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# E&P HEALTHCARE CONFERENCE PRESENTATION

**EMVision Medical Devices Limited (ASX:EMV) ("EMVision" or the "Company"),** a medical device company focused on the development and commercialisation of medical imaging technology, is pleased to provide a copy of the presentation to be given by EMVision's CEO and Managing Director, Dr Ron Weinberger, at the E&P Healthcare Conference, September 2022.

Authorised for release by the Board of the Company.

#### [ENDS]

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#### **About EMVision Medical Devices**

EMVision Medical Devices Limited is focused on the development and commercialisation of medical imaging technology. The Company is developing and seeking to commercialise a potentially cost effective, portable, medical imaging device using electromagnetic microwave imaging for diagnosis and monitoring of stroke and other medical applications. The technology is the result of over 10 years of development by researchers at the University of Queensland. The team of approximately 20 researchers is led by co-inventor Professor Amin Abbosh, who is considered a global leader in electromagnetic microwave imaging. EMVision's Chief Scientific Officer is Professor Stuart Crozier, who is a co-inventor and is globally renowned for creating technology central to most MRI machines manufactured since 1997. EMVision's CEO, Dr Ron Weinberger, is the Former Executive Director and CEO of Nanosonics' (ASX:NAN), a \$1.2 billion market cap healthcare company. Dr Weinberger has over 25-years' experience developing and commercialising medical devices. During his time at Nanosonics, Dr Weinberger co-developed the company's platform technology and launched their breakthrough product 'Trophon' globally, which would go on to become the gold standard for infection prevention. Dr Weinberger was instrumental in transforming Nanosonics from a research and development company to one of Australia's leading medical device commercialisation success stories.

#### **Forward-looking Statements**

This release may contain certain forward-looking statements with respect to matters including but not limited to the financial condition, results of operations and business of EMVision and certain of the plans and objectives of EMVision with respect to these items. These forward-looking statements are not historical facts but rather are based on EMVision's current expectations, estimates and projections about the industry in which EMVision operates, and its beliefs and assumptions. Words such as "anticipates," "expects," "intends," "plans," "believes," "seeks," "estimates", "guidance" and similar expressions are intended to identify forward looking statements and should be considered an at-risk statement. Such statements are subject to certain risks and uncertainties, particularly those risks or uncertainties inherent in the process of developing technology and in the endeavour of building a business around such products and services. These statements are not guarantees of future performance and are subject to known and unknown risks, uncertainties and other factors, some of which are beyond the control of EMVision, are difficult to predict and could cause actual results to differ materially from those expressed or forecasted in the forward looking statements. EMVision cautions shareholders and prospective shareholders not to place undue reliance on these forward-looking statements, which reflect the view of EMVision only as of the date of this release. The forward-looking statements made in this announcement relate only to events as of the date on which the statements are made. EMVision will not undertake any obligation to release publicly any revisions or updates to these forward-looking statements to reflect events, circumstances or unanticipated events occurring after the date of this announcement except as required by law or by any appropriate regulatory authority.





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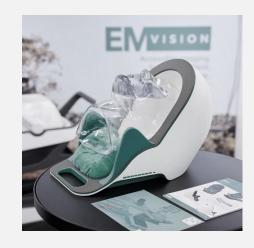
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EMVision is an innovative medical device company developing world first electromagnetic portable brain scanner products to address significant unmet needs



Founded in 2017

- Best-in-breed partnerships and clinical collaborations
- Experienced team (including key ex-Nanosonics leaders)
- Significant nondilutive grant funding

- "Zero to one" technology
- Multi-billion-dollar market opportunity





## **CAPITAL STRUCTURE**

Headquarters: 4.01, 65 Epping Road, Macquarie Park Sydney, Australia

#### **ASX TICKER: EMV**

Share Price (5 September 2022)	\$1.50
Shares on issue	77.63m
Total Options on issue	3.55m
Performance Rights	6m
Market Capitalization	\$116.4m
Enterprise Value	\$109.6m
Cash Balance (30 June)	\$6.8m
MRFF/ASA Non-dilutive Grant Funds*	\$6.2m
MMI Non-dilutive Grant Funds	\$5m

