Human-Computer Interaction

CPSC 481 - Winter 2019

User-Centered Design

Adapted from Tony Tang

Why a process?

- …
- Directs us toward final product
- Helps us stay on schedule and on cost
- Helps us to communicate with others
- More reliable than intuition
- Forces us to **iterate**
- Helps to **keep the users first**

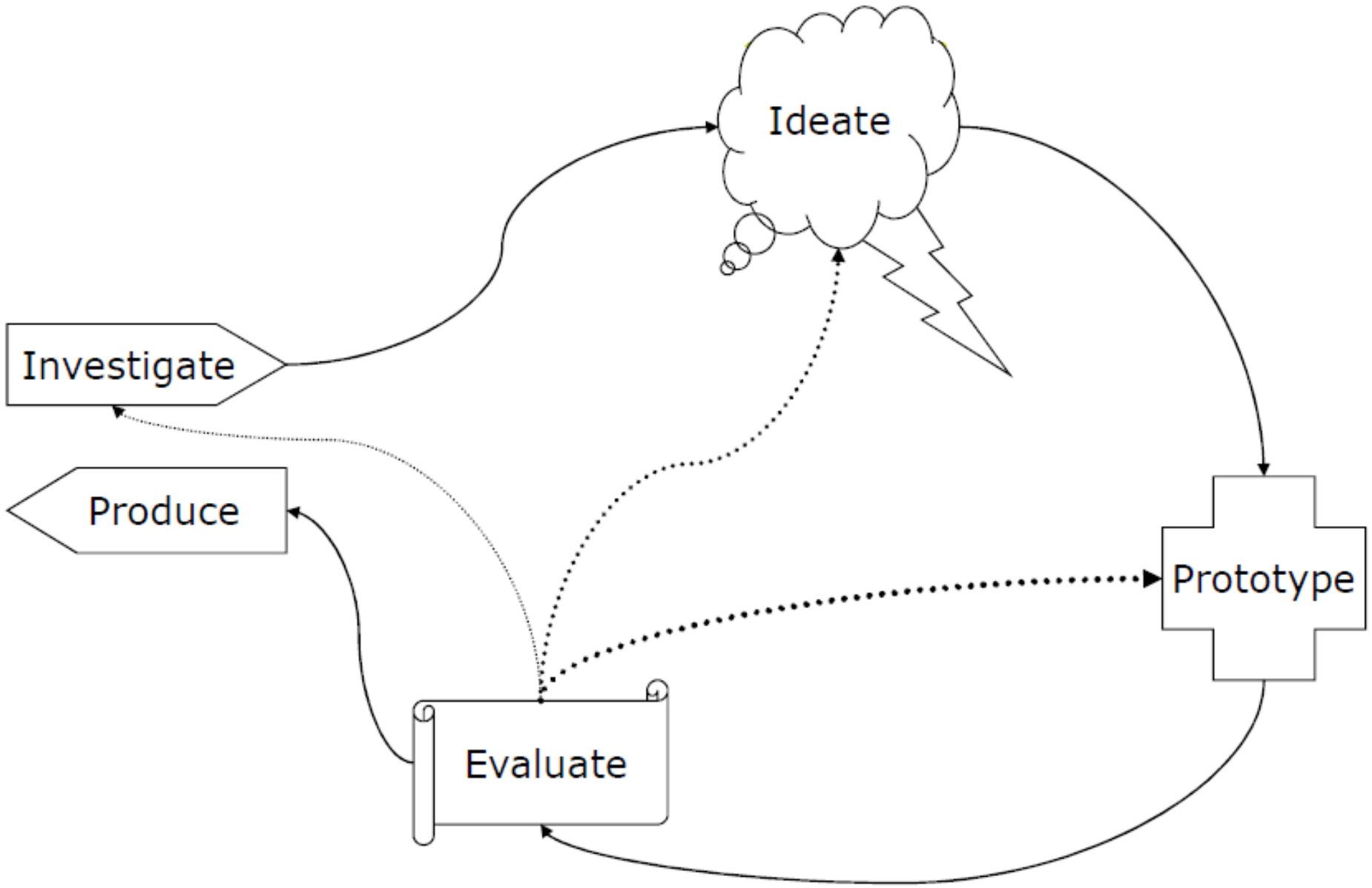
User-Centered Design (UCD)

- An iterative design process that makes use of knowledge through **investigation** of a domain of work/play to create **ideas** and **prototypes**.

- **Prototypes** are used for **evaluation**, and to further stimulate investigation, and **idea** and **prototype** generation.

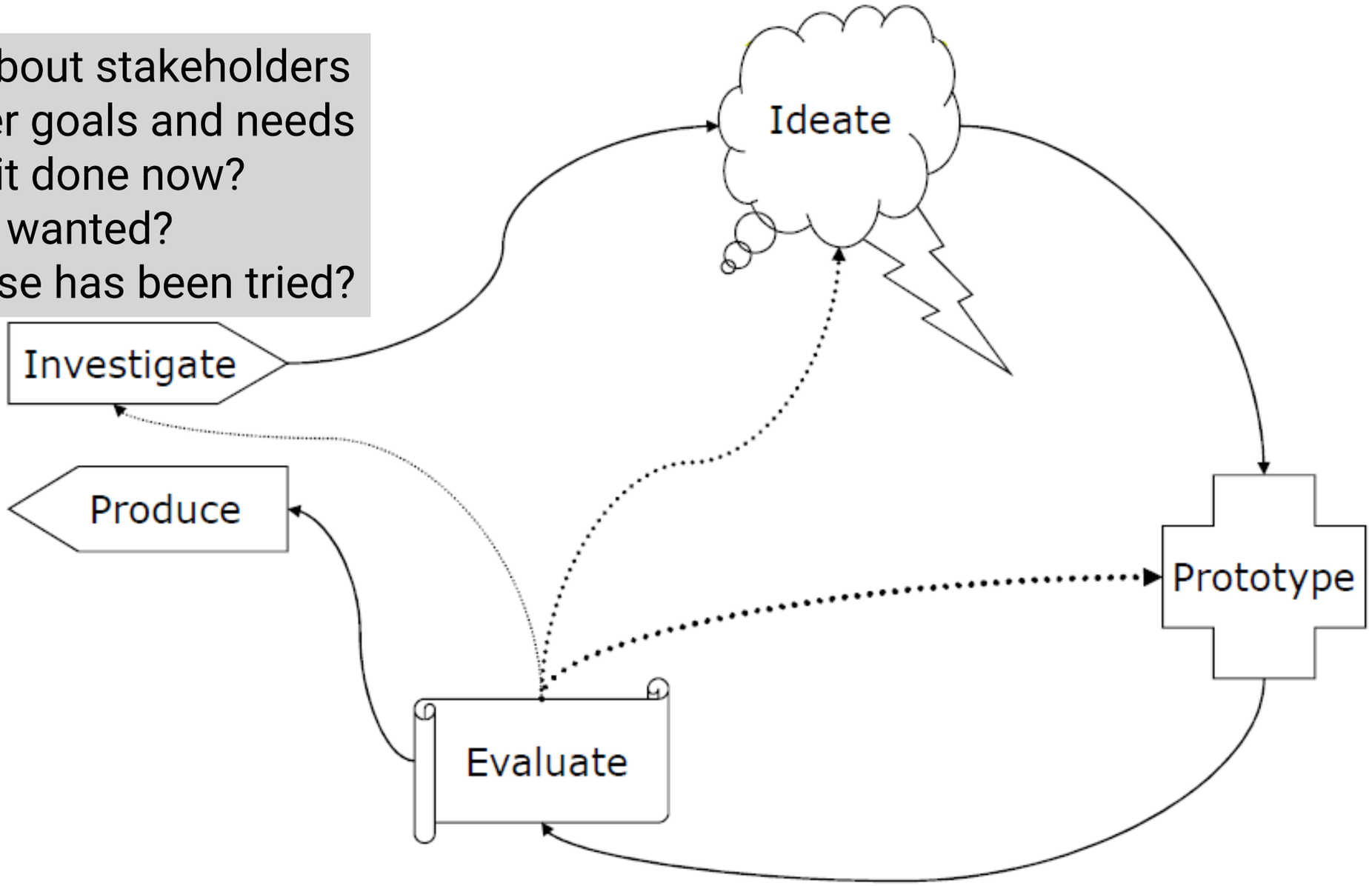
- These **prototypes** and **evaluations** are used to aid in **production**.

