The prompt optimization process *proposal*

Bee

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The prompt optimization process

Outlines

1. Motivation
2. How to do it?
3. Prompt evolution: The onion approach
4. The process
5. The process detail
6. Current state and next steps

The prompt optimization process

Motivation

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Why “the prompt”?

The prompt optimization process

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- It controls flow.
- It’s a critical part that can break everything.
- It determines how clever the bee is.

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- There is no ‘just right’ solution.
- No one knows how to do it. *We need to find our own path*.
- Prompt is model-agnostic.
- Prompt techniques are evolving.

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Why set up the “process”?

> Because the prompt is a valuable asset and is constantly changing, we have to take care of it!

The prompt optimization process

How to do it?

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Strategy

The prompt optimization process

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Strategy

- Prompt evolution

`The onion approach`

The prompt optimization process

How to do it?

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- Robust testing

Testing

Evaluation

Benchmarking

The prompt optimization process

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The prompt optimization process

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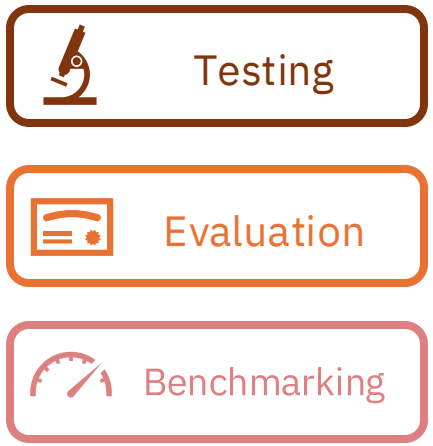

Process

- A well-defined way to incorporate:
  - new requirements
  - change requests
  - bug fixes
  - new approaches
  - model changes
  - etc.

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How to do it?

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Tools

The prompt optimization process

How to do it?

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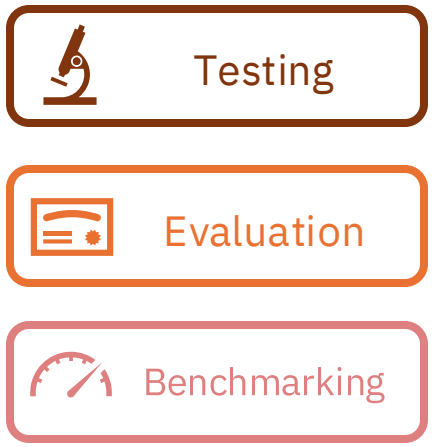

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Tools

- Bee prompt lab (POC)
  - https://github.ibm.com/Ales-Kalfas/bee-prompt-lab-poc
- API support (???)
- Airtable evaluation
- Observe (ML-flow)

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Prompt evolution: The onion approach

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Prompt evolution: The onion approach

Comm. protocol

- Protocol
  - Final answer
  - Thought
  - Tool call
- Questioning
- Conversation messages vs all in system prompt
- Prompt sections isolation

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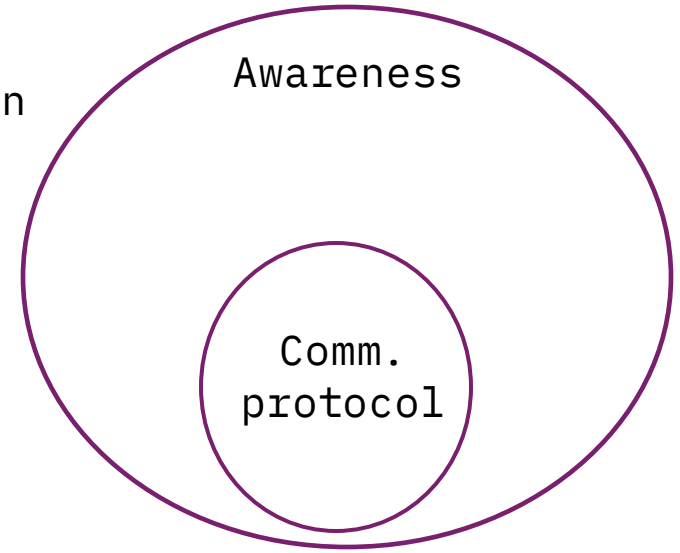
Prompt evolution: The onion approach

- Awareness of being part of agentic system
- Time
- Location
- etc.



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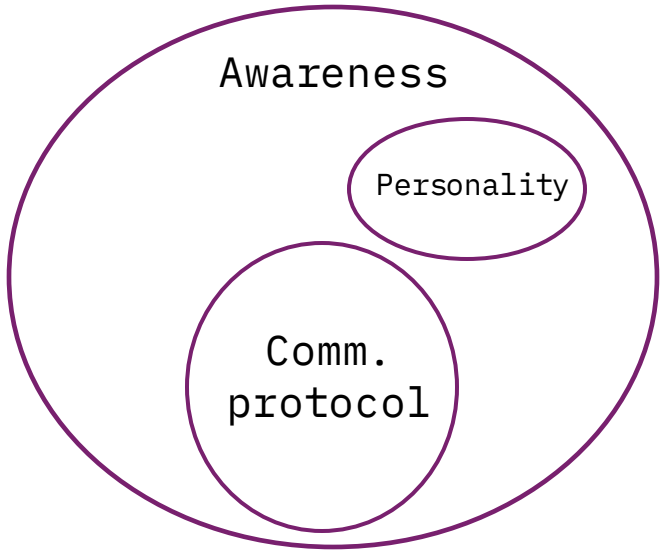
Prompt evolution: The onion approach



- Bio
- Role play
- Behaviour control
- etc.

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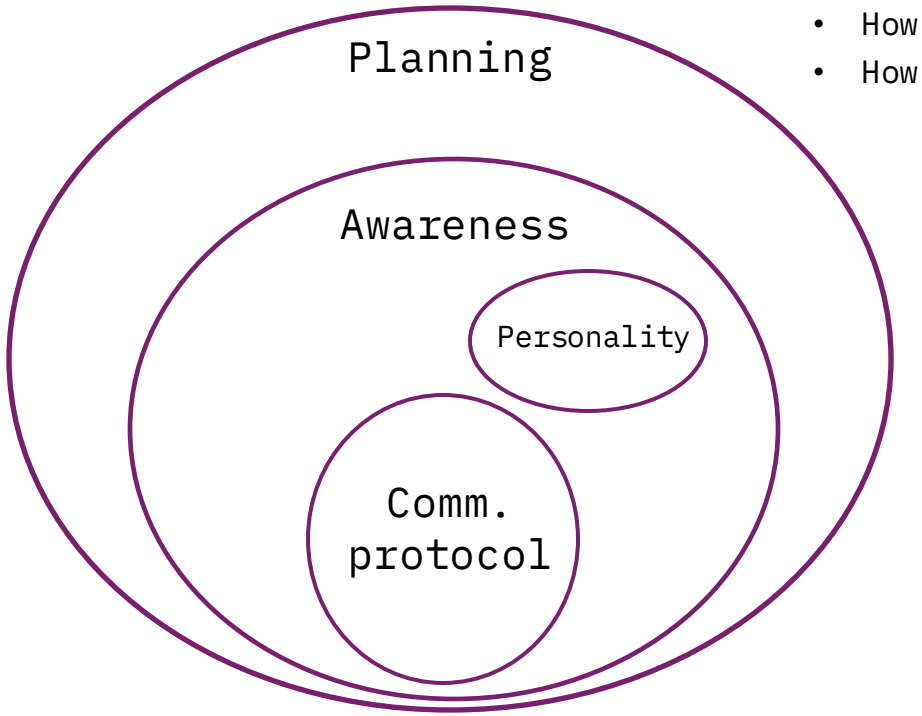
Prompt evolution: The onion approach

- Complexity control
  - How many steps?
  - How long it should take?
  - How many sources?



