

**WORKING SMARTER:
USING BRAIN BASICS
TO IMPROVE PROJECT MANAGEMENT**



Calumet Chapter

July 16, 2014
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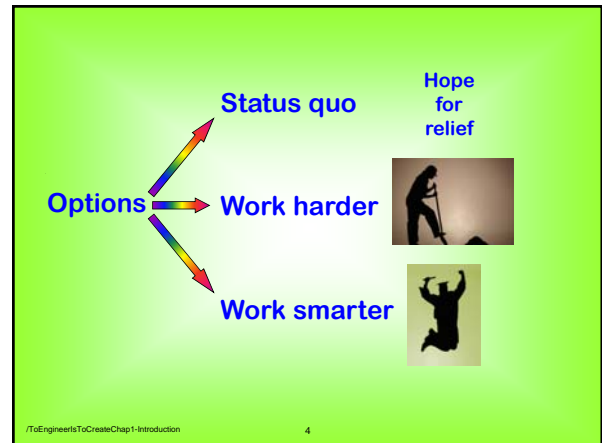
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Working smarter

Effective: Doing the right things

Efficient: Doing things right

Innovative: Developing much better structures, facilities, products, systems, and processes

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Purpose

Show you how to use brain basics to help you and your organization work smarter on projects

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Skepticism

/ToEngineerIsToCreateChap4-TheBrain-Part2

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Topics

- Brain basics
- Working smarter applications related to PM

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Topics

- Brain basics
- Working smarter applications related to PM

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“There is perhaps no greater untapped resource in the universe than the human brain...
The human brain is no longer the domain of academia and medicine.”

(Paul D. Nussbaum, Ph.D., neuropsychologist)

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BRAIN BASICS

The brain:

- Controls body temperature, heart rate, and breathing
- Accepts information from senses
- Handles physical motion
- Enables dreaming, thinking, and planning

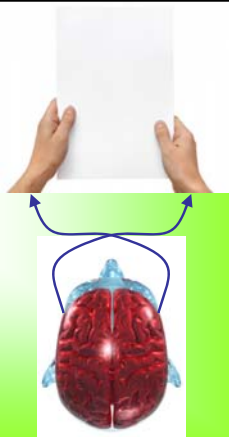
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The brain has symmetrical left and right halves or hemispheres connected by (not shown) white communication fibers called corpus callosum

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Lateralization of functions means that the left side of the brain interacts with the right side of the body and vice-versa



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The two hemispheres of the brain are asymmetrical with respect to some capabilities

LEFT HEMISPHERE	RIGHT HEMISPHERE
Verbal	Nonverbal
Analytic	Synthetic
Symbolic	Actual
Abstract	Analogic
Temporal	Nontemporal
Rational	Nonrational
Digital	Spatial
Logical	Intuitive
Linear	Holistic

Source: Edwards 1999

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~~Hardwired?~~

or

Neuroplastic?

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Conscious and Subconscious

The conscious mind explicitly uses information from our senses and memory^{1,2}

The subconscious mind thinks without us being aware of our controlling the process³

Sources: 1—Wikipedia 2012, 2—Adams 1986
3—Wikipedia 2012

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Conscious mind:
We are thinking
and we know it

Subconscious mind:
We are thinking
but don't know it

<u>Conscious mind</u>	<u>Subconscious mind</u>
• When thinking – we know it	• When thinking – we don't know it
• Intermittent	• 24/7
• Linear processor	• Parallel processor
• Slow	• Fast

<u>Conscious mind</u>	<u>Subconscious mind</u>
• Prefers complete information now—decide/do	• Can work with pieces
• Sees, or thinks it sees, what can be accomplished	• Believes what is imagined by the conscious mind
• Does not control dreams	• Controls dreams

<u>Conscious mind</u>	<u>Subconscious mind</u>
• Can change habits	• Source of habits



Habits: On automatic pilot



Learning a new Habit

Recognize cue: conscious mind decides to try something new

Source: Adapted from Martin 2008 and Duhigg 2012

Unconscious mind learns new habit

Learning a new Habit

Recognize cue: conscious mind decides to try something new

Source: Adapted from Martin 2008 and Duhigg 2012

The Brain's Negativity Bias

Source: Hanson 2013, Restak and Kim 2010

Starvation vs predation

“Eating lunch” vs “being lunch”

Negativity bias: Not needed as much but still there

Our brains are...

