

## Key Thoughtz:

- **Legacy transfers:**  
AMLCD remains dominant
- **Commodity races:**  
“There’s plenty of room at the bottom”
- **Shotgun marriages:**  
ministers or shareholders become active
- **Ubiquitous displays:**  
messages become visible everywhere
- **Blurring edges:**  
market segments become less distinct
- **Service goods:**  
technologies become utilities
- **Biologic interfaces:**  
users touch and become recognized
- **New competitors:**  
offshore suppliers become competitors

## Strategic Scenarios 2010

A better year with lingering problems

**T**actics tell you how to fight, strategy tells you where and when. A good strategist therefore considers a range of possible futures. While war analogies can be overdone, this one seems appropriate as we head into 2010. What future conditions might your business face?

“If you don’t test your strategy, your competitor will.”

BizWitz recommends using scenarios as means of describing possible futures and imagining possible responses by your firm. Scenarios are stories people tell themselves about the future, so all companies have at least one: their official strategic plan. While a single plan helps people concentrate their efforts, it might not help people respond effectively to conditions that differ from the plan’s assumptions.

We therefore offer the following scenarios for your consideration. In some cases, these stories explain the past and describe the present. In other cases, these stories are less certain to come true but are useful tests for your display-related business plans.

## Legacy Transfers

*Imagine a future in which national policies stimulate investment in AMLCD capacity and companies in that country expand to the point of diminishing returns on capital. AMLCD area prices are halved every three years as producers attempt to keep fabs full and drive competitors out of the market. After several rounds of this, national policy shifts to aid higher-value industries and producers sell their technology to new entrants in other countries who restart the cycle. AMLCD prices continue declining, chasing other technologies out of the market.*

BizWitz believes this scenario explains the past and describes the future. The basic means and methods of making AMLCD remain unchanged over the past decade. There have been advances such as one-drop (cell) filling, but these sustained producers for the most part and preserved their ability to leverage technologies already in use. As we enter the next decade, new entrants in China will use back-channel etch (TFT) processes similar to those developed in Japan twenty years ago. Those means and methods moved to Korea, then Taiwan and now they are moving to China where capital is cheaper.

The following trends or factors appear to be natural implications of this scenario.

- The price per square inch of AMLCD area will continue declining about 20% a year.
- AMLCD producers will re-purpose older assets to serve niche markets. AMLCD will compete with other display technologies in most market segments.
- Alternative technologies will face higher entry barriers as AMLCD prices decline and set expectations in most markets.
- Large investments in alternative display technologies will be deferred until AMLCD leaders develop fabrication technologies compatible with, or more cost effective than, their assets in use.
- Commodity price pressures will continue for brands and retailers. They will pile into one product after another (e.g. 3D TV sets) seeking some temporary price premium.

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## Commodity Races

*Imagine markets in which competitors race each other to the bottom, where all products become commodities sold at the marginal cost of production. Competitors do this in hope of capturing market share and obtaining some competitive advantage for their stakeholders (their nations, employees, suppliers or affiliated companies).*

BizWitz believes that display makers have tended to behave this way, which partly explains the history of technology transfer in the industry. The tag line, “There’s plenty of room at the bottom,” comes from an address by Richard Feynman, a famous physicist who talked about the potential for nanotechnology. In this case, we use his phrase to indicate that there is plenty of demand for low-priced products.

Companies who assume that they can drive competitors out of the market then enjoy the advantage of market share often find there is little profit to enjoy or that competitors have matched their prices and there is no profit to enjoy. Such dynamics present particular difficulties for venture-funded firms when they enter industries driven by oriental values rather than occidental ones.

Potential implications for our clients include the following.

- Products in which displays are the primary cost factor (e.g. TV) become cheaper.
- Brand and retailer profits decline as they price to preserve market shares threatened by new entrants and discounters.
- Sales may be bolstered by rising demand in developing markets as prices decline and spending power rises.
- Producers seek ways out of the commodity trap by designing a variety of products. The diversity increases their average cost but provides brands or retailers with new value propositions for a time.
- Venture-funded firms find it difficult to reach economic scale as oriental firms with less need for profit reduce prices and destroy market value for innovators.

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## Shotgun Marriages

*What if government ministers or company shareholders advocated consolidation in the display industry in order to increase firm values or to preserve jobs and sustain the national economy?*

BizWitz believes that this scenario became evident in 2009 with the consolidation of Chi Mei Optoelectronics and InnoLux Display, which encompasses former combinations of Hosiden and Philips Display, Philips Mobile Display Systems and Toppoly Optoelectronics. In addition, we note significant changes in the management of Chunghwa Picture Tubes that may enable the company’s merger with companies outside the Tatung group.

