

# RSA®Conference2018

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## MEDICAL DEVICE THREAT MODELING WITH TEMPLATES

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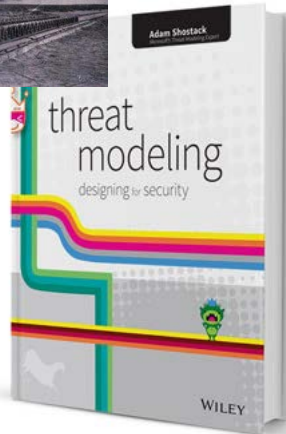
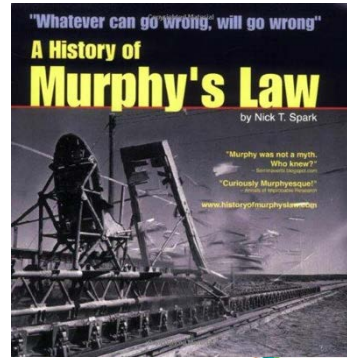
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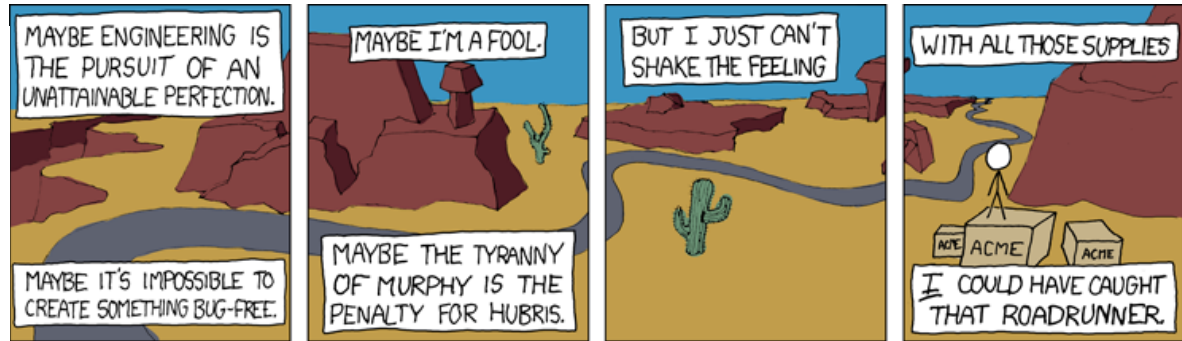


#RSAC

# Threat Modeling: What Could Possibly Go Wrong?



Murphy's law is not a curse,  
it's a design approach

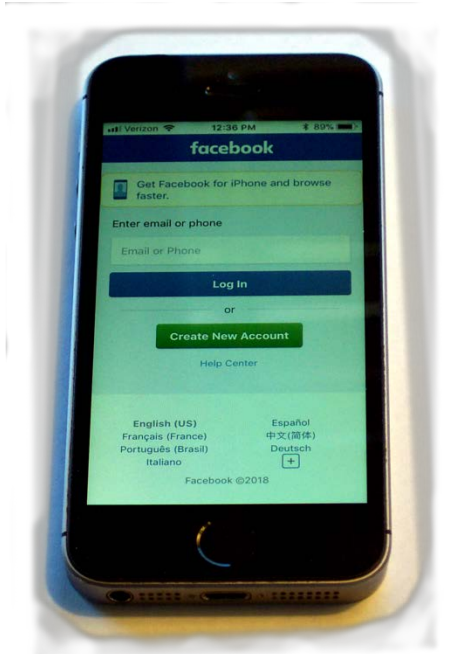


# Threat Modeling: Life Cycle





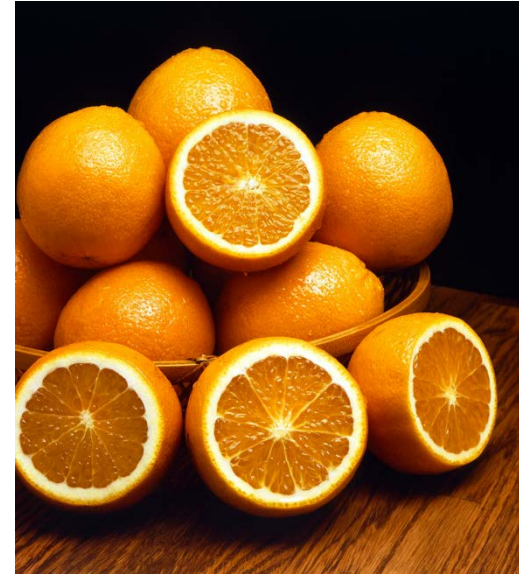
# Vision: Software Applications vs Medical Devices



How is **your product** different?



