

# Can (and should) knowledge be 'managed'?

Jack Whalen

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&  
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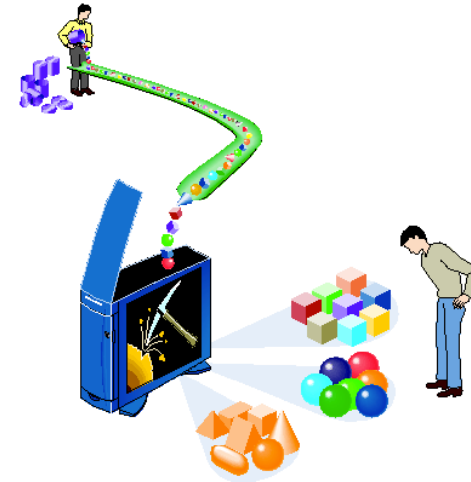
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Knowledge Management a Catalyst For Innovation

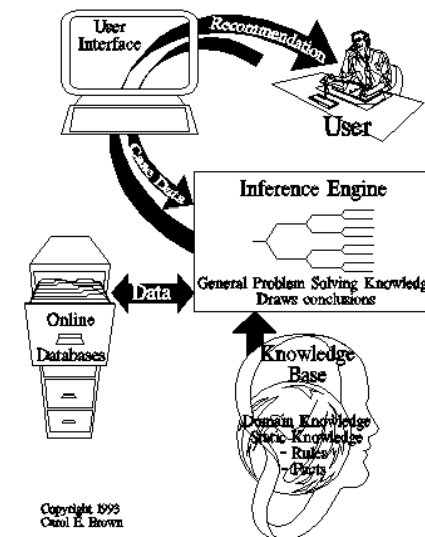
# KM as Artificial Intelligence

- Data mining – Getting more from the data you have already collected
  - Pattern-finding for discovery
  - Pattern-finding for profiling – marketing, surveillance, fraud detection



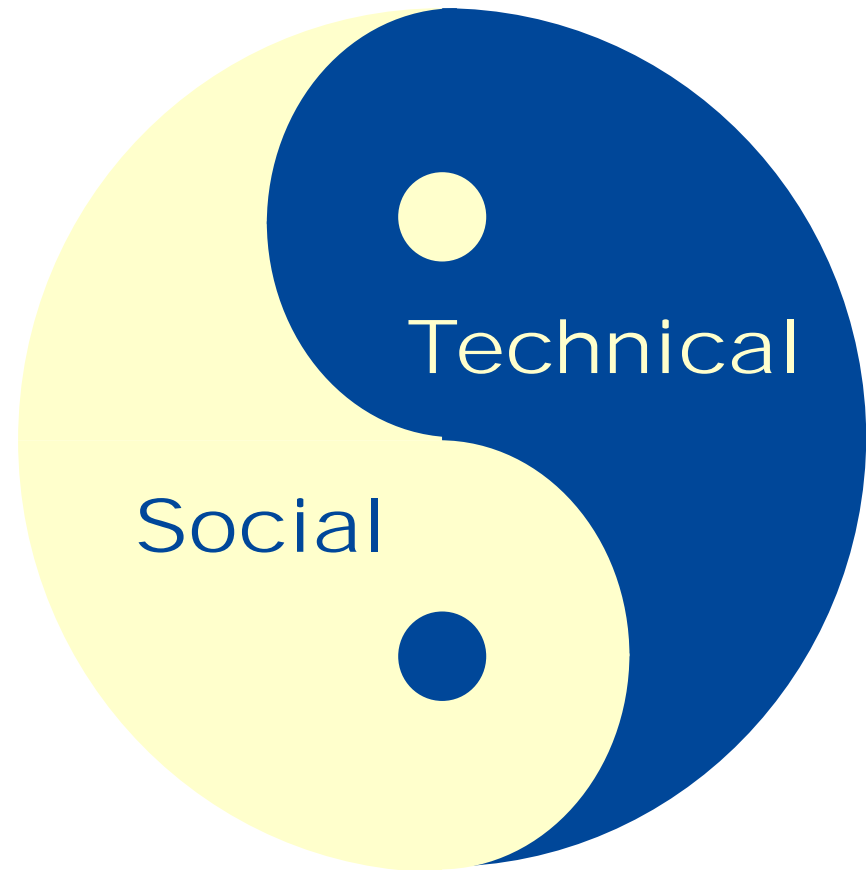
# KM as Artificial Intelligence

- Data mining – Getting more from the data you have already collected
  - Pattern-finding for discovery
  - Pattern-finding for profiling – marketing, surveillance, fraud detection
- Expert systems – Knowledge in a box



