

# Technology and innovation at GE

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## Caution Concerning Forward-Looking Statements:

This document contains “forward-looking statements” – that is, statements related to future, not past, events. In this context, forward-looking statements often address our expected future business and financial performance and financial condition, and often contain words such as “expect,” “anticipate,” “intend,” “plan,” “believe,” “seek,” “see,” or “will.” Forward-looking statements by their nature address matters that are, to different degrees, uncertain. For us, particular uncertainties that could cause our actual results to be materially different than those expressed in our forward-looking statements include: current economic and financial conditions, including volatility in interest and exchange rates, commodity and equity prices and the value of financial assets; potential market disruptions or other impacts arising in the United States or Europe from sovereign debt issues; the impact of conditions in the financial and credit markets on the availability and cost of General Electric Capital Corporation’s (GECC) funding and on our ability to reduce GECC’s asset levels as planned; the impact of conditions in the housing market and unemployment rates on the level of commercial and consumer credit defaults; changes in Japanese consumer behavior that may affect our estimates of liability for excess interest refund claims (Grey Zone); potential financial implications from the Japanese natural disaster; our ability to maintain our current credit rating and the impact on our funding costs and competitive position if we do not do so; the adequacy of our cash flow and earnings and other conditions which may affect our ability to pay our quarterly dividend at the planned level; the level of demand and financial performance of the major industries we serve, including, without limitation, air and rail transportation, energy generation, real estate and healthcare; the impact of regulation and regulatory, investigative and legal proceedings and legal compliance risks, including the impact of financial services regulation; strategic actions, including acquisitions, joint ventures and dispositions and our success in completing announced transactions and integrating acquired businesses; and numerous other matters of national, regional and global scale, including those of a political, economic, business and competitive nature. These uncertainties may cause our actual future results to be materially different than those expressed in our forward-looking statements. We do not undertake to update our forward-looking statements.

“This document may also contain non-GAAP financial information. Management uses this information in its internal analysis of results and believes that this information may be informative to investors in gauging the quality of our financial performance, identifying trends in our results and providing meaningful period-to-period comparisons. For a reconciliation of non-GAAP measures presented in this document, see the accompanying supplemental information posted to the investor relations section of our website at [www.ge.com](http://www.ge.com).”

“Effective January 1, 2011, we reorganized our segments. We have reclassified prior-period amounts to conform to the current-period’s presentation.”

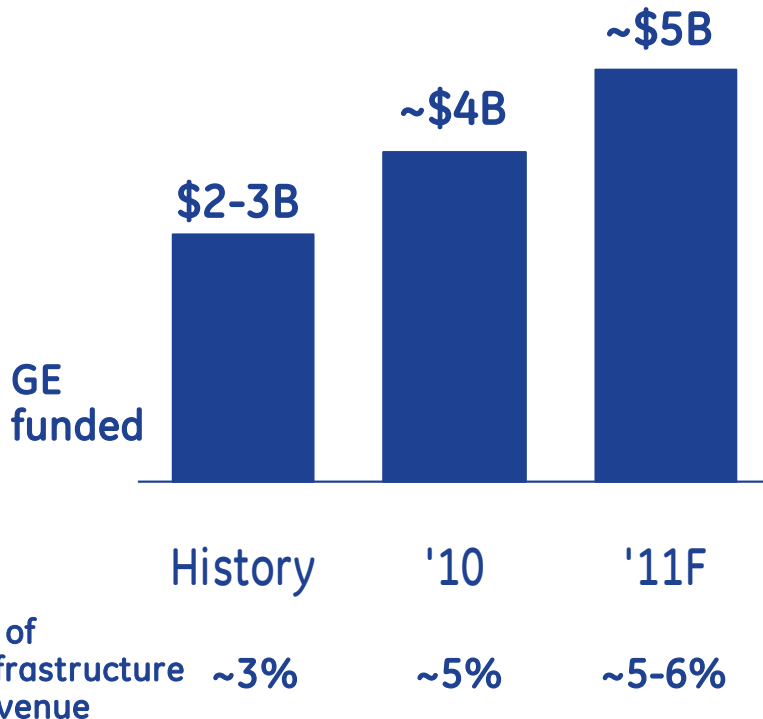
“In this document, “GE” refers to the Industrial businesses of the Company including GECS on an equity basis. “GE (ex. GECS)” and/or “Industrial” refer to GE excluding Financial Services.”



