than 20 countries around the world. Its most successful international effort is EUHOU, European Hands-on Universe, which was partly funded by the European Commission in a collaboration of 8 European Nations. More than 1500 teachers worldwide have already been trained in preliminary efforts. We plan to expand our network to at least 100 nations in 7 years. Students regularly undertake science studies after being exposed to our multidisciplinary resources heavily based on real astronomical data and new technologies.

For the IYA2009, we want to hold a global program fostering the interaction of schools around the globe. Our program is called "Today I am Galileo - Tomorrow I am Darwin". Series of activities are planned: historical research, reproduction of Galileo's observations, extra-solar planets studies...; a global inquiry will take place. Our main objective is to promote a deeper understanding, based on evidence, of our place in the Cosmos.

O19. Global Networking of the Digital Universe 3D Atlas to Classrooms

Carter B. Emmart

This past year marks a turning point in outreach potential for teaching astronomy and astrophysics through 3D data visualization of the universe to a global network of classrooms and planetariums. Developed and maintained by the American Museum of Natural History, the "Digital Universe" 3D atlas has been in use for almost a decade as the basis for "Space Shows" and teaching via data visualization as opposed to artwork. Interactive visualization of this atlas has been an ongoing development at AMNH as well through collaboration with Linköping University in Sweden as a graduate internship program. This program created the Swedish company Sciss, AB which has now developed interactive n-user networking within Digital Universe through software named "Uniview" that can continuously traverse the entire scale range of the known universe. Remote lectures, teaching, and professional development are now possible within a global network of users all logged into the same data base. Authorities can log in from office or home and speak to planetarium audiences, classrooms or individuals as questions and control can be passed across to and from remote locations via Uniview. Demonstration of this will be made at the conference to a network of classrooms in Europe, the U.S., and possibly the Far East.

O20. Anthropomorphic Astronomy in IYA 2009

Gary Evans (*Science Photo Library, United Kingdom*)

The International Year of Astronomy 2009 will stimulate interest in astronomy across the world, especially with the young. To help do this, astronomy's 'face' in 2009 needs to be more human than that presented by large domes on distant mountain tops.

While we can reach those already interested in astronomy, and those on the fringes, a more difficult audience is the majority – those with little or no interest in science. We need to use communication tools that they already accept. To do this, we need to take a lesson or two from the mass-appeal sector of television.

Firstly, we need to present astronomy as something the everyday person can do, and tap into the vast amateur astronomy community. Perhaps we need to find astronomy's Steve Irwin, a person with boundless enthusiasm who can present shows in which s/he does astronomy in the most unlikely places, even involving the public in 'street astronomy'. Secondly, we need programmes presenting children with challenges to recreate iconic moments in astronomy's history. Finally we need to enlist celebrities – both those already into astronomy and those who aren't. Whatever the details, the key ingredients remain the same: everyday people (amateur astronomers), children, celebrities and above all, entertainment. We can use our creativity to apply astronomical themes to as many popular TV formats as we can.

The Great Messier Race, The Naked Astronomer, the Galileo Challenge - the possibilities are endless. Is "Astronomy Idol" even a step too far?

O21. Progress toward a Decent-Quality "Cheapscope" for IYA 2009

Richard Tresch Fienberg (*Sky & Telescope*)

Nothing piques a kid's interest in astronomy like looking through a telescope she built herself. It would be unrealistic to expect millions (or even thousands) of kids to build a typical telescope maker's first instrument: a 6-inch reflector on a Dobsonian mount. But it would be realistic to give thousands (or even millions) of kids and adults a chance to build a simple refractor similar to the ones that Galileo used to make his astonishing discoveries beginning in 1609. And with such a telescope, IYA 2009 participants could enjoy views of some of the most significant wonders that Galileo saw, including lunar craters and mountains, the moons of Jupiter, and the phases of Venus.

Especially for people who can't afford to buy even a department-store telescope, a do-it-yourself "cheapscope" could be the key to pursuing an interest in astronomy beyond IYA 2009. There are several cardboard-and-plastic do-it-yourself refractor kits on the market today, but none have an optimum combination of magnification, field of view, optical quality, and ease of use.

Two IYA 2009 task groups – under the auspices of the American Astronomical Society in the U.S. and the International Astronomical Union more broadly – are working to develop a better inexpensive telescope kit that can be distributed in quantities of millions. Ideally, every participant in an IYA 2009 event would be able to take home one of these little telescopes.

O22. A Comet's Tale: How Most of the World Came to Miss the Greatest Comet in Decades

Daniel Fischer (*Interstellarum Magazine, Germany*)

In January 2007 one of the truly Great Comets in history - and the first one of the internet era - graced the Southern skies, a full five months after McNaught's discovery. Yet most of the world outside the amateur community never took notice, and the mass media in particular failed completely to convey the (literally) largest astronomy story in years to a general audience.

This paper asks: Who's to blame, and how can we do better next time? It will be shown that it was partly the fault of the comet itself, which could not be observed well before perihelion, but key players in the comet community also failed to grasp its unique properties. Still the worldwide media machine would have had enough time to kick into action when the comet became very bright in early January. Were they just lacking the right trigger, such as a well-timed NASA or NOAO or ESO Press Release?

O23. Misconceptions in Astronomy

Aurelia Teresa Gallego-Calvente, Stefano Sandrelli (*INAF-Osservatorio Astronomico di Brera, Italy*), **Amelia Ortiz-Gil**

In the present study performed by the Astronomical Observatory of Brera (Italy) and the Astronomical Observatory of the University of Valencia (Spain), we analyze some usual misconceptions in Astronomy. In particular we explored their evolution (if any) depending on age and socio-educational factors, from a cognitive structures point of view. Cognitive structures interact with learnt contents and produce resistant conceptual schemes which are almost completely unknown and ignored by teachers and educators. We carried out an extensive survey (more than 2000 test between these two countries) and we studied the spontaneous schemes and concepts used by youngsters when facing some basic astronomical ideas, in order to focus efforts on helping to change the above schemes by inducing on the students "clash of ideas" situations. In that way, students could acquire a dynamic mental model consistent with the scientific model.

O24. Virtual Astronomy Multimedia Project

Adrienne Gauthier (*Steward Observatory, University of Arizona*), **Lars Lindberg Christensen** (*ESA/Hubble*), **Robert L. Hurt** (*Spitzer Science Center*), **Ryan Wyatt**

High quality astronomical images, accompanied by rich caption and background information, abound on the web and yet are notoriously difficult to locate efficiently using common search engines. "Flat" searches can return dozens of hits for a single popular image but miss equally important related images from other observatories. The Virtual Astronomy Multimedia Project (VAMP) is developing the architecture for an online index of astronomical imagery and video that will simplify access and provide a service around which innovative applications can be developed (e.g. digital planetariums). Current progress includes design prototyping around existing Astronomy Visualization Metadata (AVM) standards. Growing VAMP partnerships include a cross section of observatories, data centers, and planetariums.

O25. Be an Astronomer for One Night: When a Telescope Enters a Planetarium Dome

Gianluca Masi, Gabriele Catanzaro, Giangiacomo Gandolfi, Stefano Giovanardi, Vincenzo Vomero

NB: the affiliation is "Planetario di Roma" for all the authors, while the first one also belongs to "The Virtual Telescope Project"

While sharing the astronomical experience with our public at the Planetarium of Rome, we tried to transform the dome into a real observatory.

For this, we used the Virtual Telescope - a remote, fully robotic observatory - with an astronomer on site.

This way, it was possible to blend the atmosphere of the planetarium with the typical environment where astronomers work: the former was used in concert with the observing facility, with the remote astronomer guiding and explaining the observing session. Each observation was previously introduced under the dome, hunting for the right corner of sky, before to go with the telescope.

We had a very positive feedback from our visitors, who enjoyed the excitement of a typical night at the telescope. The images were also properly enhanced live, to show and explain the benefits of image processing. When possible, we have chosen last-minute targets (like newly discovered comets and near-Earth asteroids) or true astrophysical targets (like fast variable stars), to reinforce the return of such a live experience.

In this work our approach, the format of the show, the techniques and the public feedback are presented and discussed.

O26. Socio-Economic Impact of Astronomy in South Africa

Kevin Govender (*South African Astronomical Observatory / Southern African Large Telescope, South Africa*)

In South Africa, a country where almost half the population live in poverty, we have built the multi-million dollar Southern African Large Telescope, we have begun on the even more expensive Karoo Array Telescope, and we are one of the two finalists bidding to host the multi-billion dollar Square Kilometre Array! In trying to communicate astronomy to the public, how do we justify such spending to a family in a rural area living in poverty?

This presentation will expand on efforts in South Africa, specifically the SALT Collateral Benefits Programme, which are trying to answer these seemingly difficult questions. The socio-economic impact of astronomy on societies, especially those in the vicinity of these large telescope projects, will be investigated, with examples and experiences being shared especially from the sparsely populated Northern Cape Province of South Africa.

O27. IYA2009 in Africa - A South African Perspective

Kevin Govender (*South African Astronomical Observatory / Southern African Large Telescope, South Africa*)

In Africa, the stars have always been a part of people's everyday lives, be it in the form of folklore, superstition or even agricultural indicators. Modern astronomy, however, has not been very widespread, with only a few African countries having sufficient facilities or academics to support a modern astronomical community. The International Year of Astronomy serves not only as an opportunity to boost these astronomical communities, but also to celebrate the rich history and culture that has existed for thousands of years. On this, the poorest continent, with so many millions living in rural areas, there is one glaring advantage over others - people's abundant access to a dark night sky. We would like to see 2009 as the year that everyone in Africa, no matter what their background or lifestyle, turn their heads to the skies in appreciation of the beauty of the universe, in celebration of their cultural heritage, and in the hope that they are inspired to overcome harsh challenges that this small planet and its occupants may have placed on them. It is an opportunity not just to promote astronomy, but also to spark curiosity and spur a culture of learning. The perspective will be given from South Africa, home to a number of major astronomical facilities, and a major player in the development of astronomy across Africa. IYA2009 progress to date and plans for the future will be discussed.

O28. Creating Opportunities in Astronomy Communication for People Who are Blind or Visually Impaired

Noreen Grice (*You Can Do Astronomy LLC*)

Astronomy is such a visually rich field that you may wonder if access is possible for a person who is blind or visually impaired. The good news is that with creative strategies and available resources, students who are blind need not be excluded. Braille text, tactile illustrations, hands-on models, and descriptive narration can remove many barriers. Come to this presentation and learn how accessible astronomy can be!

O29. IYA Tabloid in your Community

Janice Harvey (*AURA-GEMINI Observatory, USA*), **Antonienta Garcia** (*AURA-GEMINI OBSERVATORY, Chile*)

Gemini PIO would like to offer suggestions on how to approach your local newspaper with the possibility of a tabloid for your community being published during IYA 2009. Local government support, astronomer's articles, advertisers, and someone within your organization to manage the content will be discussed. We will explain the timeline required, number of personnel hours required, developmental stages and income your local newspaper would have to generate in order to produce a quality, table-top tabloid.

In 2003 "Stars Over Mauna Kea", a special supplement/tabloid was produced and distributed in the local newspapers in Hilo, Hawaii with over 30,000 copies printed and distributed. The publication, 48 pages in total, featured profiles of observatories on Mauna Kea, stories about the geology and legends of Mauna Kea, and historical information about the evolution of astronomy in Hawaii. In addition the publication included a series of essays titled "In their own words". These were articles written by key members of the astronomy community.

In 2005 60,000 copies of "Stars Over Mauna Kea II" were printed as a follow-up to the first edition. An article on 'Imiloa Astronomy Education Center, explanations of what types of telescopes sit atop Mauna Kea, and columns written by scientists about the fascinating and significant discoveries being made were featured. Personal stories about careers in astronomy were also highlighted.

In Chile, a similar tabloid, 8 pages in length was published and 5,000 copies were distributed throughout the country. The 2005 tabloid featured Gemini, CTIO and SOAR telescopes.

O30. Canadian Planning for IYA 2009

J.E. Hesser (*NRC-HIA, Canada*) & **The IYA Canada Committee**

The Canadian Astronomical Society (CASCA), the Royal Astronomical Society of Canada (RASC) and the Fédération des Astronomes Amateurs de Québec (FAAQ) are working with diverse partners to develop Canadian IYA activities. Our primary goals are to offer an engaging astronomy experience to every person in Canada, and to cultivate partnerships that sustain public interest in astronomy. Our overall philosophy envisions building highly-leveraged participation from organizations and individuals across Canada whose activities are supported by our national volunteer team. We have participation from the National Research Council and the Canadian Space Agency, as well as representatives of the planetarium and science centre communities and of the media. Given the long-standing importance of the night skies to Aboriginal peoples in Canada and in other countries, we are particularly encouraging a strong participation of Canada's First Nations and Inuit communities and are fortunate to have secured creative, effective leaders from Cape Breton University for this component.

We present our plans with emphasis on those elements we believe will be of greatest interest to the international community represented at the conference, with an aim towards exploring collaboration or co-ordination for selected activities.

O31. Education, recruitment/training & public outreach in Europe - Findings from ASTRONET Panel E

Robert Hill (*Northern Ireland Space Office*), **Rosa Maria Ros** (*Technical University of Catania*), **Bob Fosbury** (*ESA/ST-ECF*), **Lars Lindberg Christensen** (*ESA/Hubble*), **Leonarda Fucili** (*SSIS, Universities of Lazio*), **Dirk Lorenzen** (*German Public Radio*), **Jose Carlo**

ASTRONET is a unique ten year planning exercise created by a group of European funding agencies in order to establish a comprehensive long-term plan for the development of European astronomy. The objective of this effort is to consolidate and reinforce the world-leading position that European astronomy has attained at the beginning of this 21st century. Panel E - education, recruitment & training, public outreach – was set up by the ASTRONET Roadmap Working Group. I will report on the findings and recommendations of this Panel.

O32. Dark Sky Scotland

Dan Hillier (*Royal Observatory Edinburgh, Visitor Centre, United Kingdom*)

Dark Sky Scotland (DSS) is a nationwide programme of public and educational astronomy events running from Autumn 06 to Spring 08. Scotland has some of the largest areas of dark skies in Western Europe and DSS is harnessing these in support of science education and careers, and rural tourism and communities.

DSS will reach some 6000 people through over 30 events and many more through touring exhibitions. The DSS events are based mainly around tried and tested astronomy activities. The innovative features of the project are:

1. The national DSS partnership comprise diverse organisations including the Royal Observatory Edinburgh, Forestry Commission Scotland and Careers Scotland – and is possibly the first initiative in any country to run a nationwide dark sky programme.
2. DSS was launched by the Deputy First Minister for Scotland and has received national media coverage.
3. The events are run throughout Scotland, often in remote rural communities.
4. In these locations, weekend events include daytime and evening sessions for families, and training workshops for teachers, tourism organisations and community groups to ensure there are wide benefits for the local community.
5. Special emphasis on making astronomy accessible through naked eye observing, leading into current astronomy and space programmes.

The way DSS has been packaged, at national and local levels, may offer models for similar programmes in other countries.

O33. The International Year of Astronomy in Germany: The Role of Planetaria

Susanne Huettemeister (*Planetarium Bochum / Ruhr-Universität Bochum, Germany*)

German planetaria draw about 2 million visitors per year. Thus, they are by far the largest communicators of astronomy, surpassing public observatories or efforts made by universities or research institutions. Planetaria communicate and promote astronomy at all times. But clearly a special coordinated effort needs to be made in 2009, to make the most of the unique opportunity offered by the Year of Astronomy.

Experience shows that the public only perceives an event as 'special' if it is promoted by numerous independent channels, especially national media. This is the level of attention required for the Year of Astronomy to have a high impact. To accomplish this, the Council of German Planetaria is in the process of joining forces with the European Space Agency ESA. The aim is to establish a cooperation that will last well beyond 2009, and begin already in 2008 with the launch of the Planck/Herschel mission. For 2009, a technically very ambitious planetarium show will be developed.

The main focus will be on space astronomy, but it is obvious that the full story of exploration starting with Galileo and the invention of the telescope will be told. The primary aim is to present the show in at least 30 German language planetaria, but it will be offered to planetaria all over Europe. An effort of this size provides the opportunity for coordinated and thus effective promotion. Of course, it will be an integrated part of the larger context of the Year of Astronomy as a whole, on a national and international level, in which all planetaria will take part both individually and as a group.

O34. Dynamic Range of Astronomical Pictures and the Implications for EPO Use

Robert L. Hurt (*Spitzer Science Center*) & **Lars Lindberg Christensen** (*ESA/Hubble*)

The universe produces light across a broad spectrum of light and incredible extremes of dynamic range. Rendering photographic quality pictures from astronomical research data requires the visualizer to understand the difficulties in converting a linear record of sky flux into a properly compressed visual representation that satisfies multiple goals: 1) preserve scientific integrity of the image; 2) captures detail at both the faintest and brightest areas of interest; and 3) produces an aesthetically appealing product. The mathematics of dynamic range compression yield a number of powerful and flexible tools to achieve these. We will discuss the overall nature of dynamic range, families of mathematical dynamic range transformations (with suggestions on how to use them effectively), and considerations in balancing science and aesthetic content in the process. We will also demonstrate how the FITS Liberator plug-in brings this functionality to Photoshop, though the techniques can be used in many image analysis packages.

O35. First VAMP Prototype

Amit Kapadia (*ESA/Hubble*), **Fabien Chéreau** (*ESO*), **Lars Lindberg Christensen** (*ESA/Hubble*), **Lars Holm Nielsen** (*ESA/Hubble*), **Adrienne Gauthier** (*Steward Observatory, University of Arizona*), **Robert L. Hurt** (*Spitzer Science Center*) & **Ryan Wyatt** (*California Academy of Sciences*)

The Virtual Astronomy Multimedia Project (VAMP) intends to implement metadata standards to be used by a myriad of applications delivering high quality multimedia to the public. VAMP supports the Astronomical Visualization Metadata (AVM) standard for the contextual information embedded in the multimedia products. With this standard, observatories, universities, and other institutions will be able to collaborate and share their science and outreach images to the public.

This demonstration shows one software application that will make use of VAMP: the community-supported (1 million downloads) desktop planetarium program Stellarium with the new VirGO plug-in. VirGO is developed by ESO's Virtual Observatory Systems department. The demo will show how Stellarium's 300 million star sky, seamlessly moved in real-time, gets littered with thousands and thousands of "footprints" from real ESO science data, and allows access to associated metadata and science data previews. For the well-known deep-sky objects the user will be presented with multiple PR images from multiple sources (i.e. Hubble, Chandra, Spitzer, VLT etc) and access to some of the embedded metadata.

O36. Dark Panorama Event for IYA2009

Young-Soo Kim, Dong Joo Lee, Young Sook Ahn, Seo Gu Lee, & Han Bae Yoon (*all Korea Astronomy & Space Science Institute (KASI), Republic of Korea*)

Korea Astronomy and Space Science Institute (KASI) has made plans for the International Year of Astronomy 2009. One of the events is a 'Dark panorama', which is a star gazing activity of public in the city center. All the lights of buildings and in the street at an area are turned off and people can see the night sky.

In order to figure out the plan for the IYA2009, a model event will be performed in August this year. The event will be placed in the heart of the capital, at the plaza in front of the Seoul city hall. At the event, we will count stars so that we can compare the darkened night to the light polluted sky. It is a coalition event working together with the Korea NGO's Energy Network, and supported by the National Assembly, Ministry of Commerce, Industry, and Energy, and more than thirty organizations including corporations, press, and NGOs.

