



Medallion
R E S O U R C E S

Rethinking Rare Earths

A Better Plan for Rare Earth Production

Investor Presentation

Q1 2016





Rethinking Rare Earths

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Rethinking Rare Earths



Contents

Company Snapshot

Rare Earth Industry

- Uses
- Production / Pricing
- China
- Demand

Monazite Production Strategy

- Monazite opportunity
- Rare Earth plant

Milestones / News Flow

Talent

Investment Summary

Capital Structure

Medallion Resources

Company Snapshot

- **Direct approach** to rare-earth production — purchase and import rare-earth mineral ore to a proposed North American processing plant — extract and sell rare-earth chemical concentrates
- Target mineral is monazite sand
 - Available as a by-product from heavy mineral sands mines in Australia, South Africa and SE Asia
 - High grade material
 - Processed historically for rare-earth in India, Brazil and China
- Low capex / low opex – relatively quick production
- Flowsheet developed and supplies sourced – pilot plant and business development execution in 2016

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Rare Earth Elements

Period	Group 1										Group 18																									
1	1 H (1.008)										2 He (4.008)																									
2	3 Li (6.941)		4 Be (9.012)												5 B (10.81)		6 C (12.01)		7 N (14.01)		8 O (16)		9 F (19)		10 Ne (20.18)											
3	11 Na (22.99)		12 Mg (24.31)												13 Al (26.98)		14 Si (28.09)		15 P (30.97)		16 S (32.07)		17 Cl (35.45)		18 Ar (39.95)											
4	19 K (39.10)		20 Ca (40.08)		21 Sc (44.96)		22 Ti (47.88)		23 V (50.94)		24 Cr (52)		25 Mn (54.94)		26 Fe (55.85)		27 Co (58.93)		28 Ni (58.69)		29 Cu (63.55)		30 Zn (65.39)		31 Ga (69.72)		32 Ge (72.59)		33 As (74.92)		34 Se (78.96)		35 Br (79.9)		36 Kr (83.8)	
5	37 Rb (85.47)		38 Sr (87.62)		39 Y (88.91)		40 Zr (91.22)		41 Nb (92.91)		42 Mo (95.94)		43 Tc (100)		44 Ru (101.1)		45 Rh (102.9)		46 Pd (106.4)		47 Ag (107.9)		48 Cd (112.4)		49 In (114.8)		50 Sn (118.7)		51 Sb (121.8)		52 Te (127.6)		53 I (126.9)		54 Xe (131.3)	
6	55 Cs (132.9)		56 Ba (137.3)		57 La (138.9)		58 Ce (140.1)		59 Pr (140.9)		60 Nd (144.2)		61 Pm (147)		62 Sm (150.4)		63 Eu (152)		64 Gd (157.3)		65 Tb (158.9)		66 Dy (162.5)		67 Ho (164.9)		68 Er (167.3)		69 Tm (168.9)		70 Yb (173)		71 Lu (175)			
7	87 Fr (223)		88 Ra (226)		89 Ac (227)		90 Th (232)		91 Pa (231)		92 U (238)		93 Np (237)		94 Pu (242)		95 Am (243)		96 Cm (247)		97 Bk (247)		98 Cf (249)		99 Es (254)		100 Fm (253)		101 Md (258)		102 No (259)		103 Lr (260)			

Demands for Rare Earths

Market Overview



ENERGY PRODUCTION

ENERGY REDUCTION

ENERGY EFFICIENCY

LIFESTYLE

La

Petroleum Refining

Nd Dy Tb

High-Powered Electric Motors

La

New Generation Vehicles

Ce

UV Filters in Glass

Nd

Reducing Fuel Consumption

Dy

Lighter Vehicles - Improved Performance

Nd Sm

New Generation Vehicles

La

Rechargeable Batteries

Pr Eu

Energy-Efficient Lighting

Eu Tb Y

Colour Screen LCDs/PDPs

Nd

Components to Hardware

Nd Gd Ce

Medical Services

La (Lanthanum), Nd (Neodymium), Dy (Dysprosium), Tb (Terbium), Ce (Cerium), Sm (Samarium), Pr (Praseodymium), Eu (Europium), Y (Yttrium), and Gd (Gadolinium)

