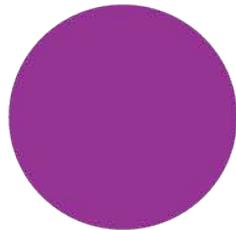




Graphene Quantum Dots

THE NEXT **BIG** SMALL THING!



ASX: DTZ

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Agenda

**Intro on Dotz
Nano**

**What are
Quantum
Dots?**

**Dotz Nano
technology and
pathway to
commercialisation**



Intro on Dotz Nano



Corporate Overview

- Dotz Nano is a technology company which develops and commercialises technologies in the advanced materials industry, specifically **graphene quantum dots** (GQDs)
- What's so special about Dotz?

The Company has the sole rights **to extract GQDs from coal** instead of graphite, producing **cheaper, non toxic** and at ten times the production yield GQDs (25% yield instead of 2% from graphite). Dotz Nano is currently not aware of any other party that is commercialising graphene quantum dots
- GQDs can create a shift in the applications market allowing traditional applications to use GQDs to achieve performance levels otherwise not considered possible
- Dotz intends to focus on applications which require high, low and zero quantum yield
- The company listed on the Australian Securities Exchange in November 2016

Dotz Nano timeline

March 2014
Incorporated

March 2015
Seed Raise
\$2.5m in
Australia

Feb 2016
Office and
Lab setup

Jun 2016
First 40g
Batch
Production

Aug 2016
ASX Raise
Nov 2016
ASX re-list

Nov 2016
Quantum
Yield
Breakthrough

Dec 2016
BIRD Grant
Approval

Jan 2017
First sales &
distribution
agreements

Feb 2017
First sales to
China & S.
Korea



Management Team



Dr. Moti Gross

CEO/Director

Moti Gross has extensive managerial experience leading technological companies, developing business strategy for ongoing enterprises and start-ups. Dr. Gross earned his PhD in Economics and Finance at Oxford University.



Prof. James Tour

Chief Scientific Advisor

Professor of Materials Science & Nano Engineering and Computer Science at Rice University in Houston, Texas. He was named among the 50 most Influential Scientists in the world today in 2014 & selected as Scientist of the Year by R&D magazine in 2013.



Mr. Faldi Ismail

Chairman

Mr Ismail is an experienced corporate advisor with significant ASX listed companies experience. Mr Ismail is also the founder and operator of Otsana Capital, a boutique advisory firm. He also currently sits on the board of a number of ASX listed companies.



Dr. Michael Shtein

CTO

Dr. Shtein holds a Ph.D. in Nanotechnology from Ben Gurion University; together with an M.Sc. in Chemical Engineering and an MBA. He was the Chief Material Engineer for the Israeli Ministry of Defence and has developed several new materials and compounds.



Mr. Eran Gilboa

CFO

Mr. Gilboa has vast experience as CFO for various mergers and acquisitions including international companies, leading the financial and tax processes. Mr. Gilboa has a CPA license, a B.A. in economics and management, specializing in finance from the College of Management in Israel, and an M.A. in law from Bar Ilan University.



Mr. Avigdor Kaner

VP Business Development

Mr. Avigdor Kaner has a multitude of experience in Business Development. He has held many senior marketing positions including Head of Business Development for Baran Technologies and Supergas. He holds a BA and MBA from Ben-Gurion University and is currently finishing his PhD degree.



Directors



Mr. Ashley Krongold

Director

Mr Krongold has spent 15 years in the Investment Banking and Accounting industries. He was a founding member of Investec Bank Australia and is currently CEO of the Krongold Group and a non-executive director of Weebit Nano Ltd (ASX: WBT). Mr. Krongold is also a founding General Partner of global equity crowd-funding platform, OurCrowd.



Mr. Steve Bajic

Director

Mr. Bajic has been in the finance industry for 20 years and has helped raise capital in various industries at all levels of company advancement. He has an extensive resume of current and past private and public director and officer positions.



Mr. Menashe Baruch

Director

Mr. Menashe Baruch is an experienced entrepreneur in the field of retail sales as well as an experienced investor in hi-tech companies over the past 10 years.



The Dotz Nano investment case



First mover advantage: Exclusive rights to produce non toxic GQDs from source coal via a simple one step process



PCT Patent technology: 5 major PCT patents over several major jurisdictions



Partnerships in place: Rice University in the U.S., Ben-Gurion University in Israel and Nanyang Technological University in Singapore



Pathway to commercialisation: From Q4 2016 and on.

