Australia's low cost semiconductor developer

Investor Presentation

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BluGlass profile

- Delivery of novel manufacturing technology to the global semiconductor market
- Strong proprietary and competitive position
  - ✓ substantial reduction in gallium nitride (GaN) wafer production cost – WWK modeled 48%
  - ✓ reduced environmental impact
- Rapidly growing, multibillion dollar markets for LED and RF/power electronics applications
- Strong international technical and commercial team
- Commercial spin off from Macquarie University, manufacturing facility based in Silverwater, Western Sydney

- ASX:BLG
- oversubscribed IPO Sept 2006 raised A$10M
- Market Cap. A$50M
- 135 M shares on issue
- Top 20 shareholders 44.7%
- Cash Balance A$10.3M 30 Sept 2007
- A$5M AusIndustry Commercial Ready grant 2007- 2009
- Cash Burn A$0.9M p.q.

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Highly skilled team of industry experts

DIRECTORS	MANAGEMENT	TECHNOLOGY DEPARTMENT
Dr. Michael Taverner Chairman **David Jordan** Managing Director and Chief Executive Officer **Dr. Peter Dodd** Non-executive Director **Greg Cornelsen** Non-executive Director **Chandra Kantamneni** Non-executive Director	**David Jordan** Managing Director and Chief Executive Officer **Geoff King** CFO **Dr. Scott Butcher** CTO **Giles Bourne** Commercial Manager **Conor Martin** Equipment Design and Development Manager **Piotr Glowacki** Facilities Manager	**Dr. Marie Wintrebert-Fouquet** Senior Research Scientist **Guy Reynolds** Equipment Engineer **Satanarayan Barik** Research Engineer **Dr. Tim Dabbs** Senior Research Scientist **Alanna Fernandes** Research Engineer **Arran McKay** Research Scientist **Phil Dixon** Equipment Engineer

many years of experience in semiconductors, research and international business

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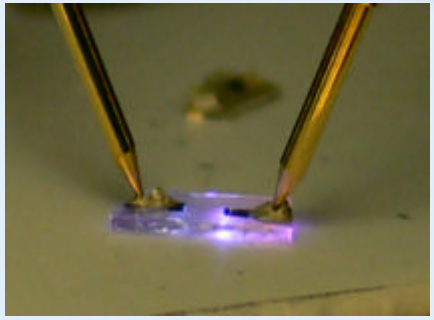
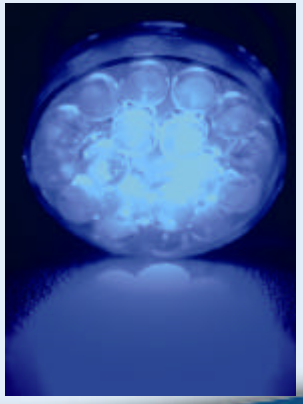
Why focus on Gallium Nitride?

Gallium nitride (GaN) is a semiconductor material that electroluminesces (emits light) under applied voltage



GaN dominates the blue / green Light Emitting Diode (LED) & UV Laser Diode (LD) market. LED applications include mobile phone and laptop screen backlighting, torches, car displays, traffic signals.



Environmental benefit underpins the potential for significant LED penetration of the US$100B general lighting market

Lower cost for GaN production a key enabler

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Our breakthrough technology

Remote Plasma Chemical Vapor Deposition (RPCVD)

Low pressure **reaction chamber** in which a glass **substrate** is heated to **500 - 700°C**.

- ✓ new low cost substrates

Remote plasma generated active **nitrogen** species react with trimethyl gallium (TMGa) depositing a thin film of GaN on the wafer.