imagination at work

# Launch great new products

## 2X R&D investment



Technology creates long-term value leadership



## Technical foundation for growth

- + Gain profitable share through execution, innovation & more NPI
- + Execute difficult technologies better than competition
- + Reverse innovation ... new products at more price points with higher margins
- + Lower cost & higher margins

### Enterprise value: scale

- ✓ Global research framework
- ✓ Lead in core technologies
- ✓ Partner of choice

# Expanding our global presence



**Manufacturing &  
Software**  
Ann Arbor, MI



**Global Research HQ**  
Niskayuna, NY



**Global Research - Europe**  
Munich, Germany



**China Technology Center**  
Shanghai, China



**Brazil  
Technology  
Center**  
*coming soon*



**John F. Welch  
Technology Center**  
Bangalore, India

# Global Research at GE

- ✓ Deliver core technologies for New Product Introductions
- ✓ Invent new technology and new businesses
- ✓ Harness advanced technologies
- ✓ Spread technology across GE
- ✓ Develop world-class talent
- ✓ Form technology partnerships and foster collaboration

Clear mission ... core to GE



# Energy R&D



# A range of technologies are needed to resolve our energy challenges

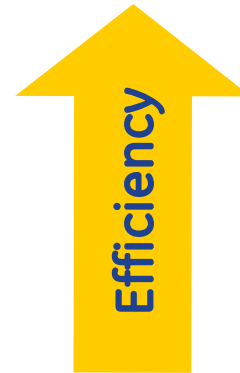
## Diversity



Coal  
Gas  
Wind  
Solar  
Geothermal  
Biomass  
Hydro  
Oil  
Nuclear



## Performance

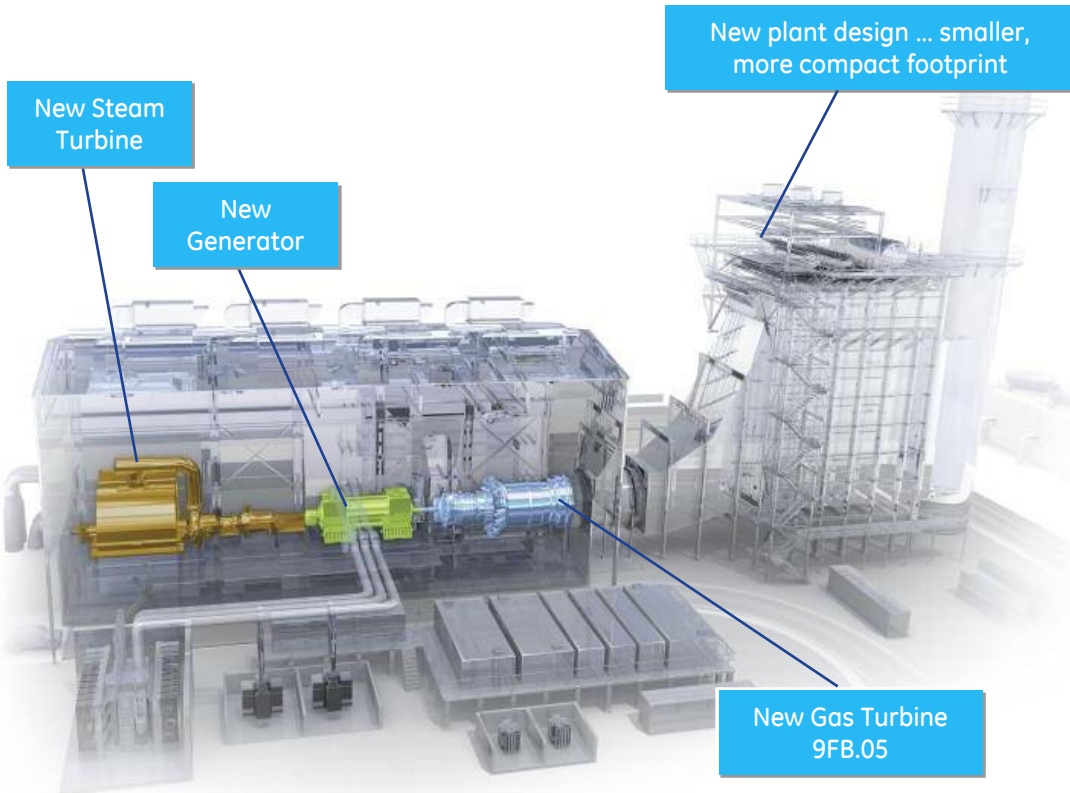


Driving cost of electricity down

Affordable, reliable & environmentally responsible

# Flex Efficiency™ 50 launch

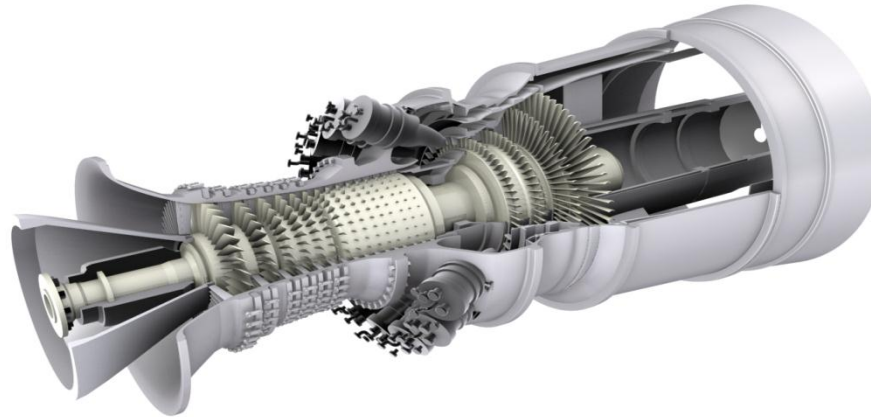
## Efficiency and flexibility



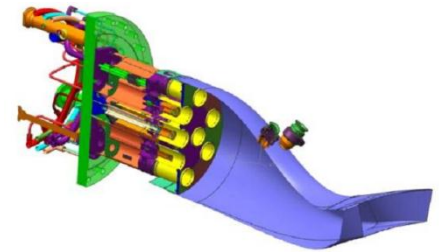
- 61%+ baseload efficiency ... 510MW
- One-button start ... less than 30 minutes
- 51 MW/min ramp rate ... 50% faster than industry benchmark
- Innovative plant design ... two year construction schedule
- 18-year rotor life

