Mission

★ Carry out high quality research in Information Technologies with an emphasis on
  ✦ formal methods
  ✦ foundations (including multi-disciplinary foundations)

★ To support cooperation and exchange between groups and researchers in Toulouse and in Madrid
  ✦ visits and interchange
  ✦ joint projects

★ To support education and early stage researchers
  ✦ joint PhD supervision
  ✦ guest lectures
★ The LEA will initially include topics such as:
formal methods for safety and security
intelligent agents and open multi-agent systems
automated deduction
declarative and logic programming
ontologies
IRIT’s work centres on foundational topics with applications to formalization of programming semantics.

UPM has achieved remarkable results on static analysis, based on a thorough understanding of semantics and of efficient inference procedures.

Results of the collaboration, both theoretical and practical, can have a significant impact on the productivity of software engineers and on software reliability in key application areas such as aeronautics and medical appliances.
Intelligent agents and open multi-agent systems

✧ a key topic at UPM and IRIT
✧ includes study of modal logics for representing and reasoning about complex concepts related to beliefs, trust and emotions in multi-agent systems
✧ long-term relevance for applications such as e-commerce or electronic voting
The availability of automated deduction methods for non-classical logics is important not only for the implementation of intelligent agents, but also for the implementation of logic-based languages.

We will jointly address complexity and mechanization issues for important families of non-classical logics.
A new project at UPM in cooperation with IRIT will develop new extensions of the declarative programming framework answer set programming (ASP)

New functionalities in ASP will be applied to formal reasoning problems in areas of social relevance and sustainability
✦ Ontologies provide a key enabling technology of the semantic web.
✦ Widely used in science and business.
✦ Challenges for IRIT and UPM teams are to integrate natural language processing, formal ontologies and relevant interactive tools into a cooperative ontology engineering process.
The LEA programme

- organize a series of UPM and IRIT seminars and workshops alternating between Madrid and Toulouse.
- Doctoral students and post-doc researchers: scholarships and grants, joint PhD supervision
- exchanges and short-term visits
- guest lectures
- partnership in national and European research programmes
Example: an FP7 Coordination Action

- 2011–2014
- 624000 €
- Coordinator: UPM
- Main partner: IRIT
- Interplay of ICT with Philosophy, Social and Cognitive Sciences