

**2012 FLEX**  
February 6-9 Flexible Electronics & Displays  
Conference & Exhibition

Presented by: **FlexTech Alliance**

# Select and Focus. Mind the Gap. Share the Risk.

Thoughts on the business of being flexible



**BizWitz**

# Introduction

## Presentation

- **Select and Focus**  
Challenges and opportunities in applications markets
- **Mind the Gap**  
Barriers to flexible electronics success
- **Share the Risk**  
Thoughts on fostering more effective cooperation

## Experience

- **Ian Hendy** [ian.hendy@hendyconsulting.com](mailto:ian.hendy@hendyconsulting.com)  
13 years— Display, Touch & Sensor projects  
16 years— consulting (MBA)
- **David Barnes** [db@bizwitz.com](mailto:db@bizwitz.com)  
15 years— Display & Mat'ls projects  
37 years— semiconductors, electronics mfg
- Cumulative deals > \$12 b

# Select and Focus

- Steer clear of mass markets.
  - PV: annual price trend -18%/Wp
  - Display: annual price trend -20%/m<sup>2</sup>
  - HB-LED: annual price trend -20%/unit
- Seek applications where you create *extrinsic* value, not just intrinsic value (it's printable!).
  - Consider the uncontrollable factors.
  - Select applications incumbents can't serve.

# Displays

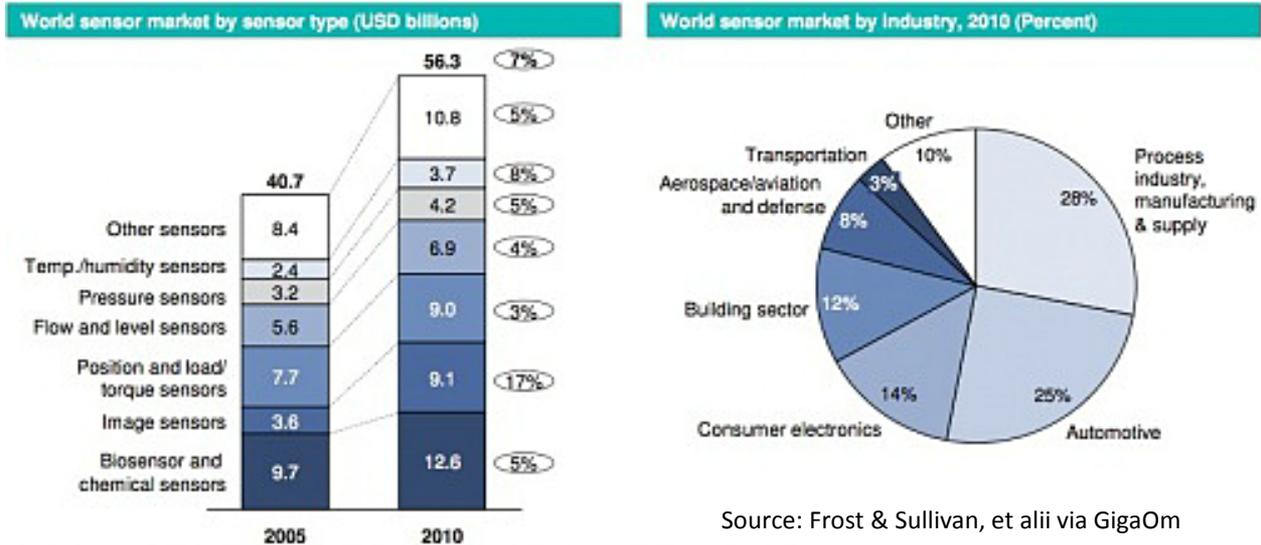
- Displays are an unattractive market only a vertically-integrated leader would love.
- Annual price declines offset annual output gains; margins decline with scale.
- As material traders, display makers are risk adverse but they will risk new technology if it cuts variable costs.
- Inorganics may dominate.



Samsung and its affiliate Cheil Industries are changing the rules by developing an FRP substrate that supports temperatures above the limit of typical plastics for glass lift-off. PET and PEN suppliers have made progress, also, so flexible OLED may be near...

