



Instilling rigor and imagination in analysis

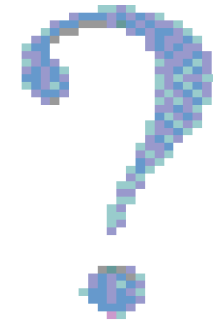
INDICATORS: THE LINGUA FRANCA OF ANALYTIC TECHNIQUES

IALEIA Webinar, July 18, 2012

Two Concepts to Keep in Mind

1. Greg Treverton

Is our problem a puzzle or a mystery?



2. Gary Klein: Sensemaking

Our brains automatically fit data into a frame and fit the frame around the data.



Indicators as a Lingua Franca

- Prepare us to attend to the changes in **puzzles** or static frames.
- Help us think our way through the **mysteries** or forward-looking frames.
- **Bridge** our communication across cultures, disciplines, and analytic problems.



Indicators

- What are Indicators?
- Types of Indicators
- Qualities of a Good Indicator
- Developing a Useful Set of Indicators
- Validating Indicators
- Challenges in Using Indicators

What are Indicators?

- Indicators are observable phenomena that (usually as part of a set) help you track events, spot emerging trends, and warn of unanticipated change.
- An indicator of a phenomenon, X , is a set of observable conditions, facts, or events whose joint occurrence would be very unlikely without the occurrence of X .



Why Do We Use Indicators?

Goal: An objective baseline to track events, instill rigor into the analytic process, and enhance the credibility of the product.

- **Applications in Intelligence Analysis**

- Warning
- Signposts of Change
- Validation
- Anticipation
- Guide for Collection



Different Uses of Indicators

A pre-established set of Indicators is often used in the Intelligence/Law Enforcement Community as *evidence* to suggest:

- A target's activities or behavior are consistent with an established pattern (Backward-Looking)



- A given hypothesis is correct or a forecasted scenario is emerging
(Forward-Looking)



From a Student Taking an Exam...

Steve is driving his car. He is travelling at 60 feet/second and the speed limit is 40 mph. Is Steve speeding?

He could find out by checking his speedometer.

Qualities of Good Indicators

- Observable/Collectible [Practical]
- Valid
- Reliable
- Stable
- Unique



Specificity Is Critical!

Qualities to Keep in Mind

- Indicators that can be **measured** are more objective than descriptive indicators.
- Descriptive indicators may be necessary but must be **tangibly defined** to be objective and reliable.
 - What does “nervous” or “abnormal” mean?
 - How can you determine “intent to do harm”?
- Index or **composite indicator** -- weighted or aggregated set of several indicators.
- **Diagnostic indicators** or sets distinguish among hypotheses or scenarios.

Developing Indicators

- 1. Clearly define the issue, question or hypothesis of interest.**
- 2. Use structured brainstorming to generate an inclusive list of activities, events or other observables that you would expect to see.**
 - Think in multiple dimensions, e.g., political, social, technological, environmental, economic, military, etc.
 - Consider analogous sets of indicators drawn from similar or parallel circumstances.

Developing Indicators

3. Consider each indicator individually *and* in conjunction with others within the set.

- Are the indicators redundant?
- Are they complementary?
- Are they sufficiently comprehensive, i.e., are they sufficient to meet the requirements of a good indicator?
- What are the collection strategies and priorities?