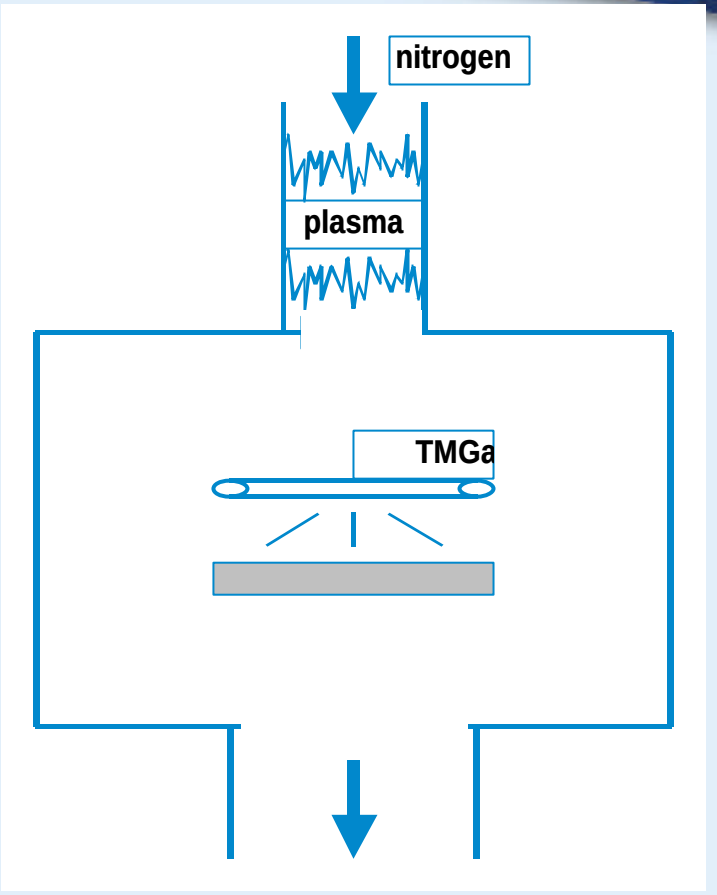
- ✓ safer process

Large area deposition capability (>6", *cf* 2" industry standard) offers substantial production efficiencies.

- ✓ highly scalable

Strong IP position within competitive IP environment.

- ✓ commercially attractive
- ✓ environmental benefits
- ✓ cost driven



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Our “green” credentials

Environmental benefits accrue at two levels:

GaN wafer manufacturing process (RPCVD *vs* MOCVD)

- Reaction temperatures reduced (500-700°C *vs* 1,000°C plus)
- Nitrogen replaces toxic ammonia

Energy efficient LED devices

- Curently replacing **incandescent bulbs, first** commercialised in the late 1800’s, more than a century ago
- LED lights are currently 4 - 5 times more energy efficient, about the same as compact fluoro’s (CFL’s) but targeted for much higher
- last 50 times longer than incandescents, 5 times more than CFL’s, with higher targeted lifetimes (up to 100,000 hours)
- LED’s contain no mercury, unlike CFL’s

Professor Shuji Nakamura, blue GaN LED pioneer and 2006 Millenium Prize winner –
“It is estimated it is possible to alleviate the need for 133 nuclear power stations in the US by the year 2025 if white solid-state lighting is implemented”

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LED evolution

- Red and amber LEDs in commercial production for over 30 years (billions sold). These use somewhat similar material types to GaN (alloys of GaAs & GaP)
- Red LED's used mainly as small indicator lamps and alphanumeric displays because of performance limitations
  - Did not cover full color spectrum (blue end missing)
  - Poor outdoor performance in full sunlight
- **GaN based blue LED materials "revolution" occurred in the early 1990s**
- **GaN** process initially developed by Nichia / Toyoda Gosei (Japan), with Cree (USA) following soon after producing high brightness blue and green LEDs (and white, using blue + phosphor). Many producers have since entered the market.
- GaN HB-LED devices are currently fabricated by Metal Organic CVD, a high cost process

➔ **HB LED manufacturing "revolution" from 2008 enabled by BluGlass RPCVD**

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High Brightness LED application segments