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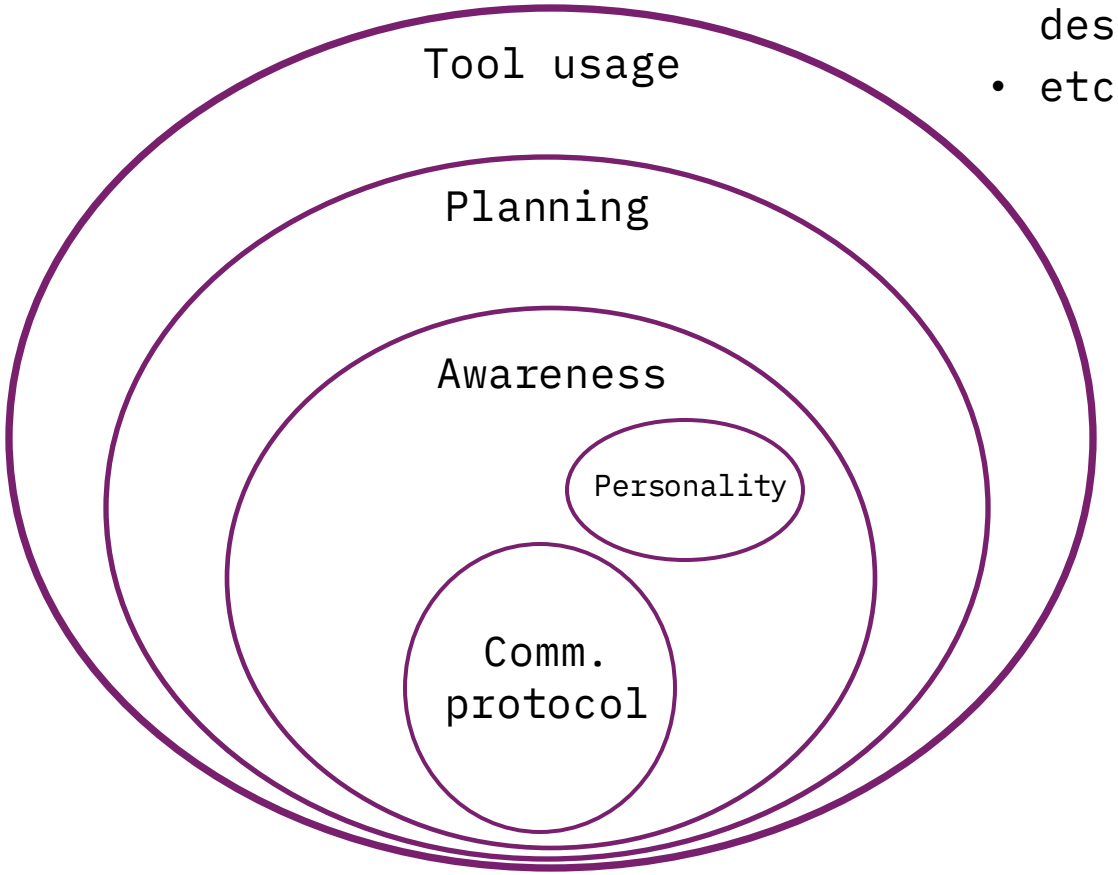
Prompt evolution: The onion approach

- How many tools is too much?
- How to write good tool descriptions?
- etc.



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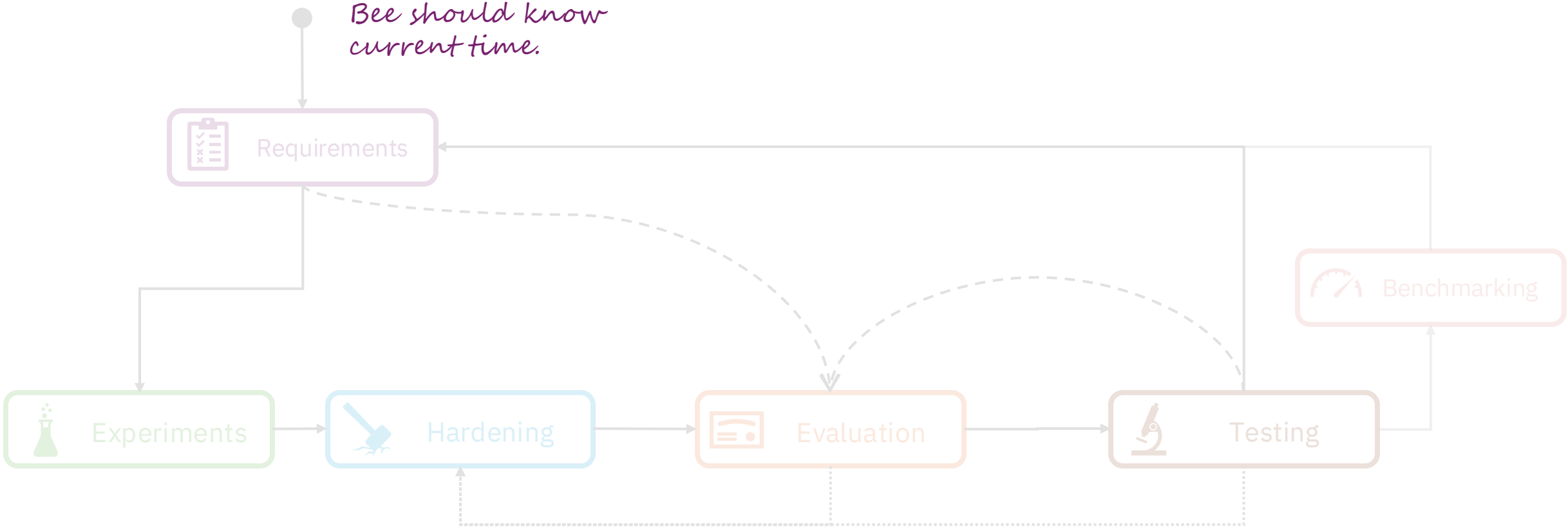