- like Velcro for bad experiences
- like Teflon for good ones

Source: Hanson, R. 2013 *Hardwiring Happiness*

Examples:

You are asked to **speak** at PMI about PM — but decline because of an earlier disaster



You are given an opportunity to **manage a big construction project** but don't because of some of your project management failures



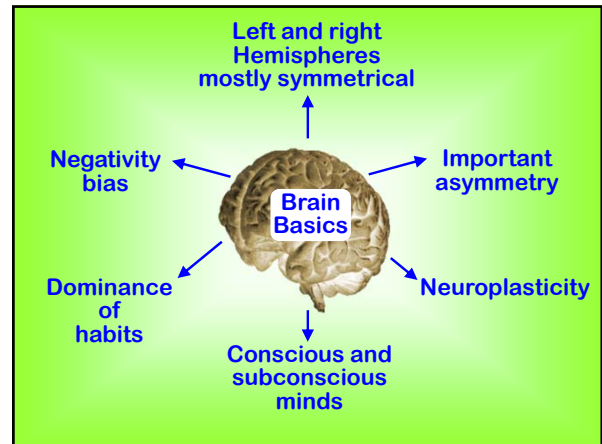
You are inclined to build on your PM experience and **start your own business**— but decide not to because of an earlier set back



You are invited by friends to take a month off and **bike across Europe** but you defer because of all the things that could go wrong



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So
what
?

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Topics

- Brain basics
- Working smarter applications related to PM

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/UWorkshop - Part 1

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Tip 1: Take
Multitasking
to
task

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Multitasking?



Text – email – google – tweet – blog...

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Bioengineering professor John Medina (2008): “Most of us have no idea how our brain works” and “...it is... impossible for our brains to multitask...” “Studies show that a person who is interrupted [or interrupts herself or himself], takes **50 percent longer** to accomplish a task. Not only that, he or she makes up to **50 percent more errors.**”

Scientists Strayer and Watson (2012): “**Performance deteriorates drastically** when we attempt to focus on more than one task at a time.”

Business trainer Joe Robinson (2010): “People may be able to chew gum and walk at the same time, but they **can’t do two or more thinking tasks simultaneously.**”

Roman writer of maxims Publilius Syrus: “To do two things at once **is to do neither.**”

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Stopped multitasking for one week

Benefits:

- Noticed more things and interacted more effectively with people
- Made significant progress on projects
- Experienced dramatic drop in stress
- Lost patience with things that are not a good use of his time
- Gained patience for things that were useful and enjoyable

There were no downsides

Source: Bregman 2011

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Then reward our self!



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Are you a multitasking project manager?

Is that smart?



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**Tip 2:
Apply
the
Medici Effect**

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Assemble highly diverse project teams

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Diversity factors

- Disciplines
- Personalities profiles
- Specialties
- New with organization
- Positions/functions
- Outsiders
- Gender
- Greenhorns

Why the novices?

- New with organization
- Outsiders
- Greenhorns

↓

Invoke the novice phenomenon¹

1. Source: Gross 1991

Team Composition and Results

Team composition	Communication effectiveness	Time to decide ^a	Degree of creativity/innovation
Homogeneous	High	Short	Low
Heterogeneous	Low	Long	High

a) For example, solve a problem, determine how to pursue an opportunity, address an issue.

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Four steps of team development

Storming
Disagreement, confusion, conflict, factions. *Some productivity*

Forming
Politeness, inquiring, waiting to see what will happen. *No or little productivity*

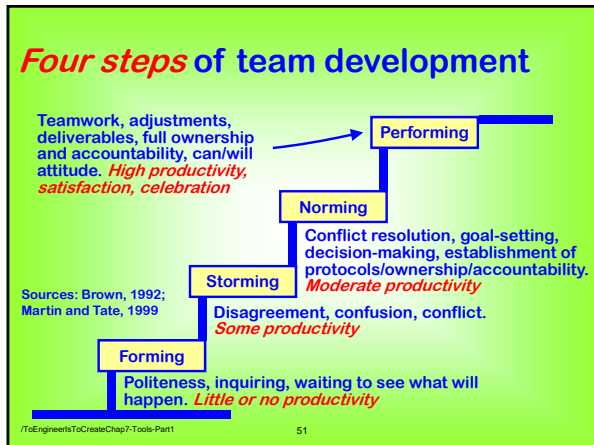
Sources: Brown, 1992; Martin and Tate, 1999

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Minimize "storming"

- Arrange *face-to-face* interaction
- Provide *context*
- Agree on *terminology*
- Encourage *sharing of concerns/ideas*
- Respect *roles* of team members
- Other ideas?



