

Optimizing Knowledge Uptake

Employ a Knowledge Management System
to Drive Principles to Practice

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Houston, We Have a Problem

- We Don't Really Understand Knowledge Exchange
- We Take Knowledge Exchange for Granted
- We Fail to Recognize the Importance of Cultural Differences
 - R&D Culture
 - Market/Client Culture
 - Cultural Context for Product Dispersion and Acceptance
- We Ignore Barriers to Knowledge Uptake
- We Need A Knowledge Exchange Solution



What is Knowledge Exchange ?

What is Knowledge Exchange?

Moving Principles to Practice in a Manner that Effects Change

Venues for KE Include:


Extension

Technology Transfer

Outreach

Training

Continuing Education



*What are the Consequences of Taking
Knowledge Exchange
For Granted?*

Taking Anything For Granted is Risky Business

The State of Energy

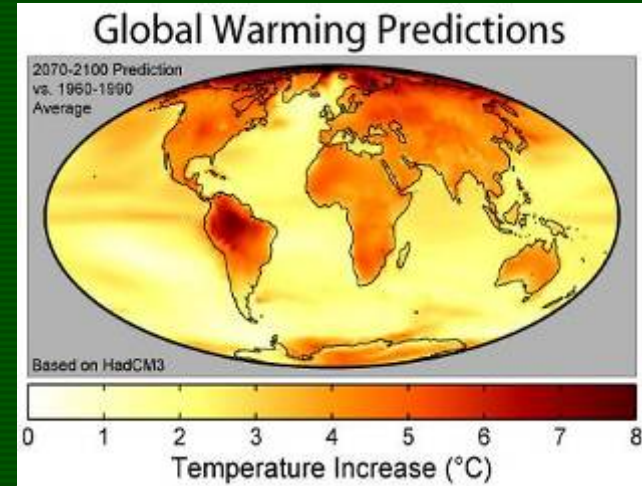


There's Plenty of Oil !
What Oil Peak ?



The North American
Compromise

The State of Climate



But it's Only a Prediction, and
it's not for 55 years !



Tell it to the Polar Bear

Taking Knowledge Exchange for Granted

The Consequence to Companies and Communities
+
Being ill-prepared and poorly positioned
to capture an opportunity



Don't Blink Opportunity Moves Quickly !

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*What Cultural Differences
Need to be Considered?*

Comparing Cultural Attributes

| Cultural Type & Character | Environmental Setting | Conditioned Behavior | Approach to Problems and/or Opportunities |
|--|---------------------------------------|--|---|
| Researcher or Engineer + <i>"Intellectual Growth"</i> | Studious Skeptical Scrutinizing | Curious Free-Spirited Self-Assured | Analytical Cautious Opportunistic |
| Policy Developer + <i>"Restrictive"</i> | Perpetual Crisis Management | Control the Pieces and the Players | Band-Aid |
| Corporate Management or Finance + <i>"Stay in the Black"</i> | Bottom Line | Competitive Wary Savvy Secretive | Move quick, make it happen, and move on |
| Operations Field or Plant + <i>"On the Ground"</i> | Get it Done | Practical and Pragmatic, with a Dash of Frugal | Common Sense |

Evolution of Corporate R&D

4 Generations of R&D

- 1st Serendipity Management (1930-1960) “Give me money, let me do my thing”
- 2nd Project Management (1960-1975) Ensure project objectives are linked to business priorities
- 3rd Portfolio Management (1975-1995) R&D portfolio aligns corporate priorities and balances high, medium and low risk projects – Partial Systems Approach
- 4th Symbiotic Management (1995 →) Capture the imagination locked in the minds of clients and unleash the ingenuity of researchers to innovate – Full Systems Approach

Know Anyone Still Stuck in #1 ??



The Cultural Gap

Dealing with Differences

Different Business Cultures Shape Activities Unique to that Culture

Research

Think-Ponder
Seek Answers
Question
Formulate Hypotheses
Design & Test
Analyse & Interpret
Publish

2-10 Years

Client

Strategize
Respond to Issues
Set Deadlines
Identify Risks
Contingency Plans
Take Action
Implement

Now to 1 Year

G

A

P

Time

Lines ??

