CURRICULUM VITAE

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I   POSITIONS AND WORK EXPERIENCE

- Founder and General Director of Mr. NeC B.V., Rotterdam, The Netherlands (2016 – Present)

- Senior Consultant, ZaZ Ventures SPRL, Brussels, Belgium (2018 – Present)

- Affiliated Researcher, Stockholm University, DSV, Immersive Networking, AI, (2016 – Present)

- Chief Science Officer, Almende B.V., Rotterdam, The Netherlands (2006 –2016)

- Member of Scientific Staff, Telematica Instituut, Enschede, The Netherlands (2000 – 2006)

- Fellow, European Research Consortium for Informatics and Mathematics (1998 – 2000)

    o   Fraunhofer-Gesellschaft (GMD-FIRST), Berlin, Germany
    o   INRIA - Rocquencourt, (AIR), Paris, France

- Fellow, INRIA - Sophia-Antipolis, (RobotVis), France (1996 – 1998)

- Ph.D. student at Image Science Institute (ISI), Utrecht, The Netherlands (1992 – 1996)

II   EDUCATION

- Doctor of Philosophy, Utrecht University, Computer Science (1992 – 1996)

- Master of Science, Experimental Physics, Utrecht University (1983 - 1992)

- OR Assistant, OLVG, Amsterdam, The Netherlands (1981 - 1983)

- Gymnasium B, Bisschoppelijk College, Weert, Netherlands (1975 – 1981)

III   EXPERTISE AREAS

Distributed Artificial Intelligence, Multimodal Human System Interaction, Integral-Partial Differential Equations, Control Theory, Synergetics, Renormalization and Scale-Space Theory, Self-Organized Criticality Theory, Cognitive Science, Convolutional Neural Network Theory, Multi-Agent System Theory, Learning Management Systems, Knowledge Management, Multimedia Systems, Mobile Applications and Services, Formal System Modelling, High Performance / Throughput and Cloud Computing, Health- and Home-Care Management Systems, Logistics and Transport Management Systems (optimized for air, road, railway and waterway traffic network (energy and emission) efficiency and safety), (Critical) Infrastructure Management Systems (optimized for energy and

emission efficiency, comfort and safety), Big Data Analytics – deep learning, Cloud Infrastructure Management, Cyber-Physical Systems, Internet of Things, Robotics, Language Technologies, 5G.

IV   ORGANISATIONAL SKILLS

National and European Project Development and Management, Quality Management in Scientific Research and Development, Customer Relation Management and People Management

V   PROGRAMMING SKILLS

Functional Programming (MATHEMATICA, Matlab, R, ...), C, C++, Python, Cloud Computing (Hadoop), HPC, and Agent technologies.

VI   PERSONAL QUALITIES

Proactive, Perseverance, Networker, Team Spirit, Cooperative, Leader, Goal-Driven, Empathic, Open-Minded, Thinking Out of the Box, Loyal, Confident, Expert, Balanced, Cultural Sensitive, Humour.

VII   POTENTIAL PARTNER NETWORKS

- **Academia**: INRIA, University of Toronto, University of Amsterdam, CNRS, University of Tokyo, Stanford University, Princeton University, MIT, CEA, TU Delft, TU Eindhoven, RSM, EPFL, ETH Zurich, University of Cambridge, Sintef, University of Oxford, Fraunhofer, Max Planck Institute, Insight Centre for data Analytics, DFKI, Forschungszentrum Jülich, HLRS, KIT, TECNALIA, Sant'Anna School of Advanced Studies, Sheffield Robotics, iMINDS, UCL, Cranfield University, University of Modena and Reggio Emilia, Pompeu Fabra University, University of Verona, Politcenica di Milano, WUR, Deltares, DLR&NLR, …

- **Industry**: DeepMind, SIEMENS, NVIDIA, Open AI, Thales, Aldebaran, ABB, KUKA, COMAU, ROBOTNIK, SPARC Robotics, ATOS, Telecom Italia, CRF, Pininfarina, Toyota, Jaguarlandrover, SCANIA, BMW, Rio Tinto, SHELL, KLUWER, ELSEVIER, Philips Health, IBM, BBC, CMU, FACEBOOK AI, HP, Huawei, Airbus Group, BOEING, Royal Haskoning, …

VIII   PROJECT DEVELOPMENT, ACQUISITION, MANAGEMENT & EXECUTION

VIII.A   Mr. NeC B.V.

