
Six Sigma at GE Appliances

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- More than 13,000,000 appliances per year
- Hotpoint, GE, GE Profile, Monogram
- 50,000 employees, worldwide
- Products:
 - Refrigerators
 - Ranges
 - Dishwashers
 - Laundry products
 - Microwave ovens
 - Air conditioners
 - Water products
 - Speed cooking ovens



Late 1995: GE Corporate initiative launched

- MBBs trained by Harry, corporate
- MBBs train BBs, make business aware

1996: BB driven manufacturing project focus

- dpmo and savings driven, “leap of faith”
- MAIC methodology
- 40% of IC determined by Six Sigma activity

1997: GB driven projects spreading from manufacturing

- Huge training effort, all exempt by end of 1998
- \$ focus

Define **What is the scope of the problem?**

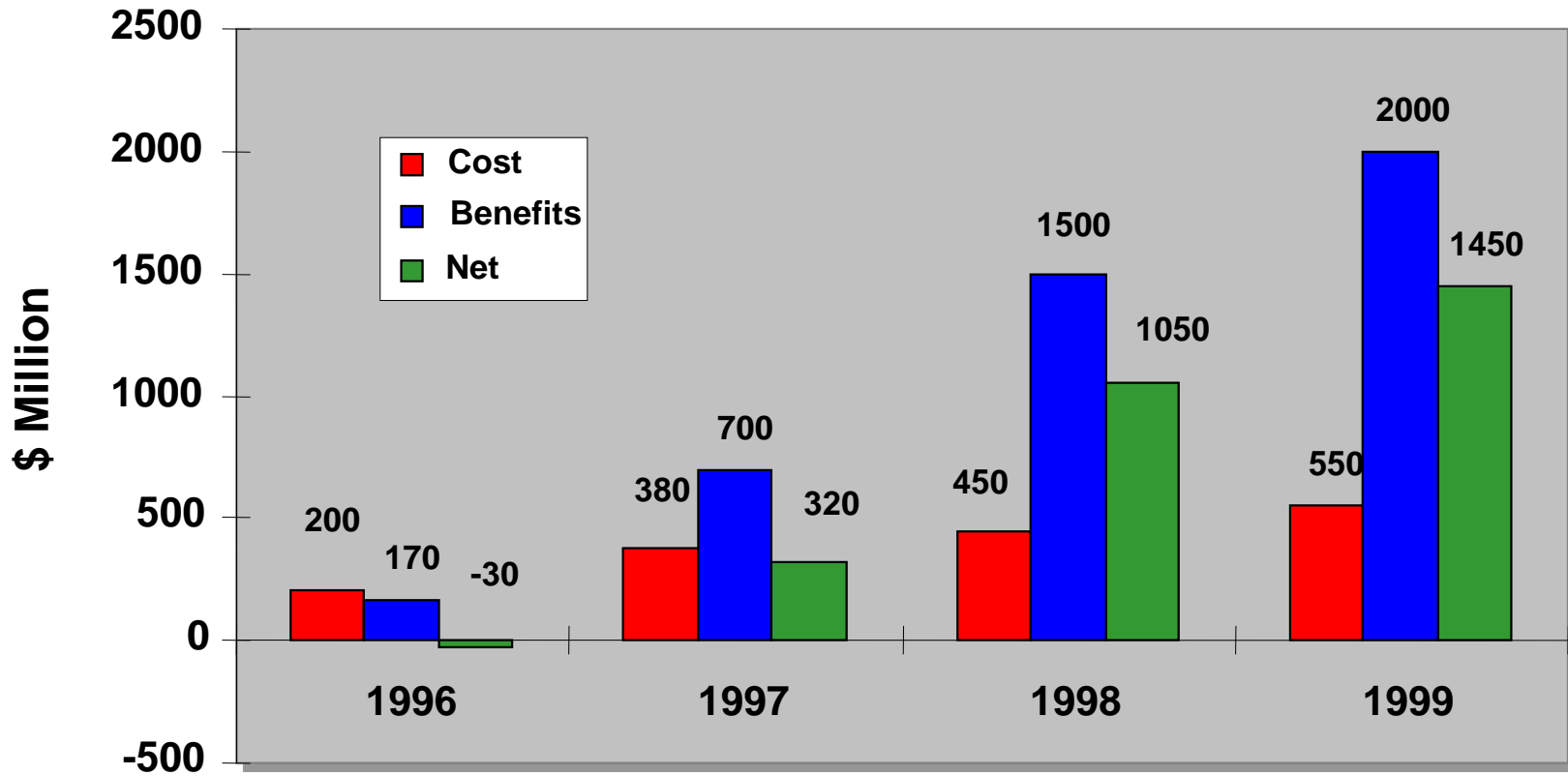
Measure **What is the frequency of defects?**

