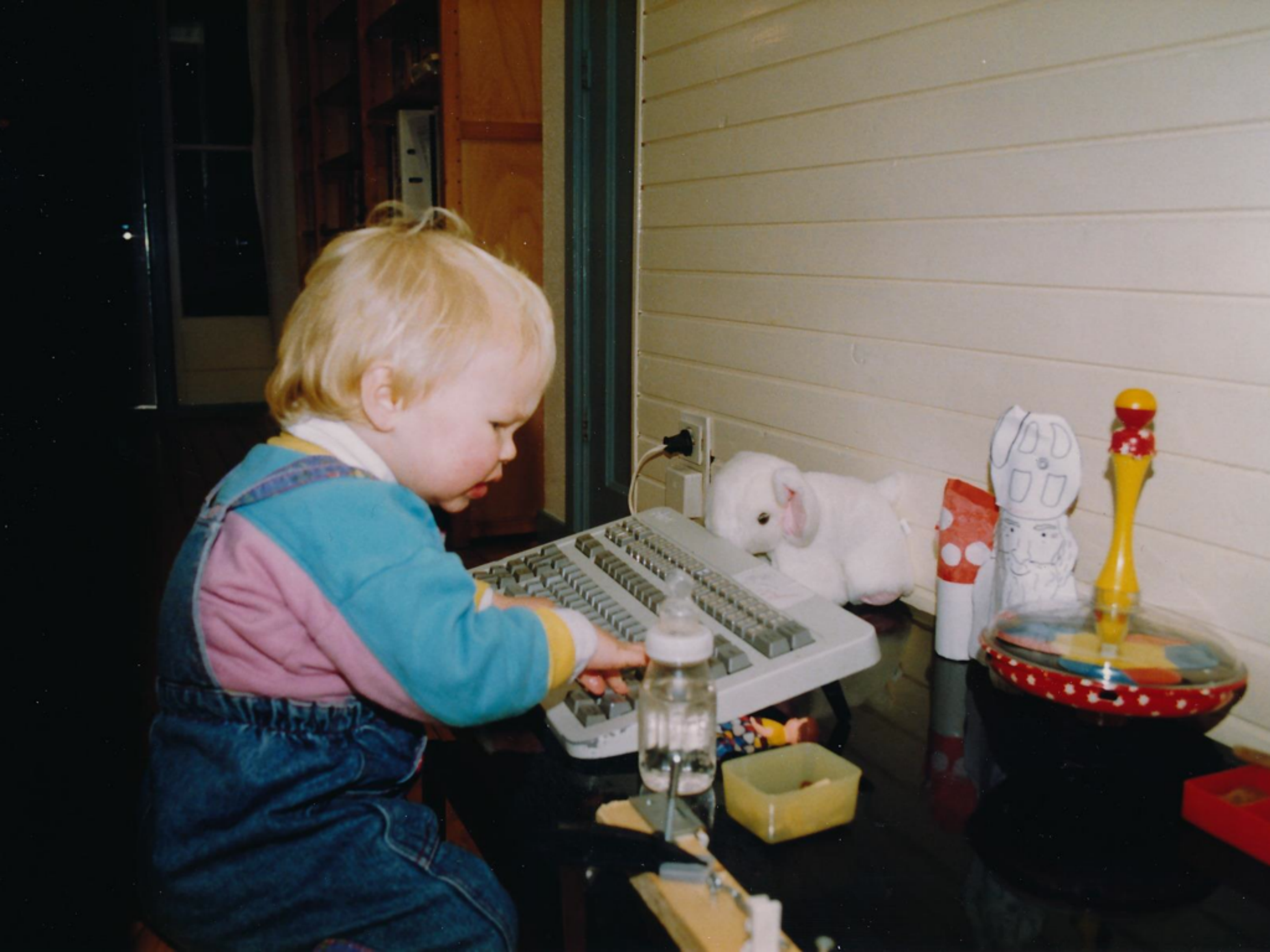


System for electronically sharing papers and notes with other researchers, so that we can collaborate on
aspects of temperature and precipitation | Live by the harmless untruths that
your next walk in the woods



Overview

- How about user stories?
- Grimm User Stories
- Interactive Narrator
- Future work

Flashback to 2014....

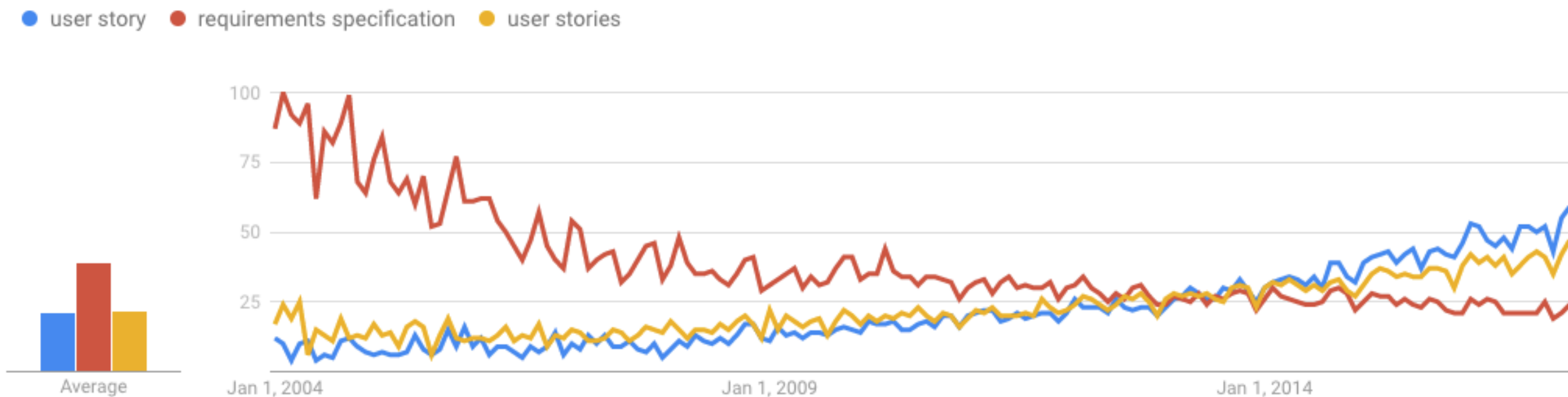
Surely there's a lot of work on **user stories**?



**Except for
Wautelet 2014!**

Huge knowledge gap!

- 45% of industry practitioners apply user stories (Kassab, 2015)
- Many industry books and articles



- Yet, academically little is known

Problems to solve

- Why are user stories **popular**?
- Why are user stories **effective**?
- Think of new **methods** to **improve** current state
- Create **tools** to support user story practice

User stories?

“As a Visitor, I want to buy an event ticket”

“As a Visitor, I want to search for new events by favorited organizers, so that I am the first to know of new events”

“As a Visitor, I want to be notified when an event is close to becoming sold out, so that I do not miss the event”

What is a user story?

- User stories **represent** customer requirements in a **card**, leading to **conversation** and **confirmation** (Jeffries, 2001)
- User stories only capture the **essential elements** of a requirement:
 - **who** it is for
 - **what** it expects from the system
 - **why** it is important (optional?)
- Simple **format** used by **70%** of practitioners (Lucassen et al., 2016)

As a **role**, I want to **action**, (so that **benefit**) (Connextra)

who what why



Practitioners struggle

- Existing quality guidelines are insufficient and relatively unknown
- **Some** practitioners use INVEST (23,5%)
 - Highly positive of impact on productivity and quality.
 - Battle-proven and effective
 - Non-specific
 - Not actionable
 - Still good to know!
 - Go **beyond** its six characteristics!

Independent
Negotiable
Valuable
Estimatable
Small
Testable

What is the Grimm Method?

The Brothers Grimm

- 1806: start collecting the **best German folk tales**

Cinderella



Hansel and Gretel



The Frog Prince



The Brothers Grimm

- 1806: start collecting the **best German folk tales**
- Did **not come up** with these stories **themselves**

Cinderella



Hansel and Gretel

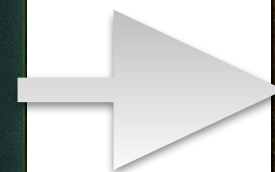
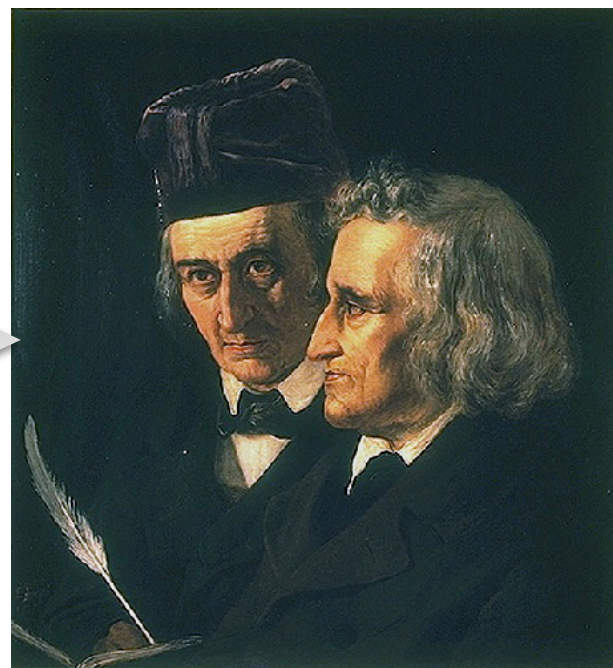
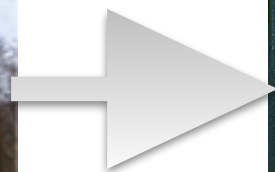


The Frog Prince



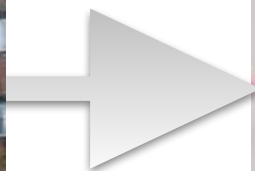
The Grimm Process

1. **Invite** story tellers in their home
2. Transcribe and **edit** heavily
3. Include in their flagship product: *Grimm's Fairy Tales*



User stories are similar

1. **Talk** to users or customers
2. Transcribe conversation and edit into **user stories**
3. Include in ***pied piper*** project: (i) refine, (ii) plan, (iii) develop



As a **role**, I want to **action**, (so that **benefit**)



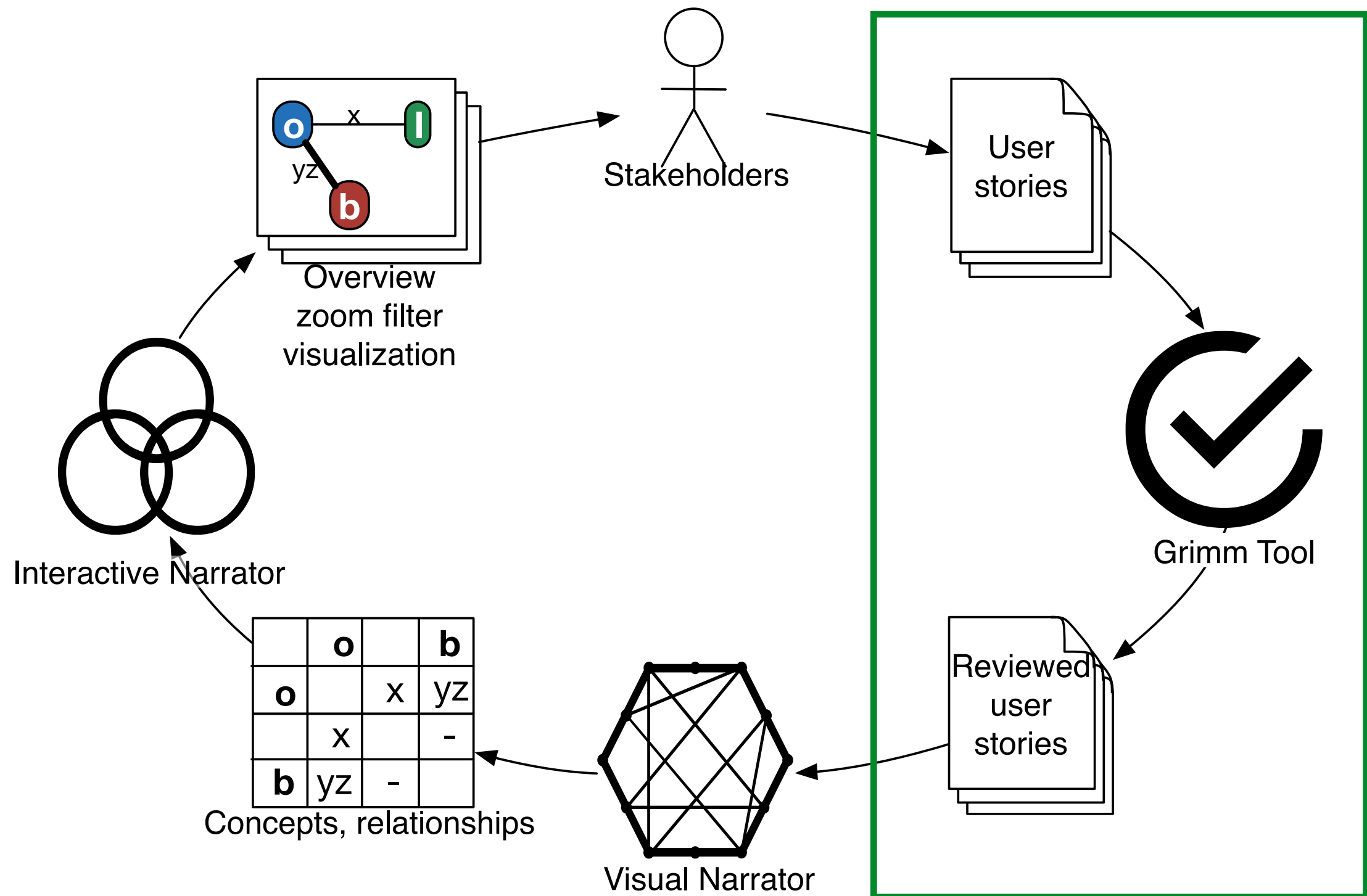
Practitioners struggle

- Only **one person** concerned with user stories
- Single point of **failure** -> insufficient QA
- 56% of user stories contained easily preventable **errors** (n=~1000)
- Consequence: ***wrong software***
 - Rework
 - Late changes
 - Leads to project **failure** and **cost** overruns