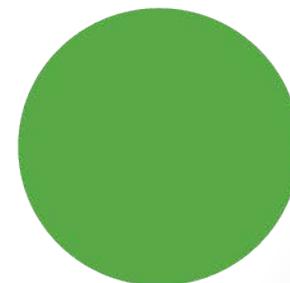


What are Quantum Dots



What are Quantum Dots?

- QD's are nanoparticles 2-70nm in diameter = 10,000x narrower than a human hair
- **Quantum dots are currently produced out of cadmium and other heavy metals**
- When exposed to UV light they fluoresce
- **Colours can be controlled by changing the size of the dot**
- Quantum Dots (QD's) are used today in various applications, such as SUHD Samsung TV
- **Currently there are few conventional GQDs that can compete with QD's, since GQDs are very expensive with very low production yields and low quantum efficiency**



Quantum dots use in applications

Quantum Yield is the measure of efficiency you look for in Quantum Dots. It measures the ration of excited energy versus emitted energy in the fluorescence process.



Quantum dots are used for three types of applications:

- Applications which require **high quantum yield** (60-80%) – display market, photovoltaics, imaging, medical applications, pigments, inks, etc.
- Applications which need **low to mid quantum yield** - casino chips, security applications, detergents, textiles, cosmetics, shampoos, toothpastes, etc.

Applications which need **zero quantum yield**, therefore don't require fluorescence – for example used for electrical conductivity, sensors, and lithium-ion batteries



Current Quantum Dot Market

QDs are in several applications....



Major commercial market DISPLAY MARKET

QD based displays to improve colour and energy are starting to emerge (Sony flat screen displays, Amazon's Kindle Fire HDX e-reader)



Early stage commercial market HEALTHCARE

Currently the main market in healthcare is tissue labelling, cancer therapy, tumour detection



Early stage commercial market PHOTOVOLTAIC & ENERGY

QD's allow for increase battery efficiency and are currently in the R&D stage in energy related devices, such as photovoltaics, fuel cells and batteries

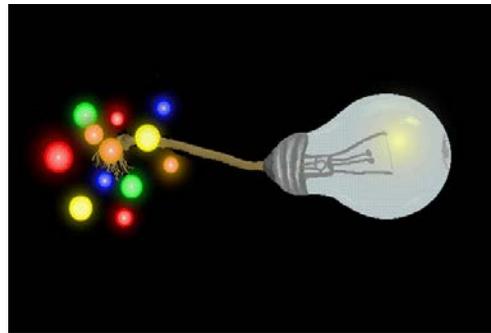
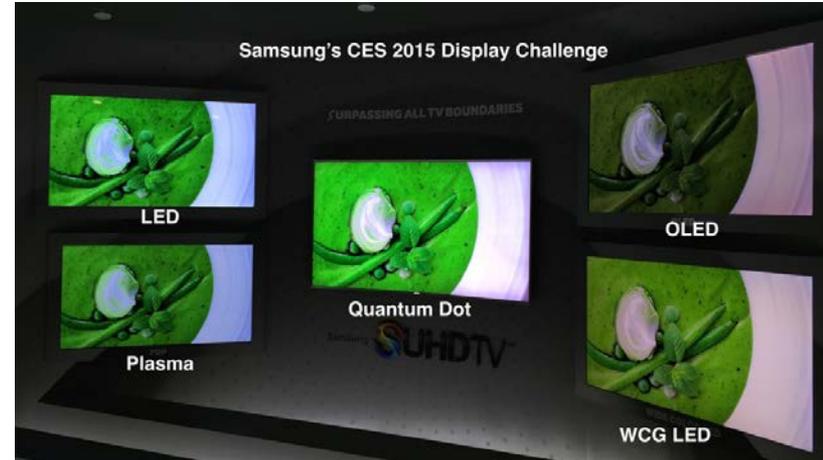


