3RD INNOVATIONS IN DISASTER RECOVERY AND RESCUE FOR BUSHFIRE, FLOOD, HURRICANE AND EARTHQUAKE

Dynamic Disaster Recovery Planning And Innovations In Search And Rescue Missions

Pre-Forum Drones & AI Technologies In Disaster Risk Management Site Tours: 6 April 2020
Main Forum: 7 - 8 April 2020
Venue: Park Hyatt Melbourne, Australia

FEATURED FIRE SIDE CHAT SPEAKER
CRAIG CHALLEN

KEY THEMES INCLUDE:

- **How Big Data Analytics And AI Are Helping To Predict And Fight Bushfires**

- **How Drones Are Used To Deliver Critical Lifesaving Flotation Devices During Floods And Hurricanes**

- **Using Drones To Assess The Aftermath Of Natural Disasters And Searching For Survivors**

- **How Virtual Reality Helps To Train Fire Fighters To Handle Emergency Responses During Searing Bushfires**

- **Saving Flood Victims With Remote-Controlled Rescue Boat**

THAI RESCUE CAVE DIVER AND 2019 AUSTRALIAN OF THE YEAR

In 2018 Craig Challen, along with his dive partner Richard Harris was involved in a cave rescue operation in Thailand to evacuate 12 children and an adult from the flooded Tham Luang Cave system. Challen was awarded the *Star of Courage and Medal of the Order of Australia* by the Governor-General of Australia for his role in the rescue. On 7 September 2018 Challen was appointed a **Companion of the Order of the Direkgunabhorn** by the King of Thailand.

Call: +61 3 9909 7310
Email: admissions@claridenglobal.com
Visit: www.claridenglobal.com

3RD INNOVATIONS IN DISASTER RECOVERY AND RESCUE FOR BUSHFIRE, FLOOD, HURRICANE AND EARTHQUAKE

DYNAMIC DISASTER RECOVERY PLANNING AND INNOVATIONS IN SEARCH AND RESCUE MISSIONS

6 – 8 April 2020 | Park Hyatt Melbourne

THE
FORUM
AT A GLANCE

REGISTER BY 30 JAN TO SAVE UP TO AU$400!

MONDAY, 6 APRIL 2020
PRE-FORUM SITE TOURS:

- **Site Tour A:** Using Unmanned Drones For Delivering Critical Medical Supplies And Searching For Victims
- **Site Tour B:** Exploring Artificial Intelligence And Predictive Mapping In Disaster Risk Management

DAY 1: TUESDAY, 7 APRIL 2020

- **City Of Los Angeles Bushfire Case Study:** How To Predict Bushfire Patterns And Risks Using Connected Sensors And Big Data
- How **Google's Advanced Machine Learning Algorithms** Helps To Revolutionize Flood Prediction
- Improving Evacuation During Bushfire With **CSIRO's Award-Winning Decision Support System**
- How **Thai Cave Rescue Team Uses Advanced Mapping And LiDAR Technology** To Save Victims Trapped In Cave
- International Case Study: Using **Drones To Assess The Aftermath Of Indonesia's Destructive Earthquake**
- Searching For Survivors With **Infrared Imaging Drones**

DAY 2: WEDNESDAY, 8 APRIL 2020

- Translating Tweets Into Insights For **Disaster Response At CSIRO**
- Innovations In **Cobots And Exoskeleton** In Fighting Bushfires
- **Fireside Chat With CASA:** Are Firefighting Drones The Answer?
- Championing Innovation With **Serval Mesh - An Emergency Communication Network**
- How **Blockchain Ensures Donation Transparency** For West Japan Disaster Relief Project
- How **AI And Big Data Helps City Councils To Identify Earthquake Vulnerability** In Cities And Prepare For Emergency Evacuation

5 POWERFUL REASONS TO ATTEND THE FORUM

1. Understand the concept and practices of **disaster risk reduction through data & system effort** to analyze and manage casual factors of disaster

2. **Integrate ICT and advanced technologies** to streamline emergency response for search and rescue

3. Enhance disaster preparedness for effective response and to **"Build Back Better" in recovery, rehabilitation, and reconstruction**

4. Foster and **strengthen the exchange of information, networking exchange, and experience acquired** in the execution of natural disaster initiatives and successful projects globally

