Searchand Recommendation

Daan Odijk & Anne Schuth data scientists









Plan today · Search Engines that Learn from their Users

Plan today

- Search Engines that Learn from their Users
- Struggling and Success in Web Search

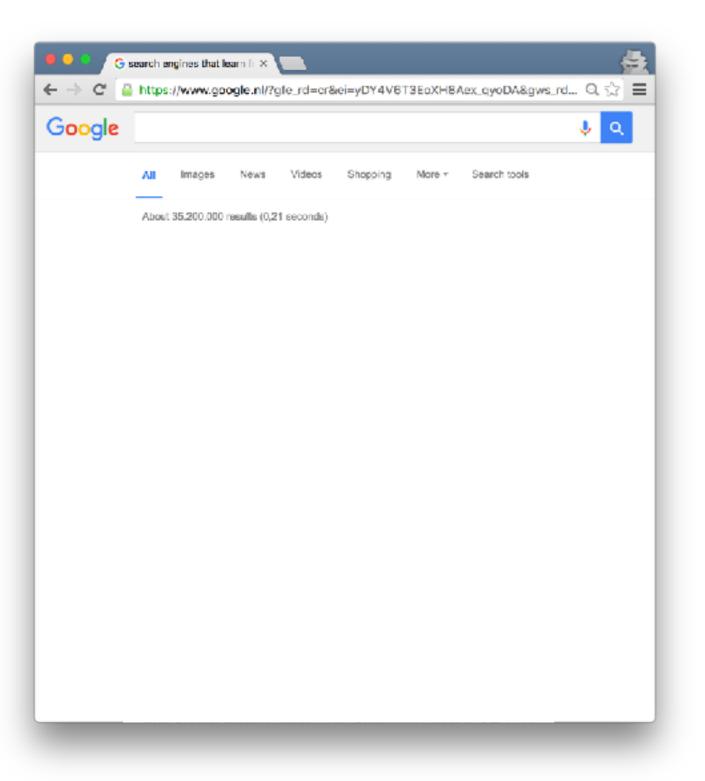
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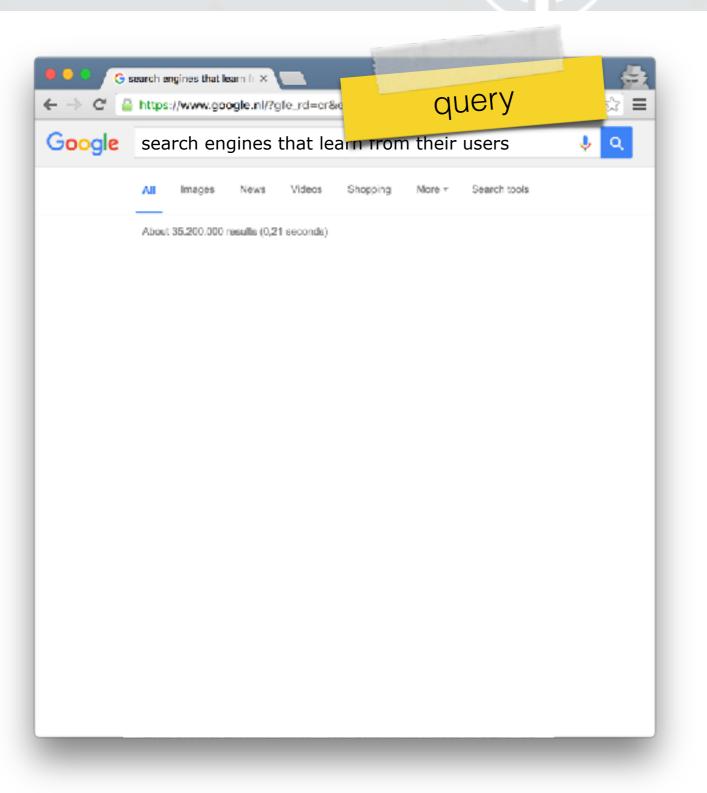
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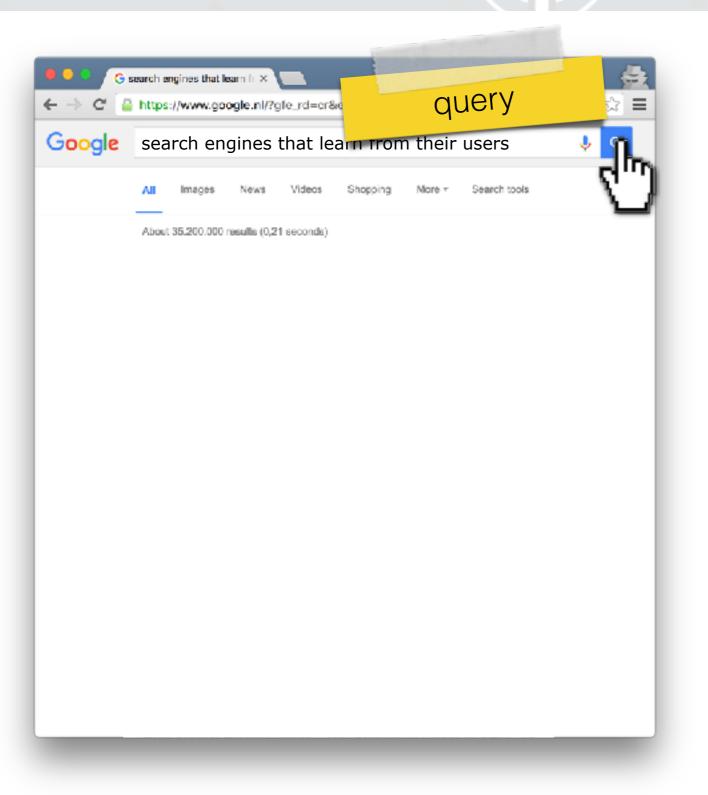
- Search Engines that Learn from their Users
- Struggling and Success in Web Search
- Real-time recommendations at Blendle
 - Article- and User profile enrichment
 - Streaming Architecture (Docker, Kubernetes and Kafka)
 - Demo

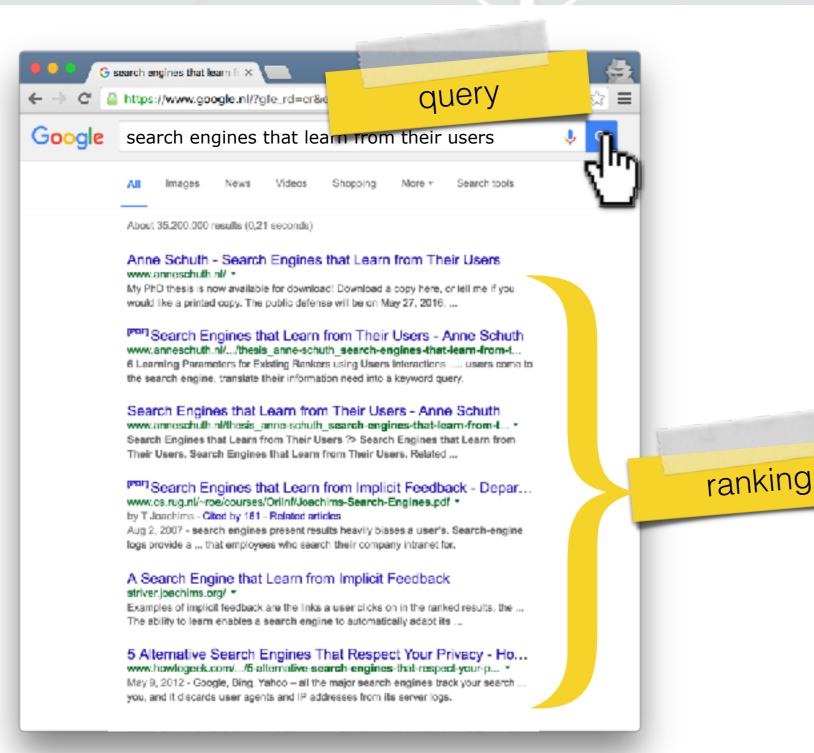


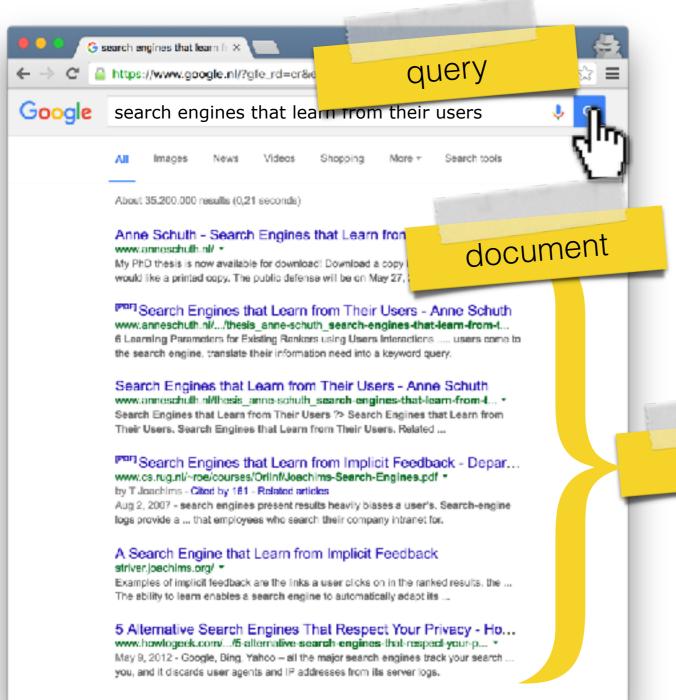






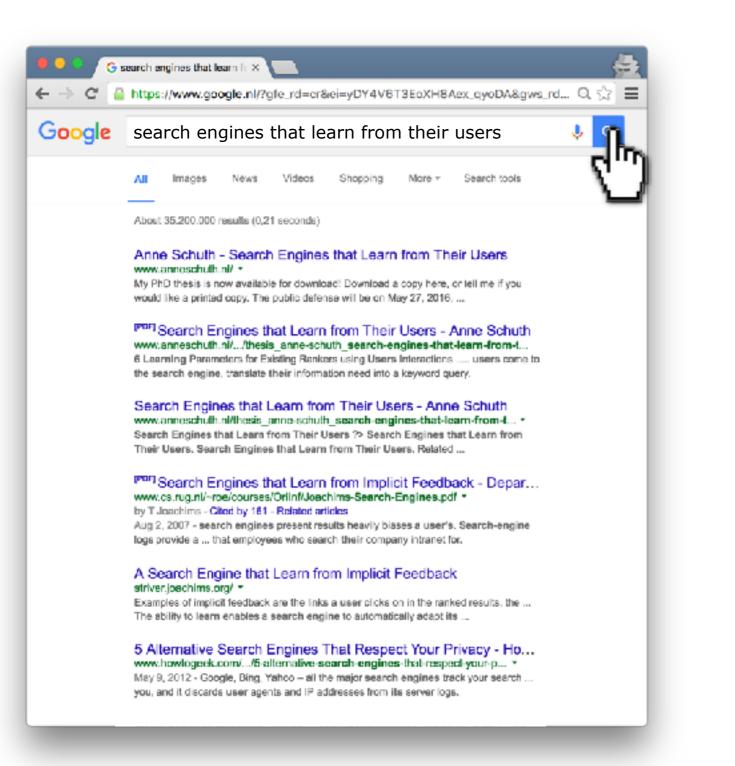








RANKING



RANKING

search engines that learn from their users

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Anne Schulh - Search Engines that Learn from Their Users www.anneschulh.nl/ * My PhD thesis is now available for download! Download a copy here, or tell me if you would like a printed copy. The public defense will be on May 27, 2016,	7		
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A Search Engine that Learn from Implicit Feedback atriver.joachims.org/ - Examples of implicit feedback are the links a user clicks on in the ranked results, the The ability to learn enables a search engine to automatically adapt its	7	2000
5 Alternative Search Engines That Respect Your Privacy - Ho www.howlogeek.com//6-alternative-search-engines-that-respect-your-p * May 9, 2012 - Google, Bing, Yahoo – all the major search engines track your search you, and it discards user agents and IP addresses from its server logs.	7	1000

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search engines that learn from their users	#query terms	#document terms	pagerank
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[Por] Search Engines that Learn from Their Users - Anne Schuth www.anneschuth.nl//thesis_anne-schuth_search-engines-that-learn-from-t 6 Learning Parameters for Existing Rankers using Users Interactions users come to the search engine, translate their information need into a keyword query.	7	80000	0.2
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5 Alternative Search Engines That Respect Your Privacy - Ho www.howlogeek.com//6-alternative-search-engines-that-respect-your-p * May 9, 2012 - Google, Bing, Yahoo – all the major search engines track your search you, and it discards user agents and IP addresses from its server logs.	7	1000	0.6

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Anne Schuth - Search Engines that Learn from Their Users www.anneschuth.nl/ - My PhD thesis is now available for download! Download a copy here, or tell me if you would like a printed copy. The public defense will be on May 27, 2016,	7	500	0.2	7
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A Search Engine that Learn from Implicit Feedback striver.joachims.org/ • Examples of implicit feedback are the links a user clicks on in the ranked results, the The ability to learn enables a search engine to automatically adapt its	7	2000	0.4	7
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Anne Schuth - Search Engines that Learn from Their Users www.anneschuth.nl/ • My PhD thesis is now available for download! Download a copy here, or tell me if you would like a printed copy. The public defense will be on May 27, 2016,	7	500	0.2	7	7		
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5 Alternative Search Engines That Respect Your Privacy - Ho www.howlogeek.com//5-alternative-search-engines-that-respect-your-p * May 9, 2012 - Google, Bing, Yahoo – all the major search engines track your search you, and it discards user agents and IP addresses from its server logs.	7	1000	0.6	6	3		

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search engines that learn from their users	#query terms	#document terms	pagerank	#query terms in document	#query terms in title	
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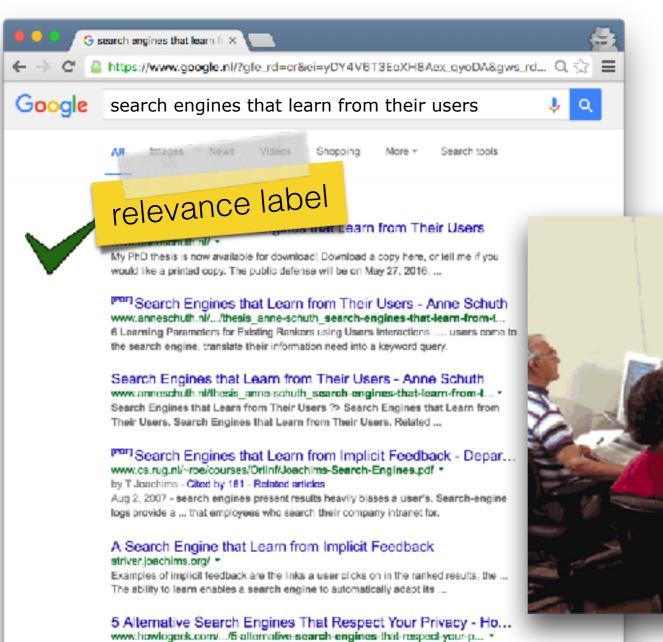
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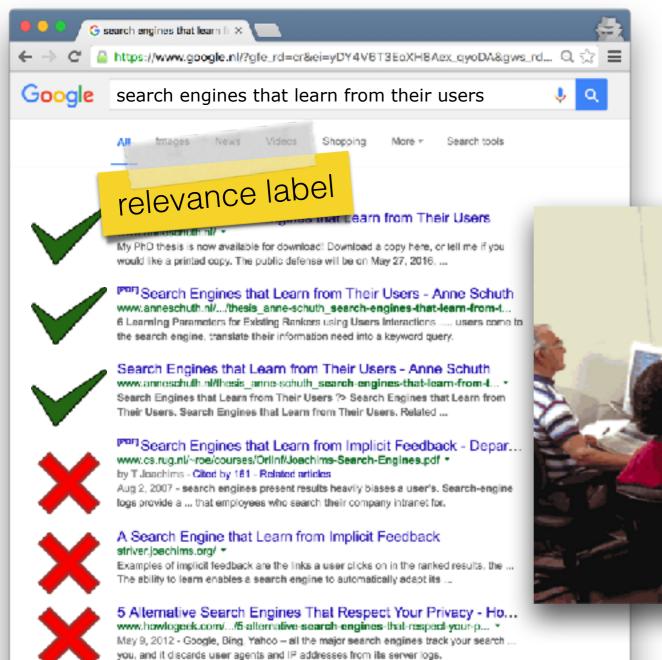
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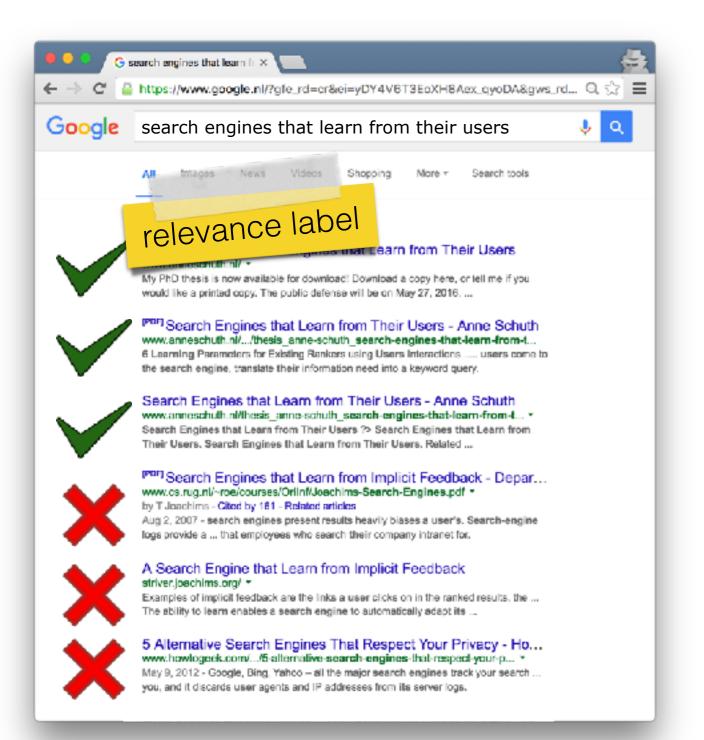


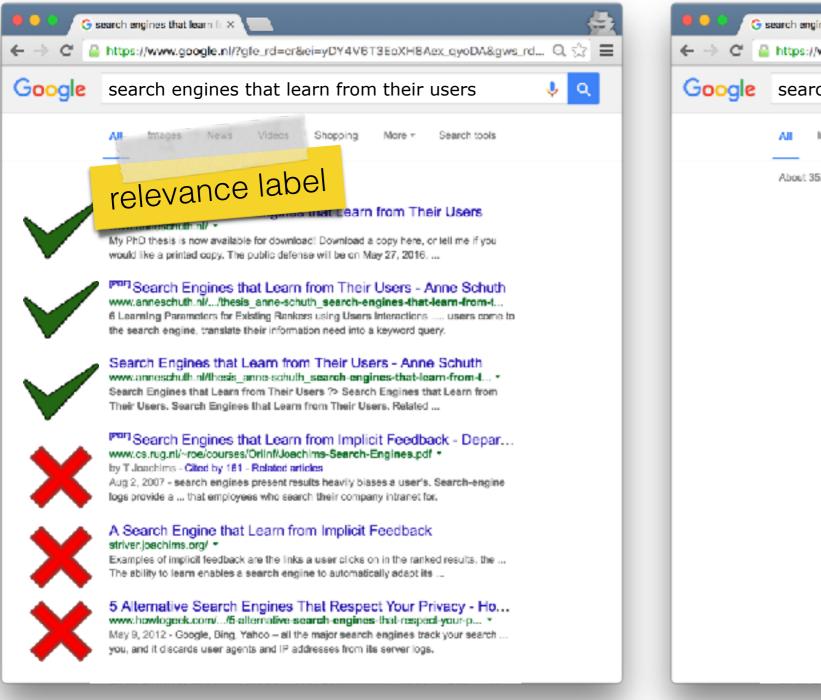
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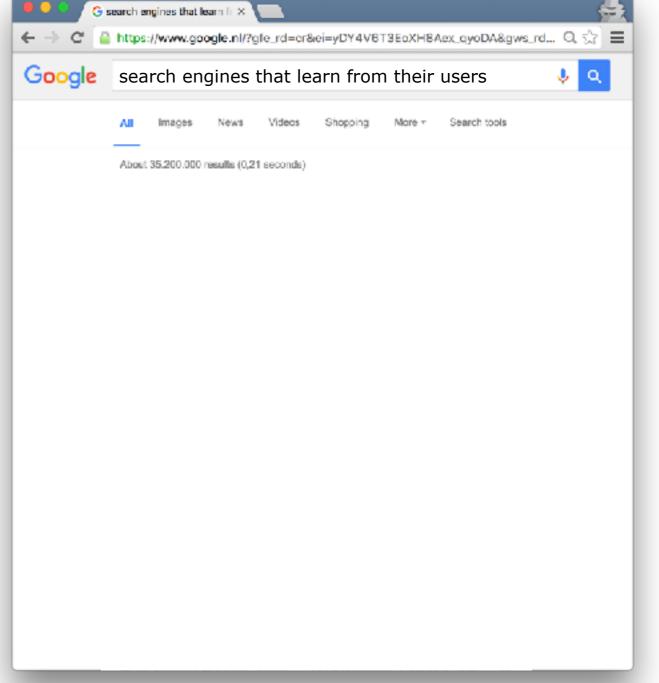


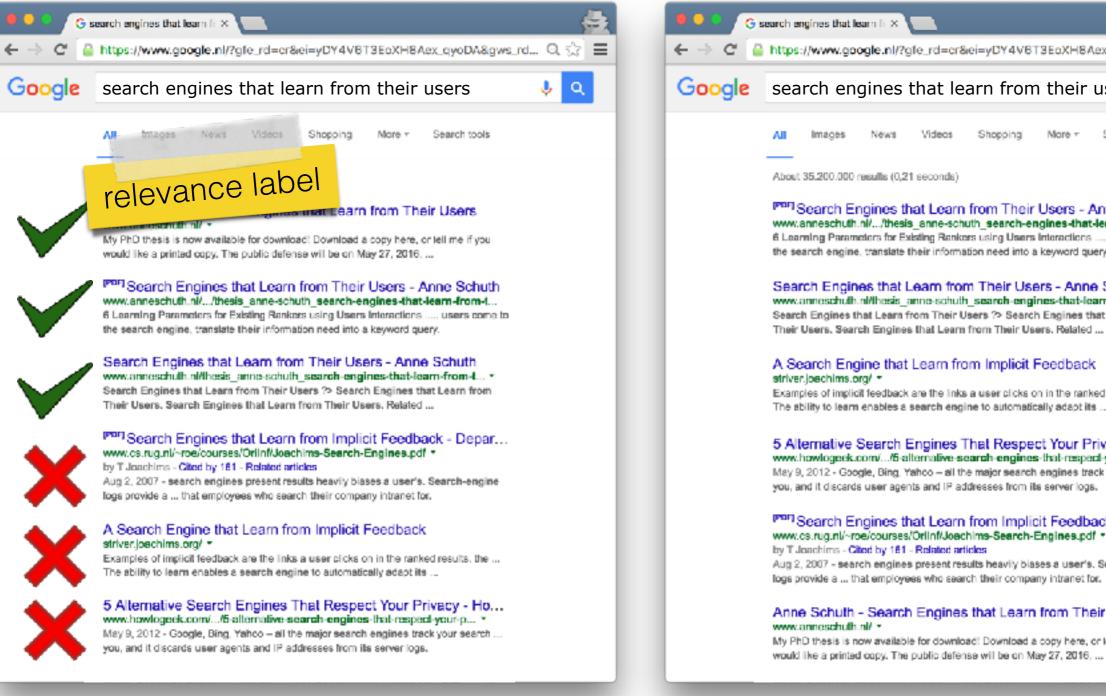


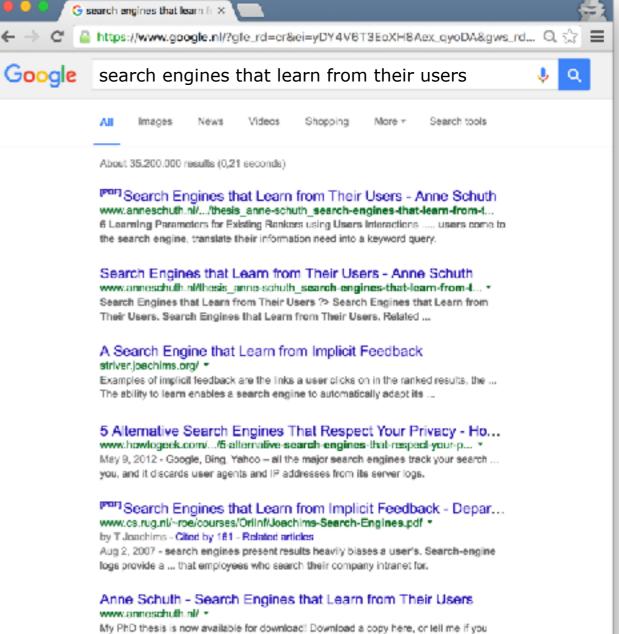


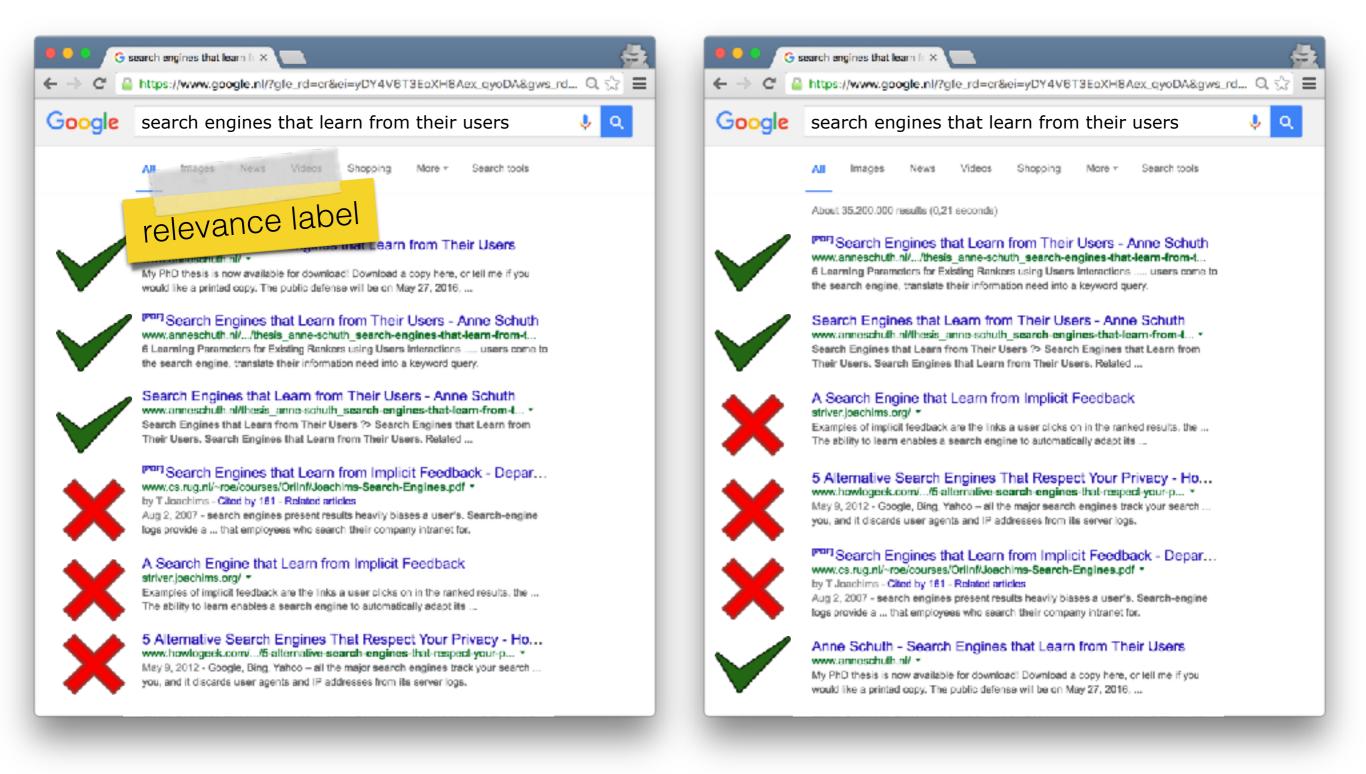


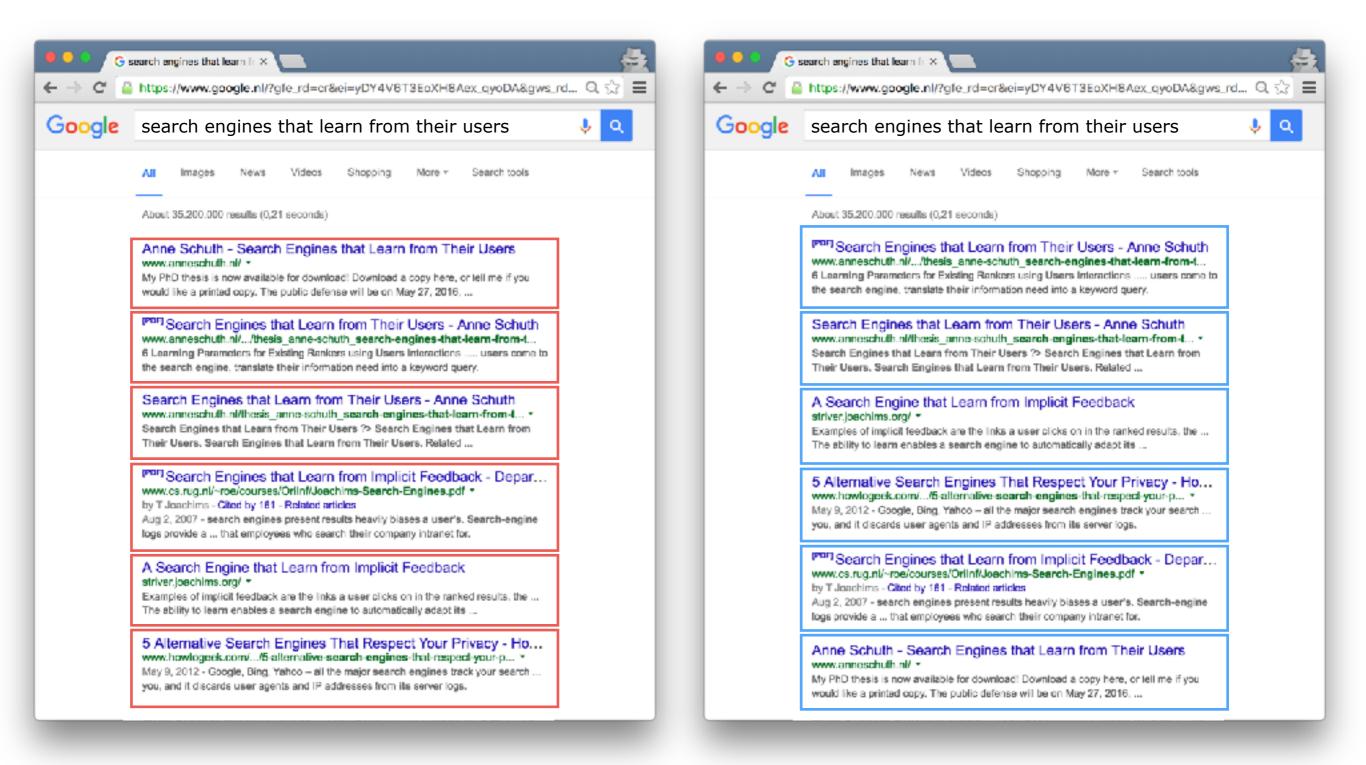












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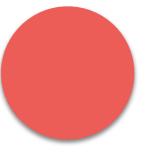
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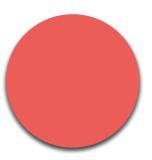
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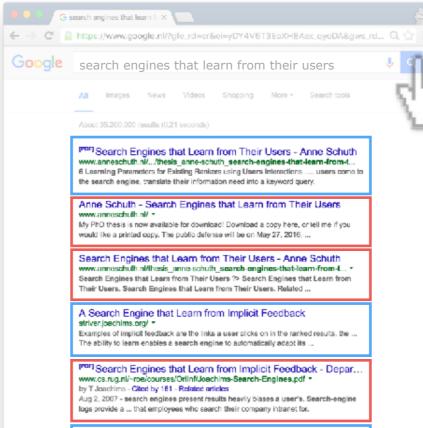
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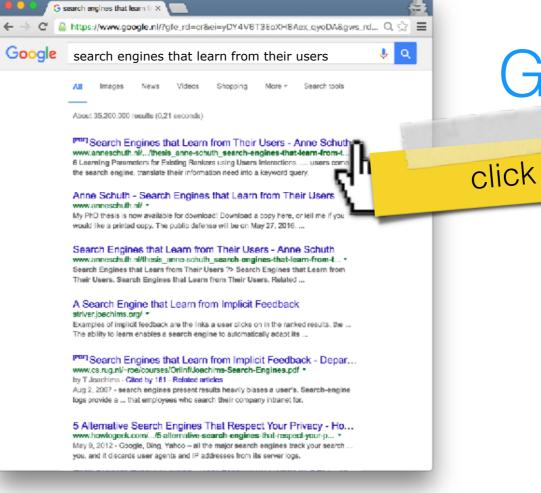
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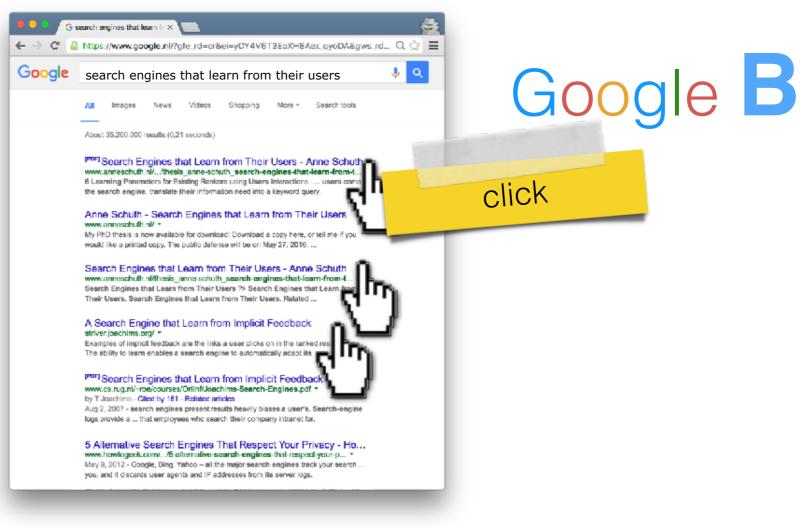
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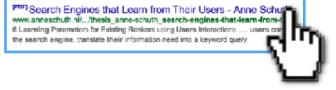




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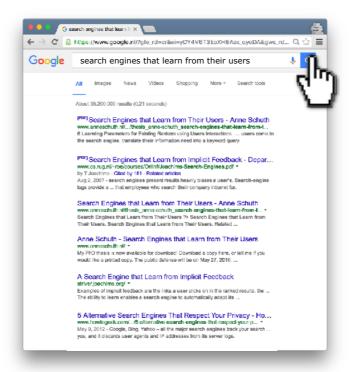
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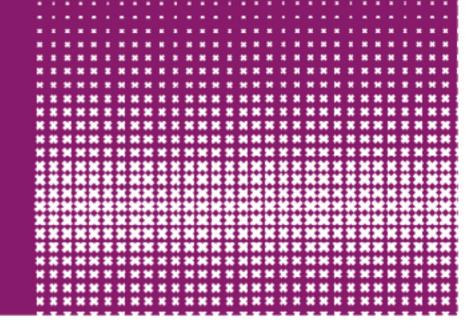


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Struggling and Success in Web Search

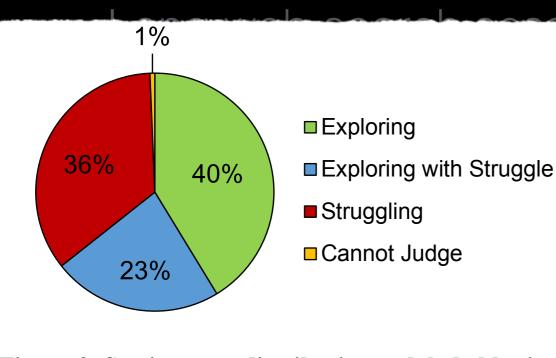
Daan Odijk, University of Amsterdam, The Netherlands Ryen W. White, Ahmed Hassan Awadallah & Susan T. Dumais Microsoft Research, Redmond, WA, USA

• Long web search sessions are common

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 - Half of web search sessions contain multiple queries [Shokouhi et al., SIGIR'13]
 - 40% of sessions take 3+ minutes [Dumais, NSF'13]
 - Account for most of search time

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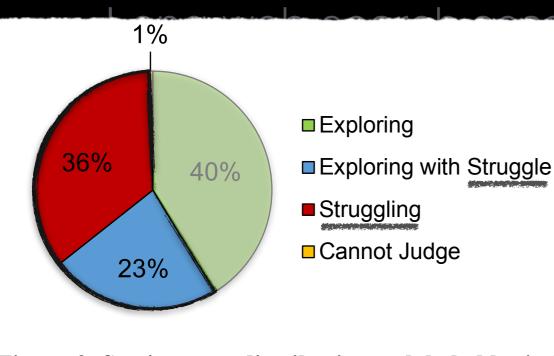
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search time

Figure 2. Session type distribution as labeled by judges.

 What are searchers doing? Struggling or Exploring. [Hassan et al., WSDM'14]



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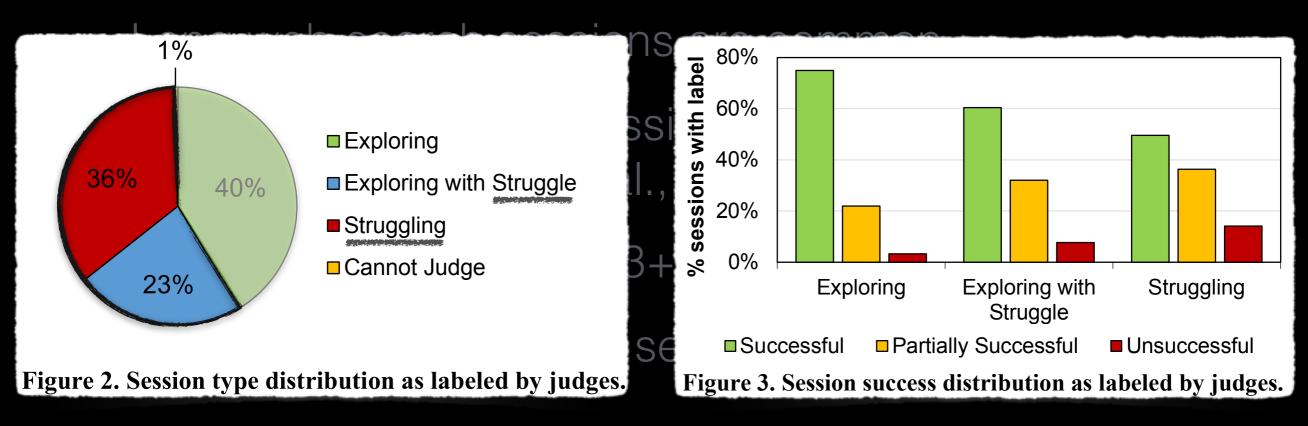
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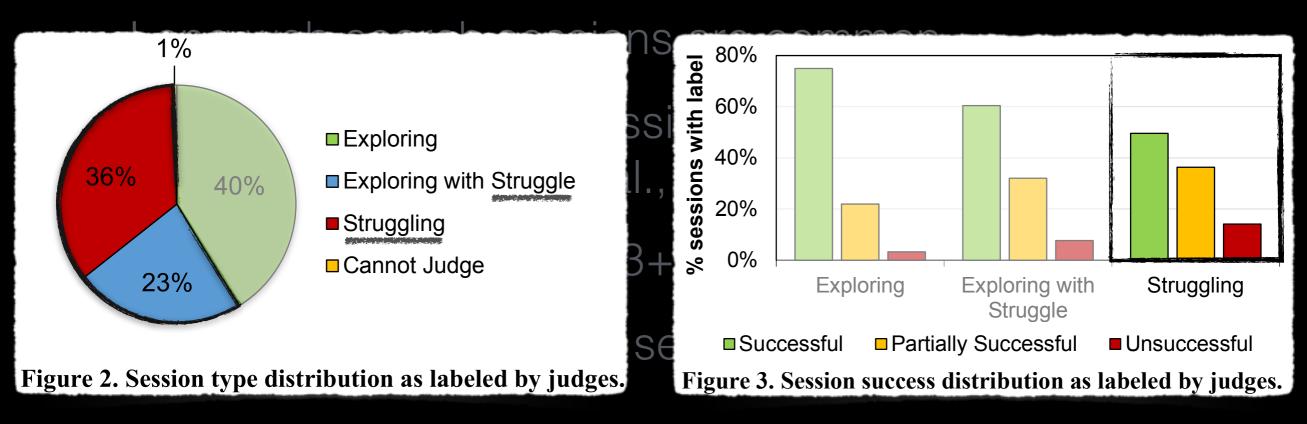
search time

Figure 2. Session type distribution as labeled by judges.

- What are searchers doing? Struggling or Exploring. [Hassan et al., WSDM'14]
 - Struggling in 60% of long sessions



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- 9:13:24 AM ? Query us open golf
- 9:13:36 AM ? Query us open golf 2013 live
- 9:13:59 AM **?** Query watch us open live streaming
- 9:14:02 AM ? Click <u>http://inquisitr.com/1300340/watch-2014-u-s-</u> 9:31:55 AM END <u>open-live-online-final-round-free-streaming-video</u>

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How & why do searchers struggle?

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How & why do searchers struggle? How do searchers go from struggle to success?

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How & why do searchers struggle? How do searchers go from struggle to success? Can we help them struggle less?

Outline

Characterizing Struggling

Annotating Query Transitions

Predicting Future Actions

Outline

Characterizing Struggling

Struggling searchers behave differently given different outcomes on many search aspects, including: queries, reformulations, clicks, dwell time & topic.

