

Agile Requirements and Estimation

BECAUSE JUST CODING DIDN'T WORK, DID IT?



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Overview



Effective Requirements

User Stories

Estimating Work

Planning Poker



Effective Requirements



What is a Requirement?

A feature, behavior,
or constraint to be added
to a system

A prelude to
a conversation

A request for someone
to do work

A request for software
to change



A Requirement is NOT

A solution design

A decision about implementation

Typically illustrative of the final deliverable

The source of truth



Complete

Consistent

Correct

Modifiable

Ranked

Traceable

Unambiguous

Verifiable

NASA Requirements

But, can I explain it to my mom?



Interfaces
Functional Capabilities
Performance Levels
Data Structures/Elements
Safety
Reliability
Security/Privacy
Quality
Constraints/Limitations

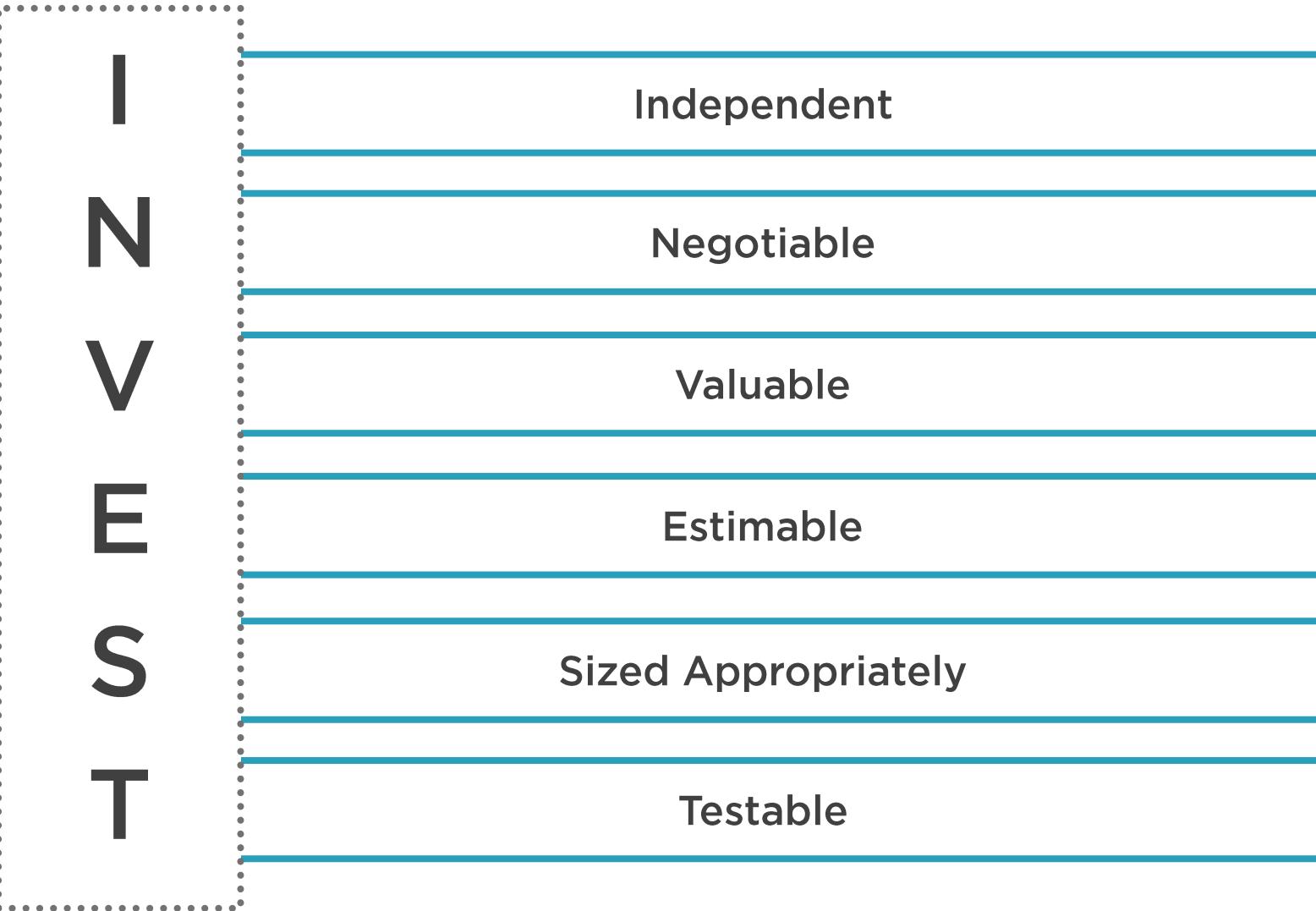
IEEE Requirements

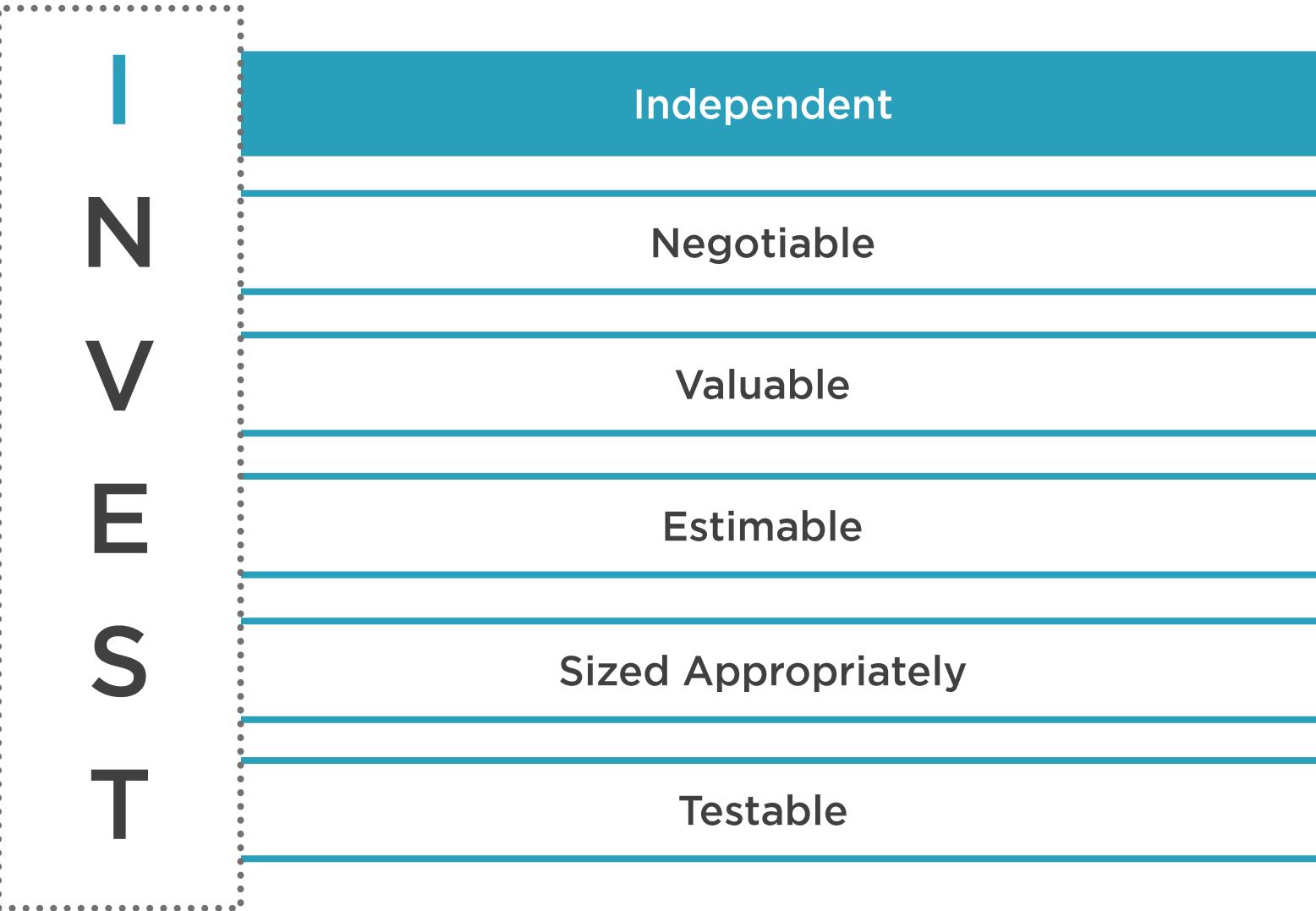
No way can I explain all this to mom

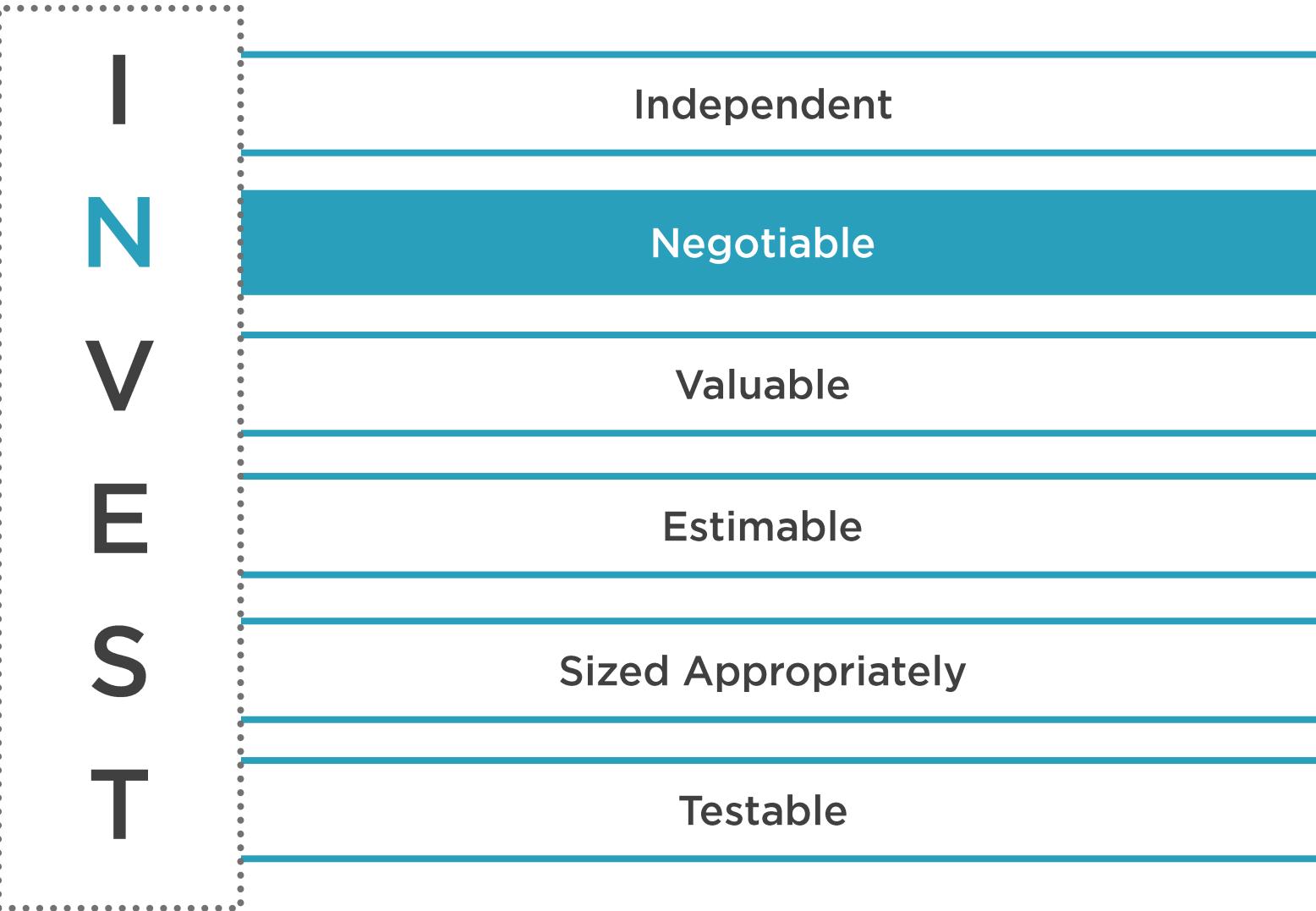


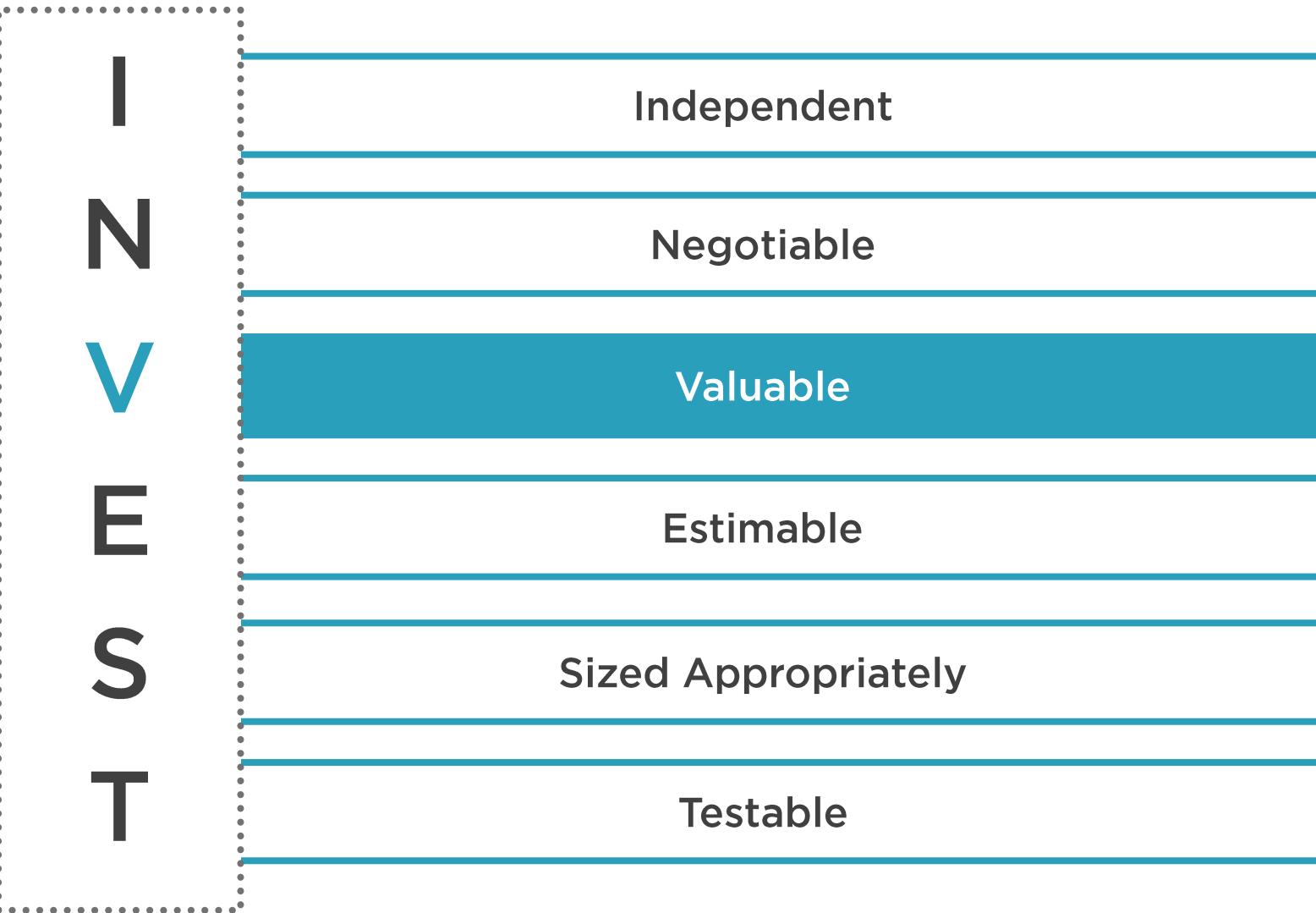
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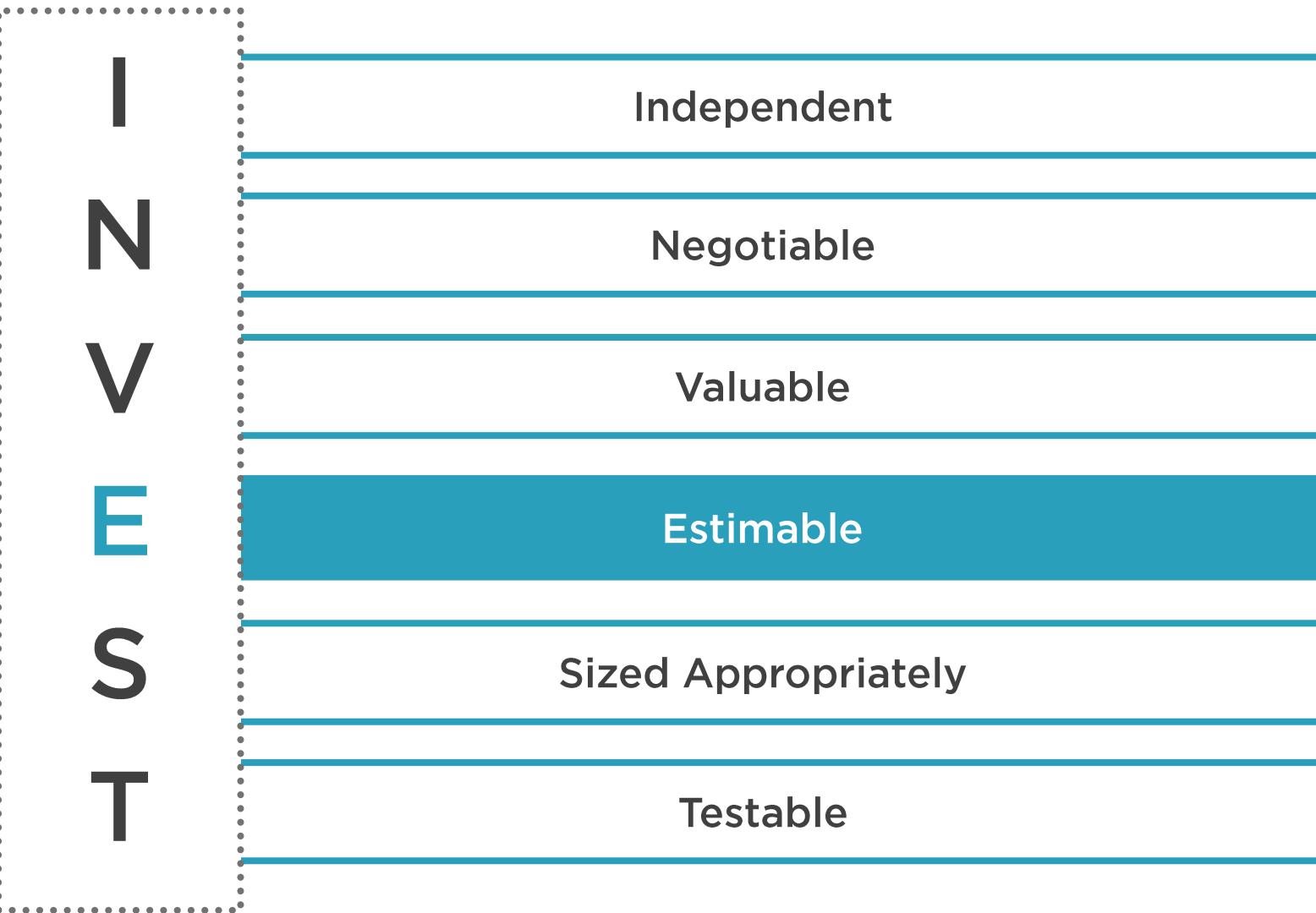


