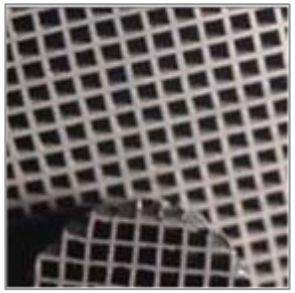
Corning's R&D / Innovation Approach

October 17, 2011
American Institute of Chemical Engineers

Joseph A. Miller, Ph.D.
Executive Vice President
Chief Technology Officer



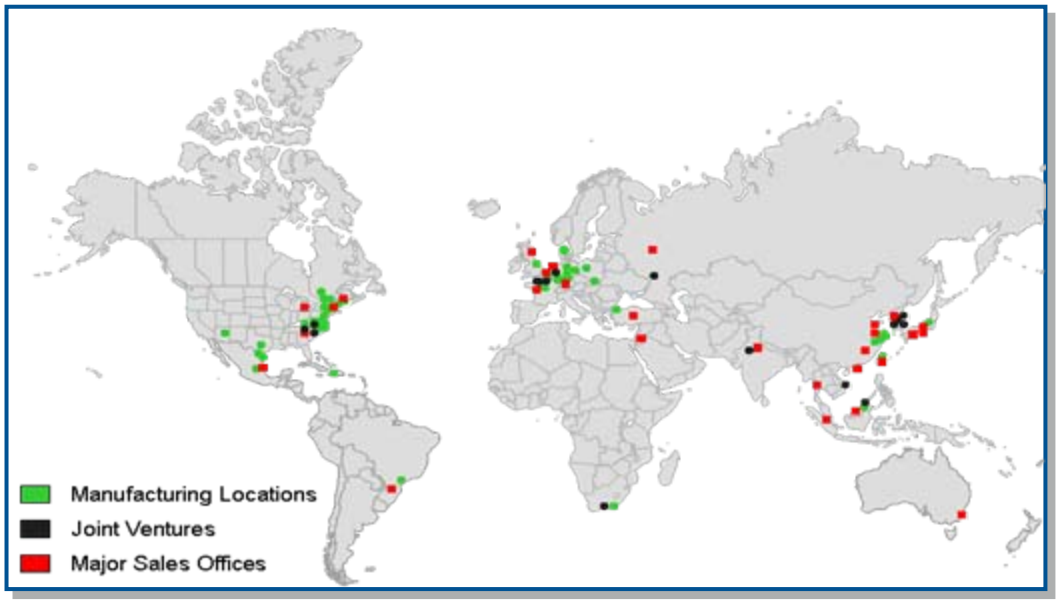
Corporate Snapshot



Corning Incorporated

Who We Are

- Founded: 1851
- R&D Lab Established: 1908
- Headquarters: Corning, NY
- Employees: ~26,000 globally
- Sales: ~$6.6 billion
- Sales (incl. pro rata JV sales): ~$11 billion
- RD&E @ 9% of sales $670 million



- Corning's global operations:

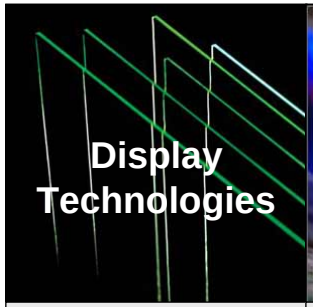
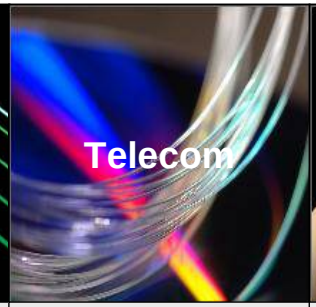
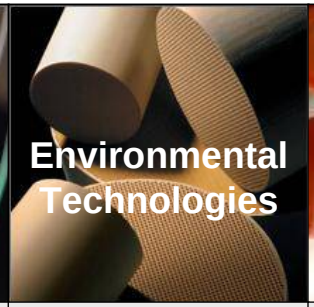
  ~ 65% of revenues from outside North America