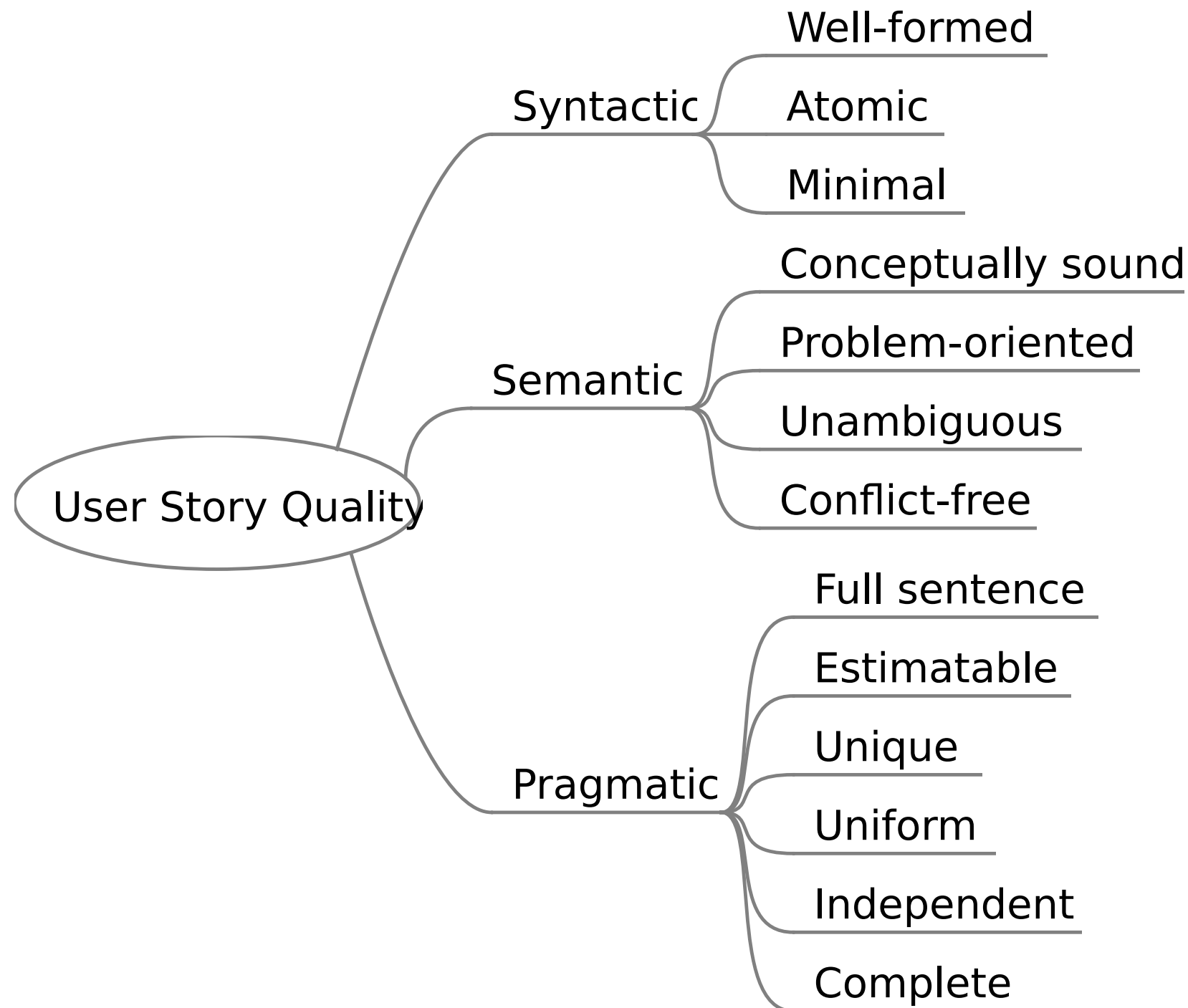
Grimm Method to the rescue

- The **Quality User Stories Framework** contains 13 quality characteristics for common issues
 - Based on **1000** user stories & **literature**
 - Derivable from **user story text**, **ignores** requirements **management concerns**
- Foster more **conversation** around user stories at every stage of user story lifecycle
 - **Understand** what kind of issues are possible
 - **Empower** everyone to identify issues pro-actively
 - **Use** terminology to convey problems
- Prepares user stories for advanced analyses

What is the Grimm Method?



Quality User Story Framework



Example 1: *syntactic*

RQ3 - minimal

A user story contains nothing more than role, action and benefit

As an Event Organizer, I want to see the personal information of attendees (split into price levels). See: Mockup by Alice NOTE: - First create the overview screen



(re)move unnecessary information

As an Event Organizer, I want to see the personal information of attendees

Rationale: unnecessary distraction, indicates creator did not think deeply

Example 2: *semantic*

RQ4 - conceptually sound

The action expresses a feature and the benefit expresses a rationale

As an Event Organizer, I want to open the event page,
so that I can see the personal information of attendees



Example 2: *semantic*

RQ4 - conceptually sound

The action expresses a feature and the benefit expresses a rationale

As an Event Organizer, I want to open the event page,
so that I can see the personal information of attendees

↓ ends becomes means

As a User, I want to see personal information of attendees, so that I know the
demographical distribution of the event

Rationale: actions that do not capture what the role truly wants omit important information. Who wants to open a page?

Example 3: *pragmatic*

RQ 11 - uniform

All user stories follow roughly the same template

1. As a Visitor, I want to create an account
2. As a Visitor, I want to reset my password
3. As a TicketExpert Manager, I receive an email notification when a new user is registered

↓ add 'want to'

As an TicketExpert Manager, I want to receive an email notification when a new user is registered

Rationale: structure of user story is necessary for quick overview of a set its dependencies and relationships

Grimm Tool

Grimm Tool Technology:

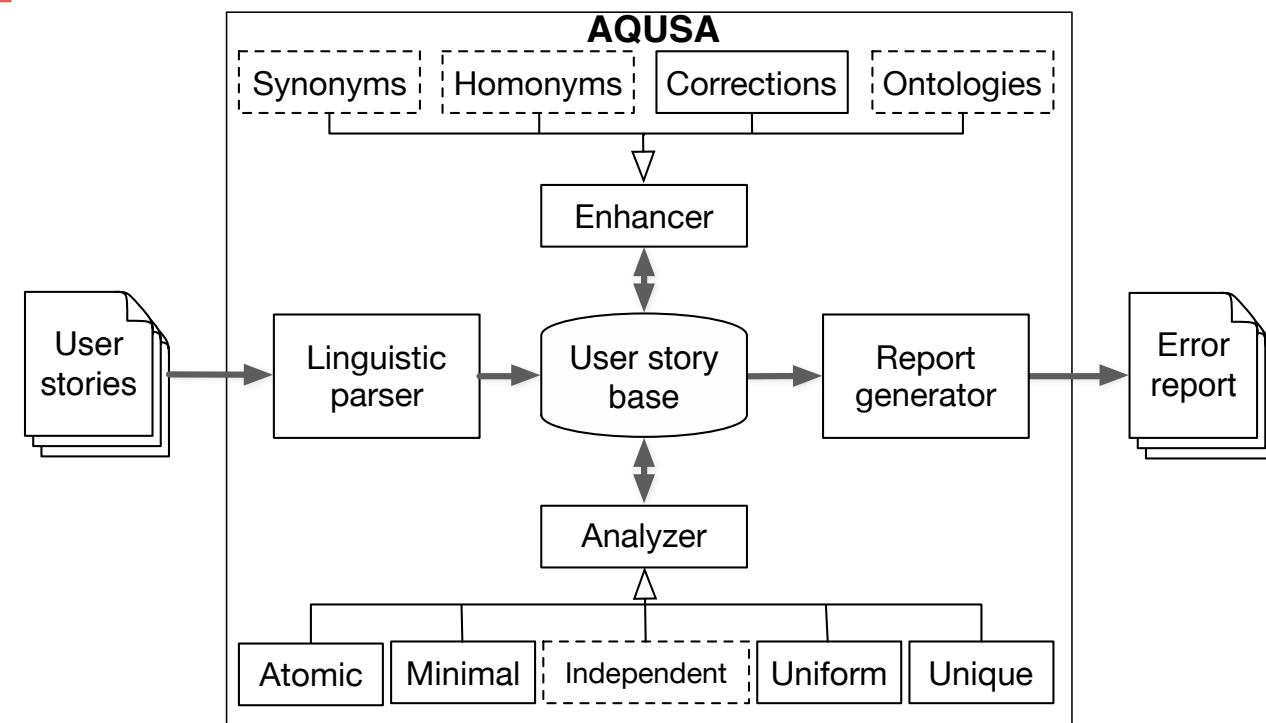
Automatic Quality User Story Artisan

- Automatically assess user story quality
- Restrict ourselves to criteria with potential for **100% recall**:

Perfect Recall Criterion

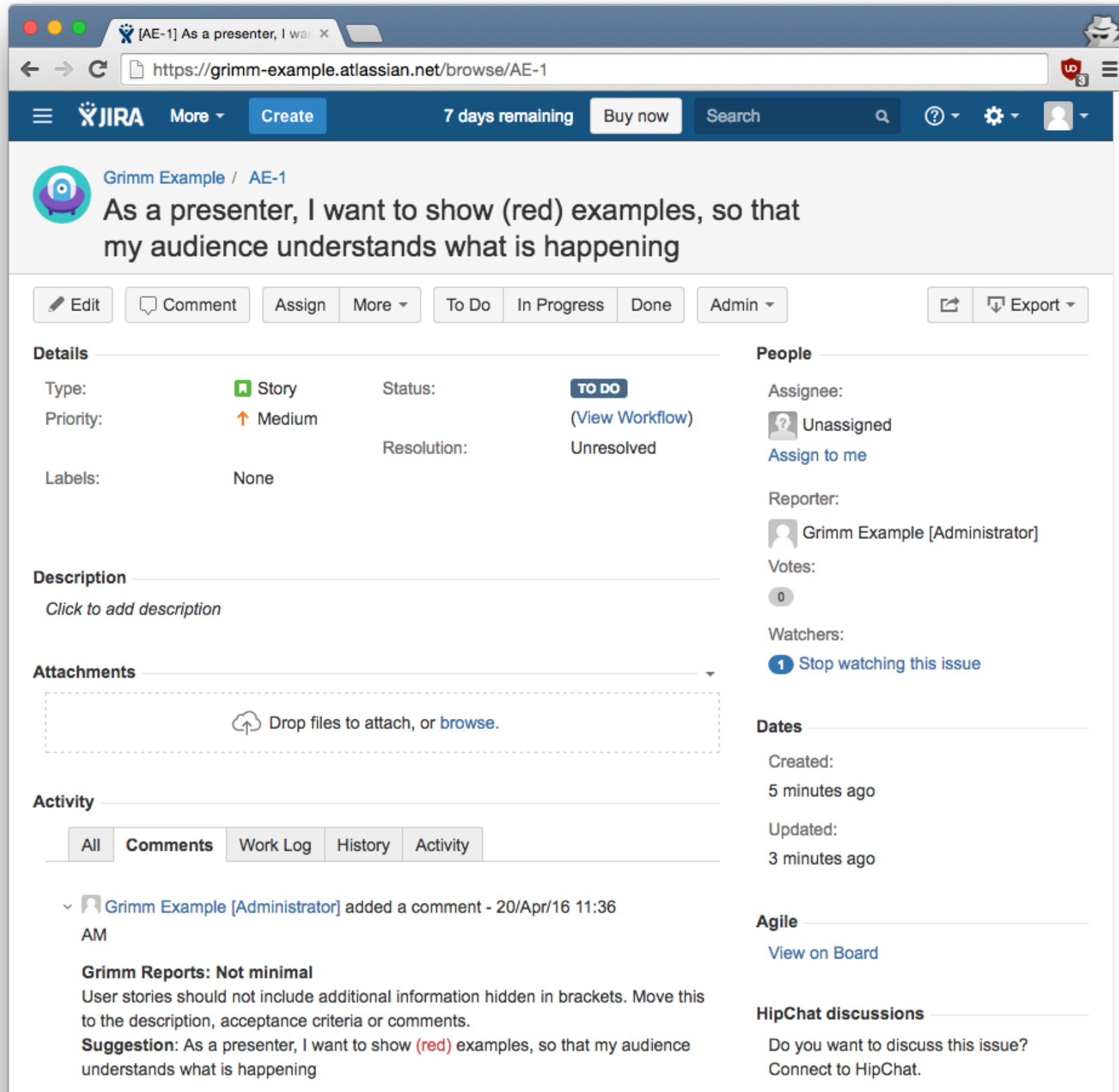
(Daniel Berry et al., 2012)

