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# Innovation & Technology Adoption Identifying & Implementing Great Ideas

Thornberry, Neal; Salem, Anita; Billeaudeau, Andre

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# Innovation & Technology Adoption

## Identifying & Implementing Great Ideas

Neal Thornberry PhD

Anita Salem M.S.

LCDR Andre Billeaudeau, USCG



Naval Postgraduate School

# Introduction

## **Sponsored by**

Homeland Defense & Security, Naval Postgraduate School

- Wendy Walsh

## **Presenters**

### Organizational Innovation

- Dr. Neal Thornberry, Forum for Innovation Research & Teaching, NPS

### Using practitioner input to increase adoption

- Anita Salem, Center for Defense Management Reform, NPS

### A case study in innovation

- LCDR Andre Billeaudeau, USCG

# Organizational Innovation: Antidote or Oxymoron?

In Search of the *“Dragon”*

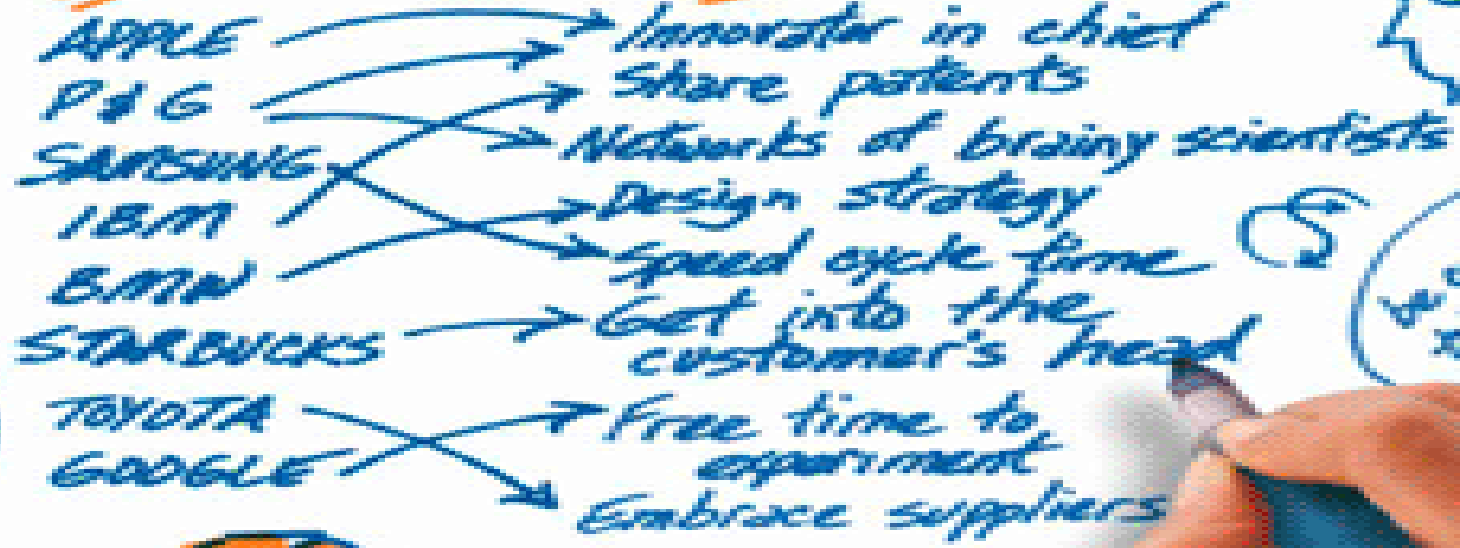
# BusinessWeek

## THE WORLD'S MOST INNOVATIVE COMPANIES



WHO

HOW



what's with Sony?



be courageous take big risks!



is there an innovation premium in stock price? at year??



# Corporate Mortality is very high!

Average life expectancy of all firms, regardless of size, measured in Japan and much of Europe, is only 12.5 years.

The average life span of a multinational organization - Fortune 500 or equivalent - is around 45 years.

One third of the companies listed in the Fortune 500 in 1970 for example, had disappeared by 1983 - acquired, merged or broken to pieces.

The first S&P index of 90 major US firms was created in the 1920s. The firms on that original list stayed there for an average of 65 years. By 1998, the average tenure of a firm on the expanded S&P 500 was 10 years.

Source: The Living Company, Arie de Geus

# The Challenge: Creating and Sustaining Growth

90% of all firms are unable to sustain an above-average growth rate for more than a few years

