

## Fastbrick Robotics Limited (ASX:FBR) Investor Presentation, February 2017



## A World First Digital Construction Solution





Fastbrick Robotics Limited (ASX:FBR) is an Australian robotic technology company building the new revolutionary commercial bricklaying machine, Hadrian X.

Hadrian X is the first globally patented 3D robotic bricklaying system and set to transform the construction industry with innovative 3D printing technology.

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## Fastbrick Robotics: Corporate Overview





#### **Key Market Statistics**

)	ASX code	FBR	Average daily volume	2.00m
	Market capitalisation	\$70.3m	52-week high	\$0.16
))	Share price (13.02.17)	\$0.09	52-week low	\$0.02
	Shares on issue	764.17m	Listed on ASX	2015
	GICS classification	Capital Goods		

## Fastbrick Robotics: Leadership Team





#### Michael Pivac Executive Director & CEO

Michael Pivac is a former airborne mission systems specialist with broad experience in night vision, infrared and radar detection systems and has been key to developing the technology and developing the Business Plan and Machine Development Strategy.



## Mark Pivac Executive Director & CTO

Mark Pivac is the primary inventor of Fastbrick's automated bricklaying technology. He is an aeronautical and mechanical engineer with over 25 years' experience working on the development of high technology equipment and 20 years' experience of pro/engineer 3D computer-aided design (CAD) Software.



## Gabriel Chiappini Non-Executive Director

Gabriel Chiappini is a Chartered Accountant with over 20 years' experience as a finance professional and a member of the Australian Institute of Company Directors and is currently also a non-executive director of ASX-listed Black Rock Mining Limited, Global Geoscience Limited, Scotgold Resources Limited and Interpose Holdings Limited



#### Shannon Robinson Chairperson

Shannon Robinson is a former corporate lawyer and corporate advisor with over 10 years' international experience in providing general corporate, capital raising, transaction and strategic advice to numerous ASX listed and unlisted companies and is currently a non-executive director of Spookfish Limited and non-executive director of Yojee Limited.

## Fastbrick: Leading An Industry Revolution





Mark Pivac & Mike Pivac in Perth

Fastbrick Robotics aims to improve the speed, accuracy and safety of the global brick construction industry utilising the world's latest innovation in mobile robotic technology.

Following the successful proof of concept achieved with the Hadrian 105 technology demonstrator, Fastbrick Robotics is now building the Hadrian X commercial prototype.

Delivery of the first commercial Hadrian X unit is due in 2017.

## Hadrian X: The Bricklaying Robot



This has never been done before

Construction of Hadrian X

is history in the making

We will revolutionise the global

construction industry



use only

or personal

## Hadrian X: The Game Changer







The Hadrian X bricklaying robot

**Hadrian X** executes the automatic loading, cutting, routing & placement of all bricks to build a house

The first globally patented 3D robotic end-to-end bricklaying system

**Unique** Intellectual Property

New levels of speed, accuracy, safety, cost & waste management

**Validated** by leading construction & machine manufacturing companies

**Revolutionizing** the construction industry & changing the way we build

**Streamlining** construction



## Hadrian X: The Game Changer





Hadrian X requires minimal human interaction and works day and night

Design capability of up to 1,000 bricks per hour, truck mounted and self-powered

Universal brick compatibility up to 500mm x 250mm x 250mm

30m robotic arm allows completion of all brickwork from a single position on site

Omni-track laser alignment system corrects dynamic interference and vibration to within 0.5mm accuracy of computer-aided design (CAD) design

Hadrian X will maximize efficiency and affordability of brick construction with efficient software called **The Architectural Designer [TAD]** 

