Brain's hardwiring and its impact on software development and secure software

Alex Bolboaca & Maria Diaconu

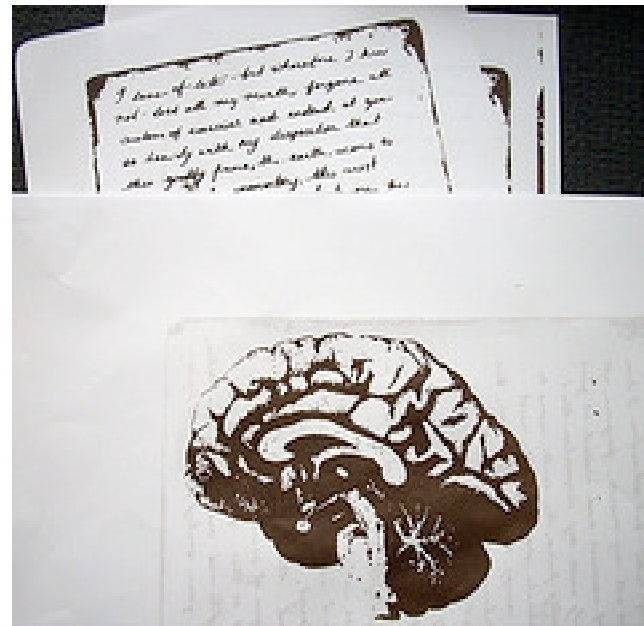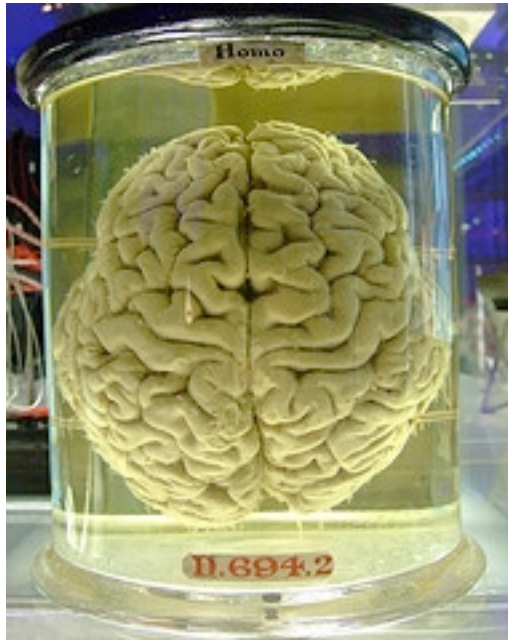**Mosaic Works**
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OWASP
EU09 Poland

The OWASP Foundation
http://www.owasp.org

Brain stories

Human Factor

- Software engineering is managing complexity for human beings

- Security is a human issue

Human Factor

- User view

- Business view

- Technical view
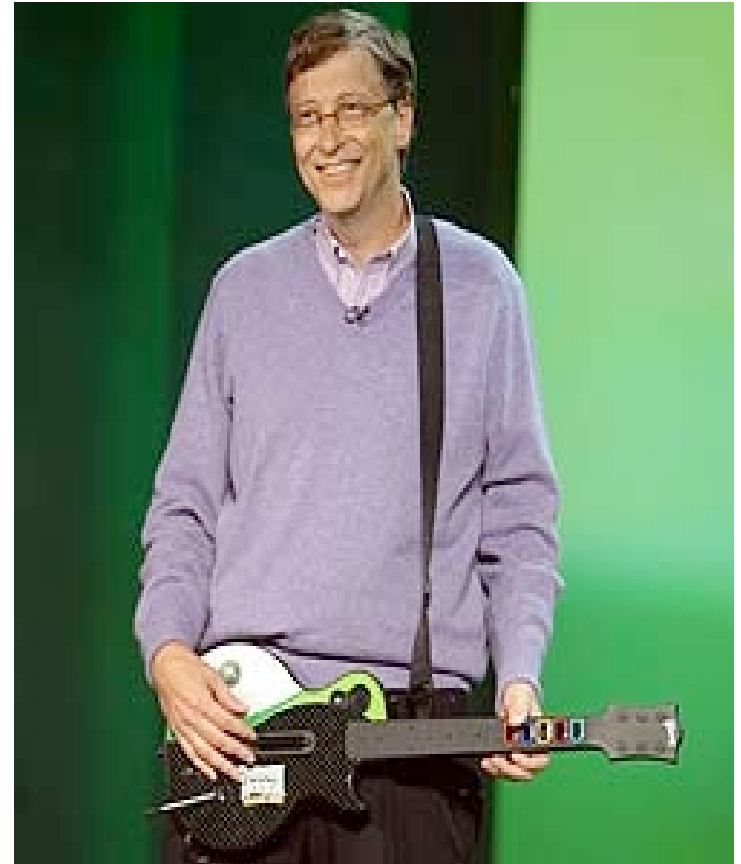
About the story tellers