# Packaging

World sensor market, 2005-2010; USD billions

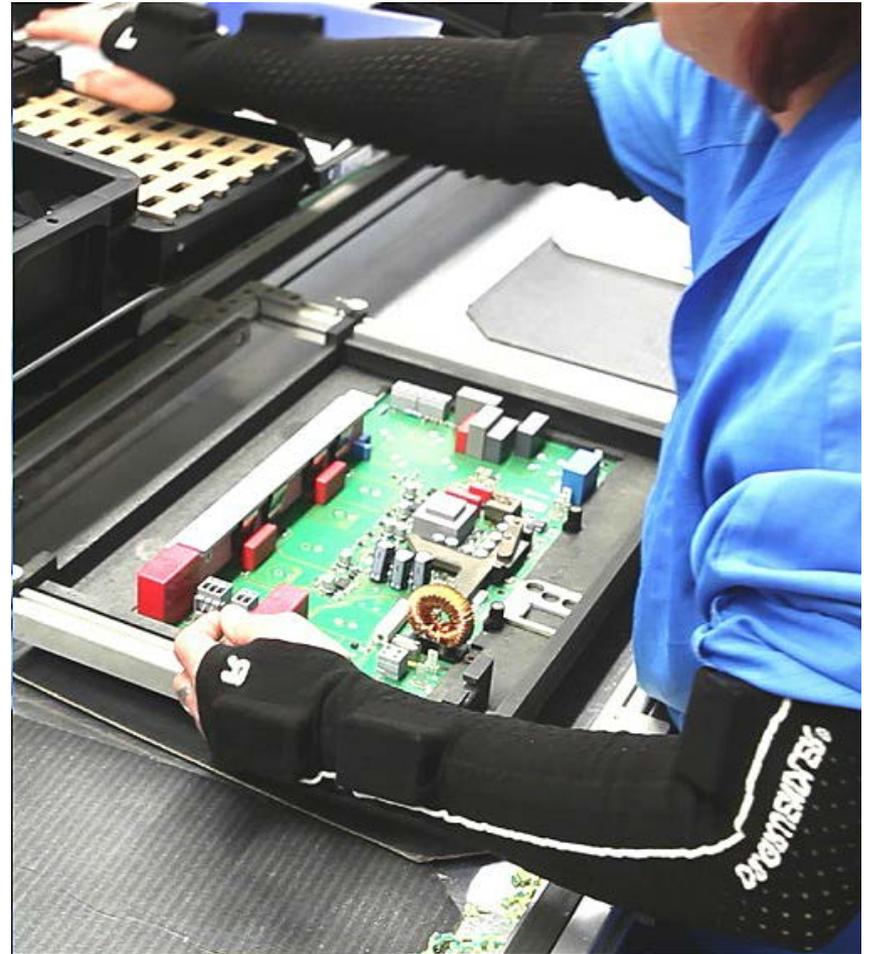


Source: Frost & Sullivan, et alii via GigaOm

- Sensors, a \$10m market may offer the best opportunity.
- Printables are not the only option (test your extrinsic value).
- Costs are king and packagers need to understand the system.

# Wearables

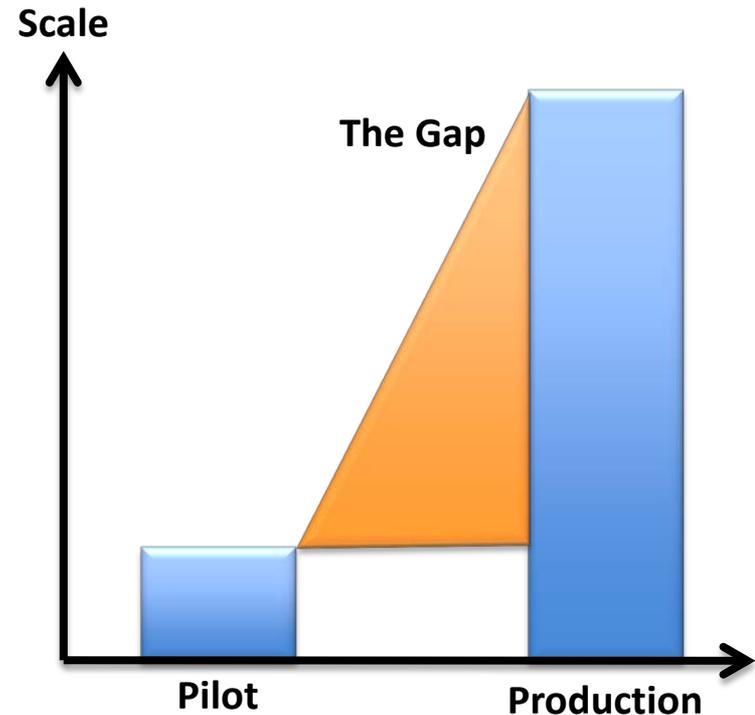
- Mousetraps seeking mice?
- Combining sensors and RF/IR may be a winner if these help solve a real-world problem.
- Beware of forecasts.
- Win the market deal by deal.
- Performance will be key in the early days, then cost
- Inorganic electronics self-assembled on fabrics may be an alternative.



