



The Expertool Paradigm

Modeling Cognition and Complex Systems

PREPAREDNESS ANALYSIS COMPLEX THREATS
TOOLSET (PACTT)

WWW.EXPERTOOL.COM

PACTT suite of products and services

Enable and support holistic emergency preparedness programs:

- **Expansion of the risk analysis scope** to include non-traditional, high consequence natural and manmade hazards
- **Expansion of the preparedness planning scope** to include cascading failures between Energy, Communications, Transportation, and other infrastructure sectors critical for executing disaster response plans
- **Integration of existing emergency programs** into a holistic and rationalized solution

Value Proposition:

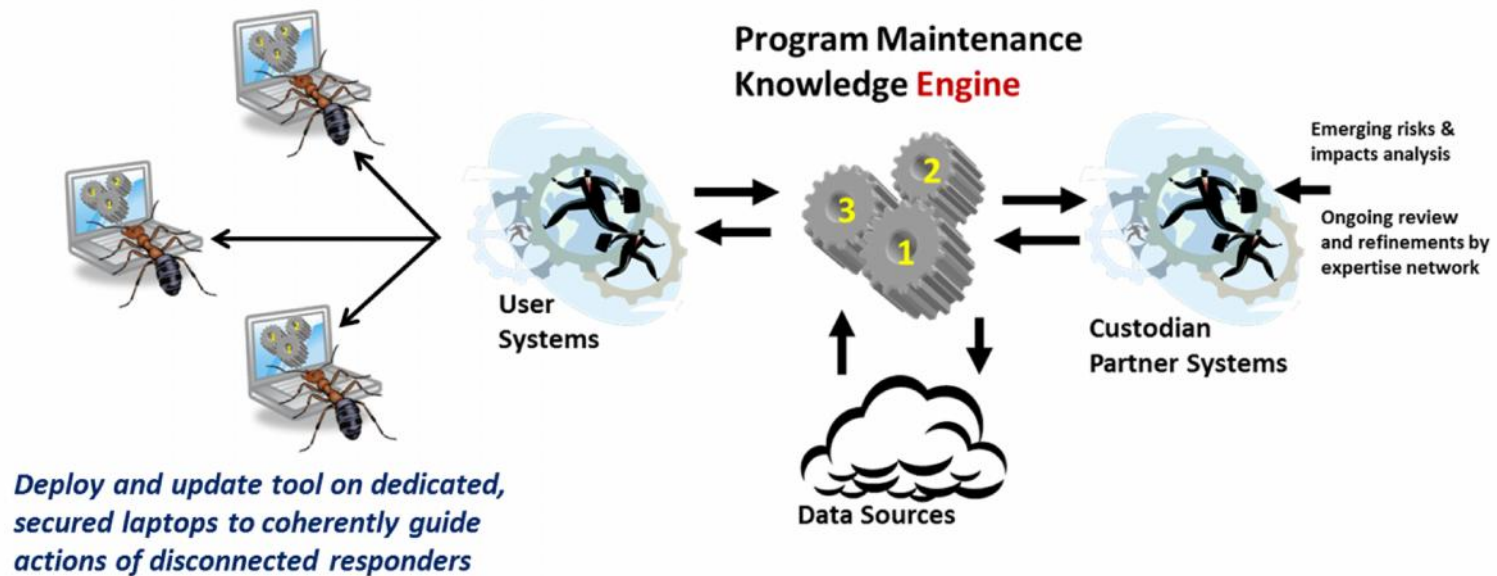
- Enhances scope of preparedness
- Optimizes response effectiveness
- Optimizes BCP/DRP maintenance efficiency – now
- Minimizes regulatory compliance costs across the programs – now

PACTT Differentiated Approach

“When going into battle, plans are useless but planning is indispensable”
– D.D. Eisenhower

1. Focus is on enabling people to respond to circumstances for which they cannot be completely prepared
 - Adapting a RACI structure when key personnel are not available
 - Providing available leaders and professionals with information and guidance needed to expand their roles vertically and horizontally
 - Guiding available responders to priority objectives and critical tasks when there is **no power and no communications**
2. Technological solutions that can adapt to the degraded environment in which disaster responders will operate
 - providing tailored but coherent direction based on circumstances
 - models work on a virtual “ant colony” of independent expert systems when both power and communications are down