Indicators of a Drug Laboratory

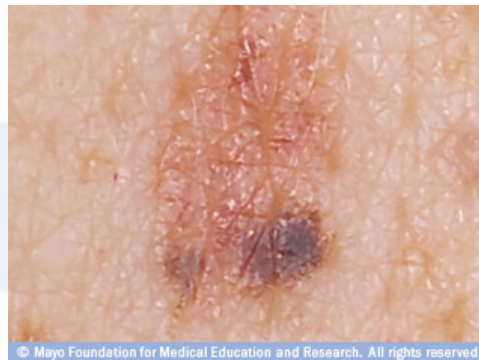
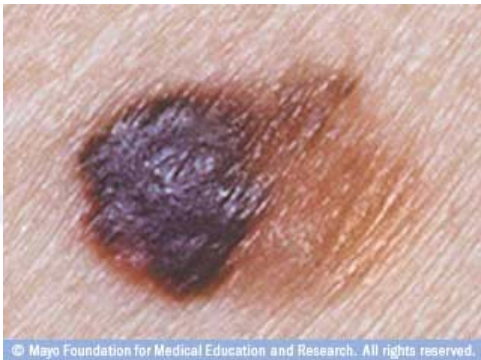
- Noxious odors associated with chemical/industrial use.
- Exhaust fans constantly running or running in cold weather.
- All windows darkened, covered, sealed and/or painted.
- Abnormal use of electricity and water; high bills.
- Purchase of large quantities of chemicals such as:
 - Acetone in multi-gallon lots.
 - Sodiumhydroxide products (“Drano”) by the case.
- Purchase of lab supplies or equipment.
- Delivery frequently being made by parcel services of glassware, chemicals.



Medicine: ABCDEs of Melanoma



- Asymmetry
- Border Irregular
- Color Changes
- Diameter Increase
- Evolving



Seven Signs of Terrorist Activity

- Surveillance
- Elicitation
- Test of Security
- Acquiring Supplies
- Suspicious People Who Do Not Belong
- Dry Runs
- Deploying Assets
Getting Into Position



Indicators of Gang Dominance



- Gangs take on defensive positions.
- Gang Graffiti predominantly from one gang.
- Decline in reports of inter-gang or gang-related violence.
- Decline in gang-related 911 calls.
- Merchants report paying protection money to the same gang.
- Tattoo parlors report making tattoos for one gang.
- Police officers observe one gang's colors on the street.
- Growing reports of gang intimidation of recent migrants to the region.

