Creating More Effective Cultures for Innovation

PDMA-AMA Conference

Connecting the Dots: Customer, Marketing and Process

Frederik Meijer Gardens & Sculpture Park,
Grand Rapids, MI
4/10/07

Greg Stevens,
WinOvations, Inc.

Agenda

Creating More Effective Cultures for Innovation

- The Problem
- Organizational Culture Definitions
- Case Example:
  Dow Polyolefins Business 1991-2005
  - Four Step Model for Increasing Effectiveness of Innovation
  - *Starters* & *Finishers,* & Fit with Job Roles
- Results: Dow Example
  - *Forward* Looking NBD-Indicator Metrics Measured
    - Predict "Backward Looking Metrics" Like Profit
  - Dow Chemical Chosen Outstanding Corporate Innovator, 2003
  - Speed-Based-Development:
    - Spreading Across Dow
- Implementation Guidelines

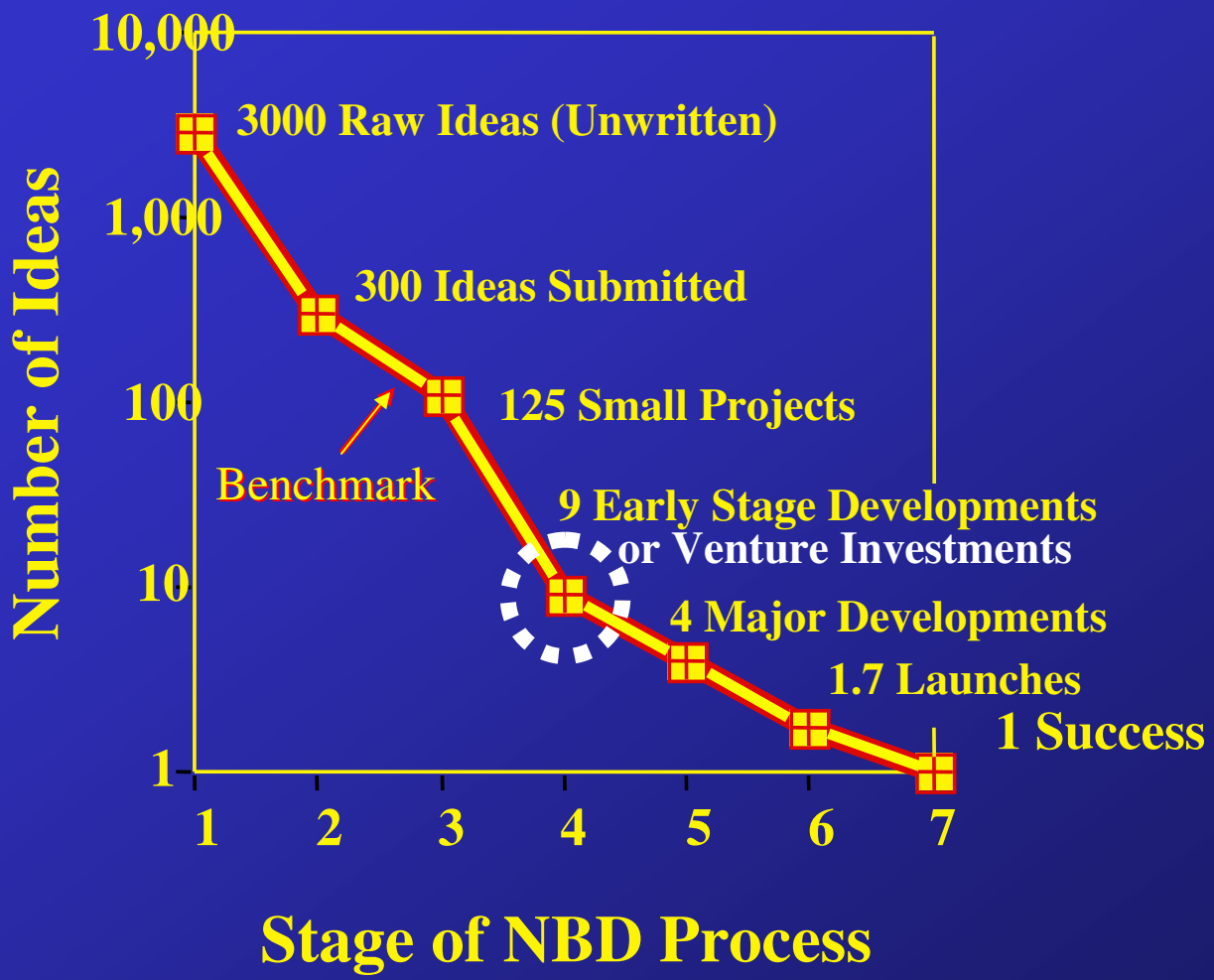
Top Management: Hungry for Growth

"***Just Tell Us*** Which Ideas Will Win ***& We'll Invest"***

- The Catch - They Don't Want 100's of Ideas "To Consider"
  - Just Want A Few *That Will Succeed*
  - *With Low Risk*
  - Yet What Do We Do?
    - Try Convincing Top Management *"That's Unreasonable"*
    - That We Must Really Encourage Failures To Find Winners
    - That It Will Take *At Least 9 Losers* To Find One Winner
      - Far Worse Odds Than Las Vegas
    - In Short, We Make Excuses for Low Success Rates from NBD
  - & We Wonder Why Top Management "Does Not Get It"

- But The Top Management Challenge Remains:
  Just Tell Us Which Ideas Will Win ***& We'll Invest***

Low Odds on Universal Success Curve Define "The NBD Problem."



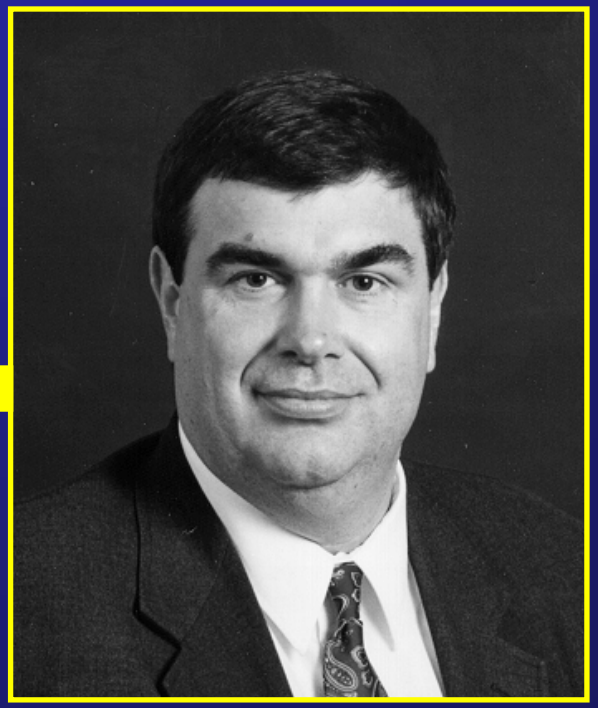
Ref's: 1. Stevens & Burley, May-June 1997, *Research•Technology Management*

2. Stevens & Burley, Piloting the Rocket of Radical Innovation, March-April 2003, *Research•Technology Management*

Case Example – Dow Chemical, Today a $49 Billion Revenue Co.

1991: An Entire Organization "On The Block" Needed Cultural Change - *In A "Fortune-50" Co.*

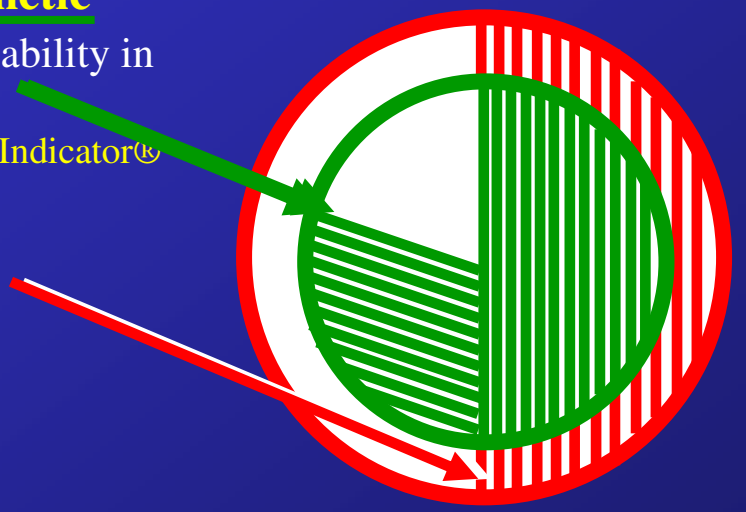
- Dow Chemical, Polyolefins and Elastomers Business, Pre-1991:
  - Portfolio Mature
  - Low Growth, Commodity Business
  - Little Belief Even In *Possibility* of Innovation
- 1991 Charter To Kurt Swogger:
  - Innovate & Differentiate
    - Or Else - Be Sold



New Understanding of the *Genetic Nature of Personality*

Key to Becoming More Culturally Innovative

- **~80% Core Adult Personality Genetic***
  - When Correct For Test-Retest Variability in Psychological Instruments
    - Including the Myers Briggs Type Indicator®
- Minimum of 50% Due to Genetics
  - When Do Not Correct
- Video: Giggle Twins
- *Personality* Is Primary
  - *Behavior* Flows from Personality



*Bouchard, Thomas et al. "Sources of Human Psychological Differences: The Minnesota Study of Twins Reared Apart," *Science,* 12 October, 1990. pps 223-228.

Organizational Culture Is Defined Here As the Average Personality of The Organizations' Leadership

