A Better Way to Build Displays
Overview Presentation (UNXL.OB)

Southern California Investment Association
August 2008

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http://www.unipixel.com/
Safe Harbor Provision

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Company Overview
“A Better Way To Build Displays”

• **The Company:**
  – Publicly Traded Company (Symbol: UNXL.OB)
  – Founded 2001
  – Developing new enabling Flat Panel Display Technology

• **The Opportunity**
  – $100 Billion +, fast growing market opportunity
  – Market applications include everything from Mobile Phones to TVs and Active Signage

• **The Technology:**
  – Time Multiplexed Optical Shutter (“TMOS”)
  – Opcurity™ Films
  – Enabling the $100 Billion LCD Market
  – Superior image quality, greater energy efficiency, lower manufacturing cost, improved reliability

• **The Accomplishments:**
  – Working prototypes
  – Partnerships with Lockheed, Philips
  – $22 Million Raised from Tudor & Merrill Lynch in 2007
**Time Multiplexed Optical Shutter (TMOS)**

**Superior Flat Panel Display Technology**

- **Superior Performance**
  - Lower power consumption (up to 90%*)
  - Increased reliability and durability
  - Longer lifespan (>200%*)

- **Superior Cost Structure**
  - 40% - 60% reduction in bill of materials*
  - Simplified manufacturing – improved yields*

*Compared to LCD

- **Superior Image Quality**
  - Higher resolution
  - More color
  - Greater brightness (sunlight readability)

- **Built with existing materials, processes and infrastructures, enabling and leveraging the $100 Billion LCD market segment**
Large, Growing Market

$101.7 Billion in 2007
estimated to be
$128.6 Billion, 2010
(DisplaySearch Market Forecast)

- Growing number of display applications
- Growing volume of display devices
- Growing total display market revenue
TMOS Simplicity vs. LCD Complexity

**TMOS Layers**
- Cover Glass
- Active Layer
- Light Guide
- Transparent Conductor
- Standoff Layer
- Air Gap
- TFT

**LCD Layers**
- Glass Substrate
- Black matrix
- Color filter
- Overcoat
- Common Electron
- PI (Alignment Film)
- Liquid Crystal
- Capacity
- Pixel Electron
- TAB
- ACF
- Driver LSI
- Diffuser
- Spacer
- Light Guide Plate
- Reflector
- CCFL Lamp

Image is of small size, TN type, laptop module, with edge lamp ball spacer. Larger panels use similar materials but may have column spacers, VA features, direct type backlights, etc.
Pixel and Light Guide Operation
(Follows Same Principles as Fiber Optics)

Single Pixel Activation – Coulomb Attraction

<table>
<thead>
<tr>
<th>Pixel Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lights Off</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pixel Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light On</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pixel On</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light On</td>
</tr>
</tbody>
</table>

NOTE: Layers and Deformation Not to Scale
TMOS is Significantly More Efficient than LCD

> 10x More Optically Efficient

<table>
<thead>
<tr>
<th>Layer</th>
<th>TMOS Percent</th>
<th>LCD Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% LED Output</td>
<td>100%</td>
<td>61%</td>
</tr>
<tr>
<td>TFT Glass</td>
<td>97%</td>
<td>28.3%</td>
</tr>
<tr>
<td>Opquity™ Film</td>
<td>61%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Light Out</td>
<td>61%</td>
<td>5%</td>
</tr>
<tr>
<td>100% Start</td>
<td>100%</td>
<td>5%</td>
</tr>
<tr>
<td>Polarizer</td>
<td>43%</td>
<td>5%</td>
</tr>
<tr>
<td>TFT Glass &amp; Aperture</td>
<td>29.2%</td>
<td>5%</td>
</tr>
<tr>
<td>LC Layer</td>
<td>97%</td>
<td>28.3%</td>
</tr>
<tr>
<td>Color Filters</td>
<td>61%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Polarizer</td>
<td>43%</td>
<td>5%</td>
</tr>
<tr>
<td>Light Out</td>
<td>61%</td>
<td>5%</td>
</tr>
</tbody>
</table>
TMOS = TFT Backplane + Opcuity + LEDs
TMOS = TFT Backplane + Opcuity + LEDs
TMOS = TFT Backplane + Opcuity + LEDs