Analyze **What variables control the output?**

Improve **What are the best settings?**

Control **How do we keep from backsliding?**

To improve Y, control the key x's



Significant impact on the bottom line

More important success metric than σ level

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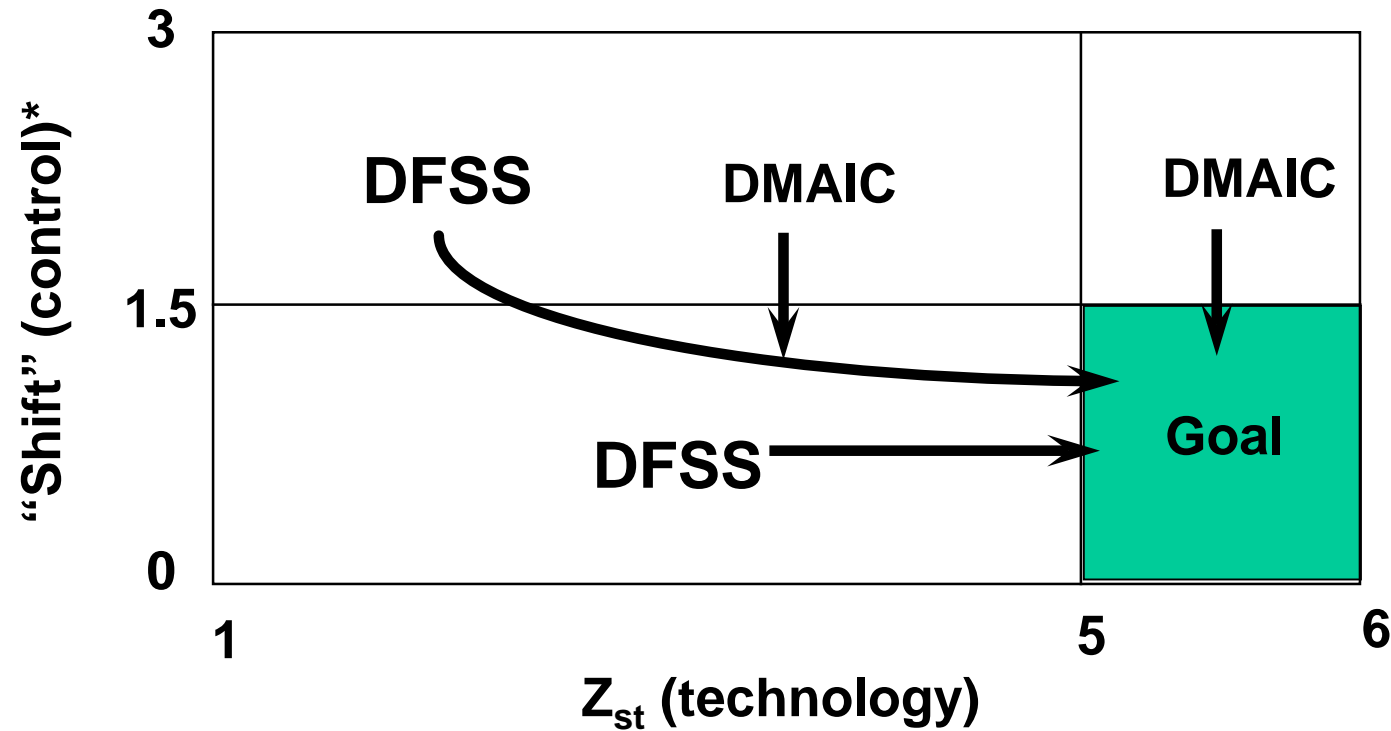
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1998: DFSS introduced, all areas of the business involved

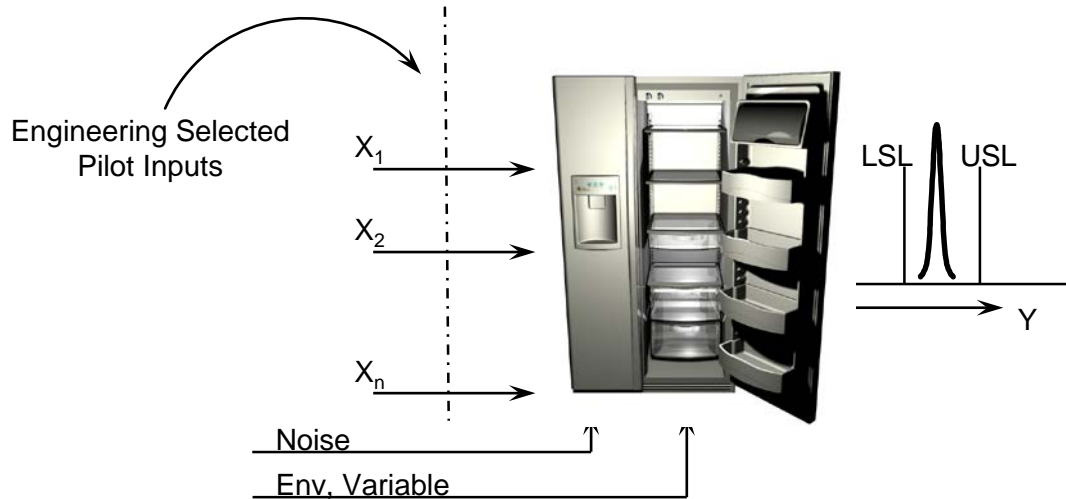
- First NPI teams and trainers trained by Berryman