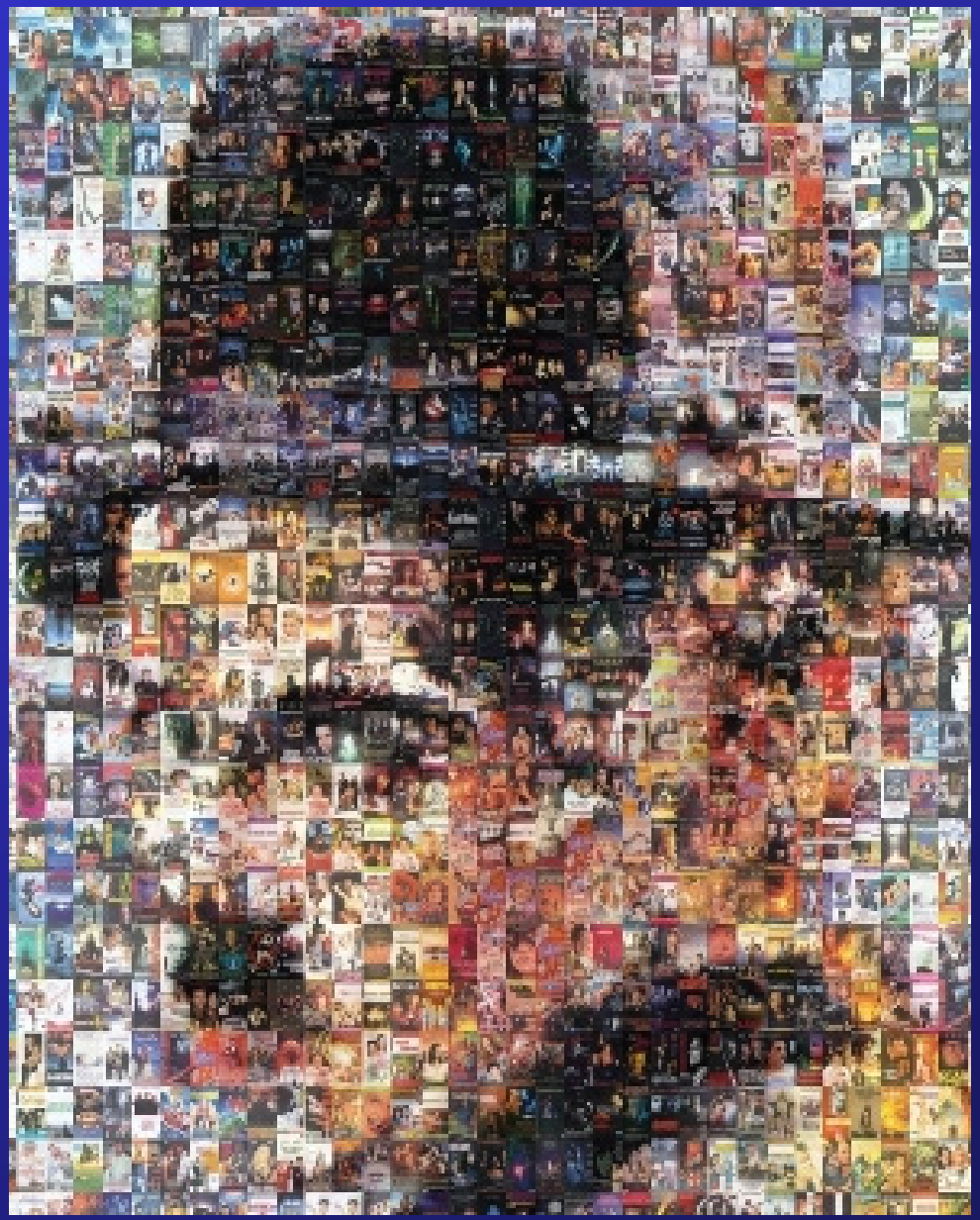
- *Organizational Cultures*: Also Largely Genetic
  - Because They Consist of Individual *Genetic* Personalities
  - Genetic Nature of Organizational Cultures Explains Why They Stubbornly Resist Change
    - Cultures of Organizations Become **"Hard Wired"** Over Time
  - Includes *Both*
    - Managerial and Technical Leadership Personalities
  - Determines Inherent Innovativeness of Organizations

Organizational Culture:
Is Like a Composite Face (Photo-Mosaic)
Made Up of Individual Leader's Faces/Minds

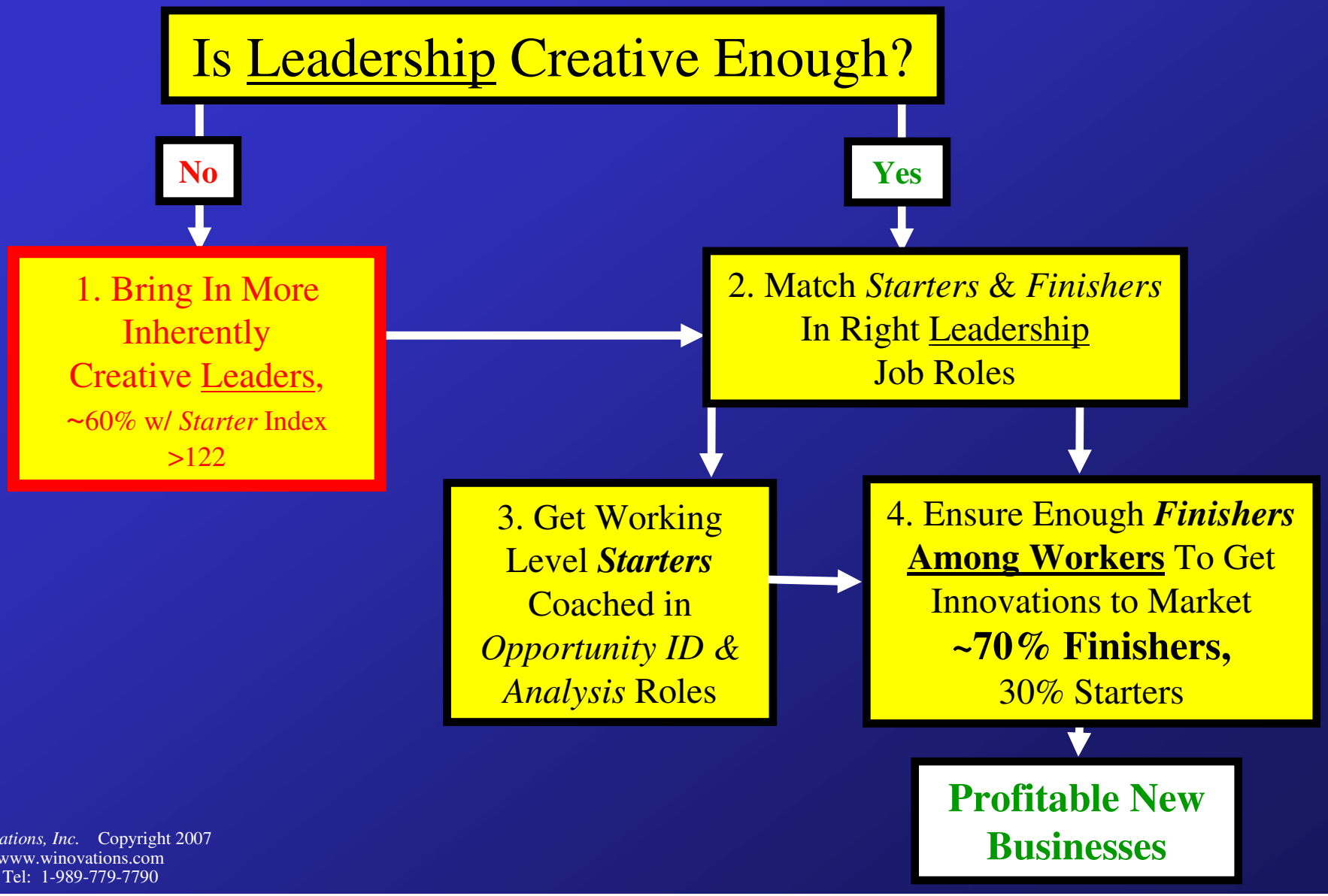
- The Personality or Culture of Organization
- Can Be Highly Appropriate…
  - Abe Lincoln

Or Inappropriate…

- **Charlie Chaplin**
- **Depending on The Job Function Required!**
- Both Were Masters at Their Jobs
  - Their Personalities Suited Their Jobs
  - & Neither Could Do What the Other Did
- Whatever the Case…. Organizational Culture Is
  - Largely Genetic
  - & Measurable
  - The "Hive Mind"



Step 1: of Four-Step Model for Increasing NBD Group Effectiveness



Two Main Personality Types Can be Identified By Standard Psychological Instruments

Including the Myers-Briggs-Type-Indicator®

- "Starter" Personality Types:
  - Identify & Define New Opportunities
    - Like Challenge of "You Can't Do That"
- "Finisher" Personality Types:
  - Make Money
    - Practical, Deliver the Opportunities to the Marketplace
- *Both* Clearly Needed In NBD

How Management Can Identify *"Starter"* and *"Finisher"* Personality Types

- *"Starter"* Personality Types:
  - ≥ 122 on Myers-Briggs-Type-Indicator® (MBTI®) Based ***"Starter-Index."*** [9,10]
    - Continually Challenge Status Quo, & Ask "Why Not?"
    - Creative, Risk Takers, Usually Hard to Manage, Often Unfocused\
    - Intuitive, Thinking, Perceiving Personality Preferences
    - Tend to Dislike Detail, Often Impractical, Procrastinators

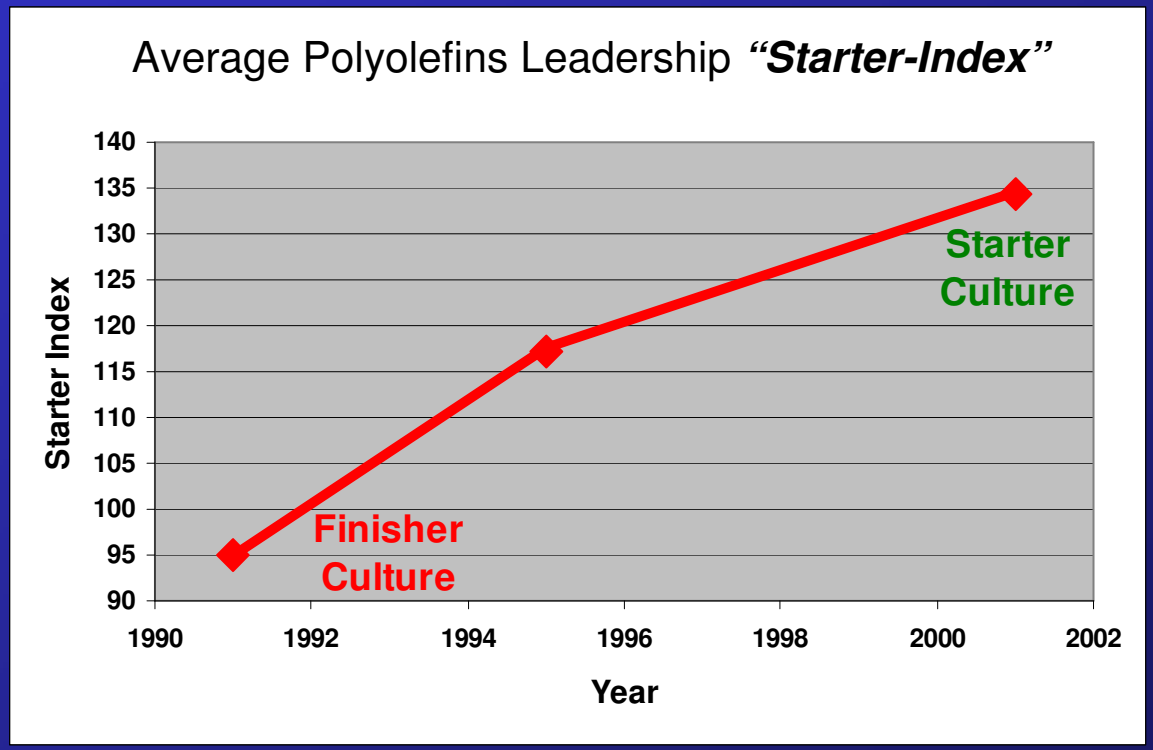
- *"Finisher"* Personality Types:
  - <122 On MBTI® Based ***"Starter-Index"***
    - Respectful of Authority and Rules. Fraternal.
    - Sensory, Thinking, Judging Personality Preferences
    - Well Focused & Task Oriented. Manage Time Well. Steady Workers

- Subsequent Trial & Error (But *Far Less Error* Than Before)
  - Make Assessment, Assign to Job Accordingly.
    - ***Quickly*** Reassign if Needed (In 6-12 Weeks)

Leadership Results - Cultural Assessment:

Group *Starter Index* Was Increased Substantially from 1991 to 1995-2001*

- MBTI® Based "NTP," or *"Starter Index"*
- ***Highly Correlated to Creativity***