80% of venture capital funded start-ups fail within the 1<sup>st</sup> 2 years

75% of new products launched by established firms fail

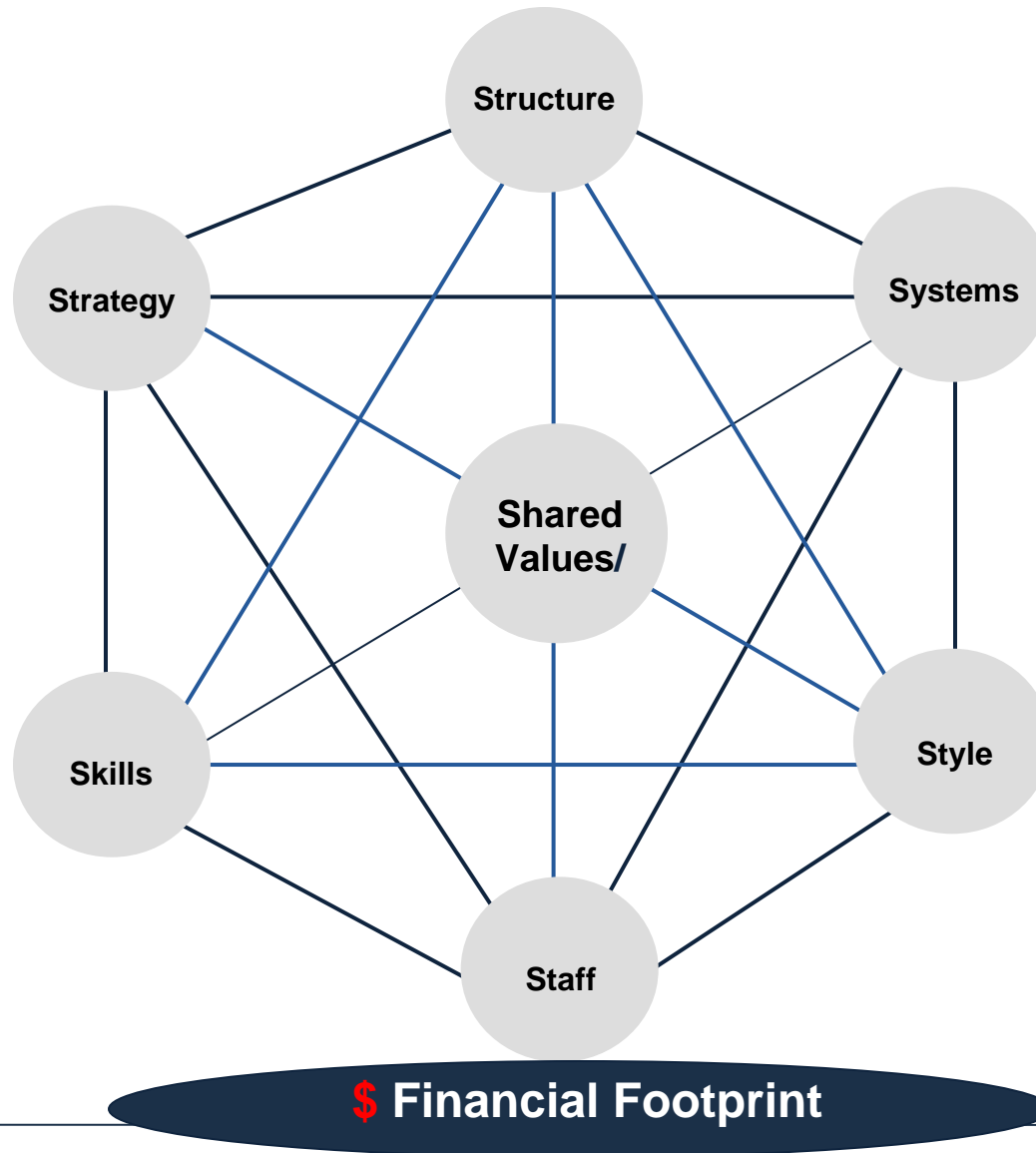
Source: Christensen, 2004

# The State of Innovation

- Where Quality was 10-15 years ago
- Ideation is not the end game(current IBM commercial)
- Implementation & sustainment are the real issues
- Organization for innovation
- Absence of “Best Practices”
- Replication issues
- HR strategies for Jekyll and Hyde personas
- Confusing innovation & entrepreneurship
- Accepting & managing the oxymoron of “organizational innovation”
- Legitimizing “Corporate Judo”
- Lack of disciplined methodologies to differentiate great ideas from great opportunities



# The 7S + 1 Framework



# Entrepreneurship: Innovation's lesser known sibling

Entrepreneurship always involves innovation; Innovation does not always involve entrepreneurship