User-Centered Design (UCD)



User-Centered Design (UCD)

- Learn about stakeholders
- Discover goals and needs
- How is it done now?
- What is wanted?
- What else has been tried?



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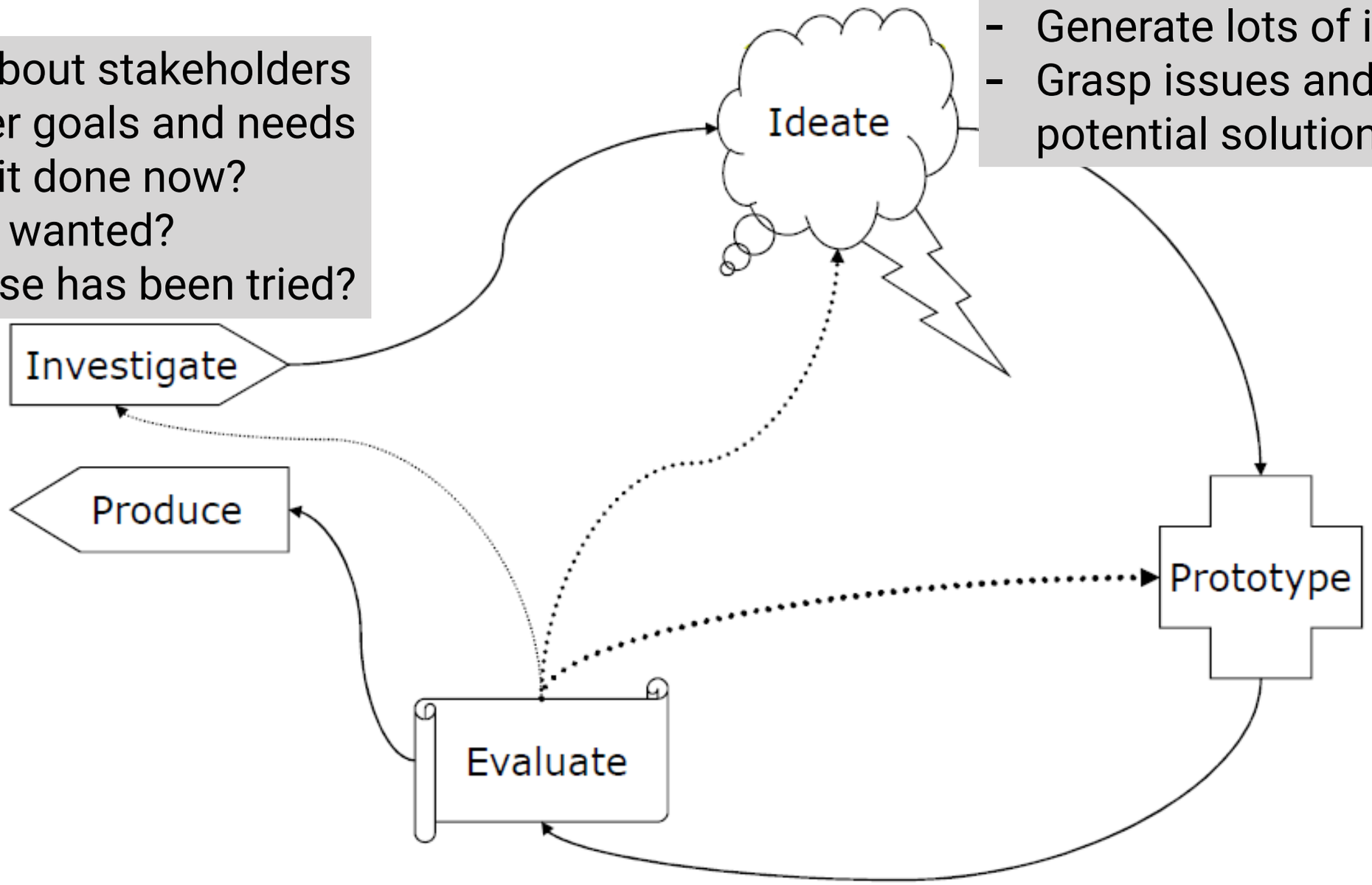

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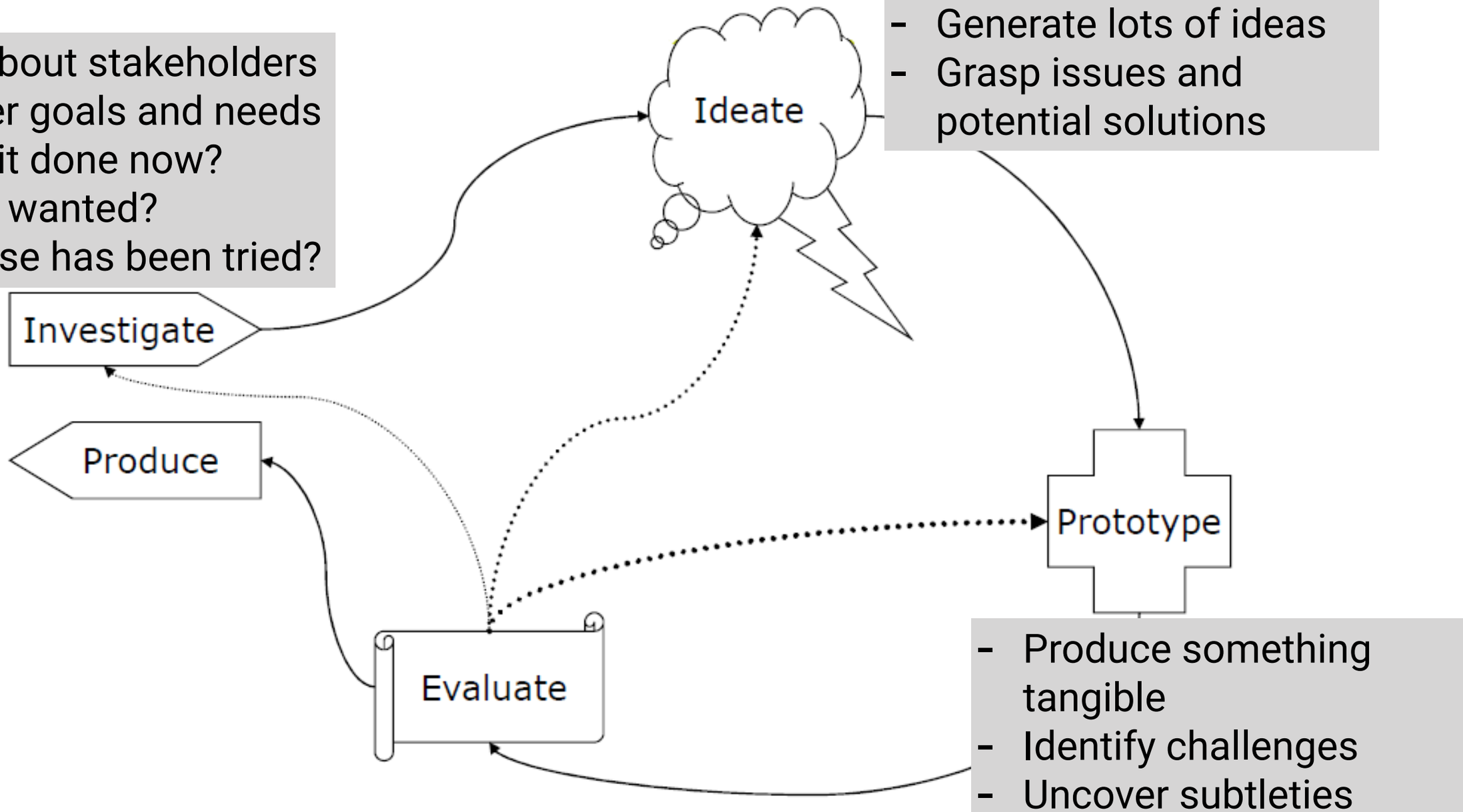

