The ReDCAD research unit

http://www.redcad.org

I. Overview:

The Research Unit Development and Control of Distributed Applications (ReDCAD) was created in October 2005 at the Department of Computer Engineering and Applied Mathematics of the National School of Engineers of Sfax. The main activities carried on by the members of this unit include: scientific research, training and advising of young researchers, participation in the socio-economic life, contribution to national and international research projects and organization of national and international scientific conferences and workshops.

The research activities within the ReDCAD group belong to the field of adaptive distributed systems and are particularly interested in the development of models, approaches, techniques and tools which help to design and implement adaptive distributed applications. These approaches are applied to collaborative activities, distributed algorithms, and pervasive software. Different software technologies are addressed, like objects, agents, components, and Web services.

Topics and research Fields

Four major research fields are handled within the ReDCAD research unit:

1. Formal approaches for designing adaptive and distributed applications
2. Deployment and management of adaptive and distributed applications
3. Distributed applications based on mobile agents

II. Cooperation

Collaborations within the ReDCAD research unit are mainly academics. They are achieved through a co-direction of PHD Thesis with:

1. French laboratories: such as the LAAS laboratory in Toulouse University, the LaBRI laboratory in University of Bordeaux I,
2. **National Laboratories**: such as MIRACL Laboratory in the Institute of Computer Science and Multimedia of Sfax (Institut Supérieur d'Informatique et de Multimedia de Sfax - ISIMS),

3. **German laboratories**: such as Software Technology Group Laboratory in the Technical University of Darmstadt.

### III. Publications

#### 2009

- **An xADL Extension for Managing Dynamic Deployment in Distributed Service Oriented Architectures**
  (conference) the 3rd International Conference on Fundamentals of Software Engineering, from : 2009-04-15, to : 2009-04-17, 8 pages
  [ Mohamed Nadhmi Miladi, Ikbel Krichen, Mohamed Jmaiel and Khalil Drira ]

- **ELECTING A LEADER IN THE LOCAL COMPUTATION MODEL USING MOBILE AGENTS**
  (conference), from : 2009-03-29, to : 2009-04-02, 6 pages
  [ Mohamed Amine Haddar, Ahmed Hadj Kacem, Yves Métivier and Mohamed Mosbah, Mohamed Jmaiel ]

- **From Formal Access Control Policies to Runtime Enforcement Aspects**
  [ Slim Kallel, Anis Charfi, Mira Mezini, Mohamed Jmaiel and Karl Klose ]

#### 2008

- **Multi-layer coordinated adaptation based on graph refinement for cooperative activities**
  (journal) Communications of SIWN, 2008-09-09
  [ Ismail bouassida, Nicolas Van Wambeke, Khalil Drira, Christophe Chassot and Mohamed Jmaiel ]

- **Providing predictive self-healing for web services: a QoS monitoring and analysis-based approach**
  (journal) Journal of Information Assurance and Security (JIAS), volume 3, 2008-09-01, 10 pages
An experimental evaluation of SEC+, an enhanced search engine for component-based software development
(journal) SIGSOFT Software. Eng. Notes, volume 33, 2008-07-25, 3 pages
[Sofien Khemakhem, Khalil Drira, Emna Khemakhem and Mohamed Jmaiel]

ForMAAD: A Formal Method For Agent-Based Application Design
(journal) Web Intelligence and Agent Systems International Journal, volume 5, 2008-01-24, 10 pages
[Ahmed Hadj Kacem, Amira Regayeg and Mohamed Jmaiel]

Using Aspects for Enforcing Formal Architectural Invariants
(journal) Electronic Notes in Theoretical Computer Science (Elsevier), volume 215, 2008-01-01, 17 pages
[Slim Kallel, Anis Charfi and Mohamed Jmaiel]

Service level agreement modeling and monitoring using ontologies
(conference) JF0 2008, from: 2008-12-01, to: 2008-12-03, 6 pages
[Kaouthar FAKHFAKH, Tarak CHAARI, Saïd TAZI, Khalil DRIRA and Mohamed JMAIEL]