  More than 50% of our employees are outside the United States

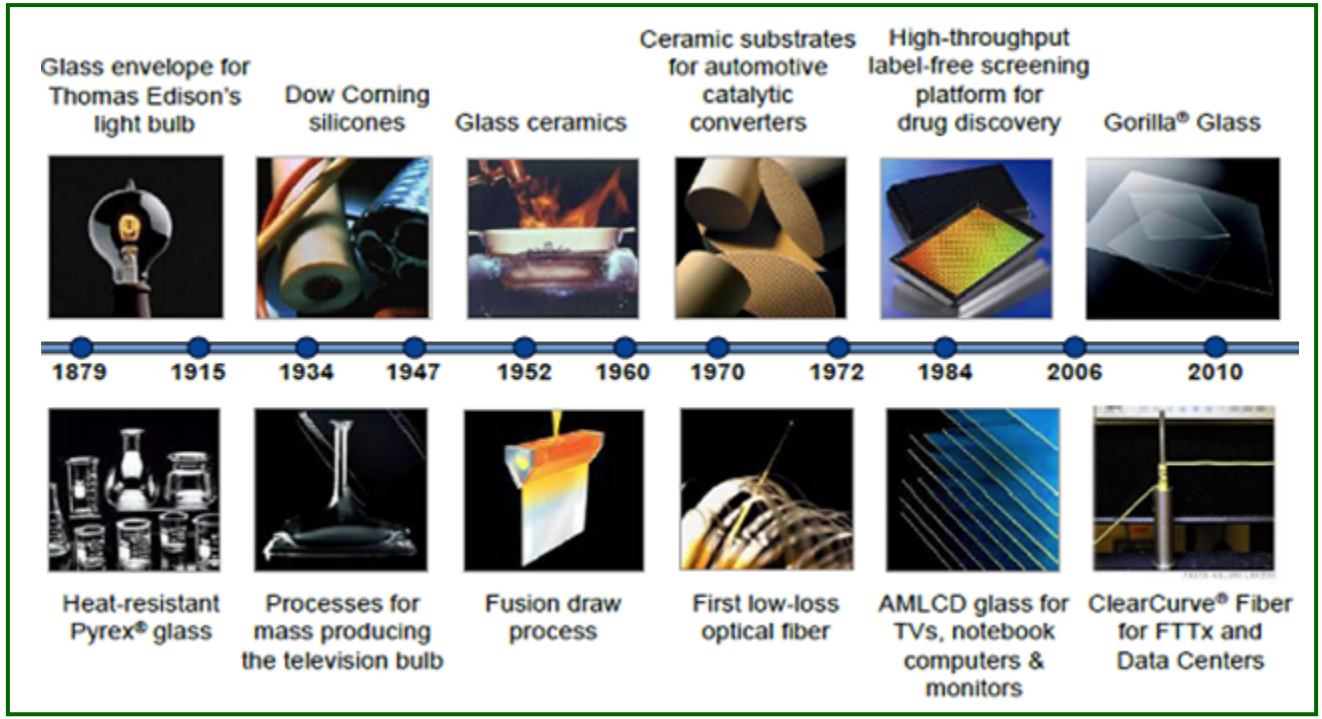
Corning Incorporated

Who We Are

Market Segments

 Display Technologies	 Telecom	 Environmental Technologies	 Life Sciences	 Specialty Materials	 Other Products & Services
• LCD Glass Substrates • LTPS-LCD Glass Substrates	• Optical Fiber & Cable • Hardware & Equipment	• Emissions Control Products – Automotive – Diesel – Stationary	• Cell Culture & Bioprocess • General Laboratory Products	• Advanced Optics & Materials • Display Optics & Components • Semiconductor Optics & Components • Aerospace • Astronomy • Optical Metrology • Ophthalmic • Telecom Components • Specialty Glass	• Display Futures • New Business Development • Drug Discovery Technology • Equity Companies – Dow Corning Corp. – Samsung Corning Precision Glass Company, Ltd – Eurokera, S.N.C

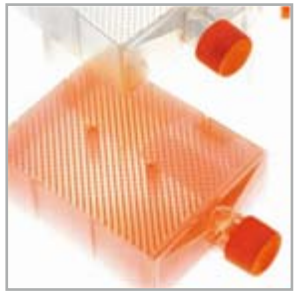
Corning is building from a rich technology history

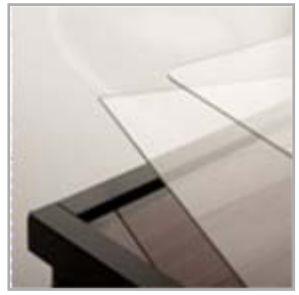


Formal R&D Lab Established:	**1908**
100 Years of Organized R&D:	**2008**
R&D + MT&E Technical Workforce:	**1975**
Centralized RD&E - % in Corning, NY:	**90%**
RD&E @ ~9% of sales (~$8B in 2011):	**$692M**



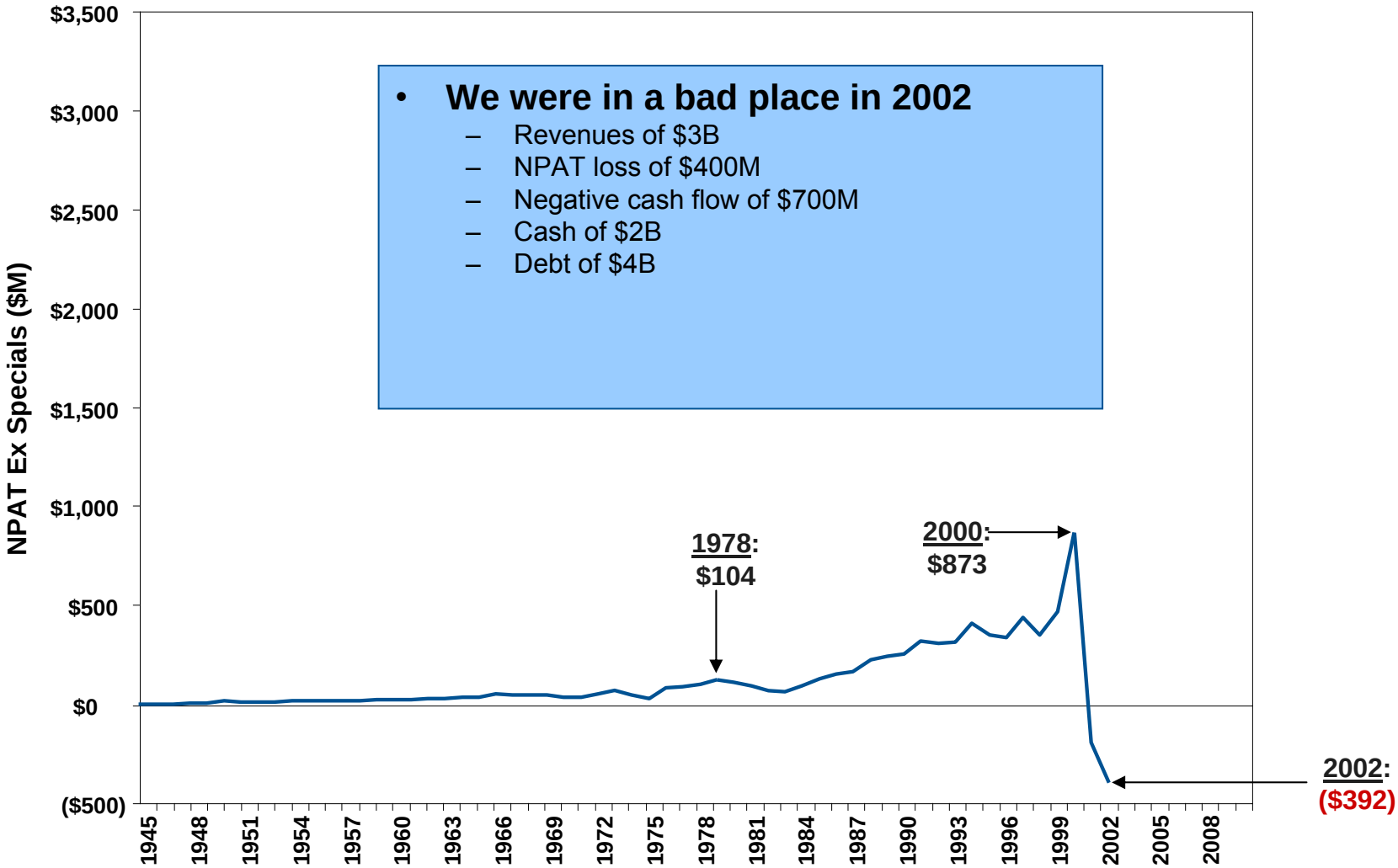
Economic Disruptions Evolution of Strategy