5. **Coordinate the traditional media with new media platforms** to develop an effective disaster management communication strategy

PARTICIPATING COMPANIES INCLUDE

1ST & 2ND ANZ DISASTER AND EMERGENCY MANAGEMENT FORUMS

PAST PARTICIPATING COMPANIES

- Auckland Airport
- Auckland University
- Australasian Society for Emergency Medicine (ASEM)
- Babcock Mission Critical Services Australasia
- Cardno NZ
- Central Coast Council
- Children's Health Queensland
- Christchurch City Council
- City of Adelaide
- City of Casey
- City of Greater Dandenong
- City of Hobart
- City of West Torrens
- Country Fire Authority
- Department of Internal Affairs
- Department of Main Roads and Transport
- Department of State Development
- Department of Transport and Main Roads
- DNRM
- Environment Canterbury Regional Council
- Hamilton City Council
- Health Research Council of New Zealand
- Hutt City Council
- Ideas Lab
- Jacobs
- Jonathan Howe
- Lifeline UnitingCare Queensland
- Logan City Council
- Metropolitan Fire and Emergency Services Board
- Miyamoto International NZ
- Mornington Peninsula Shire
- Mount Alexander Shire Council

- Mount Isa Mines
- National Disability Insurance Agency
- National Parks Sport and Racing
- Nepean Hospital
- New Zealand Fire Service
- New Zealand Parliamentary Services
- Nillumbik Shire Council
- Northern Sydney Local Health District
- Pasifika Futures
- QSuper
- Queenland State Emergency Service
- Queensland Country Practice
- Queensland Fire and Emergency Services
- Queensland Health, Princess Alexandra Hospital
- Queensland Parks and Wildlife Service
- Red Cross
- Risk and Emergency
- Ryman Healthcare
- SA Fire & Emergency Services Commission (SAFECOM)
- South Australian Water Corporation
- South Canterbury District Health Board
- Southern Downs Regional Council
- SpeedCast
- St John
- Tasman District Council
- Telstra
- TransLink
- University of Canterbury
- UPA North Coast Region
- Victorian Council of Churches Emergencies Ministry

" **The content and enthusiasm of the speakers. It was an extremely well run forum - I really liked that speakers were kept to time to ensure the day flowed well.** "

Queensland Care Training Pathway, Queensland Health

" **The speakers were very knowledgeable about their particular fields of expertise. The diversity of speakers that you had in the program was very important to me for making the forum informative and interesting.** "

Central Coast Council

PAST SPONSOR & EXHIBITOR

HEAR FROM KEY EXPERTS
FEATURED SPEAKERS LINE UP

6 - 8 APRIL 2020 | PARK HYATT MELBOURNE, AUSTRALIA

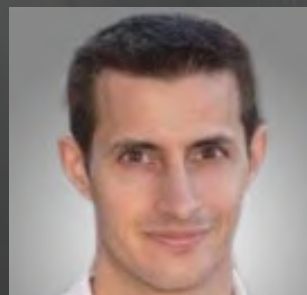**DR. CRAIG CHALLEN**
Cave Diver and 2019
Australian of the Year

ANTHONY FRANGI
Founder
Pop Up Radio Australia

PHILIP LINDSAY
Chief Superintendent
Operational Communications
Fire & Rescue NSW

KENNETH MURPHY
Project Director
Fire & Rescue NSW

LUDOVIC GROSJEAN
Principal Consultant
OceanX Group

MARK TREGELLAS
Founder
Crisis Cleanup Australia

TONY NOLAN OAM
Community Fire Fighter
and Data Scientist of
The Minder Project
NSW Fire and Rescue

CHRIS QUIN
Project Director
Resilient Projects
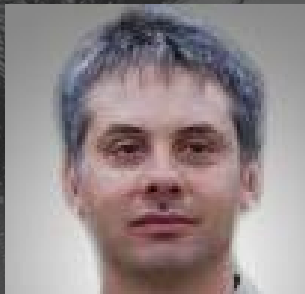
JOSH KEEGAN
CEO
Keegan Consulting Group

4

RATINDRA KHATRI
Crisis, Emergency and Disaster
Management Specialist
SCDRR-Nepal

PAUL GARDNER-STEPHEN
Founder and CTO,
Serval Project
Senior Lecturer,
Flinders University