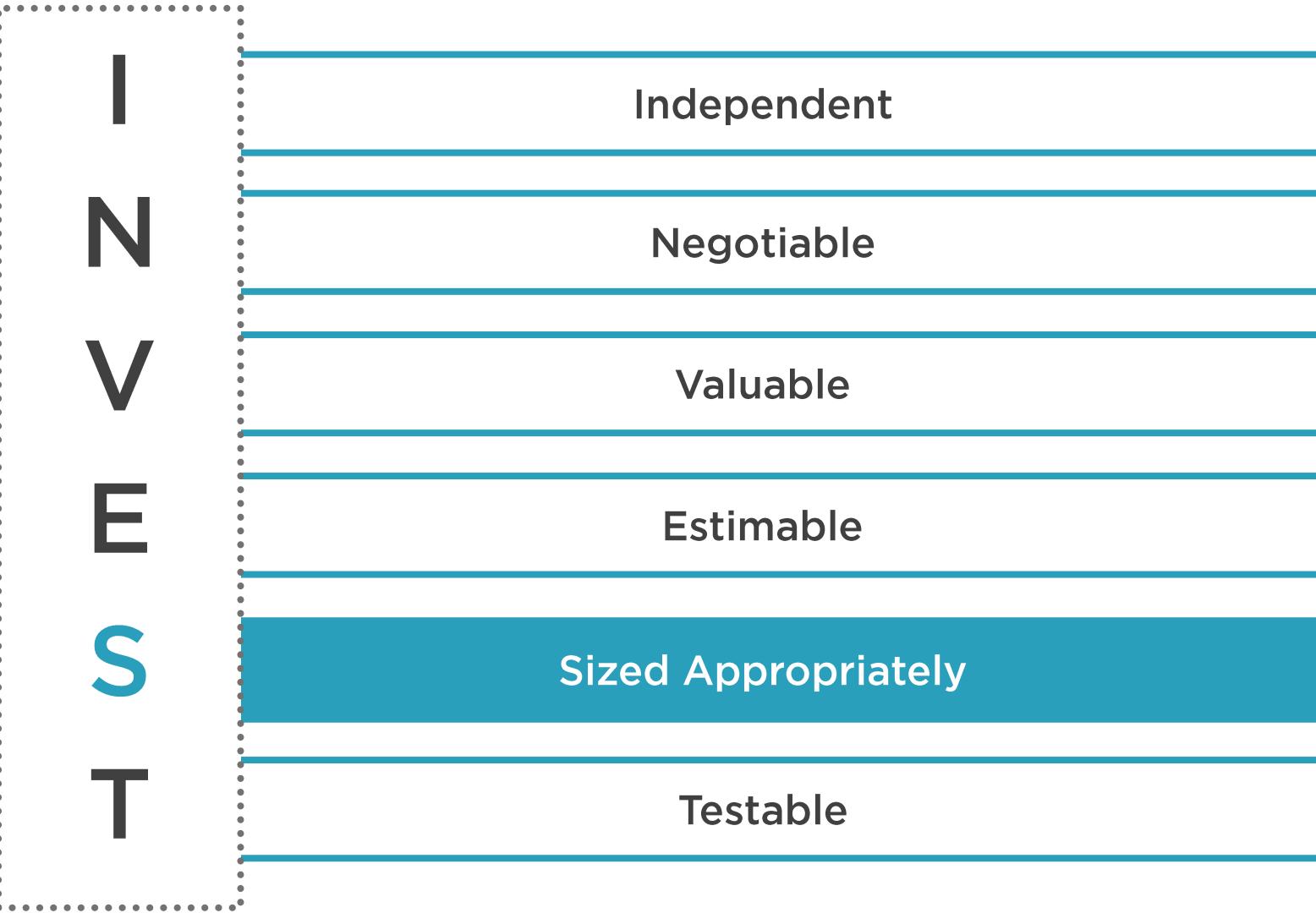


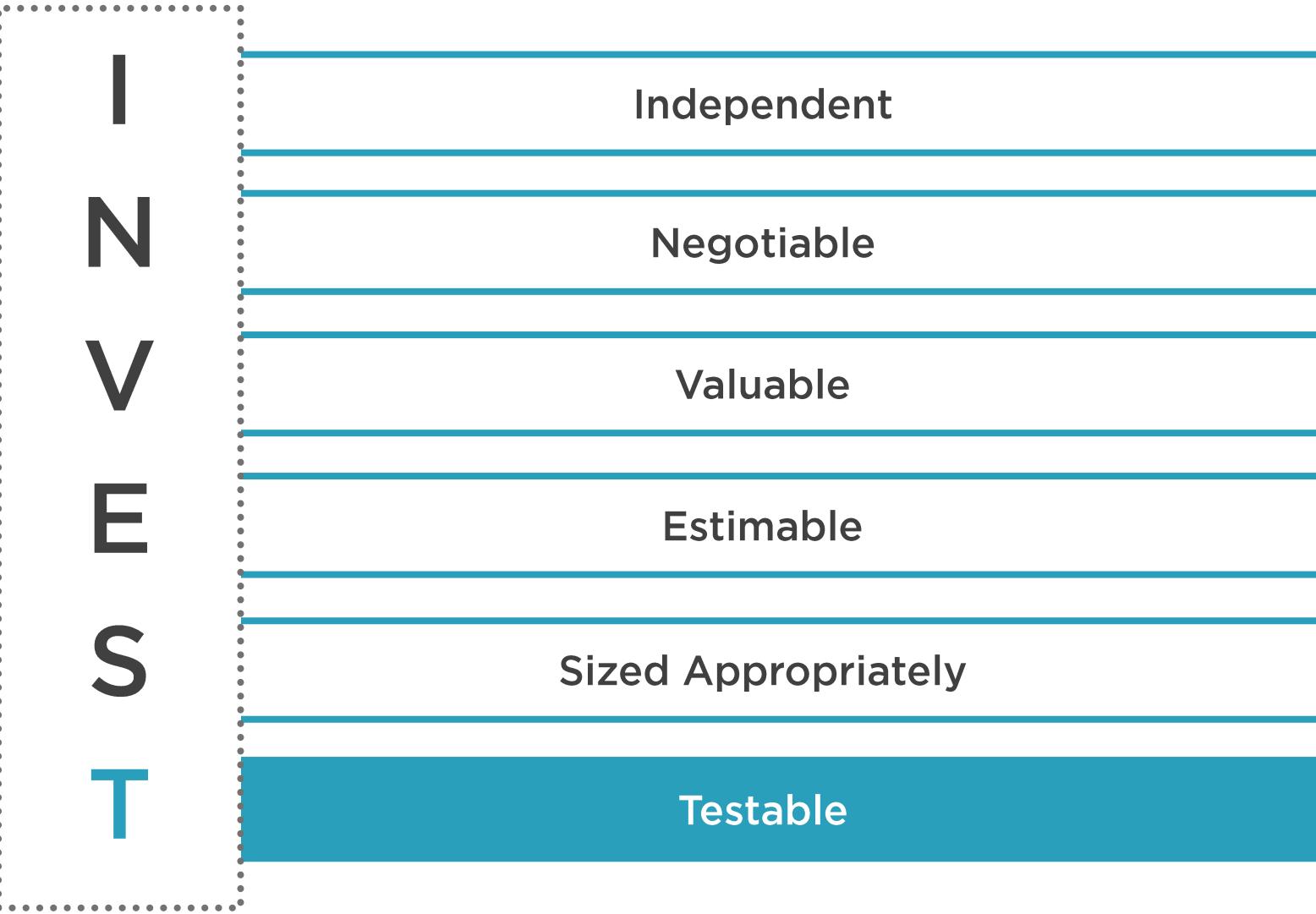












User Stories



User Story Recipe:

As a <role> I want <feature>
so that <benefit>.