- Secured >\$17m in non-dilutive funding since inception
- \$6.8m cash balance at 30 June 2022, modest cash burn
- Further \$11.2m ongoing non-dilutive grant funding sources
- Multi-centre clinical trials capital efficient at anticipated <\$4m</li>
- Founders, Management and Directors closely aligned to shareholders, holding approximately 20% of shares on issue





# EMVISION IS CREATING WORLD FIRST PORTABLE BRAIN SCANNERS

Neuroimaging as is accessible today.



EMV 1<sup>st</sup> Gen, Neuroimaging anywhere.





# BRINGING IMAGING TO WHERE STROKE OCCURS WILL SAVE LIVES



#### TRADITIONAL IMAGING TOOLS

- Mainstay imaging techniques, CT and MRI, produce excellent images but are for the most part large, stationary and complex machines that require specialist operators, limiting their point-of-care accessibility.
- Whether a new acute stroke or a complication of an existing stroke, urgent brain imaging is required before the correct triage, treatment or intervention decision can be made.



- 1 in 4 adults will have a stroke in their lifetime
- 2 out of 3 strokes result in permanent disability
- 34% of total global healthcare expenditure is spent on stroke
- The average healthcare cost of stroke per person in the United States is USD \$140,048



#### **EMVISION POINT-OF-CARE**

- EMVision's product portfolio of portable, light weight, affordable and easy to use brain scanners fills this unmet need for point-ofcare brain imaging wherever the patient is.
- ✓ Faster diagnosis, faster treatment
- ✓ Better monitoring
- ✓ Less disability
- ✓ Improved quality of life
- ✓ Significant healthcare & insurer savings



GEN 1



GEN 2

# TIME IS BRAIN

Rochmah, Thinni Nurul et al. "Economic Burden of Stroke Disease: A Systematic Review."

Every 10 minutes can SAVE up to 20 MILLION brain cells

CE

# FILLING A GAP WHERE NO ALTERNATIVE IMAGING SOLUTIONS READILY ACCESSIBLE

#### UNMET NEED FOR PRE-HOSPITAL AND BEDSIDE IMAGING ACROSS THE ENTIRE PATIENT JOURNEY

#### A typical patient journey & timeline



#### 2nd GEN



#### Potential clinical use cases

- Reliability segment LVOs to assist decision making on transport to clot retrieval center versus local stroke unit or hospital
- Reliably distinguish between haemorrhagic stroke versus ischaemic stroke. Future in-field tPA opportunity

#### 1st GEN



#### Potential clinical use cases

- Monitor response to therapy or surgical intervention & complications
- Decision support when CT or MRI not accessible
- Detect secondary bleeding earlier routine brain scan to assess haemorrhagic transformation of ischaemic stroke
- Monitoring for post stroke oedema to allow earlier clinical detection and intervention
- Monitoring response to reperfusion therapy including restoration of blood flow and complications

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# 1<sup>ST</sup> GEN

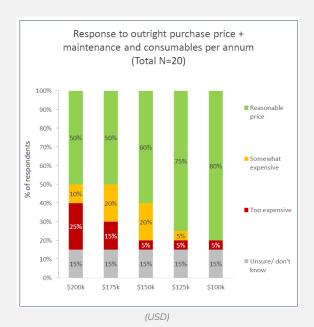
DETECT CLINICALLY SIGNIFICANT CHANGES, AT THE BEDSIDE, WHEN TIME MATTERS.