PRADEEP KHANNA
Executive Director, Asia Pacific
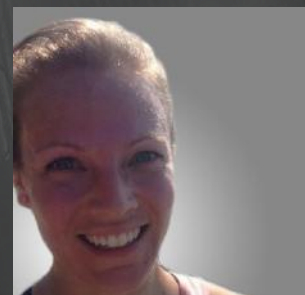**VR AR Association
Corporation**

MARK CUTHBERT
Advisor, Lessons
and Evaluation
**Australian Maritime Safety
Authority**

JOE URLI
President & Chairman
**ACUO - Australia Certified
UAV Operators** *(Invited)*

TAMSIN ACHILLES
Senior Advisor, Readiness &
Intelligence
**Victoria State Emergency
Service**

ANDREW SHORT
Assistant Commissioner
**Queensland Fire and
Emergency Services**

DUNCAN MCLUCKIE
Principal Flood Specialist
**NSW Department of Planning,
Industry and Environment**

RICHARD ADAMS
Founder & Chief Remote Pilot
Team Rubicon Australia

5

JILLIAN EDWARDS
Founder and Principal
Beyond Business as Usual

RYAN VANDERHORST
Social Media and
Content Specialist
Bureau of Meteorology

CHRIS BERG
Co-Director
**RMIT Blockchain Innovation
Hub - RMIT University**

TRISTAN COLE
Co-Founder
Sempo

JELENKO DRAGISIC
Executive Officer
Greening Australia Training
*Founder of Global Resilience
Collaborative*

JOHN GAWNE
Advisory Board Member
Powerline Bushfire Satety
Program
**Department of Environment,
Land, Water and Planning**

FORUM HIGHLIGHTS

HOW BIG DATA ANALYTICS AND AI ARE HELPING TO PREDICT AND FIGHT BUSHFIRE

LEARNING LESSONS FROM THAI CAVE RESCUE TEAM

HOW DRONES ARE USED TO DELIVER CRITICAL LIFESAVING FLOTATION DEVICES DURING FLOODS AND HURRICANES

HOW DISASTER TEAMS ARE USING AUTONOMOUS DRONES TO DELIVER CRITICAL MEDICAL SUPPLIES

SAVING FLOOD VICTIMS WITH REMOTE-CONTROLLED RESCUE BOAT

HOW COBOTS AND EXOSKELETONS CAN HELP TO FIGHT BUSHFIRES

USING DRONES TO ASSESS THE AFTERMATH OF NATURAL DISASTERS AND SEARCHING FOR SURVIVORS

ESTABLISHING AN EFFECTIVE EMERGENCY COMMUNICATION NETWORK DURING NATURAL

HOW VIRTUAL REALITY HELPS TO TRAIN FIRE FIGHTERS TO HANDLE EMERGENCY RESPONSES

USING DRONES TO ASSESS THE AFTERMATH OF DESTRUCTIVE EARTHQUAKES

HOW CROWDSOURCING INTELLIGENCE HELPED TO ASSESS DAMAGE CAUSED BY CYCLONE DEBBIE IN REAL TIME

7 APRIL, EVENING:
CHAMPAGNE NETWORKING SESSION

Enjoy a glass of champagne whilst networking with other like-minded individuals on topics that are of most interest to you and fellow delegates.

Who You Will Meet:

SENIORITY LEVEL OF DELEGATES

40%
Vice President /
Director /
General Manager

20%
Board / C-Level /
President / Managing
Director

20%
Head of
Department

20%
Manager

Industries (including but not limited to):

- Airline / Aviation
- Banking / Finance / insurance
- Commercial Real Estate
- Defense & Space
- Community
- Government Administration
- Healthcare / Hospital & Education
- Information Technology and Services
- Civil Defense
- Maritime
- Military
- Non-profit Organization
- Public Safety
- Security & Investigations
- Transportation / Trucking / Railroad
- Telecommunication
- Utilities

In the Roles of:
C-Level/President/Vice President/ Director/Head/Manager of

- Disaster Management
- Lifecycle Management
- Regional Emergency Communication Coordination
- Development & Evaluation
- Spectrum Management
- Disaster Mental Health
- Child Safety and Disability Services
- Red Cross

10 REASONS

TO ATTEND THE 3RD INNOVATIONS IN DISASTER RECOVERY AND RESCUE FOR BUSHFIRE, FLOOD, HURRICANE AND EARTHQUAKE

1 Receive latest updates on the innovative technology available for disaster rescue and response operations.

2 Develop key disaster management competencies: preparedness, prevention, response, and recovery.

3 Strengthen data analytics and gathering through social networking sites to enable improved disaster recovery operations.

