

Evergreen Software Development

Why It's Better To Set It All On Fire And Start Over

Who's This Bloke, Then?

- Nathaniel Eliot, CEO of The Greenfield Guild
- Two decade veteran of the software industry
- A guy who collects and invents metaphors
- An oddly Anglophilic Texan

And What's This All About, Anyway?

- A philosophical no-code presentation
- Set all your architecture on fire
- Evergreen Development
- Recent trends in operational tools and attitudes
- Recent trends in security threat model
- Suggested implementation



Not Seeing the Forest-Fire for the Trees

- Traditional operations, like traditional forest management, focuses on fighting fires
- Growth-only focus in development produces a lot of dead wood that doesn't get cleared out
- When the breakout wildfire happens, even heroic efforts are unlikely to save things

NATURAL FIRE CYCLE



HEALTHY FIRE

BURNS UNDERSTORY
VEGETATION

NEW GROWTH

DIFFERENT SOIL NUTRIENTS,
FLUCTUATING TEMPERATURE,
MORE SUNLIGHT REACHES THE
GROUND, FIRE-DEPENDENT
SEEDS SPROUT

EVOLVING HABITAT

FOREST ECOSYSTEM
CONTINUES TO EVOLVE WITH
CHANGING PLANT AND
ANIMAL DIVERSITY

OLD GROWTH

AS FOREST MATURES, FOOD
SOURCES CHANGE, LESS
SUNLIGHT REACHES THE
GROUND, LESS DIVERSITY

FIRE IN UNDERSTORY
RESETS, MATURE
TREES REMAIN


What is Evergreen Software?

- Automated upgrades and push-on-green to patch without manual intervention
- Regular recapitulation of all systems, including your infrastructure systems
- By patching and redeploying regularly, you segment the problem space for release errors



Evolution in Operations

- Deployment tooling
 - Manual (i.e. “runbooks”)
 - Configuration management (e.g. Puppet, Chef)
 - Container orchestration (e.g. Mesos, Kubernetes)
- Organizational attitude
 - BOFH - antagonistic relationship with developers
 - DevOps - dev and ops should work together
 - SRE - best practices for working together at scale

A man with dark, curly hair, wearing a blue t-shirt, is sitting at a desk and talking on a white corded telephone. He is looking down and to the left with a slightly frustrated or thoughtful expression. The background is a cluttered office space. On the wall behind him are several posters, including one of a cartoon character's face and another with the text "PARADISE BY". There are also various items on shelves, including a green helmet, a blue robot figurine, and some boxes. A small green and blue lizard is perched on the edge of a black computer monitor in the foreground on the left. The overall scene suggests a typical office environment from the early 2000s.

**Hello, IT, have you tried
turning it off and on again?**

“Have you tried turning it off and on again?”

- Repeatability infrastructure
- Immutable infrastructure
- Crash-only software
- Chaos engineering



“If it hurts, do it more often”

- Upgrading dependencies hurts
- Rebuilding infrastructure hurts
- Security patching hurts



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Evolution in Threat Model

- Attack surface is expanding
- Perimeter-defense model of security is dead
- Principle of least authority
- Bad actors are getting more sophisticated
- Vulnerabilities aren't getting any younger
- Rapid defense in depth is now a necessity

How-To?



* Your Mileage May Vary

How-to?

- Make recapitulation more automatic, via container and infrastructure orchestration tools
- Regular push-on-green rebuilds of your core
- Automate the upgrades of dependencies
- Automatically open tickets on upgrade and rebuild failures, and fix them quickly

Questions?

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<https://greenfieldguild.com>

References

- <http://bofh.bjash.com/>
- <https://www.usenix.org/conference/lisa14/conference-program/presentation/klein>
- <https://landing.google.com/sre/books/>
- <https://www.synopsys.com/content/dam/synopsys/sig-assets/reports/2018-ossra.pdf>

Suggested Tooling

- <https://kubernetes.io>
- <https://www.terraform.io>
- <https://about.gitlab.com>
- <https://github.com/renovatebot/>