

***Faster Responses are Better Responses:
Introducing Incrementality into Sociable Virtual Personal Assistants***

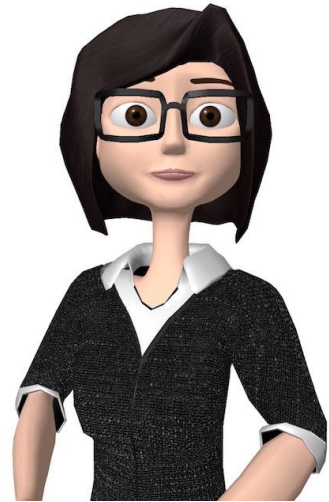
Vivian Tsai, Timo Baumann, Florian Pecune, and Justine Cassell

16 May 2018

InMind Movie Agent

task gives personal movie
recommendations

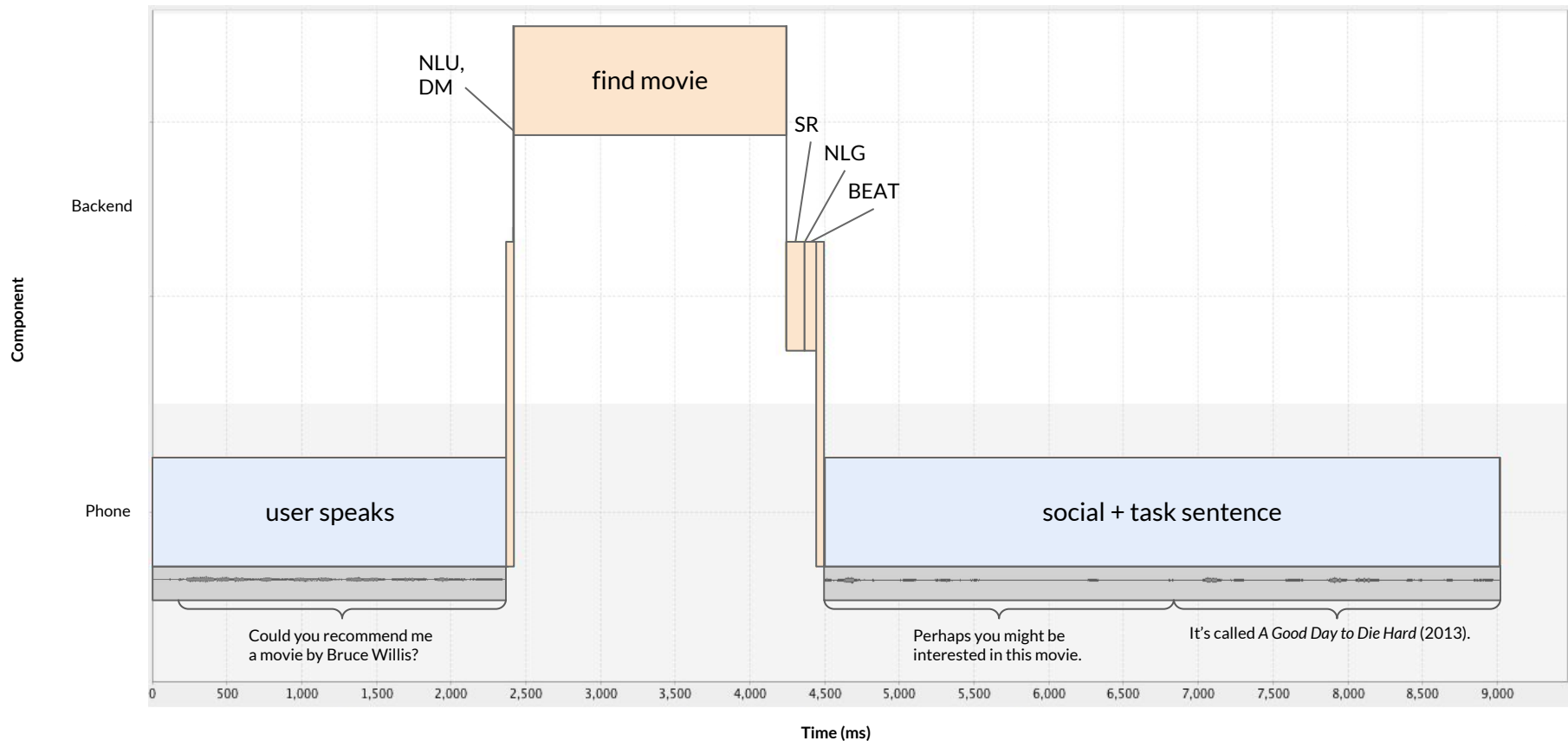
social analyzes *visual, vocal, and verbal*
cues, then forms a strategy to
improve relationship with user



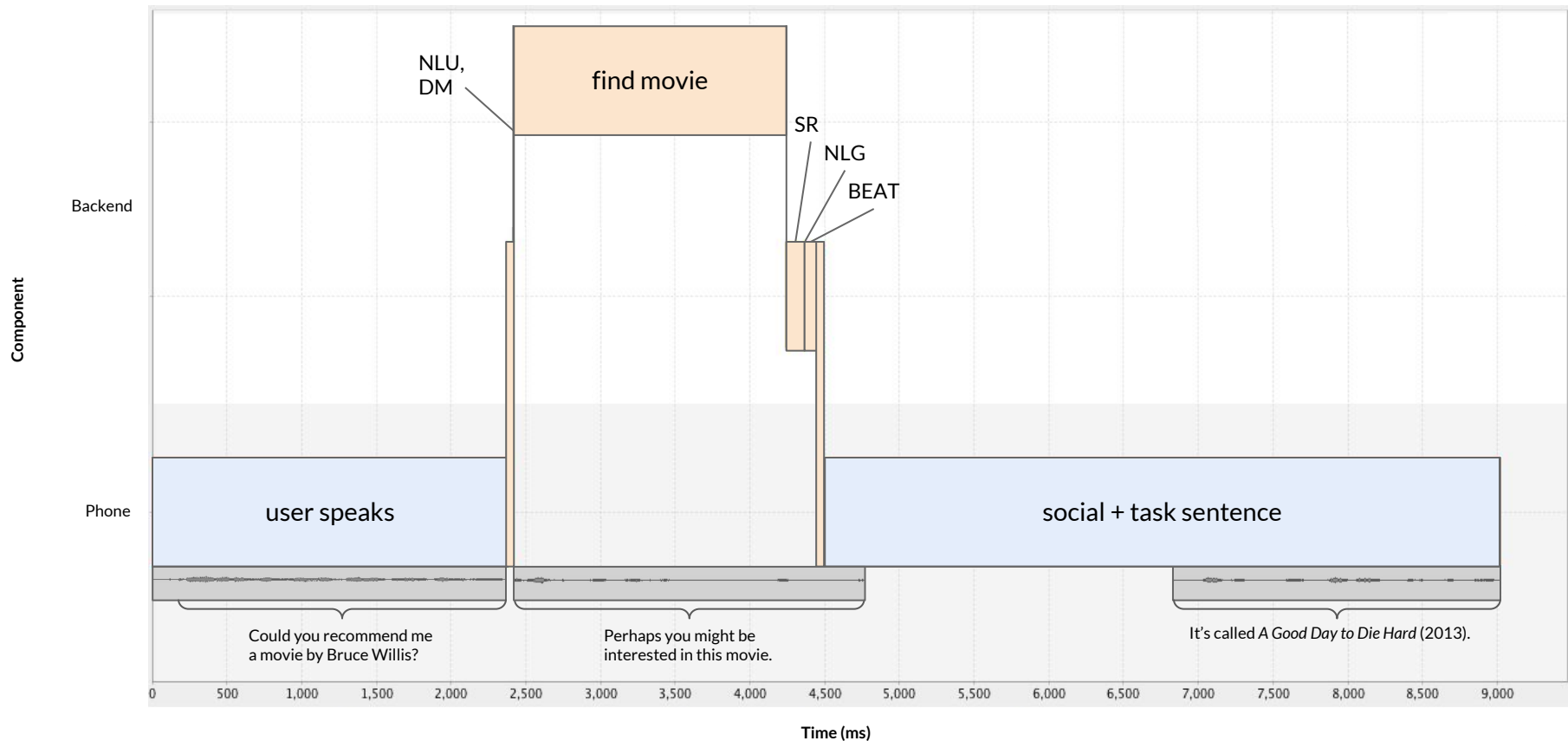
Example Conversation

turn exchange	user	My favorite is Jennifer Lawrence.
	movie agent	<u>Wow, here is one I'd love to go to.</u> It's called <i>Silver Linings Playbook</i> (2012).
turn exchange	user	Can you recommend another? I don't think I'd like that.
	movie agent	<u>Perhaps you might be interested in this movie.</u> It's called <i>Joy</i> (2015).