Annotating Query Transitions

Predicting Future Actions





June 1–7, 2014

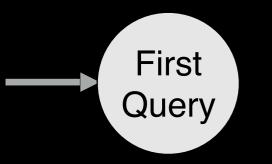
- 1. Filter sessions: US & English, start with a typed query
- 2. Segment into tasks: Topically coherent sub-sessions with at least 3 queries
- 3. Filter struggling tasks





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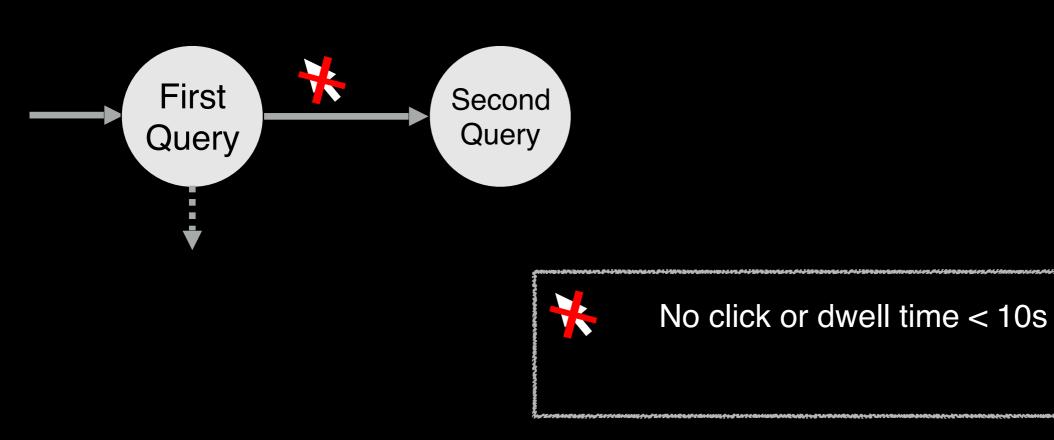






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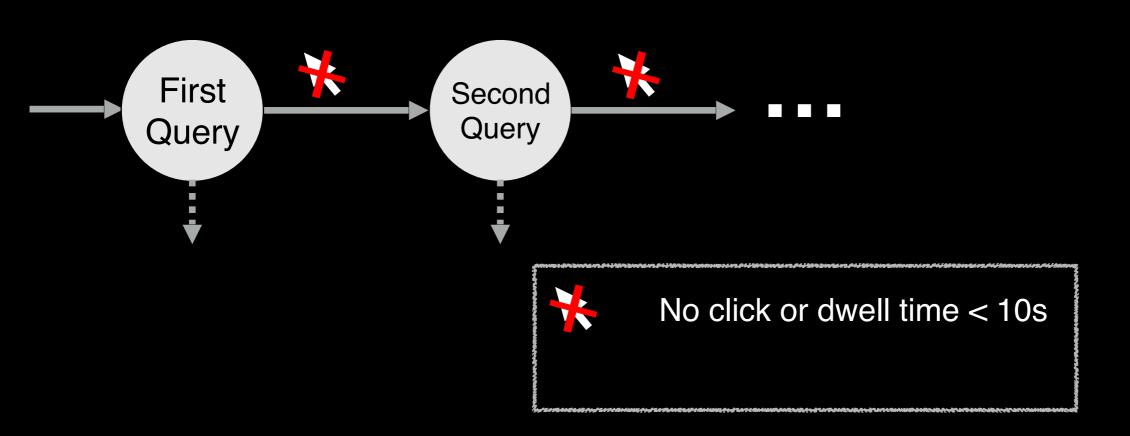






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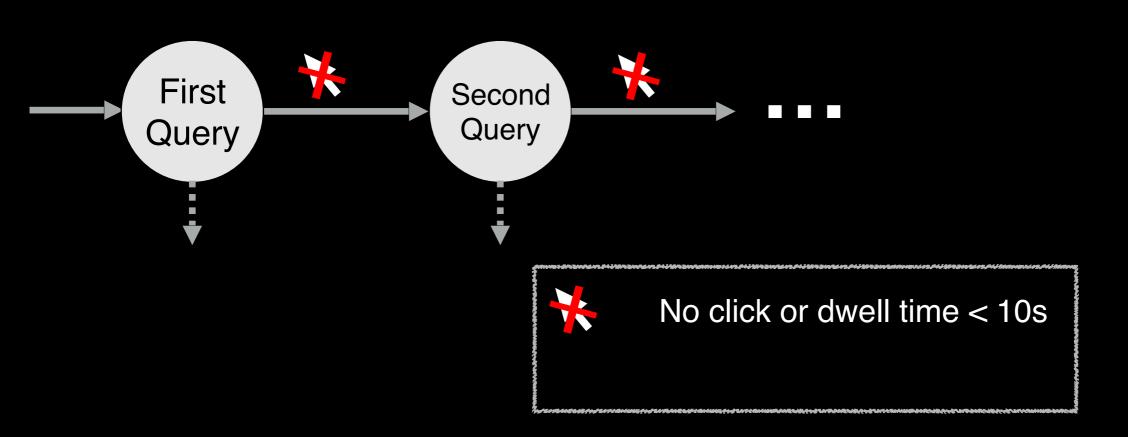


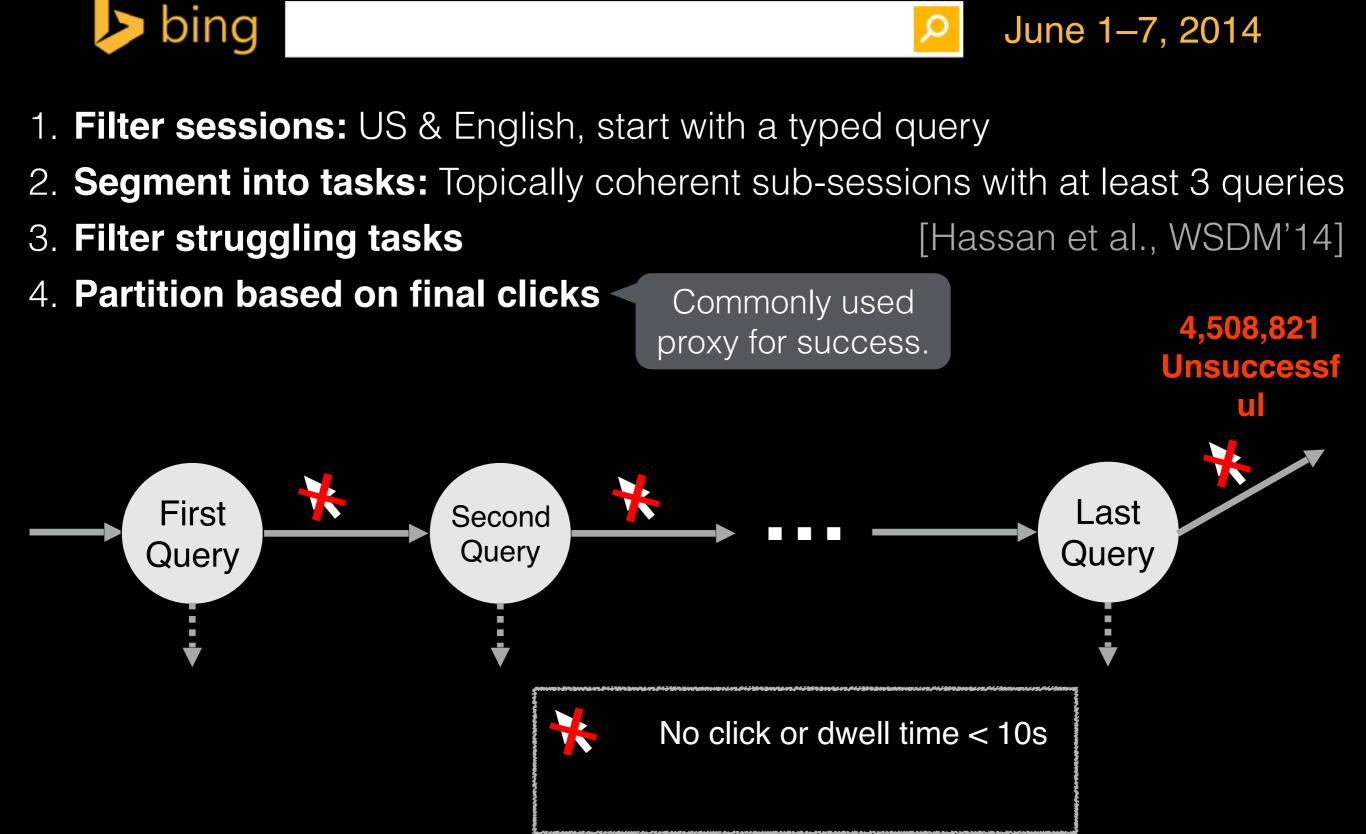
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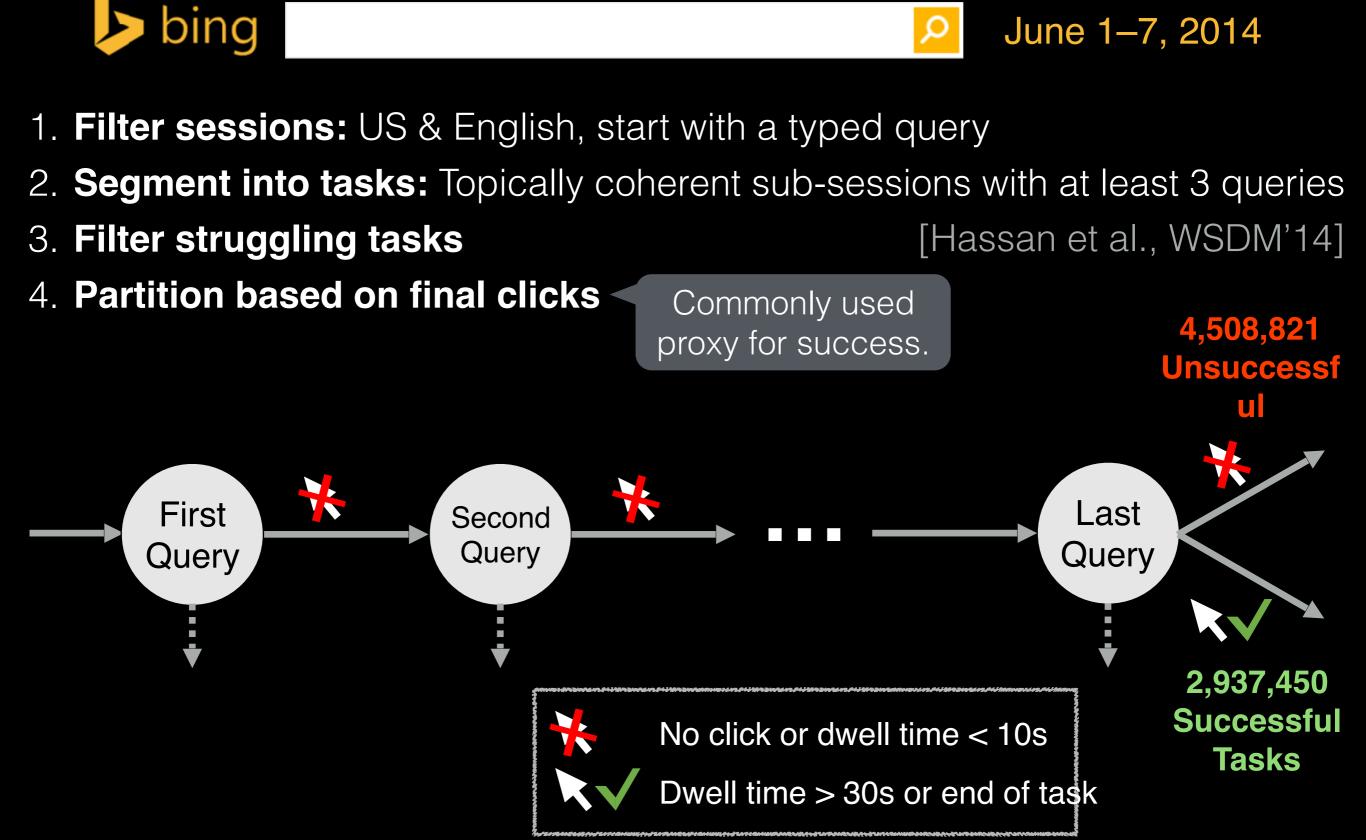
[Hassan et al., WSDM'14]

- 1. Filter sessions: US & English, start with a typed query
- 2. Segment into tasks: Topically coherent sub-sessions with at least 3 queries
- 3. Filter struggling tasks
- 4. Partition based on final clicks

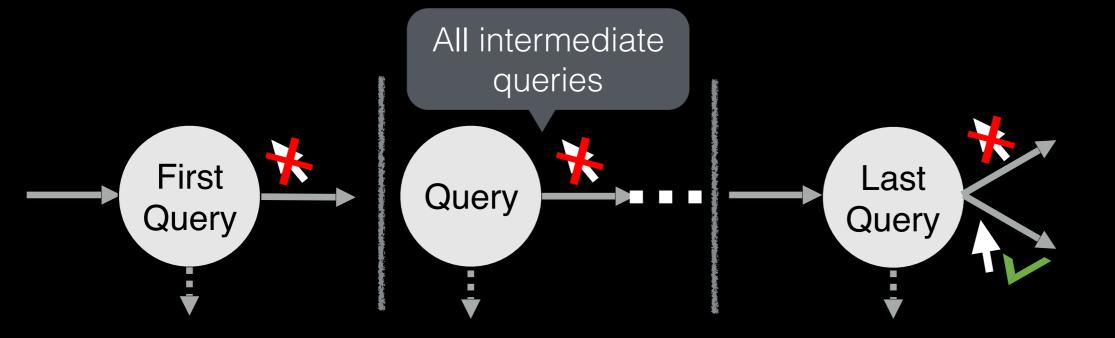
Commonly used proxy for success.

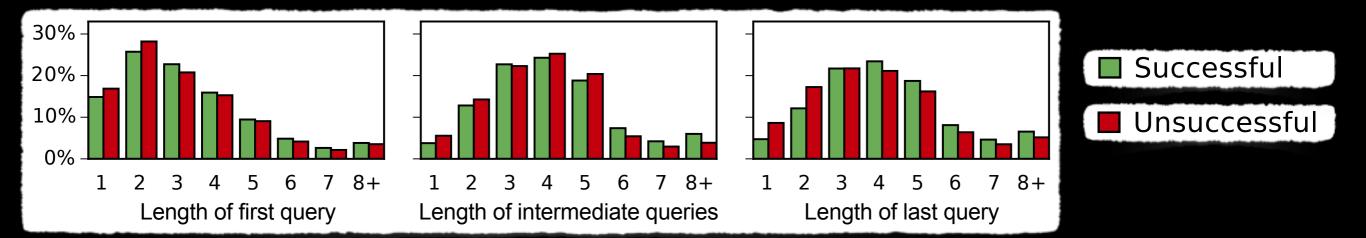


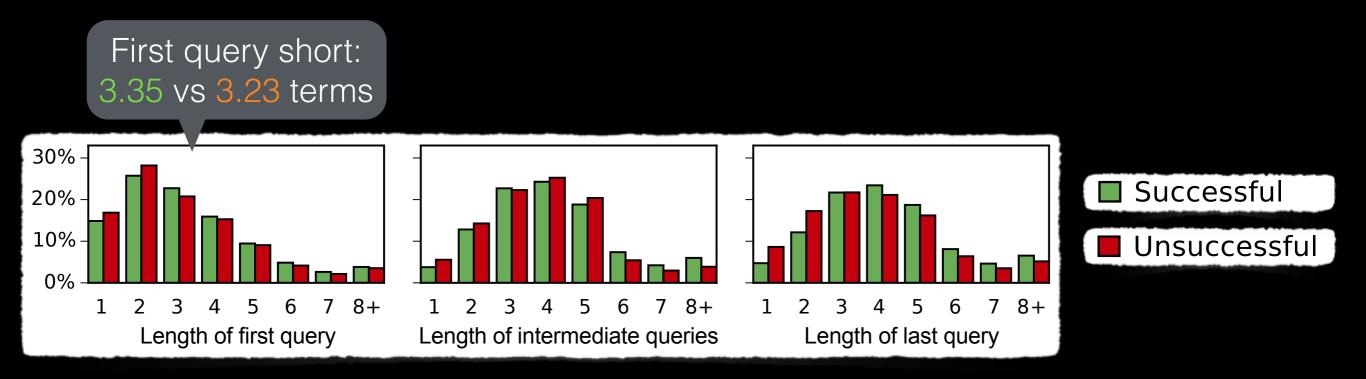


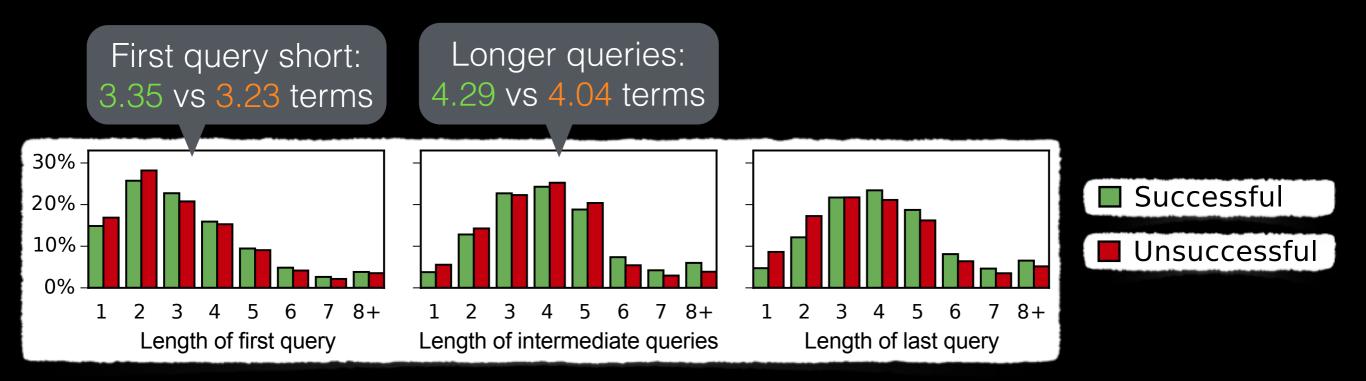


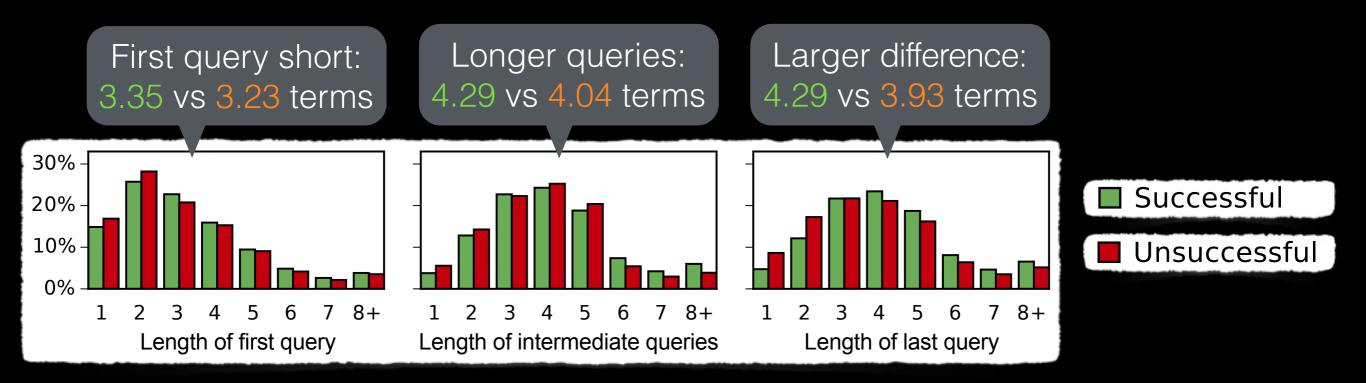
Query Grouping

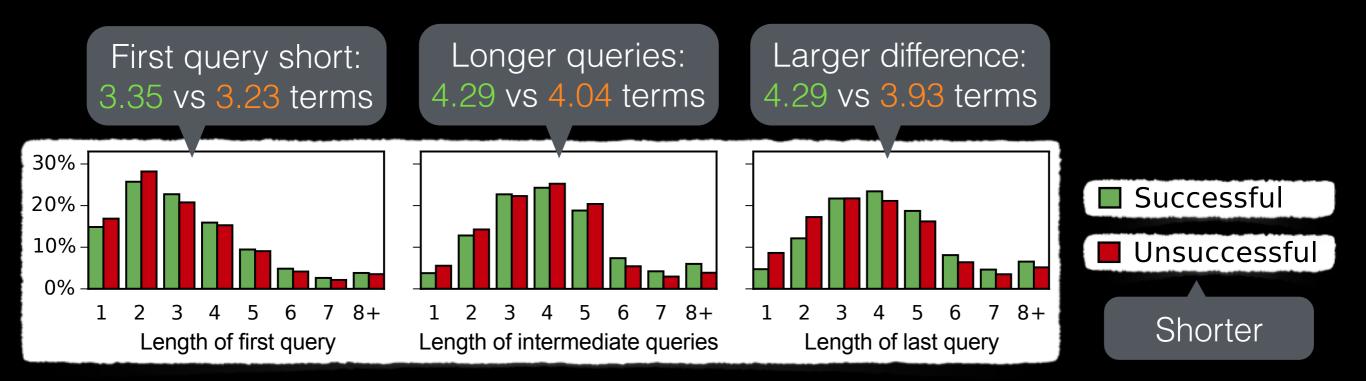












Outline

Characterizing Struggling

Struggling searchers in successful vs unsuccessful tasks issue fewer and shorter queries. Query reformulations indicate more trouble choosing correct vocabulary.

Annotating Query Transitions

Predicting Future Actions

Outline

Characterizing Struggling

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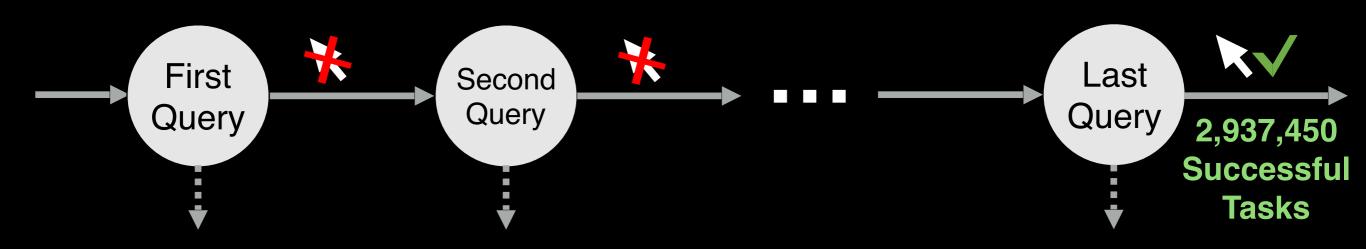
Annotating Query Transitions

Crowd-sourcing to better understand: connection between struggling and success & query transitions. First an exploratory pilot, then main annotations.

Predicting Future Actions

Intent-based query reformulation taxonomy Based on the answers to the open-ended questions

Main Annotations: Transitions in 659 successful tasks



- Annotated 659 new successful tasks
 - Single tasks, no pairs
 - Annotated transitions between each query pair

Understanding Struggling Behavior

Struggling describes a situation whereby a user experiences difficulty in finding the information they are looking for.

Below is a session in which we believe that a Bing user could not immediately find the information they were looking for. The session is presented as a series of Bing Queries (()) and Result Clicks ()) with their timestamps. You can click on a query to repeat a search or click on a result click to inspect the page that the user viewed (the page will open in a new window).

Please examine the session shown below and then answer the questions about it.

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○ Not at all successful ○ Somewhat successful ○ Mostly successful ○ Completely successful	ıI

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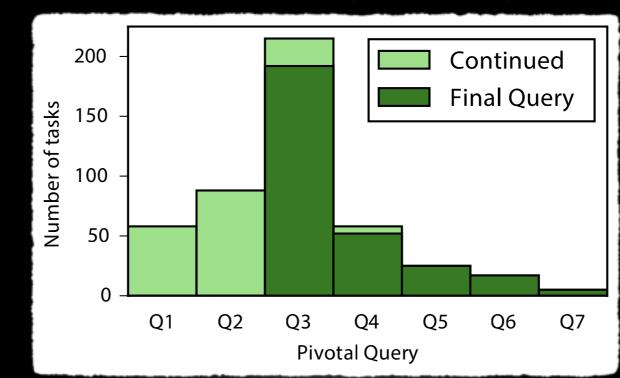
Success & Pivotal Query



Success & Pivotal Query



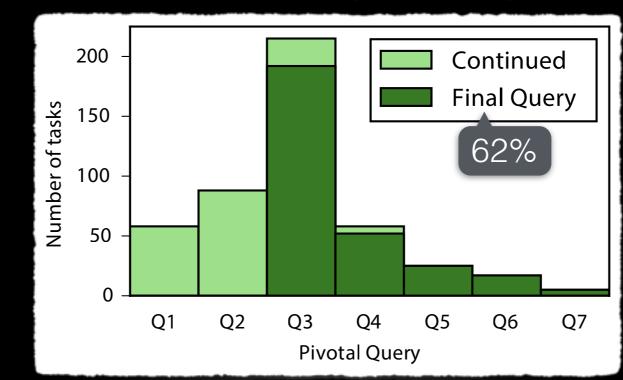
Location of the pivotal query

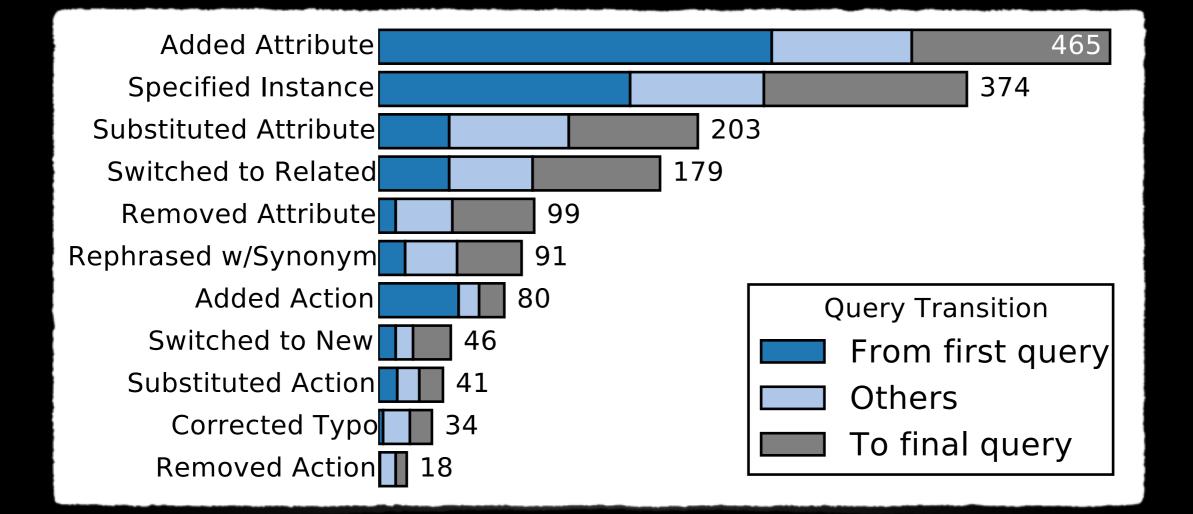


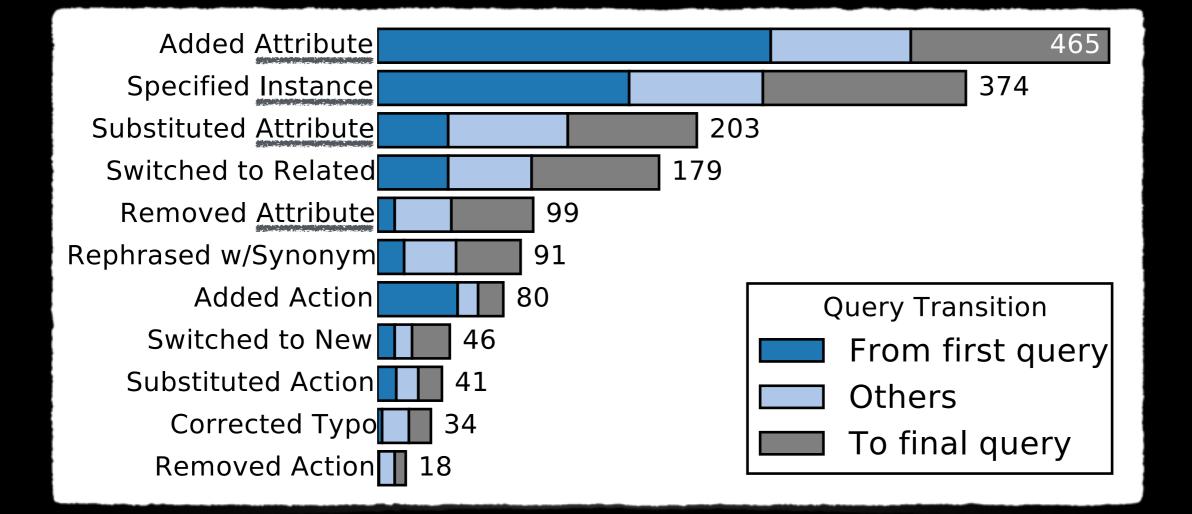
Success & Pivotal Query

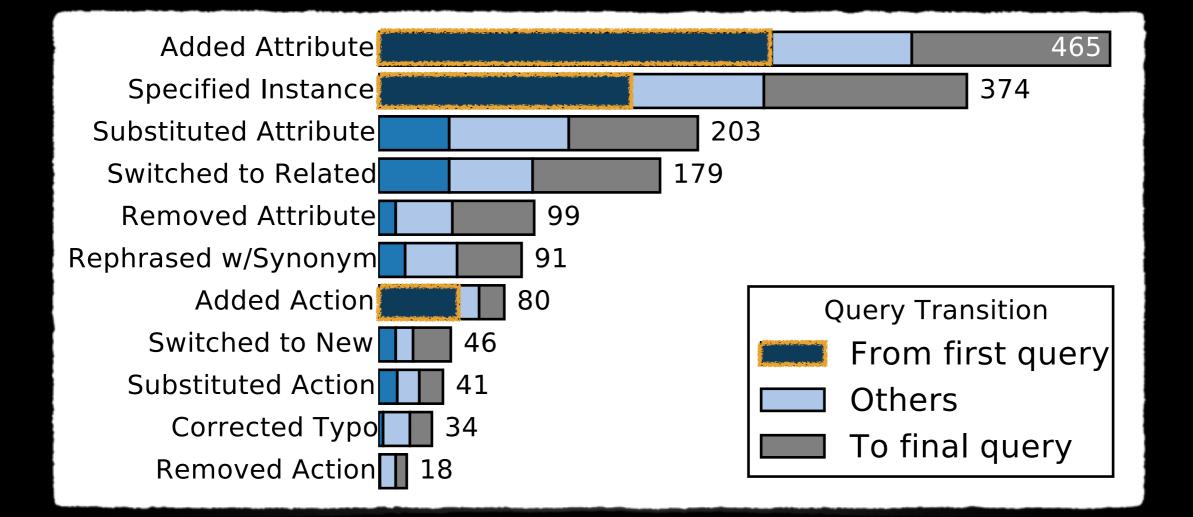


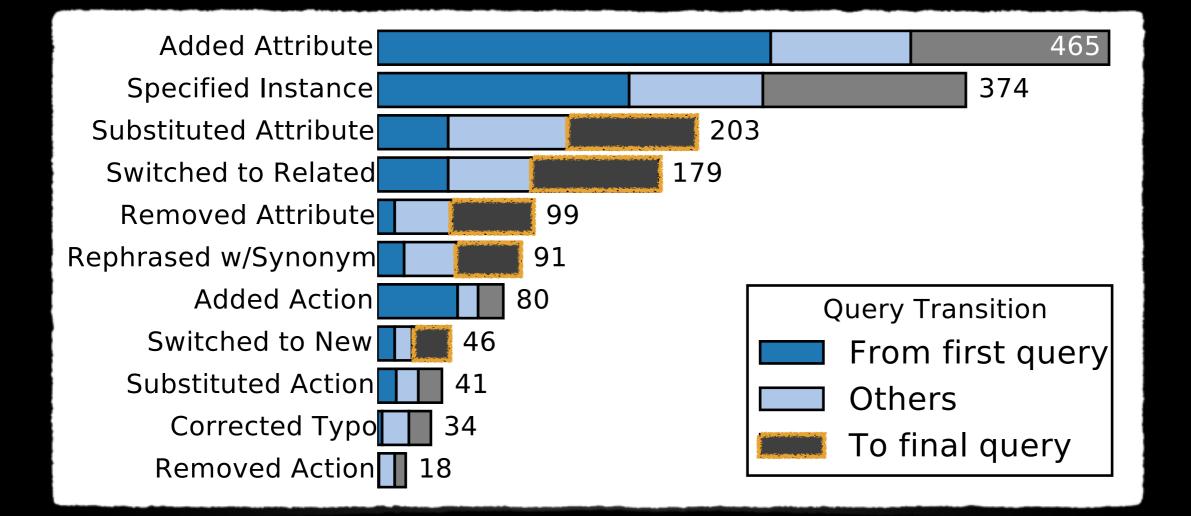
Location of the pivotal query

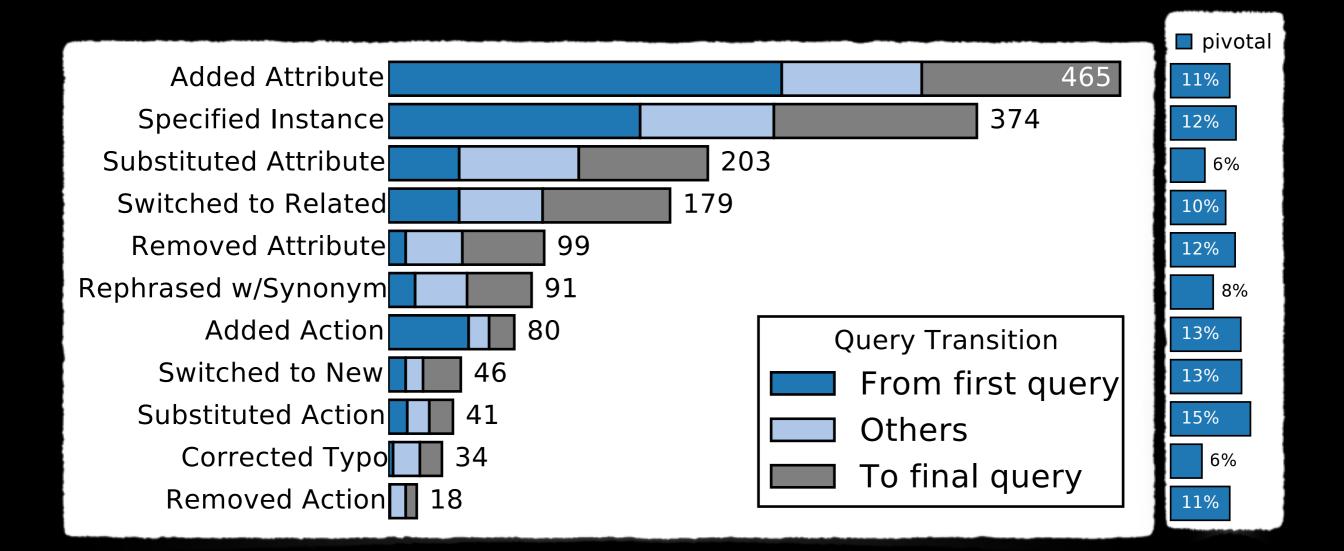


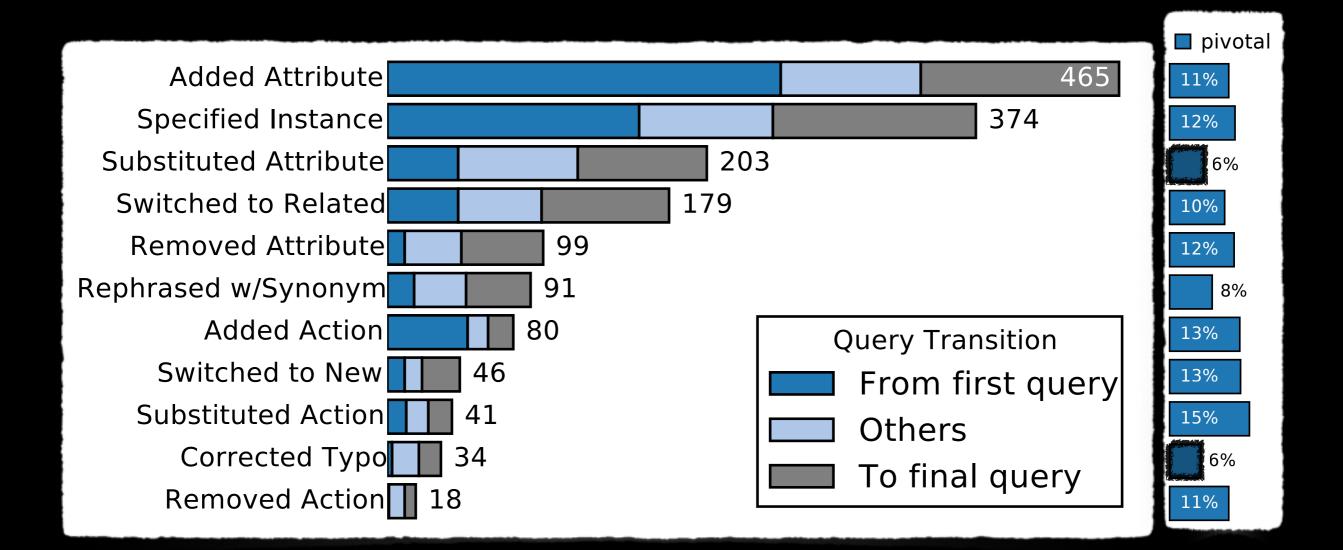


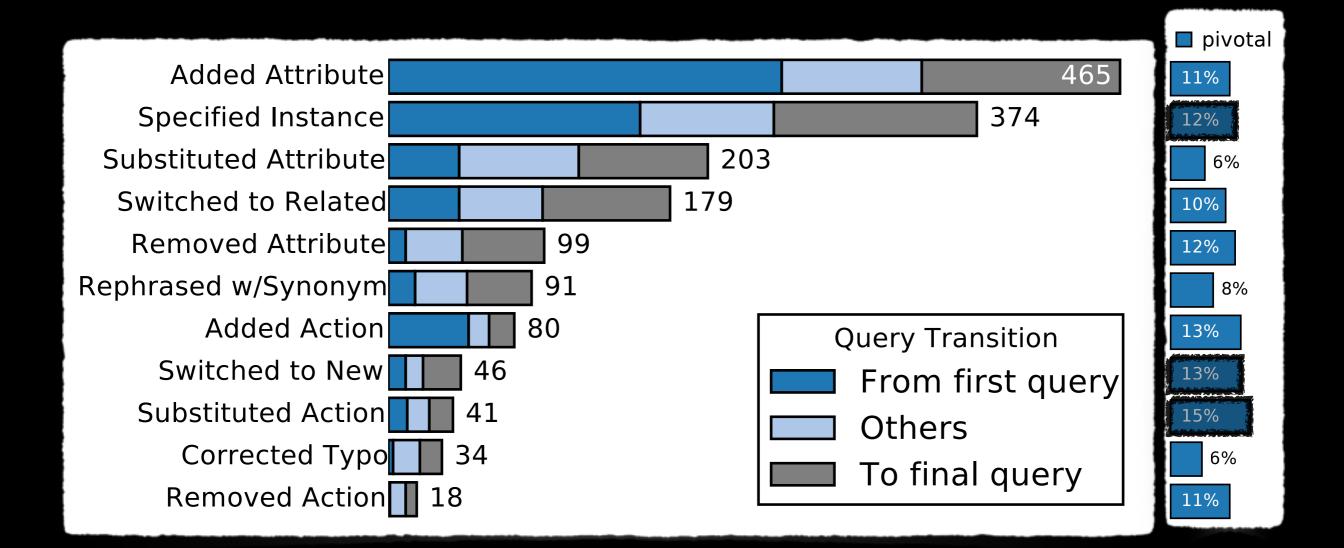












Outline

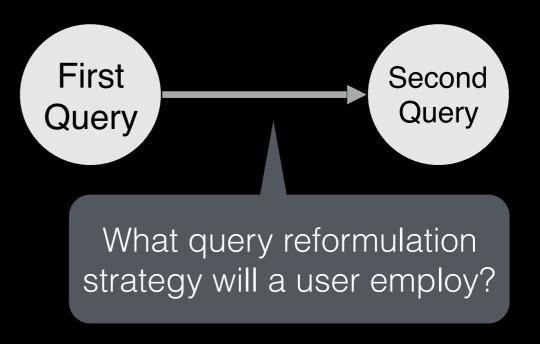
Characterizing Struggling

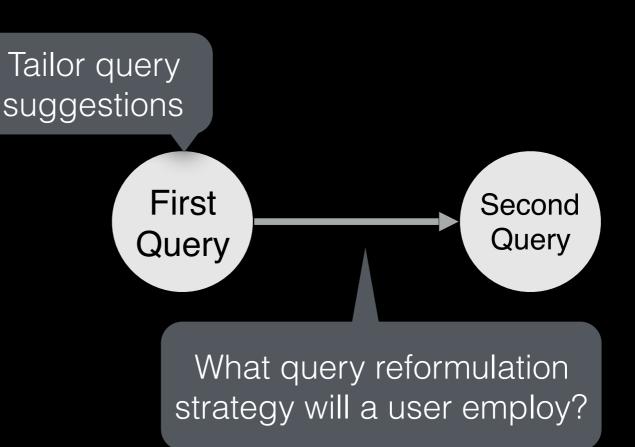
Struggling searchers, successful or not, behave differently on many search aspects, including: queries, reformulations, clicks, dwell time & topic.

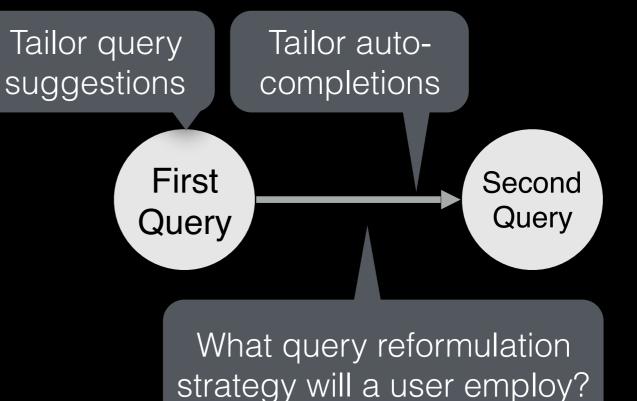
Annotating Query Transitions

Substantial differences in how searchers refine queries in different stages in a struggling task. Strong connections with task outcomes, and particular pivotal queries.

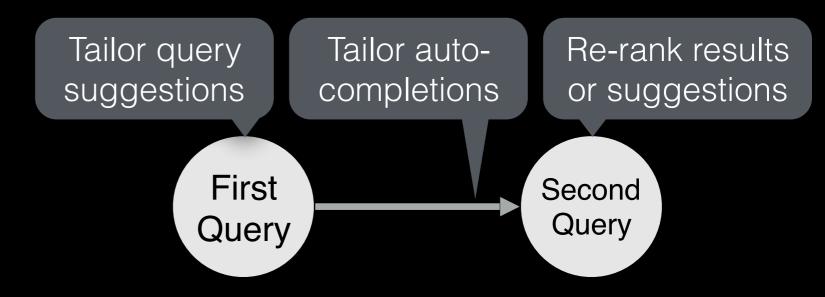
Predicting Future Actions

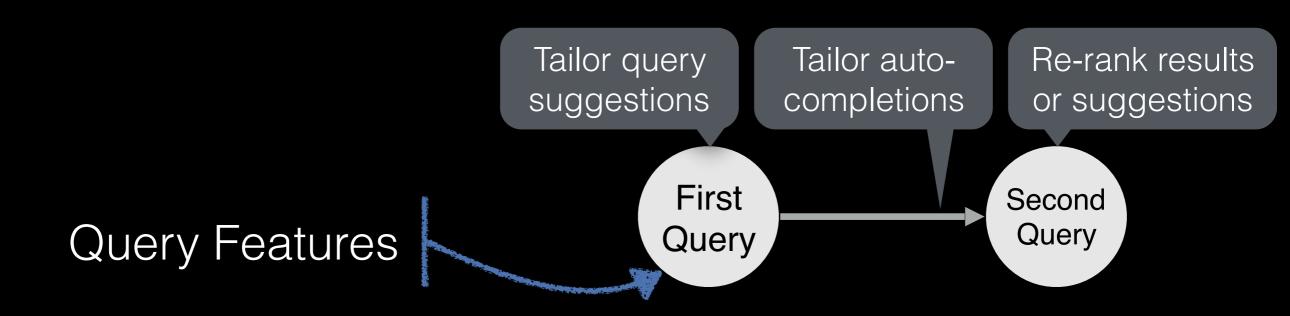


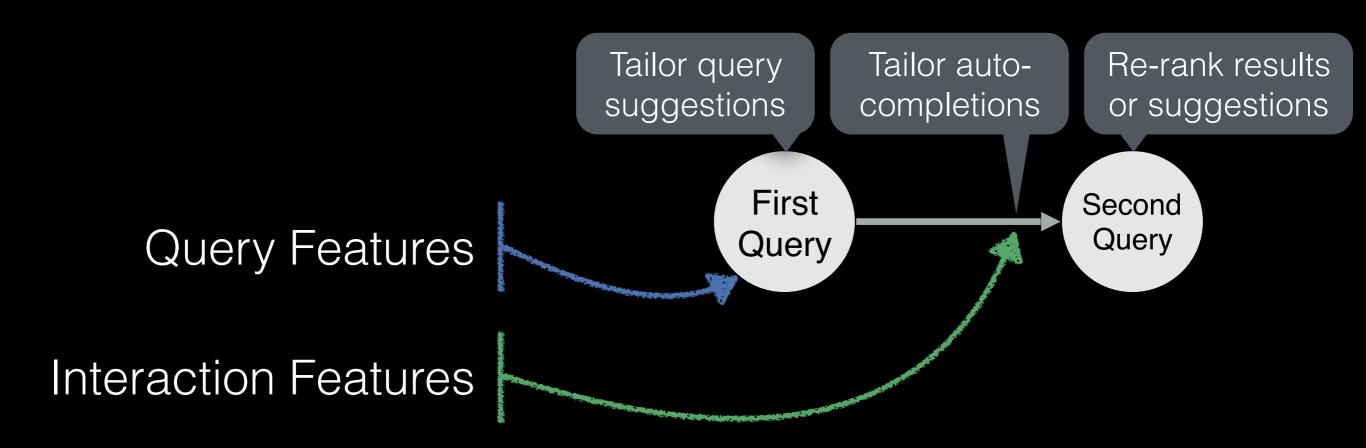


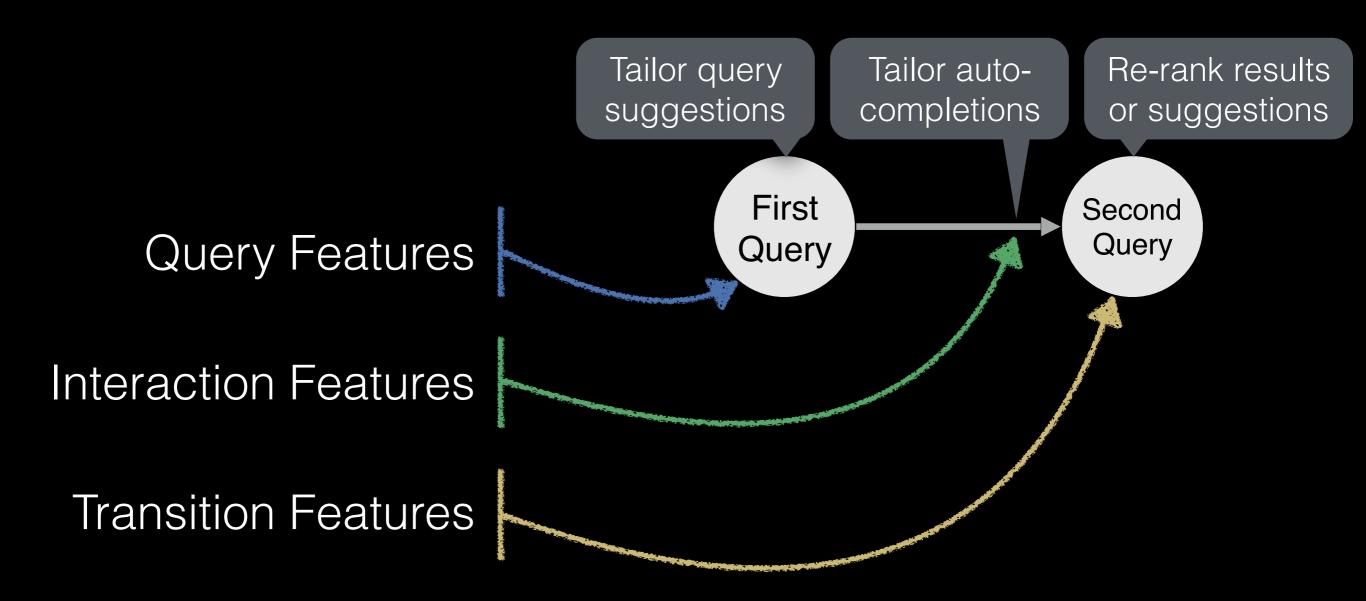


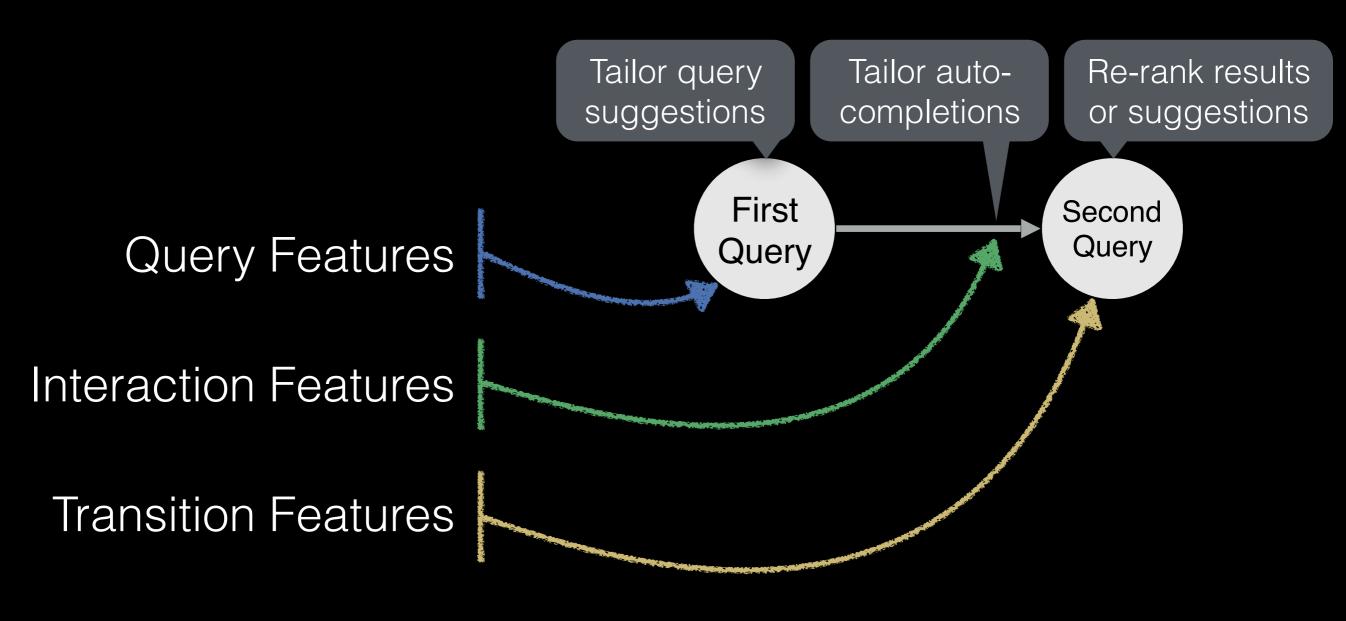
Tailor query
suggestionsTailor auto-
completionsRe-rank results
or suggestionsFirst
QuerySecond
QueryWhat query reformulation
strategy will a user employ?



