



STRATEGIC OPEN INNOVATION

04.08.214

PRESENTED AT: Ceramic Leadership Summit 2014

Andy Zynga, CEO, NineSigma



NINESIGMA[®]

NINESIGMA OVERVIEW



OFFICES IN USA, EUROPE, JAPAN,
AUSTRALIA, KOREA AND CANADA



37,000 + PROPOSALS
RECEIVED FROM 116 COUNTRIES



2,500 + OPEN INNOVATION
PROJECTS COMPLETED



DIVERSE CLIENTS
MULTINATIONALS, MIDDLE MARKET,
NON-PROFIT, GOVERNMENT



2 MILLION + SOLUTION
PROVIDERS CONTACTED



PROGRAM MANAGER
EXPERIENCE: 28 YEARS AVERAGE
INDUSTRY EXPERTISE, 150
PROJECTS MANAGED

OUR CLIENTS ON NINESIGMA:

**THE BEST IN THE WORLD AT UNCOVERING
TECHNOLOGIES TO SOLVE INNOVATION NEEDS.**

A SAMPLE OF OUR GLOBAL CLIENTS



PROGRAM DELIVERY IN:

North America • Brazil • South Africa • Europe • Japan • Korea • Australia

OPEN INNOVATION

THE PROCESS OF GOING OUTSIDE YOUR COMPANY'S OR INDUSTRY'S FOUR WALLS TO FIND OR INSPIRE NEW CONCEPTS, TALENTS AND TECHNOLOGIES. ▶

HOW DOES THE TECHNOLOGY SEARCH PROCESS WORK?



NON-CONFIDENTIAL NEEDS BRIEF

A PROBLEM WELL STATED IS A PROBLEM HALF SOLVED

▶ CLEAR

Is written so that researchers in other industries can understand what is needed

▶ CONCISE

Provides the critical information for potential Solution Providers to understand what is needed for the technology to be evaluated and acquired

▶ COMPELLING

Has a financial reward that is commensurate with the proposed project

NINESIGMA Request for Proposal
NineSigma - Connecting technology seekers with solution providers around the globe

REQUEST # 66783
Cutting and Handling Technology for Micropolymer Rods

RESPONSE DUE DATE: December 3, 2010
MANAGER: Stephanie Orellana, Ph.D.
SOLUTION PROVIDER HELP DESK
EMAIL: FO@ninesigma.com PHONE: +1-218-280-3801

Opportunity
Licensing, co-development, equipment purchase (prototype, pilot, or commercial scale)

Timeline
Phase 1 - Proof of concept prototype by end of Q1 2011
Phase 2 - Pilot scale equipment by end of Q4 2011
Phase 3 - Production scale equipment

Financials
All terms to be negotiated as warranted

REQUEST FOR PROPOSAL DESCRIPTION
NineSigma, representing a Fortune 500 company, invites proposals for products or technologies that can accurately cut and enable precise mechanical manipulation of micropolymeric rods.

- The successful technology will:
 - Handle polymeric rods of 0.2 - 0.5 mm diameter, 0.5 - 6.5 mm length, and 0.05 - 0.7 mg weight
 - Accept polymeric filaments of 15 - 30 cm in length
 - Have precise and reproducible cutting capabilities, especially on micro rods of materials with diverse mechanical properties (e.g., flexible, brittle, etc.)
 - Weigh (± 0.0001 mg) and sort out rods
 - Inspect rod diameter and accept or reject based on dimensional criteria
 - Orient rod during inspection to facilitate accurate placement for subsequent steps
 - Not distort rod shape, cross-link, or degrade polymers
 - Overcome static charge challenges

In addition,
• Equipment must be cleanable

- All aspects will be automated so that no manual intervention is required after material loading
- Target speed will be $\geq 1,000$ pieces/day

BACKGROUND
Polymeric rods of extremely small size are difficult to handle and cut in a reproducible, precise, and non-damaging manner without significant manual intervention. Additional challenges include rod distortion, inconsistent sizes and weights, and static charges that result in displacement and loss of material. Damaged or imprecise product rods must be discarded. To overcome these challenges, NineSigma's client seeks a rapid, automated approach to achieve accurate product sizing and orientation.