Insider Threat

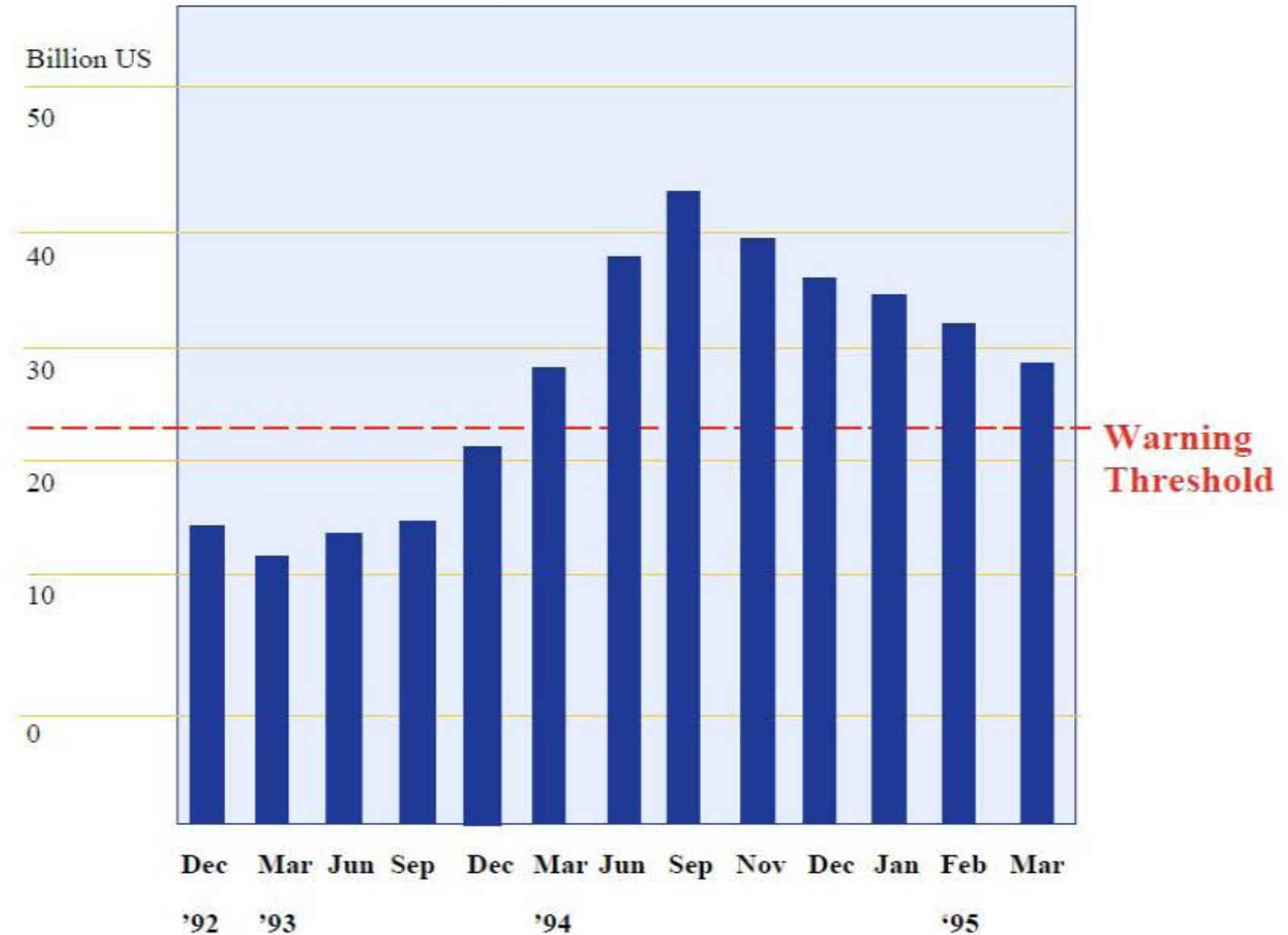


- Without need or authorization, takes proprietary or other material home via documents, thumb drives, disks, or e-mail.
- Inappropriately seeks to obtain proprietary or classified information on subjects not related to their work duties.

- Interest in matters outside the scope of their duties, particularly those of interest to foreign entities of business competitors.
- Unnecessarily copies material, especially if it is proprietary or classified.
- Remotely accesses computer network while on vacation, sick leave, or other odd times.



Foreign Reserves Warning Threshold



Zambria Political Instability Indicators

- Legend**
- Negligible concern
 - Low concern
 - ◐ Moderate
 - Substantial
 - Strong

Prospects for major regime policy change

- ◐ During next six months
- During next six months to two years


		1984				1985				1986	
		I	II	III	IV	I	II	III	IV	I	II
Social change/conflict	Ethnic/religious discontent	•	•	•	•	•	•	•	•	•	•
	Demonstrations, riots, strikes	•	•	○	○	○	◐	■	■	■	●
Economic factors	General deterioration	○	○	◐	◐	◐	○	◐	◐	◐	◐
	Decreased access to foreign funds	○	◐	○	○	○	○	○	○	○	○
	Capital flight	○	○	○	◐	◐	○	■	■	■	■
	Unpopular changes in economic policies	○	○	○	○	■	■	■	■	■	■
	Food/energy shortages	○	○	○	○	◐	●	■	■	■	■
	Inflation	○	○	◐	○	○	◐	■	■	■	■
Opposition activities	Organizational capabilities	○	•	•	•	•	•	•	○	○	○
	Opposition/conspiracy planning	○	○	○	○	○	○	○	○	○	○
	Terrorism and sabotage	○	○	○	○	○	○	○	○	○	○
	Insurgent armed attacks	○	○	○	○	○	○	○	○	○	○
	Public support	•	•	•	•	•	•	•	•	•	•
Military attitudes/activities	Threat to corporate military interests/dignity	•	•	•	•	•	•	•	○	○	○
	Discontent over career loss, pay or benefits	•	•	•	•	•	•	•	○	○	○
	Discontent over government action/policies	○	○	○	○	○	○	○	◐	◐	◐
	Reports/rumors of coup plotting	○	○	○	○	○	○	○	○	○	○
	External support for government	○	○	○	○	○	○	○	○	○	○
	External support for opposition	○	○	○	○	○	○	○	○	○	○
	Threat of military conflict	○	○	○	•	•	•	•	•	•	•
Regime actions/capabilities	Repression/brutality	◐	○	◐	◐	◐	◐	◐	◐	◐	◐
	Security capabilities	•	•	•	•	○	○	○	○	○	○
	Political disunity/loss of confidence	○	○	○	○	○	○	○	○	○	○
	Loss of legitimacy	●	◐	◐	◐	◐	◐	○	◐	◐	◐