- Alex Bolboaca
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- Maria Diaconu
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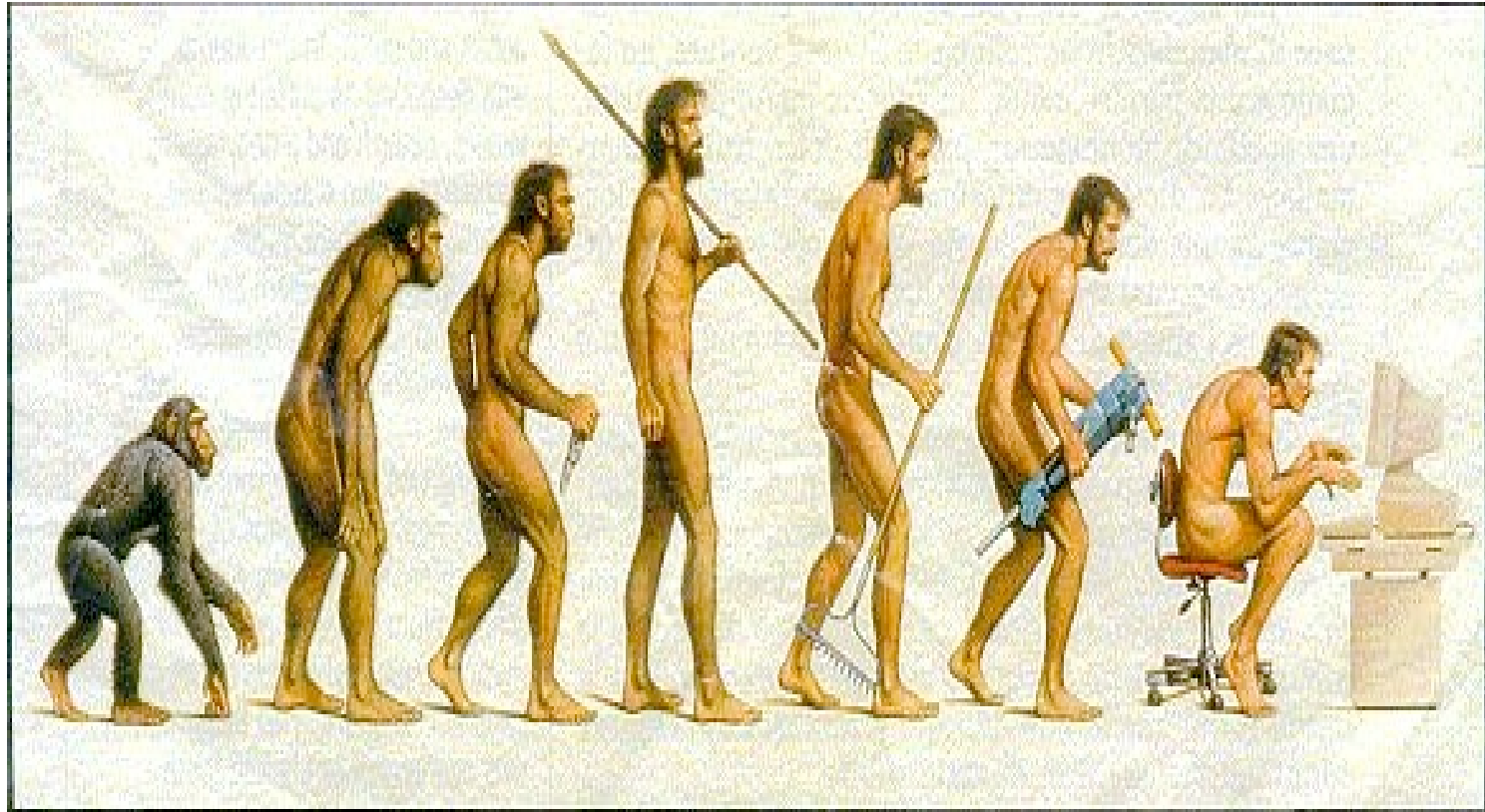 - Owner Mosaic Works, Romania