## Hadrian X: Latest Update

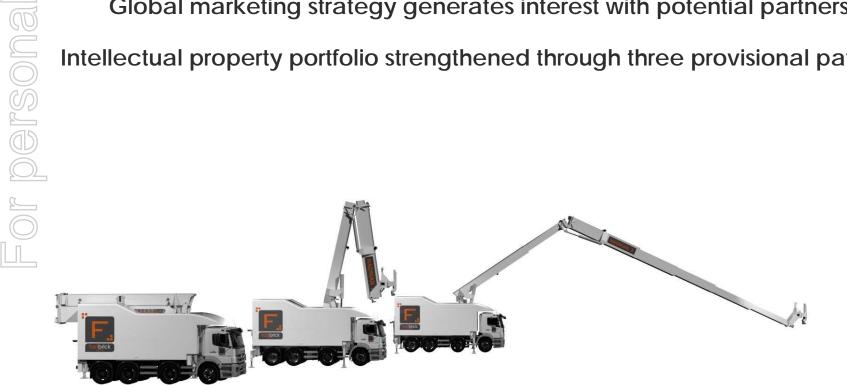


Construction of Hadrian X has advanced to 30% completion

Fastbrick Robotics confirms guidance on delivery of first commercial unit in CY17

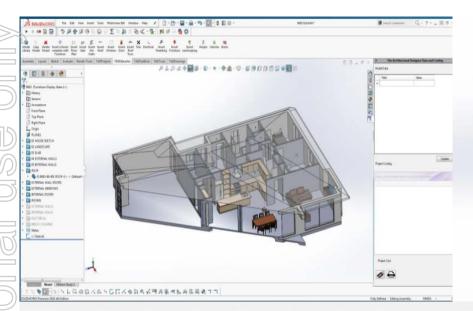
Global marketing strategy generates interest with potential partners

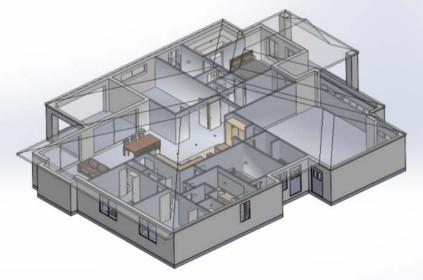
Intellectual property portfolio strengthened through three provisional patents



## TAD: The Architectural Designer







Fastbrick Robotics began working on its stand alone TAD proprietary software in 2014

**TAD** initially designed to handle the production of the laying data for the Hadrian 105

TAD now evolved into architectural design tool that will have many unique functions

**TAD** will enable builders to design, tender work, assign contractors, purchase components and invoice for payment, all via smartphone and tablet technology

TAD set for workshop and field trials in 2017 and market release in 2018

## The Global Opportunity



## People Need Housing. Fastbrick's Global Opportunity Is Immense.

# The Global Addressable Market is between \$100 to \$200 billion

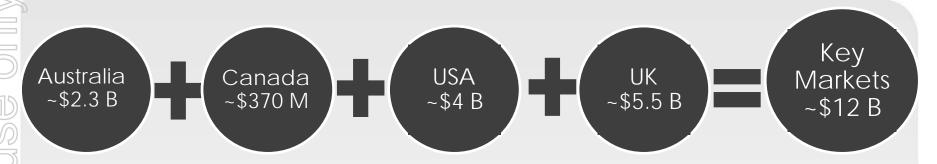
Independent Report from BDO Consulting



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## The Global Opportunity





Global addressable market of between \$100 to \$200 billion - Independent global market assessment completed by BDO Consulting

Most attractive markets Australia, Canada, USA and UK with a total addressable market of around \$12 billion

**Competitive advantages** created through market inefficiencies including: Labour shortages
Time sensitivities due to climate

Human error and inaccuracy
High material and labour costs

or personal

Stringent Occupational Health & Safety regulation

## Priority International Markets



## Fastbrick Robotics has identified **United Kingdom**, **United States & Canada** as target markets because:

- Climatic conditions in each country favour quick construction techniques
- Favourable factors including language, government, currency
- Attractive addressable market potential of between ~\$8.0 to \$9.5 billion
- High bricklaying margin in UK costing ~\$3.21 per brick with 1.81 billion bricks laid in FY15, of which 65% is residential
- Popular use of bricks in the southern region of the US
- Replacing manual labour 80% of brick construction cost is attributed to manual bricklaying labour