Filling the Gap



Different "Cultures" ??

- Different cultures create different realities, e.g. different real worlds, with different mandates, different priorities.....different reasons for being.
- Practitioners say, “scientists (or engineers) do not understand the real world” but it can also be said, “clients do not understand the real world of the scientist or engineer” !
- The point....respect the “real world” of each partner and the rules that govern their actions.....and get on with it!
- Knowledge exchange specialists can help!!

North American Culture For Energy

Not Conservation Friendly

Motivated to Change...???



More Efficient



Urban Sprawl

Less Dispersed



FOSSIL FUELS

Greener

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What Impedes Knowledge Exchange ?

Barriers

Which Can Take On Many Forms !

Barriers to Knowledge Exchange

"Legacy of Indifference"

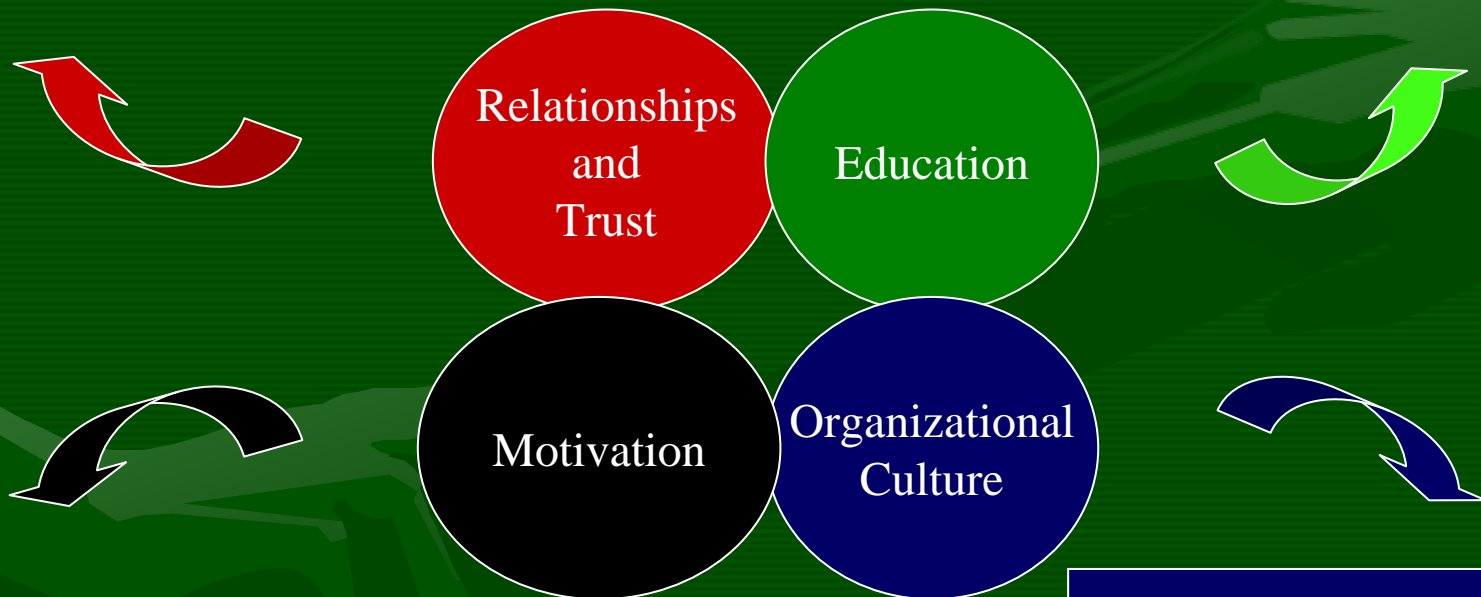
- KE tends to be an after-thought in the R&D Process
- Scientists are not held accountable for doing extension, training or continuing education, nor adequately rewarded (relative to peer-review publishing)
- Organizations lack a KE culture/ethic, whether it's a) providing useful info/tools to clients, or b) clients actively integrating new info/tools into mainstream business
- KE typically competes for R&D dollars, hence is poorly resourced, and typically 1st in line for budget cuts
- Interactive client-KE-researcher project teams that collaborate from project conception to product uptake are rare.....so, the risk that the final product will not meet the need is high