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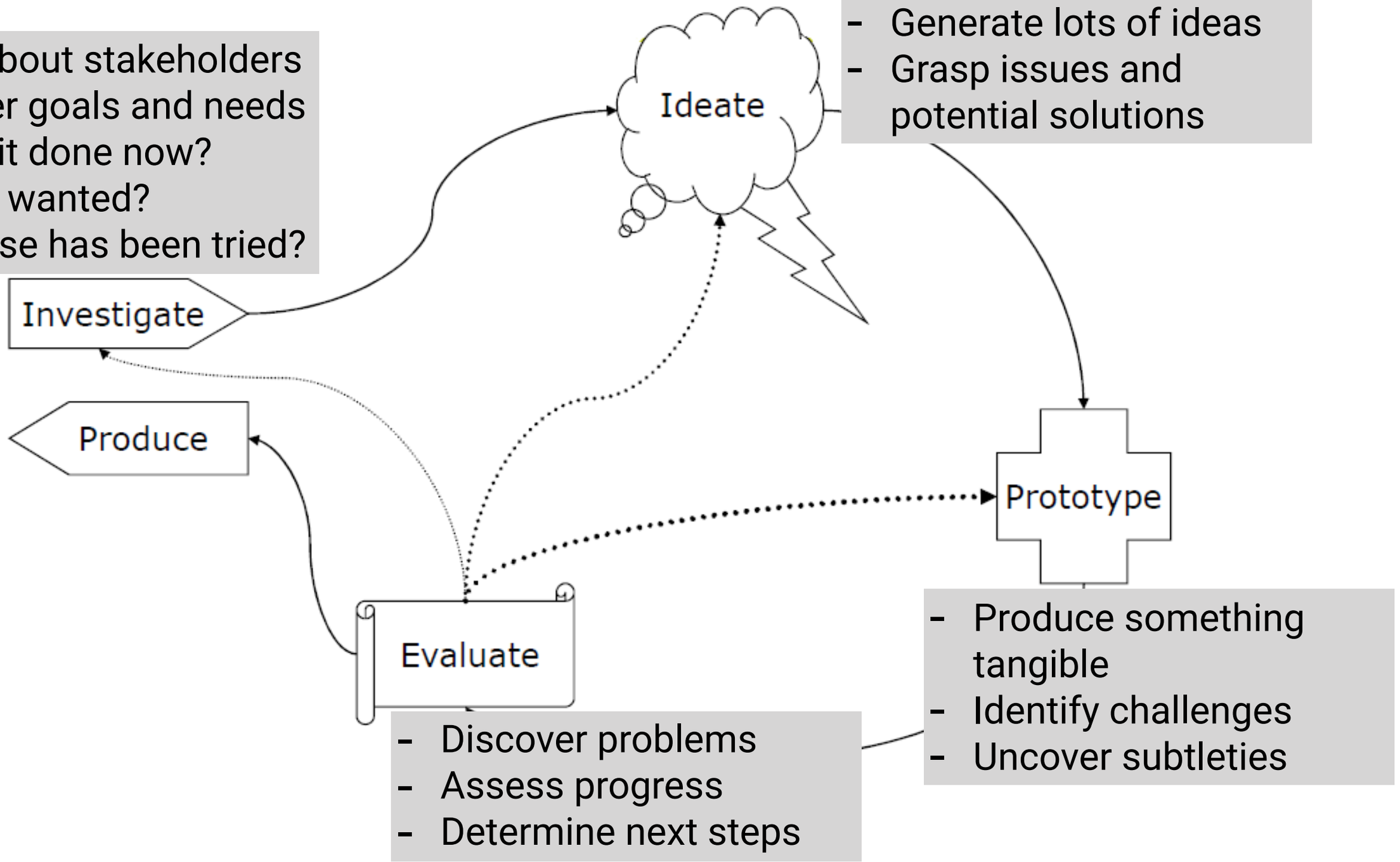

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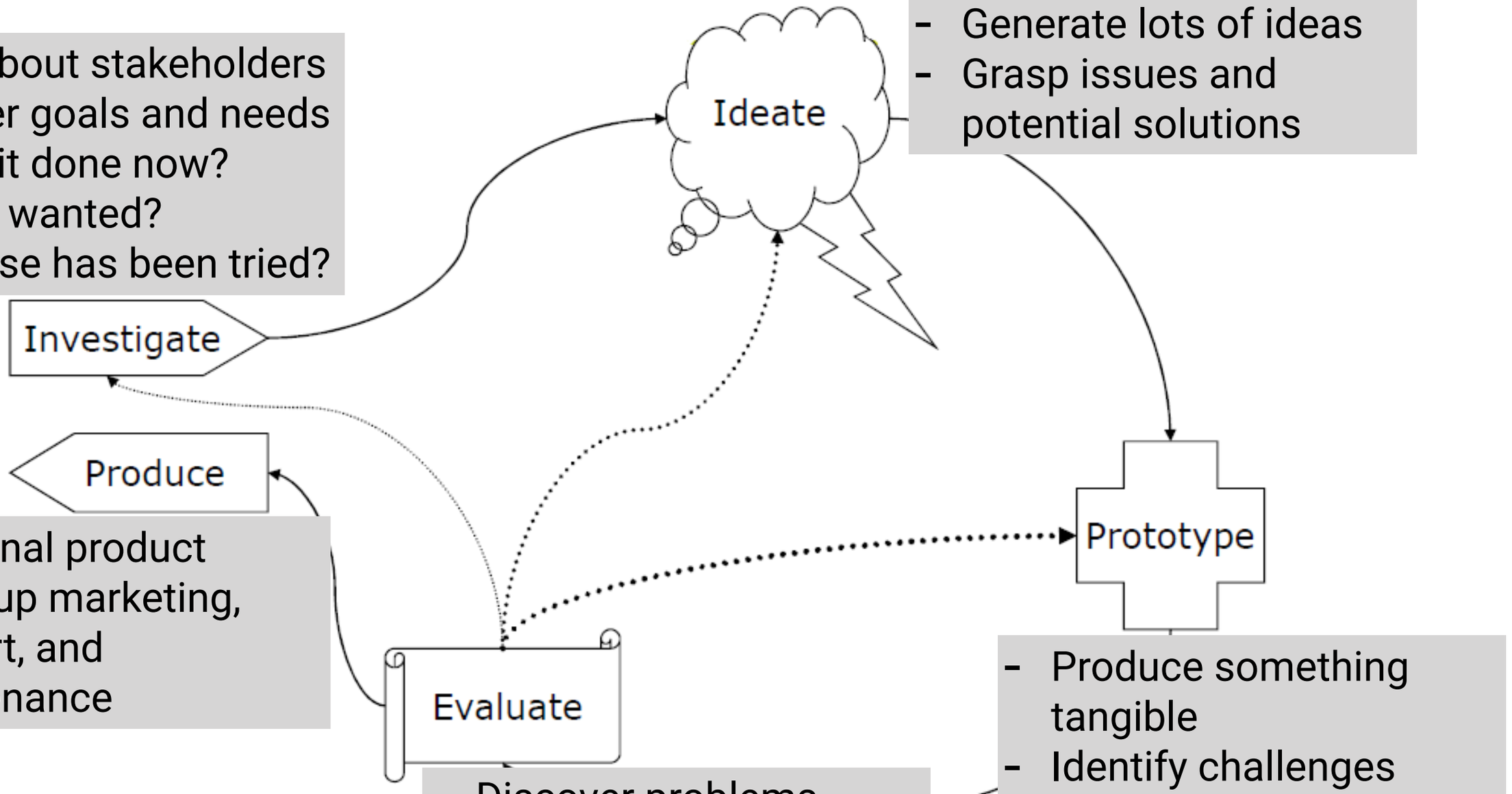