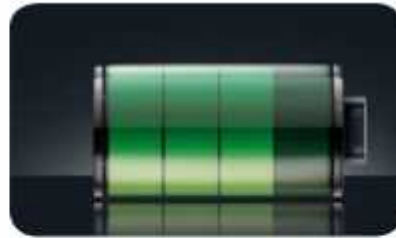
Specific uses of Rare Earths

Market Overview



MAGNETS

- Motors
- Disc Drives & Disc Drive Motors
- Power Generation
- Actuators
- Microphones & Speakers
- MRI
- Anti-lock Brake System
- Automotive Parts
- Communications Systems
- Electric Drive & Propulsion
- Frictionless Bearings
- Magnetic Storage Disk
- Microwave Power Tubes
- Magnetic Refrigeration
- Magnetostrictive Alloys



METAL ALLOYS

- Hydrogen Storage (NiMH Batteries, Fuel Cells)
- Steel
- Lighter Flints
- Aluminum/Manganese
- Cast Iron
- Superalloys



AEROSPACE

- Fly-by-Wire
- Guidance Systems
- Energy/Engines
- Structure
- Instruments
- Opto-electronics



ELECTRONICS

- Display phosphors (CRT, PDP, LCD)
- Medical Imaging Phosphors
- Lasers
- Fiber Optics
- Optical Temperature Sensors

CERAMICS

- Capacitors
- Sensors
- Colorants
- Scintillators

GLASS

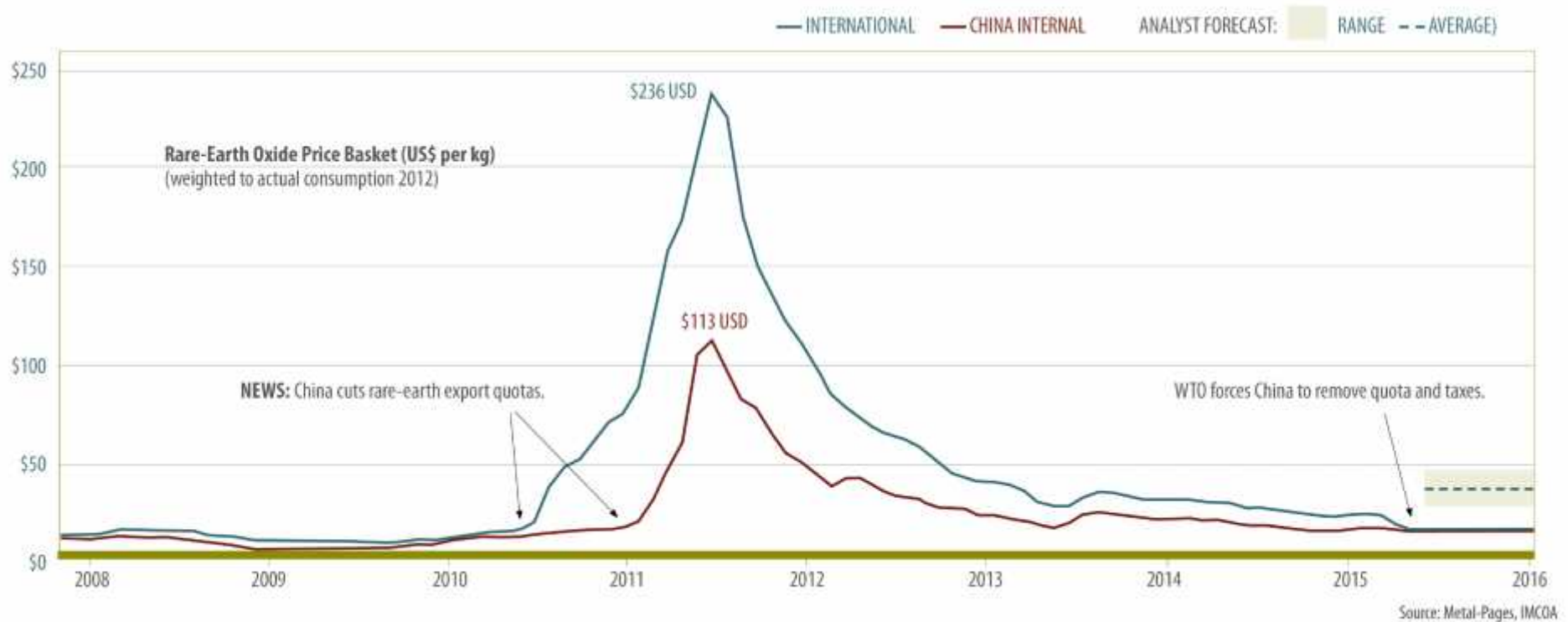
- Polishing Compounds
- Optical Glass
- UV-Resistant Glass
- Thermal Control Mirrors
- Colorizers/Decolorizers