In this talk, we will present the plans for the IYA2009 and the result of this year's Dark panorama event.

O37. Bringing the Universe Down to Earth

Anita Krishnamurthi (*University of Maryland & NASA Goddard Space Flight Center, USA*)

The Astrophysics Science Division at the NASA Goddard Space Flight Center has more than a hundred active research scientists and is home to several exciting NASA missions and programs, including the upcoming James Webb Space telescope.

We are committed to sharing the results of our research efforts with a wide variety of audiences and have a very active education and public outreach program. Our communications efforts reach a large variety of audiences with a diverse range of programming - from press to podcasts to school teachers, afterschool program providers, Girl Scout groups, amateur astronomy clubs, museum displays and so on.

I will share some examples of our ongoing efforts and discuss how we might collaborate with others and participate in IYA programming.

O38. Using Art as a Medium in Communicating Astronomy

Lau, Chen Chen (*National Planetarium of Malaysia*)

In general, Batik is a delicate art, which requires patience and skills. It is a process of "painting" and "drawing" on the fabric into a unique pattern using dye and wax. Before that, Malaysian designers were using organic motif such as flowers, animals, plants, shapes and geometric motif for their Batik designs. But in the Inaugural 2006, Malaysian National Space Agency have been organized Batik Art Competition "My Space's Inspiration". Participants were asked to produce motif of space science for their Batik making on the fabric which 1m x 1m and to write a summary about their Batik design. The objective of this competition is to promote space using Batik and encourage or create interest designers or public combine space science elements in producing Batik art. This competition received good response that we received 106 participations from art background people which were University's students, College students and designers. These participants used background of night sky, galaxies, nebulae, Milky Way, solar system and astronaut as their Batik's motif. Through this competition, it showed that Batik art competition is an educational and communication tools for space science. In conclusion, Malaysian National Space Agency will carry out various types of space art activities in the future to create awareness among the artists interest in space science.

O39. Inspiring a Community

Christopher Lawton (*Scientific Directorate of European Space Agency, Netherlands*)

Everyone has access to the night sky, but many are uncertain of the objects visible to the naked eye and through binoculars. By creating courses tailored for small groups in the local community it is possible to inspire them to be interested in the heavens and associated issues such as light pollution. In reaching out to the mature adult community it is possible to inspire them and their children to take a greater interest in the universe. Too often, however, such courses avoid difficult areas, such as gamma-rays, based on the false assumption that the public do not understand more complex ideas. Through careful presentation and use of language it is possible to engage an audience on a range of subjects normally considered to sit outside the standard list of topics. The impact of such courses should not be underestimated when it comes to promoting more expansive (and expensive) national projects.

O40. UNAWE: Humanizing Astronomy

Sarah Levin (*Universe Awareness, Leiden Observatory, Netherlands*)

Universe Awareness (UNAWE) is an international programme that aims to expose underprivileged children (in the age group of 4-10) to the inspirational aspects of astronomy. We are currently at the stage of developing materials that will be utilized in a diverse range of environments. This paper will explore the particular approach of UNAWE to developing educational tools which incorporates indigenous and folkloric astronomical knowledge and delivers that knowledge in the local culture of transmission. A specific understanding and explanation of the Universe, the Sun, Moon and stars is present in every culture and can be found contained in its history, legends and belief systems. By consciously embracing different ways of knowing the Universe, alongside the rational model, UNAWE places the humanizing potential of astronomy at the centre of its purpose. Whilst inspiring curiosity, pride and a sense of ownership in one's own cultural identity, such an approach also exposes very young children to the diversity of other peoples and their cultures as well as the unifying aspects of our common scientific heritage. The means of creating and delivering the astronomy programme are as relevant to the desired educational outcomes as the content. Respect for alternative values systems, the need for dialogue and community participation, and where possible the production of materials using local resources is emphasized. This paper will touch on recent experiences liaising with communities in India, South Africa, Tunisia, Venezuela and Colombia

O41. Celebrating the IYA2009 in Ecuador

Ericsson Lopez (*Observatorio Astronomico de Quito, Interior del Parque La Alameda, casilla 17-01-165, Quito-Ecuador, ericsonl02@yahoo.com*)

At the first semester of 2007, the Ecuadorian working board was established in order to prepare national events and projects for the International Year of Astronomy, to be held in 2009. People involved in this group are quite important for communicating astronomy to general public in highly professional way. The board was integrated by qualified scientists and educators from the Quito Astronomical Observatory, universities of Ecuador, such as the National Polytechnic School, heads of planetariums and science journalists, complemented with the valuable representation of primary and secondary schools around the country. The IAY2009 in Ecuador will be celebrated promoting the scientific and educative activities previously made in the country; carrying on science meetings for students and general public, performing night observation sessions and traveling exhibitions abroad the country, and so on. Radio, TV and newspapers promotion is considered as an important component for spreading and getting the people participation inside the events planned for the IYA2009. We are compromised with the education and promotion of the Science in the country that we are seeing in this IYA2009 global celebration as a great opportunity for reaching great results in our noble work.

O42. Update on Celebrations of 400th Anniversary of the Publication of Keplers Astronomia Nova

Terence J. Mahoney (*Instituto de Astrofísica de Canarias, Spain*)

Contacts are being made with various organizations to prepare celebrations the 400th anniversary of the birth of modern astronomy with the publication of Kepler's *Astronomia Nova* (in which the first two laws of planetary motion were first described). So far there are plans being made at Graz (Austria) and Prague (Czech Republic). NASA's Kepler project is also actively preparing to make 2009 Kepler's year. Further contacts will be made with other towns and cities in which Kepler lived and worked (e.g. Weil der Stadt, Tuebingen and Regensburg (Germany), Linz (Austria) and Sagan (Zagan, Poland) to encourage similar events. Kepler's work is now being drastically reappraised by historians, who are now arguing that the impression hitherto given of Kepler as a mystic who made his important discoveries in spite of himself needs to be drastically revised. Perhaps the time is now ripe for an IAU GA Special Session on Kepler. Historians of science, particularly Kepler specialists, are now being contacted to consider this possibility. A request has now been made to form an IYA working group to prepare to celebrate "Kepler's Year" (2009).

O43. The Importance of the Public Talk

David Malin (*Anglo-Australian Observatory/RMIT University, Australia*)

A long-established and effective way of engaging general audiences with scientific ideas is the public talk. Such a talk should be part of any broad program of science communication. With the right title and presentation, this combines elements of the theatre with a public discourse and reveals the scientist as a 'normal', interesting and approachable human being. Other essential ingredients and potential pitfalls in this kind of presentation will be discussed, in particular the layout of the venue, the visual content and ways of encouraging and managing discussion at the end of the talk.

O44. International Year of Astronomy in Russia

Oleg Malkov (*Institute of Astronomy, Russia*)

The International Year of Astronomy (IYA2009) will be a great event in scientific and cultural life of all nations. The IYA2009 activities will be on several levels, however, the majority of IYA2009 events will take place locally and nationally.

To prepare these activities, National Nodes in each country have been formed. These Nodes establish collaborations between professional and amateur astronomers, science centres and science communicators.

The Russian National Node activity is described in this presentation.

O45. Intermediary Astronomy: Education through the Leveraging Of Networks, Partnerships, and Intermediaries at the Astronomical Society of the Pacific

James Manning, Suzy Gurton, Michael Gibbs, Dan Zevin, Marni Berendsen, and Andrew Fraknoi (*all Astronomical Society of the Pacific, USA*)

In the last decade of its 12-decade existence, the Astronomical Society of the Pacific (ASP) has worked to expand the impact of its education and outreach program through physical and electronic networks and partnerships. Some of its key networks include the Project ASTRO Sites Network (with 15 regional sites for training educators and astronomers to work together in classrooms), the Family ASTRO Network (trained leaders around the U.S. who do family astronomy workshops in formal and informal settings), the Night Sky Network (an organization of 200 astronomy clubs engaged in public outreach), the Astronomy from the Ground Up Network (an expanding group of smaller museums and nature centers doing astronomy programs), the Astronomy College Network (an informal network of over 1000 instructors teaching astronomy in smaller colleges throughout the U.S. and Canada, who meet every three years at "Cosmos in the Classroom" conferences), and the ASP Membership (in all 50 U.S. states and more than 60 other countries). The presenter will demonstrate how these networks, as well as its connections with scientific and Education/Public Outreach communities, advance its mission to train and support astronomy education and outreach "intermediaries" (those at the interface between astronomy and students and the public) to increase public understanding and appreciation of astronomy—and also position the Society to advance the goals of the International Year of Astronomy.

O46. Astronomy Outreach in Greece and IYA Prospects

Nikolaos Matsopoulos (*National Observatory of Athens, Greece*) & **Manolis Zoulias** (*National Observatory of Athens, Greece*)

We present an overview of astronomy outreach activities in Greece and the profiles of the organizations involved, such as astronomy and space research institutions, media, amateur societies and more. Furthermore an analysis of the capabilities and potential of these organizations is presented for their involvement in IYA2009 projects on national and international levels.

O47. SOFIA - The Flying IR Observatory

Dörte Mehlert, Cecilia Scorza (*Landessternwarte, ZAH, Germany*), **D. Backman**

SOFIA, the Stratospheric Observatory For Infrared Astronomy, is an airborne observatory that will study the universe in the infrared spectral region. For this project NASA and DLR, the German Aerospace Center, created SOFIA — a Boeing 747SP aircraft modified in the U.S. to accommodate a German 2.5 meter reflecting telescope. SOFIA will be the largest airborne observatory in the world, and will make observations that are impossible for even the largest and highest of ground-based telescopes. Besides this contribution to science progress, SOFIA will be a major facility for the development of new instruments and observational techniques, and for the education of young scientists. Moreover SOFIA has a unique Education and Public Outreach (E&PO) program geared for people involved in science education such as teachers, museum or planetarium workers, youth or community organization workers and volunteers, scientists doing outreach education, or journalists writing about science education. In this contribution we will present the activities of the US and German E&PO teams. In particular we will focus on the possible SOFIA contribution to the IYA 2009.

O48. UNESCO & IYA

Minella Alarcon (*UNESCO, France*)

O49. The Antikythera Mechanism, a Great Attractor of Children to Science, Mathematics, Engineering and Technology.

X. Moussas, (*University of Athens, Physics Dept., Astrophysics Lab., Greece*), **J.H. Seiradakis, T. Freeth, M. Edmunds, Y. Bitsakis, G. Babasides, D. Ioannidis-Vamvakas, G. Fasoulopoulos, E. Daniels, D. Kriaris**

The Antikythera Mechanism is an excellent attractor of pupil and young people to Science, Mathematics, Engineering and Technology. This old astronomical instrument of the 2nd century BC found in an ancient shipwreck of the 1st century BC, looks

like an oxidized grand mother's clock made of bronze gears, is the oldest known analogue computer that calculates the position of the Sun, the Moon (its phases), the eclipses of the Sun and the Moon, several calendars, based on the Saros, Exeligmos Meton's and Callippus cycles of 18 years, 54 years, 19 years and 76 years. The Antikythera Mechanism rewrites the history of science and technology, and it is an excellent device to teach many subjects to children, but mainly modelling of physical phenomena. The interest concerning the Antikythera Mechanism in Greece and worldwide is enormous and we organize and we participate to conferences, general public lectures, exhibitions, and we construct and contribute to models and replicas. We have a successful collaboration with the Children's Museum of Manhattan and we participate to their exhibitions Gods, Myths & Mortals: Discover Ancient Greece (www.cmom.org) with great success.

O50. Asteroids for Popularization of Astronomy

Orlando A. Naranjo (*Grupo de Astrofísica Teórica. Universidad de Los Andes. Facultad de Ciencias. Departamento de Física, Venezuela*)

It is presented here how the nomination of Asteroids may be used as a tool for popularization of Astronomy, Science and Technology. The nomination of asteroids was used by organizers of educative activities in schools and museum as a price to the winners of scientific and technological events which they promote. Actually, there are two events, one in Venezuela and one in Brazil, which had used this as an attractive alternative for popularization. The first event was called "Bautizo Espacial" (Space Baptism) and consisted of a contest of scientific stories written by fundamental and high school students. This event was organized by universities and governmental institutions and was realized in the Venezuelan State of Lara. The second event, called "Grande Desafío" (Big Challenge), was a competition where teams (with 3 to 6 fundamental and high school students) was challenged to build a prototype of an equipment to battle forest fire. This happening was organized by the Exploratory Science Museum of the State University of Campinas in Brazil (Museu Exploratorio de Ciências, UNICAMP). Both events had national publicity in newspapers, radios, TV and WEB pages, reaching great amount of people in each nation. In both events were realized parallel activities promoting public knowledge of astronomy. The asteroids that have been named were discovery in a search program developed by the Group of Theoretical Astrophysics of University of the Andes in Mérida, Venezuela (Grupo de Astrofísica Teórica, Universidad de Los Andes). The search was done with the 1-m Schmidt camera from Llano del Hato National observatory, located in Mérida State. Finally, it is proposed to IAU the use of the program "Asteroids for Popularization of Astronomy" during the celebration of the International year of astronomy in 2009.

O51. The Credibility of Science Communication: An Exploratory Study of Press Releases in Astronomy

L. H. Nielsen (*ESA/Hubble, Germany - on behalf of N. T. Jørgensen, K. Jantzen and L. L. Christensen*)

Current developments in the media marketplace are leading inevitably to faster, simpler and more aggressive science communication. We will present the results of an exploratory study of potential credibility problems in astronomy press releases, their causes, consequences and possible remedies. The study consisted of eleven open-ended interviews with journalists, scientists and public information officers (PIOs). Results suggest that credibility issues are ubiquitous, deeply integrated into the workflow and can have severe consequences to the actors (especially the scientist), but are an unavoidable part of the communication process.

O52. From The Zulu's Indigenous Knowledge of Stars to the Modern Understanding of the Universe: Critical Evaluation of Indigenous Knowledge of Stars

Mdumiseni Nxumalo

Older age people wondered about what lies out there in the night skies. Their amazement led to different star-lore and myths found across the cultures of the world. Star-lore and myths were and are still stimulators of interest in stars (astronomy). However some of these myths and even our modern star movies we grew up enjoying can lead to misconceptions leading to what is known as bad astronomy. However, with research involving elderly people some indigenous knowledge has been identified to be very careful studies of the nature of stars to an extent that such knowledge was used to predict the year's seasons. Some plants and crops behaviors were found to coincide with some events in the sky. This knowledge was very useful in the prehistoric means of agriculture. This presentation aims to critically evaluate South African (Zululand) indigenous knowledge of stars, identify and highlight usefulness, encourage research by astronomy communicators on this knowledge and highlight the possibility of using this knowledge in conjunction with modern astronomy to enhance the communication of astronomy to the public. It relates some experiences of interacting with the public in planetarium shows at the University of Zululand Science Centre, South Africa.

O53. A Web Site of Astronomical News in Spanish

Amelia Ortiz-Gil (*Astronomical Observatory - University of Valencia, Spain*)

"Noticias del Cosmos" (<http://www.uv.es/obsast/es/divul/noticias/>) is a collection of web pages inside the Astronomical Observatory of the University of Valencia's web site where we publish short summaries of astronomical press releases daily.

Most if not all of them are originally written in English, and often the Spanish readers may find it difficult to understand them because not many people are familiar with the scientific language employed in these releases. The goal of the "Noticias del Cosmos" is twofold. First, we want to communicate the latest astronomical news on a daily basis to a broad Spanish-speaking public who otherwise would not be able to read them because of a language barrier. Second, we propose the use of the daily news as a tool to introduce the astronomy topics of the school curriculum in a more captivating way. Most of the students at school have not reached a level in their knowledge of English good enough to fully understand a press release, and "Noticias del Cosmos" offers them and their teachers these news in their mother tongue. During the regular program of school visits at the Observatory we use the news as a means of showing that there is a lot to be discovered. So far the visits to the web site have been growing steadily. Between June 2003 and June 2007 we had more than 30,000 visits, with an average of 70 visitors per day. More than 70% of the visits come from Spain, followed by visitors from South and Central America. The feedback we have received from teachers so far has been very positive, showing the usefulness of the news in the classroom when teaching Astronomy.

O54. Everyday Astronomy @ Sydney Observatory

Stephanie L. Parelo (*Sydney Observatory*)

Catering to a broad range of audiences, including many non-English speaking visitors, Sydney Observatory offers everything from school programs to public sessions, day care activities to night observing, personal interactions to web-based outreach. With a history of nearly 150 years of watching the heavens, Sydney Observatory is now engaged in sharing the wonder with everybody in traditional and innovative ways. Along with time-honored tours of the sky thru two main telescopes, as well as a small planetarium, Sydney Observatory also boasts a 3D theatre, and offers programs 363 days a year — rain or shine, day and night. Additionally, our website never sleeps, with a blog, youtube videos, and night sky watching podcasts. And for good measure, a sprinkling of special events such as the incomparable Festival of the Stars, for which most of northern Sydney turns out their lights. Sydney Observatory is the oldest working observatory in Australia, and we're thrilled to be looking forward to our 150th Anniversary next year in anticipation of the International Year of Astronomy immediately thereafter.

O55. Science Communication and the European Union

Eniko Patkos & Claus Madsen (*ESO*)

As much scientific research is funded with public money, it is evident that there is a need to inform the public about the main research results. In addition, the general lack of understanding of how advances in science and technology affect our lives also calls for increased efforts in science communication. In Europe, public money comes from national budgets, international research organisations' budgets, and also the European Union (EU) budget. This establishes a clear responsibility for all these actors to support science communication. The stakes for the European Community for the coming years are high: between 2007 and 2013, the Community will invest some €50 billion in research.

The EU provides support for science communication in different ways and in the framework of different EU programmes. The Community-launched policy initiatives aim to harmonise the best practises of science communication, while databases and hands-on guides try to ease the everyday work-life of the science communicators. The EU also provides some financial support to innovative science communication projects through its R&D Framework Programme, the e-Content Plus Programme, and the new Media Programme. The structure of the different funding programmes is complex; it is not easy to find the most appropriate support programme for a project without some EU experience.

The presentation will introduce the main EU science-communication policy initiatives of recent years, followed by an overview of future possibilities. The second part will elaborate on the concrete funding possibilities, describing the different programmes, and the ways and means of applications, with particular attention to those possibilities where astronomy can appear.

O56. The Society for Space and Astronomy

Panos Patsis (*Academy of Athens / Research Center for Astronomy, Greece*), **Loukas Zachilas, Konstantinos Mavromatis**

The Society For Space and Astronomy was founded in Volos, Greece in 1992 and now has 511 members both in Greece and abroad. Approximately, one third of the total number of its members is high school students. Since its foundation, the Society issues its own magazine, "Ouranos" (The Sky), with subscribers in Greece, Europe and The United States. Every Sunday evening the Society holds meetings and discussions on issues concerning astronomy - the meetings take place at the 1st Volos High School yard. Members can also borrow books, maps, slides, videotapes, e.t.c. from the Society's library. Each month the Society holds "Astronomy Classes For All", open both to its members as well as to anyone interested in Astronomy. Every summer the Society organizes night meetings at Hania, on Pelion Mountain. Members have the chance to observe or take photographs of planets, nebulae, galaxies etc. from the 22 telescopes that the Society and its members own. Each year the Society organizes the Pan-Hellenic School Competition in Astronomy and on a special evening it awards its prizes to the students who were distinguished in the Competition. The first boy winner and the first girl winner visit U.S. Space & Rocket Center at Huntsville, Alabama. The Society's activities include visits to sites with astronomical interest, scientific lectures etc. The Society also has its own sun clock in the 1st Volos High School yard.