- Well-formed
Atomic
Minimal
Uniform
Unique



Jira integration

automatically posts comments



Grimm Tool

Activity

All Comments Work log History Activity Transitions

✓ Grimm User Story Review added a comment - 23 Aug 16 14:42

Grimm Reports: No action
It looks like you didn't include an action. Are you sure this is a user story?
Suggestion: Add what you want to achieve

✓ Grimm User Story Review added a comment - 23 Aug 16 14:42

Grimm Reports: No role
It looks like you didn't include a role. Are you sure this is a user story?
Suggestion: Add for who this story is

Activity

All Comments Work log History Activity Transitions

✓ Grimm User Story Review added a comment - 21 Apr 16 15:34

Grimm Reports: Not atomic
A user story should consist of only one feature. Avoid using conjunctions such as and or &.
Suggestion: As a Tenant, I want to resolve complaints without intervention from the superintendent **and** indicate why (optional)

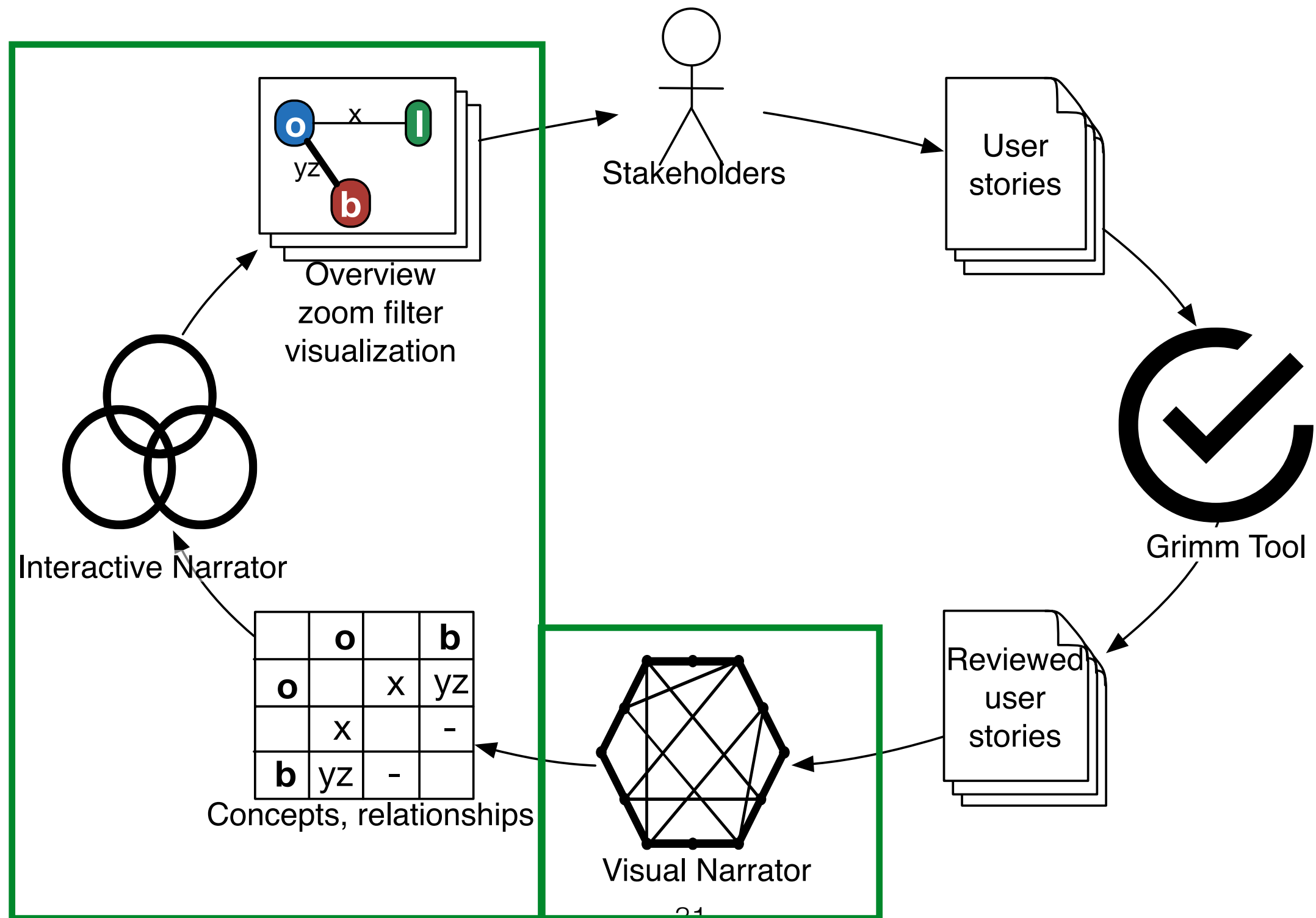
✓ Grimm User Story Review added a comment - 21 Apr 16 15:34

Grimm Reports: Not minimal
User stories should not include additional information hidden in brackets. Move this to the description, acceptance criteria or comments.
Suggestion: As a Tenant, I want to resolve complaints without intervention from the superintendent and indicate why **(optional)**

Why Grimm?

- Quality guidelines like **Grimm** and **INVEST** support **effectively working** with user stories
- Applying Grimm paves the way for **advanced analyses**

What is the Grimm Method?

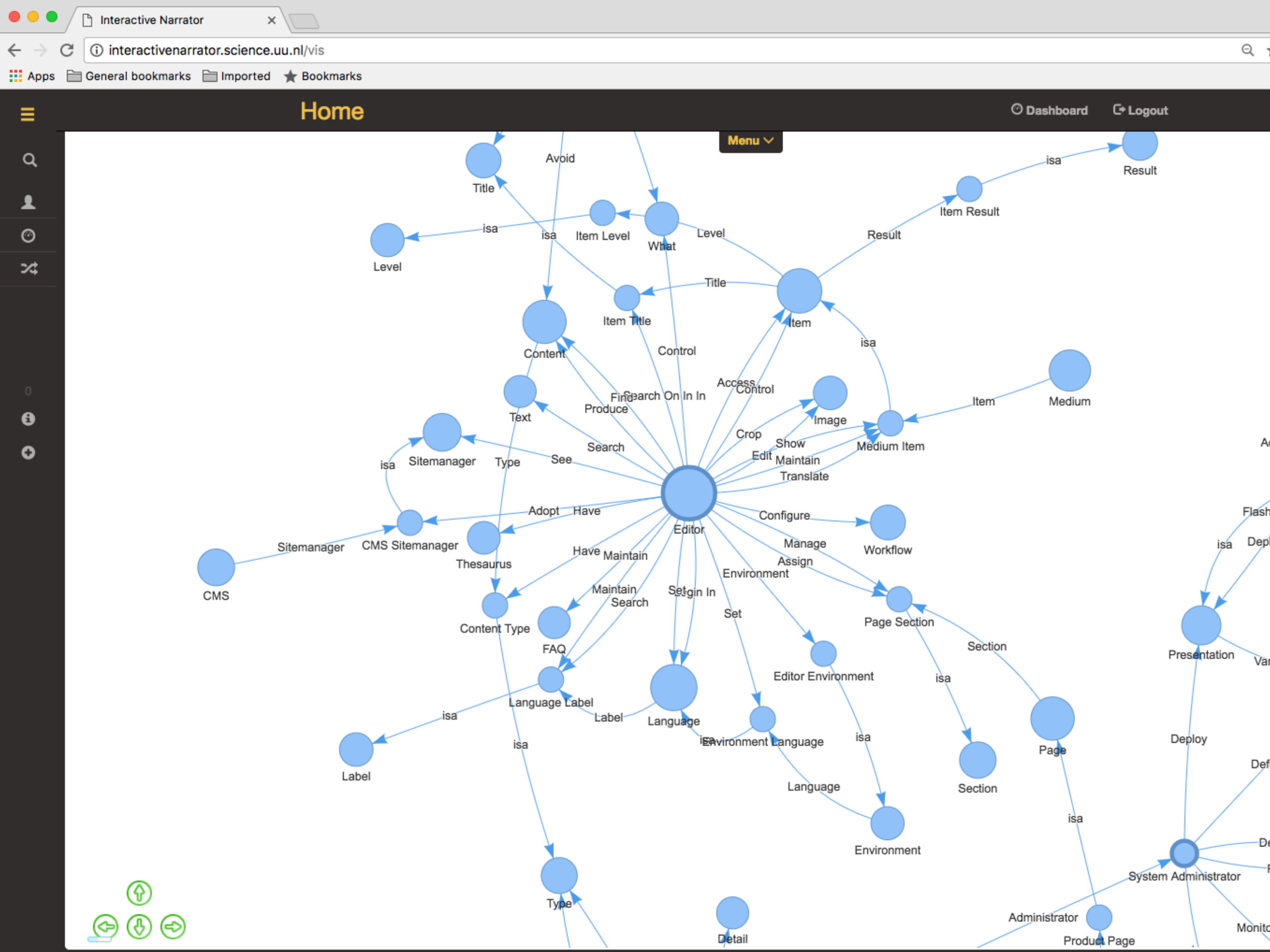


From user stories...

“As a **Visitor**, I want to **search for new events by favorited organizers**,
so that **I am the first to know of new events**”

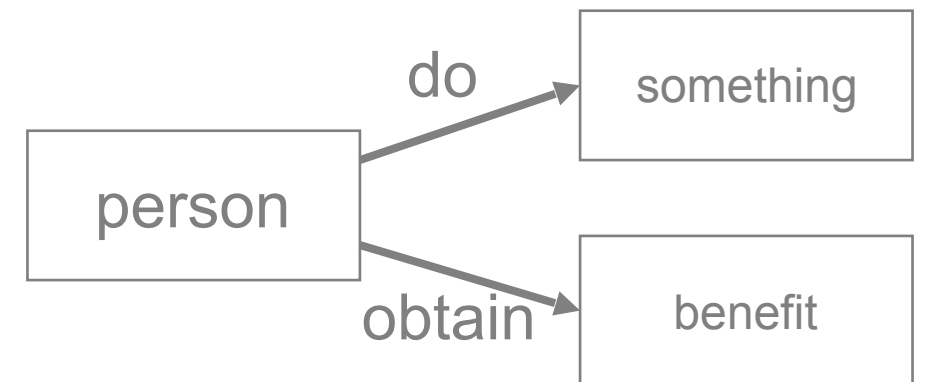
.. to





Extraction method

As a person, I want to do something so that I obtain benefit.



