1. Introduction

The group CASIP is officially recognized as researching group by the Regional Government (Junta de Andalucía) with reference TIC-117, and is one of the groups included in the Researching Thematic Unit on Advanced Computing Architectures and Smart Embedded Systems (ACASES) of the Research Center for Information and Communications Technologies of the University of Granada (CITIC-UGR, http://citic.ugr.es/). The group is composed by members of the Department of Computer Architecture and Computer Technology (http://atc.ugr.es) that teach subjects related with Computer Technology and Architecture, High Performance Computing, Application Specific Integrated Circuits and Systems, Control Systems, Operating Systems and Programming on the Graduate studies of Computer Engineering, Electronics Engineering, Telecommunications Engineering, Physics and Chemistry, and on the Master of Computer Engineering and Networks.

In the present year (2014), the group CASIP is composed by 36 members (of which 33 are PhD) and six PhD collaborators. Among the members there are 7 full professors and 15 associate professors, and 10 members have received the Graduate Extraordinary Prize, and 4 members have received the Doctorate Extraordinary Prize.

The mission of the group CASIP is to develop high quality researching, developing and innovation activities in areas of Information and Communication Technologies (ICT) for the advancement of scientific and technological knowledge, and to improve the quality of life of the citizens and the competitiveness of companies in our socio-economic environment. The areas of interest of CASIP are the following ones:

- **High Performance Architectures and Distributed Systems.**
  - Advanced implementation of network interfaces and distributed file systems.
  - High performance computing (HPC) and novel architectures and algorithms in bioengineering, biomedicine and bioinformatics.
  - Application-Specific embedded systems for smart vision sensors, robotics and instrumentation.
  - Safety embedded systems for avionics, automotive or industry.
  - Mobile and Cloud computing infrastructure.

- **Neural Engineering.**
  - Computational Neuroscience.
  - Brain simulation.
  - Brain Computer Interface (BCI) technologies and applications.
  - Neuromorphicengineering.

- **Advanced Monitoring and Control Systems.**
  - Embedded systems for control of distributed networks.
  - Online self-organizing adaptive smart embedded controllers.
  - Inference behaviour in sensor networks for monitoring in smart spaces.
  - Control and monitoring of large scientific infrastructures.
  - Remote monitoring and control of environmental parameters for energy efficient buildings and risk prevention.
The target applications of CASIP belong to the following areas:

- e-Health and well-being.
- Computer-aided medical diagnosis.
- Scientific Instrumentation
- e-Monitoring and control
- Smart spaces and ubiquitous systems
- Systems for people with special needs


- Health and wellbeing
- Smart, green and integrated transport
- Climate action, resource efficiency and raw materials
- Inclusive, innovative and reflective societies
- Secure societies


- A new generation of components and systems: Engineering of advanced and smart embedded components and systems;
- Next generation computing: Advanced computing systems and technologies;
- Future Internet: Infrastructures, technologies and services;
- Content technologies and information management: ICT for digital content and creativity;
- Advanced interfaces and robots: Robotics and smart spaces;
- Micro- and nanoelectronics and photonics: Key enabling technologies related to micro- and nanoelectronics and to photonics.

The activities of group CASIP clearly deal with activities in lines a), b), c) and e).

The scientific production of the group in the last years is summarized in Table 1. It has been obtained from the SICA (System of Information on Science of Andalusia) database.

| Table 1. Summary of the scientific production of CASIP |
|---------------------------------|---|---|---|---|---|---|---|
|                                | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
| Papers in Internacional Journals |    |    |    |    |    |    |    |
| Conferences                    |    |    |    |    |    |    |    |
| Doctoral Dissertations         |    |    |    |    |    |    |    |
| Books                          |    |    |    |    |    |    |    |
| Book Chapters                  |    |    |    |    |    |    |    |
| Patents                        |    |    |    |    |    |    |    |
| Public Funded Projects         |    |    |    |    |    |    |    |
| Contracts (article 11/45 LRU)  |    |    |    |    |    |    |    |

Papers on the different researching lines of the group have been published in some of the best International Journals of their corresponding areas, as it can be seen from its ISI impact factor. The formative capability of the group is demonstrated by the high number of Doctoral dissertations (more
than 85) advised by its members. One of the members of the group (professor Eduardo Ros) has received the Award for Young Researchers of Andalusia in its edition of 2002 and the group CASIP won the University of Granada’s Social Council Award for Knowledge transference (2003 edition).