Barriers to Knowledge Exchange

4 Key "Intra-organizational" Challenges

- Researcher insensitive to client needs
- Poor researcher-client relationship
- Researcher viewed as unreliable

- Client lacks understanding
- Client lacks technical skill
- Knowledge unproven – prove it!
- Researcher lacks extension skills



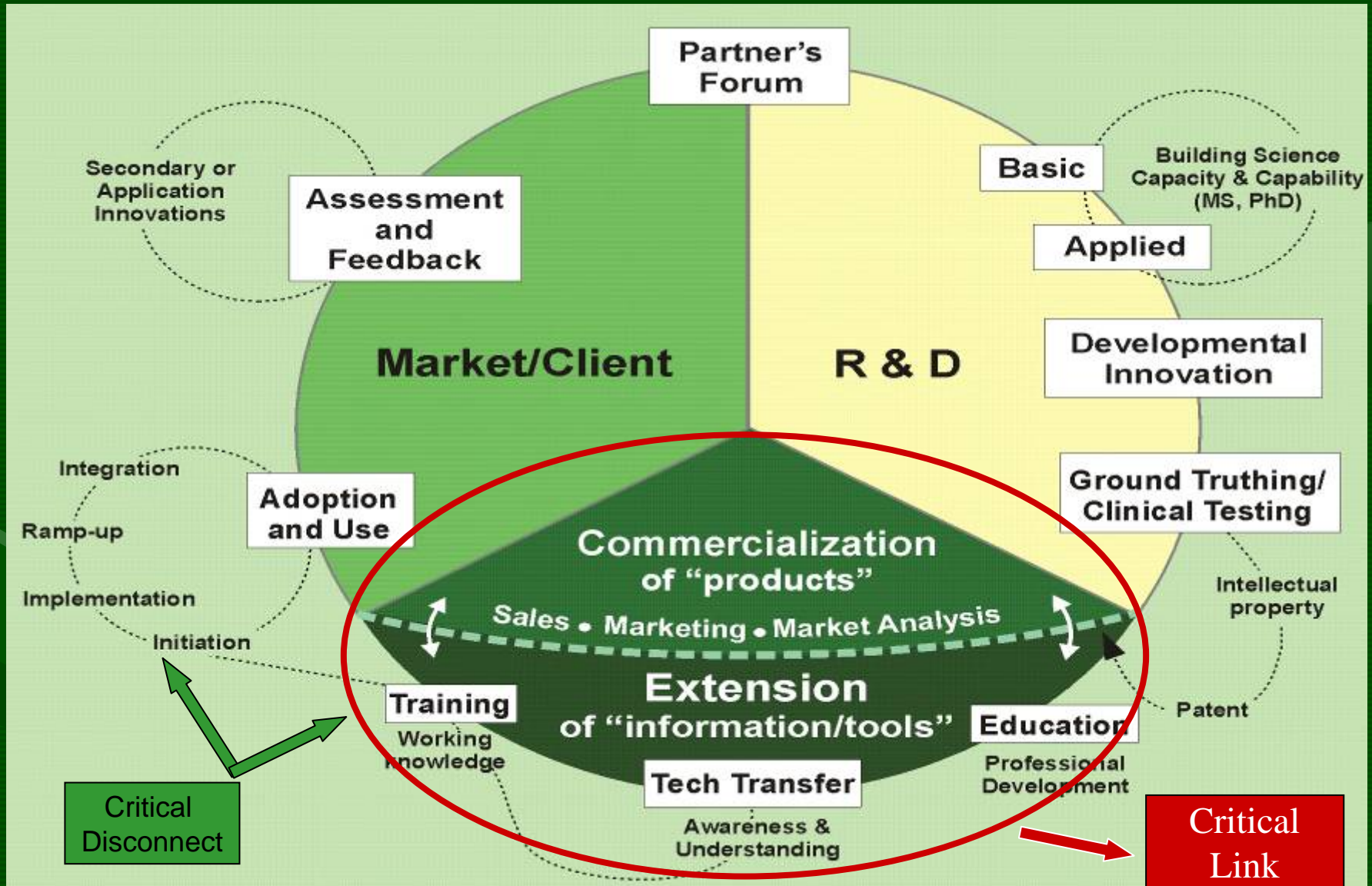
- Client not interested in new info
- Researcher not rewarded
- Change is onerous & takes time