# Redefining turbine efficiency

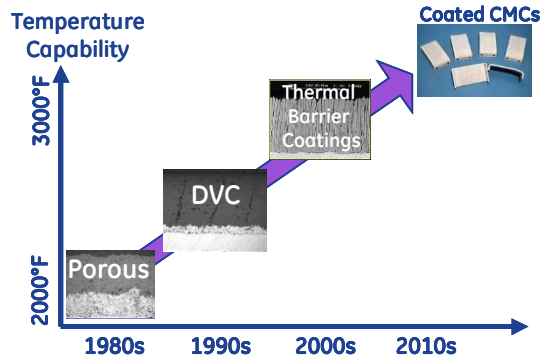
3-D Compressor Aero



Advanced Combustion  
Advanced premixing, axial fuel staging



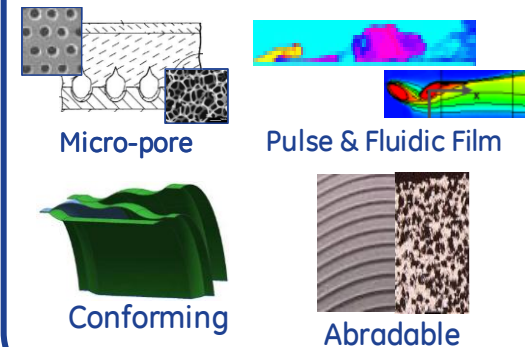
Advanced Thermal Coatings



Ceramic Matrix Composites  
+300°F temperature capability vs. superalloys

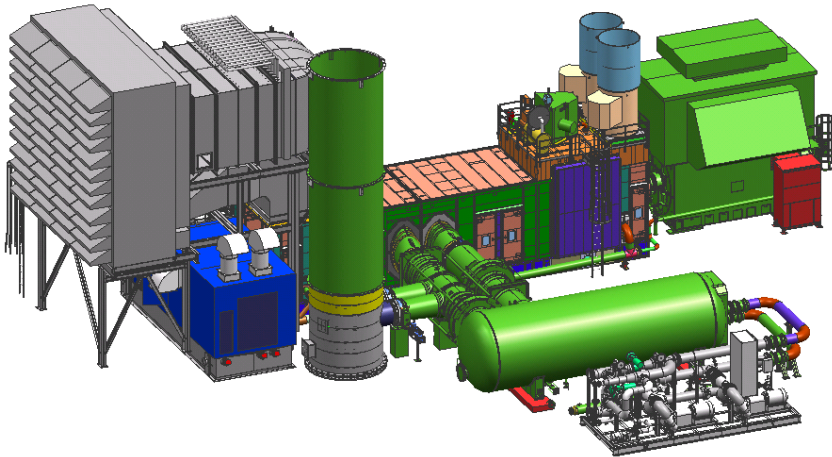
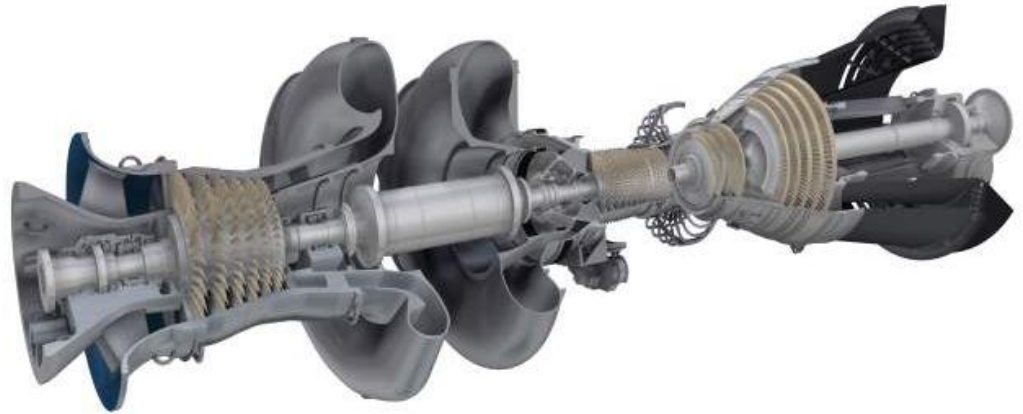


Advanced Cooling & Sealing





# Aeroderivative gas turbine GE LMS100®



- 44% simple cycle efficiency
- Flexible gas turbine
  - High part load efficiency
  - 10 minute start
  - High ramping capability
- Technology to enable more wind and solar power on the grid

## Back-up power for renewables

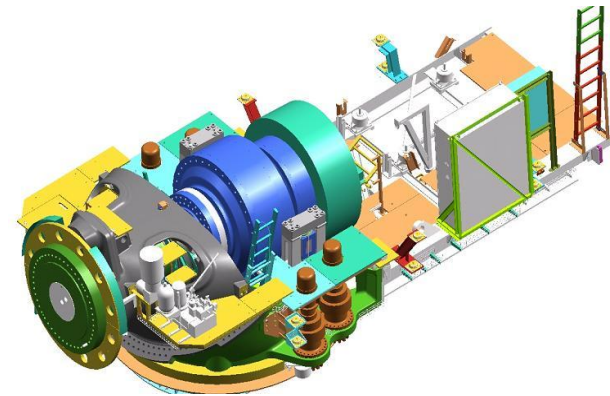
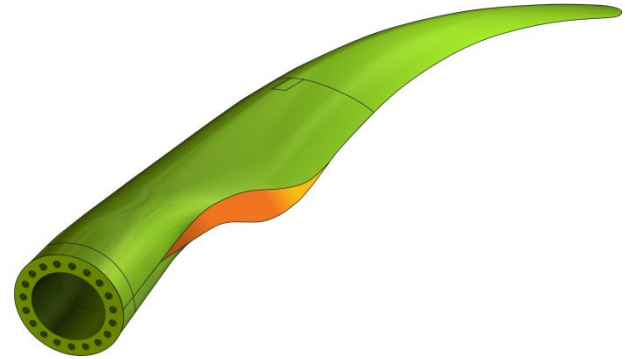
# Taking wind to the next level