# KM as sharing & learning

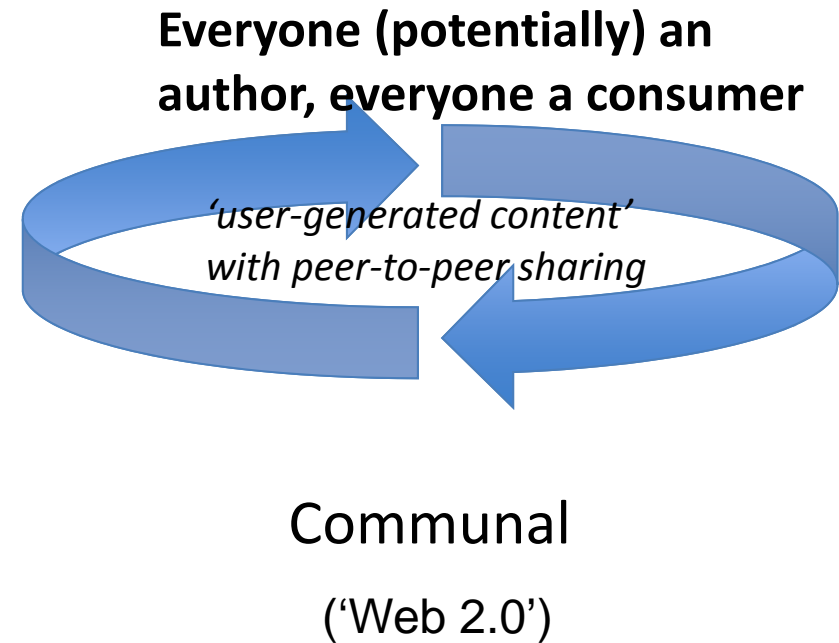
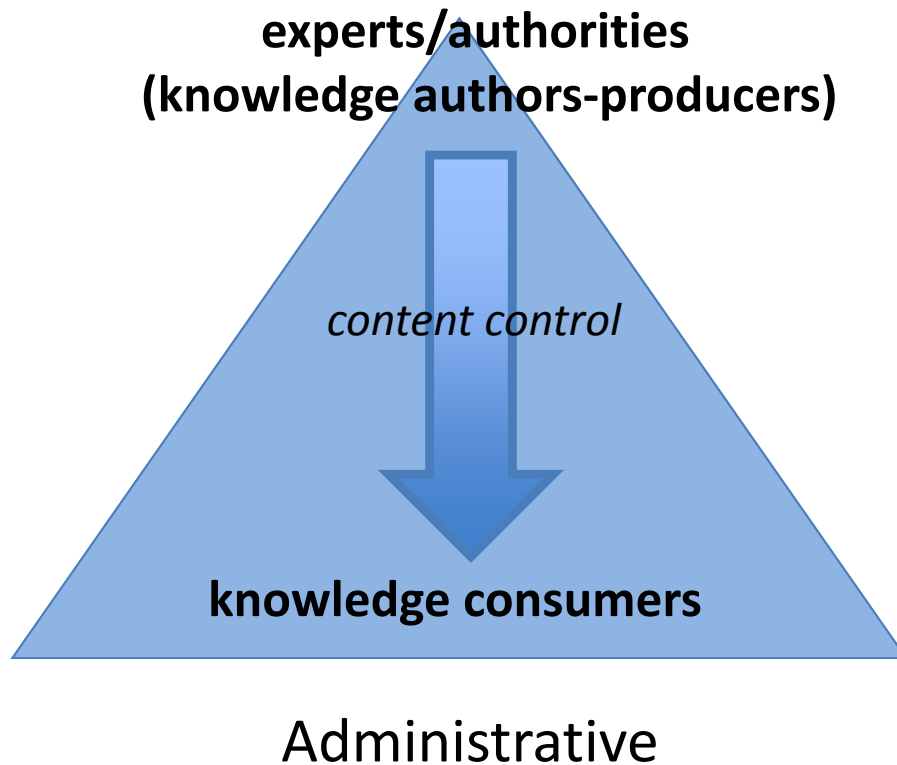
- Learning from the experiences and inventions of those on the 'front lines'
- Leveraging the natural social practices and relationships of communities