Source: Gizmag, courtesy of Fraunhofer Inst.

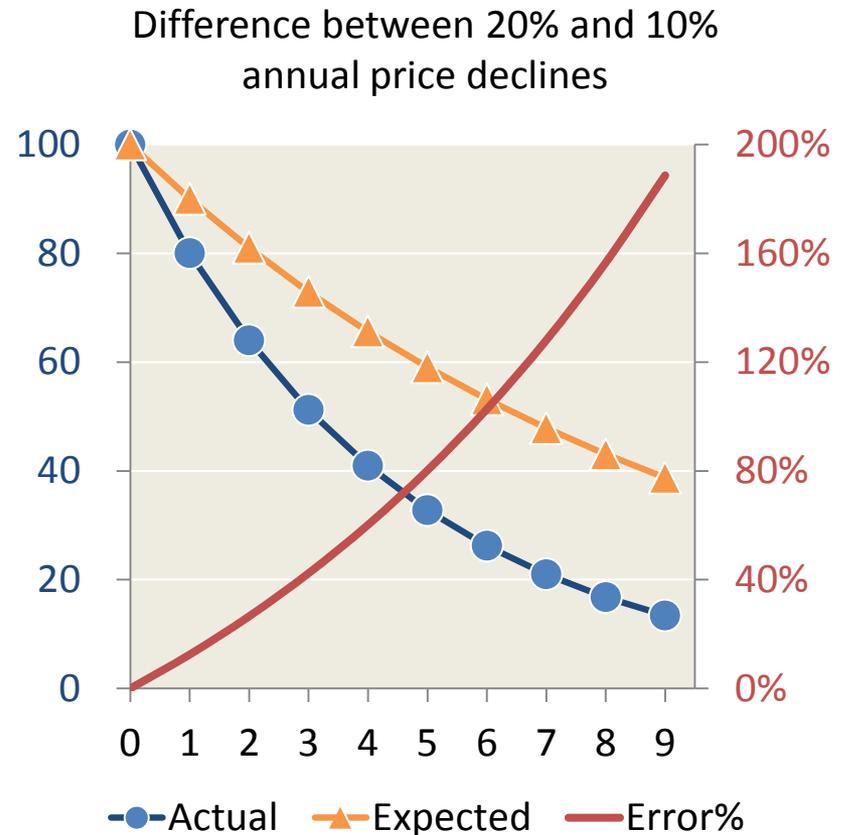
# Mind the Gap

- Surviving scale (growth) means testing your plan before competitors do.
- Any new-to-the-world tech goes from zero to something, a hockey stick chart may be realistic but...
  - Are forecasts magical?
  - Can your secret sauce be used without information?
  - What are you counting on?



# Hitting a Moving Target

- Aim where incumbents are going, not where they are.
- Study historical trends.
- Question forecasts.
- Ask yourself, what if we're a few years late?
- Think about industries or markets as snowballs rolling down hill..