Research stage LIGHTING INDUSTRY

QD's are expected to fill the growing need for better and efficient LED's



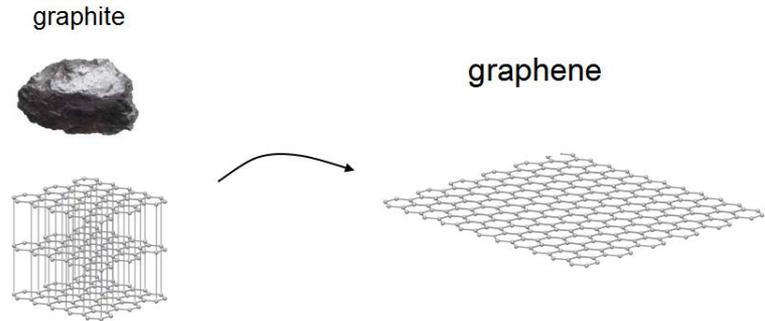
The QD Market



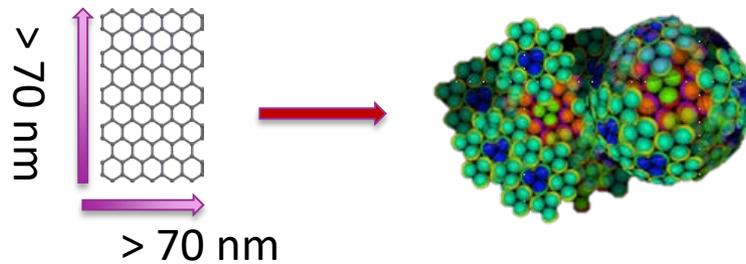
What are Graphene Quantum Dots?



Core of pencil is made of graphite and clay



Peel layer of graphite 1 atom thick we get graphene



Cut a corner 150 atoms by 150 atoms by 1 atom thick we get a Quantum Dot



Which fluoresce when exposed to UV light

The challenge?

GQDs can be an alternative to inorganic QD's. There are a number of different technologies available to produce GQDs however:



Most are very expensive



Complex production process



Produce very small quantities



Rely on the availability of high quality graphite



Dotz Nano technology and pathway to commercialisation

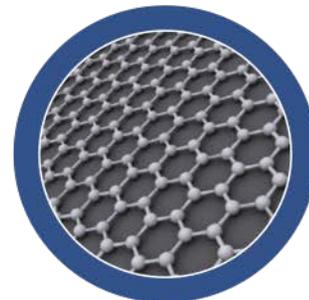


Dotz Nano's Solution

- Innovative breakthrough process for producing GQDs developed in the lab of Prof. James Tour of Rice University in Texas
- PCT Patent Technology
- Based on extracting **non-toxic** GQDs from **inexpensive COAL**
- Greatly **reduces manufacturing** costs, and 10 times greater production yield
- Allows a **large supply of inexpensive GQDs**



Carbon/Coal



GQD



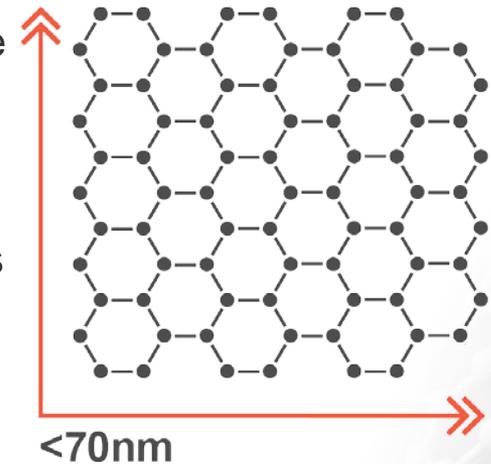
Manufactured Product



The benefit of Graphene Quantum Dots

- Graphene, discovered in 2004, is the **lightest** and **strongest material** discovered with the **highest electrical and thermal** conductivities
- Currently Graphene Quantum Dots are made out of graphite and are graphene layers with 2-70nm lateral dimensions
- Combining the structure of graphene with the quantum confinement effects of QD's gives GQDs **unique properties** (non toxic, water soluble, metal-free, biocompatible & highly photo-stable)
- GQDs can significantly **improve the appearance and brightness of colours**, and in healthcare GQDs hold the promise for early cancer imaging and detection

Lateral Dimensions



Advantages of Dotz Nano's Graphene Quantum Dots



GQDs are:

Water Soluble, Metal-Free, Non-Toxic, Biocompatible & Highly Photo-Stable



GQDs are:

Superior in terms of their unique and **Highly Advanced Properties, low manufacturing costs and high QY**