**Longer blade ...** New composite core with aero elastic design, for 8% power increase

**Smaller Drivetrain ...** improved reliability with ~20% mass reduction for ~0.5% AEP increase

**Power electronics ...** 50% increase in power density, with ~0.5% reduction in losses

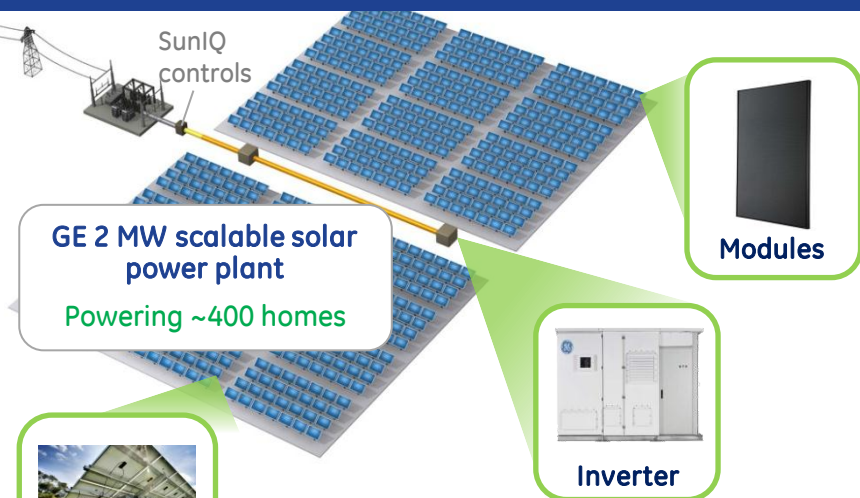
**Model based control ...** ~1% AEP increase, 10% reduction in loads and expanded operation envelope



## Driving cost leadership onshore, expanding offshore

# Differentiating large scale solar

## Utility scale solutions



Racking & wiring

- Thin film efficiency excellence
- Superior energy capture
- Smarter grid integration
- Proven power electronics
- Faster installation

## Commercial rooftop solution



- Lightweight, high eff. thin film module
- Rugged system design with no roof penetration
- Modular and scalable; enhanced inverter portfolio

**Building on 100+ years of power generation expertise**

# Subsea technology ... pipeline for new oil production

- Move oil processing from the surface to the seabed floor
- Double amount of recoverable oil from 35% to 70% in existing wells ... access new, untapped reserves
- Driving remote, monitoring & diagnostic (RM&D) technologies for increased safety and reliability