Approaches for precision cutting and handling from any industry are welcome.

POSSIBLE APPROACHES

- Microelectronics
- Plastics
- Stamping, punching
- Machine vision
- Robotics
- Lasers

Offices: Cleveland - USA, Tokyo - Japan, Leuven - Belgium www.ninesigma.com
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EXPANDING YOUR REACH THROUGH UNEXPECTED CONNECTIONS

PACKAGE LEAK
DETECTION



DISPENSER
TECHNOLOGY



MICROWAVE
EVEN HEATING




SENSORS



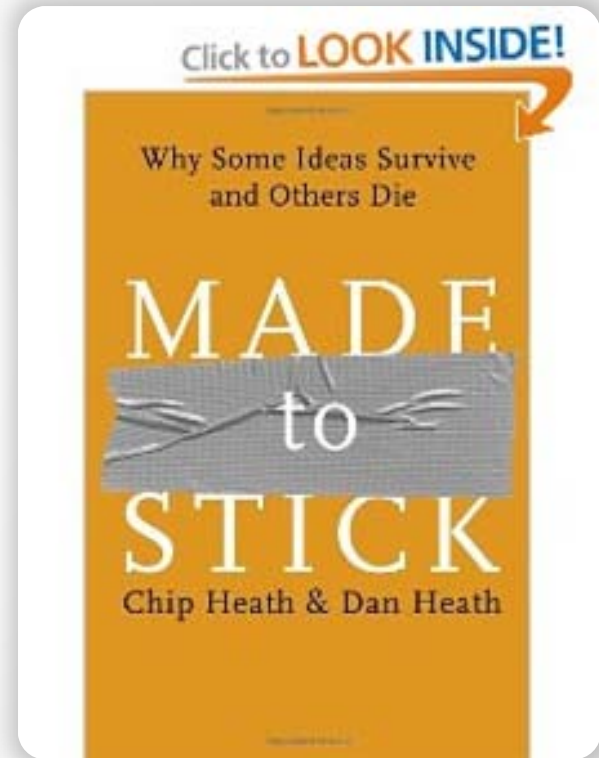
The common tendency of filtering input and output through one's own likes, dislikes, and experiences to acquire, retain, and process information.

ELIZABETH NEWTON*: TAPPING AND RECOGNIZING MELODIES



*Overconfidence in the communication of intent:
Heard and Unheard Melodies. Elizabeth Newton, Ph.D. Thesis,
Stanford, 1990

*“Here’s the great cruelty of the **Curse of Knowledge**: The better we get at generating great ideas—new insights and novel solutions—in our field of expertise, the more **unnatural** it becomes for us to communicate those ideas clearly”*



KARL DUNCKER



CREATOR OF THE “CANDLE EXPERIMENT”

THE CANDLE EXPERIMENT*



*KARL DUNCKER, 1945

NOT THE RIGHT SOLUTION...



THIS IS THE SIMPLEST WAY...