- Maintain Status Quo
- Fence-sitters, wait and see



*A KE “Systems-Based” Solution
to Move
Principles to Practice*

A Knowledge Management System



Key Attributes of a KE System

| Partner Forum | R&D | Extension | Knowledge Use | Feedback |
|-------------------------------|--|--|---|--|
| Pre-nuptual Agreement | <u>Basic</u> : Explore and Discover | Information and Tools | <u>Initiation</u> : Early Adopters | Monitor & Assess Tool |
| Communication Planning | <u>Applied</u> : Business Application | Teaching and Enabling | <u>Implement</u> : Need Internal KE Staff & Employ Pilots | Engage & Reward Staff for Tool Improvement |
| Activity Aligned With Outcome | <u>Developmental</u> : It is Doable | Commercialization | <u>Ramp-Up</u> : Resolve Issues Fast & Manage Skeptics | Maintain Strong Relations: User & Researcher |
| | <u>Ground Truthing</u> : Utility under diverse condition | Products and Services Marketing and Sales | <u>Integration</u> : Engage Staff & Use Tool | |



*How a Systems Approach to KE
Can Win the Day*

Experiences & Examples

Science to Practice

"Perfection Versus Solutions"

- ***The Blue Chipper.*** This is a highly intellectual, perfection driven scientist who focuses on advancing the information or tool regardless of the time/dollars required, not wanting to provide timely, relevant answers/solutions in the interim.
- ***1st Things 1st !*** Decisions will be made whether or not the best policy, guideline or new technology is available.
- ***Continuous Feed.***
 - Employ an Extension Specialist to help the scientist provide “1st Response” to the client
 - Work with the client to identify short-term needs and longer-term desires and push the scientist to deliver needs and help realize the desires.
- ***Add Value.*** Engage the client to improve on primary innovation.

Science to Policy

"Building Trust - Building Relationships"

- ***Aversion to Change***: Once the policy is developed, it takes significant inertia for developers to adjust or modify policy, much less amend it.
- ***Advance & Adjust***: Scientists are continually advancing and improving the knowledge to justify policy evolution, e.g. change.
- ***Bridge the Gap***: Extension Specialists, with support of policy and science managers, can facilitate meaningful relationships between scientists and developers.
- ***Mainstreaming***: When extension specialists reside in both policy and science institutions, adoption of facts, amendments to policy and application in practice can be swift and seamless

Science to Technology

"Bridging the Culture Gap"

- ***Walking a Tightrope.*** Employ Extension Specialists to bridge the client-engineer “cultural” gap in commercializing new technology.....similar goal (what), different objectives (how)
- ***Congeniality.*** Be nice – bite your tongue.
- ***Reality Injection.*** Work with the engineer to assist them in understanding and embracing the need for business acumen – hire a business manager, a financial officer, and a marketing specialist
- ***Humble Beginnings.*** Be patient, be practical and be productive!
- ***Anticipate Growth.*** Help the engineer develop a business plan that optimizes success, then develop the strategy to handle it.