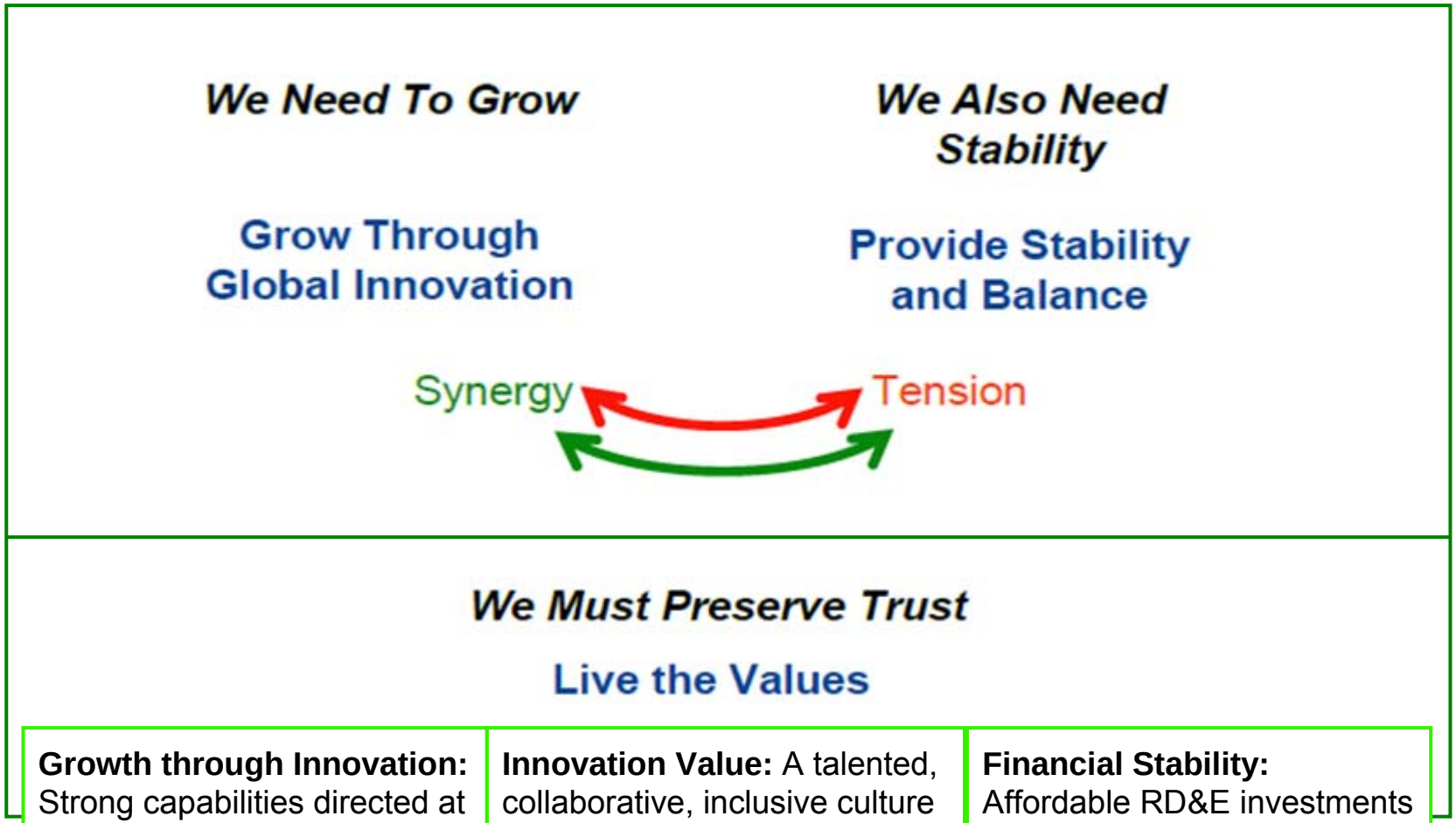


Look where we started 9 years ago

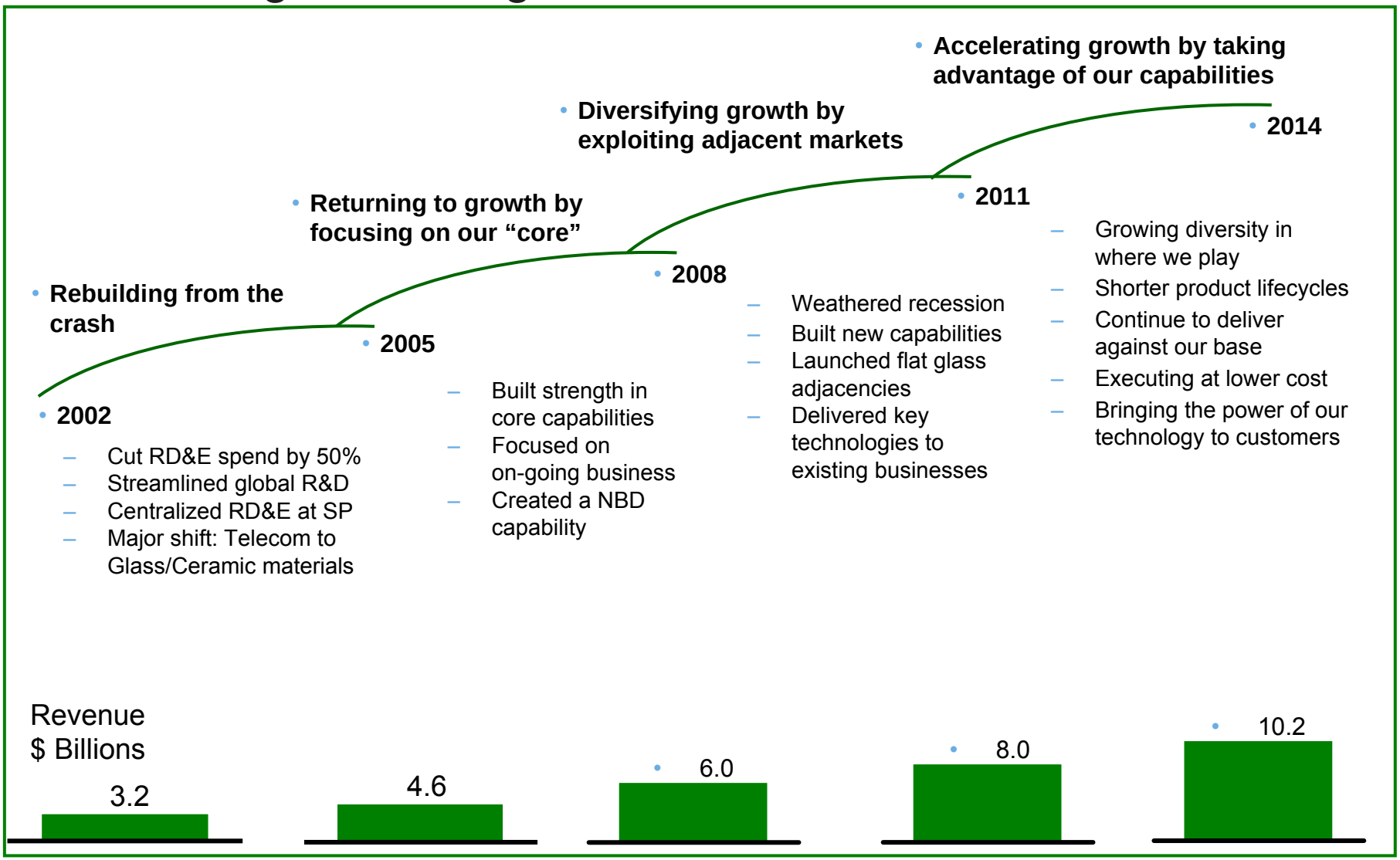
Where have we come from?



Corporate Strategy Framework has proven to be resilient yet adaptable to change…as has been the Technology Strategy