OTHER

- Water Treatment
- Flourescent Lighting
- Pigments
- Fertilizer
- Medical Tracers
- Coatings

Rare-Earth Prices Up . . . Then Down

Industry Insights



All about China ...

Industry Insights

- Over 30 years, backed with good geology, state support and lax environmental standards – China came to dominate the rare-earth industry
- In past 10 years China has pursued rare-earth industrial policy ... **ensuring access of rare earths supplies for its trillion-dollar manufacturing economy**
 - 2010 government actions:
 - Export quotas and taxes
 - New environmental regulations / enforcement
 - State companies ordered consolidate rare-earth production
- Rest of the world response:
 - Panic / hoarding / price spike
 - Frenzy of funding exploration projects (up to 300 at one point)
 - Two firms get to production Lynas + Molycorp (now in Chapter 11)
- Lessons learned:
 - For ROW: need to have alternative supplies !
 - Rare-earth processing is complex

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Industry Insights

- New supply capacity, outside of China, has been constrained due to:
 - Significant metallurgical (technical) challenges
 - High capital costs for new mines, processing and infrastructure.
- Virtually all of China's heavy-rare-earths (HREE) come from an unusual geological setting in South China — there is no easy path to significant heavy-rare-earth production
- Now supply and demand is in balance but future demand for rare earths cannot be met by China alone
- The by-product **monazite** represents the best rare-earth opportunity to deliver significant amounts of the key elements used in permanent magnets:

Neodymium **Dysprosium**
Praseodymium **Terbium**



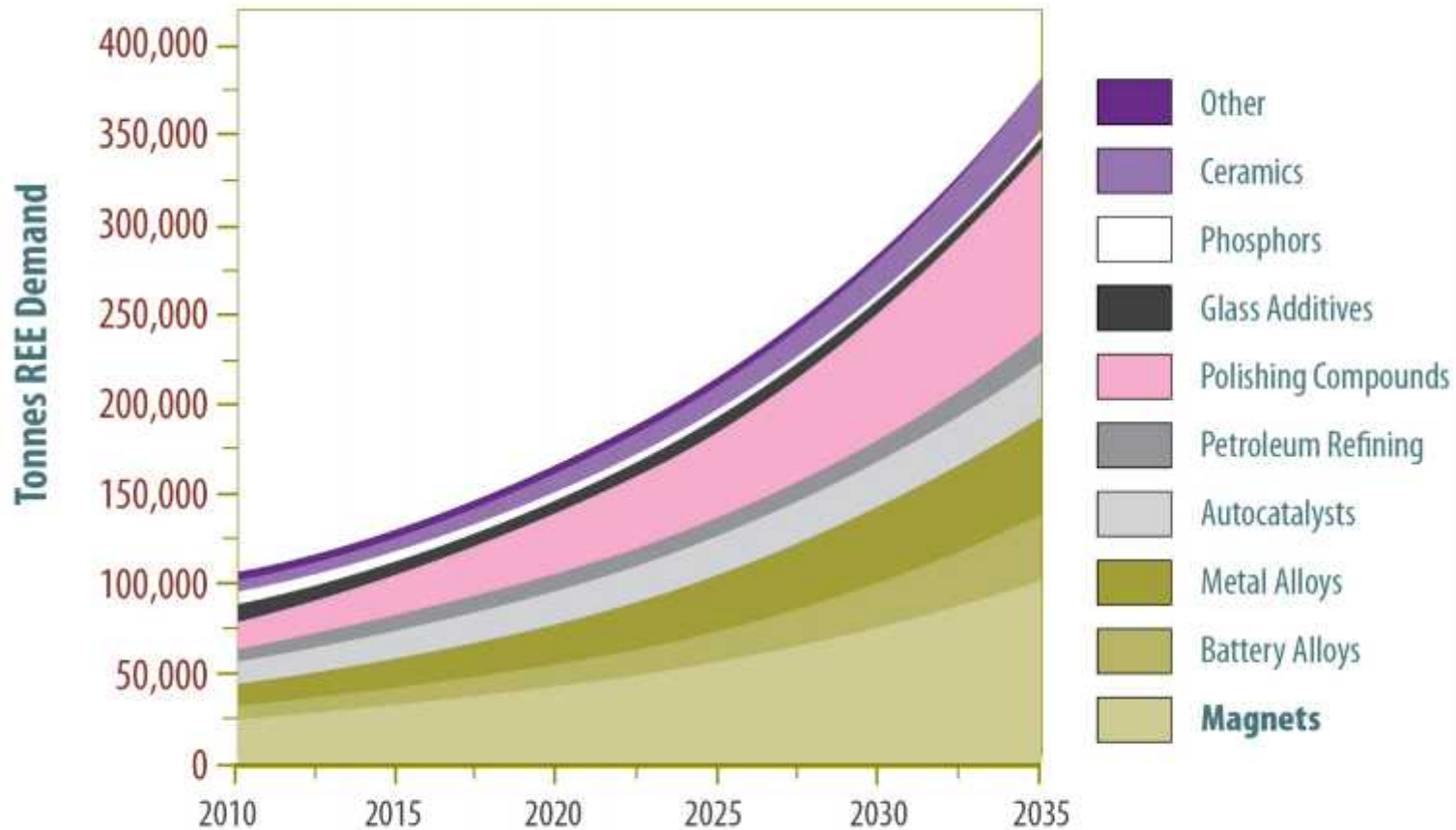
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Evolution of Market Distribution of REE Demand

Industry Insights



Source: Alonso, E., Sherman, A., & Kirchain, R. (2012). Evaluating Rare Earth Element Availability: A Case with Revolutionary Demand from Clean Technologies. *Massachusetts Institute of Technology: Environmental Science & Technology*, 46, 3406-3414

Major Rare-Earth Mineral

- contains 50-60% rare earths
- Original rare-earth source – historically processed in India, China, Brazil and France
- Concentrated as a by-product during heavy mineral sands processing
- Stockpiles estimated at 200,000 tonnes plus ongoing production
- Heavy mineral sands producers :
 - Focus on titanium and zircon
 - Are keen to monetize a valuable waste product (with issues)