# Innovation & The Discipline of Entrepreneurial Thinking

I  
D  
E  
A  
S



## The Balancing Act

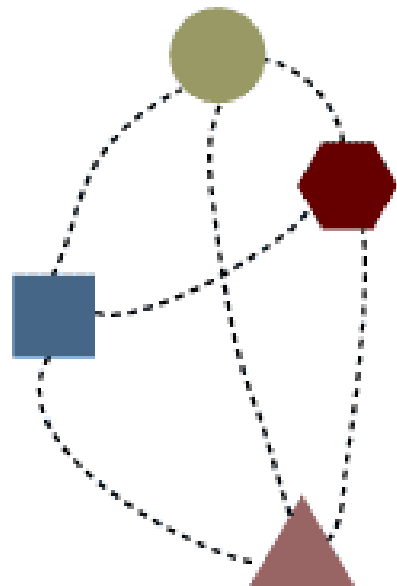
Timmons, 1999

# Will the Innovation Create Value?

$$V = B/C$$



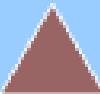

# A new model of Innovation

## Innovation Network



## Business model

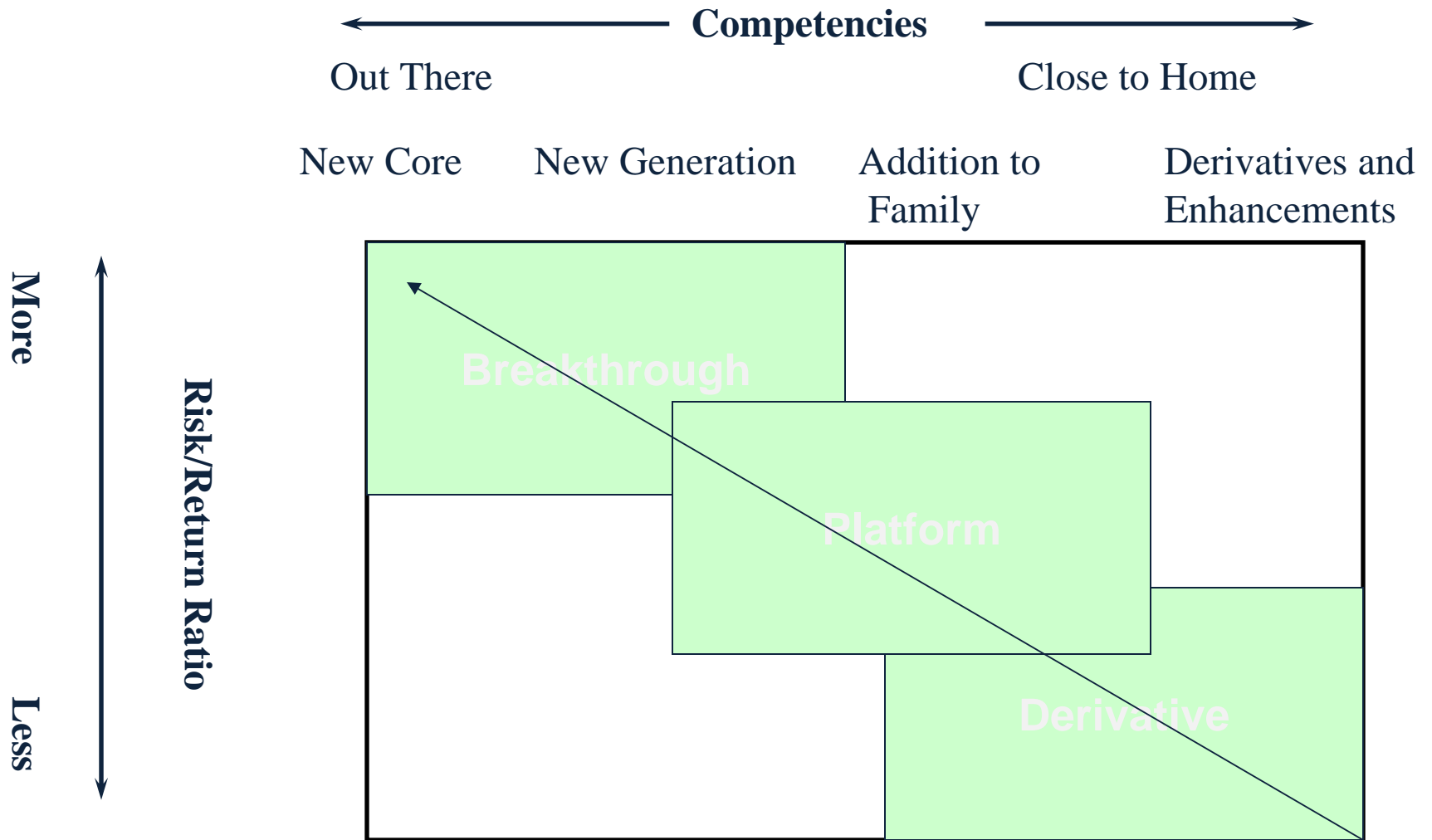
## Specialization

 Inventor	Intellectual powerhouses that conduct basic science research and/or design products and services that result in patentable inventions. <b>Example:</b> MIT, IDEO, SRI, GE Global Research, KAIST, Celera, Oxford, Microsoft Research, HP Labs, CNRS, Persistent, IIT
 Transformer	Multifunction production and marketing services that convert inputs from Inventors and other Transformers into valuable business innovations for either internal or external customers. <b>Example:</b> Dell, Pfizer, BP, Merrill Lynch, SAIC, IBM, Infosys
 Financier	Funding source for Innovation Network service providers — especially Inventors and startup Transformers. Financiers will seek to own intellectual property rights for inventions. <b>Example:</b> Cargill Ventures, Silicon Valley Bank, Garnett & Helfrich Capital, InterActiveCorp, ICICI Bank, Vulcan, IP2IPO
 Broker	Market makers that find and connect Innovation Network service providers — buying and selling or enabling service delivery both within and among companies. <b>Example:</b> Knowledge Campus, yet2.com, PLX Systems, Big Idea Group, InnoCentive, Evaluateserve, ISTC, Intellectual Ventures, P&G's Technology Entrepreneurs, DCMA, METI, TIE

Source: Forrester Research, Inc.

# Opportunity Evaluation

- Differentiate good ideas from real opportunities
- Business plan or paying customer
- Follows the opportunity thinking process
- Compelling, defensible, durable, sustainable
- A unique value proposition for a customer set
- Is the value worth the risk?



# The Balancing Act

I  
D  
E  
A  
S







# CENTER FOR DEFENSE MANAGEMENT REFORM

GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY

## Opportunity Identification & Shaping

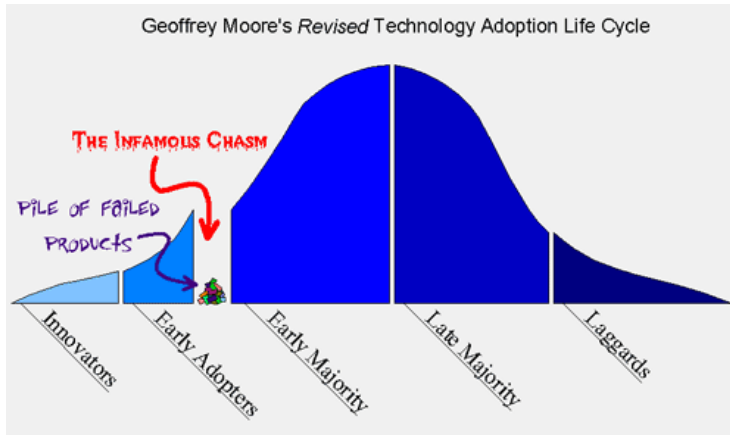
How light bulbs are powered by logic

# Using practitioner input to shed some light

1. Human barriers to adoption
2. Methods for understanding the “problem space”
3. Practice session on problem analysis
4. What people need

# Barriers to adoption—why humans matter

## Problem 1: Designing for wide adoption



- Features vs. Usability
- Desirability vs. Efficiency
- Narrow vs. Wide adoption