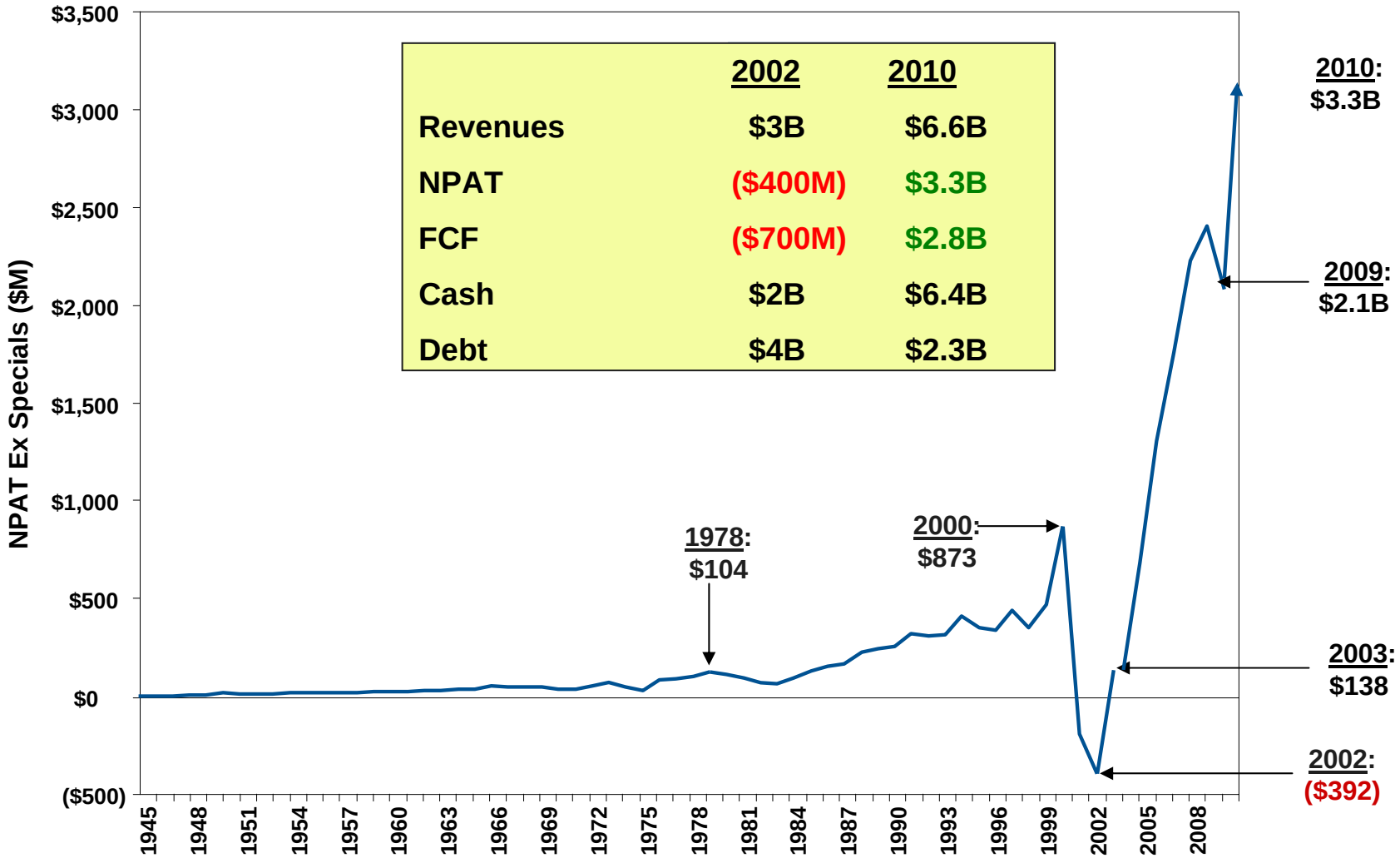


Technology strategy has changed over 10 years as the world and Corning has changed



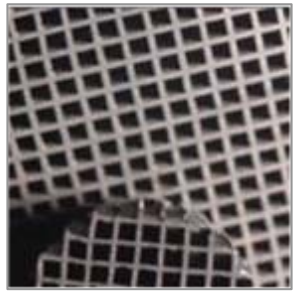
Where have we come from?