A rapidly growing and evolving market

HB LED Market

Other

Indicators, small displays amusement, misc. other

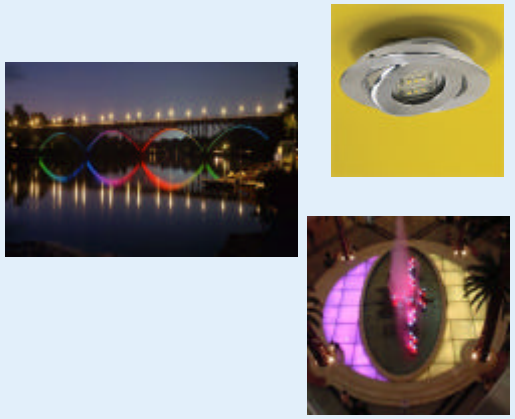
11%

Mobile Appliances

50%

Illumination

9%



Signs and Displays

15%

Signals

1%

Automotive

14%

Source: Strategies Unlimited

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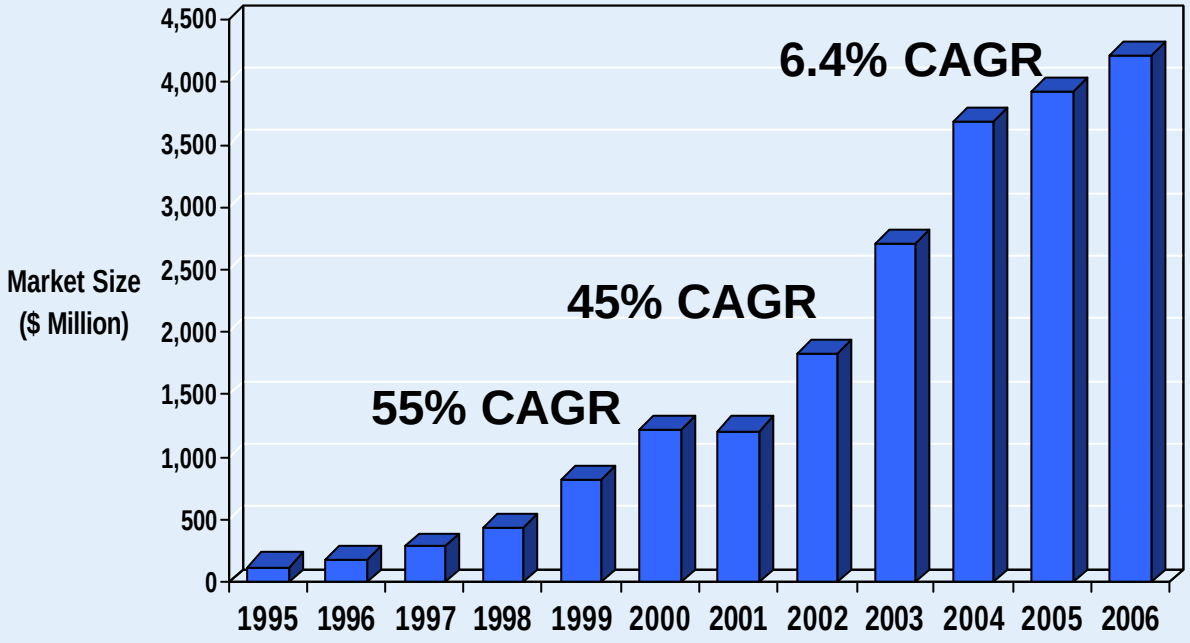
LED sector emerging as next star industry*

Overall LED market revenues US$6.3B for FY06F and CAGR growth of 15% predicted for FY06 – FY10F *Source :Deutsche Bank

17.6% CAGR to $9.4 billion in 2011 Source: Strategies Unlimited



Source: Strategies Unlimited

Market growth will be driven by lighting, display backlights (large panel LCD) and automotive

