



# The Case for the New V-Model

by: **Alfred Kromholz**,  
Lead Systems Engineer with The MITRE Corporation

Wednesday, April 26, 2006

American Society for Quality (ASQ) — Washington, DC & Maryland Metro Section  
Software Special Interest Group (SSIG)

What is Assurance? Feeling Warm and Fuzzy without Blanket Coverage  
(The Case for the New V-Model)

One traditional approach to describing a product development process is through the use of a “V Chart”, which is basically an extension of the traditional waterfall diagram. In this depiction, the process can be viewed as three areas on the chart: requirements decomposition descending the left-hand side of the V, end-product development at the base of the V, and integration/verification ascending the right-hand side of the V.

“Assurance”, the flip side of the design-build-verify coin, gives the customer a level of confidence that the untested or untestable characteristics of the product nevertheless meet expectations. This presentation summarizes an approach to developing assurance cases. It shows how assurance-cases can also be represented by a new kind of V Chart, with the left-hand side of the V describing claims made about a target system and the right-hand side as the synthesis and evaluation of assurance evidence.



**Presenter: Alfred Kromholz** has been active in the field of organizational and system/software process improvement for over 15 years. In a field rife with TLAs (three-letter acronyms) his SPI work has spanned such diverse areas as DKC (Design Knowledge Capture), QFD (Quality Function Deployment), TQM (Total Quality Management), JAD (Joint Application Design) BPR (Business Process Redesign), and CMMs (Capability Maturity Models). His formal academic training includes a Bachelor of Electrical Engineering (with a minor focus in European languages and literature), an MA in Classics (Latin and Greek studies), and a PhD in Ancient Cultures (archaeology/anthropology, history and languages). He has lectured or given papers in systems engineering, computer science and/or anthropology/archaeology in Sweden, the Netherlands, Hungary, Italy, Israel and Turkey. He has broad experience on a wide range of hardware (from ham radio and aircraft assembly lines through three generations of computers) and software (over 40 years in system design and coding). Dr. Kromholz is currently a Lead Systems Engineer with The MITRE Corporation.

## This Meeting Will Be Held at 3 Locations!

The MITRE Corporation  
7515 Colshire Drive  
McLean, VA

FDA Tech. Center  
16071-B Industrial Drive  
Gaithersburg, Maryland

The MITRE Corporation  
260 Industrial Way West  
Eatontown, NJ 07724

Driving directions and maps for all three facilities are provided below. There will be two-way video-audio conferencing between the locations. All locations will have food. Please indicate which location you will be attending when you register.

**Sponsored By:** The American Society for Quality (ASQ), Washington DC & Maryland Metro Section (509), Software Special Interest Group (SSIG). Members of the ASQ SSIG include software quality professionals, software engineers, and others interested in applying quality principles to the field of software development. See our web page: <http://www.asq509.org/ht/d/sp/i/2499/pid/2499>  
We meet every other month, at the FDA Tech Center near Gaithersburg, Maryland and/or the MITRE facility in Tyson's Corner, Virginia.

### Registration:

Please register for the meeting by COB Monday, April 24, 2006 by contacting Scott Ankrum at [ankrums@mitre.org](mailto:ankrums@mitre.org) or 703-983-6127 for the Maryland and Virginia sites, or contact Richard Eng at 703-578-6352 or [reng@mitre.com](mailto:reng@mitre.com) or for Eatontown, NJ. Please include your company affiliation, your citizenship, and at which location you plan to attend. You do not need to be an ASQ member to attend.

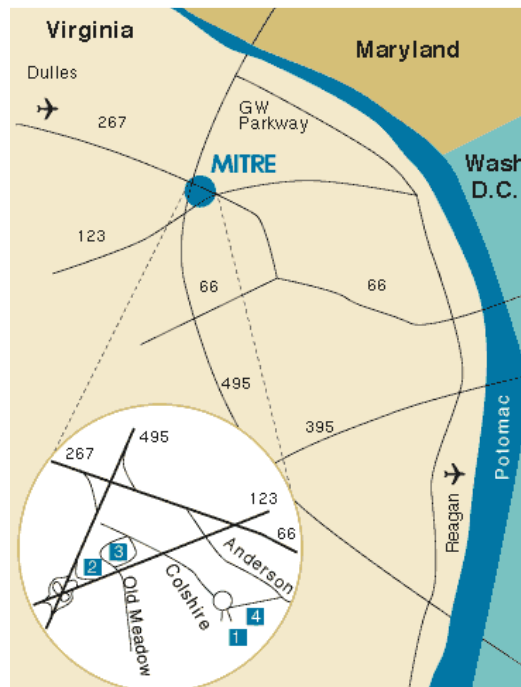
**There is no cost to attend. Pizza and soda will be served.**

### The Meeting Is Scheduled For:

Wednesday, April 26, 2006  
6:30 - 7:30 Pizza and Sodas  
7:30 - 8:30 Program

### Will Be Held At:

MITRE building 2, Mclean, VA  
MITRE Eatontown, NJ  
FDA Tech. Center, Gaithersburg



