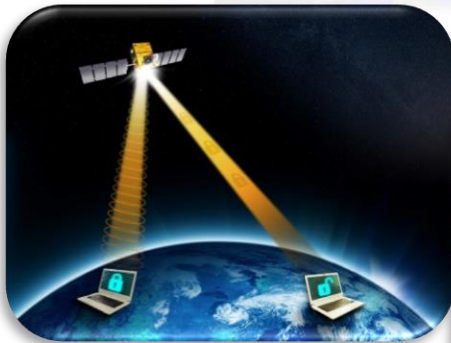
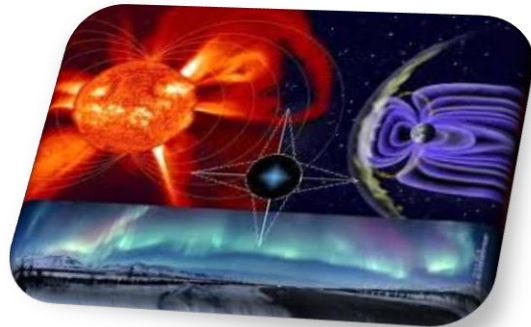


# SpaceOps Workshop 2019

June 3<sup>rd</sup> to 5<sup>th</sup>, 2019



6500, Blvd De Rome, 15<sup>th</sup> Floor  
Brossard, Qc. J4Y 0B6



## *Building the Operational Ecosystem*

*International Committee on Technical Interchange for  
Space Mission Operations & Ground Systems*

[www.spaceops.org/](http://www.spaceops.org/)

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## **Host:**

Michel Doyon, Manager, Flight Operation  
Space Exploitation, CSA

## **Organizing Committee:**

William Harvey, Josée Gagnon, CSA

## **Workshop Secretary:**

Marie-Hélène Brosseau, Chantal Trottier, CSA

## **Co-Chairs:**

**ITSECOPS:** Josée Saint-Marseille (CSA), Pierre Lods (CNES)

**SSA :** Viqar Abbasi (CSA), Young H Lee (NASA)

**OPTLINK:** Alexander Koujelev (CSA), Thomas Müller (DLR)

## **To contact us:**

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# Monday June 3, 2019

## Space Situational Awareness – space weather and ops management (SSA)

Co-Chairs : Viqar Abbasi (CSA) & Young H Lee (NASA)

HOUR	SUBJECT	AUTHOR	AGENCY
<b>08:30</b>	<b>WELCOME</b>		
<b>09:00</b>	Space Weather Services for Spacecraft Operations as part of ESA's Space Situational Awareness Programme	A. Glover, J. Luntama	ESA
<b>09:25</b>	SWE - CNES Lessons Learned from In-Orbit Anomalies and Environment Effects	G. Galet	CNES
<b>09:50</b>	Enhancing Operational Space Security to Improve Space Weather Resilience	A. Monham	EUMETSAT
<b>10:15</b>	<b>COFFEE BREAK</b>		
<b>10:30</b>	Discussion on the Space Weather Theme	All participants	
<b>10:55</b>	First Steps to Cope With the Space Debris Challenge	H. Fiedler, J. Herzog, M. Prohaska, T. Schildknecht	DLR
<b>11:20</b>	Improvement of LEO Satellite Orbit Propagation by Machine Learning	H. Hinagawa, K. Akiyama, H. Kato - S. Nakamura	JAXA
<b>11:45</b>	Collision Avoidance in the context of Frequently Maneuvering Satellites	V. Abbasi, F. Babiker, M. Doyon, D. Golla	CSA
<b>12:10</b>	Conjunction events next-day prediction capability in EUMETSAT: benefits from operational usage	F. Sancho	EUMETSAT
<b>12:35</b>	<b>LUNCH</b>		
<b>13:35</b>	SSA Software Development, Maintenance and Operation evolution to DevOps within ESA's Space Situational Awareness Programme	G. Di Girolamo, J. Klug	ESA
<b>14:00</b>	Discussion on Space Debris Theme	All participants	
<b>14:45</b>	Space Data Management Evolution within ESA's Space Situational Awareness Programme	G. Di Girolamo, J. Klug	ESA
<b>15:10</b>	<b>COFFEE BREAK</b>		
<b>15:30</b>	Discussion on SSA Coordination Theme	All participants	
<b>16:30</b>	General Discussion on SSA Topic	All participants	
<b>17:30</b>	<b>CLOSING</b>		



## Tuesday June 4, 2019

### IT Security on Operational Ground Segment (ITSECOPS)

Co-Chairs : Josée Saint-Marseille (CSA) & Pierre Lods (CNES)