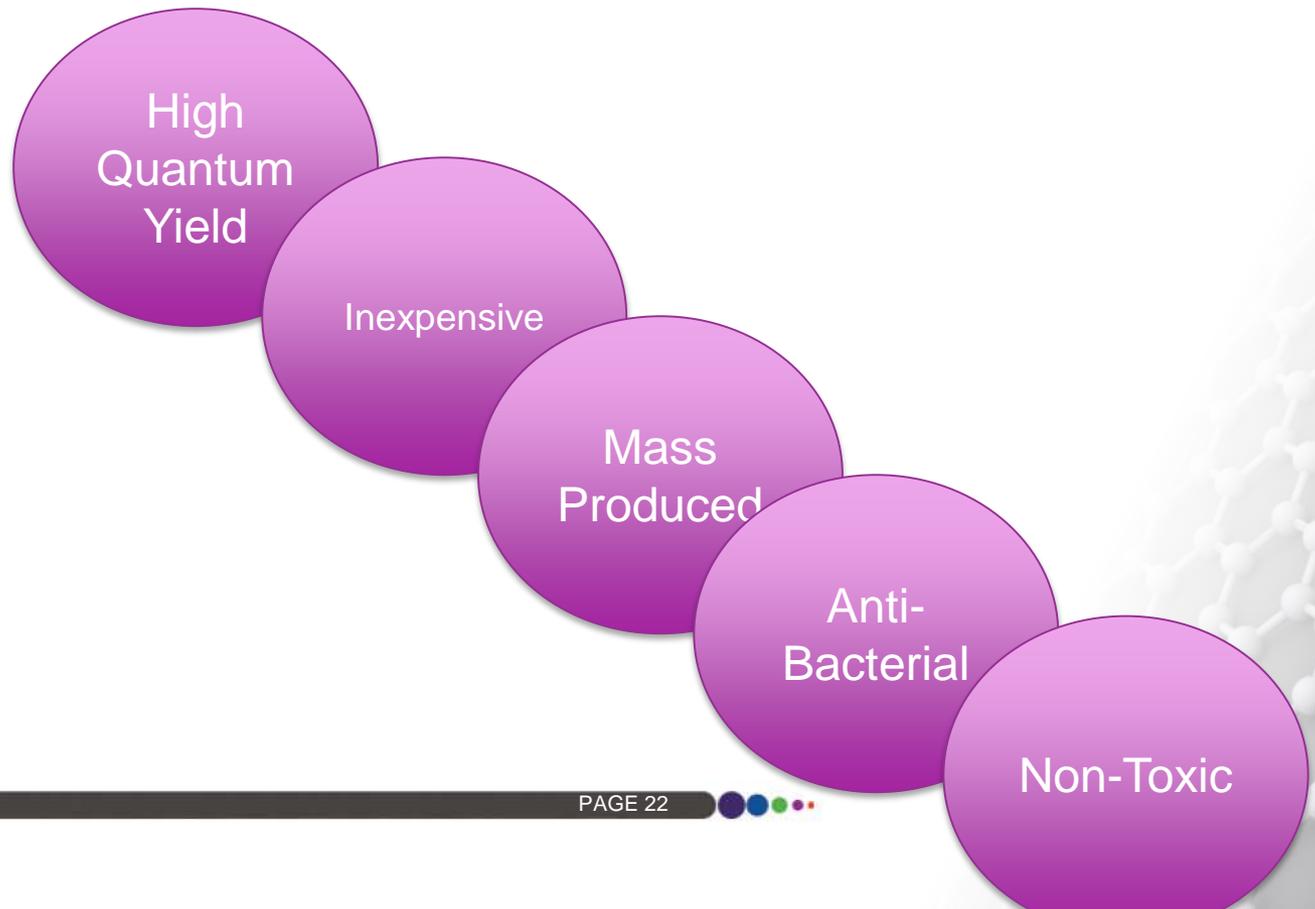
GQDs are:

Now in **High Demand** due to these novel properties



Dotz Nano GQD Benefits

Due to the benefits of Dotz Nano's GQDs (in addition to conventional applications), Dotz intends to target the previously **untouched low end/high volume market** that GQDs can supply added value for an acceptable price.