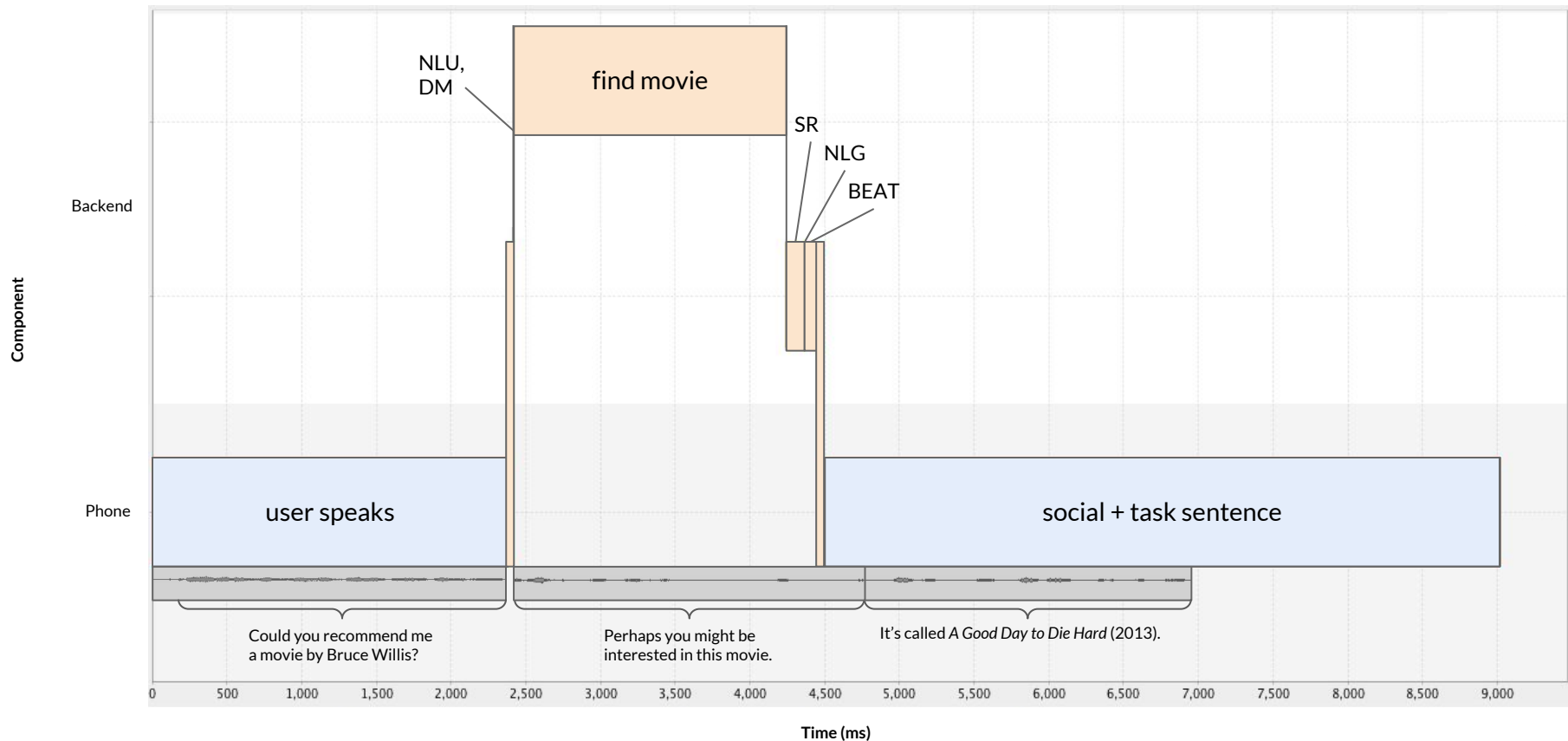
Example of a Turn Exchange



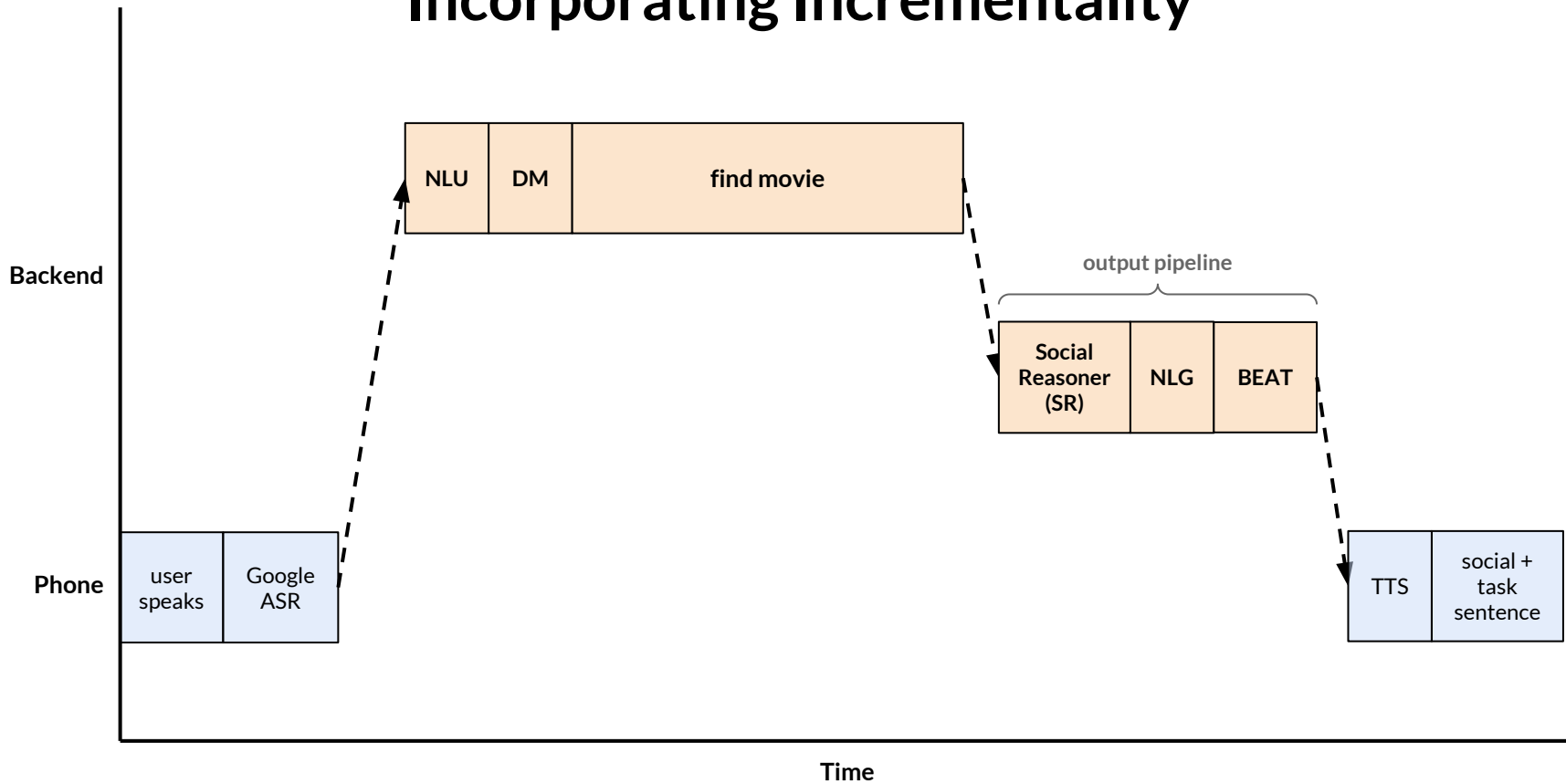
Example of a Turn Exchange



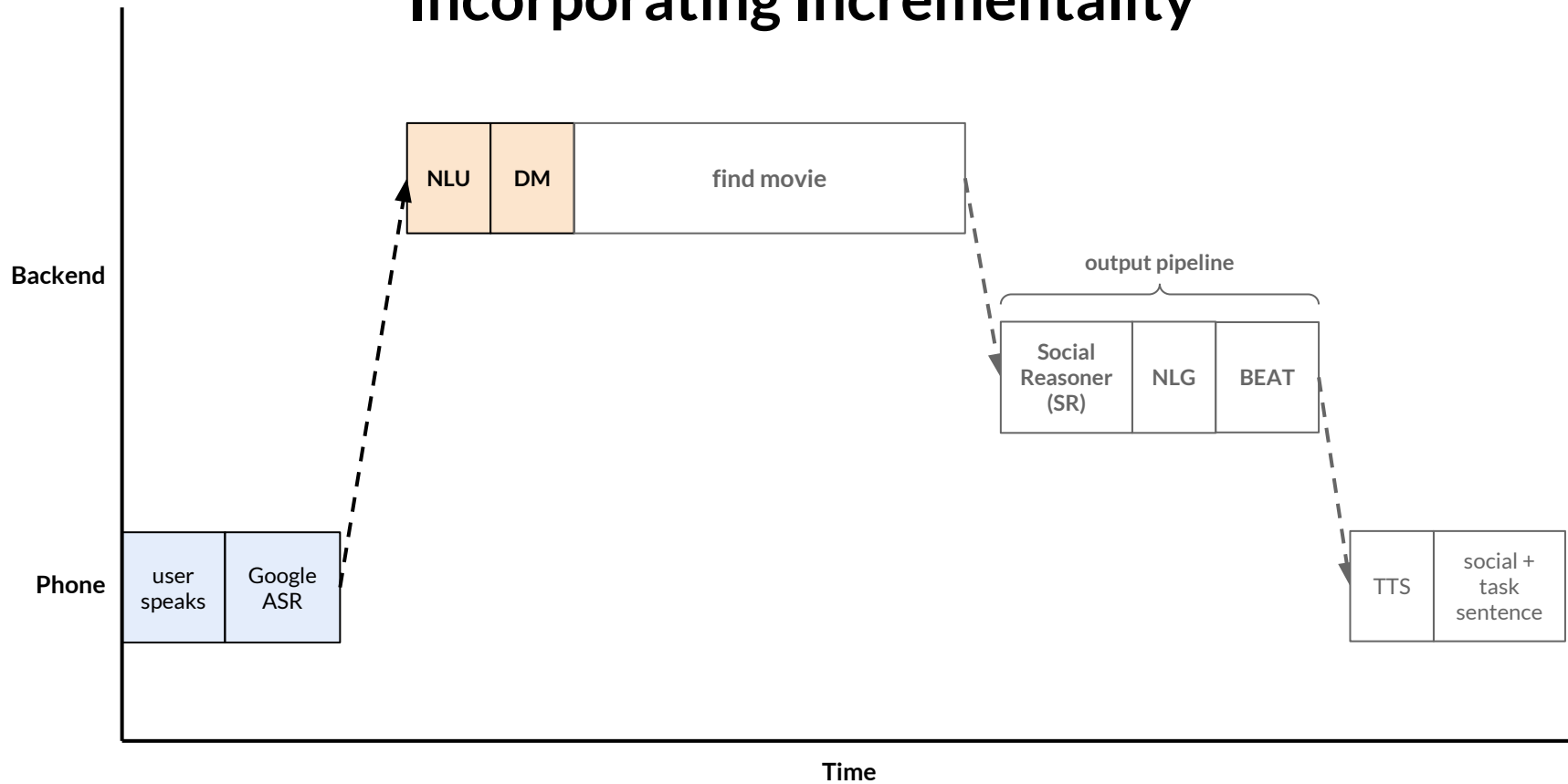