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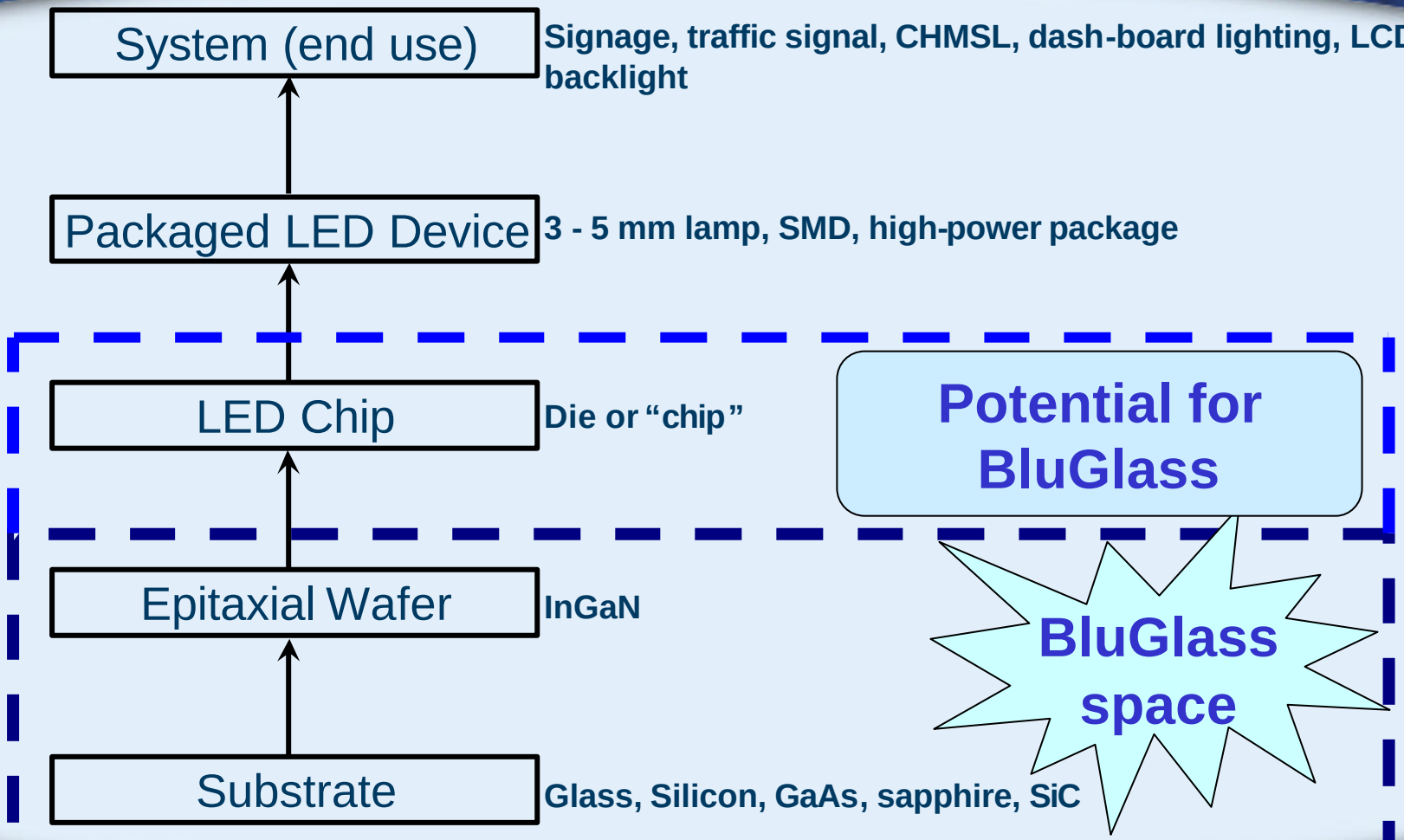
HB LED vertical supply chain



