

FORM 51-102F3
Material Change Report

Item 1. **Name and Address of Company**

Summus Solutions N.V. (the “**Company**” or “**Summus**”)
RPO Box 60610 Granville Park
Vancouver, BC, Canada V6H 4B9

Item 2. **Date of Material Change**

August 2, 2019

Item 3. **News Release**

A news release dated August 2, 2019 concerning the material change was forwarded to Canada Stockwatch and Marketnews for dissemination and was SEDAR filed with the British Columbia and Alberta Securities Commissions and the TSX Venture Exchange.

Item 4. **Summary of Material Change**

On August 2, 2019, the Company acquired a 1% strategic minority investment in Ionoterra Limited P.C. (“Ionoterra”) for EUR100,000.

Item 5. **Full Description of Material Change**

On August 2, 2019, the Company acquired a 1% strategic minority investment in a potential future unicorn company Ionoterra, which is working in the Republic of Romania (European Union) on a Proof of Concept of an early warning system of earthquakes. The 1% strategic interest in the Israel based US Ionoterra Group was acquired by way of an Assignment Agreement dated August 2, 2019 with an institutional investor in Ionoterra. The Company is in negotiations to potentially increase its stake up to 20%. For additional information on Ionoterra, please refer to the attached News Release.

Item 6. **Reliance on Subsection 7.1(2) or (3) of National Instrument 51-102**

N/A

Item 7. **Omitted Information**

N/A

Item 8. **Executive Officer**

The following executive officer of the Company is knowledgeable about this report and the material change disclosed herein:

Urs Meisterhans
President and CEO
Tel: +41 44 913 36 01

Item 9. **Date of Report**

August 12, 2019

Attachment: News release dated August 2, 2019.



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NEWSWIRE SERVICES

NEWS RELEASE

SUMMUS SOLUTIONS NV announcing strategic minority investment into potential future unicorn company IONOTERRA LIMITED P.C., which is working in the Republic of Romania (European Union) on Proof of Concept for an early warning system for earthquakes

Vancouver, August 2, 2019 - SUMMUS SOLUTIONS NV ("Summus" or the "Company") (TSXV: SS) is pleased to announce that today SUMMUS SOLUTIONS NV ("SUMMUS") has acquired an 1% strategic interest in the Israel based US IONOTERRA Group. SUMMUS acquired its stake from an institutional investor in IONOTERRA and is in negotiations to potentially increase its stake upto 20%.

What Is IONOTERRA, www.ionoterra.com?

IONOTERRA is a scientifically & realistically proven system, enabling mankind for the first time to predict & warn population of an upcoming earthquake, at least 8 hours before the catastrophic event, with over 90% precision (for magnitude exceeding 4.5 Richter scale).

IONOTERRA is an Israeli based US American R&D company consisting among others of experts in geophysics, ionosphere, and radar systems for various natural and artificial phenomena prediction occurring in the near-the-earth cosmic space.

Technology is based on prediction of main parameters – precursors of EQ, resulting with the 3 most crucial indicators in EQ prediction: breakthrough moments / IONOTERRA Observatory Lab/August 2019: Where will the EQ take place? When will the EQ take place? What magnitude will the EQ have?

All seismic activity on earth is reflected in ionosphere before during and after an earthquake. IONOTERRA deployed system is constantly scanning a specific Ionosphere region sizing thousands of square kilometers above a seismically active zone using radars. IONOTERRA developed an IP Algorithm analyzing all data coming from the radars & ionosondes sensors.

The IP Algorithm produces a geo seismic real time risk map for any monitored region, resulting with a clear cut alert in case of an upcoming Earthquake 8 hours in advance.

R&D is finalized after a long term research of more than 25 years in the fields of ionosphere, radio propagation and over-horizon radar systems, resulting with many international academic publications such as:

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- Blaunstein, N., Method of Earthquake Prediction, US Patent 6,246,964 B1, Jan. 12, 2001.
- Blaunstein N., and M. Hayakawa, " Short-term ionospheric precursors of earthquakes using vertical and oblique ionosondes", Physics and Chemistry of the Earth, vol. 34, No. 6-7, pp. 496-507, 2009.
- Blaunstein, N., Hayakawa, M. "Short-term ionospheric precursors of earthquakes using vertical and oblique ionosondes", in Electromagnetic Phenomena Associated with Earthquakes and Volcanoes, M. Hayakawa, J. Y. Liu, K. Hattori, L. Telesca (Eds.), pp. 406-421, 2009.
- Blaunstein, N., and E. Plohotniuc, Ionosphere and Applied Aspects of Radio Communication and Radar, Boca Raton: CRC Press, 2008, 577 p.
- Blaunstein, N., S. Pulnits, and Y. Cohen, "Computation of the main parameters of radio signals in the land-satellite channels during propagation through the perturbed ionosphere", Geomagn. and Aeronomy, Vol. 53, No. 2, 2013, pp. 1-13.