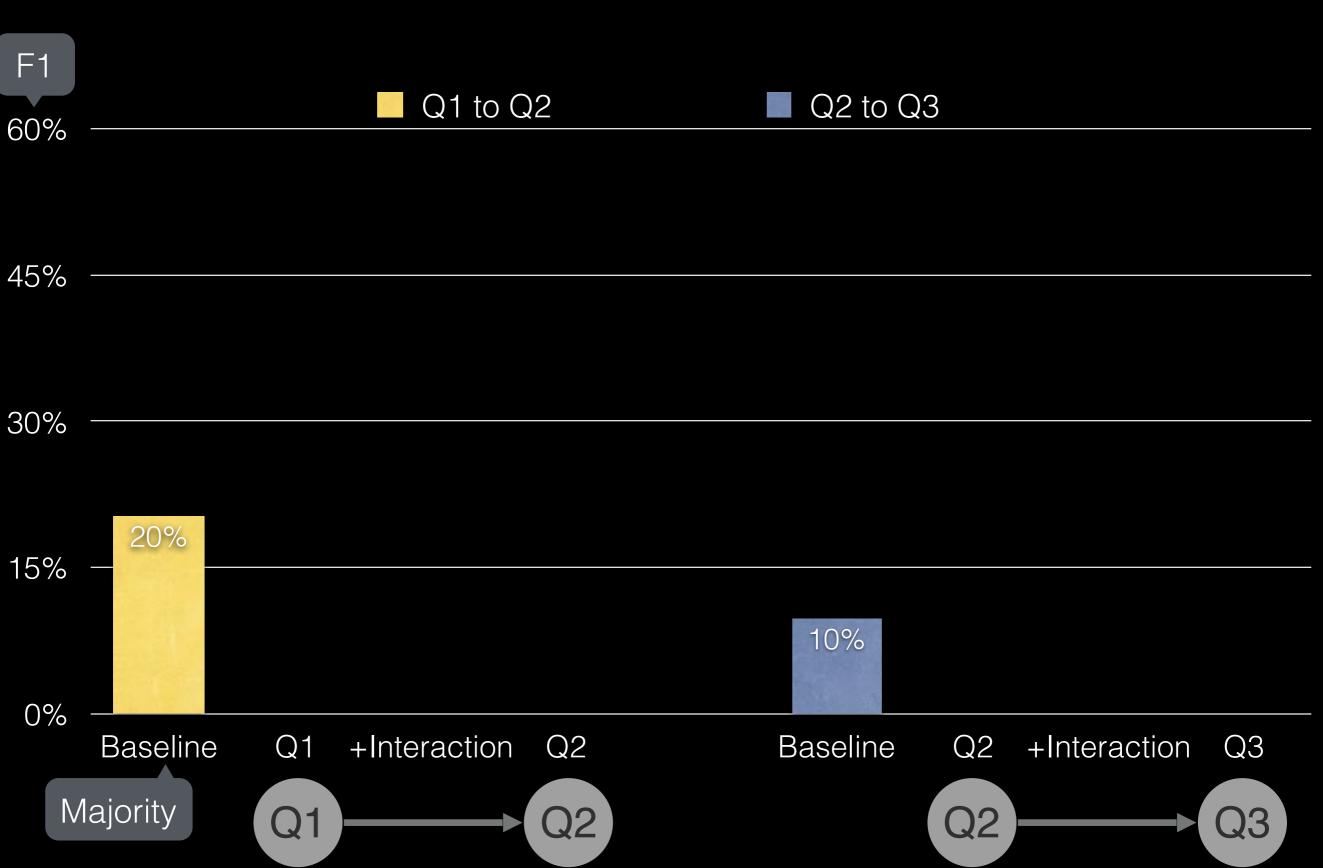


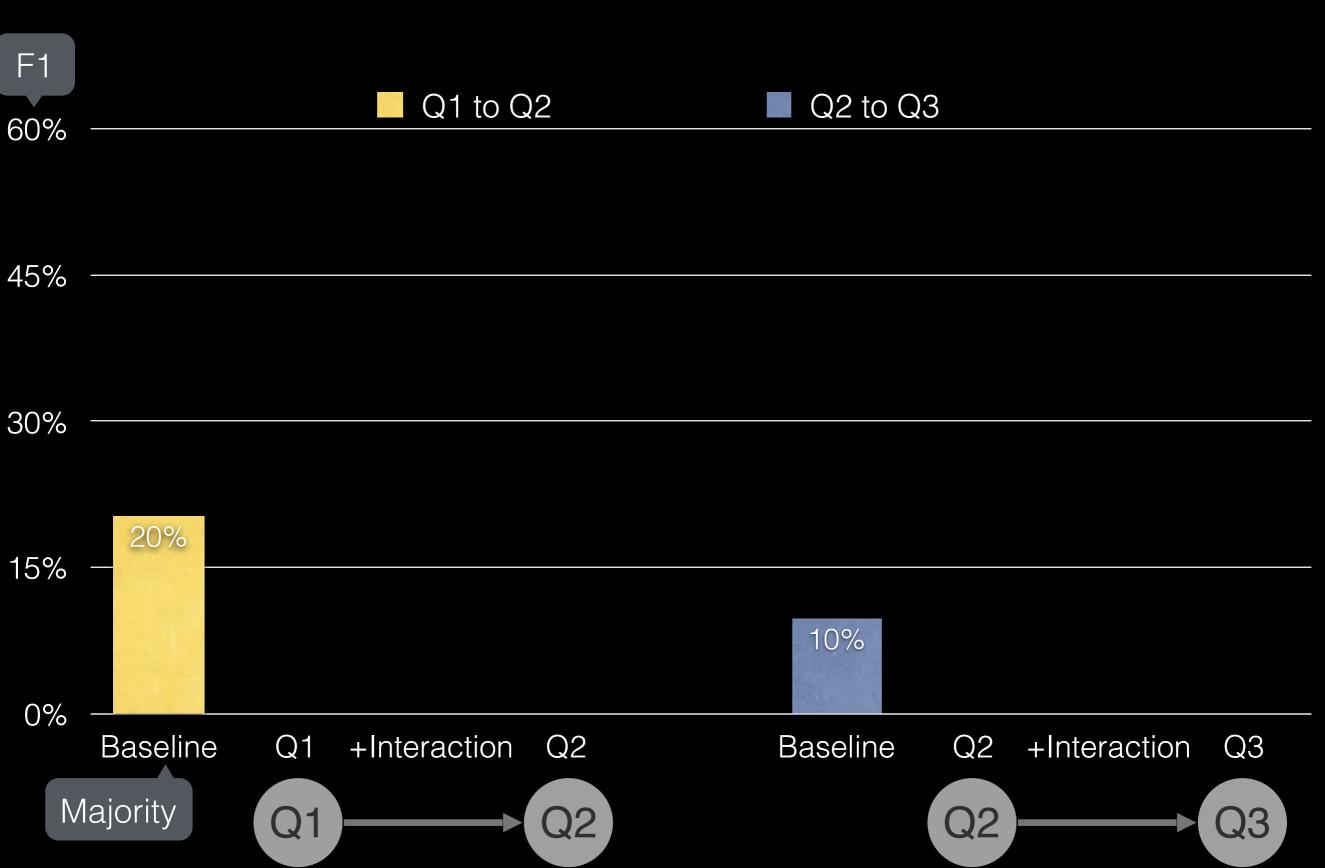


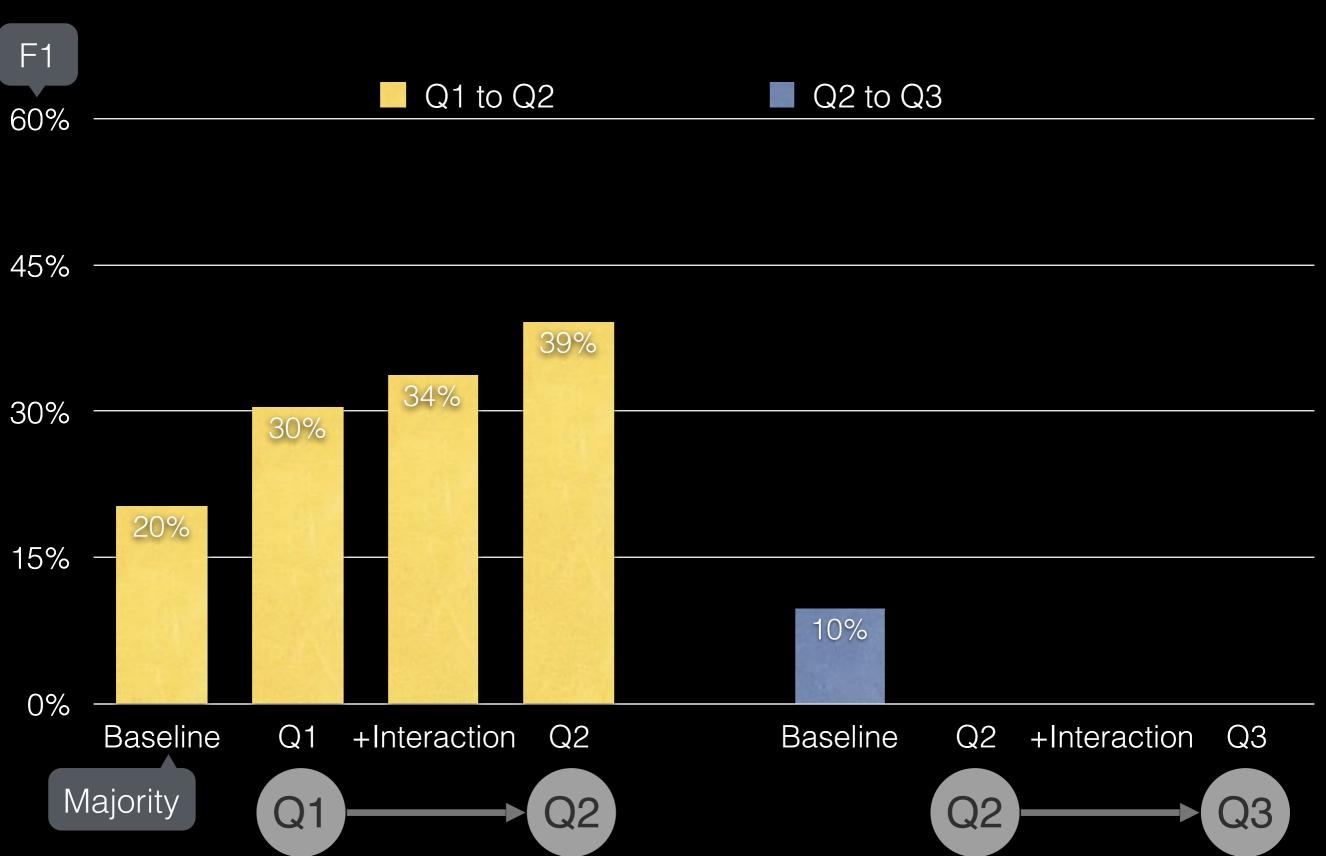


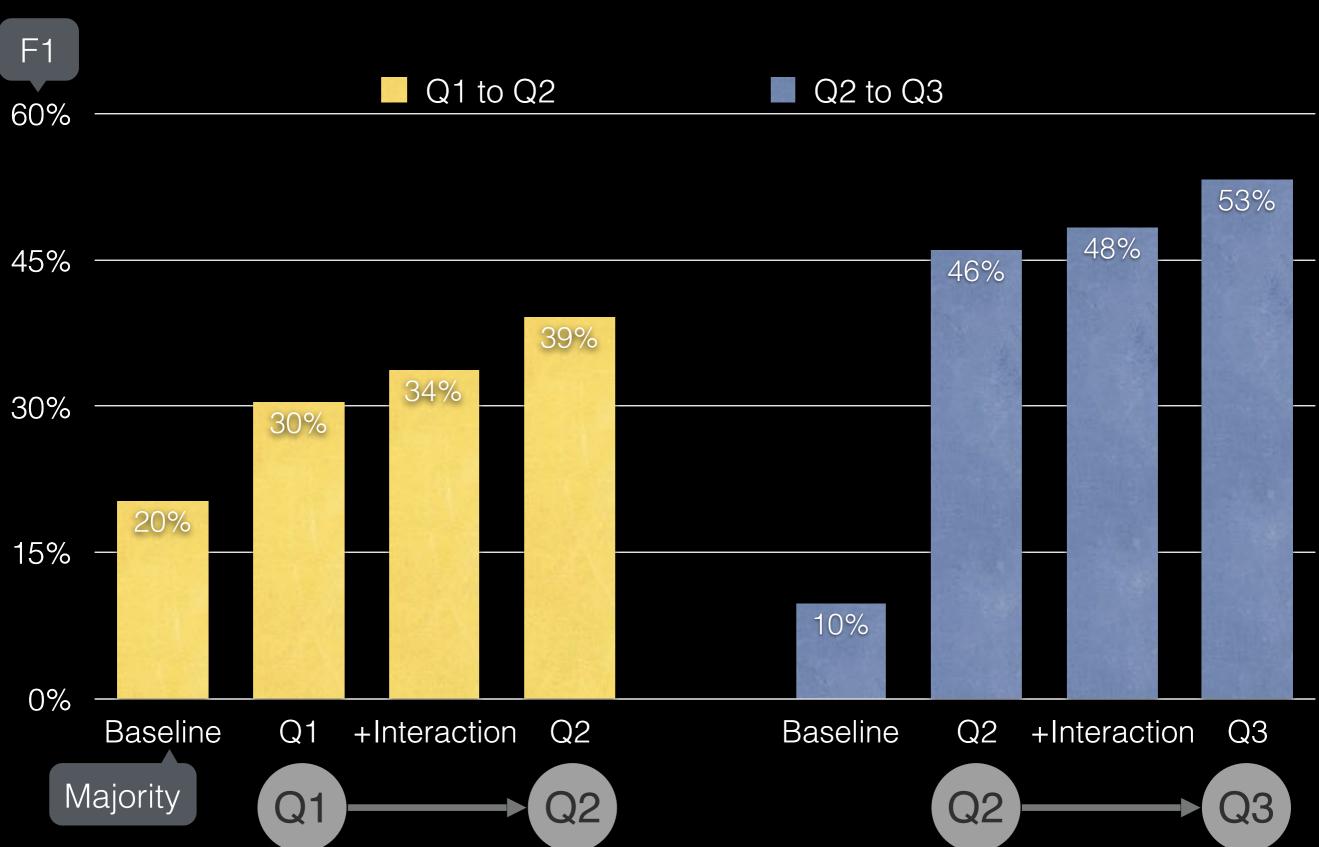


+History Features









Outline

Characterizing Struggling

Substantial differences in how searchers behave in a struggling task, depending on task outcomes.

Annotating Query Transitions

Accurately predict reformulation strategy to provide situation-specific support at a higher level.

Predicting Future Actions

Limitations

Very specific and apparent type of struggling

Limitations

- Very specific and apparent type of struggling
- Determination of search success
 - Final click as a proxy
 - Judgements by third-party, not by searchers themselves

- Directly applying reformulation strategies
 - Query suggestions & auto-completions

- Directly applying reformulation strategies
 - Query suggestions & auto-completions
 - Mining query ➤ pivotal query pairs

- Directly applying reformulation strategies
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 - Can identify automatically: F1 59% (final query baseline: 51%)

- Directly applying reformulation strategies
 - Query suggestions & auto-completions
 - Mining query ➤ pivotal query pairs
 - Can identify automatically: F1 59% (final query baseline: 51%)
- Hints and tips on reformulation strategies

Real-time Recommendations at Blendle

Daan Odijk & Anne Schuth data scientists







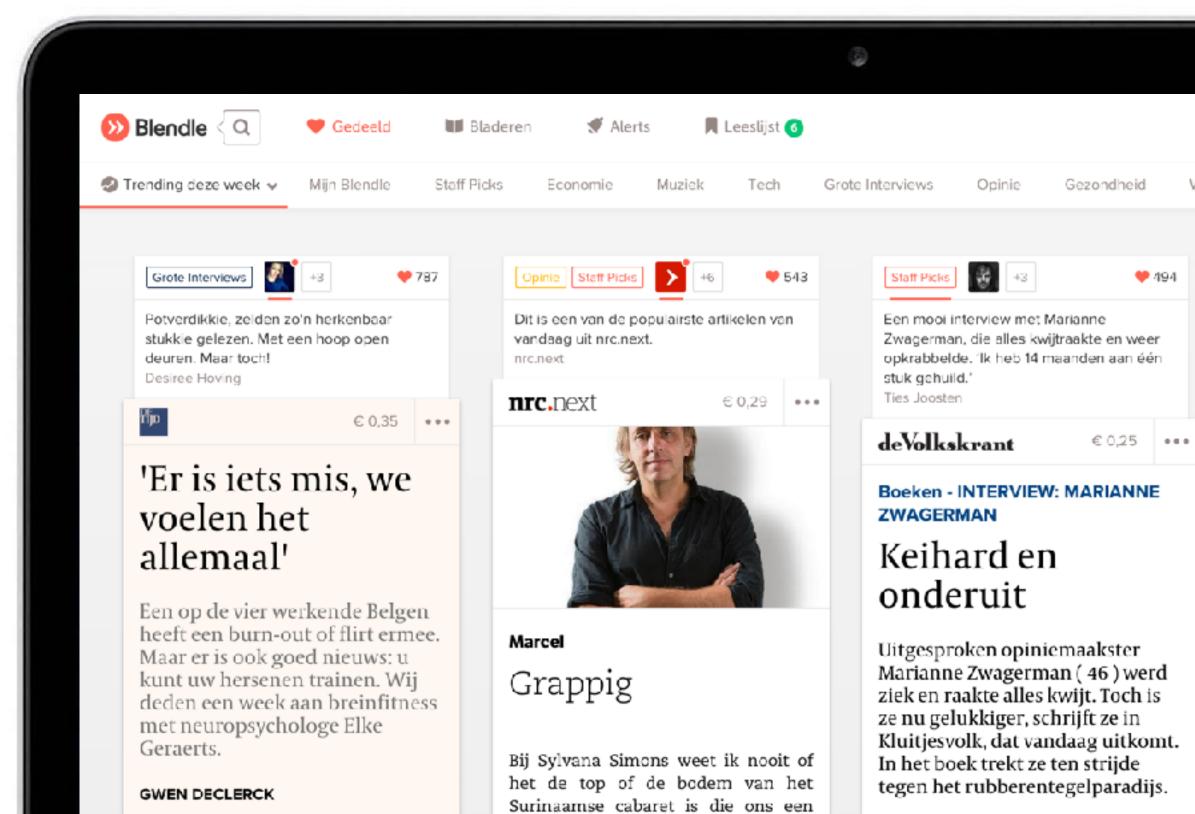


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Help you discover and support the world's best journalism





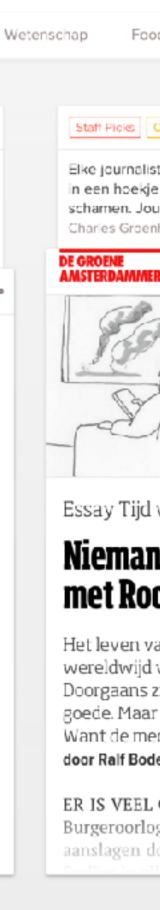


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schermpje: twee Whatsapp-berichten,

drie Facebook-boodschappen, negen

Sylvana had zich aangesloten bij een nieuw gezelschap dat met de week øekker dreigt te worden. Het nieuwe DOOR MENNO VAN DONGEN



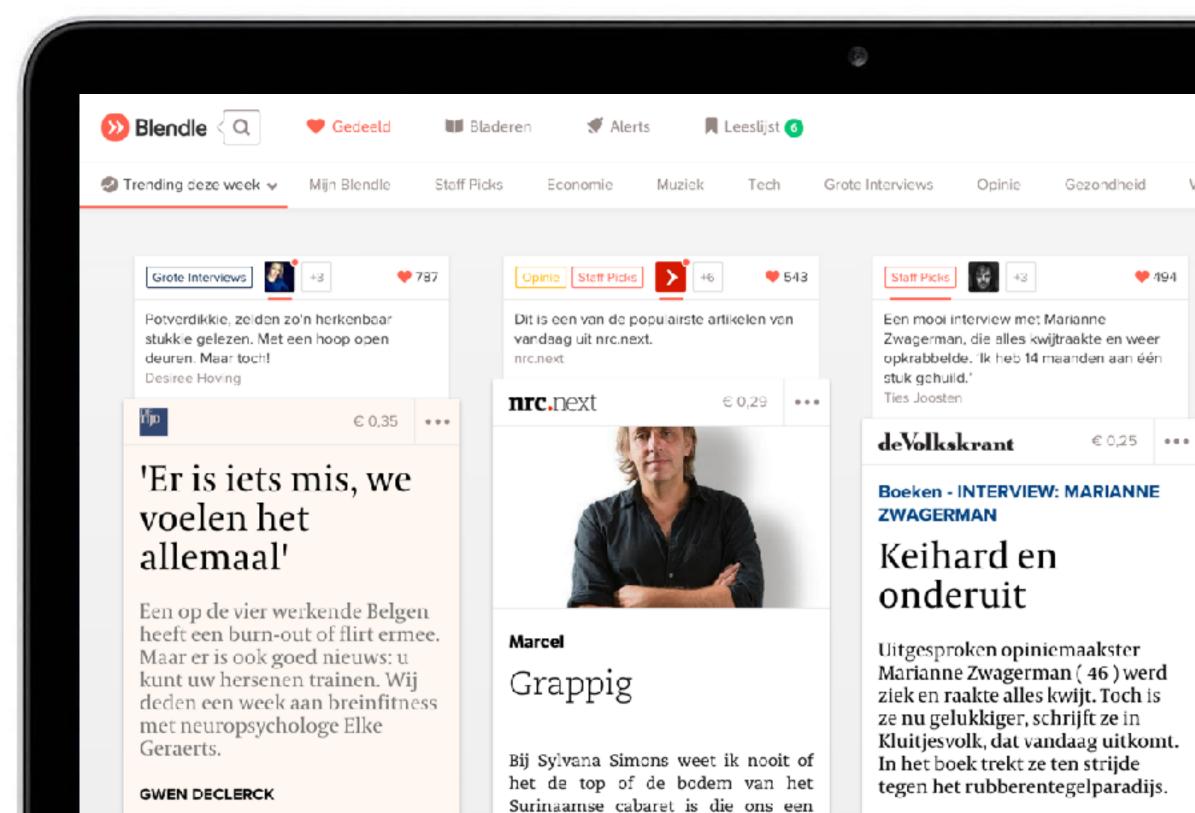
Mission

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Micropayment platform

articles, issues, subscriptions



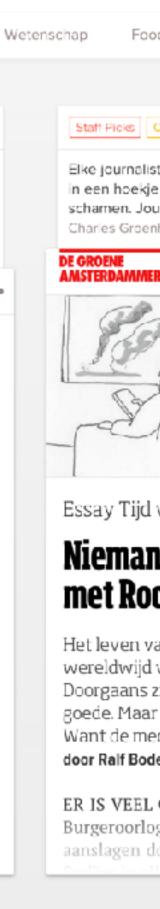


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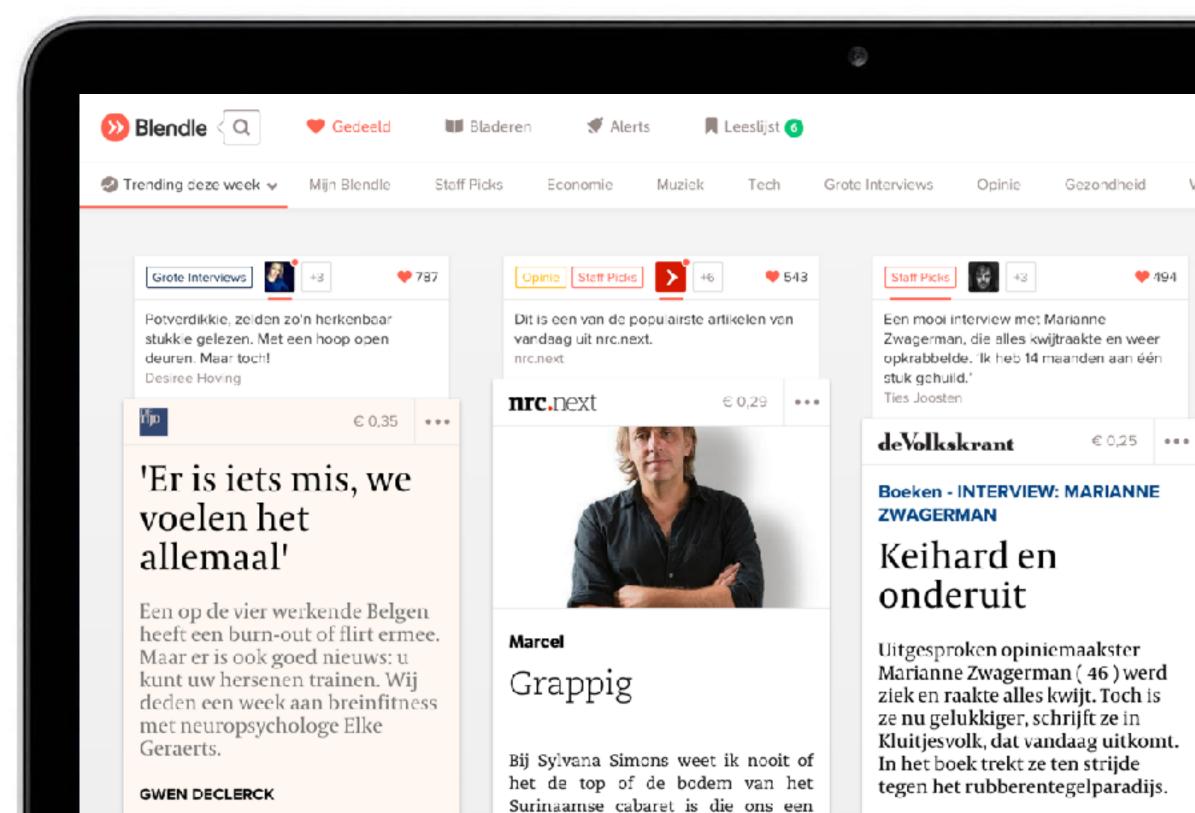
Micropayment platform

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International

May 2014 : The Netherlands Sept 2015 : Germany March 2016 : United States



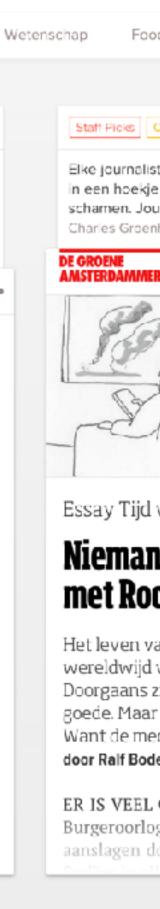


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International

May 2014 : The Netherlands Sept 2015 : Germany March 2016 : United States

Numbers

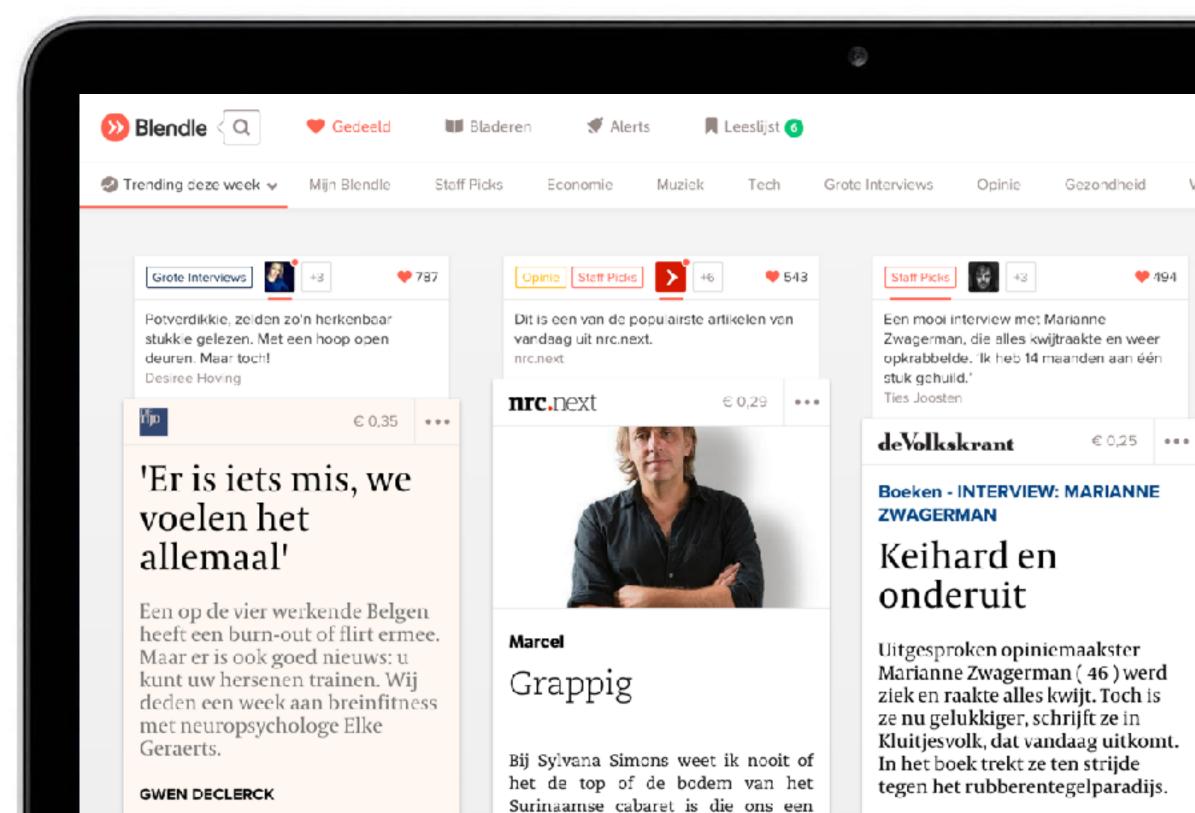
> 1M users
1 in 5 is paying
70 employees
(15 journalists, 50 developers,
+ 30 clippers)





🥑 @anneschuth



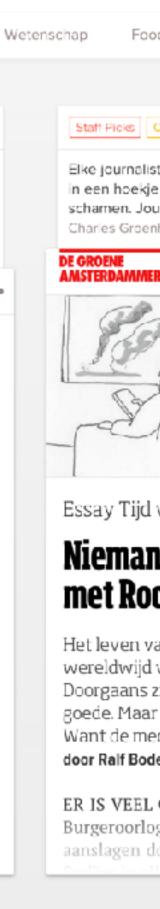


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DE DIGITALE VLUCHTELING

Net behulp van Facebook en Google naar Europa

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MENSJE VAN KEULEN

Over het geloof, de dood en huiselijke gothic

HET BIER EN

HET SCHUIM

De foute Afrikaanse

connectie van Heineken

SENIOREN-PARADIJS

Welkom in het Disney-

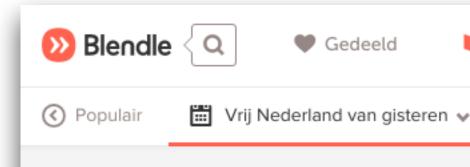
land voor bejaarden

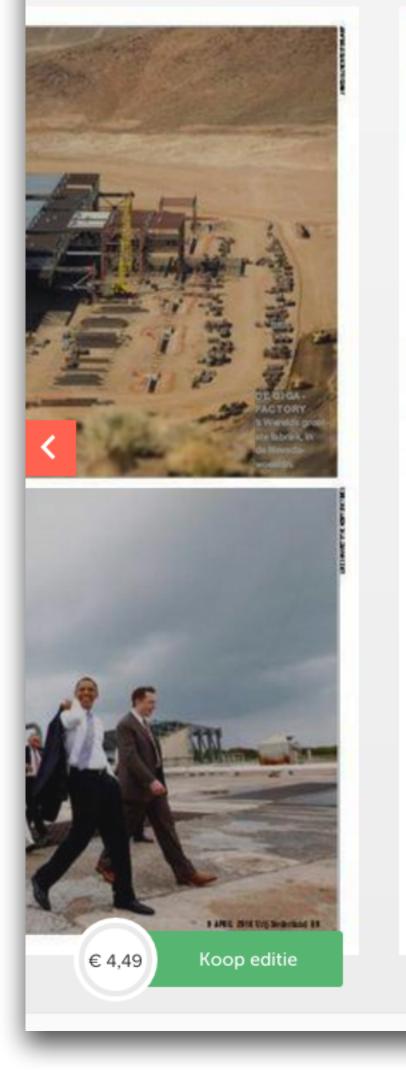
Vrij Nederland

oe de man achter esla miljardair werd. En moreel leidsman



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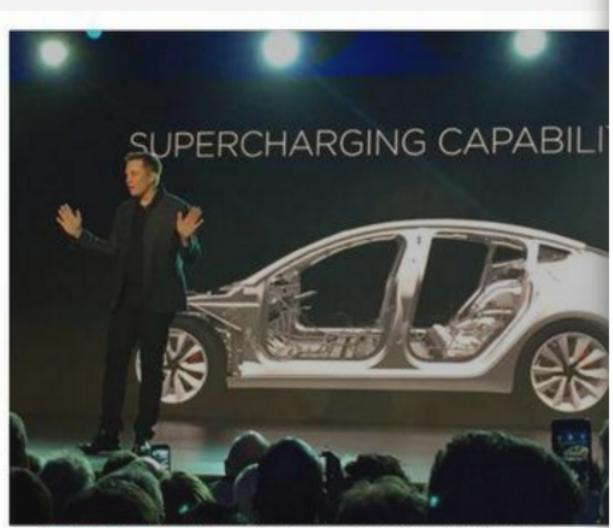




Bladeren

Alerts

Leeslijst



URZAMER VERVOER De orthulling van Model 3 van de Tesla. Binnen een dag waren er 100.000 reserveringen.

Hoe moest hij leven? Hij zocht steun b§ de tot e filosofen, maar kwam van een kouwe ermis thats

1k las Schopenhauer en Nietzsche en het was reselik. Nemand zou hen moeten leten. eel te deprimere nd. Dat war en geen gelukki-

De filosofen konden hem niks verteilen over le zin van het leven. Toen kwam hij The Mach ter's Guide to the Galaxy tegen. Daar kon hij d wat mee, dat leerde hem dat de antwoor n voor het oprapen liggen, het gaat erom de iste vragen te vinden. Maar hoe moet hij dat in doen, vragen noeken? 163 sloeg aan het aden ken en dat is in zijn geval een vaak als ugisch voorgesteld proces: als Bon nadenkt, rggen wienden, slaagt hijestinzich heel lang concentreren op één probleem. Die keer s dat dus de zin van het leven.

in conclusie luidde dat we 'emaar zoude oet en streven oen de retkwijdte en de schaa n het menselijk bewustzijn tevergroten, zo ht we beter begrüpen welke vragen we moeen stellen'. nktlogisch

18 Init Nederland # APRIL 2018

Ausk verh aalt erover in de biografie, in intertews, hij gebruikt verschillende formulerinen en dan valt opeens op dat hij er ook een code dimensie mee betreedt. Hi zegt. Het enige zinnige om naar te strever

een grotere collectieve verlichting." gens anders: 'Als we streven naar verlikh-

ing, kunnen we beter begrijpen welke vragen we moeten stellen over het universum. I eems like there's a fundamental good in that." let fundamenteel goafevoor de mens. Niets sinder. Daarop zulien zijn doelen zijn geba

PERMANENTE EXPANSIE

Verder. Op zijn negende krigt hij zijn eerste nmodore computer. Op zijn twaalde wint ij een prijs met e en zelf geschreven compu rspel. Op zijn zeventiende verlaat hij het ge Adadige Zukl-Afrika voorgoed. Met 100 ollar trekt hij via Canada (zijn moeder is Ca idees) naar Amerika en gaat voor de Ameriaanse drocen. Go West young man, go West. oorbij de grenzen van het Westen, voorbij

Hij stelt zichzelf de vi komst van de menshek den? En komtmeteen internet; duaname energie;

nimtevaart metinb naar permanente e buitende aardbol; tu natroatige Intellige

heth erprogrammere netische code. Nou, lot nu toe zijn alle set behandeld.

RENTENIEREN?

Met aljn broer begint i soort Gouden Gids op in dassieke start-upverh mase werken, geen hut kantoor en vlák voor de l in 1999 koopt Compaq zi ige Musk schrift zijn eer bij. Rente nier en? Hij prob ntern ethank op te ikh Pal, dat wordt gekocht i

Vrij Nederland

ELON MUSK

PORTRET **DE ONDERNEMER ALS** MOREEL LEIDER

€ 0,89

. . . .

Ja, er zit geld in moraal. Elon Musk presenteerde de Tesla Model *3*, *de coole en betaalbare* elektrische auto die de wereld moet veranderen, en hij wil de mensheid redden door Mars te koloniseren. Het heeft hem geen windeieren gelegd, dat redden van de mensheid.

SANDER PLEIJ PORTRET DAN WINTERS

Hoeveel tijd kost een vrouw? Zo luidde de vraag van Elon Musk, directeur van Tesla (iPhone onder de elektrische auto's) en SpaceX (rakettenfabriek die de mensheid naar Mars wil emigreren); een rijke vent die het beste met de mensheid voor heeft.

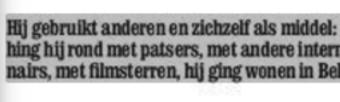
Hij zat met een probleem, zo vertrouwde hij zijn biograaf toe, hij was net voor de tweede keer gescheiden en zocht nu een nieuwe vriendin, maar hij vreesde dat een



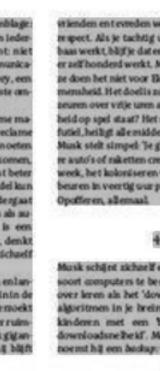
EKE CELEBRITY Musk met zih tweede echtgenole, fil

nderdelen zelf te maken. Niks asse mblag lever heel grote fabrieken met alles en ledereen vlak bij elkaar want dat betekent: niet wachten, geen tädverlies, directe communica tie. Binnenkort opent hij de Gigafactory, een nie uwe batt erijendabriek met de grootste emtrek ter wereld en nul giftige uitstoot. Alles light oncon ventioneel : geen reclame ma ken – met de ideologische reden dat reclame manipuleert en oneerlijk is Auto's moeten niet jaarlijks met een nieuw model komen, nee, het huklige model wordt constant beter als jewilt wachten op een nieuw model kun e voor altijd wacht en. Bovendien ondergaat Tesla contin u software updat es. Jets als au tomatisch van rijbaan verwisselen is eer nachtelijke download. Over vijf jaar, denkt Musk, zijn die zover dat de Tesla's zichzelt kunnen röden.

Ook onconventioneel:raketten maken en lan ceren vanafhet afgelegen atol Kwajaleinin de irote Oeraan. Alle s kan hij ook en onde moekt hil self. De technisch e handborken over rulen tev aart le est hij zelf. Dat de werkdruk gig an isch is, moge duidelijk zijn, maar hij blijft

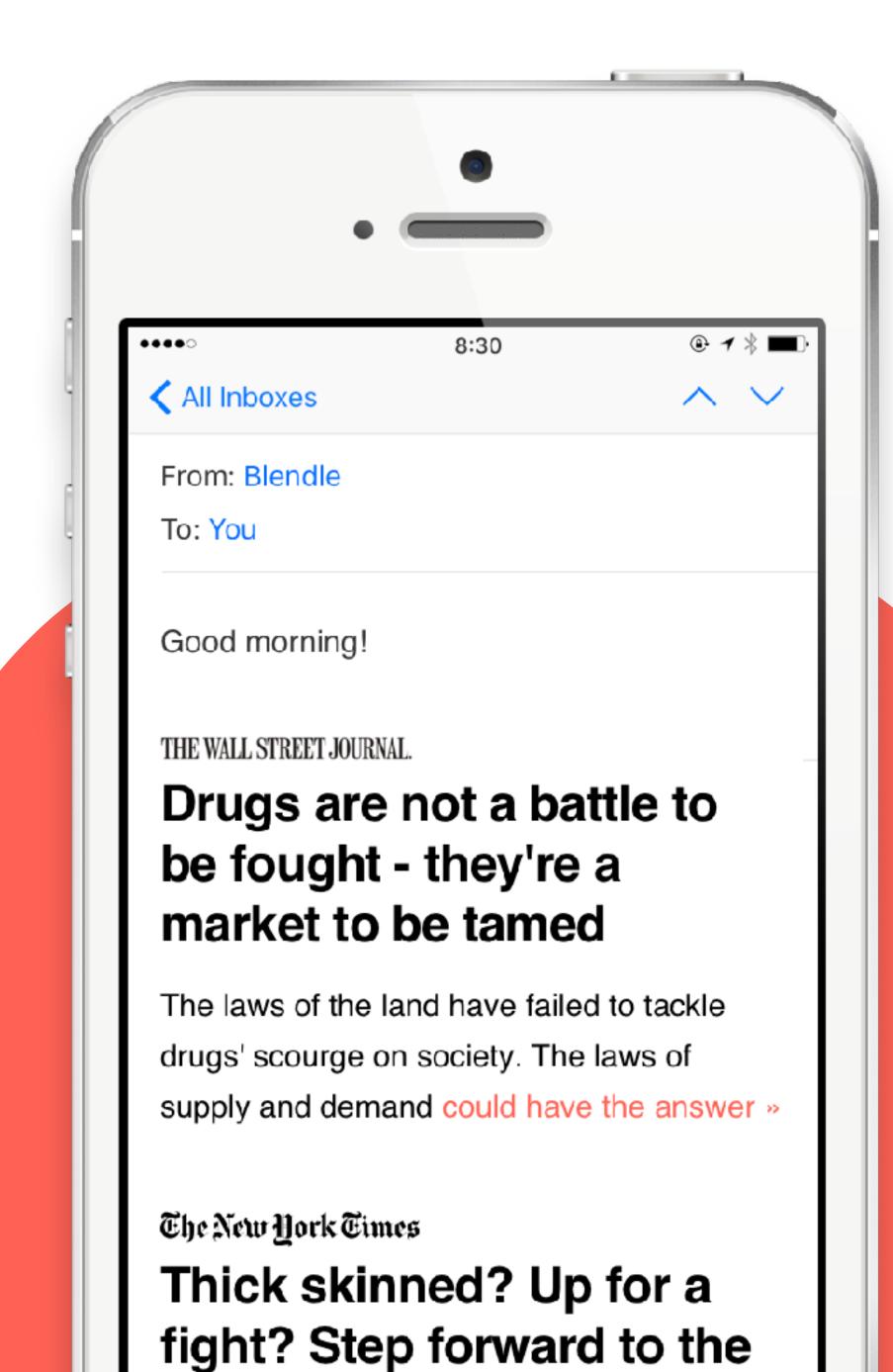






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Data at Blendle · Articles

- > 3.5M in total
- > 6K new every day
- > 30% is read





Data at Blendle • Articles

- > 3.5M in total
- > 6K new every day
- > 30% is read
- Users
 - >1M users
 - ~ 1 in 5 converts to paying user





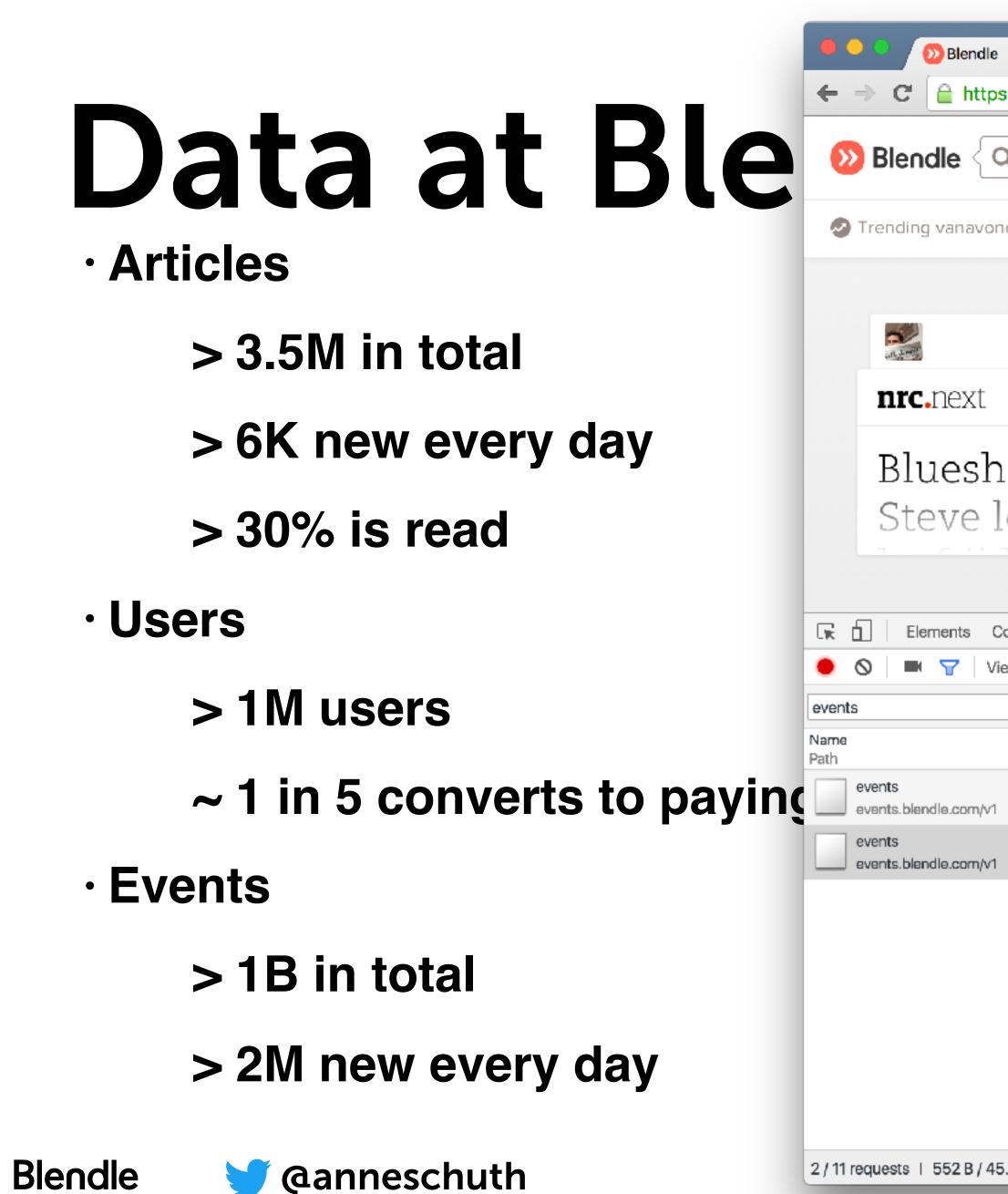
Data at Blendle • Articles

- > 3.5M in total
- > 6K new every day
- > 30% is read
- Users
 - > 1M users
 - ~ 1 in 5 converts to paying user
- Events
 - > 1B in total
 - > 2M new every day







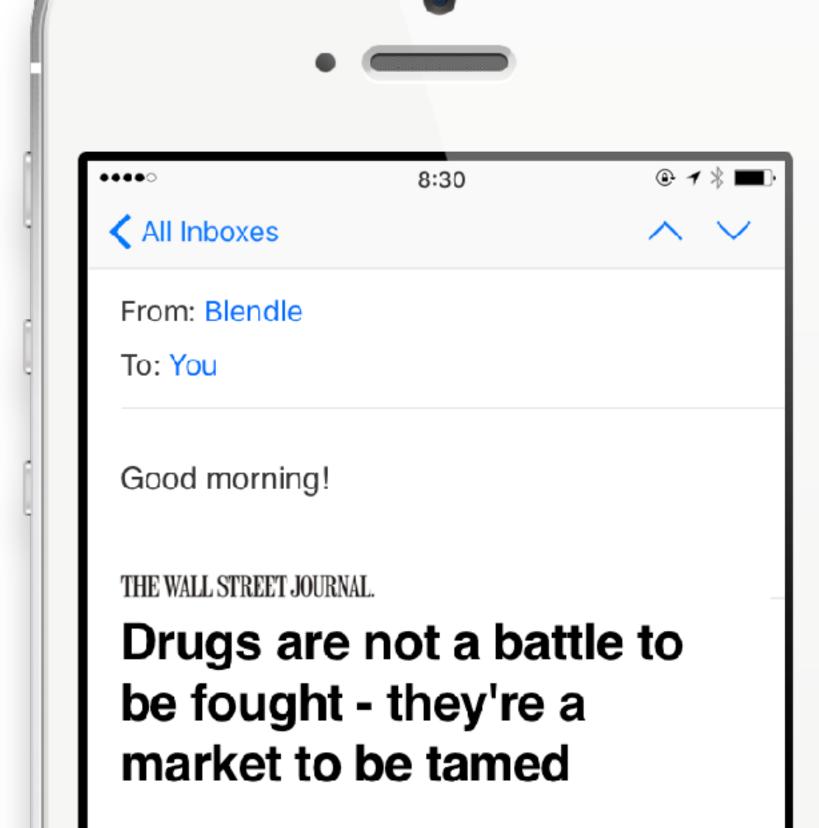


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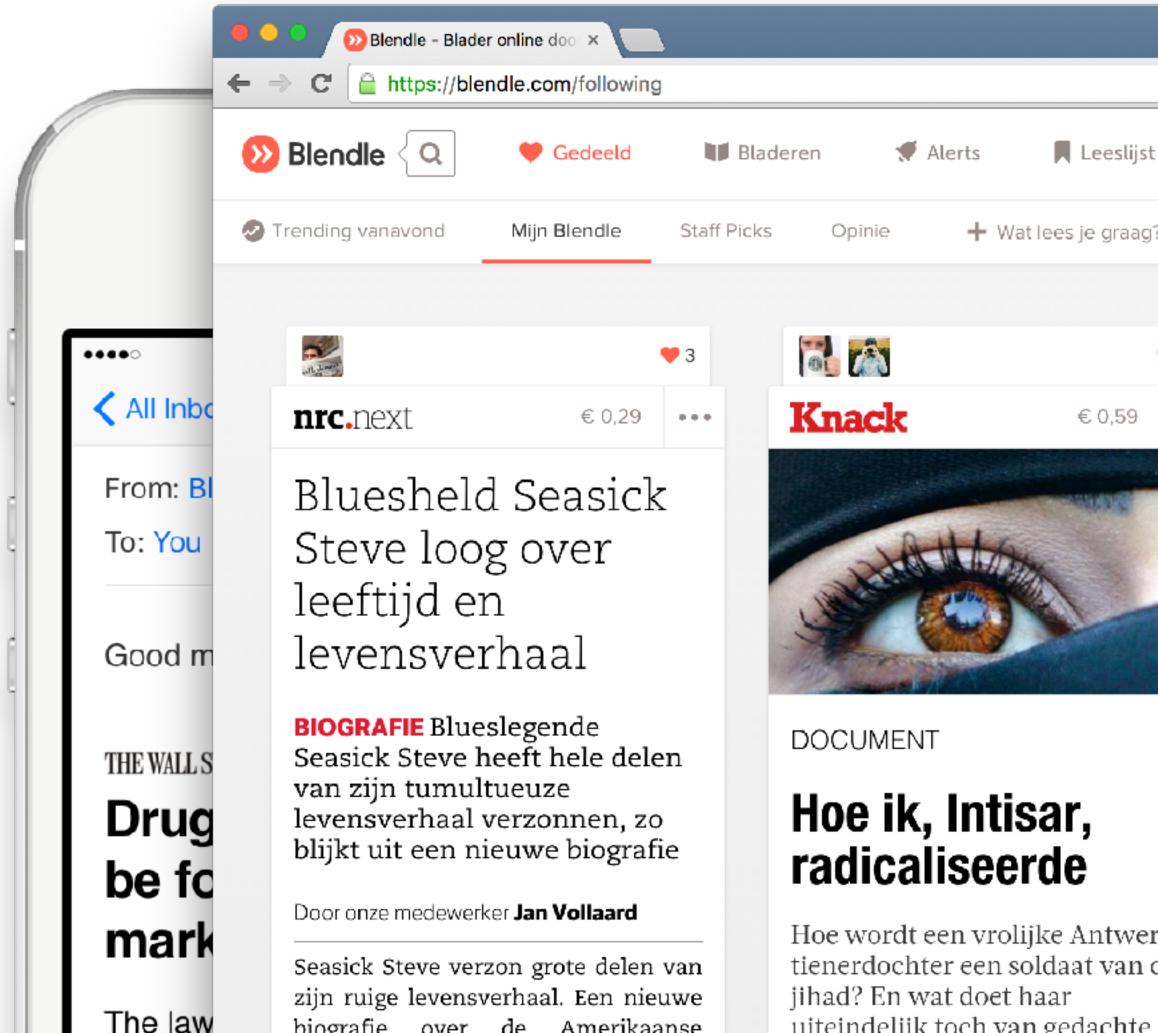


The laws of the land have failed to tackle

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Rankings at Blendle



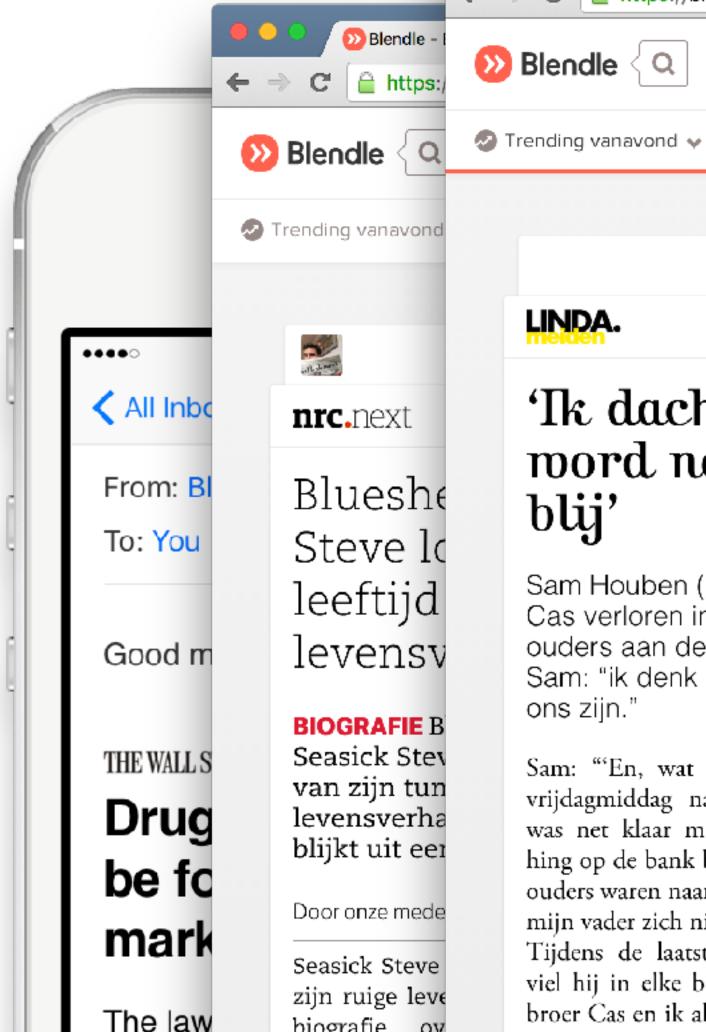


en 🛒 Alerts 📕 Leeslijst		
Opinie 🕂 Wat lees je graag?		
3	Staff Picks +2 +2	Opinie Staff Picks
Knack € 0,59 •••	Wow. Na deze brief van een 23-jarig verkrachtingsslachtoffer ben je even stil. Ties Joosten	'Geef Giel Beelen aandad zonder. Over een paar ma patiënt weer naar zijn gla
	€ 0,39 •••	Sjors Hofstede
OCUMENT		
loe ik, Intisar,	Edologhthoro	
adicaliseerde	Edelachtbare,	Berouw
loe wordt een vrolijke Antwerpse ienerdochter een soldaat van de had? En wat doet haar iteindelijk toch van gedachte	Aanranding Het 23-jarige slachtoffer van een verkrachting op Stanford University in de VS schreef een	Marcel van Roosmalen



Rankings at Blendle

C



Blendle

LINDA.