Tip 3: Replace bad habits with good habits



Learning a new Habit

Recognize cue: conscious mind decides to try something new

Cue → New routine

Source: Adapted from Martin 2008 and Duhigg 2012

Learning a new Habit

*Recognize cue:
conscious mind
decides to try
something new*

Cue → **New routine** → **Reward** → **Cue**

Subconscious mind learns new habit

Source: Adapted from Martin 2008 and Duhigg 2012

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Tip 4: Borrow brilliance

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BORROWING BRILLIANCE

Murray, presumably with tongue-in-cheek, suggests that creativity borders on stealing

Source: Murray 2009

Gutenberg borrowed the screw press from wine making and olive oil production and he also borrowed from woodblock printing and copper and coin forging

Source: Murray 2009

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Ford borrowed a disassembling carcasses system and converted it into an assembling cars system

Source: Murray 2009

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In managing an engineering, IT, or similar technical project, what could we borrow from managers of very different projects?

(Film making, dairy farming, military actions, etc.)

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Tip 5:
Use mind mapping

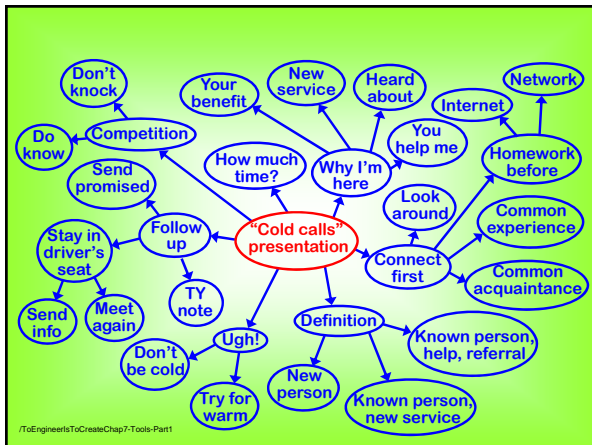
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MIND MAPPING EXAMPLE

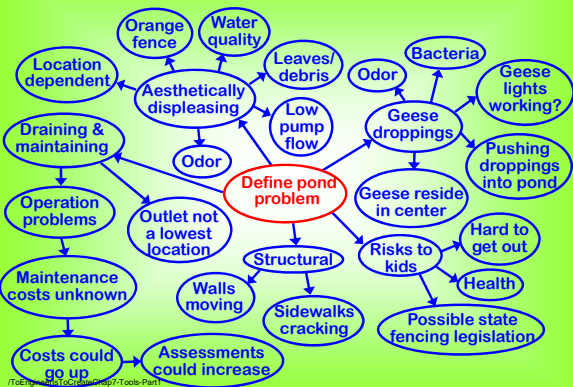


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Another example



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Why is mind mapping effective?

- Can be done quickly by an individual or group
- No preparation required—it just happens
- Highly visual and not linear—engages the right hemisphere

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Tip 6: Resist negativity bias

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Examples:

You are asked to **speak** at PMI about PM — but decline because of an earlier disaster



You are given an opportunity to **manage a big construction project** but don't because of some of your project management failures



You are inclined to build on your PM experience and **start your own business**— but decide not to because of an earlier set back





You are invited by friends to take a month off and **bike across Europe** but you defer because of all the things that could go wrong



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So what can you do about your brain's negativity bias?

- Recognize  
- Don't react—Instead think about why you are about to decline
- Recall your goals and your positives—Then decide
- Learn to install positives in your brain¹

1) See Hanson, R. 2013 *Hard Wiring Happiness*

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Tip 7: Apply fishbone diagramming