O57. Planetariums – New Tools for A Greater Impact

Antonio Pedrosa (*Navegar Foundation, Portugal*), **Marco Silva**

The International Year of Astronomy will be a celebration of Astronomy. Planetariums will definitely be one of the major vehicles to transmit its message. The new digital technologies that are now becoming available to the planetariums bring an enormous change on the way planetariums work and what's more, on the possibilities and impact of the message they transmit. Navegar Foundation manages the Espinho Planetarium that has been developing efforts in different areas of digital planetariums, mainly on content creation and software tools development. Among these tools we would like to present two that have been developed in the recent past, for pre-rendered content production. We would like also to present a new tool, dedicated to test content under production and to real-time presentation of shows in the planetarium, integrating real-time sky simulations and the display of pre-rendered content.

O58. ESO Education and Public Outreach for the International Year of Astronomy 2009

Douglas Pierce-Price (*ESO*)

I will present an overview of education and public outreach activities for the International Year of Astronomy 2009 (IYA2009) at ESO, the European Organisation for Astronomical Research in the Southern Hemisphere.

Specific activities are still being designed, but we plan various projects including: public events local to ESO facilities, for example an exhibition of astronomical imagery in Munich; interactive web-based activities for the global public; and an international competition aimed at school students which will invite young people, as potential future astronomers, to imagine and plan for a night of observations with the forthcoming European Extremely Large Telescope.

The IYA2009-specific events will take place in addition to ESO's normal education and public outreach activities, which will also be summarised in this presentation.

O59. Still Photography for All-Dome Time-Lapse Movies

Kirk Puu'ohau-Pummill (*Gemini Observatory, USA*)

I am presenting a demonstration of and technique for creating high-resolution, full dome time-lapse movie content for planetaria using a Canon 1Ds Mk II digital camera. Our objective is to produce educational content for planetariums, including those using state-of-the-art 4K x 4K digital projection systems to demonstrate the operation of the Gemini telescopes as seen from the observing floor over the course of the nights observations.

O60. Las Cumbres Observatory Global Telescope Network

P. Roche (*Cardiff University, United Kingdom*), **S. Roberts** (*Las Cumbres Observatory Global Telescope (LCOGT), United Kingdom*), **R. Ross** (*Las Cumbres Observatory Global Telescope Network, USA*)

Las Cumbres Observatory Global Telescope Network will provide a series of facilities supporting astronomical research and education. We report here on the first three and a half years of operations of the Faulkes Telescope Project (now part of LCOGTN), working primarily in the UK and Europe.

We will provide an update on LCOGTN plans, and implications for network and educational resource availability by IYA2009. A variety of educational approaches have been attempted to try and engage high school teachers and students, and we will discuss several case studies and examples of good practise.

O61. IAU Commission 55 - An Update

Ian Robson (*UK ATC/ROE, United Kingdom*), **Dennis Crabtree** (*Gemini Observatory, Chile*), **Lars Lindberg Christensen** (*ESA/Hubble*)

We will give a brief update of the work of C55 'Communicating Astronomy with the Public', especially with the focus on IYA2009.

O62. IYA2009 - The Work in the UK

Ian Robson (*UK ATC/ROE, United Kingdom*)

I will give a brief overview of the work being done within the UK for IYA2009.

O63. Chilean Activities for IYA 2009

Patricio Rojo (*SPoC*) and Chilean Node members

The Chilean node, for the preparations of activities for the International Year of Astronomy 2009, currently consists in 24 members representing most of the professional and amateur organizations related to astronomy in Chile. We have divided ourselves in two main working groups that focus in the preparation of activities on the areas of Education and Society,

respectively. Each group have divided their projects in two broad categories, those that will be performed during 2009, and those that should start on 2009, but have a lasting effect. Those four categories of activities are given equal importance. In this talk, I will present the activities that are being planned as well as their progress report.

O64. The Journal Communicating Astronomy with the Public - A Study from IAU Division XII Commission 55 CAP Journal Working Group

Pedro Russo (*MPI Solar System Research / Europlanet, Germany*), **Lars Lindberg Christensen** (*ESA/Hubble*), **Terry Mahoney** (*Instituto de Astrofísica de Canarias, Spain*), **André Heck, Rick Fienberg** (*Sky & Telescope, USA*), **Richard de Grijs, Andrew Fraknoi, Sidney Wolff, Paul Murdin, Steve Miller**

The public communication of astronomy provides an important link between the scientific astronomical community and society, giving visibility to scientific success stories and supporting both formal and informal science education. While the principal task of an astronomer is to discover new knowledge, disseminating this new knowledge to a wider audience than the scientific community is becoming increasingly important. This is the main task of public astronomy communication: to bring astronomy to society. Here we present the results of a study from IAU DIVISION XII Commission 55 CAP journal Working Group for establishing a partly peer-reviewed journal called Communicating Astronomy with the Public. Such a journal, published quarterly in full colour, will be vital for intra-community exchange of information and will make it possible to learn from others in the same profession and with the same needs, as well as give authors a chance to present their information in a coherent and meaningful fashion.

O65. The International Year of Astronomy 2009 - An Opportunity too Good to Miss

Pedro Russo (*IYA 2009 coordinator/ESA-Hubble*) & **Lars Lindberg Christensen** (*ESA/Hubble & IAU*)

The vision of the International Year of Astronomy 2009 (IYA2009) is to help the citizens of the world rediscover their place in the Universe through the day- and night time sky, and thereby engage a personal sense of wonder and discovery. All humans should realize the impact of astronomy and basic sciences on our daily lives, and understand better how scientific knowledge can contribute to a more equitable and peaceful society. The authors of this talk are working for the IYA Secretariat and will present a snapshot of the current status of the project, as well as re-iterate the IYA2009 goals, objectives and deliverables. Part of this talk will deal with some important IYA evaluation parameters and also the global strategy for the future

O66. Distribution Services of Astronomy and Planetary Sciences Outreach Products

Pedro Russo (*IYA 2009 coordinator/ESA-Hubble*)

The wikipedia entry of web 2.0 refers web 2.0 to a "perceived second generation of web-based communities and hosted services — such as social-networking sites, wikis and folksonomies — which facilitate collaboration and sharing between users." With this premise, web2.0 will play an important role in future astronomy education and public outreach collaboration projects and in the dissemination of outreach products between the public. In this paper I will present the first efforts to integrate outreach products under virtual observatories and distribution services and how the use of new approaches, like web 2.0 and semantic web can help to achieve the main objectives. With main emphasis on the Europlanet Integrated and Distributed Information Service (IDIS) which will offer to the european planetary science community a common and user-friendly access to the data and information (including outreach products) produced by the various types of activities.

O67. The Universe as a Creative Lab: Mixing the two Cultures

Stefano Sandrelli (*INAF-Osservatorio Astronomico di Brera, Italy*), **Alessandra Angelini**

Is it possible today to use a Renaissance-like approach to culture, where rationality and creativity, reality and imagination, history and myth, science and art are not opposite polarities but complementary fashions to observe reality?

The Public Outreach & Education office (POE) of the Astronomical Observatory of Brera (Milan), one of the most ancient and prestigious institutes of the Italian National Institute of Astrophysics (INAF), has been started a multidisciplinary approach to the diffusion of the culture for several years.

In 2006-07, as a preparation for the International Year of Astronomy, we pursued four main projects:

1. an experimental narrative laboratory "The Olmicomics", addressed to 12-13 years old students in order to motivate them to use scientific suggestions as a starting line for creative processes in both literature and comics;
2. an anthology of tales written by scientist, to show that science is not pure rationality, but a real way-of-life. The anthology will be published in Italian by Springer – Verlag in September 2007 under the title of "Every number is equal to 5" (Tutti I numeri sono uguali a cinque).
3. a whole month (March-April) of Science and Theatre at the Arsenale Theatre (Milan), in collaboration with the Arsenale Theatre Company, which has a very deep interest in contemporary scientific languages;
4. "The universe as a creative lab: astronomy for artists", a two-years long project in collaboration with the Academy of Fine Arts of Brera (Milan), addressed both to students and teachers of the Academy itself.

In our contribution we will illustrate what works and what does not in our programmes, referring in particular to the biennial project "astronomy for artists". In the past academic year, in fact, the course for artists was divided into two phases. First, the artists attended some astronomical laboratories to see how scientists understand and image some cosmic phenomena, like the 3D Solar System, the stars as natural alchemists, the interacting galaxies, the black holes, the nature of space-time, the origin of the universe, the debate about the Dark Energy, the final fate of the universe. In the second part of the course, the artists are elaborating independently the scientific informations, trying to digest and assimilate them and to use them as plastic material to create visual art works. "Astronomy for artists" will be finally result in a consistent number of art-works, which will constitute the "core" of a Science and Art exposition to be hold in Milan (and elsewhere is requested) during IYA2009. Keeping in mind that we must defy the perennial and crucial problem: the general public seems just as estranged from contemporary art as it does from science.

O68. Touch the Invisible Sky

Simon Steel (*Harvard-Smithsonian Center for Astrophysics, USA*), **Noreen Grice** (*You Can Do Astronomy LLC, USA*), **Doris Daou** (*NASA, USA*), **Kimberly Arcand** (*Smithsonian Astrophysical Observatory, USA*)

Multi-wavelength astronomy – the study of the universe at wavelengths beyond the visible, has revolutionized our understanding and appreciation of the cosmos. Hubble, Chandra, and Spitzer are examples of powerful, space-based telescopes that complement each other in their observations spanning the electromagnetic spectrum.

While several Braille books on astronomical topics have been published, to this point, no printed material accessible to the sight disabled or Braille reading public has been available on the topic of multi-wavelength astronomy. "Touch the Invisible Sky" presents the first printed introduction to modern, multi-wavelength astronomy studies to the sight disabled community.

O69. Japanese Plans For The IYA2009

Kazuhiro Sekiguchi (*National Astronomical Observatory of Japan, Japan*)

Plans of Japanese local activities for the International Year of Astronomy 2009 are summarized. Several public activities including, chartered cruises to view the solar eclipse in the Western Pacific, special exhibitions at museums, productions of planetarium shows and TV programmes, series of public talks by the astronomers, etc. have been organized. Participations to some of the international events are also considered. Current status of the preparation works for above mentioned plans are given at the conference.

O70. The Future of the IYA2009 Web Site

Raquel Yumi Shida (*IAU & ESA/Hubble*), **Pedro Russo** (*IAU/IYA2009 & ESA/Hubble*) & **Lars Lindberg Christensen** (*ESA/Hubble & IAU*)

The Internet will, without doubt, be one of the most important channels connecting the International Year of Astronomy (IYA2009) activities with the general public. The IYA2009 website (www.astronomy2009.org) was released in December 2006 and has since then served as the main communication tool between all the countries and agents that take part of this event. Recently a new strategy has been applied to the IYA2009 project and its communication. The project has changed from mainly catering to internal communication needs (IAU <-> SPoCs) to communicating more towards the external and wider world, incl. laypeople. The current website features will be demonstrated, and ways of using web tools to empower the communication of astronomy with the public will be suggested. Plans for the future of the IYA website as new events and ideas come up until 2009, will also be discussed.

O71. IYA2009 in Australia

Helen Sim (*CSIRO and Anglo-Australian Observatory, Australia*)

Planning is under way for IYA 2009 in Australia, with involvement from representatives of the media, education, business, amateur and professional astronomy communities, and planetaria and public observatories. In this talk I will outline our progress to date.

O72. Digital Planetariums: Hot Off the Press - Presenting Actual Data on the Dome within Hours of Its Release

Glenn Smith (*SkyScan, Germany*), **Dieter Schwab**, **Markus Steblei** (*SkyScan Europe*)

Live Interactive Demonstration in Digital Planetarium Theater. With Gliese 581 and its newly discovered planet "Gliese 581C" as an example, we will discuss how with today's advanced digital planetarium technologies, we can update and explore large data sets so that actual astronomy can be made relevant and interesting. And this all within hours of release of the latest data. Because of Gliese 581C's position with respect to the star, it qualifies as a planet with the right conditions that could permit life as we know it to exist. Attendees will be "flown" right to Gliese 581 and see the planet system as it is up close. The planets orbiting

the star will be shown in their actual orbits and the zone of habitation displayed and explained. Other examples may be demonstrated as well. Please observe poster with more detailed information on the various themes to be presented on Monday and Tuesday.

O73. Education through Communication

Magda Stavinschi (*IAU Com. 46 President*)

Children have always been the best communication vehicle. They impart what they learn in school to family, friends, the other children. That is why astronomy communication should begin at their level, of the children, of school.

IAU Commission 46 is undergoing a period of major transformations, seeking new ways of education, called for by the new technologies and the attention given by children to them, to the internet, TV, films, DVD, etc.

The special events celebrated by the entire world – IHY and IYA 2009, to which Romania adds in 2008 the centenary of Romanian astronomy – help us attract the children to astronomy, to science. Consequently we intend to approach in this presentation the ways in which communication can help education, and the latter one may lead to the growth of the education level of the members of the civilized societies of today.

O74. ViewSpace, a Self-Updating Astronomy Display Network

John M. Stoke (*Space Telescope Science Institute*)

Every day, some 160+ museums, planetaria, libraries and other informal education venues whose combined audience approaches 40 million persons present the latest discoveries in astronomy and space-based earth science by means of ViewSpace, an automated network of large flat panel screens and mini projection theatres that uses digital signage technology to present beautiful images and interpreted information from a wide gamut of observatories and space probes. In this poster we present the "basics" of ViewSpace, highlight some of the program's newest developments, and invite the larger astronomy communication community to participate in both content creation and expansion of the network.

O75. Social Impact of the Shaw Prize in Astronomy

Sze-leung Cheung (*Ho Koon Nature Education cum Astronomical Centre, Hong Kong – China*)

The Shaw Prize in Astronomy is an international award given since 2004, it is unofficially known as the Nobel Prize in the East. This annual prize carries a monetary award of US\$1 million, honoured distinguished astronomers for their significant achievements in astronomy. The Nobel Prize is well known for its profound impact in the public, it lay down the milestone of humankind. Same as the Nobel Prize, the Shaw Prize has its profound social impact on the course of astronomy. This prize is still young since its foundation, but communicating astronomy with the public by the means of these astronomical milestones could arise great social impact. In the presentation, its social impact and the possible ways of communication will be investigated.

O76. Alien Worlds: Astrobiology and Public Outreach

Mark Brake, Martin Griffiths, Neil Hook, Allan Trow (*University of Glamorgan, United Kingdom*), **Catherine Tryfona** (*University of Glamorgan, United Kingdom*)

Over the last three years an outreach programme in astrobiology has been stimulating public interest in South Wales, UK. Funded by a European Social Fund (ESF) grant, with a total project cost of £450k (\$840K), 550 people have enjoyed an accredited undergraduate course, Alien Worlds. The modular course has introduced students to the multidisciplinary nature of astrobiology, and coupled it to a practical ability to recognise the constellations and objects of the night sky. This paper outlines the outreach programme, the course's themes and content as an example of the potential of the science and culture of astrobiology.

O77. Astronomy in The Equatorial Africa

Johnson O. Urama (*University of Nigeria, Nsukka, Enugu State, Nigeria, Nigeria*)

Africa lies astride the equator and extends almost equal distances (~ 370) north and south of the equator. Equatorial Africa, here, refers to those countries in the continent that lie within about 20 degrees north and south of the equator. Nearly 80% of the countries in Africa lie in this region. In all of these countries, there is very little or no awareness about modern astronomy and this accounts for the total absence of astronomical research facility, of any type, in the region. However, like ancient people everywhere, Africans wondered at the sky and struggled to make sense of it. Indigenous, endogenous, traditional, or cultural astronomy focuses on the many ways that people and cultures interact with celestial bodies. The region is rich with mythic figures, divination methods, cosmology and cosmogony that utilize observations of celestial bodies, and many other sky-related beliefs and traditions. The African Cultural Astronomy Project aims at unearthing the body of traditional knowledge of astronomy possessed by peoples of the different ethnic groups in Africa and providing scientific interpretation to deserving cosmogonies and ancient astronomical practices. And part of her vision is to create awareness and interest in astronomy through this work.

This paper discusses the African Cultural Astronomy Project and various other strategies for popularizing astronomy in this region.

O78. Communicating Radio Astronomy with the Public

Stefania Varano (*Instituto di Radioastronomia, Italy*)

Radio waves, although not directly accessible to human perception, are used in daily life by almost everybody. Still, the majority of the general public do not even know that celestial bodies emit radio waves. Communication of radio astronomy is strongly needed: it is important to let people know about publicly funded radio observatories. In addition to that, most of the technology available in many scientific fields was obtained at first in radio observatories, for the detection and processing of radio signals from the Universe. Presenting invisible radiation to a general audience with little or no background knowledge in physics is a difficult task. Moreover, outreach on issues related to radio astronomy does not have such a well-established background as optical astronomy. In order to make radio astronomy accessible to the public, it is necessary either to go more deeply into detail and introduce scientific content or to find different ways of communicating. In this contribution we present examples of the approach to fulfill this task at the Visitor Centre "Marcello Ceccarelli", which is part of the Medicina Radio Observatory, operated by the Institute of Radio Astronomy (INAF, Bologna).

O79. IYA2009 in Ukraine

Iryna Vavilova (*Space Research Institute, NAS of Ukraine, Ukraine*)

Some ideas regarding the IAY2009 in Ukraine and some thoughts about supporting IAU ideas are discussed in details.

In Ukraine we started - the procedure for preparation stamp/coin devoted to the IAY2009; - new scientific programs, which are already supported by the National Academy of Sciences of Ukraine ("Dark matter and Dark energy", "Space Weather", "Telescopic Network"); - to organize a special page at the UAA web-site.

During the memorial conference devoted to the 100- anniversary of V.P. Tsesevich (August 12-19, 2007) we are planning to organize the first meeting of our national IAY committee, which will be open for public. Among the questions we will discuss are the following: - IAY' events in Kiev, Odesa, Kharkiv, L'viv, Uzhgorod, Poltava, Dnipropetrovsk, Mykolaiv, Alchevsk, Vinnitca, Chernigov, and the Crimean observatories and astronomical sites; - creation of the base date of all astronomers worked in Ukraine from XV cent. till now (practically is ready); - astronomical chronology, including archaeoastronomy in Ukraine; - public communications, planetariums, etc. - publications in our advertising journals (Astronomical calendar, Odessa Astronomical calendar, Space-Time-Universe, Svitoglyad etc.)

It will be useful to discuss at the CAP2007 such questions as - to provide a "IAY 2009 meeting" likely olympic torch, beginning from Italy through the world wide observatories (a week in each of countries) and finishing again in Italy.