- **2019-2023: COGNIPLANT** - Cognitive platform to enhance 360º performance and sustainability of the European process (aluminium refinery, concrete manufacturing and metal) industry (H2020-EU-DT-SPIRE-06-2019 Digital technologies for improved performance in cognitive production plants).

    o   Project ideation, consortium formation, development and management

- **2016-2019: MONSOON** – Model-based control framework for plant site-wide optimization of data-intensive processes in the aluminium and petrochemical industries (H2020-EU.2.1.5.3. - Sustainable, resource-efficient and low-carbon technologies in energy-intensive process industries; 723650)

    o   Project ideation and consortium formation and active as member of the Extended Stakeholders Group on deep reinforcement learning.

VIII.B   Almende B.V.

- **2016-2019: vf-OS** - Virtual Factory Open Operating System (H2020-FOF-11-2016 – Digital Automation; 723710)

- o Project acquisition

- **2016-2019: DIGICOR -** Decentralised Agile Coordination Across Supply Chains for preferred partner SMEs in aviation and robotics industry OEMs processes (H2020-FOF-11-2016 – Digital Automation; 723336)

  - o Project acquisition

- **2016-2018: OPSCHALER -** Open platform for smart data based energy consumption reduction (NL - iDEEGO (TSE); Programmalijn 4. Energieregelsystemen en –diensten voor energiebesparing en optimaal energiegebruik op gebouw- en gebiedsniveau)

  - o Project development as well as management of development of agent-based micro-aggregation modules yielding smart data that enable end-users to manage their home appliances themselves or by trusted third parties, and to share their energy data with other energy network stakeholders like operators or governments without that their privacy concerns will be compromised.

- **2015-2019: MOEEBIUS** - Modelling optimization of energy efficiency in buildings for urban sustainability (H2020-EeB-07-2015 - New tools and methodologies to reduce the gap between predicted and actual energy performances at the level of buildings and blocks of buildings; 680517)

  - o Project development as well as management of development of agent-based retrofitting recommendation and investment assessment models and tools that capture real-life building operation complexities to find retrofitting solutions (capitalizing on building and microclimate models) that optimize in simulation the building energy performance.

- **2015-2018: KRISTINA** - Knowledge-based information agent with social competence and human interaction capabilities (H2020-ICT-22-2014 - Multimodal and Natural computer interaction; 645012)

  - o Project development as well as management of development and integration of platform of software agents that are capable of recognizing and predicting social and emotional cues from gestures by means of novel multi-scale computer vision approaches.

- **2013-2017: SENSEI** - SENSOR BASED ENGAGEMENT FOR IMPROVED HEALTH (NL - COMMIT Programme)

  - o Project development as well as management of development of a long-term cloud data pattern analytics framework that is capable of providing intelligent feedback towards the coaching application layer, i.e., estimating personal mood, social network analytics and context-dependent recommendation for adapting and recommending or automatically switching coaching application strategies on the basis of the huge amount and diversity of historic data streams that are acquired about the contexts, physical, mental and social well-being of individual people but also masses – possibly stored and shared across different social media networks.

- **2013-2016: SALIG++** - Smart Assisted Living involving Informal careGivers (Ambient Assisted Living Joint Programme (AAL JP); AAL5)

  - o Project development as well as management of development of software-agent models of user daily activity activities such as cooking, cleaning, doing exercises, taking medication, and sleeping, and dangerous events such as falls using 3D computer vision-based pattern recognition.

- **2012-2016: SG-BEMS** - Smart Grids – Building Energy Management Systems: The Art of Optimizing Energy Supply and Demand for Comfort (Agentschap NL, TKI Smart Grids)

  - o Project development as well as management of set up of an open source platform for developing agent-based building energy management systems coupled to wireless sensor-actuator networks that minimize internal building ventilation, air, heating and lighting energy consumption and maintain comfort levels.