1. Split on Indicator

Role **As a visitor,**

Means **I want to** choose an event

End **so that** I can book a ticket for that event

2. Functional role

Role

As a visitor

Means

I want to choose an event

End

so that I can book a ticket for that event

3. Simplify the means

Role

As a **visitor**

Means

~~I want to~~ choose an event

End

so that I can book a ticket for that event

3. Simplify the means

Role

As a **visitor**

Means

I ~~want to~~ choose an event

End

so that I can book a ticket for that event

4/5. Main verb & main object

Role

As a **visitor**

Means

~~I want to~~ **choose** an event

End

so that I can book a ticket for that event

6. Main relationship

Role

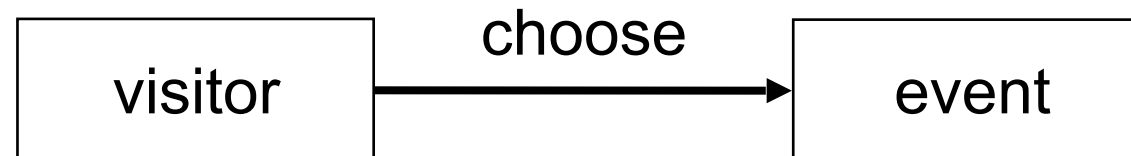
As a **visitor**

Means

~~I want to~~ **choose an event**

End

so that I can book a ticket for that event



7. Remaining information

Role

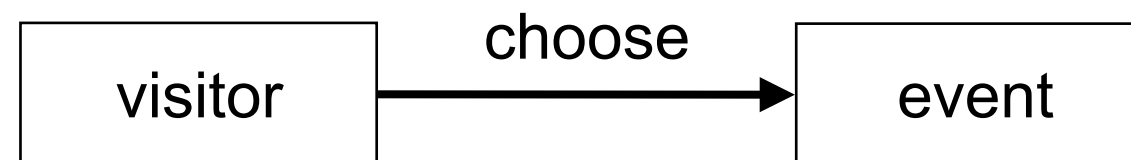
As a visitor

Means

~~I want to~~ choose an event

End

so that I can book a ticket for that event



7. Remaining information

Role

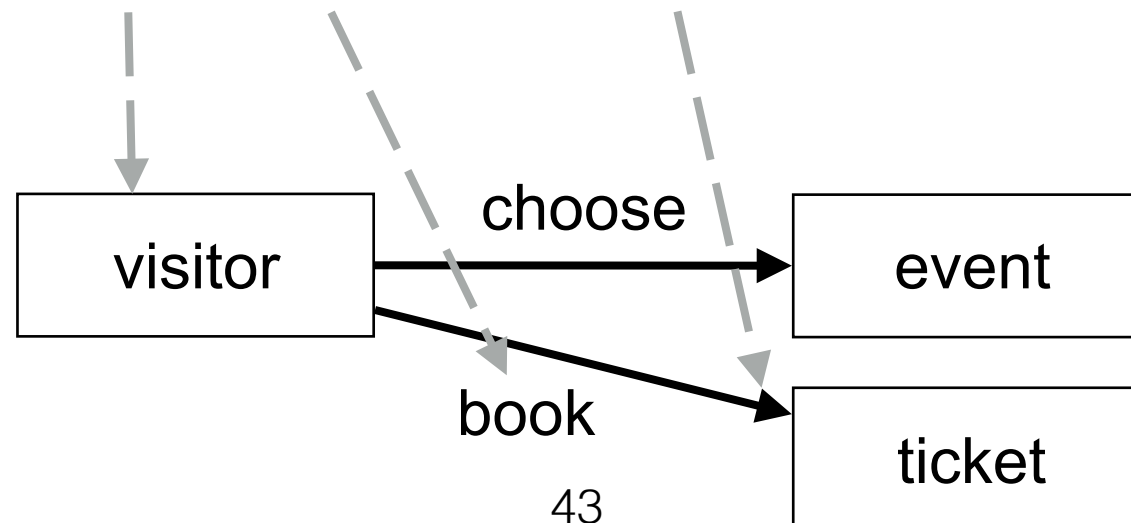
As a visitor

Means

~~I want to~~ choose an event

End

so that I can book a ticket for that event



7. Remaining information

Role

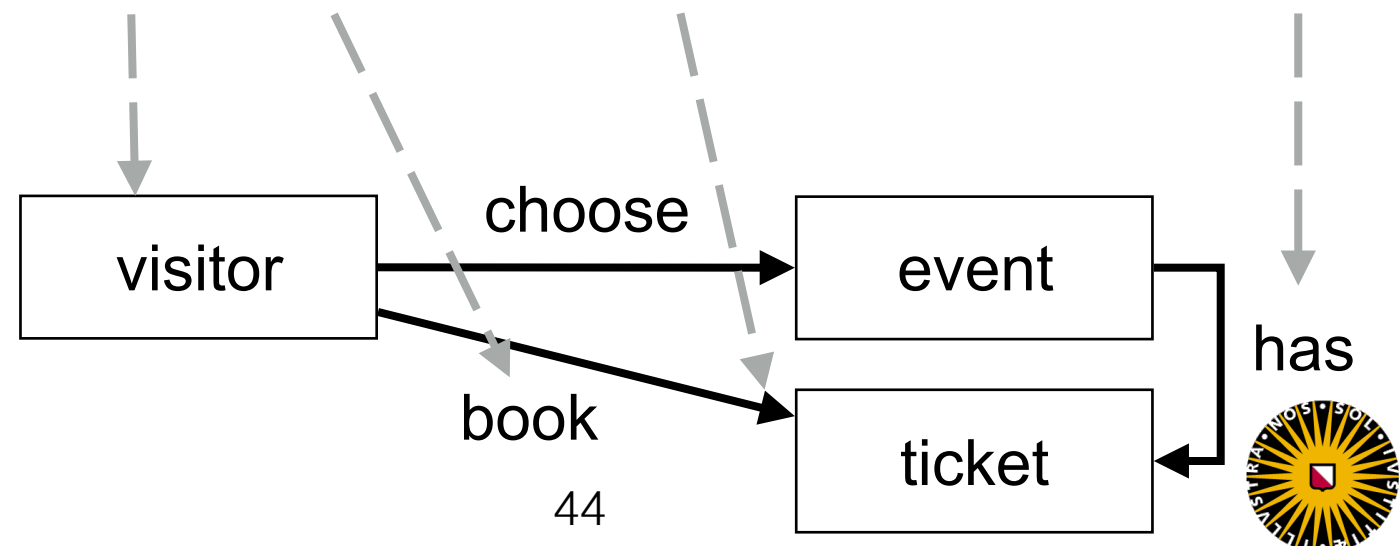
As a **visitor**

Means

~~I want to~~ **choose an event**

End

so that I can book a ticket for that event



To obtain a **holistic conceptual model** of a requirements collection, we **repeat** the extraction method for **every user story**