Example of a Turn Exchange



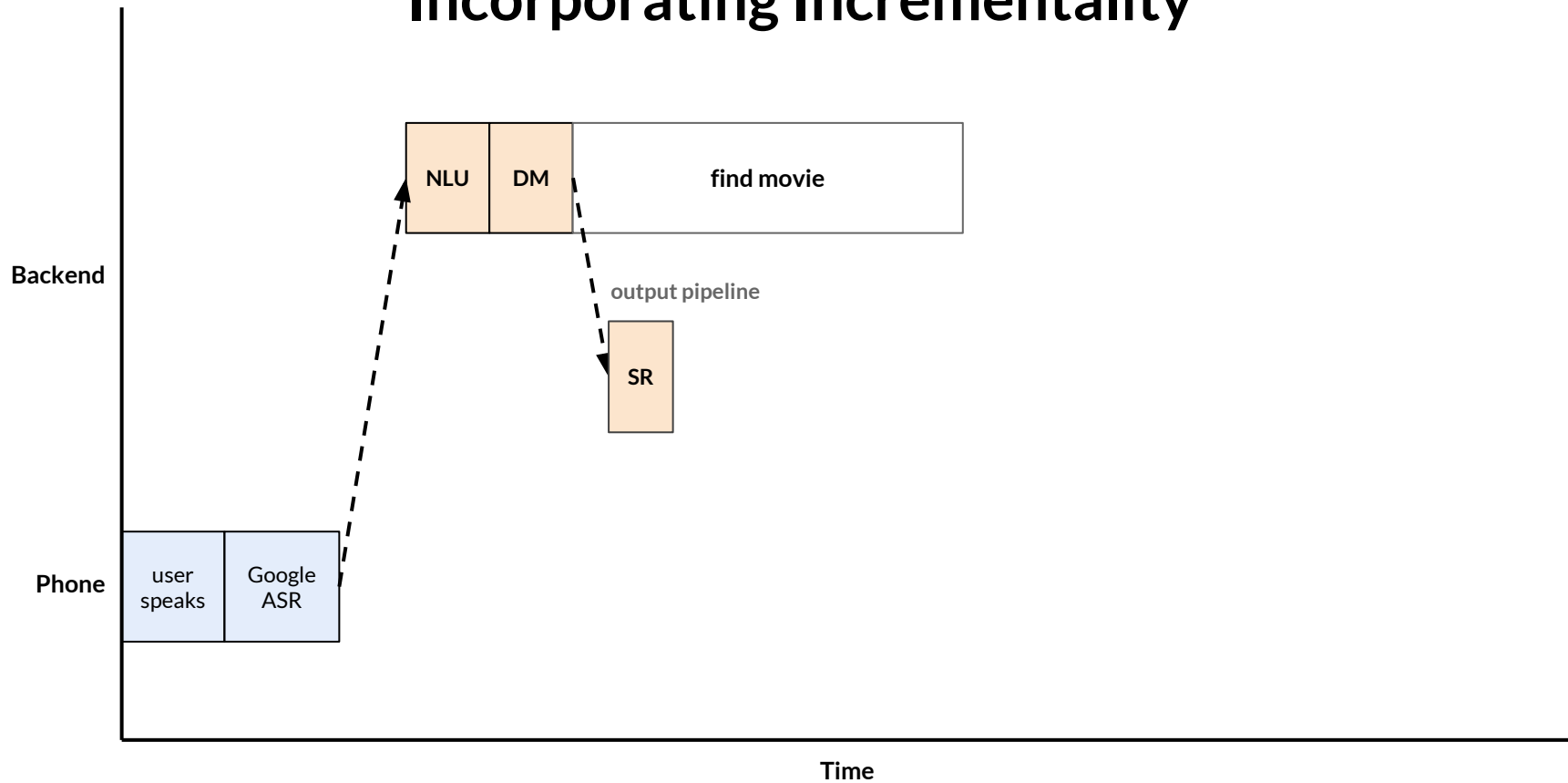
Incorporating Incrementality



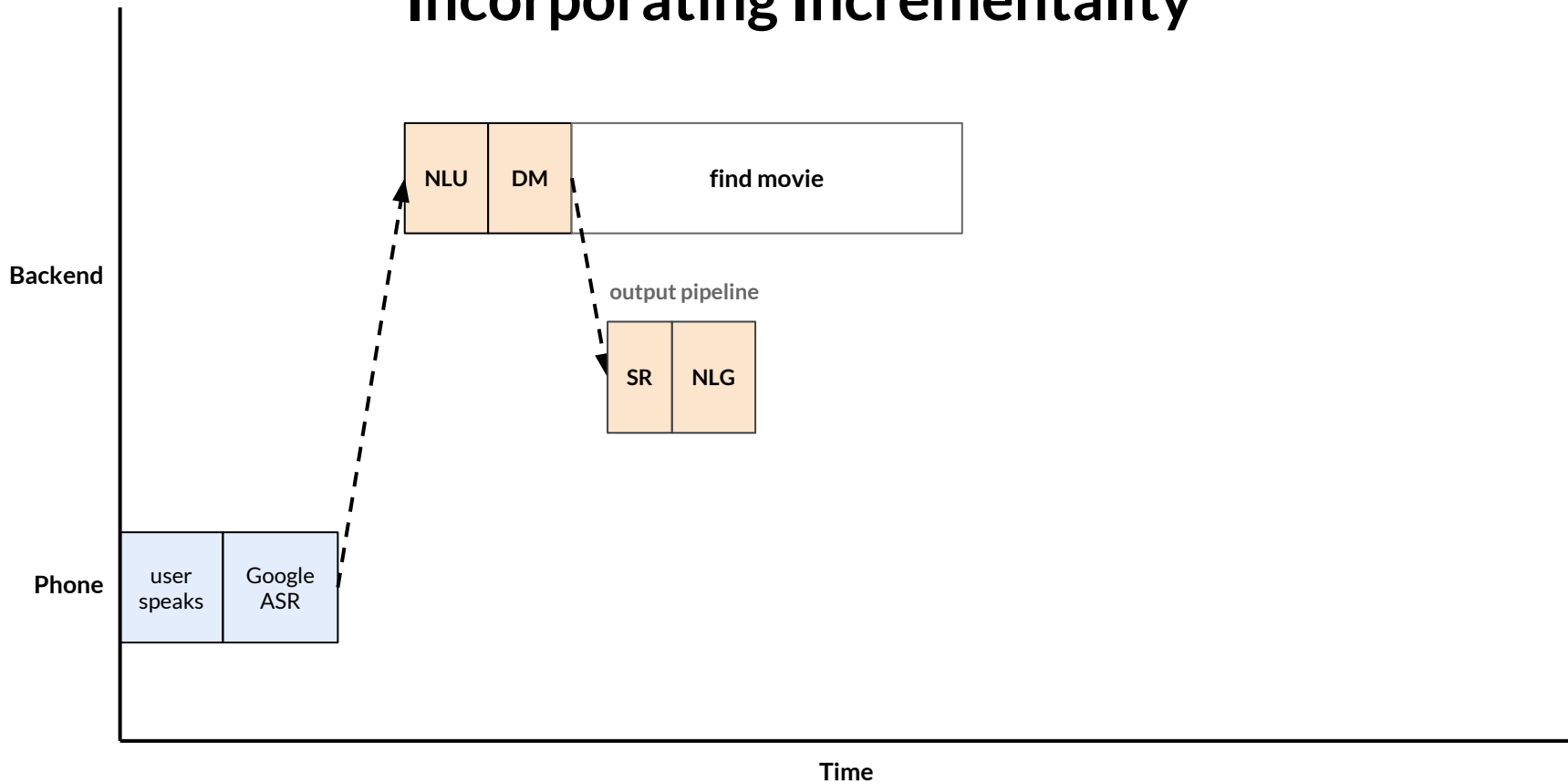
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