COGNITIVE BIAS 2: FUNCTIONAL FIXATION



MYTH #1

OPEN INNOVATION MEANS ALWAYS BEING OPEN

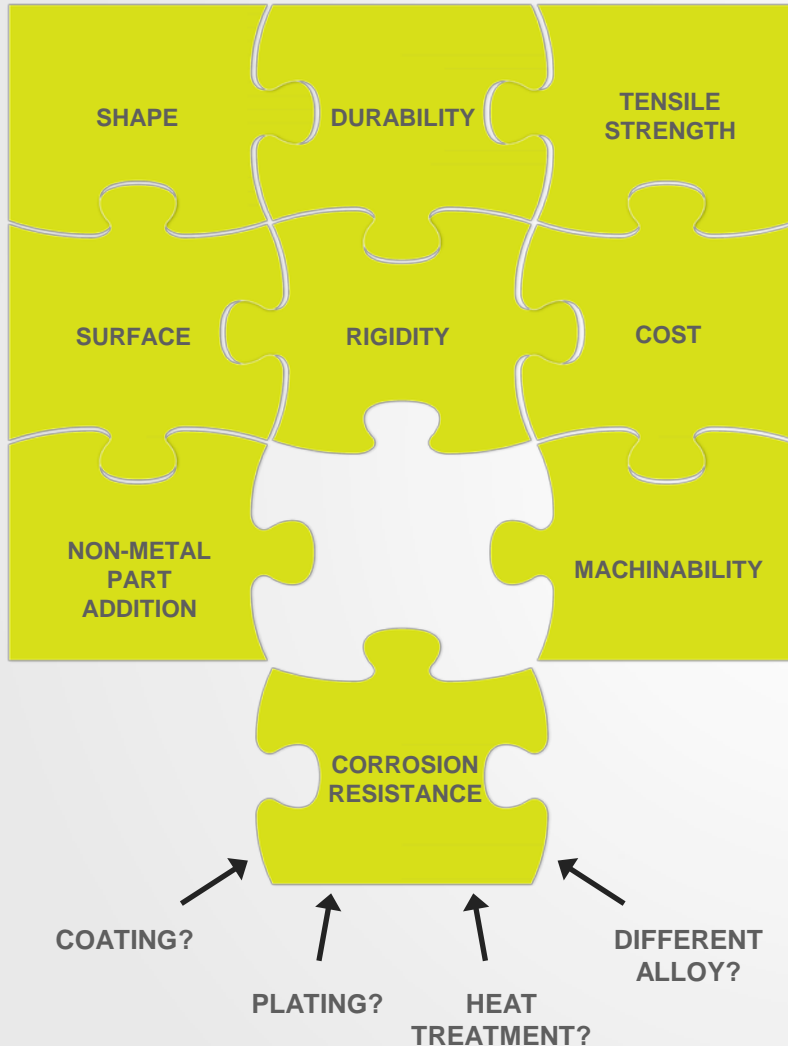


Projects at any step of the technology value chain

- Practitioners of Open Innovation do protect their Intellectual Property
- It's about need, timing/staging, and process
- The innovations sought are typically part of a larger whole *(see next myth)*

MYTH #2

OPEN INNOVATION REPLACES INTERNAL R&D



- Need experts to understand solutions & to integrate in overall part design
- OI Enhances / Accelerates, does not replace
- Tech Searches or Expert Services

MYTH #3 INTELLECTUAL PROPERTY WILL BE COMPROMISED WHEN PRACTICING OPEN INNOVATION

NINESIGMA PH.D. TEAM

2. SOLUTION PROVIDERS

1. CLIENT



5.

2.

"Technology Brief" summarizing the need (RFP)
NON-CONFIDENTIAL

4.

Proposed IP Solution
NON-CONFIDENTIAL

Proposed IP Solution
NON-CONFIDENTIAL

Proposed IP Solution
NON-CONFIDENTIAL

Universities



Industry



Labs



NineSigma Proprietary Search Methodology & Database

BROADCAST SEARCH

VDMA - PILOT

**“This will never work
in my industry.”**

Return on open innovation

Data from VDMA project in textile machinery industry

Direct cost of OI project

€18 000 ,- + approx. 2 person months

Estimated value of realized solution

€375 000,-

ROI : approx. **2000%**

Quality of solution:

Average of **89% immediate “fit for purpose”**

OHIO MID MARKET OPEN INNOVATION INCENTIVE*



14
COMPANIES



19
PROJECTS



\$224M (3-5 YEARS)



AVERAGES:

\$16M / COMPANY
\$11.8M / PROJECT



70
JOBS



5 NEW JOBS
PER COMPANY

*The above are estimates from the client companies

SINCE JANUARY 2013, CONTRACTS FOR 24 TECHNOLOGY SEARCHES HAVE BEEN AWARDED

SELECTION OF COMPANIES:

AtriCure



OATEYSCS[®]
Supply Chain Services

TimberTech[®]
Less Work. More Life.