## Corporate Achievements: 2015-16



ASX LISTING Fastbrick Robotics lists on ASX in November 2015 via an oversubscribed reverse takeover and raises \$5.75 million



**RE-BRANDING** Completes rebranding and upgrades Perth headquarters

**TECHNOLOGY** Successfully demonstrates technology and builds various small structures to progress the technology to build a complete house

**VALIDATION** Technology tested and validated by various university institutions including Curtin University, Perth

**CONSTRUCTION** Completes the automated end-to-end construction of a full-scale two room structure with pillar and returns

GLOBAL EXPOSURE Video of Hadrian 105 Prototype filmed in time-lapse achieves almost one million hits on Fastbrick Robotics' YouTube page

**GLOBAL INTERTEST** Fastbrick Robotics' receives numerous global enquiries as news of the company's innovation spreads



## Corporate Achievements: 2016

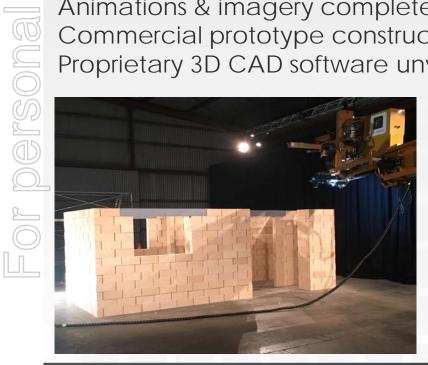


#### **BUILDING THE FASTBRICK ROBOTICS TEAM**

FBR team expands to include Engineering Manager, Mechanical Engineers, Mechatronic Engineers, Software, Vision Systems, Simulation Specialists and Administration Manager

#### **DEVELOPING HADRIAN X**

Animations & imagery completed and released to market Commercial prototype construction commences Proprietary 3D CAD software unveiled: TAD (The Architectural Designer)



#### HADRIAN X BUILDS STRUCTURE FROM CAD MODEL

Room built from CAD design 1.6m(w) x 2.4m(l) x 2.4m(h)

330 maxi bricks (Equivalent to 2.2 standard bricks)

Bricklaying rate ~200 bricks\* per hour

Door and window openings, manual lintel placement

\*Standard Brick Equivalents

## Corporate Achievements: 2016





#### **SECURING DEALS**

**ARCHISTRUST** | Signed framework agreement to construct world's first 3D printed brick homes with Perth based company



#### **BUILDING GLOBAL RELATIONSHIPS**

**BECHTEL** | FBR's Executive team travelled to US at the invitation of Bechtel, the world's largest privately owned construction company



NASA | FBR invited to NASA in California for meetings regarding the Lunar habitat challenge being planned by the US Government





Ongoing discussions with numerous global companies regarding Hadrian machines and commercialization of FBR's technology

## Corporate Achievements: 2016



MEDIA Extensive media exposure across print, online and radio platforms VIEW FASTBRICK ROBOTICS MEDIA: www.fbr.com.au/media





VIDEO: A one-armed Australian **robot** can build a house four times ... Business Insider Australia - 26 Jul. 2016

**Fastbrick Robotics**, an ASX-listed company based in Perth, has created a robot brick layer, a form of 3D printing which can create the shell of a ...



Watch a giant house-building **robot** lay 1000 bricks per hour Digital Trends - 28 Jul. 2016

Australia's **Fastbrick Robotics** wants to shake up the world of Bob the Builder new bricklaying machine that can build a house four times ...

ANIMATION: How this one-armed Australian **robot** builds a house ... Highly Cited - Business Insider Australia - 27 Jul. 2016



Opinion: This home-building **robot** could put human construction ... MarketWatch - 1 Nov. 2016

Hadrian X is the second iteration of the house-building robot from Australia-based Fastbrick Robotics Ltd. FBR,  $\pm 0.00\%$  that could disrupt the ...