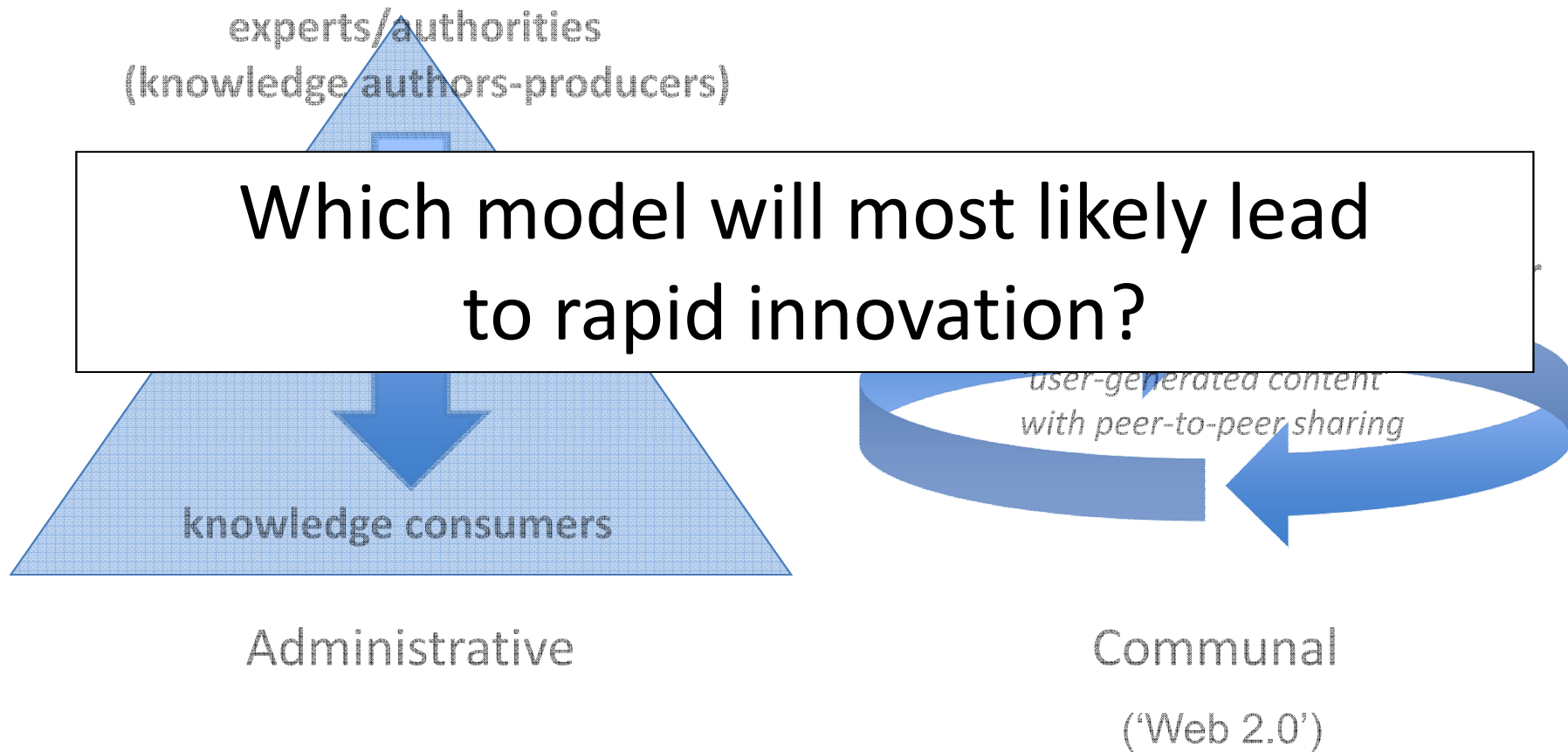
# Sharing and 'managing' knowledge

- Distributing is not sharing!
  - Storing and distributing are technical matters
  - Sharing is a social (communal) phenomenon – based on a relationship involving reciprocity (and trust)
- 'Managing' can mean many things
  - From controlling to directing to administering to supervising to organizing and monitoring....
  - The key issue here is **control**
    - Who, what, why, how

# Two models of knowledge sharing and management



# Two models of knowledge sharing and management



# The most common arguments over the communal model

- Ensuring content quality
  - Authority versus The Crowd (objectivity/neutrality versus bias)
  - Vetting process for accuracy?
- *Organizational* use and value
  - How can a corporation or government agency – or any other formal organization – manage and thus leverage the knowledge flow and use?

Supporting the invention and sharing of knowledge can make a real difference...

## Normandy, June-July 1944: **The hedgerows**



“We had been neither informed of them or trained to overcome them.”

Captain John Colby,  
90th Infantry Division

# Inventing solutions in the field

“...ideas generally flowed upward from the men actually engaged in battle.” \*

- No solution in the book
- No time to set up committees and study the problem
- Drawing on practical know-how, learning by doing
- Rapid validation and sharing



\*Michael Doubler, *Closing With the Enemy: How GIs Fought the War in Europe*

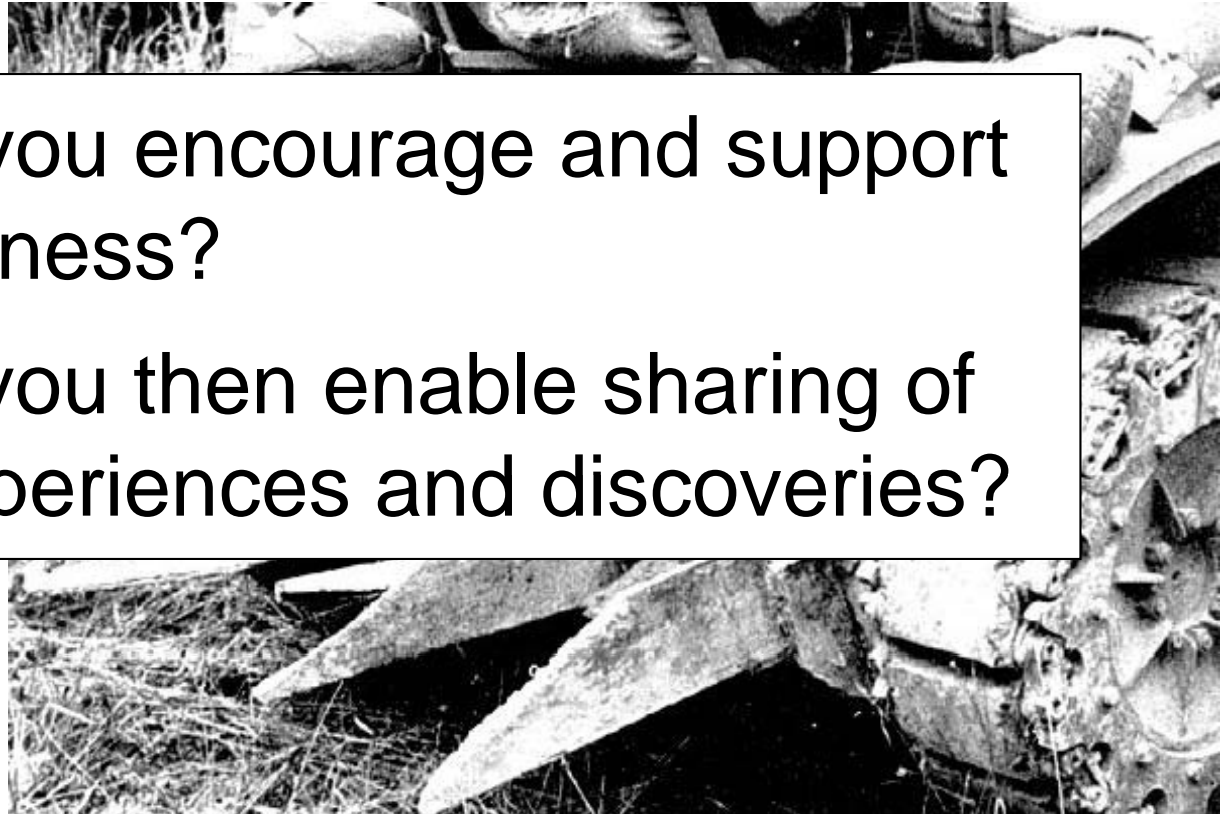
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How do you encourage and support inventiveness?

