

# Lec 5 - Sprints + Distributed Systems



# Sprints

- How was your first sprint? How did you like working in a large group?
- Agile vs Waterfall



# Sprints

- Planning: what to do?
- Standup: progress checkins
- Retrospective: what was done & area of improvement



# Critical Path

- Longest path of sequential activity
- Delays in the critical path delays the whole project

# Prioritization



## Urgent

## Not Urgent

### Important



#### *DO IT*

Things with clear deadlines and consequences for not taking immediate action.

##### **Examples**

- Finishing a client project
- Submitting a draft article
- Responding to some emails
- Picking up your sick kid from school



#### *SCHEDULE IT*

Activities without a set deadline that bring you closer to your goals. Easy to procrastinate on.

##### **Examples**

- Strategic planning
- Professional development
- Networking
- Exercise



#### *DELEGATE IT*

Things that need to be done, but don't require your specific skills. Busy work.

##### **Examples**

- Uploading blog posts
- Scheduling
- Responding to some emails
- Meal prep



#### *DELETE IT*

Distractions that make you feel worse afterward. Can be okay but only in moderation.

##### **Examples**

- Social media
- Watching TV
- Video games
- Eating junk food

### Not Important

# Estimation

I NEED A BUDGET ESTIMATE FOR MY PROJECT, BUT I DON'T HAVE A SCOPE OR A DESIGN FOR IT YET.



Dilbert.com DilbertCartoonist@gmail.com

OKAY, MY ESTIMATE IS \$3,583,729.



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YOU DON'T KNOW ANYTHING ABOUT MY PROJECT.



THAT MAKES TWO OF US.



IT WILL TAKE FOUR WEEKS TO BUILD THE APP, UNLESS THERE ARE UNFORESEEN PROBLEMS.



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HOW OFTEN DO WE HAVE UNFORESEEN PROBLEMS?



ONE HUNDRED PERCENT OF THE TIME.



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THEN WHAT'S THE POINT OF ESTIMATING A COMPLETION DATE?



I WAS HOPING TO MAKE YOU STOP TALKING, BUT IT DIDN'T WORK.



# Estimation

- It's difficult to be accurate
- Known Kowns, Known Unknowns, Unknown Unknowns, Unknown Knowns
- Luckily, for the first 1-2 years, you are not responsible for the whole project





# How?

- Break down the project, tackle the unknowns head on
- Ideally break it down to 1-2 day granularity, good balance



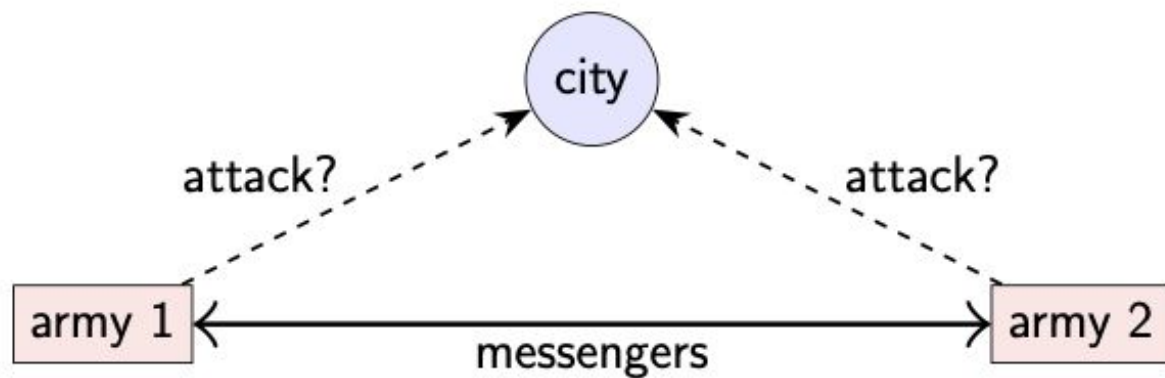
# Algorithm

- What experiments?
- Ballpark estimate
- If length > 1 week, start breaking down to 1 week chunks
- Recurse



