Contact

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Top Skills

Software Engineering
Software Development
Distributed Systems

Languages

English (Full Professional)
Italian (Native or Bilingual)
German (Limited Working)

Publications

Instrument Control Software Requirement Specification for Extremely Large Telescopes
Evolution of the VLT Instrument Control System toward industry standards
The ESO astronomical site monitor upgrade
Enabling technologies and constraints for software sharing in large astronomy projects
Experiences in Applying Model Driven Engineering to the Telescope and Instrument Control System Domain

Gianluca Chiozzi

System Engineer at European Southern Observatory
Greater Munich Metropolitan Area

Summary

I am since 1994 at the European Southern Observatory (ESO) and in my current role as Senior Software Engineer in the System Engineering Department I work for our new ELT 30m diameter optical telescope and for other projects.

My main area of expertise is the development of control systems for telescopes and their instrumentation. I have given an important contribution to all major ESO projects in the last 25+ years (VLT, ALMA and now ELT).

This expertise can be successfully applied to any complex control system and covers, from the technical point of view, requirements management, architecture and design, system modeling, distributed systems and several other modern software engineering technologies.

I have been successfully managing development teams since year 2000, in an international and geographically distributed context. I am a very good team builder and I have excellent communication skills. I like mentoring and I strive to help young engineers developing their potentiality.

From 2007 to 2013 I have been Head of the Control and Instrumentation Software Department, providing line management to ~ 20 software engineers, but I have then decided to go back full time to active project activity to work on the control system of our new ELT project.

I often collaborate with other projects in the domains of astronomical or large experimental physics machines, for example participating in reviews or providing consultancy, and organizing conferences.

Before coming at ESO in 1994, I have worked at the IBM Scientific and Technological Research Center in Milano (Italy). At IBM, I

have been involved on recognition systems for maps and technical drawings and on the development of effective user interfaces for utility management systems (like electrical or railways networks).

My education as a physicist (I have done active research in plasma physics, nuclear fusion) allows me to understand very well the needs of scientists, our "customers".

See my web page for more details and a full list of publications: http://www.eso.org/~gchiozzi

Experience

European Southern Observatory

27 years 1 month

System Engineer, System Engineering Department

October 2019 - Present (1 year 8 months)

Munich Area, Germany

In the System Engineering Department I bring my software expertise and my decades long esperience with telescope control system design and construction in multidisciplinary system activities and I apply my experience in Model Based System Engineering with the SysML modelling language.

In the ELT project I am a member of the core system engineering team where I represent in particular the control software perspective.

In the ELT project I am also responsible for requirements management, architecture and design of the Central Control System, i.e. the control software supervising and coordinating the activity of all the subsystems of the telescope and interfacing with the astronomical instruments and with the world outside the telescope itself.

I am also involved in the activities for the ELT instrumentation control software and in the specifications for the control software infrastructure.

I am always very happy of making my expertise available to other ESO projects, in particular the ones I have been working on in the past.

In all my work, I use my expertise in telescope control systems, distributed systems, requirements management and collection, architecture, modeling, design, prototyping of complex software systems.

Senior Software Engineer, Control Software and Engineering Department
April 2013 - October 2019 (6 years 7 months)

In the ELT project I have been in these years responsible for requirements management, architecture and design of the Central Control System.
As a member of the System Engineering Core Team, I was also the liaison between system engineering and the Control System team.
In these years I have also been involved for the ELT in the instrumentation control software and in the specifications for the control software infrastructure.
From 2015 until the beginning of 2017 I have been responsible, with a small team, for the upgrade of the Astronomical Site Monitor in Paranal with the adoption of new technologies and the integration of new instruments.

