AntiPatterns

Every Software Development Team Must Know

Vidya Vrat Agarwal

www.MyPassionFor.Net | @dotNetAuthor

https://www.linkedin.com/in/vidyavrat/

Agenda

- Software **Development** AntiPatterns
- Software **Architecture** AntiPatterns
- **Project Management** AntiPatterns
- **Software Release** AntiPatterns

What is an AntiPattern

An AntiPattern is commonly occurring solution to a problem that generates decidedly negative consequences.

Software Development AntiPatterns

Lava Flow

How many times have you heard/told this?
I don't know what that class/function is for.
It was written before I joined this project/team.

Generally, 30-50% actual code that comprised a complex system is not understood or documented by anyone currently working on it.

Most of the questionable code is serving no purpose.

Fix is a refactored solution with significant code cleanup. But then it will require through testing to ensure that all tests pass.

Boat Anchor

A boat anchor is a piece of software or hardware which serves no useful purpose on the current project.

A commitment to the product is made without a proper technical evaluation.

Significant efforts have to be made by the development teams to make that work.

Golden Hammer

Misapplication of a favored tool or concept.

Comfort with an existing approach and not willing to learn and apply one that is better suited.

Significant efforts have to be made by the development teams to make that work.

Technical feasibility of the candidate technologies and solutions can help.

Spaghetti Code

Spaghetti code appears as a program or system that contains very little software structure and had no design prior to implementation.

Non-Object oriented code often have this antipattern. But it's fairly common to see it even in OOP code.

This is usually result of development in isolation.

Prevention is better than refactoring.

Refactoring will involve such as, use of abstract classes, convert code segments into functions that can be reused, and implementing SOLID design principles etc.

Cut-and-Paste Programming

The same bug reoccurs throughout software despite many local fixes.

"You guys code fast, 30,000 lines of code in three weeks is outstanding progress !"

Lines of code increase without adding overall productivity.

It get's code out of the door but leads to excessive maintenance cost.

Solution to this will require thorough detection policies such as code review, inspection and validation in addition to educational efforts.

Software Architecture AntiPatterns

Swiss Army Knife

Excessively complex class and interfaces.

There is no clear abstraction of purpose for the class.

It get’s code out of the door but leads to excessive maintenance cost.

Solution to this will require thorough detection policies such as code review, and implementation of design principles.

Reinvent the wheel

Many software systems are build from the ground up, even though, several systems with overlapping functionality exist.

The process assumes that system will be built from scratch.

No communication and technology transfer between software development projects.

Architecture mining - Precursor designs exist for most information system applications and problems. These designs are in form of legacy systems.

Project Management AntiPatterns

Analysis Paralysis

Analysis paralysis occurs when the goal is to achieve perfection and completeness of the Analysis phase.

It usually involves waterfall assumptions.

- Detailed analysis can be successfully completed prior to coding.
- Analysis model will not be extended nor revised during development.

Incremental development assumes that details of the problem and it's solution will be learned in the course of the development process.

Fear of Success

When people and projects on the brink of success, some people begin to worry obsessively about the kinds of things that can go wrong.

Positive statements by management that support the successful outcome of the project are needed.

Corncob

Corncobs are difficult people who can be prevalent in the software development business.

This attitude can be due to aspects of individual personality, but often, difficulties arise from personal motivations for recognition or monetary incentives.

The Corncob has a hidden agenda, which conflicts with the team's goals.

Solutions to the Corncob AntiPattern are applied at several levels of authority, including strategic, operational, and tactical.