- **2011-2015: I-PE** - Intelligent Play Environments (NL - Creative Industry Science Programme (CRISP) - FES)

    o Project development as well as management of development of activity profiling and context aware software services to stimulate elderly or youngsters in physical activities like sport.

- **2011-2014: SEAM4US** - Sustainable energy management for underground stations (EEB-ICT-2011.6.4 - ICT for energy-efficient buildings and spaces of public use; 285408)

    o Project development as well as management of development of a) an agent-based classification and prediction system for passenger density in metros based on distributed CCTV systems and b) an agent-based distributed control system for passenger density and (internal and external) microclimate forecasts-based energy management of underground systems such as lighting, ventilation systems and escalators.

- **2012-2015: INERTIA** - Integrating Active, Flexible and Responsive Tertiary Prosumers into a Smart Distribution Grid (FP7-ICT-2011.6.1 - Smart Energy Grids; 318216)

    o Project development as well as management of development of an agent-based energy-consumption and comfort control and optimization system for prosumers.

- **2012-2015: ARUM** - Adaptive pRodUction Management (FoF-ICT-2011.7.1 - Smart Factories: Energy-aware, agile manufacturing and customization; 314056)

    o Project development as well as management of development of new generation of service orientated enterprise information platforms, a service orientated bus integrating service-based architecture and in particular knowledge-based multi-agent systems (MAS) that support both the strategic planning and the real-time dynamic, time-, cost- and risk-oriented incident detection re-planning of aircraft, aircraft interiors and ship manufacturing operations.

- **2011-2015: BRIDGE** - Bridging resources and agencies in large-scale emergency management (FP7-SEC-2010.4.2-1 - Interoperability of data, systems, tools and equipment; 261817)

    o Project development as well as management of development of agent-based situational-aware resource management system that is accessible as a mobile apps on smart phones of rescue workers or desktop applications in command and control centres on top of a cloud-based infrastructure, serving multiple crisis management and emergency response agencies across borders.

- **2011-2014: Adapt4EE** - Occupant Aware, Intelligent and Adaptive Enterprises (ICT-2011.6.2 - ICT systems for energy efficiency; 288150)

    o Project development as well as management of development of agent-based building energy performance evaluation and optimization system handling different usage and environmental conditions at an early design phase.

- **2008-2013: REPLICATOR** - Robotic Evolutionary Self-Programming and Self-Assembling Organisms (FP7-ICT-2007.2.1 - Cognitive systems, interaction, robotics; 216240)

    o Project development as well as management of development of an advanced robotic system, consisting of a super-large-scale swarm of small autonomous mobile micro-robots that are capable of self-assembling into large artificial organisms, in particular cognitive distributed sensor fusion and object recognition modules and emerging self-organized distributed control modules.

- **2011-2014: All4Green** - Active collaboration in data centre ecosystem to reduce energy consumption and GHG emissions (FP7-ICT-2011.6.2 - ICT systems for energy efficiency; 288674)

    o Project development as well as management of development of heterogeneous agent-

based IT service (re) allocation recommendation systems for federated data centres having different contracts with their IT customers and energy providers, that all together through cooperation strive for optimizing energy and emission efficiency while maintaining profitability.

- **2010-2012: FIT4Green** - Federated IT for a sustainable environmental impact (FP7-ICT-2009.6.3 - ICT for energy efficiency; 249020)

  o Project development as well as management of development of future business and functional requirements, ICT reference architecture, agent-based data centre automation management and energy models, federated energy efficiency optimization policies and plug-ins.

- **2008-2011: METAVERSE1 -** Setting global standards among real and virtual worlds (ITEA 2 Call 2 07016; Challenge - Virtualization of communities)

  o Project management and development of a software framework for the seamless integration of the real and virtual world to predict daily life activities on the basis of (wireless) sensor and actuator data and consequently a proper or novel sensation of multimodal presence for end-users.