4 Coordinate the use of robotic and drone technology with more traditional methods of rescue and relief operations.

5 Enhance communication and exchange of information and experience through innovative emergency communication networks.

HURRICANE

VOLCANO

DROUGHT

BUSHFIRE

EARTHQUAKE

FLOOD

6 Foster machine learning algorithms to aid flood prediction.

7 Learn how to efficiently manage disaster risks through various AI-enabled systems.

8 Acquire in depth knowledge on strategies in conducting long term recovery planning.

9 Discover the latest methods to effectively evacuate communities to safety during rapid spreading disasters such as bushfires.

10 Engage and network with the most learned minds in disaster management and lifecycle management.

SITE TOUR A: 09:00 - 12:00

Using Unmanned Drones For Delivering Critical Medical Supplies And Searching For Victims

When disaster strikes, one of the critical concerns is **getting important relief goods such as medical supplies to those in need as swiftly as possible**. However, when roads are unpassable, this becomes a tricky logistical challenge. Thus, the **use of drones in delivering medical packages** is nothing short of a brilliant idea. These **drones can land in places that ground vehicles either cannot get to or take too long to reach**. It can **deliver life-saving treatment directly** to the victims and at the same time **give remote physicians eyes, ears and voice to instruct anyone on site**.

SITE TOUR B: 14:00 - 17:00

Exploring Artificial Intelligence And Predictive Mapping In Disaster Risk Management

Software algorithms are progressively generating important insights on a variety of phenomena. These software programs have also become so advance that they seemingly imitate human intelligence, hence the appropriate namesake **artificial intelligence (AI). AI has had tremendous impact in managing disasters and planning out relief operations**. It could be utilized to **potentially predicting earthquakes to quickening recovery and response times, flood occurrences and even patterns in climate**. Humanitarian groups are now also using **AI to speed up map creation** by using machine learning in computer software to extract objects such as buildings and roads from aerial images.

10

MAIN FORUM AGENDA

7 - 8 APRIL 2020 | PARK HYATT MELBOURNE, AUSTRALIA

DAY ONE - 7 APRIL 2020

09:00 **Welcoming Speech, Opening Remarks & Thank You Sponsor Speech By Forum Producer**

Building Advanced Prediction And Early Warning System For Natural Disasters With Connected Sensors, Big Data And AI

09:15 Fighting Bushfire With Big Data

City Of Los Angeles Bushfire Case Study: How To Predict Bushfire Patterns And Risks Using Connected Sensors And Big Data

With climate change rapidly increasing the danger and scale of wildfires, the dry lands of California are particularly vulnerable. The state's largest ever, the Thomas Fire, in December 2017, raged over 282,000 acres, destroyed a thousand homes, and threatened the lives of tens of thousands more. Yet in the midst of this aggressive firestorm emerged a surprising new tool to help the Los Angeles Fire Department monitor the fire and predict where it would go—and what it would do—next. WIFIRE is an integrated system for fire analysis. Using computational techniques including signal processing, visualization, modeling and data assimilation, the web-based platform merges satellite imagery and real-time data from cameras and sensors to assemble a picture of the fire, the conditions around it, and its trajectory.

Tony Nolan
Community Fire Fighter and
Data Scientist of The Minder Project
NSW Fire and Rescue

09:45 Flood Prediction With AI

How Google's Advanced Machine Learning Algorithms Helps To Revolutionize Flood Prediction

For years Google has warned users about natural disasters by incorporating alerts from government agencies like FEMA into apps like Maps and Search. Now, the company is making predictions of its own. As part of a partnership with the Central Water Commission of India, Google will now alert users in the country about impending floods. These predictions are being made using a combination of machine learning, rainfall records, and flood simulations. Such warnings are particularly important in India, where 20 percent of the world's flood-related fatalities are estimated to occur.