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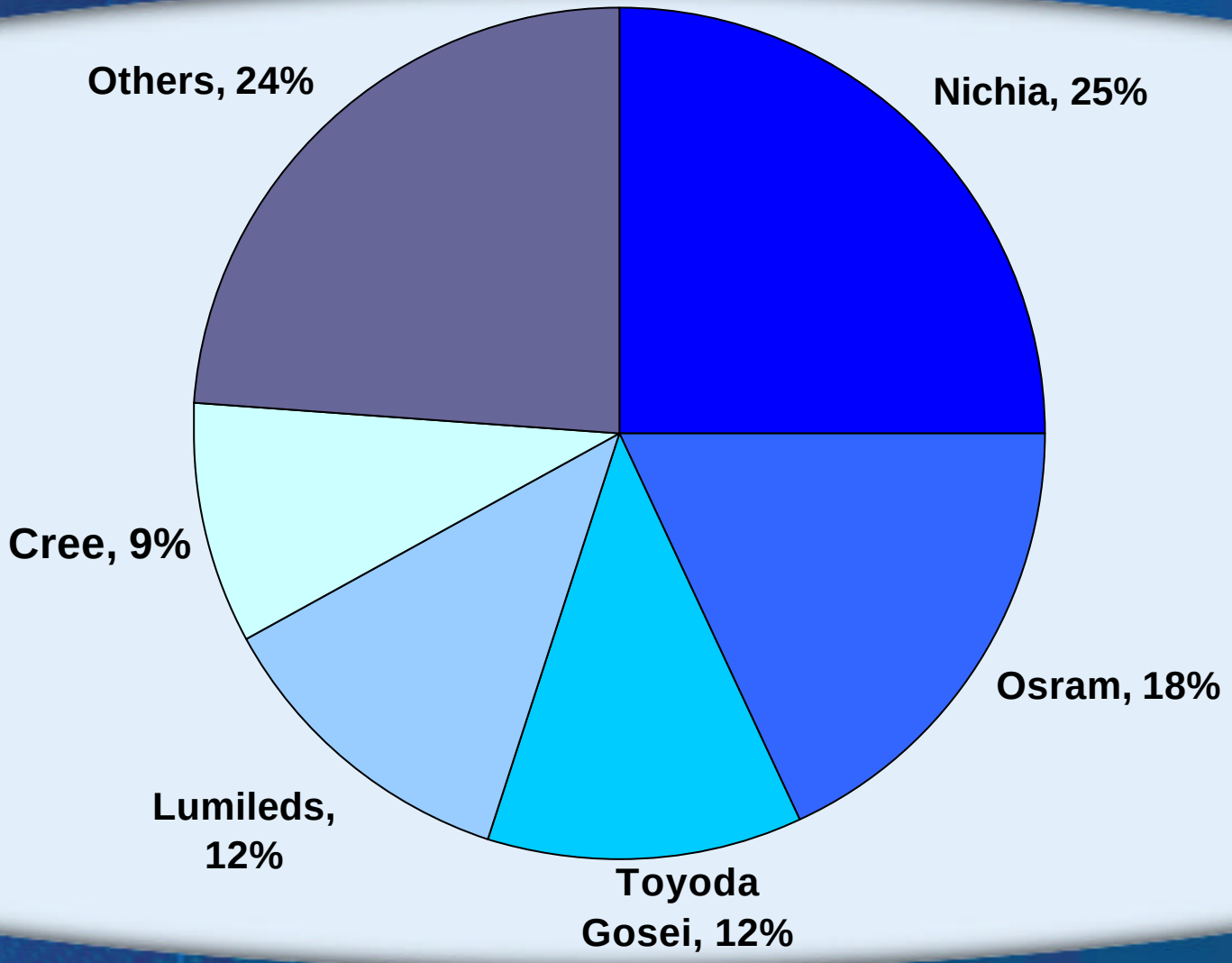
HB-LED 2006 market shares in revenues per company (all colours, all materials)