How do you then enable sharing of those experiences and discoveries?



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# The corporate front lines

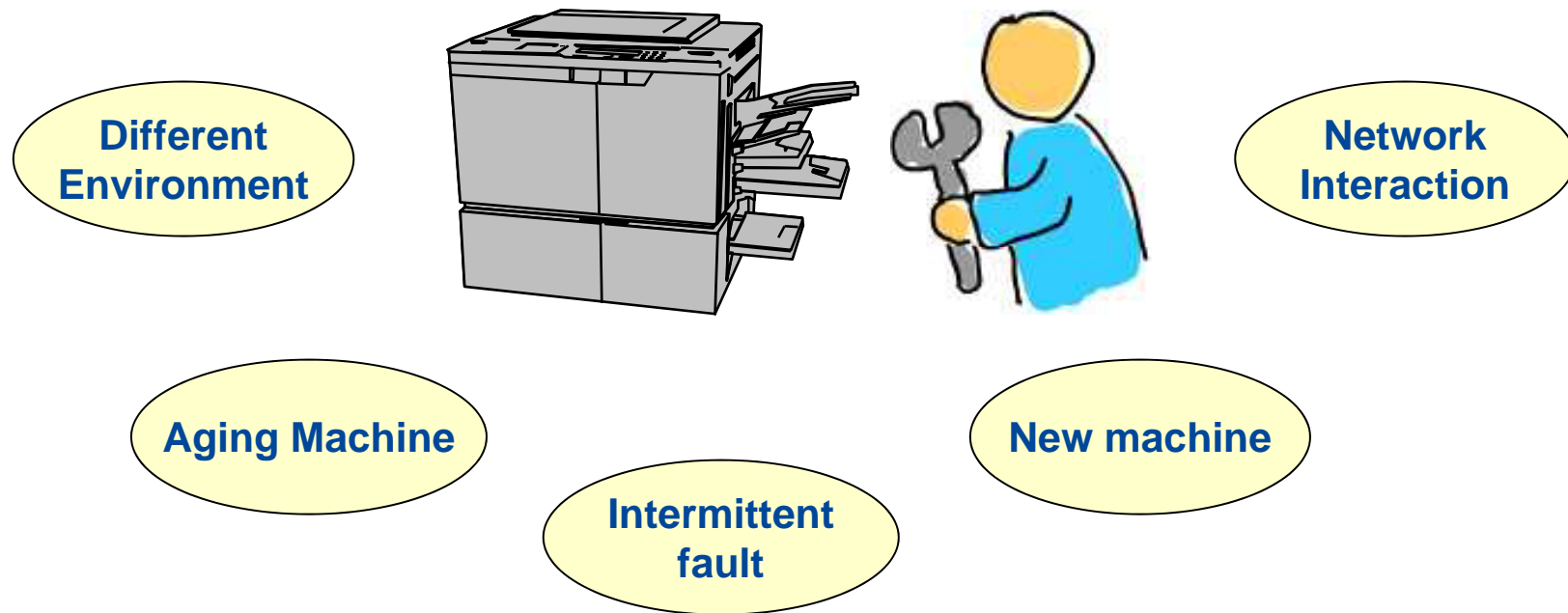


Xerox service technicians

# The need for solution creation

**No solution  
in the book**

**No one around  
to help**



# Observing work practice: the actual role of knowledge in organizational life

- Necessity is the mother of invention
  - Technicians frequently invent new solutions
  - They keep cheat sheets of solutions to jog their memories
  - They share *war stories* with their local work groups (although migration of solutions between groups is slow and incomplete)
- In designing a system to help these knowledge workers, we realized we could build on their own practices

# Peer review for knowledge vetting



# What's in a tip?

- identifying new problems and possible solutions
- proposing new solutions to known problems
- sharing useful workarounds, shortcuts, equipment modifications and other kinds of tinkering



## 3-396 VSEL Communication Fail

Author: Gilles Robert\_que

Validator: Marc Beauregard\_que.

Success:

Show details

Product: **dc40**

Chains: 03

Problem:

Printer declared 03-396 fault always at the start of a print job and never in the middle of the job.

Cause:

Fault : 03-396

Video selector marking control PWB detected a read/write fault of the XPC register on the **VSEL** .We changed the 2 video PWB's and the 2 ribbon cables between the video and the marking boards . We returned the next day and changed the marking board . Still the customer had intermittent 03-396 codes.