Ludovic Grosjean
Principal Consultant
OceanX Group

10:15 *Morning Refreshment & Networking & Networking*

Improving Evacuation With AI And Big Data

10:30 **Roundtable Discussion: Latest Innovative Technology For Disaster & Rescue Management**

- Understanding Evacuation Patters with Big Data and Social Media Analytics
- Securing Communication Infrastructure During Major Disasters
- Predicting Bushfire Spread with Big Data Analytics and AI
- Autonomous Drones in Search and Rescue

Anthony Frangi
Founder
Pop Up Radio Australia

Philip Lindsay
Chief Superintendent Operational Communications
Fire & Rescue NSW

Kenneth Murphy
Project Director
Fire & Rescue NSW

Andrew Short
Assistant Commissioner
Queensland Fire and Emergency Services

Tamsin Achilles
Senior Advisor, Readiness & Intelligence
Victoria State Emergency Service

11:30 AI- Enabled Disaster Response

Improving Evacuation During Bushfire With CSIRO's Award-Winning Decision Support System

A bushfire evacuation tool created by CSIRO's Data61 in collaboration with the Victorian Government and RMIT has won three Merit Awards at the 2019 iAwards. Held in Victoria, the Bushfire Evacuation Modelling program took home accolades in the Research and Development Project of the Year, Infrastructure and Platforms Innovation of the Year, and Community Service Markets categories. Described as a decision support system for bushfire evacuation, the platform assists emergency management organisations to assess evacuation and risk mitigation options for bushfires at a local, regional level and state level. The DSS (Decision Support System) addresses a significant gap in evacuation planning and danger reduction, specifically through the

use of artificial intelligence to limit manual data gathering, a timely process that limits the number of scenarios that ultimately influence final decision making. The DSS allows local authorities and emergency services to explore a multitude of situations in a limited amount of time, whereas existing methods focussed on validating decisions already made by an organisation. While a significant number of software products can build evacuation plans, they lack the decision support capabilities provided by the DSS, and the capability to successfully translate designs to regional evacuations.

Fireside Chat: Thai Cave Rescue

12:00 **Lessons Learned in 100 years of Preparing, Responding and Recovering for Cyclones in Mackay North Queensland**

Dr. Craig Challen
Cave Diver and 2019 Australian of the Year

12:30 *Lunch & Networking*

Disaster Surveying And Mapping With Drones & LiDAR Technology

13:30 Disaster Mapping
How Thai Cave Rescue Team Uses Advanced Mapping And Lidar Technology To Save Victims Trapped In Cave

Using advanced mapping and LiDAR technology, Nat Geo is able to digitally "drain" the water from the flooded cave system and provide a unique and enlightening perspective on the dilemma the rescuers faced. Nat Geo worked with the authorities in Thailand's Department of National Parks to send a team into Tham Luang to conduct the first digital 3D survey of the cave system. The team used a laser scanning system that emits 400,000 beams per second to record reflections from the cave walls, enabling them to map the 1.5 mile span between the mouth of the cave and the pocket where the boys and their coach found themselves trapped as muddy monsoon waters flooded the cave. The extraordinary effort to produce Drain the Oceans: Thai Cave Rescue is the result of 8.7 billion data points from nearly 400 scans throughout a 3-week survey. The team also captured every crack and fissure of the cave system with more than 7,000 photos. To classify Harvey tweets, an AIDR classifier was trained (F1=0.64) using more than 30k human-tagged tweets collected from a number of past disasters.

Dr. Craig Challen
Cave Diver and 2019 Australian of the Year

14:00 **International Case Study: Using Drones To Assess The Aftermath Of Indonesia's Destructive Earthquake**

The magnitude 7.5 earthquake that shook Sulawesi immediately flattened buildings and caused liquefaction, leading to mudflows in two neighborhoods in Palu (population 330,000) that ripped apart houses, swallowed roads and buried people alive. The National Agency for Disaster Countermeasure, or BNPB, turned to Team Rubicon Australia (TRA) for help. The nonprofit group is part of Team Rubicon Global, an international global disaster-response organization network powered by more than 80,000 well-trained volunteer military veterans who step in as first-responders to disasters worldwide. Once on the ground, the The TRA team used drones to take aerial photos and videos given the destruction and inaccessible landscape. Led by Richard Adams, a highly skilled drone pilot with extensive military and civilian UAV experience, the drone crew concentrated on four key areas: two neighborhoods in Palu that had suffered the most earthquake damage and two settlements that the tsunami struck.