TFT Backplane

TMOS Illumination System

TMOS Opcuity Film
### Five LCD Panel Materials Replaced by TMOS Approach

<table>
<thead>
<tr>
<th>42&quot; Materials &amp; Other Manufacturing Costs</th>
<th>2008</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass</td>
<td>$29.30</td>
<td>6.0%</td>
</tr>
<tr>
<td>Target</td>
<td>$4.82</td>
<td>1.0%</td>
</tr>
<tr>
<td>Chemical &amp; Indirect Materials</td>
<td>$15.89</td>
<td>3.3%</td>
</tr>
<tr>
<td>Array Material Total</td>
<td>$50.01</td>
<td>10.3%</td>
</tr>
<tr>
<td>Yielded Array Material Cost</td>
<td>$58.16</td>
<td>12.0%</td>
</tr>
<tr>
<td>Color Filter</td>
<td>$59.68</td>
<td>12.3%</td>
</tr>
<tr>
<td>Polarizer</td>
<td>$29.94</td>
<td>6.2%</td>
</tr>
<tr>
<td>LC</td>
<td>$20.09</td>
<td>4.1%</td>
</tr>
<tr>
<td>Others</td>
<td>$6.32</td>
<td>1.3%</td>
</tr>
<tr>
<td>Cell Material Total</td>
<td>$116.04</td>
<td>23.9%</td>
</tr>
<tr>
<td>Yielded Cell Material Cost</td>
<td>$129.23</td>
<td>26.6%</td>
</tr>
<tr>
<td>Driver IC</td>
<td>$16.44</td>
<td>3.4%</td>
</tr>
<tr>
<td>Backlight</td>
<td>$95.50</td>
<td>19.7%</td>
</tr>
<tr>
<td>Inverter</td>
<td>$15.06</td>
<td>3.1%</td>
</tr>
<tr>
<td>PCB, etc.</td>
<td>$38.13</td>
<td>7.9%</td>
</tr>
<tr>
<td>Module Component Total</td>
<td>$165.13</td>
<td>34.0%</td>
</tr>
<tr>
<td>Yielded Module Component Cost</td>
<td>$168.54</td>
<td>34.7%</td>
</tr>
<tr>
<td>Yielded Material and Component Total Cost</td>
<td>$355.93</td>
<td>73.4%</td>
</tr>
<tr>
<td>Personnel Cost</td>
<td>$26.11</td>
<td>5.4%</td>
</tr>
<tr>
<td>Depreciation Cost</td>
<td>$62.53</td>
<td>12.9%</td>
</tr>
<tr>
<td>Indirect Expense Total</td>
<td>$13.20</td>
<td>2.7%</td>
</tr>
<tr>
<td>Manufacturing Total Cost</td>
<td>$457.76</td>
<td>94.4%</td>
</tr>
<tr>
<td>SG &amp; A</td>
<td>$27.26</td>
<td>5.6%</td>
</tr>
<tr>
<td>Sales Total Cost</td>
<td>$485.03</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**TMOS Savings**

- Eliminates Color Filters $59
- Eliminates Polarizers $30
- Eliminates Liquid Crystals $20
- Reduces backlight cost $72
  (TMOS uses an Edge Injection Illumination System)
- Eliminates Inverters $15

**SAVINGS of 55% $196**

Source: DisplaySearch Q4’07 Forecast

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**TMOS provides significant cost reduction**

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What is the Opcuity Active Layer Film?