# Model: What's Different?



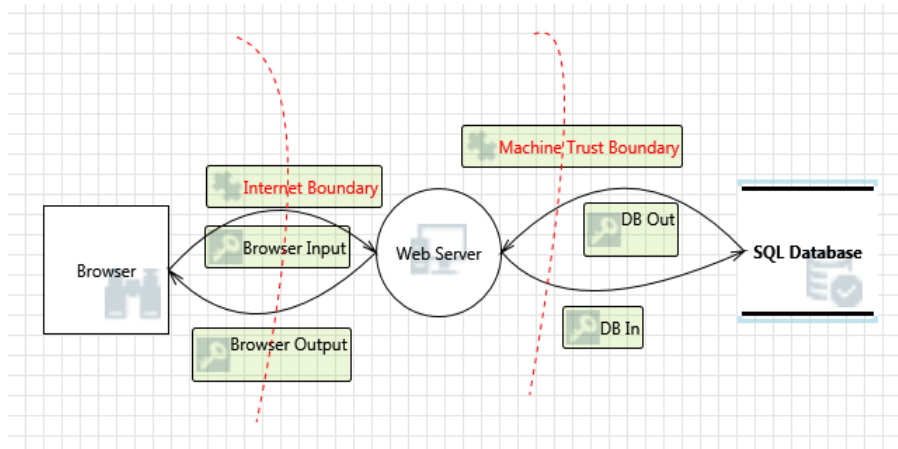
How is **your product** different?



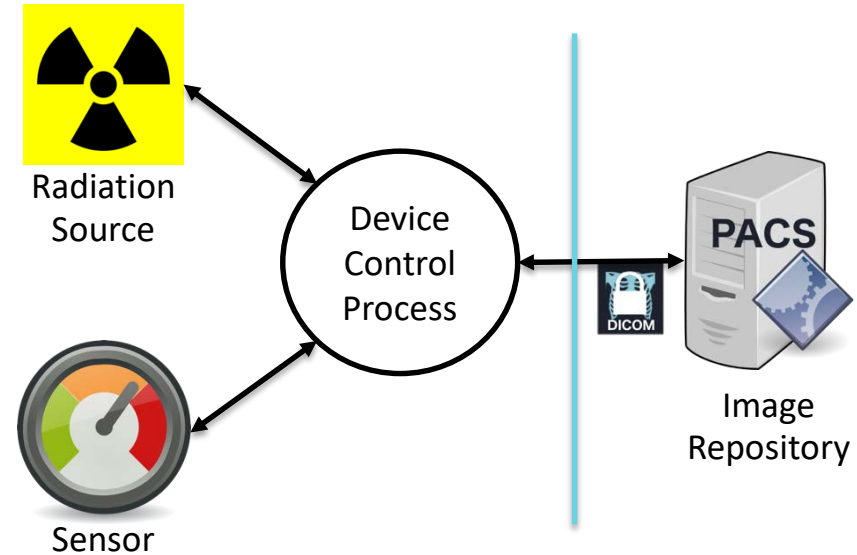
# Model: What's Different?



## Web Application



## Medical Environment



How is **your product** different?