Richard Adams
Founder & Chief Remote Pilot
Team Rubicon Australia

14:30 **Searching For Survivors With Rescue Radar And Wireless Life Detector**

Ratindra Khatri
Crisis, Emergency and Disaster Management Specialist
The Strategic Centre for Disaster Risk Reduction Nepal (SCDRR-Nepal)

15:00 *Afternoon Refreshment & Networking*

Innovative Approach To Deliver Critical Supplies In Disaster Response

15:30 Drones To Deliver Critical Medical Supplies
How Disaster Teams Are Using Temperature-Controlled Autonomous Drone Delivery System To Deliver Critical Medical Supplies

Merck and its partners have tested drone flights and the coordinated processes needed to provide medical supplies by drone in a temperature-controlled environment with real-time monitoring. The drones are designed to carry the types of medications people often lose access to in disasters, which can lead to health crises or death. The technology of the smart boxes allows for temperature-control when delivering products such as some of Merck's vaccines. The non-refrigerated cargo can carry medications for asthma and hypertension for instance. This week tests were conducted with drones

flying in challenging terrain in remote areas impacted during Maria, beyond the line of sight. The drone deliveries extend to remote mountain villages that were cut off from electricity and road access for months after Hurricane Maria, some of them for a time accessible only by helicopter.

Josh Keegan
CEO
Keegan Consulting Group

16:00 Saving Victims Trapped In Flood With Drones
How Drones Are Used To Deliver Critical Lifesaving Flotation Devices During Flood And Hurricanes

Duncan McLuckie
Principal Flood Specialist
NSW Department of Planning, Industry and Environment

Converging Information For Alert, Search & Rescue And Disaster Relief With Mobile Apps And Online Platform

16:30 Crowdsourcing Intelligence
Learning Lessons From Cyclone Debbie: How Crowdsourcing Intelligence Helps To Assess Damage Caused By Cyclone Debbie In Real Time

When Cyclone Debbie slammed into the Australian coast in March 2017, Queensland State disaster recovery teams were better prepared than ever before to document, catalog and respond to the extensive damage it caused. Disaster recovery workers used the Gruntify mobile app, a cloud-based app to easily and quickly document storm damage. Using a mobile device, they only needed to snap a picture, fill out a text form, and submit the report with the tap of a button. The app transmitted the data to the Gruntify web platform, which was accessed by the state's disaster center in a standard format, with geotagging information to precisely locate each incident. Gruntify systematically organized the data and kept information flowing smoothly to all relevant stakeholders, optimizing disaster response processes both during and after the storm.

Chris Quin
Project Director
Resilient Projects

17:00 **The New Era OF Climate & Disaster Risk Information Capabilities**

The urgent need for next generation capabilities to support agile, strategic decisions in a rapidly changing world.

Jillian Edwards
Founder and Principal
Beyond Business as Usual

17:30 **Closing Remarks by Forum Chairperson**

17:35 **Champagne Networking Session**

After a long day of learning, benchmarking, and planning, unwind and mingle with your peers

13

DAY TWO - 8 APRIL 2020

09:00   **Welcoming Speech, Opening Remarks & Thank You Sponsor Speech By Forum Producer**

Keeping Pulse In Disaster Response With Social Media Analytics

09:15   <u>Leveraging Social Media In Disaster Response</u>
Translating Tweets Into Insights For Disaster Response

CSIRO's Emergency Situation Awareness (ESA) software detects unusual behaviour in the Twitter stream and quickly alerts the user when a disaster event is being broadcast. ESA also stores complete Twitter stream information and allows post-event analyses. Such useful and accessible information can provide timely situation awareness for disaster managers and emergency response agencies. ESA works by exploiting the statistical incidence of words used on Twitter to describe emergency events. It's trained using historical word occurrences from past disaster incidents. This allows ESA to reveal emerging topics and flag them for investigation.

Ryan Vanderhorst
Social Media and Content Specialist
Bureau of Meteorology

09:45   <u>Social Media Analytics:</u>
Identifying Evacuation Patterns Using Social Media Analytics

In July 2018, a spark near the Mendocino National Forest ignited California's largest wildfire on record. As the Ranch Fire spread rapidly, officials declared mandatory evacuations in several areas and counties. Analyzing evacuation and recovery patterns could help researchers understand how humans behave in the face of a disaster, which could inform emergency response efforts. Jia said nobody was able to provide population movements during a disaster, especially at a high temporal and spatial resolution–until Facebook manner.