We've delivered outstanding financial performance





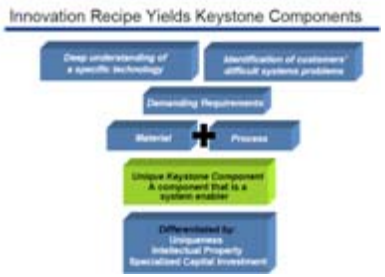
Response to 2001



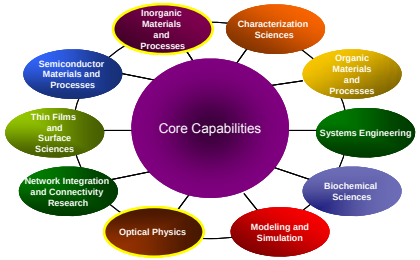
Created a robust set of capabilities, processes and presence

Differentiated set of capabilities in materials science and process technology

Innovation Recipe and Keystone Components



Broad and Deep Core Competencies

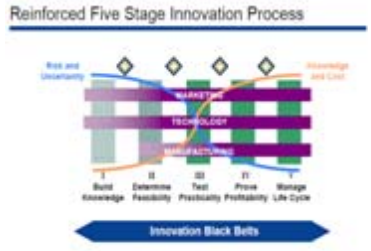


Glass, Optical Physics Process Technology

Disciplined innovation processes

Corporate Innovation Governance (CTC + GEC)

Five Stage Innovation Process



Roadmaps → Portfolio → Execution

Technology footholds in global innovation markets

State-of-Art facilities

Sullivan Park, Corning, NY

Centralized RD&E Offers Proximity to Integrate Technologies Quickly

Europe

Silicon Valley

Asia

…and developed a collaborative innovation culture

Collaborative Culture, Strong Technical Talent, Experienced Leadership

- Focus on knowledge sharing, idea generation, and global teamwork
- Attract and retain the best talent in Materials Science and Engineering: Attrition Rate = 1%
- >500 years technology innovation experience in top 2 levels of CTO's organization

Patent Board ranks Corning as #1 innovator in the Industrial Materials Segment

Industrial Materials Scorecard	2010	2011
Number of Scorecard Companies	113	109
Corning Inc Y-o-Y Rank Change		
Patents Granted Rank	1	1
Technology Strength Rank	1	1
Science Strength Rank	1	1

Solid stable of leading customers, partners and collaborators

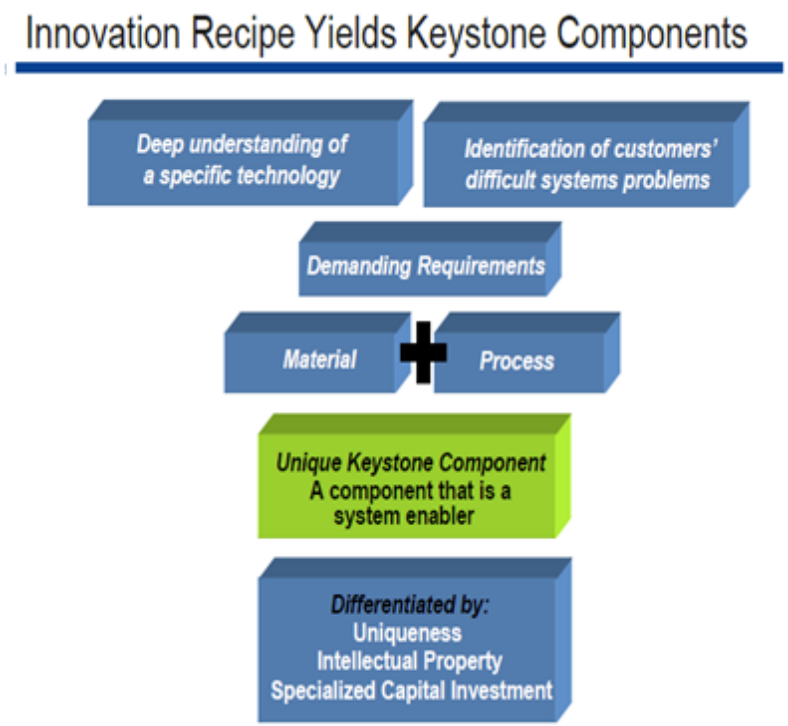
verizon, at&t, Pfizer, Deutsche Telekom, SONY, AstraZeneca, SAMSUNG, SAINT-GOBAIN, DOW CORNING

Coveted University Relationships

Hopkins, Uppsala Universitet, Rutgers, Princeton, Penn State, ITRI Industrial Technology Research Institute, MIT, Shanghai Institute of Ceramics CAS, UCSB, Chinese Academy of Sciences, Stanford, Clarkson University