# Identify Threats: Are We Covered with STRIDE?



- Spoofing
- Tampering
- Repudiation
- Information Disclosure
- Denial of Service
- Elevation of Privilege
- Abuse
- Patient Safety

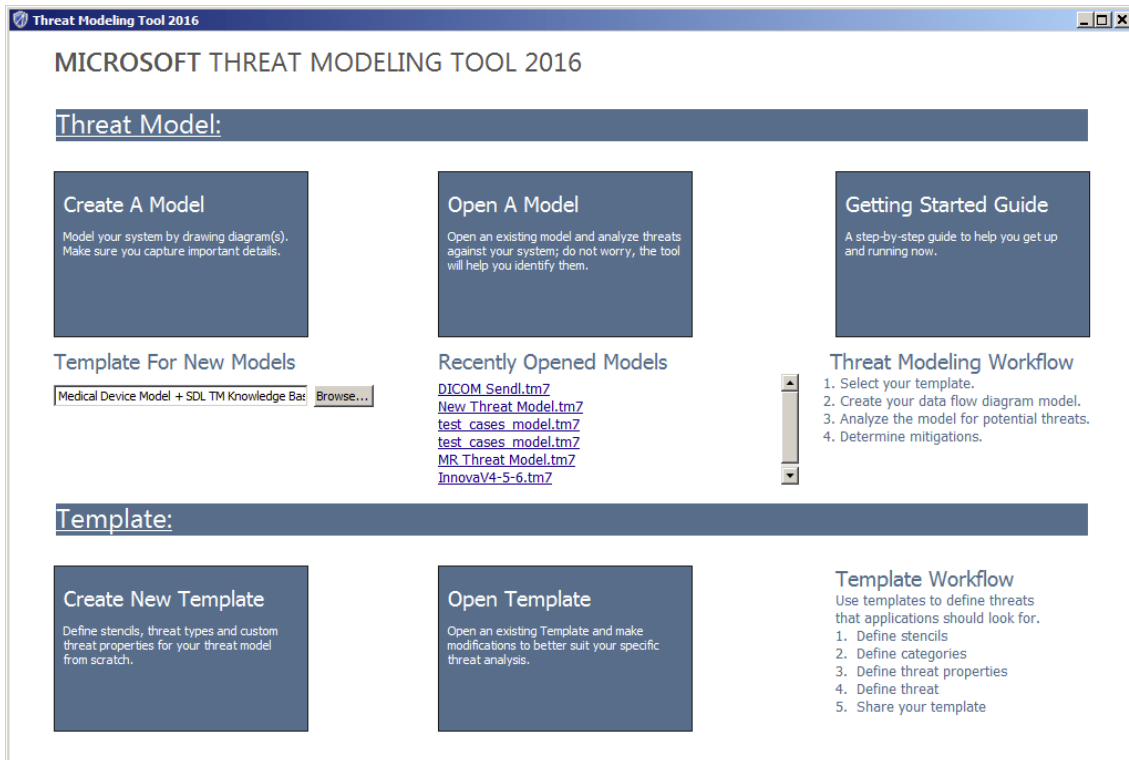


There are tools for this!





# Demo Time – Our Template



## Generic Physical Medical Component



Pharmaceutical Pump



Remotely Controllable Patient Table



Ionizing Radiation Source



Moving Gantry or C Arm



Emergency stop



Safety Interlock



Image Detector



Sensor



Clinical Information Display



Imaging Device



- Threat modeling answers “What can possibly go wrong?” question
- If nothing else, threat model. Use STRIDE (or another framework)
- Tooling isn’t essential, but can make life a lot easier





Anything can be threat modeled.  
Ask "What can possibly go wrong?"

# Questions?

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# Apply What You Have Learned Today



- 3 weeks: Familiarize yourself with threat modeling; consider reading a book, downloading a tool and make yourself familiar with it
- 6 weeks: get a customized template and build a threat model with it
- 3 months: create your own template and submit to the community!



# Bibliography, References, and Suggested Reading



- “Whatever can go wrong, will go wrong,” by Nick T. Spark, ISBN 978-1411684690
- “Threat Modeling: Designing for Security,” by Adam Shostack, ISBN 978-1118809990
- Microsoft Threat Modeling Github: <https://github.com/Microsoft/threat-modeling-templates>
- Existing NCC Group Automotive Threat Modeling Template
  - <https://www.nccgroup.trust/us/about-us/newsroom-and-events/blog/2016/july/the-automotive-threat-modeling-template/>
- Image attributions:
  - XKCD number 319, <https://xkcd.com/319/> Creative Commons BY-NC version 2.5
- Microsoft Threat Modeling Tool
  - 2016 Release: <https://www.microsoft.com/en-us/download/details.aspx?id=49168>
  - Preview Release <https://aka.ms/tmtpreview>, includes Microsoft Azure template