'Ik dacht: ik word nooit blij'

Sam Houben (20) en h Cas verloren in één jaa ouders aan de spierzie Sam: "ik denk dat ze tr ons zijn.'

Sam: "En, wat is het?', vrijdagmiddag naar mijn was net klaar met mijn t hing op de bank bij mijn n ouders waren naar het zieke mijn vader zich niet goed vo Tijdens de laatste winters viel hij in elke bocht. Dat broer Cas en ik al in de stoe

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g vanavond 🖌 Mijn Blendle	Staff Picks Opinie 🕂	Wat lees je graag?			
🎔 14	43 Staff Picks +2	♥ 472		* 193	
CA. € 0,49	•••• Wow. Na deze brief va verkrachtingsslachtoff Ties Joosten		Vrij Nederland	€ 0,89 •	
κ dacht: ik ord nooit mee ij'	r	€ 0,39	GELIJKHEID INTERVIEW	DSCHAP IS:	
n Houben (20) en haar broe s verloren in één jaar hun ers aan de spierziekte ALS. h: "ik denk dat ze trots op zijn."			IK BEN WI BEN SUPER 400 jaar kolonia	RIEUR'	
: "'En, wat is het?', appte ik a agmiddag naar mijn moeder. net klaar met mijn toetsweek op de bank bij mijn nichtjes. Mi ers waren naar het ziekenhuis omd vader zich niet goed voelde. ens de laatste wintersportvakan hij in elke bocht. Dan zaten mi r Cas en ik al in de stoeltjeslift na	Ik en Aanranding ijn Het 23-jarige slact lat verkrachting op S University in de V tie brief aan de recht ijn is overkomen. De	htoffer van een tanford 'S schreef een er, over wat haar dader, een	na in hoe je naar jezelf en de ander kijkt, zegt emeritus hoogleraar gender en etniciteit Gloria Wekker. In haar boek 'White Innocence' onderzoekt ze waarom 'ras' in Nederland zoveel reactie oproept. 'Racisme was er altijd, maar steeds meer mensen vinden het normaal om grof te zijn. Geef mij maar méér politieke		



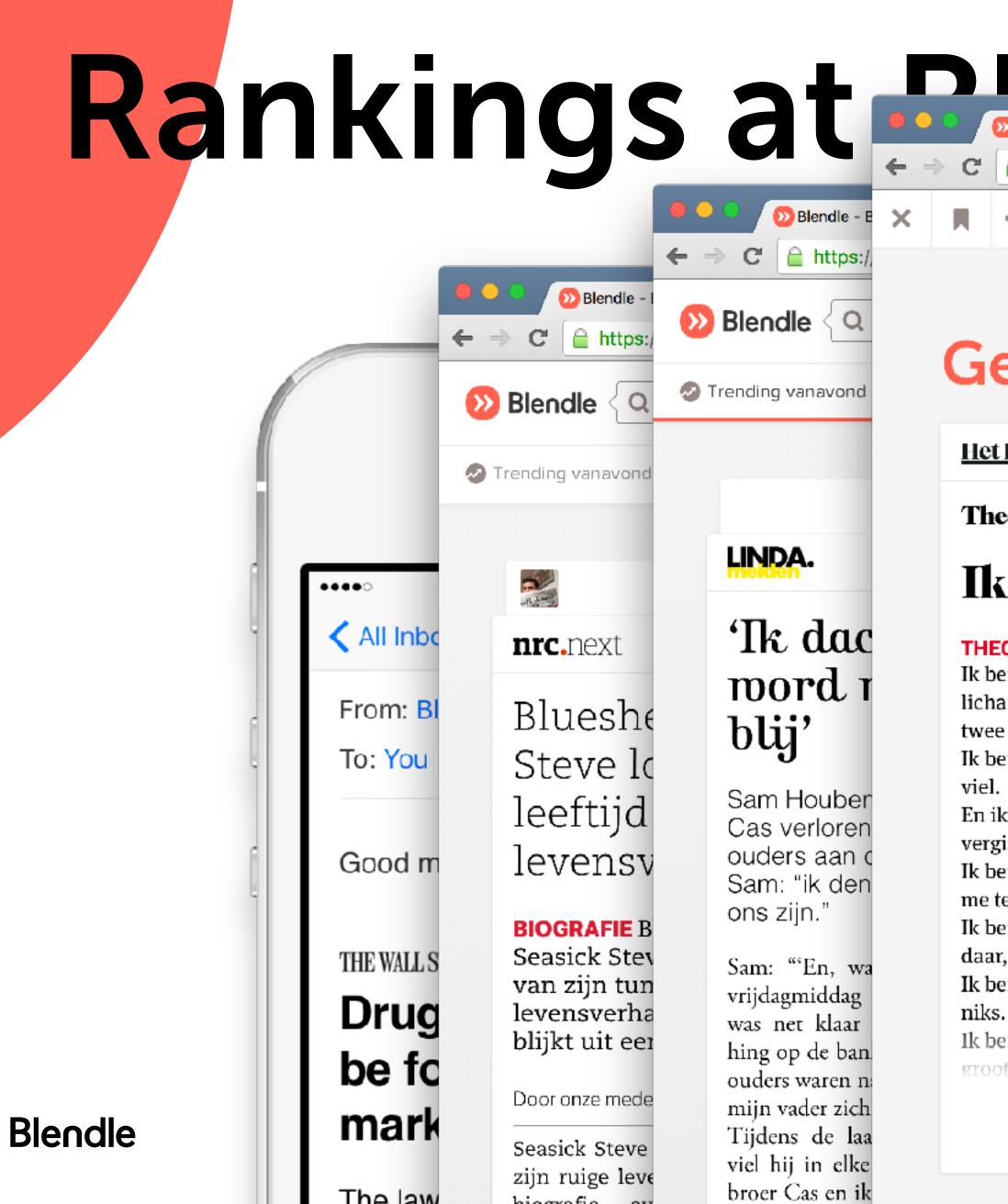


The law

hiografie ov

€ 0,19 boerenlul, ik ben Zijn mond zit vol kronen, hij is half doof en zijn stem klinkt als een slecht startende Unimog. Een pionier loopt altijd schrammen op en zeker Bennie Jolink van Normaal, al 40 jaar spreekbuis van het achterland.

SIDDEBUREN In Wittewierum is een oude Mercedes met de neus in de grond begraven. Dát is Normaal. Cadillac zijn Noord-Gronings. Boerenhumor. Zoals Herman Brood rolmodel bleek voor de stadjer, zo was de Achterhoekse boerenrockband, die het na veertig jaar toeren voor gezien houdt, rolmodel voor de plattelander.



hiografie ov

The law

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en zaş ken o het lic	Nederlands	~	Ma			

En ik ben ret vergist? Ik ben een ra me te scham Ik ben solda: daar, ons tre Ik ben hun v Ik ben de pre groot.



Tip:

Gebruik dubbele aanhalingstekens om woorden te combineren. Gebruik - om een woord uit te sluiten. Een dagtocht per schip dwars door West-

Brabant, inclusief uitgebreide lunch en warme snacks.

Binnen twee weken zijn inmiddels zeven vaartochten - met ruim 700 abonnees - stijf uitverkocht.

Omdat er zoveel animo voor is, hebben we in samenwerking met de Zilvermeeuw meerdere extra vaartochten gepland. Zo kunnen de leden van BN DeStem club onder andere op woensdag 15 juni of op zaterdag 18 juni het ruime sop kiezen.



burgemeester Oni vinden dat de huis





Should be personalised





- Should be personalised
 - Lots of content





- Should be personalised
 - Lots of content
 - Lots of different tastes

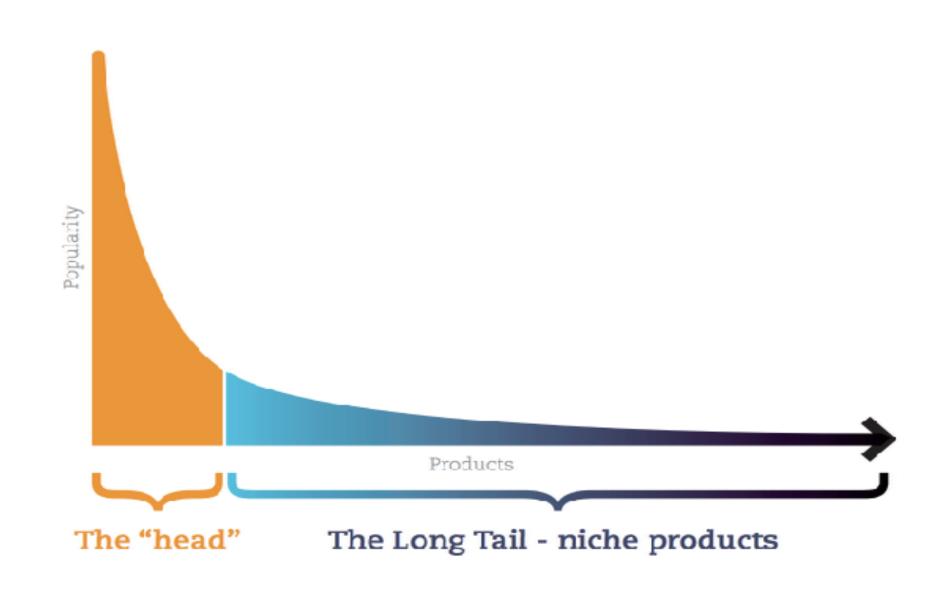




- Should be personalised
 - Lots of content

🤟 @anneschuth

Lots of different tastes



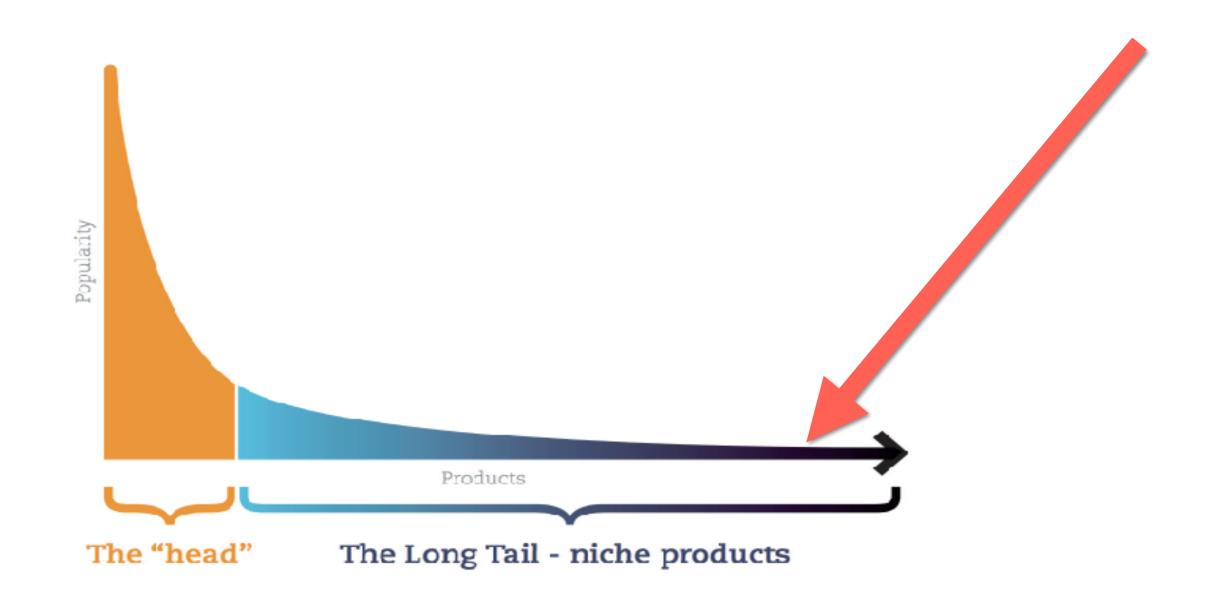




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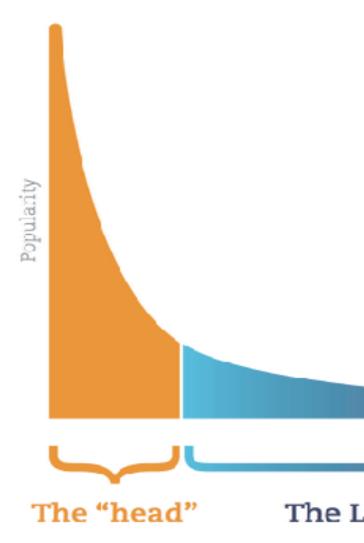


Rankings at Ble

- Should be personalised
 - Lots of content

🥑 @anneschuth

Lots of different tastes





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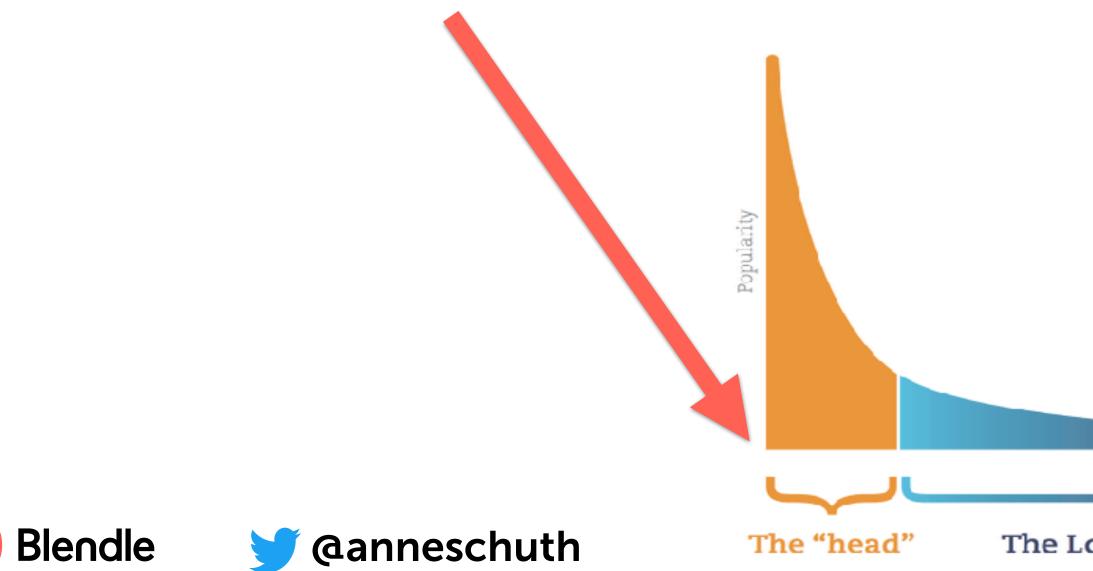
The Long Tail - niche products

Products



Rankings at Ble

- Should be personalised
 - Lots of content
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	POLE COURANT	0 E y
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The Long Tail - niche products

Products



🗧 🔿 🖸 🔓 https://blendle.com/i/linda/lustige-dames/bnl-linda-20160120-120550_lustige_dames

X 📕 …

LINDA. woensdag 20 januari 2016 - 5 mi

Lustige dames

Tv-vrouw Geraldine Kemper (25) en model Kim Feenstra (30) rollebollen graag met vrouwen, maar willen de mannen niet missen. "Als het maar geen softie is."

Tekst Eva Loesberg, fotografie Marc De Groot, styling Jos Van Heel, visagie Irena Ruben

VROUWEN

Kim "Ik val op mannen én vrouwen. Daar ben ik kort geleden pas eerlijk voor uitgekomen. Op mijn achttiende heb ik een lesbische relatie gehad."

Geraldine "Ik heb nog nooit een relatie gehad met een vrouw, maar ik speel wel met vrouwen." *Kim* "Ja, misschien was die relatie ook meer spelen. Het was sex. Het was ontdekken. Het duurde drie maanden. Vrouwen zijn zo zacht. Fijn om te voelen."

Geraldine "Ik vind sex met een vrouw ook fijn. Ik word aangetrokken door een persoon – of het nou een man of een vrouw is kan me niet schelen."

Kim "Het hippie-idee staat me aan: love everyone; geen hokjes, vrijheid."

RODDEL

Kim "Sinds ik in *Spuiten en Slikken* heb laten merken dat ik Geraldine heel aantrekkelijk vind, gaat het gerucht dat er iets tussen ons is gebeurd."

Geraldine "Maar daar gaan we verder niets over zeggen. Sommige dingen blijven privé."

Kim "Die blijven in de slaapkamer."

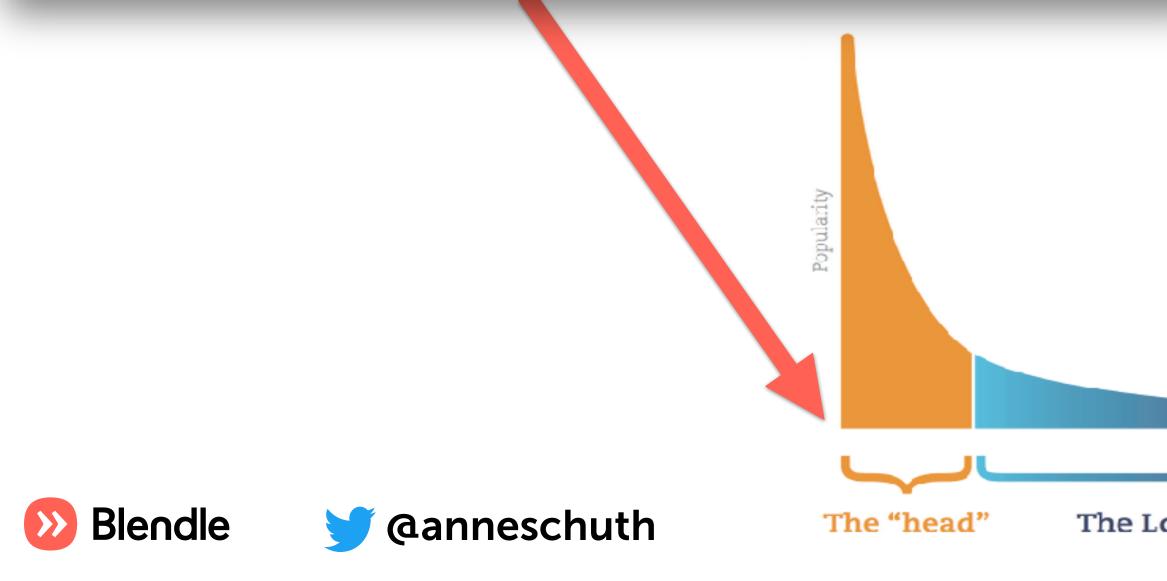
Geraldine "We doen mee aan deze LINDA.-shoot omdat we fotograaf Marc de Groot geweldig vinden. Met hem weet je

dat het classy oplaait, vinde

0 FI Y 🛛

MODE

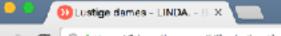
Geraldine "W zou ik dat noo genoeg voel ik *Kim* "Of iets : draagt. Bij jou *Geraldine* "Jij van Christian *Kim* "Ik vond *Geraldine* "No truitje. Simpe Bezweet. In ee maxjes. En da *Kim* "Ik heb o Lieslaarzen vit



COLOFON ELECTRON Delen op		RDER COURANT	Ø	
Snijder (chef), Theo Zandstra, Janna Zuiderveld Mail dit artikel Vormgeving Erik Hilverda Dit artikel kornt uit Art director Alie Veenhuizen Dit artikel kornt uit Telefoon cultuurredactie Dit artikel kornt uit 058 - 2845395 van afgelopen vrijdag. E-mail cultuur@lc.nl Meer lezen uit Leeuwarder Courant Veer lezen uit Leeuwarder Courant? Hele editie Eenmalig € 1,78 Lees editie	Eindredactie Gerda Douma, Wiebe van der Hout, Roel Snijder (chef), Theo Zandstra, Janna Zuiderveld Vormgeving Erik Hilverda Art director Alie Veenhuizen Telefoon cultuurredactie 058 - 2845395 E-mail cultuur@lc.nl	Dit artikel komt uit Leeuwarder Courant van afgelopen vrijdag.	F Mail dit artik E-mailadres o	kel na

Products The Long Tail - niche products





← → C 🔓 https://blendle.com/i/linda/lustige-dames/bnl-linda-20

X 🗏 …

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Mét Tete, Bazoer, Riedewald en El Ghazi, het kwartet op een zijspoor bij **Ajax**.

DAGBLAD NOORDEN

€0,09 •••

Grote jongens, nu in Jong Oranje

zeist Jong Oranje speelt binnen een week cruciale interlands tegen Turkije en Cyprus om het jeugd-EK van 2017 nog te halen.

Mét Tete, Bazoer, Riedewald en El Ghazi, het kwartet op een zijspoor bij Ajax.

Een gek gezicht? Ja, toch wel. Riechedly Bazoer, Jairo Riedewald, Kenny Tete en Anwar El Ghazi stonden gistermiddag gebroederlijk naast elkaar op het veld van het trainingscomplex in Zeist. Niet bij het grote Oranje, maar bij Jong Oranje. Een elftal...



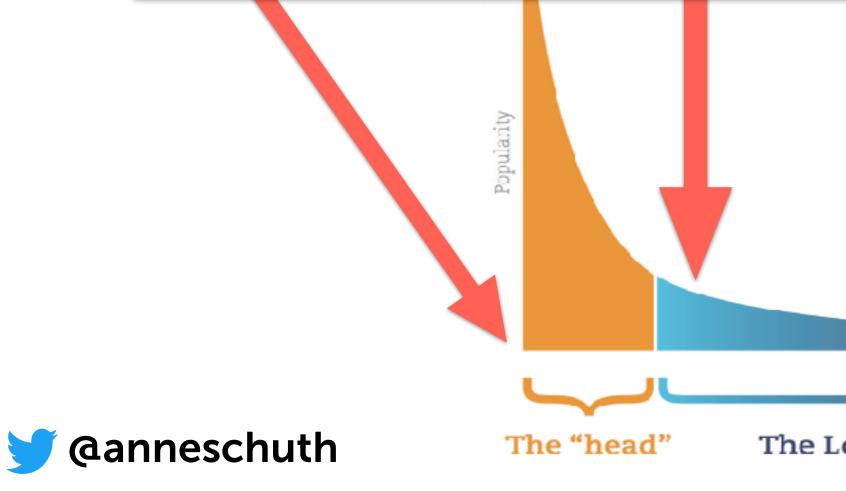
Prima voor Ajax, zou je zegge

AD

Jaar geleden bij grote jong nu in Jong Or

DANIËL DWARSWAARD

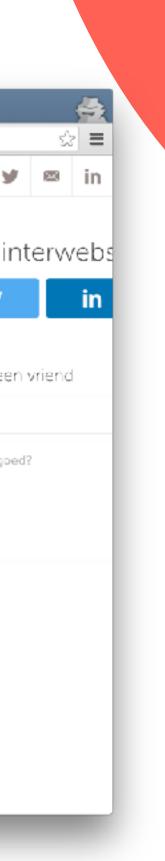
Jong Oranje speelt binnen cruciale interlands tegen Turkij om het jeugd-EK van 2017 n Mét Tete, Bazoer, Riedewald het kwartet op een zijspoor bij Een gek gezicht? Ja, toch we Bazoer, Jairo Riedewald, Ker Anwar El Ghazi stonden g gebroederlijk naast elkaar op v trainingscomplex in Zeist. N grote Oranje, maar bij Jong elftal dat ze...





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The Long Tail - niche products





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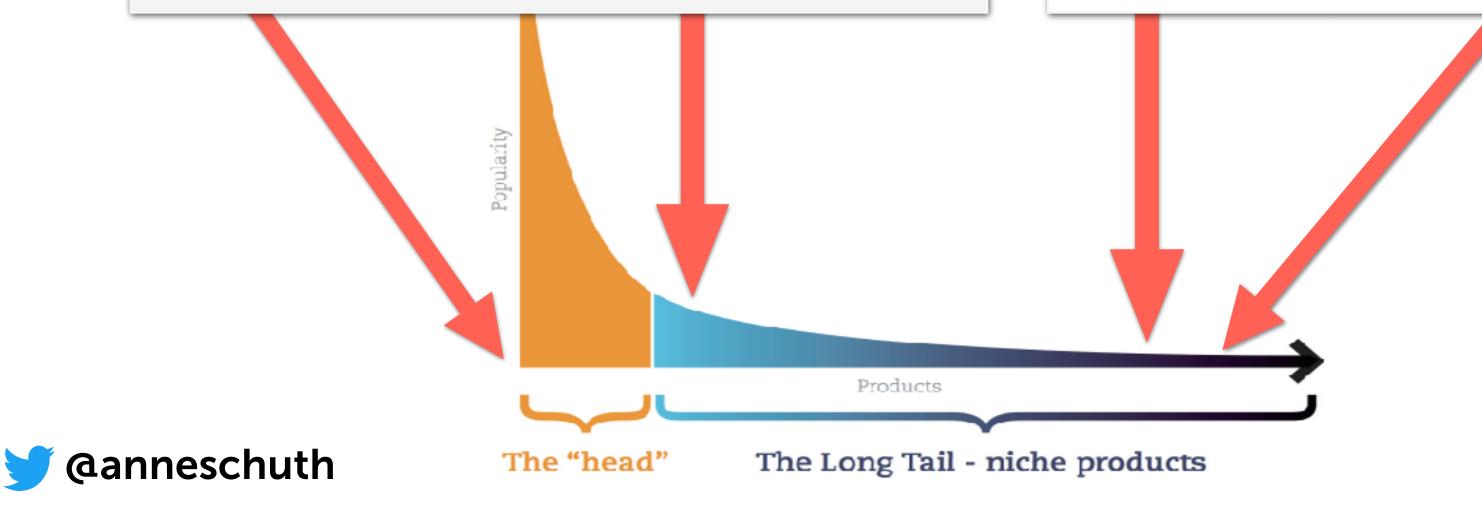
Prima voor **Ajax**, zou je zeggen.

AD

Jaar geleden nog bij grote jongens, nu in Jong Oranje

DANIËL DWARSWAARD

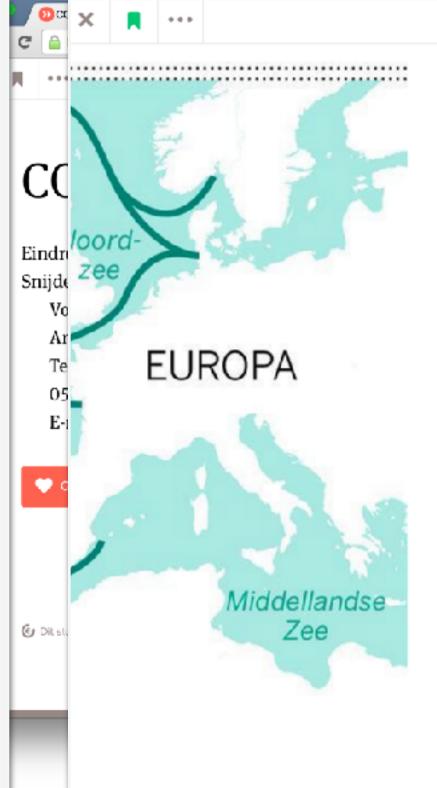
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deVolkskrant

€ 0,15 •••



Mysterieuze migratie van paling in kaart gebracht

Met behulp van zenders zijn wetenschappers erin geslaagd de paling te volgen op zijn route van geboorte naar volwassenheid. **VAN ONZE VERSLAGGEVER JENTE OTTENBURGHS AMSTERDAM**

Europese palingen zwemmen meer dan 5.000 kilometer - twee keer de afstand tussen Amsterdam en Moskou - naar hun voortplantingsgebied in de Atlantische Oceaan. Een internationaal team van wetenschappers heeft deze migratieroute nu in detail gereconstrueerd. Vanuit diverse Europese rivieren zwemmen de palingen naar de Azoren vanwaar ze koers zetten richting hun eindbestemming. Dat schrijven de o tijdschrift Scier De route

biologisch vraa bescherming v ging het niet Europese kust stichting Duur niet betrokken is het Europese huidige maatr harde gegeve onderzoek b beschermingsr Tijdens zijr zoute oceanen worden gebore de Atlantische

golfstroom voo vasteland, een zwemmen de j

- Should be personalised
 - Lots of content
 - Lots of different tastes





- Should be personalised
 - Lots of content
 - Lots of different tastes
- Can be personalised





- Should be personalised
 - Lots of content
 - Lots of different tastes
- Can be personalised
 - •We know what our users read





- Should be personalised
 - Lots of content
 - Lots of different tastes
- Can be personalised
 - •We know what our users read
 - What they didn't like





Rankings a

- Should be personalised
 - Lots of content
 - Lots of different tastes
- Can be personalised
 - We know what our use ence' pleit u voor meer etiquette in onze
 - What they didn't like

terugkwam uit de Verenigde Staten, viel onbeschaamdheid op waarmee hier merkingen worden gemaakt. Met groot reen hier van alles over anderen en dan en. Het gevoel is: wij kunnen dit doen, iet racistisch. Ik schuif Amerika zeker





C

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Line https://blendle.com/i/vrij-nederland/de-boodschap-is-ik-ben-wit-dus-ik-ben-superieur/bnl-vn-20160608-28991

iseerd worden, het begint al bij de grote wordingsgeschiedenis van Nederland. n Schama, Russell Shorto en Jonathan van hun boeken staat hoe het werkelijk halen gaan over wat de Gouden Eeuw verde, de strijd tegen het water, de eidsstrijd tegen Spanje, maar het de slavenhandel spelen geen rol. Het over Nederland moet veranderen en en we in het onderwijs iets doen aan aardigheden: hoe gaan we met elkaar

niet naar voren als het voorbeeld dat we moeten volgen, opmerkingen worden daar beledigende maar onmiddellijk afgestraft.'

Als u het klimaat toen al erg vond in Nederland, moet u nu van uw stoel vallen. Nogal wat mensen zeggen: weg met de politieke correctheid.

'Geef mij maar meer politieke correctheid. Ik vind het ongehoord wat er allemaal kan worden gezegd en dat is alleen maar erger geworden. Racisme was er altijd, maar steeds meer mensen vinden het normaal om grof te zijn.'

Hoe is het eigenlijk om dit soort opmerkingen aan te moeten horen sinds u een kind was?

Peinzend: 'Weet je, als ik kan verklaren waarom dit soort dingen wordt gezegd, zoals ik in dit boek heb gedaan, werkt dat verzachtend. Het was heel pijnlijk om het te schrijven, soms heb ik aan mijn bureau zitten huilen, als ik iets over mezelf vertelde of als ik een connectie zag die ik nog niet eerder had gezien. Ik zat er



Oit stuk las je voor €

Rankings a

- Should be personalised
 - Lots of content
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Toevoegen aan Pocket	
Niet goed? Geld terug (€ 0,89)	
Printen	,
Uitgave weergeven	

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Vrii Nederland

isteren - 16 minute



💛 Goed stuk



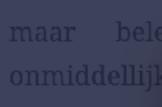
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Laat maar zitten

het te schrijve



- Should be personalised
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 - Lots of different tastes
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 - •We know what our users read
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- Should be personalised
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 - When they read



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. . .



- Repeated consumption
- More niche than movies/series
- Tens of millions of songs and users
- Long (often unlimited) shelf life
- Feedback: implicit (listening behaviour)





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Movies and series

- Single consumption
- Less niche than music
- 75.000.000 users
- Long shelf life
- Feedback: explicit ratings





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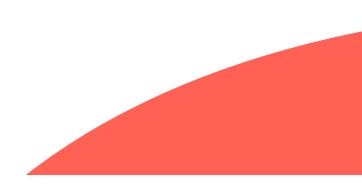


- **Single** consumption
- Very **short** shelf-life
 - Cold start problem, Collaborative Filtering won't work





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Articles

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- Very short shelf-life
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- **Diversity** of suggestions very important
 - **Content Based Recommendation won't work**





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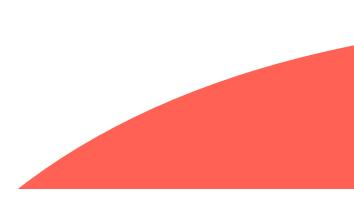


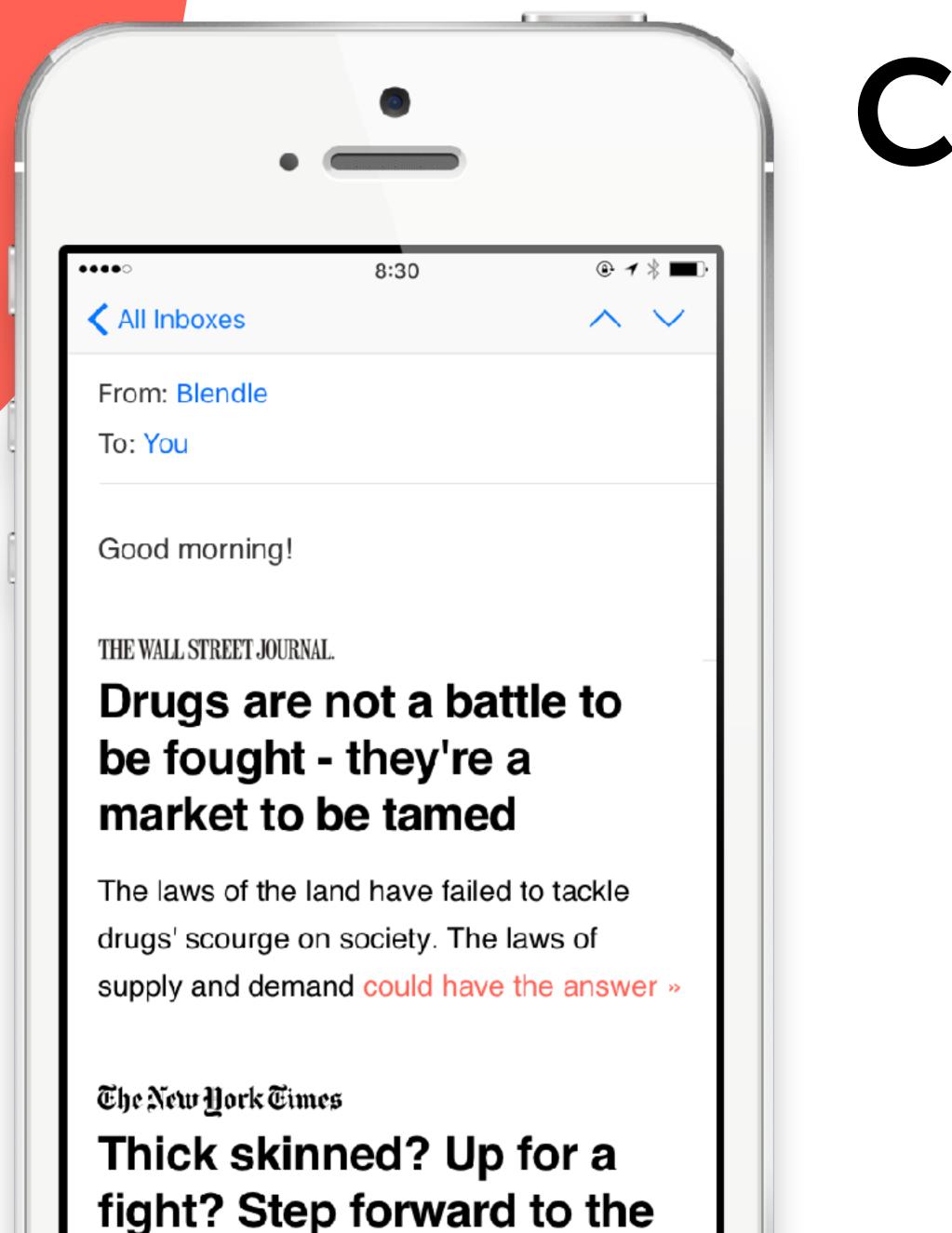


🥣 @anneschuth



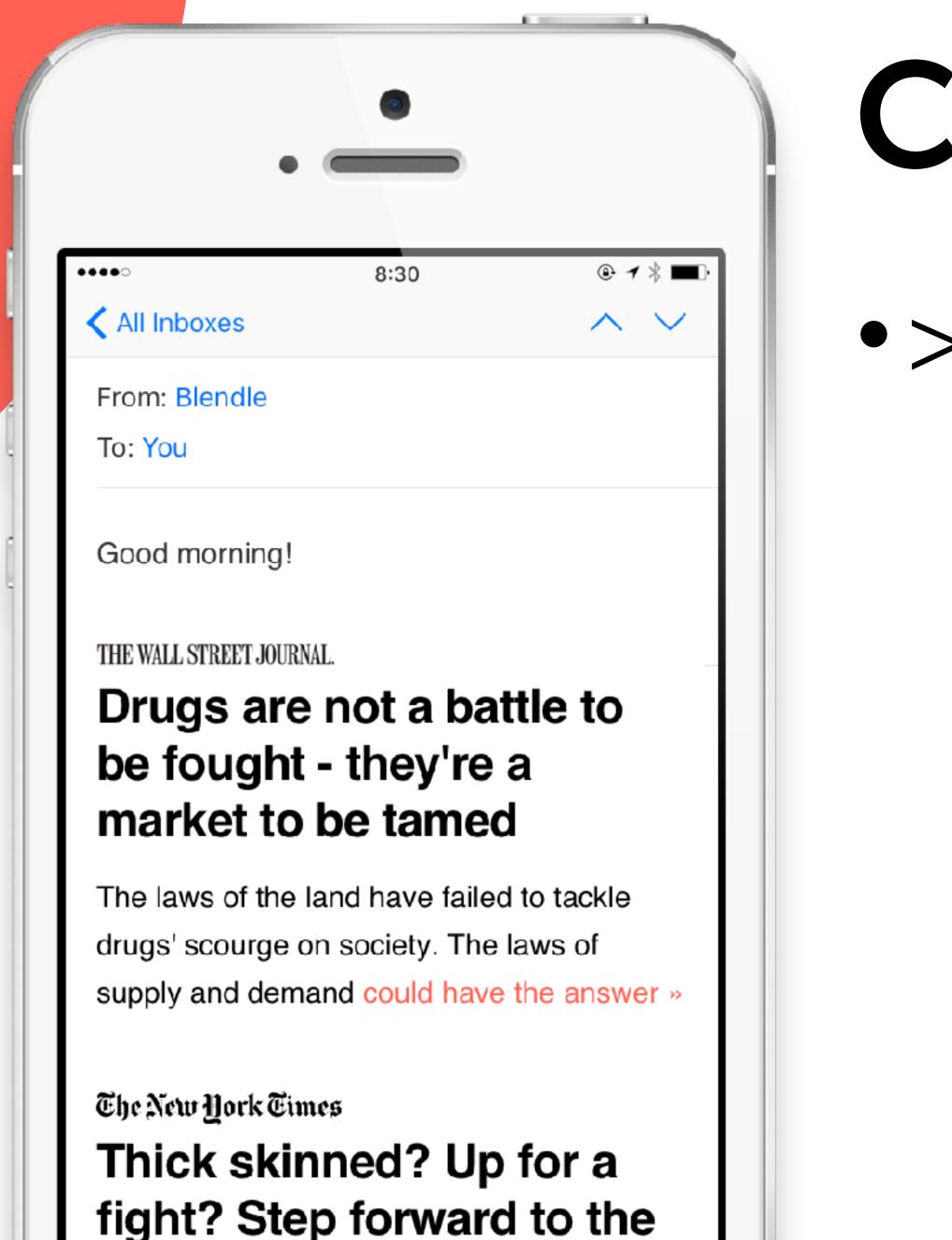
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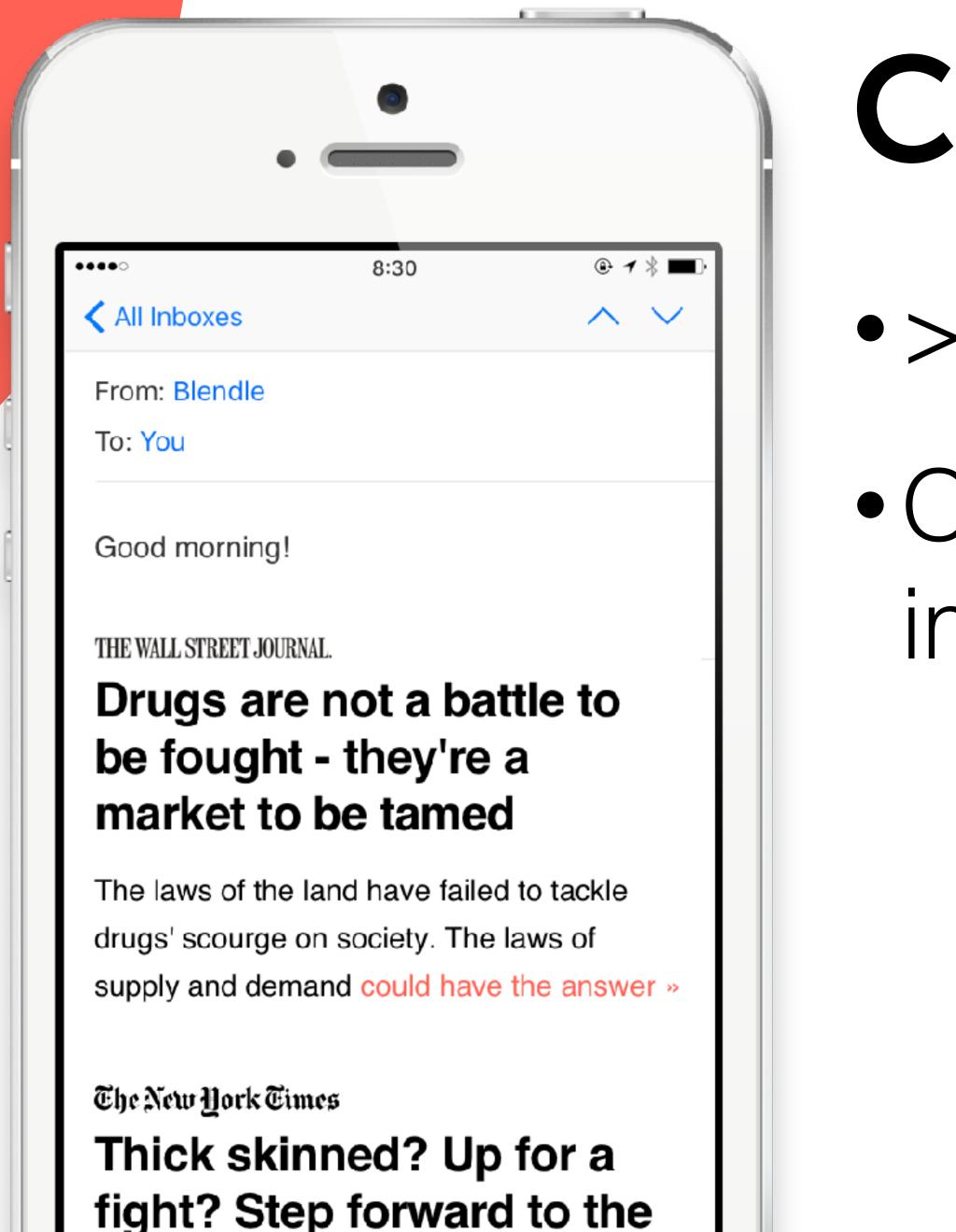
Cold start problem