At present IONOTERRA holds an advanced technology of ionospheric tomography combined with a novel ionosonde that can obtain a useful signal "embedded" into the clutter (e.g., noisy ionospheric plasma environment).

PROOF OF CONCEPT

During the period August 15th - October 15th 2019 IONOTERRA is running a final PoC experiment from its Observatory Lab in the Balti University, Moldova, monitoring Vrancea, a frequently active seismic region in East Romania used by IONOTERRA in the recent years for experiments, calibration and field tests.

About the Company

Summus Solutions NV is a junior oil and gas exploration and production company focused on identifying and exploiting hydrocarbon opportunities. To counteract global warming we have been lately looking into identifying early-stage pre-IPOs and start-ups in the tech arena and related sustainable fields. For further information, please contact Urs Meisterhans at +41 44 913 36 01 and/or visit the company website at www.summus-solutions.com.

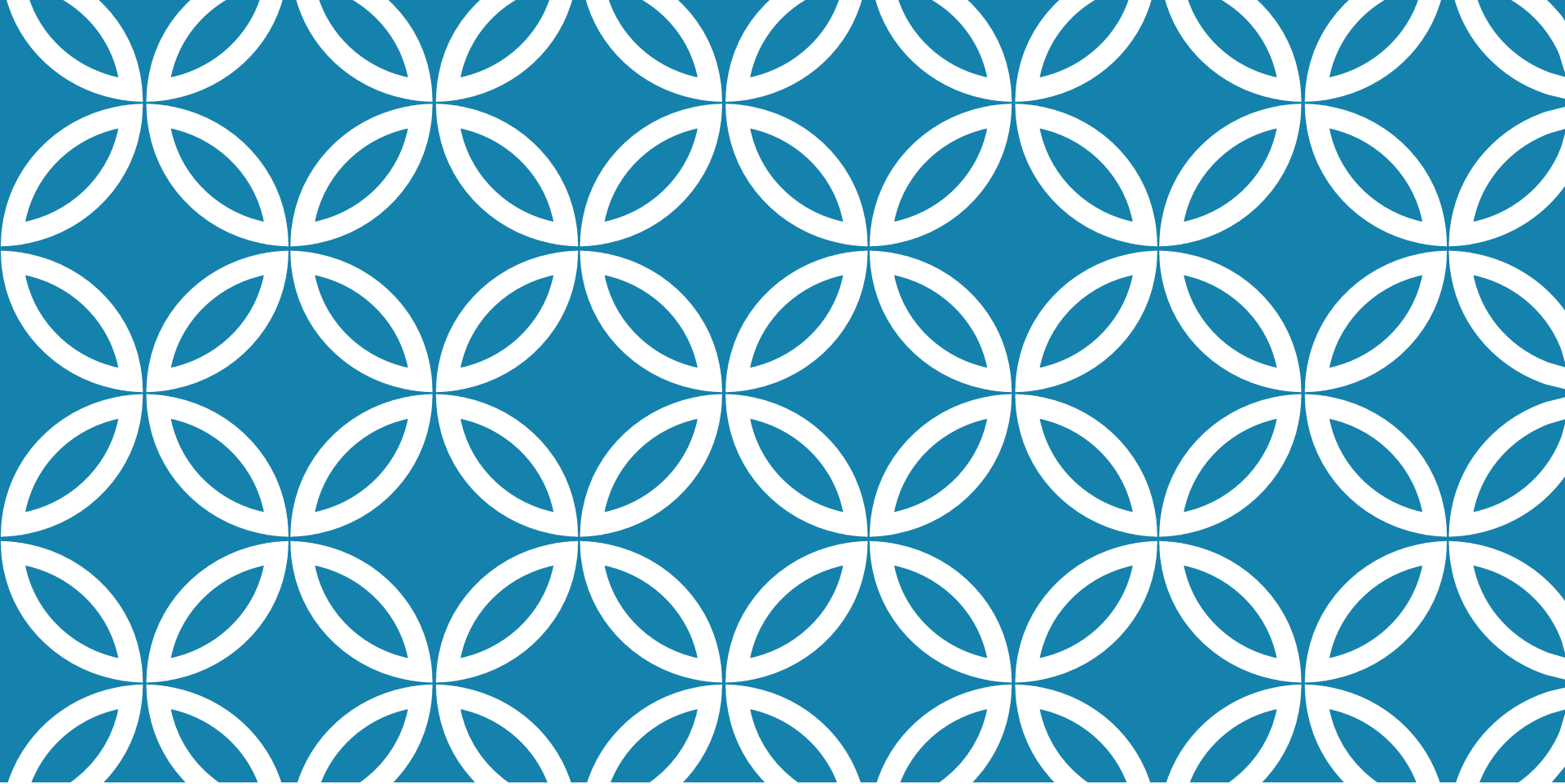
On behalf of the Board of Directors

"Urs Meisterhans"

Urs Meisterhans
President
+41 44 913 36 01, urs.meisterhans@summus-solutions.com

Attachement: Presentation of IONOTERRA's state-of-the-art technology and its impact on mankind

NEITHER THE TSX VENTURE EXCHANGE NOR ITS REGULATION SERVICE PROVIDER (AS THAT TERM IS DEFINED IN THE POLICIES OF THE TSX VENTURE EXCHANGE) ACCEPTS RESPONSIBILITY FOR THE ADEQUACY OR ACCURACY OF THIS NEWS RELEASE.



IONOTERRA

A system to save lives and property

**Earthquake
Prediction**

WHAT IS IONOTERRA

IONOTERRA is a Scientific system, enabling mankind for the first time to Predict & Warn population of an upcoming catastrophic Earthquake of magnitude over 4.5 in the Richter scale, at least **8** Hours in advance.

WHAT IONOTERRA IS CALLED TO MITIGATE

