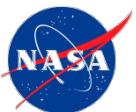


What IV&V Can Learn from Whitewater Rafting Guides

Presented by Lorelei Lohrli-Kirk and Neal Saito
September 10, 2014

NASA IV&V International Workshop 2014



Agenda



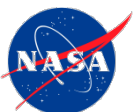
One good looking
boatload of
IV&Vers!

- Background on rafting
- Lesson 1: The “Big Picture” is made up of many small details
- Lesson 2: Sweat the small stuff
- Lesson 3: When in doubt, eddy out
- Lesson 4: Make a splash!

General Tips for Successful Rafting



- Travel with an experienced trip leader/guide.
- River travel is a group effort – everyone paddles!
- Before starting a journey, boaters should become knowledgeable about local conditions.
- Never fight the current!
- Know what you are looking at, and watch out for obstacles/dangers downstream.
- Have a plan in place for sudden obstacles.
- When stuck on/by an obstacle, be ready to try different approaches
 - Sometime you have to rock the boat
 - Sometimes everyone needs to move to one area
 - Sometimes you just have to get assistance from other boats.
- Never tie boaters to the craft.



Raft Guides

- Usually independent contractors
- Paid by the trip and tips (“If you liked your ride, tip your guide!”)
- Training includes river navigation, first aid and swift water rescue
- Tools of the trade: Paddle, throw rope, river knife and whistle
- Responsible for customer safety on and off the river



Lesson 1: The “Big Picture” is made up of many small details

- Quote from the archetypal river guide John Wesley Powell:

“You cannot see the Grand Canyon in one view, as if it were a changeless spectacle from which a curtain might be lifted, but to see it you have to toil from month to month through its labyrinths.”



- For IV&V, the Mission is our Grand Canyon

You Can't Step Into the Same River Twice

- River level changes daily
 - Need to learn to “read the river”
 - Different flow means different hazards and approaches
- White Water \neq Random
 - It is predictable within a range
 - The river banks remain the same
 - Large obstacles remain the same



Variability and Volatility are the NORM!

■ Information Flows/Navigation

- How various documents work with each other
- Concept → Design → Test → Implementation



Lesson 2: Sweat the small stuff

- High likelihood hazards are likely to happen
- Mitigation is important even for low impact hazards
- Most injuries on a river trip happen on shore or getting on shore
- Where the customer is most comfortable is often where bad things happen, because less attention is being paid to the situation