For Managerial & Technical Leaders Over 10-Year Period

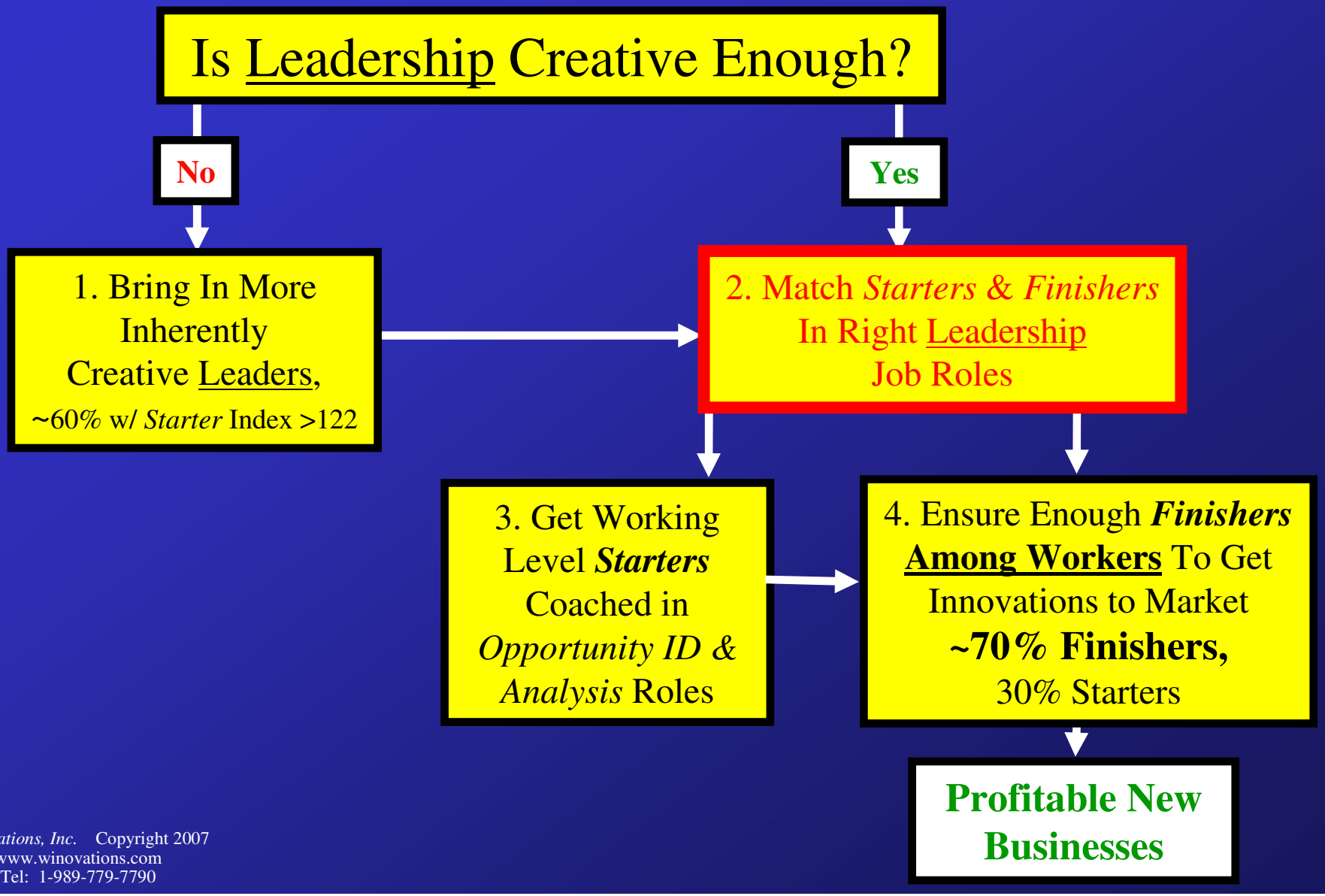
* Stevens, Greg; James Burley & Kurt Swogger, Dow Chemical Achieves Major Transformation of PO&E R&D Group. Personality-Oriented Approach Improves NPD Results. PDMA *Visions.* July, 2003, Vo. XXVII No. 3, pps. 6-10

NBD Leadership Group Needs Higher Percentage of "Starters" Than Overall Business Leadership

- NBD Leadership Typically Needs ~60% "Starters"
  - Myers-Briggs®-Based ***Starter-Index*** >>122
    - Same for Technical Leaders, Marketing Groups
  - And Enough "Finishers" Per Project Area to Get It Done
    - ***& Make Money***

- However, Business Leadership *Overall*:
  - Needs 20-30% Starters In Leadership Roles, & 70%+ Finishers
    - Key Business "Finisher" Roles Include:
      - Sales, Production, Quality Roles, Customer Service, Technical Service, Patent Management, Accounting, Finance, Clerical, Pilots…etc.

Step 2: of Four-Step Model for Increasing NBD Group Effectiveness



Choose the **Right People** for the Right Job Roles

2 Personalities:

4 Job Roles:

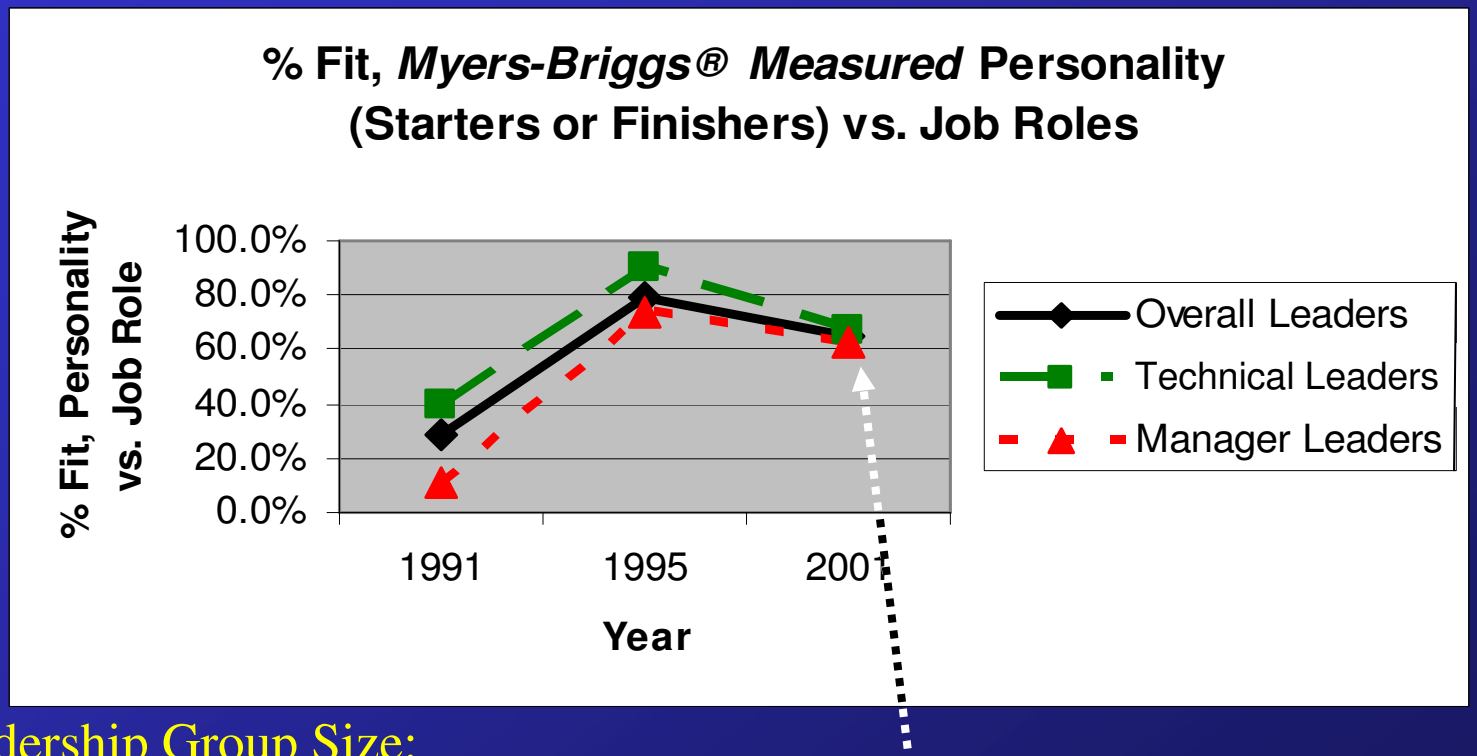
"Starters"	"Finishers"
Initiating, Developing	Growing, Enhancing

- Also Choose People With The **Right Skill Sets**
  - Mechanical Engineer, EE, Chem E., Scientist, etc.
- & Choose **Highly Driven** People Who Want Their Projects And Themselves to Succeed

Dow Polyolefins Business Results

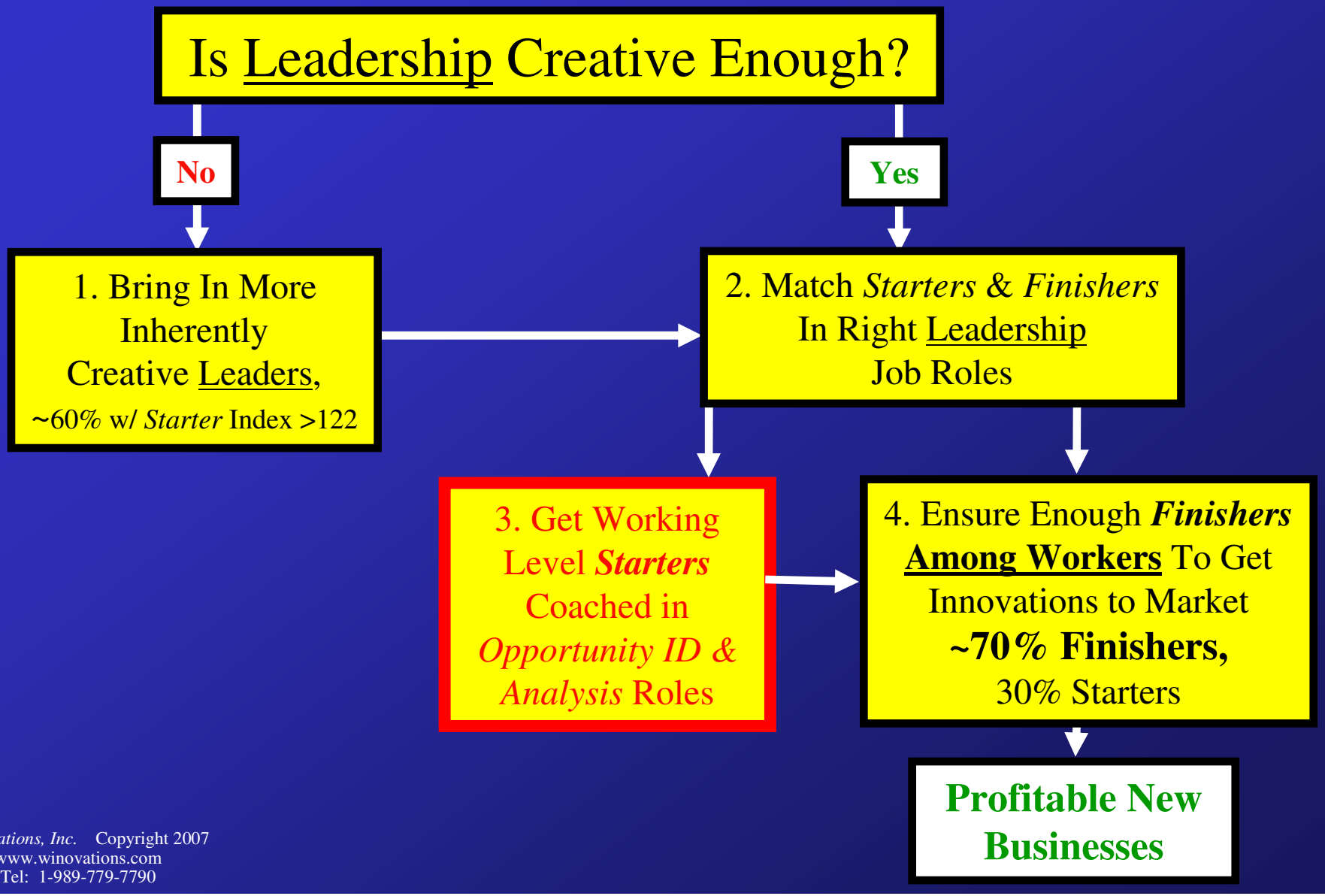
Match of Personality to Job Role Was Increased Substantially 1991 to 1995 & 2001

