

ATE PI Workshop: Scale 101

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NSF ATE Proposal Criteria

- Intellectual Merit
- Broader Impacts
- Dissemination
- Sustained Impact/Change



The Challenge for Innovators

- Innovation vs. Invention
- Creating an Innovative Culture
- Sustaining Innovation



Research Contributions

- Chris Dede, Timothy E. Wirth Professor in Learning Technologies, Harvard Graduate School of Education; <http://www.gse.harvard.edu/~dedech/>
- Jim Dearing, Senior Scientist, Kaiser Permanente, Institute for Health Research; <http://kpc-co-ihp.org/jamesdearing/publications/2010dearing.htm>
- Synergy Collaboratory for Research, Practice and Transformation; <http://sites.google.com/site/synergy2010group/>



You have a proven innovation you want to scale...



Exploring the Process of Scaling Up

What are the steps—and traps—in moving from innovation to broad-based adoption and consequential change?



<p>Dimensions of Scale</p> <p>Taking an educational innovation completely to scale involves five dimensions that reflect different aspects of making an intervention effective in one setting useful across a wide spectrum of contexts.</p>	<p>Depth</p> <p>Getting to scale produces deep and consequential changes in practice. Requires evaluation and research to understand and enhance the causes of effectiveness.</p>	<p>Sustainability</p> <p>Sustaining scaled growth means maintaining these changes in practice over substantial periods of time. Requires robust design to enable adapting to negative shifts in context.</p>	<p>Spread</p> <p>Scaling up is achieved by diffusion of the innovation to large numbers of users. Requires modifications to retain effectiveness while reducing the resources and expertise required.</p>	<p>Shift</p> <p>Ownership of the innovation is assumed by users, who deepen and sustain the innovation via adaptation. Requires moving beyond “brand” to support users as co-evaluators, co-designers, and co-scalers.</p>	<p>Evolution</p> <p>The innovation as revised by its adapters is influential in reshaping the thinking of its designers. Requires learning from users’ adaptations about how to rethink the innovation’s model.</p>
<p>Sources of Leverage</p> <p>Each dimension provides leverage for the scaling process by evolving the intervention to increase its power, durability, applicability, and flexibility.</p>	<p>Evaluation and Research</p> <p>What are the sources of the innovation’s effectiveness? What conditions does each source depend on for success? How sensitive is each source to these conditions? How consistent is the innovation with the current political and cultural context of educational improvement?</p>	<p>Robust Design</p> <p>How can the innovation be modified so that it functions in various types of inhospitable conditions? How typical is each condition for success in the target population of users? How can developers support varied users while evolving toward conditions for success that enable full effectiveness?</p>	<p>Reducing Resources and Expertise</p> <p>How much is the overall power of the innovation affected by reducing its cost or the knowledge required to implement it? How much power is retained in a light version that requires fewer resources or less expertise of its users? How can developers support light users to achieve full effectiveness?</p>	<p>Moving Beyond Brand</p> <p>How can developers support users going beyond what the originators have accomplished? How can developers build users’ capacity as co-evaluators, co-designers, and co-scalers? How can users form a “community of practice” that helps answer questions about scale?</p>	<p>Rethinking the Model</p> <p>How can developers unlearn their initial beliefs, values, and assumptions about the innovation, and generate willingness to start the innovation process over again? How can developers facilitate reconceptualization and discontinuous evolution? How can developers form a “community of reflective redesign” with other innovators?</p>
<p>Traps to Avoid</p> <p>Evolving along each dimension requires the developers of the innovation to overcome traps that have both cognitive and affective aspects.</p>	<p>Trap of Perfection</p> <p>Developers should not seek an unattainable goal of perfection at the cost of deflecting resources from other dimensions of scale. (The great should not be the enemy of the good.)</p>	<p>Trap of Mutation</p> <p>Developers should ensure that the ways they modify the innovation to adapt to various inhospitable contexts do not undercut its core conditions for success.</p>	<p>Trap of Optimality</p> <p>Developers should realize a somewhat less powerful innovation that reaches much greater numbers of users is a step forward.</p>	<p>Trap of Origination</p> <p>Developers should not attempt to control the original innovation in ways that deter adaptation and further innovation by users.</p>	<p>Trap of Unlearning</p> <p>Developers’ unwillingness to take a fresh look can prevent genuine evolution.</p>