Australian Company Fastbrick Robotics Introduces a Robot That ...

3DPrint.com - 27 Jul. 2016

Hadrian 105 is a robot developed by Australian company **Fastbrick Robotics**, and it's capable of laying bricks at a rate of 225 bricks per hour.

AWARDS Awarded 2016 Western Australia Innovator of the Year

#### **Financial Information**



#### No Debt - Funded Beyond 2019

Ordinary Shares on Issue<sup>1,2</sup> 764m

Options on Issue<sup>3</sup> 80m

Cash in Bank<sup>4</sup> \$10.46m

- 1. Includes 126,975,702 shares subject to 24 month escrow from November 2015
- 2. Excludes 499,999,998 Performance Shares. Performance Shares to vest in 3 even tranches upon achievement of major commercial milestones.
- 3. Includes 75,000,000 options exercisable at \$0.02 on or before 12 November 2019
- 4. Cash as at 31 December 2016

#### **December Quarter Report** Highlights | January 2017

- \$8 million in funding secured through share placement to cornerstone investor
  - Development of Hadrian X advances
  - Continued interest from potential domestic & global commercial partners
- Fastbrick Robotics named
   2016 WA Innovator of the Year



#### Hunter Hall Investment: December 2016





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- FBR secures \$8 million investment from Hunter Hall (ASX:HHL)
- FBR fully funded through to 2018
- Hadrian X programme bolstered with additional funding
- First Commercial Prototype to be delivered in 2017
- Cash reserves to exceed \$10 million

Fastbrick Robotics successfully completes an \$8 million capital raising through a Strategic Cornerstone Investor Placement with Hunter Hall Investment Management Limited. The Placement was completed at 8.1 cents per share and the proceeds will be used to complete the Hadrian X Commercial Prototype and for working capital.

Hunter Hall is one of Australia's largest dedicated ethical investment managers and invests in companies with high growth potential at prices representing significant long term value. Upon completion of the Placement Hunter Hall's holding in FBR will represent 17.2% of shares on issue.

#### Fastbrick Robotics: 2017 Priorities



#### **OPERATIONS**

- Build corporate relationships with focus on South East Asia, US and UK to grow business opportunities and secure machine offtake agreements with governments and organisations around the world
  - Move FBR into a more suitable headquarters in Perth to reflect world-class robotic technology company and accommodate business visitors and future growth
  - Implementing ERP System (Enterprise Resource Planning) to ensure procedures & systems align with best global manufacturing companies

#### **HADRIAN X**

- Complete the assembly of the Hadrian X machine
- Begin factory testing and site acceptance testing
- Demonstrate Hadrian X is achieving new and exciting developments
  - Prepare Hadrian X for mass manufacture



#### Plans Are In Pace To Scale Hadrian X



**CONSTRUCTION** Fastbrick Robotics plans to scale the construction of Hadrian X with the assistance of well established and recognised global manufacturers and continues to build strong relationships

**COST** The unit price of \$2 million per Hadrian X unit offers a very high return on investment, giving business a very strong case for these machines

SCALING OPERATIONS Fastbrick Robotics remains in discussions with global machine manufacturers regarding the mass production, distribution, financing and in-field servicing of Hadrian X

**DELIVERY SCHEDULE** Fastbrick Robotics hopes to be supplying customers with Hadrian X machines in 2019 and generating revenue



## The Future: Leading An Industry Revolution



## **FASTBRICK ROBOTICS**

Addressable global market of up to \$200 billion
International patents secure competitive position
Development of Hadrian X commercial prototype fully funded
Competitive advantage: Time, cost, quality & safety of construction
Technology solution for dire skills shortage & housing affordability crisis
Technical & operational expertise in place for commercialization
Support secured from governments & major industry partners
Highly successful ASX listing & share price performance
Considerable shareholder wealth created
Global market ready and eager for Hadrian X



#### Fastbrick Robotics: Join The Revolution



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