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System Engineer

Complex system development, usage and resource driven

Main skills

- Requirement and system engineering integrating safety and reliability aspects: turning need analysis specific to various stakeholders into System specifications, made of verifiable requirements, organized in life phases specific to different standpoints. Trade-off and development prioritization.
- Complex system development based on a threefold approach: **system engineering**, product focused, **architecture development**, resource focused, within **modular platforms** to optimize reuse, reactivity, product configuration and lifecycle management.
- Model Based System Engineering: “black box” simulation models, usable as reference for design purposes, embedded software development, an test vectors generation/verdict in IVVQ phase.
- Information system design (Business analysis, Project organization, PLM, MLM, AML, Configuration Management, ILS, ...)
- Team building, organization, and management of collaborative development in extended enterprises - Training - Dissemination

Main Achievements

- **Development of information systems and of mechatronic systems**
 - Methodological achievement: development of a Relativized Systemic (RS) and, within that framework, of a Relativized System Engineering (RSE – MBSE – Mechatronic) and, together with F. Fleuchey, of a Relativized Information Management (RIM – PLM, MLM, Project management, configuration management ...), users training, urbanization.
 - Business analysis: needs/requirements safety and reliability driven, acceptability of usage features induced by solution design, trade-off between the different standpoints.
 - Mechatronic system engineering: MBSE, technical documentation (specification, design, architectures), simulation, automated testing
 - Technical Information System Development: Integrated Logistic System with editorial environment, Product Lifecycle and configuration Management, Automated generation of interactive technical documentation, configuration management, collaborative project platform for equipment makers, development of ATA and AECMA platforms, ...
 - RSE IDE development: Rhapsody Modeler encapsulation with Eclipse, code generation out of EMF Relativized Systemic metamodel (with E. Campo)

Technical skills

- System Engineering, MBSE, PLM, MLM, ALM, SLI, Web applications
- Relativized System Engineering focused on requirement engineering and resource optimization
- Relativized Information Management to master complex information system development
- Agile development (2TUP, Scrum, Kamban ...), SADT
- Languages: UML, Java, Python, C++, VB, PHP, HTML, XML, CSS ...
- Tools:UML Modeler (Rhapsody, Enterprise Architect, Objectteering, ...), DOORS, Matlab/Simulink, Jira, Epic, Java IDE ...
- Standards : IEC 61508, ISO-26262, ISO-29148, ISO 42020, EIA 632, 13882B, DO-178B...

References

- Phd. Vincent Brindejonc
 - Position: Thales radar – Safety and Reliability Expert
 - Relation: collaboration to integrate Safety and reliability analysis within RSE framework through operational projects
 - tel : +33 6.33.85.51.12– mail : vincent.brindejonc@wanadoo.fr
- M. Eric Campo
 - Position: System and Devops Engineer,
 - Relation: co-designer of RSE IDE dedicated to MBSE development and simulation
 - tel : +33 6 66 82 36 44 – mail : campo_eric@yahoo.fr
- M. Patrice Elu
 - Position: retired from PSA, former Information System and PLM expert
 - Relation: RSE analyst, contribution to the development of RIM IDE prototype (Sonia), operationally used for 10 years by up to 400 designers (engine control)
 - mail: patrice.elu@wanadoo.fr
- M. Anthony Kremer
 - Position: PSA – Battery System technical leader
 - Relation: under its, supervision, setting up of a Battery Management System specification (BMS) conforming to RSE (“black box”, relativized viewpoints)
 - tel: +33 7 78 67 15 55– mail : Anthony.kremer@laposte.net
- M. Bruno Massys de la Chesneraye
 - Position: PSA – B3N project leader [Embedded ECU “black box” specification]
 - Relation: RSE expert user and trainer. Made RSE adopted as reference method for B3N project (2021-04)
 - tel: +33 7 82 52 91 31– mail: bruno.massydelachesneraye@stellantis.com
- M. Yann Rogard
 - Position: Alsthom Traction System Manager
 - Relation: the former PSA Service Head who hired me, triggered and supervised RSE development and its applications to the design of car body mechatronic systems
 - tel : +33 6 25 80 75 68 – linkedin : <https://www.linkedin.com/in/yann-rogard-18467052/?originalSubdomain=fr>
- M. Miche Roux
 - Position: PSA – Head of the service « Software Design for Dynamic Vehicle Organs”
 - Relation: collaborative work around several projects, such as BMS
 - tel : + 33 6.88.31.75.56 – mail : michel.roux1@stellantis.com