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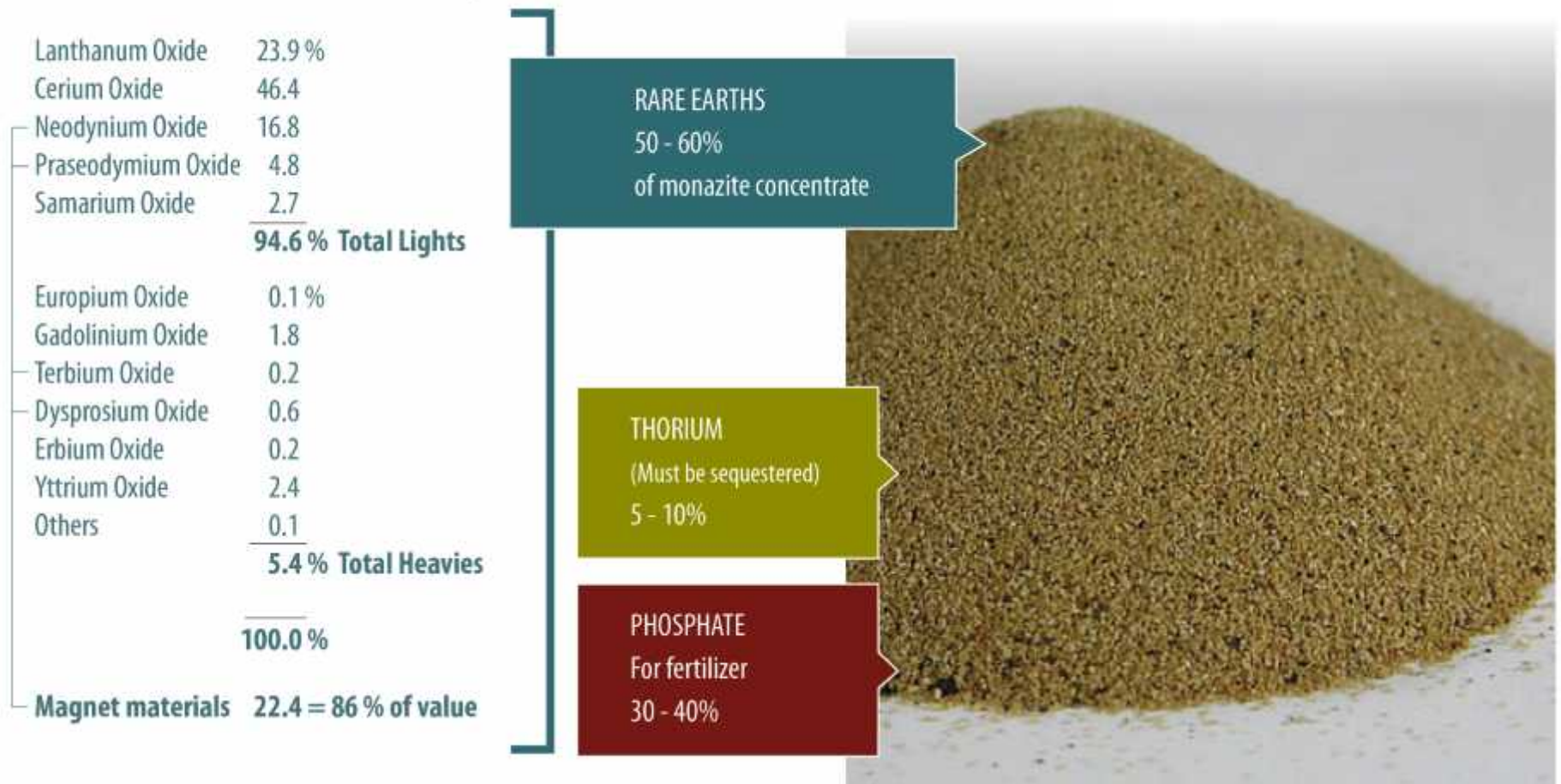
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Monazite Sand



Monazite sand

Distribution of monazite rare-earth components



Countries with 50,000+ tonnes

Monazite Sources





Production Strategy

- Medallion is convinced that projected global rare-earth demand in the near and medium term cannot be met through Chinese production or the development of known hard-rock occurrences:
 - Hard-rock, rare-earth metallurgy is very complex.
 - Many projects lack infrastructure.
 - Capital costs can become prohibitive.
- US Geological Survey confirms that monazite is a major source of potentially economical rare earths.
- Medallion is actively pursuing monazite-processing partnerships and monazite-purchase agreements to advance its rare-earth production strategy.
- Based on critical success factors, Medallion is considering several NA-based locations for its proposed large-scale monazite-based rare-earth processing facility.