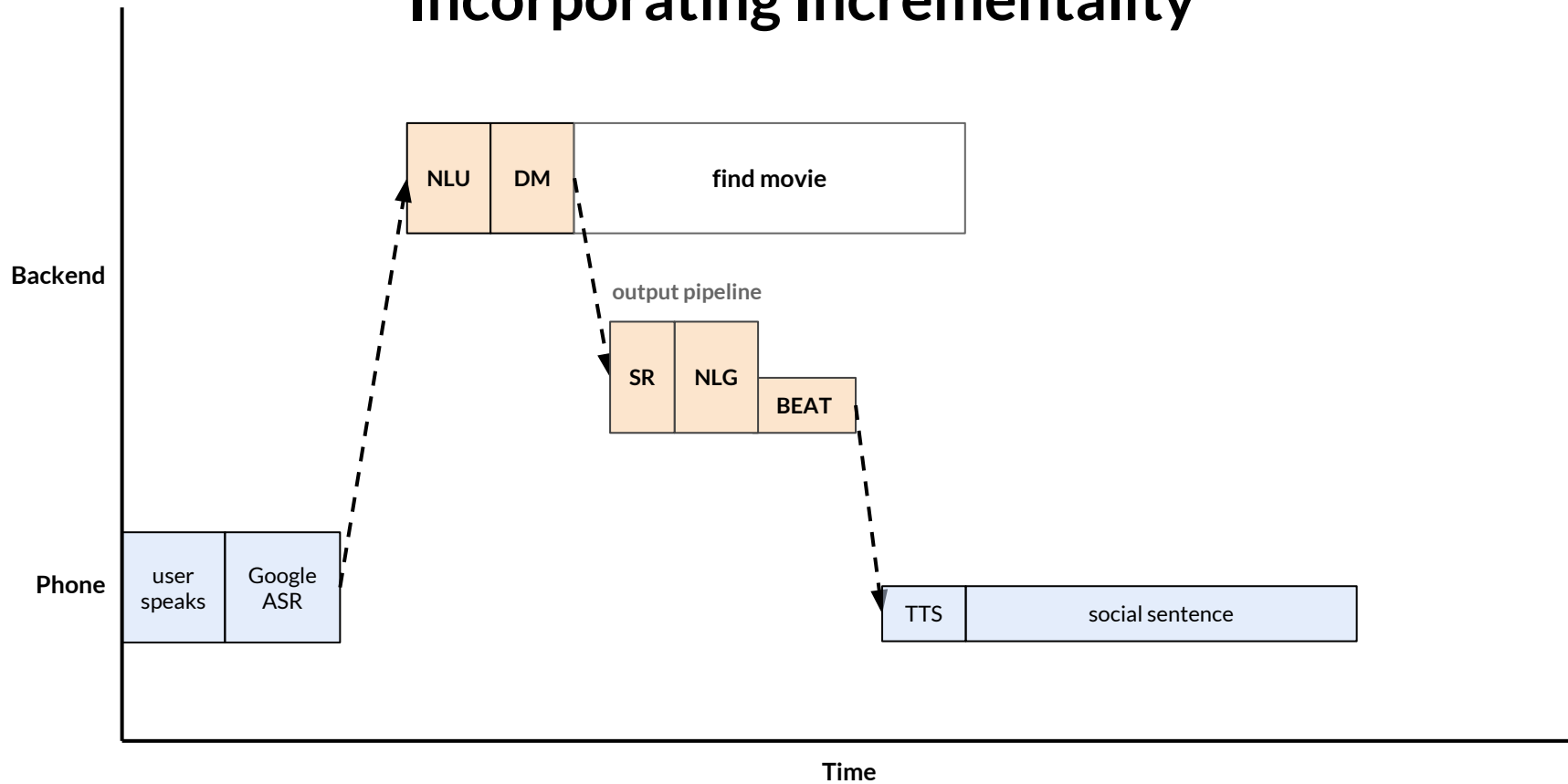
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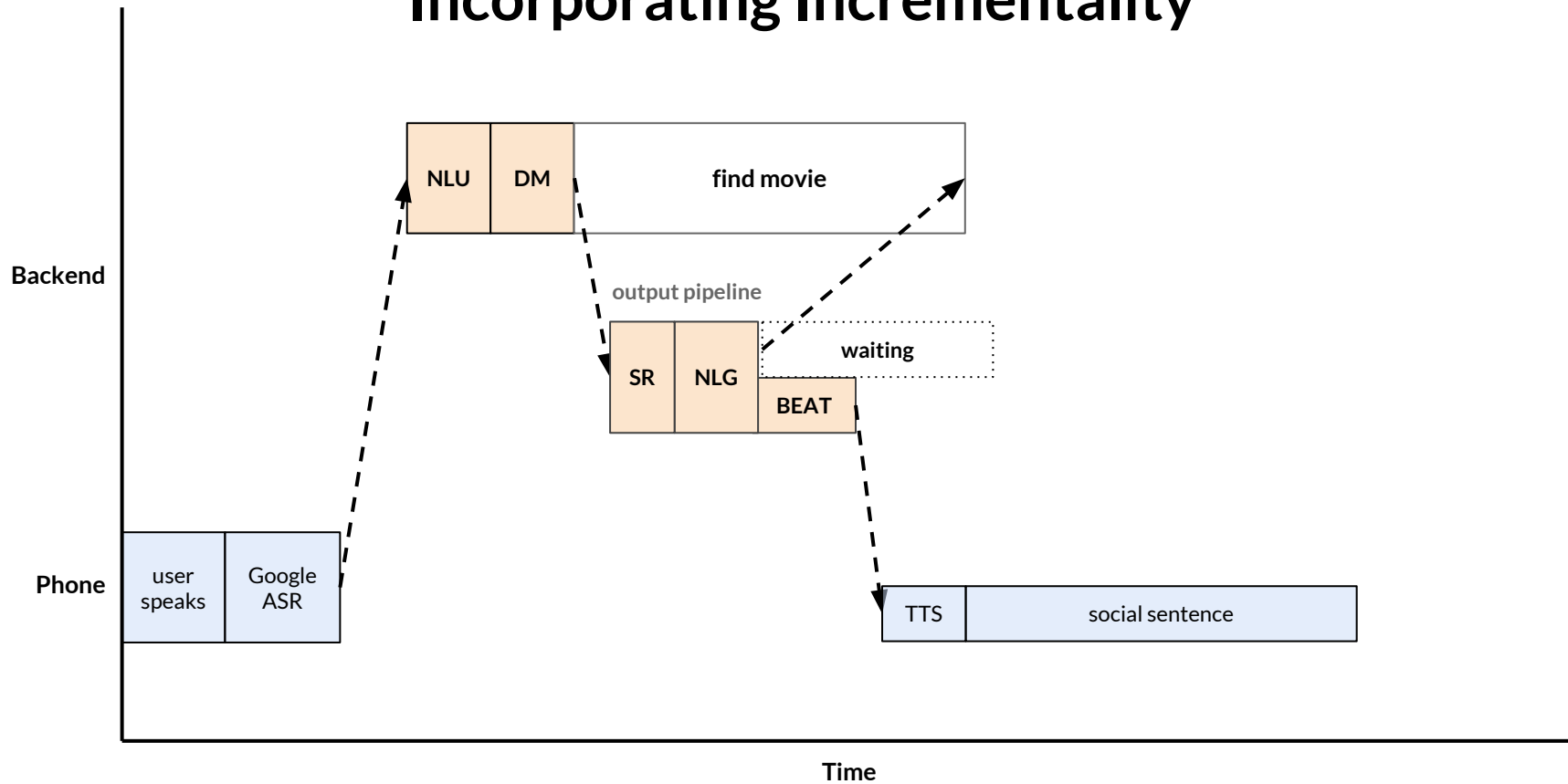
Incorporating Incrementality



