Outline of Presentation

IP Trends in Mature Markets
New IP Players and Strategies
Monetization Paths and Expectations
Non Practicing Entities
Electronics Mega-Trends

Major Markets mature in developed countries
Dominant technologies become entrenched
Dominance of Asian hardware fabs and contract manufacturers
Continuing consolidation of players
Focus on cost down, production scale, and geographic expansion
IP Trends in Mature Markets

- Dominant companies build gigantic patent portfolios
- Cross licensing by leaders create barrier to new entries
- Major IP litigations require big bucks and take forever
- FTC filings become preferred litigation theater
Despite IP Obstacles, Innovation Continues

• Continuous improvements in video quality
  ▫ Contrast, black level, color gamut

• Constant cost down of >10% per year
  ▫ Ever larger panels with higher definition
  ▫ Higher resolution images in smaller sizes

• Improved ergonomics and user friendliness
  ▫ Touch screens and enhanced graphical interfaces

• Wide spectrum of sizes and performance
Competition Shifts to New Features

• Lower Power Consumption
  ▫ LED Backlights
  ▫ Dynamic Contrast and Local Dimming

• 3D fails to sustain big screen growth in 2010
  ▫ 240 Hz frame rate; fast switching makes shutter glasses a standard
  ▫ LGE and others continue to promote patterned micropolarizers
  ▫ Autostereo remains a dream

• Flexible Displays
  ▫ Technology push fails to gain tractions
Quest for Alternative Technologies

• OLED
  ▫ Allure of simple display structure and potential lower costs
  ▫ Stable and reliable materials and processes prove difficult

• eBooks
  ▫ Will consumers opt for Kindle or iPad in the long term
  ▫ Full color video or monochrome?

• Long and Risky Path to Commercialize New Displays
  ▫ Both eInk and OLED approach 20 years of development
  ▫ Many other simpler technologies continue to struggle
    • 3D, Micropol, haptics, personal displays, HUDs, etc. etc.
Display IP Players and Strategies

The IP Landscape
Major Players
Classes of Players and New Middle Men

• **Research and development from an array of sources**
  - Five major LCD manufacturers dominate cost down IP
  - Tens of LCD supply chain companies
  - R&D companies develop technology for licensing
  - Universities and Research Institutes foster innovation
  - Start up companies and inventors pursue breakthroughs

• **IP middle men acquire portfolios of patents**
  - Strategies range from licensing to assertion
  - New business strategies include defensive IP collaborations
IP Landscape Segments

- Mega-IP Aggregator
- IP Developer Licensors
- Core Players
- Hi-Tech Startups
- Trolls
- Materials Supply Chain
- System Branders
Display Core Companies, the Big 5

- **Samsung**
  - Leading TV brand with full spectrum of LCD production capability

- **LG Display**
  - Top LCD technology developer and leader across the size spectrum

- **Sharp**
  - Top TV and mobile LCD producer with WW brand recognition

- **AUO**
  - Number 1 display technology and production company in Taiwan

- **Chimei Innolux**
  - Merger gives CMI scale and reach to achieve core company status
Leading Display Tech/Manufacturing Companies

- Other LCD Technology and Manufacturing
  - Epson, TMD, Other smaller Asian companies, Emerging Chinese players

- Major Supply Chain Companies
  - Corning, Asahi, DNP, Toppan, 3M, FujiFilm, Sumitomo, Nitto Denko, SKC, Toray, Teijin, Merck, Chisso, Applied Materials
Leading Brander Technology Companies

- **TV and Gaming Set Branders**
  - Sony, Toshiba, Microsoft, Nintendo, Apple?