- Opcuity Active Layer film is comprised of:
  - Polymer film substrate
  - Micro-optic structures
  - Thin film flexible conductor

- TFT backplane + Opcuity film + LEDs = TMOS display

- UniPixel will control the development, production and sales of the Opcuity Active Layer film
1) Base Polymeric Film
2) Opcuity Micro-Optic Layer
3) Flexible Conductor

Flexible conductor sprayed onto film into micro-lens valleys.
Opcuity Lamination Process

- TMOS
- Opcuity Film
- Lamination Process
- TFT Backplane
Opcuity Active Layer Film
(Multiple Micro-Optic Structures for each Pixel)
TMOS Ecosystem

- Semiconductor
  - License
  - Development
  - Distribution

- Active Layer
  - License
  - Development
  - Distribution

- Manufacturing
  - License
  - Development
  - Panel Assembly
  - Distribution

- Illumination System
  - License
  - Development
  - Distribution

- OEM
  - Market Exclusive
  - Platform Development
  - Commercialization

UniPixel TMOS
Patent Portfolio – 27 Patents, 79 Applications Filed

Architectural IP
- Curved TMOS Screen
- Backside Reflection Display
- Embedding of Conductive Planes
- Inverted TMOS Architecture
- Multilayer Waveguide (2)
- Shaped Lightguide Reflection System (2)
- Light Pipe Variant to Lightguide
- Solid State Pixel & Miscellaneous (4)
- Fingerprint-Resistant Display Shield

Electromechanical/MEMS IP
- Double Electret MEMS Actuator
- Dynamic Force Profile Articulation (2)
- Active Release Pixel Actuation
- Pixel Perimeter Tethering, etc. (3)
- Voltage Reduction Architecture
- Enhanced Architecture Patents (4)
- Low-Stiction Micro-Optical Structures

Optics IP
- Light Leakage Attenuation
- Light-Extracting Microstructure Arrays (2)
- Contrast Ratio Enhancement w/Retroreflectors
- Light Insertion Improvements (2)
- Dynamic Uniformity Compensation Method
- Tunable Light Sink
- Embedded Reflecting Structures
- Coupling Enhancement Variations (3)

Visual Performance IP
- Z-Axis Redundant / Preg. Interleave (2)
- Color Palette Enhancement
- Artifact Suppression
- Extended Gamut
- Nonvisible/Visible Interface
- Noncontiguous Primaries
- Whitepoint Auto Feedback Loop
- Gamma Correction for High Dynamic Ranges
- Apodization-Based Uniformity Compensation

Drivers & Efficiency IP
- FSC Efficiency Enhancement
- Common Ground Plane Discharge
- Simple Matrix Drive
- Enhanced Data Encoding
- TFT-Driven TMOS
- Polarity Switching Variants
- Four-Voltage Simple Matrix
- Line-At-A-Time Driver Method
- Miscellaneous (4)

Fab/Assy/Process IP
- Airgap Autogenesis
- Coulomb Force Dynamic Assembly
- Parylene on Flex Deposition Method
Recent Technology Accomplishments

Active Matrix

Demonstrated 3 TMOS design prototypes
1) TFT Active Matrix
2) Direct Drive Dot Matrix
3) Direct Drive Enunciator

Achieved MEMS electro-mechanic milestones
1) < 2 microsecond pixel actuation speed
2) < 12 volt operation
3) > 150 frames per second video output

Produced leading edge micro optic structures and optical films

Developed Finger Print Resistant film for Touch Screens

Direct Drive

Opquity™ Film
Development to Market Entry (Leveraging Current Infrastructure)
UniPixel has established thin film capabilities that are a Platform Technology for Developing a wide variety of New Application Films

UniPixel is able to combine the listed elements to produce films in a roll to roll environment

Platform combines:

- Precision Geometric Micro Structures of 1 to 10 microns
- Optical Expertise and Optical Engineering
- Surface Engineering using nano-materials and self assembling mono-layers (SAMs) – Chemical and Materials Expertise
- Finely patterned conductors (3D capable w/ lines of 3 to 4 microns)
Opcuity™ Finger Print Resistant (FPR) Film