O80. The International Year of Astronomy 2009 in the Netherlands

G. Verdoes-Kleijn, P. Barthel, M. Baan (*on behalf of the Dutch IYA2009 Committee / The Netherlands Research School for Astronomy - NOVA and Kapteyn Astronomical Institute*)

On behalf the Dutch IYA2009 Committee, we present the plans in the Netherlands for IYA2009. These include collaborations between museums, schools, universities and observatories (e.g., Westerbork Synthesis Radio Telescope (WSRT) , Low Frequency Array (LOFAR)). We put forward several ideas for joint projects and events during IYA 2009 together with other countries.

O81. Globe at Night: An Update and Look Ahead To IYA 2009

Constance E. Walker (*National Optical Astronomy Observatory, USA*), **Douglas Isbell** (*National Optical Astronomy Observatory, USA*), and **Stephen M. Pompea** (*National Optical Astronomy Observatory, USA*)

The GLOBE at Night 2007 program has been built upon the success of the inaugural campaign in March 2006 when 4600 observations were submitted by citizen-scientists from 96 countries. Participation this year was up by 85 percent, producing 8,491 unique measurements from 60 countries and 49 US states. About 65 percent of the 2007 measurements (5,512) were from the United States.

The international star-hunting event known as GLOBE at Night returned March 8-21, 2007 in two flavors: the classic GLOBE at Night activity incorporating unaided-eye observations toward Orion, and a new effort to obtain precise measurements of urban dark skies toward zenith using digital sky-brightness meters. Both flavors of the program were designed to heighten the awareness about the impact of artificial lighting on local environments, and the ongoing loss of a dark night sky as a natural resource for much of the world population.

To make possible the digital GLOBE at Night program, the NSF funded 135 low-cost, digital sky-quality meters (manufactured by Unihedron). Along with related materials developed by the National Optical Astronomy Observatory (NOAO), the meters were distributed to citizen-scientists in 19 US states plus Washington DC, England, South Africa and Chile, where NOAO has a major observatory. The participants were teachers, their students, astronomers at observatories, International Dark-Sky Association (IDA) members and staff from science centers. For each meter, citizen-scientists were asked to make several measurements

from different locations in their region, away from lights and obstructions like buildings. 800 to 1000 observations have been pooled for regional analyses around the US. Cities contributing over 100 observations include Tucson, AZ, Washington, DC, Glen Gardner, NJ, and Hilo, HI.

The success of GLOBE at Night 2007 is a major step toward the International Year of Astronomy in 2009, when one goal is to make the digital data collection into a worldwide activity. In this presentation, we will outline the set-up for the digital part of the program, the outcome and the plans for the future.

GLOBE at Night is a collaboration between NOAO, the GLOBE Program, CADIAS, Windows to the Universe, ESRI and IDA

O82. From Athens to Around the World: Taking the Cap2007 Image Exhibit to IYA2009

Kim Kowal Arcand, Megan Watzke (*Chandra X-ray Center*), **Lars Lindberg Christensen** (*ESA/Hubble*), **Manolis Zoulias** (*National Observatory of Athens*)

Our fantastic images of the Universe are responsible for a large fraction of the magical appeal that astronomy has on lay people, and, hence, serve as one of our most efficient weapons in reaching the broad public. CAP2007's installation of astronomical images in Athens is significant in bringing the cosmos to the public in an innovative and exciting way. It also serves, however, as an important learning opportunity for taking such exhibits to a much larger, world-wide audience during the IYA 2009. Based on the experiences from CAP2007 and the work of the IYA2009 "Image Exhibition" Task Group, we present two exciting visual concepts for how a global series of image exhibitions could be conceived. Both are scalable and are designed to be accessible to the largest number of people possible. We outline the necessary role of sponsors of any such IYA2009 endeavor. We wish to solicit inputs from the community on which direction to take, and also invite possible collaborators to participate in the further work.

O83. Maximizing Mileage from the Chandra Podcasts

Kimberly Kowal Arcand, Megan Watzke (*Chandra X-ray Center*)

The Chandra X-ray Observatory began producing and distributing its podcasts in March 2006. Since then, the podcasts have become a growing vehicle to communicate scientific topics in X-ray astronomy to a wide -- and perhaps different -- audience than traditional outreach methods. After a brief introduction to the philosophy and production of the Chandra podcasts, we will discuss our attempts to leverage the podcasts to as many outlets as possible. These include such obvious means as iTunes and other podcast-specific websites, but also the use of the production of DVDs to reach less wired venues. Feedback or questions from audience members with their own podcast "best practices" will be most welcome.

O84. Building the World Wide Telescope

Curtis Wong (*Microsoft Next Media Research, USA*)

The World Wide Telescope project is the passion of three people in the Next Media group within Microsoft Research who share a lifetime goal of astronomy education for kids and lifelong learners.

This talk will describe our experience with building award winning interactive media and combining those ideas towards creating an intuitive, compelling and educational Web application called the World Wide Telescope.

The World Wide Telescope's goal is to enable astronomers, astronomy educators, amateurs, teachers and kids to easily create and share instructional rich media guided tours of the sky, objects and object details via seamless navigation that will facilitate informed discovery, contextual understanding and exploration. The virtual sky will allow browsing multiple sky surveys and very high resolution imagery from some of the best ground and space based surveys and object images.

The World Wide Telescope is possible thanks to the generous collaboration of astronomers and EPO staff from a number of university, ground and space based observatories who will be credited in the talk.

The talk will conclude with the first public demonstration of the World Wide Telescope.

O85. Science Visualization within a Planetarium Setting

Ryan Wyatt (*California Academy of Sciences, USA*)

In less than a decade, a dramatic shift has taken place inside planetariums. Hundreds of theaters of various sizes have adopted immersive video technology, filling domes with computer-generated visuals that can depict current astronomical discoveries with unprecedented fidelity. Whereas planetarium programming once depended on informed artwork to tell science stories, the opportunity now exists to incorporate science visualization into high-impact "narrative journeys" that immerse audiences inside the content. Observed data and computational simulations can provide a rich basis for such simulated excursions, giving people an experience of 21st-century astronomy that approximates an alternate reality.

Proper utilization of the new technology requires the worldwide planetarium community to mature in certain ways, however. Broadened science topics require significant professional development on the part of educators, production teams need to devise ways of incorporating data into their work, and collectively, we must learn how to tell stories with an enriched palette of

data-driven visuals. The international astronomy education community must consider how to support this emerging medium. Some ideas include the development of community standards (e.g., the Virtual Astronomy Metadata Project), specifically engineered content (e.g., HubbleSource's pre-rendered sequences), and increased visibility of the medium at conferences (e.g., the special session at the 2006 Astronomical Society of the Pacific meeting). As the chair of the Fulldome Video Committee of the International Planetarium Society—and the director of an immersive theater under construction—the author is seeking ways to increase collaboration and cooperation across our varied subdisciplines.

O86. Langit Selatan Blog, a Window for Popularizing Astronomy in Indonesia

A. Yamani (*Rigel Kentaurus (langitselatan.com), Indonesia*), **D. Dewantara, A.A. Baskoro. D. Pramesti**

Internet users are rising including in Indonesia, even it still an expensive choice for the most of our people. More sources can be obtained, but foreign sources are preferred since sites on astronomy in Indonesian language are a rarity. Current Indonesian sites on astronomy are private sites and institutions.

In 2004, Rigel Kentaurus starting it's first online media to spread astronomy information in Indonesian language. In March 2007, with the rising of blogging as one of the most highly touted features of the Web 2.0 era, we change our service into blogging. Our main address is www.langitselatan.com. Blog gave us opportunity to discuss a topic with our readers, and with RSS Feeds our readers could follow the page changes from time to time. Langit Selatan also make itself as an aggregator blog to astronomy resource so our readers could reduce the time to check every websites for updates.

Langit Selatan means Southern Sky, is an educational service to teach and inform people of Indonesia the basic knowledge and understanding of astronomy. Because right now, there still so many misunderstanding and lack of knowledge of astronomy. Through Langit Selatan blog, we also develop a community and make a collaborative network among astronomy amateur community in Indonesia.

O87. Visuospatial Astronomy Education in Digital Planetariums

Ka Chun Yu & Kamran Sahami

Even simple concepts in astronomy are notoriously difficult for the general public to understand. Many ideas involve three-dimensional spatial positional relationships and orientations between astronomical objects. However much of the traditional teaching materials used in astronomy education are 2D in nature, while studies show that visualizing mental rotations and perspective changes can be difficult for many. The simplifications that occur when explaining one phenomenon—such as seasons or phases of the Moon—may lead to new misconceptions in other concepts—such as sizes and distance scales. Properly constructed three-dimensional simulations can provide not only correctly sized virtual environments (VEs), but also systems that move through time with realistic dynamics and physics. Results from virtual reality researchers show additional benefits from VEs, and especially immersive VEs that surround users with imagery. As a venue for astronomical VEs, the new class of digital video fulldome planetariums that are appearing in museums and science centers therefore have the potential to bridge the comprehension gap in astronomy learning. Their public accessibility, large audience capacity, and growing numbers make them ideal places to study lecture-style learning. However the transient nature of informal science education audiences make them less than ideal test subjects. As a result I will describe a research project which aims to evaluate the effectiveness of visualizations in both immersive and non-immersive settings, by using freshmen undergraduate students from a four-year college. The retention of students over the course of a semester for this study means that student misconceptions can be tracked and recorded weekly via curriculum tests. Pre-instruction, contemporaneous, and post-instruction questions can help pinpoint when conceptual change occurs, if the scientific concepts are retained, and if newly learned concepts can track to improve understanding in topic modules not yet covered. I will cover some of the innovative pedagogic features of the visualizations, and review some of the preliminary results.

Posters

P1. Writing a Popular Book on Astronomy

A. Gunawan Admiranto (*Indonesian National Institute of Aeronautics and Space (LAPAN), Indonesia*)

In 2000 I finished my book titled "Tata and Alam Semesta" (The Solar System and the Universe") written in Bahasa Indonesia. It was published by a publisher in Indonesia, and the target of this book is general reader, especially those who have finished their high school education. The emphases of this book is the solar system, and this covers most of the book, from Mercury until Pluto and non planetary bodies in the Solar System. Then I move on to tell about the stars and the galaxy. This year I try to make a revised edition of this book, and I made some additions, especially in the status of Pluto, finding of trans-neptunian objects, and on extra solar planets.

P2. The TACOR educational telescope and the Italian RemoteLab Project: Learning tools for the International Year of Astronomy 2009

Aldo Altamore¹, **Roberto Nesci**² & **Corinne Rossi**² (¹*Dipartimento di Fisica "E. Amaldi" Università Roma Tre*, ²*Dipartimento di Fisica Università La Sapienza, Roma*)

The Department of Physics of the University La Sapienza has installed a didactic telescope with remote control (TACOR), which, in collaboration with the Department of Physics of University Roma Tre, is currently used in mid-level and high-schools classes. The telescope is controlled and the observations are acquired through ADSL connection directly from the school both during the day and the night. Up to now it has revealed itself an efficient way of teaching and learning Science with great satisfaction of students and teachers.

The TACOR telescope operate in the framework of the National RemoteLab Project which is supported by Italian Ministry of Public Education (MPI).

Besides Astronomical Observations, RemoteLab provides web-based access and complete control and data acquisition of advanced experiments of Chemistry, Physics and Biology.

During the forthcoming International Year of Astronomy 2009 TACOR and RemoteLab will be powerful on line tools for an interdisciplinary approach to teaching and public communication of Astronomy .

P3. Popularization of Astronomy in Estonia

Kalju Annuk (*Tartu Observatory, Estonia*), **Mare Ruusalepp**

We shall present a short review about popularization of astronomy in Estonia. As Estonia is quite small country and there is only one professional astronomical institution - Tartu Observatory, there are few popularization centers of astronomy. We shall describe the work of visitor center Stellaarium (located at Tartu Observatory), astronomical club at Tartu Old Observatory (in Tartu), astronomical club Ridamus (in Tallin), and some other small clubs. As well, we shall give a brief overview about popular books and articles in magazines which are dedicated to astronomy or space.

P4. Hunt for the Black Hole: A New Concept Workshop for High School Students

Ilaria Arosio (*INAF-Osservatorio Astronomico di Brera, Italy*), **Andrea Tiengo**, **Stefano Sandrelli** (*INAF-Osservatorio Astronomico di Brera, Italy*)

"The hunt for black holes" is a new conception workshop organized at the end of the scholastic year 2006-07 by the Public Outreach & Education office (POE) of the Astronomical Observatory of Brera (Milan) and the ASF Milano, the Milan Section of the Space Astrophysics and Cosmic Physics Institute. It was hold in collaboration with Thales Alenia Space (Milano, Italy) and Media Lario Technologies (Lecco, Italy) and coordinated by the onlus association Odisseospace. The workshop was financed by ASI (Italian Space Agency) and the National Agency for Education (ex IRRE). ESA (European Space Agency) supported the workshop as well.

The workshop lasted 8 days, for a total of about 50 hours, and it was addressed to about 30 secondary school students, who just finished the penultimate scholastic year. Its main goal was to introduce the students both to the scientific research and to the industry in the field of space technology and applications. The formal goal of the students was to make a proposal of a high energy spatial telescope to hunt for black holes, taking into account both the scientific rationale, the industrial technologies and the actual assigned budget.

Since the very beginning the students were divided into six competing groups. Day by day, they attended laboratories and lessons hold by scientific researchers and aerospace industries representatives, and they gathered information about both black holes and spatial missions. On the very last day, each group had to formalize its own choices, by making a proposal of a high energy spatial telescope to study black holes. Namely, the groups had to specify the scientific goal of their missions (which aspect of black holes they wished to investigate), the energy ranges they wished to explore, the mirrors, the detectors, the spacecraft (solar panels and electronics all-included) and the launcher. They had 30 credits to buy the components and the launch itself. The groups had to prepare a presentation and submit the project to a scientific panel. Just 5 minutes before the

presentations, the groups were announced that the budget was reduced down to 23 credits, because of a sudden different strategic decision of the Space Agency. They were given an extra-time of 10 minutes to take this new piece of information into account. This was very interesting moment in the workshop: the groups naturally joined their forces, making every effort to maintain the scientific relevance of their missions. At the end a panel of scientists chose the space telescope (or telescopes) which was worth of flying into space.

We strongly believe that this approach, which uses both the role-play approach, the hands-on strategy and some more formal education constitutes a format which can easily repeated in most of the European countries to fight the disaffection of secondary school students towards science curricula at university level.

P5. Communicating Astronomy in South Africa

Isobel Bassett (*South African Astronomical Observatory, South Africa*)

Communicating astronomy in South Africa has many challenges. The South African Astronomical Observatory has been involved in the field for decades both in Cape Town, a metropolitan area, as well as in the Northern Cape Province, a sparsely populated rural part of South Africa. Our experiences in this field will be discussed as well as the approaches that we have adopted in addressing some of the challenges.

P6. PARTNER. Radioastronomy For the Students

Carmen Blasco (*Instituto Nacional de Tecnica Aeroespacial (INTA), Spain*)

The acronym PARTNeR stands for Proyecto Academico con el Radiotelescopio de NASA en Robledo (Academic Project with the NASA's radiotelescope at Robledo). NASA has three satellite tracking stations all over the world:

- CDSCC (Canberra Deep Space Communications Complex). Australia
- GDSCC (Goldstone Deep Space Communications Complex). USA
- MDSCC (Madrid Deep Space Communications Complex). Spain

One of the 34 meter antenna located at MDSCC is not used for satellite tracking any more and thanks to an agreement between the spanish space agency (INTA, Instituto Nacional de Tecnica Aeroespacial) and the american space agency (NASA), it is offered to the students to perform radioastronomical observations. For students younger than 15 years old, astronomy hands-on projects can be accessed according to the age and topic selected by the teachers. They are available at the Training and Visitors Center, attached to MDSCC. For students older than 15 years old, the radiotelescope can be accessed via internet. Students can operate the antenna from the school/university and perform radioastronomical observations. There are two scientific projects they can join:

- X-ray binaries monitoring. An x-ray binary consists of a compact object (black hole or neutron star) and a "normal" star, swallowed by the compact object. Some of these systems show radio bursts and their study can give us information about the black hole/neutron star, accretion rate, etc.
- Galactic Plane maps. Most of the material of our Galaxy is located at the galactic plane (supernova remnants, HII regions, etc.) Nevertheless, any other project can be held after an evaluation by the scientific committee.

P7. Showing the Diversity of Astronomy's Professions

Thierry Botti (*Observatoire de Marseille, France*)

The popular appeal of astronomy allows us to regularly share with a large audience the latest advances in our knowledge of the Universe, via numerous and varied outreach activities.

These activities are an opportunity for us to present the diversity of professions involved in this fabulous quest of knowledge, including technicians, engineers and scientists in numerous fields. We thus communicate to the public an overview of the many players in the adventure of astronomy, hopefully encouraging young people to choose scientific studies.

Films, on-line videos, exhibition panels, round table discussions and press releases are among the many easily-implemented possibilities of attracting the attention of a local or even wider public.

P8. Astronomy at Schools and the UNAWA Initiative in Venezuela

Enrique Torres & Cesar Briceno (*Centro de Investigaciones de Astronomia-CIDA, Merida, Venezuela*), **Cecilia Scorza** (*Landessternwarte - ZAH, Heidelberg, Germany*)

Venezuela is preparing for the IYA 2009 with a series of activities aimed at bringing science and astronomy to the public at large, but with a strong emphasis on the younger generations. The Centro de Investigaciones de Astronomía (CIDA) is the prime astronomy research institution in the country, with a long tradition of communicating Astronomy to the community. Its Public Outreach program runs the Visitor Center at the National Astronomical Observatory, that receives over 20000 visitors each year, many of whom are special groups from schools around the country. Recently CIDA has established a collaborative initiative with the Universe Awareness Programme for young disadvantaged children (UNAWA) with support of the Venezuelan UNESCO

delegation. We will present here the results of this UNAWA pilot project, and the ongoing experience and plans for communication and education in science and astronomy across all the country.

P9. An Open Day for Children: The “Bambineide” in Arcetri

Albanese, L., Biolatti, A., Brunetti, F., Galli, D., Gasperini, A., Mannucci, F., Masini, E., Pacini, F., Palla, F., Pastorini, G., Risaliti, G., Salvati, M., Sani, E., Stefanini, P. (*Arcetri Astrophysical Observatory-INAf, Firenze – Italy*)

In addition to its daily outreach activities, once a year the Arcetri Observatory opens its gates to the children of Florence in the age range 4-11. This implies the arrival of about 500 children and a similar number of parents. During a visit, lasting about 2 hours for each group, the children can partake in a show inside a Starlab planetarium, listen to stories about the constellations and their mythology, take part in scientific experiments and/or watch a play of scientific theatre (in 2007 dealing with the discoveries of Galileo). In the evening, if the sky is clear, telescope observations and the identification of the main stars and constellations become the main attraction. The success of the program is enhanced by reading children poetry related to astronomy. With some modifications, the “Bambineide” has been travelling to several Italian cities.

P10. EUROPLANET is Celebrating a Very Spatial Year

Eleni T. Chatzichristou (*Institute of Astronomy & Astrophysics, National Observatory of Athens, Greece and the Europlanet Outreach Steering Committee*) & **Yale Naze**

Europe is now one of the leading space explorers. It all started on October 4, 1957 with the Soviet probe Sputnik that launched humanity in the space era. To celebrate the 50th anniversary of our space beginnings and the ten years of the Cassini-Huygens launch, the Europlanet consortium is organizing special events and manifestations in several member countries and a pan-European contest of photography, drawing and art works, inspired by our solar system and the space exploration. In this contribution we will give a pot-pourri of these celebrations which, with their diversity and innovative ideas, constitute a prime example of communicating astronomy with the public.