Some User Stories



As a traveller, I want to reserve a room



As a vacation planner, I want to see pictures of the hotels



As a user with a reservation, I want to cancel my reservation



As a hotel owner, I want to see a report of all cancellations



A Note on Roles



Vacationer



Hotel Owner



Travel Agent



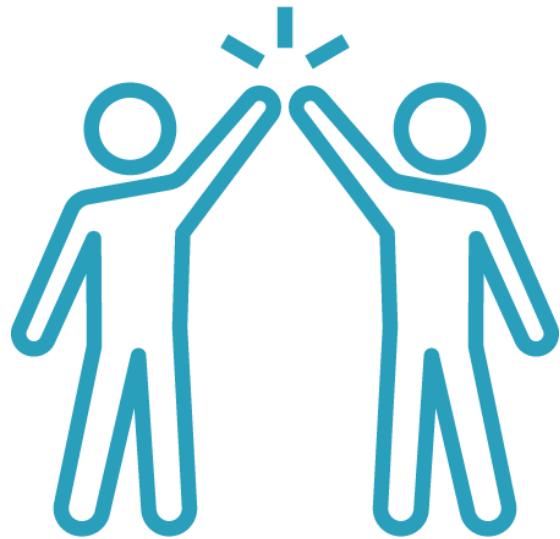
Trip Planner



Parent
NOT THE END USER



Why User Stories Work Well



They are simple to write and understand

Software requirements is a communication problem

They elicit detail in conversation

Requirements analysis is effective when performed collaboratively

Full intent can rarely be modeled or represented 100%



The User Story Conversation

As a user with a reservation,
I want to cancel my reservation
So that I get a refund.



The User Story Conversation

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Does user get full or partial refund?
Refund to credit card or site credit?

How far ahead must reservation be cancelled?
Same for all hotels?
For all site visitors or can frequent travelers
cancel later?

Confirmation provided to user? How?



Details as smaller sub-stories

AS A user with a reservation, I WANT to cancel my reservation SO THAT I get a refund



As a premium member, I want to cancel at the last minute with no penalty so that I get a full refund



As a non-premium member, I want to cancel up to 24 hours in advance so that I get a 50% refund



As a site member, I want an email confirmation of my cancelled reservation so that I can have a record of the transaction



Signs Stories are Working



Focus shifts from writing to talking



Stories are understood by customer and developer



At estimation time, they are the right size



Participative design is occurring



Emphasis is on the user goals, not the system's attributes



Communicating Done

Given <context> [and <more context>],
when <something happens>
then <outcome> [and <another outcome>].



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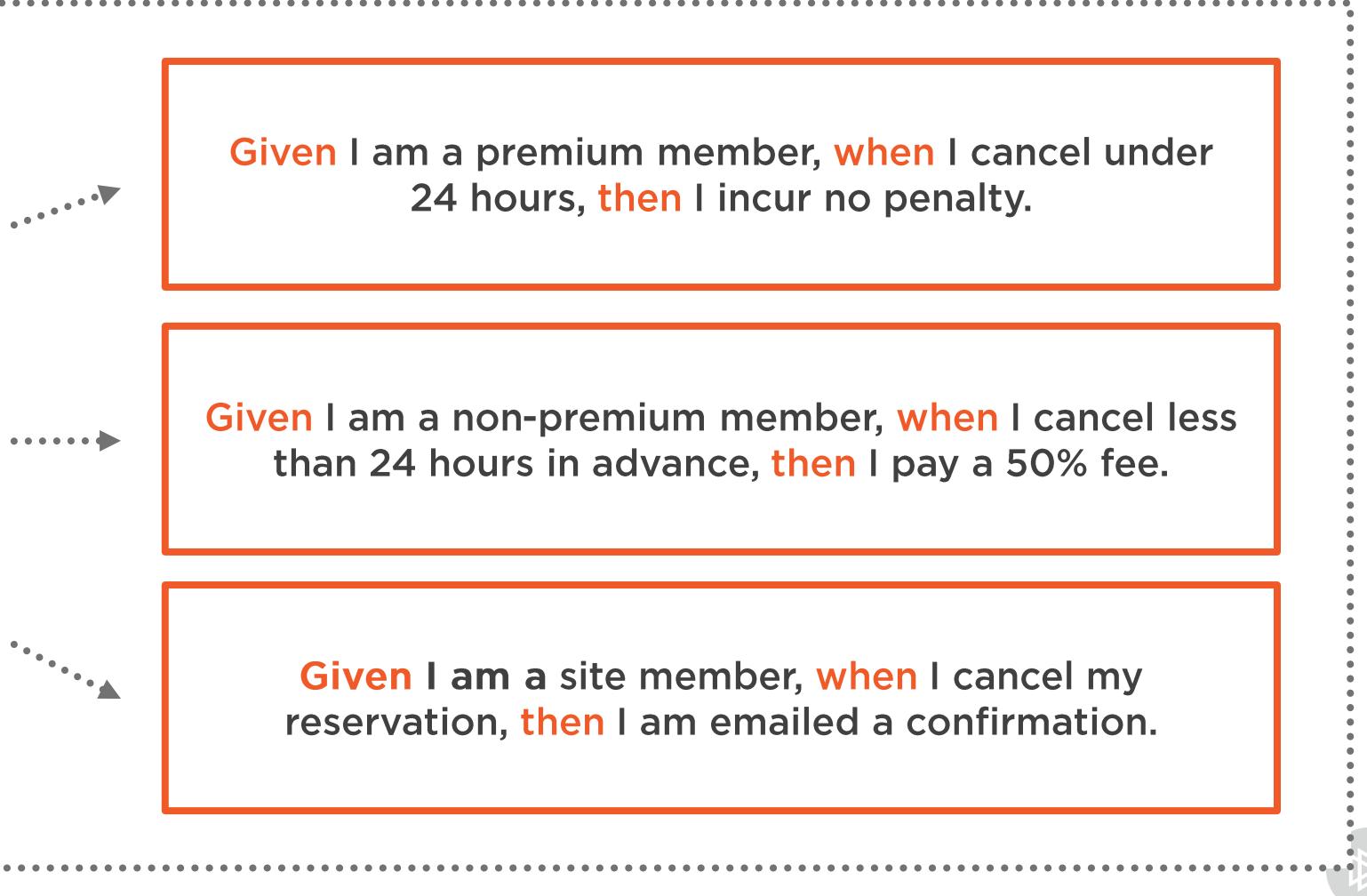
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Given/When/Then Criteria

AS A user with a reservation, I WANT to cancel my reservation SO THAT I get a refund



Given/When/Then Criteria

AS A user with a reservation, I WANT to cancel my reservation SO THAT I get a refund



Given I am a premium member, **when** I cancel under 24 hours, **then** I incur no penalty.



Given I am a non-premium member, **when** I cancel less than 24 hours in advance, **then** I pay a 50% fee.



Given I am a site member, **when** I cancel my reservation, **then** I am emailed a confirmation.



Adding Snappy Titles

Title: User Cancels Reservation

AS A user with a reservation, **I WANT** to cancel my reservation **SO THAT** I get a refund

Scenario 1: User is PREMIUM member

Given I am a premium member, when I cancel under 24 hours, then I incur no penalty.