Program Overview



1. Model non-traditional risks & cascading/compounding impacts across energy, communications & civil infrastructure
2. Model a Response Framework including federal standards, structure of impacted organizations and RACI dynamics
3. Develop a expert-custodian network for maintenance

Before Expertool

Information Silos complicate Preparedness and Response



Emergency Replacement Power

- **Vendor**
 - Equipment
 - Transportation
 - Services
- **Risks**
 - Natural phenomena
 - Man-caused disasters
- **Dependencies**
 - Utility Workers
 - Communications
 - Roads & Bridges
 - Drivers
 - Labor
 - Equipment
 - Utility Workers
 - Communications
 - Roads & Bridges
 - Drivers
 - Labor
 - Equipment



Communications

- **Third Party**
 - Cellular
 - Satellite
 - Other
- **Risks**
 - Natural phenomena
 - Man-caused disasters
 - Cyber Attacks
 - Random Failure
- **Dependencies**
 - Equipment
 - Software
 - Power



Resources

- **Utility Internal**
 - Management
 - Workers
 - Linemen
 - Other
- **Risks**
 - Natural phenomena
 - Man-caused disasters
 - Health
- **Dependencies**
 - Communications
 - Roads & Bridges
 - Vehicles
 - IT
 - Procedures



Equipment

- **Utility Internal**
 - Transformers
 - Switches
 - Lines
 - Other
- **Risks**
 - Natural phenomena
 - Man-caused disasters
 - Cyber Attack
 - Random Failure
- **Dependencies**
 - Equipment
 - Software
 - IT



Procedures

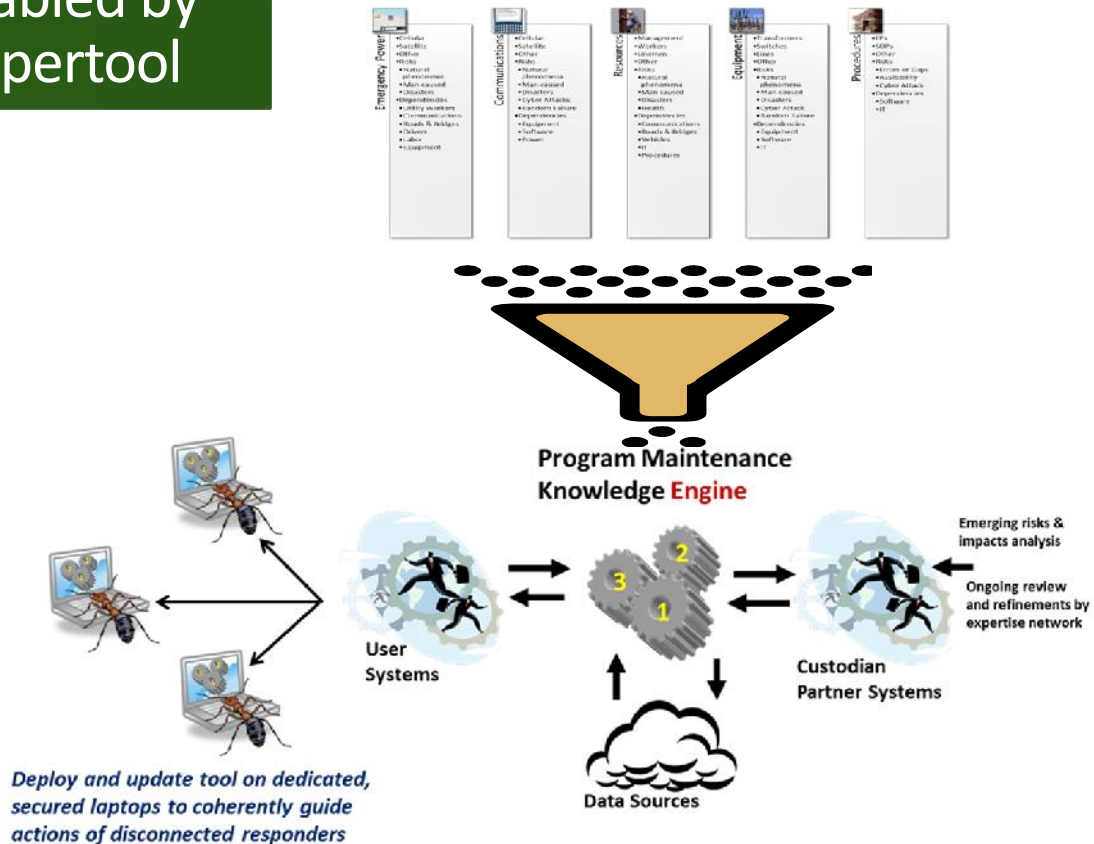
- **Utility Internal**
 - EPs
 - SOPs
 - DTIs
 - Other
- **Risks**
 - Errors or Gaps
 - Availability
 - Cyber Attack
- **Dependencies**
 - Software
 - IT