P11. Sharing Images Intelligently: The Astronomical Visualization Metadata Standard

Robert L. Hurt (*Spitzer Science Center*), **Lars Lindberg Christensen** (*ESA/Hubble*), **Adrienne Gauthier** (*Steward Observatory, University of Arizona*)

This poster describes a standard for Astronomical Visualization Metadata (AVM) metadata that has been developed for astronomical audiovisual products — artist's conceptions, simulations, photography, video products etc. — defining a common set of content fields suited for the needs of education and public outreach (EPO) community, and ultimately the general public, educators, press etc. Such resources are currently scattered across the Internet in a variety of galleries and archives, but are not searchable in any coherent or unified way.

The AVM standard includes both the metadata schema for describing outreach images and the method by which the metadata may be embedded within the image file. Embedded metadata are commonly in use in digital photography and the publication industry, and the standard described here easily integrates into those workflows.

The first generation of tools are now available to tag images with this metadata, which can be embedded with the image file using an XML-based format that functions similarly to a FITS header. As image collections are processed to include astronomy visualization metadata tags, extensive information providing educational context, credits, data sources, and even coordinate information will be readily accessible for uses spanning casual browsing, publication, and interactive media systems.

P12. Astronomy in Inca Empire: A Ceque Based Calendar

D. Bourguignon (*OV-UFRJ*), **N.G.C. Correa**, **F.P. Magalhes**

This work is a report about different kinds of arrangements and organization of the Inca astronomical calendar, approaching archaeological vestiges in Cuzco, such as observatories aligned to celestial objects which were observed for the computation of the time. We also analyze the ceques lines that can be associated to these techniques of Inca astronomical observation, according to the chroniclers and the researches in archaeoastronomy

P13. Hubblecast – the world's first Full HD Vodcast?

Lars Lindberg Christensen (*ESA/Hubble*), **Martin Kornmesser** (*ESA/Hubble*), **Raquel Yumi Shida** (*ESA/Hubble*), **Will Gater** (*ESA/Hubble*) & **Joe Liske** (*a.k.a. Dr.J, ESO*)

Video Podcasting, or Vodcasting, is the latest evolution of the podcast revolution of the past few years. Now on-demand content is shifting from headphones and commutes to portable devices, computers, and televisions in the form of video. The appeal of accessing video content at will is growing and attracts especially the young demographic segment.

The Hubblecast was initiated in March 2007 and has since become one of the most popular science vodcasts in the world. This poster outlines some of the features and statistics from this production. One of the main conclusions is that video podcasting can make a real difference to the overall impact of a science communication office – if not even revolutionize it, as in the case of the Hubblecast.

P14. CAB's Robotic Telescopes and their Use as an Educational Tool

Luis Cuesta (*Centro de Astrobiología (Instituto Nacional de Técnica Aeroespacial), Spain*)

Robotic telescopes are a new tool that is changing in many aspects the way to make Astronomy. The use of this type of telescopes quickly has been adopted in some of the prolific fields of this science, including the extrasolar planet search. In this particular field, robotic telescopes have demonstrated to an efficiency and an agility that hardly would have been obtained with conventional telescopes. But, in addition to the uses typically scientists, robotic telescopes are called to being fundamental pieces in the practical education of Astronomy. Numerous institutes and museums have begun to develop their own robotic telescopes to take to the classrooms Astronomy like a way to understand the Universe that surrounds to us. Establishing collaborations between institutions of different countries in opposed Earth places interactive observations can be made in the classrooms without change school schedules, which is from an enormous interest for the educative community.

P15. Net of INTA Telescopes

Luis Cuesta (*Centro de Astrobiología (Instituto Nacional de Técnica Aeroespacial), Spain*)

The Spanish Instituto Nacional de Técnica Aeroespacial has a net of three telescopes distributed along the mainland. They are located in some of the best places for Astronomy in Spain. The first one is in the Observatorio de Calar Alto, in Almería, at more than 2100 m high. The second one is in the area of Calatayud, in Zaragoza, at the summit of a 1400 m high mountain. The last one is at the campus of INTA, in Madrid. The three have diameters between 40 and 50 cm and will be available for divulgative tasks.

P16. 1967-2007: Forty Years of Outreach Activity at Catania Astrophysical Observatory

G. Cutispoto (*INAF - Catania Astrophysical Observatory, Italy*), **G. Leto**, **G. Strazzulla**, **F. Zuccarello**

The mountain station of Catania Astrophysical Observatory (dedicated to its founder and first director M.G. Fracastoro) is located at an altitude of 1725 m a.s.l on the slopes of Mt. Etna. It was completed in 1965 and at that time equipped with four telescopes, the larger a Cassegrain reflector with a diameter of 91cm. A couple of years later a regular program of visits for schools (in spring) and private citizens (in summer) was started. Moreover, daytime visits were organized for schools at the "A. Riccò Observatory headquarters in Catania. In the last years the request for visits at the Observatory, public conferences and courses for teachers and/or students has steadily increased. It was then decided to create the POE (Public Outreach and Education) office, with the task to organize and coordinate such activities. Besides the traditional visits to the "M.G. Fracastoro" station and to the "A. Riccò headquarters, the POE has been organizing a number of further activities, including the so called "Special Events" (such as the public observations of the Venus transit in 2004, of the solar eclipses in 2005 and 2006 and the observations of the Perseides meteor shower) or, more recently, competitions for schools. One of these was the "Osserva il cielo e disegna le tue emozioni" (Observe the sky and draw your feelings), a competition for students of primary schools carried out this spring in the framework of the International Heliophysical Year Outreach activities (other related activities included the dance exhibition "Sun mit"). Several booklets on topics such as "The Sun" or "The solar and lunar eclipses" have also been realized, and are both distributed free of charge to the schools and made available for download in the POE webpage. In the last years an average of more than 8500 persons/year have participated to the activities organized by the Catania Astrophysical Observatory.

P17. Astronomia.pl Portal Activity in 2006-2007

Krzysztof Czar, **Jan Pomierny** (*Astronomia.pl*)

In the poster we have presented the latest activity of the Astronomia.pl – Polish Astronomy Portal, the most popular internet portal about astronomy in Poland. Astronomia.pl is widely extended portal, covering news, database of articles, books, lectures, astronomical calendar, newsletter, virtual library of diploma thesis, discussion forum, chat, galleries, catalogue of websites and other services. The portal was engaged in opening of Supernovae Portal in Europe Hands-On Universe project. Astronomia.pl was also one of organizers of SuperNova School contest for schools in Poland. Each year the portal actively support Astroprocent initiative. This program allows anyone order to use 1% of his or her taxes for amateur astronomy. In 2006 we organized a special service about Sun eclipse. In the same year we have started special service about New Horizons mission. In the same year we decided about our first media patronage over a book (about Yuri Gagarin). Recently the portal has become a source of RSS news headlines for many electronic public media. The portal has been still developing multiple dependent websites like Kopernik.pl – biographies of astronomers, Planetarium.pl – about planetaria in our country, AstroWWW – a place

for websites of astronomy amateurs. Astronomia.pl was also honoured with prizes. We received a diploma of recognition from the project Interklasa and a special mark out in the contest „Science Communicator” organized by Ministry of Science and Higher Education and service Science in Poland of Polish Press Agency.

P18. OBLIGATORY COURSE UNIT!: Trainee astronomers learn to communicate their future scientific results in a Master's Degree Course in Astrophysics at the University of La Laguna and the Instituto de Astrofísica de Canarias.

Carmen Del Puerto (*IAC/ULL*)

A scientist not only must do science, but must also know how to communicate it. It is possible that he even ends up by devoting himself professionally either to outreach or to teaching. Therefore, the Master's Degree Course in Astrophysics, created by the University of La Laguna (ULL) and the Instituto de Astrofísica de Canarias (IAC), includes in its programme the obligatory course unit "Communicating Astronomy: Professional Results and Educational Practice" (in Spanish, "Comunicación de Resultados Científicos y Didáctica de la Astronomía"). In this poster, I present the results of this experience during the academic year 2006-2007, in which the Master's students, in addition to learning the skills necessary to communicating their results within the scientific community, have also studied the language of popularization in a practical and fun way through role-playing as science writers and schoolmasters in the classroom.

P19. IYA2009 legacy: What the Universe has done for us, a global project on education and culture.

Francisco Diego (*University College London*)

IYA2009 will generate a lot of excitement about the Universe all over the world. In the long term, the legacy of this important event would be to keep 'bringing Astronomy to the citizens of planet Earth' for generations to come. Following this, I describe here a careful selection of easy but fundamental concepts about the simple nature, distant origin and long term evolution of the Universe and life within it (basic Astrophysics and Cosmology) and propose ways to promote them globally at elementary levels of education. The presentation takes inspiration from my long experience as a lecturer visiting schools, where amazingly deep questions from uninhibited young minds provide an invaluable wealth of incipient wisdom. There is also a description of the same fundamental concepts but expanded into a cross curricular panorama, involving mythology, art, religion, etc. and also told with an enchanting and poetic language that engages the general public. This follows very positive feedback from large audiences at public lectures and specific planetarium shows created at CosmicSky. The final discussion deals with the urgent need to find ways of keeping alive, of nourishing, of weaving these expressions of curiosity-driven knowledge into the cultural fabric of a modern society, otherwise obsessed with technology and short term greed that may push it farther and farther away from the excitement of wonder, exploration and discovery of Nature, of the Universe, for its own sake.

P20. Galileo and Darwin 2009. a Universe for life

Francisco Diego (*University College London*)

2009 will be a remarkable year for science celebrations. It will mark the 400th anniversary of the first observations with telescopes. It will also be the 200th birthday of Charles Darwin and the 150th anniversary of his publication of the Origin of Species by Natural Selection. The works by Galileo and Darwin produced the two greatest revolutions in our perception of the natural world and both of them had, and still have, severe confrontations with strong religious beliefs. Here I outline a few ideas to link astronomy and biology with topics like the chemistry of the Universe, extra solar planets and the origin and evolution of life. Resulting events should include exhibitions, lectures, debates, cafe-scientifiques, articles, TV programmes, etc.

P21. "The lives of Galileo" A journey through the history of astronomy

Fiami

An educational comic book project for the 2009 international year of astronomy. Ideal for schools, museums and observatories.

Who was Galileo? What is astronomy?

Everybody is familiar with the names Galileo, Eratosthenes and Halley. But what do we know about them? For the first time, astronomy is presented as an historical, accessible and humoristic comic book. In 40 pages in color, Galileo plays different roles through the ages of great astronomical discoveries.

This pedagogic project is encouraged by the Geneva Observatory and schools in Switzerland.

The quality of Fiami's work has been tested recently by the comic book "The lives of Einstein" which was a unanimous success in the scientific and educational circles.

Purpose of "The lives of Galileo":

To point out the importance of astronomy in the history of mankind by presenting it as a succession of exciting human adventures. Using humour and drawing to popularize astronomy.

P22. Looking Through a Telescope during the IYA 2009

Richard Tresch Fienberg (*Sky & Telescope*)

The main goal of the IYA 2009 effort in the United States is to offer an engaging astronomy experience to every person in the country. Since the IYA is a celebration of the 400th anniversary of Galileo's introduction of the telescope to astronomy, the key engaging experience that U.S. astronomers will offer is the opportunity to look through a small telescope at the celestial targets Galileo looked at: the Moon, Venus, Mars, Jupiter, Saturn, the Pleiades, Praesepe, the Trapezium, Mizar/Alcor, and the Sun.

Another goal of the U.S. IYA effort is to cultivate sustainable partnerships. "Sidewalk astronomy" is an ideal vehicle for astronomy clubs and individual amateur astronomers to participate in IYA 2009. In addition to their own programs, local amateurs will set up their scopes at events held by professional organizations, including NASA, universities, observatories, planetariums, and museums of science or natural history. The relationships forged during this large-scale collaboration for public outreach in astronomy will continue beyond 2009.

We aim to give 10 million people their first look through an astronomical telescope in 2009. This is achievable if, for example, 100,000 amateur observers each show the sky to 100 people.

Millions of small telescopes are sold every year, but anecdotal evidence suggests that most are rarely used for astronomy. Our "telescope amnesty" program will invite people to bring their little-used telescopes to IYA 2009 events, where astronomers will teach them how to use them and offer advice on repairs, improvements, and/or replacements, encouraging more people to stay involved in the hobby.

We encourage organizers of IYA 2009 celebrations in other countries to promote similar activities, with a common goal of giving 100 million people worldwide their first look through an astronomical telescope.

P23. Musée De L'astronomie: De La Divulgation À La Préservation De La Mémoire Scientifique

Ronaldo Rogério de Freitas Mourão

L'importance du journalisme scientifique est intimement associée aux multiples dimensions qui impliquent la science dans la production complexe des sociétés modernes. Une de ces dimensions concerne la créativité, le pouvoir d'innovation de la science. Dans le processus scientifique, en tant qu'action socialement organisée, toutes les innovations possèdent un énorme potentiel capable de déstabiliser ou de rompre le système social. Pour ces raisons elles sont généralement combattues afin de ne pas être intégrées au savoir et utilisées comme force productive entrant en confrontation avec les structures de la société. Car une des dimensions de la science est justement sa force productive et à mesure que la science est utilisée comme processus de capitalisation, ce facteur de production devient déterminant dans les critères d'incitation à la recherche scientifique : l'État et l'activité privée vont développer les champs du savoir dont les découvertes pourront être employées directement ou indirectement comme forces productives. Ainsi la science en tant que savoir pur, création libre, cesse d'exister. De ce fait, certains champs du savoir théorique et pratique seront davantage encouragés et divulgués alors que d'autres se verront atrophiés, réprimés ou muselés, car ne servant pas d'instruments d'intensification du rythme du processus civilisateur. On doit chercher à démontrer que la science n'est pas constituée de « faits » mais de processus dont l'élaboration dépend de toutes les instances de la société. Lorsqu'on rend compte d'une découverte, il faut souligner que ce n'est pas l'idée d'un seul, mais de plusieurs individus qui, au fil des ans, ont contribué à ce que cet objectif soit atteint. On ne doit pas oublier que des décisions politiques ont aussi participé à ce qu'une telle innovation soit possible, grâce à des incitations et à des encouragements. En réalité, la divulgation scientifique est une activité tournée vers la démocratisation du savoir, d'une énorme importance politique et socioéconomique. Évidemment le journalisme scientifique peut se transformer en outil de domination technologique lorsqu'il divulgue la connaissance produite dans les pays les plus développés, ce qui aggrave la dépendance des pays émergents. D'autre part, on ne peut pas exiger des médias l'adoption d'une attitude xénophobe, qui privilégie les seules questions nationales, oubliant les progrès technico-scientifiques des autres pays développés. Quels doivent être les objectifs de la divulgation scientifique? On doit considérer qu'elle est surtout éducative, adressée à l'ensemble de notre population. Lorsqu'on popularise le savoir, on doit employer un langage facile et direct, qui permet sa compréhension par le commun des mortels. Le journalisme scientifique doit montrer aussi – j'insiste – que toute innovation ou fait isolé est la conséquence d'un processus scientifique auquel plusieurs savants se sont consacrés au fil du temps. Il doit aussi éveiller un intérêt permanent pour la science, montrant que les « idées en vogue » se rattachent à des intérêts secondaires, en général complètement à l'opposé des objectifs de la science. Dans cette noble activité de divulguer la science, le journalisme scientifique doit contribuer à l'éveil des vocations, en initiant les jeunes au monde du savoir, et en agissant comme instrument d'éducation scientifique des adultes. On ne doit jamais séparer la divulgation de la politique scientifique, en essayant de faire comprendre au lecteur ce qui a motivé telle ou telle « information » et en faisant que le peuple comprenne qu'il doit se sentir impliqué par les décisions sur l'allocation de ressources, faites par le parlement. Car les activités scientifiques de l'État sont financées par le peuple, qui paye les imprts et en conséquence toute production du savoir doit viser à son bien-être social. Au-delà de la préoccupation de divulguer les sciences, c'est-à-dire, de réduire le nombre des exclus du savoir scientifique et technologique, un autre aspect important est le rétablissement de l'enseignement de l'Histoire des Sciences et des Techniques, comme un processus fondamental d'

apprentissage et aussi un des éléments fondamentaux de la divulgation scientifique. On ne peut pas rendre populaires les sciences et les techniques, si elles sont dissociées de leur histoire.

P24. Do It Yourself Astronomy

M.T. Fulco (*INAF-Osservatorio Astronomico di Capodimonte-ITALY, Italy*) and **M. Capaccioli**

“Do it yourself Astronomy” is an educational project of the INAF-Astronomical Observatory of Capodimonte, Italy, designed for high school students and aimed at attracting the interest of the youngsters for astronomy and for elementary optics through the practical experience of grinding an astronomical mirror. To the purpose an ad hoc kit of tools, a user manual and a demonstration movie on DVD have been prepared. The project has been successfully tested with 20 schools of the Naples area. The coming implementation is to include the construction of a simple wooden telescope mount to be assembled from a special kit, so that the final product will be a working instrument, appropriate for a first approach to the observation of the night sky. This contribution will report on the design of the project, on the results of the first two trials (years 2005 and 2007), on the foreseen implementations, and on the possible association of this cheap idea to the developments programs for the Third World.

P25. From The Hill Of Galileo to the Edge of the Universe: Outreach Activity at The Arcetri Observatory

D. Galli (*INAF Osservatorio Astrofisico di Arcetri, Italy*) et al.

P26. Gemini Observatory: Outreach Program of an International Organization

Ma. Antonieta Garcia (*AURA-GEMINI OBSERVATORY, Chile*), **Janice Harvey** (*AURA-GEMINI Observatory, USA*) and **Peter Michaud**

The Gemini Observatory international partnership of seven countries including the United States, United Kingdom, Canada, Chile, Australia, Brazil and Argentina. Gemini consists of twin 8-meter optical/infrared telescopes located at two of the best locations on our planet for astronomical research: Hawai'i and Chile. Together these telescopes can access the entire sky. The Gemini South telescope is located at an elevation of over 2,700 meters on a mountain in the Chilean Andes called Cerro Pachón. This location is about 20 kilometers from the long-established Cerro Tololo Inter-American Observatory (CTIO) which is operated by the U.S.'s National Optical Astronomical Observatory (NOAO). The Frederick C. Gillett Gemini North Telescope is located on Hawaii's Mauna Kea and is part of the international community of observatories that have been established there to take advantage of the superb atmospheric conditions on this long dormant volcano that rises over 4,000 meters into the dry, stable air of the Pacific. Both of the Gemini telescopes have been designed to take advantage of the latest technology and thermal controls to excel in a wide variety of optical and infrared capabilities. One example of this is the unique Gemini coating chamber that uses "sputtering" technology to apply protected silver coatings on the Gemini mirrors to provide unprecedented infrared performance. Gemini has consistently put considerable effort into educational programming for the two host communities (Hawaii and Region IV of Chile). This has resulted in an increased awareness in our local communities of the benefits of having state of the art observatories nearby, and created consciousness about preserving dark skies to allow other scientific projects to take place in the future. However, having two telescopes located so far apart gives Gemini a unique set of circumstances that need to be considered when implementing any educational programming. These circumstances also provide a powerful combination of resources and synergies that allow for the development of innovative programs that are not available to other institutions.