- For Leadership Group, Matched Consciously But Intuitively Initially
  - & Later Measured via Myers-Briggs-Type-Indicator®



- Leadership Group Size:
  - 1991 = 14; 1995 = 29; 2001 = 86 (Harder to Do Well Without Measuring Personality)

Step 3: of Four-Step Model for Increasing NBD Group Effectiveness



Earlier Key Discovery:

Starter Genetic Personality Types Outperform in *Early-Stages of NBD**

- Top-Third on ***Starter*** Personality Profile Out-Earns Bottom-Third by 9,500%. [9]
  - $8.0 Million vs. $0.09 Million: 1991-2001
    - Per ***Business-Opportunity-Analyst***
      - In Roles An Average of Just ~2 Years
        - (Longer Assignments Recommended Now)
        - Tracked Results **Over Ten Years**
  - With Identical NBD Process Training and Coaching
  - Gone On to Be >>$20 MM Profit Per ***Starter***

* Stevens, Greg & James Burley, Piloting the Rocket of Radical Innovation, March-April 2003, *Research*Technology Management,* pps. 16-25. *Article selected by Emerald Management Review as top 50 Management Articles for 2003 out of 15,000 reviewed*

Business-Opportunity-Analyses Were Conducted *Early* In the Revised Polyolefins Business

Key: Determining Customer's Functional Requirements, & Competitor's Costs of Meeting Them vs. Dow's.

- Insite® Metallocene Chemistry
  - Packaging Opportunities
    - Meat Wrap & Many Other Applications
  - Durables
    - Elastomers for EPDM Replacement
      - Led to DuPont-Dow Joint Venture
    - Wire & Cable Compounds
  - Automotive
  - Shoe Soles

Real Targets ID'd

€, $, ¥

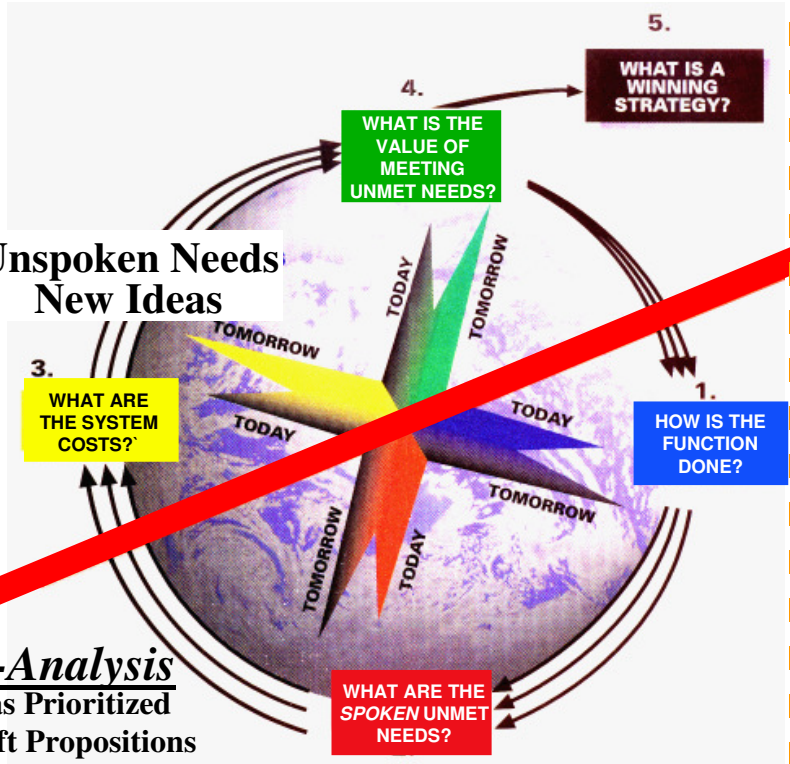
Early-Stages of Iterative NBD Process Summary

End of *Early Stages*

Profits

Winning Actions

Winning Tactics



Unspoken Needs
New Ideas

Gap-Analysis
Ideas Prioritized
Draft Propositions

Idea Management

Gut-Level-Screen

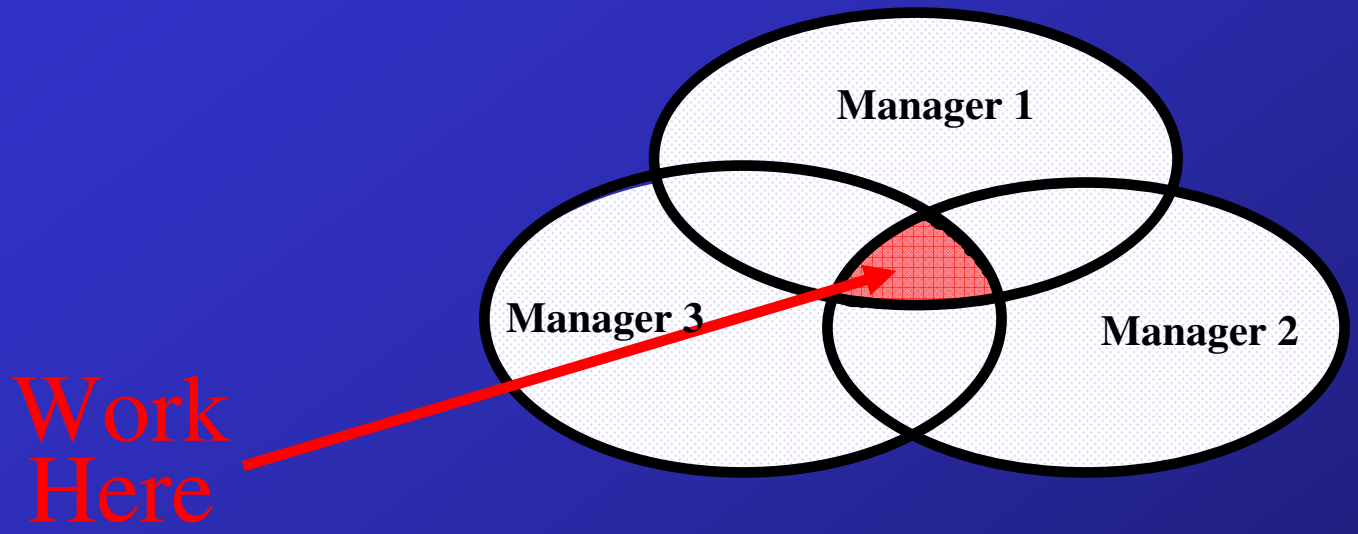
Success-Wheel
Customer Interviews

Stages: Ideation | Shaping | Analysis | Validation | Develop & Implement

Individual Business-Opportunity-Analyst Predominates (Or Small Teams)

Teams Predominate with Project Leaders

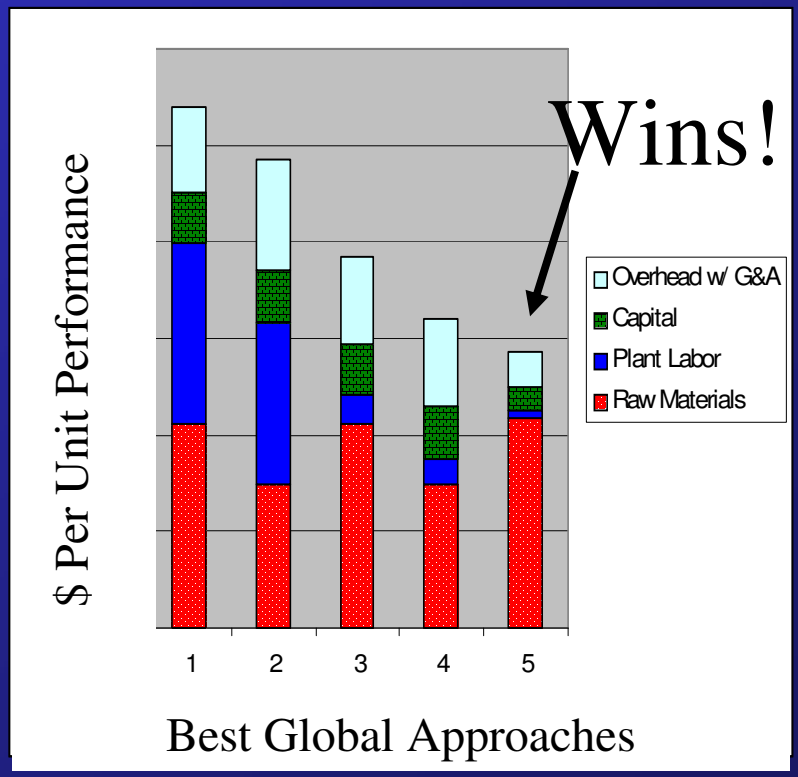
Determining Top Management's *Gut-Level-Screen* Raises Odds of NBD Success 2-4X



- "Group" Zone of *Agreement & Excitement*
  - How Big, How Fast, & Qualitative Factors
- Not a "False Consensus" Building Tool
  - Work Where They Happen To *Really* Agree

" Starter" (Rainmaker) Business-Opportunity-Analyst Job-Roles:

1. Compare "Fit" of Starting Ideas vs. Top Management's ***Gut-Level-Screen***
   - To Prioritize Platforms and Projects Quickly
2. Analyze Customers' Unspoken Needs
   - Prepare ***Draft-Propositions*** to Test With Customers
   - Many Direct Interviews & Plant or Site Visits
   - Building **System-Cost-Performance Models** *from Customers' View*, for New Ideas vs. Best Alternatives Globally
3. ***"Morph"*** Starting Ideas Into Winners
   - Based on Real Needs, & Real Value
   - Showing How to Win vs. Best in Class
   - **Requires Creativity, & Analysis**
4. Present to Business Management
   - Only After Learn How to Win!
   - For Later Commercialization by Business



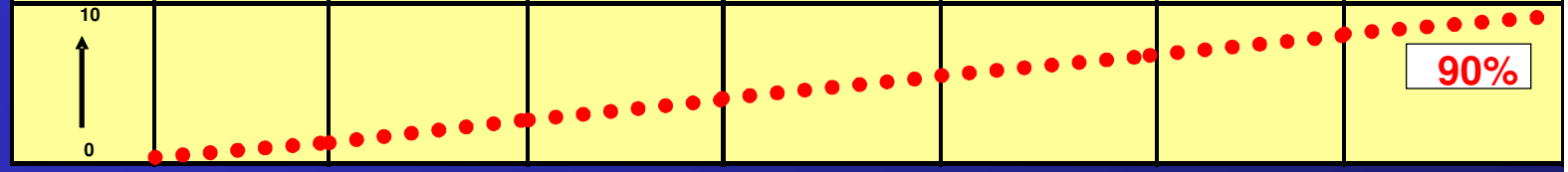
≥90% Grade on Implementation Metrics

Yields 95% Commercial Success vs. 11% Norm on "Success Curve"