The Scaling Framework

ROLL OVER THE INTERACTIVE TABLE BELOW TO LEARN MORE ABOUT THE SCALING FRAMEWORK

DIMENSIONS OF SCALE	DEPTH	SUSTAINABILITY	SPREAD	SHIFT	EVOLUTION
POWER OF DIMENSION	EVALUATION AND RESEARCH	ROBUST DESIGN	REDUCING NEEDS FOR RESOURCES AND EXPERTISE	MOVING BEYOND BRAND TO CO-OWNERSHIP	RETHINKING THE MODEL
TRAPS TO AVOID	TRAP OF PERFECTION	TRAP OF MUTATION	TRAP OF OPTIMALITY	TRAP OF ORIGINATION	TRAP OF UNLEARNING
ROLE OF TECHNOLOGY	CREATING POWERFUL LEARNING	MEETING SPECIAL NEEDS	PROVIDING EFFICIENCIES AND SUPPORTS	ADAPTING AND SHARING	STUDY OF ADAPTATIONS
NEXT STEPS TO EXPLORE	UNDERSTANDING EFFECTIVENESS	COPING WITH DIFFICULT SETTINGS	DEVELOPING "LIGHT" VERSIONS	FOSTERING CO-DESIGNERS	EVOLVING DESIGN ASSUMPTIONS

Sources: Chris Dede, Harvard University Graduate School of Education; Cynthia Coburn, "Rethinking Scale: Moving Beyond Numbers to Deep and Lasting Change," Educational Researcher (2003).
Microsoft US Partners in Learning

Email additional questions about scale to uspil@microsoft.com

MUSIC ON

DEPTH

effectiveness of innovation under ideal conditions

Questions

- From what sources of leverage does the innovation get its power?
- What are its conditions for success?
- How can the innovation be modified to enhance depth?

Trap: Perfection

Check List

1. Conduct research and evaluation
2. Work through a Logic Model
3. Use iterative design



SUSTAINABILITY

changes in practice maintained over substantial periods of time

Questions

- To survive in inhospitable conditions, how will I modify the innovation?
- What are the minimum conditions of success for this innovation to retain reasonable effectiveness?
- What target settings / populations have at least these minimum conditions?

Trap: Mutation

Check List

1. Develop ruggedized hybrids
2. Use technology to automate ongoing processes (so that continuity is easy)



SPREAD

large numbers of users embrace the innovation

Questions

- How do I reduce costs while retaining power (light version)?
- How do I simplify training?
- With a light version – what are the trade-offs?
- How do I ensure success early on so that users gain confidence?

Trap: Optomality

Check List

1. Reduce costs
2. Reduce barriers to initial usage
3. Create new efficiencies



SHIFT

many users deepen and sustain the innovation via adaptation

Questions

- How can I move beyond “brand” to support users as co-evaluators, co-designers, and co-scalers?
- How can I help users to go beyond what I already developed?
- How can I train users to be co-evaluators, co-designers, and co-scalers?

Trap: Origination

Check List

1. Train for co-design
2. Empower others to think in terms of co-design
3. Increase collaboration and communication



EVOLUTION

revisions reshape the thinking of original designers

Questions

- How can I get motivated to start the innovation process again?
- How can I re-conceptualize the innovation?
- How can I facilitate a “community of reflective redesign” with other innovators?

Trap: Unlearning

Check List

1. Determine how to re-motivate
2. Determine how to innovate with new eyes
3. Use technology to track changes



DEPTH



SUSTAINABILITY



SCALE MODEL

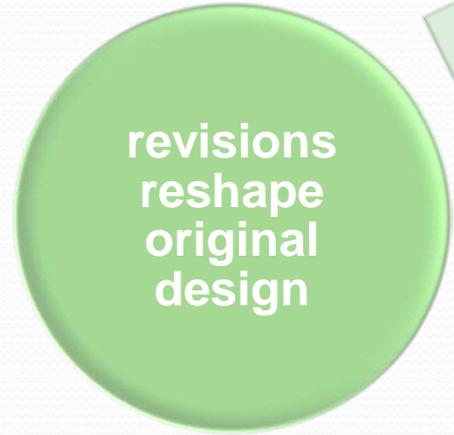


SPREAD



SHIFT

EVOLUTION





How do we select which new things to do in our organizations?