Insurgency Indicator #1


Presence in Country


DESCRIPTION: Number of troops maintained inside the country.
Creation of safe havens inside the country.


Definition of Levels:

Deficient:  Vast majority of rebels are outside the country. Little ability to operate inside except for cross-border raids. No safe havens.

Weak:  Half of rebel combatants operate inside the country for several months to a year at a time, but still totally dependent on external bases. No safe havens in the country.

Moderate:  More than half of combatants operate inside the country for several months to a year at a time. Some transitory safe havens in the country. Insurgent dependence on bases for food, medical care and resupply.

Substantial:  Majority of combatants always inside the country. Rebel Headquarter moves into the country. Some permanent safe havens established inside. Depots and caches of supplies established inside.

Strong:  Vast majority of rebels operate permanently inside the country. Rebel headquarters and most logistics based inside. Most camps in neighboring state abandoned. Rebel family members move back to the country.

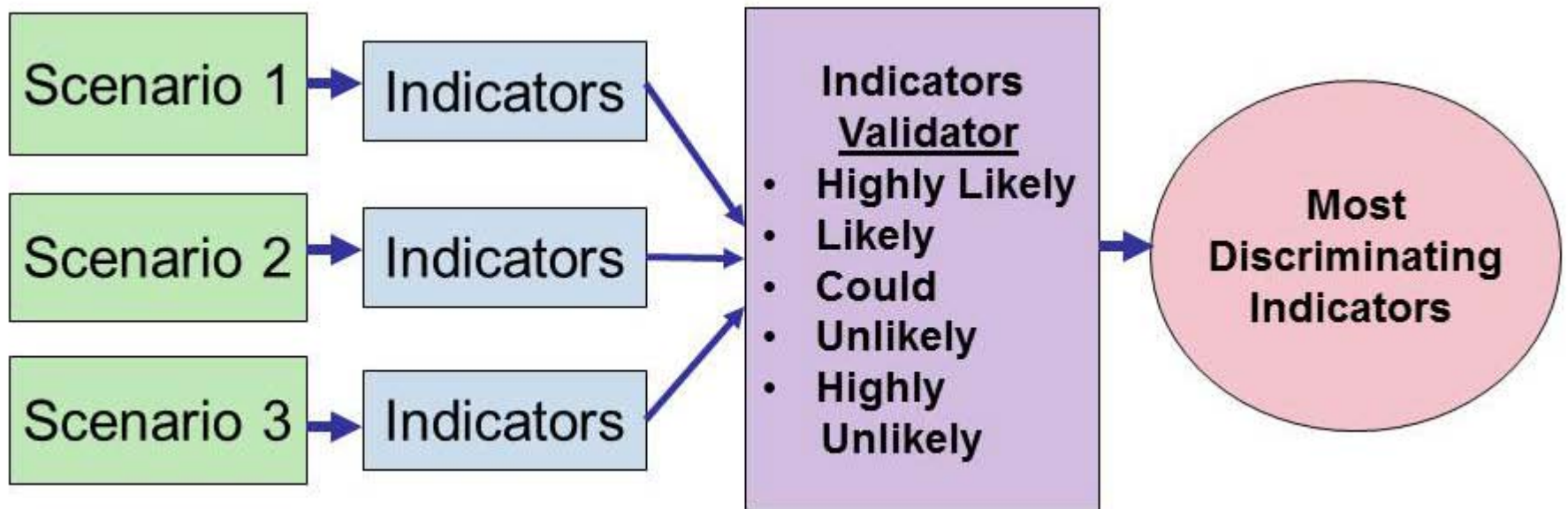
Challenges

Analysts must periodically review the validity and relevance of an indicators list.

