

## Marie-José Montpetit, Ph.D

Research Scientist.

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### Profile

Recognized and award-winning video over wireless and IP networks innovator with over 15 years experience in research and development. Expert in architecture, design and implementation of end-to-end multimedia systems including devices, software, simulations and protocols. Winner of the MIT Technology TR10 in May 2010 for “Social Television” and of the Motorola Innovation Prize in 2007 for converged television. Participation in Internet standardization efforts at ETSI , ATIS IIF and IETF. In depth knowledge of wireless (3/4G, WIFI, UWB), IMS and other IP architecture and protocols including recent applications of network coding. Experience in international projects and with multi-disciplinary projects using intensive simulations and realistic proofs of concepts.

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### Education

*PhD – Electrical and Computer Engineering (EECS), École Polytechnique, Montreal, Canada. Information and Communication Theory*

*M.Sc.A - Electrical Engineering, Ecole Polytechnique, Montreal, Canada. Communications and Digital Signal Processing*

*B.S - Eng.- Engineering Physics, École Polytechnique, Montreal, Canada*

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### Career History

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*Research Scientist, Research Laboratory of Electronics, Network Coding and Reliable Communications Group, research on video-centric network coding technology and architectures for video over broadband wireless and wireline IP networks, with emphasis on mobility, peer to peer, device and network compositions and social networking. Winning proposal manager for projects with industrial partners from Europe and Asia including NBC/Universal-Comcast, Huawei, FT/Orange, British Telecom and NBC Universal. Presentation of network coding for video papers and conferences at CCNC'10, BT Research, Docomo Research, BBVA Spain, DLR Gernany , Comcast etc.*

### Current Employment 2009-

*Main Lecturer* and original promoter of the Social TV project class at the MIT Media Lab with Henry Holtzman with collaborations from Intel, Comcast, Alcatel-Lucent, Motorola, HBO and others. Presentation of a tutorial at EuroITV2011. The Social TV (TV convergence) work was acknowledged as one of the TR10 (the 10 Technologies to watch) in the May-June issue of the MIT Technology Review.

**Previous  
Employment  
2007-2009**

***Motorola Scientist in Residence at MIT Media Lab***

Appointed for 2 years to bridge the research of MIT and the Motorola product roadmap for wireless and mobile media. Successful joint projects include advanced video applications and wireless as well as Social Interaction. Participation in peer to peer communications and platform development projects. Worked on using open hardware and software for cable and 4G (WIMAX and LTE).

**2005-2008**

***Distinguished Member of the Technical Staff, Motorola Connected Home Division, Technology Office***

Network and system architecture for LTE IPTV, MSO IPTV, IMS IPTV and advanced streaming solutions for wireless and wire line (telco and cable) operators. Original architect of the Motorola IMS IPTV system with NGN and OpenCable architecture. Definition of both architecture and protocols for enabling Device Independent Video Experiences (by extending IMS) and Peer to Peer communication with collaboration with Motorola Labs and MIT Communication Future Program. Monitoring the work on satellite to handheld communications Winner of the Motorola 2007 Innovation Prize for Seamless Video Mobility (place and time shifting of video using SIP/IMS). Active in IETF and ATIS IIF input provider to Motorola's IPTV teams at ITU NGN, ETSI TISPAN NGN, 3GPP2 and Packet Cable Multimedia. Participation in winning RFI/RFP teams. Sponsor of network performance R&D.

**2004**

***Motorola Acadia Integration Center***

**-  
2005**

***Senior System Engineer***

3<sup>rd</sup> and 4<sup>th</sup> party ISV integration of cable and optical broadcast applications, participation in the Home Media Architecture, lead SE on the DVB and FTTP systems and investigator for new products including cell phones with STBs and other wireless interfaces (802.11n, UWB etc.). Involved IEEE, IETF, OMA, MoCA and OCAP standards as well as middleware and system design based on Java and C#/NET technologies. Leader of a simulation of the end to end Verizon-MOCA network with the Motorola NAT group using OPNET

**2002-2004**

***Advisor: Xebeo Communications – NJ*** - Advisor to the business team in end to end system architecture for IP/Ethernet over MPLS. Establishment of a White Paper portfolio for carriers and customers and patent advice on QoS, switching, queuing and packet processing.