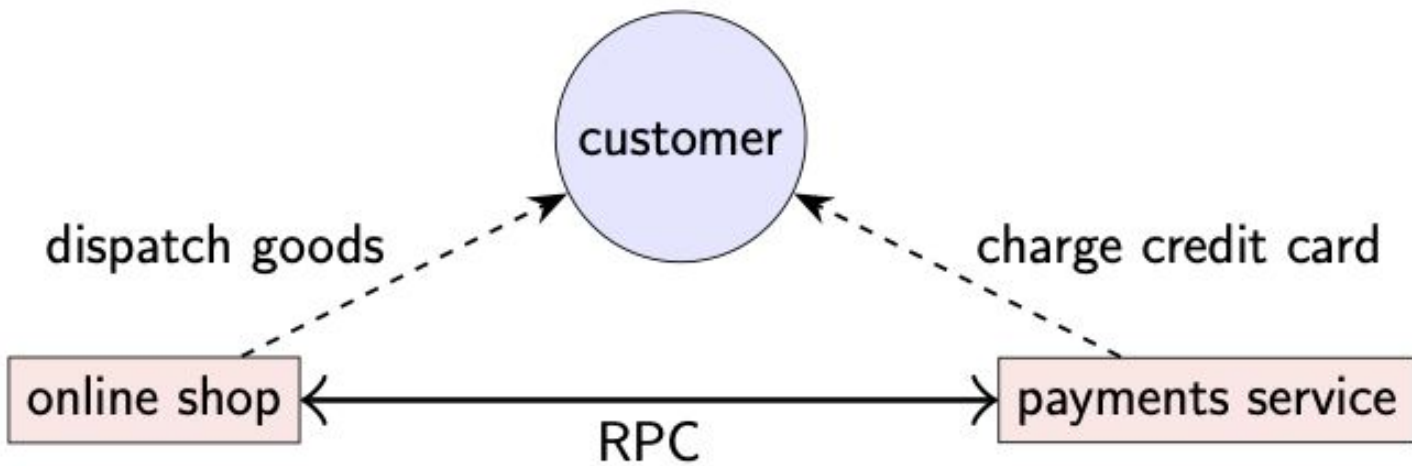
# Distributed Systems

- Concurrent programming and distributed programming?
- “... a system in which the failure of a computer you didn’t even know existed can render your own computer unstable” – Leslie Lamport



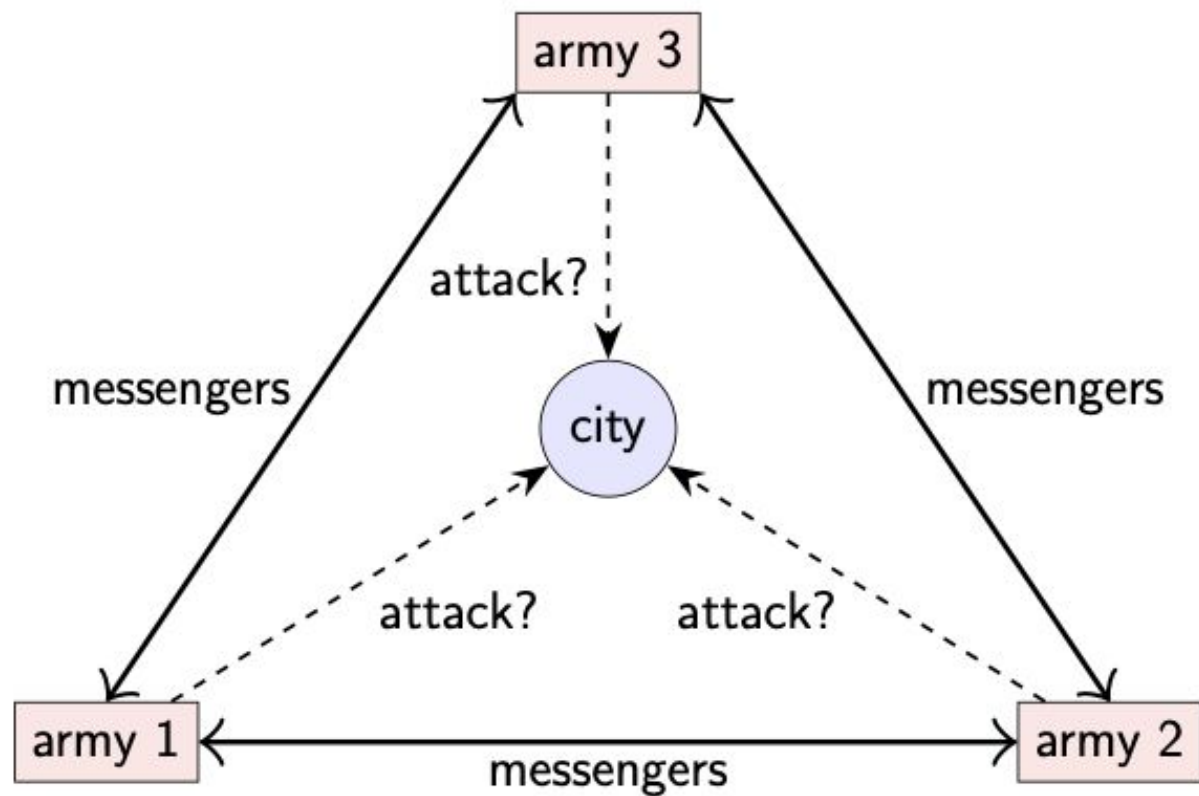
army 1	army 2	outcome
does not attack	does not attack	nothing happens
attacks	does not attack	army 1 defeated
does not attack	attacks	army 2 defeated
attacks	attacks	city captured