Traditional criteria

1. Is it consistent with our mission (or the RFP)?
2. Do we have the team?
3. Do we have the know-how?
4. Can we afford it?
5. If we build it, will they come?



Evidence-Based Spread Selection Criteria

- Compatibility
- Cost
- Simplicity
- Adaptability
- Effectiveness
- Observability
- Trialability

James W. Dearing, Kaiser Permanente



Compatibility

- ... is the extent to which an innovation fits with preexisting routines, beliefs, and norms

Cost

- ... is the extent to which an innovation is less costly relative to alternatives



Simplicity

- ... the extent to which an innovation is easy to understand

Adaptability

- ...the extent to which an innovation can be customized by an adopter without decreasing effectiveness

Effectiveness

- ...the extent to which an innovation is better than an alternative



Observability

- ...the extent to which the results of using an innovation are visible

Trialability

- ...the extent to which an innovation can be tried with low or no risk



Which Attributes are Especially Powerful?

1. ***Compatibility***
2. ***Cost***
3. ***Simplicity***
4. Adaptability
5. Effectiveness
6. Observability
7. Trialability

Attribute Rating Tools

- The innovation matrix
 - Attributes by team perception, team portrayal, potential adopter perception (7x3)
 - Diagnosing communication barriers via the matrix
- The innovation profile
 - Composite of attributes (1x3)
- The Potential for Adoption Rating score

You Can Use Attributes to

- Assess how team members perceive an innovation
- Assess how team members talk about an innovation
- Assess how potential adopters perceive an innovation
- Rate websites and other information portrayals about an innovation
- Compare innovations to decide the readiness of each for scale



Using Attributes Can Help Answer Questions Such As...

- Which faculty development strategy can most rapidly spread to other institutions/cities/regions?
- Have we described our new curricula in ways that will interest faculty at other institutions?
- Which approach(es) will be best received?
- How can we improve how we present our project?