Mark Tregellas
Founder
Crisis Cleanup Australia

10:15   *Morning Refreshment & Networking & Networking*

Empowering Disaster Response Capacity With Robotic Technology

10:30   <u>Exoskeleton</u>
Innovations In Cobots And Exoskeleton In Fighting Bushfires

Bounding up numerous flights of stairs when the elevator is out is punishing enough for our legs and lungs, but imagine having to do so while carrying heavy equipment needed to extinguish a blazing high-rise fire. Such a scenario has prompted specialist vehicle manufacturer Trigen Automotive to work with Singapore's Civil Defence Force to develop Auberon, a purely mechanical exoskeleton designed to take the strain out of carrying emergency equipment up to tower-top fires. Trigen says that the breathing apparatus, hose lines, nozzles, power tools and more which often make up a firefighter's emergency toolkit can all add up to 40 kg (90 lb) of back-punishing weight, particularly when having to climb flights of stairs in a burning tower. Such equipment becomes much less of a burden when mounted to the Auberon Pneumatic Exoskeleton's specially-designed frame.
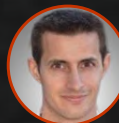
Mark Cuthbert
Advisor, Lessons and Evaluation
Australian Maritime Safety Authority

11:00   <u>Unmanned Vehicles</u>
Saving Flood Victims With Remote-Controlled Rescue Boat Emily

Emily, which stands for Emergency Integrated Lifesaving Lanyard, is essentially a remote-controlled rescue boat. Since 2010, Emily robotic rafts have been used to rescue people. Thermal cameras can help Emily spot people in the water and slow down before arriving at their location, even turning itself the long way for an easier rescue. The idea is to make it possible for someone to call off the coordinates of a victim far away, and have a computer convert those – send them to GPS, to the robot, so that the robotic raft can arrive and help someone in the water, while the lifeguard can tend to people who need help elsewhere.

Ludovic Grosjean
Principal Consultant
OceanX Group

Firefighting Drones

11:30   **Fireside Chat: Are Firefighting Drones The Answer?**

- Overview of recent incident on drones causing waterbombing to be grounded on bushfire rescue attempt
- Why drones can be dangerous in bushfire surrounding?
- What countermeasures can be done?

Joe Urli
President & Chairman
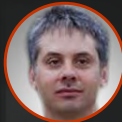*ACUO - Australia Certified UAV Operators* (Invited)

14

Overcoming Network Failures During Disasters With Innovative Technology

12:00   Mesh Network
Championing Innovation With Serval Mesh - An Emergency Communication Network

An Adelaide-designed app enabling mobile phone users to communicate even if their networks fail has won international acclaim at the Pacific Humanitarian Challenge. Dr Paul Gardner-Stephen of Flinders University created the Serval Mesh app so people in disaster-struck areas could continue to communicate among themselves. Serval Mesh utilises Bluetooth and wi-fi to transfer encoded messages between neighbouring phones hosting the app. Primarily, data in the form of SMS, maps and other text files can be moved across the network. If a direct link is available between phones, a phone call can be made. Dr Gardner-Stephen said the initial concept was to provide emergency communication systems when traditional phone towers were damaged.

Paul Gardner-Stephen
*Founder and CTO, **Serval Project***
*Senior Lecturer, **Flinders University***

12:30   *Lunch & Networking*

Strengthening Australia's Disaster Preparedness And Resilience

13:30   **Understanding The Australian Disaster Preparedness Framework In Practice**

The Australian Disaster Preparedness Framework supports Australia to develop the required capability to effectively prepare for and manage severe to catastrophic disasters The framework encompasses the following areas:
• Understand risks & consequences;
• Understand Capability Requirements;
• Enhance & Develop Capabilities;
• Foster Partnerships;
• Plan, coordinate capabilities and partnerships; Inform policy, investment & expectations;
• Establish effective governance, roles & responsibilities.

John Gawne
Advisory Board Member
Powerline Bushfire Satety Program
Department of Environment, Land, Water and Planning
Managing Director
Resilient Services Pty Ltd

Ensuring Transparency And Accuracy For Disaster Relief Support With A Secure Blockchain System

14:00   Blockchain In Disaster Support
Case Study Of Red Cross Boosts Disaster-Prone Communities With Blockchain 'Cash'

The technology allows slum dwellers and rural villagers with simple mobile phones to effectively create their own local currencies to bootstrap development.