HDT[™]
GLOBAL

THERMA TRU[®]
DOORS



KEITHLEY

MEGGITT



Seaman Corporation

HENNY PENNY[™]
Global Foodservice Solutions



EMERSON[®]
Climate Technologies

MICHELMAN[®]
YOUR COMPETITIVE EDGE.™

NOVEL TECHNOLOGIES TO PRODUCE OPEN CERAMIC FOAMS



OVERVIEW & CHALLENGES

- A major Chemical Company was looking for technology to produce three dimensional ceramic foam structures with high strength and porosity, preferably directly made from a mixed metal oxides containing slurry.
- Ceramic foam produced by methods known to the client are of low strength.

RESULTS

- NineSigma collaborated with the Client to articulate the technical need.
- 24 proposals were received from a number of different industries, academia, and laboratories.

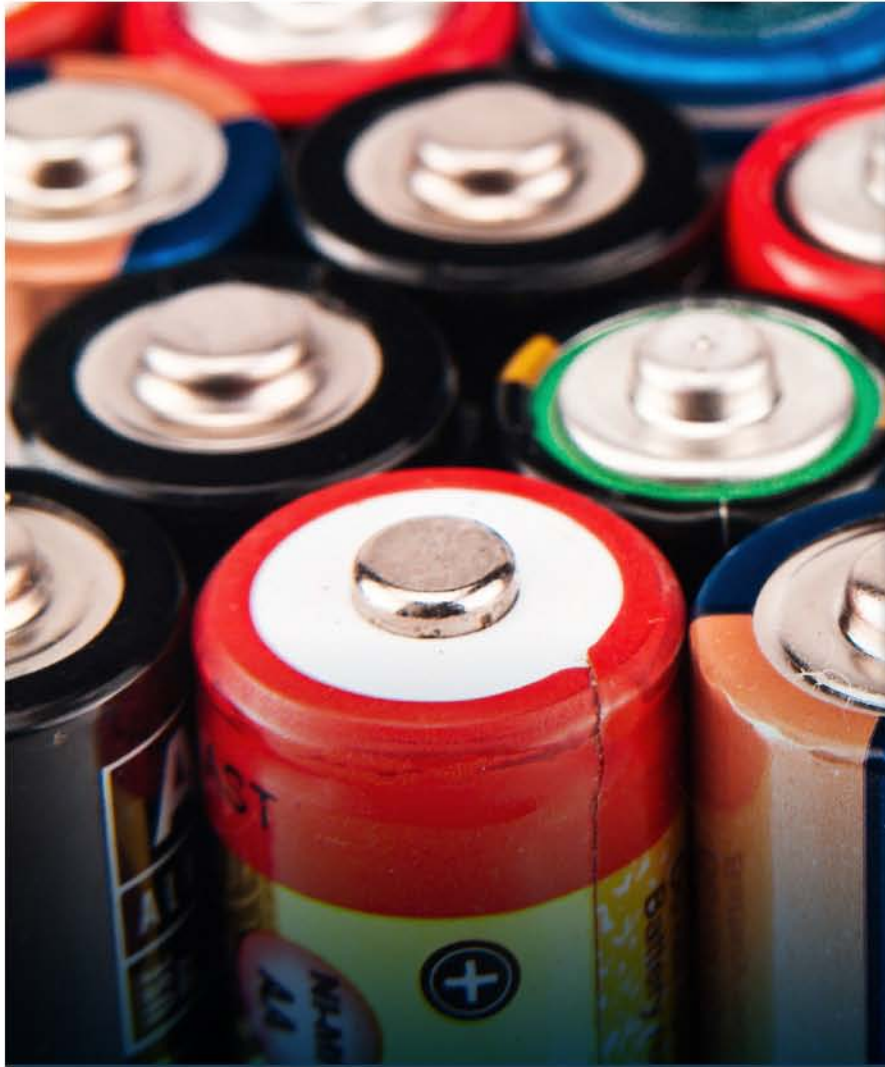
KEY TAKEAWAYS



- The Client selected two companies to follow up and engage in discussions with under a non-disclosure agreement.