**Seafloor processing**

# Healthcare Solutions

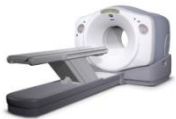


# Broad focus... technology throughout

## Imaging



CT



PET/CT

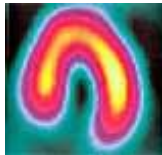


MRI



X-ray

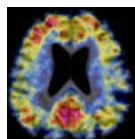
## Imaging Agents



X-ray/CT



MRI



PET

## Radiopharmacy



Cyclotrons



Generators



TRACERlab



Automated  
Radiochemistry

## Life Sciences



Bioprocess

## Protein Analysis



Cellular Analysis



Stem Cell  
Production

## Clinical Systems



Ultrasound



Monitoring



Life Support



Interventional

## Services & Consulting



Hospital Services



TRACERcenter



Education



Courses

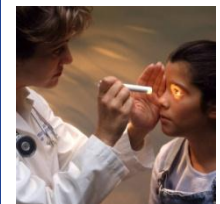
## Healthcare IT



Imaging  
Solutions



Enterprise  
Solutions



Physician Office  
Solutions

## GE Healthcare Portfolio

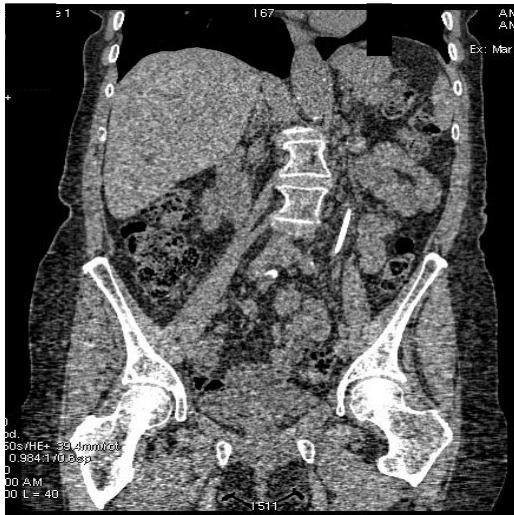
# Computed Tomography

Improved image quality, lower dose

## Filtered Back Projection

Basic reconstruction... used for the past 30+ years

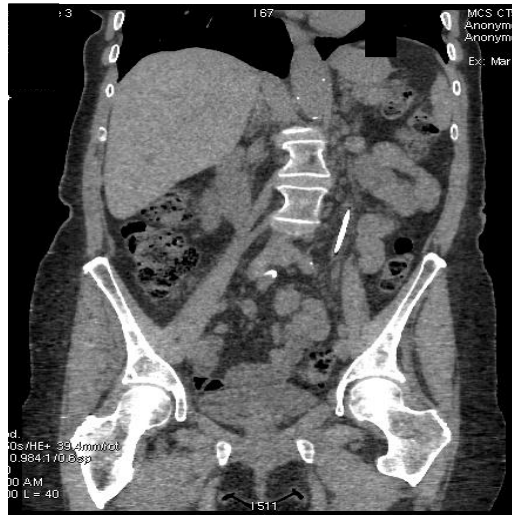
Limited dose reduction opportunity



## ASiR™

Statistical iterative image reconstruction

Improved image quality at lower dose\*



## Veo™

Full model-based image reconstruction

Exceptional image quality at the even lower dose\*

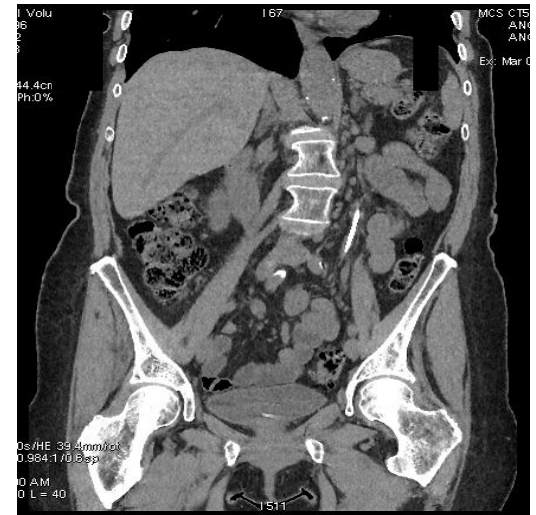


Diagram compares 3 reconstruction methods currently applied by GE Healthcare. \*Image quality measured as image standard deviation.

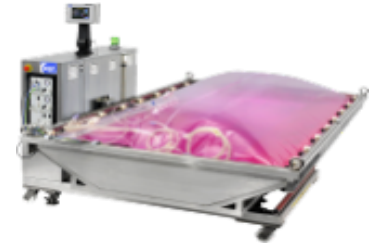
# 10 years of investments resulting in 4X dose reduction

# Cell Therapy

Taking the next strides in enabling cell therapy

- Access and penetration of future clinical markets by “designing-in” technologies into translational & clinical research
- GEHC to provide therapy-agnostic, regulatory compliant processing products for cell expansion & harvesting

Isolation

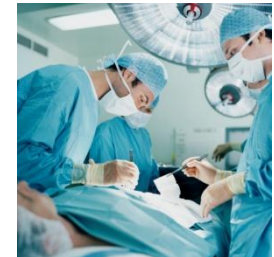


Expansion

Concentration



Administration



# Digital Pathology

## 1650s - Today



Tissue on glass slides  
viewed and diagnosed  
under microscope

## Tomorrow



Pathologist diagnoses  
via digital image

## Improves

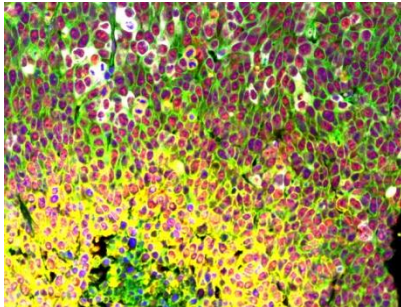
- Pathologist Productivity
- Collaboration
- Accuracy
- Speed of Result
- Computer aided diagnostics



