Realities of Running Software: The Human Factor

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About this Talk

(generic introduction)

About the Author

Round of Introductions

- Introduce yourselves
- Various questions for audience
- Who is a nervous flier?

We Do Human Error Badly

Our lack of understanding of human error leads to:

- Poor automation
- Poor post-mortem analysis
- Poor reasoning about safety barriers
- Bad on call practices
- Three Mile Island Syndrome
- Health issues, perhaps even loss of life

We need to learn from

There are many industries which take this topic seriously and we need to learn from them, including:

- Aviation (Tenerife)
- Nuclear Power Plants (Three Mile Island, Chernobyl)
- Offshore oil and gas (Piper Alpha and Deepwater Horizon)
- Medicine
- Firefighting (Hotel Vendome)

Human Error is solvable!

Stories of Hope from:

- Aviation
- Offshore oil and gas
- Medicine
- Firefighting

Just because an error isn't deterministic doesn't mean it cannot be debugged and addressed. We deal with non-deterministic errors all the time.

There are some good parts

- Collective responsibility in blameless culture
- Notion of humans as fallable: at least we see there is a problem

How do we build on the good parts?

Agenda this Morning

After 90 minutes we will have a break.

- Realities of Running Software
- Identifying and Managing Fatigue
- break
- Monitoring, Workload, and Shared Situational Awareness
- Threat and Error Management

Then we will break for lunch

Afternoon Agenda

- Stress Management
- Taxonomies of Human Error
- break
- Investigation and Introspection
- Addressing Causes of Human Error

Limitations of this Course

A proper course would be 3-5x longer and would go into quite a lot more depth. Such a course would also include:

- Leadership and Followership
- Structured Decision Making
- Communication Theory
- Assertive Communication and Conflict Capability
- Cognitive Biases

Disaster Breakdown: Three Mile Island

- Mechanical failure and Human Error
- Monitoring failures
- Degradation of Situation
- Impact and Learnings

Disaster Breakdown: Piper Alpha

- Coordination breakdown
- Too many things done at once
- Total failure of standard procedures
- Many parallels to IT projects
- Loss of life due to following SOPs

Disaster Breakdown: Deepwater Horizon

- Various organizational shifts
- Junior people in safety-critical roles
- Large numbers of contractors
- Lots of things happening at the same time, obscuring signs of immanent disaster
- Misreading of monitoring
- Technical failure followed human error

Disaster Breakdown: Tenerife Disaster

- Worst aviation disaster in history
- Runway collision due to taking off without clearance
- Negative training and stress were clear factors
- Arguments over social distance impacts

Listing Organizational Factors in Incidents

(flipboard exercise)