Cold start problem >6K new articles every night

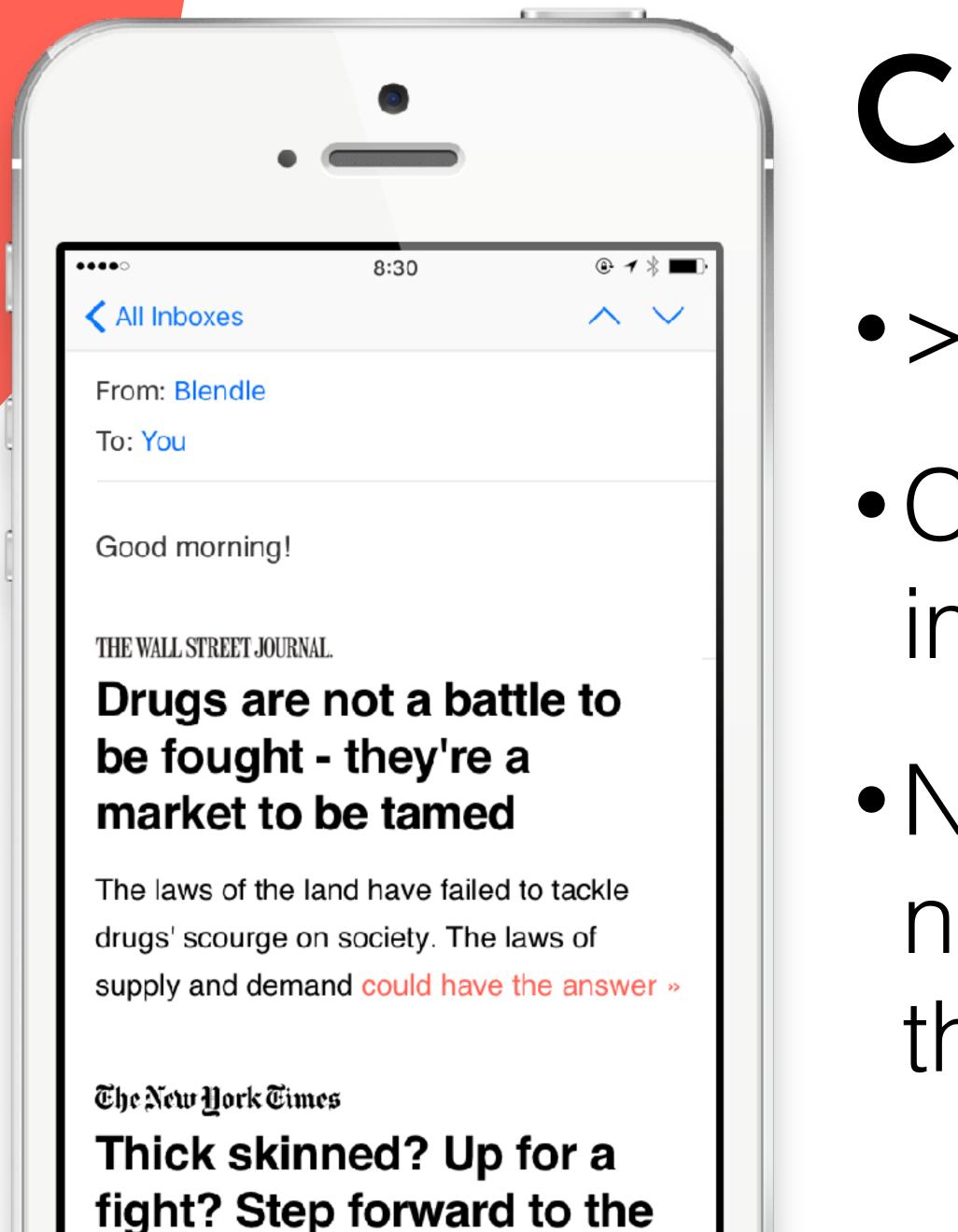




Cold start problem

- >6K new articles every night
- Our newsletter is an important traffic driver

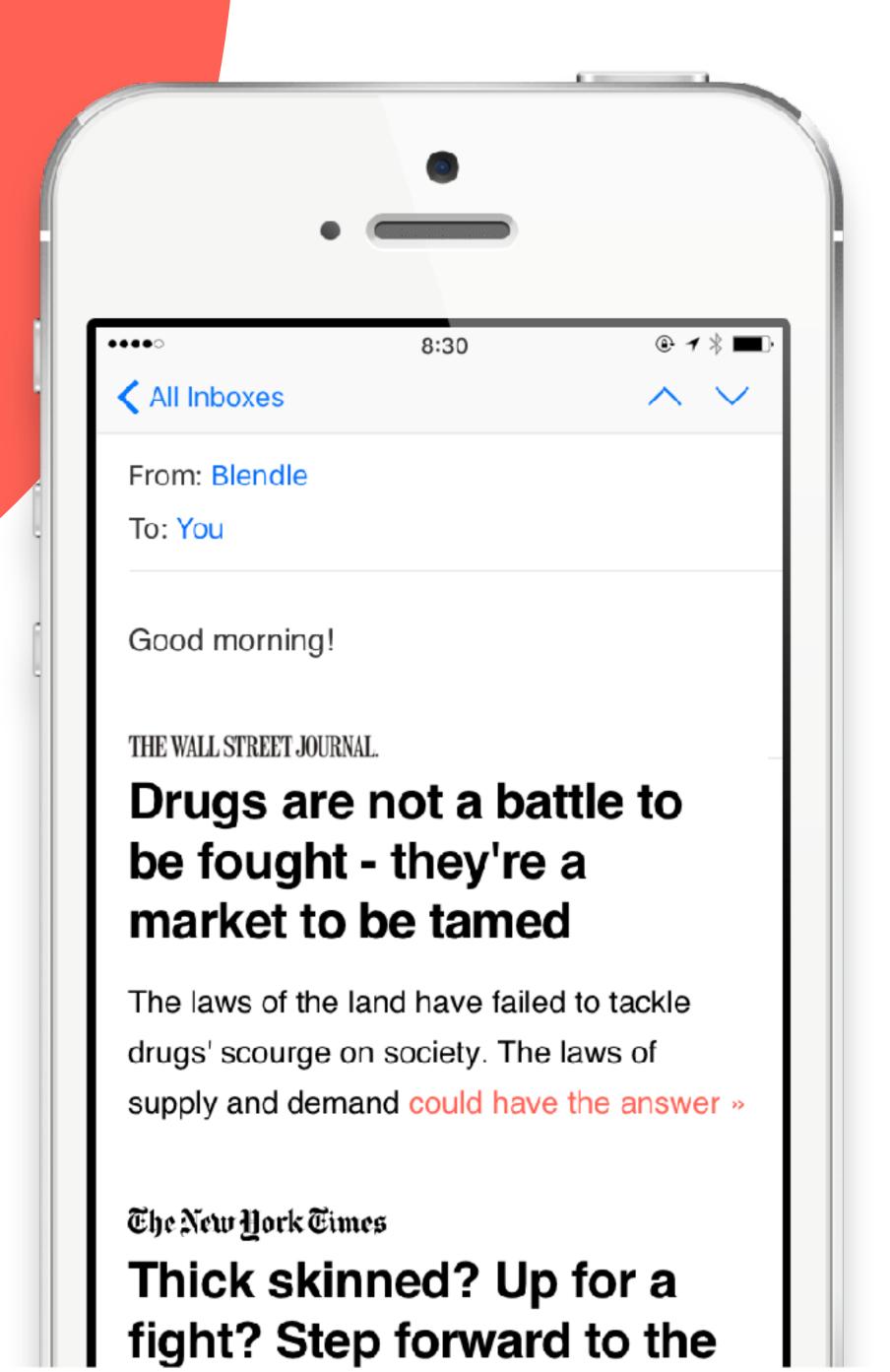




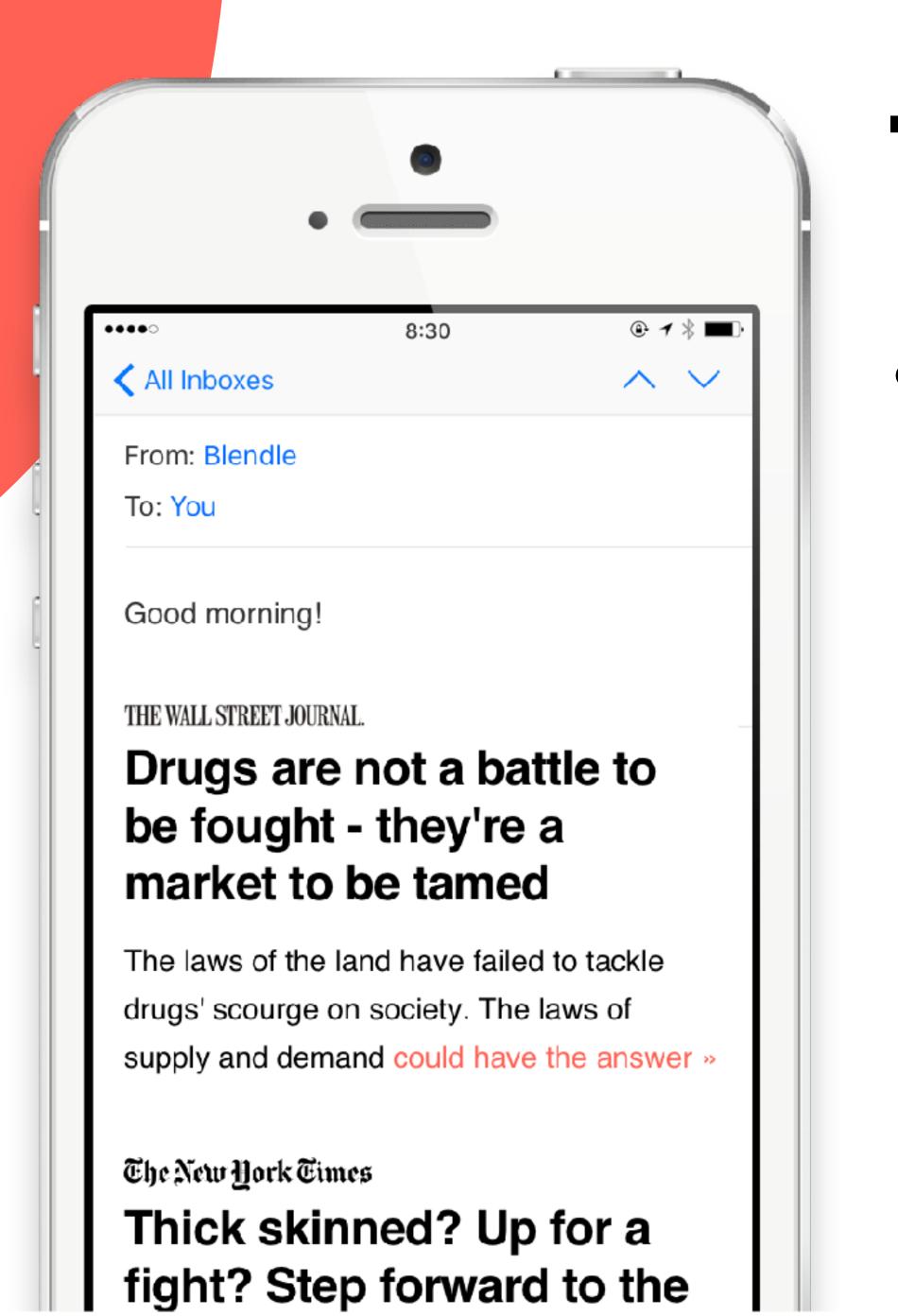
Cold start problem

- >6K new articles every night
- Our newsletter is an important traffic driver
- No usage info to rank the newsletter before we send the newsletter



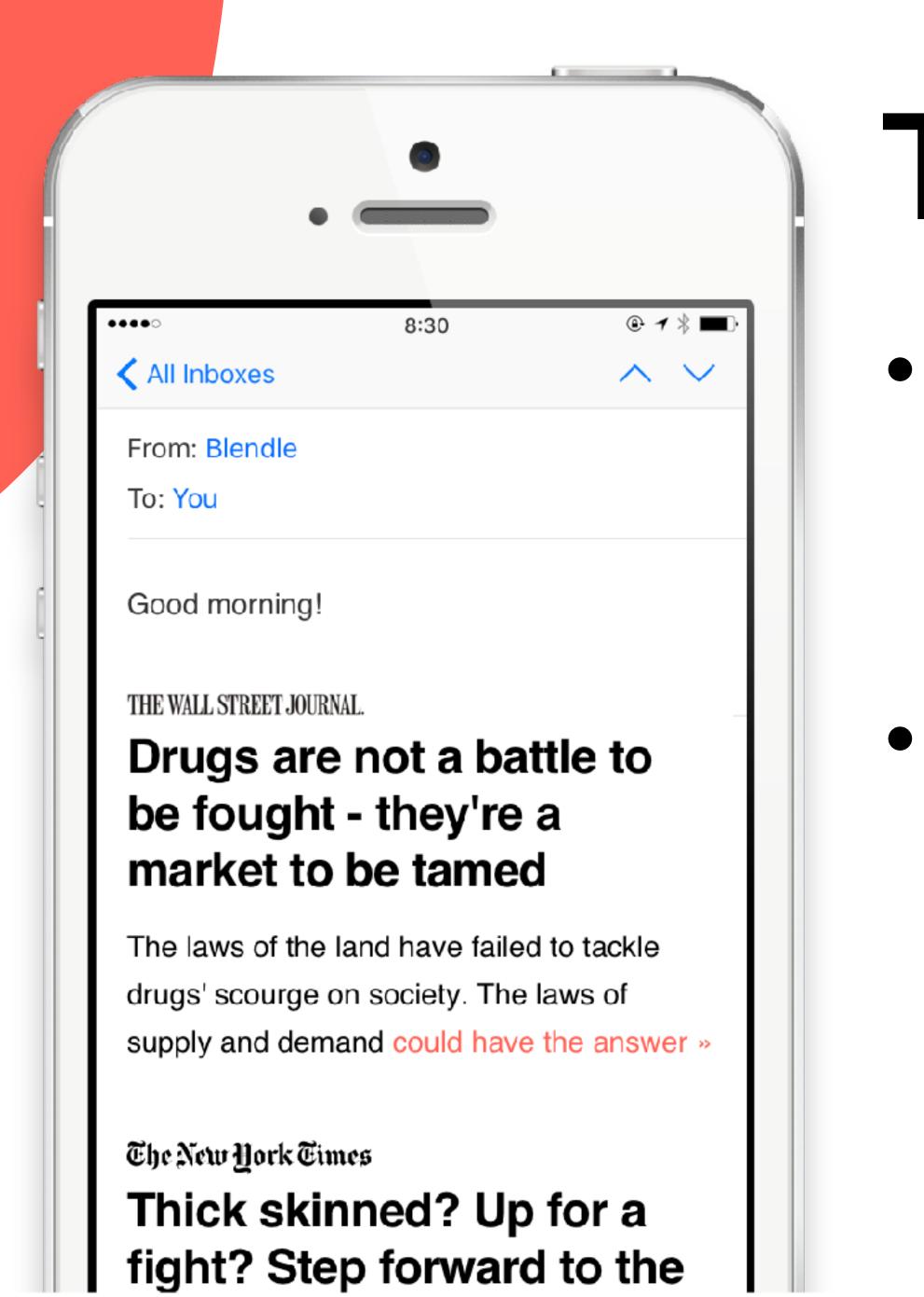


Timing problem



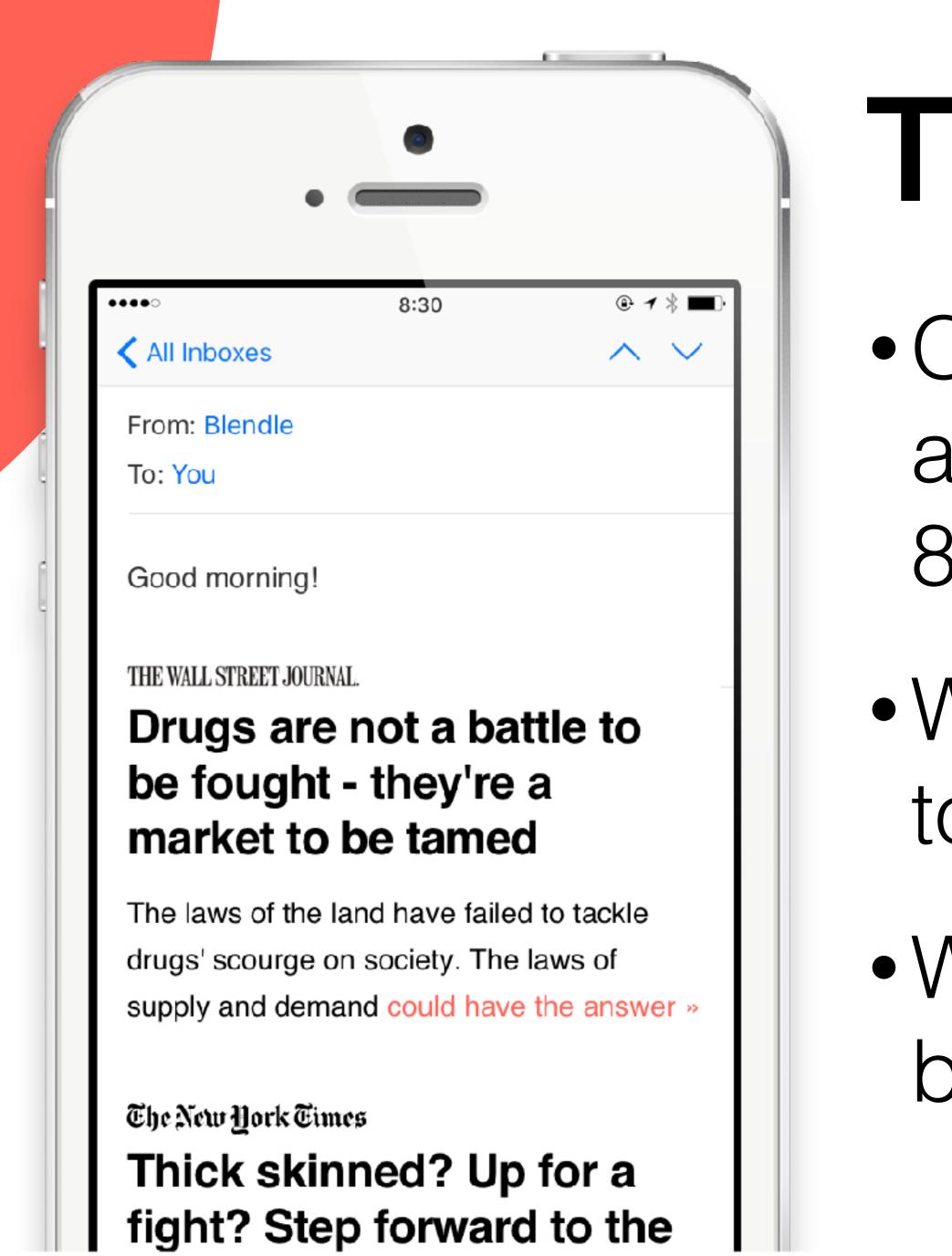
Timing problem

• Our editors wake up at 5am and are done reading at 8am



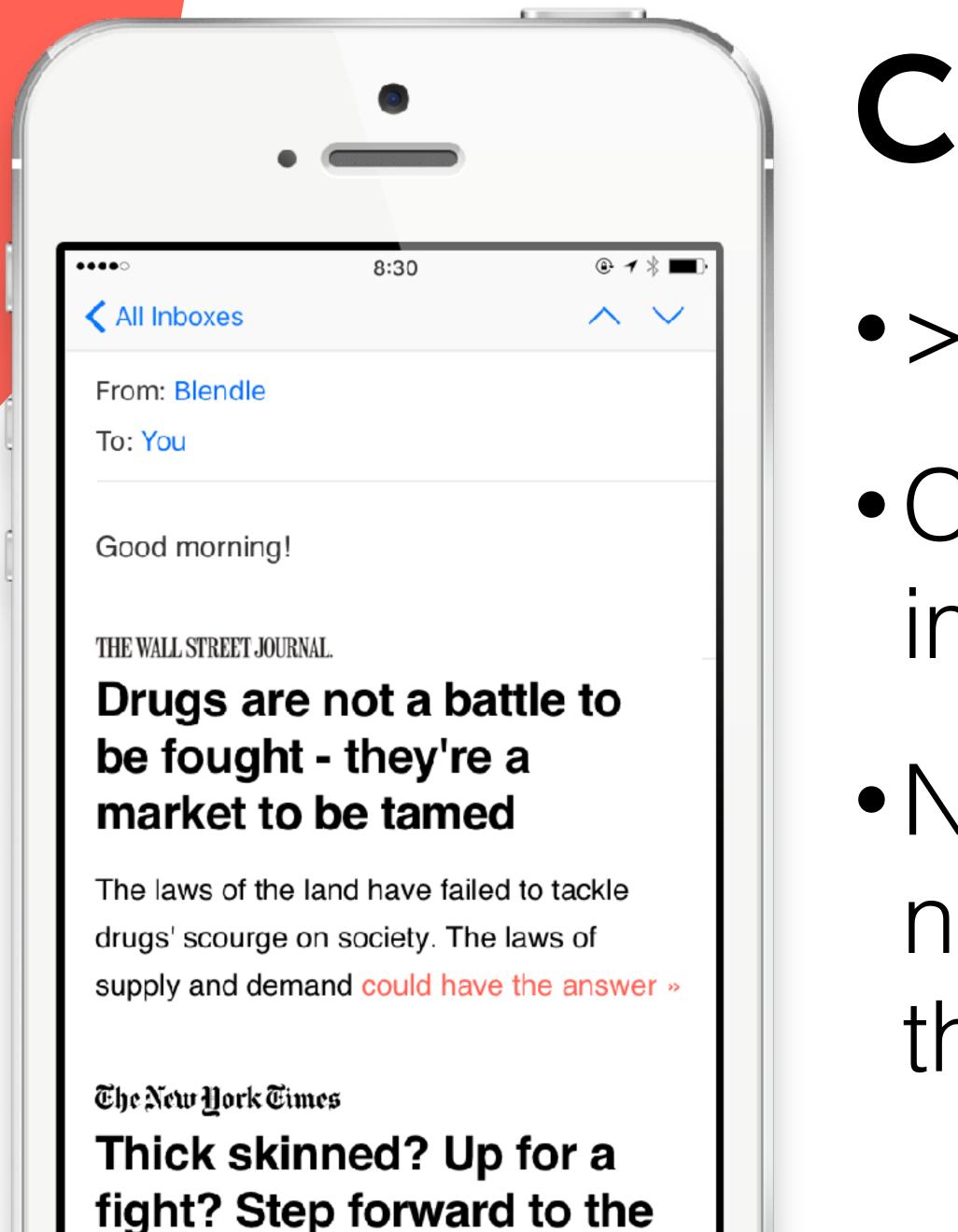
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- Which is also when we want to send our newsletter



Timing problem

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- Which is also when we want to send our newsletter
- We simply can't wait for a batch process



Cold start problem

- >6K new articles every night
- Our newsletter is an important traffic driver
- No usage info to rank the newsletter before we send the newsletter



Birth of a Blendle article

Che Mashington post HEALTH&SCIENCE

Job hunting is daunting for people with autism

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Cities take a second look at LED streetlights

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Open Chief



5 years without a meal Belentilese petro wasalen'i liet young warran -oot, ooly a level og tabe kear live alive

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Dogs are born with tails and ears. They should get to keep them.

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Delivered as PDF





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">MEDICAL MYSTERIES icle-in-image">

s="article-in-image" src="images/img_51_1.jpg" alt=""/> ass="articleImageCredit">CAM COTTRILL FOR THE WASHINGTON

">The medical team encircled Mackenzie Hild's bed, the '>"We've done all these tests, and they're ting disorders.

">Hild, who at 5-foot-3 then weighed 75 pounds, remembers we >"I didn't know how to convince them this is no ">For the next five years, Hild would repeatedly confront the ">Exhaustive testing and treatment at several of the nations whe. She tried to avoid focusing on what seemed a near-impo ">Last year, an extraordinary confluence of events would mak ">The catalyst was a chance meeting between Hild's par ">Intrigued by Hild's case, he asked a fourth-year me icle-in-image">

s="article-in-image" src="images/img_55_1.jpg" alt=""/> :loss="articleImageCaption">Mackenzie Hild, a medical stude lass="articleImageCredit">COURTESY OF MACKENZIE HILD</div>

">Drug reaction?

">Since childhood, Hild, now 26 and a second-year medical st antimalarial drug was responsible.

">Back home in rural Nevada City, Calif., and off the drug,

">When she got off the plane in August 2010, Hild's fa orders, including Crohn's disease. All tests were neg >At school, her health worsened. A few weeks into her sopho >After her confrontation with the medical team, Hild spent y bouts of nausea.<∕p>

>In the spring of 2011, the pain was so debilitating that

Processed as epub



To the Blendle format











Serram Outlers godøde Syriëganger bouden gemeente verantwoordelijk

Waarom eindigde Quentin als kanonnenvoer voor IS?

Quentin Roy stierf in Januari als soldaet voor Islamitische Staet In Syrië. Zijn ouders vinden dat



Language detection

Tokenization











Serran Outlers godode Syriëganger houden gemeen verantwoordelijk

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Language detection

Tokenization



Length, word variation, vocabulary richness, ...

Stylometry







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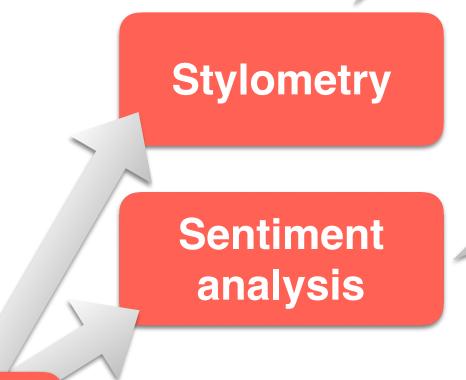


Language detection

Tokenization



Length, word variation, vocabulary richness, ...



Polarity scores (negative, positive)







Serrum Outlers gedøde Syriëganger boolen gemeente verantwoordelijk

Waarom cindigde Quentin als kanonnenvoer voor IS?

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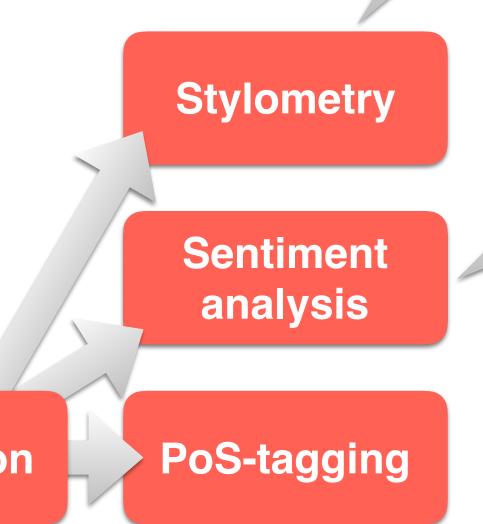


Language detection

Tokenization



Length, word variation, vocabulary richness, ...



Polarity scores (negative, positive)







Serrum Outlers gedøde Syriëganger boolen gemeente verantwoordelijk

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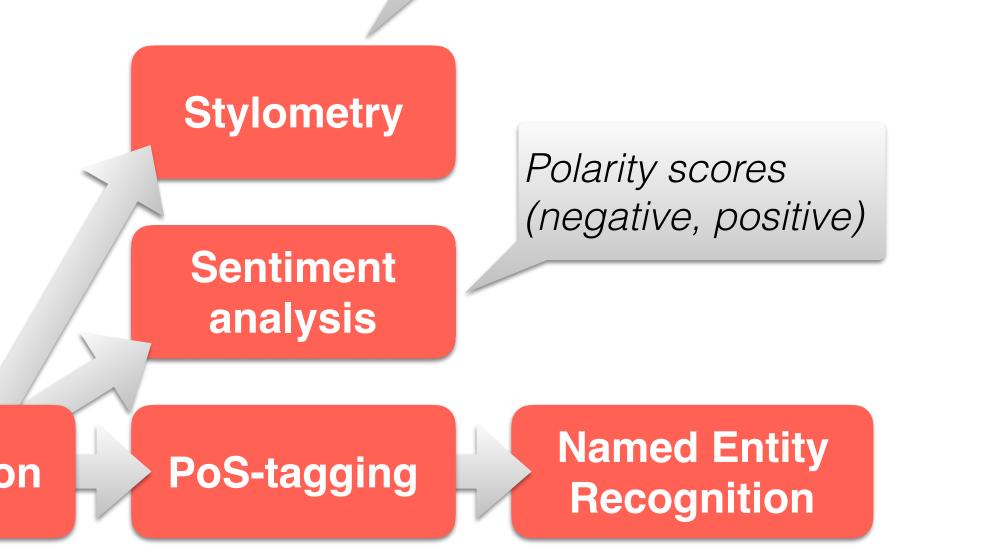


Language detection

Tokenization



Length, word variation, vocabulary richness, ...



Locations, persons, organizations







Serrum Outlers gedøde Syriëganger houden gemeente verantwoordelijk

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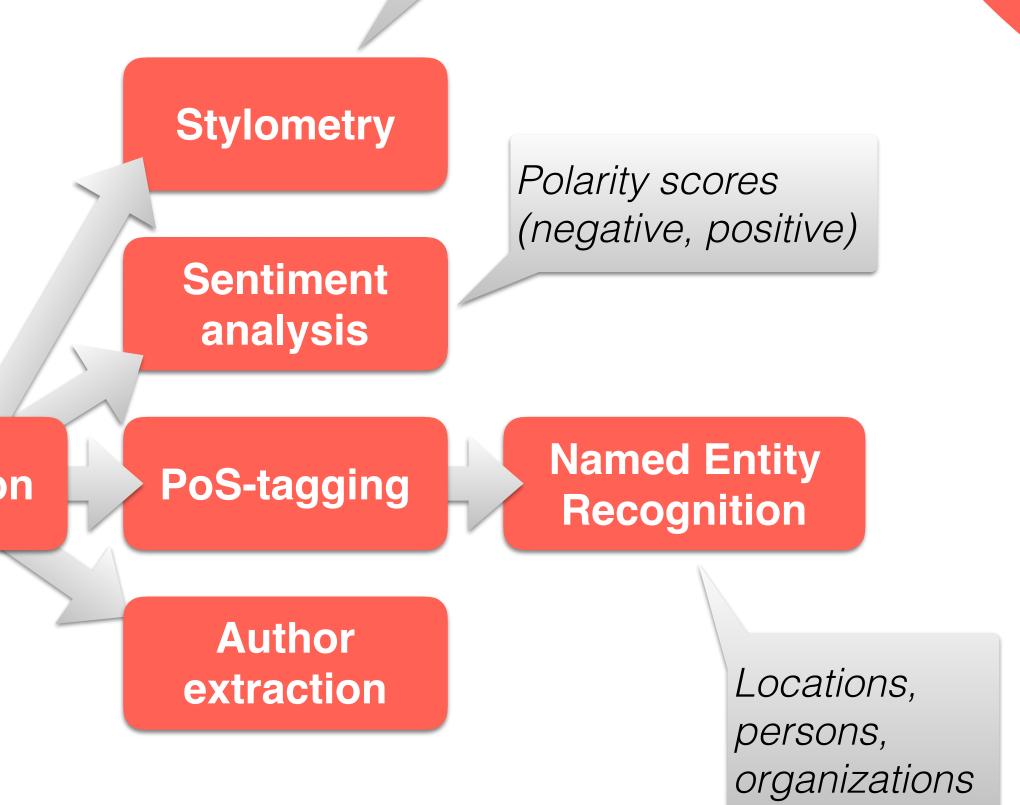


Language detection

Tokenization



Length, word variation, vocabulary richness, ...









Serram Outlers godode Syriëganger houden gemeente verantewoodelijk

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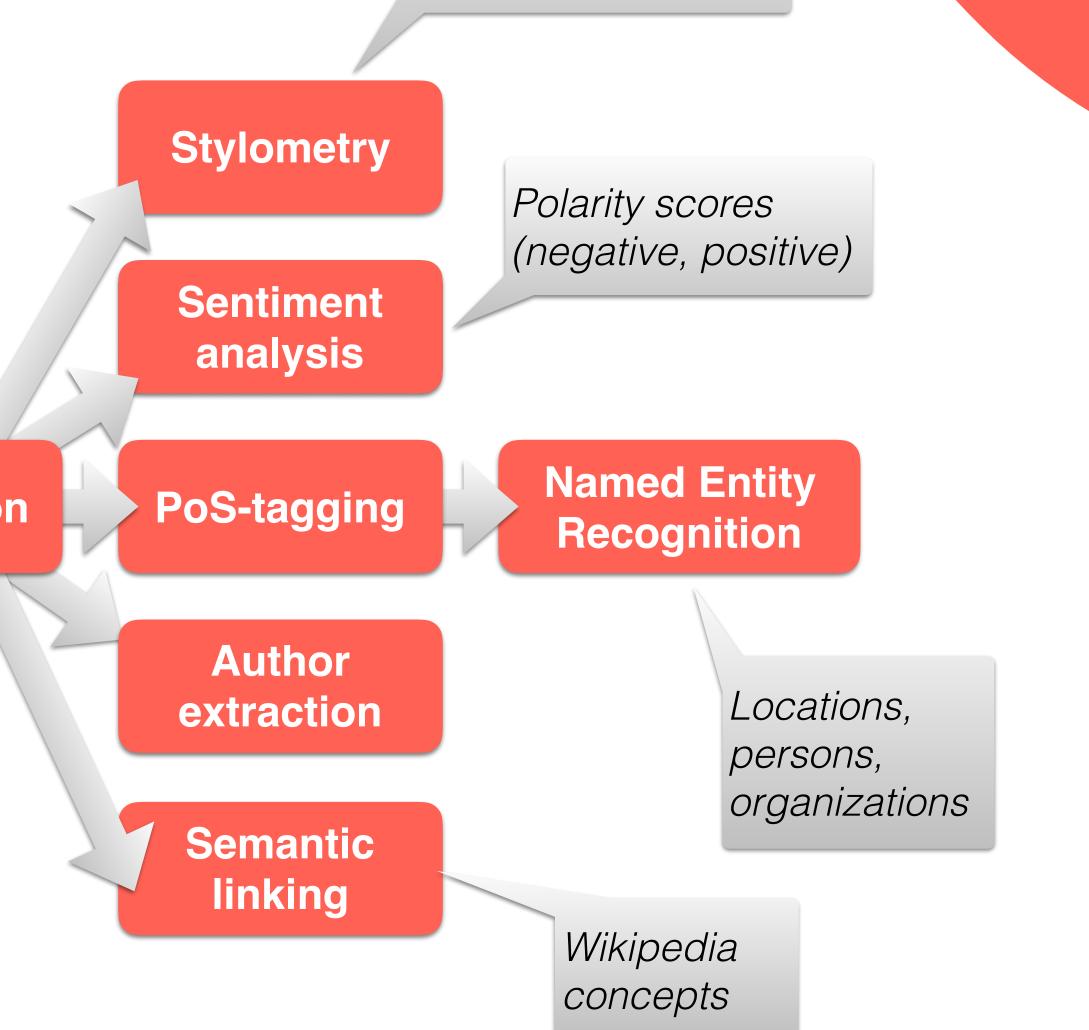


Language detection

Tokenization



Length, word variation, vocabulary richness, ...









Serram Ouders gadede Syriëganger bouden gemeente verantwoordelijk

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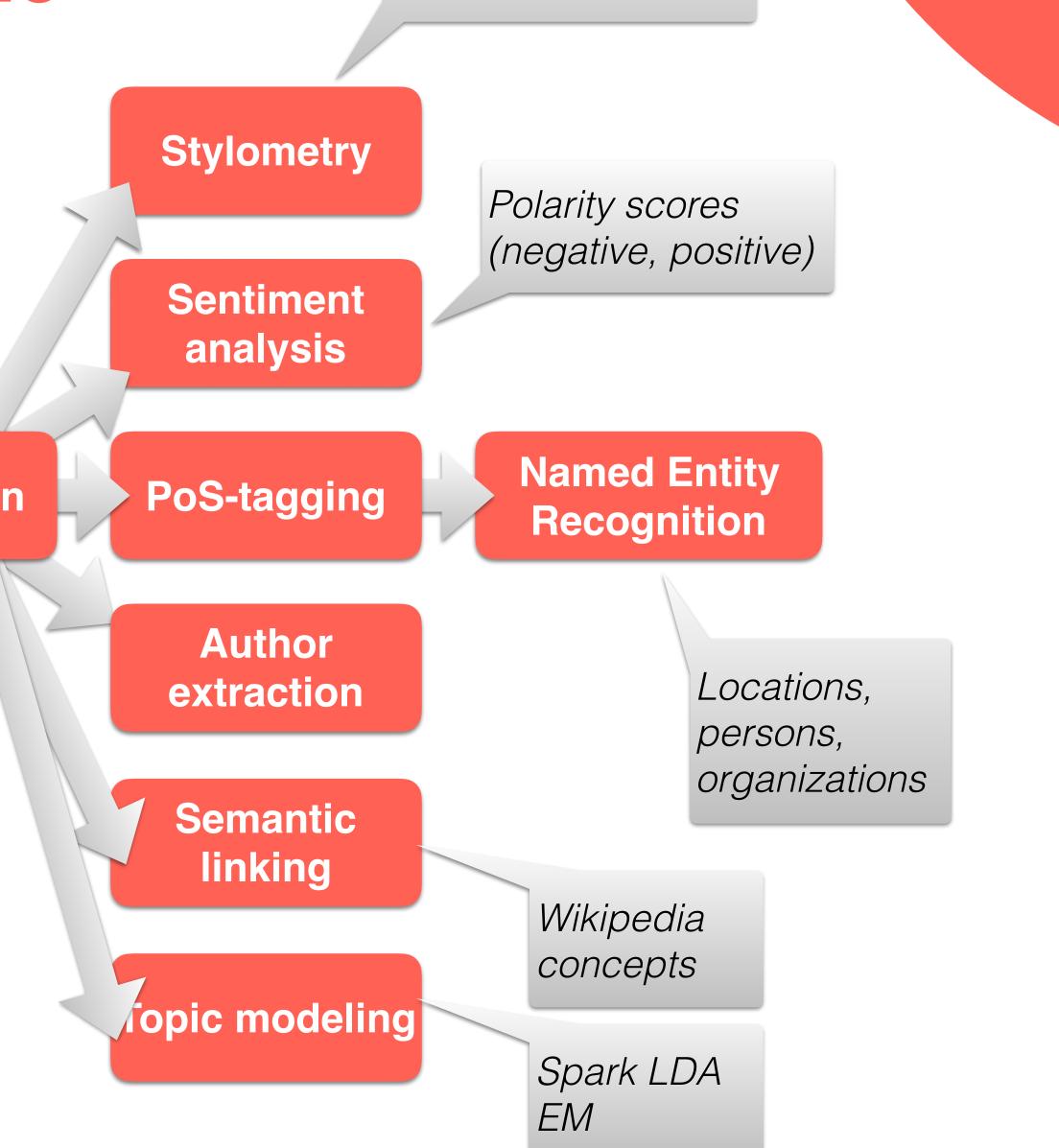


Language detection

Tokenization



Length, word variation, vocabulary richness, ...









Scenario: Enrich an item

Given I have the following item data

"""json

{"_links":{"self":{"href":"s3://static.blendle.nl/publication/par/2015/01/27/item/3895280/version/1/private/content.json"}},
"body":[{"content":"Smulpapen","type":"kicker"},

{"content":"Tom Kellerhuis stoomt uit allerhande keukens bedrieglijk simpele gerechten klaar.","type":"intro"},
{"content":"Dronken vegetariër","type":"hll"},{"content":"TOM KELLERHUIS","type":"byline"},
{"content":"Ik ken een flink aantal restaurateurs dat gruwt bij het woord vegetariër. Ik ken er zelfs een paar die
hem bewust uit hun zaak weren. \"U eet geen vlees of vis? Wat doet u hier dan?\" hoorde ik ooit als pissig antwoord
op de vraag of er soms ook gerechten zónder vis of vlees op de kaart stonden.","type":"p"},{"content":"Een goeie
kok wil nu eenmaal laten zien wat hij in huis heeft. Dat zit hem vooral in de vlees- en visbereidingen, of in de
sauzen, waarin vaak ook vlees- en visproducten zijn verwerkt. Vanuit dat oogpunt snap ik de kok wel. Maar steeds
meer mensen kiezen ervoor om minder vlees of vis te consumeren, om hen moverende redenen. De één denkt aan het
milieu en de consumptiemaatschappij, de ander aan het dierenwelzijn, weer een ander louter aan zijn eigen
gezondheid.","type":"p"},

{"content":"Hoewel er aan het woord vegetariër nog steeds een sektarisch randje kleeft, mogen we toch wel stellen dat hij tegenwoordig lang zo suf niet meer is als het aloude stereotype beeld: het op sandalen - waarin platvoeten in geitenwollensokken – sjokkende en van elke humor gespeende tiepje, met linnen draagtas op zoek naar gedroogde sojabonen en tempé voor de avondmaaltijd.","type":"p"},{"content":"Ik kreeg laatst het receptenboek De dronken vegetariër van Floor Overgoor, Hanny Roskamp en Yannick Slagter toegezonden, dat gehakt maakt van dat oude cliché. Allemaal vegagerechten met een tic (en soms flink wat, zoals in bijgaand recept. Roskamp schrijft in haar voorwoord: 'We zijn gaan beseffen dat die dronken vegetariër een betere ambassadeur is voor een diervriendelijke wereld dan een vegetariër die zichzelf opsluit achter een muur van morele superioriteit.'","type":"p"},{"content":"Welaan, het beeld is dus aan het kantelen. Ik hoop snel eens zo'n dronken vegetariër tegen te komen!","type":"p"}, {"content":"Reageren? t.kellerhuis@parool.nl","type":"p"},{"content":"Wijnfondue","type":"ph"}, {"content":"(voor 2 personen)","type":"p"},{"content":"1/2 liter vega-bouillon, 1/2 fles pinot noir, 1/2 aubergine in plakken, 200 g oesterzwammen, 200 g bospaddenstoelen, 1 courgette in plakken, 200 g tofoe in repen.","type":"p"}, {"content":"Simpeler en romantischer dan dit wordt het niet. Maak de bouillon, breng aan de kook, giet de wijn erbij en breng opnieuw aan de kook (maar laat niet doorkoken: zonde van de wijn!).","type":"p"},{"content":"Zet dit heerlijke vocht op een fonduestel, warmhoudplaatje of theelicht. Gooi een paar flinke handen groentes en tofoe in het hete vocht en haal de stukken er na een minuut of 5 weer uit; liefst met zo'n Chinees fonduemandje, maar een vork werkt ook prima.","type":"p"},{"content":"Laat de volgende portie groente en tofoe garen in het vocht, terwijl je de eerste portie opeet.","type":"p"},{"content":"Eet de stukjes groente met brood en knoflookboter. Dippen in knoflooksaus kan uiteraard ook.","type":"p"}], "date":"2015-01-27T00:00:00+00:00"

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"provider":{"id":"par"}}
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Feature: Enrich item pipeline

Scenario: Enrich an item **Given** I have the following item data ""json {"_links":{"self":{"href":"s?://static hlendle nl/nublication/nar/2015/01/27/item/3895280/version/l/nrivate/content ison"}} "body":[{"cont × Het Parool {"content":"To dinsdag 27 januari 2015 - 2 minuten {"content":"Dr {"content":"I hem bewust uit en visproducten zijn verwerkt. Vanuit dat oogpunt snap Smulpapen op de vraag of ik de kok wel. Maar steeds meer mensen kiezen ervoor kok wil nu eer sauzen, waarir om minder vlees of vis te consumeren, om hen Dronken meer mensen ki moverende redenen. De één denkt aan het milieu en de milieu en de d gezondheid.", consumptiemaatschappij, de ander aan het vegetariër {"content":"Ho dierenwelzijn, weer een ander louter aan zijn eigen dat hij tegenw gezondheid. in geitenwolle sojabonen en t Tom Kellerhuis stoomt uit allerhande Hoewel er aan het woord vegetariër nog steeds een vegetariër var keukens bedrieglijk simpele gerechten sektarisch randje kleeft, mogen we toch wel stellen dat Allemaal vegag hij tegenwoordig lang zo suf niet meer is als het aloude 'We zijn gaan klaar. vegetariër die stereotype beeld: het op sandalen - waarin platvoeten beeld is dus a in geitenwollensokken - sjokkende en van elke humor TOM KELLERHUIS {"content":"Re {"content":"(\ Ik ken een flink aantal restaurateurs dat gruwt bij het gespeende tiepje, met linnen draagtas op zoek naar in plakken, 20 woord vegetariër. Ik ken er zelfs een paar die hem gedroogde sojabonen en tempé voor de avondmaaltijd. {"content":"Si bewust uit hun zaak weren. "U eet geen vlees of vis? Ik kreeg laatst het receptenboek De dronken en breng opnie heerlijke voch Wat doet u hier dan?" hoorde ik ooit als pissig vegetariër van Floor Overgoor, Hanny Roskamp en het hete vocht Yannick Slagter toegezonden, dat gehakt maakt van dat antwoord op de vraag of er soms ook gerechten zónder vork werkt ook je de eerste p vis of vlees op de kaart stonden. oude cliché. Allemaal vegagerechten met een tic (en knoflooksaus | Een goeie kok wil nu eenmaal laten zien wat hij in soms flink wat, zoals in bijgaand recept. Roskamp "date":"2015-0 "format_versic huis heeft. Dat zit hem vooral in de vlees- en schrijft in haar voorwoord: 'We zijn gaan beseffen dat "id":"bnl-pardie dronken vegetariër een betere ambassadeur is voor visbereidingen, of in de sauzen, waarin vaak ook vlees-"issue":{"id":

"item_index":7

"provider":{"i

een diervriendelijke wereld da zichzelf opsluit achter een superioriteit.'

f.

 \sim

>>

Welaan, het beeld is dus aan snel eens zo'n dronken vegetariër Reageren? t.kellerhuis@paroc

Wijnfondue

(voor 2 personen)

1/2 liter vega-bouillon, 1/2aubergine in plakken, 200 g oe bospaddenstoelen, 1 courgette ir in repen.

Simpeler en romantischer da Maak de bouillon, breng aan de k en breng opnieuw aan de k doorkoken: zonde van de wijn!).