1. Split on Indicator

Role

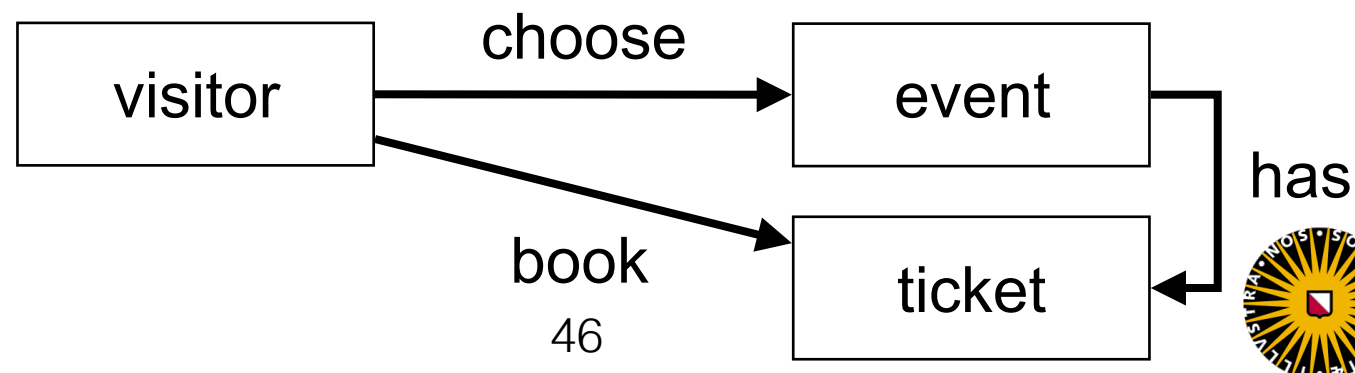
As a visitor,

Means

I want to filter on event types

End

so that I can find announcements for events I might like



2. Functional role

Role

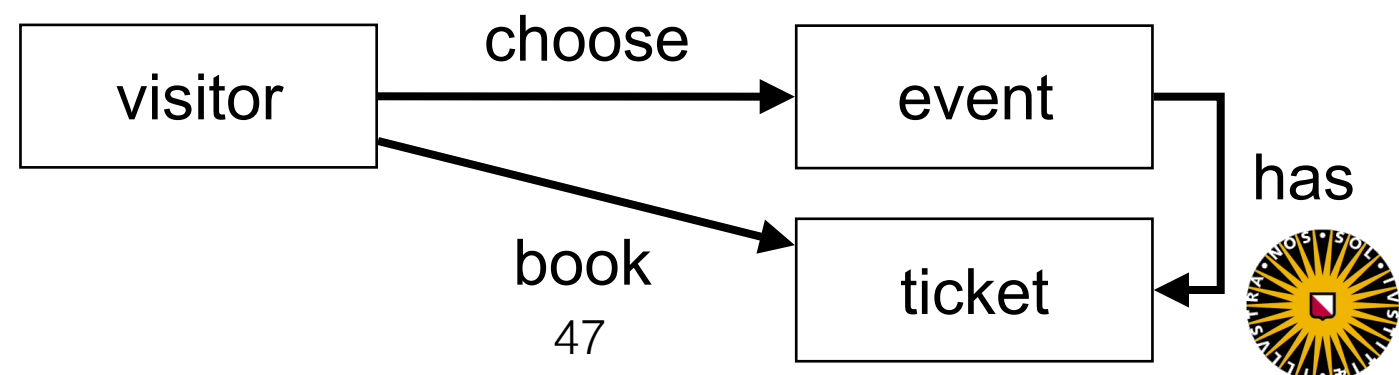
As a **visitor**

Means

I want to filter on event types

End

so that I can find announcements for events I might like



3. Simplify the means

Role

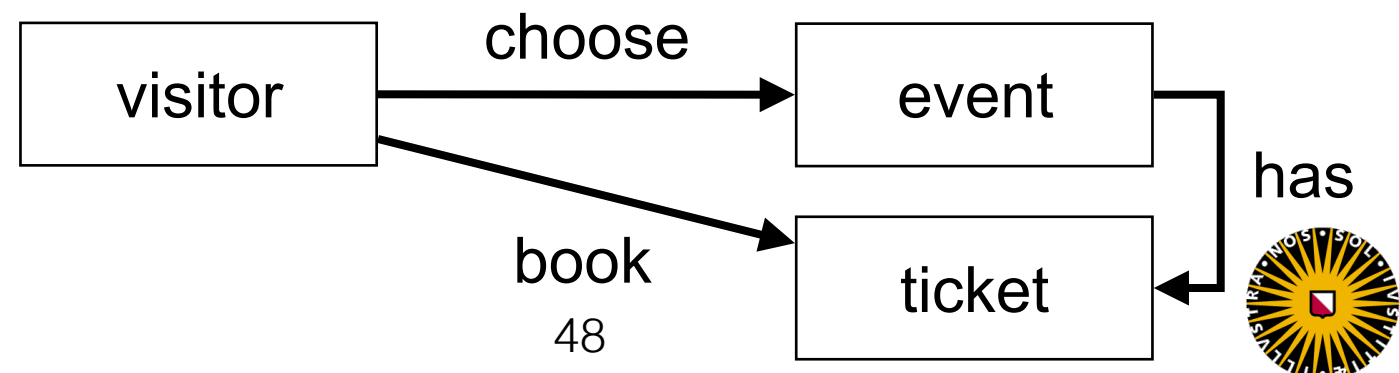
As a **visitor**

Means

I ~~want to~~ filter on event types

End

so that I can find announcements for events I might like



3. Simplify the means

Role

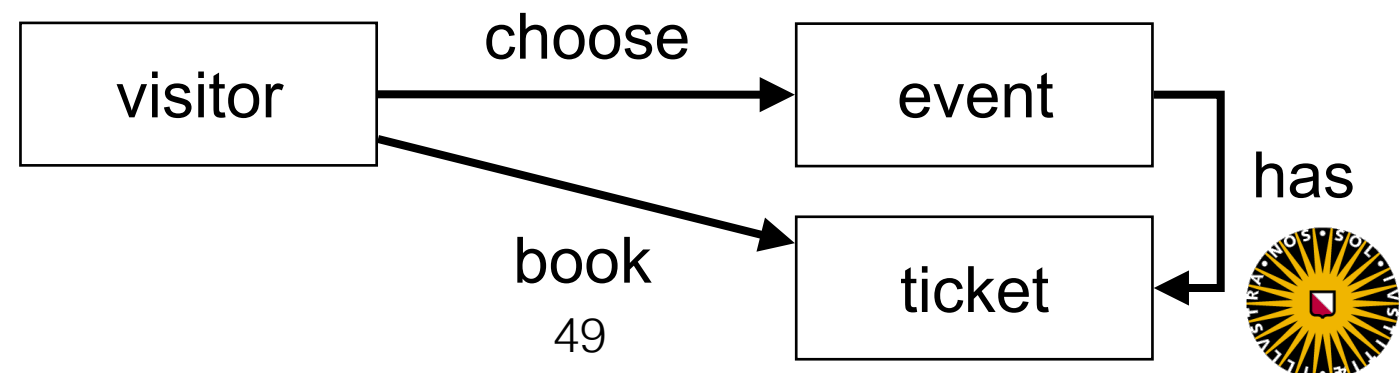
As a **visitor**

Means

~~I want to~~ filter on event types

End

so that I can find announcements for events I might like



4/5. Main verb & main object

Role

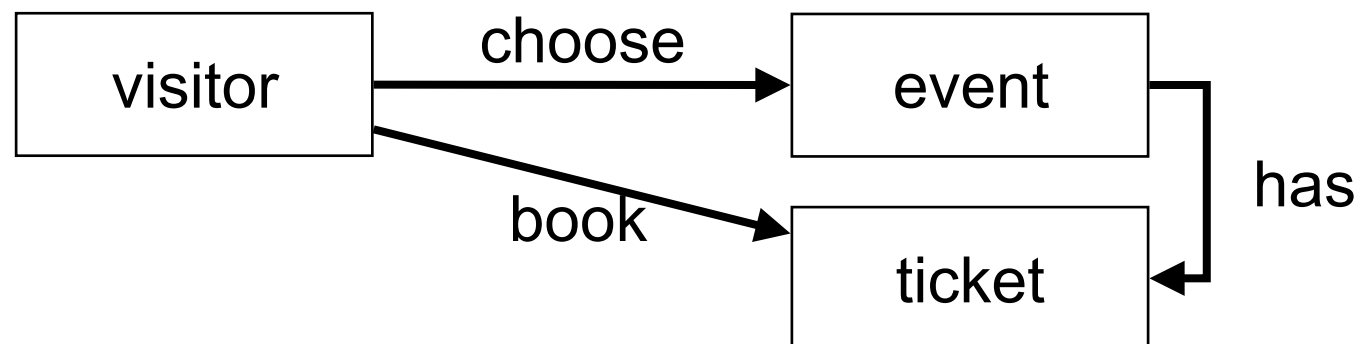
As a **visitor**

Means

I ~~want to~~ **filter on** event types

End

so that I can find announcements for events I might like



6. Main relationship

Role

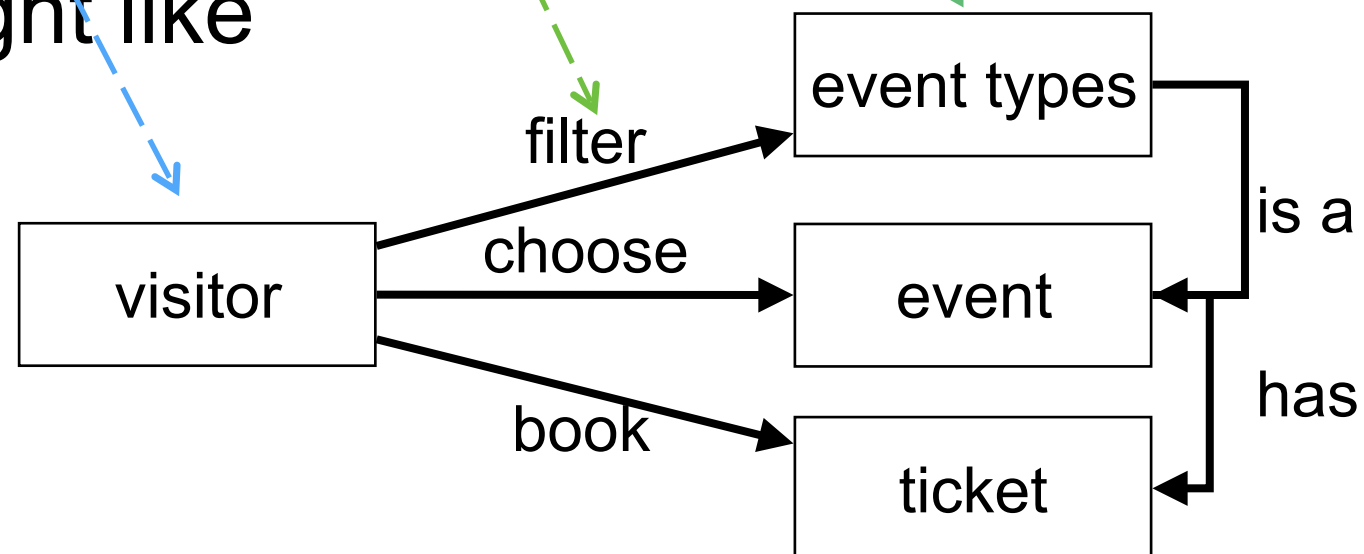
As a **visitor**

Means

I ~~want to~~ **filter on** **event types**

End

so that I can find announcements for events I might like



7. Remaining information

Role

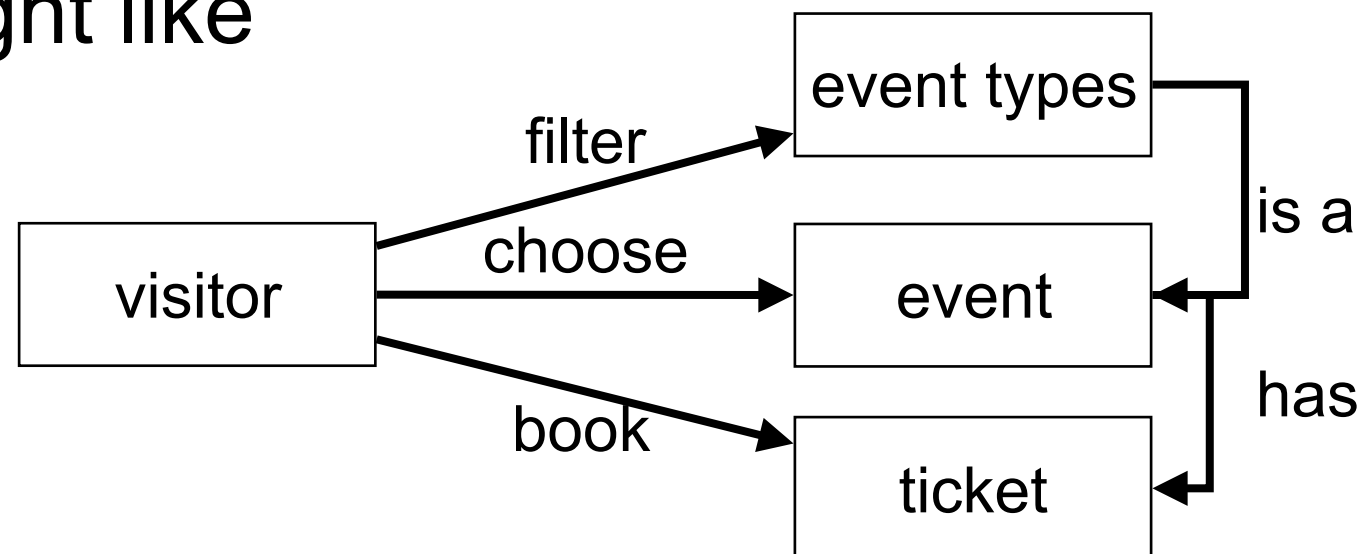
As a **visitor**

Means

~~I want to~~ **filter on event types**

End

so that I can find announcements for events that I might like



7. Remaining information

Role

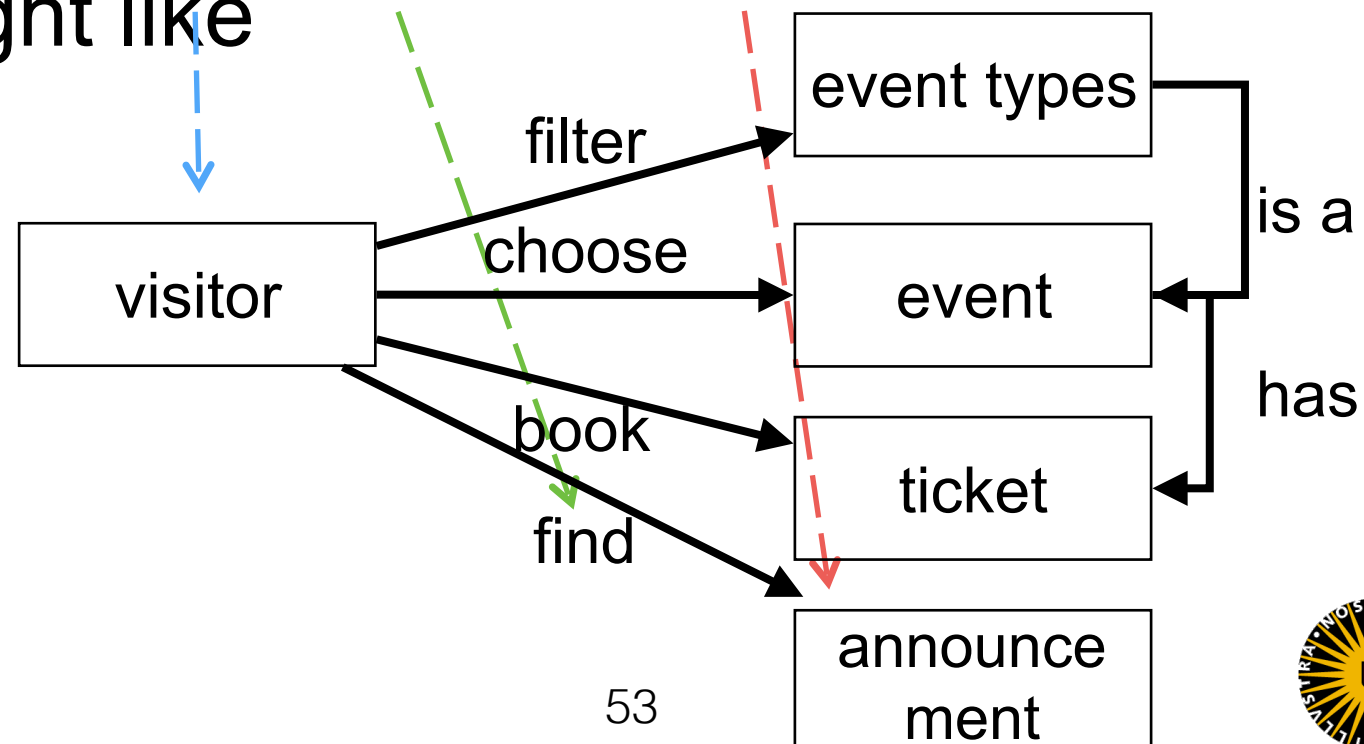
As a **visitor**

Means

I want to **filter on event types**

End

so that I can find announcements for events that I might like



7. Remaining information

Role

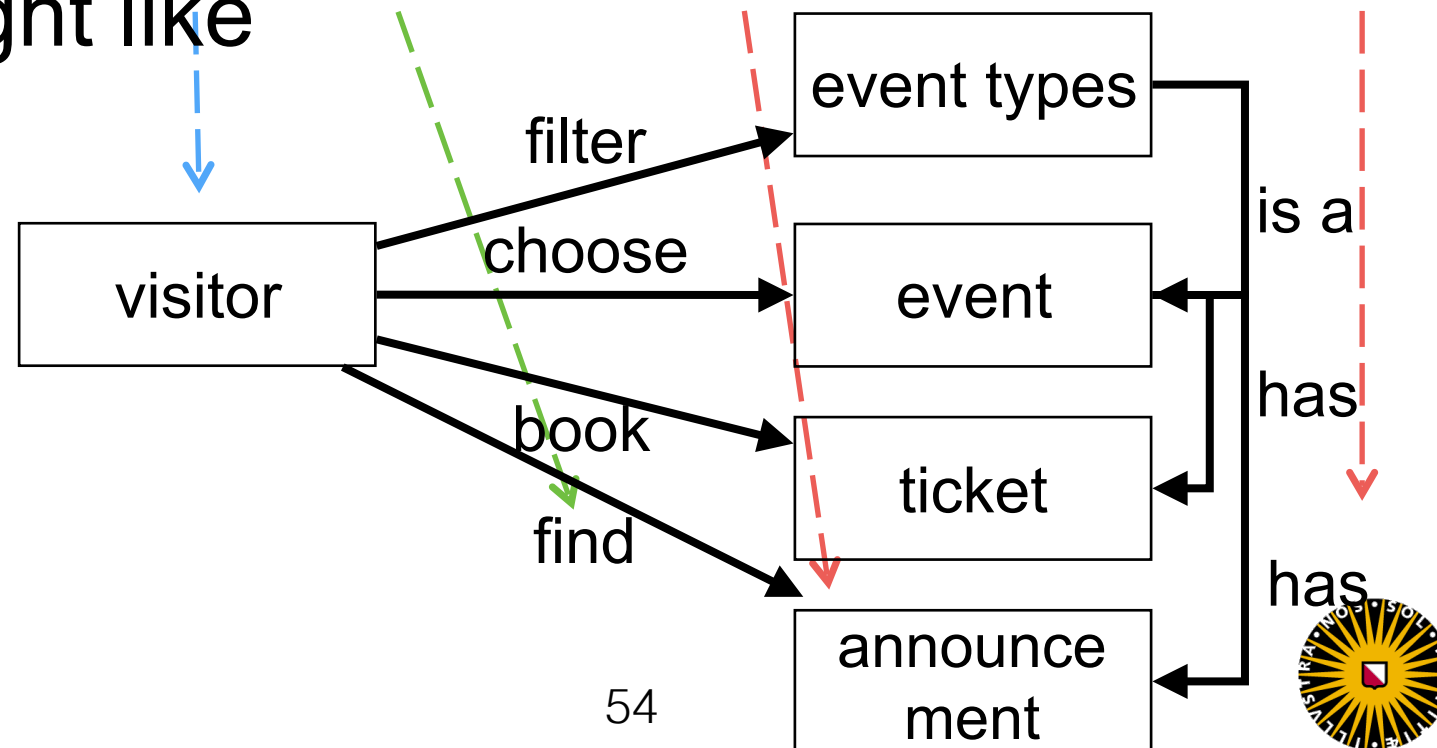
As a **visitor**

Means

I want to **filter on event types**

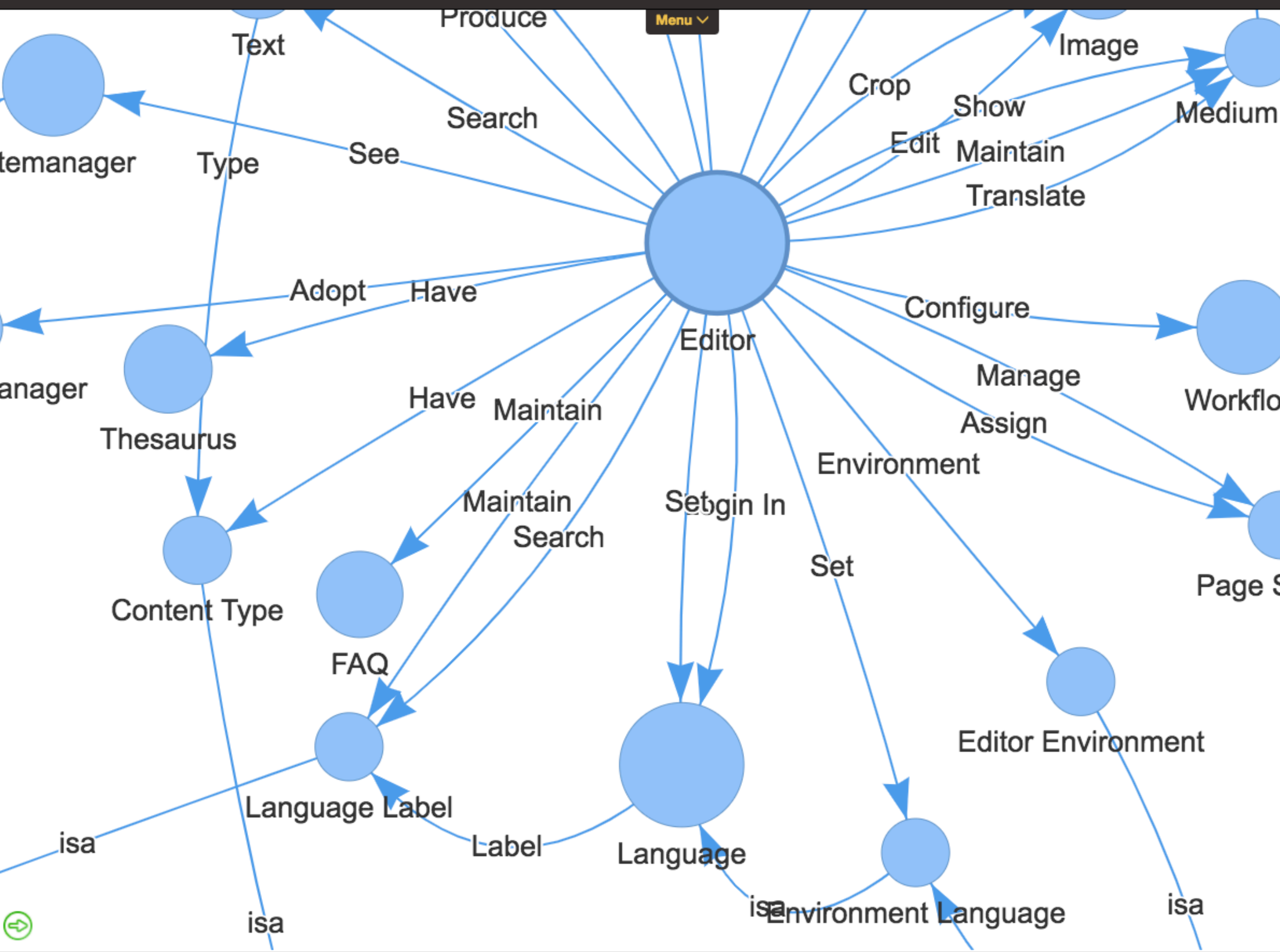
End

so that I can find announcements for events that I might like



However...