Tristan Cole
Co-Founder
Sempo

Assessing A City's Vulnerability To Earthquakes With AI And Big Data

14:30   Predicting Earthquake With AI
How AI And Big Data Helps City Councils To Identify Earthquake Vulnerability In Cities And Prepare For Emergency Evacuation

Detecting seismic vulnerability in urban areas is critical. Identifying high-risk buildings can save lives and help prioritize retrofitting investments. However, sending large teams of surveyors into the field is time consuming and expensive. Instead, this case study leverages imagery from satellites and drones, and street-view images from 360° street cameras to identify homes that are a high risk for collapse during an earthquake. Digital elevation models from satellite imagery helped identify buildings located on steep slopes, which are at higher risk for mudslides. A combination of satellite and drone imagery helped identify rooftop material, suggesting underlying construction techniques which are more vulnerable to seismic activities. The availability of street-view imagery is unique, as it can be used to identify soft-story constructions which are vulnerable to seismic activities. This case study is a good example of how different physical factors of vulnerability can be extracted from various data sources and the unique capabilities of street-view imagery. The deep learning algorithm trained on the street-view imagery caught 85% of the buildings which were flagged by expert engineers as vulnerable.

Chris Berg
Co-Director
RMIT Blockchain Innovation Hub - RMIT University

15:00   *Afternoon Refreshment & Networking*

MAIN FORUM AGENDA

7 - 8 APRIL 2020 | PARK HYATT MELBOURNE, AUSTRALIA

Enhancing Training For Disaster Preparedness With AR/VR Technology

14:30   **How Virtual Reality Helps Train Fire Fighters In Handling Emergency Responses During Searing Bushfires**

Pradeep Khanna
Executive Director, Asia Pacific
VR AR Association

Telemedicine Empowered By 5G Network In Disaster Emergency

16:00   **Successfully Implementing Disaster Preparedness, Response And Resilience Plan**

- How technology can be utilized in resilience process.
- How technology driven resilience can be used more effectively
- How technology can work with existing laws and regulations
- Harmony between regulations and human behaviour

Jelenko Dragisic
Executive Officer
Greening Australia Training
Founder of Global Resilience Collaborative

Pioneering Innovation In Disaster Response Mission

16:30   **Using 3D Printing To Deliver Critical Spare Parts And Medical Equipments During Disaster Relief**

As you step into World Vision's Innovation Lab, there are dozens of things that might catch your attention. The buzz of a 3D printer whirring in the corner, a giant blackboard decorated with sketches, or the quiet focus of the teams dotted around the room. What might not catch your gaze is a seemingly simple, yellow pipe fitting resting on a desk. It looks basic enough; a ring made of hard plastic. But it actually symbolises something much bigger, both for communities affected by the Nepal Earthquake and the future of disaster responses around the globe. This pipe fitting is a new, tailored solution for earthquake-damaged water systems in Nepal. Its creation has been made possible because of the 3D printing expertise of Field Ready, a start-up aid group. In the past, a damaged water pipe in Nepal would be repaired by community members using makeshift solutions, such as wrapping a plastic bag over the leak. But today, this new fitting is delivering a much more secure and sanitary solution for leaking pipes. More importantly, it's showing what's possible when local and international innovators and active local communities have the chance to collaborate.

Ratindra Khatri
Crisis, Emergency and Disaster Management Specialist
The Strategic Centre for Disaster Risk Reduction
Nepal (SCDRR-Nepal)

17:00   **Utilization Of Helicopters For Flood Rescue And Reconnaissance**

Shannon Crofton
Vice President
NSW SES Volunteers Association

17:30   **Closing Remarks by Forum Chairperson**

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A: 2-Day Forum *(Most Popular)*	AU$2,095	AU$2,295	AU$2,395	AU$2,495
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4 WAYS TO REGISTER

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6 - 8 April 2020
Address: 1 Parliament Pl, Melbourne VIC 3002, Australia
Phone: +61 3 9224 1234
Website: https://www.hyatt.com/en-US/hotel/australia/park-hyatt-melbourne/melph?src=corp_lclb_gmb_seo_aspac_melph

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