We know that there are many ways to build an effective PIO effort for a major observatory, but few formulas to follow. Fortunately at Gemini everyone from management to the partnership recognized the importance of doing outreach and education in order to assure the long-term health of the organization.

To meet those goals, education has been a main key area of activity that is being developed in terms of creating a pedagogical knowledge, techniques and tools to more effectively share Gemini's science with all learners.

Some of the most effective initiatives that Gemini is currently covering are:

- Teacher training: a well developed training in conjunction with RedLaser (NOAO) and Gemini North Hawaii which benefits teachers providing the necessary tools to teach astronomy in their curriculums.
- Virtual Tour: interactive educational CD-Rom highlights many aspects of Gemini science and technology currently just released in the Spanish version.
- StarLab Portable Planetarium: This Gemini "Flagship" outreach program provides school programming and educator loan opportunity with innovative portable planetariums both in urban areas and in remote country locations.
- StarTeachers Exchange: Initiated in 2003 this program provides an opportunity for local teachers in Gemini host communities to visit and teach in Chile and Hawai'i. Two versions of this pilot program have been successfully achieved benefiting directly a total of 12 teachers and over 20,000 students at both locations.
- Journey Through the Universe

All this vast experience as an international organization makes Gemini Observatory a unique yet a perfect nudge to become an active lead member at the International Year of Astronomy in 2009. In Chile, Gemini has been working with the local IYA group since March 2006. Many of the astronomy education organizations throughout the country have already met several times, and the scenarios have been divided into society and education fields.

In order to provide a diverse and most complete coverage of the astronomy outreach area, all the participants have joined sub groups orientated directly into their specific work abilities and experiences. Soon the Chile IYA 2009 group will have more concrete goals to achieve and Gemini Observatory will be a part of these ideas.

P27. Communicating Astronomy: The Role of an Observatory Library

Brunetti, F (*INAF Osservatorio Astrofisico di Arcetri, Italy*), **Gasparini, A.**

How can an Observatory Library support the communication of science to the general public? We will describe how a highly specialized astronomical library can also play a key role in disseminating astronomical knowledge, making scientific results available across a wide range of levels, from professional to public to educational. This outreach activity requires several steps, ranging from the preliminary identification and scrutiny of sources to the production of new information material (e.g. maps, brochures, and DVDs). In particular, we will describe some recent experiences in the dissemination of astronomical information to the general public, especially teachers and children, analysing some results of this activity, such as a bibliography of Italian astronomical books for children, a review of scientific books and other multimedia products.

(<http://www.arcetri.astro.it/BIBLIO/edu/librib.html>).

P28. The Virtual Telescope Project: Enjoy the Universe from your Desktop

Gianluca Masi (*The Virtual Telescope Project*)

The Virtual Telescope is a new robotic facility making possible for people worldwide real time observations of the sky. Complete scientific instruments are made available, to fit the needs of researchers, students and amateur astronomers.

All the instruments are controlled in real time by the remote user and live, qualified assistance is made available from a professional astronomer, to assist and address the observing experience.

The project consists in several, remotely controlled and independent telescopes, including solar H-Alpha and Ca/K scopes for daily observations. The diameters of the telescopes range from 36 to 4 cm.

The project and the involved technology are presented here, as well as the peculiar benefits for students and other users. Some outstanding results (both scientific and of general interest) are also shown.

To learn more about the Virtual Telescope, please visit <http://virtualtelescope.bellatrixobservatory.org/>

P29. IYA2009: Current and Planned Activities in Latvia

Martins Gills

Latvia is pretty small country, but with some good astronomical traditions. Current communication channel for astronomers to the general public is through the periodical *Zvaigznota Debess* ("The Starry Sky") and occasionally through two other popular science magazines. Important role in communication among astronomy amateurs plays the Latvian Astronomical Society. Astronomy Development Foundation has developed a Mobile Observatory project – a truck equipped with telescopes and observatory dome. The Mobile observatory can reach any location in the country, and has made a tour in the Northern Europe. Professional observatories accept organized visits. The plans for IYA2009 presume to focus on 4 groups: Primary school students, Secondary school students, educators and the general public. The current pool of activities covers a wide range of activities starting from simple informative events to interesting creative activities for the focus group. IYA2009 Latvia node would also like the experience of using the teamwork supportive free web tools by Google. Most useful right now are found to be web document environments, mapping service, image sharing and the web page services.

P30. Ukrainian Network of Internet Telescopes: Addressing Multiple Audiences...

V. Godunova (*International Center for Astronomical, Medical & Ecological Research, Ukraine*), **Ya. Romanyuk, B.Zhilyaev**

The UNIT project (Ukrainian Network of Internet Telescopes), which started at the end of 2006, aims at the use of new technologies and systems to better demonstrate opportunities of modern astronomy and to create an interface between society and basic science. At present, the network includes three small telescopes installed in southeastern Europe (two telescopes in Ukraine and one telescope at the Ukrainian observatory Terskol in the Northern Caucasus). The telescopes are robotic; their work can be synchronized up to 1 ms by the use of GPS technologies. The main objectives of the UNIT are: - to integrate research into teaching and education, - to inform the public about current research, - to promote a new type of cooperation between society and basic science, and - to contribute to a complete time coverage and follow-up of variable astronomical objects. This project also comprises the development of a web (<http://www.unit.univ.kiev.ua>) with an extensive set of background information and guides to performing observations and data processing. One segment of the site will allow the users to perform

real-time astronomical observations with robotic telescopes. Another segment will be useful for scientists, which require specialized, value-added information. Especially, a distinctive feature of UNIT is an opportunity to study transient events and variable stars using synchronous observations with the aid of robotic telescopes located at remote sites. The UNIT team updates and expands continuously the service's capabilities of the network to meet the needs of its users and to encourage people to be involved in scientific work.

Acknowledgements This project is supported by the Science and Technology Center of Ukraine (project #4134).

P31. CAP in the UK

Paul Haley (*The SHARE Initiative*)

The SHARE Initiative (known as 'TSI') are a social enterprise delivering 3 projects on astronomy in the UK:

1) Webb-SHARE: Celebrating our Victorian Astronomy Heritage is a 3 year project celebrating the lives of 3 amateur astronomers living in Herefordshire, England in the 1850s. IYA-2009 coincides with the 150th anniversary of the Revd. Thomas William Webb's book - "Celestial Objects for Common Telescopes". Webb-SHARE is funded by the Heritage Lottery Fund.

2) Space Watch: is a 3 year inter-generational learning project linked to 50 years of space exploration. Family learning events have been organised for a range of groups including those with sensory impairment. Funded by the Science & Technology Facilities Council the project has linked closely with the Royal National College for the Blind - and their T3 talking tactile resource for the visually impaired called 'Unseen Universe'.

3) IHY in Schools: is a touring exhibition linked to how the Sun can affect the Earth. The International Heliophysical Year 2007-09 provides great opportunities to link the arts with science in public outreach work. A Magic Planet digital globe is used to show the latest results from space probes like STEREO and Hinode.

This poster illustrates a variety of delivery models for communicating astronomy to children, young people and adults with a wide range of learning needs.

An oral presentation - involving an 8 minute DVD - will also be possible. Copies of the DVD will be available at a nominal cost.

P32. Simple, Joyful, Instructive: Make an Unique Telescope of your own and Explore the Universe

Yasuharu Hanaoka

Presentation aims to share our ideas and methods for educational and outreach programs, which are offered by the Society of Little Astronomers, authorized nonprofit organization, Japan. Our goal is to develop science literacy for all members of community with the help of people's intrinsic interest in Astronomy. It is notable that astronomy is important tool for fostering growth of science literacy. Say now our slogan: Open your eyes to the universe, feel the Joy of Astronomy.

Let's enjoy together and enrich your life. Our workshop programs for the community have been successful to ignite the joy for the Astronomy by using very light and easy to make telescopes which the participants make by themselves and with which they observe. We are always pleased to hear joyful glee here and there at the moment of climax when they focus their telescopes on a crescent moon. It is really the fact that none forgets the first image of the moon with the first telescope that one might be obtained from a store. Wonderful is it if with the telescope made by oneself. To observe the starry night with a telescope of one's own fabrication is Very impressive attractive, never forget, for the participants.

In the presentation we figure out how such workshop are performed. This program. it is very simple but joyful and educational.

P33. Careers and Interactive Technologies at Gemini Observatory

Janice Harvey (*AURA-GEMINI Observatory, USA*), **Antonietta Garcia** (*AURA-GEMINI OBSERVATORY, Chile*)

Gemini Observatory feels it is important to let the public know that there are a wide range of astronomy related careers that most people are not aware of. We hope to accomplish this by providing a video profiling different job opportunities available at Gemini. The video will be included on our next CD-ROM/Internet-based Virtual Tour and also eventually available over Gemini's website.

Gemini Observatory is now offering a new educational program designed to share live science with educational audiences using the Internet2 (I2) educational/research network. Called "Live from Gemini" the program allows audiences to join a Gemini Observatory astronomer live from the control room and experience real science in a genuine observatory environment. In 2007 the program is expanding into the international partnership of the Gemini Observatory (US, Canada, UK, Australia, Brazil, Argentina and Chile) and will be offered to educational institutions in these countries with I2 capabilities on a first-come-first-served basis. The program consists of a multi-media overview of the observatory (complemented by an interactive CD-ROM/Internet-based Virtual Tour which is sent in advance of each session), followed by recent science highlights and ends with a live Q&A session with a staff astronomer. This session will provide an overview of the program, details on how to participate and will feature a live link to the Gemini control rooms in Hawai'i and Chile.

P34. Traditions of the Sun - Maya Astronomy and NASA Solar Science

Isabel Hawkins (UC Berkeley Space Sciences Laboratory and NASA Sun-Earth Connection Education Forum, California, USA) & **Jose Huchim Herrera** (Instituto Nacional de Antropología e Historia; Zona Arqueológica de Uxmal, Yucatan, Mexico)

Humans across all cultures have venerated, observed, and studied celestial objects for thousands of years. Long ago, the great Maya civilizations of Mesoamerica were keenly attuned to the cycles of nature and the Universe. The great Mayan archeological sites are a testament to the great civilization that constructed them. The ancient Maya were more than just expert builders and architects; their understanding of the world around them was impressive. Among their many accomplishments, the Maya developed a system of writing and complex calendar to mark the passage of time. Like other scientists, the Maya have always been careful observers, and more than a thousand years ago, they recorded the motion of the planets, the Sun, and the Moon, predicting eclipses. These observations were used to create a complex calendar to organize the events of their world. The Maya built great cities containing grand, magnificently decorated buildings, some of them aligned with the Sun, Moon, and the stars to mark important times of the year. Their interest in understanding our relationship with the Universe is a quality that is shared by humans all over the world.

Many of the Mayan astronomical traditions are still practiced today by the Maya of the Yucatán peninsula, Southern states in México, and other areas in Mesoamerica. Traditional farming communities today time the cultivation of corn and other crops by observing the movements of the Sun and the stars. We'll give you a glimpse of the living culture of the Mayan people in the Yucatán, where science and astronomy are practiced in a holistic manner, integrating every other aspect of their culture into a native way of knowing, a native science. You'll be able to see and hear the Mayan people speaking Yucatec Maya, the language spoken by more than 1 million people in the Yucatán peninsula today. Our hope is that you'll increase your interest and knowledge of the Mayan people, learning to appreciate the legacy of their ancestors, and also the enduring wisdom reflected in the daily lives of Mayan families.

In the context of this "Communicating Astronomy with the Public" conference, we will present the results of several education and public outreach programs that position astronomy within its cultural context as an effective means of capturing the interest and enabling authentic participation of under-represented populations in science.

P35. Effort to Popularize Astronomy in Indonesia

T. Hidayat (*Bosscha Observatory, Institut Teknologi Bandung, Indonesia*)

Being the only large astronomical observatory in Indonesia, the Bosscha Observatory carries multiple responsibilities in the advancement of astronomy in Indonesia, namely research, formal university education, and informal (public) education. The latter is carried out by researchers of the Bosscha Observatory as well as students (undergraduate and graduate) of the Astronomy Department in the Institut Teknologi Bandung through the public outreach programs. This consists of regular visits in day time to the observatory, public nights (more restricted), and open house once a year. During semester breaks in June and July, the observatory organizes the Astrocamp Program for school children, i.e., one night program to introduce astronomy and to do observations using small telescopes in a recreational educative manner. These whole programs could reach around 75,000 people per year, mostly school children. Recently, we publicized star map in cooperation with kid magazines whose wide circulation to familiarize stellar constellations for children. In a more formal level, over the past five years, most of Bosscha Observatory staffs also actively participate in organizing astronomy olympiad for students in junior and senior high schools in cooperation with Ministry of National Education. It is one of eight national olympiads, organized annually by the ministry. First, most schools select and send their best students to participate in the olympiads for regency/city level in April. The best students subsequently compete in province level in June, and then the champions of each province go to national level in September. Finally, five of them are selected to go to International Astronomy Olympiads (IAO), held every year in October/November in a host country. Last year, IAO was its eleventh competition and was held in India. This program proves efficiently to introduce astronomy properly in schools and induces higher needs for teachers to enhance their scientific educational competence. Within five years, it is expected that misperception on astronomy among teachers and students are significantly reduced. More elaborated public outreach programs are in preparation for the forthcoming IYA 2009 to stimulate public awareness on the importance of astronomy for the society.

P36. Extremely Large Telescopes for IYA 2009

Dan Hillier (*Royal Observatory Edinburgh, Visitor Centre, United Kingdom*), **John Davies**, **Eleanor Gilchrist** (*Royal Observatory, Edinburgh, United Kingdom*)

Sometimes astronomy can see into the future as well as the past. Over the next twenty years, astronomy in optical and infra-red wavelengths will be revolutionised by the next generation of (probably two) Extremely Large Telescopes. These promise to be outstanding achievements of science vision, technology development and international collaboration. The timescale of their development means that some of today's schoolchildren will be building and using the ELTs, while many more will be hearing about and paying for their discoveries.

The ELTs merit being the focus of a major outreach programme. The national (as distinct to international or local) dimension of such a programme is crucial to its success. It ensures that ideas and materials that are generated will be widely taken up by the media, school and informal education sectors, which are generally organised at a national level. The Royal Observatory Edinburgh Visitor Centre has experience of running successful countrywide outreach programmes. The observatory is also home to the UK Astronomy Technology Centre which is leading on technology research and design studies for the European ELT. Together, these experiences provide the basis for our proposals for a successful E-ELT outreach programme – the launch of which might become one focus for International Year of Astronomy 2009.

P37. US Plans for the International Year of Astronomy 2009

Douglas Isbell (*National Optical Astronomy Observatory, USA*) & **Susana Deustua** (*American Astronomical Society, USA*)

To coordinate the U.S. celebration of IYA 2009, the American Astronomical Society (AAS) appointed two committees whose members are drawn from leading organizations that engage in astronomy education and public outreach in the United States, Canada and Mexico. The Program Committee is charged with developing themes and activities that spread awareness of astronomy's rich scientific and cultural role throughout human history; the Development Committee will work to secure funding to support these activities.

The U.S. IYA 2009 program's goal is to offer an engaging astronomy experience to every person in North America, and cultivate new partnerships to sustain public interest.

Events and activities will be organized along six major themes: Looking Through A Telescope; Dark Skies are a Universal Resource; Arts, Entertainment & Storytelling; Student-Teacher Research Experiences; Telescope Building & Optics Challenges; and, Sharing the Universe Through New Technology. Each theme is coordinated by one or more working groups of 8-10 people each consisting of interested professionals and amateurs, supported by a centralized Web portal and a presence at MySpace and Facebook.

P38. LSST Education and Public Outreach Programs

S.H. Jacoby (*LSST Corporation, USA*)

Scheduled to see first-light from Chile in 2014, the Large Synoptic Survey Telescope (LSST) is a proposed ground-based 8.4-meter, 10 square-degree-field telescope that will provide digital imaging of faint astronomical objects across the entire sky, night after night. The Education and Public Outreach (EPO) programs for the LSST are as ambitious as the survey itself. LSST data will be available to the public, giving anyone with a web browser a movie-like window on the Universe. Our goal is to provide access to the LSST database in an appropriate and usable format suited to broad audiences including the general public, formal education programs, informal learning centers, and citizen-scientists wishing to make a contribution to scientific research. During our Design & Development phase, we are identifying goals, strategies, and tactics for success. By sharing our process and progress to date, the LSST EPO development team endeavors to demonstrate a structured approach from which other EPO programs can benefit.

P39. Visit to the Top Modern Observatories - A Program by Kyiv Planetarium

Nataliya Kovalenko (*Kyiv Planetarium, Ukraine*)

The lecture "Visit to the top modern observatories" is prepared for the coming International Year of Astronomy 2009 and covers such questions: - what one can see through a telescope - the gain one gets by using a telescope - basic principles of telescope construction - history of telescope, its invention and development through 400 years - Earth's atmosphere transparency - radio telescopes - top 10 optical telescopes of the planet - large telescopes of the near future - space telescopes, discoveries done by them. Script of Kyiv planetarium lecture "Visit to the top modern observatories" is presented. Public response on the program is discussed.

P40. The International Sidewalk Astronomy Handbook

Alberto Krone-Martins (*Clube de Astronomia de São Paulo*)

We shall present an international effort led and organized by Clube de Astronomia de São Paulo (CASP) and the Los Angeles Sidewalk Astronomers. The project aims to create a Sidewalk Astronomy Handbook covering as many issues related to this activity as possible. With this in mind, astronomy clubs from the whole world will discuss a format for the handbook and contribute ideas and texts. The handbook will be a comprehensive guide for all those individuals or groups that want to hold public observations of the sky. It will be made available to everyone interested in it in electronic format and, if possible, book format. It will also be translated into different languages. The work is being fully developed online with collaborative tools, such as an email group and Google Docs.

P41. IYA2009 in Greece

Paul Laskarides

An overview of Greece's plans and activities for IYA2009.

P42. Visualizing the Invisible

Mary Beth Laychak (*Canada-France-Hawaii Telescope, USA*)

In addition to the optical camera Megacam, the Canada-France-Hawaii Telescope operates a large field infrared camera, Wircam, and a spectrograph/spectropolimeter, Espadons. When these instruments were commissioned, the challenge arose to create educational outreach programs incorporating the concepts of infrared astronomy and spectroscopy. We integrated spectroscopy into discussions of extra solar planets and the Search for Life, two topics routinely requested by teachers for classroom talks. Making the infrared accessible to students provided a unique challenge, one that we met through the implementation and use of web cams modified for infrared use.

P43. Gathering the Forgotten Voices: An Oral History of the Canada-France-Hawaii Telescope's Early Years

Mary Beth Laychak (*Canada-France-Hawaii Telescope, USA*) and **Liz Bryson**

They came to the Big Island from as far away as Murrumbena, Australia, and as near by as Hilo, Hawaii. They were progeny of Scottish coal miners, French physicists, Chicago truck drivers, Japanese samurai and Big Island cane workers. Together, these men and women would build and commission one of the most dynamic and productive 3.6 meter telescopes in the world that remains in the forefront of science and technology. The CFHT oral history DVD preserves the stories of the first decade and a half of the observatory.