Using Social Networks as Influence Networks

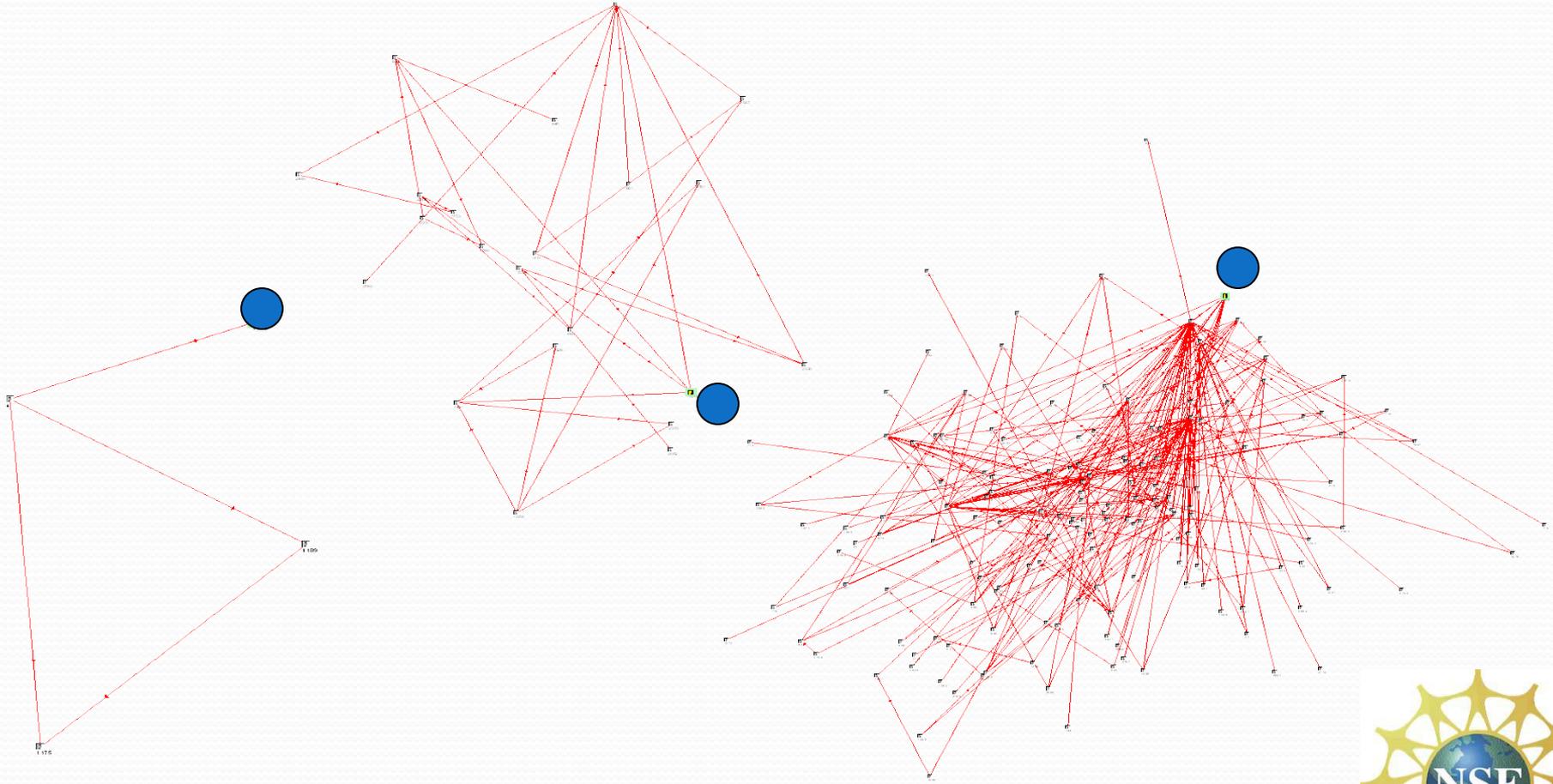
- A social network is the patterned set of relationships among the members of a social system
- Adopters, implementers, leaders, and champions are the “nodes”
- Relations of different types comprise the “links” between nodes

In General, Intervention with Informal Opinion **Leaders** Speeds the Adoption of Worthy Practices, Processes, and Policies

- ***When...***
 - They perceive the innovation positively
 - They are approached with a normative appeal
 - They are not asked to do too much



Influencing through Opinion Leaders



In Summary:

- Scale has five dimensions that must be considered in realizing success – depth, sustainability, spread, shift and evolution.
 - Accentuate the power of the dimension
 - Minimize the traps of the dimension
- There are seven attributes that must be considered when trying to identify adopters – compatibility, cost, simplicity, adaptability, effectiveness, observability and trialability
 - The more that can be associated with your project, the more likely you are to have it adopted



In Summary:

- Influence networks (target populations) embed different roles of opinion leaders, bridges, and innovators
- Innovators function as information sources for opinion leaders
- Opinion Leaders influence others within the group; bridges spread information about innovations across groups
- Change Agents are successful to the extent that they correctly identify who leads the opinions of others (who provides advice), and spend their time with those persons

Role of Community & Network

Joyce LaTulippe, *Synergy Innovation Coach Leader*



About the Synergy Community

Our Synergy Community is moving from a level of insight into a project and Center to a more collective understanding of the broader and deeper perspectives (the individual and collective learning) of the Synergy Community.

We are uncovering, as a group, common themes or issues across projects that will enrich our knowledge base about scaling.



How did we begin? – our questions

What is our purpose?

How will our members find/get what they need?

How do we foster involvement and participation?

How do we connect across communities?

Should our community be public or private?

How will we know if our community is successful?

What technological features incentivize participation?

What are effective approaches for inviting and rewarding facilitators?

How do we measure our community's health?

