

# Risk Management Analysis of Security

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Can we achieve perfect security?



# Risk Analysis

- **Quantitative Risk Analysis**

- Hard metrics, usually monetary values

- **Qualitative Risk Analysis**

- Approximate values

- **Hybrid Risk Analysis**

- Combination of qualitative and quantitative analysis methods

# Let's play a game

## ○ Threat

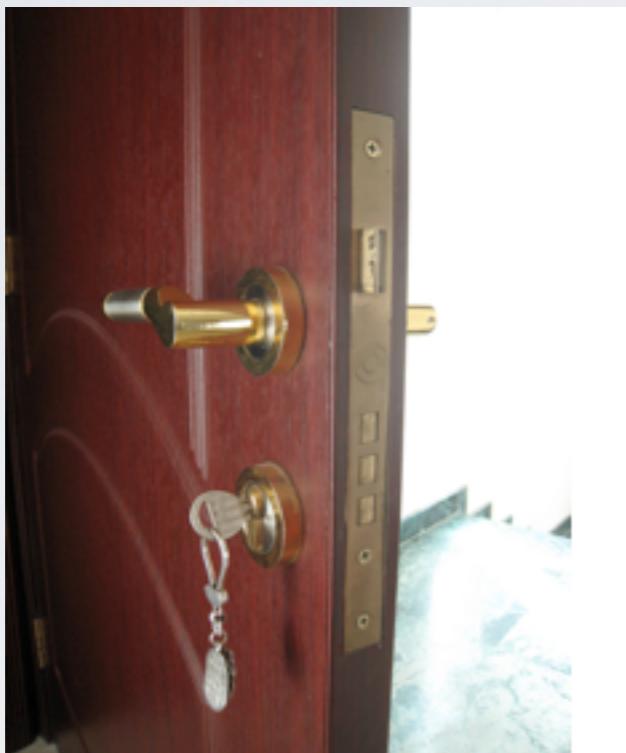
- Someone can break into my house to steal or destroy my stuff

## ○ Attacks and counter-measures

- I have a basic protection, but worse things can happen!  
Help me finding the best security solution

# My protections so far

Wooden door  
with 3 points lock



On the balcony (2nd floor)  
windows with single point lock

# What do I have in my house?



\$20

# What did we learn from the game?

- ✓ You never prevent a threat, you **lower the risk**
- ✓ Performing an attack is **more or less difficult** the assets to protect versus the attacker's efforts
- ✓ Deploying a counter-measure has **a cost** cost of recovering versus cost of deployment

# Triaging Risk Exposure

**Risk Exposure = probability × impact**



Formally ...

- **Total Cost of Ownership**

Cost of deploying and maintaining a mitigation strategy

- **Return On Investment**

Amount saved by deploying and maintaining a mitigation strategy

- **Annualized Loss Expectancy**

Annual loss due to a risk

# Risk Choices

## → **Accept**

An informed decision to leave an asset unprotected

## → **Avoid**

An informed decision to not own an asset due to extreme risk

## → **Mitigate**

Lowering the risk to an acceptable level

## → **Transfer**

Risk becomes another's responsibility often for a fee

# Do you own risk analysis

## **How important is your data**

- on your laptop?
- on your phone?
- on internet?

## **What if someone**

- steals them?
- distributes them?
- deletes them?

## **What if the system is down or not working well?**

# Let's do the risk assessment of your digital self

- As a UofT student
- As the founder of a startup
- As a public figure
- As a political leader