Scenario 2: User is TYPICAL member

Given I am a non-premium member, when I cancel less than 24 hours in advance, then I pay a 50% fee.

Scenario 3: User gets email confirmation

Given I am a site member, when I cancel my reservation, then I am emailed a confirmation.



The Whole Story on a Card

Title: User cancels reservation

Description: As a user with a reservation, I want to cancel my reservation so that I get a refund.

Success Criteria:

- Given I am a premium member, when I cancel under 24 hours, then I incur no penalty.
- Given I am a non-premium member, when I cancel less than 24 hours in advance, I pay a 50% fee.
- Given I am a site member, when I cancel my reservation, then I am emailed a confirmation.



Story Owner:

Business Value Estimate:

Development Effort Estimate:

ROI Estimate:



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Estimating Work



Estimates Are Necessary

To plan and proceed deliberately

To get a feel for costs

To calculate potential ROI

To understand the size of something

To know if work even can be done

To weigh options



Ways to Estimate Software



Darts



Give it to
a Manager



Ask the expert



Without
“bothering” the
developers



Deadly Estimation Warning Signs

Estimates are given without looking at historical performance.

Someone other than the team is doing the estimation.

Estimates are treated as promises.

Estimates are rejected because they don't fit an already existing plan.





“I just want to know when it will be done.”

“That’s bigger than it should be.”

“That’s smaller than it should be.”



The Typical Estimation Process

PM: Hey Bill, how long to _____?

PM to self: They always say that. So, 2.5 weeks. I'll make it 3.

PM out loud: Thanks Bill. I'll go write the specs now.

Dev to Self: I'm busy, that'll take 2 days I can't afford to lose. What can I say to make him go away?

Dev out loud: About a week.

Dev to self: I can stall those out for weeks.



How do we measure software work?

Lines of Code

Buckets per day

Cycles Per Month

Mega Jewels per nanosecond

Coffees per day

Rotations Per Minute

Feature Points

Kilowatts per hour

Hertz

Miles Per Hour



How We Measure Software Work

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Feature Points

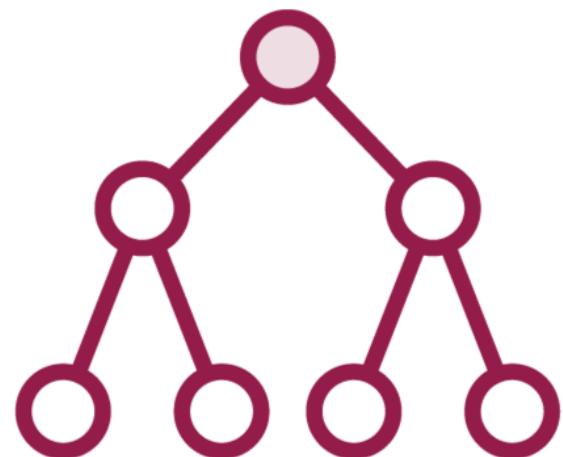
Kilowatts per hour

Hertz

Miles Per Hour



Story Points



- Very common way to estimate work
- Based on size and complexity, not duration
- Unitless and numerically relative
- Different for each team of estimators
- Points are additive, unlike time
- Based on historical reality
- Easy to use and understand





ACORNS?



Using Story Points



Pile o'
User Stories



Defect A | Cost: 20

Defect B | Cost: 30

Requirement A | Cost: 100

Requirement B | Cost: 100

Requirement C | Cost: 30

Constraint A | Cost: 20

We can see right away

Which work items cost the most

Total cost of all the work

Total cost to an iteration



Story Point Values

(Include big and small outliers if you want:
0, 1/2, 100, 300)

Can you distinguish a 1-point story from a 2?

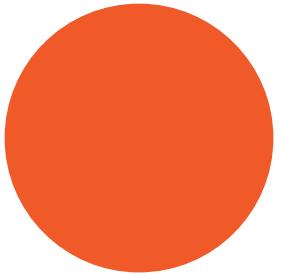
Can you distinguish a 17 from an 18?

How about a 99 from a 100?

Use units that make sense:

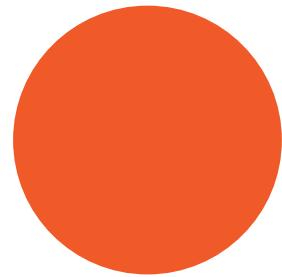
- XS, S, M, L, XL, XXL
- 1, 2, 3, 5, 8, 13, 20, 40
- 1, 2, 4, 8, 16, 32



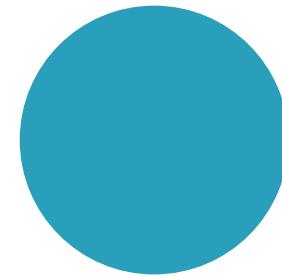


Project Last Week



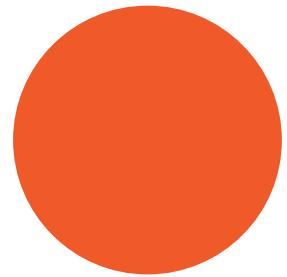


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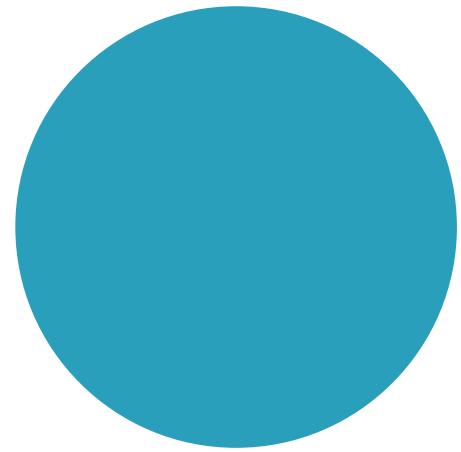


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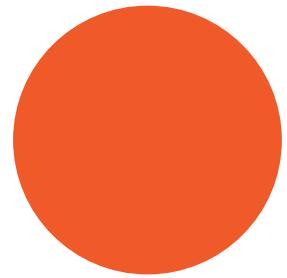


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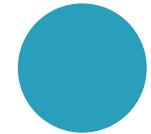


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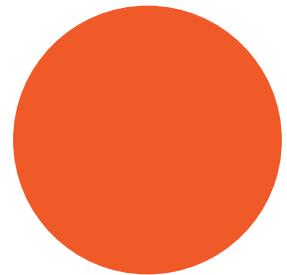


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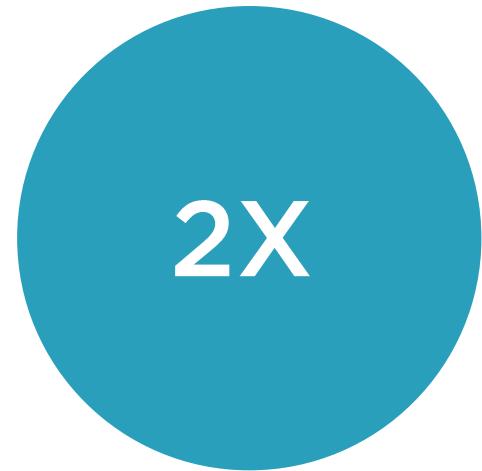