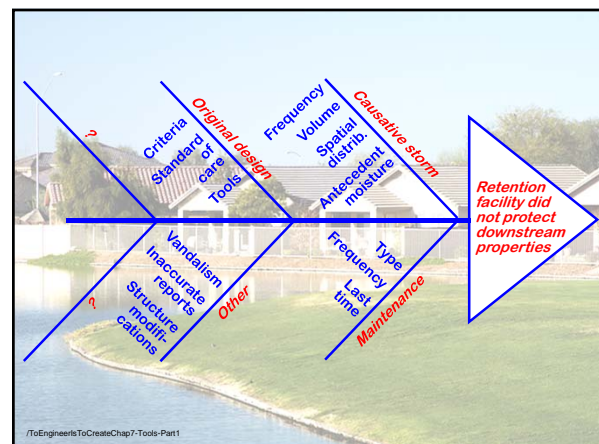
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FISHBONE DIAGRAMMING PROCESS

- Helps *identify possible causes* of a problem
- Invite *cross-section* of participants
- *Pose problem*
- Create *diagram*

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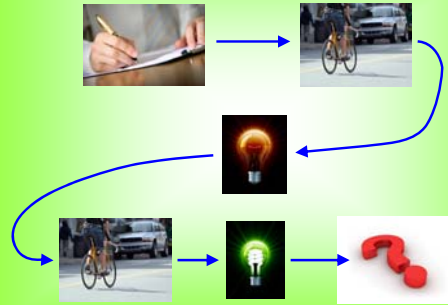
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**Tip 8:
Take
a
break**

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TAKE A BREAK



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**Einstein asked
why he got his
best ideas
while shaving**

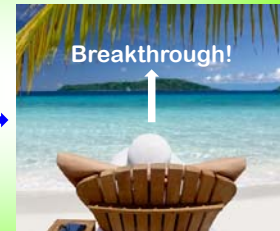
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**We cannot relax our way
into creativity**

Intense work



Breakthrough!



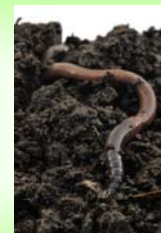
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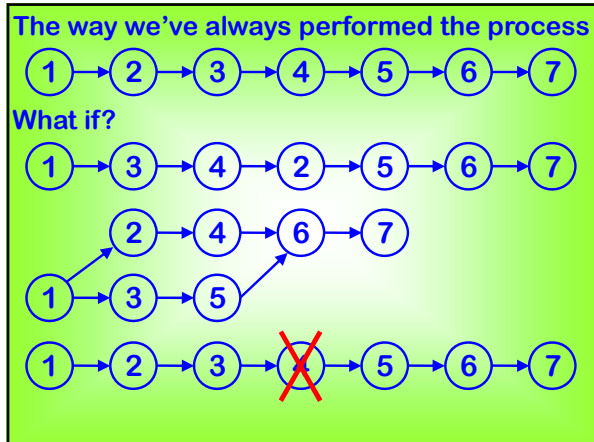
**Tip 9:
Play
What If?**

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WHAT IF?





Try
“what if...”
 to get beyond
 constraints

Taco Bell

- 1965 Los Angeles Watts riots
- Destroyed Taco Bell restaurant
- Vowed to rebuild in a 24 hour period
- Documented in a VHS video¹
- **“What if?” benefits:**
 - Publicity
 - Reduced construction time by 20-50%

Sources: 1) Taco Bell 1992, 2) Wikipedia 2012

**Summary:
 Working Smarter Using Brain Basics**

<u>Tip</u>	<u>Brain basic(s) applied</u>
1. Take multitasking to task	• Conscious mind can only do one task at a time
2. Apply the Medici Effect	• Left and right-brain individuals offer widely varying views
	• In addition, brains develop very differently adding to a range of perspectives

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<u>Tip</u>	<u>Brain basic(s) applied</u>
3. Replace bad habits with good	<ul style="list-style-type: none"> • Habits are controlled by our subconscious—we don't consciously do them • Habits control at least half of what we do • Our conscious mind can work with our subconscious mind to replace/create habits

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<u>Tip</u>	<u>Brain basic(s) applied</u>
4. Borrow brilliance	<ul style="list-style-type: none"> • If stimulated, the human mind is likely to make new connections • When the conscious mind seeks new connections, the subconscious mind will assist

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<u>Tip</u>	<u>Brain basic(s) applied</u>
5. Use mind mapping	<ul style="list-style-type: none"> Highly visual and non-linear features engage the right hemisphere to supplement the left
6. Resist negativity bias	<ul style="list-style-type: none"> Draws on subconscious mind if done in a series of sessions Offset the mind's natural tendency to recall negative experiences

