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

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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

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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
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Thank you!