CHALLENGE 1

- ❖ Citizen-oriented Information and Communication Technologies
- ❖ Tecnologias de la Informacion y la Comunicacion orientadas al ciudadano
- ❖ Tecnologias de Informação e Comunicação Orientadas ao Cidadão

- Motivation and description
    - Development and use of technologies (web, telephony, radio, tv, …) to support citizen-oriented activities
    - Digital inclusion as a pre-condition
    - Citizen empowerment
    - Knowledge dissemination
  - Research issues
    - search engines for local webs, community modeling, participatory construction of tools, knowledge bases, user interfaces, collaboration environments, security, privacy, …
    - low-cost devices
    - Communication technologies for universal access
  - Social relevance
    - Social inclusion
    - promotion of socio-economic development
    - Citizen empowerment
  - Regional relevance
    - Huge digital divide, information poverty, lack of access to public services, joint development, reuse and dissimination of solution to common problems, deepening of personal inter-relations
- Benefits
  - digital inclusion (citizen, business, government), improved local web, participatory decision-making, e-governance (tools for the citizen as well as for elected officials)
- Proposed Actions
  - Getting citizens involved in local decision-making, social network scaffolding, development of pilot projects and larger deployment, foster a community of practice
- Human resources aspects
  - Desired expertise
    - Inter-disciplinary social Interaction
    - Participatory user interface design
- Infra-structure needs
  - Last mile infra-structure, hosting services, further education support, open authoring tools

CHALLENGE 2

- ❖ Multilinguism and Latin American Identity in a Digital World
- ❖ Multilinguismo e Identidad Latinoamericana en un Mundo Digital
- ❖ Multilinguismo e Identidade Latinoamericana em um Mundo Digital

- Motivation
  - LA content is practically hidden within the digital world (e.g. Web)
  - There is little LA digital identity
  - It's hard for LA people to access their own cultural contents
- Description
  This challenge regards
  - Valorization of linguistic and cultural distinguished identity, recognizing the particularities, the intellectual resources, and national heritage associated with each of the LA countries
  - Visibility improvement of LA contents
  - Expanding and democratizing access to LA content
- RESEARCH QUESTIONS
  Regarding the LA content and its distinguished features (multi-source, multilingual, multi-version, multimedia), the research questions are
  - How to collaboratively build and integrate it
    - Compilation of large Portuguese and Spanish (and minor languages) corpora
  - How to make it available
    - Creation of large digital libraries via advanced (adapted) tools for manuscripts and other media in native languages
    - Lower-cost and more efficient technologies for communication (wireless and rural networks…)
    - New models for communication networks
  - How to make it universally accessible
    - New devices and technologies to facilitate access to the whole population (including readers with poor literacy)
    - Interfaces via voice and/or text in the native language
    - Friendlier human-computer interfaces for different user profiles and abilities, and diverse devices considering Information retrieval, Information Extraction (IE), Text Summarization (TS), Machine Translation (MT), Natural Language Processing (NLP)
    - Provide content that is adaptable to low-cost devices (cellular phones, digital television, OLPC, etc)
  - How to manage and maintain it
    - Quality management preserving all the original features
    - Content classification and annotation
    - Knowledge generation and evolution
- Social relevance
  - Overcome regional, cultural and social barriers
  - Promote exchange of people, expertise and experiences
- Regional relevance

  - Improve insertion of LA into the information society
- Benefits
  - Preserve and promote the diverse cultures in LA
  - Improve insertion of LA into the information society
  - Improve cultural, development and teaching conditions in LA
  - Bring speakers of minor languages into the information society
  - Overcome the digital division and all it implies
- Proposed Actions
  - Create a Consortium to build, collect and distribute linguistic resources (data, tools and standards) in Latin America
  - Define an annotation standard for all Language Technologies disciplines (IR, IE, MT, NLP, TS)
  - Promote multidisciplinary and multinational research projects within LA
  - Promote technology transfer to public and private organizations that could use and commercialize these developments
  - Promote multidisciplinary and multinational research projects within LA
  - Join efforts with international communities
    - For example: European community to develop research in this topic within FP7 (Framework Program 7 – multilingual lexical resources)
  - Regional search engines
  - Automatic translation of digital content
    - Create good Portuguese-Spanish MT systems to facilitate the sharing of resources, tools and products developed in LA
  - Promote technology transfer to public and private organizations that could use and commercialize these developments
- Human Resources Aspects
  Impact on ➔ REFINAR
  - Least privileged people in society
  - Ethnic groups
  - Citizens of all ages and social classes
  - IT industries, software users
  - Human language technology researchers
  - Teachers, educators and students
- Infra-structure needs
  - Networks, non-traditional IO devices, storage capacity, collaborative plataforms …