- **Monitor, and Notebook Branders**
  - Apple, Toshiba, HP, Dell, Asus

- **Cell Phone, Smart Phone, and Mobile Branders**
  - Apple, Google, RIM, Nokia, HTC, Motorola, LGE, Samsung, Sony
# IP Mega Aggregators

<table>
<thead>
<tr>
<th>Company</th>
<th>Founded</th>
<th>Patents</th>
<th>Key Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intellectual Venture Partners</td>
<td>2000</td>
<td>30,000</td>
<td>Intel, Microsoft, Nokia, Sony</td>
</tr>
<tr>
<td>Open Innovation Network</td>
<td>2007</td>
<td>Linux</td>
<td>IBM, NEC, Sony, Philips</td>
</tr>
<tr>
<td>RPX</td>
<td>2008</td>
<td>1,500</td>
<td>IBM, Cisco, Epson, LGE, Panasonic, Sony, HP, InFocus, Sharp</td>
</tr>
<tr>
<td>Round Rock Research</td>
<td>2010</td>
<td>4,500</td>
<td>Micron</td>
</tr>
</tbody>
</table>
## Display Technology Developers/Licensors

<table>
<thead>
<tr>
<th>Company</th>
<th>Primary Technology</th>
<th>Display Technology</th>
<th>Sales ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualcomm</td>
<td>Cell chipsets</td>
<td>IMOD MEMS</td>
<td>$10,780M</td>
</tr>
<tr>
<td>Dolby</td>
<td>Audio, Cinema</td>
<td>Local Dimming</td>
<td>$720M</td>
</tr>
<tr>
<td>Rambus</td>
<td>Bus Interface Solutions</td>
<td>LED Lighting</td>
<td>$247M</td>
</tr>
<tr>
<td>Immersion</td>
<td>Haptics</td>
<td>User Interface</td>
<td>$29M</td>
</tr>
<tr>
<td>RealD</td>
<td>Cinema 3D</td>
<td>Consumer 3D</td>
<td></td>
</tr>
<tr>
<td>SEL</td>
<td>IC, Solar, CGS, OLED, Flex</td>
<td></td>
<td>$500M</td>
</tr>
</tbody>
</table>
Universities and Research Institutes

- **US Universities**
  - Kent State LC Institute, Univ of Central Florida, Univ of Colorado, UCLA, Brown, Renssalaer
  - Flex Display Center of Arizona State Univ.

- **European Institutions**
  - Fraunhofer: HHI, IPMS, IAO, IOF
  - Ghent
  - Russia
Monetization Paths

Licensing, Sale, and Litigation Paths
Factors That Determine IP Value
Realistic Expectations
Paths for Non-Practicing Inventors

• Licensing
  ▫ Requires marketing, legal, collection, and enforcement infrastructure
  ▫ Long term multi-year commitment of more than ten years
  ▫ Patents must withstand test of time and repeated challenge

• Litigation
  ▫ File infringement litigation then license; common patent troll strategy
  ▫ Substantial up front costs even with contingency litigation compensation
  ▫ 2-5 years to complete program

• Sale of Patent
  ▫ One time deal with troll, licensing agent, or strategic tech player
  ▫ Limited returns but low risk and faster turn around

• Joint Licensing
  ▫ Partnering with industry leader to support licensing and share royalties
Paths for Manufacturers and Sellers

- **Cross Licensing**
  - Common practice in electronics industry to avoid costly litigation
  - Difficult to establish fair and reasonable royalties for small players

- **Licensing of Standards**
  - Pooling of IP relating to industry standards (for example MPEG-LA)
  - Organizers of standards and pools usually get dominant share

- **Litigation**
  - Expensive and long path taken by industry leaders against each other

- **Investment in Patent Aggregation Pools**
  - New form of IP investment/insurance popularized by IVP

- **Joint Licensing**
  - Partnering with NPEs to support licensing programs and share royalties
Determinants of IP Value

- Market success and infringement
- Breadth, depth, and number of filings and claims
- Priority date and validity of patents
- Strict adherence to all legal and procedural policies
- Clear ownership and financial position of owner
Determinants of IP Value

- Size of potential markets for applications
- Value chain level of first infringement and exhaustion
- Current and forecasted level of infringement
- Number of patents citing invention
- Potential impact of technological innovation
- Profit and cost structure of industry of application
## Sales Value of Patents