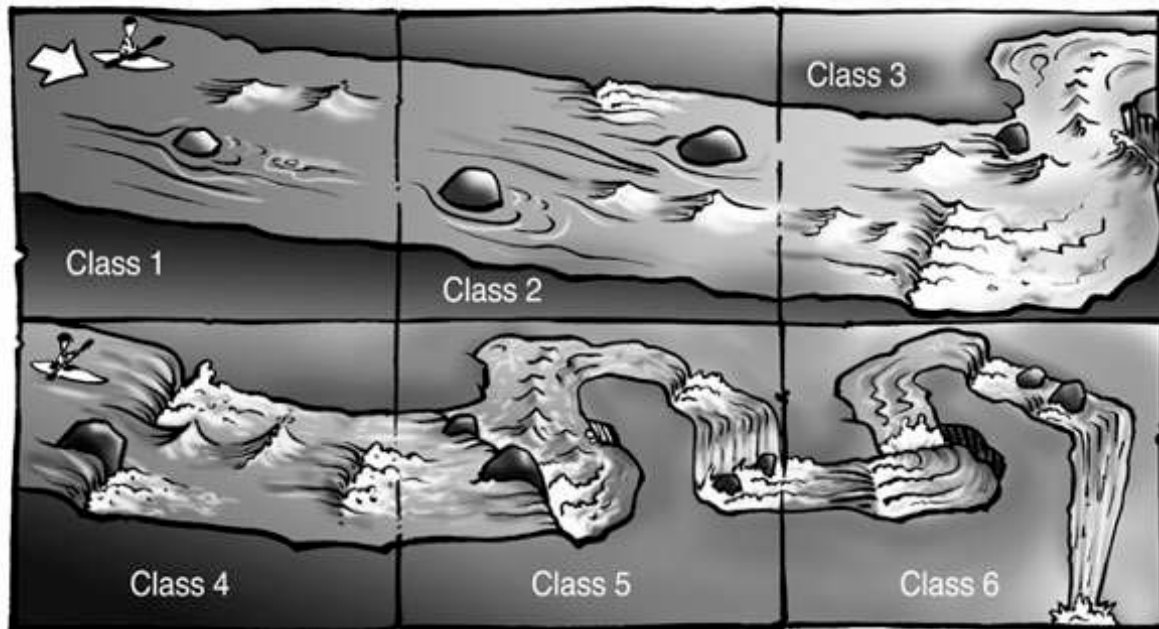


Lesson 3: When in doubt, eddy out

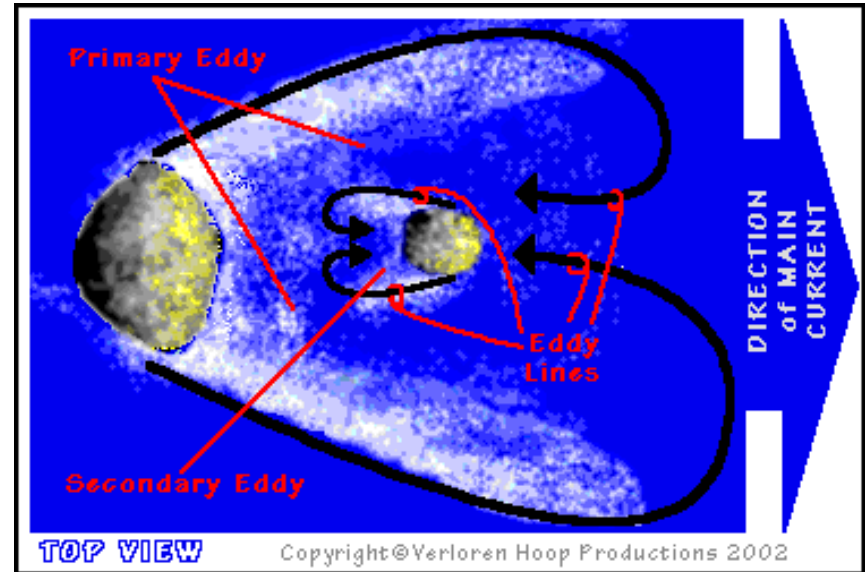
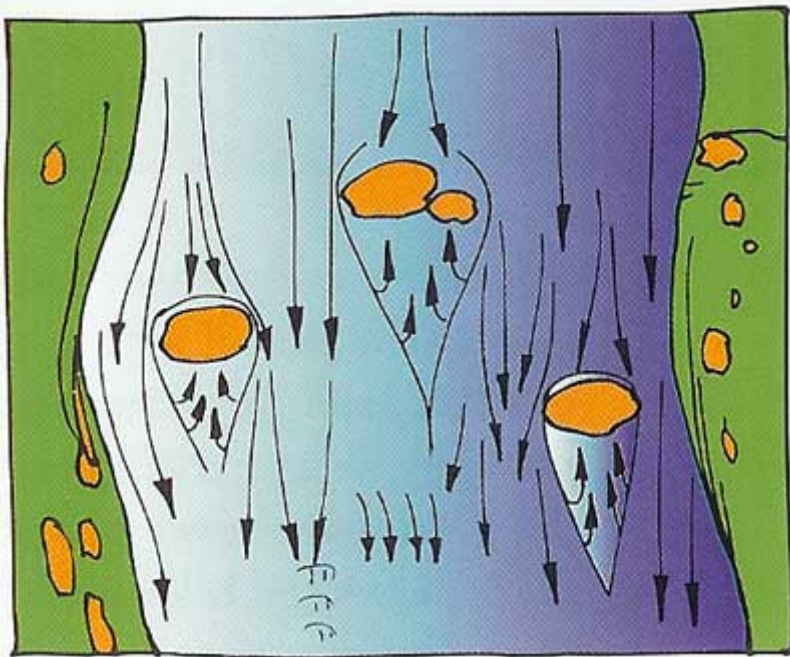


- Mindfulness – Having a plan but paying attention to the moment
- “Controlled urgency, rather than no urgency or chaos, ... facilitated successful problem-solving.” [Itabashi-Campbell, Gluesing and Perelli, 2012]