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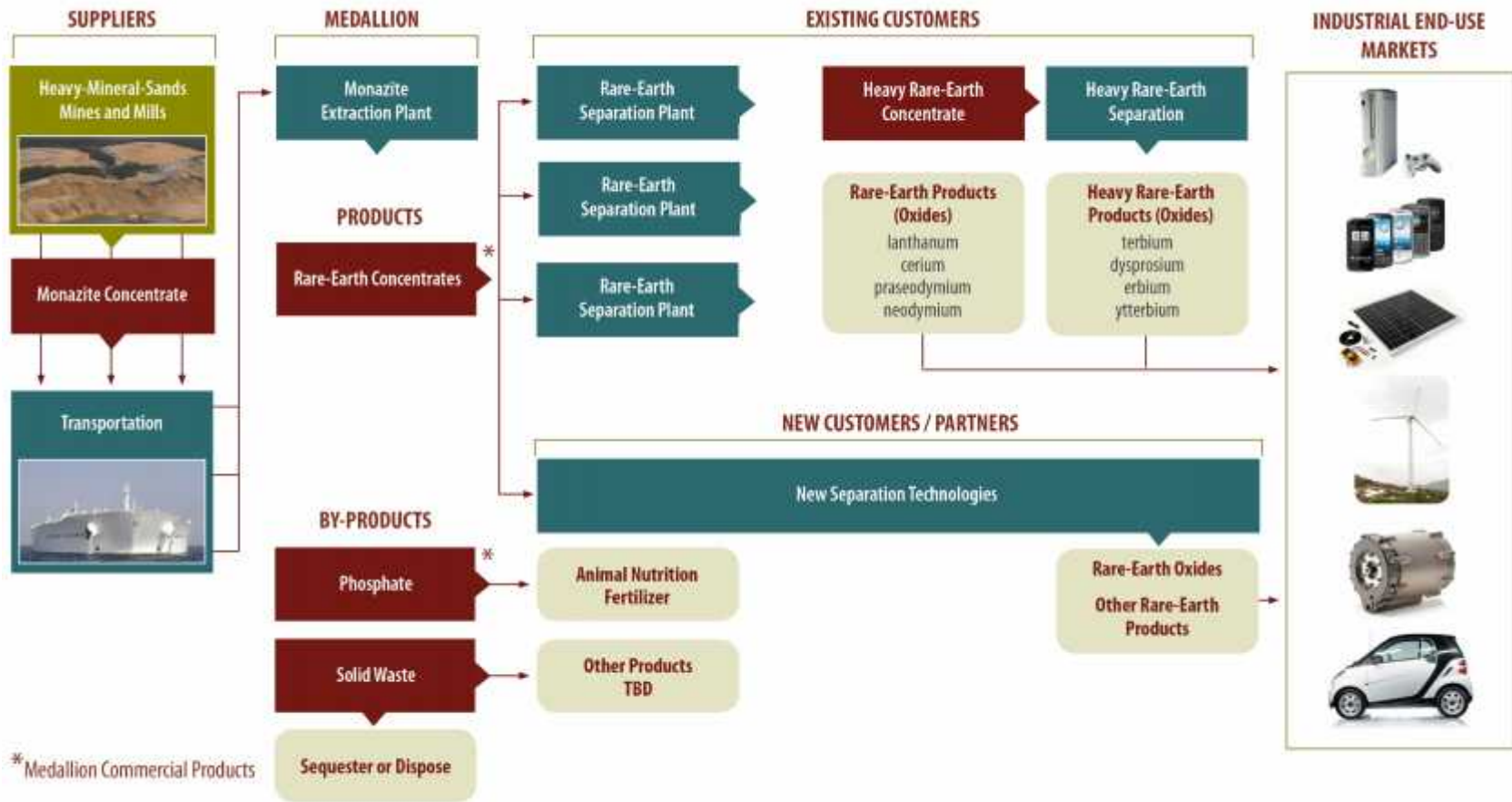
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Rare-Earth-Production Flow