- Narrowly conceived or outdated indicators can:
 - Reinforce analytic biases.
 - Encourage analysts to discard new evidence.
 - Lull consumers inappropriately.
- Original assumptions may be flawed.
- Indicators may be invalid. They may have proven to be poor “pointers” to what they were supposed to represent.
- Issues evolve.
- Targets learn your indicators and adapt.

Indicators Validator™

Definition: A simple technique for assessing the **diagnostic** power of indicators.



Why Use IV:

- IV helps ensure the credibility of the analysis by identifying and dismissing non-diagnostic indicators or, in other words, those indicators that point to multiple futures.

When to Use IV:

- When you need to develop a robust set of indicators to help anticipate the future.
- When you need to challenge your (or other's) assessment of the indicators.

The Method

- 1. List a set of mutually exclusive scenarios across the top of the matrix.**
- 2. Brainstorm indicators for each and list them down the left side of the matrix.**
- 3. Consider each indicator against each scenario.**
 - Is it Highly Likely to Appear, Likely to Appear, Could Appear, Unlikely to Appear, Highly Unlikely to Appear?
 - Is it common to more than one?
 - Does it provide uniqueness because it only appears in one or because its presence would be invalidating?
 - Is it necessary or just nice to have?
(How important is it?)

The Method

4. Resort the indicators so the most diagnostic are at the top.





- Create a revised list of necessary or discriminating indicators for each scenario.
- Consider whether you have enough indicators for each scenario.
- Will set of indicators provide full coverage?




5. Eliminate those with few Unlikely or Highly Unlikely ratings.

6. Track indicators and brainstorm new ones to see which scenario is evolving.


Indicators Validator™ Matrix


Home | Analyst Toolkit

Group Matrix






Show Disregarded Indicators   + 2 

Filter Analysts **Currently displaying: All**

No Ratings Yet
 Consensus
 Mild Dispute
 Large Dispute
 Extreme Dispute
  Responses/Total Analysts

Disregard	Indicator	S1: LeT attacks Taj Hotel with small arms and grenades	S2: LeT attacks multiple simultaneous targets with small arms an[...]	S3: LeT multiple simultaneous targets with suicide bombers	S4: LeT multiple simultaneous targets with Hostage Taking	Notes
<input type="checkbox"/>	18: LeT trains suicide bombers	HU	HU	HL	HU	0 Notes <input type="checkbox"/> Assumptions
<input type="checkbox"/>	19: LeT practices suicide bombings	HU	HU	HL	HU	0 Notes <input type="checkbox"/> Assumptions
<input type="checkbox"/>	14: LeT documents suggesting several targets	U	HL	HL	HL	0 Notes <input checked="" type="checkbox"/> Assumptions
<input type="checkbox"/>	110: LeT not focusing on small arms training	HU	HU	L	HU	1 Note <input type="checkbox"/> Assumptions
<input type="checkbox"/>	111: LeT recruits suicide bombers	U	U	HL	HU	0 Notes <input type="checkbox"/> Assumptions
<input type="checkbox"/>	13: LeT purchases or acquires RDX/bomb materials	2 HU  3/3		L	C	0 Notes <input type="checkbox"/> Assumptions