- Result from Ocean Tomo open auction

<table>
<thead>
<tr>
<th>Auction</th>
<th>Total Proceeds</th>
<th>Lots Sold</th>
<th>Lot Average</th>
<th>Max Lot</th>
<th>Lots &gt; $1M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2009</td>
<td>$2,900,000</td>
<td>6</td>
<td>$483,333</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Fall 2008</td>
<td>$12,842,500</td>
<td>48</td>
<td>$267,552</td>
<td>$1,815,000</td>
<td>1</td>
</tr>
<tr>
<td>Spring 2008</td>
<td>$19,629,500</td>
<td>53</td>
<td>$370,368</td>
<td>$6,600,000</td>
<td>4</td>
</tr>
<tr>
<td>Fall 2007</td>
<td>$11,599,500</td>
<td>38</td>
<td>$305,250</td>
<td>$1,925,000</td>
<td>2</td>
</tr>
<tr>
<td>Spring 2007</td>
<td>$11,429,000</td>
<td>34</td>
<td>$336,147</td>
<td>$3,025,000</td>
<td>2</td>
</tr>
</tbody>
</table>
# M&A Value of Display IP/Tech Start-Ups

<table>
<thead>
<tr>
<th>Buyer</th>
<th>Bought</th>
<th>Date</th>
<th>Transaction</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVI</td>
<td>eInk</td>
<td>2009</td>
<td>Company</td>
<td>$450 M</td>
</tr>
<tr>
<td>Sumitomo</td>
<td>CDT</td>
<td>2007</td>
<td>Company</td>
<td>$285 M</td>
</tr>
<tr>
<td>Qualcomm</td>
<td>Iridigm</td>
<td>2004</td>
<td>Company</td>
<td>$170 M</td>
</tr>
<tr>
<td>Dolby</td>
<td>Brightsides</td>
<td>2007</td>
<td>Company</td>
<td>$28 M</td>
</tr>
<tr>
<td>Rambus</td>
<td>Global Lighting</td>
<td>2009</td>
<td>Company</td>
<td>$26 M</td>
</tr>
<tr>
<td>Fuji Film, et al</td>
<td>Vitex</td>
<td>2006</td>
<td>Investment</td>
<td>$24 M</td>
</tr>
<tr>
<td>Nitto Denko</td>
<td>Optiva</td>
<td>2005</td>
<td>IP Portfolio</td>
<td>unknown</td>
</tr>
<tr>
<td>Samsung</td>
<td>Liquivista</td>
<td>2011</td>
<td>Company</td>
<td>Unknown</td>
</tr>
<tr>
<td>Samsung</td>
<td>Clairvoyant</td>
<td>2008</td>
<td>IP</td>
<td>Unknown</td>
</tr>
<tr>
<td>Real D</td>
<td>ColorLink</td>
<td>2007</td>
<td>Company</td>
<td>unknown</td>
</tr>
<tr>
<td>Real D</td>
<td>StereoGraphics</td>
<td>2005</td>
<td>Company</td>
<td>unknown</td>
</tr>
<tr>
<td>Polatechno</td>
<td>Moxtech</td>
<td>2004</td>
<td>Company</td>
<td>Unknown</td>
</tr>
</tbody>
</table>
Realistic Expectations for Success

• Licensing Program
  ▫ Successful LCD Program: NPV of $10M to $50M
  ▫ Initial deals in year 2-3
  ▫ Stable run rate in year 5-8

• Sale of Patent
  ▫ Range of $100,000 to $2,000,000
  ▫ Six to eighteen months

• Litigation
  ▫ Partnership with IP owner, contingency law firm, and investor
  ▫ Range of $500,000 to $50,000,000 in 2 to 5 years shared by partners
  ▫ Plan is to file and then settle before trial
Patience and Perseverance

• Patent Prime of Life: The Second Decade
  ▫ Outcome of filings and examination are known
  ▫ Prior art is clear
  ▫ Clear assessment of commercial success and value
  ▫ Plenty of time to monetize before end of life

• Patents and Start Ups
  ▫ Product sales trump patents in early years
  ▫ Proof of Concept necessary to open the door
  ▫ Joint development programs and licensing necessary to penetrate LCD supply chain
IP Strategy Issues for the Teens

Core Players: Confrontation or Cooperation?
Aggregators: License, Insurance, or Litigation
NPEs: Sell, License, or Assert
Core: Confrontation or Cooperation

- Litigation dominant between Core Players since 2000
  - Clash of the Giants: Samsung vs. Sharp; LGD vs/ AUO & CMO
  - Outcomes highly risky and take years to finalize
  - Will assertion era come to an end in 2010?