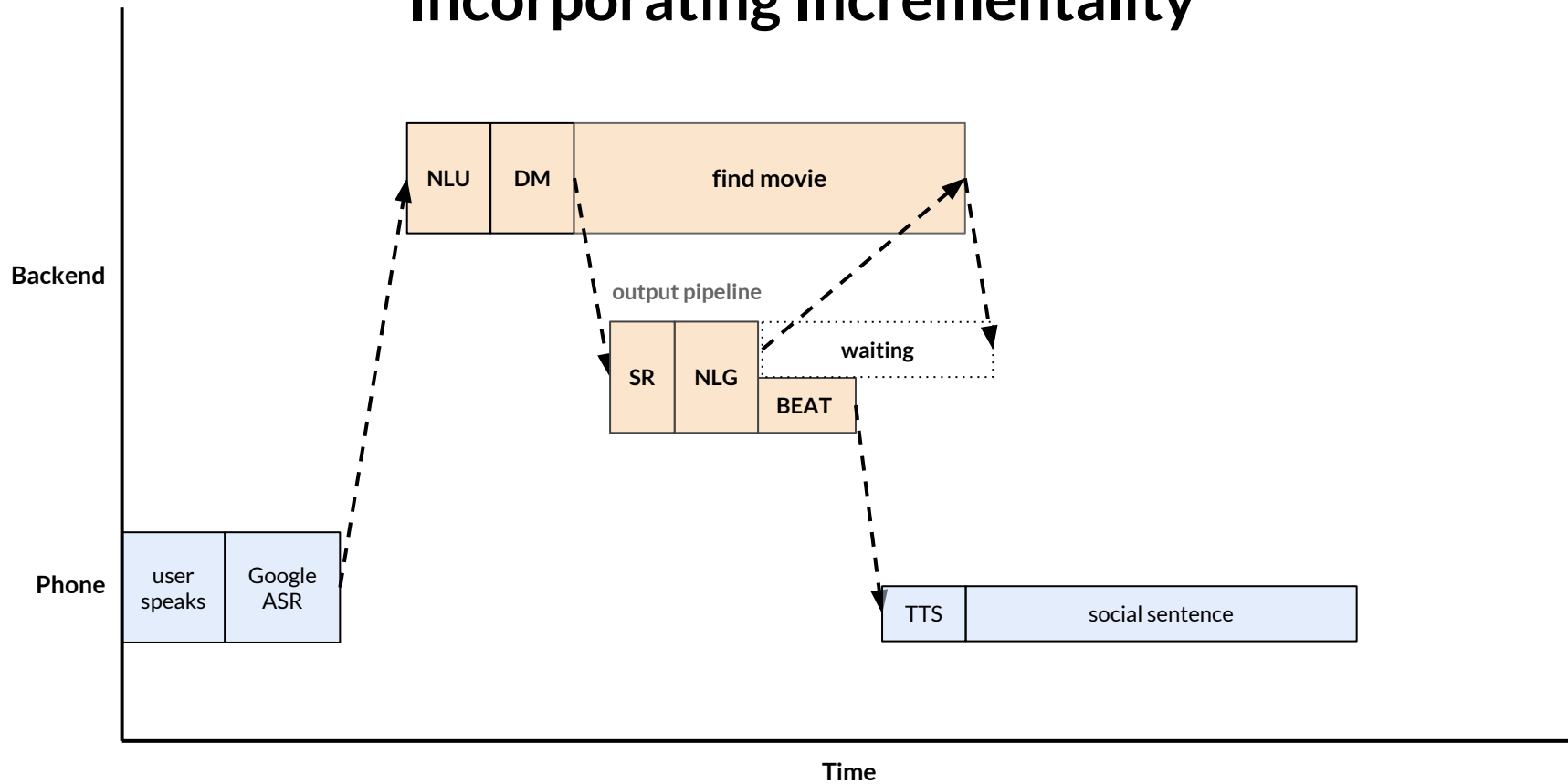
Incorporating Incrementality



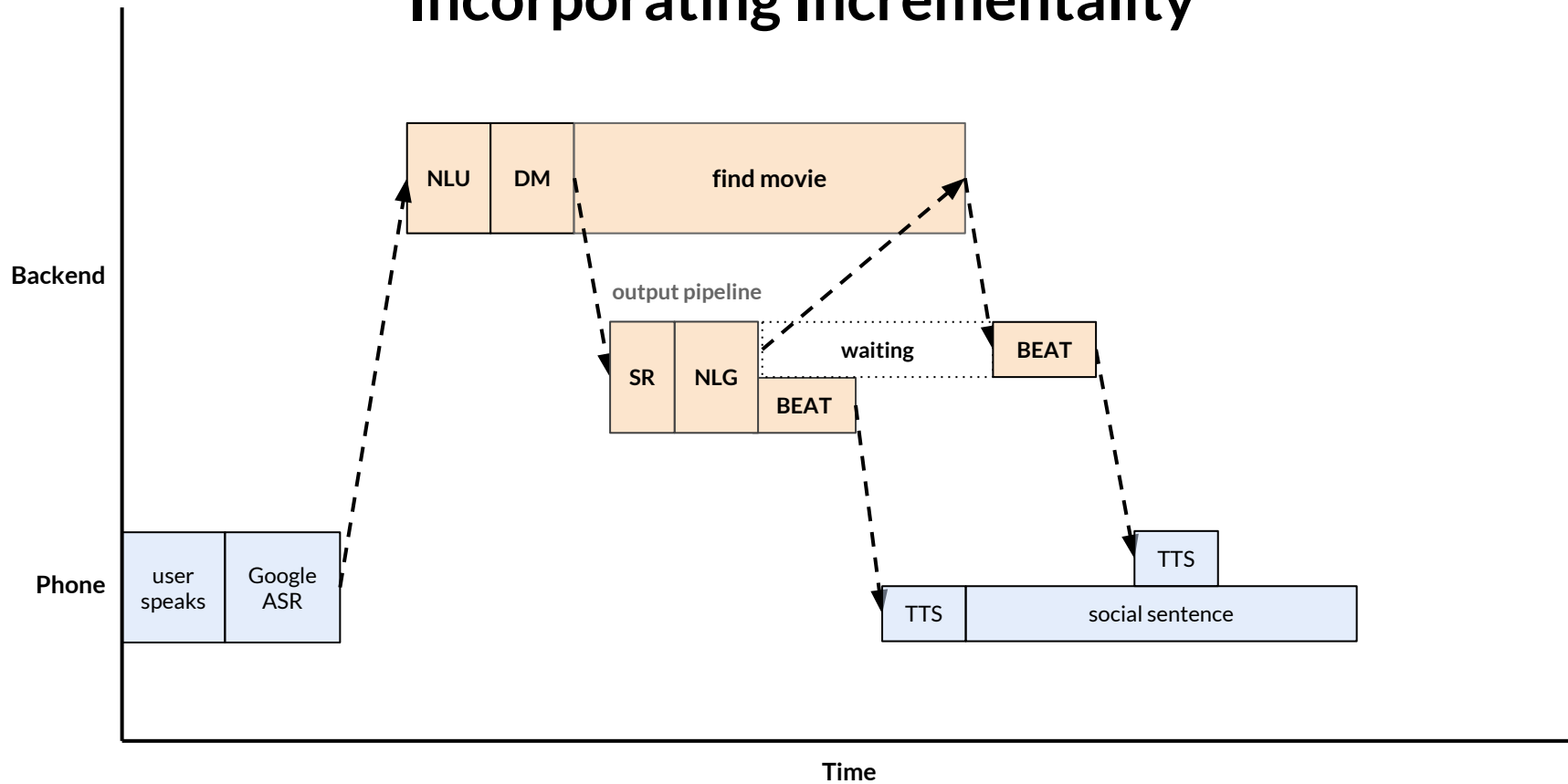
Incorporating Incrementality



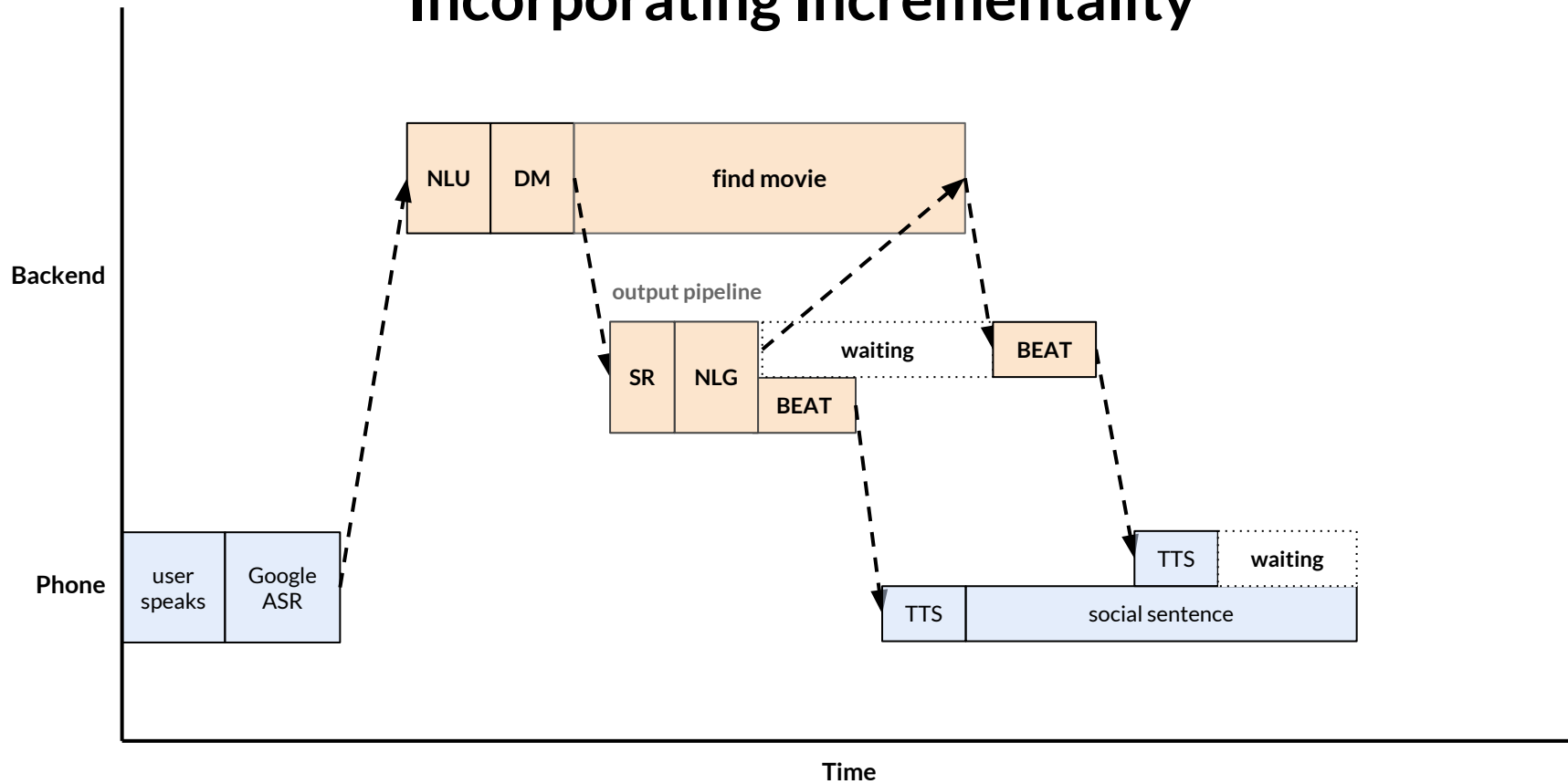