P44. The Korean Astrofest as National Star Party and Public Astronomical Observatories in Korea

Seo-Gu Lee, Young-Sook Ahn, Dong-Joo Lee, Hong-Jin Yang, Han-Bae Yoon, Kyoung-suk Lee (*Korea Astronomy and Space Science Institute, Republic of Korea*)

KASI(Korea Astronomy and Space Science Institute) has held star festivals from its beginning and the year 2007 meets the 33rd. KASI has led the representing star festivals so far and also has supported the star festivals held by local astronomical organizations. However, the festival from last year, April of 2006, was jointly held by 10 organizations relevant to the stars and the universe parts. Republic Of Korea Air Force joined the festival from this year and the scale of astrofest became larger.

The program of the festival, including the traditional star observation with the small telescope, is made up of the contest of star observations using small telescope with the school students, the concert with the stars in the night sky, 'Golden Byul', the quiz game for learning general astronomical knowledge, and lectures answering the mysteries of the universe etc. In the festival, each participating organization is supposed to provide the public with various things by opening an exhibition booth or by displaying educational materials like a model of telescope, artificial satellite and ISS, and so forth.

Also, KASI is support public observatory meeting actively in Korea and to promote the distinguished observatory meetings according to the local characteristics.

The meeting mentioned above is expected to give astronomy wider publicity to help students getting interested and understand the universe, and moreover to improve the universe-like minds of the public. In this presentation, we are going to examine how this astrofest works to the public and how it influence the science popularization

P45. School Visits and Astronomy – What Learning Took Place at an Observatory and a Planetarium?

Anthony Lelliott

This presentation will describe the results of a doctoral study carried out in 2003 at a Radio Astronomy Observatory and a Planetarium in South Africa. Data was collected from 34 grade 7 and 8 students using 'concept maps' and interviews prior to and after their visit to one of the two astronomy 'science centres'. Findings show that all students learnt at least some factual information from the visit, although students with more substantial prior knowledge were able to deepen their knowledge more effectively. Students learnt mostly by incremental addition of facts about astronomy, but some showed greater knowledge restructuring likely to result in more long-term learning. All students also showed learning in the affective domain, where

enjoyment and personal relevance of the visit played a part. Relatively few students were motivated to carry out activities within the theme of astronomy after their visit. The study has a number of implications for the informal learning of astronomy:

- The relevance of 'Big Ideas' in science as structuring themes for learning.
- The importance of involving students and teachers in pre- and post-visit activities, which were found to be lacking in this study.
- The importance of a centre providing several different activities around a theme, so that students experience a topic from a number of different angles, which appears to contribute to greater learning.
- The value of working with students' misconceptions, which provide a basis for a more scientific understanding.

P46. Big Ideas in Astronomy A Review of the Research 1976-2005

Anthony Lelliott

This paper reviews astronomy education research carried out among school students, teachers and museum visitors over a 30-year period from 1976 until 2005. 62 peer-reviewed journal articles were examined, nearly half of which were qualitative in design, and the majority dealt with conceptions of astronomical phenomena. Most studies examined more than one topic, but the following 'Big Ideas' in astronomy accounted for over 80% of the studies: the day-night cycle, phases of the Moon, the seasons, the shape of the Earth and gravity. The remaining studies included stars (and the Sun), the Solar system, size and scale, and attitudes towards astronomy. Findings of the review include the following:

- The day-night cycle and conceptions of the Earth are relatively well-understood, especially by older students, while the Moon phases, the seasons and gravity are topics that people at all levels find difficult both to understand and explain.
- Many primary teachers appear to have similar misconceptions to those of their students, while secondary teachers show a greater understanding of the subject. Problems of language use are also apparent, such as confusion between the terms rotate and revolve.
- From a research methods viewpoint, the use of models and interviews appear to obtain much clearer results than using written questions. I recommend that future research should concentrate less on people's conceptions and more on how understanding is acquired. Similarly, topics closer to current astronomy (such as stars and the solar system) should be addressed more than traditional Earth-related issues such as the day-night cycle and the Moon phases.

P47. Virtual Telescopes and Astronomy in the classrooms using streaming, in Ecuador

Ericsson Lopez (*Observatorio Astronomico de Quito, Ecuador*)

Since approximately one year ago, the Astronomical Observatory of Quito (OAQ) is working in the creation of a virtual telescope system, which will be put in use of nearly all educational institutions in the country. The principal purpose of this project is the education and promotion of the astronomical activity in Ecuador.

Before of the beginning of the job, the Observatory had as the most important instruments the MERZ telescope, which in that time functioned only manually. But now, this device has been automated using a motor step and microcontrollers. Also, by means of LABVIEW has been created an HMI interface, which permits to control the telescope in the equatorial axis. Moreover, as an important part of the project, it has been acquired the MEADE telescope, which is a sophisticated and complete instrument placed in the Quito Observatory.

The images obtained with both telescopes, are captured with CCD cameras of high quantum definition, which are fixed with precision to the system. The involved processes permit us to digitalize, compress, store and transmit the images in real time at the internet, like also to manage the telescopes.

The project is the first step in order to execute other educative plans similar to that one, and all those will let to the Observatory of Quito acquire modern instrumentation that help to impel the development and introduce new technologies to our institution.

P48. Astrotainment: Using Indigenous and Modern Games To Communicate Astronomy

Sivuyile Manxoyi (*South African Astronomical Observatory, South Africa*)

Games are by their nature interactive, informative, and developmental and in many cases full fun and entertainment. This presentation examines how SAAO has used modern and indigenous games to communicate astronomy to learners, teachers and member of the public. These games include board, card, stone, pen and paper, domino, sing along, ball and computer games.

The use of games serves to simplify, demystify and communicate hard concepts in a fun way. They further extend beyond the confines of institution as games can be taken and played at home and school. There is also no need for supervision when the rules are mastered.

This presentation also examines the principles (racing, collection, simulation and placing), which underpin our games as well as seek to demonstrate how simple materials can be transformed into communication and educational tools by infusing relevant astronomy knowledge.

P49. A Pinch of Salt Goes Along Way in Communicating Astronomy

Clifford Nxomani, Sivuyile Manxoyi (*South African Astronomical Observatory, South Africa*), **Karel Klein, Mark Conley**

The building of the Southern African Large Telescope not only revolutionized the methods of data collection in astronomy as a science in South Africa but also changed the face, approach and impact of astronomy communication in our country.

This presentation examines the various ways in which SALT has been supporting and continues to drive astronomy communication with the public. These include the following strands: learner activities, educator activities, family programs, and special events as well general public programs.

The learner activities include SALT tours, workshops, space camps, night sky viewing, astro quiz, astro fair as well astro job shadowing. The educators' strand includes workshops, camps, and tours as well team or co teaching. The resources developed through these ventures will be displayed.

We welcome more than 30 000 visitors annually in our SALT science visitor center. This houses astronomy displays and exhibits. Photographs and miniature version of these will be displayed.

International partners with University of Wisconsin, Rutgers, Southampton, UCLA as well as Cambridge University have contributed in creation of North- South links between communities in America, Africa and Europe.

P50. Amateur Astronomy as a Link between the Science of Astronomy and the Public

Nicolas Matsopoulos (*National Observatory of Athens, Hellenic Astronomical Union, Zagori Observatory*) & **Stelios Kleidis** (*Hellenic Astronomical Union, Zagori Observatory*)

Astronomy Clubs and Public Observatories are acting as intermediates between the Astronomical Scientific Community and the Public, acting as bi-directional channels between them, by initiating the amateurs to the astronomical scientific knowledge and methodology, and supporting scientists in various fields of astronomical observations. In this paper, we present the activities of Hellenic Astronomical Union and Zagori Observatory in training amateurs in observational techniques and in public outreach programmes.

Some of the results of the collaboration between professional astronomers and amateurs are also presented. This pro-am collaboration, is focused on the collection of photometric data by the amateurs and the subsequent submission of them to professionals for further analysis and evaluation, in the observational fields of variable stars, exoplanet transits, asteroid observations and occultations, GRB's and microlensing phenomena. This collaboration contributes to the improvement of public understanding of Science, due to hands on activities based on the established scientific practice and methodology.

P51. The Role of a Communications Department in an Astronomical Institution

Javier Mendez (*ING, La Palma*)

I will review some of the theoretical aspects of the role of a communications department in an astronomical institution, giving special attention to the different elements involved, the design of a communications department and its plan, the treatment of information, the organisation of tasks and procedures, and the way the model can be adapted to the different types of institutions.

P52. Communicating the Educational Value of the Night Sky

Margarita Metaxa (*Philekpaideutiki Etaireia*), **Kim Patten, Tammy Matthews, Teresa Hudson** (*International Dark Sky Association*)

Light pollution is spreading rapidly all over the world as more and more people urbanize and electricity becomes more of a commodity. As a result, the quality of the night sky is drastically deteriorating. Prime astronomical sites depend upon these disappearing dark skies. Therefore the preservation of the dark sky at these choice astronomical locations, the maintenance of the sky's quality, and the continuation of public interest in observing the stars, depends on the education of the importance of our night sky. Since the sky's importance and benefits are not generally well known or appreciated, it is imperative to continually promote awareness of light pollution and its effects. Thus, the preservation of the astronomical environment is tightly coupled to and requires effective education and tutelage.

In this poster we discuss and analyse further the role of the night sky in education and how it can be used as a tool to contribute to the development of citizens' and people's knowledge, sensitivity, imagination and understanding of their relationship with their physical and human environment. This will then allow individuals to make and suggest solutions to and participate in decision making and implementation of the protection of our sensitive night sky.

P53. PETER: Robots that Watch the Skies

Gara Mora Carrillo (*Instituto de Astrofísica de Canarias, Spain*)

The Liverpool Telescope (LT), sited at an altitude of 2400 metres at the Roque de los Muchachos Observatory, on the island of La Palma in the Canary Isles, is a professional 2 metre state-of-the-art robotic telescope used for astronomical research by astronomers from around the world.

The IAC administers the 20% Spanish observing time, according to the Agreement on Co-operation in Astrophysics, and this is distributed by a Time Allocation Committee (CAT). Considering the importance of communicating astronomy to the public, the IAC has been decided to reserve 5% of the LT s time for Spanish pupils and amateur astronomers, and the remaining is assigned to astrophysical research.

PETER, the “Proyecto Educativo con Telescopios Robsticos” (Robotic Telescopes Educational Programme), provides the tools necessary for schools to access and use the telescope in the classroom or from home. A key objective of PETER is to encourage a sense of excitement about science and technology in young people by allowing them to use professional technology.

Recently the BIA Project (Banco de Imagenes Astronsmicas) has been launched, consisting of an astronomical image bank which is available to school children, the media, amateurs, astrophysicists and the general public. This project will complete the support provided for PETER users.

P54. Radio Broadcasting- An Attractive Way of Communicating Astronomy

Cătălin Mosoia (*Radio Europa FM, Romania*)

Astronomy is full of shiny stars and big planets, interesting stories to tell, beautiful landscapes, and it has also, interesting sounds to hear. Even if they are coming from space such as from the Sun, Enceladus, or Leonids or are the resulting process of creation on Earth such as music composed by professionals on certain themes (Nobody Steals the Sun soundtrack that was written by a Romanian composer for the March 29, 2006 TSE). Furthermore, astronomy is always fascinating the audience. That means astronomy has an advantage from other sciences. It might represent the base from where specialized journalists and scientists start developing the audience interests, be it children, students or adults. Furthermore, radio broadcasting is an essential source of information and entertainment for blind and visually impaired people. Science journalists and scientists have the potential for bringing astronomy closer to people.

P55. Outreach of Astronomy with Emphasis to the Solar System by the Space Group, Physics and Mathematics Teachers and Amateur Astronomers in Greece

X. Moussas (*University of Athens, Physics Dept., Astrophysics Lab., Greece*), **G. Babasides**, **G. Fasoulpoulos**, **S. Kouphos**, **V. Dimitropoulou**, **D. Prassopoulos**, **K. Aggioplasti**, **G. Tarsoudis**, **E. Spandagos**, **J.M. Strikis**

The general public interest in astronomy is enormous and astronomy is the best attractor of children to science, mathematics, technology and engineering. In Greece all newspapers and many TV stations have regular articles and programmes concerning astronomy. There is a long tradition in Space and Solar System outreach activities at the University of Athens (Space Group).

Together with Physics and Mathematics teachers we organize, in high schools and other places, several events related to astronomical observations (e.g. Venus transit, solar eclipses, astronomy nights). Many high school pupils come to the University with enquiries concerning bibliography and general advice. This interaction with pupils is of great importance at a time when the interest in university studies in some of these disciplines is declining in Europe (but not yet in Greece).

Together with the Hellenic Physical Union, we have organized a series of Physics and Astrophysics Lectures at the University of Athens. We have also organized theatrical plays concerning the solar system and other astronomical subjects, for example the recent total solar eclipse.

We have contributed with many popular science articles in encyclopaedias (a total of some 200000 words), magazines and newspapers, public lectures around Greece and radio and TV programmes.

P56. Have your Say on the ESA/ESO/NASA Photoshop Fits Liberator V.3

Lars Holm Nielsen (*ESA/Hubble*), **Lars Lindberg Christensen** (*ESA/Hubble*), **Robert L. Hurt** (*Spitzer Science Center*), **Kasper Kirstein Nielsen** (*ESA/Hubble*) & **Teis Johansen** (*ESA/Hubble*)

We review some of the planned features for the next upcoming version 3.0 of The ESA/ESO/NASA Photoshop FITS Liberator - the de facto standard for processing astronomical images for PR use. We will discuss how the FITS Liberator integrates into the VAMP (Virtual Astronomy Multimedia Project) effort using the Astronomy Visualization Metadata (AVM). We plan to use this opportunity to solicit inputs from the user community on the needed features of the next version of the FITS Liberator, and also the future of the project in general

P57. International Universe Awareness Pilot Activities, A Variety of Projects

C. J. Ödman

The Universe Awareness project (<http://www.unawe.org/>) is being developed in close partnership with the communities implementing the programme. We present diverse examples of UNawe pilot activities in a number of countries including Tunisia, India, Colombia. These experiences serve as input for the development of the global Universe Awareness materials (see also presentation by Sarah Levin).

P58. The Ott Planetarium: A Small Planetarium Makes a Big Difference

Stacy Palen

With the advent of digital full-dome theatre, even small planetaria (approximately 50 seats) are finding themselves with access to the very best technologies and imagery. Programs are possible now that were unimaginable even five years ago. The Ott Planetarium has spent the last three years creatively using the talents of undergraduates (specializing in a large variety of fields) to build a production and outreach program that more than quadrupled the number of people we reach each year. From science in the park activities for children to traditional field trips for K-12 students to production of high-quality programming for full-dome theatre, we are stretching in every direction. I will discuss the impact we are having in our community, the impact we are having on our undergraduates, how we are getting it all done, and some hard lessons learned.

P59. IYA2009 in Portugal

João Fernandes, Rosa Doran, Filipe Pires (*Centro de Astrofísica da Universidade do Porto, Portugal*), **Máximo Ferreira, António Pedrosa** (*Navegar Foundation, Portugal*)

The Portuguese Astronomical Society is highly committed in the preparation of the IYA 2009 by establishing a coherent set of events/activities to be held in Portugal with a significant impact, mainly among the young generation.

A commission was established to prepare such events/activities in a national perspective at different levels: National, Regional and local.

In this poster we would like to present the Portuguese approach to this celebration as well as some of the most significant events under preparation.

P60. Vodcasting Space Weather

Carolyn Collins Petersen, (*Loch Ness Productions*) and **Phil Erickson** (*MIT Haystack Observatory*)

The topic of space weather is the subject of a series of video podcasts (vodcasts) being created by MIT Haystack Observatory (Westford, MA) and Loch Ness Productions (Groton, MA). The project is funded by a NSF informal science education grant under the auspices of ongoing Haystack research into the nature of space weather and its effects on Earth's upper atmosphere. The grant covers nine vodcasts to be produced in the next two years. This paper discusses the planning, production, and presentation of the vodcasts, including a description of our evaluation processes using local educators alongside the science and production staff.

P61. The Griffith Observatory Exhibit Program: Turning Visitors into Observers

Carolyn Collins Petersen, (*Senior Exhibition Writer, Griffith Observatory Exhibit Program*) and **Mark A. Pine**, (*Deputy Director, Griffith Observatory*)

World-famous Griffith Observatory re-opened in November 2006 after a nearly five-year renovation and expansion project that restored the building, remade the planetarium, doubled the public space, and created a new exhibit program. The working theme of the exhibits was "Turning visitors into observers." The premise was to develop exhibits that would engage visitors in observation either directly or by experiencing the results of astronomical study. The exhibits were designed to be large, unique, and very visual, so as to provoke engagement, wonder, and inspiration. Writing the 165 panels that accompanied the dozens of exhibits focused on an inviting and conversational tone, as if the exhibits themselves could answer the questions visitors might have about what they were seeing. The panels make adroit use of imagery and very focused and meaningful written captions intended to connect with the Observatory's very broad, very diverse audience. This paper discusses the approach we took in writing the exhibits and presents some lessons learned that other institutions may find helpful.

P62. The Role of Planetarium under the IYA2009, The Portuguese Context.

Filipe A.L. Pires

For decade's planetarium are uses for promoting the Astronomy, complements the school curricula and motivated young people for science. In Portugal we have 3 large planetarium with a audience around 140 000 visitors' a year, this correspond to 1,5% of all population. Since the construction of the first Portuguese planetarium in 1965 more than 3 million students had visitor one. For the IYA2009 planetarium will have an important role especially promoting programs for schools and motivated general public.

P63. Astronomia.pl Ideas for International Year of Astronomy 2009

Jan Pomierny (*Astronomia.pl - Polish Astronomy Portal, Poland*), **Krzysztof Czart** (*Astronomia.pl - Polish Astronomy Portal, Poland*), **Włodzimierz Pomierny** (*Astronomia.pl*)

Astronomia.pl is an internet portal for Polish language people. As being a website, most of our activities in IYA 2009 will be focused on Internet and electronic media area. Mainly we are going to prepare rich-content website, in cooperation with Polish committee of IAY 2009. Common emission of stamps series all over the world was suggested during IAU General Assembly in Prague by IAU. We propose that before deciding what will be displayed in stamps, there should be a contest for children in each country. The best work will be displayed in a stamp in a given country (each country should have its own winner). Also plebiscite in media about who or what should be placed in the second stamp is not bad idea. There should be available a set of free astronomical wallpapers for mobile phones, as well as motives and calls for them (for example: start of space shuttle, voice of Neil Armstrong, forefronts of popular astronomy programs). Naming a planetoid is another idea – each country „receives” one planetoid to propose a name for it in a public voting for ideas suggested by the local committee (of course finally the name must be accepted by appropriate division of IAU). Blog run by famous astronomer (famous in mass-media, not only in scientific community) must be in a language of a country, not only in English. We also present interesting ideas suggested by some people outside of our editor's office, for example one day assemble of astronomy amateurs in a big sport hall. These were examples, more ideas are presented in a poster.

P64. Examples of Astronomy Education and Outreach in Poland

Włodzimierz Pomierny, Jan Pomierny, Krzysztof Czart (*Astronomia.pl*)

Astronomy in Poland, despite constants problems with financing, is developing very well. This process is visible in academic and scientific level (astronomy research has began one of the most important field of Polish science) as well as in field of astronomy education, outreach and something what we can call "social astronomical consciousness". Certainly Polish astronomers (educators, amateurs, researchers) have a lot of to do more - satisfactory level never will be achieved (always is something more we can do or improve something what we have already done) but present condition in-comparison to the situation decade ago allow us to find we have developed several solutions and methods that successfully support Polish astronomy in all its fields.