Fundamental difficulty of software
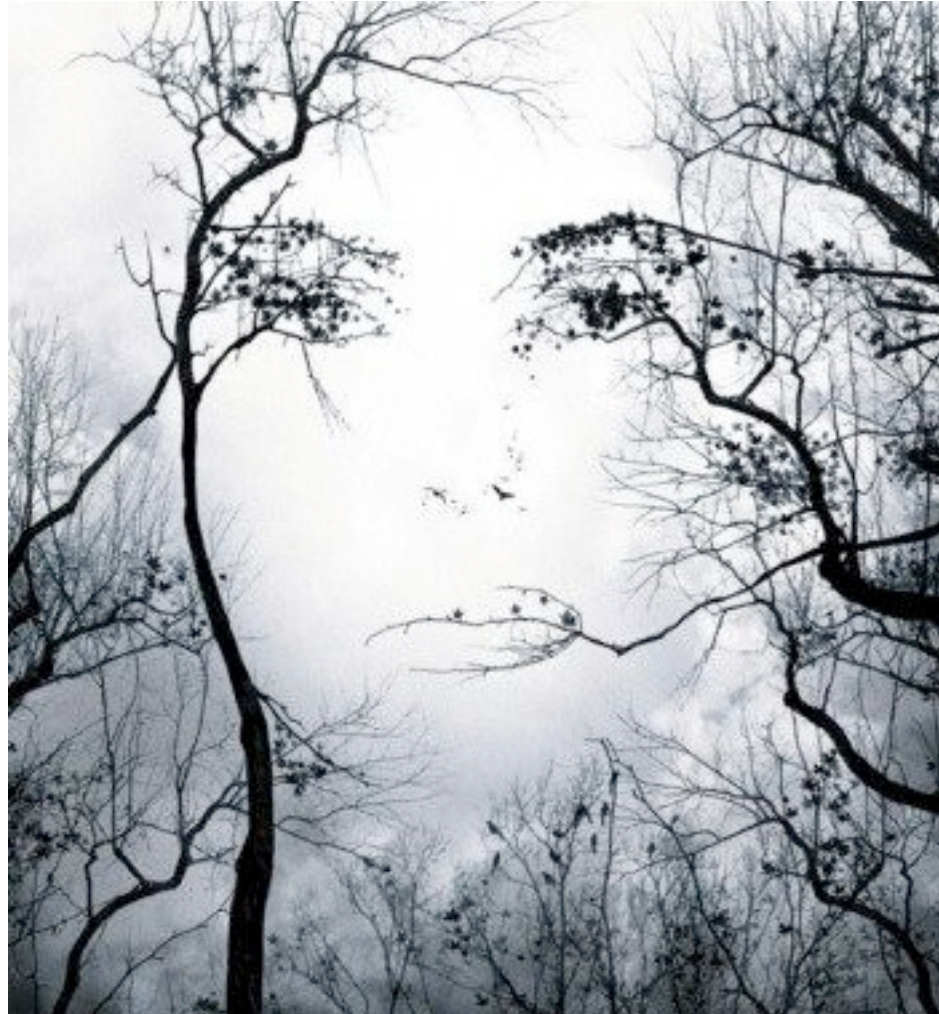
Fundamental difficulty of software

Software is an idea

Brain evolution

Brain issues: overuse of pattern

Brain issues: overuse of pattern

- ■ Misunderstanding requirements
- ■ Using design patterns in the wrong context
- ■ Availability heuristics - '*I rarely heard about it, so it won't happen to me*'

Brain issues: prediction of future

Brain issues: prediction of future

"Because everything in her home is waterproof, the housewife of 2000 can do her daily cleaning with a hose" 1950s

Brain issues: prediction of future

"I think there is a world market for maybe five computers."
Thomas Watson, chairman of IBM, 1943

Brain issues: prediction of future

"*Where a calculator on the ENIAC is equipped with 18,000 vacuum tubes and weighs 30 tons, computers in the future may have only 1,000 vacuum tubes and weigh only 1.5 tons." - Popular Mechanics, 1949*

Brain issues: prediction of future

"Radio has no future. Heavier-than-air flying machines are impossible. X-rays will prove to be a hoax."

William Thomson, Lord Kelvin, British scientist, 1899.

Brain issues: prediction of future

- Estimation
- Risk management
- Design too general (for the future)

   Context is important!