Incorporating Incrementality



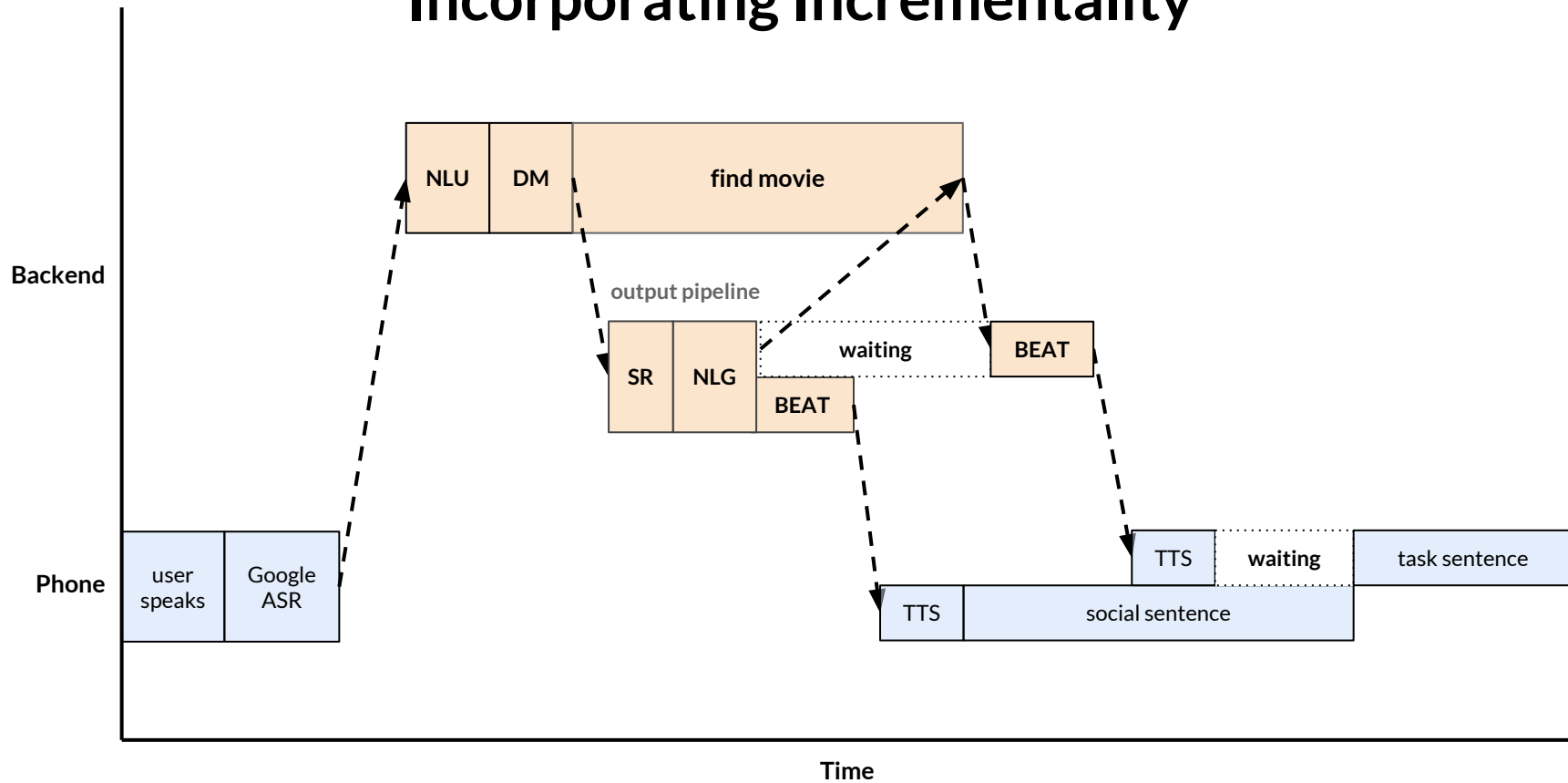
Incorporating Incrementality



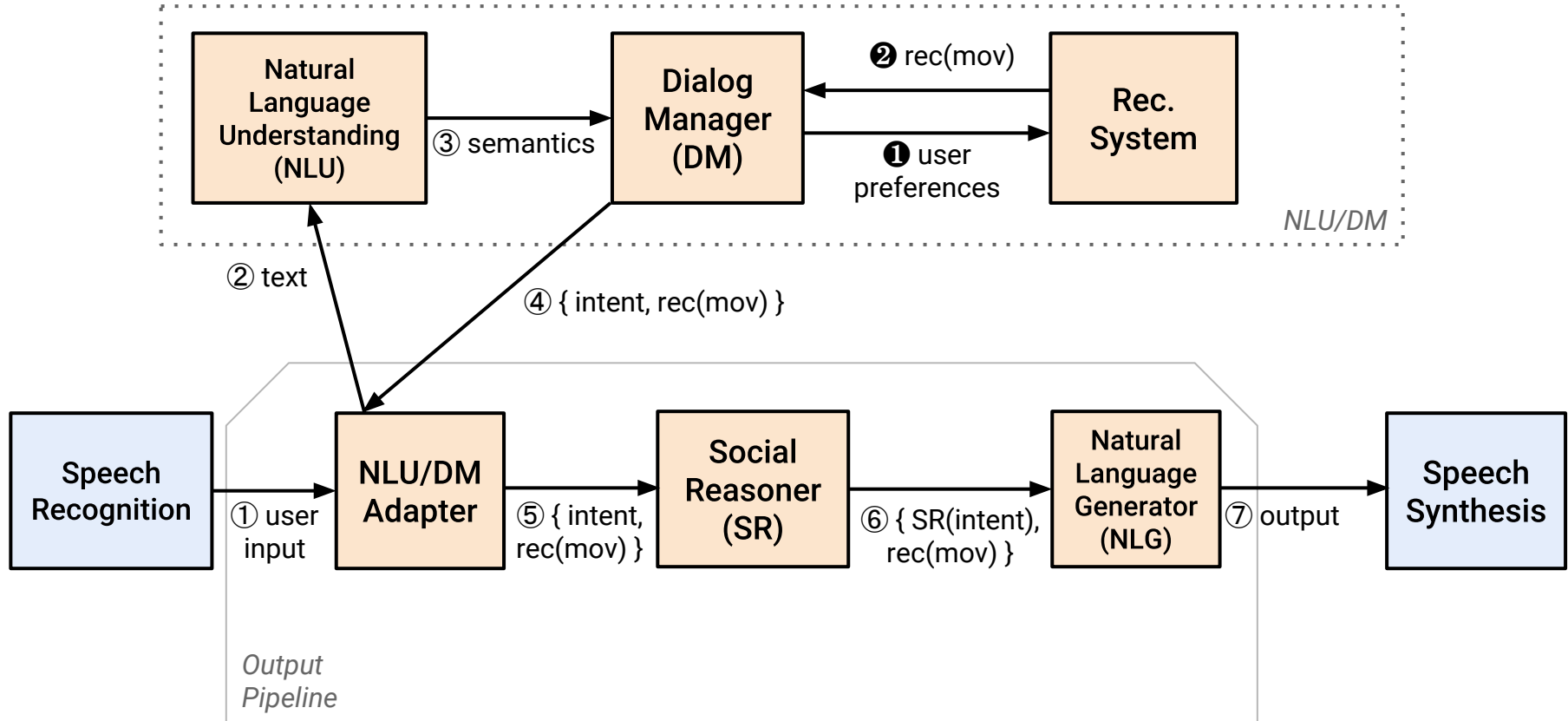
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