Objectives, Policy, Regulations & Compliance

- **Utility Internal**
 - Policies
 - Metrics
 - Regulations
 - Voluntary goals
 - Other
- **Risks**
 - Errors or Gaps
 - Availability
 - Cyber Attack
- **Dependencies**
 - Software
 - IT

With PACTT enabled by Expertool



Solution Approach

- Cognitive methods
- Biomimetic engineering
- System Dynamics
- Modeling information dependencies
- Modeling logical dependencies*
- Emerging research

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* See Appendix

Expertool Knowledge Engineering Platform

Leading Disruptive Innovation on two fronts

1. Consulting Tool to Discover Insights across Complex Data



Consulting on the Cusp of Disruption

Sep 2013

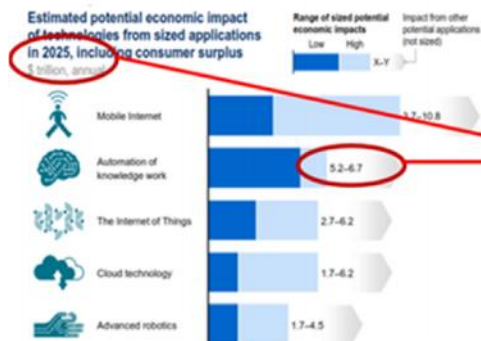
by Clayton M. Christensen, Dina Wang, and Derek van Bever

“the steady invasion of hard analytics and technology is a certainty”

- we evolved our platform in the “real-world lab” of client engagements
- won \$5+ million in projects at Chase and Pfizer competing with the big 4



2. Vertical Products that Automate Complex Knowledge Work



Knowledge work automation will have a global economic impact second only to mobile tech – **\$6 trillion by 2025** according to McKinsey

We enable focused, tailored automation of complex knowledge work *without writing code*

Table below from: *Nanoinformatics Conference – December 2011*

Leading Edge Applied AI

Universal Knowledge Modeling Platform

- Anything described in words or expressions can be modeled
- Software and Methodology evolved since 1996 while architecting large, complex solutions

Biomimetic Information Architecture

- Neural networks scale content and interaction capacity
- Cognitive methods capture human expertise

Code-free Construction

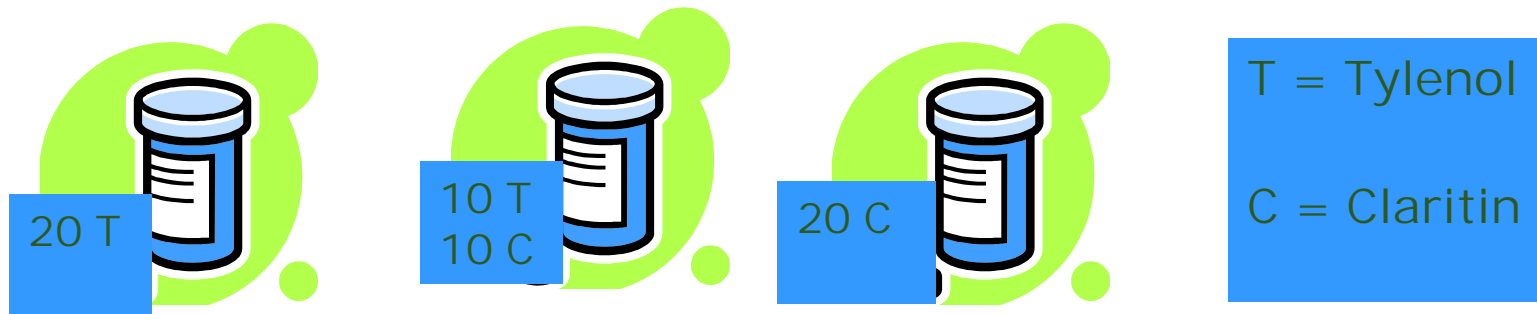
- Highly agile iterative process
- Minimizes interdisciplinary ambiguity and miscommunication