Fast-Track Strategy



Milestones 2014-2016

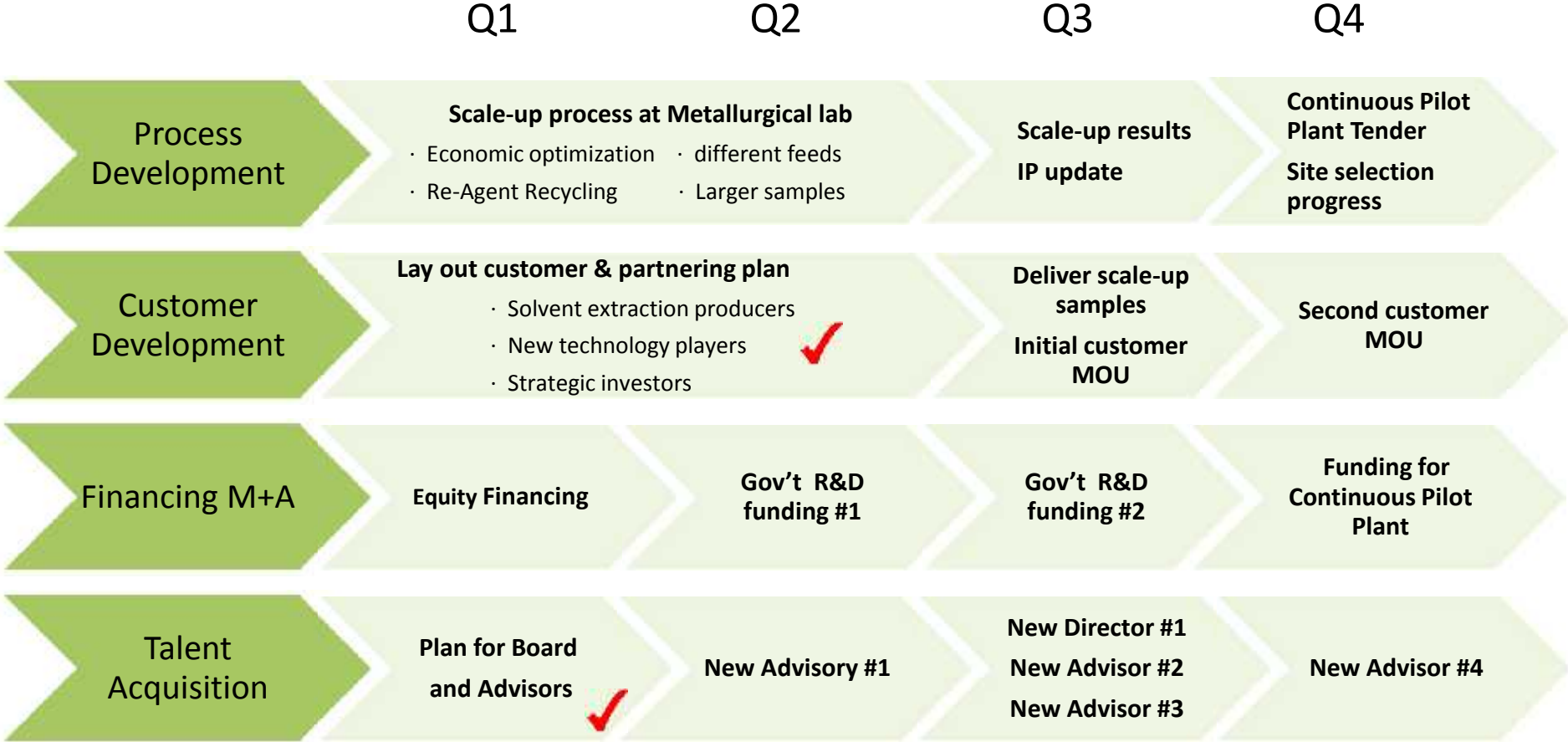
Production Strategy

RARE-EARTH PROCESSING AND PRODUCTION		
✓	December 2015	Sample Product Confirmed as Refinery-Ready
✓	August 2015	Produce Phosphate By-Product from Extraction process
✓	August 2015	Medallion Appoints South-East Asian Monazite Agent
✓	May 2015	Lab-scale tests confirm process design plans
✓	Jan 2015	Seeking Rare-Earth Processing Sites in North America
FINANCE / CORPORATE		
✓	October 2015	Closes \$225,000 Private Placement
✓	May 2015	Closes \$325,000 private placement.
✓	March 2015	Investor relations firm R+R Consulting appointed.
✓	January 2015	Closes \$250,000 private placement.
✓	October 2014	Don Lay appointed CEO - Dr Bill Bird new Chief Technical Advisor
✓	July 2014	David Shaw appointed to Board of Directors.



2016 –Milestones by quarter

Looking Forward



Note: Bold text denotes separate news releases



Management / Board

- **Donald M Lay, BSc — President & CEO, Director** — 20+ years of international experience in public and private venture-capital and project funding. Developed business and raised capital in technology and ag-bio processing fields. A number of successful investor exits.
- **Tom Arnould, CA — CFO & Secretary** — 30+ years in private companies including merger and acquisitions and senior finance roles.
- **David Haber, IDD — Chairman** — Business / succession consultant; Honorary Consul General, Republic of Austria. Career in insurance: built, operated and sold benefits consultancy in 2006 to Morneau Shepell (TSX: MSI).
- **David Shaw, PhD, PGeo — Director** — Consulting Geologist, Director of First Majestic Silver (NYSE: AG), First Mining Finance (TSXV:FF), Great Quest Metals Ltd (TSXV:GQ), 30+ years in global exploration and mining finance.
- **Rod McKeen, LLb — Director** — co-founding partner at Axium Law Corporation, 25+ years practising mining-related securities and corporate law. Formerly partner at Gowling Lafleur Henderson LLP and Montpellier McKeen Varabioff Talbot and Giuffre.