- Forms of Cooperation in the new decade
  - Cross licensing
  - Standardization
  - Pooling patents for licensing
  - Purchase of next gen IP for sharing among Big 5
  - Balkanization: Korea, Japan, Taiwan, China
About Fergason Licensing

- Fergason Licensing offers a full spectrum of services to support technology and innovation companies in commercializing their inventions in worldwide markets through licensing of intellectual property and joint development.

- **Services include:**
  - Opportunity analysis and formulation of IP strategy
  - IP marketing, licensing, licensee servicing enforcement, and audit management
  - Marketing and negotiation of joint development agreements
  - Marketing and sale of IP

- [www.fergasonlicensing.com](http://www.fergasonlicensing.com)

- **Contacts**
  - Charles W. McLaughlin (chuck@fergasonlicensing.com)
  - Jeffrey K. Fergason (jeff@fergasonlicensing.com)
### FL Licensees for SSBC™ IP

<table>
<thead>
<tr>
<th>Company</th>
<th>Licensed Since</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panasonic</td>
<td>2001</td>
<td>LCDTV and Projectors</td>
</tr>
<tr>
<td>LG Display</td>
<td>2003</td>
<td>All LCD Modules</td>
</tr>
<tr>
<td>Seiko Epson</td>
<td>2004</td>
<td>Projection</td>
</tr>
<tr>
<td>Sharp</td>
<td>2006</td>
<td>All LCD Modules</td>
</tr>
<tr>
<td>Samsung</td>
<td>2006</td>
<td>All LCD Modules</td>
</tr>
<tr>
<td>Chinontec</td>
<td>2006</td>
<td>Projectors and Engine</td>
</tr>
<tr>
<td>Sanyo</td>
<td>2007</td>
<td>Projectors</td>
</tr>
<tr>
<td>JVC</td>
<td>2007</td>
<td>LCDTV and RPTV</td>
</tr>
<tr>
<td>Sony</td>
<td>2008</td>
<td>LCDTV, RPTV, Modules</td>
</tr>
<tr>
<td>AG Neovo</td>
<td>2008</td>
<td>LCD Monitors</td>
</tr>
<tr>
<td>Viewsonic</td>
<td>2008</td>
<td>LCD Monitors</td>
</tr>
<tr>
<td>Lite-On</td>
<td>2008</td>
<td>LCD Monitors</td>
</tr>
</tbody>
</table>
## FL Licensees for SSBC™ IP

<table>
<thead>
<tr>
<th>Company</th>
<th>Licensed Since</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epson Imaging Devices</td>
<td>2008</td>
<td>Mobile LCD Modules</td>
</tr>
<tr>
<td>AUO</td>
<td>2008</td>
<td>All LCD Modules</td>
</tr>
<tr>
<td>Sharp</td>
<td>2008</td>
<td>Mobile LCD Modules</td>
</tr>
<tr>
<td>NEC</td>
<td>2009</td>
<td>LCD Monitors and Projectors</td>
</tr>
<tr>
<td>Philips</td>
<td>2009</td>
<td>LCDTV, Monitors and Projectors</td>
</tr>
<tr>
<td>Funai</td>
<td>2009</td>
<td>LCDTV</td>
</tr>
<tr>
<td>Hitachi Display</td>
<td>2010</td>
<td>Mobile LCD modules</td>
</tr>
<tr>
<td>TPV</td>
<td>2010</td>
<td>Televisions and Monitors</td>
</tr>
<tr>
<td>Wistron</td>
<td>2010</td>
<td>Televisions and Monitors</td>
</tr>
<tr>
<td>Qisda</td>
<td>2010</td>
<td>Monitors</td>
</tr>
<tr>
<td>Tatung</td>
<td>2010</td>
<td>LCD Monitors</td>
</tr>
<tr>
<td>Eizo Nanao</td>
<td>2010</td>
<td>LCD TVs &amp; Monitors</td>
</tr>
</tbody>
</table>