- Generate lots of ideas
- Grasp issues and potential solutions

- Build final product
- Ramp up marketing, support, and maintenance

- Produce something tangible
- Identify challenges
- Uncover subtleties

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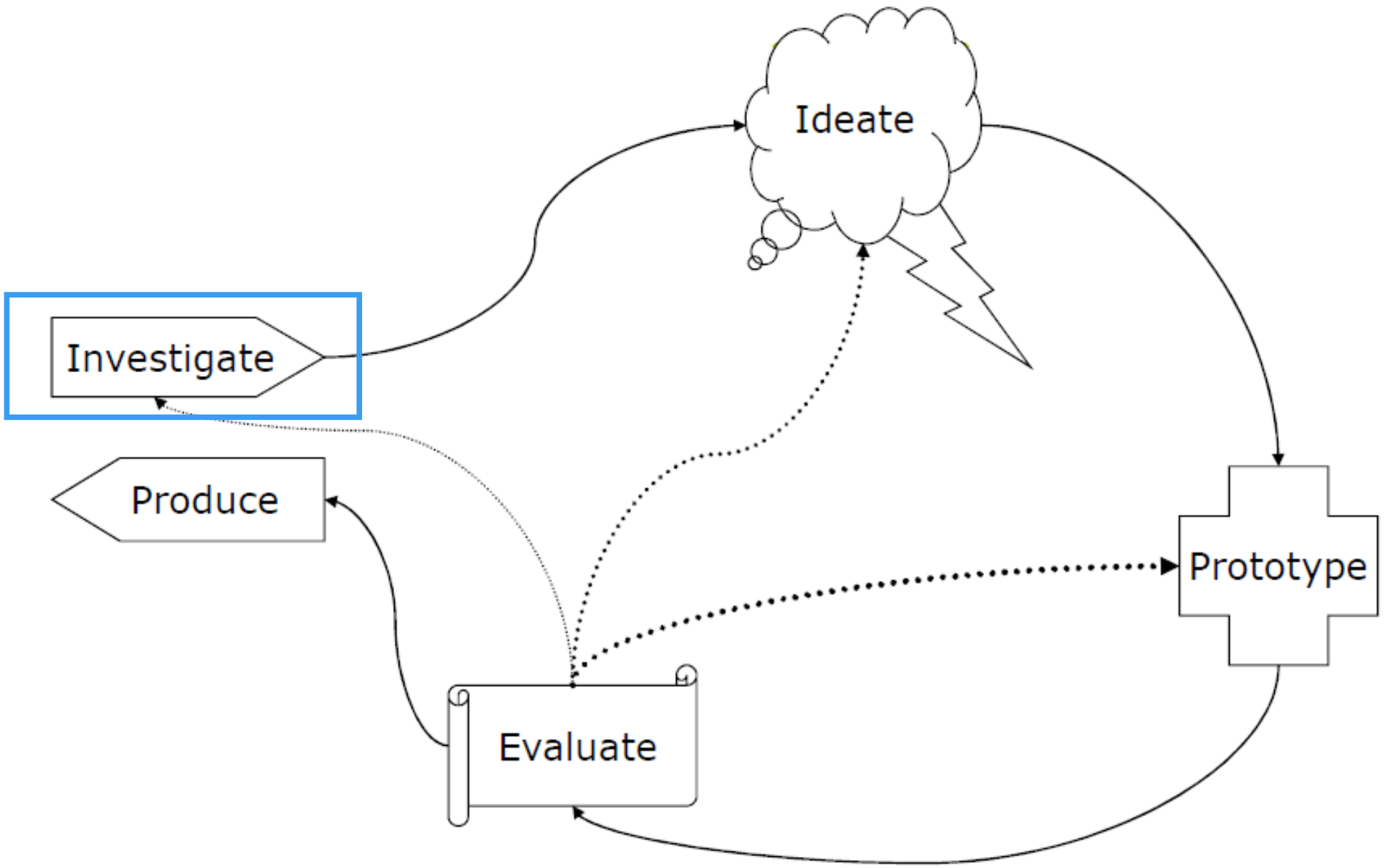
Investigate



Why Investigate?

Why Investigate?

- “You cannot design apart from the world where your users and design will live”

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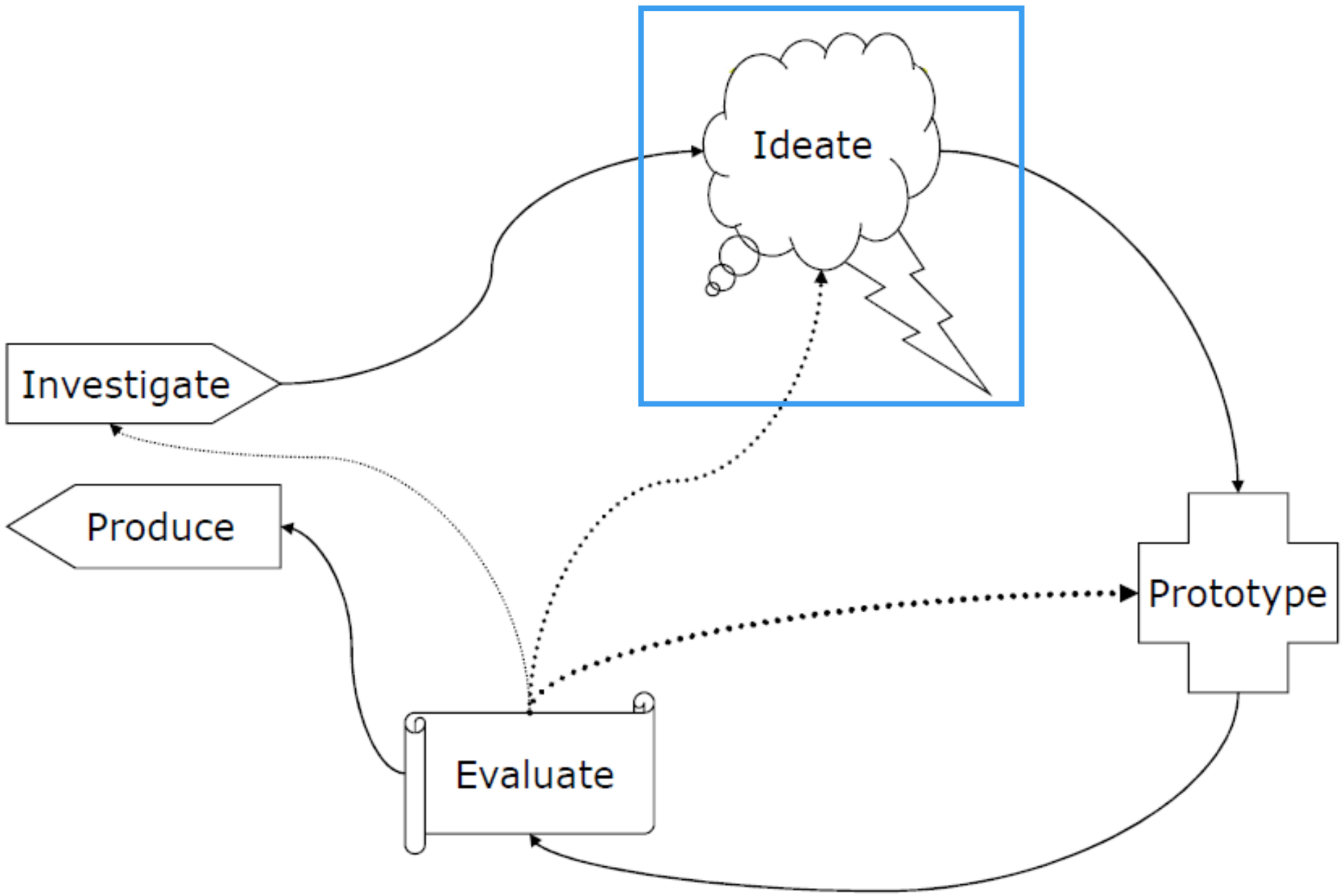
Investigation questions

- Identify users
- Identify stakeholders
- What are the requirements?
- How do they do it now?
- How long does it take?
- What do they want?
- What do they need?
- What have they already tried?
- Is there another solution?