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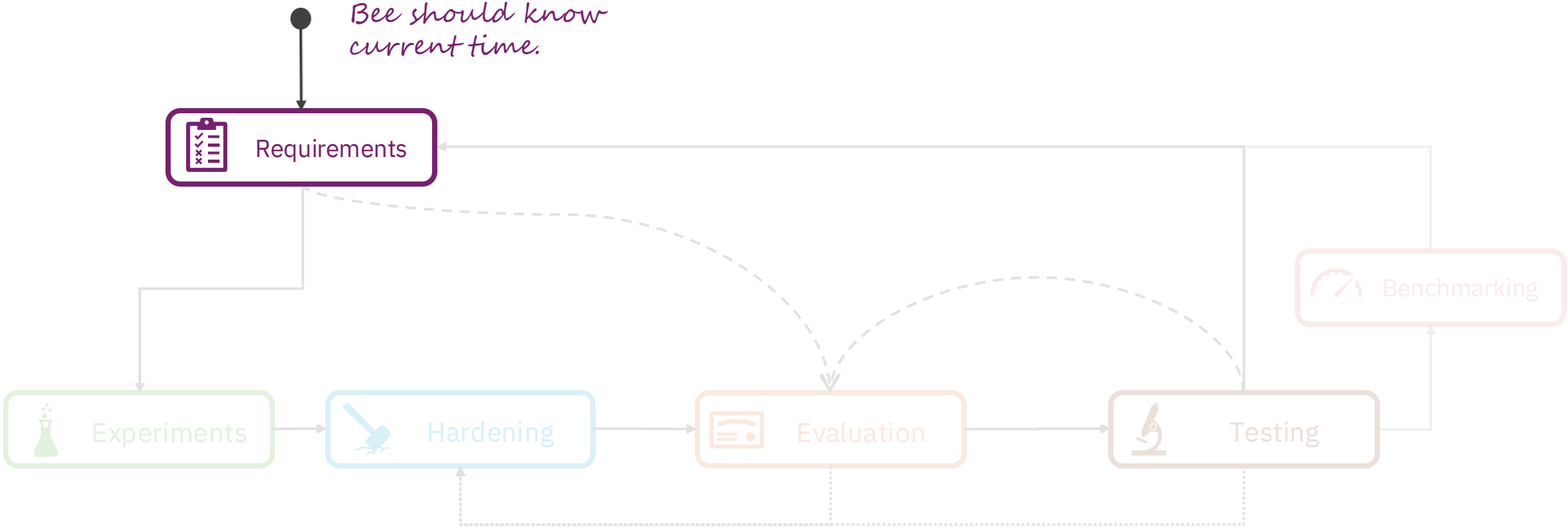

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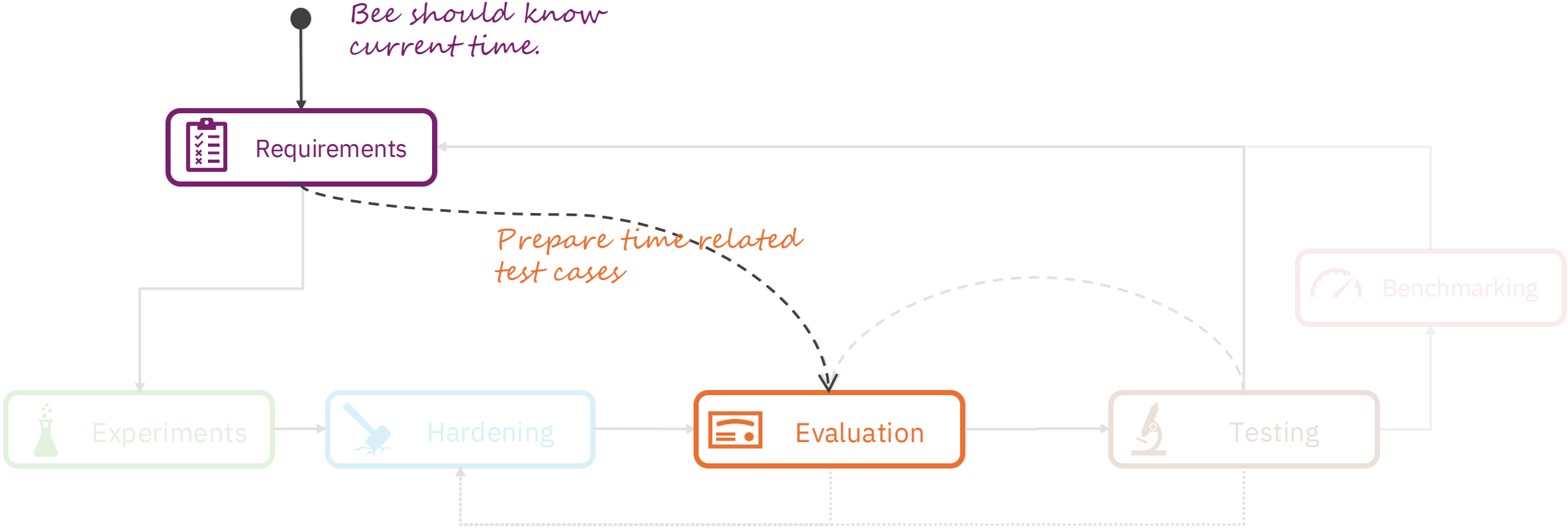

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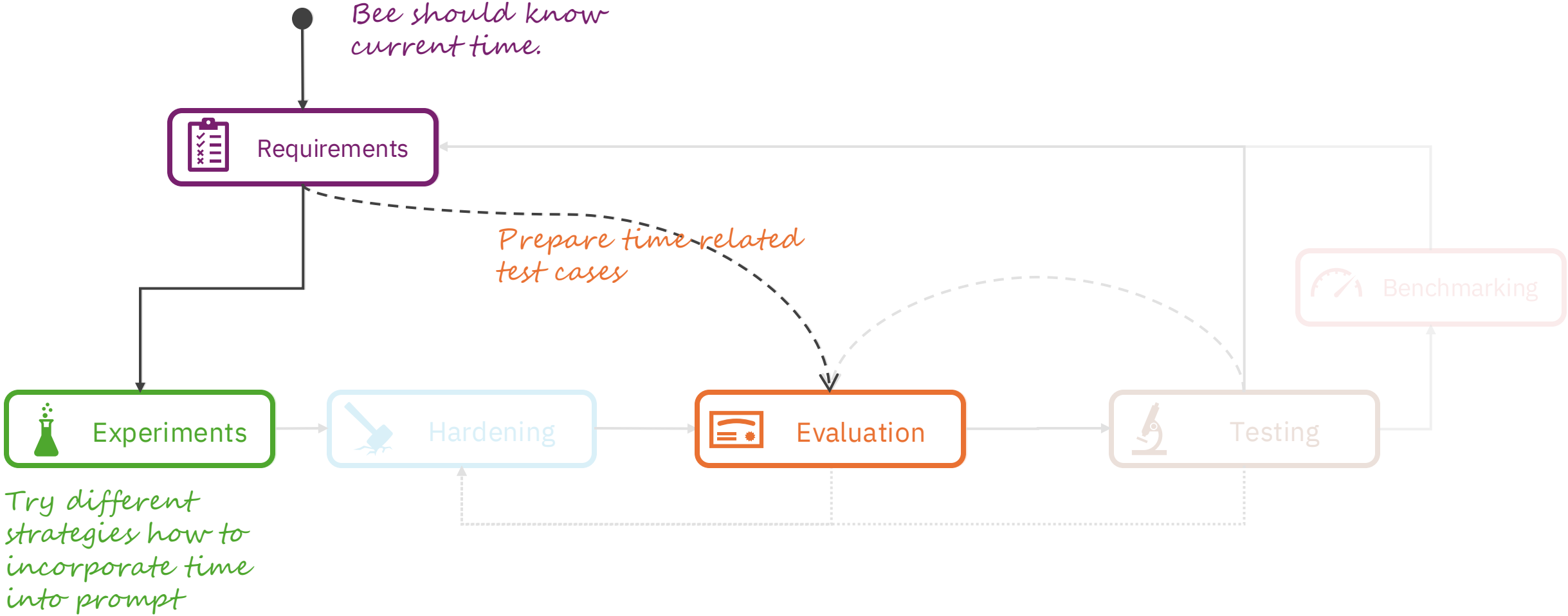