Per Ten Year Longitudinal Study - More Than a Six-Sigma Improvement*

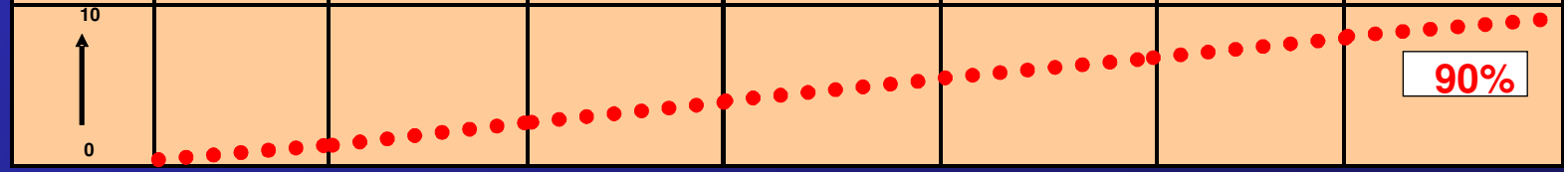
Organizing

Ranking 1-10 1 = Low 10 = High	Dedicated Front End Working Group?	% Group With 3 Day Training?	% Group With >40 *Rainmaker-Index?*	% Top Management With ***Gut-Level-Screen*** Measured?	Non-Linear NPPD Process In Place?	NPPD Collaborative Software In Place?	Overall Organizational Index?
	10	9	8	9	10	10	9



Implementing

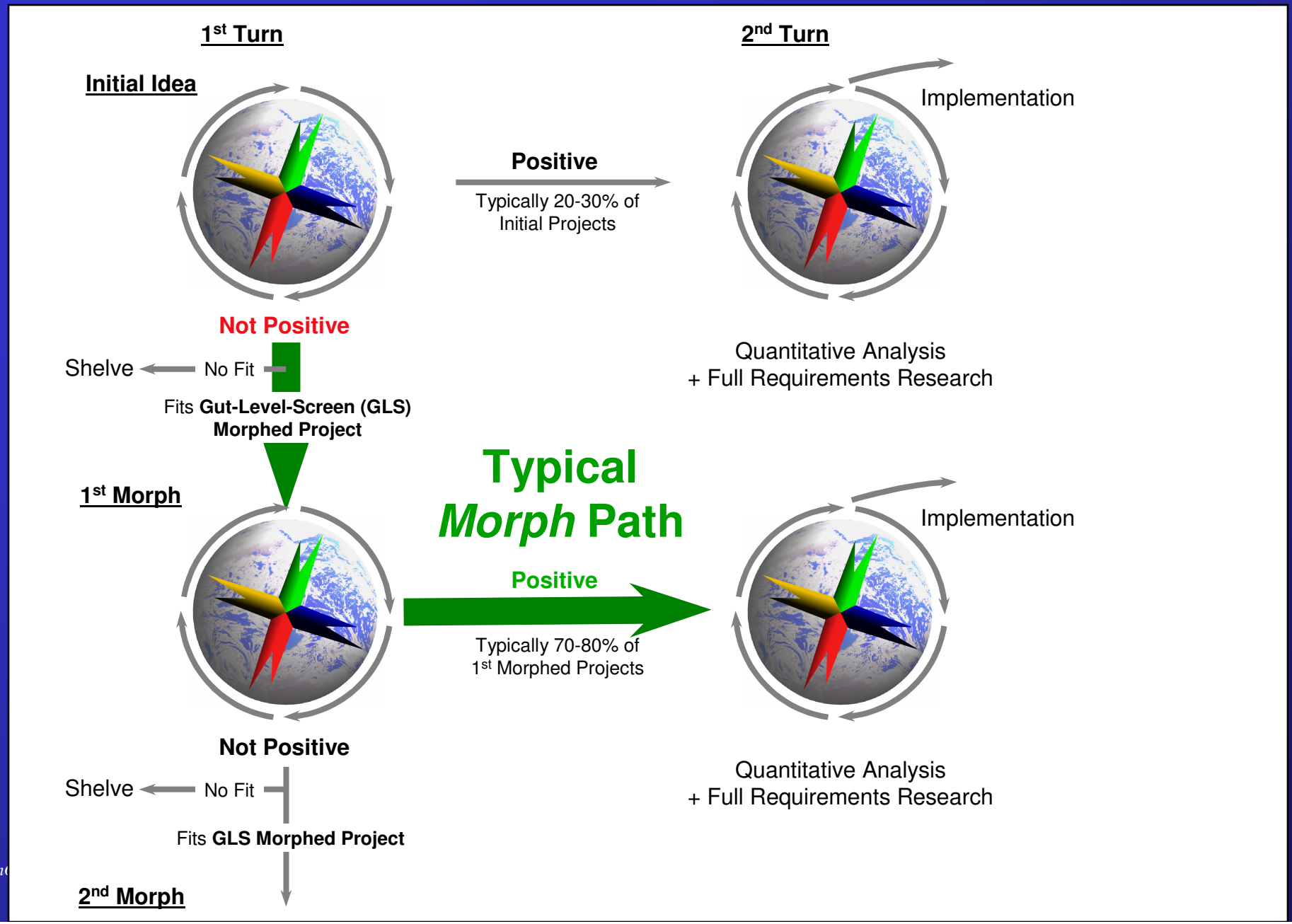
Ranking 1-10 1 = Low 10 = High	% of Projects Meeting ***Gut-Level-Screen?***	Manager of NPPD Group Coached? On 1 Project?	% Projects w/ > 2 Coached Customer Visits?	% Projects w/ Coached Cost-Performance Models Completed?	% Projects w/ Coached Final Reports?	% of NPPD Analysts Certified As "Master Black Belts"	Overall Implementation Index?
	10	10	9	9	9	9	9



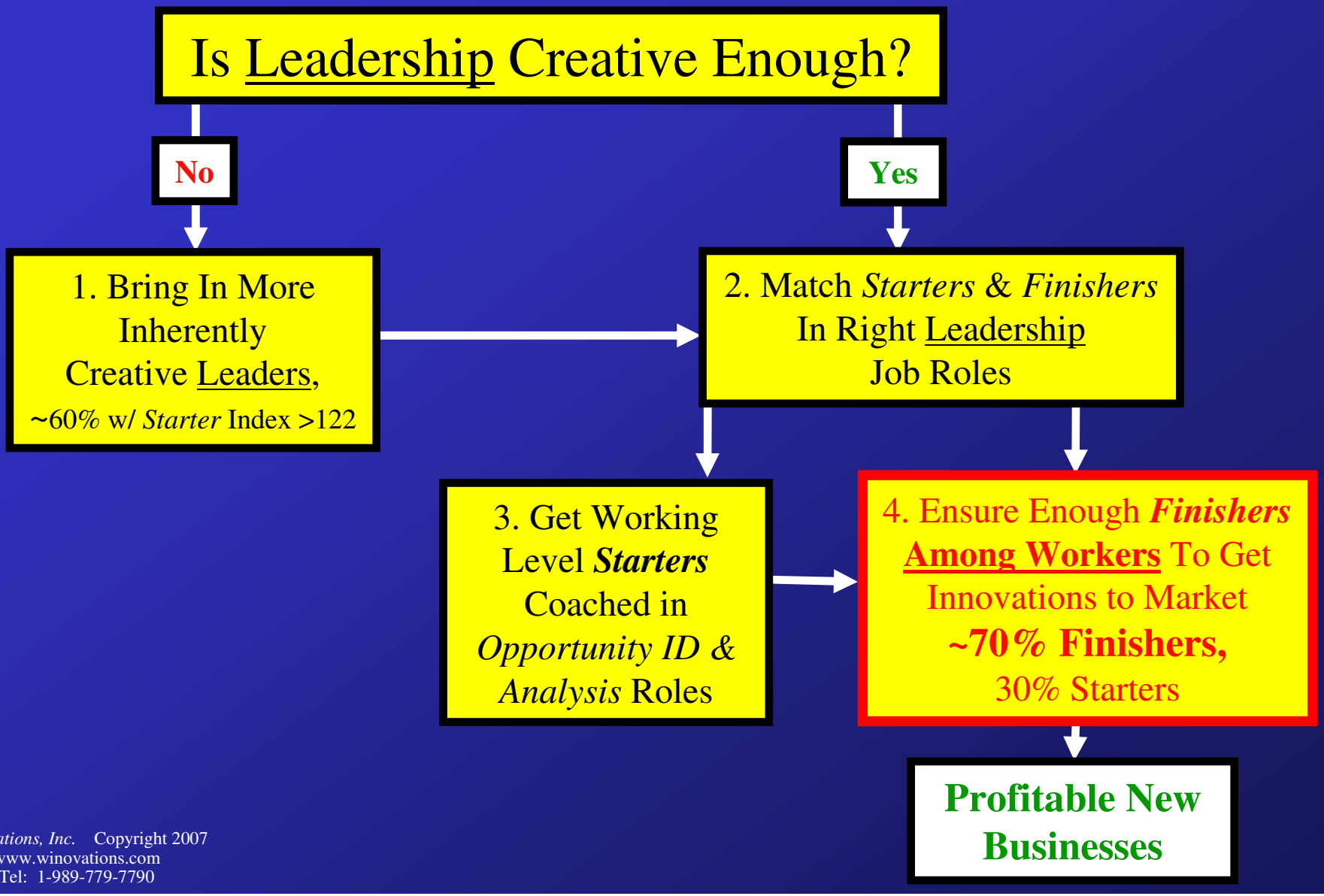
- Can Predict Odds of NBD Success Using Above Metrics, Easily Gathered via ***"Gap-Analysis"***

* Stevens, Greg & James Burley, Piloting the Rocket of Radical Innovation, March-April 2003, *Research*Technology Management,* pps. 16-25.

Typical Path To Success Requires *"Morphing"*



Step 4: of Four-Step Model for Increasing NBD Group Effectiveness



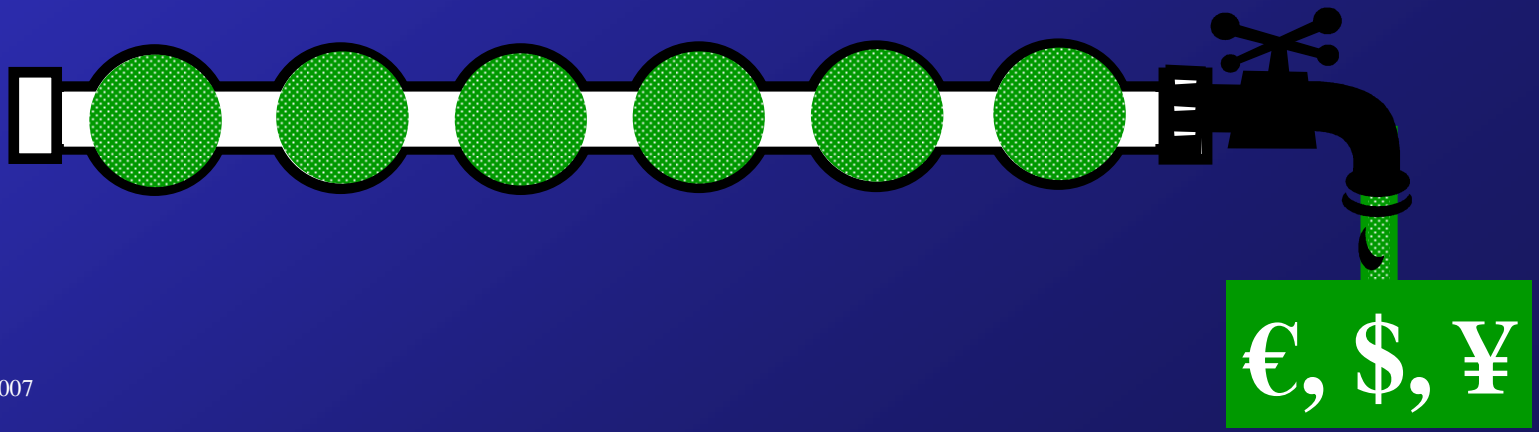
Makeup of Entire NBD (or Marketing or R&D) Organization Needs Much Higher % of Finishers than In Leadership of NBD Group