Zet dit heerlijke vocht warmhoudplaatje of theelicht. handen groentes en tofoe in het stukken er na een minuut of 5 w



Scenario: Enrich an item

Given I have the following item data

"""json

{"_links":{"self":{"href":"s3://static.blendle.nl/publication/par/2015/01/27/item/3895280/version/1/private/content.json"}},
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"issue":{"id":"bnl-par-20150127"},
```

```
"item_index":70,
```

```
"provider":{"id":"par"}}
```



When I send it through the enrichment pipeline language|tokenizer|postagger|ner|stylometry|author|semanticizer|sentiment Then I should have the following enrichments in the result

enrichment	value
language	nl
author	TOM KELLERHUIS

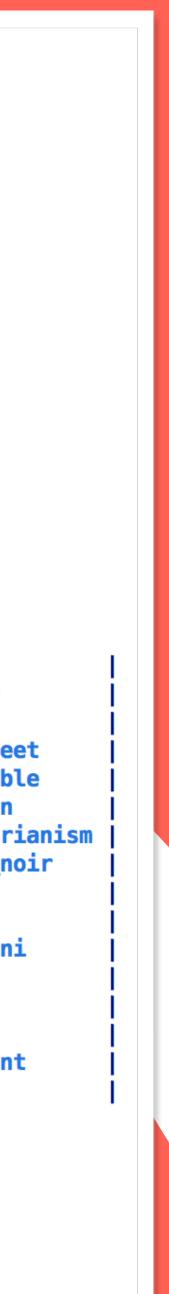
And I should have the following stylometry enrichments in the result

enrichment	value
<pre>number_of_paragraphs</pre>	12
number_of_words	432
article_length	2542
vocab_richness	40.5376820773
word_variation	0.585648148148
avg_word_length	4.9861111111
word_size_short	0.553240740741
word_size_medium	0.391203703704
word_size_long	0.0555555555556
hapax_legomena	0.4375
hapax_dislegomena	0.07638888888889
<pre>number_of_images</pre>	1

A	d I should have the following semantic links in the resu	lt				
	url	title	text	senseProbability	count	norm
	http://nl.wikipedia.org/wiki/Avondmaaltijd	Avondmaaltijd	avondmaaltijd	0.36666666666666666	1	http://dbpedia.org/resource/Supper
	http://nl.wikipedia.org/wiki/Tic	Tic	tic	1.04166666666666667	1	http://dbpedia.org/resource/Tic
	http://nl.wikipedia.org/wiki/Platvoeten	Platvoeten	platvoeten	0.47058823529411764	1	http://dbpedia.org/resource/Flat_fee
	http://nl.wikipedia.org/wiki/Groente	Groente	groente	0.41304347826086957	2	http://dbpedia.org/resource/Vegetabl
	http://nl.wikipedia.org/wiki/Sojaboon	Sojaboon	sojabonen	0.6206896551724138	1	http://dbpedia.org/resource/Soybean
	http://nl.wikipedia.org/wiki/Vegetarisme	Vegetarisme	vegetariër	2.6956521739130435	6	http://dbpedia.org/resource/Vegetari
	http://nl.wikipedia.org/wiki/Pinot%20noir	Pinot noir	pinot noir	0.8827586206896552	1	http://dbpedia.org/resource/Pinot_no
	http://nl.wikipedia.org/wiki/Knoflooksaus	Knoflooksaus	knoflooksaus	0.35294117647058826	1	
	http://nl.wikipedia.org/wiki/Consumptiemaatschappij	Consumptiemaatschappij	consumptiemaatschappij	0.5121951219512195	1	
	http://nl.wikipedia.org/wiki/Courgette	Courgette	courgette	0.8421052631578947	1	http://dbpedia.org/resource/Zucchini
	http://nl.wikipedia.org/wiki/Tofoe	Tofoe	tofoe	0.8275862068965517	3	http://dbpedia.org/resource/Tofu
	http://nl.wikipedia.org/wiki/Bouillon%20%28voedsel%29	Bouillon (voedsel)	– bouillon	0.5752212389380531	1	http://dbpedia.org/resource/Broth
	http://nl.wikipedia.org/wiki/Bouillon%20%28voedsel%29	Bouillon (voedsel)	bouillon	0.5752212389380531	2	http://dbpedia.org/resource/Broth
	http://nl.wikipedia.org/wiki/Aubergine%20%28plant%29	Aubergine (plant)	aubergine	0.8666666666666666	1	http://dbpedia.org/resource/Eggplant
	http://nl.wikipedia.org/wiki/Kensoort	Kensoort	ken	0.8787878787878788	2	

And I should have the following named entities in the result

	entity	tag	count
Ì	TOM KELLERHUIS	PER	1
Ì	FLOOR OVERGOOR	PER	1
Ì	HANNY ROSKAMP	PER	2
Ì	YANNICK SLAGTER	PER	1
Í	WIJNFONDUE	LOC	1
Í	SIMPELER	PER	1



When I send it through the enrichment pipeline language tokenizer postagger ner stylometry author semanticizer Then I should have the following enrichments in the result			
And I en nu nu ar vo wo avg_word_length word_size_short word_size_medium language 4.9861111111 0.553240740741 0.391203703704	va nl TO	lue M KELLERH	
<pre>i word_size_long 0.055555555556 hapax_legomena 0.4375 hapax_dislegomena 0.0763888888889 number_of_images 1 And I should have the following semantic links in the resul url </pre>	title	text	
<pre>http://nl.wikipedia.org/wiki/Avondmaaltijd http://nl.wikipedia.org/wiki/Tic http://nl.wikipedia.org/wiki/Platvoeten http://nl.wikipedia.org/wiki/Groente http://nl.wikipedia.org/wiki/Sojaboon http://nl.wikipedia.org/wiki/Vegetarisme http://nl.wikipedia.org/wiki/Pinot%20noir http://nl.wikipedia.org/wiki/Consumptiemaatschappij http://nl.wikipedia.org/wiki/Courgette http://nl.wikipedia.org/wiki/Tofoe http://nl.wikipedia.org/wiki/Bouillon%20%28voedsel%29 http://nl.wikipedia.org/wiki/Aubergine%20%28plant%29 http://nl.wikipedia.org/wiki/Aubergine%20%28plant%29 http://nl.wikipedia.org/wiki/Kensoort</pre>	Avondmaaltijd Tic Platvoeten Groente Sojaboon Vegetarisme Pinot noir Knoflooksaus Consumptiemaatschappij Courgette Tofoe Bouillon (voedsel) Bouillon (voedsel) Aubergine (plant) Kensoort	avondmaaltijd tic platvoeten groente sojabonen vegetariër pinot noir knoflooksaus consumptiemaatschappij courgette tofoe - bouillon bouillon aubergine ken	
And I should have the following named entities in the result entity tag count TOM KELLERHUIS PER 1 FLOOR OVERGOOR PER 1 HANNY ROSKAMP PER 2 YANNICK SLAGTER PER 1 WIJNFONDUE LOC 1 SIMPELER PER 1	lt		

RHUIS

senseProbability	ςοι
0.36666666666666664	1
1.0416666666666667	11
0.47058823529411764	11
0.41304347826086957	i 2
0.6206896551724138	i 1
2.6956521739130435	i 6
0.8827586206896552	i 1
0.35294117647058826	i 1
0.5121951219512195	11
0.8421052631578947	11
0.8275862068965517	3
0.5752212389380531	1
0.5752212389380531	2
0.86666666666666666	i i
0.878787878787878788	12

count	norm
1	http://dbpedia.org/resource/Supper
1	http://dbpedia.org/resource/Tic
1	http://dbpedia.org/resource/Flat_feet
2	<pre>http://dbpedia.org/resource/Vegetable</pre>
1	http://dbpedia.org/resource/Soybean
6	http://dbpedia.org/resource/Vegetaria
1	http://dbpedia.org/resource/Pinot_not
1	
1	i de la constante de
1	<pre>http://dbpedia.org/resource/Zucchini</pre>
3	http://dbpedia.org/resource/Tofu
1	http://dbpedia.org/resource/Broth
2	http://dbpedia.org/resource/Broth
1	<pre>http://dbpedia.org/resource/Eggplant</pre>
2	



When I send it through the enrichment pipeline language tokenizer postagger ineristvlometry lauthor is emanticizer is entiment

TI S		-
	enrichment	valu
Ai	<pre>number_of_paragraphs</pre>	12
	number_of_words	432
	article_length	2542
	vocab_richness	40.5
	word_variation	0.58
Aı	avg_word_length	4.98
	word_size_short	0.55
	word_size_medium	0.39
	word_size_long	0.05
	hapax_legomena	0.43
	hapax_dislegomena	0.07
A	number_of_images	1
	CagCouncTOM KELLERHUISPER1FLOOR OVERGOORPER1HANNY ROSKAMPPER2YANNICK SLAGTERPER1WIJNFONDUELOC1SIMPELERPER1	

e

564
57
764
957
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35
52
326
) 5
47
L7
31
31
57
38

count	norm
1	http://dbpedia.org/resource/Supper
1	http://dbpedia.org/resource/Tic
1	http://dbpedia.org/resource/Flat_fee
2	http://dbpedia.org/resource/Vegetable
1	http://dbpedia.org/resource/Soybean
6	http://dbpedia.org/resource/Vegetaria
1	http://dbpedia.org/resource/Pinot_no:
1	
1	i
1	http://dbpedia.org/resource/Zucchini
3	http://dbpedia.org/resource/Tofu
1	http://dbpedia.org/resource/Broth
2	http://dbpedia.org/resource/Broth
1	<pre>http://dbpedia.org/resource/Eggplant</pre>



url

http://nl.wikipedia.org/wiki/Avondmaaltijd http://nl.wikipedia.org/wiki/Tic http://nl.wikipedia.org/wiki/Platvoeten http://nl.wikipedia.org/wiki/Groente http://nl.wikipedia.org/wiki/Sojaboon http://nl.wikipedia.org/wiki/Vegetarisme http://nl.wikipedia.org/wiki/Pinot%20noir http://nl.wikipedia.org/wiki/Knoflooksaus http://nl.wikipedia.org/wiki/Consumptiemaatschappij http://nl.wikipedia.org/wiki/Courgette http://nl.wikipedia.org/wiki/Tofoe http://nl.wikipedia.org/wiki/Bouillon%20%28voedsel%29 http://nl.wikipedia.org/wiki/Bouillon%20%28voedsel%29 http://nl.wikipedia.org/wiki/Aubergine%20%28plant%29 http://nl.wikipedia.org/wiki/Kensoort

e/Supper e/Tic e/Flat_feet e/Vegetable e/Soybean e/Vegetarianism e/Pinot_noir

e/Zucchini e/Tofu e/Broth e/Broth e/Eggplant





W Hoofdgerecht - Wikipedia

https://nl.wikipedia.org/wiki/Hoofdgerecht

WINIPEDIA De vrije encyclopedie

url

Hoofdpagina Vind een artikel Vandaag Etalage Categorieën Recente wijzigingen Nieuwe artikelen Willekeurige pagina

Informatie Gebruikersportaal Snelcursus Hulp en contact **Donaties**

Hulpmiddelen

Links naar deze pagina

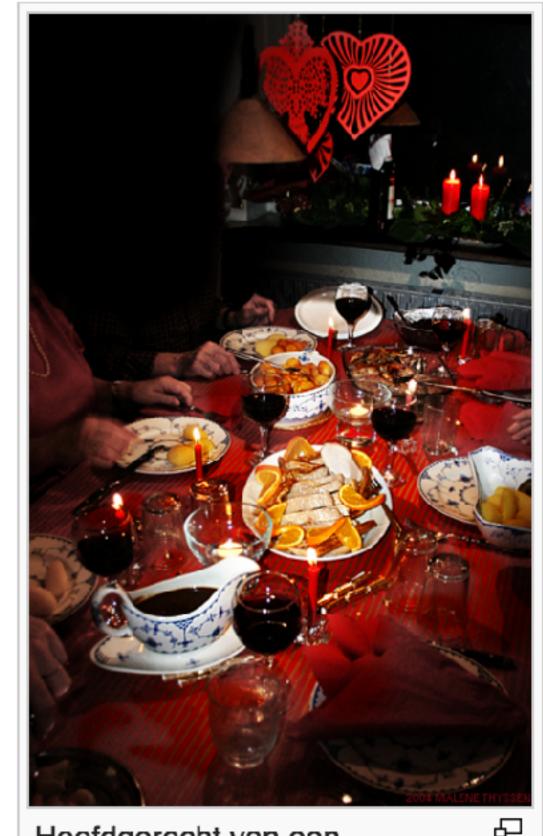
Een hoofdgerecht wordt in de klassieke keuken als het belangrijkste deel van een diner gezien. Het kan als gang op een menukaart te vinden zijn.

Kenmerk van een hoofdgerecht is dat er nadruk op wordt gelegd door deze uitgebreider dan de andere gangen te serveren. In het Frans wordt het wel uitgelegd als "pièce de resistance".^[1] Het zwaarste deel van de maaltijd, meestal rondom vlees, gebraad of gevogelte. Tezamen met het vlees kunnen groenten, sauzen en bijgerechten worden geserveerd.

In de zin van "belangrijkste onderdeel van de maaltijd" kan een hoofdgerecht in de moderne keuken evengoed rondom bijvoorbeeld vis of een groenteschotel zijn gecreëerd.



https://nl.wikipedia.org/wiki/Avondmaaltijd



Hoofdgerecht van een kerstdiner in schalen op tafel.

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র্ম্ব

_feet etable ean ot_noir

chini olant



url

http://nl.wikipedia.org/wiki/Avondmaaltijd http://nl.wikipedia.org/wiki/Tic http://nl.wikipedia.org/wiki/Platvoeten http://nl.wikipedia.org/wiki/Groente http://nl.wikipedia.org/wiki/Sojaboon http://nl.wikipedia.org/wiki/Vegetarisme http://nl.wikipedia.org/wiki/Pinot%20noir http://nl.wikipedia.org/wiki/Knoflooksaus http://nl.wikipedia.org/wiki/Consumptiemaatschappij http://nl.wikipedia.org/wiki/Courgette http://nl.wikipedia.org/wiki/Tofoe http://nl.wikipedia.org/wiki/Bouillon%20%28voedsel%29 http://nl.wikipedia.org/wiki/Bouillon%20%28voedsel%29 http://nl.wikipedia.org/wiki/Aubergine%20%28plant%29 http://nl.wikipedia.org/wiki/Kensoort

e/Supper e/Tic e/Flat_feet e/Vegetable e/Soybean e/Vegetarianism e/Pinot_noir

e/Zucchini e/Tofu e/Broth e/Broth e/Eggplant



	url http://nl.	wikipedia.org/wik:
1	🔎 🔍 👿 Avondma	aaltijd – Wikipedia 🛛 🗙
	← → C ∩ https:/ Чавашла	//nl.wikipedia.org/wiki/Avondmaaltijd
l	Dansk Deutsch	de gewoonte om de belangrijkste maalt eten. ^[1]
A	English Esperanto Español Euskara Suomi Français Galego עברית	Vandaag betekent diner in België en met meerdere personen wordt genut
l		avonds. Al begint een diner soms al in d doorgaans meer tijd besteed om het ma
		tijdens het diner de gelegenheid gebode diner dat door een staatshoofd wordt ge mogen hieraan deelnemen. Vaak wordt
l	Bahasa Indonesia Íslenska Italiano	Een ander woord voor het avondmaal is
A	旧本語 한국어	ketel (stoverij of soep), die een tijdlang Kerstdiner [bewerken]
	https://en.wikipedia.org/wiki/s	Supper Wikipedia.org/wik:

http://nl.wikipedia.org/wiki/Kensoort

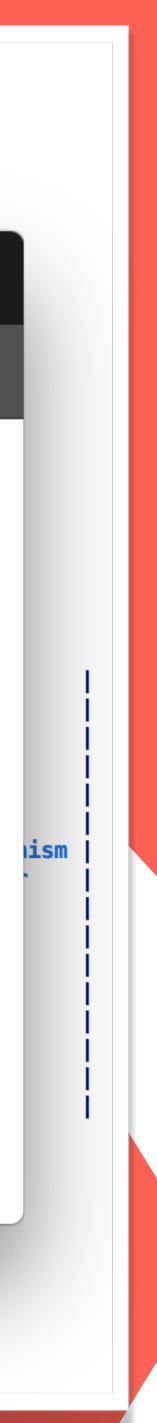
i/Avondmaaltijd

- Itijd van de dag 's avonds te
- lederland een vaste maaltijd die gd. In praktijk gebeurd dit vaak 's de middaguren. Er wordt



- haal te nuttigen. De locatie kan ook buitenshuis plaatsvinden. Wordt er den om te dansen, dan spreekt men van een *diner dansant*. Een officieel gegeven, noemt men een *staatsdiner* of *staatsbanket*; alleen genodigden It bij een staatsbezoek een staatsdiner aangeboden.
- is het 'souper'. De oorsprong hiervan ligt bij het eten van de inhoud van een had staan garen.^[1]

i/Aubergine%20%28plant%29 i/Kensoort



...

☆ 5

url

http://nl.wikipedia.org/wiki/Avondmaaltijd http://nl.wikipedia.org/wiki/Tic http://nl.wikipedia.org/wiki/Platvoeten http://nl.wikipedia.org/wiki/Groente http://nl.wikipedia.org/wiki/Sojaboon http://nl.wikipedia.org/wiki/Vegetarisme http://nl.wikipedia.org/wiki/Pinot%20noir http://nl.wikipedia.org/wiki/Knoflooksaus http://nl.wikipedia.org/wiki/Consumptiemaatschappij http://nl.wikipedia.org/wiki/Courgette http://nl.wikipedia.org/wiki/Tofoe http://nl.wikipedia.org/wiki/Bouillon%20%28voedsel%29 http://nl.wikipedia.org/wiki/Bouillon%20%28voedsel%29 http://nl.wikipedia.org/wiki/Aubergine%20%28plant%29 http://nl.wikipedia.org/wiki/Kensoort

e/Supper e/Tic e/Flat_feet e/Vegetable e/Soybean e/Vegetarianism e/Pinot_noir

e/Zucchini e/Tofu e/Broth e/Broth e/Eggplant



norm

http://dbpedia.org/resource/Supper http://dbpedia.org/resource/Tic http://dbpedia.org/resource/Flat_feet http://dbpedia.org/resource/Vegetable http://dbpedia.org/resource/Soybean http://dbpedia.org/resource/Vegetarianism http://dbpedia.org/resource/Pinot_noir

http://dbpedia.org/resource/Zucchini http://dbpedia.org/resource/Tofu http://dbpedia.org/resource/Broth http://dbpedia.org/resource/Broth http://dbpedia.org/resource/Eggplant

norm nt

http://dbpedia.org/resource/Supper http://dbpedia.org/resource/Tic http://dbpedia.org/resource/Flat_feet http://dbpedia.org/resource/Vegetable http://dbpedia.org/resource/Soybean http://dbpedia.org/resource/Vegetarianism http://dbpedia.org/resource/Pinot_noir

http://dbpedia.org/resource/Zucchini http://dbpedia.org/resource/Tofu http://dbpedia.org/resource/Broth http://dbpedia.org/resource/Broth http://dbpedia.org/resource/Eggplant



When I send it through the enrichment pipeline language|tokenizer|postagger|ner|stylometry|author|semanticizer|sentiment Then I should have the following enrichments in the result

enrichment	value
language	nl
author	TOM KELLERHUIS

And I should have the following stylometry enrichments in the result

enrichment	value
number_of_paragraphs	12
number_of_words	432
article_length	2542
vocab_richness	40.5376820773
word_variation	0.585648148148
avg_word_length	4.9861111111
word_size_short	0.553240740741
word_size_medium	0.391203703704
word_size_long	0.0555555555556
hapax_legomena	0.4375
hapax_dislegomena	0.0763888888888
<pre>number_of_images</pre>	1

And I should have the following semantic links in the result

······································		
url	title	te
http://nl.wikipedia.org/wiki/Avondmaaltijd	Avondmaaltijd	av
http://nl.wikipedia.org/wiki/Tic	Tic	j ti
http://nl.wikipedia.org/wiki/Platvoeten	Platvoeten	j pl
http://nl.wikipedia.org/wiki/Groente	Groente	j gr
http://nl.wikipedia.org/wiki/Sojaboon	Sojaboon	SO
http://nl.wikipedia.org/wiki/Vegetarisme	Vegetarisme	i ve
http://nl.wikipedia.org/wiki/Pinot%20noir	Pinot noir	j pi
http://nl.wikipedia.org/wiki/Knoflooksaus	Knoflooksaus	i kn
http://nl.wikipedia.org/wiki/Consumptiemaatschappij	Consumptiemaatschappij	i co

	entity	tag	C
	TOM KELLERHUIS	PER	1
Aı	FLOOR OVERGOOR	PER	1
	HANNY ROSKAMP	PER	2
I	YANNICK SLAGTER	PER	1

text avondmaaltijd tic platvoeten groente sojabonen vegetariër pinot noir knoflooksaus consumptiemaatschappij

ount

senseProbability	cour
0.36666666666666666	1
1.0416666666666666	1
0.47058823529411764	1
0.41304347826086957	2
0.6206896551724138	1
2.6956521739130435	6
0.8827586206896552	1
0.35294117647058826	1
0.5121951219512195	1
0.8421052631578947	1
0.8275862068965517	3
0.5752212389380531	1
0.5752212389380531	2
0.8666666666666666	1
0.8787878787878788	2
-	-

unt	<pre>norm http://dbpedia.org/resource/Supper http://dbpedia.org/resource/Tic http://dbpedia.org/resource/Flat_feet http://dbpedia.org/resource/Vegetable</pre>
	<pre>http://dbpedia.org/resource/Soybean http://dbpedia.org/resource/Vegetaria http://dbpedia.org/resource/Pinot_nod</pre>
	http://dbpedia.org/resource/Zucchini http://dbpedia.org/resource/Tofu http://dbpedia.org/resource/Broth http://dbpedia.org/resource/Broth http://dbpedia.org/resource/Eggplant



When I send it through the enrichment pipeline language|tokenizer|postagger|ner|stylometry|author|semanticizer|sentiment Then I should have the following enrichments in the result

enrichment	value
language	nl
author	TOM KELLERHUIS

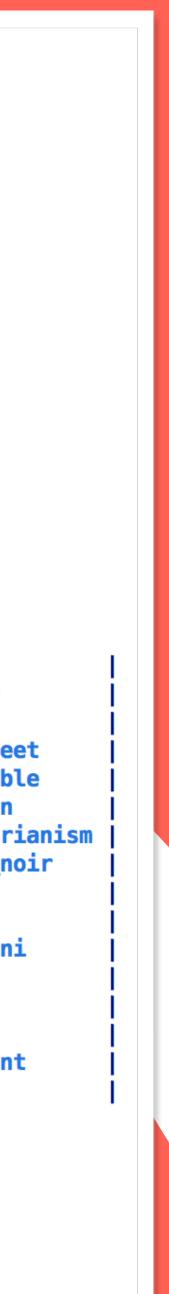
And I should have the following stylometry enrichments in the result

enrichment	value
number_of_paragraphs	12
number_of_words	432
article_length	2542
vocab_richness	40.5376820773
word_variation	0.585648148148
avg_word_length	4.9861111111
word_size_short	0.553240740741
word_size_medium	0.391203703704
word_size_long	0.0555555555556
hapax_legomena	0.4375
hapax_dislegomena	0.0763888888888
<pre>number_of_images</pre>	1

Ar	d I should have the following semantic links in the resu	lt				
	url	title	text	senseProbability	count	norm
	http://nl.wikipedia.org/wiki/Avondmaaltijd	Avondmaaltijd	avondmaaltijd	0.3666666666666666	1	<pre>http://dbpedia.org/resource/Supper</pre>
	http://nl.wikipedia.org/wiki/Tic	Tic	tic	1.0416666666666666	1	http://dbpedia.org/resource/Tic
	http://nl.wikipedia.org/wiki/Platvoeten	Platvoeten	platvoeten	0.47058823529411764	1	http://dbpedia.org/resource/Flat_fee
	http://nl.wikipedia.org/wiki/Groente	Groente	groente	0.41304347826086957	2	http://dbpedia.org/resource/Vegetabl
	http://nl.wikipedia.org/wiki/Sojaboon	Sojaboon	sojabonen	0.6206896551724138	1	http://dbpedia.org/resource/Soybean
	http://nl.wikipedia.org/wiki/Vegetarisme	Vegetarisme	vegetariër	2.6956521739130435	6	http://dbpedia.org/resource/Vegetari
	http://nl.wikipedia.org/wiki/Pinot%20noir	Pinot noir	pinot noir	0.8827586206896552	1	http://dbpedia.org/resource/Pinot_no
	http://nl.wikipedia.org/wiki/Knoflooksaus	Knoflooksaus	knoflooksaus	0.35294117647058826	1	
	<pre>http://nl.wikipedia.org/wiki/Consumptiemaatschappij</pre>	Consumptiemaatschappij	consumptiemaatschappij	0.5121951219512195	1	
	http://nl.wikipedia.org/wiki/Courgette	Courgette	courgette	0.8421052631578947	1	http://dbpedia.org/resource/Zucchini
	http://nl.wikipedia.org/wiki/Tofoe	Tofoe	tofoe	0.8275862068965517	3	http://dbpedia.org/resource/Tofu
	http://nl.wikipedia.org/wiki/Bouillon%20%28voedsel%29	Bouillon (voedsel)	– bouillon	0.5752212389380531	1	http://dbpedia.org/resource/Broth
	http://nl.wikipedia.org/wiki/Bouillon%20%28voedsel%29	Bouillon (voedsel)	bouillon	0.5752212389380531	2	http://dbpedia.org/resource/Broth
	http://nl.wikipedia.org/wiki/Aubergine%20%28plant%29	Aubergine (plant)	aubergine	0.8666666666666666	1	http://dbpedia.org/resource/Eggplant
	http://nl.wikipedia.org/wiki/Kensoort	Kensoort	ken	0.8787878787878788	2	

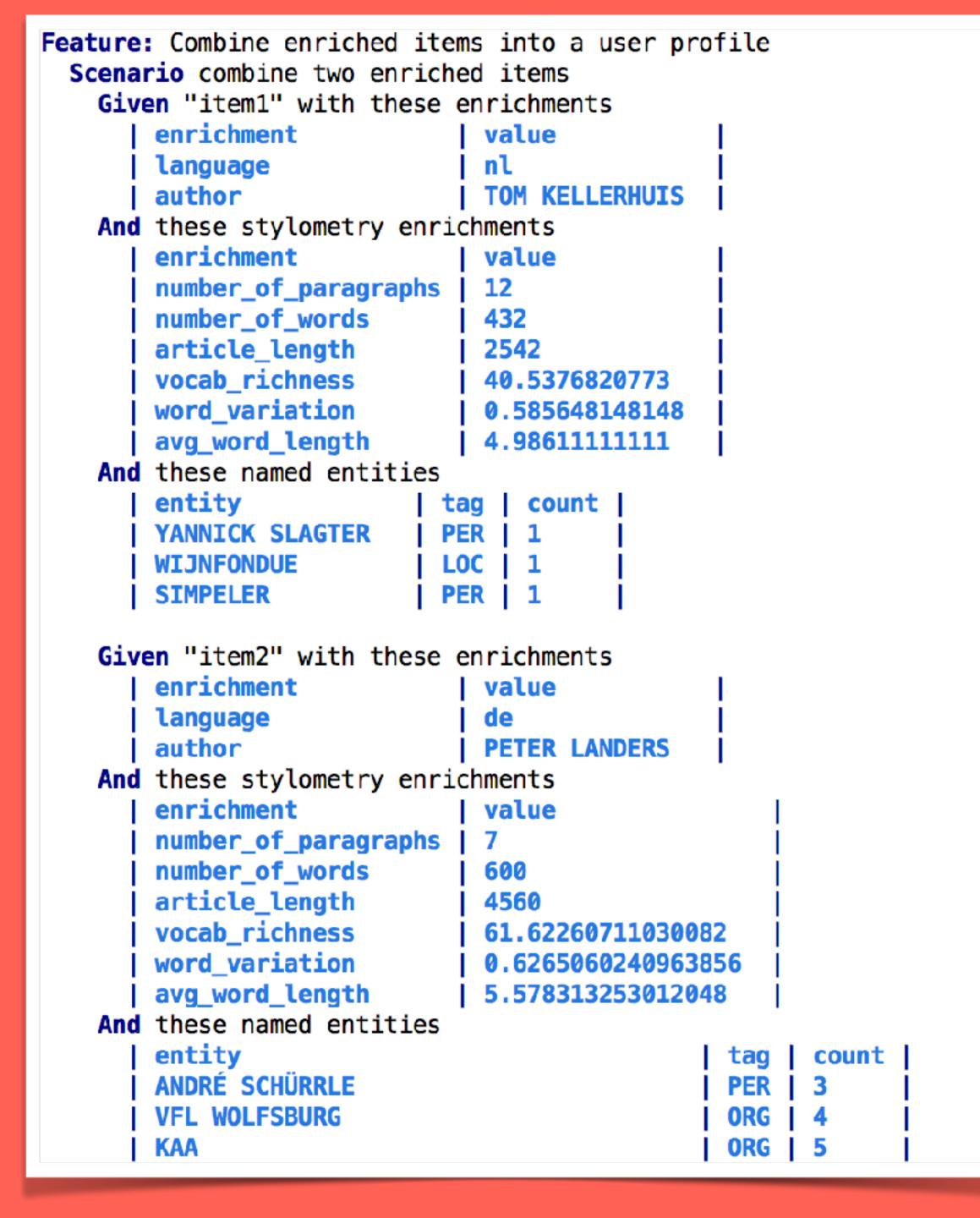
And I should have the following named entities in the result

	entity	tag	count
Ì	TOM KELLERHUIS	PER	1
I	FLOOR OVERGOOR	PER	1
Ì	HANNY ROSKAMP	PER	2
Ì	YANNICK SLAGTER	PER	1
Í	WIJNFONDUE	LOC	1
Í	SIMPELER	PER	1

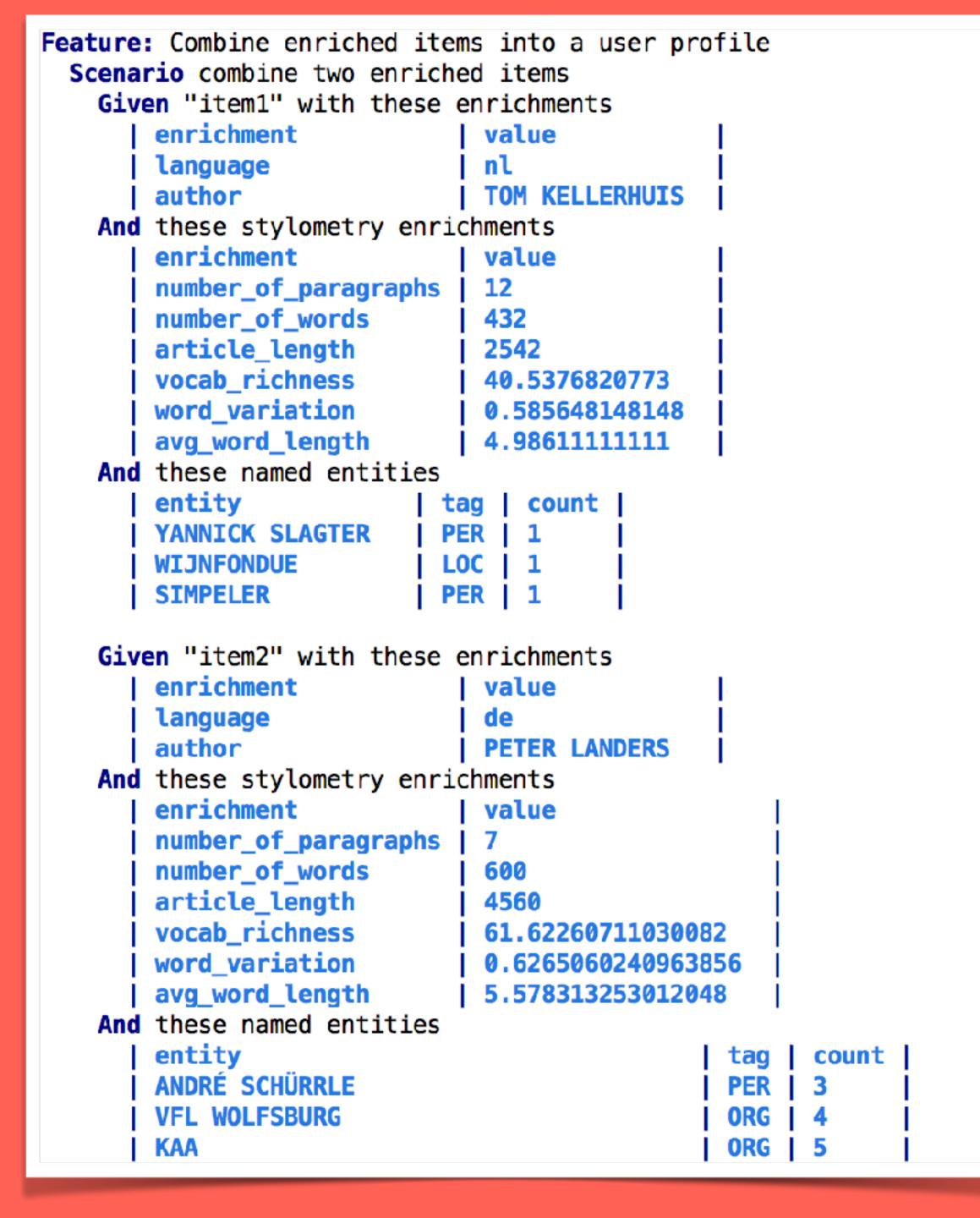


User enrichment pipeline



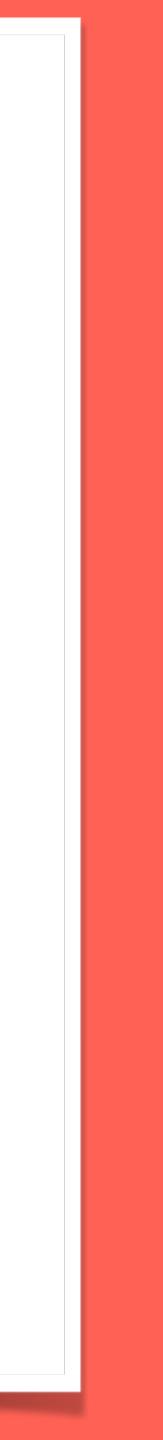


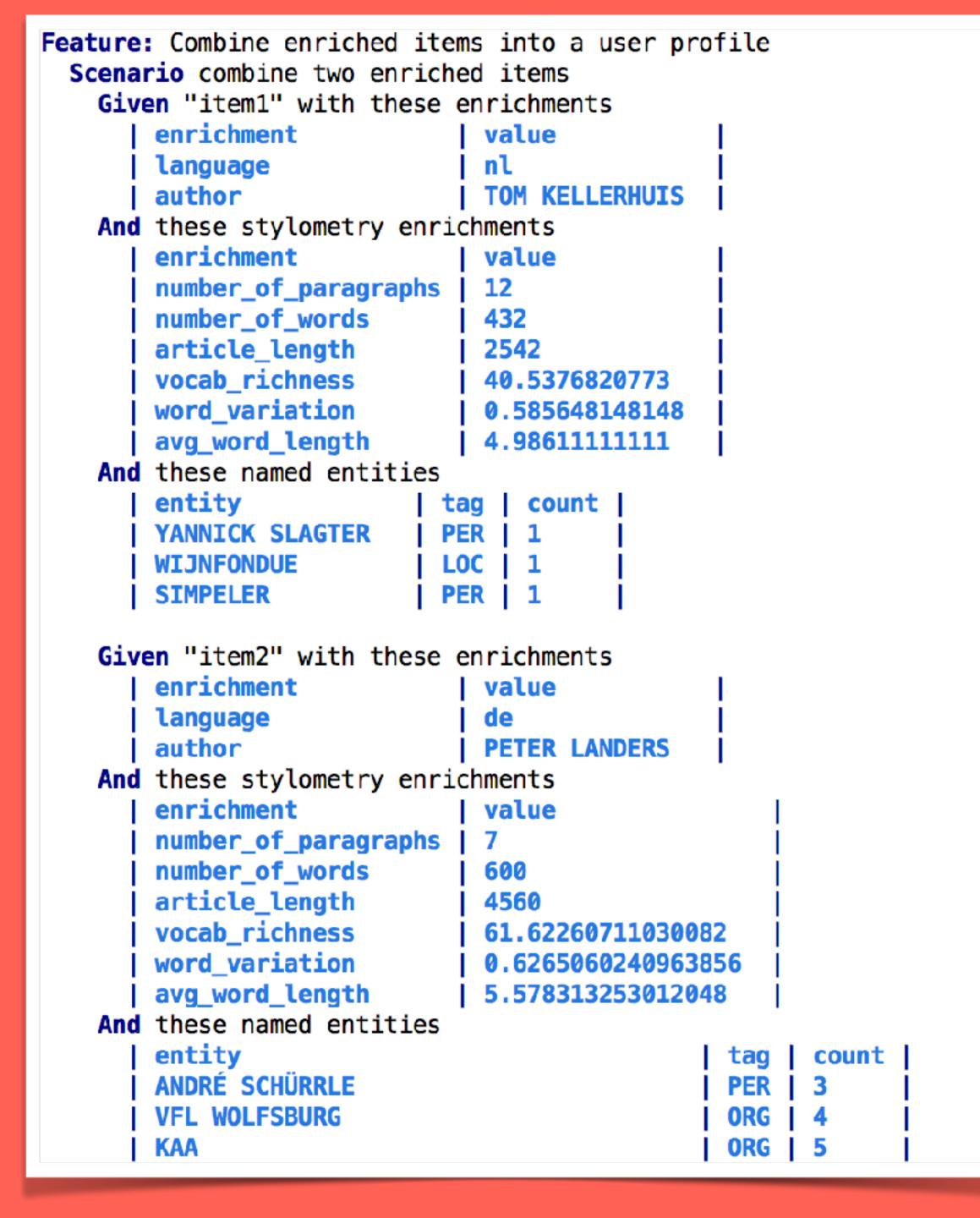




```
When I run the UserEnrichmenTask task and it's dependencies
Then the user "anne" should have the following profile:
  """json
    "count": 2,
    "enrichments": {
      "language": [
          "count": 1,
          "name": "nl"
        },
          "count": 1,
          "name": "en"
      ],
      "author": [
          "count": 1,
          "name": "TOM KELLERHUIS"
        ł,
          "count": 1,
          "name": "PETER LANDERS"
      "stylometry": [
          "count": 2,
          "mean": 2177.5,
          "stdev": 515.4808434849931,
          "name": "article_length"
        },
          "count": 2,
          "mean": 5.165410504361017,
          "stdev": 0.2535676336592832,
          "name": "avg_word_length"
    "last_100_purchased_items": ["item1", "item2"],
    "tracking_uid": "anne"
  }
```

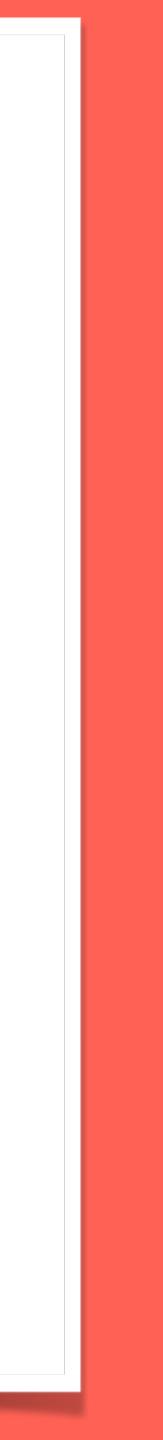
.....

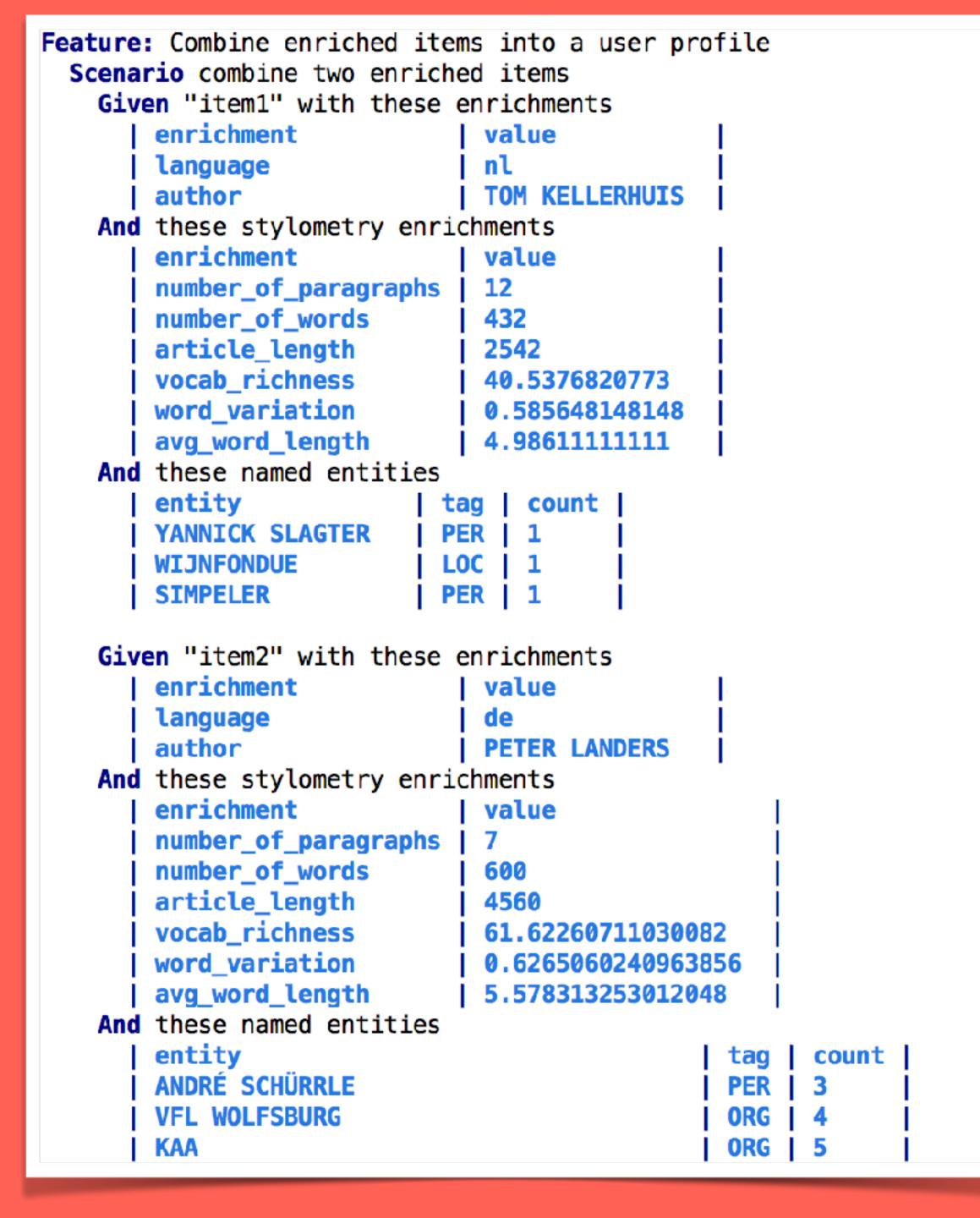




When I run the UserEnrichmenTask task and it's dependencies Then the user "anne" should have the following profile:





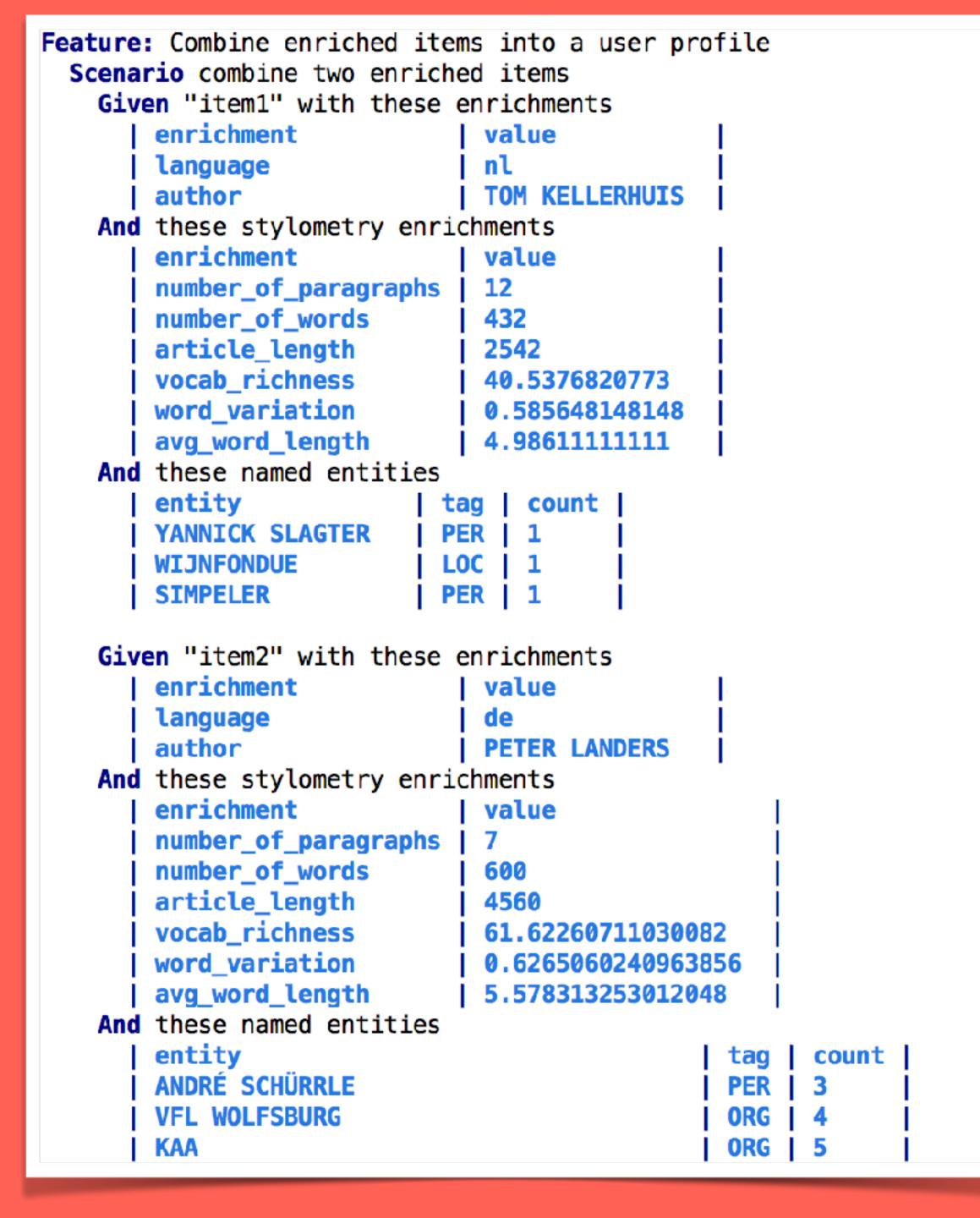




"language": [