Investigation methods

- Interviews
- Focus groups
- User surveys
- …

Ideate



Ideation = idea generation

“To get good ideas… Get lots of ideas”

Why ideate?

- One of the worst things:

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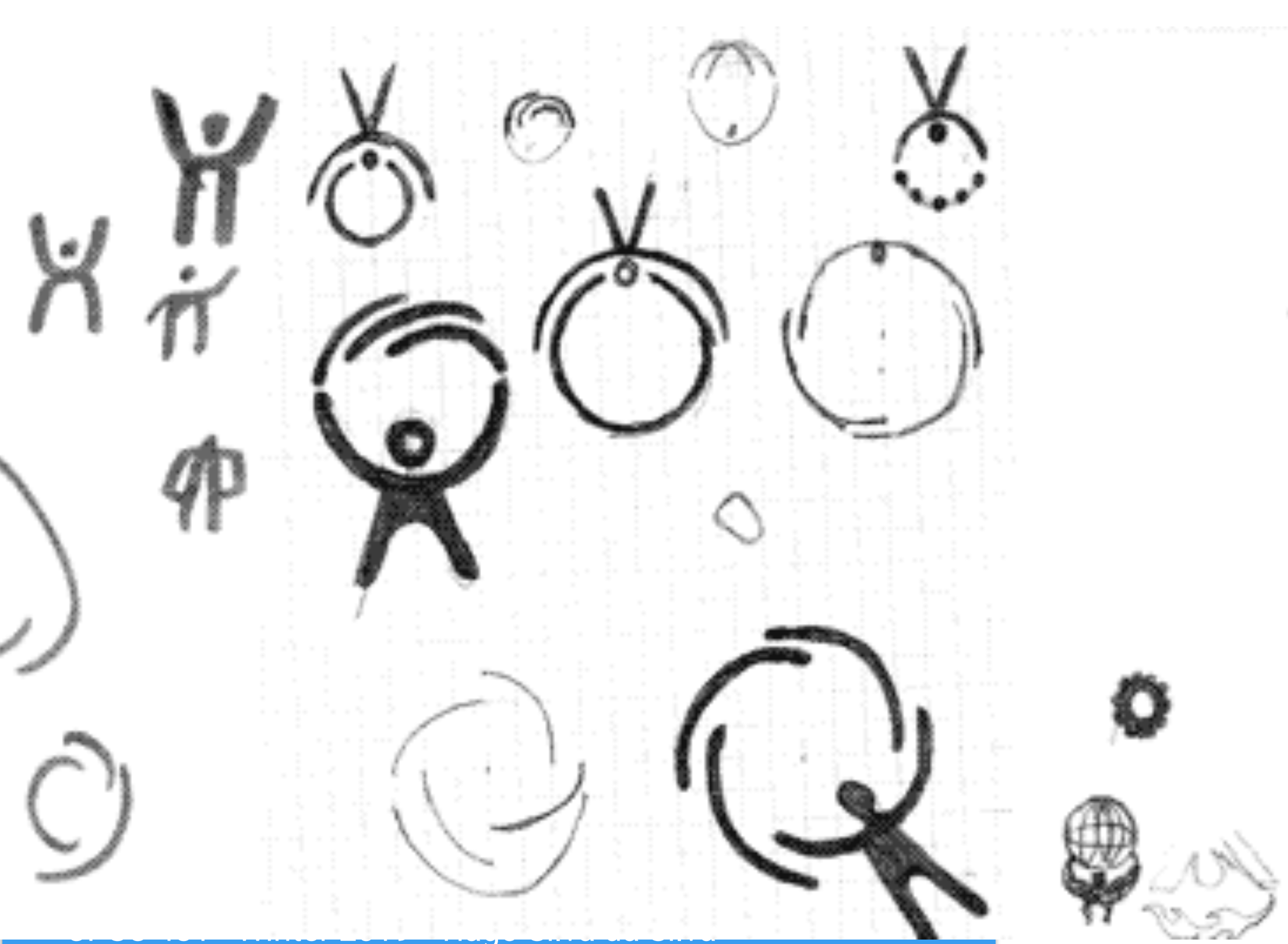
Why ideate?

- One of the worst things: go with the first one you have
  - You can always come back to it later
- Volume matters the most
- Increase chance of success by considering a huge volume of ideas in a systematic way
  - *Natural selection*

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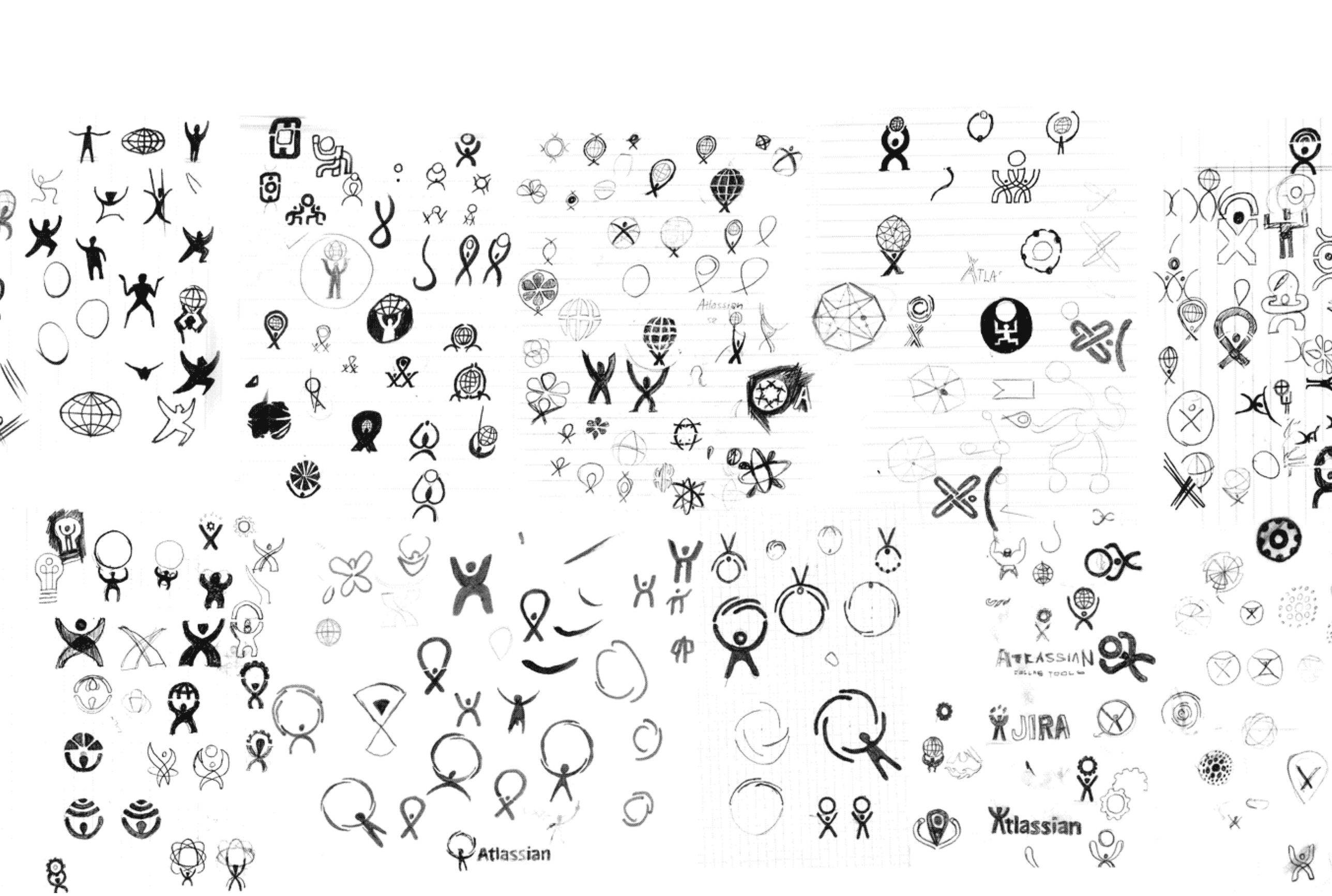