Source: GaN' 07, Yole Developpement

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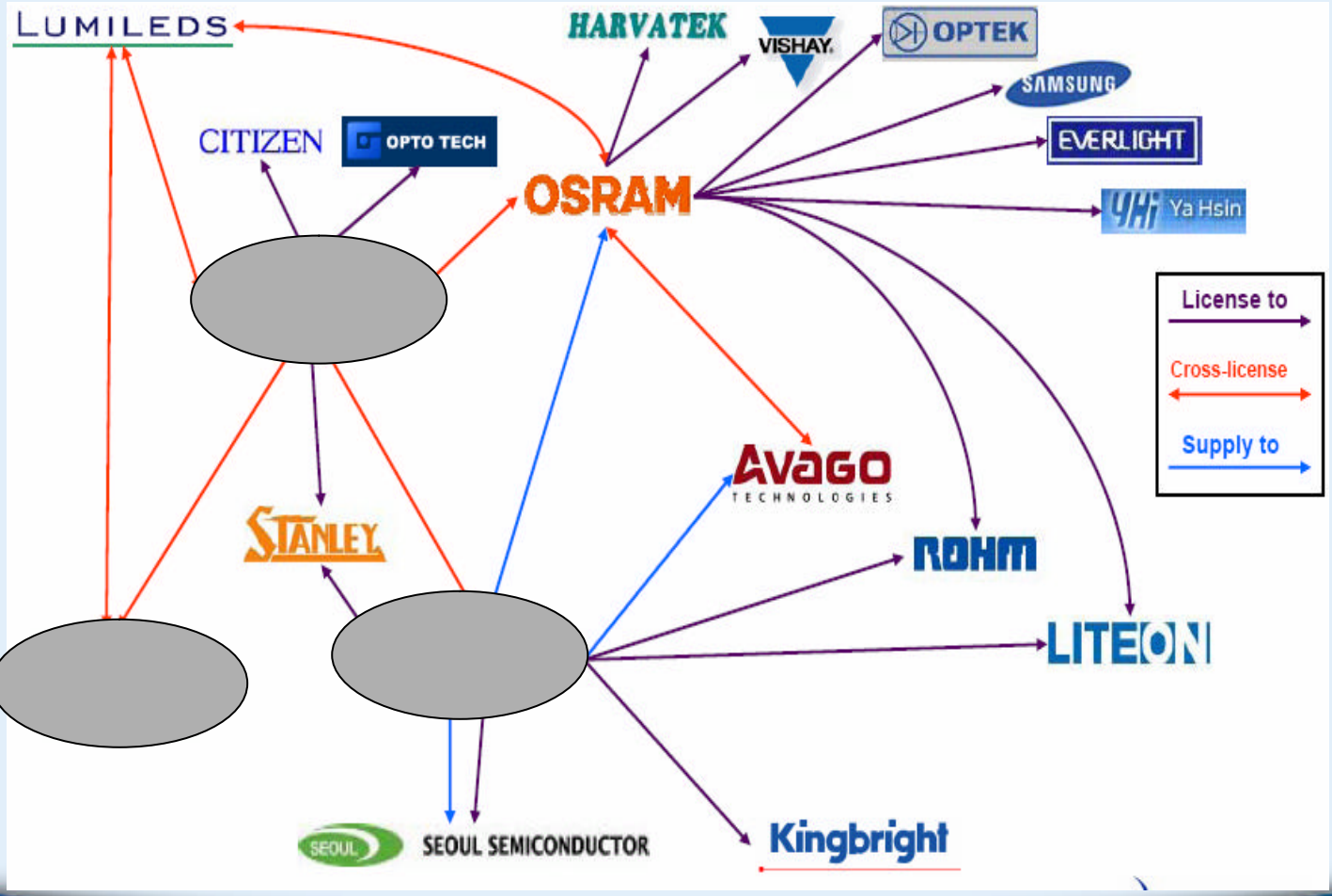
BluGlass RPCVD technology works within the current competitive and complex IP licensing environment