```
"author": [
          "count": 1,
          "name": "TOM KELLERHUIS"
          "count": 1,
          "name": "PETER LANDERS"
      "mean": 2177.5,
     "stdev": 515.4808434849931,
     "name": "article_length"
     "count": 2,
     "mean": 5.165410504361017,
     "stdev": 0.2535676336592832,
     "name": "avg_word_length"
 "last_100_purchased_items": ["item1", "item2"],
 "tracking_uid": "anne"
.....
```







Learning to rank: preference learning



Cis amonine nu trendarg in Cie Standard Una standard AS. Conta and



Vertrekken was mijn

enige droom' Latino Anotica versión recent Delvigan négativního: Ducandou Dabaser froteina de algelopen constan slove ber contant néet dagrie 40. Valo Americance tresser, bet begrecom ena lewstle van overlower.'

Varianza redactricada Cuba Annallas

Tweek 3 we can be a set of the se



WeTransfer gaat in webhandel

WEMARKET WeTrander komt met føls nivevag Weblarket, enn andred natuerk vora handelaren. Weer wen hilf

Decrement relation **Marc Hijnin** Ja seut denken dat het wardekeljde web ma 25 jaar wel een koor genoeg vellingstaa en eellew winkels tale



Learning to rank: preference learning





7 2

10.

CHEANSE INCOUSINAND VERENGD'S STATEN SWELT AAN Vertrekken was mijn

enige droom Latijne Amerika vorstelt met em Loui vigan migstioerisis. Duizandon Urbayen troiden de algelopen incombination betweet investment and thing



Twee **DIC_**Dext

• 12



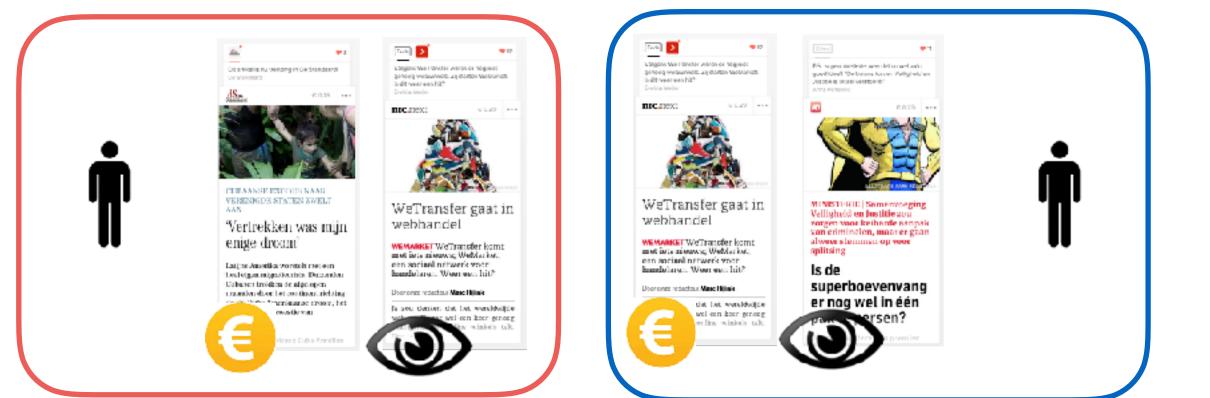
WeTransfer gaat in webhandel

WEMARKET WeTransfer komt met føde nivervog WeMarket, enn andred netwerk vort handelaren. Weer wen hit?

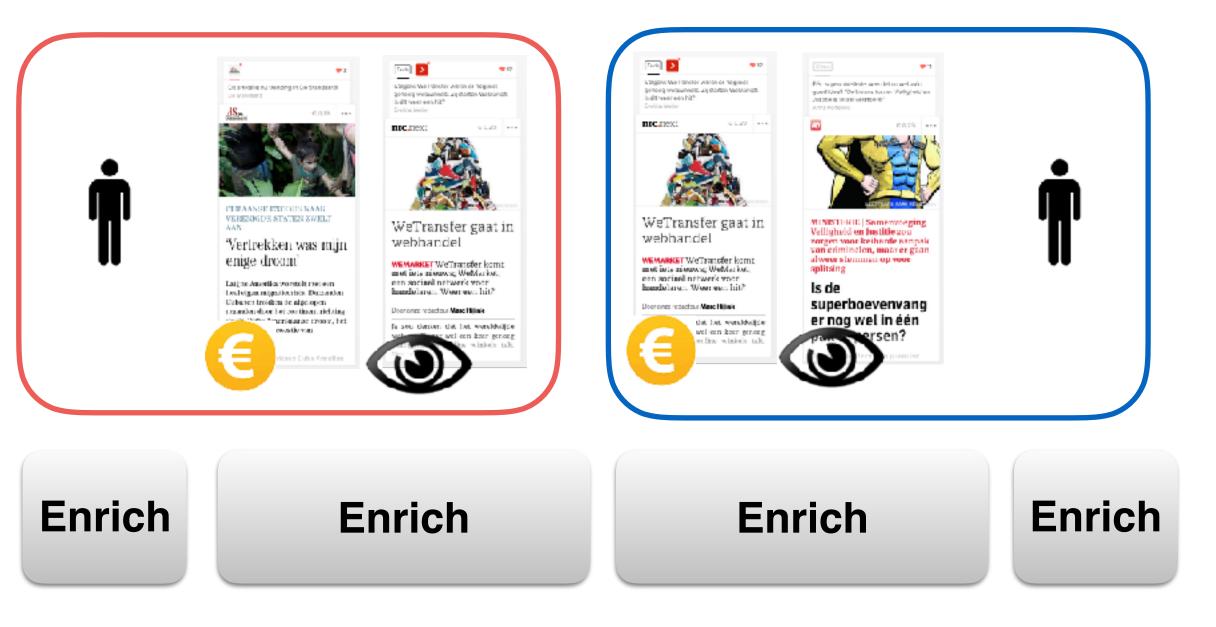




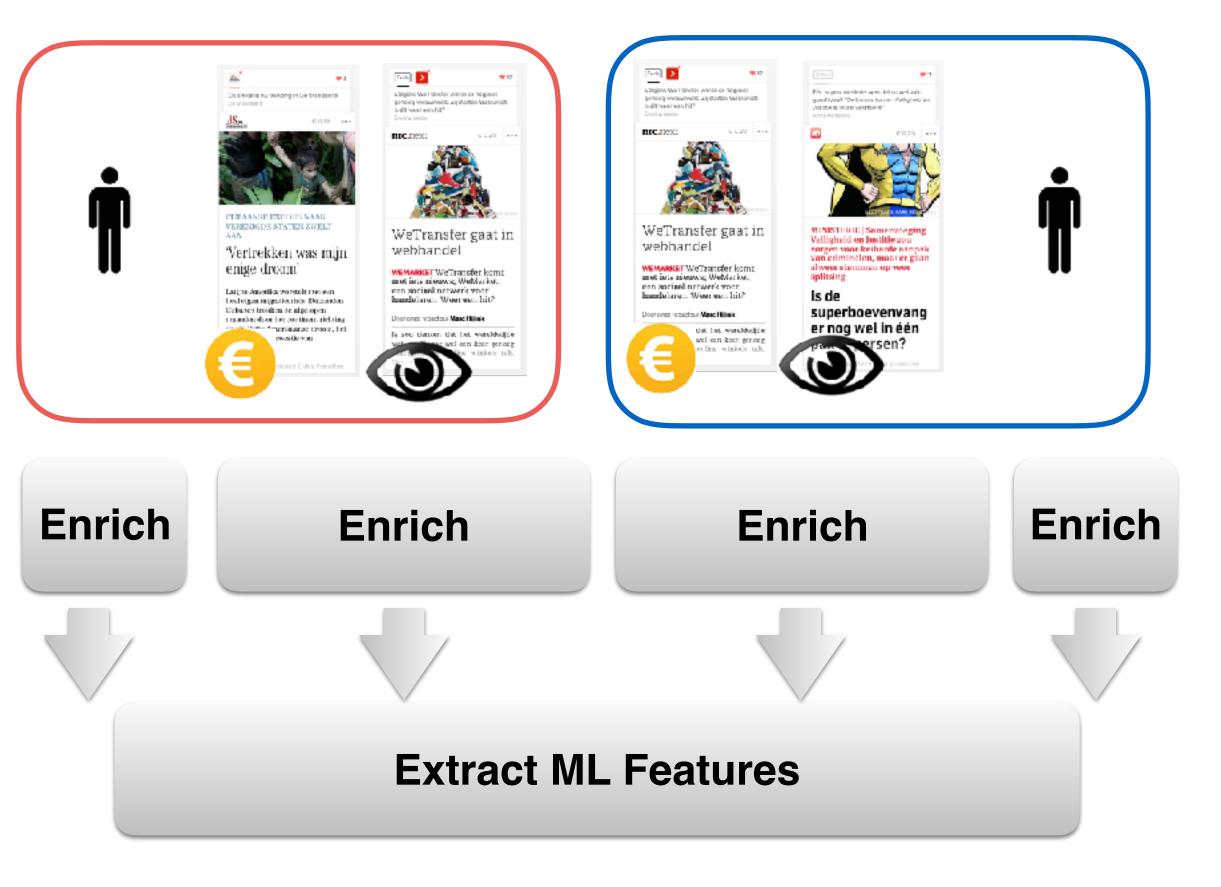
Learning to rank: preference learning



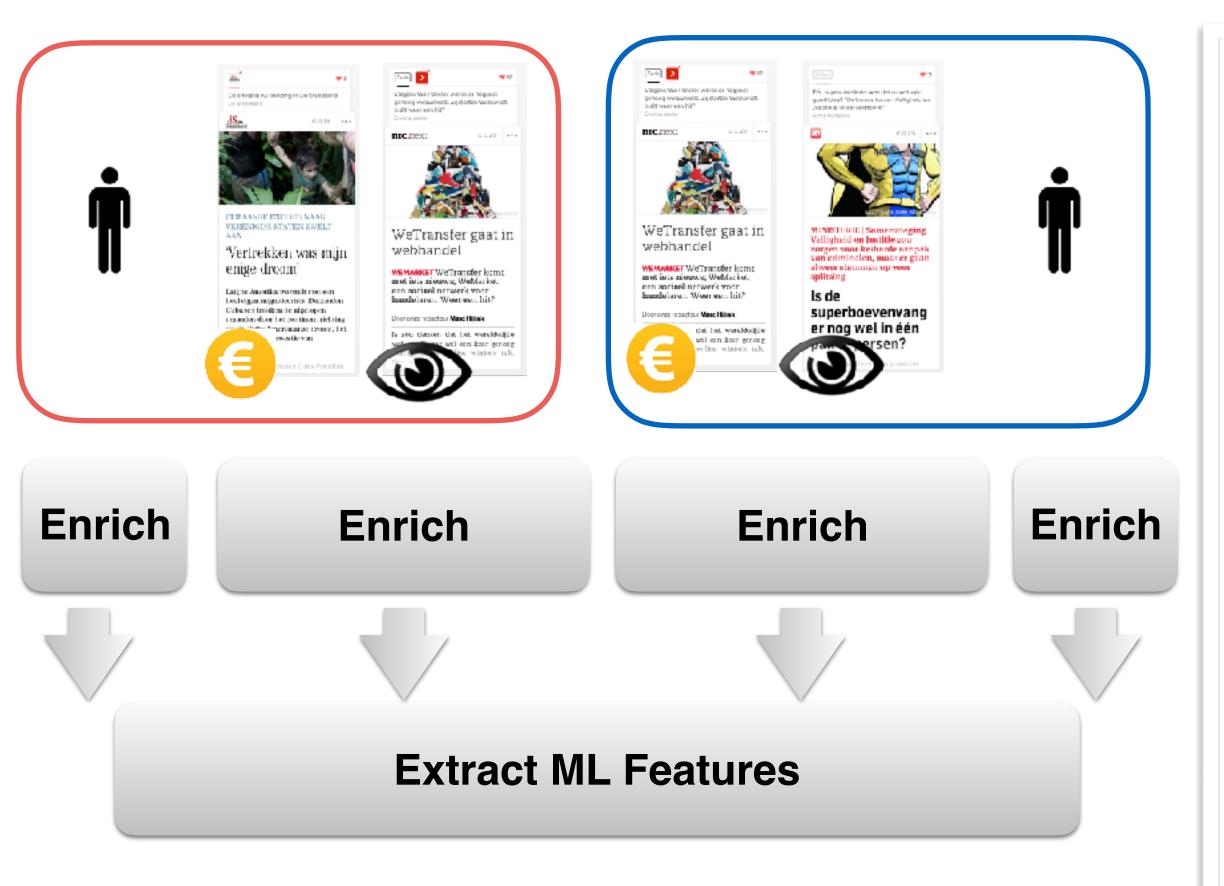








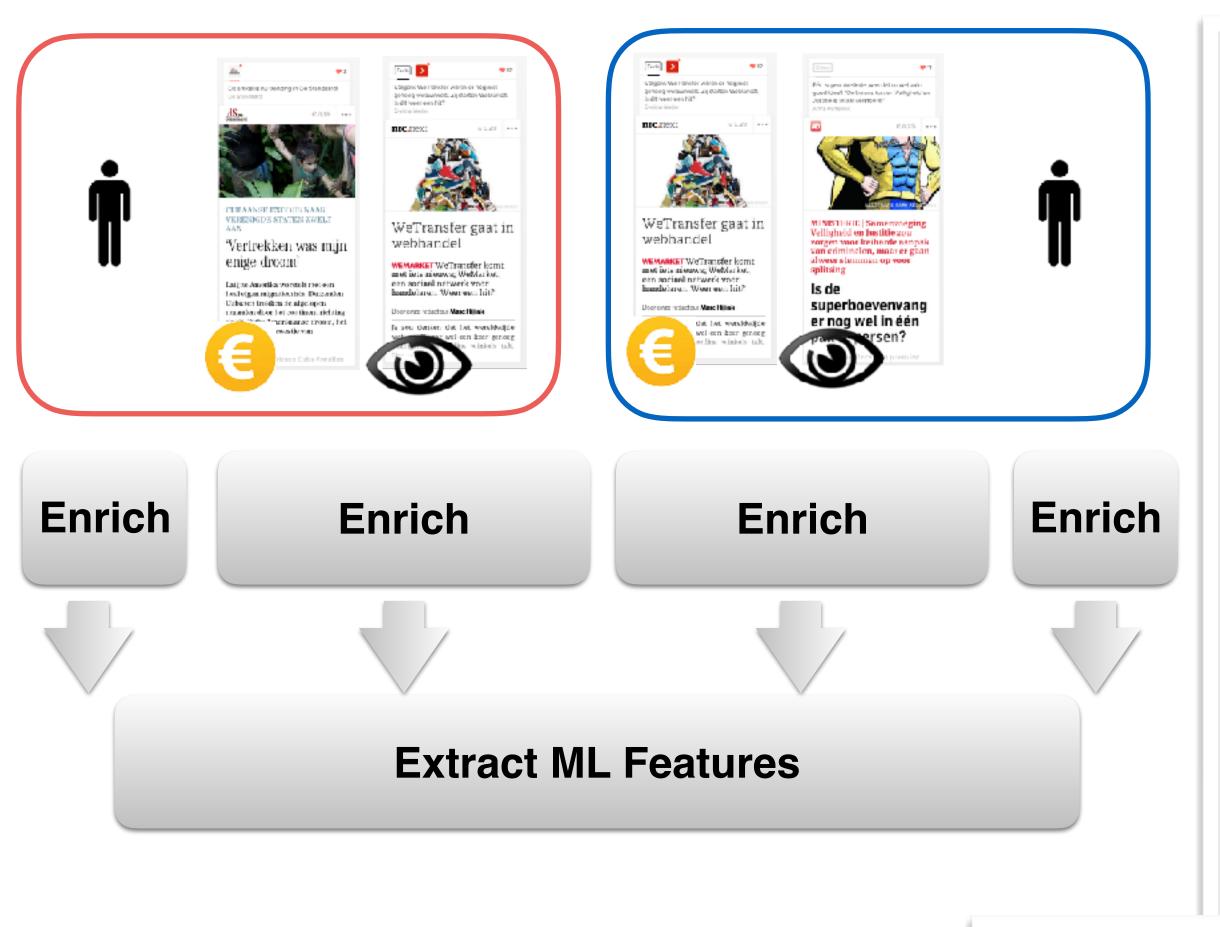






When I compute features	
Then I should have the following features	s and values:
feature	value
<pre>user_nr_purchased_items</pre>	5
user_nr_channels	1
user_nr_subscriptions	2
user_nr_providers	1
<pre>user_vmoney_almost_spent</pre>	1
user_alerts	1
user_new_edition	1
user_digest	1
user_magazine_digest	1
user_image_mean	0.5
user_likes_it_long	0
<pre>purchased_channel_intersect</pre>	1
<pre>purchased_channel_intersect_size</pre>	1
<pre>newsletter_purchased_channel_score</pre>	0.05
<pre>newsletter_purchased_provider_score</pre>	0.025
<pre>item_provider_followed_by_user</pre>	0
<pre>item_channel_followed_by_user</pre>	0
<pre>item_rating_score</pre>	0.9
<pre>item_number_of_images</pre>	1
<pre>item_length_class</pre>	0
<pre>user_item_language_score</pre>	0.5
<pre>user_item_author_in_top3</pre>	1
user_item_semlink_in_top10	1
<pre>user_item_semantic_overlap</pre>	0.097777777777777
<pre>user_item_named_entity_overlap</pre>	0.04081632653061
<pre>user_item_length_pdf</pre>	0.00316108841344





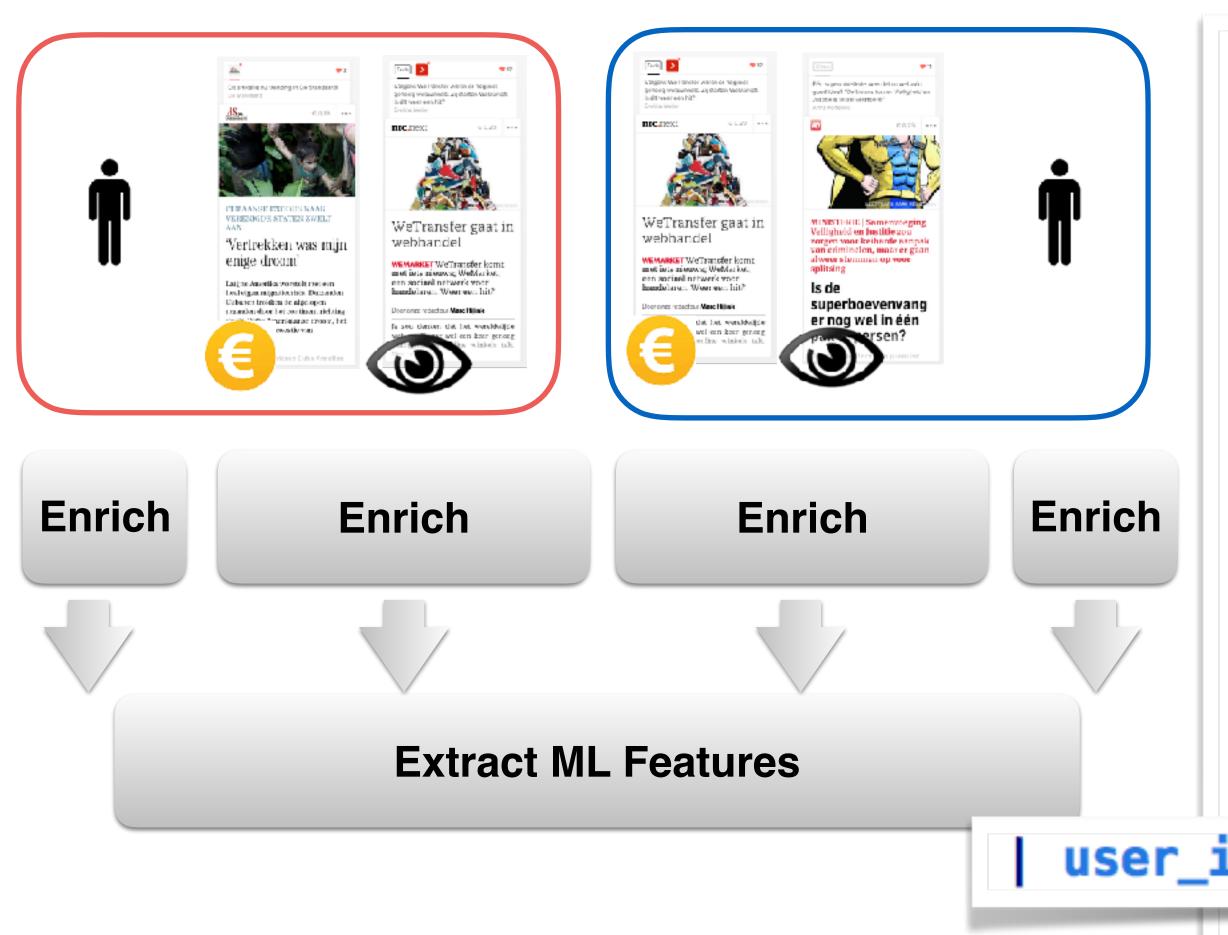




When I compute features	
Then I should have the following features	and values:
feature	value
<pre>user_nr_purchased_items</pre>	5
user_nr_channels	1
user_nr_subscriptions	2
user_nr_providers	1
<pre>user_vmoney_almost_spent</pre>	1
user_alerts	1
user_new_edition	1
user_digest	1
user_magazine_digest	1
user_image_mean	0.5
user_likes_it_long	0
purchased_channel_intersect	1
<pre>purchased_channel_intersect_size</pre>	1
newsletter_purchased_channel_score	0.05
newsletter_purchased_provider_score	0.025
<pre>item_provider_followed_by_user</pre>	0
<pre>item_channel_followed_by_user</pre>	0
<pre>item_rating_score</pre>	0.9
<pre>item_number_of_images</pre>	1
i item length class	0
<pre>item_author_in_top3</pre>	1
user_item_semlink_in_top10	1
user_item_semantic_overlap	0.09777777777777
<pre>user_item_named_entity_overlap</pre>	0.04081632653061
user_item_length_pdf	0.00316108841344





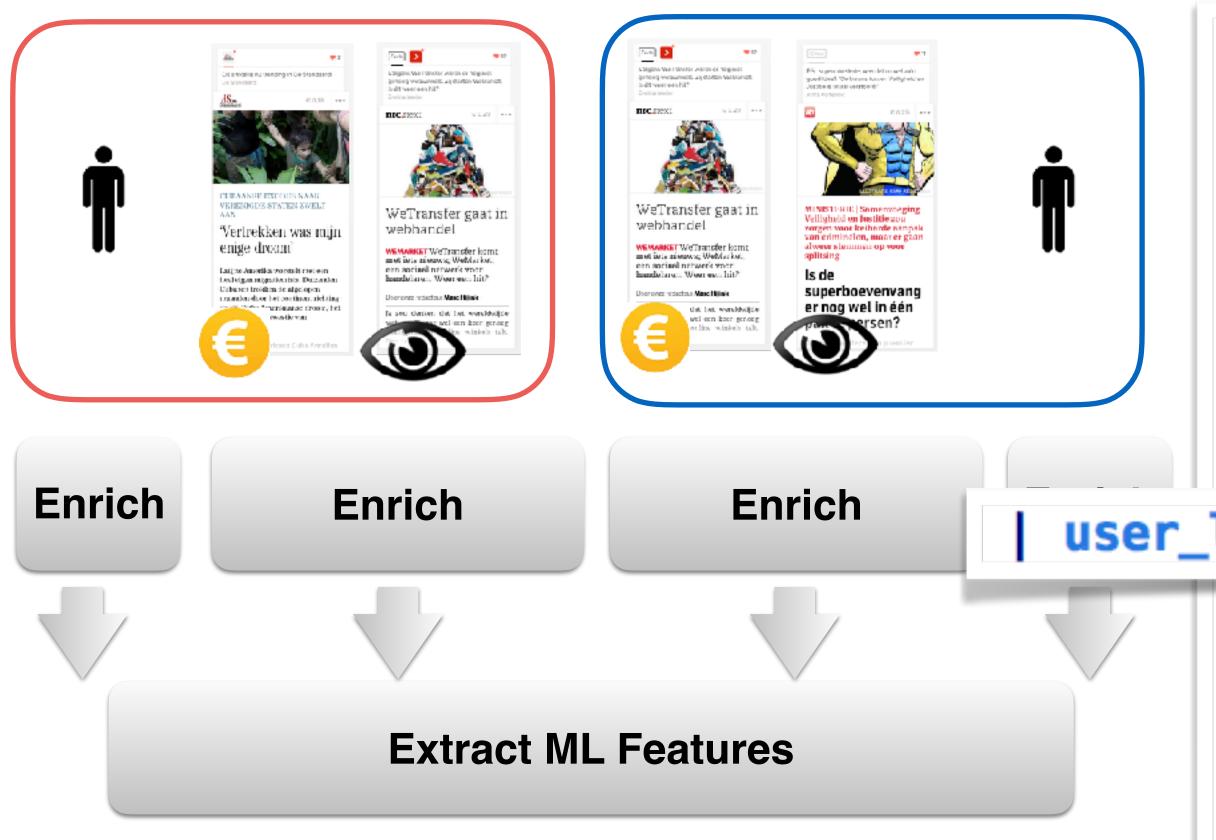




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user_alerts	1
user_new_edition	1
user_digest	1
user_magazine_digest	1
user_image_mean	0.5
user_likes_it_long	0
<pre>purchased_channel_intersect</pre>	1
<pre>purchased_channel_intersect_size</pre>	1
<pre>newsletter_purchased_channel_score</pre>	0.05
<pre>newsletter_purchased_provider_score</pre>	0.025
<pre>item_provider_followed_by_user</pre>	0
<pre>item_channel_followed_by_user</pre>	0
<pre>item_language_score</pre>	0.5
<pre>item_tength_class</pre>	0
<pre>user_item_language_score</pre>	0.5
<pre>user_item_author_in_top3</pre>	1
<pre>user_item_semlink_in_top10</pre>	1
<pre>user_item_semantic_overlap</pre>	0.09777777777777
<pre>user_item_named_entity_overlap</pre>	0.04081632653061
<pre>user_item_length_pdf</pre>	0.00316108841344

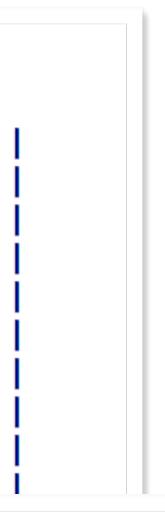




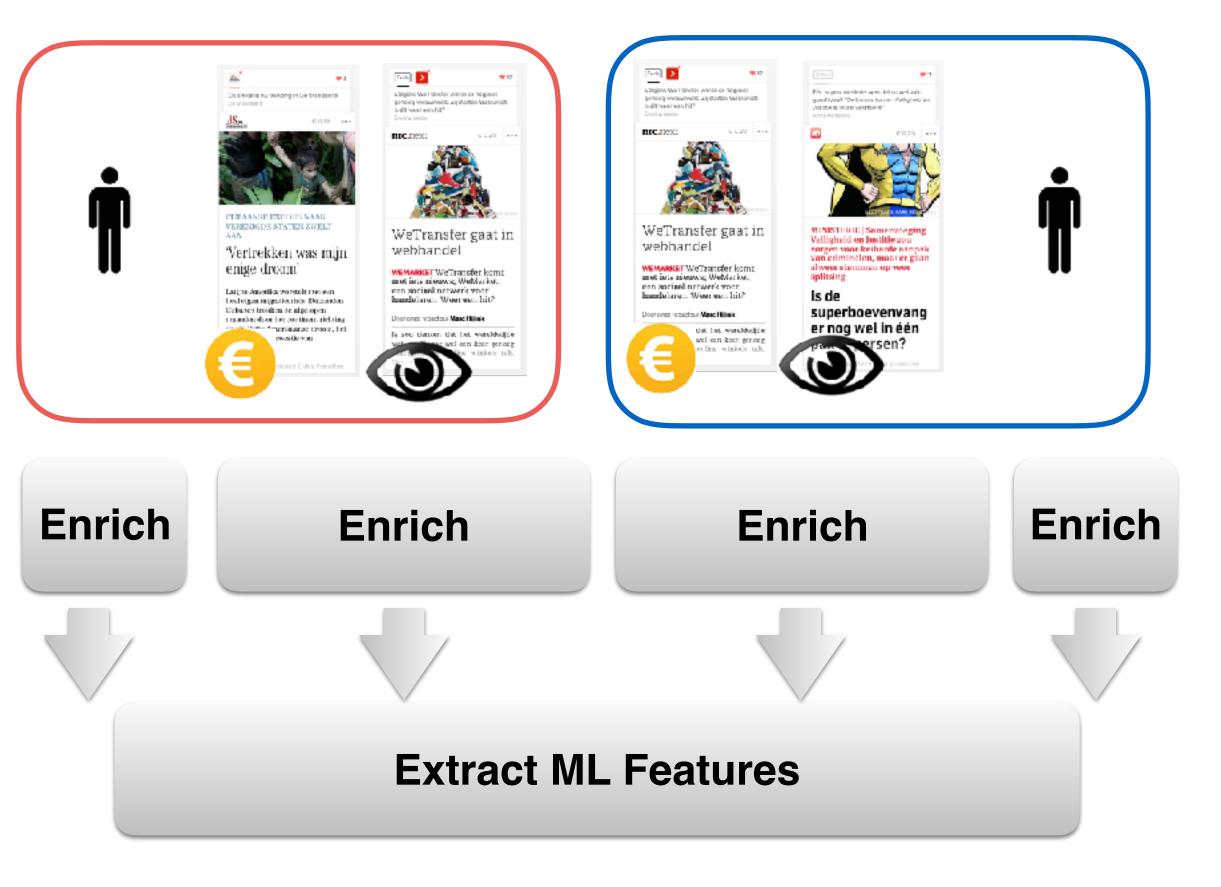




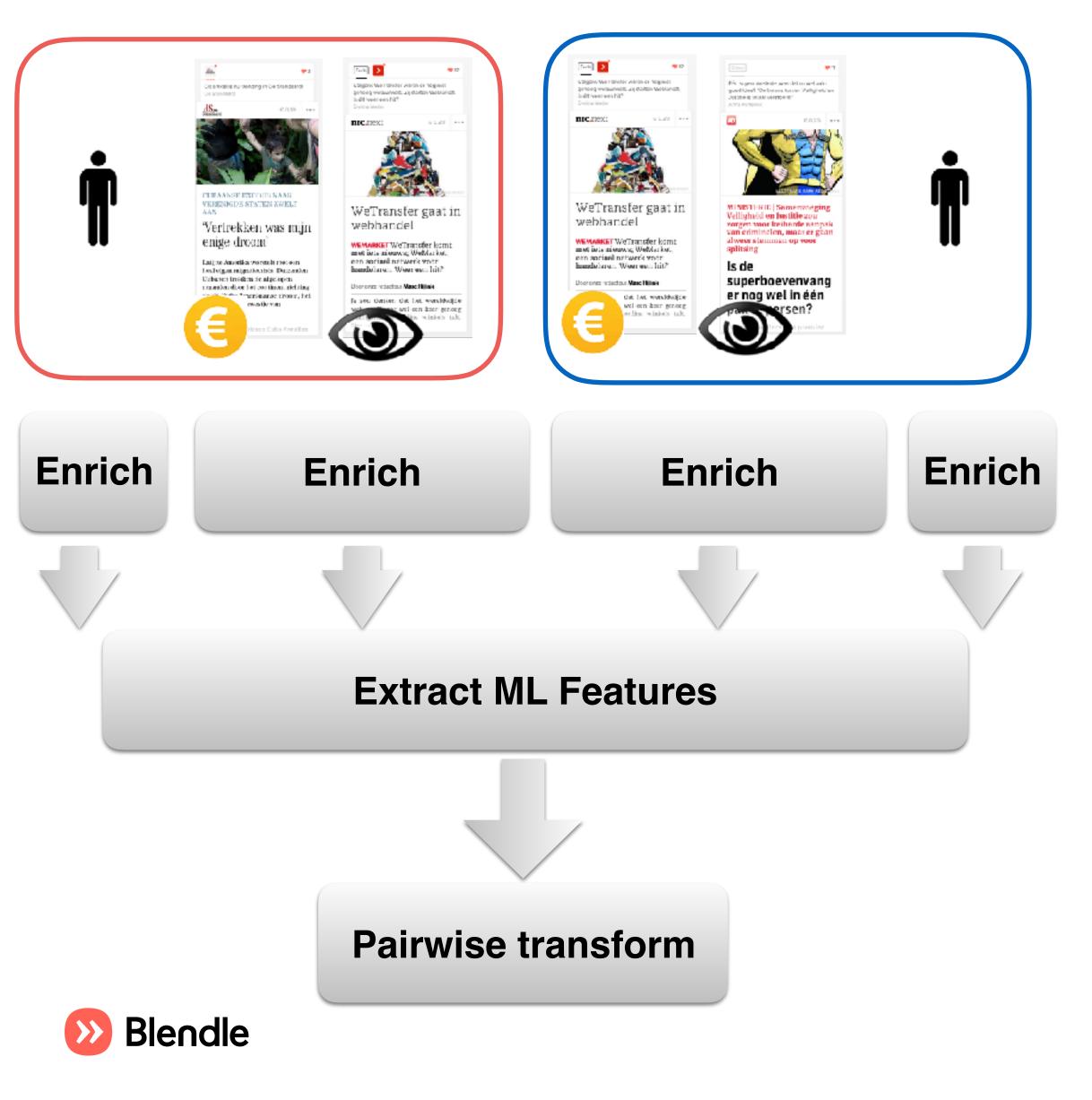
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user_nr_purchased_items 5	
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<pre>purchased_channel_intersect_size 1</pre>	
<pre>newsletter_purchased_channel_score 0.05</pre>	
<pre>newsletter_purchased_provider_score 0.025</pre>	
<pre>item_provider_followed_by_user 0</pre>	
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item_rating_score 0.9	
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user_item_language_score 0.5	