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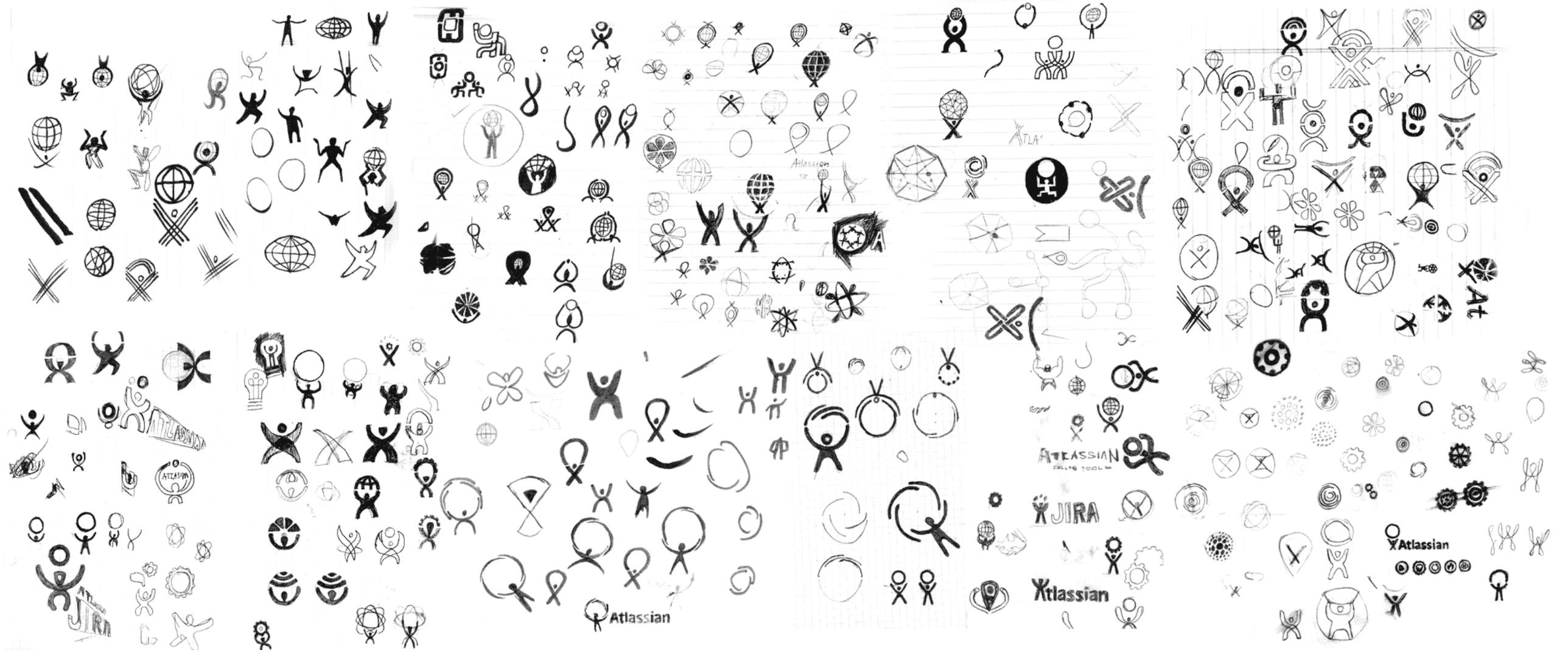

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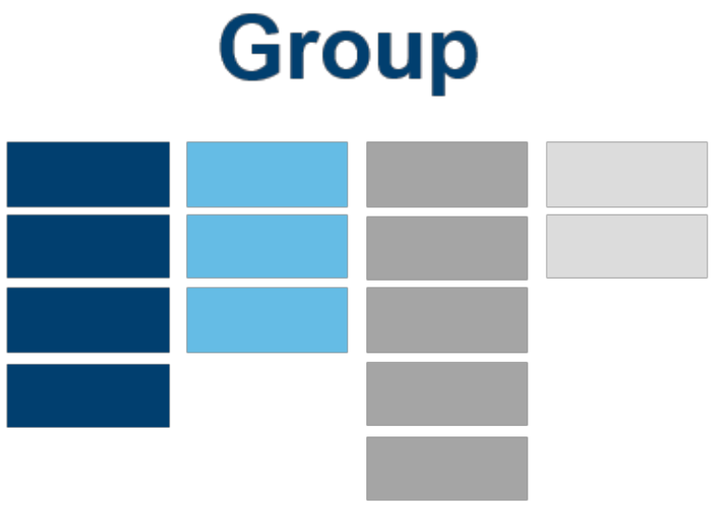
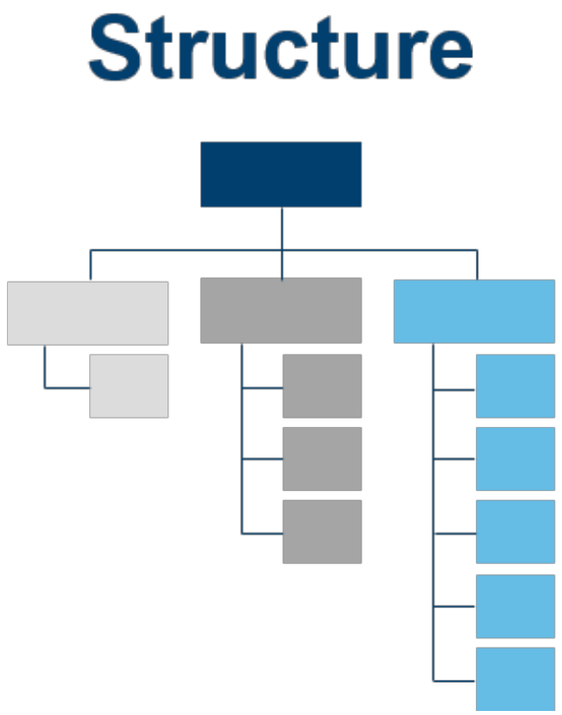
Ideation

- Structured brainstorming
- Sketching
- Affinity diagramming
- Card sorting
- Personas
- …