Head of Control and Instrumentation Software Department
May 2007 - June 2013 (6 years 2 months)

As Head of the Control and Instrument Software Department, my tasks in the matrix structure of our organization included:
- Providing line management to ~ 20 software engineers, allocated to the development of control software for all ESO projects.
- Ensuring that an appropriate level of resources is made available to the projects, outsourcing development and services if necessary.
- Participating in the definition of software engineering practices.
- Promoting and maintaining synergies between projects.
- Assisting project teams when necessary in the definition and planification of software products. Maintaining an overview of deliveries of projects from a functional perspective.
- Keeping abreast of new technology developments and assess their suitability for ESO's work.
- Collaborating with the ESO IT Manager for the definition of the IT infrastructure needed for software development.

In these 5 years, I had very little time for technical activities, but I still managed to do some work as software architect on the ALMA (Atacama Large Millimeter Array) project, mainly in the ALMA Common Software, and on preliminary studies for the control system of the ELT project.
In 2013, with the ramping up of the effort for the construction of the ELT, I felt that it was the right time to return to purely technical activities and give my

contribution to the exciting new project. I have therefore asked to return to full time active technical responsibility.

Head of ALMA Common Software subsystem team
January 2000 - April 2007 (7 years 4 months)
Munich Area, Germany

The ALMA (Atacama Large Millimeter Array) project is an international collaboration between European, American and Japanese institutes for construction and operation of a radio interferometer in Chile.
As responsible for the software infrastructure used across the whole project (ALMA Common Software), I have been:
- Leading the definition of the overall architecture of ACS.
- Leading a team of ~ 10 people geographically distributed among several members of the collaboration
- Managing external collaborations and development contracts.
- Ensuring communication and interfaces with all other subsystems.
I have been also a member of the ALMA High Level Analysis and Software Engineering groups, where I have played a key role on one side in the definition of the overall architecture of the ALMA project and on the other side in the definition of the software engineering standards and software development methodology.
ACS is publicly available open software and is used also in other projects in the community of astronomical telescopes.

Software engineer, VLT project
May 1994 - December 1999 (5 years 8 months)
Garching bei Muenchen

In this period I have given a major contribution to the development of the control system for the Very Large Telescope (VLT), now in operation in the Atacama desert in Chile.
From 1998 to 1999 I have been responsible for the activity of the Telescope Control Software (TCS) team at ESO headquarters, with a goup of 3 people.
Design and development were based on object oriented technology and part of my job involved research on the application of objet oriented techniques for the implementation of real-time control systems.
I have been since the beginning of my activity at ESO the co-ordinator of the Object Oriented Working Group, responsible of driving and co-ordinating the introduction of object oriented methodologies.

IBM Italia S.p.A.
Software Engineer

1990 - 1994 (4 years)
Milano, Italy

At the IBM Research Center in Milamo I have worked on the following topics/ projects:
- Recognition techniques and interpretation of raster images to perform raster to vector conversion.
- Development of software tools for automatic interpretation of technological maps, able to recognise not only lines and text, but high level, complex entities and to fill in a technical data base with all the data found on the raster image.
- Development of a system for colorimetric analysis of non uniform, extended surfaces, to be used in industrial applications.
- Effective user interfaces' development techniques and interactive user interface generators.
- Co-ordinated the project of an interactive system to manage failures on the medium tension electric grid for ENEL (National Agency for Electrical Energy in Italy).
- Task force for the design and prototype's implementation of a system for railway traffic management for FFSS (National Railways Company of Italy).
- Analysis, design and prototype's implementation for the user interface of a highway traffic control system.
In all these projects I have played a major role in driving the change to OO technology and providing formal and on-the-job training and mentoring support.

Education

Liceo Classico Ludovico Ariosto
Maturita' Classica

Università degli Studi di Ferrara
Plasma Physics · (1988 - 1990)

Università di Bologna
Corso di Perfezionamento in Fisica (Master in Physics), Physics · (1987 - 1988)

Università degli Studi di Ferrara
Physics (Laurea in fisica), Plasma Physics · (1984 - 1987)

Scuola Normale Superiore

Student of the Science Class, Physics · (1983 - 1984)