- **Andy Morden, CA — Director** — President & CEO Corvus Energy, Vancouver. 20+ years of operations and finance experience in public and private companies in high-tech field. Formerly with Intrawest Corporation and KPMG.



World-Class Talent

Advisors / Consultants

- **Anthony Mariano, PhD** — **Advisor** — Internationally renowned rare-earth consultant, 50+ years experience in mineral exploration, former advisor to Molycorp Inc and currently advises Rare Element Resources Ltd and other potential rare-earth producers.
- **James G. Clark, PhD, LGeo** — **Advisor** — 30+ years of exploration – strong field and laboratory orientation. Has managed exploration programs for REE's, niobium, gold, base metals, and industrial minerals. Former VP Exploration Rare Element Resources and consultant to Molycorp.
- **Bob Roe, MS Geosciences** — **Advisor / Consultant** — Consulting mineral-exploration geologist, formerly with Rio Algom, Phelps Dodge, and Kerr McGee Corporation, 30+ years experience in heavy-mineral-sands deposits.
- **Warwick Bartle, Consultant** — 50+ year career in minerals sands sales and marketing – experience in North America, Australia, Africa and South America



Investment Highlights

- Developed a modern metallurgical process producing a high purity rare-earth chemical concentrate suitable for current rare-earth refineries
- Flow sheet include re-agent re-cycling and by-product production
- Input feed is available from stockpiles and existing production streams (to those following Western H+S protocols!)
- Minimal technical risk / low opex / low capex
- Evaluation: Several North American plant locations, with excellent infrastructure and costs profiles
- Strategic leverage to:
 - Industrial world seeking non-Chinese sources
 - New separation technology groups
 - Strategic investors (Japanese, European, Korean, US)
- Attractively priced and de-risked – schedule of valuation changing milestones



Share Information

Shares issued:	73.9 million shares + 4.5 million options + 16.1 million warrants
Fully diluted:	94 million shares
Market capitalization:	~\$2.5 million
52 week high - low:	\$0.01 - \$0.065
Institutional holdings:	~10% (plus 8% insiders)