Brain issues: perception of randomness

Brain issues: perception of randomness

- **Estimation**
- **Planning**
- **Risk management**

Impact & Event expectation

Brain issues: perception of numbers

One death is a tragedy, a million deaths is statistics

Stalin

Brain issues: perception of numbers

- (Gues)timates
- Probability/Statistics
- Indicators/Statistics

Numbers don't tell the whole story!

Software stories

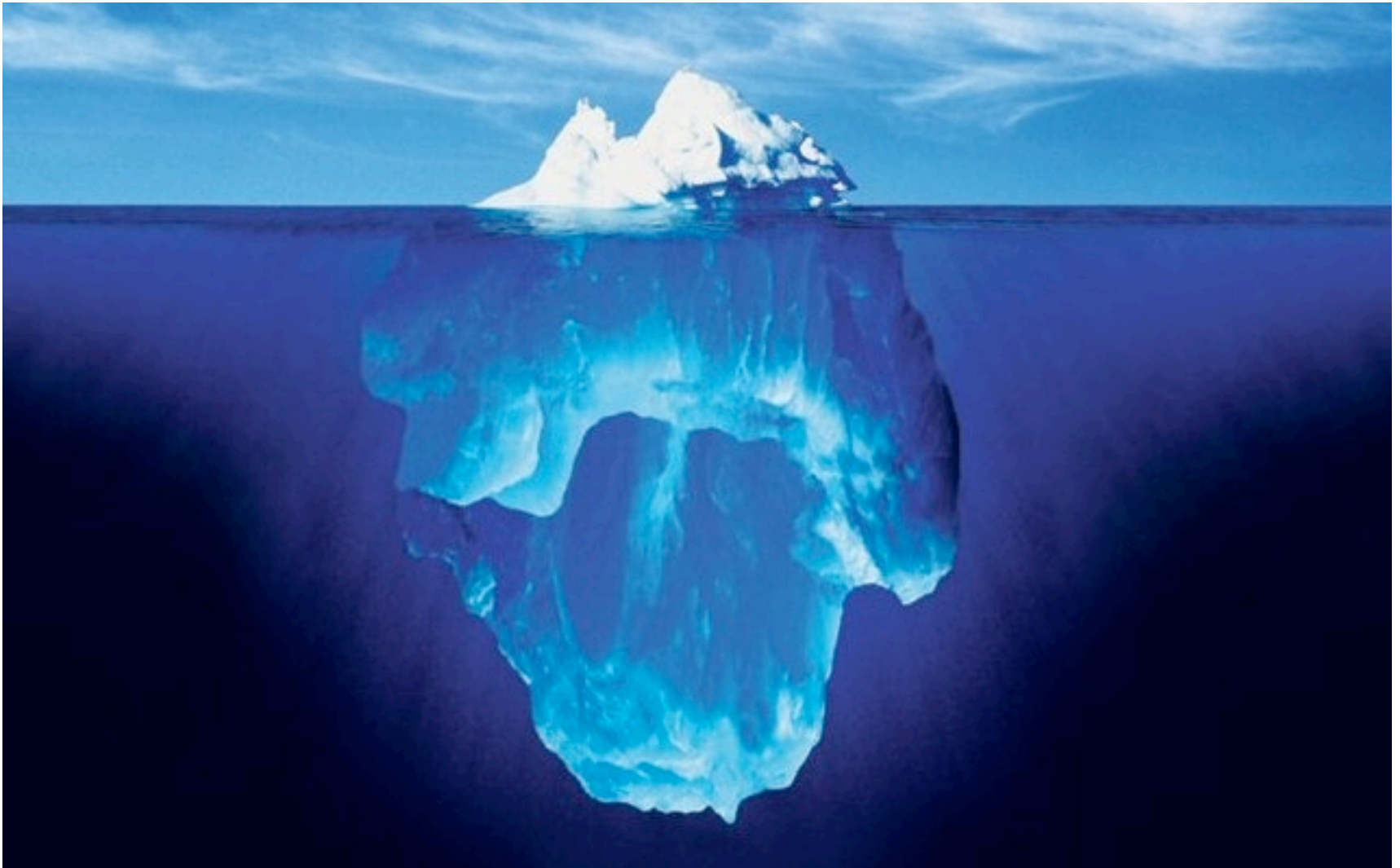# Best practices work around brain issues

Software stories – best practices

- ■ Estimation methods
- ■ Reviews (at all levels)
- ■ Feedback
- ■ Release early, release often
- ■ Definition of "Done"

Security stories – Threat Perception

Security stories – Human Factor

Brain, software and security

Knowing more about brain, helps us create better and secure software

Brain's hardwiring and its impact on software development and secure software

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Thank you!