The customer had done did a lot of renovations in their offices and we found dust in the dc40.

Solution:

THIS SAVED US A LIKE FOR LIKE

The 5 volt line for the 2 **VSEL** PWB'S was the problem. There was a bad contact in the inline fuse in the 5 volt line. The 5 volts comes from the IIT LVPS . The problem is that between PJ782 pin 1 and 3 and the 2 **VSEL** PWB you have 2 inline fuses there and the 2 fuses were resistive and gave a bad 5 volt to the **VSEL** PWB. We cleaned the fuse contacts of the fuses and the problem never reappeared

See attachment for the BSD.

Written for  
technicians  
everywhere;  
intended for  
massive  
re-use

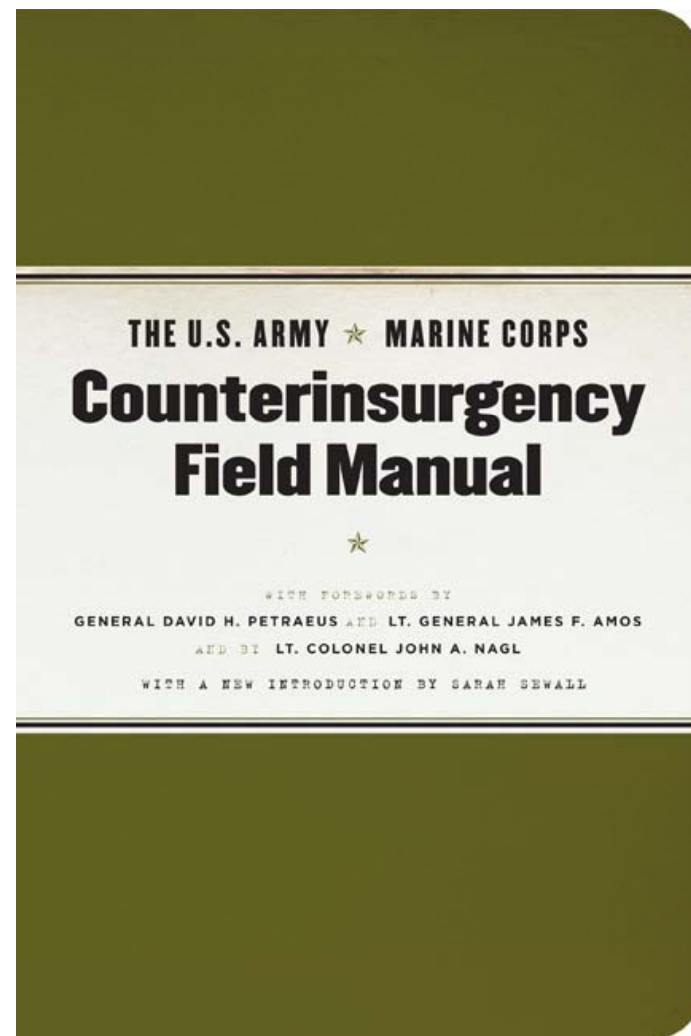
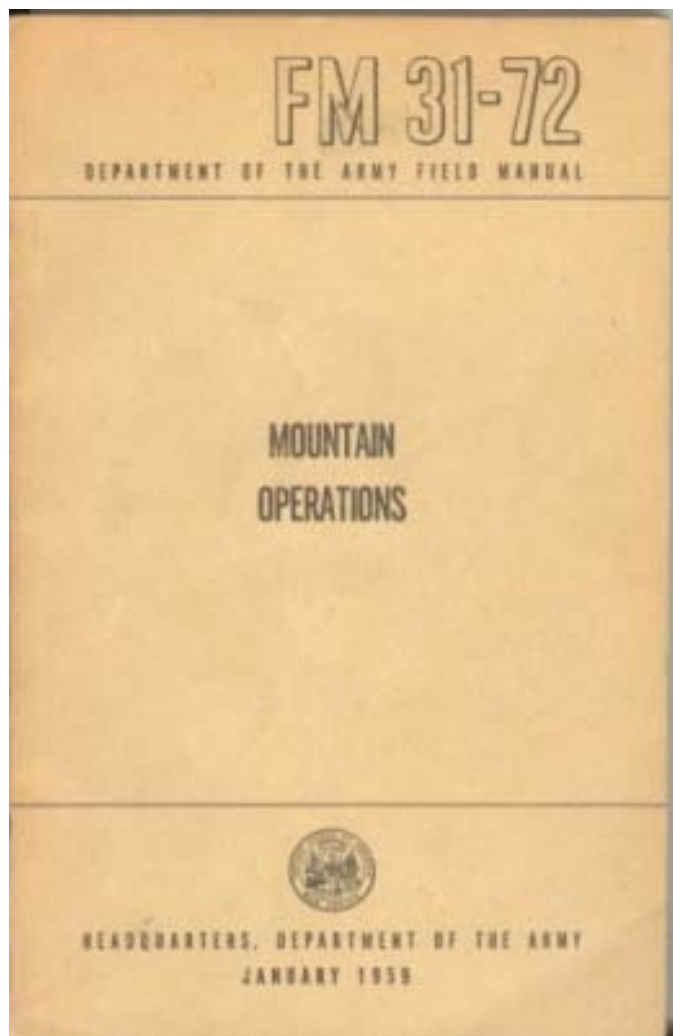
# Knowing not only 'what' but 'how'