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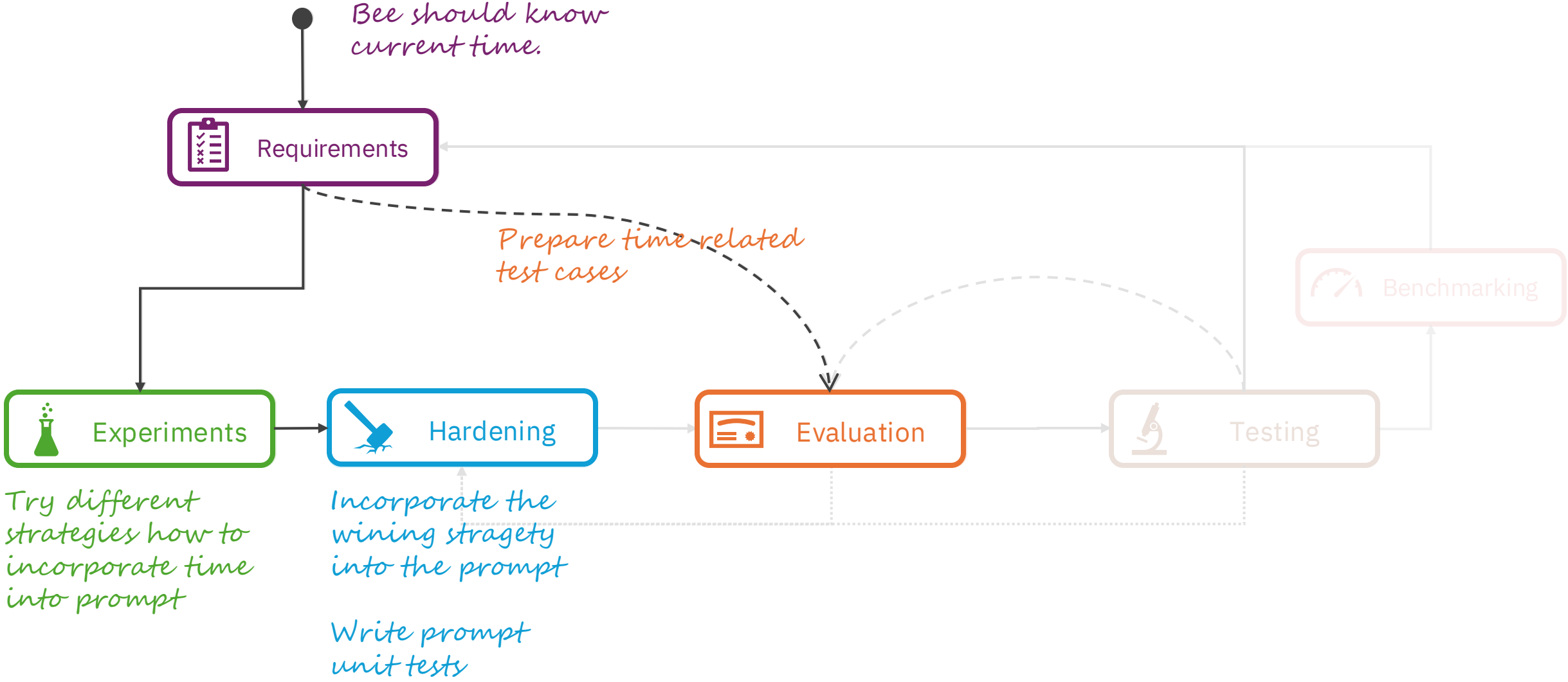

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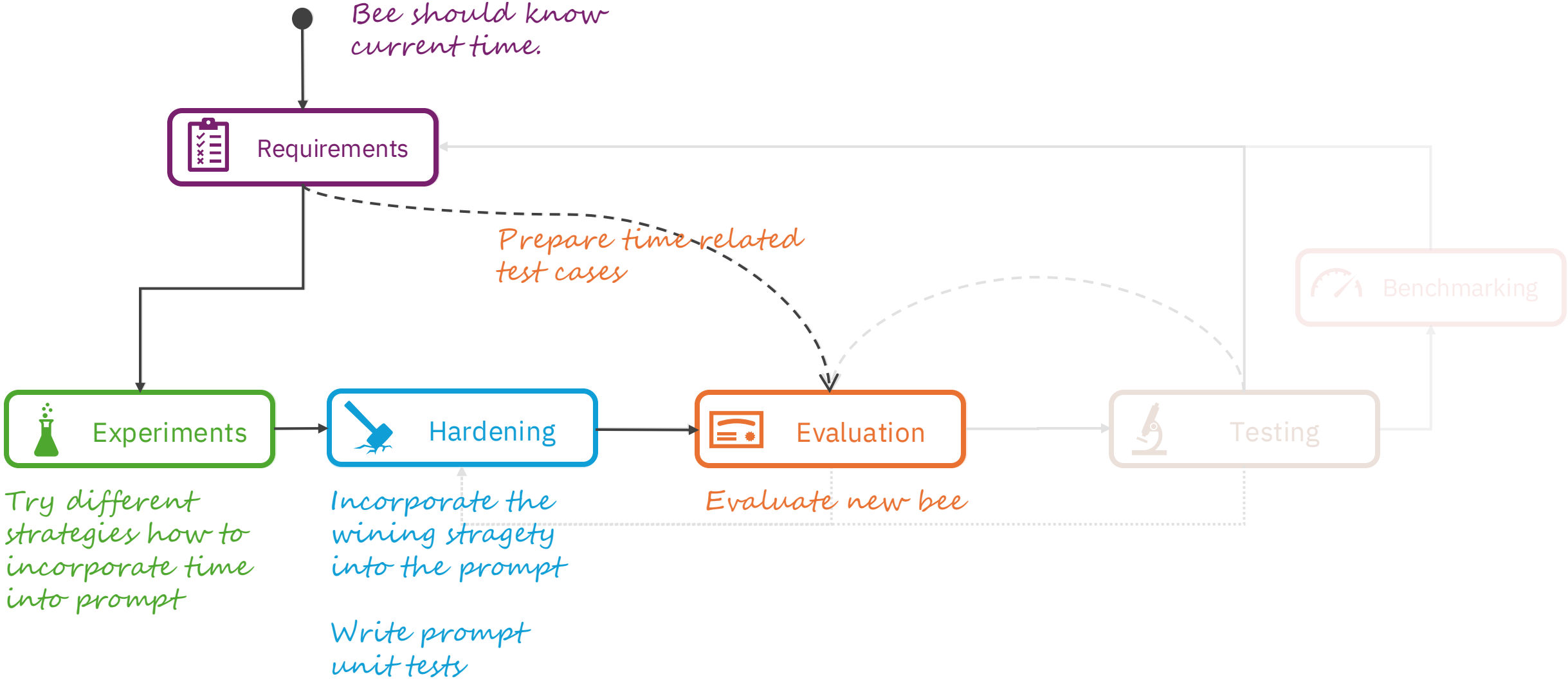