## Problem 2: Designing for interoperability

- Language—codes vs. natural language
- Frequency of use—Police & Fire vs. Utilities
- Training—Learnability vs. Intuitiveness
- Culture—big city vs. rural

“Governance is the greatest gap being found in field testing of interoperability initiatives”

Robert Zanger, U.S. Department of Justice

# Barriers to adoption—buy-in and sustainability

## Organizational ROI

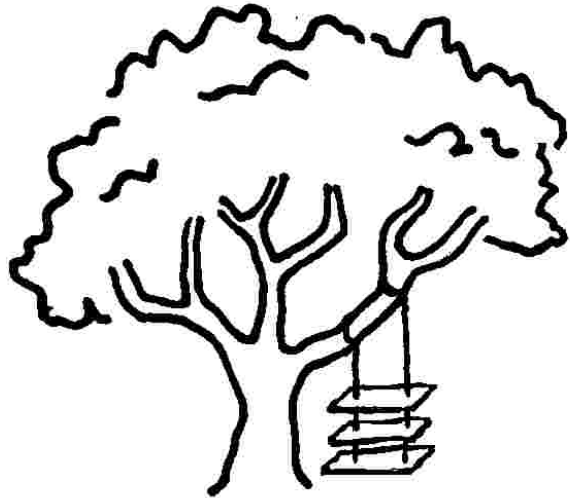
- Customer.....convenience, ease of use, features
- Social.....benefits to society or group
- Operational...improved infrastructure, efficient processes
- Strategic.....fulfilling the mission, aligning with strategies
- Financial.....increased revenue, lower costs, risk reductions

## Human goals

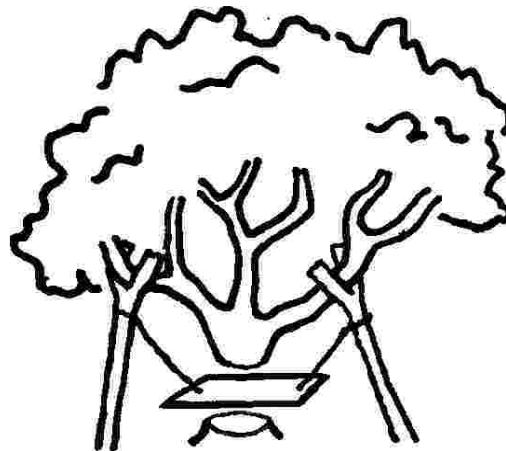
- Human needs and goals drive value
- Value varies by practitioner (interoperability)

GIS software for  
"Best Practices"  
Police: officer safety  
page of Intranet  
through Release  
shares information  
improvement in  
between  
water supply facilities  
departments  
exercises and agile  
Increasing  
practices from  
compliance of the  
software  
use of PPE's for  
90 million  
the Department of  
Labor & Industries  
increased  
revenues based  
on A/B testing  
of phones

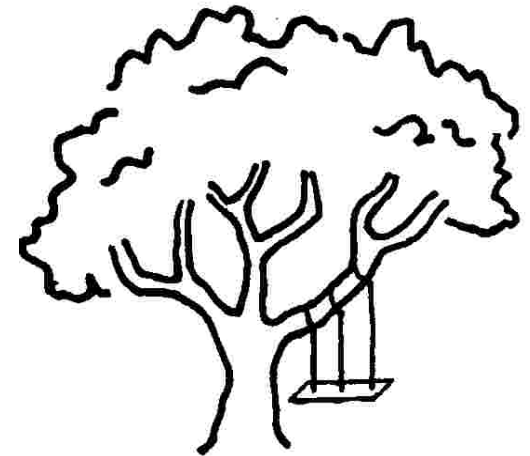
# Don't do this



Features over  
usability



Product requires  
extensive  
customization



Specs based on  
system not users

# Do this



Human: Infant/Parent

Need: Calmness/Safety & Time

*"It's for gentle soothing and rocking for baby, not for jostling and bouncing fun, that's what a bouncer is for"*