Technology transfer is one impetus for consolidation. We think there are others such as shareholder or debt holder perceptions of declining profit opportunities. Even before the credit crisis of 2008, bankers and investors began to question if display makers would ever make money. There was evidence of diminishing returns to scale. Merchant panel makers, particularly those in Taiwan, appeared to be on a credit-powered treadmill. We note that new loan facilities were made available to Chimei Innolux after the merger was announced.

Here are some implications clients might consider in their midterm plans.

- Business combinations disrupt the supply chain. Some former suppliers lose orders and some former customers lose sources.
- Repercussions affect other companies in the supply chain as some suppliers lose scale and become less competitive.
- Combinations may cause more display makers to forward integrate. They may become OEM/ODM or brands of their own.
- Forward integration and value creation may sustain established producers as new entrants challenge them in China.
- There may be a tendency to create companies that are “too big to fail.”

## Ubiquitous Displays

*Imagine seeing information displayed everywhere. Windows can show messages, generate electricity and shine at night. Most surfaces are smart surfaces as we expect them to be. Displays evolve from novelties to commodities to utilities. Displays are no longer device specific, they are ubiquitous.*

This scenario can be exciting or threatening depending on your point of view. It is exciting to imagine the global demand for displays of all sizes and shapes. It is threatening to think that such technology will be taken for granted as steel and semiconductors are today. What will create value in such a world?

Ideas in wide circulation include flexible displays that can wrap around corners, our wrists or our wounds (e.g. bandages that monitor healing). Some related attributes are disposability (low-cost) or recyclability. Other ideal capabilities include scalability, very large displays that can turn any wall or conference table into smart surfaces.

BizWitz tends to be skeptical forecasting such developments over the midterm but we offer several positive implications for display-related software or hardware businesses.

- Businesses will need software that adapts content to arbitrary display formats. We think Adobe software and ePub tools are examples of what can be done.
- Advertisers need standardized means of allocating budgets to a variety of media, including out-of-home displays. There is no de facto standard for this today.
- Wireless networks and extended internet addresses might let us redirect any content to any display. This would require new software and hardware infrastructures.
- New business models will arise. Displays and supporting hardware may be leased instead of purchased. Display time may be priced dynamically like airline seats are today. Some functions in the value chain may be consolidated or disintermediated.

## Blurring Edges

*What if there was no hard line between a PC and a TV, between an e-book and a handset, between a game and a workstation? What if the edges marking market segments today became blurred so that your company faces one big market teeming with competitors?*

Companies often base their plans on ways they assume the market is divisible into segments or how it can be so divided. BizWitz is not so sure these are safe assumptions as advances in technology blurs the edges.

The only hard distinction we can see that might remain is viewing distance. Products held at arm's length will be closer to the eye than products on a table across the room will be. The handheld display creates more value from smaller pixels than the larger display does. The larger display creates more value from display area than the smaller one does.

In other ways, comfortable concepts of the PC market as distinct from the TV market may fail to describe opportunities or threats over the midterm.

We offer some thoughts for consideration.

- Personal and social activities may become more important distinction than we see between a PC and a TV today. You might edit a photo on one display and view movies on another, or you might not.
- Consumers may accept conventional TV pricing but not PC pricing when evaluating home entertainment systems in the future. The advent of netbooks created new norms.
- Software or subscription subsidies may be one of the few ways to generate sales that sustain product design or production.
- Users may value displays or display-based products more by how they feel looking at the content displayed than by how the display "looks."
- Displays may not preserve much intrinsic value. Parts are parts and value will accrue to other companies in the chain.

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## Service Goods

*Imagine goods not being considered very good at all while services are considered essential. Consumers perceive the value of hardware based on the value of services delivered through or with that device. Most devices are just input/output for the internet.*

BizWitz acknowledges that this scenario is implicit in Ubiquitous Displays but we state it explicitly in case displays are not your main concern. Here, we stress the potential for services becoming the key value propositions for a variety of products.

We think this may transcend the well-known coupling of so-called eco-systems with certain devices such as the App Store with iPhone or Amazon with the Kindle. The embedding of Netflix portals in DVD players may be an example of things to come, as are service-subscription bundled handsets and netbooks.

The rise of mass-market discounters and the rise of service desks in conventional retail is another indication of this scenario's validity. Here are some thoughts on the implications.

