



Engineer's Cadenza in G Minor

Confused about IA? Join the club. Confidentiality, integrity, authentication, and availability dominate the chatter while effective and useful are taciturn in IA circles. Are we talking assurance as in “a declaration to inspire confidence” or assurance as in “that which is designed to give confidence?” I’m hearing a lot of declaration and not much design or confidence. What’s an engineer to do?

Sit back, relax, pop in the ear buds, and crank up Johann Sebastian Bach’s third movement of the Brandenburg Concerto #3. Listen to the uniform division of parts between the three string groups. Listen how they combine to play in unison and then dart off into a varied musical dialogue. As they glide on separate melodic paths, never does one string dominate or another pale. They never compete or collide, but exist in one accord.

For me, this is what an effective information highway would sound like if it made sound. You can hear streams of information dancing across the wires and airways from destination to destination; frenzied, wispy, vigilant, yet congruent. Bach maintained order, confidence, and integrity in this movement without stifling creativity – a masterpiece in balance. Is that what you hear when you ramp up on the world’s wide web of information?

Me neither.

With identity theft, scams, downtime, and data loss it’s no wonder there is a push for more confidence, integrity, and availability in computing; much like the Pythagoreans – students of the right triangle theory guy – who wanted to bring order and integrity to music.

Pythagoras of Samos and his followers were musicians as well as mathematicians. Pythagoras wanted to improve the music of his day, which he believed was too hectic. Who knew that Johnny Rotten and Sid Vicious were Greek?

According to legend, Pythagoras thought the sounds emanating from local blacksmith’s anvils were beautiful and harmonious. Can’t you see Pags in jeans and t-shirt, arms out stretched, long hair flowing in the wind, humming the melody of Metallica’s *Sandman* to the beat of the anvils?

Pythagoras believed the scientific law behind the anvil harmony could be applied to music. He found the anvils to be simple ratios of each other; one half the size of the first, another two-thirds the size, and so on. He postulated that these ratios were the root of the rhythmic harmonics he heard permeating blacksmith alley.

Similar efforts eventually led to the codification of classical music using musical notation. The goal was to improve musical integrity by capturing and authenticating the composer’s intent and minimize performance improvisation and interpretation.

Nineteenth century musical notation intensified in detail and quantity, giving rise to unintended consequences. Improvisation – the mother of musical invention – gradually evolved to a relatively minor role in classical music, in sharp contrast to Japanese traditional music and jazz, where improvisation is central. Gradually, classical music developed into a stagnant genre, short on new ideas and concepts and long on repeated esoteric interpretations of century-old music from daisy-pushing composers – great music but not new music. Granted, the modern classical music era produced Debussy, Rachmaninoff, Gershwin, Copland, and Bernstein, but it pales in comparison to the heyday of the classical and romantic eras that we continually return to.

Ironically, improvisation played an important role in classical music development during the Baroque period in the form of the cadenza. No, not the legless renaissance sideboard your grandmother has in her parlor; that is a credenza. A cadenza is a passage found

mostly in concertos designed to allow virtuoso artists to exhibit their skills. Traditionally, the cadenza was improvised by the composer or a virtuoso artist to make each performance unique and spawn new musical concepts in the process.

Go back to Bach’s Brandenburg Concerto #3 and compare the first and third movements with the second. The second is more sedate and drab with two slow chords. It is believed that this was the cadenza where Bach expected one or more of the musicians to improvise over those chords. However, a drive for more consistency led to the cadenza being written by the composer or the virtuoso beforehand, curbing spontaneity and creativity.

So, which way will the modern day Pythagoreans take us with IA? Will their controls stagnate or liberate? Yes, information access must be certified; data cannot be changed without proper authorization; users and objects need to be genuine – not forged; information, systems, and security need to be available and functioning and, yes, we need to limit transaction repudiation. However, as we implement these safeguards, please remember balance.

Remember – your engineers grew up connected and mobile. They do more with a cell phone than you do with your laptop. They have passion and dreams they want to pursue on the fly through social and professional networks. Don’t stifle that energy; harness it.

Be safe, be protective, and add structure and integrity to your systems. However, when your staff’s passion goes from Edelweiss [1] to Kewpie Station [2], be sure your protective structures fan, rather than extinguish, the flames of innovation and ingenuity. Design engineering cadenzas in your process for your virtuosos to create, improvise, and dazzle your customer.

Remember, the intent of information, like music, is to connect people. The music is all around us; all you have to do is listen [3].

—Gary A. Petersen
Arrowpoint Solutions, Inc.
gpetersen@arrowpoint.us

References

1. Rogers, Richard, and Oscar Hammerstein. “Edelweiss.” The Sound of Music.
2. King, Kaki. “Kewpie Station.” Everybody Loves You. Velour, 2003.
3. August Rush. Dir. Kirsten Sheridan. Perf. Freddie Highmore, Keri Russell, Jonathan Rhys Meyers. Warner Bros., 2007.

Can You BACKTALK?

Here is your chance to make your point, even if it is a bit tongue-in-cheek, without your boss censoring your writing. In addition to accepting articles that relate to software engineering for publication in CROSSTALK, we also accept articles for the BACKTALK column. BACKTALK articles should provide a concise, clever, humorous, and insightful perspective on the software engineering profession or industry or a portion of it. Your BACKTALK article should be entertaining and clever or original in concept, design, or delivery. The length should not exceed 750 words.

For a complete author’s packet detailing how to submit your BACKTALK article, visit our Web site at <www.stsc.hill.af.mil>.