- A portable, cost-effective, non-ionizing and safe brain scanner
- Capable of rapidly producing quality images of biological tissue to provide game-changing insights for clinicians by the bedside
- Single operator, trained healthcare professional, no radiographer required
- Rapid insights, targeting <5 minutes from scan to images
- Pursuing FDA De Novo pathway
- Next steps: multi-site trial and regulatory approvals process



# POSITIVE MARKET FEEDBACK -**1ST GEN PORTABLE BRAIN SCANNER**

20 US based stroke specialists, with involvement in purchasing processes, surveyed by IDR Medical. The upper proposed Gen 1 purchase price ranges were considered reasonable by 50% of the sample, and only 1 respondent did not accept any of the prices presented.









# **ENCOURAGING HEALTH ECONOMIC ASSESSMENT**

Estimated Gen 1 potential financial benefits to a public hospital in Australia<sup>1</sup>

Reduction in	\$120,000
Transportation Costs	

\$150,000 More efficient CT/MRI

Utilization

\$90,000 Improvement in

**Endovascular Clot Retrieval** Resource Utilization

Reduction in Length of Stay \$78,000

**Estimated Annual Total** Financial Benefit of one device (excluding annual cost of imaging system)

\$438,000

Research & Modelling conducted by;



<sup>1</sup>Mid-range budget impact estimates for an Australian Public Hospital in AUD.

The savings estimated is from an Australian public hospital budget impact perspective and does not include post discharge patient outcomes related savings. Investors are cautioned that this study summary dated August 2021 is based on a number of assumptions, which are subject to change and may cause actual results to differ materially from those forecast. Investors should not place undue reliance on these results. The study is not indicative of the proposed unit pricing of EMVision's devices.



#### ULTRA LIGHT WEIGHT DEVICE FOR STANDARD ROAD AND AIR **AMBULANCES**

- Lightweight scalable imaging solution with telemedicine capabilities, tablet operated.
- Designed to assist with remote diagnosis
- Portable, in ambulances and carried into the home of a patient – helps with immediate diagnosis and treatment
- Leveraging knowhow from 1st Gen, 2<sup>nd</sup> Gen R&D and product development running in parallel
- FDA 510(k) Pathway (anticipated to leverage Gen 1 approvals)
- Next steps: advanced prototype fabrication and testing





# MORE LIVES COULD BE SAVED WITH OUR SCALABLE AND LIGHTWEIGHT 2<sup>nd</sup> GEN BRAIN IMAGING SOLUTION



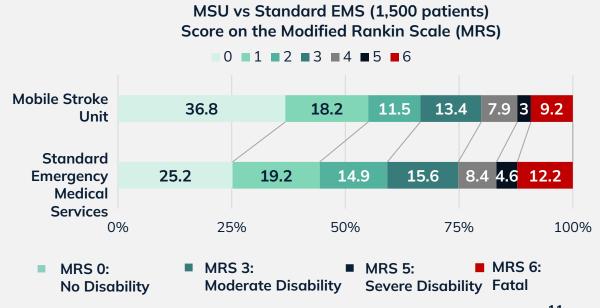
A Mobile Stroke Unit (MSU)



Inside a multi-milliondollar MSU today



- Mobile Stroke Units (MSU) essentially bring the stroke unit to the patient, providing faster diagnosis and treatment, improving disability outcomes
- However, the model is resource intensive (including radiographer) and requires an expensive specialised vehicle (\$1.5m+) and thus is not generalisable for scale-up
- EMV 2<sup>nd</sup> Gen offers a scalable solution that is portable, ultra lightweight and telemedicine enabled, deployable by trained paramedics in any road or air ambulance
- EMV is partnering with the Australian Stroke Alliance (ASA) to develop and validate the Gen 2 to transform pre-hospital stroke care