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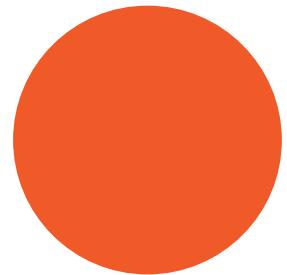


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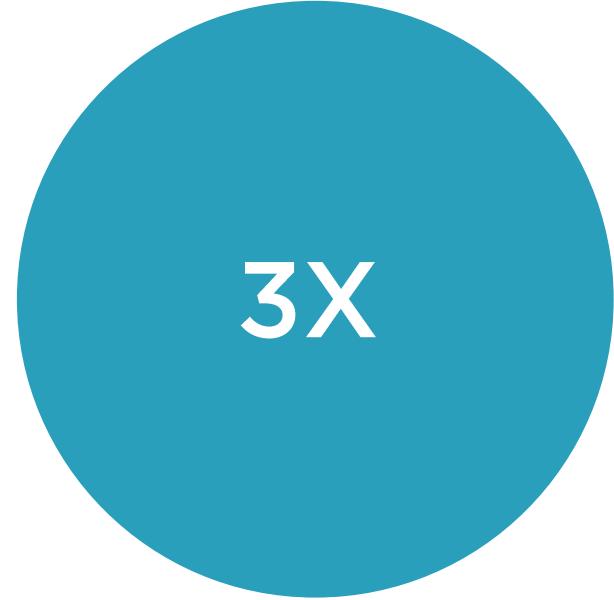


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Project Last Week



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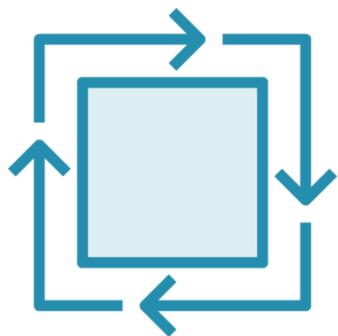
Estimates are Not Promises

If estimates are used against you this is a people problem, not a problem with the estimates. Address it.



It's Called an Estimate, Not a Promise

Remember why estimates are needed:



Large scale printing



Get a feel for cost



Planning Poker



Estimating with Groups

**Group derived
estimates are
demonstrably more
accurate than
estimates by
individuals**

**Political Trading
Marks**

Iowa Electronic Markets
Intrade.com
Politicalmarket.cnn.com

**Who Wants to be a
Millionaire?"**

Polling the audience is
accurate 91% of
the time



Together, we are smarter than any
one of us.

Japanese proverb



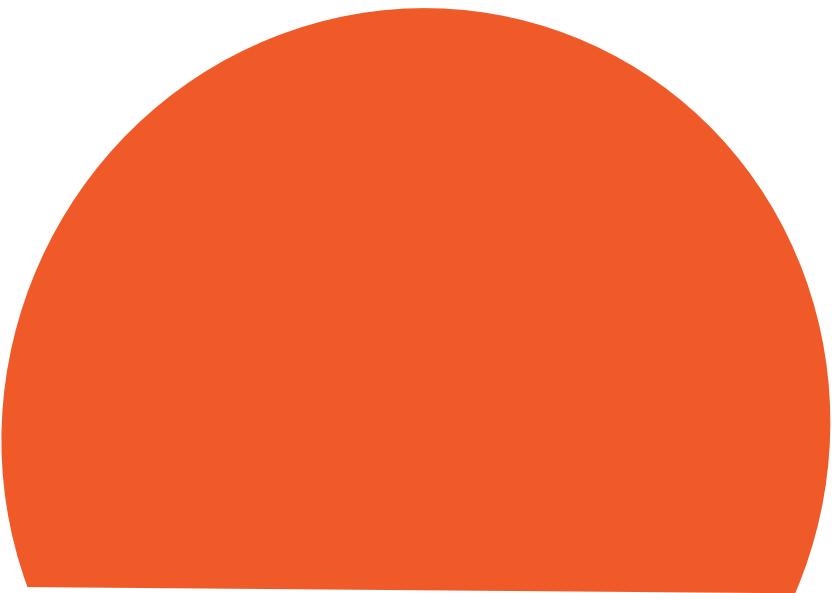


When guessing the number of jellybeans in any given jar, the average of all guesses is typically within 2-3% of the correct answer.