***Advisor: Chantry Networks, Canada*** - development of a pre-IMS architecture using softswitches.

***Consultant to University of Graz, Austria and Technical Leader – European Space Agency Study on IP over DVB*** – development, ns2 simulation and queuing process analysis of a new encapsulation method for IP over DVB. The work lead to 2 IETF RFCs.

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2000-2001

**Nokia Home Communications**

*System Architect - Advanced Systems Development*

Embedded Linux based set-top boxes combining broadcast video, streaming and Internet capabilities. Implementation of IP protocol for streaming (RTP) and videoconferencing. Architect of the cable streaming product with interfaces to 802.11b and cellular. Evaluation of hardware codecs, RFID and DSP devices. Support to business development for RFI/RFP and strategic orientation. Advisor to the business development team on questions of technologies and system architecture. “Hands-on” technical management of 10+ people team including software design and review using use cases, fast prototyping and code re-use. Active participation in IETF and IEEE as well as UPnP and OSGi. Member of the original CODIS proposal for MPEG-4 content delivery to set-top boxes.

1996-2000

**Teledesic Corporation**

*Senior Member of the Technical Staff- Network Architecture Team*

Development of Internet overlay architectures for both space and ground segment including routing and QoS. Focus on multimedia transmission and evaluation of videoconferencing and VoIP over the Teledesic network. Development of a routing algorithm based on tag switching (now MPLS). Close collaboration with prime contractors and participation in due diligence and business development as well as with the LIDS Laboratory at MIT.

1991-1996

**Spar Aerospace Canada**

*Senior R&D Engineer*

Development of Internet Technologies for space communications. Technical Team leader for project with the European Space Agency (ESA). Canadian Technical representative to the ESA OBP project with Italian, Spanish, and Belgian attendees.

## Awards

*Technology Review TR10: Social TV*, May-June 2010

*Motorola Innovation Award 2007* for the development of the *Seamless Video Mobility* a device independent TV experience based on IMS/NGN standards

*Motorola Bravo and Standards* awards for participation in patent and internal tutorial presentations: 2006 and 2007

## Participation in Professional Activities and Conferences

Interview on CBC Spark Technology program, November 2011, reported in:

<http://appmarket.tv/news/1406-radio-interview-with-martriach-of-social-tv-mits-marie-jose-montpetit.html>

W3C Interest Groups Member, Web+TV and Home Networking

Technical Program Committee Chair for Systems and Technology, EuroITV'11. Lisbon (June 29 2011)

Invited Tutorial on Social Television, EuroITV2011, Lisbon (June 2011)

Session Organizer Contel'11, Graz (June 2011)

Keynote Address, CUBICS Conference, Barcelona (December 2, 2010)

Technical Program Committee Chair for Multimedia (CCNC'11,'12)

BT Research Invited Speaker: Future of TV Research (May 2010)

Invited Speaker DOCOMO Research – Network Coding for Video (March 2010)

IMTC 2010 Keynote Speaker: (March 2010)

Keynote Speaker XMedia Lab Amsterdam (November 2009)

Co-organizer: MIT/CIPS Future of TV workshop (Jan. 2009).

Invited paper and Keynote Speaker: Contel IPTV workshop on the Future of IPTV (June 2009)

Invited Speaker: MIT Industrial Liaison Program IT Conference (April 2009)

CFP Value Chain Dynamics Participant (2007-2009)

IPTV and Social Networks study with Natalie Klym of Sloan (paper available at [cfp.mit.edu](http://cfp.mit.edu)) and co-author of a study of the video business using game theory with Chintan Vaishnav of CSAIL; book chapter on the Future of Mobile TV.

CFP PrivSec Participant

Co-PI for a study on privacy and security aspects of social networking and social television at MIT Communications Futures Program (2009)

Organizer and Chair: Workshop on Social TV – CCNC'09, CCNC'10, CCNC'11 and CCNC'12

Invited Speaker MIT Communication Future Program Fall meeting – October 2008

Presentation on the Social TV study and how it translates into networking requirements and business cases by adding services like Health, Banking and Retail to the STB

Keynote speaker: Euro ITV – July 2 2008 – Social Networking Impact on the TV experience.