Aspect-based Enforcement of Formal Delegation Policies
(conference) 3th International Conference on Risks and Security of Internet and Systems (CRiSIS), from: 2008-10-28, to: 2008-10-30, 9 pages
[Slim Kallel, Anis Charfi, Mira Mezini and Mohamed Jmaiel]

[Monia Loulou, Ahmed Hadj Kacem, Mohamed Jmaiel and Mohamed Mosbah]

Implementing a rule-driven approach for architectural self configuration in collaborative activities
(conference) 5th International Conference on Soft Computing as Transdisciplinary Science and Technology, from: 2008-10-27, to: 2008-10-31, 7 pages
A QoS-oriented reconfigurable middleware for self-healing web services
(conference) ICWS '08: The 2008 IEEE International Conference on Web Services, from : 2008-09-23, to : 2008-09-26, 8 pages
[ Riadh BEN HALIMA Mohamed JMAIEL and Khalil DRIRA ]

2007

Context-aware adaptation for group communication support applications with dynamic architecture
(journal) System and Information Sciences Notes, volume 2, 2007-09-11
[ Ismail bouassida, Khalil Drira , Christophe Chassot and Mohamed Jmaiel ]

SEC+: an enhanced search engine for component-based software development
(journal) ACM SIGSOFT Software Engineering Note, volume 32, 2007-07-23, 6 pages
[ Sofien Khemakhem, Khalil Drira and Mohamed Jmaiel ]

A Distributed Computational Model for Mobile Agents
(conference) , from : 2007-12-31, to : 2008-01-02, 6 pages
[ Mohamed Amine Haddar, Ahmed Hadj Kacem, Yves Métivier, Mohamed Mosbah, Mohamed Jmaiel ]

A formal approach to prevent attacks on mobile agent systems
[ Monia Loulou, Mohamed Tounsi, Ahmed Hadj Kacem, Mohamed Jmaiel and Mohamed Mosbah ]

A Graphical Tool to Query LMF databases
(conference) 3rd Language & Technology Conference, from : 2007-10-05, to : 2007-10-07, 7 pages
[ Mehdi Ben Abderrahmen, Bilel Gargouri and Mohamed Jmaiel ]

Formal Design of Structural and Dynamic Features of Publish/Subscribe Architectural Styles
A Serialisation Based Approach for Strong Mobility of Shared Object
(conference) The 1st International Workshop on Java for Mobility (Ja4Mo 07) as part of PPPJ2007, from : 2007-09-03, to : 2007-09-05, 6 pages
[ Soumaya Marzouk, Maher Ben Jemaa and Mohamed Jmaiel ]

A QoS-driven reconfiguration management system extending Web services with self-healing properties
[ Riadh BEN HALIMA, Mohamed JMAIEL and Khalil DRIRA ]

Combining Formal Methods and Aspects for Specifying and Enforcing Architectural Invariants
(conference) 9th International Conference on Coordination Models and Languages (Coordination), from : 2007-06-05, to : 2007-06-08, 20 pages
[ Slim Kallel, Anis Charfi, Mira Mezini and Mohamed Jmaiel ]

A Serialisation Based Approach for Processes Strong Mobility
(conference) The 7th IFIP International Conference on Distributed Applications and Interoperable Systems(DAIS'07), from : 2007-06-05, to : 2007-06-08, 14 pages
[ Soumaya Marzouk, Maher Ben Jemaa and Mohamed Jmaiel ]

Une approche orientée règle pour la spécification formelle des architectures dynamiquement configurables
[ Riadh BEN HALIMA, Mohamed JMAIE and Khalil DRIRA ]

Consistent Reconfiguration for Publish/Subscribe Architecture Styles
[ Imen Loulou, Ahmed Hadj Kacem, Mohamed Jmaiel and Khalil Drira ]

Spécification et vérification d’algorithmes distribués à base d’agents mobiles
[ Med A. Haddar, A. Hadj Kacem, M.Mosbah, Y. Métivier and M. Jmaiel ]
- **A UML Profile and a FUJABA Plug-In for modeling dynamic software architectures**
  [ Mohamed Nadhmi Miladi, Mohamed Hadj Kacem and Mohamed Jmaiel ]