Our Innovation Recipe and technical competencies have served us well

Innovation Recipe



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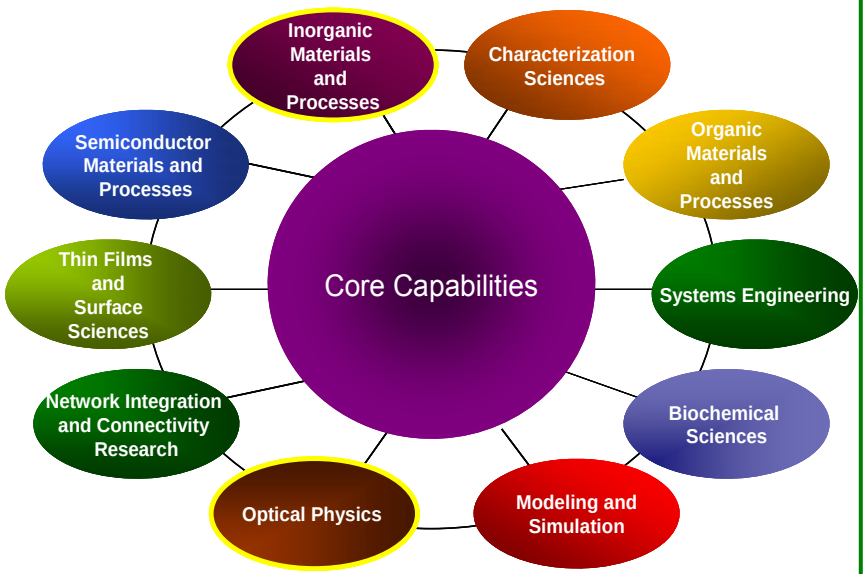
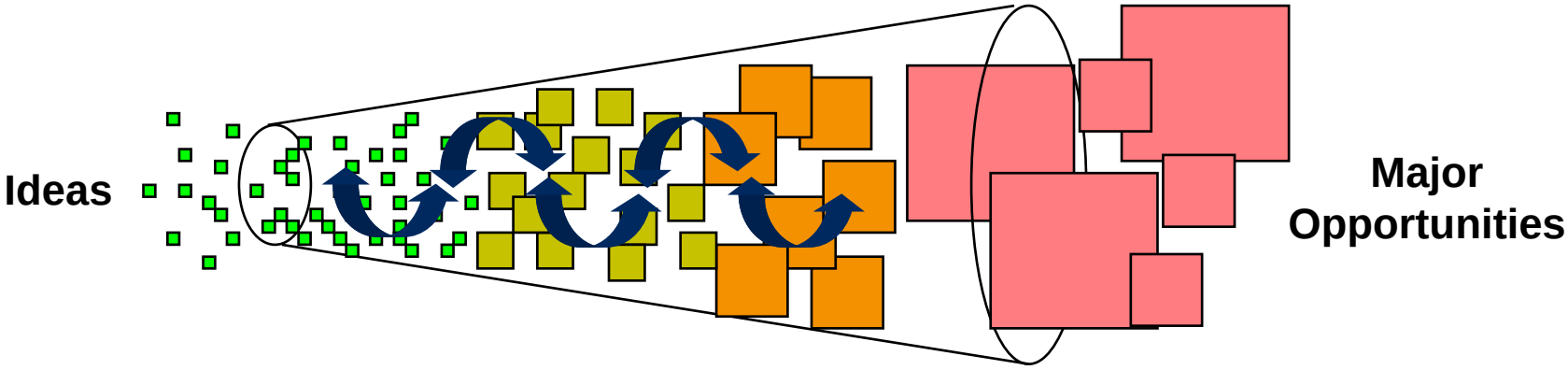


Innovation Portfolio Governance Process



Corporate Technology Council

- Create-the-Next Wave Portfolio
- Evaluate early stage opportunities
- CTO + Research & NBD Leaders
- Meets monthly or as needed

Glass Council

Growth Execution Council

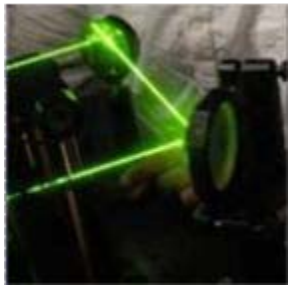
- Invest-in-the-Future Portfolio
- Sort, pace, execute growth programs
- CEO, CTO + CTO Staff
- Meets monthly or as needed

Technology with the Board

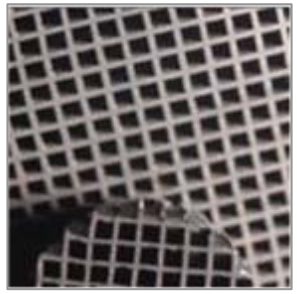
Effective Technology Delivery to Current Businesses from RD&E

Display	Diesel	Auto	Telecom	Specialty	Life Science
• LCD Substrates • Poly-Silicon Substrates for LCD / OLEDs • Thin/Slim Substrate	• Light Duty Diesel Filters • Heavy Duty Diesel • Station	• Next Gen Substrates 600/2 400/3 • Thin Wall / Ultra T ight-off	• FTTx – Fiber, Cable, H&E • ClearCurve - SM tra Low - loss Fiber • Pretium® EDGE - Data Center • IDAS Wireless	• HPFS for Kr sor Products • Precision Optics • Gorilla™ Glass	em Assays • Advanced Cell Growth Surfaces & Vessels

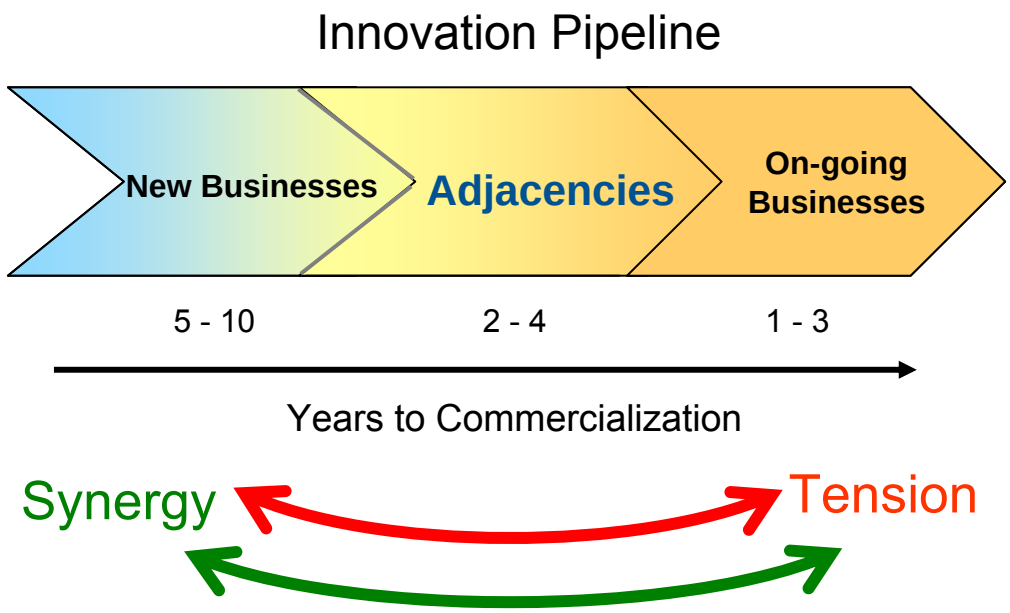
~1 - 2 New Products Each Year for Each Business