Models can get **BIG**



▼

⊗

□

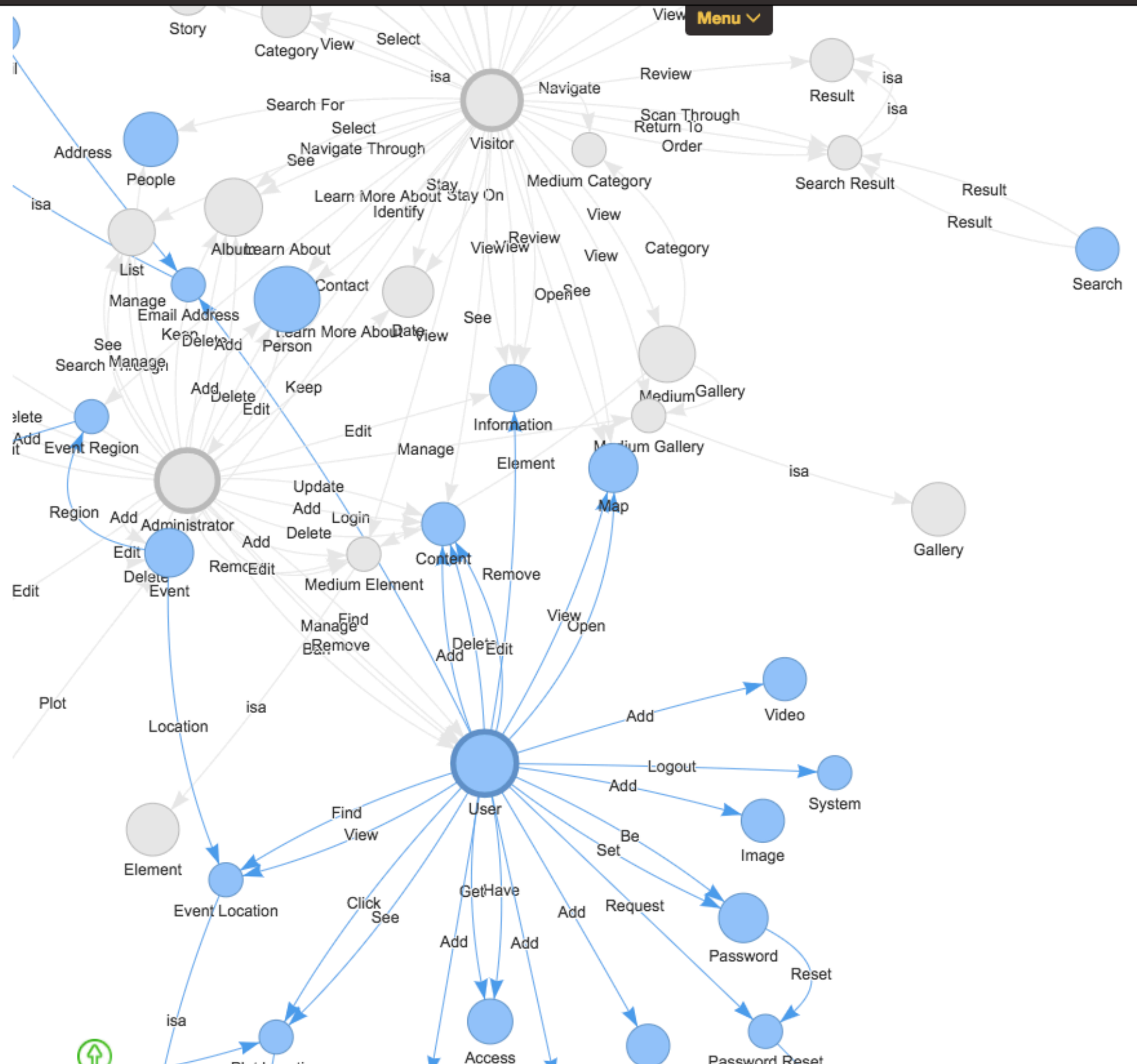
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■

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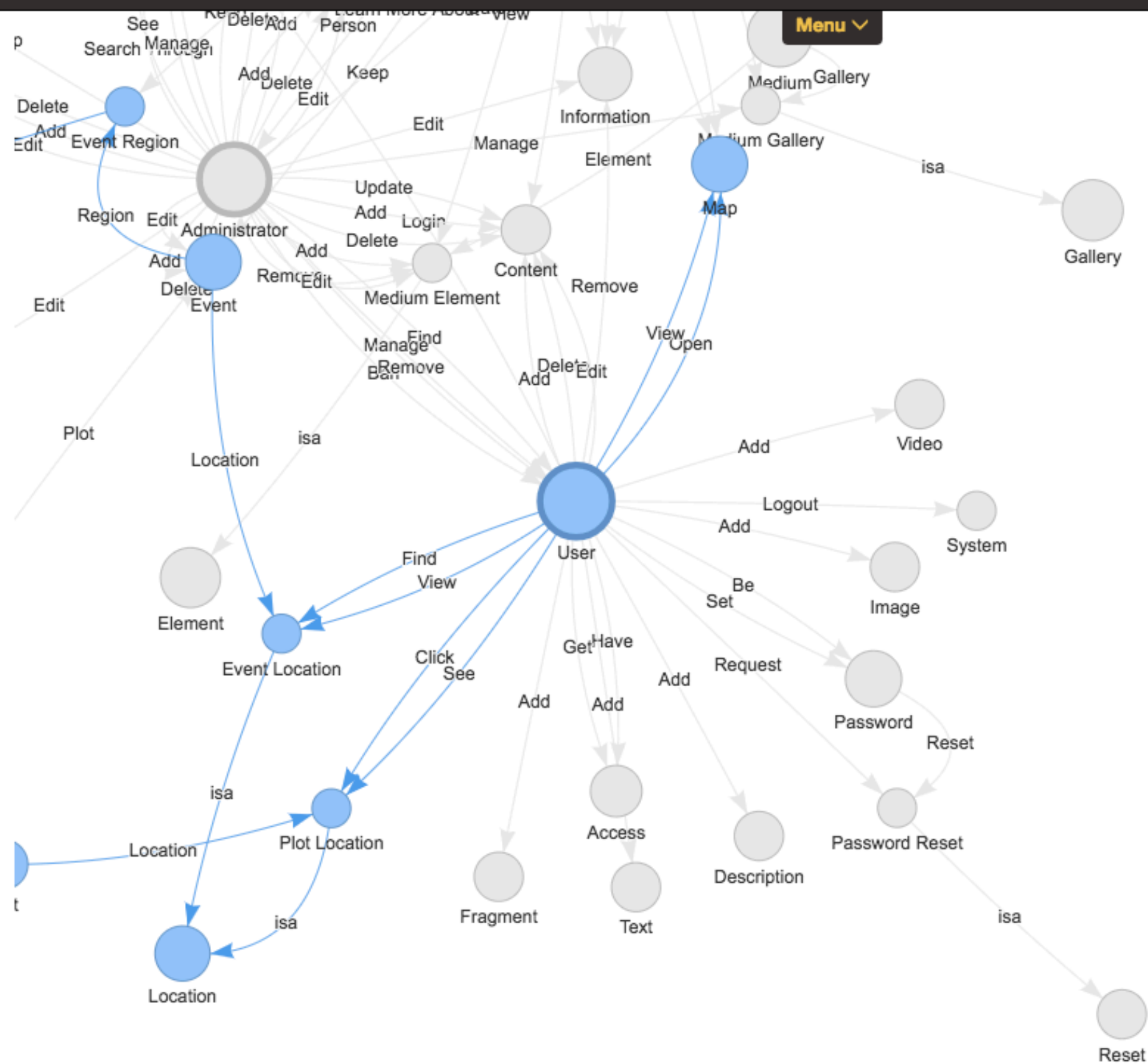


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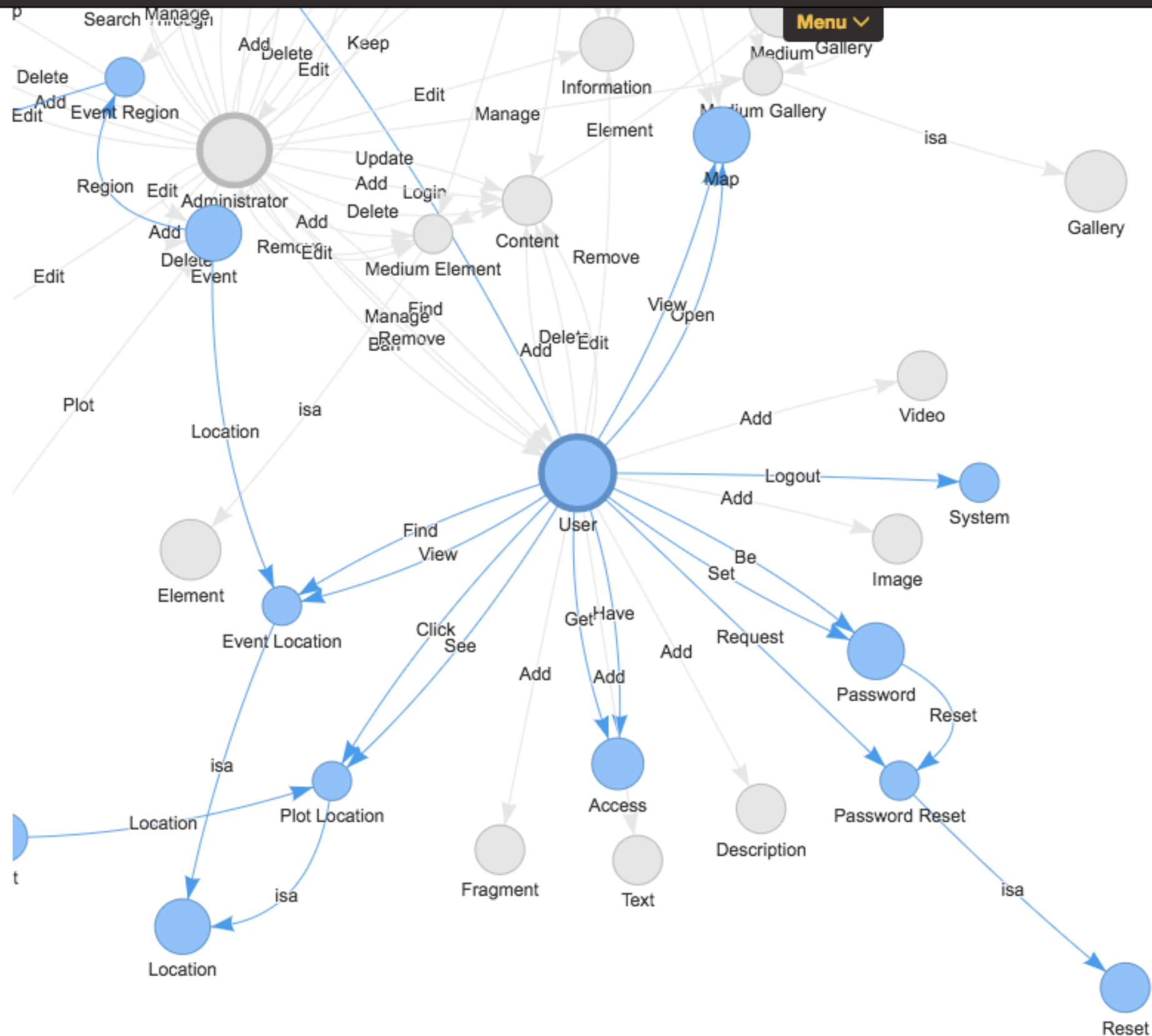
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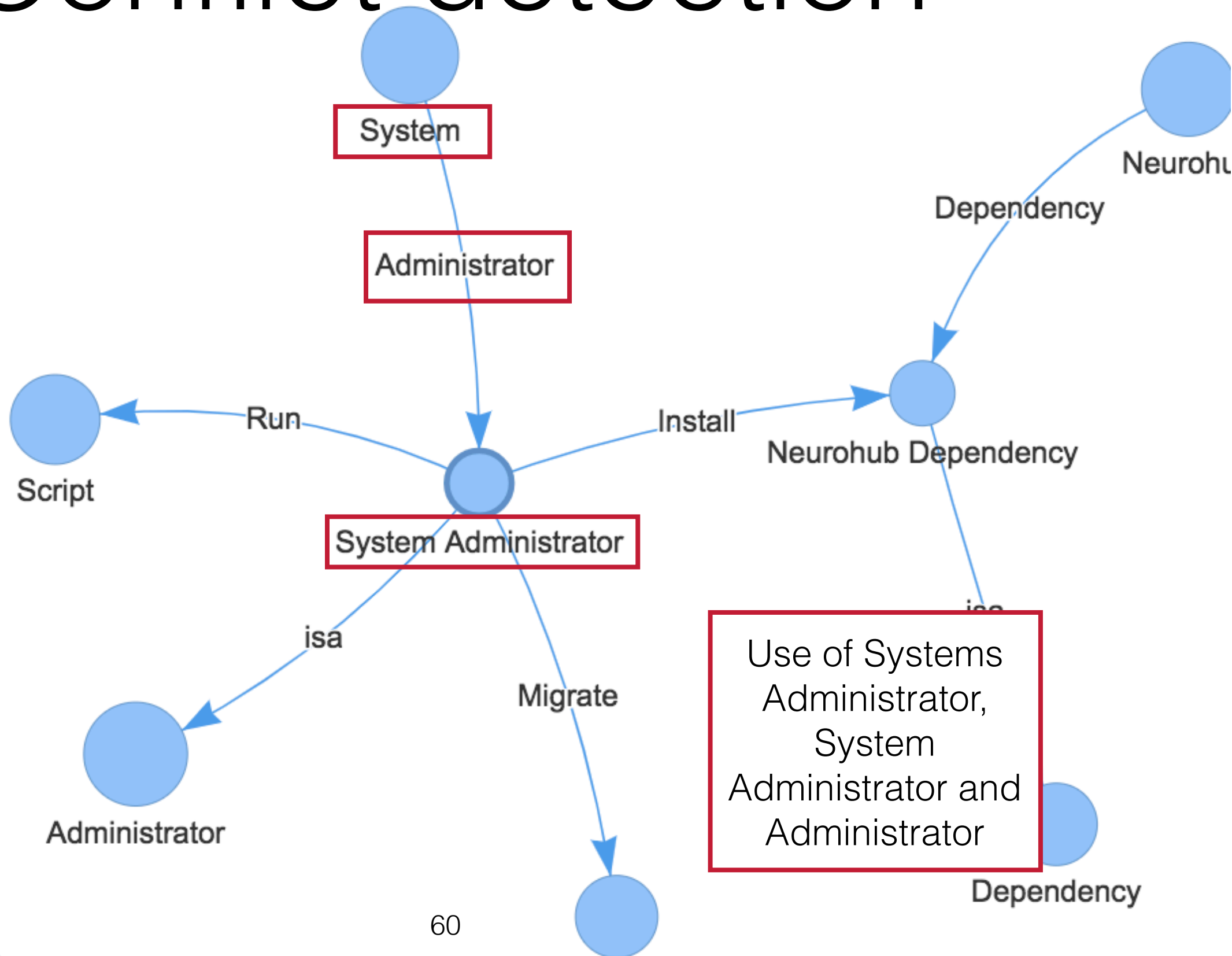
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Thres