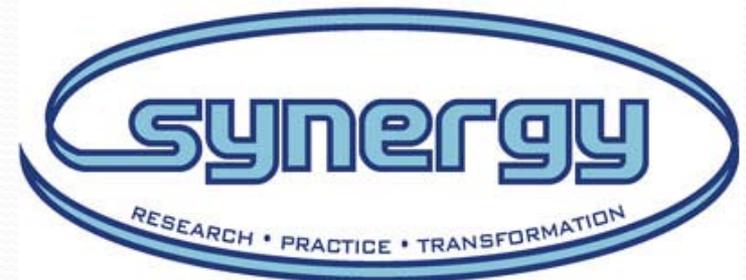
The Synergy Community of Practice

Synergy Community of Practice: Participation in a community of Synergy participants to explore the processes and tools related to scaling. This includes knowledge capture and use among and between teams.



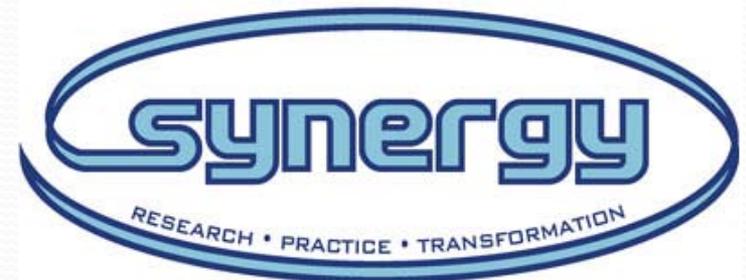
The Synergy Community of Practice

Community of Practice (COP) among your (potential) adapters: CoP can be identified as a group of people *who share a vision* in which everyone can make a contribution; *actively participate* and undertake activities in a coordinated way; *capture and reflect on their knowledge* and evolving insights and *work together to continuously improve performance*.



Wenger's Typical Activities of CoPs?

- **Problem-solving:** “Can you help me to brainstorm ways to ?”
- **Requests for information:** “Where can I find the link to that Dede flower chart on the Synergy site?”
- **Seeking experience:** “Has anyone re-designed their logic model with input from your adopters?”
- **Reusing assets:** Can you review my logic model and provide a critique of it?”