- A relatively new international marine conservation NGO...
  - Has organized dozens of 'fisheries improvement partnerships' (FIPs) between buyers and catchers in fisheries around the world
    - Each FIP based on an organizational strategy/model, but they developed organically and so followed somewhat different paths
  - Flat organizational structure, limited administrative resources
- Knowledge of **what** is going on in each partnership needs to be documented and available to all
  - For example, 'What FIPs is Partner X involved in?' or 'What are all the FIPs in the Indian Ocean?' or 'What FIPs include bottom trawl gear?'
- But equally important is the knowledge of just **how** each FIP was developed, **how** they actually brought buyers and catchers together

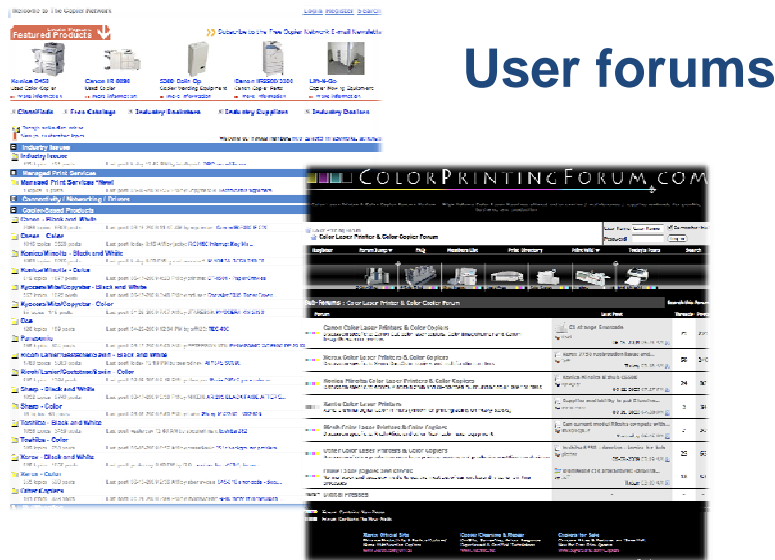
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- *Stories are especially valuable resources for 'how' knowledge*

# Traditional knowledge resources: U.S. Army Field Manuals

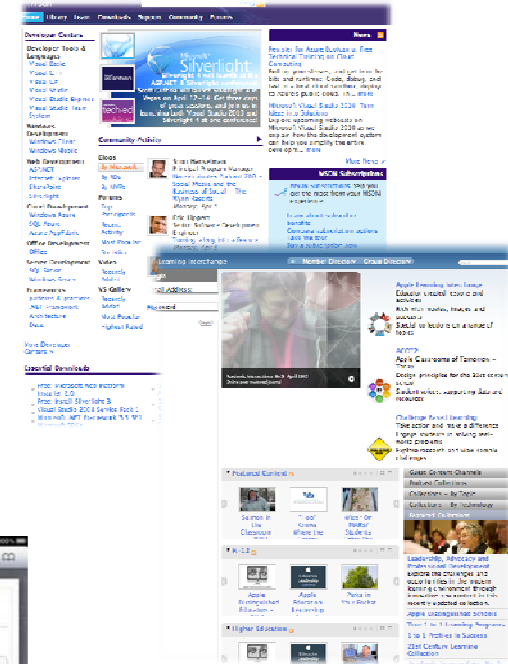


# Contemporary social media and knowledge sharing



User forums

Corporate-sponsored forums



Twitter



Wikis

# The New York Times

August 14, 2009

## Care to Write Army Doctrine? With ID, Log On

By NOAM COHEN

Join the Army, where you can edit all that you can edit.

In July, in a sharp break from tradition, the Army began encouraging its personnel — from the privates to the generals — to go online and collaboratively rewrite seven of the field manuals that give instructions on all aspects of Army life.

The program uses the same software behind the online encyclopedia [Wikipedia](#) and could potentially lead to hundreds of Army guides being “[wikified](#).” The goal, say the officers behind the effort, is to tap more experience and advice from battle-tested soldiers rather than relying on the specialists within the Army’s array of colleges and research centers who have traditionally written the manuals.