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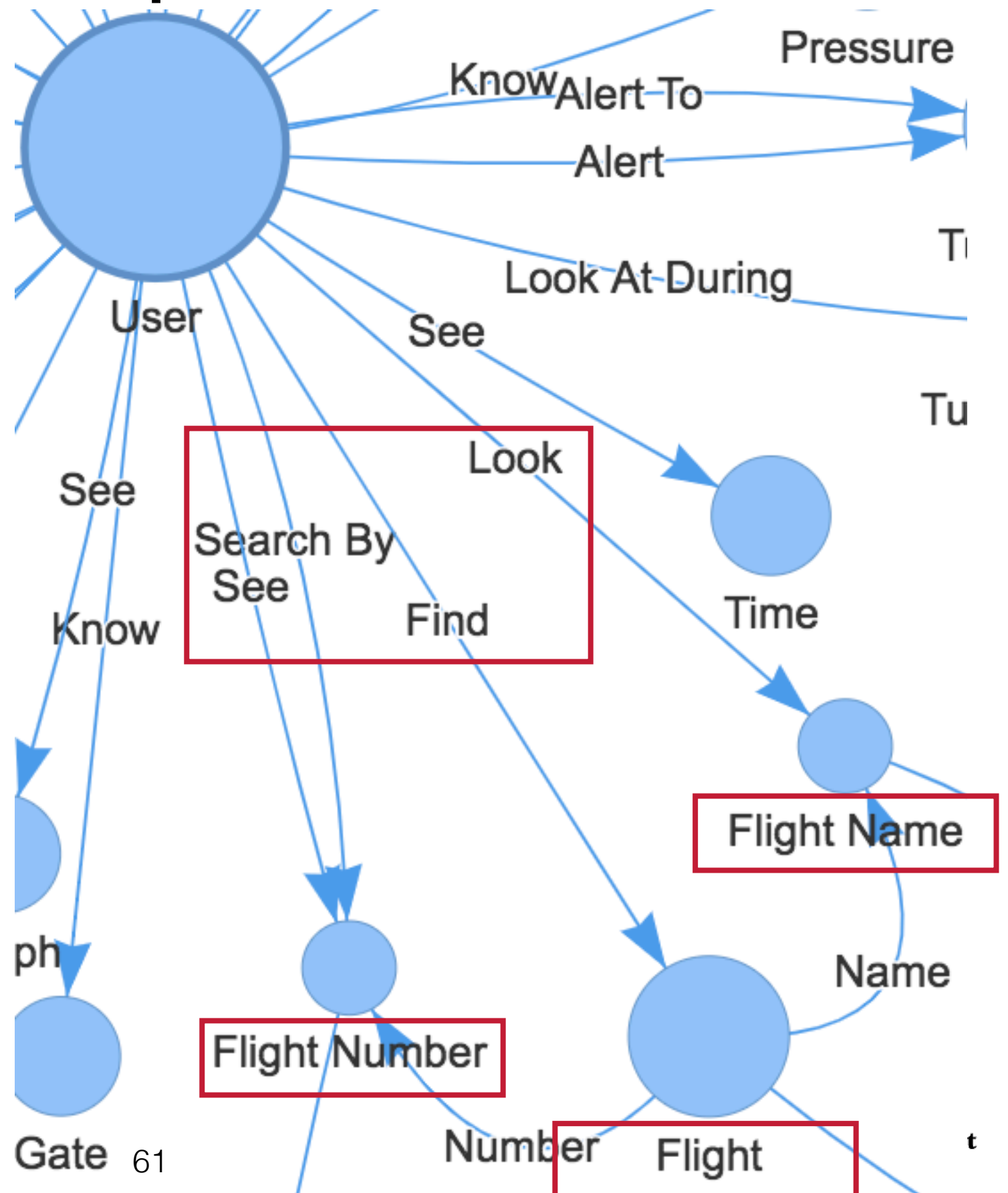
Conflict detection



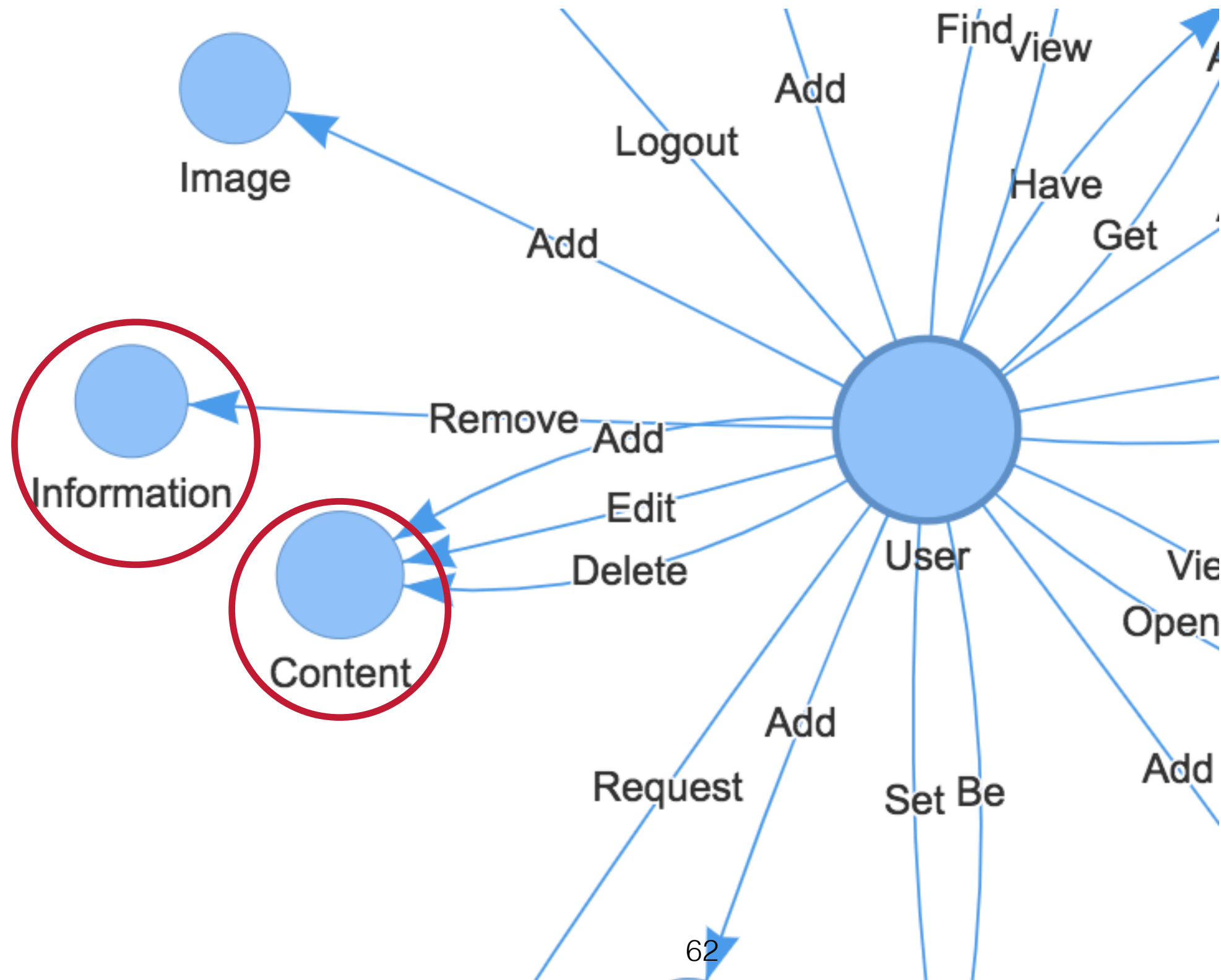
Duplicate prevention

Separate stories for:

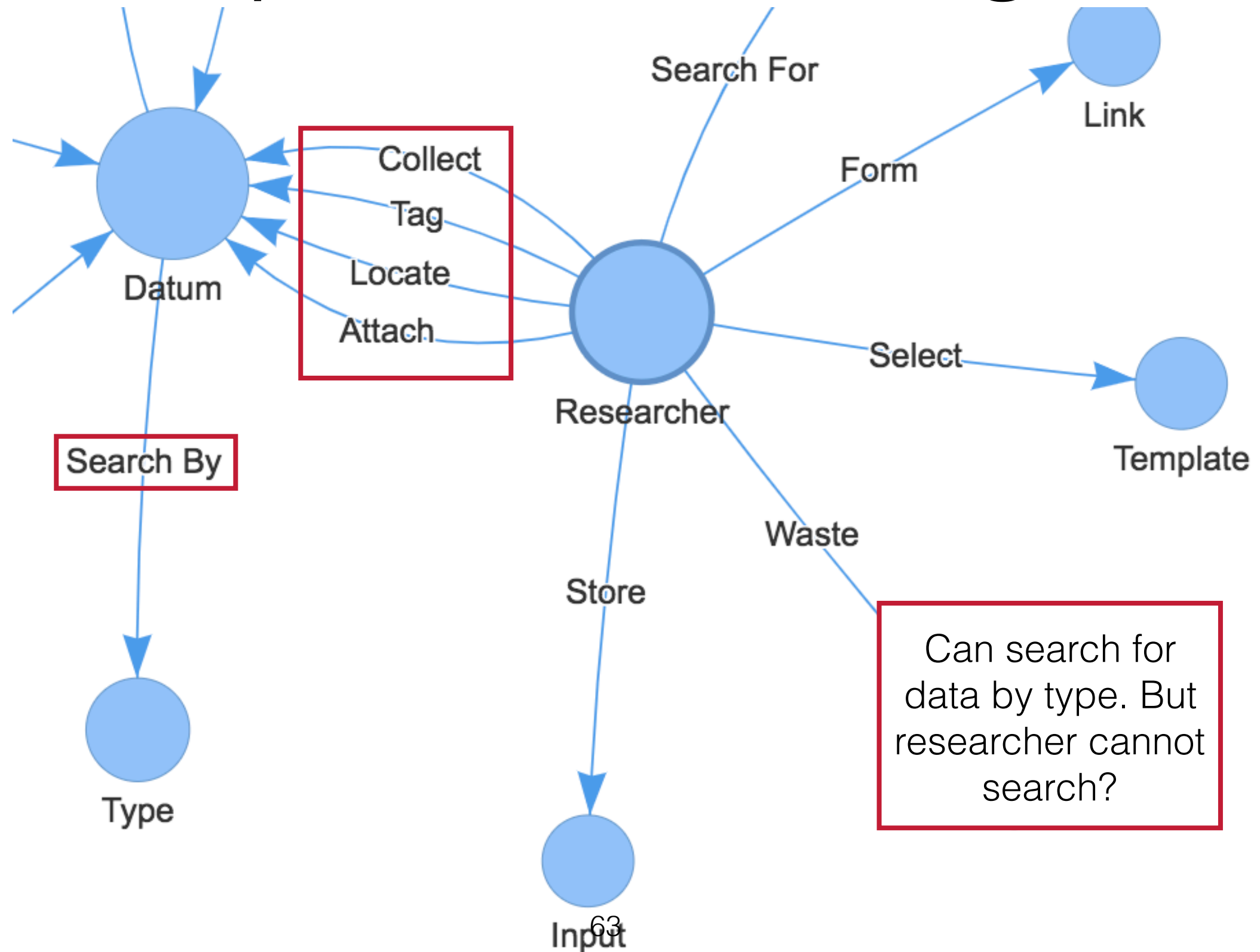
- find flight
- search flight number
- look flight name