Dotz Nano's initial commercialisation market

Dotz Nano intends to focus on applications which require **high, low and zero quantum yield**, starting from untouched low cost/ high volume markets, that GQDs can supply added value for an acceptable price.

This includes:

- **Optical Brighteners (Detergents, textiles, cosmetics)**
- **Anti-counterfeiting**
- **Displays**

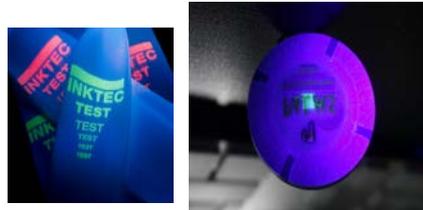
In detergents, textiles and carpets GQDs are a superior optical brightener, while in anti-counterfeiting they are used as taggants in security derived applications.

Dotz Nano Application Focus

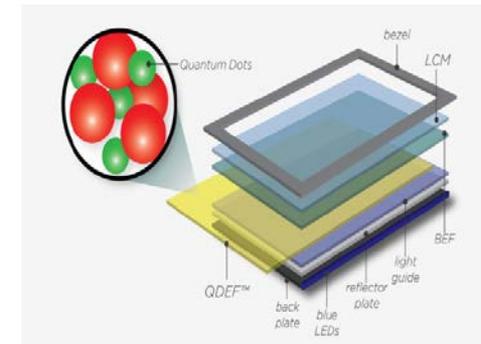
Optical Brighteners



Anti-Counterfeiting



Displays



Example of New Applications

Detergents

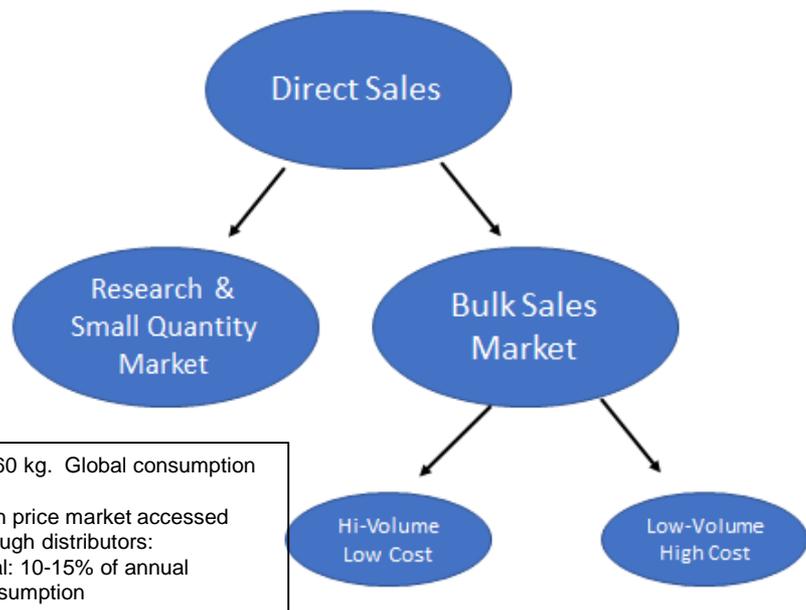
One of Dotz first market opportunities

Optical brighteners - fluorescent whitening agents

- Current Detergents additives are often used to enhance the appearance of color of fabric, causing a "**whitening**" effect
- GQD can be used as a superior optical whitening brightener with up to a **30 times longer lasting life**
- Absorbs ultraviolet light and re-emitting fluorescent light



Dotz Nano's Revenue Strategy



50-60 kg. Global consumption pa
 High price market accessed through distributors:
 Goal: 10-15% of annual consumption

1. Optical Brighteners
Detergents, Cosmetics, Paper, Pigments, Dyes, Inks, toothpaste
2. Anti-Counterfeiting – marking, tagging (crude oil, fuel, diesel, olive oil, palm oil, wine)
3. Monitoring and tagging market
4. Pigments and dyes
5. UV absorbers

1. Opto-electronics – displays and screens
2. Li-ion batteries
3. Anti-bacterial applications

Licenses

Targeting licensing for specific applications to exclusive licensees to bring added value or specific skill set:

1. Medical – therapy and direct delivery
2. Bio-imaging – in-vitro & in-vivo
3. Photovoltaics
4. Energy (fuel cells)

Revenue based on license fees and royalties

Direct Applications

1. Memory storage applications
2. Sensors: Pressure, humidity, temperature, heavy metals
3. Li-ion batteries
4. Anti-bacterial, anti-biofouling



Market Outlook

Current research by Dotz shows approximately 1 gram of graphene quantum dots is enough to tag 10,000 casino chips.