	IBM Watson	Expertool	LarKC	Wolfram Alpha
Computes	Answer	Relevance	Selected process outputs	Answer
Approach	- Statistical match - Computing power (85,000 watts)	- Contextual parsing - Concept quantification - Relationship discovery	-Massive, distributed and incomplete reasoning lab	- Linguistic parsing - Curating computable knowledge

Appendix

DYNAMICS OF INFORMATION SILOS PUZZLE

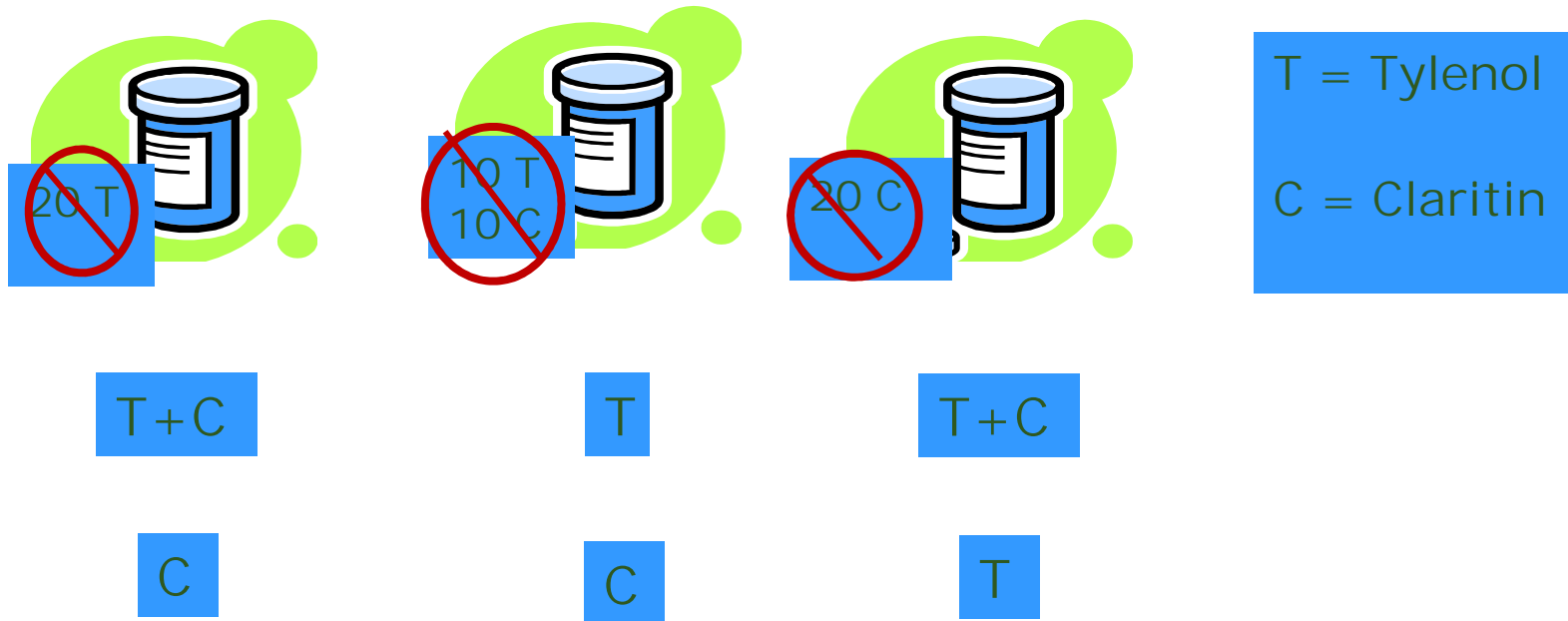
The Dynamics of Information Silos



ALL THREE LABELS ARE WRONG!