Prospective, Multicenter, Controlled Trial of Mobile Stroke Units

Grotta IC et al. DOI: 10.1056/NEJMoa2103879

# UNIQUE TECHNOLOGY PLATFORM

- Safe, portable, fast and accessible imaging modality
- IP portfolio spans software, hardware and multiple indications
- Successful proof-of-principle study completed with 50 confirmed stroke patients at Brisbane's Princess Alexandra hospital
- Algorithms refined in this study and observed to accurately classify stroke type (98%) and localise quadrant of stroke (78%)
- EMVision's technology has been published in:



source: https://doi.org/10.3389/fneur.2021.765412



source:

https://doi.org/10.1161/str.53.suppl\_1.129

#### SHARED UNDERLYING PRINCIPLES



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SECURITY

Millimeter frequency 10 - 80 GHz

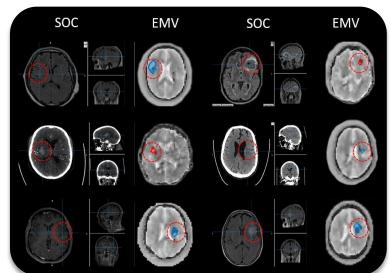
ELECTROMAGNETIC IMAGING

Microwave frequency 500 MHz – 2 GHz



Low energy electromagnetic pulses are used to provide a mobile, and rapid neuroimaging modality for pre-hospital and bedside evaluation of patients based on the dielectric properties of the tissue.





Patient examples from pilot study.

SOC = Standard of Care imaging (CT or MRI)EMV = EMVision technology.

In these patient examples pathologies highlighted blue were classified as ischemic stroke and those highlighted red were classified as hemorrhagic stroke.

Please refer to the Company's ASX announcement titled "EMVision Reports Very Encouraging Pilot Clinical Trial Data" released on 28th October 2020 and "Clinical Trial Data Drives Further Confidence for Expanded Studies" released 30th May 2021 for further details on the study. The algorithms may be subject to further refinement and investors should note there is no guarantee the algorithms will replicate the same level of accuracy on larger data sets without further refinement, or at all.

NON-DESTRUCTIVE TESTING Microwave frequency

Microwave frequency 2 – 18 GHz

## CLINICAL TRIAL ROADMAP - GEN 1

#### LOCATION

Site 1 - Liverpool Hospital

Site 2 - Royal Melbourne Hospital

Site 3 - Princess Alexandra Hospital

Sites will be activated in a staggered manner, commencing with Liverpool Hospital.

#### PARTICIPANTS

Presenting to emergency department with suspected stroke

#### REPORTING

The Company expects to provide updates to the market as it reaches relevant milestones and endpoints throughout the clinical testing

#### DURATION

Anticipated to be 12+ months

#### **Validation Phase Pre-validation Phase** TRIAL DESIGN Regulatory **Stage 1**: 30 Healthy participants **PATIENT** Endpoints and sample size will be confirmed body Stage 2: Up to 150 Acute stroke/stroke mimic participants during the pre-validation phase COHORT engagement Stage 3: To be advised as required Hardware verification Efficacy (sensitivity/specificity) **ENDPOINTS** • Stroke mimic and acute stroke Data to enhance Al algorithms Safety Safety

SCANNING PROCESS
FOR A TYPICAL STROKE PATIENT

CT + EMV Scans

Admission +24 Hours 3-5 Days later

Radiology / In-ward Radiology / In-ward

CT and/or MRI + EMV Scans

CT and/or MRI + EMV Scans



# ATTRACTIVE REVENUE MODELS

- Traditional Capex or innovative Opex pricing model offerings to provide buyer flexibility. Direct or distributor sales channels.
- Significant consumable opportunity (including replaceable coupling media alongside a disposable cap, single use per patient scan)

#### Consumables



Coupling media



Disposable cap

# MONTHLY SUBSCRIPTION MODEL (GEN 1)

- Target ~\$8,000 USD / month (subject to term)
- Delivery of the unit and training
- Consumables (subject to quota)
- Software upgrades
- Potential integration into PACS and EMR
- Access to cloud storage and viewing
- Routine maintenance included

# CAPITAL EQUIPMENT & CONSUMABLES MODEL (GEN 1)

- Capital Equipment Target: ~\$150,000 USD
- Consumables (disposable cap, coupling media)
- Maintenance & Service
- Software upgrades

## ADDRESSABLE MARKET

### VISION

#### TOTAL INSTALLED BASE OPPORTUNITY



#### 1st GEN ADDRESSABLE MARKET

US.