- 2008 SICHUAN EARTHQUAKE IN CHINA

48 seconds alert

69,000 people lost their lives

18,222 listed as missing

374,176 were reported injured

10 million homeless people

15 million people affected

2008 Sichuan earthquake



WHAT IONOTERRA ADDRESSES

GLOBAL CASUALTIES & FINANCIAL DAMAGE (2000 - 2016 STATISTICS)

Numbers of Earthquakes above 5 in Richter Scale during years 2000 – 2016:

2,756 Earthquakes

Cost of damages due to Earthquakes ONLY above 5 in Richter Scale during years 2000 – 2016:

\$596 Billion Damages

Number of People killed and injured due to Earthquakes during years 2000 – 2016:

387,000 People Killed

1,500,000 People Injured

WHAT IONOTERRA PREDICTS

- * **WHERE** is the Earthquake going to happen
- * **WHEN** is the Earthquake going to happen
- * **WHAT** Magnitude is Earthquake going to have

PRESENT GLOBAL SITUATION IN EARTHQUAKE ALERTS

USA system based on sensors and SANTINEL satellites provides up to **180 SECONDS** alert.

JAPAN system based on network of on-shore and off-shore seismic and geodetic instruments to rapidly detects earthquakes, provide up to **120 SECONDS** alert.

MEXICO system consists of a series of sensors located along the coast that detect shaking from a large earthquake, provide up to **60 SECONDS** alert.

IONOTERRA system based on Ionosphere Radar Scanning, provide at least **8 HOURS** alert.

HOW DOES IT WORK?

All seismic activity on earth is reflected in Ionosphere before, during and after an Earthquake.

IONOTERRA is constantly scanning a specific Ionosphere predefined region via radars triangle.

IONOTERRA developed an IP Algorithm analyzing all data coming from the Ionosonders sensors.

The IP Algorithm produces a Geo Seismic Risk Map for any monitored region, resulting with a clear cut alert in case of an upcoming Earthquake.