Response to 2009



Added A Third Leg



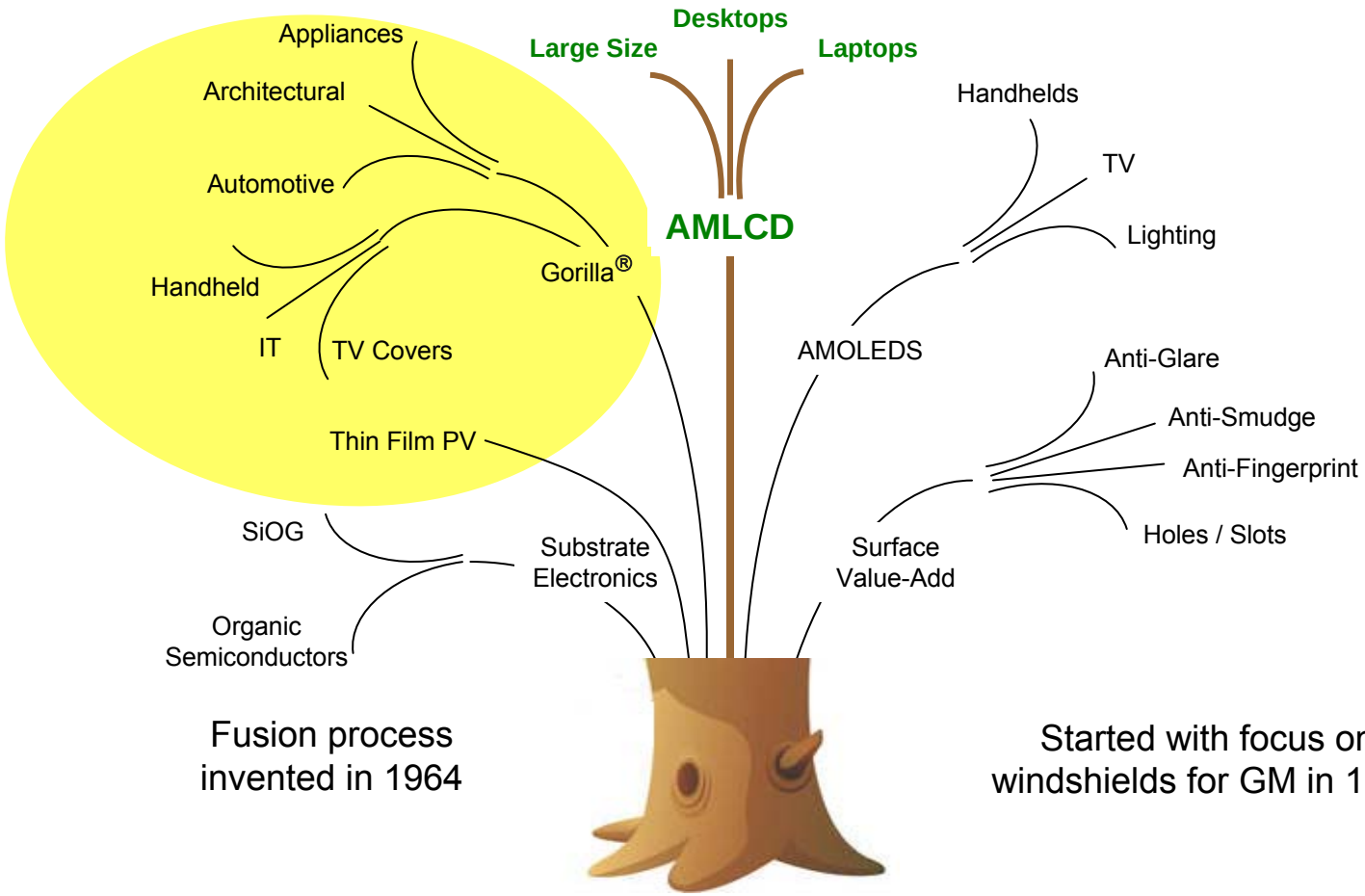
Forced the new leg into the middle

Massive redeployment of resources

We needed to balance our portfolio using existing technology assets

- Specialty glass is our core materials and process capability
- We have substantial glass sheet forming process technology and manufacturing assets to support the Display Technologies business
- We redeployed some of those assets to address adjacent market segments in Consumer Electronics with thin, strong, damage-resistant glasses
- Here's an illustration of the adjacency concept

Illustrative



2011 Strategic Frame

- Corporate technology strategy has three legs
  - Support the ongoing businesses near term
  - Build an adjacency opportunities portfolio medium term
  - Maintain exploratory activities and new business development longer term

- Make room for significant shift to adjacencies
  - Resource the fastest growing segment – glass
  - Restructure New Business Development
    - Prune the New Business Development project portfolio
    - Direct some of those resources to adjacencies
  - Maintain exploratory research to create a pipeline of opportunities

2011 Innovation Portfolio

Near Term (60%)

Major Businesses

- Display
- Diesel
- FTTx & Next-Gen Data Center

Flat Glass Adjacencies

- Gorilla® Glass
  - Handhelds/IT Covers
  - Touch Screens
  - TV Covers
- Thin-Film Photovoltaics

1-3 years

Medium Term (25%)

- Advanced Life Sciences
- Advanced Consumer Electronics and Industrial Applications
- Advanced Wire/Wireless Optical Communications
- Energy & Environmental