10,200

GER, FR, UK



5,960

**FIRST TARGETS** 

\* \*

ΑU

545



**ROW** 

86,000

1,600 PSC / CSC

642 PSC / CSC

93 PSC / CSC

PSC = Primary Stroke Centre CSC = Comprehensive Stroke Centre



#### 2nd GEN ADDRESSABLE MARKET

US.



60,000

**EUROPE** 



58.000

ΑU



5,200

ROW



54,000

TOTAL
ADDRESSABLE MARKET
~\$15Bn - 1<sup>st</sup> GEN

First
Target Market
(PSCs/CSCs)
~\$350m

- 1<sup>st</sup> Gen deployment opportunities across stroke/neurology wards, ICUs, ED, cardiology, general wards
- First targets tertiary stroke centers (PSC/CSC)
- 2<sup>nd</sup> Gen road/air ambulance market represents a further multibillon dollar opportunity

EMV cautions investors that there are regulatory barriers and unique access challenges to each market and can be subject to varying rates of penetration. Estimates based on publicly available data. There are further regulatory hurdles to sell into ROW: China, India, Brazil, Mexico, South Korea, Spain, Italy and Canada.



# SIGNIFICANT EXPERIENCE DEVELOPING AND COMMERICALISING MEDICAL DEVICES

Team of 30 across Sydney and Brisbane, in R&D and product development



Dr. Ron Weinberger CEO and Managing Director

Former Executive Director and CEO of Nanosonics (ASX:NAN). Over 20-years' experience developing and commercializing medical devices.



Scott Kirkland Co-founder and Executive Director

Oversees corporate affairs, commercial strategy and business development efforts & manages the company's participation in grant programs



Professor Stuart Crozier Chief Scientific Officer

Co-inventor of underlying technology.

Advancements in MRI technology now central to 65% of all MRI machines.



Robert Tiller Head of Design

Over 25 years in medical device product design and commercialization, previously CEO of Tiller Design, in collaboration with Nanosonics R&D team developed the Trophon EPR device



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Forough Khandan Head of Product Development

Previously Program Manager at Nanosonics (ASX:NAN)



Emma Waldon Company Secretary

Corporate advisory, capital markets and corporate governance experience in Australia and the UK.



**Dr. Konstanty Bialkowski Head of Technology Development**, Coinventor of underlying technology

Research interests in near-field and passive radar systems, multiple element antenna systems, and wireless communications.



Dr. Merrîcc Edgar-Hughes Head of Quality & Regulatory Affairs

Formerly Regulatory Affairs Manager (Global) at Nanosonics. Experience with multiple successful FDA, CE, TGA registrations



# **PARTNERS & COLLABORATORS**

#### TRACK RECORD OF SECURING AND ONGOING ACCESS TO NON-DILUTIVE FUNDING PROVIDES GOOD FLEXIBILITY



#### **Clinical Research Partnership**

Access to neurology, radiology and critical care expertise, access to simulation rooms and hospital infrastructure, advancement of bedside processes as well as input into technology development.



#### **Product Collaboration**

Strategic OEM Agreement with Keysight Technologies (NYSE:KEYS) with exclusivity in the field of neuroimaging for the supply of the "fast sweep" feature in the VNA (core to the sensors inside EMV's portable brain scanner).



#### Clinical Development & Validation, Non-dilutive funding

ASA providing clinical expertise and \$8M in non-dilutive funding to support clinical validation and deployment to transform pre-hospital stroke care



#### **Inception Member**

NVIDIA Inception nurtures dedicated and exceptional startups who are revolutionizing industries with advances in AI and data science.