Ratings Details

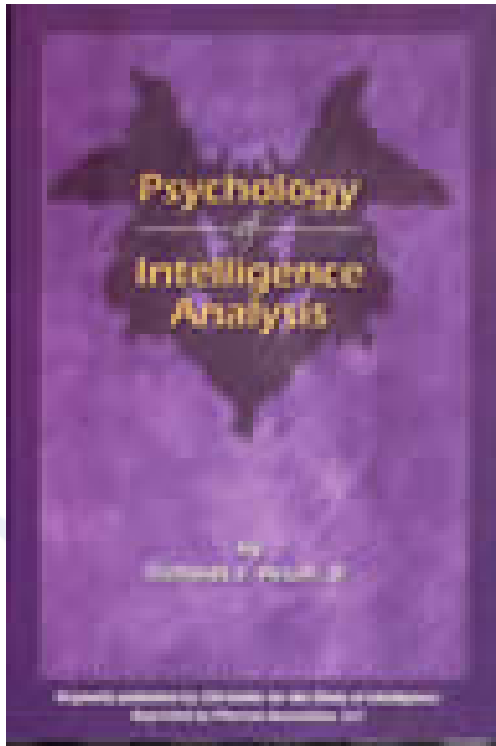
Demo01 HU 

Conclusion

The key points to remember about Indicators and the Indicator Validator™:

- The 5 qualities of a good indicator.
- Develop both forward and backward looking indicators!
- Periodically review your indicators.
- Verify that an indicator is pointing to the future that you think it is with the Indicator Validator™.

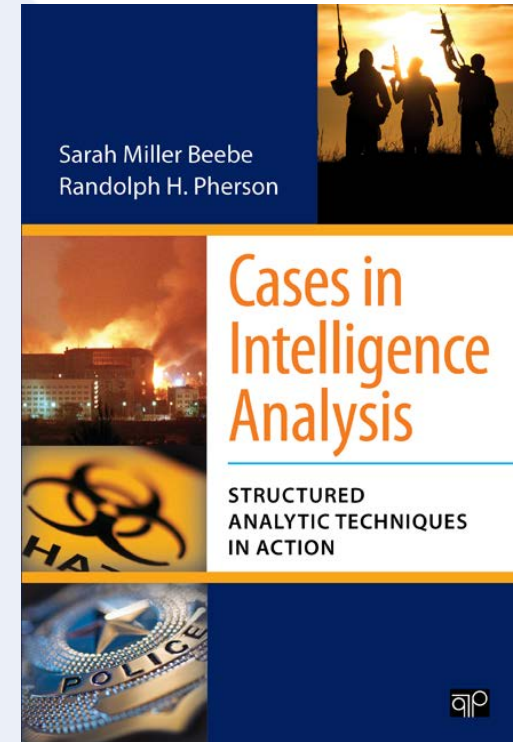
For More Information



Heuer,
1999



Heuer and R. Pherson,
2010



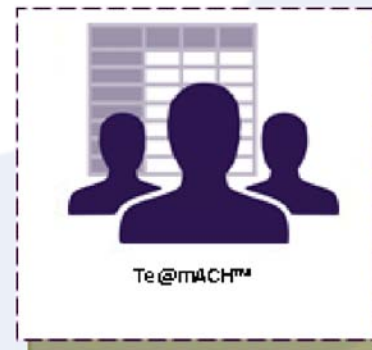
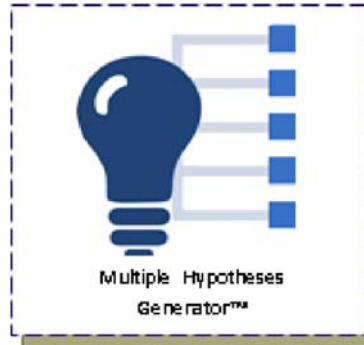
Miller and R. Pherson,
2011

What's New

ThinkSuite™



K. Pherson and R. Pherson,
Oct. 2012



www.globalytica.com

Questions or Comments?

Kathy Pherson

Pherson Associates, LLC

Phone: (703) 390-9902

Email: khp@pherson.org

Website: www.pherson.org