Case Study: Boeing 737 MAX

Issues identified by Nancy Levenson regarding Therac 25 that showed up in the Boeing case

1. Overconfidence on software
   - People who wrote the manuals didn’t give correct instructions on override
   - Design flaw requiring software patch

2. Inadequate software and software engineering practices
   - SE aren’t pilots – affected software design and implementation
   - Boeing’s Quality Assurance issues – was it software or physical component issues or design issues?

3. Lack of defensive design
   - Needed to design for when hardware doesn’t work
   - Was it a culture issue? Boeing expanding too quickly to bring their culture with them

4. Safe vs friendly User interfaces
   - Pilots not sure how to turn of MCAS. Is it ethical for a pilot to fly a plane that they are not confident in?
   - Mix response on what to do and when
   - Possibly insufficient pilot training for what to do

5. Financial motivations – are they ethical?
   - Profit-driven motivation can override a lot of these issues
   - Keeping up with the competition
Who do you believe is at fault?

- Culture at Boeing?
- Boeing Management?
- Whoever made the call to treat the 737 MAX like a 737?
- Designer of software to not have more redundancy on sensors?
- But why are there no crashes in the US and China? Better pilot training?