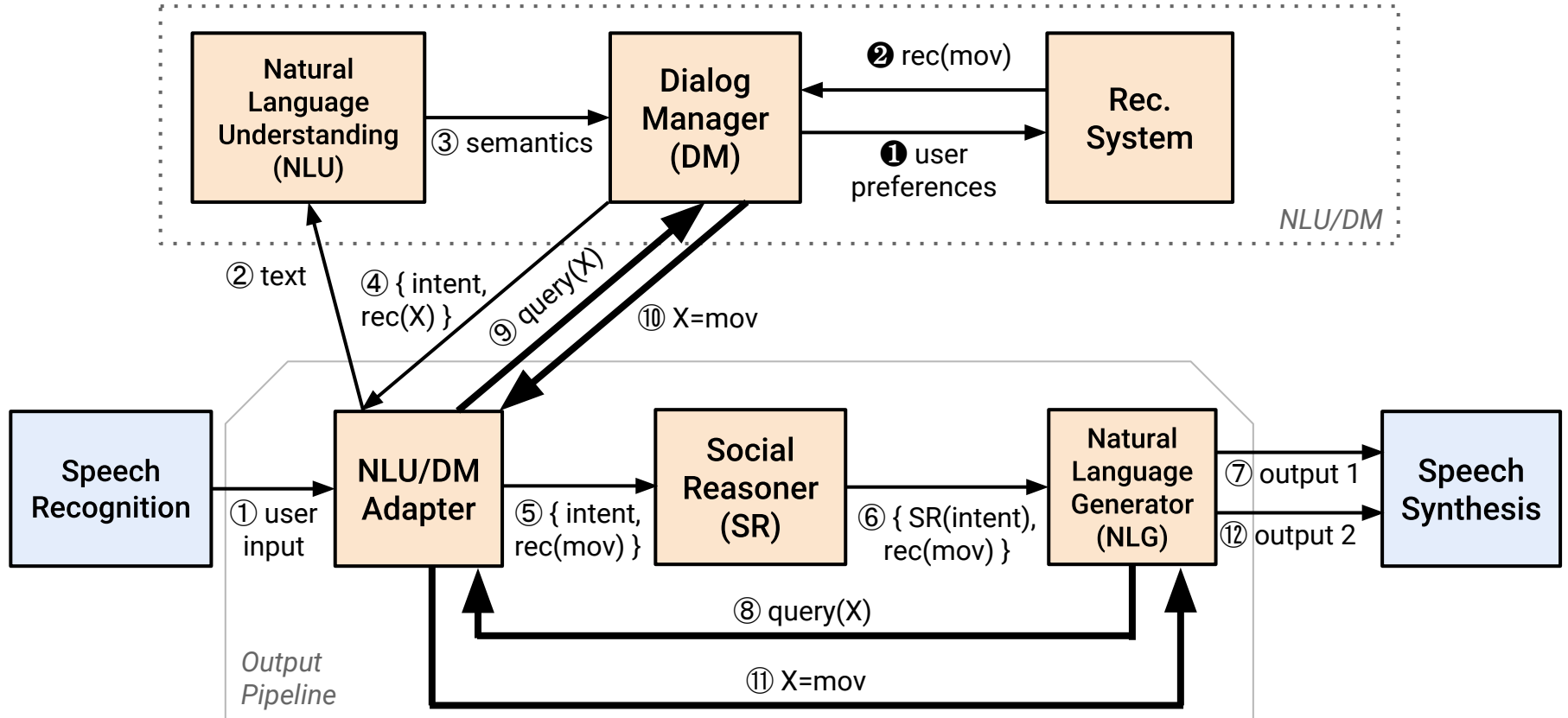
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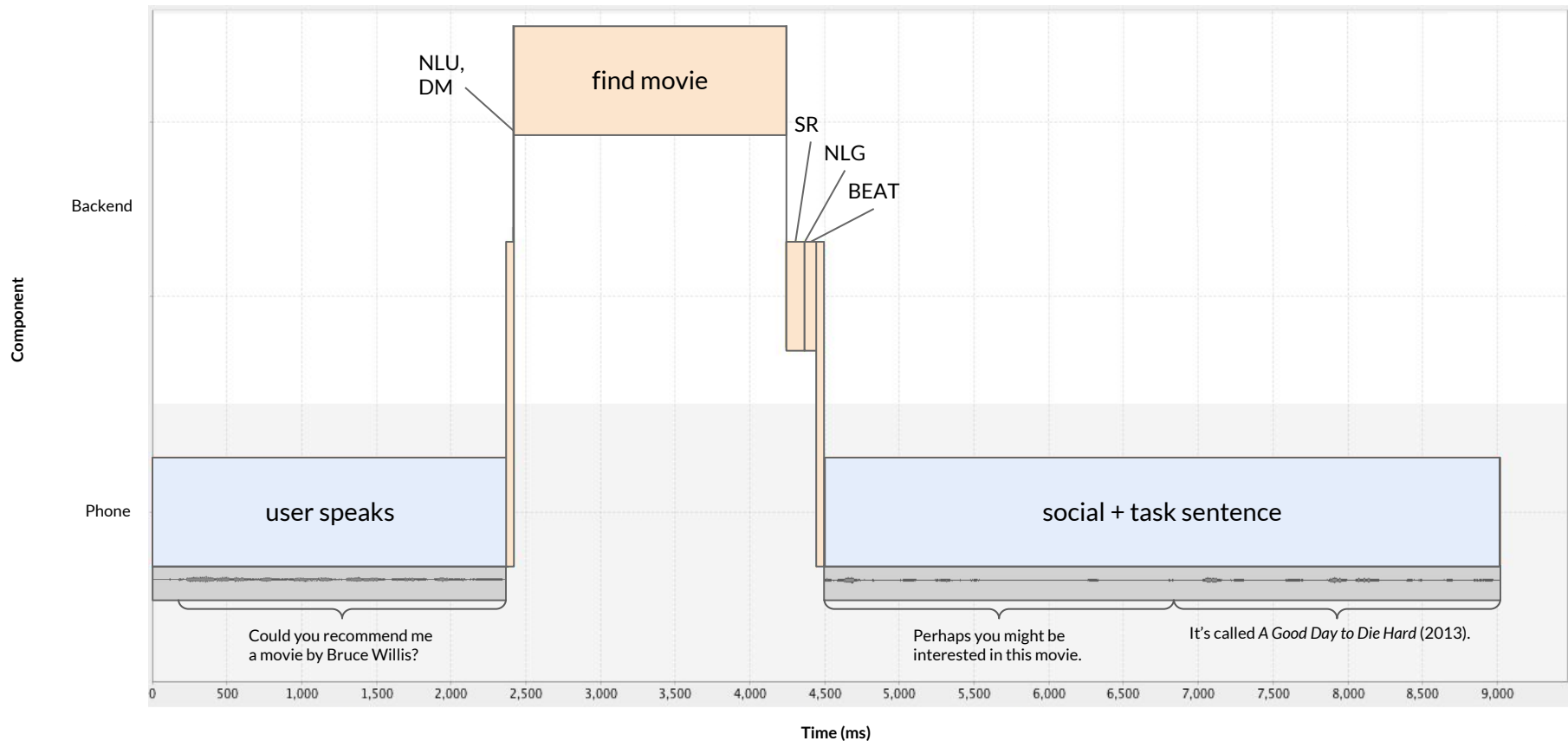
Non-Incremental System