Controversial Messages

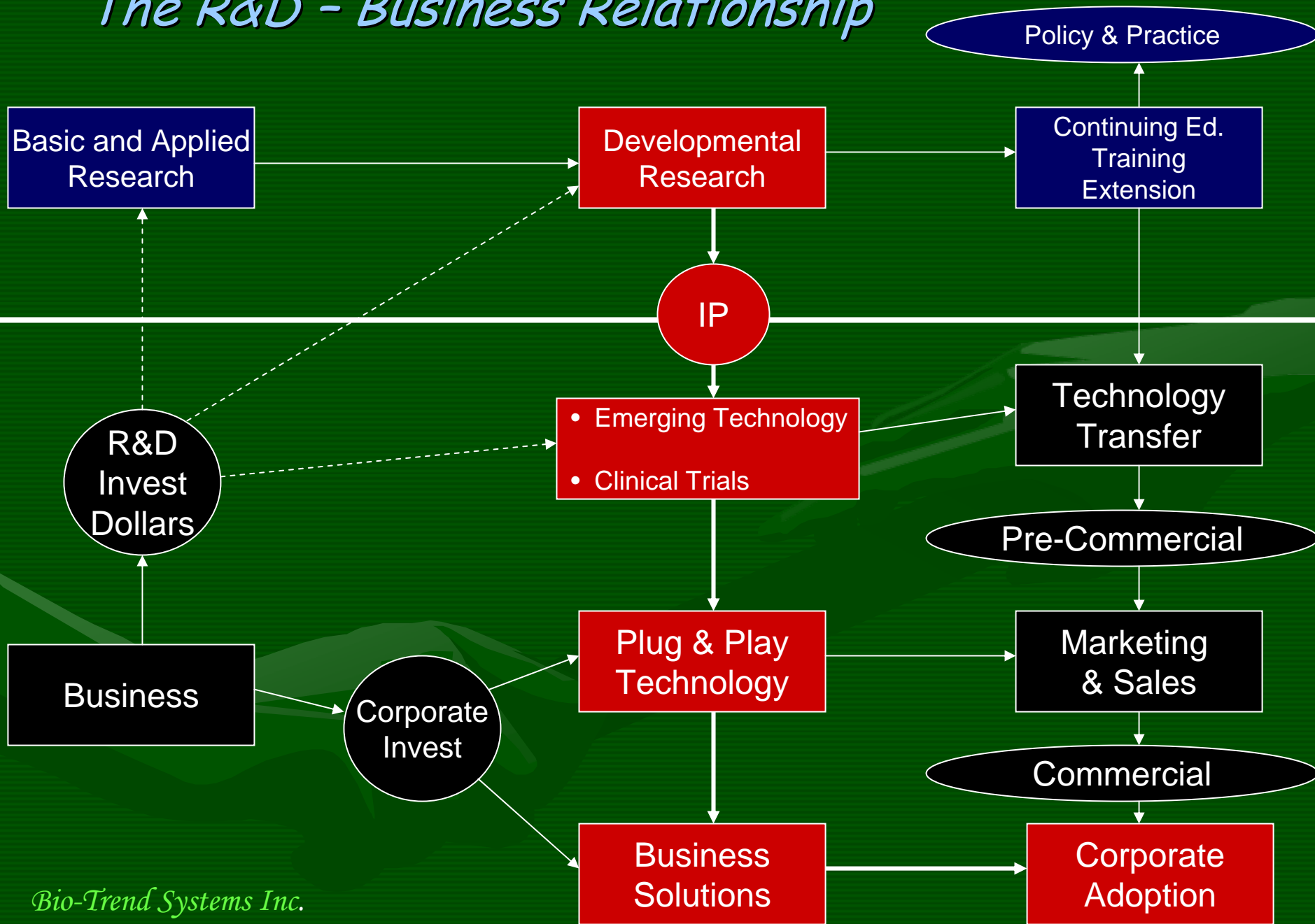
What Does it Take to Get the Message Across ?



Climate Change: Fiction or Fact ?

- Viewed as Credible
- A Strategy and a Plan
- Assertive and Assured
- Be Factual – Be Current
- Multiple Delivery Methods
- Financial Support → \$ - \$ - \$!
- Repetition – Repetition – Repetition
- Train the Trainer – Engage R&D

The R&D - Business Relationship





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Tackle the Challenge !!