Publications

- **Systemique Relativisée: Essences des conceptualisations du Réel**
Editions Universitaires Européennes (2019)
- **Représentations complexes en ingénierie système, (complex modelling in system engineering)**
p101 à p129 in Leleu-Merviel, S. Boulkekbache-Mazouz, H. (dir) (2013) *Recherche en design, processus de conception, écriture et représentations*, iSTE éditions – Londres.
- **Approches innovantes pour la maîtrise des systèmes complexes, (mastering safety in complex systems)**
H. Boulouet, V. Brindejone Journée IMdR du 6 October 2009
- **Une approche des Signaux faibles, (weak signals)**
H. Boulouet, V. Brindejone Lambda Mu 16 Avignon October 2008
- **Analyse de risques dans la cadre d'une ingénierie Système Relativisée, (Risk analysis within RSE)**
H. Boulouet, M. Mugur-Schächter, V. Brindejone Lambda Mu 16 –Avignon October 2008
- **Integrated Logistic Support Collaborative Platform for equipment developers**,
A. Azarian, **H. Boulouet**, V. Brindejone, ICE2004.
- **Plate-forme collaborative de soutien logistique intégré adapté aux PME**,
A. Azarian, **H. Boulouet**, V. Brindejone, L. Bouquin, ICSSEA 2003, Paris 2003

Education

- 2011-14 **Phd in Information Science (UVHC-Lille), « Relativized Systemic »:** Formalization (mathematization – theory of categories) of the RS framework underneath Relativized System Engineering (RSE) and Relativized Information Management (RIM). Proposal of the new concept of “physical Probability Law”, for testing and certification (together with Entropy and Complexity physical and formal definitions)
- 2004-05 **Master M2 MIAGE SIMI** (Internet and Multimedia Information system), Jules Verne University (Picardie): network architecture and administration, information theory, Dynamic website, semantic networks, (PHP, MySQL, Apache, java,)
- 1987-90 **CNAM:** DECF, 3rd cycle chairs (CNAM): Marketing and Management control - Comparative European accounting
- 1985-88 **ESLSCA:** Business School (Paris – Master M2)

Language

- ENGLISH: Fluent
TOIC (2013): 930
SEFIC - Advanced Level: Spoken English for Industry and Commerce (1988) – London Chamber of Commerce.
- GERMAN: Intermediate (conversational), study ongoing (B1 -> B2 level)
- SPANISH: Fleuent - **Diploma** (1989) - **Certificado**(1988) – Spanish Chamber of Commerce.

Experience

Since 03/2016 **PSA / PCA : Peugeot Citroën Automobile – Poissy (France) – automotive industry**

Position: System and Modelization engineer

Domain: automotive - multi-energy production

Achievements:

- Adoption of Relativized System Engineering by PSA Electronics Department as the reference method for B3N project (Embedded ECU “black box” specification made of verifiable requirements)
- Formal specification of PSA “Battery Management System”: requirement development and organization based on product lifecycles relative to the different standpoints
- Parametrization of powertrain multi-energy simulation models (organic and control) with Matlab/Simulink based on need analysis.
- Agile management of offshore subcontracted modelling work with Jira (Scrum – Kanban)
- Development of a Python application to master the complexity of a Matlab/Simulink based simulation environment.
- Analysis, UML modelling and prototyping with **MRI** tool “Sonia”, of an MLM solution to manage the lifecycle and configuration of numeric models (MBSE Model Based System Engineering), based on **RS**
- Design of a Relativized System Engineering training support for the design of mechatronic system formal specification, upon request of Opel designers
- Analysis of a Matlab/Simulink simulation platform (energy and kinematic) and of the usage of resulting model components to develop test bench environments for ECU (MIL, SIL, HIL)

From 03/2011 to 02/2016 **PSA / PCA : Peugeot Citroën Automobile – Vélizy (France)**

Position: System engineer

Domain: automotive - infotainment

Achievements:

- Contribution to the infotainment IDE development.
- Completion and defense (10/2014) on a thesis on « Relativized Systemic », setting up a formal basis for the development and the tooling of a method for complex system engineering (RSE: Relativized System Engineering).
- Development of system and requirement engineering lessons (RSE) - 40 hours - for 2nd and 3th year students ESIGELEC (Rouen) – Call for collaboration introduced by ESIGELEC and associated laboratory

From 07/2005 To 02/2011 **PSA / PCA: Peugeot Citroën Automobile – Sochaux (France)**

Position: System engineer

Domain: Automotive – car body

Achievements:

- Meta modelling (EMF) of RSE language on Eclipse platform and development of the java code generation chain.
- Prototyping of an RSE IDE based on RSE language for model editing and simulation
- Requirement engineering, design, modelling, simulation and testing, of product services, of mechatronic systems, based on RSE method
- Automated generation of system specification (requirements organized in life phases) out of RSE formal models
- RSE user training (method and tool)
- Proof of concept: automated generation of test vectors (for test bench) and verdict out of RSE specification models: labelling of VETESS industrialization project by the French pole of competitiveness “Vehicule du Futur” and grant of a 1 million euros contribution (unused).