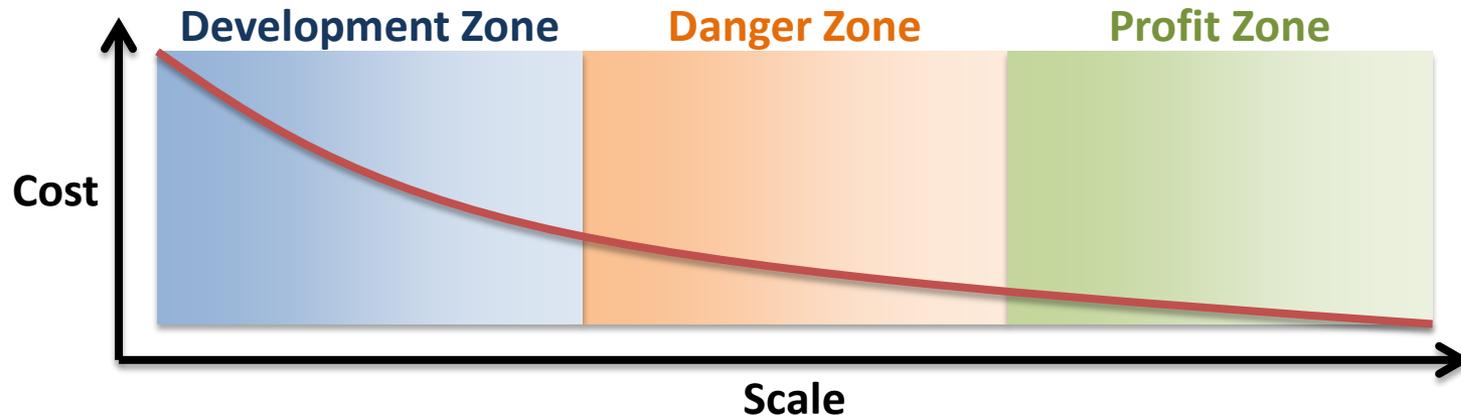


# Keeping Too Many Secrets

- Consider how much your customers and their customers need to know in order to use your product...
- What machine do they pour it into?
- How does that machine work; whose process is it?
- What assembly/conversion follows that?
- How is the product used?



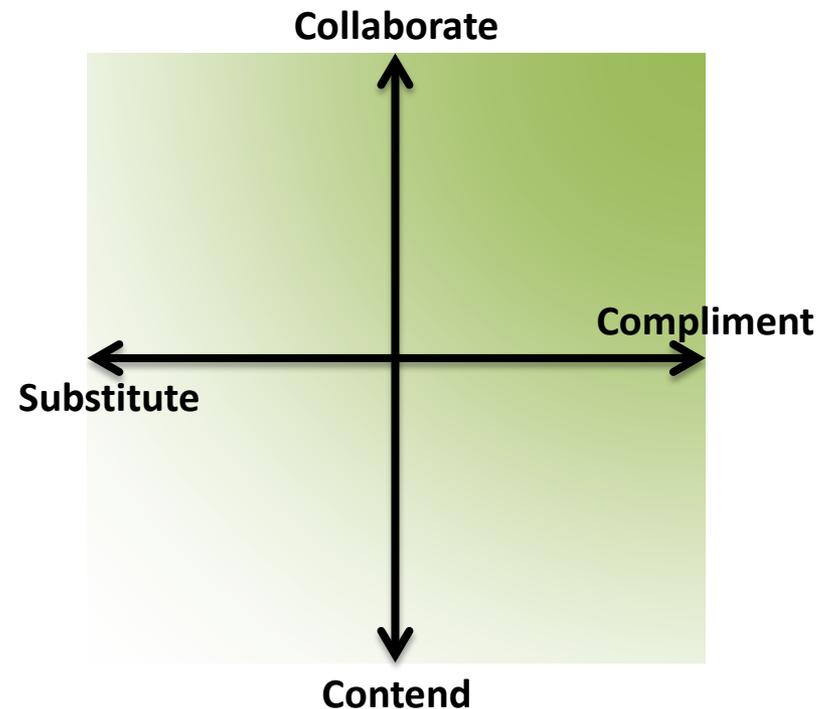
# Surviving the Transition



- Continuous processes imply mass production but you start with pilot lines.
- Pilot lines imply niche products but you need mass markets.
- How do you jump from pilot to production, from development to profit, without slogging through low utilization losses?

# Share the Risk

- Emerging tech companies can try substituting existing materials or complimenting those with new values.
- Innovators can contend with others and horde knowhow or collaborate.
- FlexTech Alliance can be a forum for considering how to share risks as we advance.



# IPR Pools

- Concerns over IPR have slowed adoption in several cases such as OLED, ProCap.
- Creating de jure standards often involves patent pools or non-assertion agreements.
- Pools or other means of bundling knowhow can foster de facto standards, also.\*



\*For an interesting caution, see [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1308997](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1308997) or <http://www.cato.org/pubs/pas/pa508.pdf>

# Platforms

- Consider building platforms instead of drawing roadmaps.
- Collaboration on a common goal will teach us more and be more convincing to others.
- IPR may be preserved and competitive benefits may be obtained with platforms.



"A map is not the territory." — Alfred Korzybski, 1933

# Ambassadors

- Large, vertically-integrated firms engender credibility, but what about ventures?
- Technology ambassadors can stand on platform projects and connect with brands or investors.
- What more can we create through alliance?



There are two ways to slide easily through life:  
to believe everything or to doubt everything;  
both ways save us from thinking.

— Alfred Korzybski