### **Directions to the MITRE Facility in McLean, Virginia:**

Take the Beltway, I-495 to Virginia. Take Exit 46B (McLean, Route 123). Take Route 123 North, (also called Dolley Madison Blvd.) and go to the second traffic light at Colshire Drive. Turn right on Colshire Drive and continue through circle on Colshire. Drive around the back of the building to the East (left) parking lot. The entrance is past the fountain, on the left. Additional directions can be found at: [http://www.mitre.org/about/locations/mitre1\\_map.html](http://www.mitre.org/about/locations/mitre1_map.html)

### **Directions to the FDA Tech Center in Gaithersburg, Maryland:**

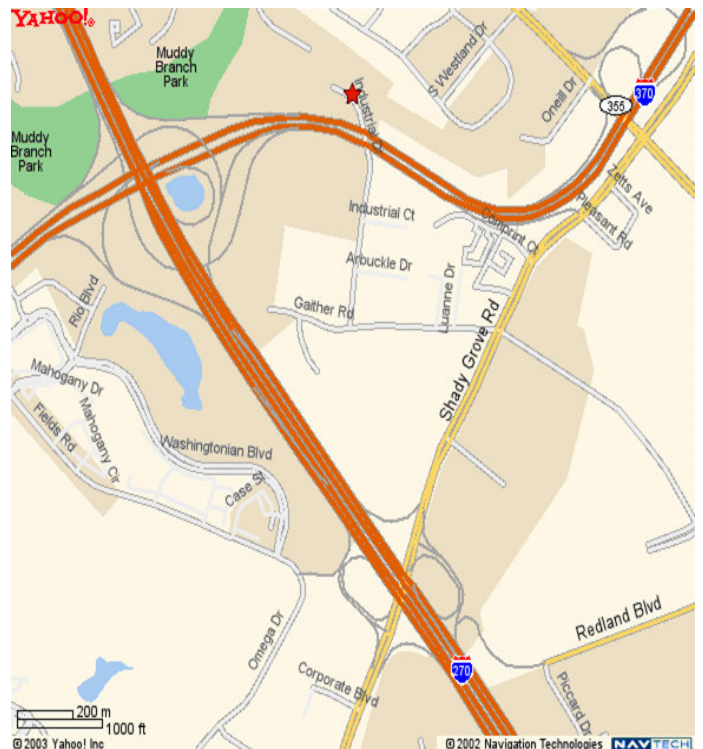
From I-270 N or S, take Shady Grove exit east and proceed to Gaither Road. Turn LEFT on Gaither and proceed to first stop sign. Turn Right on Industrial Drive. You will cross over I-370. Go to the large Industrial building at the end of Industrial Drive and bear left to the end of the building. The meeting will be at the FDA Tech Center, 16071-B Industrial Drive, Gaithersburg, MD.

From Route 355 (Frederick Rd), take Shady Grove West and proceed to Gaither Road. Turn RIGHT on Gaither Road and proceed to first stop sign. Turn Right on Industrial Drive. You will cross over I-370. Go to the large Industrial building at the END of Industrial Drive and bear left to the far end of the building. The meeting will be at the FDA Tech Center, 16071-B Industrial Drive.

### **Directions to the MITRE Facility in Eatonton, New Jersey:**

#### **From the New Jersey Turnpike**

If traveling from the **SOUTH**, get off the Turnpike at Exit 7A (195 toward Shore Points). Take 195 East towards the ocean and shortly after 195 turns into Route 138 (approximately 35 miles) watch for Route 18 North (Eatontown). Take Route 18 North to Exit 13A (Wayside West/Wyckoff Road). At end of ramp, bear left. At first traffic light (Hope Road) make a left turn. Make second left turn onto Industrial Way. The MITRE Corporation is next to the First Atlantic Credit Union on the left hand side of Industrial Way. There is a MITRE sign out front. There are two buildings on the left side of Industrial Way. The first building is MITRE, the second building is TYCO. Take a left turn into the parking lot of the first building (which is MITRE) and head around to the back of the building. Our main entrance is there. There is a MITRE sign above the door.



If traveling from the **NORTH**, get off the Turnpike at Exit 11 (Garden State parkway exit). Follow the Garden State Parkway until Exit 105 (Eatontown). Follow the directions from the Garden State Parkway below.

### **From the Garden State Parkway**

Follow the Garden State Parkway from the North or from the South to Exit 105 (the exit numbers increase going from south to north). After paying the toll at Exit 105, make first right turn onto Hope Road. Follow Hope Road to Industrial Way (second left turn after crossing Wyckoff/Shafto Road).

Make second left turn onto Industrial Way. The MITRE Corporation is next to the First Atlantic Credit Union on the left hand side of Industrial Way. There is a MITRE sign out front. There are two white buildings on the left side of Industrial Way. The first building is MITRE, the second building is TYCO. Take a left turn into the parking lot of the first building (which is MITRE) and head around to the back of the building. Our main entrance is there. There is a MITRE sign above the door.