Outlook on Dotz's initial go to market industries



Global Carpet Market

The global market for carpets and rugs is projected to reach US\$40bn by 2020, driven by the U.S. and Europe while Asia-Pac is forecast to be the fastest growing market worldwide



Soaps & Detergent Market

The U.S. is the leading market for soaps and detergents and is closely trailed by the UK. While Asia-Pac represents the fastest growing market.



Anti-Counterfeiting Market

The global market for anti-counterfeiting, brand protection and security packaging technology is forecast to grow during the period 2015-20 at a compound annual growth rate of 9.3% to \$4.2 billion.



Displays

Display market worth 169.17 Billion USD by 2022. Quantum dot LED technology-based devices to achieve highest market growth.



Who else is in the QD space?



Located in Manchester UK, Nanoco Technologies is a public company (LON:NANO) manufacturing cadmium and heavy metal-free nanomaterials for use in displays, lighting, solar energy and bio-imaging.



California based Nanosys is focused on the development of QD technology for displays. Headquartered in Milpitas, Nanosys has a 60,000 square foot manufacturing, research and development facility.



While not producing solely QDs, Ocean NanoTech specializes in the design, synthesis, modification and characterization of dispersible nanoparticles. They are mainly involved in research, working closely at supplying customized QDs to various research institutes.



QD Vision is one of the leaders in quantum dot technology for QLED™ displays. Since 2013, they have shipped more than one million Color IQ optics and are partnered with the biggest brands in the television and monitor display market including TCL, Hisense, Philips and Konka.



Located in Texas, Quantum Materials is a public company (OTC:QTMM) that manufactures cadmium free QDs for the display, lighting and solar energy industries.



Achievements since listing

- Signed MoU with NTU Singapore for S\$20M GQD Research Centre
- Produced hi-QY GQDs (over 65%) that can compete with metallic QD's
- Signed distribution agreement with Strem Chemicals and Miname Holdings (Japan)
- Expanded production process in Israel (over 100kg pa) + Specialized Production
- Won AU\$1.2M grant from the BIRD foundation and actively investigating other possibilities
- Achieved first sales of product to consumers
- Shipments of GQDs to USA, China, South Korea, Germany, Japan
- Expanded IP for additional products and concepts
- Established 5 Research Projects in specific GQD applications
- Presentation of GQDs to first tier companies in Display, Chemical, Anti-counterfeiting, Textile, Paint & dye, Detergent sectors



The Dotz Nano investment case



First mover advantage: Exclusive rights to produce non toxic GQDs from source coal via a simple one step process



PCT Patent technology: 5 major PCT patents over several major jurisdictions



Partnerships in place: Rice University in the U.S., Ben-Gurion University in Israel and Nanyang Technological University in Singapore



Pathway to commercialisation: From Q4 2016 - Q2 2017



Appendix



Corporate & Capital Structure*

ASX Code:

DTZ

MILESTONE 1 22,000,000 Shares

Dotz achieving the production and distribution of an aggregate of 20 kilograms of Graphene Quantum Dots through formal off-take agreements or commercial samples with a reputable third party within a period of 18 months

Additional
Vendor Performance
Milestones

MILESTONE 2 22,000,000 Shares

Dotz achieving the production and distribution of an aggregate of 50 kilograms of Graphene Quantum Dots in any 12 month period through formal off-take agreements with a reputable third party within a period of 30 months

MILESTONE 3 22,000,000 Shares

Dotz achieving the production and distribution of an aggregate of 100 kilograms of Graphene Quantum Dots in any 12 month period through formal off-take agreements with a reputable third party within a period of 48 months

*Undiluted Options
5,000,000 exercisable at 20c
1,000,000 exercisable at 30c
4,500,000 exercisable at 40c
Refer to the prospectus for details of the full capital structure

SHARE PRICE
\$0.30 (29/3/17)

SHARES ON ISSUE*
109,984,450

MARKET CAP
\$32,995,335

ENTERPRISE VALUE
~\$30,156,335

CASH
~\$2,839,000



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For further information contact:

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