Modern Manufacturing Initiative

#### **Manufacturing Grant**

\$5m non-dilutive federal manufacturing grant to establish first commercial production run







Princess Alexandra Hospital BRISBANE • AUSTRALIA

#### Commonwealth CRC-P Grant Program Collaborators

CRC-P grant supported an industry-led collaboration, including cash contribution from GE Healthcare, to develop and successfully test EMVision's earlier proof of principle prototype device

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# STRONG SUPPORT FROM THE CLINICAL COMMUNITY



"It cannot be underestimated how important this cuttingedge technology could become for future stroke management."

Professor Geoffrey Donnan AO Stroke neurologist Co-chair Australian Stroke Alliance, Past-president of World Stroke Organization



"The concept of bringing imaging to the patient will dramatically reduce times to administer life saving interventions such as thrombolysis and thrombectomy."

Professor Stephen Davis AO Stroke neurologist Co-chair Australian Stroke Alliance, Past-president of World Stroke Organization



"Equitable healthcare for remote Australians needs to overcome the tyranny of distance. Portable brain imaging is a crucial next step in bringing critical care to patients sooner."

Dr Mardi Steere Executive General Manager Medical and Retrieval Services, Royal Flying Doctor Service Central Operations



"We have seen the EMVision technology advancing us towards the realisation of a novel imaging technology that will assist medical practitioners in making critical decisions, and critical interventions earlier, when time matters."

Dr David Cook Intensivist



"A new phase will see mobile and portable technology move to the patient. We need advanced solutions beside the patient at the time of stroke, so that treatments can be delivered without delay."

Professor Michael O'Sullivan Stroke neurologist



"With so many Australians and in particular a large proportion of Aboriginal and Torres Strait Islander patients living vast distances from stroke imaging, EMVision holds promise in being able to reduce stroke care inequity."

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Dr. Angela Dos Santos Stroke neurologist Mobile Stroke Unit Expert

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# **SUMMARY AND OUTLOOK**

- Team of medtech experts that have successfully done this before
- Strong support from the leading minds in stroke care
- Increasing demand globally for point-of-care imaging
- Multi-billion-dollar market opportunity in stroke care
- Technology has additional applications for unmet needs in traumatic injury and adjacencies
- Multiple non-dilutive funding sources provide flexibility to support commercialization

#### **Key Catalysts**

- Clinical trial data
- Commercial partnerships
- Regulatory submissions and outcomes
- 2<sup>nd</sup> Gen prototype fabrication and testing











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**EMAIL** info@emvision.com.au

**HEADQUARTERS** 4.01, 65 Epping Road, Macquarie Park Sydney, Australia





# **EXPERIENCED BOARD**



John Keep Non-Executive Chairman

As former CEO of Queensland Diagnostic Imaging, John grew the business to become the state's leading private imaging group and led the successful trade sale of the group



Tony Keane Non-Executive Director

A Director of National Storage Holdings Ltd (ASX:NSR) Previously held numerous roles with a major trading bank principally in business, corporate and institutional banking.



Dr. Ron Weinberger CEO and Managing Director

Former Executive Director and CEO of Nanosonics' (ASX:NAN). Over 20-years' experience developing and commercializing medical devices.



Geoff Pocock Non-Executive Director

Over 20 years' experience in commercialisation, corporate finance and strategy

Currently Non-Executive Chairman of Argenica Therapeutics Ltd (ASX:AGN), and founder and former Managing Director of Hazer Group Limited (ASX:HZR)



Scott Kirkland Executive Director

Co-founder of EMVision Medical Devices Ltd (ASX:EMV) Oversees EMVision's corporate affairs, commercial strategy and business development efforts.



Dr Philip Dubois Non-Executive Director

Non-executive Director of Sonic Healthcare (ASX:SHL), and former CEO of their imaging division, and Executive Director from 2001 to 2020. Founder and former CEO and Chairman of Queensland X-Ray. Currently an Associate Professor of Radiology at the University of Queensland Medical School. Has served on numerous government and radiology group bodies



# **OUR HISTORY**