P65. The Texas Connection: Transferring Astronomy Teacher Professional Development Workshops and Student Field Experiences to Distance Learning Technologies

Sandra Preston (*The University of Texas McDonald Observatory, USA*), **Mary Kay Hemenway, Marc Wetzel, Kevin Mace, Becky Yarbrough**

Texas is a big state! It measures 1,244 km (773 miles) from east to west and 1,289 km (801 miles) from north to south. It is as large as all of New England, New York, Pennsylvania, Ohio, and Indiana combined and slightly larger than France (211,000 square miles vs. 269,000 square miles). As the state's only professional Observatory, our goal is to reach as many Texas K-12 teachers and students as possible with astronomy activities that align with the Texas Essential Knowledge and Skills, the state's teaching standards.

The Frank N. Bash Visitors Center at McDonald Observatory near Fort Davis, Texas is the hub for our teacher workshops and student field experiences. It is also located on a remote mountaintop. For example, Fort Worth is 804 km (475 miles) from Fort Davis, which makes a student field trip difficult. Therefore, we chose videoconferencing technology, which the Texas Education Telecommunications Network (TETN) supports for most K-12 teachers and students around the state, to reach the target audience. The Science Consultant and teachers from Education Service Center Region XI (Fort Worth) met with us at the Observatory to determine how to best transfer components of our student field experiences to this technology. With the help of the same Science Consultant, we pilot tested our first teacher professional development workshop via videoconference with Region XI teachers. As our distance learning programs gain momentum, we are branching out to work with the other Education

Service Centers around the state. We gratefully acknowledge the American Electric and Power, Amon G. Carter, F. B. Doane, and Lowe Foundations and NASA IDEAS HST-Ed90282.01-A for their support of this project.

P66. Educational Activities with the Faulkes Telescopes

Sarah Roberts (*Las Cumbres Observatory Global Telescope (LCOGT), United Kingdom*), **Paul Roche** (*Cardiff University, United Kingdom*), **Rachel Ross** (*Las Cumbres Observatory Global Telescope Network, USA*)

The Faulkes Project, as part of Las Cumbres Observatory Global Telescope Network (LCOGTN), provides access to a global network of robotic telescopes for research-based science education. In the UK, schools have been using the telescopes for 3 years. Here, we present the educational projects which have been undertaken, including themed observing days in which schools collaborate in their telescope sessions, the development of science portals where schools can upload and share their telescope data, and other innovative projects.

P67. Meteorite, a Rock from the Space: A Planetarium Adventure for Children

Inés Rodríguez Hidalgo (*Instituto de Astrofísica de Canarias, Dept. Astrofísica Universidad La Laguna, Museo de la Ciencia y el Cosmos, Spain*), **Rubén Naveiros y Naveiras**, **Oswaldo González-Sánchez**

In the Museum of the Science and the Cosmos (MCC, in La Laguna, Tenerife) there is a small planetarium, where different exhibitions are shown. All of them are entirely carried out by the Museum technicians, from the original idea and the script to the final edition.

In February 2007, a new show, especially addressed to children, has been released: "Meteorite, a rock from the space". The main character and narrator is a meteoroid, who travels through the Solar System, meeting planets, satellites, comets, and the Sun... During the trip, it becomes more and more naughty, and wants to make an enormous crater on the Earth. It finally fall on the African desert, where it is found by some scientists who bring them to the Museum. It doesn't achieve to produce a big cataclism... but it's really important for us, since we can see and touch it at the MCC.

The aim of this contribution is to review and analyze the efficiency and future possibilities of the different resources (some of them really innovative) used to create this program: the characters are played by puppets, designed and manufactured for this occasion - they were handled and filmed on a chroma key, so they finally appear superimposed on the starry sky of the planetarium. As far as we know, this is the first time, at least in Europe, that marionettes are used in a planetarium show - the voice of Meteorite (in the present time) belongs to a famous Spanish clown, actor, composer and musician, very well known by "children" in their 30's and 40's, and for their children as well - the rest of the characters have been dubbed by some friends, including a popular Canarian humorist - the soundtrack consists of selected fragments of classical music - the script has been carefully developed, and introduces many astronomical concepts in the form of an entertaining tale, which encourages the children to participate crying, counting, helping the characters... just like in a real puppets show.

This novel initiative was presented in the IV Spanish Meeting "Tecnoplanetarium", held in the MCC in July 2007. The opinions, criticisms, and suggestions contributed by planetarium Spanish and Portuguese technicians are also reviewed.

P68. Las Cumbres Observatory Global Telescope Network: Keeping Education in the Dark

Sarah Roberts (*Las Cumbres Observatory Global Telescope (LCOGT), United Kingdom*), **Paul Roche** (*Cardiff University, United Kingdom*), **Rachel Ross** (*Las Cumbres Observatory Global Telescope Network, USA*), **Jessica A Barton**

Las Cumbres Observatory Global Telescope Network is a privately-funded, non-profit organization. It is creating an international, cutting edge science program paired with an innovative education program. We are building two networks of telescopes in rings in both the Northern and Southern hemispheres for complete sky coverage, all of which will be equipped with high-quality, science-grade instrumentation. The telescopes will be completely robotic with the ability to be controlled by anyone from anywhere with a broadband internet connection. Accompanying the web-based observing will be a library of resources and activities including how to plan and carry out an observing session as well as activities and project ideas to carry out in formal and informal education settings. The goal is not necessarily to produce more astronomers, but to encourage enthusiasm for science and technology that people will be able to apply to any field.

P69. EUROPLANET: Europe Explores the Solar System

Pedro Russo (*MPI Solar System Research / Europlanet, Germany*), **Jean-Pierre Lebreton and the Europlanet Outreach Steering Committee**

The European Planetology Network (EuroPlaNet) was set up on 1st January 2005. The network was initially made up from representatives of 17 countries and 59 institutions across Europe, with associate involvement from institutions in the USA. New associate participants have since, and are continuing, join the network. The objective of EuroPlaNet is to co-ordinate activities in Planetary Sciences in order to achieve a long-term integration of this discipline in Europe and enhancing the competitiveness of European planetary science in the worldwide community. Outreach is an important part of this initiative and N4, one of the seven

sub-groups that make up EuroPlaNet, has been dedicated to communication activities. The main objectives for the outreach activities are:

1. To raise the profile of planetary science across Europe
2. To encourage networking between science communicators, particularly within the planetary community, and facilitate collaborations and the sharing of skills and resources.
3. To highlight European involvement in planetary sciences, including planetary missions, ground-based observations of planets, modelling and laboratory work.
4. To promote the work of the European Planetology Network, which is to encourage and facilitate sharing of knowledge.

In this talk we will present the activities and first results of the Europlanet Outreach activities.

P70. Communicating Astronomy in a Small Island State: The Unique Role of the Mauritius Radio Telescope

Sarojiny Saddul-Hauzaree

The Mauritius Radio Telescope (MRT) is a 2km x 1km T-shaped aperture synthesis array that can generate radio images of the Southern sky at 151.6 MHz. It is located at Bras d'Eau, North-East of Mauritius at latitude 20 degrees S and longitude 60 degrees E. The MRT is a joint project of the University of Mauritius, the Indian Institute of Astrophysics and the Raman Research Institute.

One of the main objectives of the MRT is to generate public interest in astronomy. Thus, it is involved in a wide range of onsite outreach activities for young school children. More mature students visiting the telescope learn about the Southern sky observation with a radio telescope, get to explore some sets of data, interact with the scientific personnel, get the opportunity to have hands-on experience with image manipulation and can ask a lot of questions on astronomy.

This poster will give an overview of the MRT project and the attempts of MRT in communicating astronomy to students as a process and not just as a vast expanse of knowledge. The challenges and dilemmas faced by MRT in conveying astronomy to the general public in a small island state are investigated and presented.

P71. Education and Public Outreach Activities at Jaxa/Isas

Seiichi Sakamoto (*Institute of Space and Astronautical Science (ISAS), JAXA, Japan*)

Institute of Space and Astronautical Science (ISAS) is the center of space sciences in Japan. ISAS was founded in 1964 in the University of Tokyo, and in October 2003 it was integrated into the Japan Aerospace Exploration Agency (JAXA), the only aerospace research and development agency in Japan, as its Space Science Research Division.

JAXA/ISAS has been conducting various promotional and enlightening activities such as open-house events, town meetings and lectures to promote understanding and support for our activities and the current status of aerospace development. Besides the above regular events, ISAS staffs volunteer as lecturers of a number of public lectures requested by a variety of groups and organizations from all over Japan.

One of our most successful public outreach campaign so far was "Let's Fly to Meet your 'Star Prince (Little Prince)' (World's First Attempt to Land Names on Asteroid)" prior to the launch of the Hayabusa spacecraft. We were pleasantly surprised when we received 880,000 applications from 149 countries. Those astonishing number of names were engraved on the Hayabusa target marker, which is only about the size of a softball and was successfully arrived on the surface of the asteroid Itokawa.

P72. Astronomy Communication with Beautiful Pictures: Study Case with the Power of Sun and Internet

Bruno Sánchez-Andrade Nuño

The gap between scientific research and society is obvious. Unfortunately in most cases we are not able or don't pay enough attention to communicate to the public the marvels of the universe where we all live. In solar physics we are living a privileged era, not only because we are pushing further our observational limits, but also the public attention is also increasing (sun-earth connection, effects on global warming, dangers of UV radiations, disruption on satellites, etc.). Part of our work as scientist is to be able to communicate our progress in the understanding of the universe to the society. As part of my work, I use high quality image sequences of the Sun, which are highly suitable for public outreach. Following this precept, I submitted some images to the Astronomy Picture of the Day editors (world reference in scientific outreach). The images and videos were published on May 22, 2007.

In this talk I will present briefly the steps from raw data to the final publication. Nonetheless, the contributions are focused in presenting the results of the follow-up done. It was interesting to see that this publication awake the scientific attitude of my colleagues, relatives and friends, encouraging them to think about the Sun as an astrophysical reality (testing their actual knowledge), strongly enough to ask physical questions about what they were seeing. Teachers and the media from several

places contacted me for using the footage for further use. Most importantly, using web-statistics we can shape the profile of the visitors, and get interesting conclusion crossing parameters as location or duration of the visits. By means of simple Google search we can also read comments of the people on several forums around the world. It is also interesting to recognize the impact of this kind of images and the suitability of the Internet for these purposes.

P73. Building the Bridge between Astronomy Research and Schools in Germany

Cecilia Scorza (*Landessternwarte, ZAH, Germany*), **Jakob Staude, Olaf Fischer**

At the present it has become an important task that astronomy research centres develop channels to communicate the results of their several research fields to schools, other institutions and the public in general. In order to achieve the desired impact, an integrative programme based of educational, informative and social aspects is required. We outline the general philosophy and structure of a very successful network developed during the last years between the "Astronomy School" at the Zentrum fuer Astronomie (ZAH) of the Heidelberg University, the project "Science into School (WiS!)" linked to the journal "Stern und Weltraum" (Spektrum der Wissenschaft) and a large number of schools at national level. This network could provide some guidelines for national activities in the IYA-2009.

P74. A Software Tool to View and Pre-View Dome Content

Marco Silva, Antonio Pedrosa (*Navegar Foundation, Portugal*)

One of the difficulties in the content creation for planetariums is the difficulty to envisage the final result of the content under preparation due to the curved nature of the dome. An original tool created with the goal to offer to the user the possibility to correctly visualize dome content in the computer screen is presented. This tool works as a player, but it also accepts content arriving directly from different software tools, such as video compositing tools, and real-time sky simulators.

P75. The International Year of Astronomy: NASA Contributions to United States Themes

Denise Smith (*Space Telescope Science Institute*); **Mary Dussault** (*Harvard-Smithsonian Center for Astrophysics*); **Leslie Lowes** (*Jet Propulsion Laboratory*); **Hashima Hasan, Doris Daou, Marilyn Lindstrom** (*NASA*)

In turning his telescope to the heavens and communicating his findings to the public, Galileo triggered a scientific and cultural revolution that continues today through a wide variety of astronomical observatories, space probes, and communication techniques. NASA's space science missions will contribute to the International Year of Astronomy 2009's (IYA2009) global celebration of this rich legacy of observation and discovery by providing professional development opportunities for educators, resources for the informal science education community, and authentic observing experiences aligned with United States IYA2009 themes. This poster provides updates on plans involving space science education and public outreach professionals representing 20 institutions located across the United States. Plans are grounded in a commitment to meeting audience needs and building strong partnerships between scientists, educators, and high-impact organizations and networks. The resulting framework has broad applications and potential for collaboration across and beyond NASA.

P76. Communication To The Public Awareness Of Orbital Evolution Of Asteroids

Soegiartini, E and Radiman, I.

Since Ceres, the largest asteroid was discovered on January 1, 1801 by Giuseppe Piazzi, some people are still asking about the asteroid belt, a region area that lies between the orbit Mars and Jupiter. Some question about asteroids are: where do they come from, how are they created, and what does their influence to the planets in the Solar System, especially Earth? In our study, we choose 7 asteroids which have special orbit's characteristics. These are: Ceres, in which its name is derived from the Roman goddess Ceres - the goddess of growing plants, the harvest, and of motherly love; Icarus, where in Greek mythology, Icarus was known as the son of the artificer Daedalus, and was famous for his death by falling when he flew too close to the Sun, melting the wax holding his artificial wings together; Hector, in Greek mythology, is a Trojan prince and one of the greatest fighters in the Trojan War; Patroclus, the son of Menoetius, king of Opus in Locris; Gaspra or 951 Gaspra, is a spa town in Crimea, Ukraine, located on the Black Sea coast, a popular holiday resort. The asteroid 951 Gaspra is named after Gaspra; Toutatis, the Celtic god Toutatis or Teutates was worshipped in ancient Gaul and Britain, and finally Eros, where in Greek mythology, was the primordial god of lust and love, he was also worshipped as a fertility deity. From orbital analysis, particularly Icarus, our simulation showed that Icarus become more eccentric, so does its semi major axis, and after 5000 years, Icarus's orbit will be thrown out from the system. In our program, Icarus will pass by The God of War, Mars, then come into Jupiter's Palace. Its orbit become more elliptic, and gets farther away from the Sun. In this occasion, we as the astronomers, would like to address and inform our research to public on one possibility of unanswered questions: concerning the impact of the unstable orbit of asteroids in the near future.

P77. Distributed Telescope Networks and Network-Centric Observing Modes: Case Studies in Education from the Eudoxos National Observatory, Greece

N. Solomos (*Eudoxos National Observatory for Education, Greece*), **I. Dimitrakopoulos**, **M. Zoulias** (*National Observatory of Athens, Greece*), **S. Papaefthimiou**

The progress made in the field of distributed sensor networks and robotic observatories towards the creation and operation of worldwide-spread heterogeneous telescope networks can have a big impact on the way astronomical observations are to be carried out. Far beyond the traditional service-based observational schemes, lie new totally machine-assisted astronomy experiment designs, which imply the exclusion of the human factor from the data acquisition, the reduction and (even) the analysis loops and its substitution by special 'thinking' robotic units to perform unattended survey, discovery and follow-up science with great degree of adaptivity for optimization. The degree of sophistication of the underlined technologies not only allows e-science operations at the research level but, also, permits effective response to a much wider spectrum of user needs in the field of science education. We report on the NOE-EUDOXOS evolving network-centric astronomical infrastructures and our own experiences and lessons learned in the course of a prolonged experimentation related with the interplay of Education and Research.

P78. Public Outreach at the Canary Islands' Astronomical Observatories

Anselmo Sosa (*The Public Outreach Group at the European Northern Observatory - ENO*)

In order to strength the impact among general public of the Astronomy carried out at the Canary Islands' Astronomical Observatories, the Telescope facilities installed at ENO have established a working group to promote further co-ordination on public outreach activities, including a broad diversity of material and actions, as well as dissemination of individual results arising from the facilities installed at ENO.

The following specific tasks are being carried out:

- Joint open-doors at Teide Observatory and Roque de los Muchachos Observatory
- Joint promotional material (press releases, bulletins, educational material,..).
- Informative web pages (ENO Public Outreach Website).
- Co-ordination of public events related to exceptional astronomical phenomena (comets, eclipses, etc.).
- Talks and conferences (co-ordination of open talks and conferences on research programmes and activities).
- Co-ordination and organisation of major events and stands on dissemination of S&T results.

These activities are mainly based on the successful exchange and distribution of information among partners and outside. The overall coherence of these activities, based on this common need, aim us to propose this collective and co-ordinated approach in order to reach a higher level of integration and co-ordination of ENO facilities.

P79. Looking Up - An Overview of Astronomy Education in the UK and Its Impact on the Wider Community

Sotira Tsifourki

The talk will focus on educational activities that are taking place in the UK which can be used as a case study for planned activities for the International Year of Astronomy 2009. The UK has a wealth of experience in astronomy communication to all members of the community; from schools, science learning centres and science visitors centres to the knock on effects of these activities engaging family members and community leaders.

Examples of case studies will be drawn upon from the Association for Astronomy Education's current work in this field, focusing on how a planned stage show for IYA 2009 has engaged and inspired school children and their families from across the north-west region (some in regions which are disadvantaged areas and have a large number of refugee citizens) to become excited about astronomy and understand the have a large number of importance of its advancement and impact on their daily lives.

The activities target audiences which would not normally have the opportunity to participate in astronomy education related and communication outreach events.

P80. Visualization of Astronomical Spectral Image Cubes

Juan M. Uson (*NRAO, USA*)

Radioastronomical synthesis observations produce spectral image cubes in which the third dimension, frequency, reveals the line-of-sight component of motion due to the well-known Doppler effect. Astronomers analyze these cubes using 3-D visualization techniques as well as a variety of 2-D representations. However, these tools are not optimal to present the results to non-specialists. N-body simulations can provide models that help to understand the structure and kinematics revealed by the spectral image cubes. The EVLA and ALMA will produce spectral image cubes that will be several hundred times richer in

structural details as well as in the number of atomic and molecular species revealed by each observation. Analyzing these spectral cubes will be challenging and require new techniques which will in turn provide new opportunities to communicate the results to non-specialists and to the public.

P81. Research in Astronomy and Developing World

Barbara Villone (*Istituto di Fisica dello Spazio Interplanetario - Torino, Italy*)

There will be presented results about real involvement in the astronomy research (both theoretical and experimental) of people coming from developing world. For example it is interesting to examine experiments settled in developing countries and connection with the daily life of the local inhabitants. In this regard is examined the relation between influence of scientific institutions and amateurs associations. Example from Tibet, Africa, regions of Southern America

Special Presentations

S01. "Hawaiian Starlight - Exploring the Universe from Mauna Kea" (Film Projection, 2007, 43m)

Jean-Charles Cuillandre

Mauna Kea inspires a sense of awe. The film "Hawaiian Starlight" aims at sharing that magic through a multi-media experience: striking time-lapse cinematography scored with beautiful and engaging music. Intermixed within these daytime and nighttime clips are animated sequences of stunning true color images of the cosmos captured by the Canada-France-Hawaii Telescope.

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