

Disseminating, Tracking and Evaluating New Knowledge in P&O

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Three KT Tools

Need to Knowledge (NtK Model)

Knowledge Value Mapping (KVM)

Level Of Knowledge Use Survey (LOKUS)









Focus of Need to Knowledge Model

The NtK Model **is** relevant to government sponsors and grantees of *Research & Development* projects which are expected to create technology-based *Innovations*, capable of generating beneficial socio-economic impacts, and do so in the near term future.

The NtK Model **is not** relevant to government sponsors or grantees of basic or inquiry-driven "R&D" projects, with no explicit intent to generate socio-economic impacts, nor expectations for application in any specific field or in any defined timeframe.









Three Methods & States











R&D for Innovation

- Each Method has own rigor and jargon.
- Actors are trained and operate in one method and over-value that method.
- Academic & Government sectors dominate policy at expense of Industry.
- Methods are actually inter-dependent.









NtK Model Assumptions

- Socio-economic impacts start with a validated need, recognized by stakeholders, addressed through delivery of innovations via market mechanisms.
- Industry is customer for R&D outputs due to ability to design & deploy market innovations in short term.
- Three different methods (R/D/P) create knowledge outputs in three different states (Discovery, Invention, Innovation), each with unique value.
- Decision to adopt/implement knowledge rests with recipient stakeholders *not* with the producers.









NtK Model Components

- 3 Phases represent activities/decisions to generate outputs in three states
 - 9 Stages and 9 Gates (537 excerpts)
 - 58 Steps (674 excerpts)
 - 70 Tips (71 excerpts)
- 3 KTA cycles (264 excerpts) stakeholder mechanisms for moving knowledge from one state to another





Knowledge Base

- · Search for citations or excerpts
- · Search by: Keyword, Knowledge User Group or Settings

In the past year, NtK Model Used/Noted by:

- · PDMA The Source
- Technology Transfer Tactics
- NIDRR Grantees
- AAATE, ATIA, CIHR



"Gamification" of Technological Innovation

Progress through three Methods of Knowledge Generation, and the effective Communication of three Knowledge States, may be circuitous and iterative, punctuated and prolonged, risky and unpredictable, yet still be planned, implemented and accomplished through the deliberate and systematic efforts of key stakeholders.







NtK Model Value

- Technology Grantees:
 - Proposal structure Review Panel liked.
 - RERC Tech Transfer/ SBIR Phase II Plans.
- Program Sponsors:
 - Assess proposals; Track progress.
 - Compliance enforced Funding continuation?
- Organizations:
 - PDMA's "The Source"; Tech Transfer Tactics;
 - CIHR; CEUD; DIT; ATIA; AAATE.









Knowledge Value Mapping Questionnaire

Reaching Target Audiences efficiently and effectively









New Requirements

- Sponsors & Grantees tasked with:
 - Communicating findings to non-traditional audiences.
 - Demonstrating evidence of knowledge use.
- New unfunded mandates to:
 - Translate findings into appropriate language and formats.
 - Identify channels for communication.









Rationale for KVM

- Reach diverse and non-traditional audiences.
- Communicate findings efficiently and effectively under current constraints.
- Employ broker organizations with appropriate membership.
- Understand how each values research to properly tailor message.









AT: Six Stakeholder Groups

- Researchers (Scientist & Engineer)
- Clinicians (Therapist/Educator/Counselor)
- Consumers (PWD & Family Member)
- Manufacturers (OEM & VAR)
- Policy Implementers (government/agency/ program administrator)?
- Brokers (attorney/employer/consultant)









Knowledge Value Mapping Study

- Multiple Comparative Case Studies
- National Organizations -AAC Stakeholders
 - ATIA Manufacturers
 - ASHA Clinicians
 - ISAAC Consumers
 - AHEAD Brokers
 - OSERS Policy Implementers
 - RESNA Cross-Stakeholder (Pilot)









The **KVM Questionnaire** explores six ways in which national organizations <u>may</u> interact with new knowledge generated through scientific research:

1) **Creating Knowledge:** Conducting research internally or funding others to do research for your organization;

2) Identifying Knowledge: searching for research findings that have already been produced by others;

3) Translating Knowledge: paraphrasing research findings to make them more relevant and understandable;

4) Adapting Knowledge: interpreting research findings to improve their fit within your organization's context;

5) Communicating Knowledge: disseminating or demonstrating research findings through various media;

6) Using Knowledge: applying research findings to situations within your organization or membership;









Question #1. Relative to other activities, how frequently does your organization engage in **Creating Knowledge** through Research activity? That is, conduct or perform your own research or pay/fund others to do research for you?

For what purpose are you conducting research or funding research performed by others?

Who conducts the research?

Who are the main intended users of the research knowledge your organization creates?









Probing Questions regarding KVM:

Question #7. Please describe any incentives that your organization uses to encourage your internal associates or members to become aware of, or apply new research-based knowledge.

Question #8. How does your organization measure the levels of awareness, interest or application of new knowledge among your memberships? What is being measured in each case?

Question #9. What percentage of your members have education/training in a research field equivalent to a Masters or Doctoral degree?

Question #10. Can you identify or suggest any ways in which researchers could help your organization facilitate the flow of knowledge from them as the sources, through your organization and out to your members?









KVM Results

- All surveyed national organizations seek, review and use research results internally.
- All communicate research via electronic means, while some use formal journal/conference outlets.
- Those with internal expertise adapt findings to context but all respect author's original intent.
- All use incentives to attract member attention webcasts, CEU's, certificates, content advisors.