**Desired:** army 1 attacks *if and only if* army 2 attacks

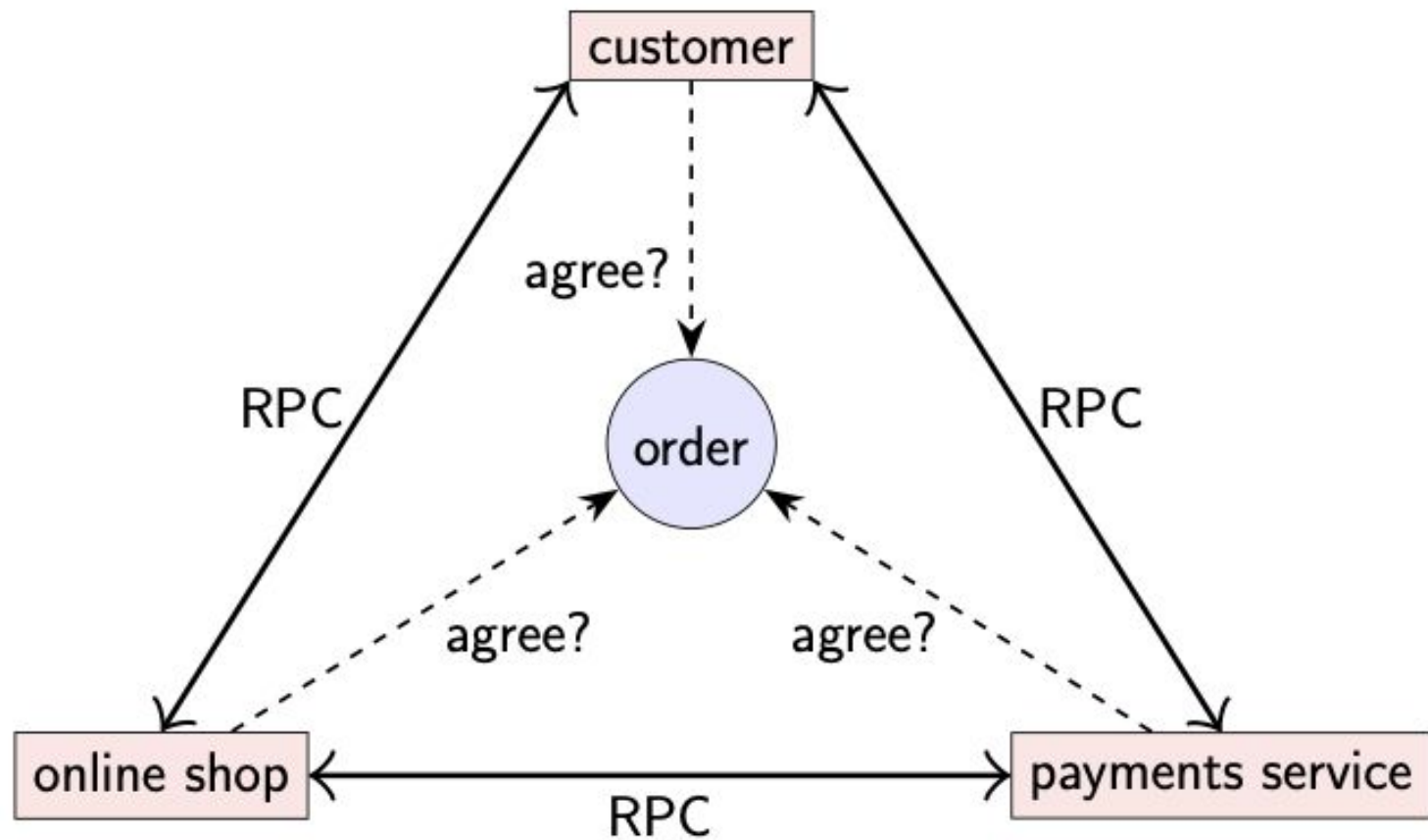


online shop	payments service	outcome
does not dispatch	does not charge	nothing happens
dispatches	does not charge	shop loses money
does not dispatch	charges	customer complaint
dispatches	charges	everyone happy

**Desired:** online shop dispatches *if and only if* payment made



**Problem:** some of the generals might be traitors



Who can trust whom?