- **2006**
  - **Des services orientés besoin pour l’exploitation des bases lexicales normalisées**
    (conference) 9ème Conférence Maghrébine sur les Technologies de l'Information, from: 2006-12-07, to: 2006-12-09, 6 pages
    [ Mehdi Ben Abderrahmen, Fatma Chaâri, Bilel Gargouri and Mohamed Jmaiel ]

  - **A formally specified framework for elaborating event-based architectural styles correct by design**
    (conference) MCSEAI'06, from: 2006-12-07, to: 2006-12-09, 6 pages
    [ Imen Loulou, Ahmed Hadj Kacem, Mohamed Jmaiel, Khalil Drira ]

  - **UML-based approach for validation of software architecture descriptions**
    (conference) TEAA-06 : The 2nd International Conference on Trends in Enterprise Application Architecture, LNCS, from: 2006-11-29, to: 2006-12-01, 15 pages
    [ Mohamed HADJ KACEM and Mohamed JMAIEL and Ahmed HADJ KACEM, Khalil DRIRA ]

  - **A conceptual model for secure mobile agent systems**
    (conference) International Conference on Computational Intelligence and Security, from: 2006-11-03, to: 2006-11-06, 4 pages
    [ Monia Loulou, Ahmed Hadj Kacem, Mohamed Jmaiel and Mohamed Mosbah ]

  - **Moderate Growth Time Series Dynamic Combinatorics Modelisation**
    [ Luaï JAFF, Gérard H. E. DUCHAMP, Hatem HADJ KACEM and Cyrille BERTELLE ]

  - **Emerging Decision Support System for Geographical Information Systems.**
    (conference) International Conference on Economics, Law and Management
[ Hakima Kadri, Rawan Ghnemat, Hatem Hadj Kacem, Cyrille Bertelle and Gérard H. E. Duchamp ]

▪ Un environnement de recherche et d'intégration de composant logiciel
(conference) seventh Maghrebian conference related to the software engineering and the artificial intelligence, from : 2006-05-04, to : 2006-05-06, 6 pages
[ KHEMAKHEM S, JMAIEL M., BENHAMADOU A., DRIRA K ]

▪ Describing dynamic software architectures using an extended UML model
[ Mohamed HADJ KACEM, Mohamed JMAIEL, Ahmed HADJ KACEM and Khalil DRIRA ]

▪ SEC: a search engine for component based software development
[ Sofien Khemakhem, Khalil Drira and Mohamed Jmaiel ]

▪ Compositional specification of event-based software architectural styles
(conference) AICCSA'06, from : 2006-03-08, to : 2006-03-11
[ Imen Loulou, Ahmed Hadj Kacem, Mohamed Jmaiel and Khalil Drira ]

❖ 2005

▪ Algebraic elimination of epsilon-transitions
[ Gérard H. E. Duchamp, Hatem Hadj Kacem and Éric Laugerotte ]

▪ Approche formelle intégrée pour la spécification des architectures dynamiques orientées composants
(journal), 2005-01-01
[ Imen Loulou, Ahmed Hadj Kacem, Mohamed Jmaiel and Khalil drira ]

▪ Towards a UML profile for the description of dynamic software architectures
(conference) COEA-05 : The International Conference on Component-Oriented Enterprise Applications, volume 70, LNI, from : 2005-09-20, to : 2005-09-24, 15
Graphical simulation of the dynamic evolution of the software architectures specified in Z
[ Riadh BEN HALIMA, Mohamed JMAIEL and Khalil DRIRA ]

Using UML2.0 and GG for describing the dynamic of software architectures
[ Mohamed HADJ KACEM, Mohamed JMAIEL, Ahmed HADJ KACEM and Khalil DRIRA ]

Evaluation and comparison of ADL based approaches for the description of dynamic software architecture
[ Mohamed HADJ KACEM, Mohamed JMAIEL, Ahmed HADJ KACEM and Khalil DRIRA ]