The main companies that have signed R+D+I contracts with members of the group CASIP are:

- AQUAPLAN
- Atico7,
- Automation Consultants, S.L.,
- BOA COR S.A.,
- CATÓN Sistemas Alternativos
- CIATESA,
- Civista,
- Control in Situ, S.L.,
- Data General,
- EMASAGRA,
- ETC Media, S.L.,
- Fujitsu España S.A.,
- HEFAGRA Informática, S.L,
- ICR (Ingeniería y Control Remoto S.A.),
- INFOTEL (Información y Telecomunicaciones S.A.),
- INISEL,
- Intecna Solutions,
- Sadiel,
- SEDIPYME,
- Southern Star,
- Telefónica I+D.
- Telvent Energía y Medio Ambiente, S.A.,
- Telvent Interactiva,
- TQM Asesores
- Viajes Genil, S.A.

Many of those contracts are included in national or regional programmes to promote relationships between public researching organizations and companies (CEDIT, PROFIT, TRACTOR, Technological Corporation of Andalusia, etc.). Moreover, several spin-off companies have been incorporated by members of our group:

- **Ingeniería y Control Remoto (ICR)**

- **Logic Factory**
  - Founded by David Palomar (also promoter and responsible of the Section in Granada of Movired 2000 S.L.)
  - [http://www.logic-factory.com/](http://www.logic-factory.com/)

- **Seven Solutions**
  - Incorporated in 2006, and founded by Eduardo Ros, Javier Díaz, Eva M. Ortigosa, Rodrigo Agís, Richard Carrillo and Rafael Rodríguez.

The funding obtained by the group through projects supported by European, national and regional programmes that are active in 2014 is shown in Table 2.

<table>
<thead>
<tr>
<th>Project</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
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</tr>
<tr>
<td>3</td>
<td>60.000</td>
<td>60.000</td>
<td>15.000</td>
</tr>
</tbody>
</table>
4. Title: FASTDEFORM: Real-time understanding of dexterous deformable object manipulation with bio-inspired architectures.
   Responsible researcher: Eduardo Ros Vidal
   Funded by: European Commission (UE, IST, VII Framework Programme). Marie Curie Programme (IEF: International European Fellowships)

The projects now active and supported from this year are the following ones (the number of the project is the same indicated in the Table 2):

**European projects**:

1. Title: TOMSY: Topology based Motion SYnthesis for dexterous manipulation.
   Reference: FP7-270436
   Responsible researcher: Eduardo Ros Vidal
   Funded by: European Commission (UE, IST, VII Framework Programme)
   Dates: 01-04-2011 - 31-03-2014
   Budget: University of Granada 434.000 Euros. Total: 3.000.000 Euros

2. Title: REALNET: Realistic Real-time Networks: computation dynamics in the cerebellum.
   Reference: FP7-270434
   Responsible researcher: Eduardo Ros Vidal
   Funded by: European Commission (UE, IST, VII Framework Programme)
   Dates: 01-02-2011 - 31-01-2014
   Budget: University of Granada 255.070 Euros. Total: 2.387.950 Euros

3. Title: HBP: Human Brain Project. Future Neuroscience WP
   Reference: FP7 Flagship Project 604102
   Responsible researcher: Eduardo Ros Vidal
   Dates: 1-10-2013 - 30-09-2023
   Budget: 150.000€

4. Title: Teal-Time ASoC
   Reference: PIOF-GA-2012-332081
   Responsible researcher: Eduardo Ros Vidal
   Funded by: European Commission (UE, VII Framework Programme). Marie Curie Programme (IOF: International Outgoing Fellowships)
   Dates: 7-05-2013 - 6-05-2016
   Budget: 254.925,90€
Dates: 15-07-2012 - 14-07-2014
Budget: 168.896,40€

**National projects:**

1. **Title:** AbFS: Sistema de Almacenamiento Paralelo y Muy Masivo para HPC & Cloud Computing  
   **Reference:** IPT-2011:1728-430000  
   **Responsible researcher:** Antonio F. Díaz García  
   **Funded by:** Ministerio de Ciencia e Innovación  
   **Dates:** 1/10/2011 - 31/12/2014  
   **Budget:** 628.431 euros total, UGR: 174.438 euros

2. **Title:** High Performance Multi-Objective Optimization and Applications on Neuro-engineering and Rehabilitation Technologies (hpMooN)  
   **Reference:** TIN2012-32039  
   **Responsible researcher:** Julio Ortega Lopera  
   **Funded by:** Ministerio de Economía y Competitividad  
   **Dates:** 1/1/2013 - 31/12/2015  
   **Budget:** 33.631 (2013); 3.771 (2014); 3.501 (2015)