BASIC FACTS-1

- **An EQ is a process - NOT a burst**
- **An EQ can be predicted by early signs (EQ seismic regime)**
 - **Thermal dynamical processes occurring in the Lithosphere**
 - **Radiative gas penetration upward in the Atmosphere**
 - **Acoustic waves accompanied upward turbulent gas flow**
 - **Seismic signs – variation of MUFs* in the perturbed ionosphere**
- **Data-searched seismic activity**
- **The ionosphere reflects the EQ process**

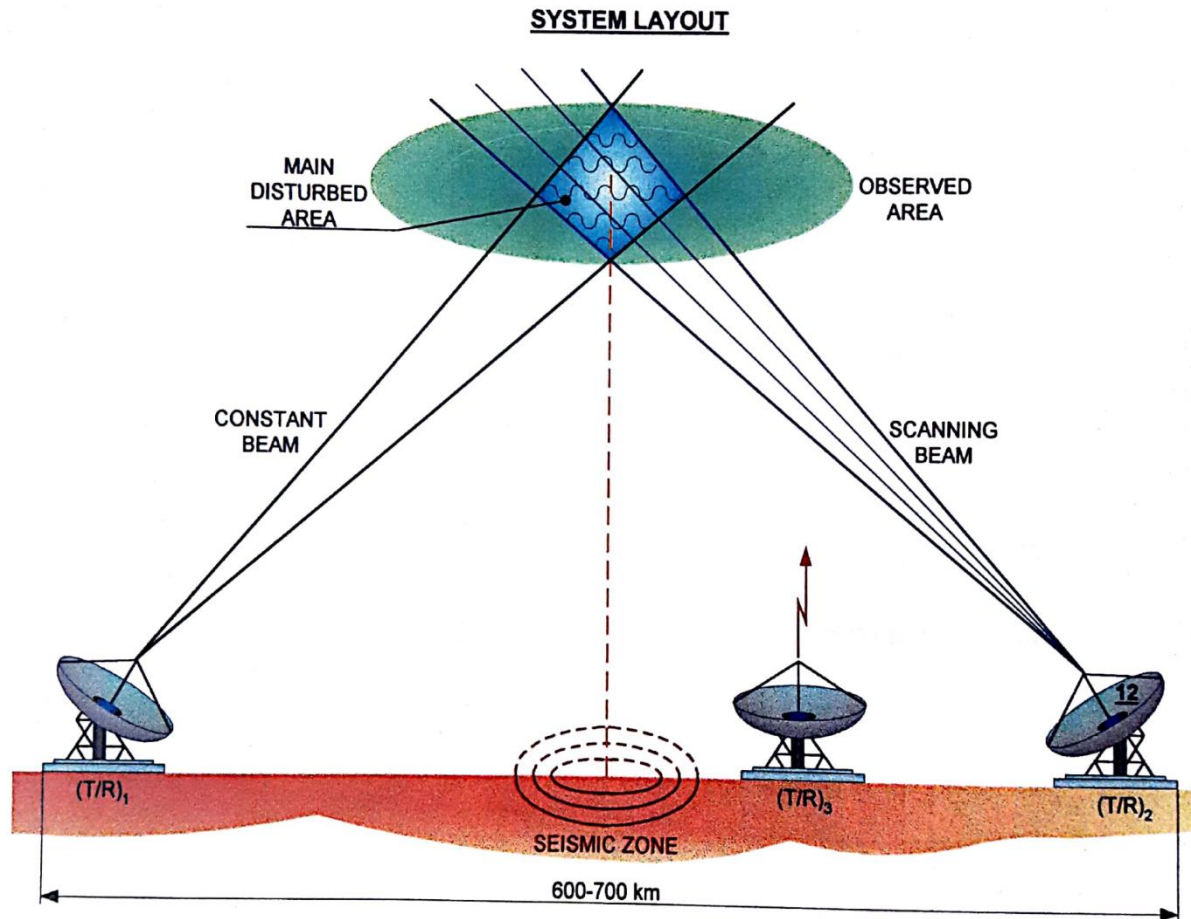
* MUF – Max Usefull Frequencies

BASIC FACTS-2

EQ AND IONOSPHERE

- **There is an EQ injected plasma perturbations and acoustic waves connectivity and activity in the Ionosphere**
- **The EQ reflection in Ionosphere is part of the general activity and hard to isolate and observe**
 - **Perturbed Total Electronic Content = Clutter**
- **There are signs that are unique and owned by an EQ process only**

SYSTEM LAYOUT



RESEARCH STAGES AND DEVELOPMENT MILESTONES - DATA UPON REQUEST

Stage 1 1990 - 1992 Finding the correlation

Stage 2 1993 - 1997 Taiwan research + US patent

Stage 3 2002 - 2008 Isolating the seismic anomaly 4 factors identifications

Stage 4 2008 - 2009 Vrancea back scatters observations

stage 5 2014 - 2017 Developing filtering tools

stage 6 2016 - 2017 Observing Vrancea with filtered tools



IONOTERRA

END