- Right Balance in *Non-Leadership* Professionals ~20-30% ***"Starters"***, 70%+ ***"Finishers"***
  - Working Groups of All ***"Starters"*** Usually a Disaster
    - No One Gets The Work Done!
  - Percentages Being More Closely Determined Via Additional Research
    - Ongoing Now, Reported in Future

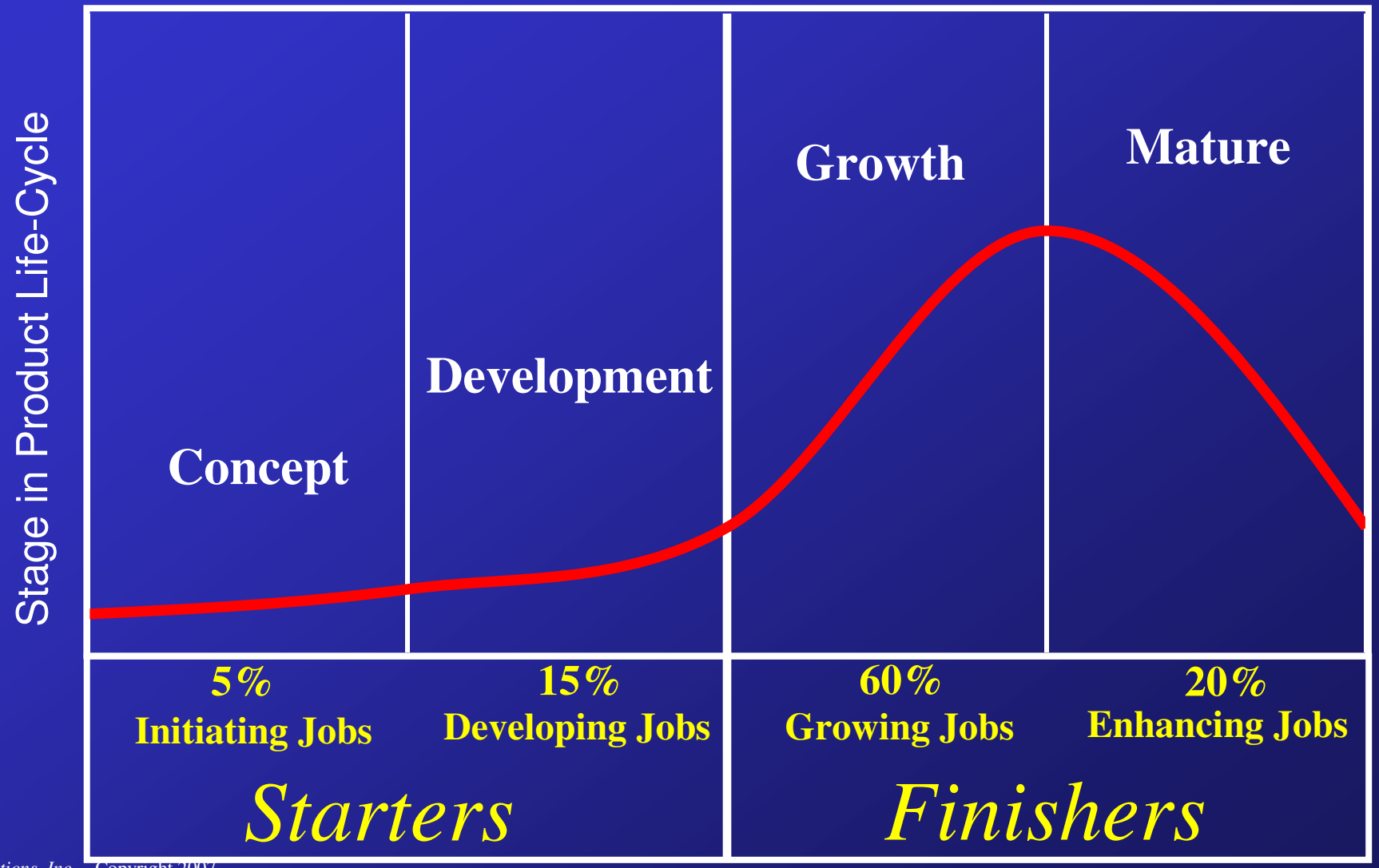
Adjust Balance of *Starters* and *Finishers* In NBD Group Tactically:

- Empty NBD Pipeline?
  - Add More ***Starters*** to Fill Front of Pipeline

- Full NBD Pipeline?
  - Add More ***Finishers*** to Exit Pipe, Make Money



Also Balance "Human Portfolio" With Business Portfolio



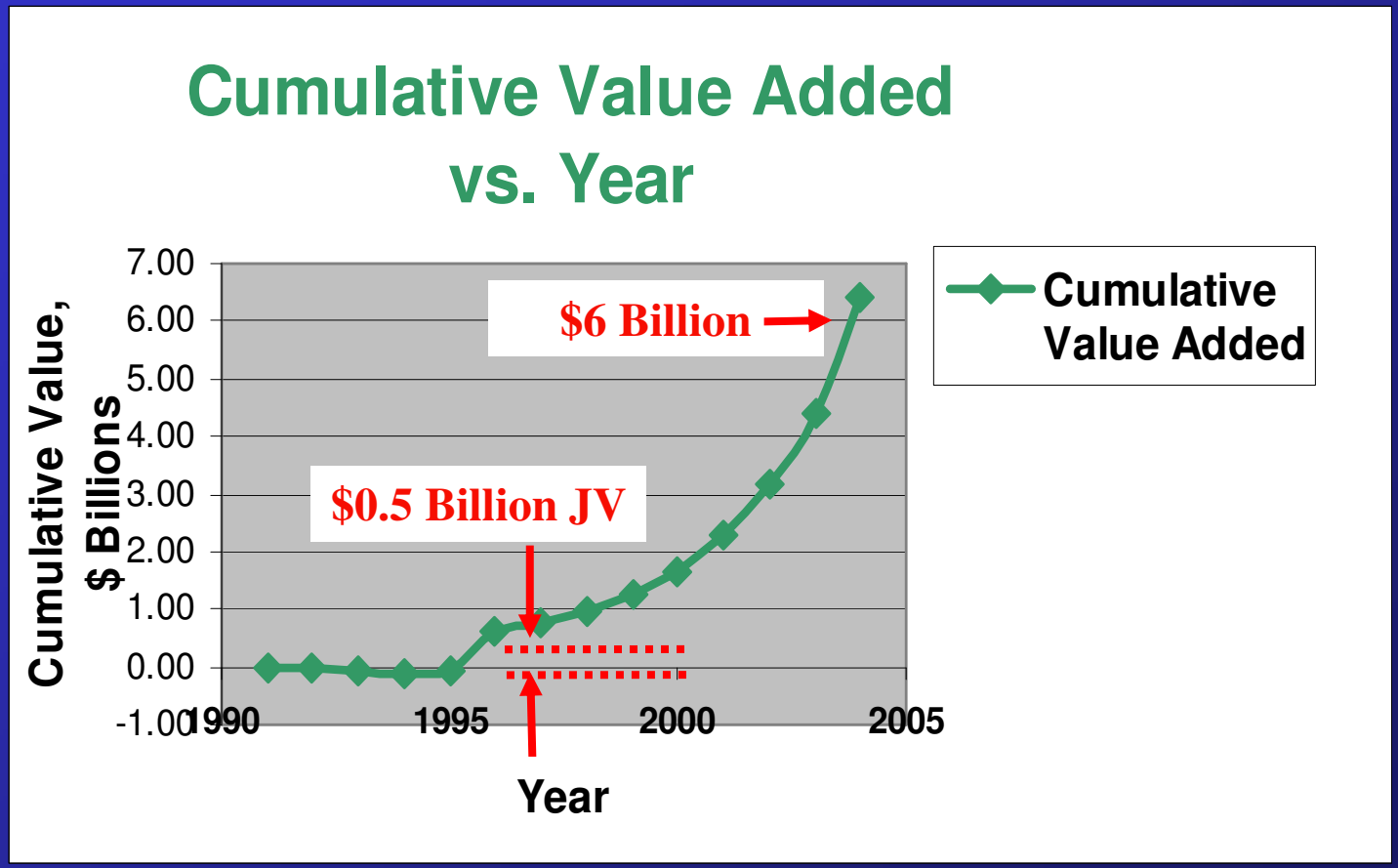
Case Example Results

For Dow Polyolefins Business

- Formerly
  - "On the Block"
- Now
  - a "Crown Jewel"…

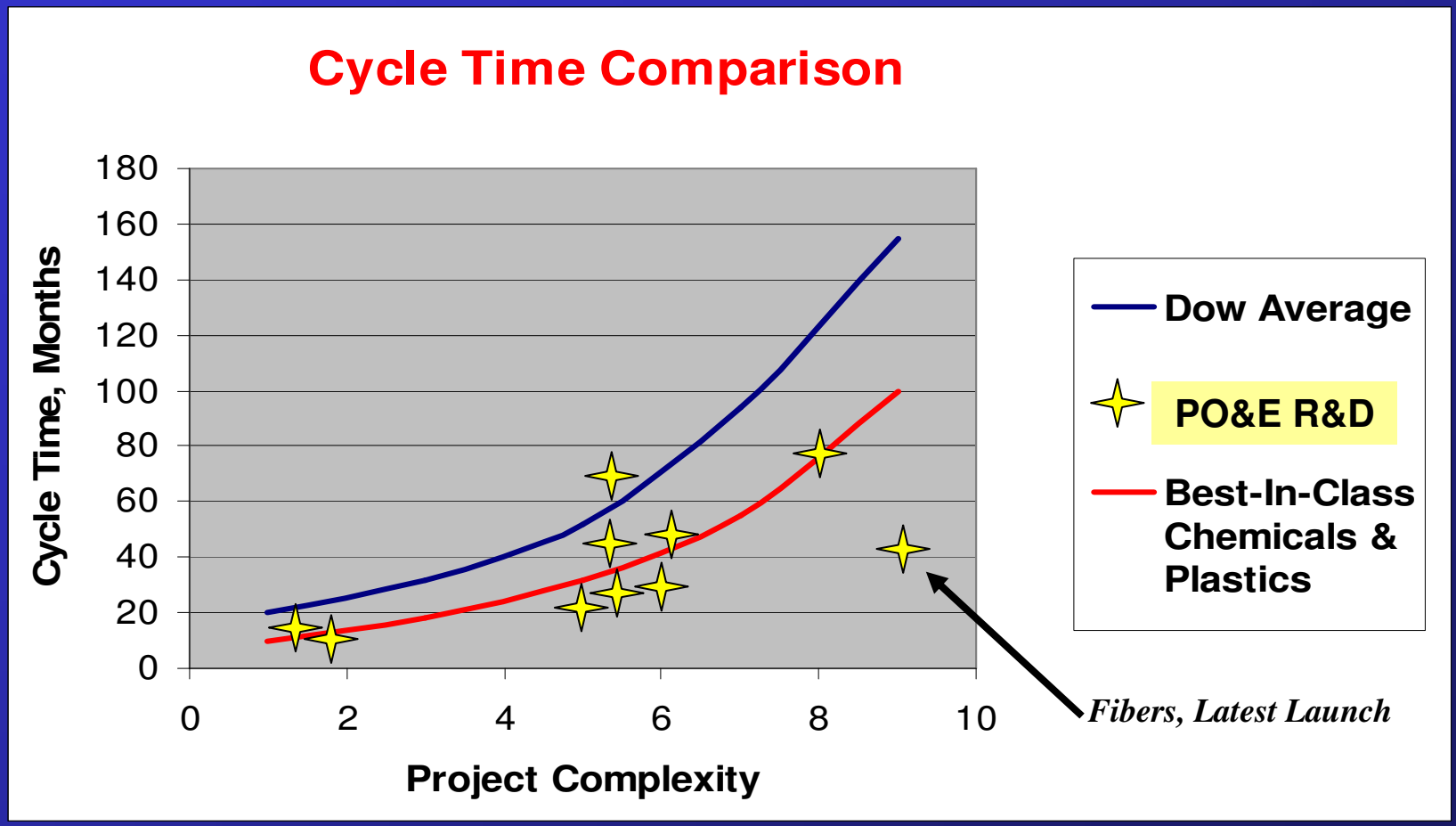
Results for Dow Polyolefins Business:

Over $6 Billion Cumulative Value Added From New Product Innovation



❖ Net of Research Expenses

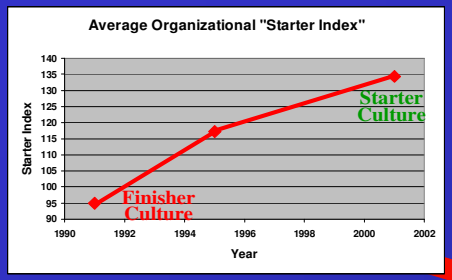
Dow Polyolefins Business *"Speed Based"* Cycle Time Performance* Now Best-In-Class



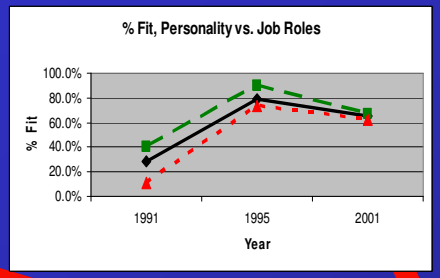
*Development Time to First Customer Sale

New "Forward Looking" Human Metrics
Leading Indicators
Driving Later Financial Success Shown By "Backward Looking" NBD Metrics

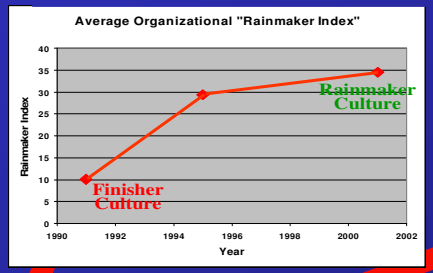
>60% Visionary Leaders



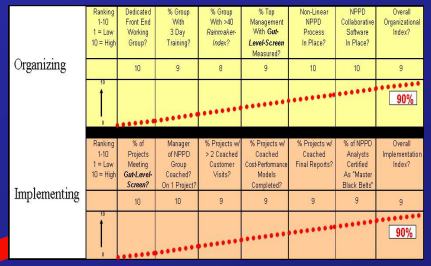
>75% Fit Between Personality & Job



>95% Starters Doing BOA's



>90% Quality Rating on NBD



Backward Looking Performance Metrics	Change	2001 vs. 1991
Intellectual Property, # of Patents	**4**	Times More
Pilot Plant Efficiency	**18**	Times Better
Technical Service Efficiency, Lbs Serviced Per Person	**2.6**	Times Better
Speed to Launch	**3 to 4**	Times Faster
Number of New Product Launches	**13**	New Launches
Sales from Products Less than 5 Years Old	**4.3**	Times More
Increased Capacity from Existing Plants	**2.5**	Times More
Job Creation	**4.8**	Times More
Increased Value, Net of R&D		***Huge***

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Speed Based NBD
Now Spreading Across Dow
Faster Yet - Supported By These Findings

- "Management continues to support this approach by increasing the size of the businesses using the Speed Based Development philosophy across the company"
- "Recently Dow was realigned so that **virtually one hundred percent of Dow will use this philosophy."**
- "We believe it is the People – not just the Process – that matters most"
  - **Kurt W. Swogger, VP** Performance Plastics and Chemicals R&D, Freeport, TX. Picking the Right People – Essential to Innovation, *Pacifichem 2005 Conference*, Area 4, Symposium 258, Symposium on the Pacific Basin Chemical Community: Chemical Business and Economics. Session 2. January 2006, Hawaii
- Dow Polyolefins Business: Selected By Product Development and Management Association (PDMA):

"Outstanding Corporate Innovator" in 2003

Achieving 95% NBD Success vs. 11% from Stage 4 of 7 Stages Provides Financial (& Personal) Returns

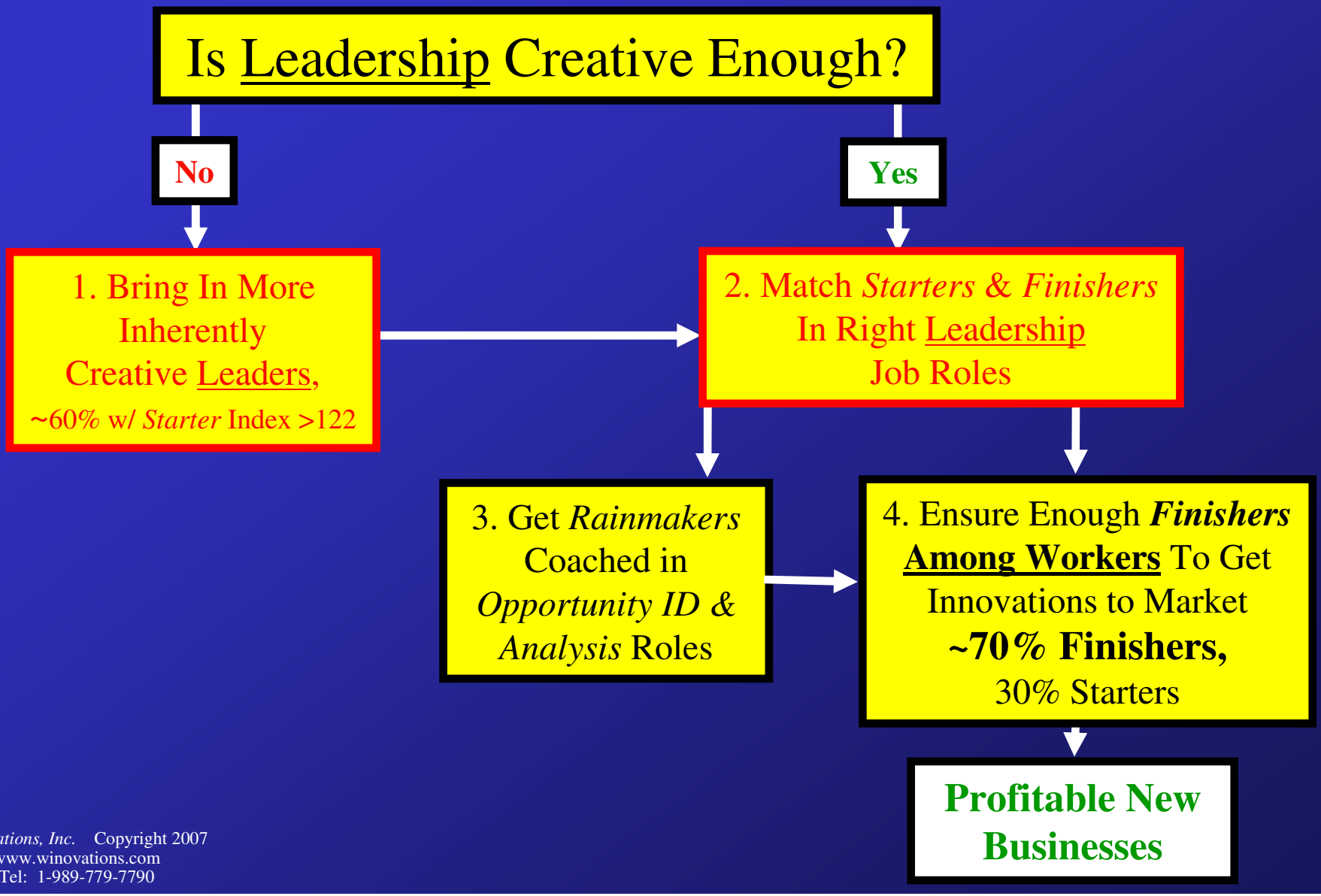
- Hasn't Hurt Careers
  - Romeo Kreinberg
    - Now Executive VP of $22 Billion Sales "Performance Plastics and Chemicals" Group (Formerly Just Polyolefins and Elastomers):
      - Heading ~50% of Dow
  - Kurt Swogger:
    - Now VP In Charge of All NBD for Romeo Kreinberg
- $1 MM Spent On Higher Quality Early-Stage NBD Analysis Yields $29 Million More Profit/Year – "A No-Brainer" Per Kreinberg
  - At Same Spending Levels As Before
  - 2,900% Return per Year*
    - Through Eliminating Most Wasted Effort
    - & Identifying Commercial Successes Faster

*Stevens, Greg. *Treating the Early-Stages of New Business Development as a Profit Center,* Sopheon Webinar, May 15, 2003

Implementation

- Giving Top Management Exactly What They Need & Want: "***Just Tell Us*** Which Ideas Will Win ***& We'll Invest"***
  - Finding the "One in a Hundred"
  - Beating the Normal Odds on the "Success Curve"