HOUR	SUBJECT	AUTHOR	AGENCY
<b>08:30</b>	<b>WELCOME</b>		
<b>09:00</b>	Keeping Operations Secure and Operational	R Zarza, K. Marston	EUMETSAT
<b>09:25</b>	Information Security for successful space mission preparations & operations	D. Heinzer	ESA
<b>09:50</b>	User accountability for continuous Mission Operations in a secure environment	L. Orłowski, J. Pattinson	DLR
<b>10:15</b>	<b>COFFEE BREAK</b>		
<b>10:30</b>	Countermeasures for Cyber Threats on Space Mission	T. Wada, M. Katsumata, M. Iwata, T. Nio	JAXA
<b>10:55</b>	IT security : The inevitable changes of operational space ground segments cyber security	J. Airaud	CNES
<b>11:20</b>	Security Management for Mission Operation System in KARI	M. Lee, D. Hyun, D. Chung	KARI
<b>11:45</b>	Satellite Operational Systems IT security and operational considerations	V. Abbasi, J. Rinfret, L. Lefebvre, R. Gould, M. Doyon	CSA
<b>12:10</b>	Optical Communications and Post-Quantum Cryptography: Cybersecurity Challenges in the Space Data Race	R. Archer	NASA
<b>12:30</b>	<b>LUNCH</b>		
<b>13:45</b>	Discussion on ITSECOPS topic	All participants	
<b>15:00</b>	<b>COFFEE BREAK</b>		
<b>15:15</b>	Discussion on ITSECOPS topic	All participants	
<b>16:00</b>	<b>CLOSING</b>		



# Wednesday June 5, 2019

## Spacecraft Operations Concepts with Optical Links (OPTLINK)

Co-Chairs : Alexander Koujelev (CSA) & Thomas Müller (DLR)

HOUR	SUBJECT	AUTHOR	AGENCY
<b>08:30</b>	<b>WELCOME</b>		
<b>09:00</b>	First ESA Spacecraft Operations Concepts with Optical Links	K.-J. Schulz	ESA
<b>09:25</b>	Impacts of Laser Communication on Space Operations	M. T. Knopp , G. Rossmanith	DLR
<b>09:50</b>	Operational Concepts and challenges for Optical Communication in Nasa's Deep Space Network	S. Lichten	NASA
<b>10:15</b>	<b>COFFEE BREAK</b>		
<b>10:30</b>	Quantum EncrYption and Science Satellite (QEYSSat) : defining concept of operations	A. Koujelev, E. Gloutnay, D. Sangiorgi, B. Mathieu, M. Nassouri	CSA
<b>10:55</b>	Operations of the Optical Communications demonstration for the Orion EM-2 mission	H. Safavi	NASA
<b>11:20</b>	Operational Concept for The Laser Communications Relay Demonstration's Optical Ground Station -1	W. T. Roberts	NASA
<b>11:45</b>	<b>LUNCH</b>		
<b>13:00</b>	Discussion on OPTLINK topic	All participants	
<b>13:45</b>	Wrap-up		



## **Co-Chairs:**

**Michel Doyon (CSA) & Vladimir Nazarov (IKI)**

## **Members:**

**Alice Bowman (JHU/APL - Prime)**

**Cesare Capararo (ALTEC)**

**Dave LaVallee (JHU/APL)**

**Dong-Gyu Kim (KARI)**

**Gerard Gallet (CNES – Prime)**

**Gian Paolo Calzolari (ESA – Prime)**

**Harry Shaw (NASA)**

**Hubert Fraysse (CNES – Alternate)**

**Michael Schmidhuber (DLR – Alternate)**

**Michael Schmidt (ESA – Alternate)**

**Renato D’Auria (ALTEC)**

**Shinichi Nakamura (JAXA)**

**Thomas Müller (DLR – Prime)**

**William Harvey (CSA – Alternate)**

**Young Lee (NASA – Alternate)**

**Zeina Mounzer (Telespazio VEGA)**



**The Workshop will be held at the Alt Hotel Quartier  
Dix30 in Brossard.**



6500, Blvd De Rome,  
15th Floor  
Brossard, Qc. J4Y 0B6  
1-877-343-1030

### Directions from the airport to the Hotel ALT:

Get on Highway 20 from boul. Roméo-Vachon N  
Keep left at the fork, follow signs for Highway 520 E/ Highway 520 E  
Keep left at the fork, follow signs for Highway 20 and merge onto Highway 20 .  
Merge onto Highway 20.  
Take exit 68S for Highway 20 E/ Highway 15 S toward Highway 10/Pont  
Champlain/U.S.A/Québec.  
Merge onto Highway 15 S/ Highway 20  
Continue onto Highway 10 E  
Use the right lane to take exit 11 for Route 30/20 Est toward Saint-Hubert/Sorel-  
Tracy/Chateauguay  
Keep right, follow signs for Boulevard du Quartier  
Use the left 2 lanes to turn left onto Boulevard Leduc (signs for Boulevard du  
Quartier)  
Turn right onto Allée de la Place

# Restaurants