Member of the Executive Committee: MIT Communications Future Program (CFP) 2007-2008

TPC – SAC at ICC'09

Invited Speaker: University of Waterloo Canada – Nortel Lecture – February 2008 – Home Networking and Content Networks

Special Issue Editor: Computer Networks Special Issue on IP over DVB – 2007

IPTV presentation at the Network Policy Class in April 27<sup>th</sup> 2007(now part of the MIT online material)

IPTV keynote at Communication Future Program meeting on May 24<sup>th</sup> 2006.

Invited Tutorial Presenter: IEEE Consumer Electronic Conference 2006

IPTV systems and technologies

Invited speaker at the September 2005 Communication Future Program meeting on IPTV,

Session organizer: Globecom 2006 on IPTV

Invited Tutorial Presenter: IEEE Consumer Electronic Conference 2005

Home Networking Standards especially wireless and multimedia streaming. Now

**Standards*****IETF***

RFC Editor: IP over DVB Architecture

IETF draft on SIP/RTSP convergence and participation in MMUSIC WG

*Working Group Participant: IETF IP over DVB Working Group.* Draft (standards track) editor and author of the architecture and main author of the Address Resolution.

***ATIS IIF, TISPAN and ITU-T IPTV*** architecture contributions 2004-2008.

***ETSI STF 237 and 283*** – BSM architecture, multicast architecture and QoS

**EU projects**

*Expert Reviewer IST FP7 program SENSEI (Next generation Internet of Things/Sensor Networks)* (March 2011) with focus on network coding for next generation sensor and wireless networks.

*Expert Reviewer IST FP7 program 4WARD (Next generation Internet)* (March 2009 and 2010) with focus on network coding for next generation connectivity.

*Expert Evaluator: IST 7<sup>th</sup> Framework:* expert evaluator for the “Networks of the Future” (June 2007 and Dec. 2009) and “Middleware” (November 2007 and December 2009), Work Programs. These projects relate to the future of networking and address architecture, technologies and platforms.

*Expert Reviewer IST 6<sup>th</sup> Framework:* review of 4 IST programs (Feb. 2005) in the field of Home Area Networks and new connectivity technologies (UWB, HPNAv3, HomePlug A/V)

*Expert Evaluator IST 6<sup>th</sup> Framework - 2004:* expert evaluator for the Integrated Projects (20M euros) in “Wireless Beyond 3G”. These projects relate to the future of 3GPP/3GPP2 and the Wireless World Initiative and address architecture, pervasive computing, services and technologies for the wireless operators and users.

*Expert Evaluator: European Union 5<sup>th</sup> Framework Program – March 2002, May 2003* Evaluation of 2-5 million euros consortium proposal on next generation networks and applications of large (10-20 million euros) consortium proposal on next generation wireless and broadband networks

**Lecturing**

*Undergraduate:* and graduate classes in wireless technologies, telecommunications, home networking

*Graduate course on Social Television with Project at MIT Media Lab since Jan. 2009*

**Patents**

15 approved and submitted patents. US and internationally.

**Publications**

Over 40 publications in various Technical Journals, Magazines and Conference Proceedings including peer reviewed papers, tutorials, a White Paper at the US National Science Foundation.

Book Chapter on Future Mobile TV to published by Springer Verlag in 2010.

Requested to participate in a new Wiley book on enabling technologies for next generation video.

**Professional Associations**

Proposal for Fellow of the IEEE in 2011 – on-going

Senior Member IEEE.

Member of IEEE Surveys Senior Editorial Board.

Member of the International Journal of Computer Networks (COMNET) Editorial Board

**Personal Information**

Languages: French, English, Spanish, Understanding of Italian, German and Dutch

Citizenship: Canadian – US Green Card holder

Software: MS Project, LINUX, UNIX and Windows environments and tools, XML, RTOS (RT-Linux, VX works), C (some C++ and JAVA), Matlab, ns2, OPNET simulation packages; Rational Tools

**References on demand**

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