Human: Adult

Need: Relaxation

*"The minute I sat in it all the stress of the day was erased."*

**Provide value based on  
*human needs***



Human: Adults

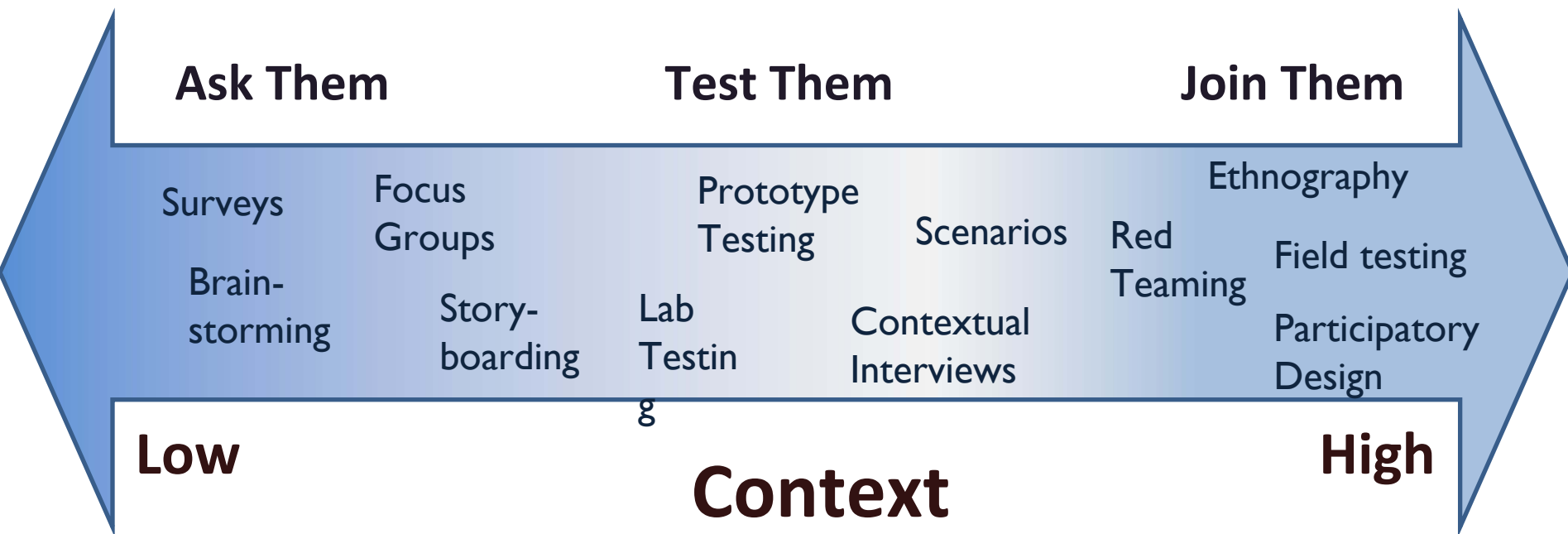
Need: Relaxation & Intimacy

*"We can read, nap, or enjoy a drink in comfort"*

# Understand what people want

## Understand the context of use

Who, what, why, where, when, and how



# An exercise in discovering value

## The mobile phone contextual interview

### 1. Partner up with 1-2 others

- One person gets interviewed
- One person interviews
- One person takes notes of issues

### 2. Ask them to talk about their mobile phone use

- What do you like best?
- What do you like least?

### 3. As things come up, ask them:

- **Why** they do it?
- **How** they actually do it
- **Have them provide an example or show you**





Why?

How?

Examples!

# Specify what people want

Effectiveness	Efficiency	Desirability
<b>Metric</b>	<b>Metric</b>	<b>Metric</b>
Success rates	Errors	Purchase patterns
Adoption rates	Time measurements	Attitudinal Surveys

# Examples of Good Opportunities



iPhone

“It just feels so natural ...every screen should be able to be touched”

"This is the perfect solution for people like me who simply want to make calls and send the odd text message,"



“It’s sleek, you can keep in contact with anyone, anywhere! surf the web, share pics, or email... and its all at your fingertips!”

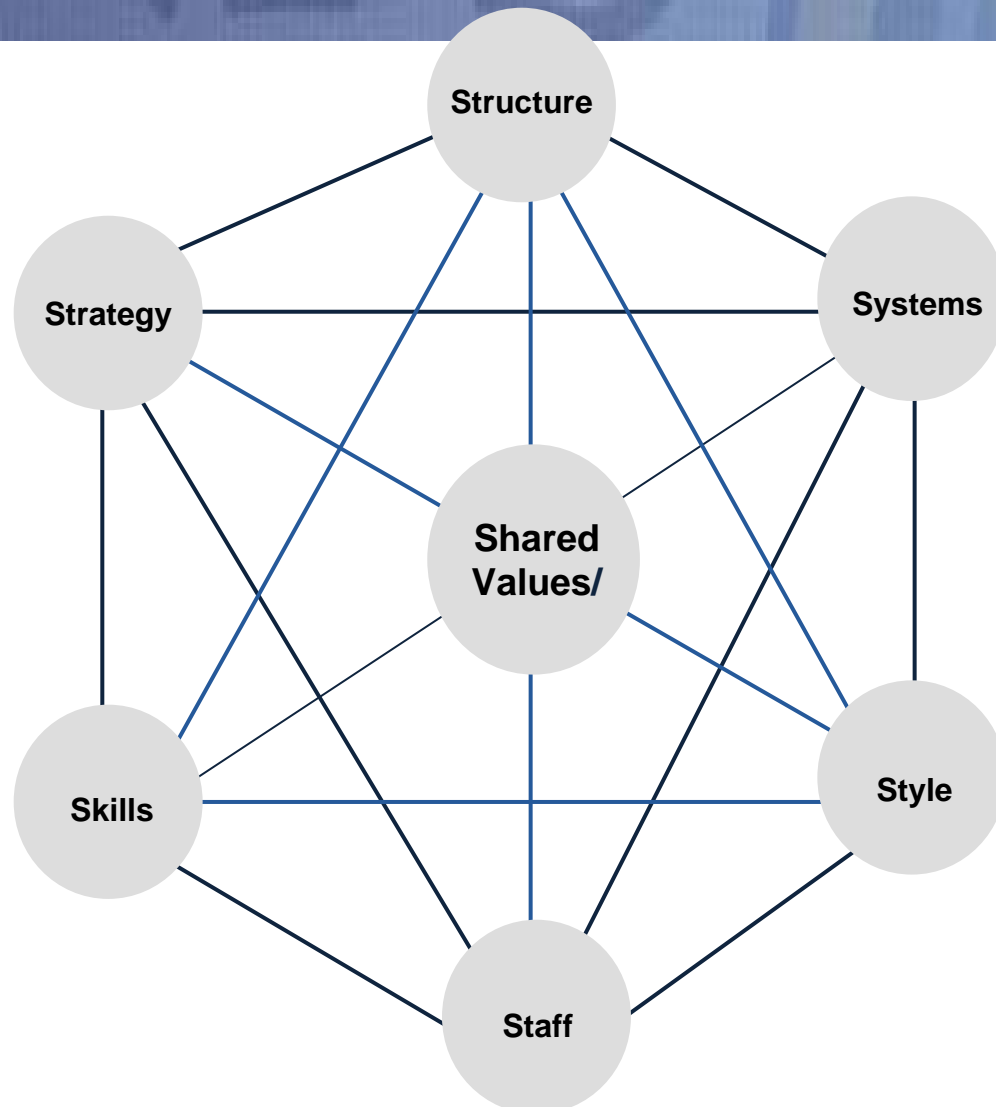


"All of us kids have been wondering when a 'senior-friendly' phone would hit the market