Source: GaN' 07, Yole Developpement

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Competitive landscape

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Cost reduction benefits

~ 48% TCoO cost reduction wafer level

~ 10% at blue LED device level

Source:Wright, Williams & Kelly, USA

Aixtron (Germany) – High Market Share
Market Capitalisation ~ US$ 430M

Veeco (USA) – High Market Share
Market Capitalisation ~ US$ 630M

EMF (Ireland) - Medium Market Share
Unlisted

RPCVD Process

Remote Plasma Chemical Vapour Deposition: BluGlass' patented technology

MOCVD Process

Metal Organic Chemical Vapour Deposition: existing technology

Low cost wafer manufacture → **Higher cost wafer manufacture**

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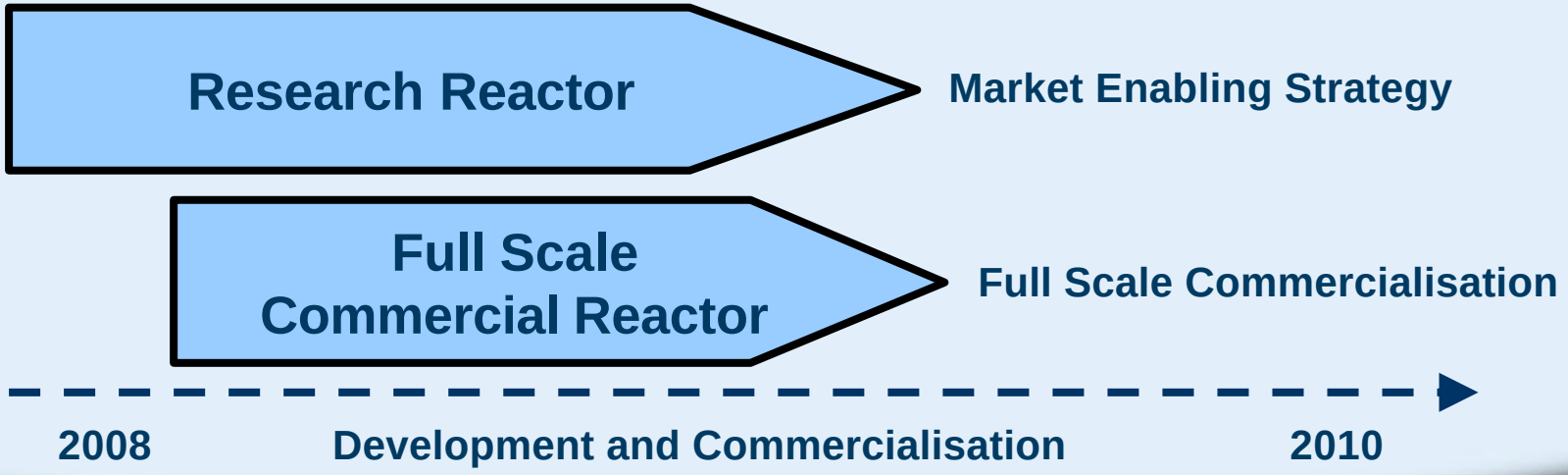
BluGlass strategy

To demonstrate and deliver a low cost GaN manufacturing technology to the global market by:

- **Supply of commercial equipment**
- **Process licensing (technology fee & royalty stream)**
- **Supply of specialised materials, and**
- **Niche manufactured product**



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Revenue model – example calculations

Revenue Model – 3 key drivers

1. *Market Size* – forward projection in $'M and substrate requirement
2. *Share* – BluGlass share of that market
3. *Return* – BluGlass revenue on that share

Revenue model – example calculations

1. ***Market Size*** – forward projection in substrate requirement / $'M

Yole Développement, Market Report, 2007, *"GaN'07 – New perspectives for nitride materials and devices"*