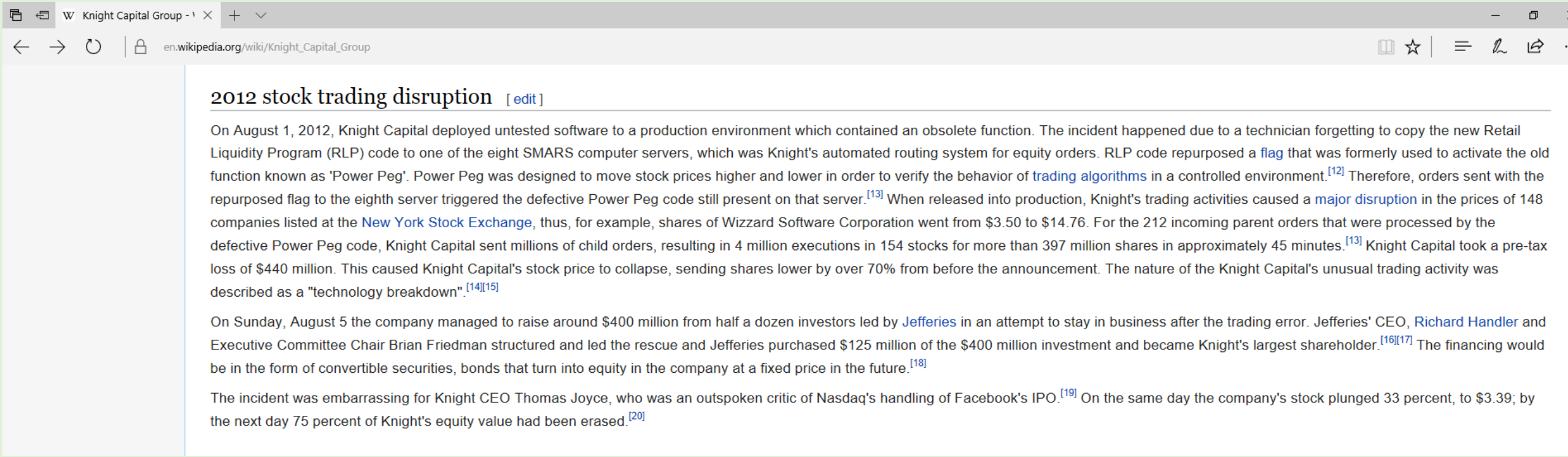
Software Release AntiPatterns

Deploying software Manually

Deploying to a QA/Production like environment only after development is complete

DevOps is the solution. There should be two tasks for a human, pick an environment and click the deploy button.

Cost of NOT Deploying to just ONE server



2012 stock trading disruption [edit]

On August 1, 2012, Knight Capital deployed untested software to a production environment which contained an obsolete function. The incident happened due to a technician forgetting to copy the new Retail Liquidity Program (RLP) code to one of the eight SMARS computer servers, which was Knight's automated routing system for equity orders. RLP code repurposed a flag that was formerly used to activate the old function known as 'Power Peg'. Power Peg was designed to move stock prices higher and lower in order to verify the behavior of trading algorithms in a controlled environment.[12] Therefore, orders sent with the repurposed flag to the eighth server triggered the defective Power Peg code still present on that server.[13] When released into production, Knight's trading activities caused a major disruption in the prices of 148 companies listed at the New York Stock Exchange, thus, for example, shares of Wizzard Software Corporation went from $3.50 to $14.76. For the 212 incoming parent orders that were processed by the defective Power Peg code, Knight Capital sent millions of child orders, resulting in 4 million executions in 154 stocks for more than 397 million shares in approximately 45 minutes.[13] Knight Capital took a pre-tax loss of $440 million. This caused Knight Capital's stock price to collapse, sending shares lower by over 70% from before the announcement. The nature of the Knight Capital's unusual trading activity was described as a "technology breakdown".[14][15]

On Sunday, August 5 the company managed to raise around $400 million from half a dozen investors led by Jefferies in an attempt to stay in business after the trading error. Jefferies' CEO, Richard Handler and Executive Committee Chair Brian Friedman structured and led the rescue and Jefferies purchased $125 million of the $400 million investment and became Knight's largest shareholder.[16][17] The financing would be in the form of convertible securities, bonds that turn into equity in the company at a fixed price in the future.[18]

The incident was embarrassing for Knight CEO Thomas Joyce, who was an outspoken critic of Nasdaq's handling of Facebook's IPO.[19] On the same day the company's stock plunged 33 percent, to $3.39; by the next day 75 percent of Knight's equity value had been erased.[20]

Thank You

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