# Case Study in Innovation

## The Coast Guard Post 9-11

# The 7S + 1 Framework / Post 9/11 CG



**Post 9/11 CG Footprint**

# Coast Guard post 9/11 Strategy

**“The vastness and complexity of the maritime domain make public and private partnerships a *prerequisite* of preparedness and effective response.”**

*Then Vice Admiral Thad W. Allen before the Senate Committee on Commerce, Science & Transportation March 9, 2006*

**“The maritime threat environment of the 21st Century *requires* broader scope and a more comprehensive vision.**

**We *must* look beyond traditional surveillance of ports, waterways, and oceans, and continuously adapt to new challenges and opportunities.**

**We *must* set priorities for existing and developing capabilities to efficiently minimize risks while contending with an uncertain future.”**

*The National Plan to Achieve Maritime Domain Awareness for the National Strategy for Maritime Security Oct 2005*

# Coast Guard Staffing Picture

## 1 firefighter for every 280 people

1 million firefighters – 750,000 volunteer

## 1 sworn officer for every 385 people

436,000 sworn law enforcement personnel  
291,000 sworn sheriff's office personnel

## 1 EMT/paramedic for every 325 people

860,000 all levels of pre-hospital services:  
basic EMT, intermediate EMT, paramedic

## 1 Coast Guardsman for every 6,300 Americans

### 1 Direct Operational Coast Guardsman for 50,000 Americans

### 1 Direct Operational Coast Guardsman for every 16 miles of shoreline

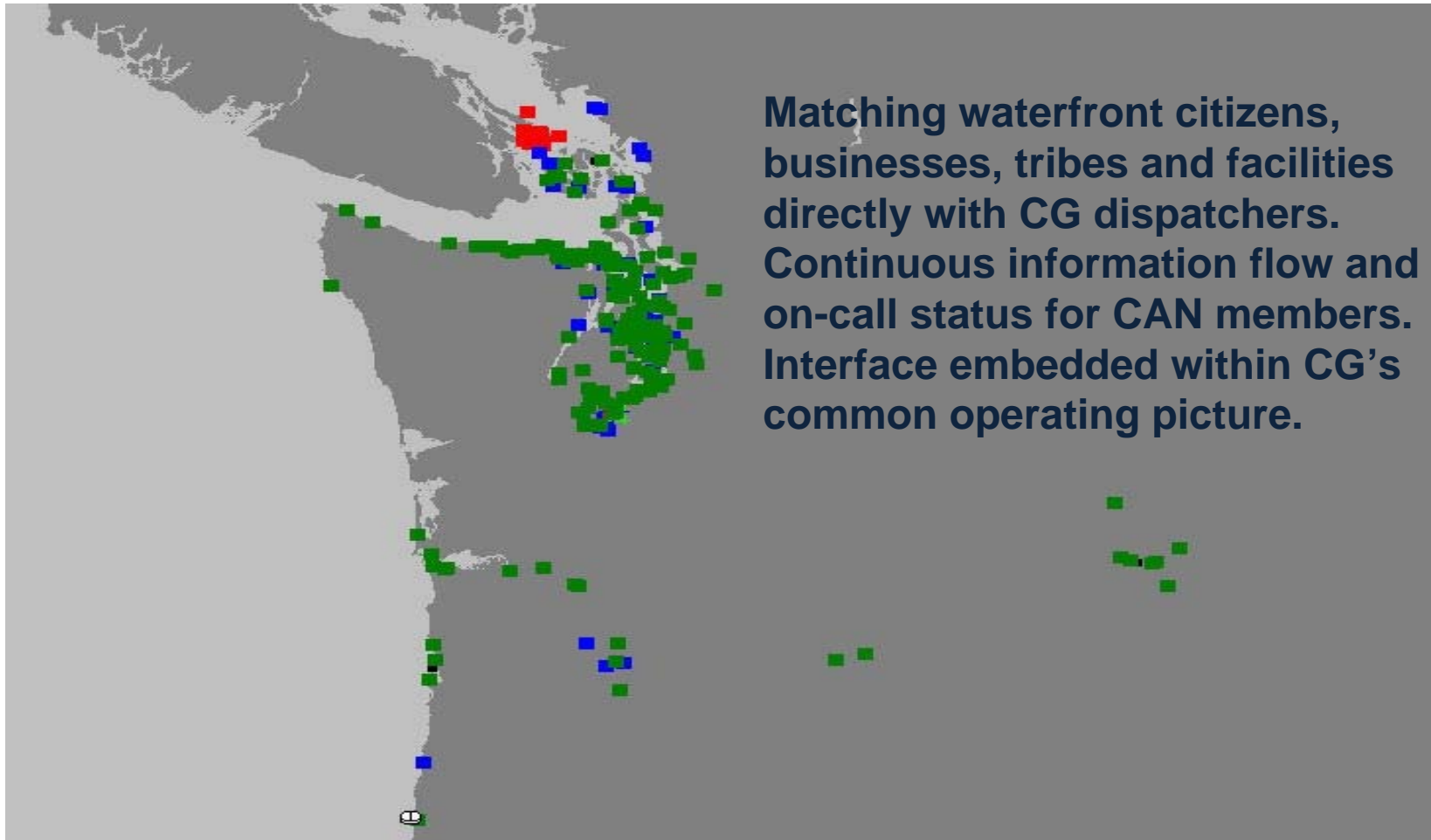
45,000 Active Duty Coast Guardsmen

# Coast Guard Structure

- ← In 2001 the strain of Coast Guard's mission demands came to light. Studies by the Inspector General & a CG internal review team that year found that readiness conditions at the 188 CG multi mission stations had been deteriorating for over 20 years. This debilitating situation was exacerbated after 9/11 according to the GAO
- ← After 9/11, the GAO found that the CGs multi mission stations had experienced a substantial rise in overall activity levels. This rise in mission demand came with a prioritization of the CG's new homeland security demands. Field stations were summarily assigned the brunt of the Coast Guard's port security responsibilities and considerable increases in the stations' security workloads.
- ← This trend is documented in boat operational hours before & after 9/11. Boat hours increased by 44%. From 217,000 hours prior to 9/11 to 300,000+ hours by the end of FY 2004.
- ← Traditional missions, SAR, RBS, Environ Protection etc. suffered.