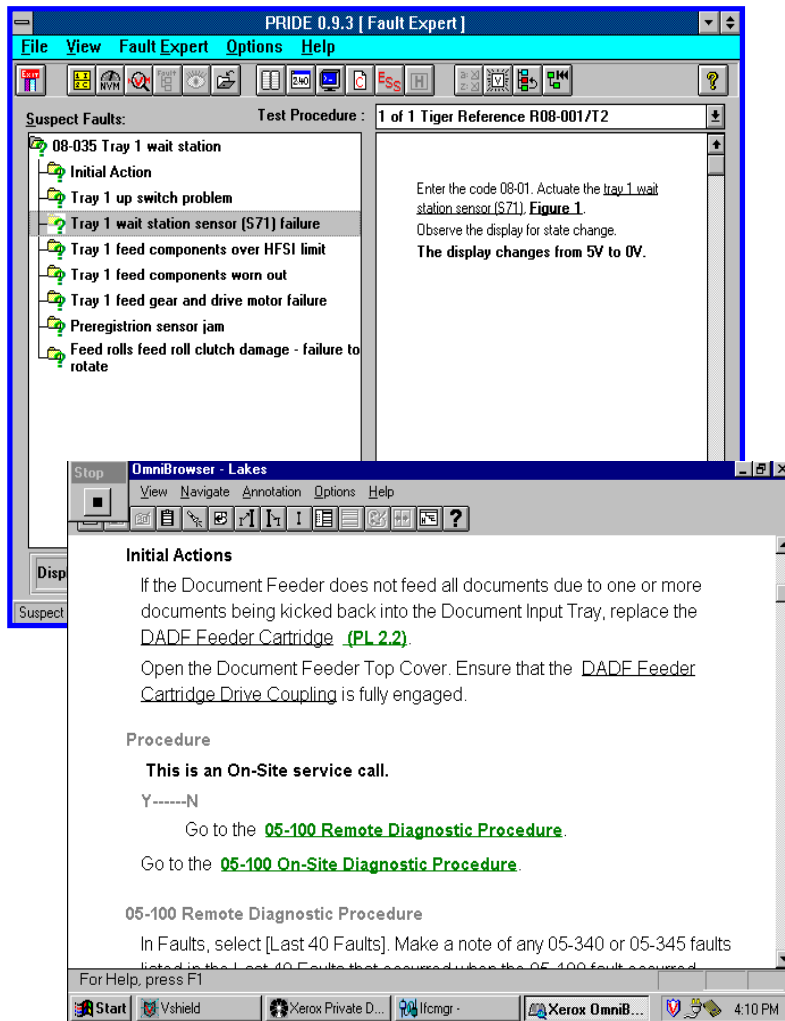
“For a couple hundred years, the Army has been writing doctrine in a particular way, and for a couple months, we [have](#) been doing it online in this wiki,” said Col. Charles J. Burnett, the director of the Army’s Battle Command Knowledge System. “The only ones who could write doctrine were the select few. Now, imagine the challenge in accepting that anybody can go on the wiki and make a change — that is a big challenge, culturally.”

# These manuals are now being ‘wikified’!

“For a couple hundred years...the only ones who could write doctrine were the select few...now anybody can go on the wiki and make a change.”

Additional/backup slides

# Traditional-authoritative versus communal knowledge resources: Instructions (RAPs) and tips



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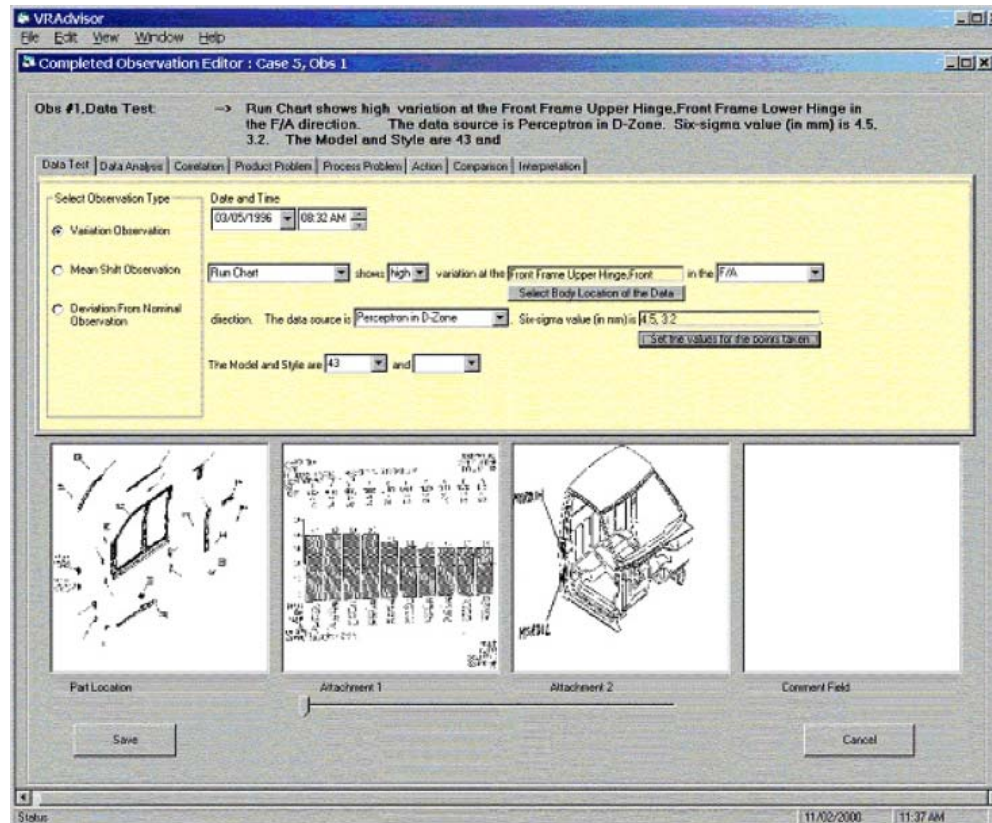
See attachment for the BSD.