Ideation

- Card sorting

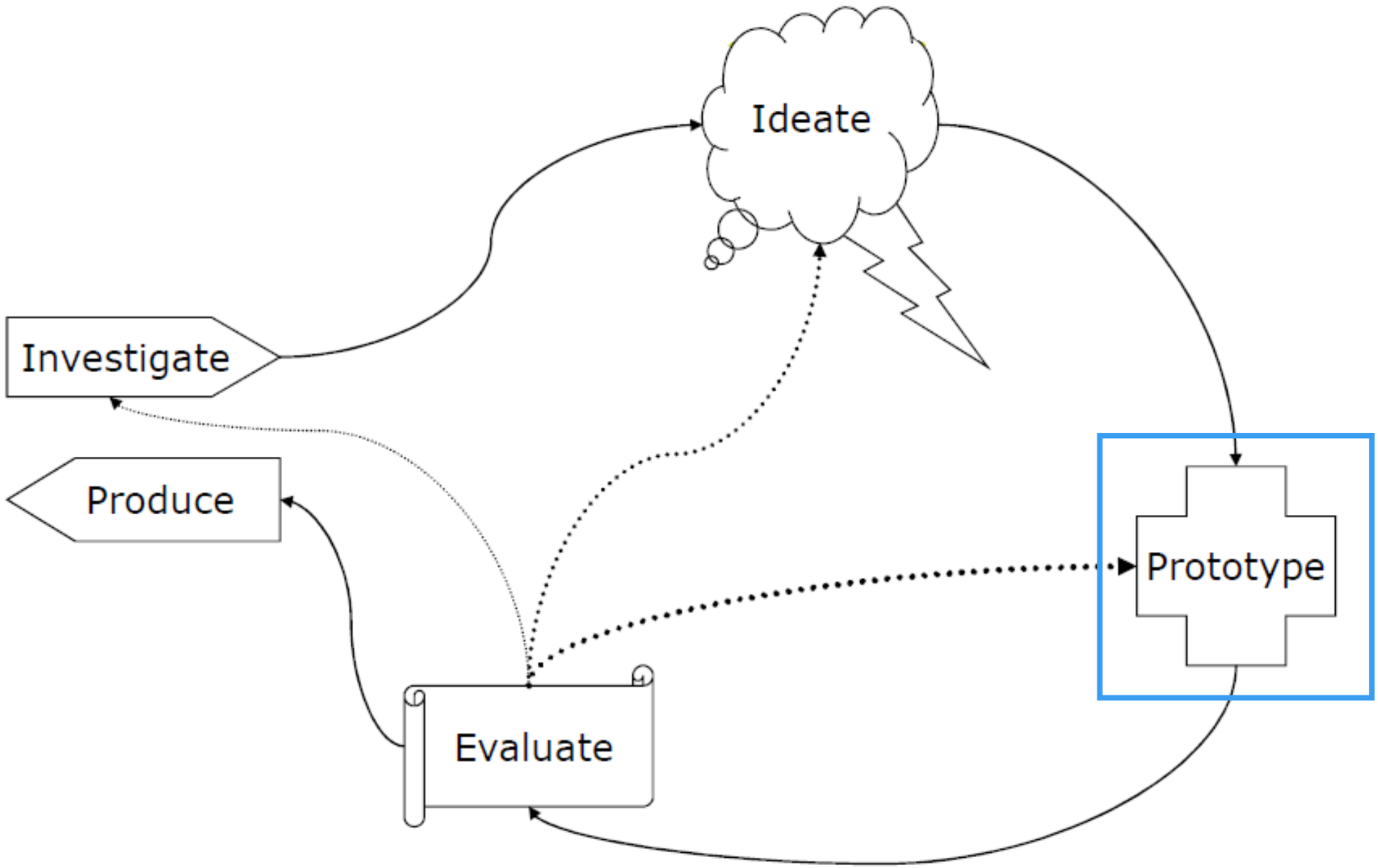




Ideation

- Card sorting

Prototype



Why prototype?

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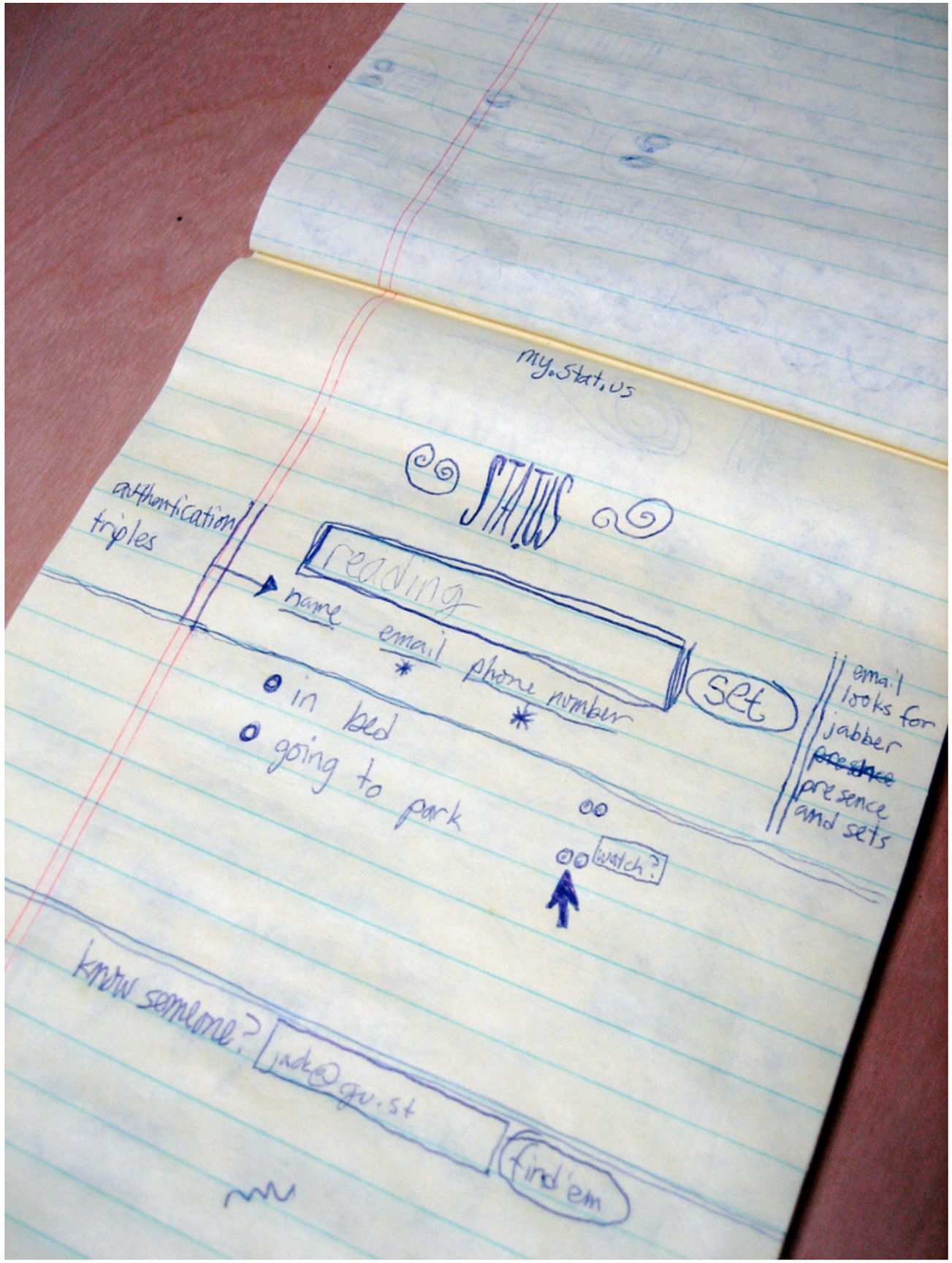
- Easier for users to react to concrete things rather than abstract concepts

- Prototyping brings subtleties and nuances to light

- Working against some technical constraints is good

Prototyping techniques

- Paper prototypes
- Screenshots
- Flip books
- Hyperlink prototypes
- Functional prototypes
- ...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in bed
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find 'em