Opcuity™ FPR  -- Clearly Superior™
Opkuity™ Films by UniPixel

Product Opportunities
• Opkuity FPR – Finger Print Resistant Protective film for Touch Screens
• Opkuity TMOS – Active Layer for TMOS display technology

Future
• Anti-Graffiti Film – Structures and Treatments
• Solar Enhancement Films – Optical Structures and Conductors
Marketing and Sales Strategy

• **TMOS Technology - Opcuity™ Active Layer Film**
  – License TMOS display technology to LCD Panel Manufacturers
  – Sell Opcuity™ Active Layer film into the TMOS Licensees
  – Support Transition of LCD to TMOS manufacturing and assembly process by LCD Panel Manufacturers

• **Opcuity™ Finger Print Resistant (FPR) film**
  – Manufacturing Options
    • License Opcuity™ FPR film to Manufacturing Partner
    • Sub-contract manufacturing to Manufacturing Company
  – Sales and Distribution Channels
    • Sell bulk Opcuity FPR to system OEMs to include with initial product
    • License packaged retail distribution for touch enabled device channels
      – iPhones/Smart Phones/PDAs/other handheld devices
      – Notebook PCs, Web Devices, Digital Cameras, etc.
<table>
<thead>
<tr>
<th>Market</th>
<th>Millions of Sq. Ft. (2008 Projection)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Size</td>
<td>95</td>
</tr>
<tr>
<td>(Cell Phone, Camera, etc.)</td>
<td></td>
</tr>
<tr>
<td>Notebook</td>
<td>230</td>
</tr>
<tr>
<td>Monitor</td>
<td>590</td>
</tr>
<tr>
<td>TV</td>
<td>1,100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,025</strong></td>
</tr>
</tbody>
</table>

Source: Corning
Opucuity™ Finger Print Resistant (FPR) Film

• **What**
  – Protective film that effectively masks fingerprints on optical surfaces, such as multi-touch devices (i.e. iPhone)
    • Provides Scratch Protection
    • Provides Anti-Glare
    • Can provide optical output enhancement (optical tuning)
    • Patent applications have been filed

• **Why**
  – Large Market opportunity
  – Leverages UniPixel in-house film and micro-optic expertise
  – Relatively low cost to market entry
  – Can generate immediate cash flow
  – High margin opportunity
    • Existing protective cover films sell for ~$7.50 ea (for iPhone)
Opcuity™ FPR Clearly Superior

DisplaySearch Estimates 660 Million Touch Screen Units by 2015
and
iSuppli Estimates 833 Million Touch Screen Modules by 2013
## Board and Management Team

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Tenure / Experience / Boards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bernie Marren</td>
<td>Chairman</td>
<td>CEO Opti Inc., President &amp; CEO AMI, President &amp; CEO Western Micro, Founding Pres. of Semiconductor Assoc., Fairchild Semiconductor Executive</td>
</tr>
<tr>
<td>Reed Killion</td>
<td>President &amp; CEO, Director</td>
<td>Trustee &amp; Director Texas A&amp;M Research Foundation, Chairman Animal Innovations, President Transition Marketing, VP Bus Dev. LogiCom</td>
</tr>
<tr>
<td>Carl Yankowski</td>
<td>Director</td>
<td>CEO Palm Inc., President &amp; COO Sony Electronics, CEO Reebok Brand, GE/PepsiCo/Memorex/P&amp;G</td>
</tr>
<tr>
<td>Bruce Berkoff</td>
<td>Director</td>
<td>Chairman LCD TV Association, President &amp; CEO Enuclia Semiconductor, Executive VP &amp; CMO LG-Philips, GM Philips Software &amp; Electronics FPD Systems</td>
</tr>
<tr>
<td>Rob Broggi</td>
<td>Director</td>
<td>VP and Director of Technology, Media and Telecommunications Research at Tudor Investment Corporation, Executive Director Morgan Stanley, Director Plastic Logic, Director Netronome Systems</td>
</tr>
<tr>
<td>Victor Calaba, JD</td>
<td>Director</td>
<td>Tudor Investment Corp.</td>
</tr>
<tr>
<td>Ross Young</td>
<td>Director</td>
<td>Founder and President of DisplaySearch, Director of Westar Display Tech, VLSI Research Exec All-Star Team, Owl Displays, Brooks Automation, Fusion Semiconductor and GCA.</td>
</tr>
<tr>
<td>James Tassone</td>
<td>CFO</td>
<td>Managing Director and CFO Mindwave Research, Inc.</td>
</tr>
<tr>
<td>Tod Cox</td>
<td>VP Engineering</td>
<td>Director of Blade Server Engineering for HP</td>
</tr>
<tr>
<td>Robert Petcavich</td>
<td>VP &amp; GM Opcuity</td>
<td>Sr. VP &amp; CTO of Lumera Corporation, and Chairman, CEO and CTO of several advanced materials and medical informatics technology companies</td>
</tr>
<tr>
<td>Dan Van Ostrand</td>
<td>VP R &amp; D</td>
<td>UniPixel Founder, Founder &amp; CEO of startups, Engineering Manager at Informatics General, Magnavox, Teledyne and Jet Propulsion Laboratory.</td>
</tr>
</tbody>
</table>
Financial Highlights and Capital Structure