3. **Title:** Neurociencia Computacional en ciclos cerrados de percepción-acción (NEUROPACT)  
   **Reference:** TIN2013-47069-P  
   **Responsible researcher:** Eduardo Ros Vidal  
   **Funded by:** Ministerio de Economía y Competitividad  
   **Dates:** 1/1/2014 - 31/12/2016  
   **Budget:** 112.500 Euros

**Regional and local (CEI BIOTIC) projects:**

1. **Title:** Plat-EEG: Plataforma de altas prestaciones para la adquisición, extracción y procesamiento inteligente de señales EEG  
   **Reference:** TIC-7983  
   **Responsible researcher:** Francisco J. Pelayo Valle  
   **Funded by:** Junta de Andalucía  
   **Dates:** 27/06/2013 - 26/06/2016  
   **Budget:** 100.639,38€

2. **Title:** Visión tridimensional para videoanálisis interactivo y realidad aumentada (VITVIR)  
   **Reference:** P11-TIC-8120  
   **Responsible researcher:** Antonio Javier Díaz Alonso  
   **Funded by:** Junta de Andalucía  
   **Dates:** 27/06/2013 - 26/06/2016  
   **Budget:** 37.881,00€

3. **Title:** Motion-based Vision Systems for UAVs  
   **Reference:** PYR-2014-4  
   **Responsible researcher:** Francisco Barranco Expósito  
   **Funded by:** CEI BioTic GRANADA  
   **Dates:** Desde 01-04-2014 - 31-12-2014  
   **Budget:** 3000 €

**Patents and contracts:**

The list of patents obtained by members of the group can be seen in the link: [http://atc.ugr.es/pages idi/patentes](http://atc.ugr.es/pages/idi/patentes)

The founded contracts signed with companies in 2014 (under the article 83 of the LOU) are shown in Table 3 (the number in the first column of this table corresponds to the number of contracts in the following list):
### Contract 2014

<table>
<thead>
<tr>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>142.609</strong></td>
</tr>
</tbody>
</table>

1. **Title:** Incorporación de nuevas tecnologías de procesamiento de datos en la ayuda a la toma de decisiones para la gestión automática de la sectorización de la red de abastecimiento de agua de la ciudad de Córdoba.  
   **Company:** EMACSA (Empresa Municipal de Aguas de Córdoba S.A.)  
   **Dates:** desde 01/01/2012 - 31/12/2014.  
   **Responsible researchers:** Miguel Damas, Héctor Pomares.  
   **Budget:** 88.636,36€ + VAT. (29.545€+ VAT per year)

2. **Title:** ALM@ Deployer, Desarrollo de Agente de Despliegue Automático e Integración en Plataforma para la Gestión del Ciclo de Vida de Aplicaciones.  
   **Company:** Telvent Energía S.A.  
   **Reference:** C-3857-00  
   **Dates:** 15/07/2013 - 14/08/2014  
   **Responsible researchers:** Miguel Damas Hermoso, Juan Antonio Holgado Terriza  
   **Budget:** 8.064€ (2013) y 8.064€ (2014)

3. **Title:** Diseño y desarrollo de herramientas de configuración e integración para RTU, enmarcado dentro del proyecto TIGRIS “Total Integrated GRid Intelligent System”  
   **Company:** Telvent Energía S.A. (subcontratación en programa FEDER-INTERCONECTA).  
   **Reference:** C-3802-00  
   **Dates:** 1/10/2013 - 30/10/2014  
   **Responsible researchers:** Miguel Damas Hermoso y Héctor Pomares Cintas  
   **Budget:** 15.000€ (2013) y 25.000€ (2014)

4. **Title:** ACELTEC: TECNOLOGÍAS DE FABRICACIÓN DE ACELERADORES LINEALES SUPERCONDUCTORES DE ALTA INTENSIDAD  
   **Reference:** OTRI 30C0319600  
   **Company:** Cibernos Consulting  
   **Dates:** 02/01/2012 - 31/12/14  
   **Responsible researcher:** Javier Díaz Alonso  
   **Budget:** 150.000 € (48.000 € in 2014)

5. **Title:** Total Integrated GRid Intelligent System” TIGRIS  
   **Reference:** OTRI 30C0338200  
   **Company:** Seven Solutions  
   **Dates:** 01/09/2013 - 31/12/14  
   **Responsible researcher:** Javier Díaz Alonso  
   **Budget:** 52.000 € (32.000 € in 2014)

In the link [http://atc.ugr.es/pages/idi/casip](http://atc.ugr.es/pages/idi/casip) it can be found more information related with the group CASIP