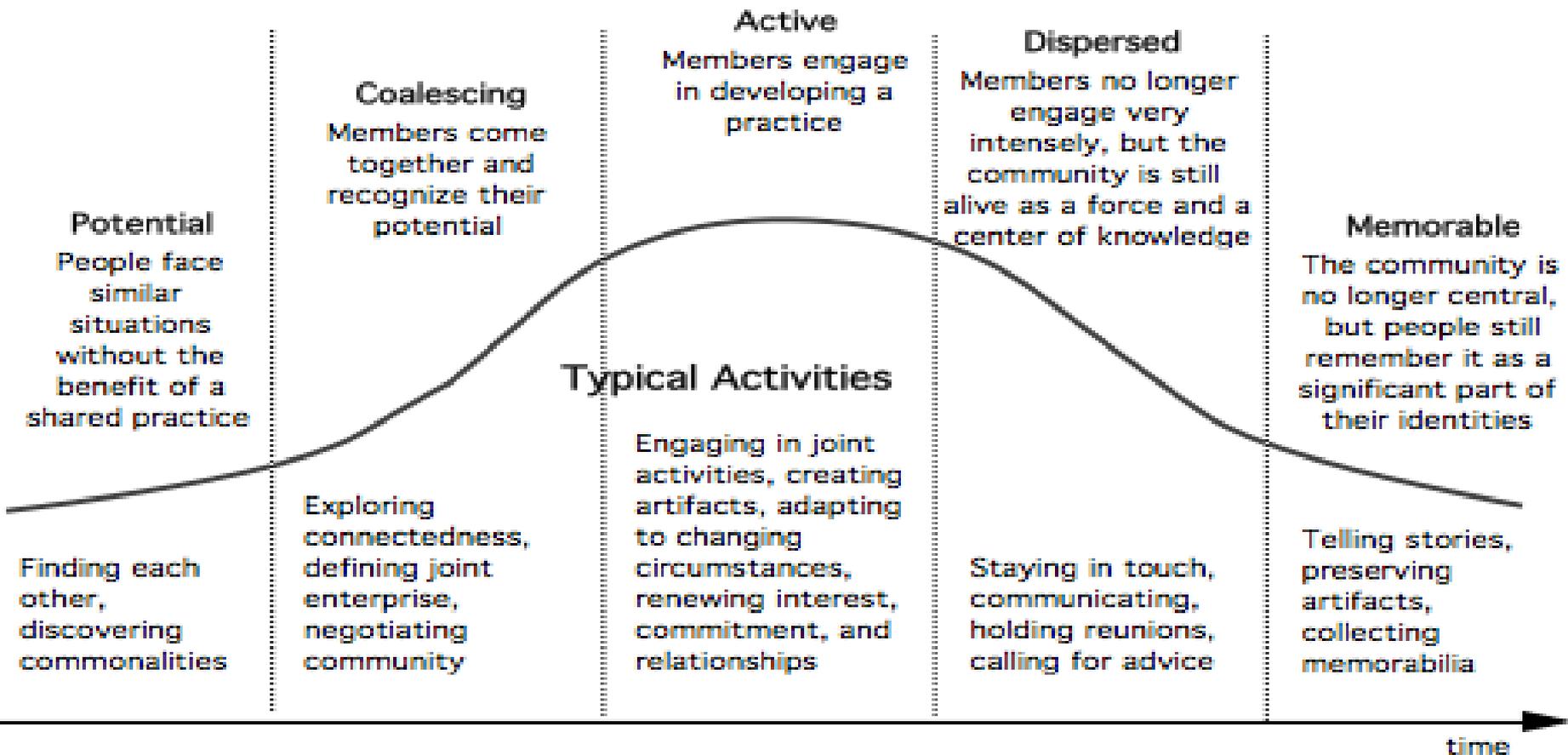
Wenger's Typical Activities of CoPs

- **Discussing developments:** “What did you think about the role of storytelling in scale of innovation?”
- **Coordination:** “Let’s combine our ideas about how to design a needs assessment.”
- **Documenting projects:** “Our SIG has kept chat logs of our discussions on X and our progress...”
- **Mapping knowledge to identifying gaps and synergies:** “Which of the concepts, processes and tools have been most helpful to you in your center?”



Our community has evolved

Stages of Development



Stages of community development

Potential A loose network of people juggles with the idea of forming a CoP; structure, members, and common interests are identified, selected, and agreed upon.

Coalescing The CoP is officially launched. The CoP activities are starting. The main focus is on establishing value.



Stages of community development

Maturing The CoP develops a stronger sense of itself. While its core practice is better defined, members see gaps and develop new areas of knowledge. The CoP goes from sharing tips to developing a comprehensive body of knowledge. Members know each other; a level of trust has developed.

Stewardship The CoP goes through a stage where the biggest challenge is to sustain its momentum.



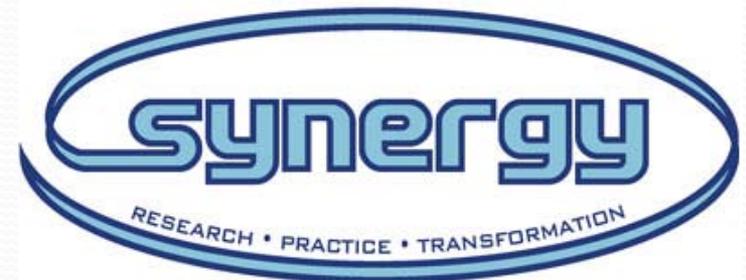
Stages of community development

Transformation An event – a major change in practice or work organization, a large influx of new members, a leadership change, or a high decrease in energy level – will trigger the need for renewal. The CoP may start all over again on a new basis or simply fade away and die.



Wenger, Trayner & de Laat

“The learning value of network derives from access to a rich web of information sources offering multiple perspectives and dialogues, responses to queries, and help from others –whether this access is initiated by the learner or by others.” –*Promoting and assessing value creation in communities and networks: a conceptual framework, 2011*



Wenger, Trayner, & de Latt