- Substrate Requirements – 2" sapphire / SiC equivalent
  - 2007 – 5.07 M
  - 2012 – 11.6 M

- Revenue US$ GaN HB-LED
  - $3.5 BN (2007) => $7.5 BN (2012)

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Revenue model – example calculation

1. ***Market Size*** – forward projection in substrate requirement

   - **Substrate Requirement** – 2” sapphire / SiC equivalent
     - 5.1 M (2007) => 11.6 M (2012)

   - **Wafer Production per Tool** – estimates & assumptions
     - Typical Reactor Capacity - 20 x 2” substrates
     - Runs / Day - 3 to 4
     - Work Days / Year – >350 plus
     - Production Yield - >80%
       - >20,000 epi-wafers pa

   - **Reactor Demand Requirement** -
     - 2007 - 5.1M substrates
     - 2008 - 5.9M substrates => additional 0.8M substrates / ~40 additional reactors
     - 2009 - 7.0M substrates => additional 1.1M substrates / ~55 additional reactors
     - etc etc

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Revenue model – example calculation

2. ***Share*** – BluGlass market share

   - **Global Reactor Requirement** – from before, based on Yole substrate demand projections.

   - **BluGlass Share** – a key driver

Revenue model – example calculation

3. ***Return*** – BluGlass revenue on market share; estimates / assumptions

   A. **25% Rule of Thumb** (Goldsheider *et al*)

      - **Royalty as % of Cost Saving Offered** – Wright Williams & Kelly TCoO model (>40%)

        ✓ **MOCVD** MQW 2” sapphire LED epi-wafer – < US$90
        ✓ **RPCVD** MQW LED 2” glass epi-wafer - < US$50
        ✓ **WWK Saving Modeled / Royalty Applied** - ˜ US$40 / 25%

   B. **% of (Reduced) Wafer Production Cost**

      - Example royalty % of reduced COGS offered US$50 / #%

   C. **% of Wafer Selling Price**

      - Example royalty on sell price US$Y / #%

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Revenue estimate – example calculations

- **Revenue**
  - Clearly a rapidly growing market with strong revenue potential for the low cost BluGlass RPCVD technology

- Additional Potential Benefits Offered (but not yet factored in)
  - Large area substrate (6”+) deposition –
    - significantly higher chip count per wafer (˜ 9x, 9,000 => 80,000)
    - improved yield potential
    - reduced downstream processing cost
    - availability of lower cost / readily available substrates
  - Other substrate types / processes (silicon)
  - Other technology areas (III – nitrides / other)

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Recent achievements and next milestones

- ☑ Dedicated manufacturing facility 1,260m^2
  - ☐ Upgrade to electricity supply and fit-out in readiness to install RPCVD fabrication equipment March 2008
- ☑ Demonstrated world's first GaN-on-glass blue LED
- ☑ Extended GaN deposition wafer size from 2 inch to 6 inch
- ☑ Key collaborations enabling the technology's commercial demonstration are in place:
  - St Gobain Recherche, France (for special substrates)
  - EMF Semiconductor Systems, Ireland and Brooks Automation Inc, USA (for components of the commercial RPCVD reactor) 2Q07
  - M+W Zander, Germany (for cleanroom and machine shop design & manufacture) 4Q06
- ☑ Reactor chamber large scale tool passes rigorous testing
  - ☐ Incorporate into demonstration production line March 2008

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Why invest in BluGlass

- LED sector is emerging as next “star” industry
- BluGlass is well positioned to enter this rapidly growing, US$6B+ market with its breakthrough low cost technology
- Well funded – IPO + Comm Ready $5M (no requirement for further funding)
- The RPCVD process has multiple benefits over existing technologies
- Strong IP position underpins commercial attractiveness
- Environmental and commercial benefits in adopting the technology
- Highly capable international technical and commercial team

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Thank you

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