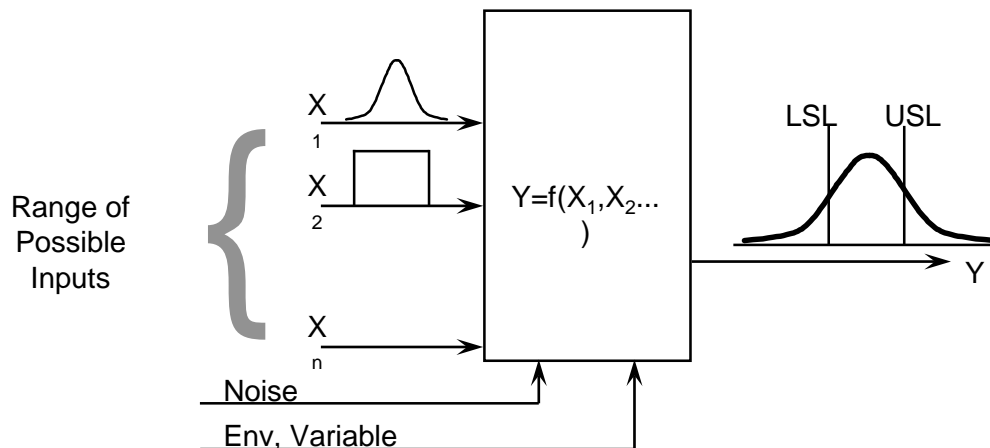
* Shift = $Z_{st} - Z_{lt}$

Both Essential to Meet GEA's Quality Goals

Single Pilot/Prototype



DFSS Statistical Analysis



- **Hear the Voice of the Consumer**
- **Systems Engineering**
- **CTQ Flow Down**
- **Process Capability Flow Up**
- **Scorecards**
- **Robust Design**
- **Reliability**
- **Integrated with Rigorous NPI**

The Big Ys

Appearance

Performance

Capacity

Cleanability

Quality/Durability



Meeting Consumer Needs

Seamless Backguard

Glass Touch Electronic Controls

Industry's Largest Oven

"Most Accurate Oven in America"

Hidden Bake Element

"Great Feeling" Hinge



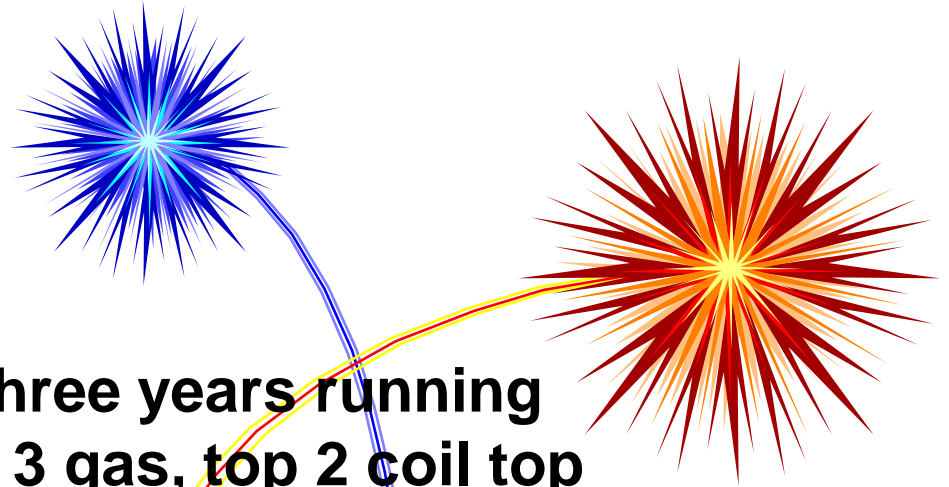
Before Spectra



Spectra

Industry's Largest Oven Capacity

- 35% Larger than Previous Product!***
- 25% Larger than Industry Average!***



- **Consumer Union #1, three years running**
- **Top 4 smooth top, top 3 gas, top 2 coil top**
- **Total number of ranges sold up slightly**
- **Dollars up 25%, consumers are moving “up”**
- **2,000,000 sold in 2 years since introduction**
- **Added third line to production facility**
- **Service Call Rate (SCR) down to 4.5%**

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1999: Making the customer feel Six Sigma

- Commercial quality emphasis growing
- Customer-centric measurements

2000-01: “Fulfillment”

- What the customer wants, when they want it
- DFSS product introductions in full gear

- **Six Sigma has become a *key element of business strategy*, directly linked to financial performance and customer satisfaction**
- **Six Sigma is viewed as more than a toolset for quality; it's a *cultural change*, aimed at driving *operational excellence* and a *customer-centric focus***
- **Six Sigma has been extended to *Design for Six Sigma (DFSS)* - the design of new products and business processes**
- **Still a Corporate Focus, 5 years after introduction**

“This is the most important initiative this Company has ever undertaken. (It) will fundamentally change our Company forever.”

John F. Welch, Jr.

Letter to GE Officers, May 18, 1996