Spécification d'une solution multi-agent pour la gestion des conflits aériens
[ Slim Kallel, Amira Regayeg, Mohamed Jmaiel ]

On the decomposition of Boolean Functions
[ Gérard H.E. Duchamp, Hatem Hadj Kacem and Éric Laugerotte ]

A formal model for mobile agent systems using Z
(conference) The 3rd ACS/IEEE International Conference on Computer Systems and
Applications (AICCSA'05), from : 2005-01-03, to : 2005-01-06, 7 pages
[ Monia Loulou, Ahmed Hadj Kacem and Mohamed Jmaiel ]

❖ 2004

▪ **Formalization of cooperation in MAS : Towards a generic conceptual model**
  (conference) IX Ibero-American Conference on Artificial Intelligence (IBERAMIA 2004), from : 2004-11-22, to : 2004-11-25, 10 pages
  [ Monia Loulou, Ahmed Hadj Kacem and Mohamed Jmaiel ]

▪ **Algebraic erasure of letter-transitions**
  [ Gérard H. E. DUCHAMP, Hatem HADJ KACEM and Éric LAUGEROTTE ]

▪ **Toward a unified graph-based framework for dynamic component-based architectures description in Z**
  (conference) ICPS'04, from : 2004-07-19, to : 2004-07-23
  [ Imen Loulou, Ahmed Hadj Kacem, Mohamed Jmaiel and Khalil Drira ]

▪ **Splitting modules using minimization theory of automata.**
  [ Hatem Hadj Kacem, Gérard H. E. Duchamp and Éric Laugerotte ]

▪ **Agent et SMA : Modélisation de la coopération et de la négociation selon la notation Z**
  [ Monia Loulou, Ahmed Hadj Kacem and Mohamed Jmaiel ]

❖ **En 2003**

▪ **Automatic generation of code within the context of the design of the embedded real-time systems**
  (conference) 15th International Conference on Microelectronics, from : 2003-12-09, to : 2003-12-11, 4 pages
  [ Mehdi Ben Abderrahmen, Mohamed Abid, Jean Philippe Diguet and Jean Luc Philippe]
IV. Members

❖ Permanent Members

- Mohamed Jmaiel: The head of the unit (Professor)
- Ahmed Hadj Kacem (Professor)
- Maher Ben Jemaa (Associate Professor)
- Mourid Marrakchi (Associate Professor)
- Fathi Ghribi (Associate Professor)
- Mohamed Hadj Kacem (Associate Professor)
- Amira Regayeg (Associate Professor)
- Hatem Hadj Kacem (Associate Professor)
- Tarak Chaari (Associate Professor)
- Moez Krichen (Associate Professor)
- Wassef Louati (Associate Professor)
- Bechir Zalila (Assistant Professor)
- Monia Loulou (Assistant Professor)
- Imen Loulou (Assistant Professor)
- Amine Haddar (Assistant Professor)
- Bachar Zouari (Assistant Professor)
- Mahdi Ben Abderrahmen (Assistant Professor)
- Riadh Ben Halima (Assistant Professor)
- Mohamed Nadhmi Miledi (Assistant Professor)
- Slim Kallel (Assistant Professor)
- Soufien Chtourou (Assistant Professor)
- Soufien Khemakhem (Assistant Professor)

❖ PhD Students

- Soumaya Marzouk
- Lamia Bouaziz Yangui
- Monia Ben Brahim
- Najla Hadj Kacem
- Nouha Sellami Baccour
- Kaouthar Fakhfakh
- Imen Lahiani
- Amina Chaabane
- Myriam Kallel
- Fatma Krichen
- Ismaïl Bouassida
- Emna Fki

❖ Master Students
- Afef Mdhafrar
- Nadia Masmoudi
- Hatem Arous
- Nesrine Ouled Abdallah
- Imen Tounsi
- Nawel Ben Ameur
- Ghofrane Fersi
- Siwar Khlifi
- Afef Jmal Maâléj
- Zeineb Fki
- Houssem Medhioub
- Raja Haddad
- Wassim Drira
- Hamza Hliou