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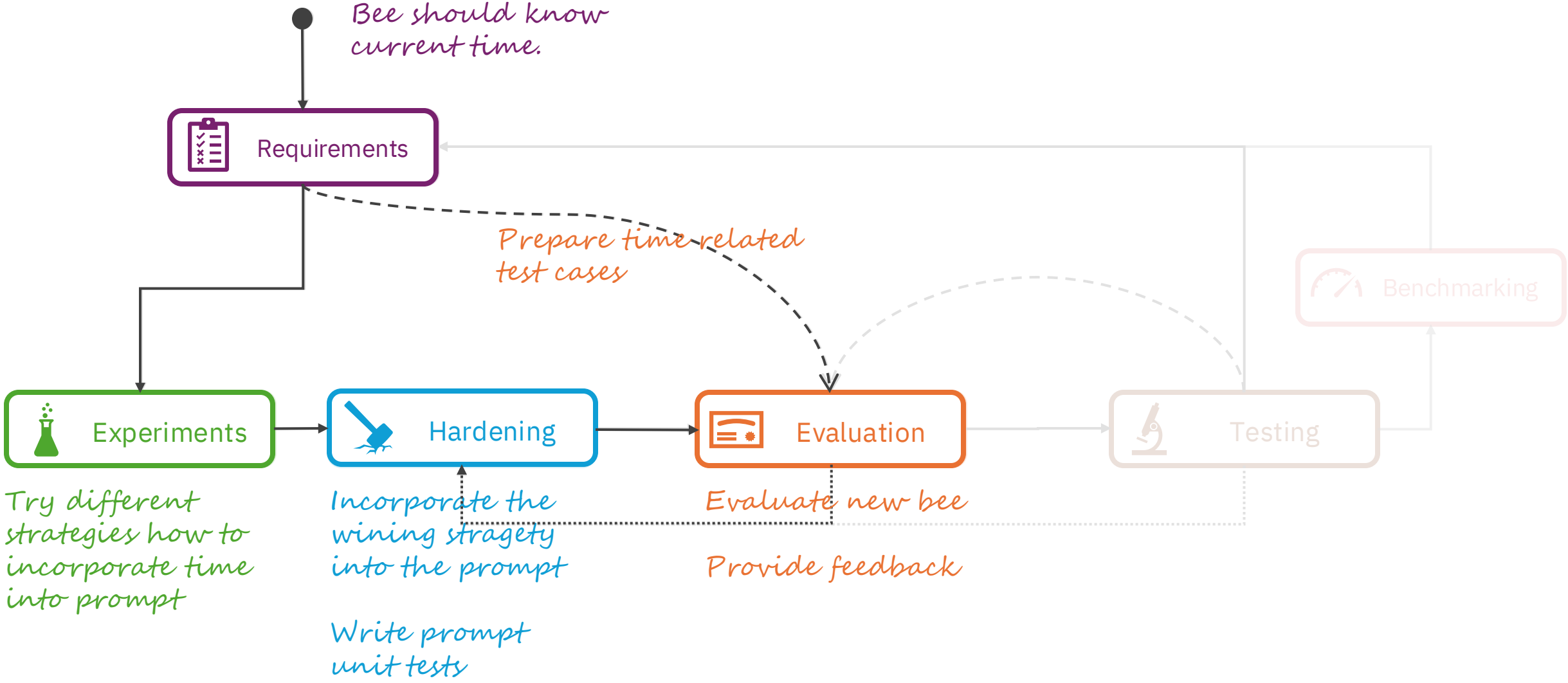

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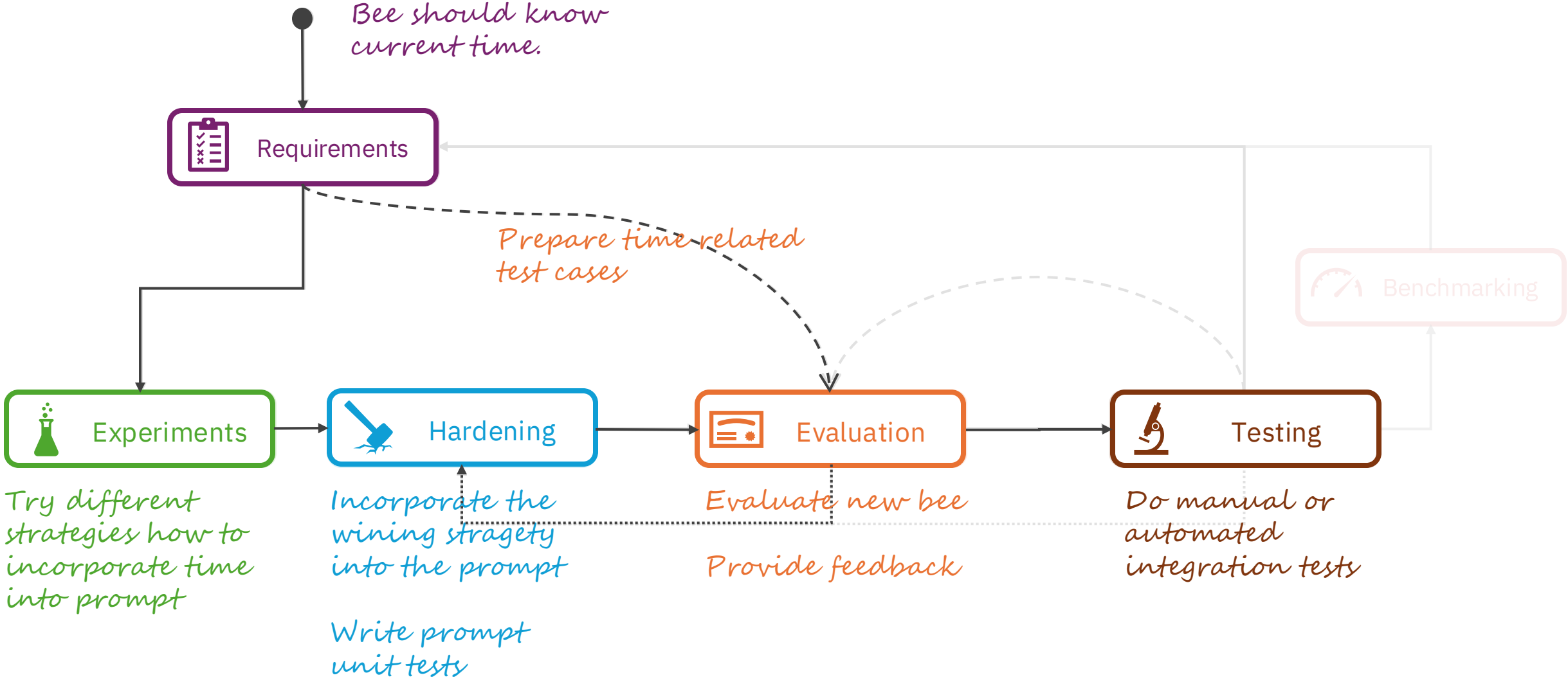