- **2010-2014: SUPPORT** - Supporting and Strengthening Logistical Networks in and around the Port of Rotterdam (NL - Pieken in de Delta – Zuidvleugel)

  o Supervision Ph.D. research on agent-based collaborative decision support platform allowing container terminal operators to assign in real-time the container to the freight forwarders and truck drivers, taking road traffic dynamics into account.

- **2010-2013: SIMPLE -** Self-organizing intelligent middleware platform for manufacturing and logistics enterprises (ARTEMIS JU ASP4; ART Call 2009 100261)

  o Project management and development of self-organizing middleware adaptable to not only heterogeneous but also novel hardware platforms and business IT systems, and that of multimodal sensor and user feedback data fusion and aggregation algorithms to learn to classify, detect and predict incidents and anomalies in factories.

- **2010-2013: DELIVER** - Distributed Coordination for Perpetual Planning (EU – Eureka)

  o Project management and development of real-time distributed cooperative agent-based decision support system for simultaneous cross-modal logistics and transport network management – emission/energy/time/cost efficient, robust to supply chains and road traffic incidents, accessible for multiple types of stakeholders, e.g. customers, container terminals, transport companies through mobile devices or ordinary backend systems.

- **(2006-2009): CREDO** - Modelling and analysis of evolutionary structures for distributed services (FP6-IST-2005-2.5.5 - Software and Services; 033826)

  o Project management and assessment of modelling, simulation and testing tools for components scheduling and coordination in safety critical distributed applications for patient monitoring and emergency response.

- **2006-2009: ICIS -** Interactive collaborative information systems (NL - BSIK program; BSIK03024)

  o Project management and development of agent-based robust and efficient coalition formation framework for handling mobile surveillance security incidents and aircraft de-icing taking into account incident and resource constraints and uncertainties.

- **2005-2009: HHAN -** Hybrid-human agent networks (NL – CASIMIR Programme)

  o Supervision of Ph.D. students and development of multi-agent system approaches and algorithms for multi-project scheduling of resources and tasks for airport ground handling of de-icing, catering, cleaning, baggage on and off-loading and fuelling of aircraft and for

aircraft taxing at the airport, under different types and severities of incidents related to weather conditions.

- **2006-2007: CIM** - Cybernetic incident management (NL - TSIT program)

  o Project management and development of agent-based self-organizing support systems for (mobile) security teams surveying strategic objects like banks.

- **2002-2006: DEAL** - Distributed engine for advanced logistics (NL - Programme E.E.T. of Senter Novum)

  o Project management and development of agent-based solutions for dynamic vehicle routing problems for the freight transport sector under diverse types and severities of incidents on the road network or to trucks and in the orders, while minimizing the greenhouse gas emissions or the distance driving empty.

VIII.C   Telematica Instituut

- **2005-2006: INES PASS** (Internal project)

  o Project development as well as management of development of a real-time distributed CCTV surveillance and object recognition, detection and alarming system for left luggage in public places.

- **2004-2006: MobilLife** (FP6-IST-2002-2.3.2.6 - Applications and services for the mobile user and worker; 511607)

  o Project development as well as multimodal interaction and front-end design, development of context management framework, proactive network services life-cycle management and machine learning system for personalized and context-aware mobile applications.

- **2006: FRUX** - FReeband User eXperience

  o Project development and development of a self-learning module for bundling of context-aware and personalized dynamic healthcare provisioning services given actual supply in a region, current legislation and needs of patients, informal and professional caregivers.

- **2004-2005: Freeband AWARENESS**

  o Survey on autonomic computing by collective intelligent agents, development of architecture and modules for context-aware reasoning about mobile application service brokerage; Quality of Service aware and secure (trustworthy) medical data and mobile service delivery between body area networks and backend hospital systems across heterogeneous communication networks; inventory of sensory, cognitive, ergonomic, actuator context factors and conditions, required technological innovations and development of design guidelines for Quality of Experience aware mobile video services.

- **2003-2004: PASS** - Proactive attentive system support

  o Project development as well as management of development of cognitive multi-modal distributed surveillance and control system for social safety and security at ATMs, stations, airports, public places and strategic objects.