- Only devices made at great scale at low cost may succeed as stand-alone products.
- On the other hand, low-tech accessories that provide emotional support to device buyers may offer profit opportunities.
- Walmartification may force conventional retailers to become service providers or branded bundlers of service goods.
- Battles over who gets to charge whom for what will impede market development in some cases. Content may yet be king.
- Expectations of interoperability may make it difficult to preserve brand value based on hardware but enable value creation through plug-n-play products and support.
- Businesses may open their IT systems to employee-owned devices, which could make the B2B market more similar to the B2C market.
- Companies with the best devices may not succeed without the best business partners.

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## Biologic Interfaces

*Imagine scowling at a TV program and seeing the TV switch back to your favorite channel. Facial recognition, haptic feedback and gesture controls have become so much a part of everyday life that display producers have forward integrated to make these features part of their products.*

BizWitz knows that most people discovered the importance of touch panel interfaces years ago. The significance of this scenario is that what we see today is an early stage of development analogous to VGA interface boards in early PC. Such graphics functions were integrated by chip makers over time.

As mentioned under Shotgun Marriages, forward integration may be one of the ways display producers can sustain profits after they reach the point of diminishing returns to scale. In the past, we assume panel makers felt constrained by affiliates who assembled display-based products or by their own lack of expertise. The need for sustainable profit margins may cause them to break through such constraints and integrate forward, however.

- Companies that integrate touch panel components today may face panel makers as competitors tomorrow.
- We may see a spate of acquisitions, mergers or alliances in this part of the market over the next three years.
- The ability to forward integrate may become the main point of distinction among display producers.
- Brands may prefer multiple sources of displays but accept single sources for given products in order to reach price points.
- Brands may guard their ability to design proprietary user interfaces and limit the amount of value delivered by displays. The biologic interaction may become the brand.
- The TV may not remain the center point of value creation in home networks. Expect some experimentation in centralizing or distributing biologic interface hardware.

## New Competitors

*What if your OEM today becomes your competitor tomorrow? Some brands have faced that problem already and more may in the next few years. The transfer of AMLCD technology to China will aid development of competency beyond assembly. As regional brands evolve from ODM in BRIC countries, they will enter developed markets and compete with established brands.*

BizWitz sees this scenario remaining as important over the midterm as it has been in recent years. We have seen global brands such as Philips (now Sony?) fail to sustain their large organizations and license their names to former ODM. We have seen a distributor of AmTRAN (a Taiwanese ODM) make Vizio a top TV brand in the USA. More recently, we saw HTC, a handset OEM rival Nokia and Apple with its Droid smart phone.

We postulate that this trend will encompass component suppliers such as panel makers. For example, the Chimei brand captured more than a 10% share of LCD TV sets in Taiwan this year. Given a stronger affiliation with Hon Hai Group through Chimei Innolux, it seems likely that this brand will enter other markets soon, as Samsung and LG did ten years or more ago.

- More display makers may become TV or PC makers, even brands.
- More OEM/ODM may become regional brands and expand into your markets.
- Retailers may welcome new entrants as means of increasing their negotiating power with established, global brands.
- Conventional retailers with service offerings may strengthen the credibility of new brands among consumers.
- Global brands may rely more on cross-selling their total product line more than ever before.
- Established brands may defend their position by linking on-line support with retailer help desks (clicks-n-bricks). Or, new entrants might try that approach.

## Summary for 2010

*Imagine improving consumer sentiment in the foreground with lingering credit risks in the background against an inflationary landscape. On this stage, display producers may see prices decline less than usual as suppliers constrain utilization and capacity grows slower than it did in 2009. Brands and retailers may see consumer demand in Asia offset slower recovery in Europe and the USA but experience continued price pressure from discounters.*

BizWitz believes that 2010 will be a better year than 2009 was but worries about market reactions if interest rates return to real nominal levels in the second half of 2010.

Considering the display industry in more detail, BizWitz expects China's defense of the yuan will sustain demand growth for LCD TV sets and other display-based products there. AMLCD capacity for TV panels (so-called gen-7 and larger substrate fabs) will rise 25% to 30% over 2009 but less than the 70–75% rise we saw in 2009. While we expect more capacity will be converted from serving PC markets to netbook/handset markets, overall capacity growth will be less than 20%. That is much less than the nominal 50% annual increases recorded for most of the decade.

LED backlit panels will command premium prices again in 2010 and LED chip suppliers will remain capacity constrained. In addition, we expect leading display makers will benefit from rising consumer interest in all things 3D. In concert with leading brands, they should capture some price premiums for such products in 2010.



—by David Barnes for BizWitz LLC, a consultancy specializing in electronic display and imaging business decisions throughout the supply chain from raw materials through retail, worldwide