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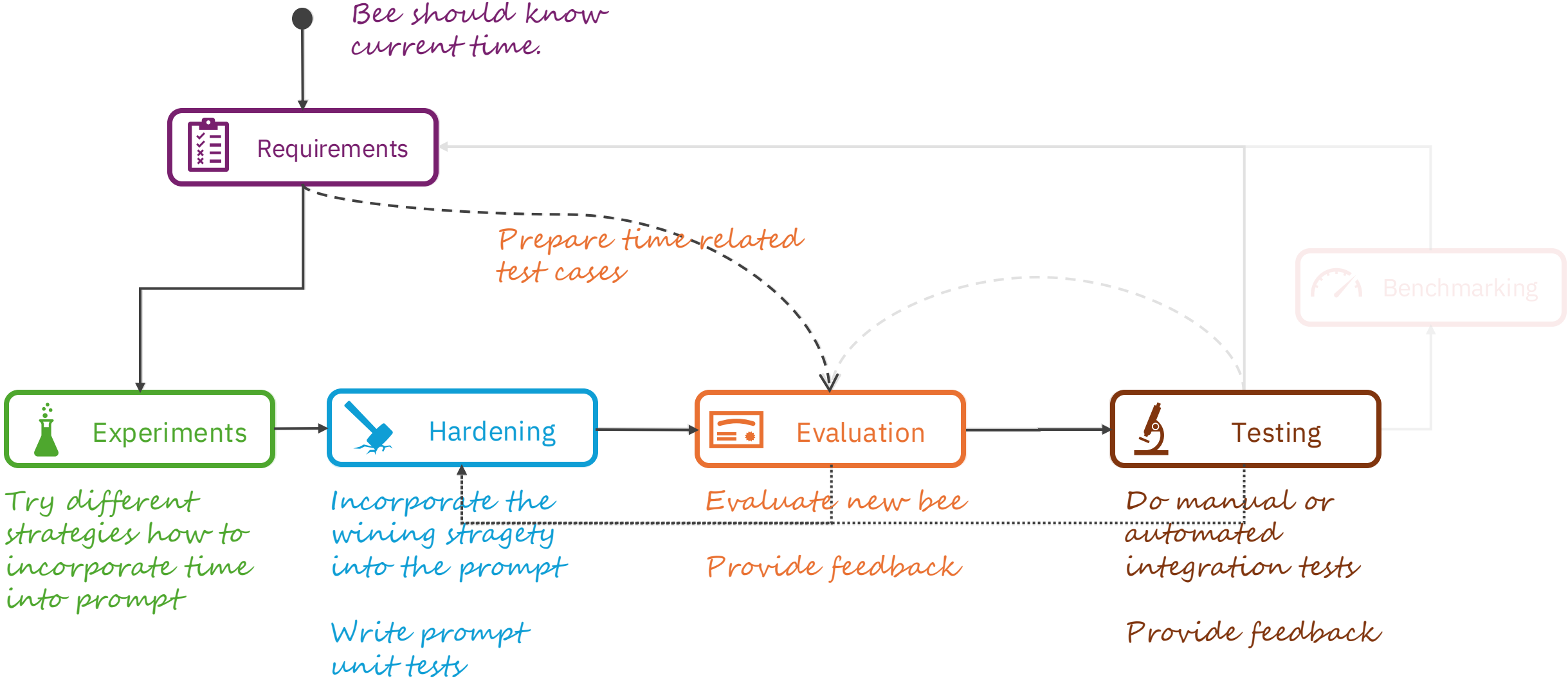

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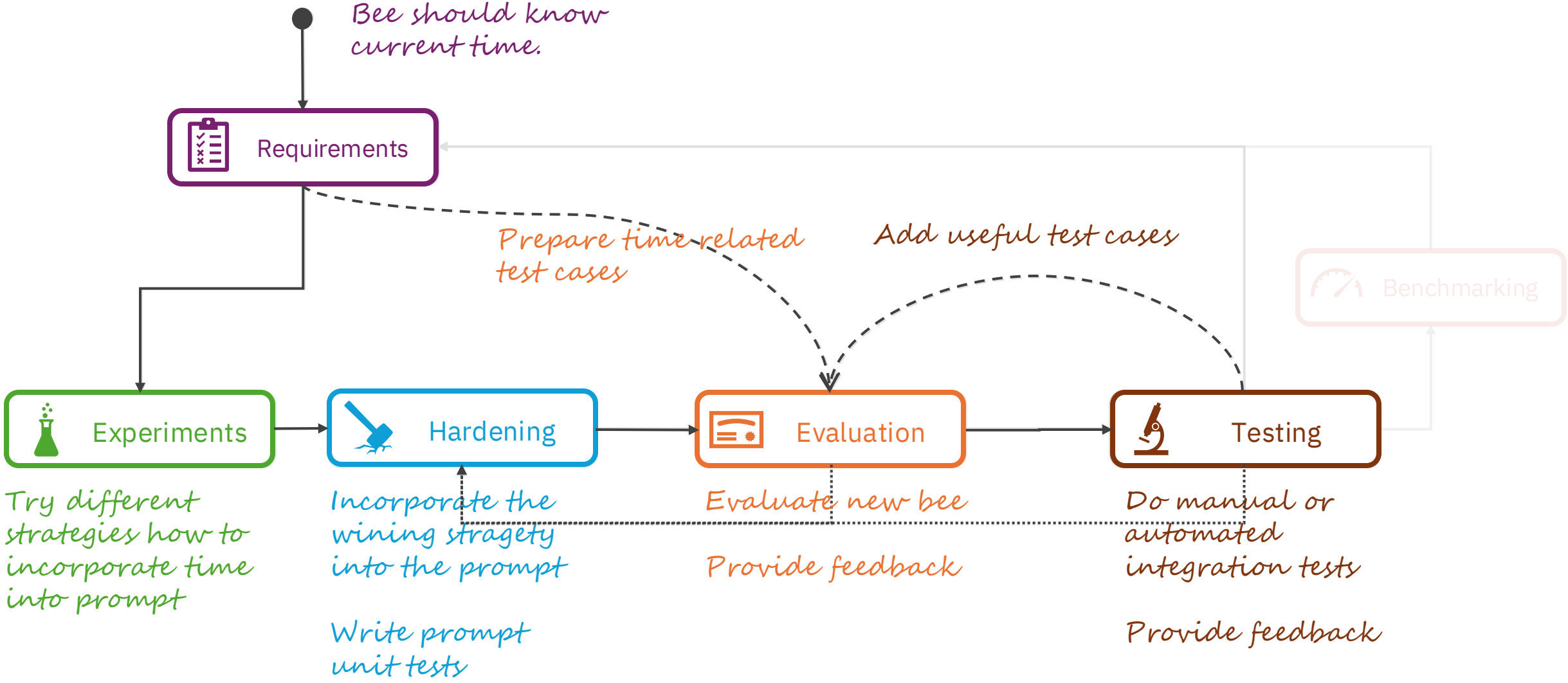

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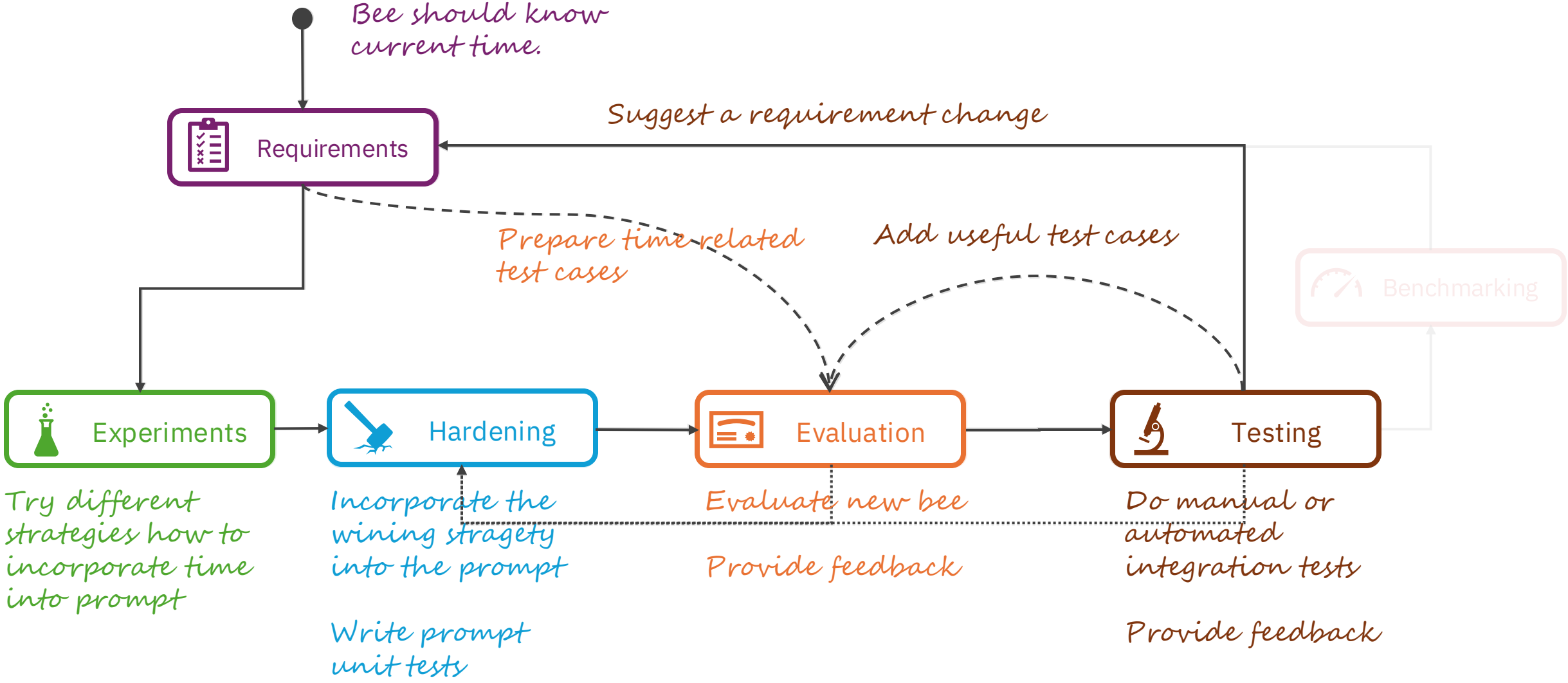