# DHS/Coast Guard Innovation



# Membership maintained in C2PC System

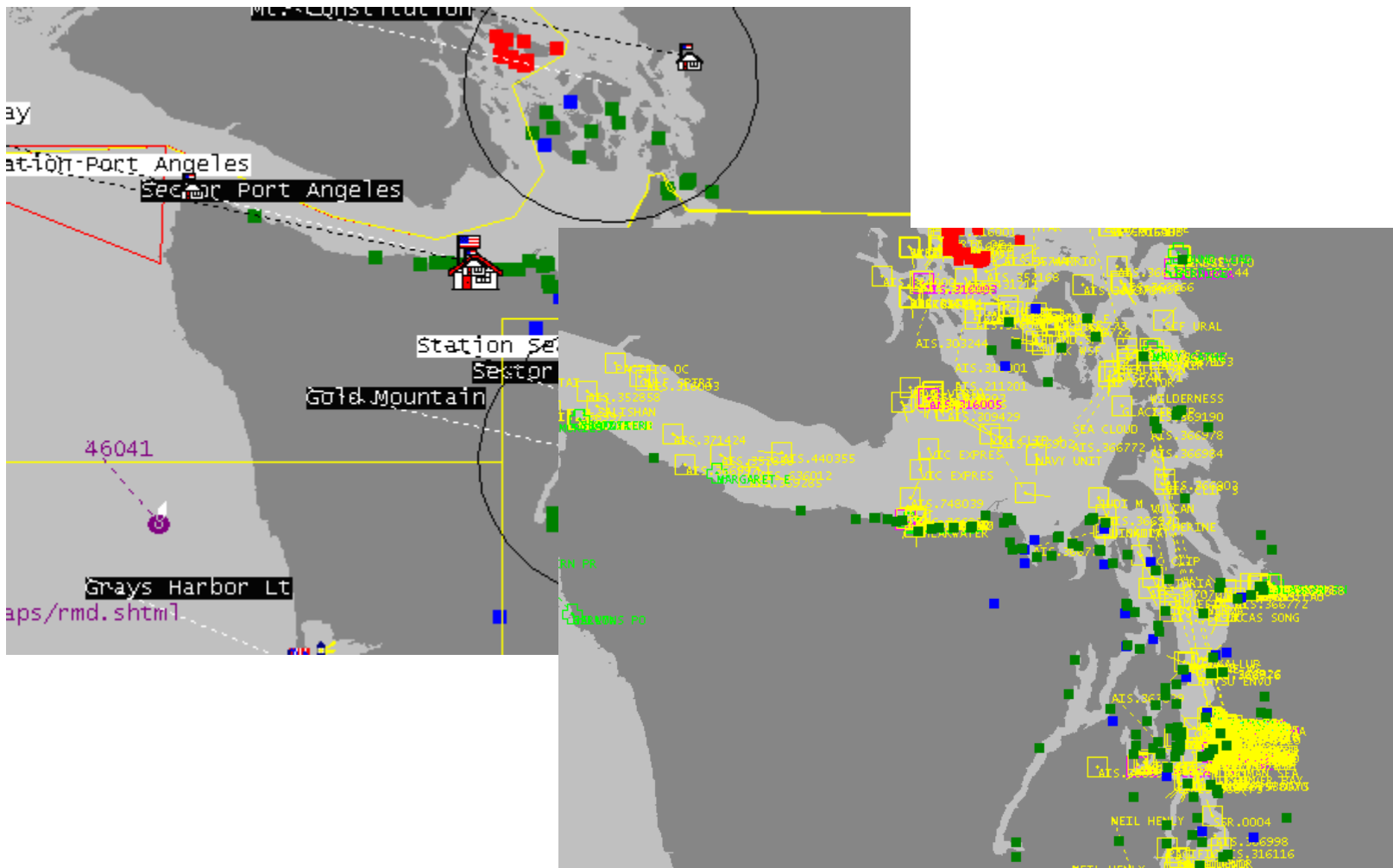
The screenshot displays the C2PC software interface, titled "C2PC - WGS 1984: Global Definition - [Map1 - Base Vector]". The main window shows a map of the Pacific Northwest coast of the United States, with several blue square markers indicating data points. A data entry dialog box, titled "Image Input Data", is open in the foreground, showing the following information:

- Name: COASTIE
- Source: JOE & JILL COASTIE
- Description: H:206.220.7237

The dialog box has tabs for "Select Image", "Times", "Remarks", "Identifiers", and "Amplifying Data". The "OK" and "Cancel" buttons are visible at the bottom of the dialog.

The background interface includes a menu bar (File, Edit, View, Insert, Overlays, Map, Favorites, Declutter, Tools, Window, Help), a toolbar with various navigation and editing tools, and a list of data points on the left side. The list includes names such as Hall, Keys, Krieg, Lewis, Linds, Loker, Lyde, Newt, Pries, Ryar, Taylc, Urba, Whei, Youn, non-au, Adair, Allen, Back, Baile, Bake, Beac, Billea, Blasc, Bottk, Boyle, Brod, Brum, Brutz, Burgi, Chey, Clark, Cope, Covir, and Croo. The status bar at the bottom shows coordinates (45-22.488N 127-23.809W) and the system tray with the Start button and taskbar.