**— The Wisdom of Crowds,
James Surowiecki**



Relative Estimation



A



B

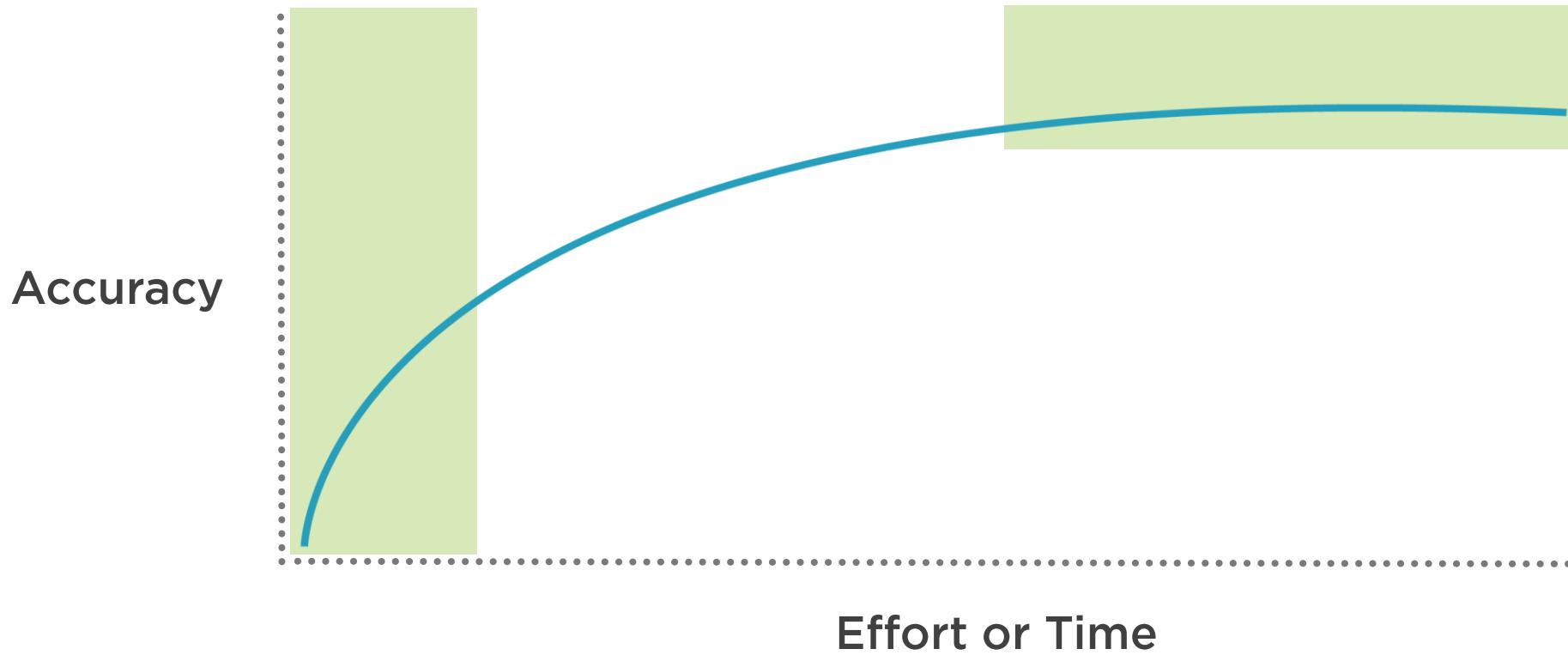


Myth

With more time, estimates get significantly more accurate



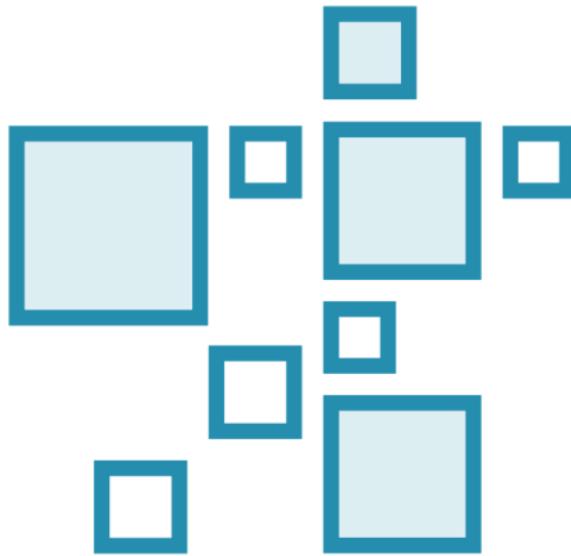
Estimation is Expensive



Planning Poker Cards



Why Planning Poker Works



- Emphasizes relative sizing
- Focuses most estimates within an order of magnitude
- Everyone is heard
- Finds hidden requirements and details
- Estimators must justify estimates
- It is iterative
- It's quick
- It's fun



Planning Poker Rules

1. Each estimator has a deck of estimation cards

2. Customer/Product Owner reads a story and it's discussed briefly

3. Each estimator selects a card that's his or her estimate

4. Cards are turned over so all can see them (synchronously)

5. Discuss differences (especially outliers)

6. Re-estimate until estimates converge



A Real Work Item

Check table widths before Check-in or Save

Before a user saves or checks in a document, test all of the tables in the document to see if they follow the XHTML rules. If they don't, throw a warning to the user.

Don't throw an error.

5

To be done for each table

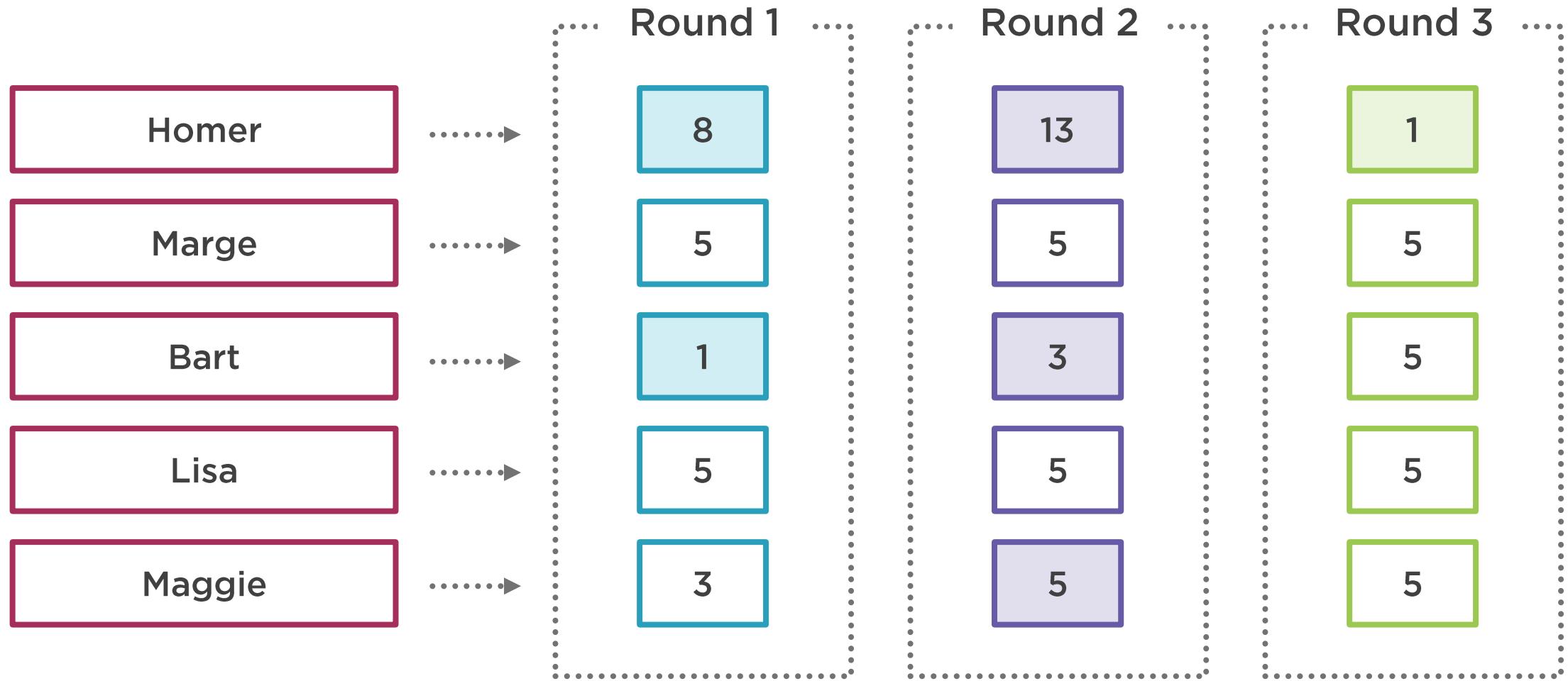
```
If (table.width == 100%) : Throw an error
```

```
Else If (table.width < 100 pixels) : Throw an error
```

```
Else pass
```



Planning Poker



Options for Handling Conflict

Aim for consensus, not unanimous agreement

Wait for convergence

Average the estimates

Toss out high and low

**Send the item back for
re-definition**



Make a Planning Poker Deck

?, 1, 2, 3, 5, 8, 13, 20, 40...



Try These

Backlog Item

Mow my lawn

Move your slacker friend from his mom's house

Paint my house

Write Pong in Silverlight

Add a new team member

Make 8 pounds of confetti

Estimate

5



Summary



Effective Requirements

- Remember INVEST

User Stories

- As a <role> I want <feature> so that <benefit>.
- Given <context> when <something happens> then <desired result>.

Estimating Work

- Relative estimation
- Group estimation

Planning Poker



References

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Malcolm Gladwell

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