Lack of Visibility = Danger



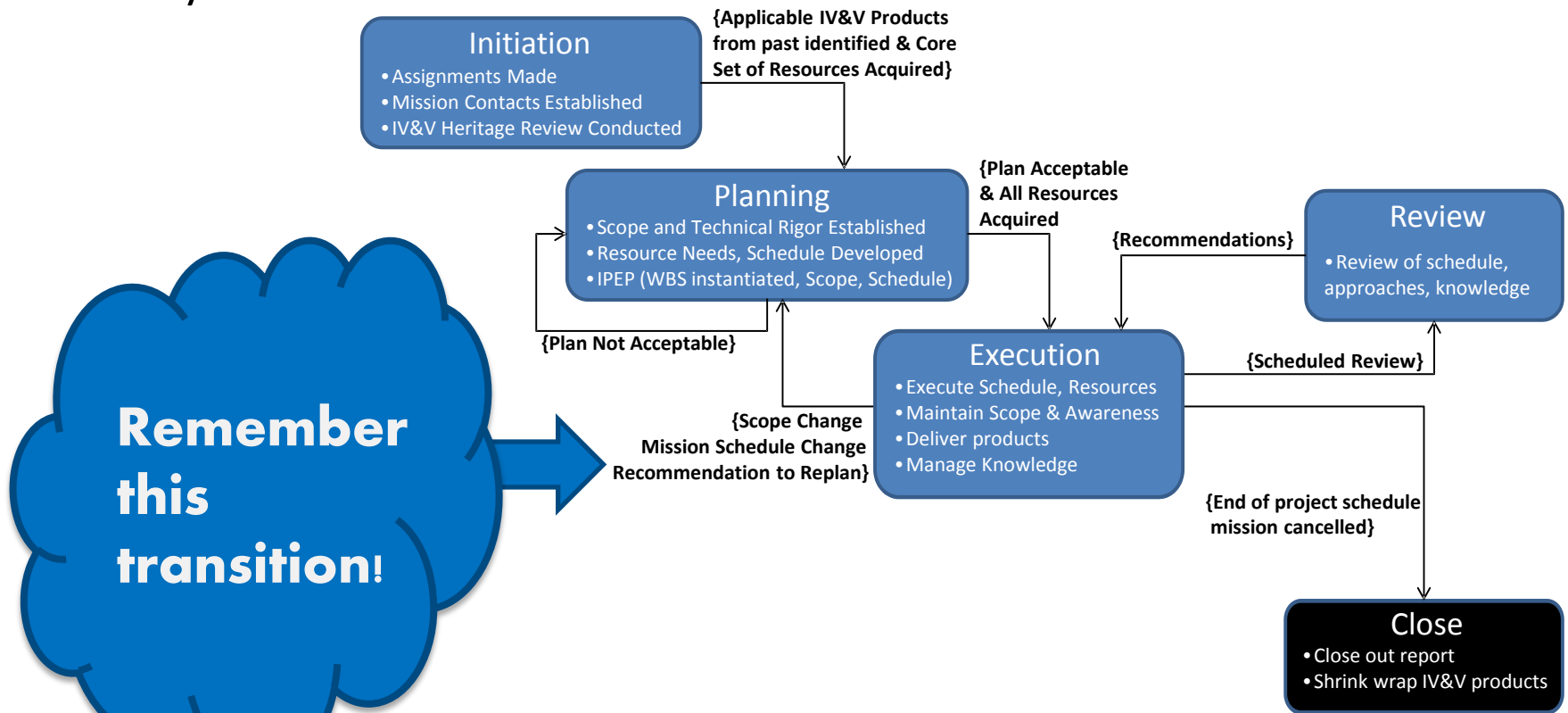
Eddies



Plan ahead of time how you are going to approach obstacles

Eddying out, IV&V style

- Controlled Urgency – If volatility increases as you approach a deadline, so will your value



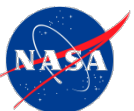
Lesson 4: Make a splash!