# Common Operating Picture



# Skills – Dispatchers working with waterfront citizens

The Coast Guard received a report from the Royal Canadian Mounted Police that a 28-foot Boston Whaler was stolen from Victoria, British Columbia in March 2007. Auto alerts were put out to CAN and the vessel was spotted the following day deep into US waters. It was recovered following a multi-week investigation.



A homeless man steals a 42-foot yacht and flees with a hostage into the vast South Puget Sound. Several CAN members called up and put on watch. Over three hours the vessel is ID'd and a successful arrest is made. Hostage is released safely.

# Skills – Dispatchers working with Waterfront Citizens

A Canadian resident observed small vessel approach shore from nearby island at night, no lights. RCMP Investigation on nearby island revealed MDA lab in pre-production phase.



CAN Members placed on watch in response to a bomb threat to the Tacoma Narrows Bridge; aided USCG & LE in identifying unusual boats or beachgoers in area.



# Skills – Dispatchers working with Waterfront Citizens



USCG called RCMP requesting assistance in locating vessel that was evading detection. RCMP called upon their CAN and suspect vessel was twice located in transit. Info relayed to USCG who effected a successful apprehension.

A CAN member called in a suspicious cylinder which had washed up on a community beach. The Coast Guard sent investigators to the scene and assessed it to be hazardous.

The cylinder was safely removed and disposed of.

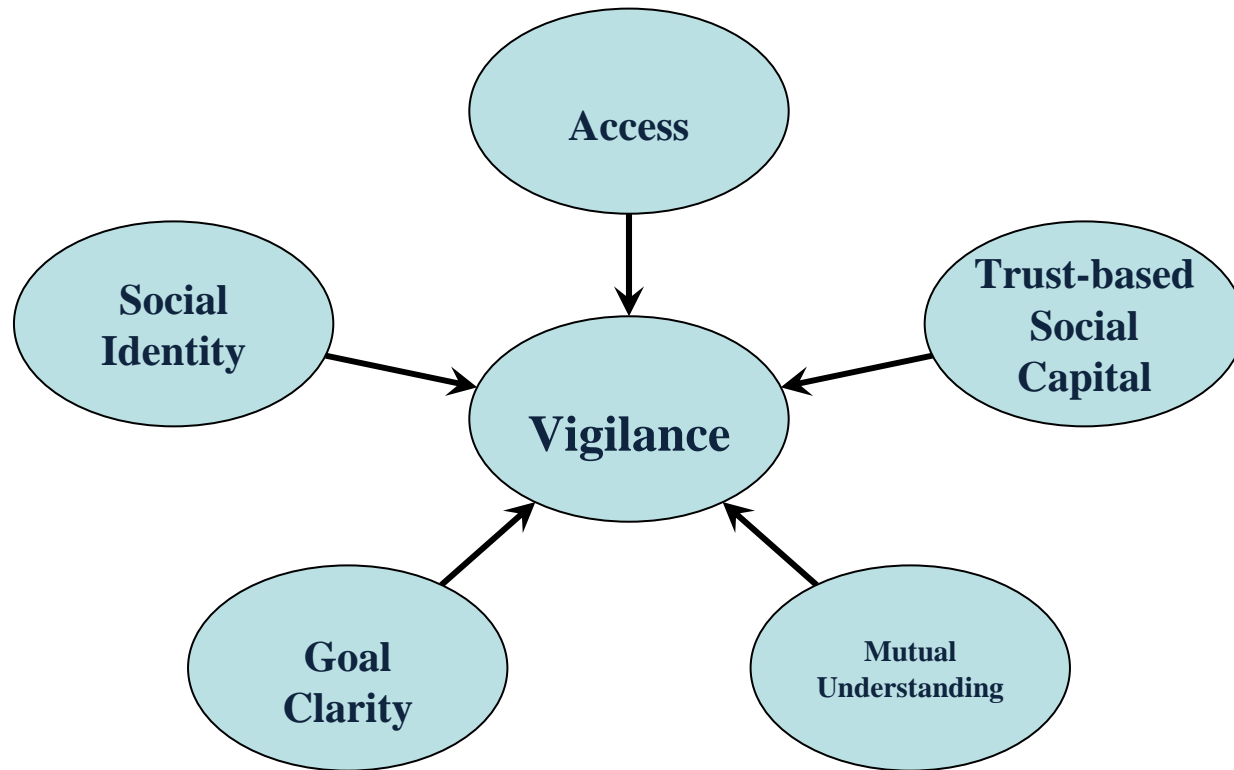


# Skills – Dispatchers working with Waterfront Citizens



A Canadian citizen observes decrepit vessel in British Columbia. Aware of Coastal Watch profiles, he calls Coastal Watch reporting number. RCMP able to respond to apprehend 159 PRC migrants on board

# Outcome: Shared Values





# Are you Entrepreneurial?

- ← Efficiently Gets Proposed Actions Through Bureaucratic Red Tape and into Practice
- ← Displays an Enthusiasm for Acquiring Skills
- ← Quickly Changes Course of Action When Results Aren't Being Achieved
- ← Encourages Others To Take The Initiative for Their Own Ideas
- ← Inspires Others To Think About Their Work In New and Stimulating Ways
- ← Devotes Time To Helping Others Find Ways To Improve Our Products and Services
- ← Goes To Bat for The Good Ideas of Others
- ← Boldly Moves Ahead with a Promising New Approach When Others Might Be More Cautious
- ← Vividly Describes How Things Could Be in the Future and What Is Needed to Get Us There
- ← Gets People to Rally Together to Meet a Challenge
- ← Creates an Environment Where People Get Excited about Making Improvements

Questions?