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<u>Tip</u>	<u>Brain basic(s) applied</u>
7. Apply fishbone diagramming	<ul style="list-style-type: none"> Highly visual and non-linear features engage the right hemisphere to supplement the left Draws on subconscious mind if done in a series of sessions
8. Take a break	<ul style="list-style-type: none"> The conscious mind primes the subconscious mind The relaxed conscious mind then learns from the subconscious mind

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<u>Tip</u>	<u>Brain basic(s) applied</u>
9. Play What If?	<ul style="list-style-type: none"> Frees, at least temporarily, the conscious mind from left-brain constraints
10. Draw freehand	<ul style="list-style-type: none"> Engages the right hemisphere to supplement the left Leverages the seeing sense

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<u>Tip</u>	<u>Brain basic(s) applied</u>
11. Listen to music	<ul style="list-style-type: none"> Accesses both hemispheres Draws on the listening sense Recalls memories
12. Wear six thinking caps	<ul style="list-style-type: none"> Group members focus serially and collaboratively on each of six thinking functions

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<u>Tip</u>	<u>Brain basic(s) applied</u>
13. Construct process diagrams	<ul style="list-style-type: none"> Focused minds finally see the forest, not just their trees
14. Develop a stimulating environment	<ul style="list-style-type: none"> Increase productive interaction among different individuals
15. Try TRIZ	<ul style="list-style-type: none"> Systematically borrow from the successful approaches of others
16. Mimic nature	<ul style="list-style-type: none"> The focused conscious mind uses multiple senses to see new possibilities

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Are you making the best use of your



?

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Questions

Comments

Critiques

Tips

Suggestions

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APPENDIX : PRESENTER

Dr. Stuart G. Walesh, PE provides management, engineering, education/training, and marketing services. He draws on more than 40 years of engineering, education, and management experience in the government and private sectors to help individuals and organizations engineer their futures. Walesh has functioned as a project manager, department head, discipline manager, marketer, professor, and dean of an engineering college.

Representative clients: include ASCE; Boston Society of Civil Engineers; BSA Life Structures; Castilla La Mancha University; CDM; Clark Dietz; Daimler Chrysler; DLZ; Earth Tech; Utility Board of Evansville, IN; Harris County (TX) Flood Control District; Hinshaw & Culbertson; Indiana Department of Natural Resources; Indiana Department of Transportation/Purdue University; J. F. New; Leggette, Brashears & Graham; Midwest Geosciences Group; MSA Professional Services; PBS&J; Town of Pendleton, IN; Pennoni Associates; Taylor Associates; City of Valparaiso, IN; University of Wisconsin Engineering Professional Development; and Wright Water Engineers.

Walesh authored *Urban Surface Water Management* (Wiley, 1989), *Flying Solo: How to Start an Individual Practitioner Consulting Business* (Hannah Publishing, 2000), *Managing and Leading: 52 Lessons Learned for Engineers* (ASCE, 2004), and *Managing and Leading: 44 Lessons Learned for Pharmacists* (ASHP, 2008, co-authored with Paul Bush, Pharm.D.), and *Engineering Your Future: The Professional Practice of Engineering - Third*

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Edition (Wiley and ASCE Press, 2012). He is writing *Introduction to Creativity and Innovation for Engineers* under contract with Pearson Education. Walesh is author or co-author of over 200 publications and presentations and has facilitated or presented over 200 workshops, seminars, webinars, and meetings throughout the U.S.



He is chair of NSPE's Engineering Body of Knowledge Subcommittee and has chaired several national committees.

In 1995, he received the Public Service Award from the Consulting Engineers of Indiana; in 1998, the Distinguished Service Citation from the College of Engineering at the University of Wisconsin; in 2003, the Excellence in Civil Engineering Education Leadership Award presented by ASCE; in 2004, he

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was elected an Honorary Member of ASCE; in 2005, he was elected a Diplomate of the American Academy of Water Resource Engineers; in 2007, he was named Engineer of the Year by the Indiana Society of Professional Engineers and received a Distinguished Service Award from the National Society of Professional Engineers; in 2008, he received the William H. Wisely American Civil Engineer Award from ASCE for leadership in promoting engineering as a profession; in 2009, he received the George K. Wadlin Distinguished Service Award from the Civil Engineering Division of the American Society for Engineering Education; in 2010, he was named a Fellow Member of the National Society of Professional Engineers; and in 2013, he received an Alumni Achievement Award from Valparaiso University.

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