National organizations can serve as effective mediators and translation/dissemination networks.







Knowledge Translation

Ranking importance across various types of knowledge use

	Very Important	Important	Moderately important	Of little importance	Unimportant	Not applicable
To create or revise industry standards or clinical protocols is	AHEAD ASHA OSERS RESNA	ATIA	ISAAC			
To build laboratory instruments or clinical tools is	RESNA	ASHA OSERS		ATIA	ISAAC	AHEAD
To create freeware (hardware, software) for free download or access is		OSERS	ISAAC	RESNA		ATIA AHEAD ASHA
Designing new or improved commercial devices or services is	ATIA RESNA	ISAAC ASHA OSERS				AHEAD
For other purposes is –Promote the AT field –Inform policy or practice		ATIA RESNA AHEAD			c	









KVM Results

Table 2 Target audiences for dissemination through national organizations

	National organization						
Audience	ATIA	AHEAD	ISAAC	ASHA	OSERS	RESNA	
Clinicians and practitioners	Х	Х	Х	Х	Х	Х	
Consumers and families	Х		Х	Х	Х	Х	
Policy makers	Х	Х		Х	Х	Х	
Educators and employers	Х	Х	Х	Х	Х		
Manufacturers	Х		Х		Х	Х	
Others	Х				Х		
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KVM Results

- Recommendations for researchers
 - Increase engagement!
 - "Translate" from research jargon to practical terms
 - Explain the findngs and implications, and give them a call to action
 - What? So what? Now what?
 - Distribution ready formats









LOKUS

- <u>Level Of Knowledge Use Survey</u>
- No existing instrument fit study purpose.
- Created LOKUS Questionnaire for web-based self-report (VOVICI).
- Five Levels; each containing multiple types, dimensions and activities.
- Psychometric analysis shows LOKUS to be valid and reliable for measuring change in level of knowledge use.









Purpose of the KT intervention studies

Problem: Sub-optimal level of demonstrated impact from R&D investment, so OMB mandates Federal programs demonstrate evidence of uptake & use.

Solution: NIDRR selected Knowledge Translation as model and method to generate evidence.

Challenge: Identify KT best practice models that are :

- Effective: increase K use by relevant stakeholders;
- Feasible : easy to implement; and
- Useful: K producers (technology grantees) can document evidence of impact from their project outputs

<u>**Purpose:**</u> Develop and evaluate KT intervention strategies that are feasible for use by technology R&D projects and effective in increasing use of new knowledge by potential users.









Relevance of LOKUS

- Sponsors & Grantees seeking to demonstrate evidence of knowledge use by stakeholders.
- Compare strategies for communicating knowledge.
- Differentiate between "Levels" of knowledge use:
 - Non-awareness to Awareness (Conceptual)
 - Awareness to Interest (Motivational)
 - Interest to Use (Action)
 - As intended As Modified
- Appropriate for All Stakeholders.







LOKUS Survey – 4 Levels/5 Types





Knowledge Translation







Method

- Map values of user categories for tailoring material to their needs and interests.
- Measure baseline awareness and use of all innovations among a sample of knowledge users from each of six categories.
- Divide sample of user into three conditions:
 1) Full KT intervention, 2) Standard KDU, 3)
 Control.
- Measure post-intervention awareness and use of all innovations among sample.









Research Design

		Baseline Assess- ment	Intervention Delivery (4 Mo.)	Follow/up Test 1	Intervention Delivery (4 Mo.)	Follow/ up Test 2
Five Stake- Holder Groups	T ₁	0	X _{1a}	0	X _{1b}	0
Five Stake- Holder Groups	T ₂	0	X ₂	0		0
Five Stake- Holder Groups	С	0		0		0

Where T1 = group exposed to TTDK; T2 = group exposed to TDK; C = Control group; O = Observation (via LOKUS); X1a and X1b are components of TTDK method; & X2 = TDK method.









KT Intervention Results LOKUS Use Types 1 - 5

Treatment	Pre-Test Mean (S.D.)	Post 1 Mean (S.D.)	Post 2 Mean (S.D.)	Difference α ≤ .05 x² (p)	Post-hoc Test α ≤ .0167 Ζ (p)
T1 – KT (N = 72)	1.22 (.68)	1.79 (1.16)	1.69 (1.03)	22.632 (<.001)	Pre vs Post 1 3.826 (<.001) Pre vs Post 2 4.297 (<.001)
T2 – KD (N = 72)	1.26 (.77)	1.76 (1.19)	1.74 (1.16)	13.884 <mark>(.001)</mark>	Pre vs Post 1 3.330 (.001) Pre vs Post 2 3.206 (.001)
Control (N = 63)	1.38 (.97)	1.51 (1.05)	1.63 (1.22)	6.484 (.079)	
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Conclusions

- T1 and T2 strategies effective.
- Generalizable?
- Can lead a horse to water, but...
 - When they are ready, they will sip~
 - Ensure tailored information is available
 - Ensure information is easy to access
 - Reminders!









Key Take Aways

- NtK Model useful for planning R&D projects when socio-economic impact is the goal.
- KVM provides insights regarding how to reach stakeholder groups.
- LOKUS can be used to determine uptake and use of new knowledge.

Information about all tools and projects available at: <u>http://kt4tt.buffalo.edu</u>









Questions?









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