# Molecular Pathology

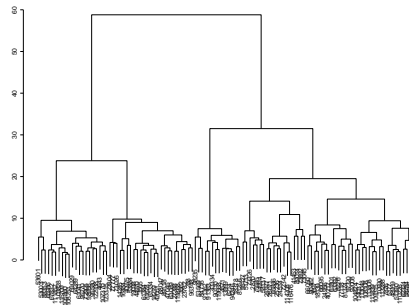
Interrogating multiple biomarkers

Simultaneous  
staining



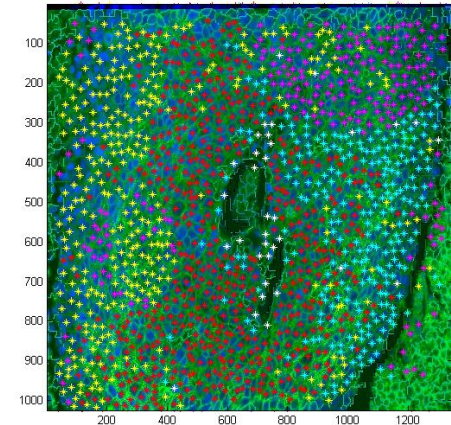
+

Bioinformatics



=

Molecular Patterns

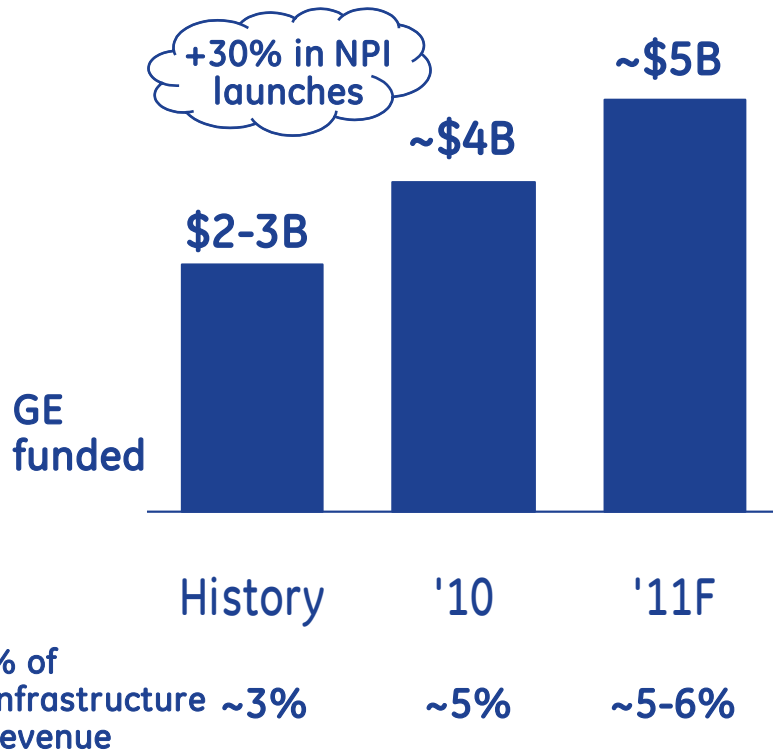


- Drug development
- Companion diagnostics
- Prognostic markers/disease staging



# Launch great new products

## 2X R&D investment



- ✓ Strengthen competitive position
- ✓ Higher margin rates
- ✓ Market expansion

## Technical investment = growth

### Key launches

Energy	✓ HD gas turbines	✓ Smart Grid
	✓ Solar	✓ Distributed energy
	✓ Controls	
O&G	✓ Subsea	✓ Shale gas
Healthcare	✓ DI share	✓ Localized NPI
	✓ HCIT	✓ Pathology
	✓ New tests/tools	
Aviation	✓ GENx	✓ LEAP-X
	✓ Business jets	✓ Avionics
Transportation	✓ Mining	✓ Tier 4
	✓ Battery	✓ Global locos
H&BS	✓ New appliances line	✓ "Green" lighting

**~5-10% organic orders growth in '11**



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