From 09/2004 to 06/2005 Assystem Services – Lyon (France)

Position: senior consultant in System engineering

Domain: Industrial Vehicles

Achievements: contribution to VOLVO PLM design

- Audit et UML modeling of motor prototyping process
- SADT modeling of the co-development motor design process for the PLM platform common to Volvo Trucks, Renault Trucks et Mack Trucks – work mainly based in Sweden (Göteborg).

From 03/2002 to 08/2004 LIGERON SA – Saint Aubin (France)

Position: senior consultant in System engineering and project risk rating

Domain: Aerospace, automotive, defense

Achievements:

- Design of a technical information system for ONERA (French aerospace lab).
- Project risk rating – cost and delay - for EDF (French electricity company) and CEA (Atomic Energy Commission): deconstruction program of nuclear powers of first generation and other related facilities.
- Audit of embedded software development process and artifacts (printing automatons, vehicle headlights adjustment system, C code)
Redesign of the safety requirement rule set applicable to automotive embedded critical system, based on MISRA (Motor Industry Software Reliability Association) and DO 178B (Airborne Systems and Equipment Certification).
- Designer of a draft proposal for a platform dedicated to the supervision and diagnosis of distant operational systems, based on Remote Data Sentinel product by Technilog (GIAT, Technilog, ADEPA, laboratories LAMIH – Valenciennes - and MODEME - Lyon 3).
- GROWTH Project No GRD1-2000-25102CASH: Collaborative working within the Aeronautical supply chain – design and prototyping of a collaborative platform for aeronautic equipment makers: best performance.

From 01/2000 to 03/2002 Communication and System (CS-SI) - Toulouse (France)

Position: Consultant in System engineering

Domain: Aerospace, Defense

Achievements:

- ATA technical documentation platform for aeronautic equipment makers, need analysis and UML modeling, customization of PLM platform WinPDM by Lascom.
- Technical Leader for the design of the Integrated Logistic System proposed and won by CS, for the M51 program (French ballistic missile).
- Software development: VB (COM/DECOM), C++, FOSI (Formating Output Standard Instance), DOM 2, XSLT, website (International Office for Water)
- Trainer on XML editing platform EPIC by ArborText.
- OIO website development

From 08/1998 to 12/1999 AEROSPATIALE – Space and Defense division

Position: Technical leader – ILS numerical information system

Domain: Space and Defense

Achievements:

- Design of an Integrated Logistic Support management platform
- Design of automated information generation out of ILS platform
- Design of technical information modular viewing system. Generation “on the fly” taking into account user’s profile, user’s need and security considerations - navigation through CGM “intelligent” graphics.
- Development of an IDE for numerical technical documentation (UML/XML scheme, EPIC (Arbortext) customization, stylesheets).

- Analysis and Model based specification (UML/XML) of Ariane V quality control system (integration/validation) in production prior to its implementation through Windchill (PTC).

From 09/1995 to 07/1998 AEROSPATIALE Aeronautic division - Toulouse (France)

Position: team leader/developer - numerical information system

Domain: aerospace

Achievements:

- Technical leader and C developer of software components for the Aeospatiale platform, dedicated to aircraft on board and ground information system.
- Design, development, and deployment of an IDE for numerical technical documentation based on Epic XML editor - SIMAT (Technical land force maintenance and logistic information system)
- Design and development of the automated generation chain of the maintenance documentation of anti-aircraft ROLAND system, out of the bill of material and logistic support information – Congratulations from French Department of National Defense.

From 06/1993 to 08/1995 AEROSPATIALE Missile division - Chatillon (France)

Position: Software Engineer for AECMA 1000D applications

Domain: Defense.

Achievements:

- Design and development of an SGML editing platform for AECMA modular documentation, BEST project (Editorial Database).
- Contribution to the development of the DTD (SGML Documentation Type Definition) for RAFALE aircraft.

From 10/1990 to 05/1993 AEROSPATIALE Missile division – Chatillon (France)

Position: Commercial Engineer

Domain: Defense.

Achievements:

- Development project cost evaluation, integrating risk analysis
- Drawing up and negotiation of commercial and financial proposals with the Official Services and the manufacturers of countries associated in multilateral weapons programs (TRIGAT - Polyphème /British Aerospace , DASA, ...).

From 02/1990 to 09/1990 KPMG – Creteil Office (France)

Position: Financial audit collaborator

Domain: Business economics

Achievements:

- Balance control and financial analysis of small and medium organizations.

Other activities

Scuba Diver: N3 – 3 stars CMAS

Private pilot: R3000 et DR400, TB10, CAP 10 (aerobatic), from 1995 to 2003.

Reserve officer: activities from 1987 to 1995 (Combat section leader).