\*RAPs = Repair Action Procedures

# Traditional-authoritative versus communal knowledge resources: Instructions (RAPs) and tips

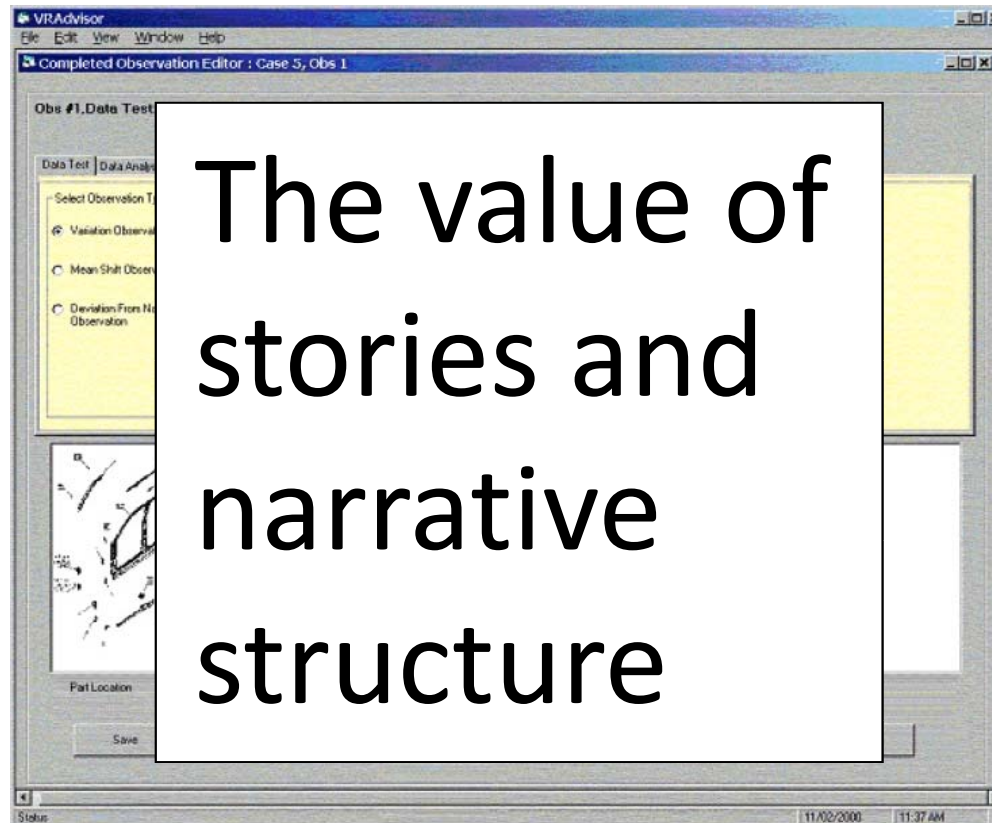
	RAP documents	Eureka tip documents
<b>Reasoning</b>	Step-wise diagnosis. Binary decision tree through yes-no questions.	<b>Loosely structured</b> through Problem, Cause and Solution fields, with <b>narrative</b> presentation. Comparatively, one step from diagnosis to repair.
<b>Authoring</b>	Written by <b>engineering</b> or <b>service documentation</b> groups.	Written by <b>technicians</b> .
<b>Philosophy of use</b>	Technicians should follow the documentation; documentation <b>structure enforces proper diagnostic process</b> . Intended to be used only when at the machine for diagnosis and repair.	Technicians can <b>explore</b> the tip document and determine what aspects of the text apply to their current problem or interests. Can be used in many <b>different contexts</b> , for <b>different purposes</b> .
<b>Source of knowledge</b>	The <b>engineering specifications</b> of the machine.	<b>Experience</b> with machines and new <b>discoveries</b> made in the field (undocumented solutions, workarounds, and the like).

# Knowledge resources in an assembly plant: Case record vs daily log



1	Horatio - Moved the left and right doors forward .5mm. Gaps door to B pillar tight on final and the M1 deck.
2	Horatio - Rhett and Miles the electrician modified the robot program for the left front door in station 210 today for the window opening. We were getting alarms for being too narrow. Also I had Leto put the alarm back to its original limit.
3	Had problems with right side inner to outer load in T zone. When we loaded the inner to the outer we were scraping the adhesive off onto the inner skin leaving a mess on the door. WE reprogramed 30 R2 load on the right side door load and it is fine
4	Tried the new battery guns for the striker tonight on final line. The left fitter likes the big 90 degree gun and the right fitter likes the small pistol grip. I locked the guns in the gf cabinet where we store the lap tops. the chargers and extra batteries.
5	Pulled a BIW for metrology tonite
6	When do you think we will have our new report format for dvc jobs completed?
7	Had problems with the shot pin sticking in T zone right hemmer found that it had a lot of fine weld dust on it . We cleaned it and flushed it out with break free and it is working fine now. Rhett is going to clean all the shot pins on both hemmers tonite.
8	Horatio - Samson has the new cmm Report for the full BIWs done. I will leave one for you in your mail box. Samson is now working on a system so that the new report will automatically come out after the cmm check is completed.
9	Worked in left P-zone today on fender variation at hood hinge hole. I/O variation has been high on this hole only on the left fenders. I slowed the pierce units down. I also found that the pierce was jerking the hood attachment
10	Worked in main line today. Station 25 the head board on the left side was not held tight in the tooling. See shim log for details.
11	Horatio - Samson used the vvm in x-zone today as you requested. He will leave you a message about the results when he gets the data analyzed.
12	Horatio - Tried the power tools on final and both fitters liked the small pistol grip. I ran into some problems with GA tooling and higher ups. They wanted us to verify with the click wrench, every job done by the gun. We weren't doing that.
13	Got the striker tools hung up in trim today. Operators are happy with them and they seem to be working well.

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# The wiki