2-4 years

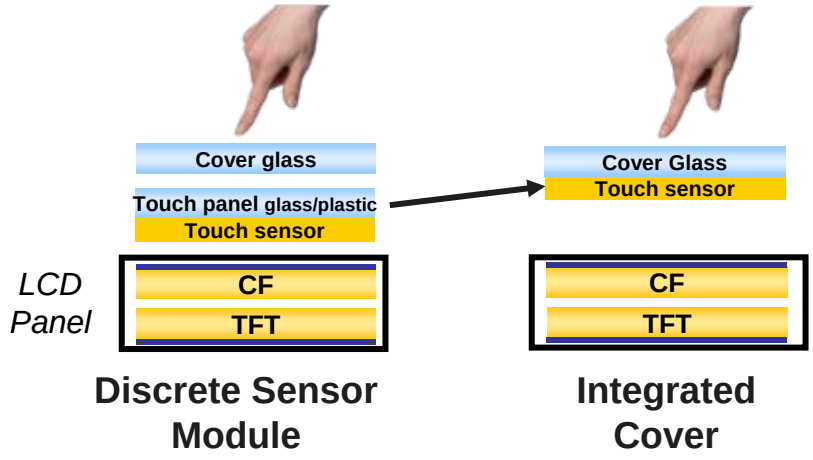
Long Term (15%)

- Organic Semiconductors
- Thermoelectrics
- Advanced Batteries
- CO_2 Sorption
- Ceramic Adjacencies
- Optical Adjacencies

5-10 years

Gorilla® Glass Applications
Touch Devices

- "Projected capacitive" touch devices are changing the game
  - Multi-touch
  - More complex applications and gestures
  - Better optical performance
- Touch device growth accelerating
  - Handheld 20% CAGR
  - Notebook/netbook 60% CAGR
- Potential for sensor integration on cover glass



Gorilla® Glass - The Slate Effect

- Glass will play a significant role in this space
  - Thinner LCD glass
  - Thinner Touch sensor glass
  - Thinner, yet stronger cover glass will be required
- Weight and area increase 5 to 7x on slates vs. handheld devices
- System designers faced with significant challenges
- Gorilla a perfect fit for reliability

Glass Adjacency Innovation Results

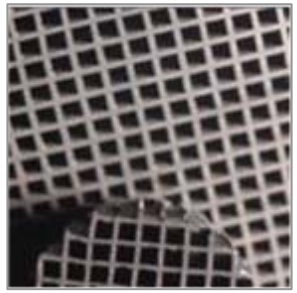
- Gorilla® Glass is exceeding growth expectations
- Growing awareness of glass as a new design element
- More than 40 major brands using Gorilla® Glass
- Next generation technology delivering significant improvements in both performance, capabilities and product possibilities
- With a potential to achieve close to $1B revenues in 2012

Strategic Response Delivered Strong Technology Performance

- Technology leader in each of our market segments
- More than 50% of revenues over last three years from new products
- Strong profitability
- Full pipeline of opportunities
- IP strength



Innovation
What I've Learned



Dynamics of Innovation – Observations

- Innovation is more than a process
- Innovation is an interconnected system
  - Imbedded in culture
  - Linked to strategy
  - Supported by process
  - Directed by leaders
- Talented people enabled to do their best - a critical success factor
- Must go beyond today and look to New Markets / New Businesses

Principles / Philosophy – My Top 10

- Strive for balance
- Pursue multiple avenues to maximize value from R&D investment
- Know “who you are” and what your “recipe” is
- Select early stage projects based on broad criteria together with a large dose of experience
- Mistakes happen – don’t try to eliminate them

Principles / Philosophy – My Top 10

- Great leaps are very risky
- Effective change is evolutionary …requiring continuous evaluation and feedback processes
- R&D must be aligned with business strategy but have enough independence to balance today's needs with the opportunities of the future
- Business silos achieve focus and intensity - their long term preservation leads to a steady decline in technology enrichment, breadth and connection
- Don't forget the social aspects – people have to work well together

Other Important Considerations - I

- The number of ideas for a robust pipeline >>> number than most believe are necessary
- Idea generation must be global with multiple sources and connections
- An unstaffed bench of ideas and opportunities promotes greater realism in assessment of current projects
- Multi-disciplinary teams of competent, motivated people beat individual genius every time … more productive, moderate risk, and compress cycles
- Sufficient rate of new business creation requires both linear and non-linear innovation pipeline flow
- Technology, marketing, manufacturing in it from the start

You get the business where you got the business

More Important Considerations - II

- Balance the deep scientific competencies with deep engineering competencies – both are needed for success
  - Great outcomes from meshing the engineering mindset with the scientific mindset
- Inject advanced engineering into the early stages of the innovation process to create and adapt more effective process invention
  - Process invention has been equally important as material invention for Corning's innovations
  - Corning embedded the advanced engineering group in the R&D center and hired PhD engineers in multiple engineering disciplines
- Reduce the learning cycles on process engineering with pilot scale laboratory operations
  - Goal: Every major manufacturing process platform in the R&D lab

More Important Considerations - III

- Modeling and simulation … and materials and process characterization are critical enablers for materials and process engineering success
  - Yield better fundamental understanding at all levels of the innovation process, create strong IP positions, and often lead to significant cost reduction
- Faster clockspeed innovation opportunities require more technology presence at the customer interface
  - Reduce the learning cycles and requirements iterations
  - Application development, applications engineering and product/process engineering are prominent roles at the customer interface
- Gross margin (GM) performance is really the name of the game
  - GM% is what actually funds RD&E activities
  - Process engineering innovation plays a major role in improving GM% and extending profitable business life cycles

Talent … Talent … Talent

- RD&E people are different than the prevailing business culture
- Continuous infusion of new talent refreshes any organization, especially R&D
- Development of well balanced innovation leadership demands multiple experiences as early as possible
- Teams prevail
- Different talent is needed at different stages
- T-shaped people with depth and breadth

Successful Innovation

The Critical Role of Leadership

- Capabilities, processes, culture, and money are critical
- But it takes *individual will* to lead innovation
  - determination and resolve in the face of uncertainty and change
  - acceptance of failure and comfort with scientific risk
- *And individual skill*
  - the backgrounds of our top leaders must reflect
    - real skills in technology and science
    - understanding – and rich intuition -- of how and why technology creates business value

At the End of the Day……..

- Innovation is Easy to say, Hard to do
  - It is all about the “how”: culture, leadership, talent, and process … and patience … and money

- A balanced innovation investment
  - Grows the existing businesses
  - Creates new businesses

- Still plenty of opportunity for invention and innovation in glass, ceramics and other inorganic materials
  - Especially when integrated with other technologies

CORNING