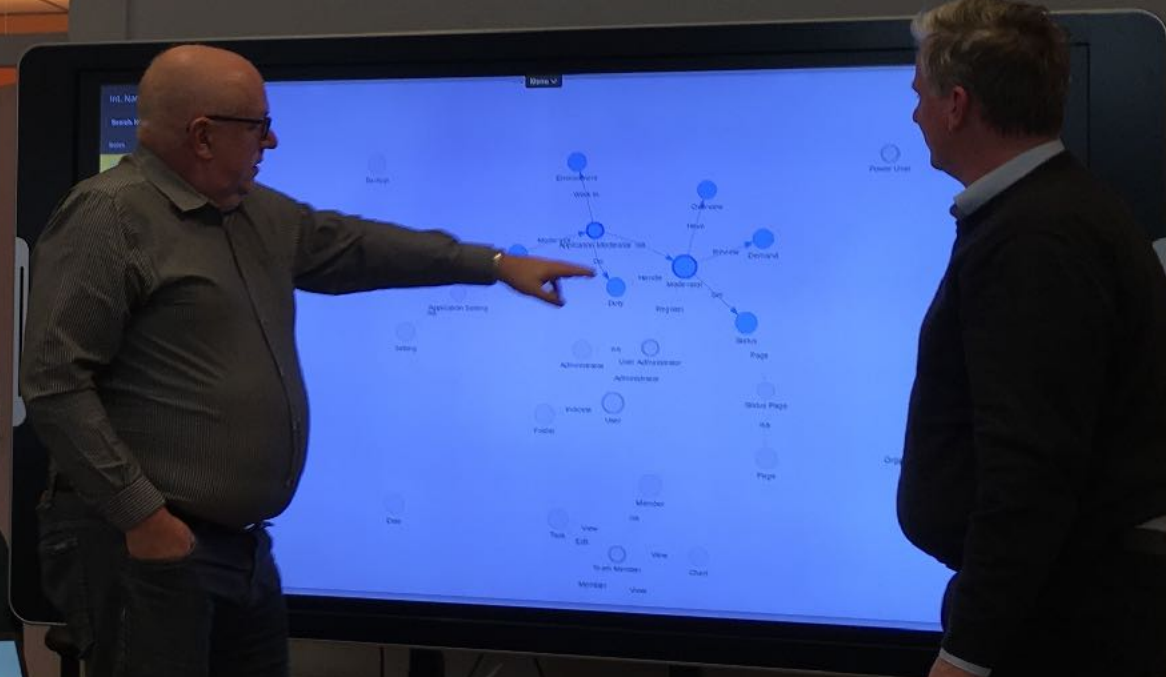


Ambiguity resolution



Incompleteness mitigation





Future work

- Machine Learning techniques
- Perfect Recall?
- Beyond User Stories

Beyond User Stories

Inspired by insightful discussions with, critical feedback from and good questions by curious audiences

- User Stories are *not* universally applicable
 - Technical requirements
 - Bugs
 - Requirements without a clear stakeholder
- Interesting *alternatives*:
 - Feature Driven Development (De Luca)
 - Job Stories (Klement)
 - The *whatever* approach? (everyone and no one)
- *When* is *what* approach suitable?

Alternative 1: technical ‘stories’

Feature Driven Development

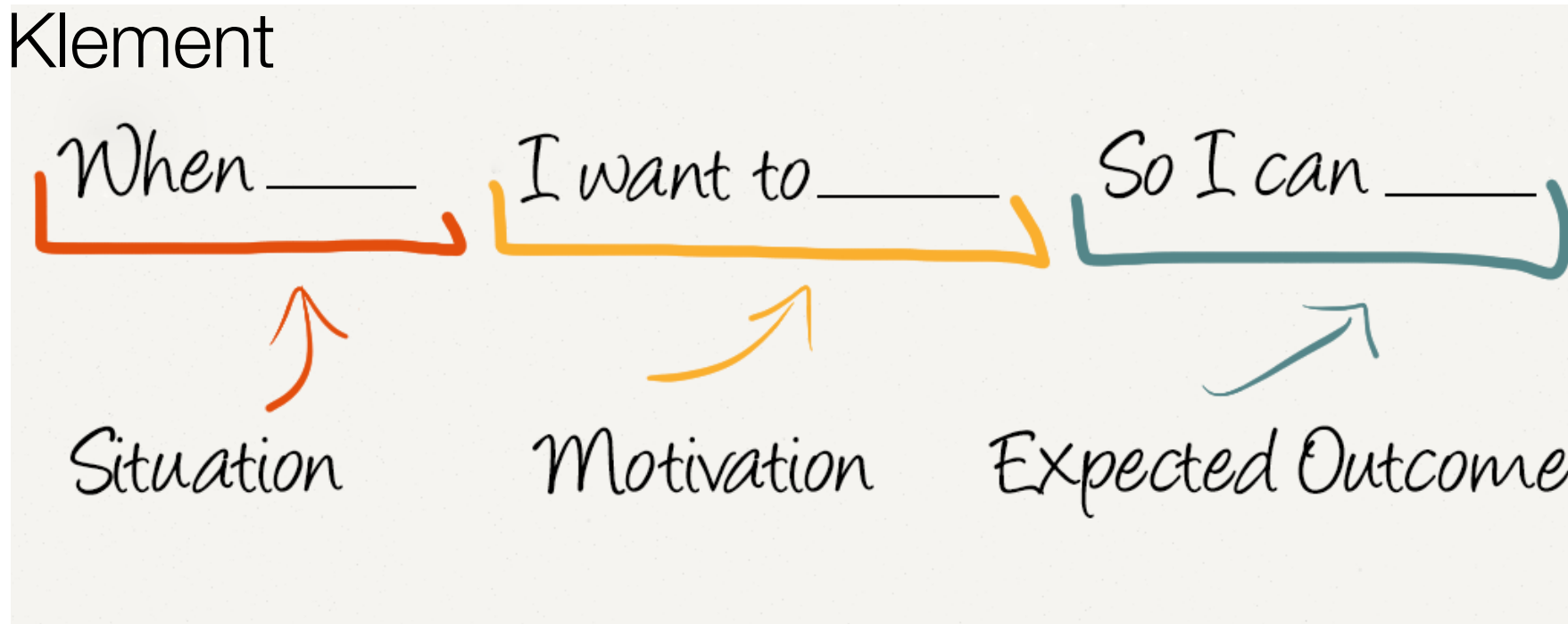
By Jeff de Luca

- *<action> the <result> <by/for/lof/to> <object>*
 - Estimate the closing price of stock
 - Generate a unique identifier for a transaction
 - Change the text displayed on a kiosk
 - Merge the data for duplicate transactions

Alternative 2: context-rich epics

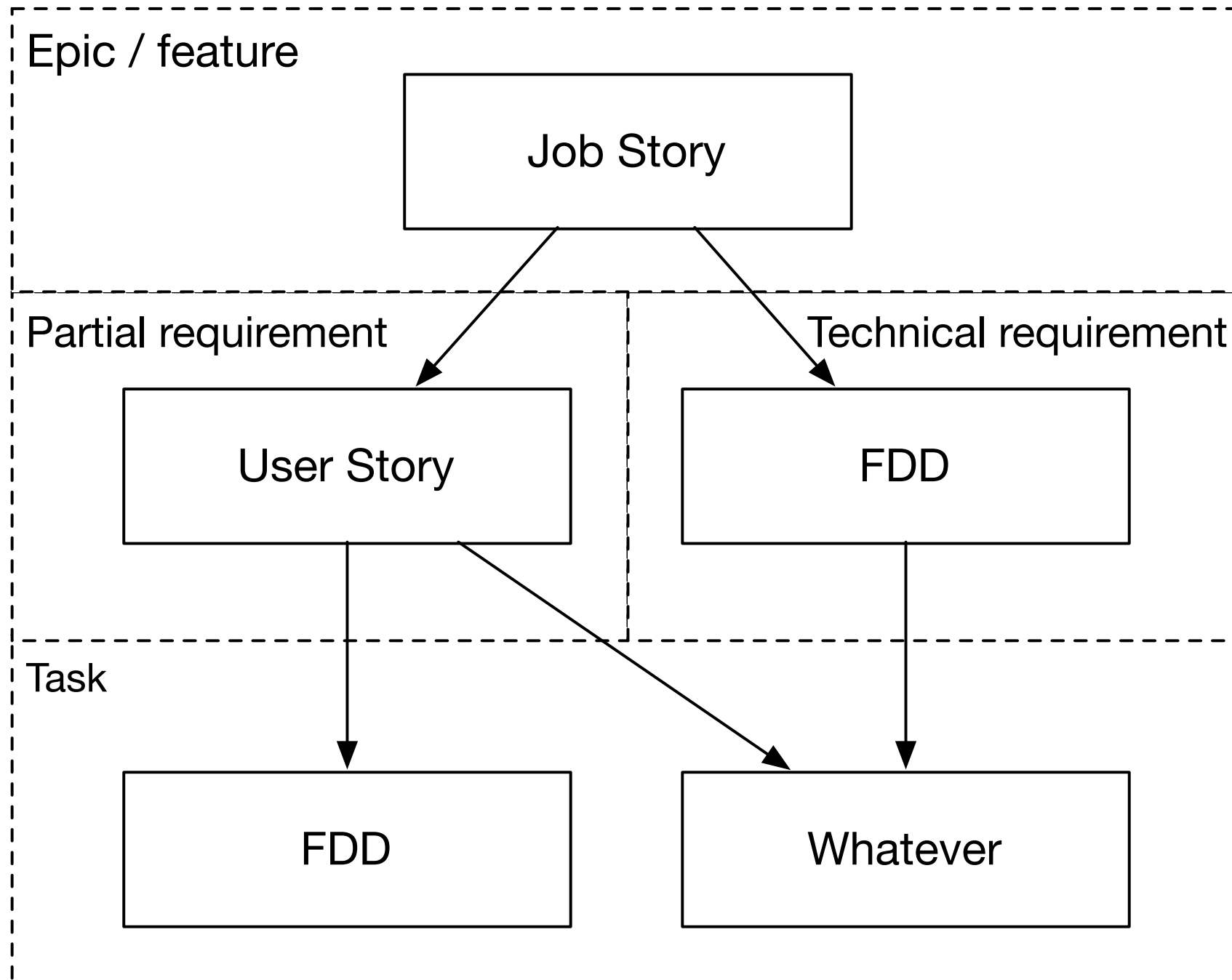
Job Stories

By Alan Klement



- **Example:** When an item does not have an estimate or has an estimate I'm not happy with, I want to be able to restart the estimation process and notify everyone, so that the team knows a particular item needs to be estimated upon.

Agile Requirements Engineering



Agile Requirements Engineering

Granularity level	RE Format	Rationale
Epic / big feature	Job Story	<ol style="list-style-type: none">1. Need as much context as possible2. Lightweight, yet exhaustive3. Multiple stakeholders -> US inappropriate
User story / partial requirement	User Story	<ol style="list-style-type: none">1. One stakeholder2. If more, duplication is recommended3. Easy to use4. Yet some structure for documentation
Technical partial requirement	FDD	<ol style="list-style-type: none">1. Stakeholder unclear or unnecessary2. Simple directive, instead of problem to solve
Bugs, team enhancements, tasks?	Whatever approach?	<ol style="list-style-type: none">1. Speed is of the essence2. No clear stakeholder3. Documentation unnecessary

Thoughts?

- *Flexibility* is necessary: big feature or technical requirement with *clear stakeholder*? User story!
- Quality requirements? FDD *too lightweight*?
- Is the *whatever* approach always wrong?



Thank you!

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Respondents that follow **quality guidelines** are more positive.
 Respondents applying **INVEST** are even more positive.

n=72

n=43

n=60