CHALLENGE 3

- ❖ Computing for environmental monitoring and control
- ❖ Computacion para monitoreo y control ambiental
- ❖ Computação orientada ao monitoramento e controle ambiental

- Motivation & Description
  - To achieve a better understanding about the environment to guide actions
    - To create and apply a computing and communication infrastructure to gather and disseminate relevant environment information.
  - Potential applications
    - Monitoring of environmental conditions (climate changing, forecast systems, ecosystems observation)
    - Management of disasters and development of forecast models
    - Increasing productivity (food production, agribusiness)
    - Energy aware systems
- Research questions
  - Propose theories, techniques, etc for WSN cross-layer design involving the different requirements (e.g., application, hardware) and validate them
    - Area coverage, appropriateness of hardware
    - Design communication and routing protocols
    - Privacy and security of information
  - Modeling of the systems
  - Integration of various input data sources (e.g., field, satellite)
  - Data analyses
- Social relevance
  - Environment issues directly impact health, availability of resources (e.g., agriculture)
- Regional relevance
  - Weather conditions, deforestation and pollution control, water supply and disaster management (early alarm and relief systems), agriculture.
- Benefits
  - Improve living conditions and quality of life.
  - Preserve the natural resources and species.
  - Increase productivity of agribusiness.
- Proposed Actions
  - Identify specific and relevant applications for Latin America
    - Once identified, develop, deploy and evaluate prototypes
- Human Resources Aspects
  - Multidisciplinary team
    - Computing
      - Hardware & software
      - Large and dynamic database management
      - Networking
      - WSN
      - HCI
    - Biology
    - Environmental (urban and natural aspects)

        - Math modeling
- Infrastructure Needs
  - Enable collaboration within CS groups related to the research topics
  - Enable collaboration between CS and researchers from other disciplines related to the research topics
  - Issue a Request for Proposals (RFP)

CHALLENGE 4

- ❖ Complex Collaborative Networks in Latin America
- ❖ Redes Colaborativas Complejas en America Latina
- ❖ Redes Colaborativas Complexas na América Latina

- Motivation and Description
  - LA countries have a lot in common and at the same time there's a lot of diversity. Currently many efforts are isolated and independent. Through a collaborative network experiences, infrastructure, knowledge and efforts can be shared to address diverse issues facing our countries
  - Acknowledge, promote and consolidate our diversity (cultural, geographical, language, etc.)
  - Many complex problems faced by modern society require multidisciplinary approaches
- Research Questions
  - Understand user needs for specific applications/communities and adoption barriers
  - Design the necessary infrastructure taking into account environmental limitations and restrictions
  - Reliable, secure, efficient, scalable, cost-effective
  - Modeling dynamic complex networks: temporal evolution, validation
  - User interfaces appropriate to diverse user profiles, habilities and devices
  - Interoperability
  - Adaptability (devices, interfaces, languages, literacy, technology, etc.)
  - Management for effective and productive use, and for the continuous evolution
- Social and Regional Relevance
  - Create opportunities for social and economic development
  - Increase knowledge about our culture/history/etc. (reduce prejudice)
  - Consolidate our diversity
- Benefits
  - Take advantage of existing resources (human, infrastructure, etc) in LA
  - Broaden specialized knowledge and expertise

  - Promote multidisciplinary and multinational research projects in LA
  - Create opportunities for building knowledge, theories, methodologies, processes
- Proposed Actions
  - Diagnosis of current situation in LA
    - infrastructure
    - research
  - Produce a map of current research efforts in LA in the required fields of expertise
  - Develop a collaborative research network for LA
    - Research mobility
  - Identify a small set of application scenarios that can be realized in the short/medium term
    - Research community; education; thematic self-sustained communities (people with disabilities, human rights, ecology, agro-business)
- Human Resources
  - Expertise in different areas in CS (Networking, HCI, CSCW, Modeling, IR, Software Engineering, Data Mining and Management,
  - Expertise from other areas (sociology, psychology, anthropology, physics, biology, economy
  - Digital literacy
  - Create a culture of collaboration and team work
- Infrastructure Needs
  - Minimal connectivity infrastructure in all participating countries
    - Reach rural/remote areas
  - Multilingual support for information and knowledge sharing/exchange