**Current Financial Status**
- Raised $22M in capital during 2007
- $6M Cash and Equivalent on hand 6/30/08

<table>
<thead>
<tr>
<th>Ownership Structure (M shares)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Insiders and 5% owners</td>
<td>3.8</td>
<td>5.8%</td>
</tr>
<tr>
<td>Other common shareholders</td>
<td>19.1</td>
<td>29.3%</td>
</tr>
<tr>
<td>Preferred B (Tudor Investment Corp.) (common equivalent)</td>
<td>16.0</td>
<td>24.5%</td>
</tr>
<tr>
<td>Preferred C (Merrill Lynch PCG) (common equivalent)</td>
<td>7.1</td>
<td>10.9%</td>
</tr>
<tr>
<td>Options and Warrants</td>
<td>19.2</td>
<td>29.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>65.2</strong></td>
<td></td>
</tr>
</tbody>
</table>
Roadmap Beginning January 2008

• 2008
  – Demonstrate Full Motion Video*
  – Demonstrate Opcuity Fingerprint Resistant Film*
  – Design* and Achieve commercial grade Light Injection System performance
  – Demonstrate dot matrix/segment display capabilities*
  – Engage*, Negotiate* and Execute an Opcuity™ FPR supply agreement or license
  – Select* TMOS-Segment display development and commercialization partner/JDA & License
  – Engage*, Negotiate* and Execute two Joint Development Agreements with LCD manufacturers that lead to limited exclusive licenses for the manufacturing of TMOS displays.
    • Mobile display – Active Signage
  – Engage*, Negotiate* and Execute a Development and Commercialization Agreement with a semiconductor partner
  – Sign two Opcuity Active Layer Film supplier agreements in parallel with the licensing of the TMOS display technology to LCD manufacturers.

• 2009 and beyond
  – License multiple LCD manufacturers for:
    • Mobile applications, Monitors, TVs, Automotive, Military, Medical and Active Signage display market segments.
    • Sign Opcuity Active Layer Film supplier agreements in parallel with licensees.
    • List on the NASDAQ

* = Already accomplished  * = In process
UniPixel – Investment Thesis

• $100+ Billion Market – Flat Panel Color Display
• TMOS – Disruptive yet Enabling Technology
  – Superior quality, performance and cost
• Small and Large Screen Applications
  – Handhelds, Notebooks, Televisions, Digital Signage
• Partnered with Industry Leaders
• Supported by Significant Investors
• Comparable Display Company
  – Universal Display Corporation (“PANL”)

• Accomplishing Milestones on Schedule
Questions?

Thank you.

UNXL – Simply Superior