- Guides need to know business practices in addition to the river
- Customers expect it
- Maximizing the 'excitement' in safe ways
 - Maximize our impact to the Mission
 - Need to take close look at issue severity and assurance statement(s)

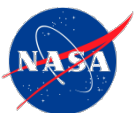


What this means for IV&V

- Lesson 1: The “Big Picture” is made up of many small details
 - Volatility is inevitable
 - See the forest and the trees
- Lesson 2: Sweat the small stuff
 - Do not allow a break in activity to lull you into a false sense of security
- Lesson 3: When in doubt, eddy out
 - A sense of “controlled urgency” maximizes productivity
 - Look for calm spots to regroup and reorient
- Lesson 4: Make a splash!
 - Know what your customers want and need (not always the same thing)
 - Make sure your work makes an impact

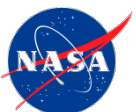


BACKUP



Mindfulness and product failure management: an engineering epistemology, Itabashi-Campbell, Gluesing, and Perelli, 2012

- Controlled urgency, rather than no urgency or chaos, is the third condition that facilitated successful problem-solving. All successful stories were associated with one or more of the following attributes: high pressure from the customer or management, safety-critical problems, or imminent deadlines for resolution. In such instances, problem-solving was “high-paced,” driven by “a controlled sense of urgency,” and “exciting.” In contrast, all less successful initiatives were associated with helplessness arising from either a chaotic environment or a lack of environmental urgency. Chaotic situations entailed “getting a lot of help and advice from people you don’t need,” “going into all kinds of escalation modes,” or “lots of emotions and stress and then [. . .] panicking.” Organizational inertia was prompted by having a “this is the way that we have always done it” attitude, a “low occurrence rate,” being “not visible to the customer,” and “lack of financial pressure.”



Q:How do river guides get to work?
A: Rapid Transit!

RAFT GUIDE



WHAT MY FRIENDS THINK I DO



WHAT SOCIETY THINKS I DO



WHAT CUSTOMERS THINK I DO



WHAT MY BOSS THINKS I DO



WHAT I THINK I DO



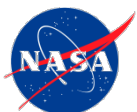
WHAT I ACTUALLY DO

GO TO RAFTING THEY SAID



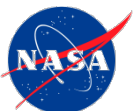
IT WILL BE FUN THEY SAID

memecenter.com 

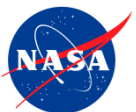


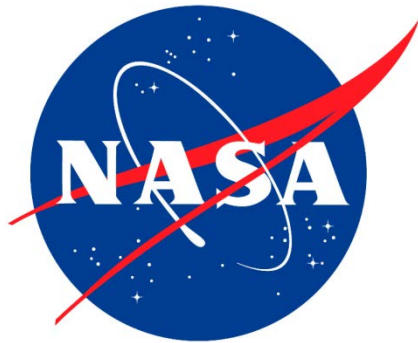
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 - <http://commons.wikimedia.org/wiki/File:Pacuareriverrafting.jpg>
 - http://commons.wikimedia.org/wiki/File:Papasidero_lao_rafting.JPG
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 - <http://www.wwaft.com/ohiopyle-group-rafting/challenging-rafting.html/challenging-cheat.jpg>
 - Itabashi-Campbell, Rachel, Julia Gluesing, and Sheri Perelli. "Mindfulness and product failure management: an engineering epistemology." *International Journal of Quality & Reliability Management* Vol. 29, No. 6 (2012): 642-665. Print.
- Slide 10
 - <http://www.paddling.net/guidelines/showArticle.html?243>
 - <http://www.wetplanetwhitewater.com/rafting/class-system/>
- Slide 11
 - <http://www.brownsguides.com/blog/how-georgia-rivers-work/>
- Slide 12
 - "IVV 09-4, Project Management, Table 4.1," Version AG (6/24/14). *System Level Procedures and Work Instructions, NASA IV&V Management System (IMS)*. Web.
- Slide 13
 - <http://extremesportsx.com/2011/09/04/extreme-white-water-rafting/Extreme-White-Water-Rafting-3.jpg>
- Slide 16
 - Itabashi-Campbell, Rachel, Julia Gluesing, and Sheri Perelli. "Mindfulness and product failure management: an engineering epistemology." *International Journal of Quality & Reliability Management* Vol. 29, No. 6 (2012): 642-665. Print.
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 - <http://media-cache-ak0.pinimg.com/originals/ba/0e/50/ba0e5072c8ad13624413a470ae2bad61.jpg>
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Thank
you





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