Two-Year Implementation In Dow Automotive Business Underway



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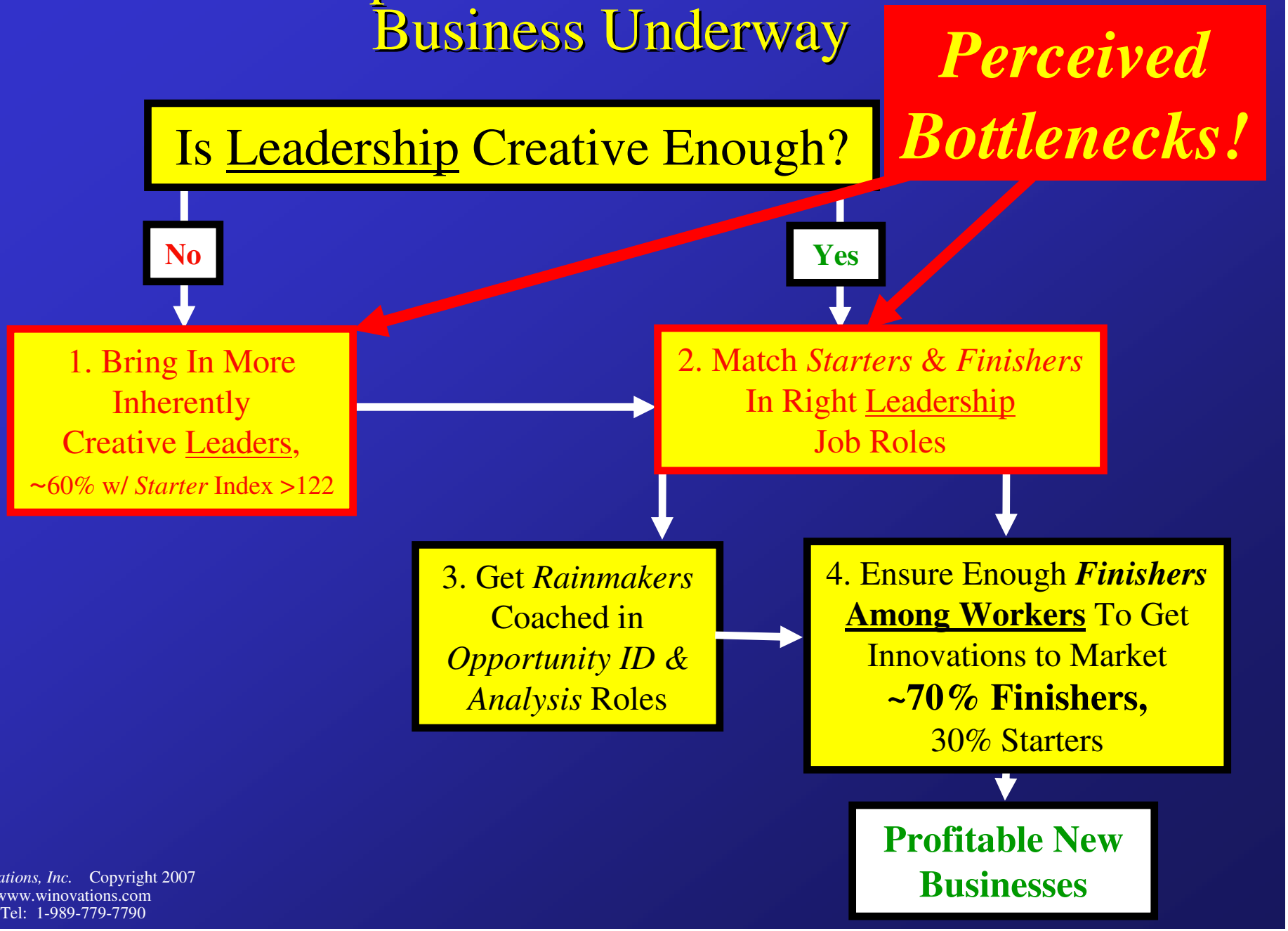
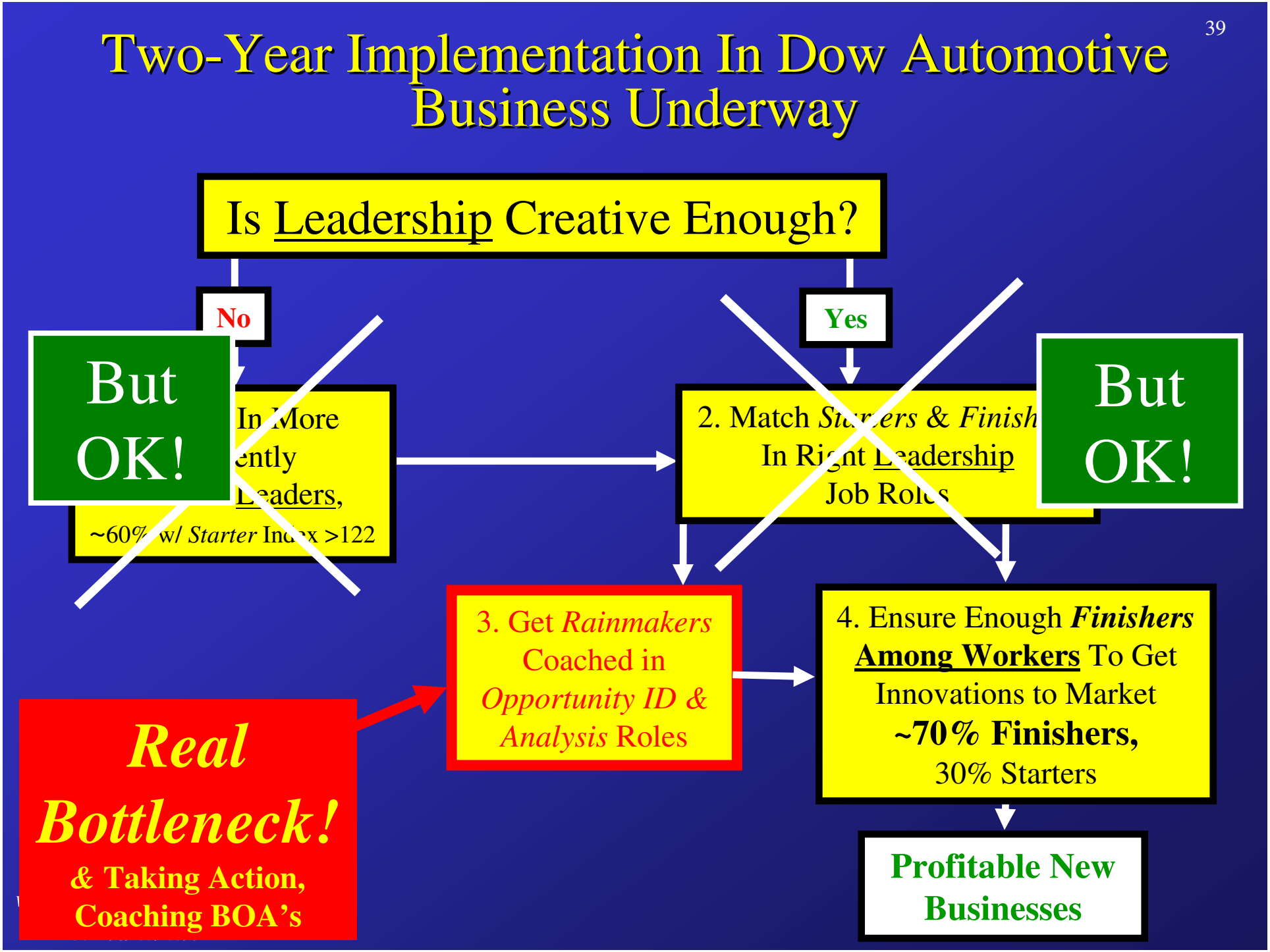


Two-Year Implementation In Dow Automotive Business Underway



Rule of Thumb: NBD Sales Potential of $100 Million Per Year Identified Per Coached *Starter* In ***Business-Opportunity-Analysis*** Roles

- Typical Size of Opportunities Found ~$50 Million/yr., Times Two NBD Projects Per Person/Yr. = $100 MM/Yr.

- Range/Project from $5 Million - $500 Million and Up
  - Most - But Not All – Positive
    - & Businesses Take Positive Action ~75% of Time
  - Group of ***Business-Opportunity-Analysts*** Needed

Assumptions For Achieving

$1 Billion In Profitable New Sales Revenue from NBD by 2020

- **$1 Billion** Comes From ***Business-Opportunity-Analysis***
- Must Have NBD Opportunities Identified Within 5 Years
  - To Commercialize & Achieve Growth Results Within 12 Years
  - $1 Billion/$100 Million per ***Business-Opportunity-Analyst*** Avg. Over 5 Years
- Achievable With Just ~3 ***Business-Opportunity-Analysts***
  - Coached and Certified
  - Ala "Black-Belts" for NBD
  - Described Next…

Achieving >$1 Billion New Business *Potential* By 2012

To Be *Commercialized* By 2020

- Last Half 2007: 3 ***Business-Opportunity-Analysts (BOA's)*** Coached
  - 3 Successful Projects x $50 MM
- Full Year 2008: Establish Group of 3 ***BOA's***
  - 5 Successful NBD Projects/Yr. (Out of 6/Yr. Coached) x $50 MM
- 2009, 2010, 2011, 2012
  - 5 Successful NBD Projects/Yr. (Out of 6/Yr.) x $50 MM Each Yr.
- By End 2012
  - 28 NBD Projects x $50 MM/Project Avg. x 75% Actionable
  - =$1.05 Billion New Sales Potential Identified by End 2012
  - Allows 7 More Years Needed to Commercialize by 2020

Method to Achieve 10 BOA's by End of 2007,

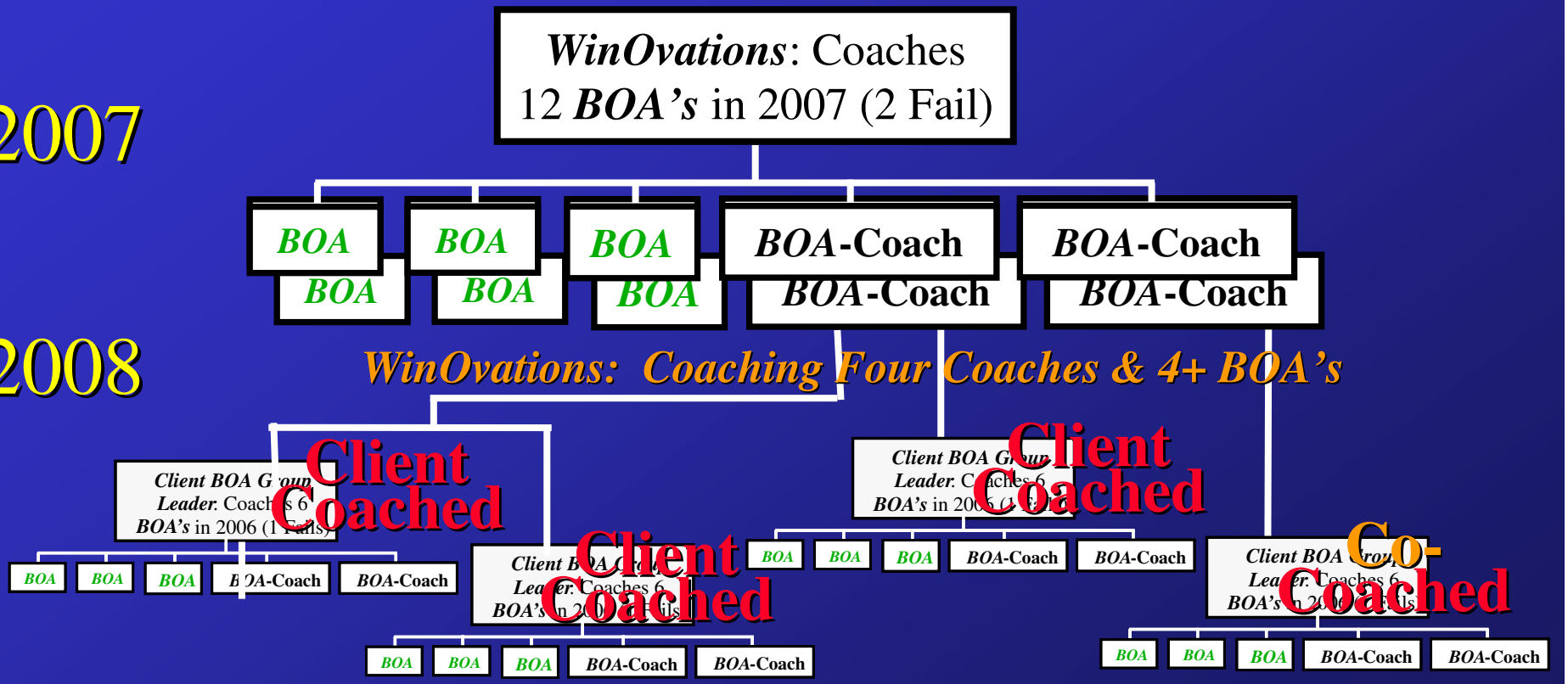
& 30 ***Business-Opportunity-Analysts (BOA's)***

Mostly Client-Coached By End of 2008,

Enough to Identify $10 Billion Sales Potential:

2007

2008



Just One More Thing:

Lots of People Talk About It,
But *You Have to Actually Do It,*

& Differently To Get Different Results

We Didn't Say It Would Be Easy
…Just Rewarding

Appendix 1: References

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