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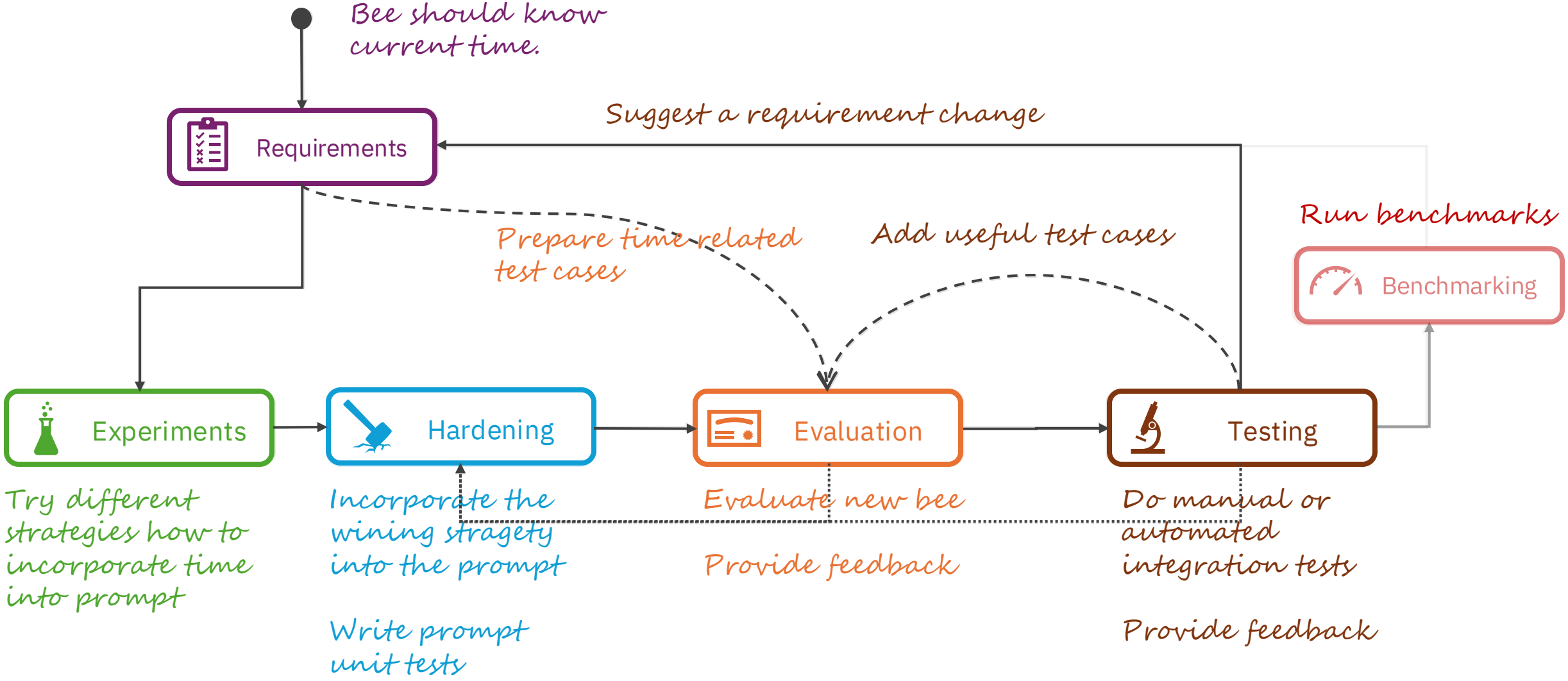

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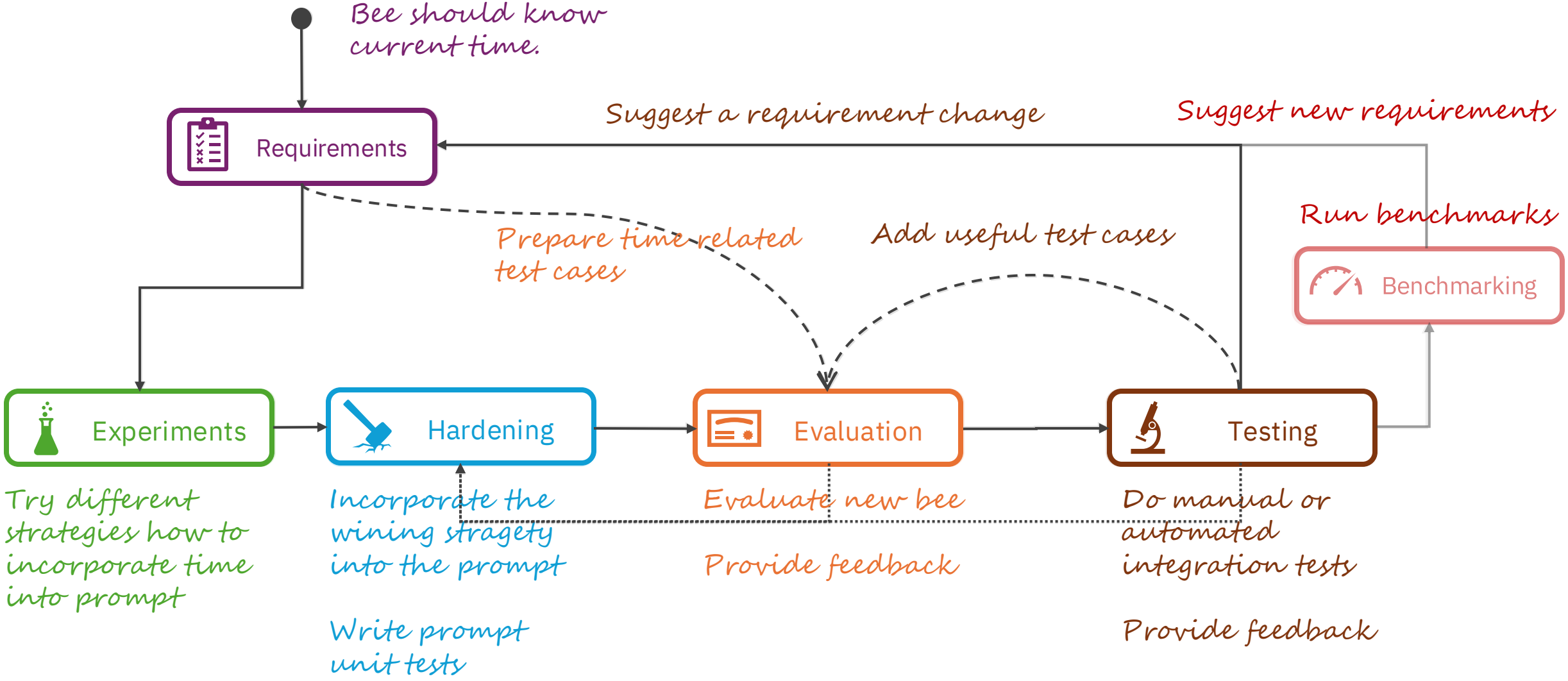