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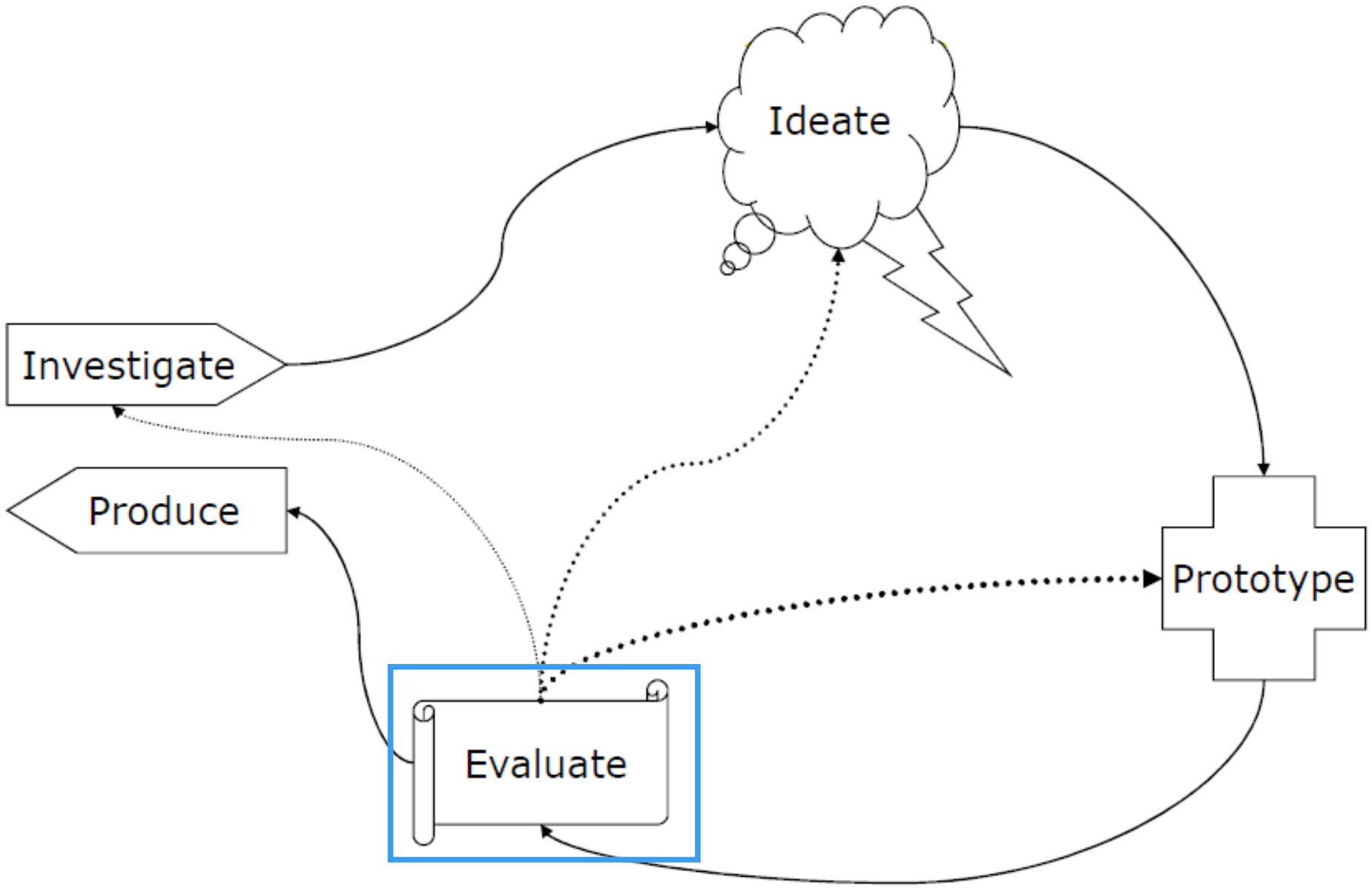
Prototyping fundamentals

- Build it fast
- Concentrate on unknowns
- Don’t be attached to them (prototypes)
- Build multiple concurrently
    - Easier to compare pros/cons

Evaluate



Why evaluation?

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- Automated processes can find bugs, but not usability issues
- Evaluation gives you a way to move forward
  - What needs to be fixed, added, removed?

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- Automated processes can find bugs, but not usability issues
- Evaluation gives you a way to move forward
  - What needs to be fixed, added, removed?
- Answers to two questions:
  - Did we build the right thing?
  - Did we build the thing right?

Evaluation methods

- Heuristic evaluation
- Usability testing
- Laboratory experiments
- Real-world deployments
- …


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Evaluation drives Iteration

- Problem: usefulness/appropriateness
    - Return to investigation phase

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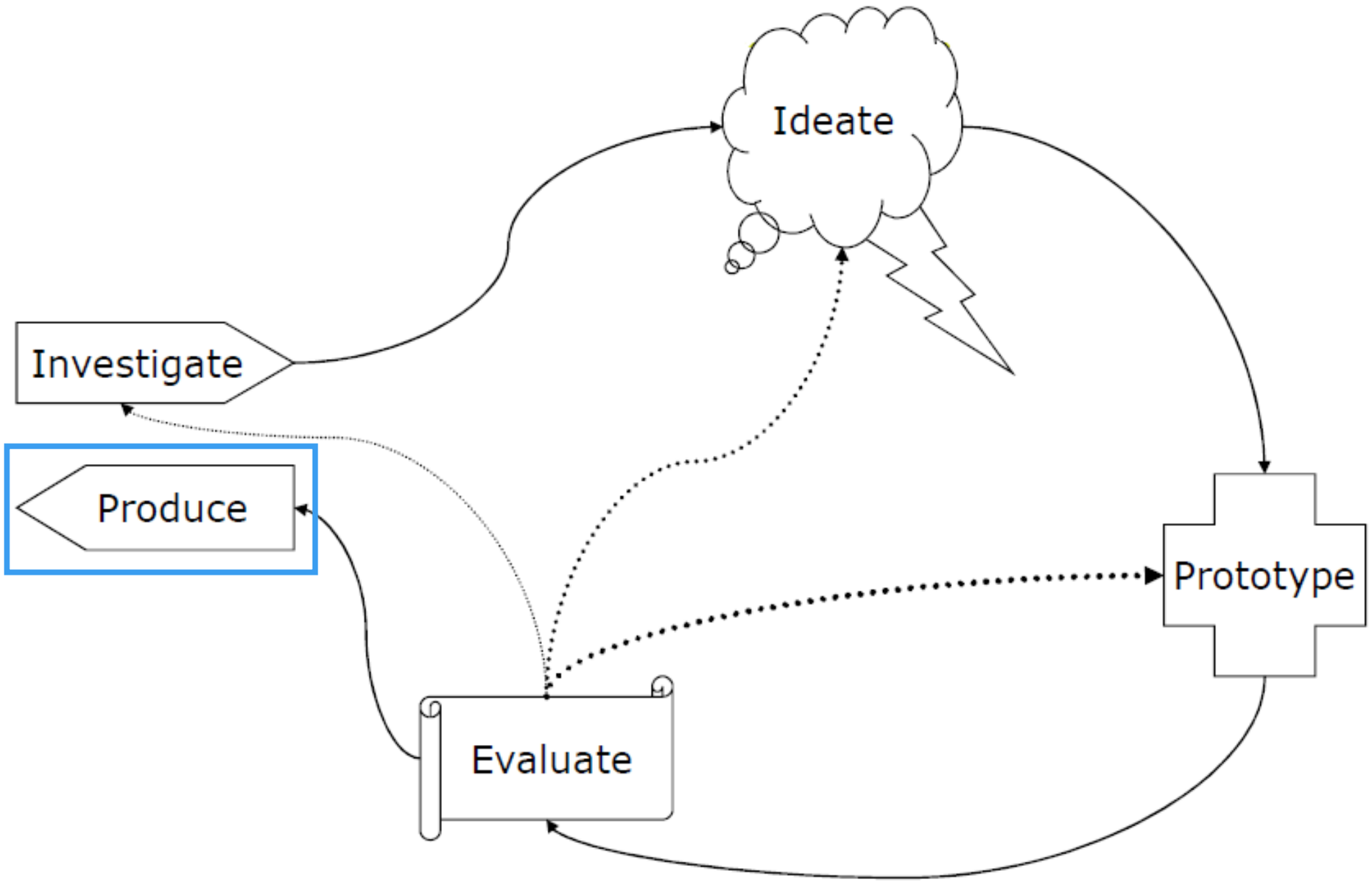
Evaluation drives Iteration

- Problem: usefulness/appropriateness
  - Return to investigation phase
- Problem: users don’t understand
  - Return to ideation phase
- Problem: user performance
  - Return to prototyping phase

Produce



Production

These are the steps required to go from functional prototype to *release candidate*

- Software architecture
- Programming, building
- Manufacturing
- Help systems
- Manuals
- Training
- Customer support
- Marketing
- Branding
- Distribution

User-Centered Design: conclusions

- Design starts with understanding your user, and should keep users' interests central

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- Design is iterative = trade-offs are difficult to see in advance

- Designs are never “perfect" = usually they can be improved

Acknowledgements

- Tony Tang
- Lora Oehlberg
- Ehud Sharlin
- Frank Maurer
- Saul Greenberg

Course information

- Website
  - GitHub Pages https://silvadasilva.github.io/CPSC481-2019W/en/#!index.md
- Communications
  - Slack https://cpsc481-2019w.slack.com/
- Readings and Slides
  - Posted online at the main website