- **2003: Pilot Draadloze Zorg**

  o Integrating home surveillance sensor-based presence, GPS/Cell/WIFI-access point based location and instant messaging data into a context-aware mobile homecare application for elderly and caregivers- timesheet registration, caregiver tasks scheduling and remote advice to elderly by professional using smart TV / interaction solutions.

- **2003: Linking Brand and Technology**

  o Engineering an integrated set of high-level substantiated requirements with respect to the service enablers, service and user life cycle management, the conceptual framework and

toolkit for trustworthy 3/4G mobile service provisioning, including the development of user interaction characteristics and underlying deployment architectures.

- **2003-2004: ICT BREEDSPOOR** (Innovation Programme of ProRail Reisinformatie)

  o Scenario development, requirements engineering for social security and support at railway stations, roaming mobile applications and services for train travellers, context-aware services for rail track maintenance, functional design NS Reizigersweb, and design of workplace online for BAM Rail.

- **2003-2004: Mobile&Wireless**

  o Survey of cognitive environments for development of mobile applications and services, business modelling and development of context-sensitive access control of mobile applications and (payment) available on the railway stations (WLAN) and tracks between Enschede-Drienerlo (Mesh) and Drienerlo-Hengelo (WLAN).

- **2002: Information Publishing**

  o Development of digital rights management in information publishing using Open Digital Rights Language (ODRL) standard.

- **2002: METIS**

  o Project development as well as development of agent-based business knowledge networks analytics and life cycle management for petrochemical process and printer industry.

- **2001-2002: Digital Media Warehouses** (DMW)

  o Development of multimedia categorization, feature grammar tools and summarization and distributed processing techniques by means of CONDOR and GLOBUS.

- **2001-2002: GigaMobile** (Dutch GigaPort Programme)

  o Development of an agent-based personalized and QoS-aware B2B mobile application and service brokerage system, and standardization activities w.r.t. FIPA, MPEG-7 and 3G services.

- **2000-2002: GigaCE** (Dutch GigaPort Programme)

  o **Development of** multimedia extraction, summarization, authoring and tailoring, (semi-) automatic metadata extraction techniques for content retrieval and synthesis, MPEG7 oriented personalized content browsing services, and semantic Web techniques for E-learning.

- **2000-2001: FRIENDS** - Framework for integrated engineering and deployment of Internet services (Dutch GigaPort Programme) - Study of application service provisioning market trends and validation of FRIENDS Internet service creation and life-cycle management platform.

VIII.D ERCIM

- **1998-2000: Image Analysis and Processing Tools for Meteorological and Transport Models used in Air-Pollution Systems (ERCIM-Fellowship)**

  o Project development as well as development of a mathematical-physical framework for sustainable complex systems and data-assimilation techniques for feeding reliable satellite image data into air pollution forecast systems for the Berlin and Paris area.

VIII.E Image Science Institute

- **1992-1996: EC/ESPRIT - NSF collaboration on Geometry-Driven Diffusion**

    o   Project development as well as the development of nonlinear scale-space theories.

IX   PH.D. PROJECT SUPERVISION AND CO-PROMOTION

- Tamas Mahr (2011). Vehicle Routing under Uncertainty. PhD Thesis, Delft University of Technology, The Netherlands.
- Xiaoyu Mao (2011). Airport Under Control: Multi-agent scheduling for Airport Ground Handling. PhD-thesis, Tilburg University, The Netherlands.
- Adriaan ter Mors (2010). The world according to MARP. PhD Thesis, Delft University of Technology, The Netherlands.

XIII   REFERENCES

- Drs. Hans Abbink, Founder and CEO of Almende B.V., Rotterdam, Netherlands.
- Dr. Johan de Heer, Director Thales Research & Technology, Hengelo, Netherlands.
- Prof. Dr. Ir. Max Viergever, Image Sciences Institute, Utrecht University, Netherlands.
- Prof. Dr. Dr. Jan Koenderink, Utrecht University, Netherlands.