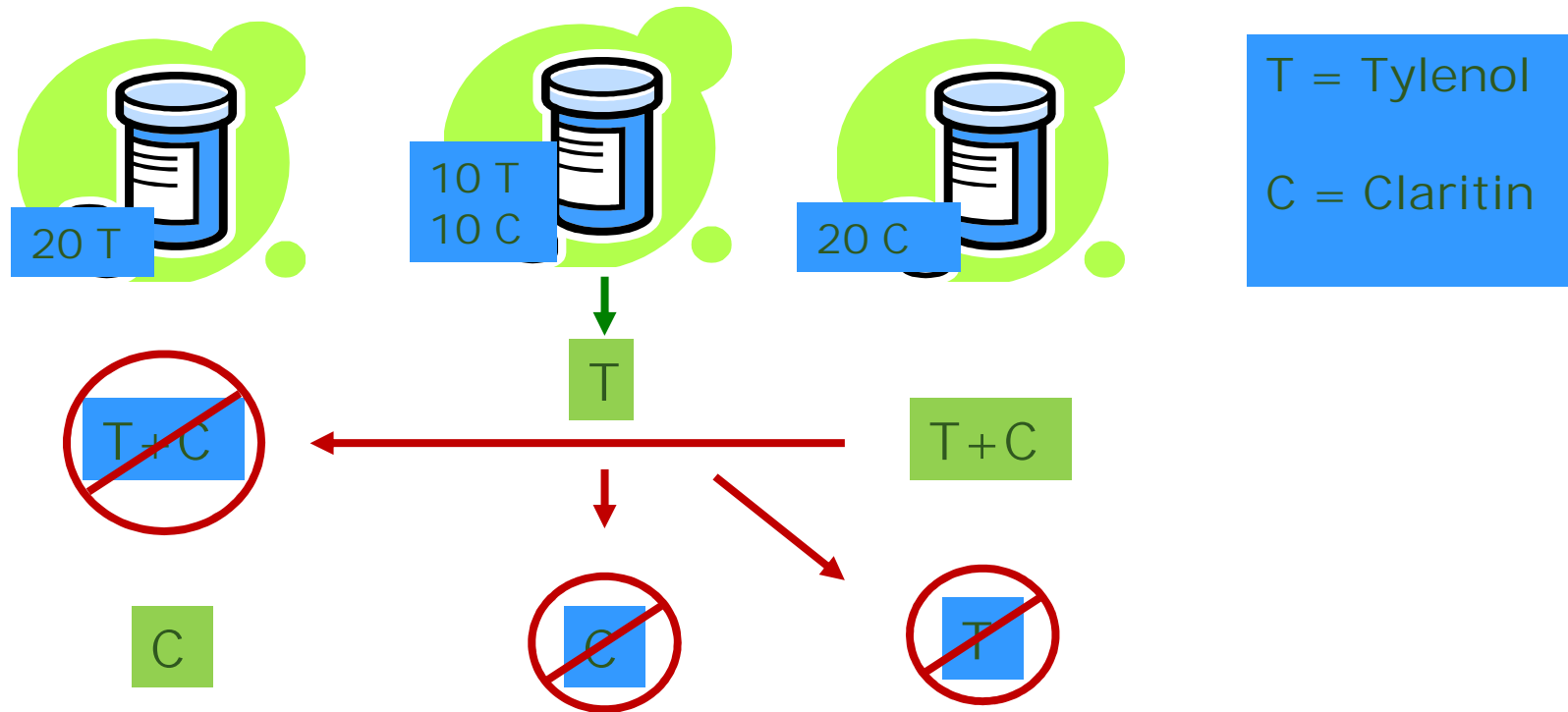
What is the minimum number of bottles we need to open and the minimum number of pills to remove to correctly label all the bottles?

Model known alternatives



- First, we model what we know – the labels are wrong!
- We know the possible alternatives for each bottle

Answer: *one* pill from the mixed bottle



What if each bottle was an information silo, such as “People”, “Process” and “Technology”?

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