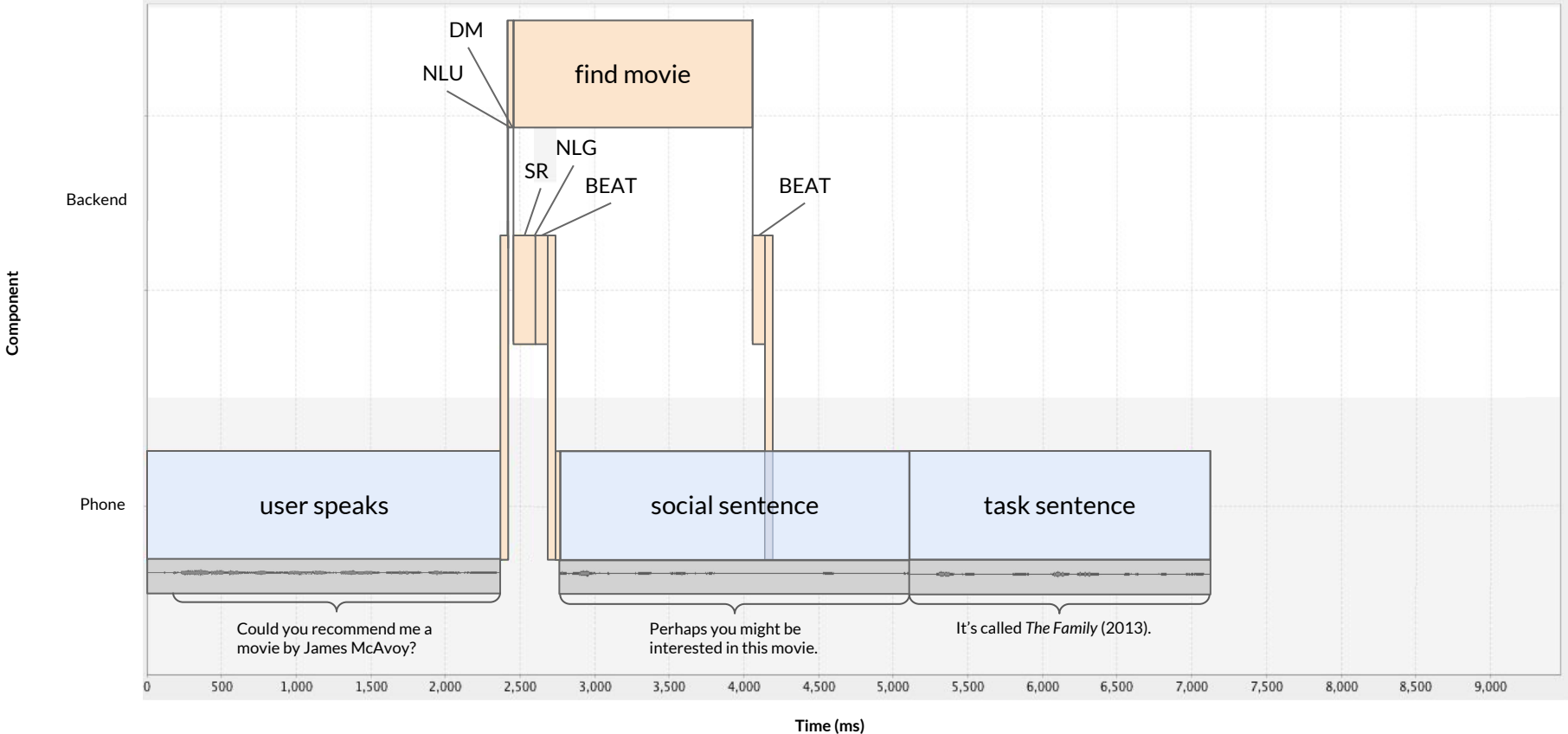
Incremental System



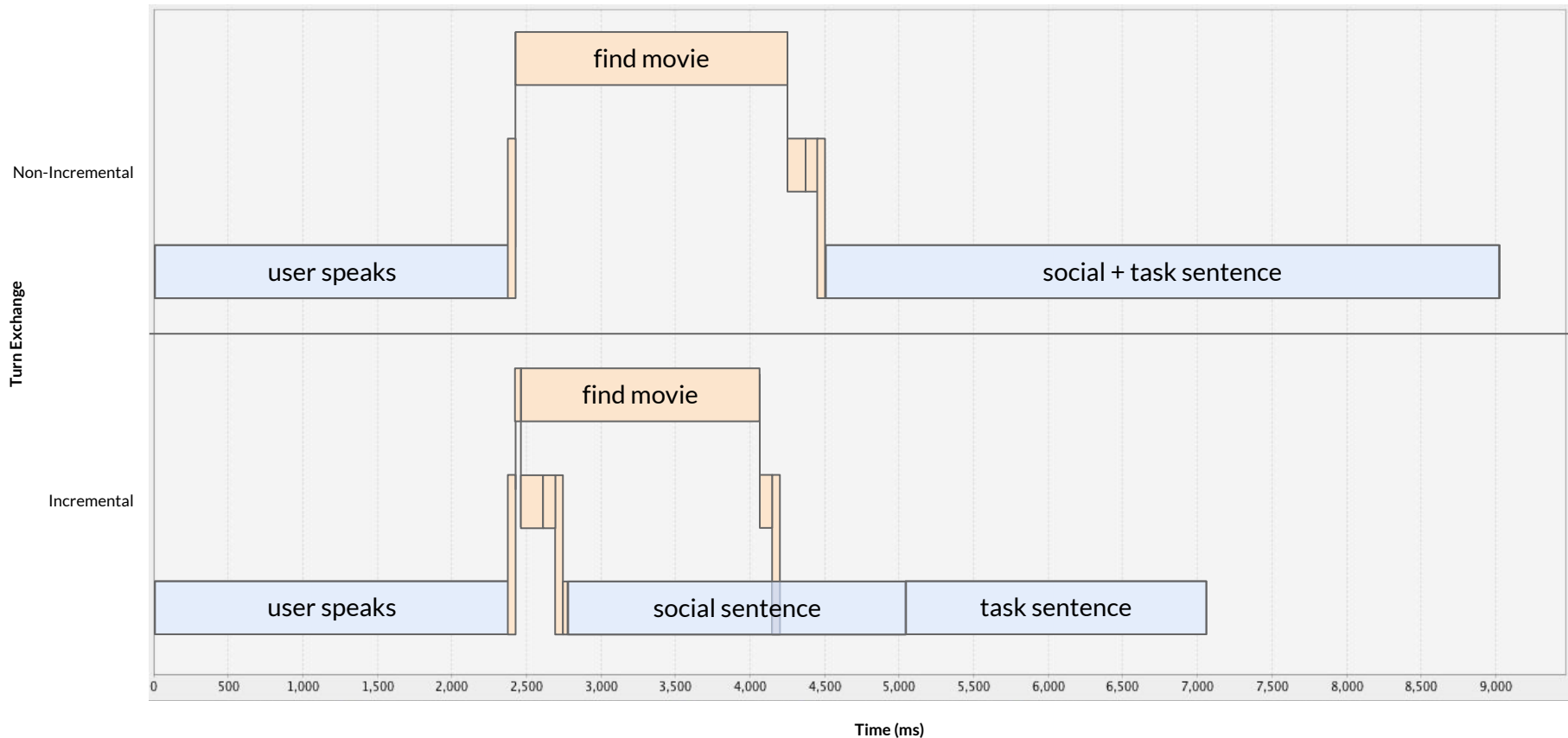
Non-Incremental Turn Exchange



Incremental Turn Exchange



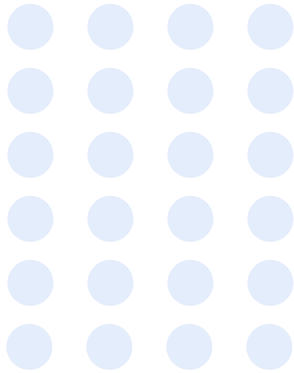
Non-Incremental vs. Incremental Turn Exchanges



User Study

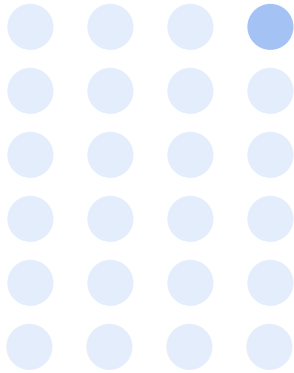
User Study

24 subjects



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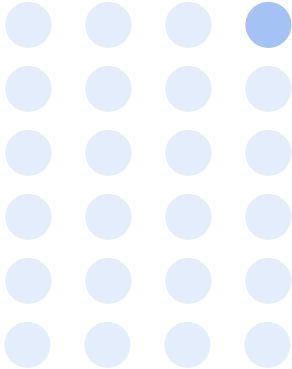
2 conversations

non-incremental

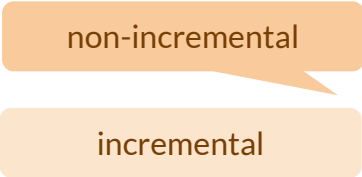
incremental

User Study

24 subjects



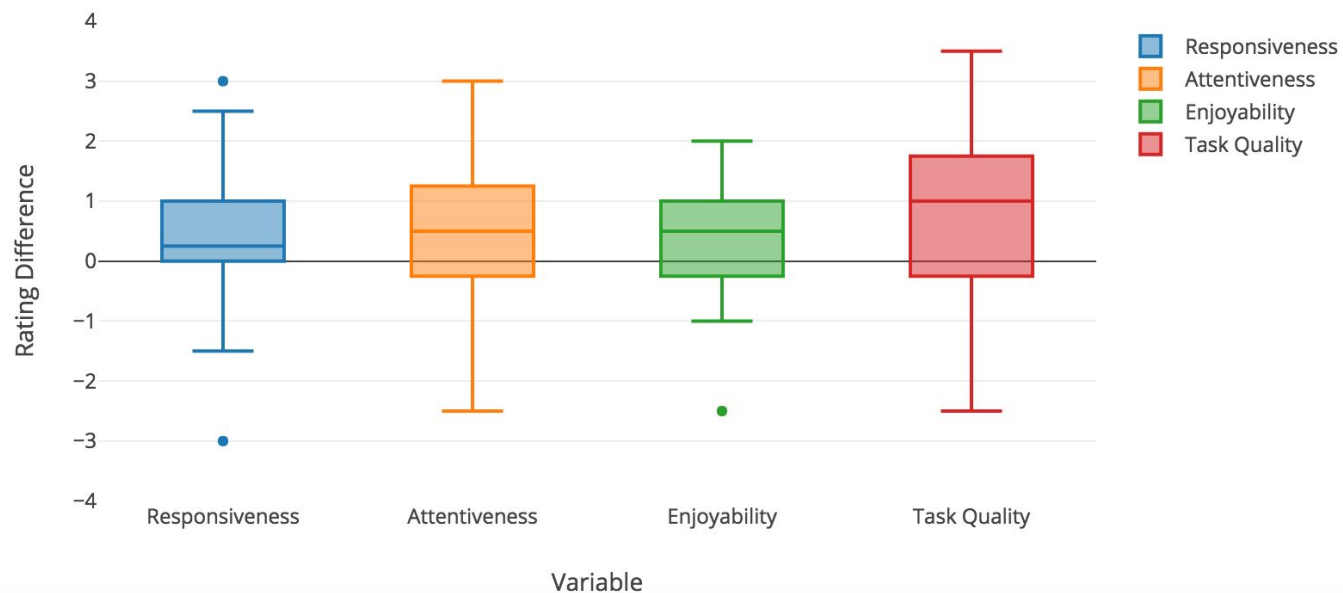
2 conversations



4 variables

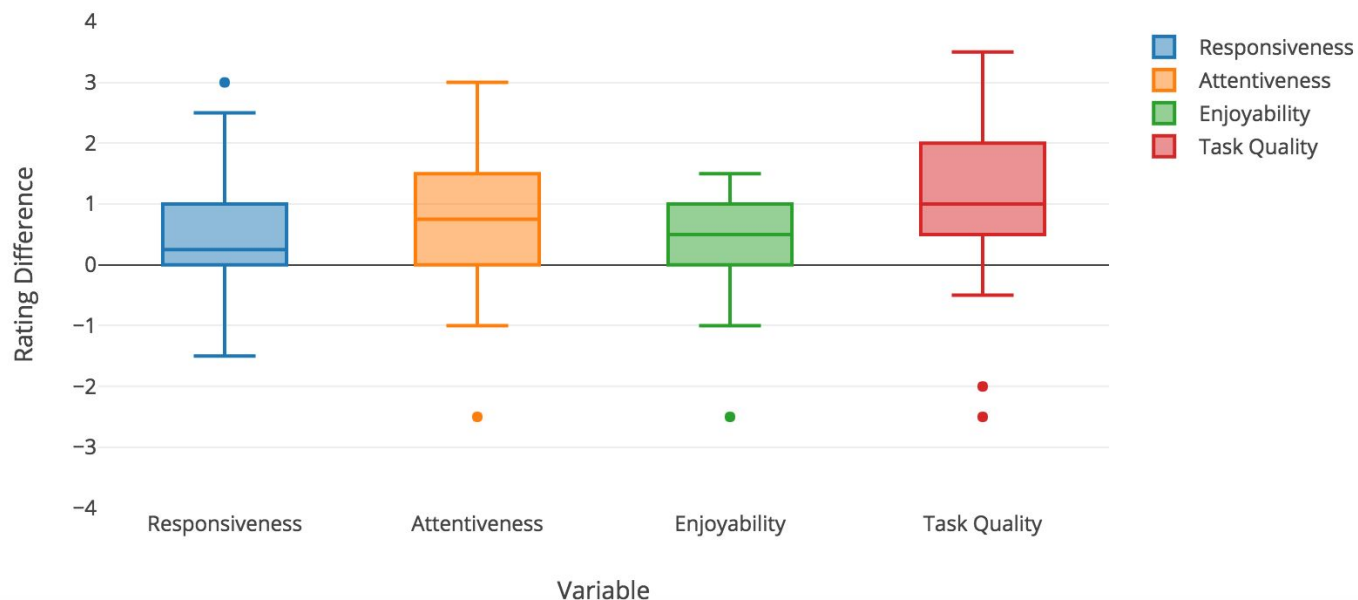


Difference in Incremental and Non-Incremental Ratings



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7+ years of English only (N = 18)



User Study Results

	all data (N = 24)	7+ yrs English (N = 18)
responsiveness	p = .0384*	p = .0327*
attentiveness	p = .0576	p = .0384*
enjoyability	p = .0835	p = .0384*
task quality	p = .0173*	p = .0154*

* significant (p-value < .05)

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Conclusion

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- Objectively more responsive
- Rated more highly by users
 - (especially when no comprehension issues)
 - *movie quality* perceived as higher
- Future work: “just-in-time” processing