CASE STUDY

TECHNOLOGIES FOR THIN FILM SHEETS OF CERAMIC MATERIALS FOR LITHIUM ION BATTERIES



OVERVIEW & CHALLENGES

- A multi-billion dollar materials manufacturer was looking for new technologies for making thin film sheets of ceramic materials to use in lithium ion batteries.
- Demand is expected to increase for lithium ion batteries.

RESULTS

- NineSigma targeted its global innovation community for potential solution providers across a variety of industries.
- 23 proposals were received from a number of different industries, academia, and laboratories from areas such as North America, Europe, the Oceania and Asia.

KEY TAKEAWAYS



- NineSigma's approach of reaching out to the global solution provider community resulted in a broad array of solutions, many of which the client would have never considered.

- » Assign a Champion
- » Pick only projects that will have a meaningful impact on the business
- » Get all stakeholders involved/informed early on



OUR EFFECTIVENESS IS CONFIRMED BY FEEDBACK FROM OUR CLIENTS



"The NineSigma Intelligence Program has proven to be an outstanding tool for us in our exploration of emerging technology. The quality, organization, and delivery of information, especially NineSigma's assessment and recommendations, will help us make strategic decisions." Kent Young, Director of Technology, Sherwin-Williams



"We are extremely pleased with the results from NineSigma. The companies and individuals NineSigma connected us to provided us with ready solutions to a materials need that we have been unable to address with our internal expertise. NineSigma delivered fast and significant value to our program." Robert Finocchiaro, Ph.D., Technical Director, 3M

Source: Authorized attributable comments.



"We use NineSigma when we are looking for alternative approaches to solve problems or where a solution from a different industry may help." Todd Abraham, VP of Global Research and Technology Strategy, Kraft



"We've distributed technology briefs to more than 700,000 people through NineSigma and have as a result completed over 100 projects, with 45% of them leading to agreements for further collaboration." Larry Huston, Nabil Sakkab, Procter & Gamble in Harvard Business Review, March 2006



"We found the NineSigma Intelligence program particularly helpful in getting us quickly up to speed on our internal knowledge on geothermal energy. We have some strategic decisions ahead of us, but the NineSigma program helped get us to the point where we can make the best decisions possible." Rod Nelson, Vice President, Schlumberger



"Innovation and technical excellence are critical to Air Products' continued success in the market. We believe that working with NineSigma will amplify our internal R&D efforts and will expand our ability to access external resources and capabilities globally" Miles Drake, Vice President and Chief Technology Officer, Air Products



"Innovation is the lifeblood of our company. If we don't innovate, we won't grow, or even survive, in today's fast moving world and highly competitive business environment. We have chosen to partner with NineSigma to establish our Networked Innovation Program because they have an impressive track record of making open innovation work for companies like ours," Graeme Armstrong, Corporate Director of Research, Development and Innovation at AkzoNobel.

Thank You

PRESENTER

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HBR Blog Post: The Innovator who Knew Too Much

By Andy Zynga | April 29, 2013

http://blogs.hbr.org/cs/2013/04/the_innovator_who_knew_too_muc.html

HBR Blog Post: The Cognitive Bias Keeping Us from Innovating

By Andy Zynga | June 13, 2013

http://blogs.hbr.org/cs/2013/06/the_cognitive_bias_keeping_us_from.html#disqus_thread