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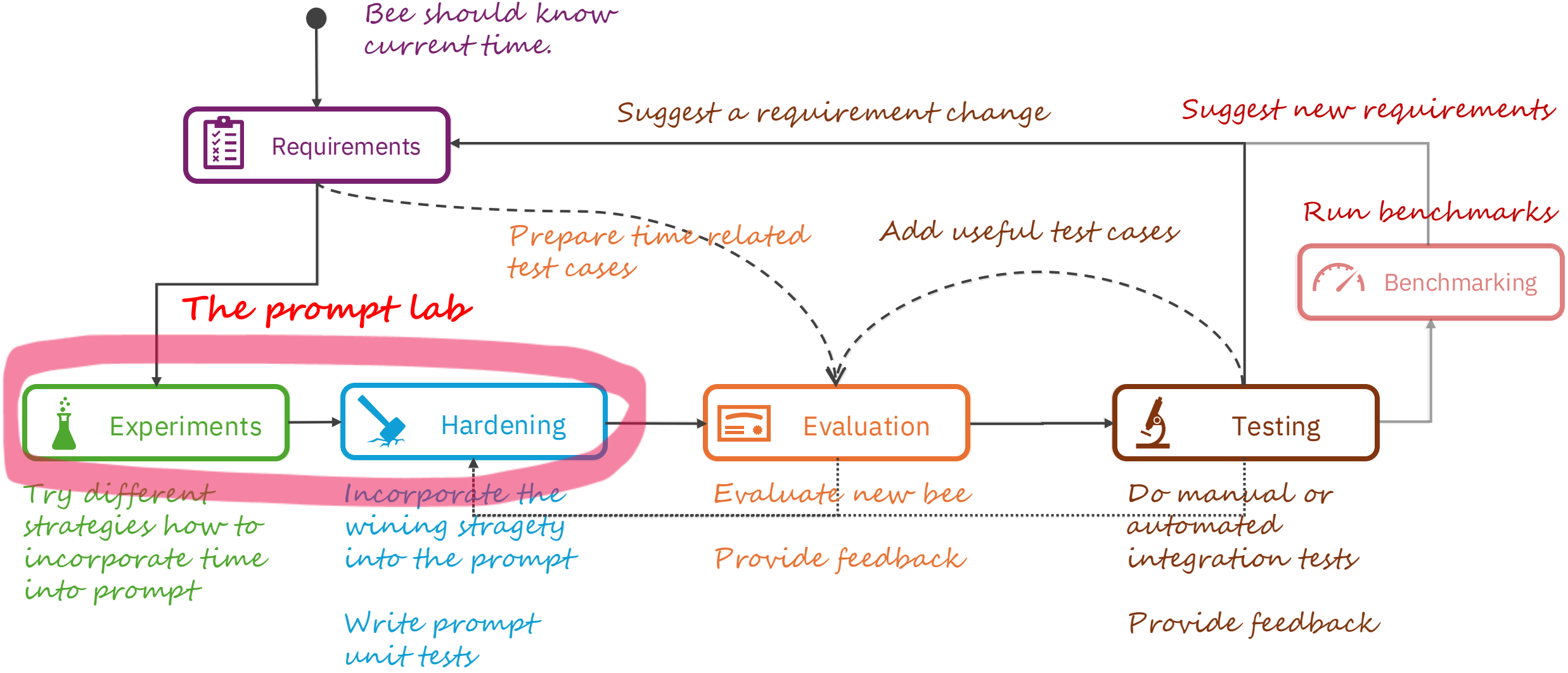

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The process detail

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	Requirements	Experiment	Hardening	Evaluation
Target	• Create a valuable product • Steer development direction	• Solve business problems • Test new ideas and approaches	• Harden the output ideas from experiments and involves them into the existing prompts. • Extend the existing approaches	• Evaluate the final product from the simplest to the most complex cases.

The prompt optimization process

The process detail

	Requirements	Experiment	Hardening	Evaluation
Target	• Create a valuable product	• Solve business problems	• Harden the output ideas from	• Evaluate the final product from the
Inputs	• Business needs • Competition • Evaluation results	• New functionalities requirements • Prompt evolution strategy (the onion approach) • Research papers, competition and other sources.	• The experiments outputs • Bugs	• Functional requirements • Competition results • Research papers and other sources

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The process detail

	Requirements	Experiment	Hardening	Evaluation
Target	• Create a valuable product	• Solve business problems	• Harden the output ideas from	• Evaluate the final product from the
Inputs	• Business needs	• New functionalities requirements	• The experiments outputs	• Functional requirements
Actions	• Define required functionalities	• Investigate how should be the requirement properly handled • Experiment with different approaches and **find limits** • Propose parametrization possibilities	• Use new approach and involve it into the existing solution. • **Write tests** for the new things. These test should cover from most simple to the most complex cases from a few to many items. • Detect errors from experiments	• Create test cases • Run evaluations and asses the results.

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The process detail

	Requirements	Experiment	Hardening	Evaluation
Target	• Create a valuable product	• Solve business problems	• Harden the output ideas from	• Evaluate the final product from the
Inputs	• Business needs	• New functionalities requirements	• The experiments outputs	• Functional requirements
Actions	• Define required functionalities	• Investigate how should be the requirement	• Use new approach and involve it into the existing solution.	• Create test cases • Run evaluations and
Outputs	• Github tickets with functional requirements labeled as “prompt engineering”	• Decision if and how to solve the business requirement • Background information like a new part of prompt and/or a new approach idea etc.	• Updated prompts • Instructions about what change in the existing prompt. • Evaluation tips • Unit tests	• Create evaluation cases • Run evaluations, analyze the results, and use the findings to identify improvement opportunities.

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Target	• Create a valuable product	• Solve business problems	• Harden the output ideas from	• Evaluate the final product from the
Inputs	• Business needs	• New functionalities requirements	• The experiments outputs	• Functional requirements
Actions	• Define required functionalities	• Investigate how should be the requirement	• Use new approach and involve it into the existing solution.	• Create test cases • Run evaluations and
Outputs	• Github tickets with functional	• Decision if and how to solve the business	• Updated prompts	• Create evaluation cases
Tools	• Github	• Bee prompt lab • BAM prompt lab	• Bee prompt lab • BAM prompt lab	• Airtable evaluation • Bee observe (ML-flow)

The End