user_item_author_in_top3 1	
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user_item_semantic_overlap 0.0977777777777777777777777777777777777	777
user_item_named_entity_overlap 0.040816326530	
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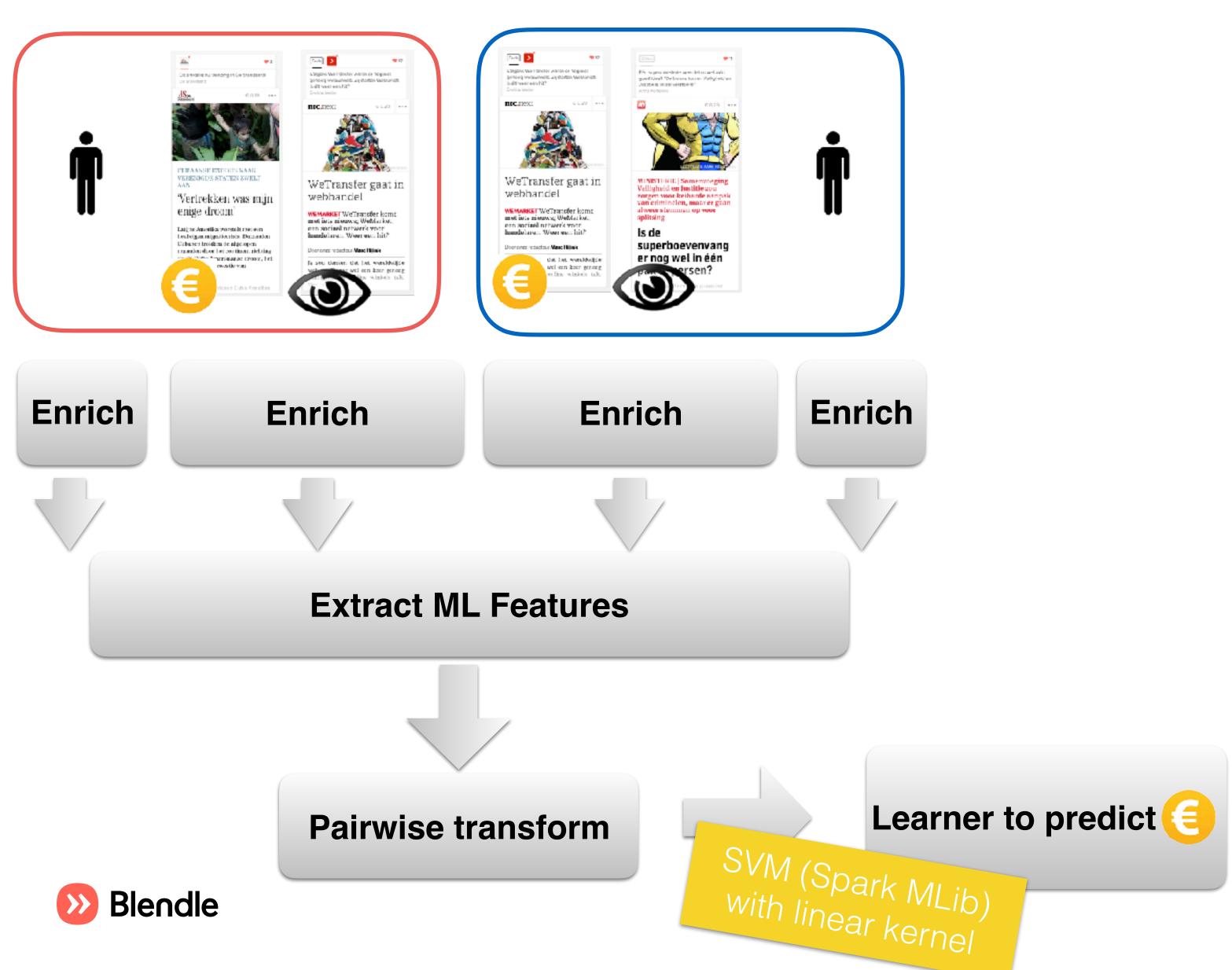


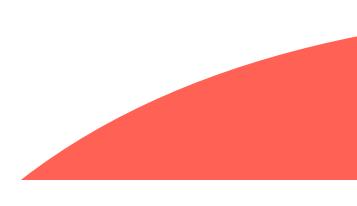


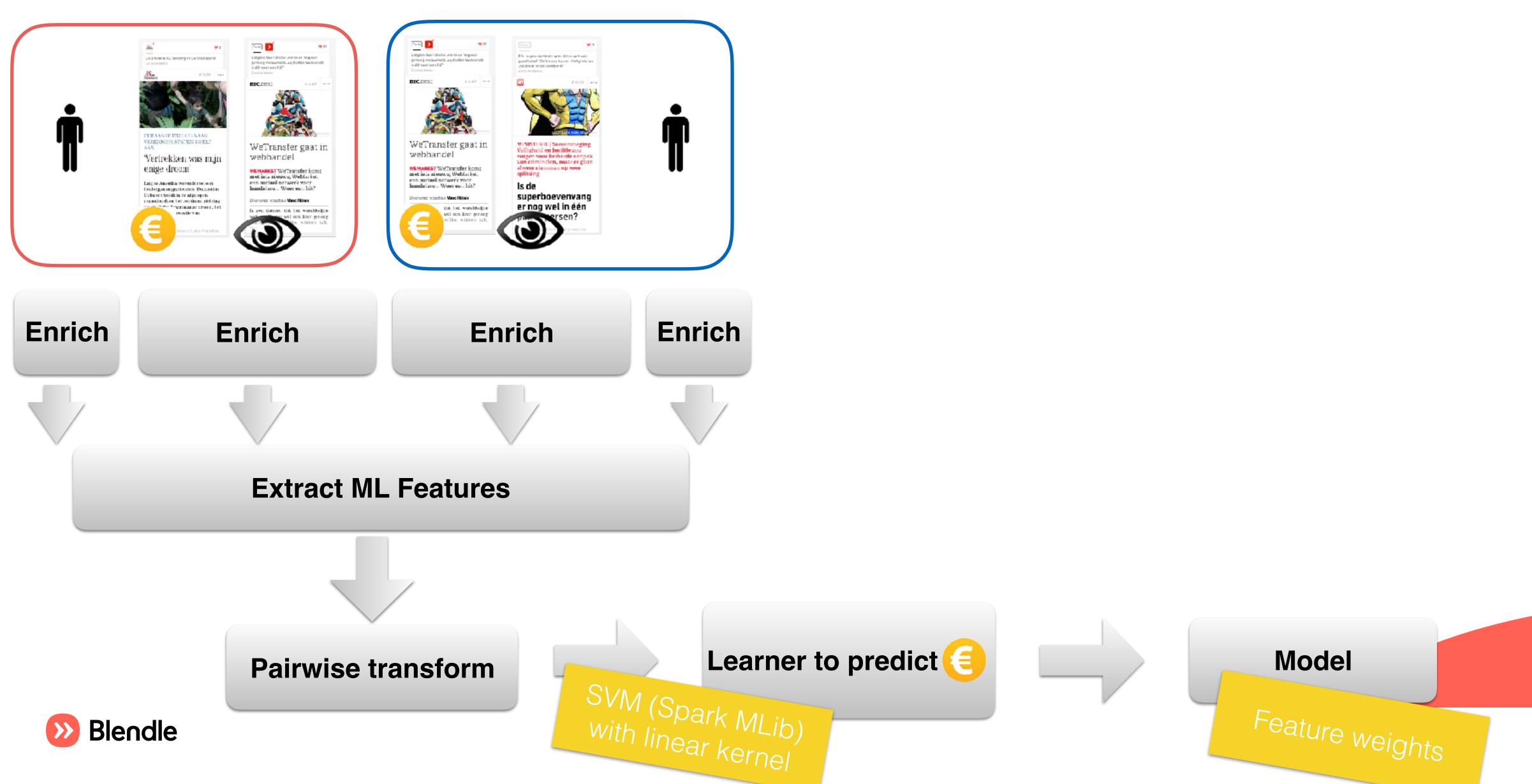


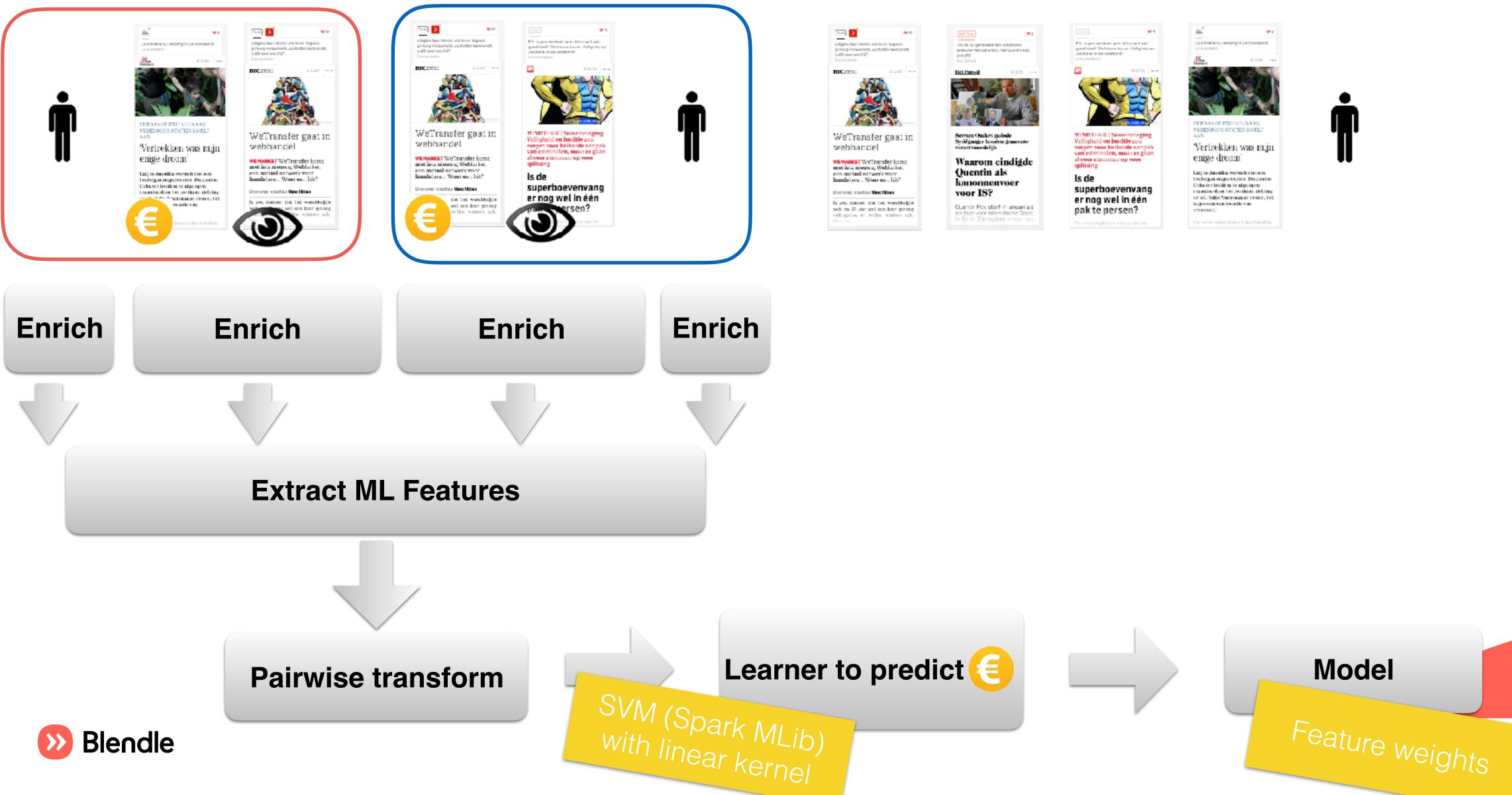












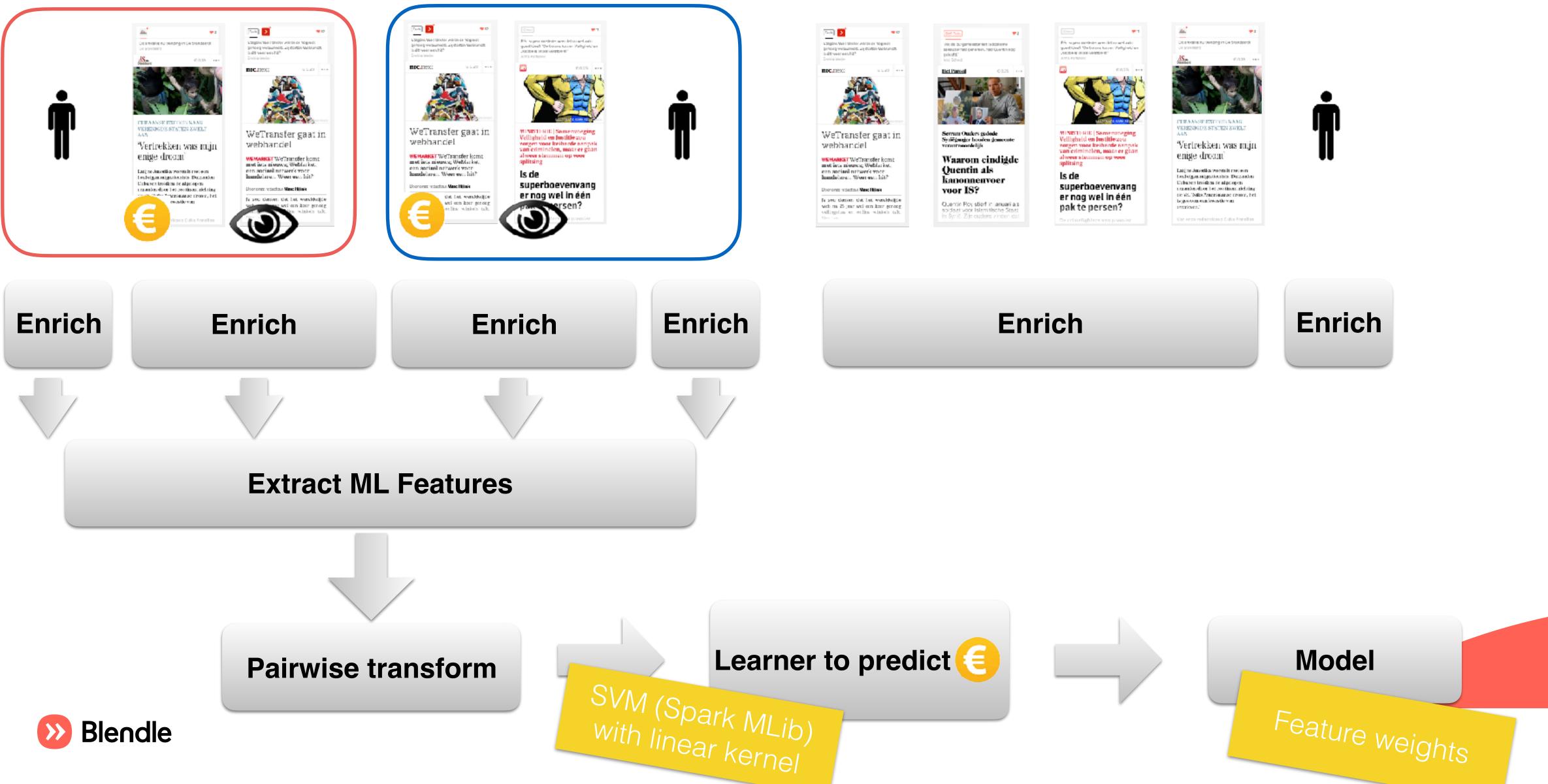


















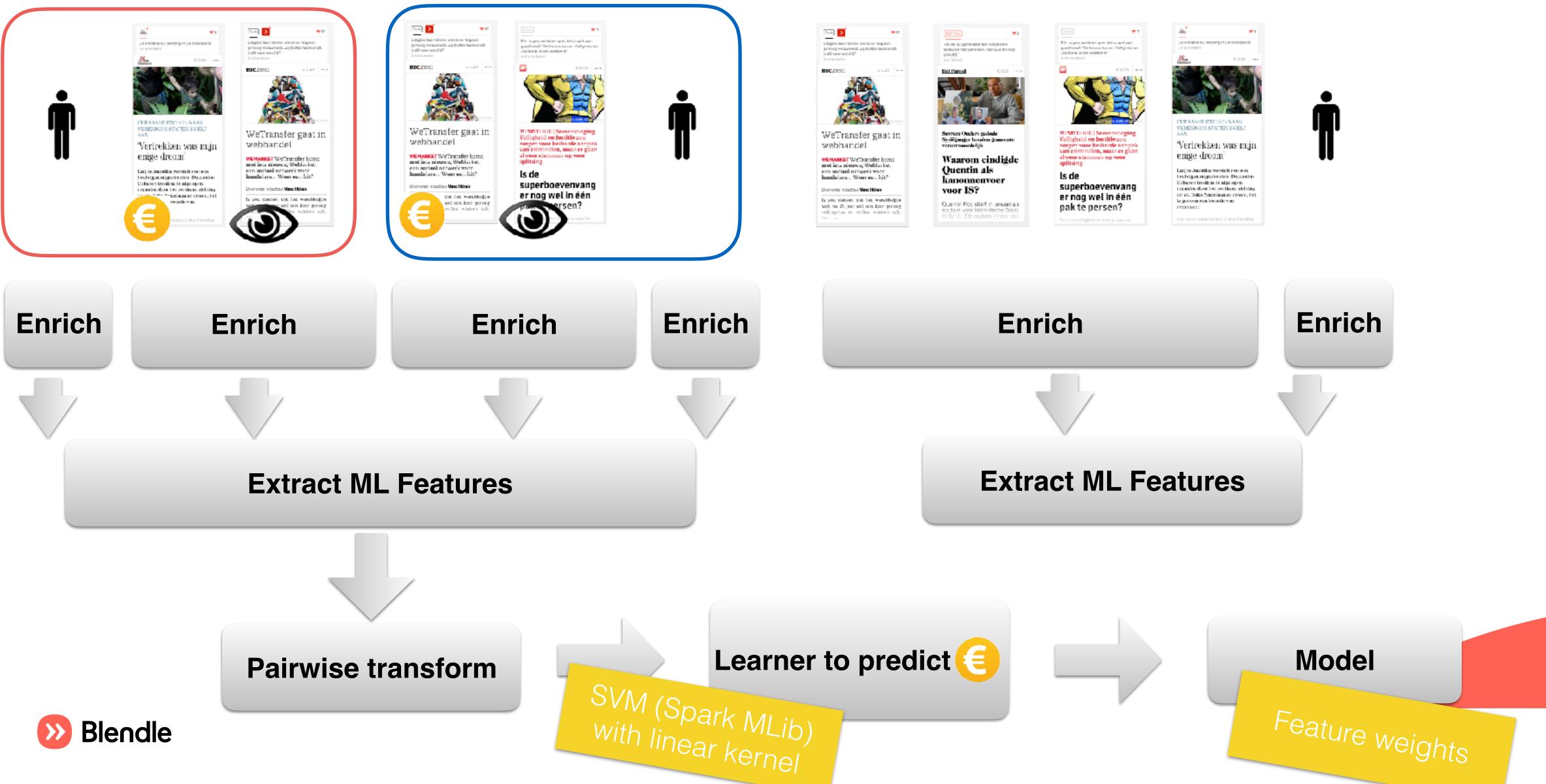
















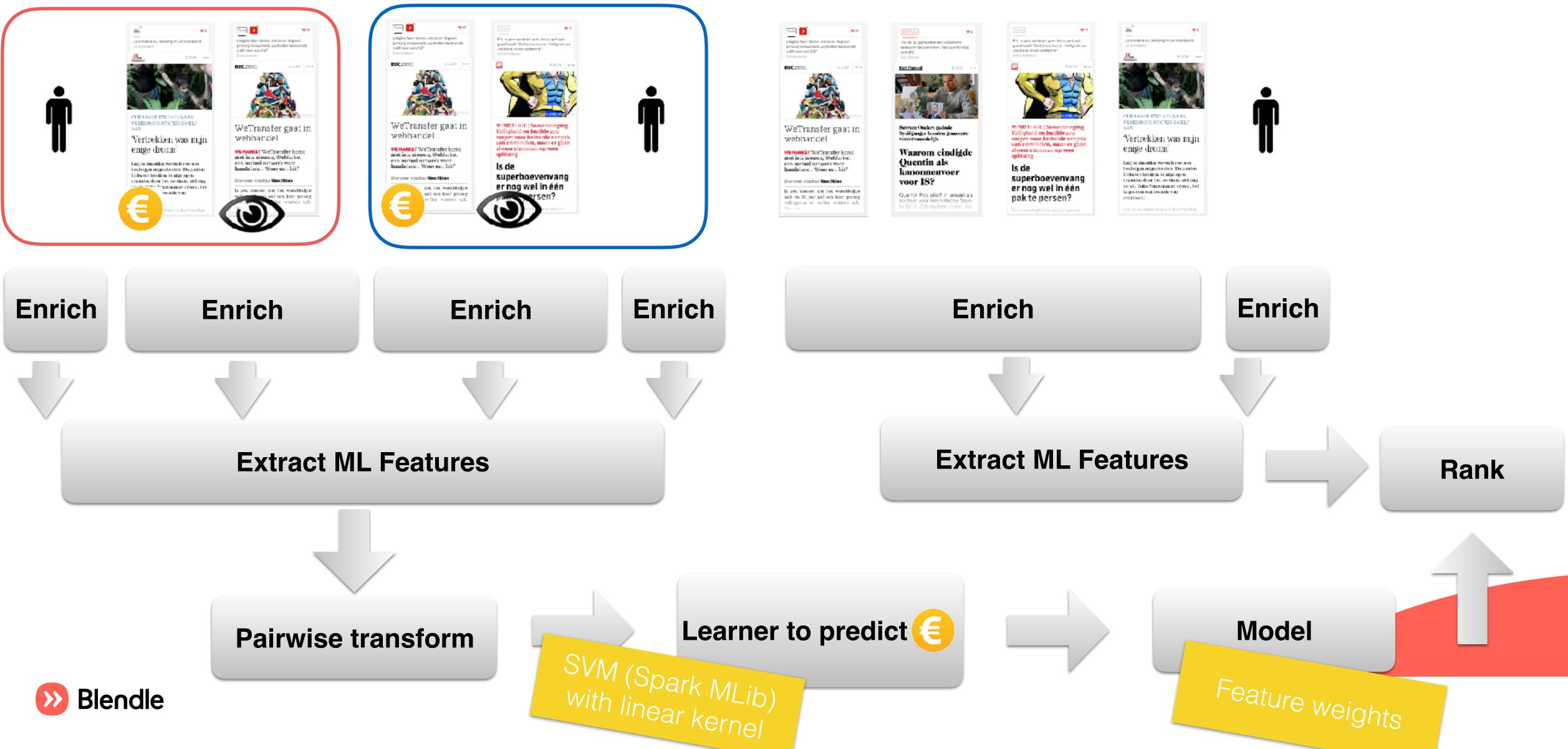
















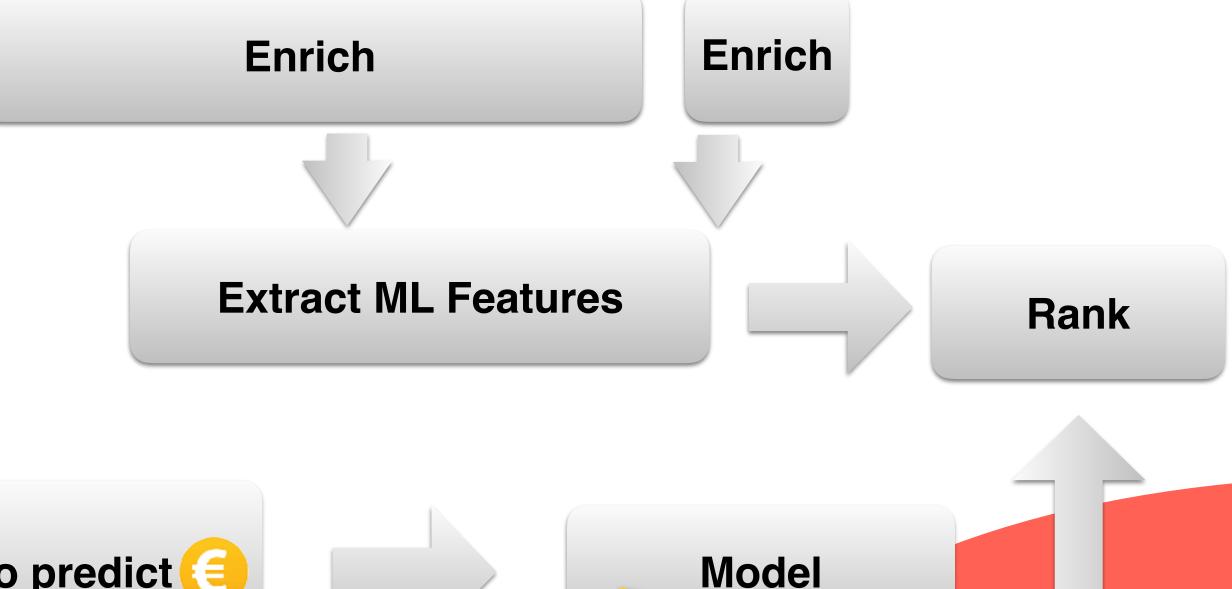


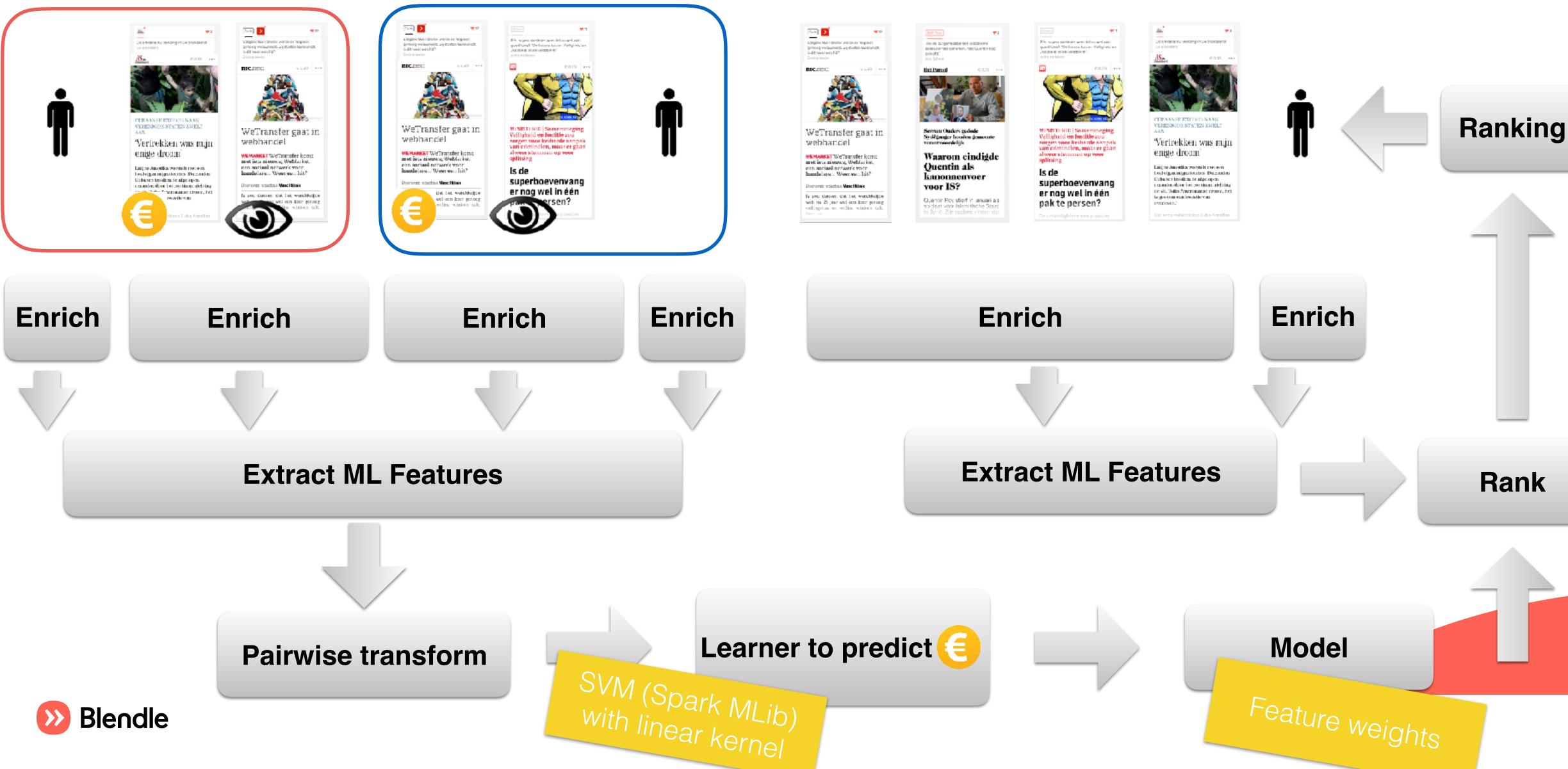


























What can possibly go wrong?

What can possibly go wrong?

Clicks are biased

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users won't click on things you didn't show them

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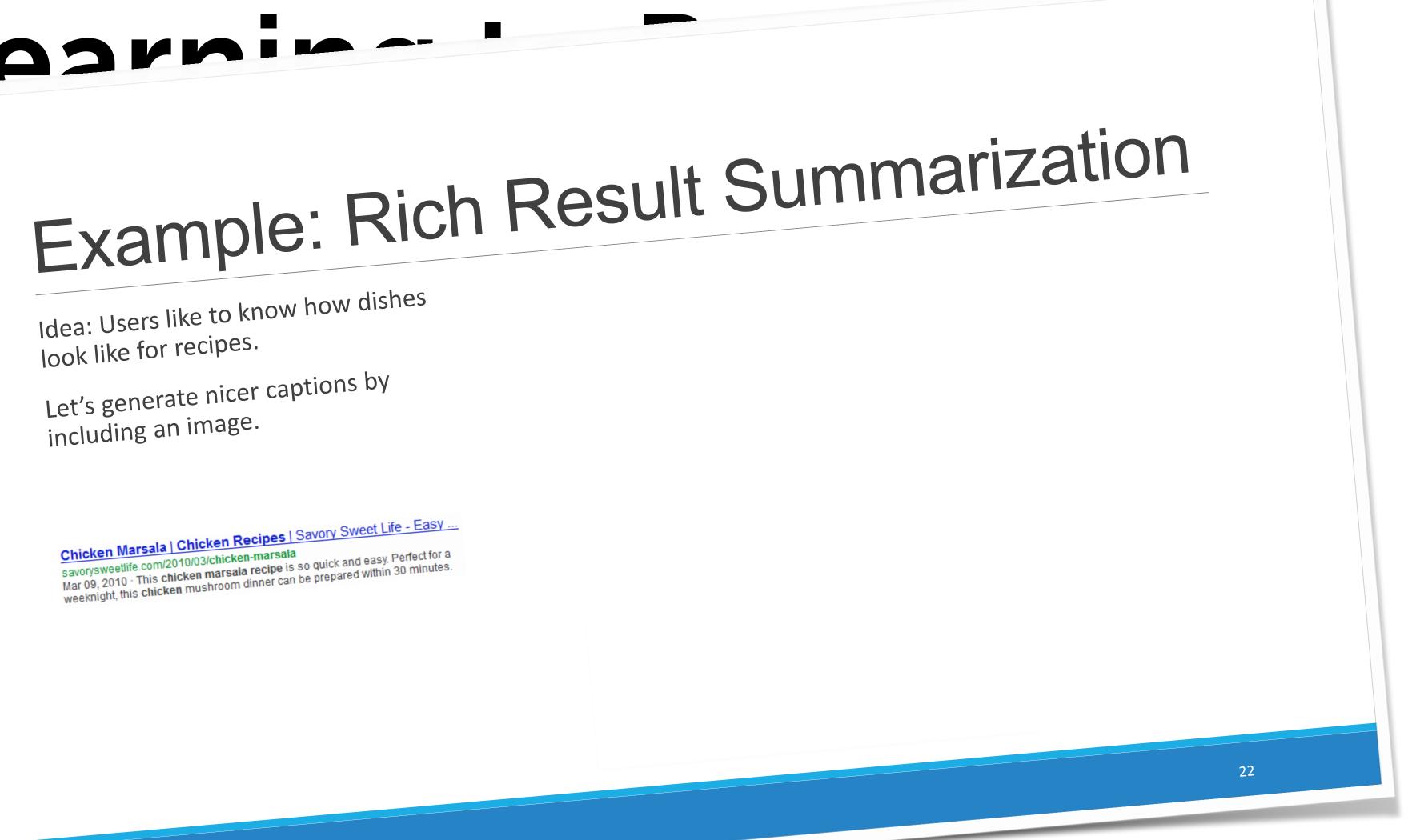
 users won't click on things you didn't show them • user are likely to click on things that appear high snippets, images, colors, font size, grouped with other



Idea: Users like to know how dishes look like for recipes.

Let's generate nicer captions by including an image.

Chicken Marsala | Chicken Recipes | Savory Sweet Life - Easy ... Mar 09, 2010 · This **chicken marsala recipe** is so quick and easy. Perfect for a weeknight, this **chicken** mushroom dinner can be prepared within 30 minutes.





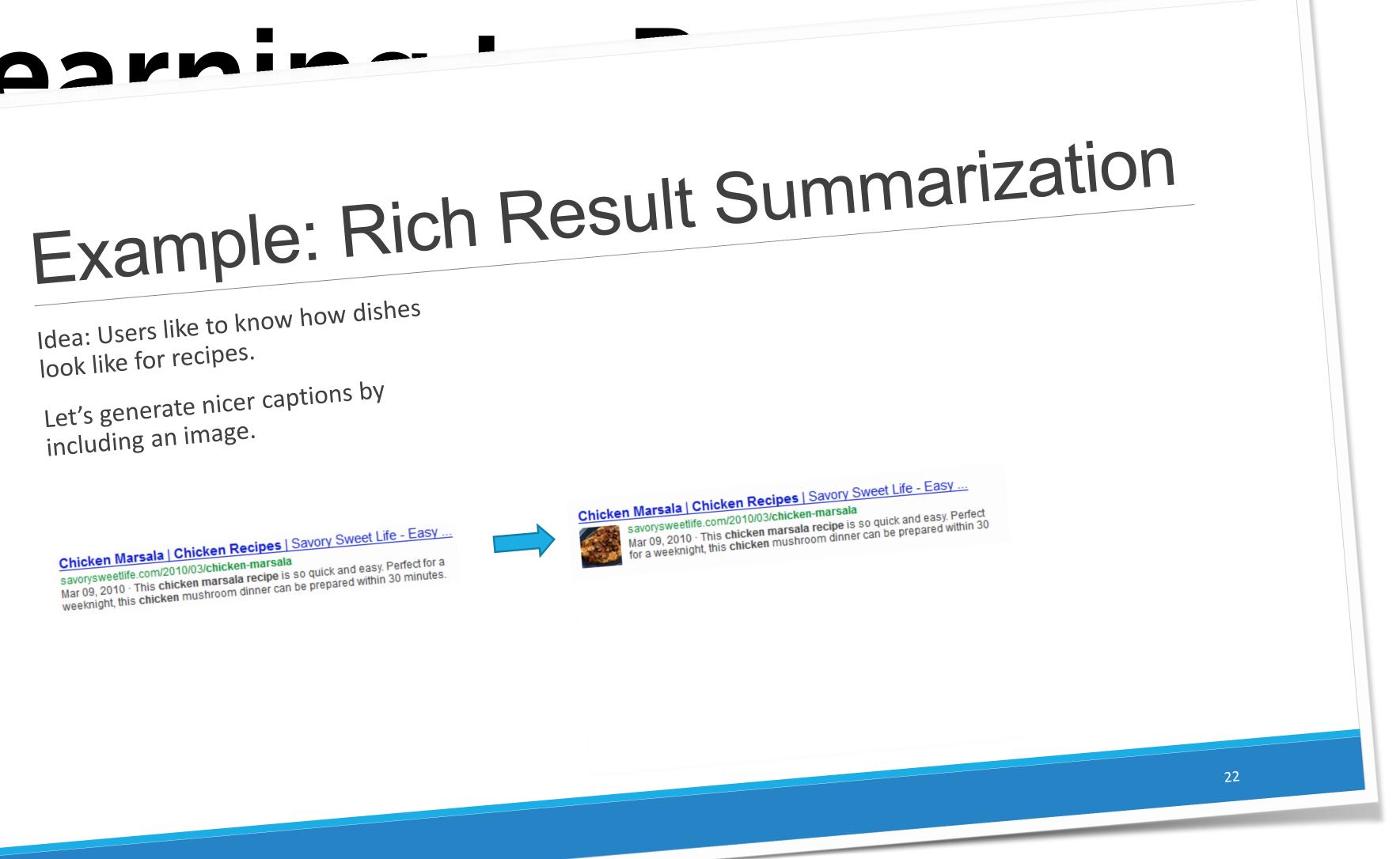
oarnie

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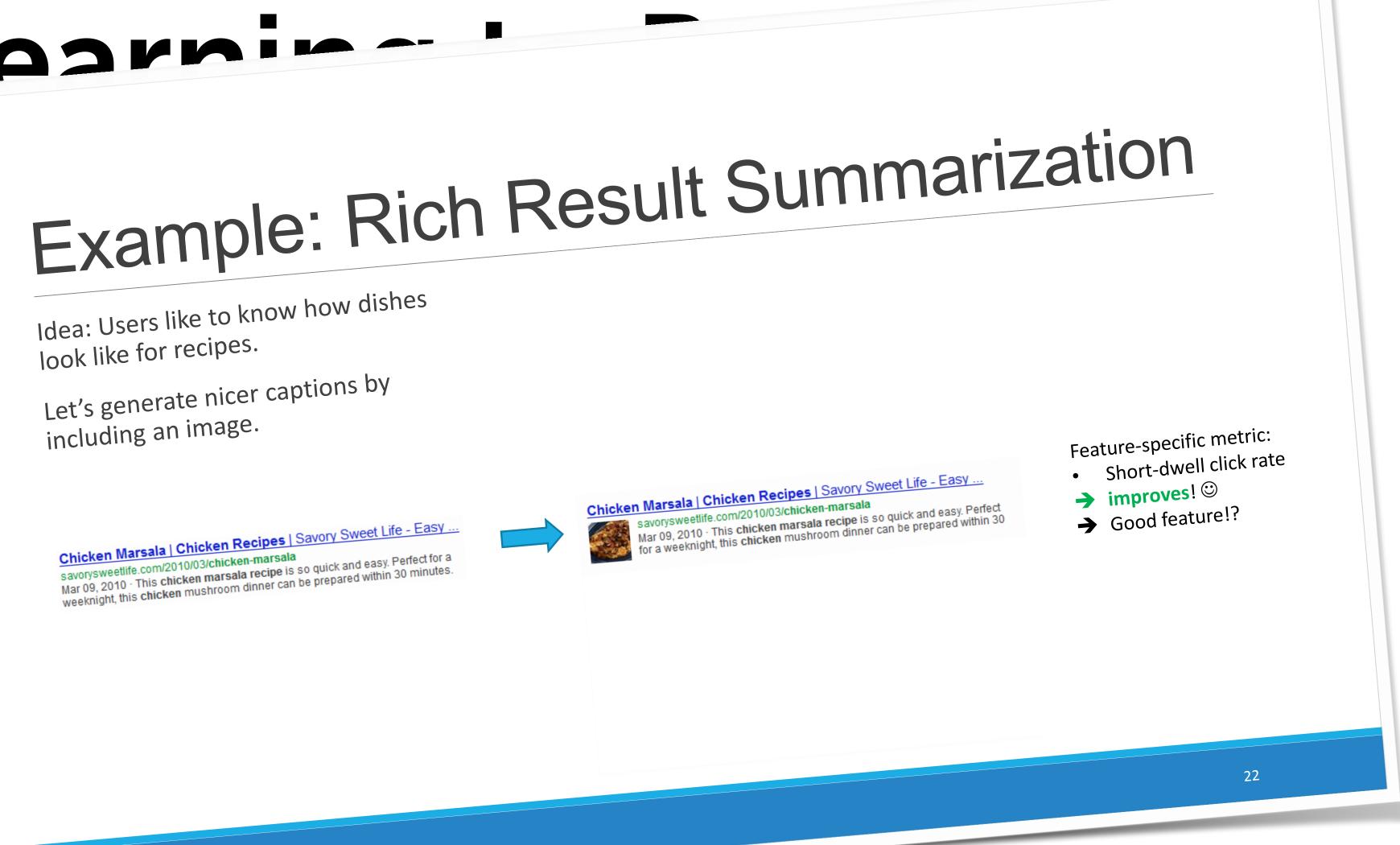


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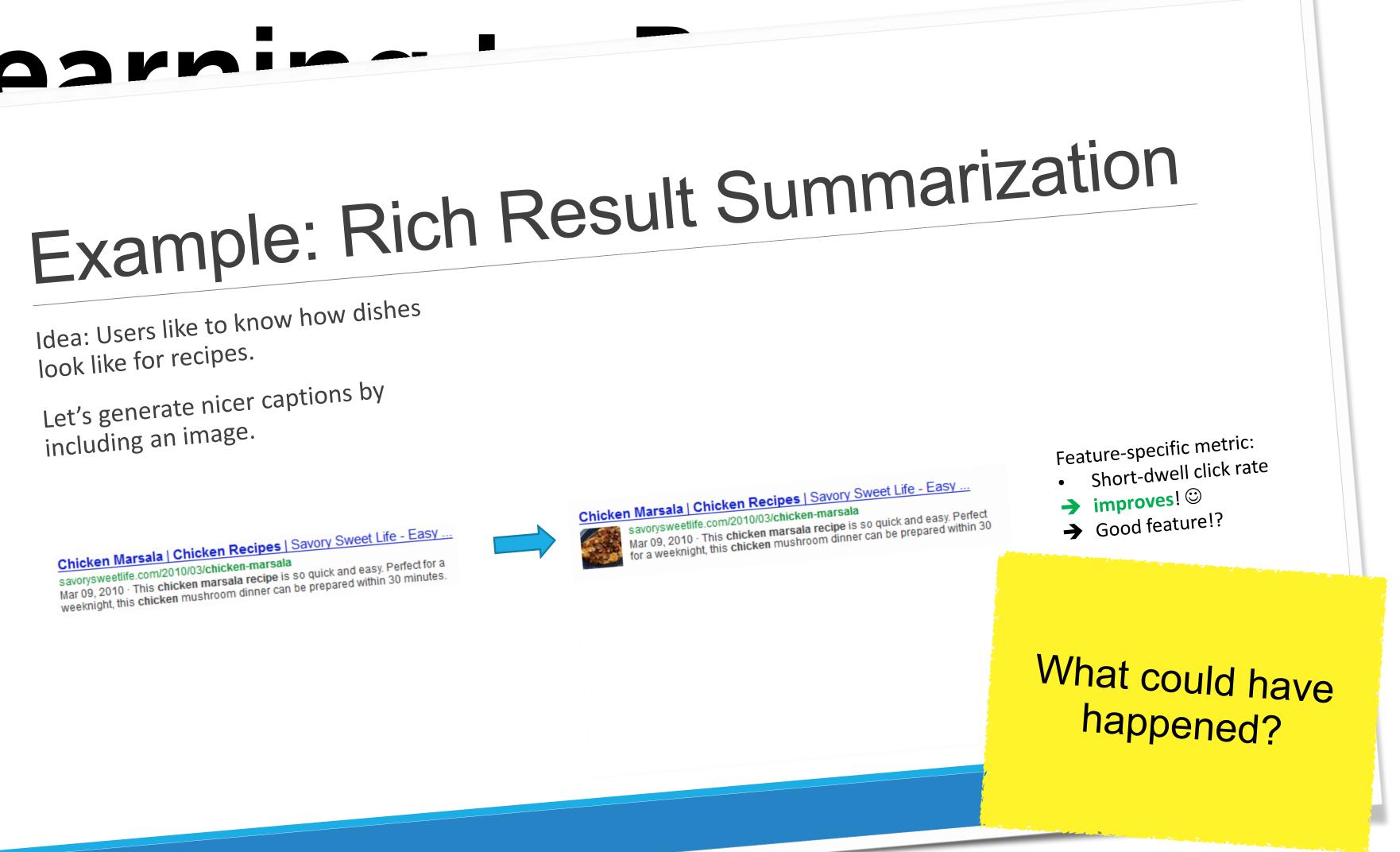


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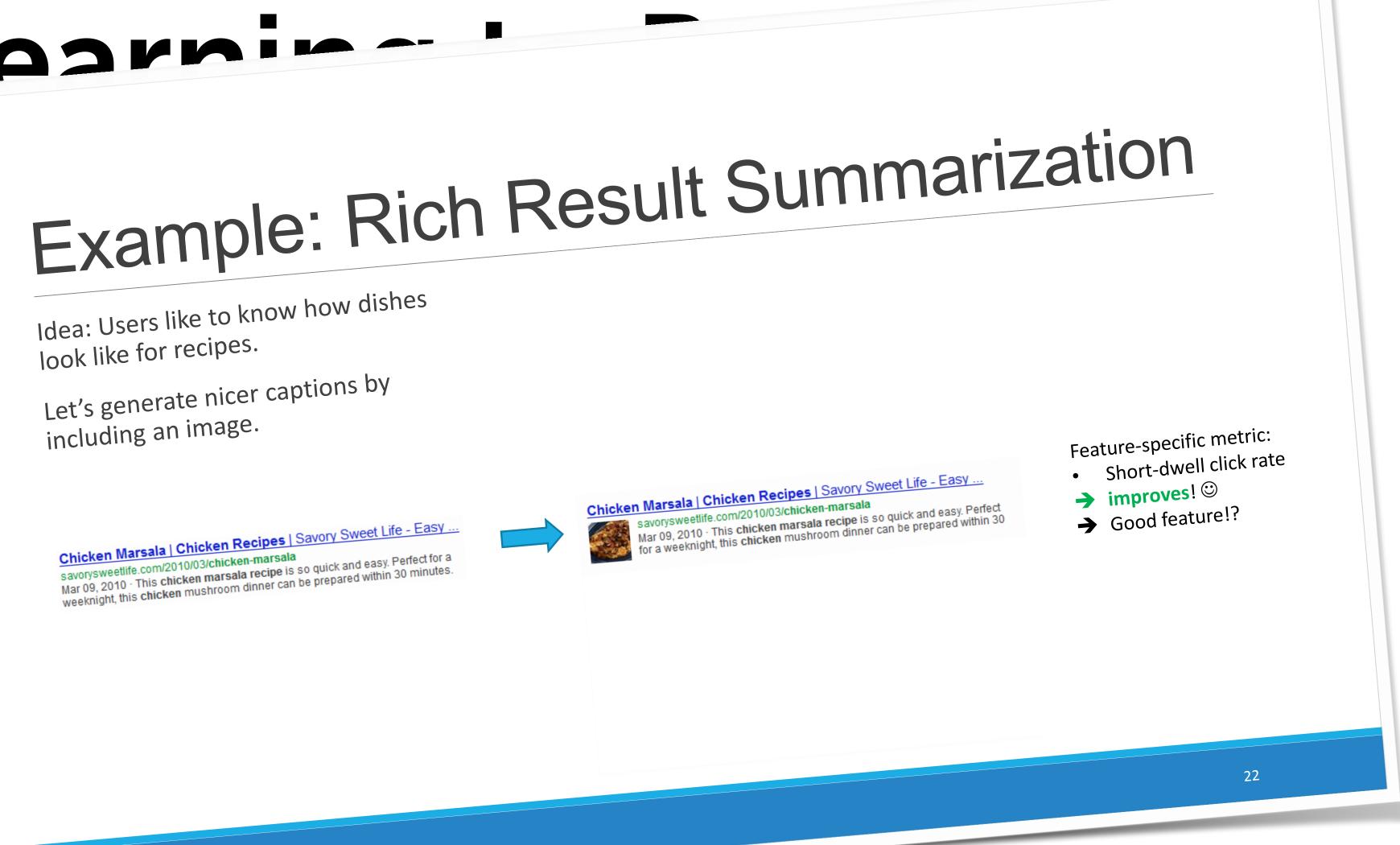


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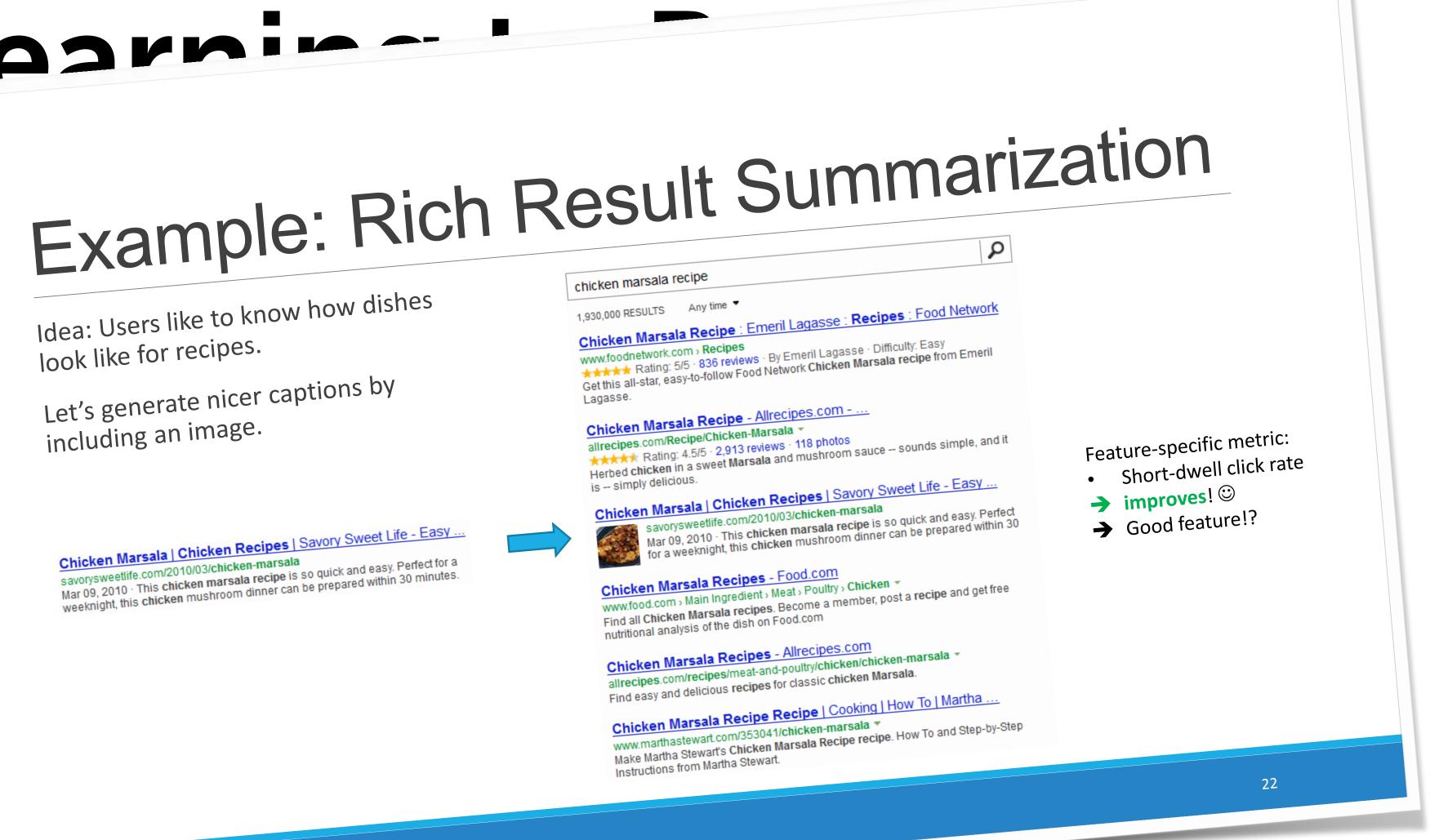


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Example: Rich Result Summarization chicken marsala recipe

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1,930,000 RESULTS Any time -

Chicken Marsala Recipe : Emeril Lagasse : Recipes : Food Network ★★★★★ Rating: 5/5 · 836 reviews · By Emeril Lagasse · Difficulty: Easy Get this all-star, easy-to-follow Food Network Chicken Marsala recipe from Emeril

Lagasse.

Chicken Marsala Recipe - Allrecipes.com - ...

allrecipes.com/Recipe/Chicken-Marsala -Herbed chicken in a sweet Marsala and mushroom sauce -- sounds simple, and it

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Chicken Marsala Recipes - Food.com www.food.com > Main Ingredient > Meat > Poultry > Chicken 👻 Find all Chicken Marsala recipes. Become a member, post a recipe and get free nutritional analysis of the dish on Food.com

Chicken Marsala Recipes - Allrecipes.com allrecipes.com/recipes/meat-and-poultry/chicken/chicken-marsala -

Find easy and delicious recipes for classic chicken Marsala.

Chicken Marsala Recipe Recipe | Cooking | How To | Martha ... www.marthastewart.com/353041/chicken-marsala -Make Martha Stewart's Chicken Marsala Recipe recipe. How To and Step-by-Step Instructions from Martha Stewart.

Feature-specific metric:

- Short-dwell click rate
- → improves! ☺
- ➔ Good feature!?

More generalizable metrics: Whole page click-

22

- through rate #queries per session
- •



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Challenge: Design feature-specific metrics in a way that they are aligned with overall goodness.

1,930,000 RESULTS Any time V

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Chicken Marsala Recipes - Food.com www.food.com > Main Ingredient > Meat > Poultry > Chicken + Find all Chicken Marsala recipes. Become a member, post a recipe and get free nutritional analysis of the dish on Food.com

Chicken Marsala Recipes - Allrecipes.com allrecipes.com/recipes/meat-and-poultry/chicken/chicken-marsala -

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22

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•What can possibly go wrong?

Clicks are biased

- What can possibly go wrong?
 - Clicks are biased
 - Clicks are noisy

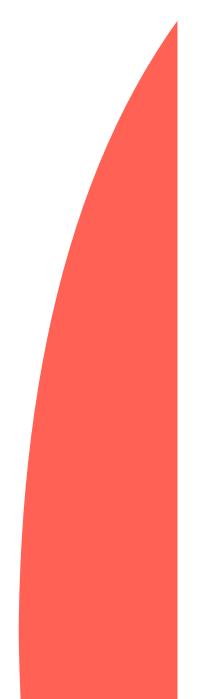
- What can possibly go wrong?
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- What can possibly go wrong?
 - Clicks are biased
 - Clicks are noisy
 - They don't always mean what you hope
 - Even with refunds
 - Absence of clicks is not necessarily negative
 - Users might learn enough from snippets

Online Learning to Rank



Online Learning to Rank

Online Learning to Rank

Bias is no longer a problem

Online Learning to Rank

 Bias is no longer a problem Noise remains

 Bias is no longer a problem Noise remains

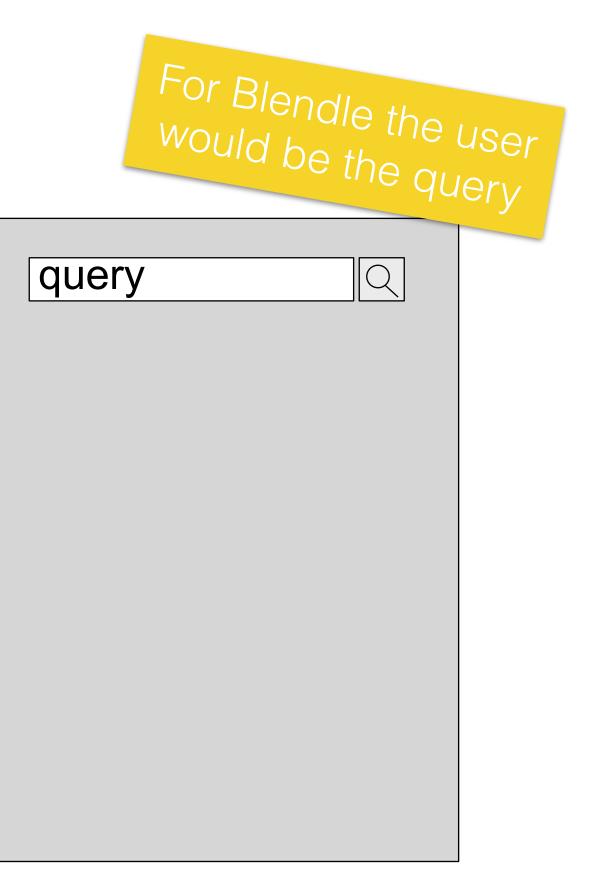


[Yue et al, 2009; Hofmann et al., 2011]



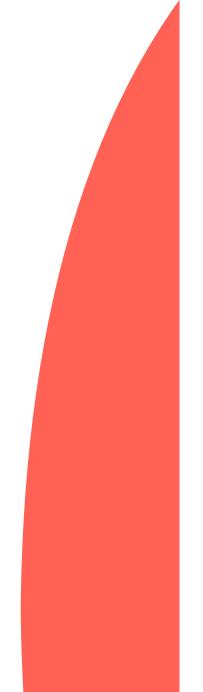




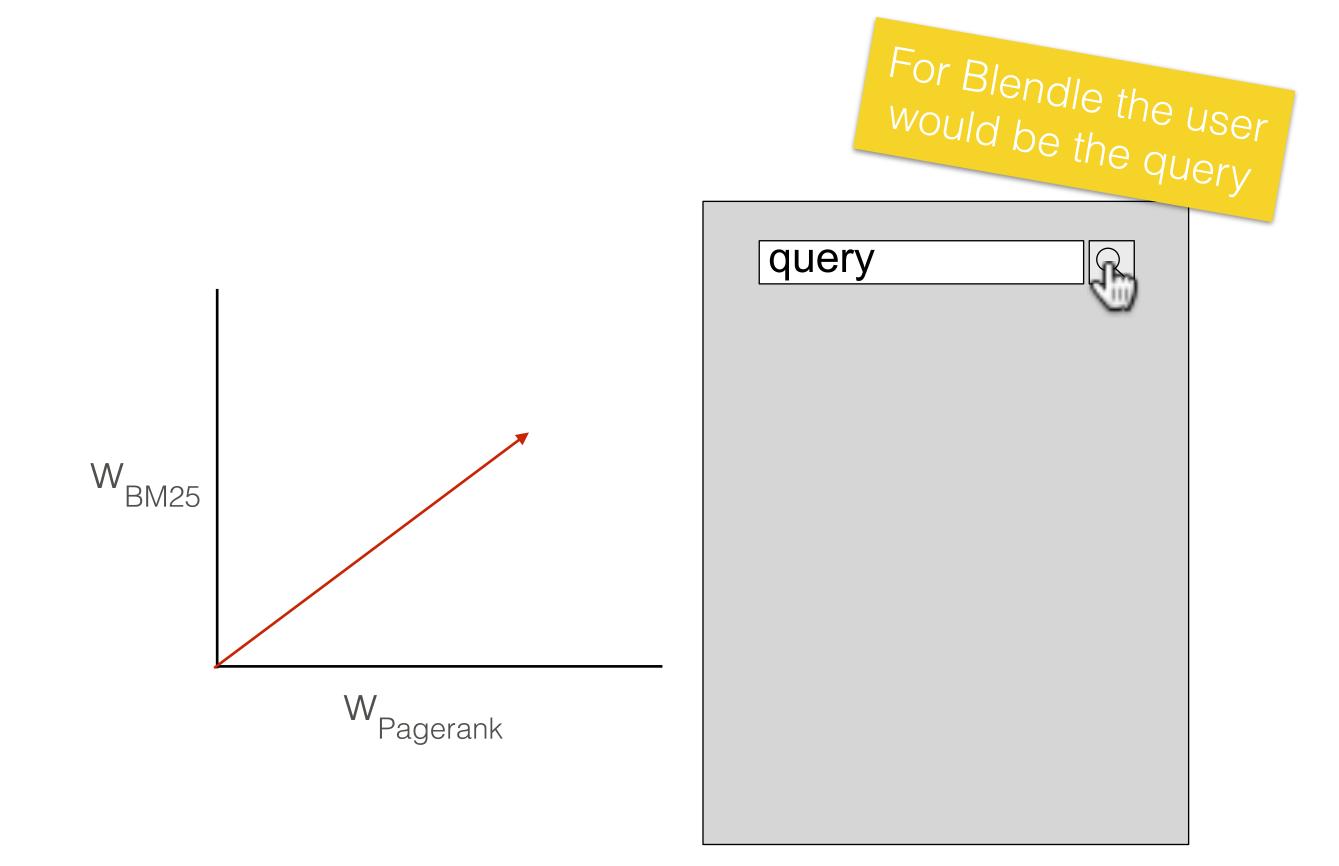


[Yue et al, 2009; Hofmann et al., 2011]



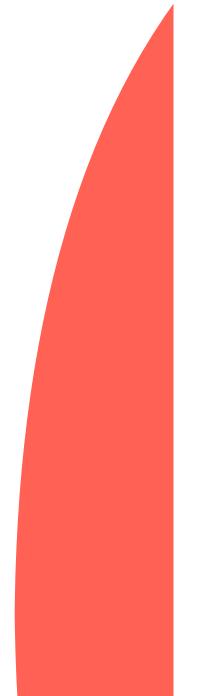




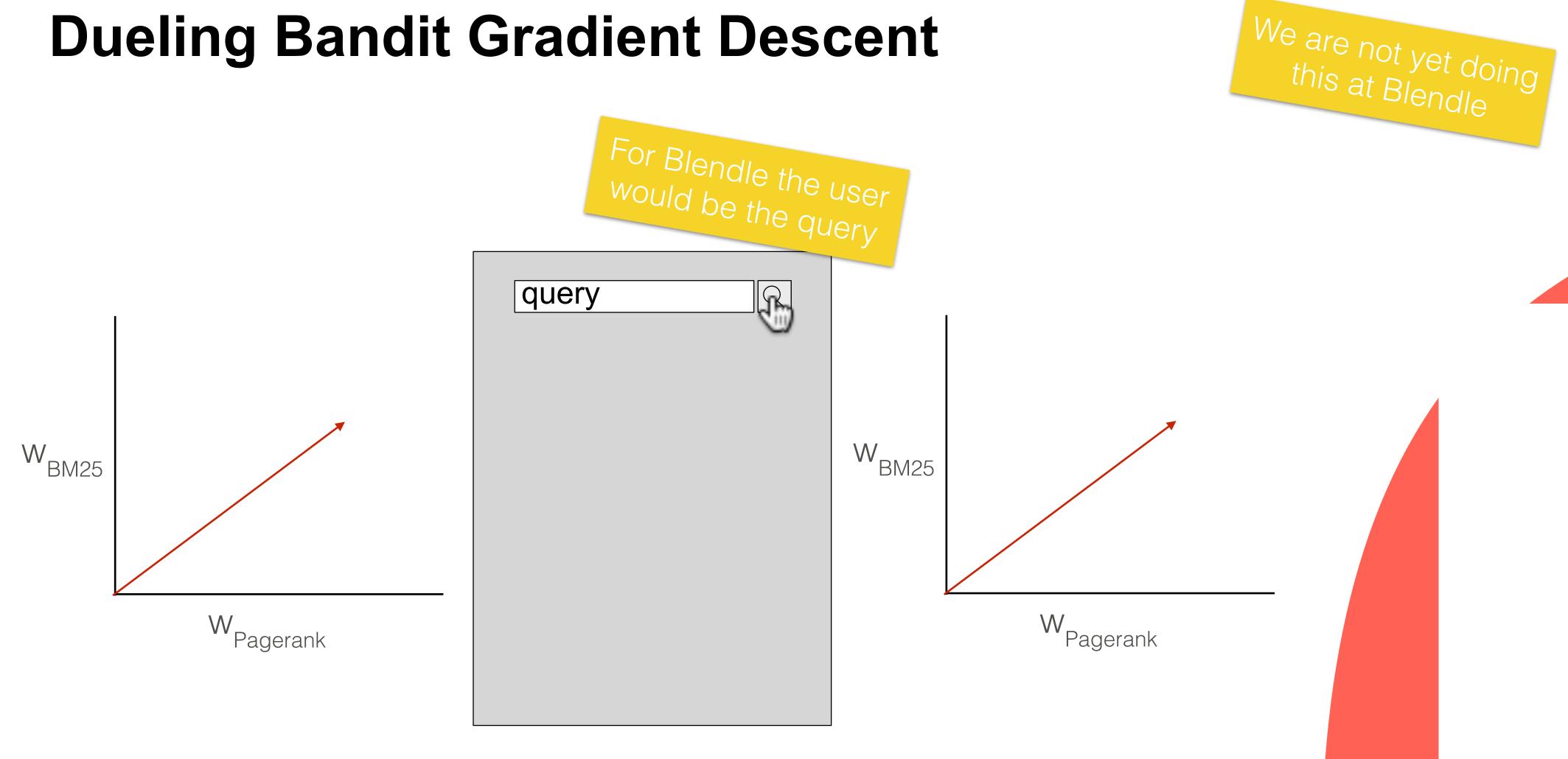


[Yue et al, 2009; Hofmann et al., 2011]



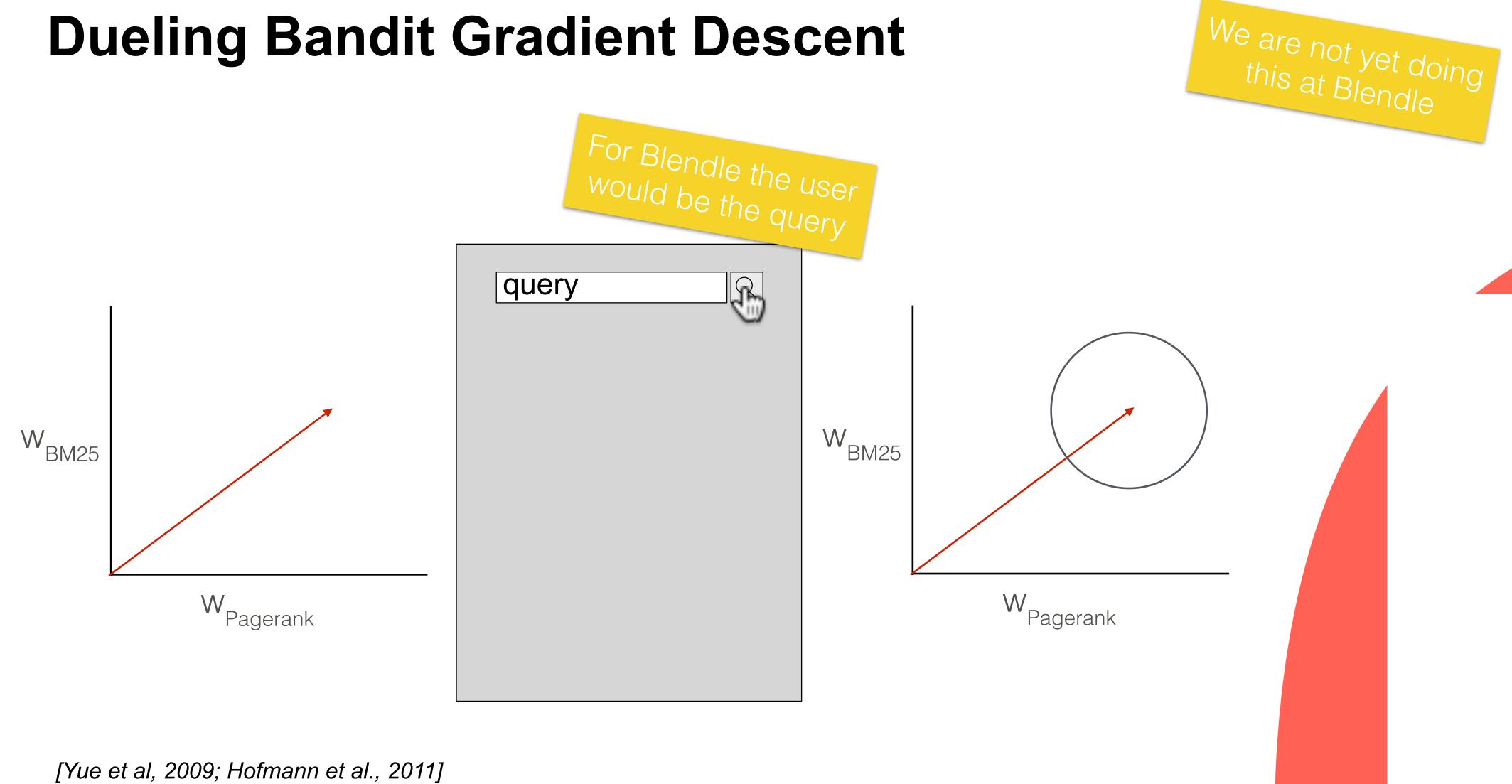




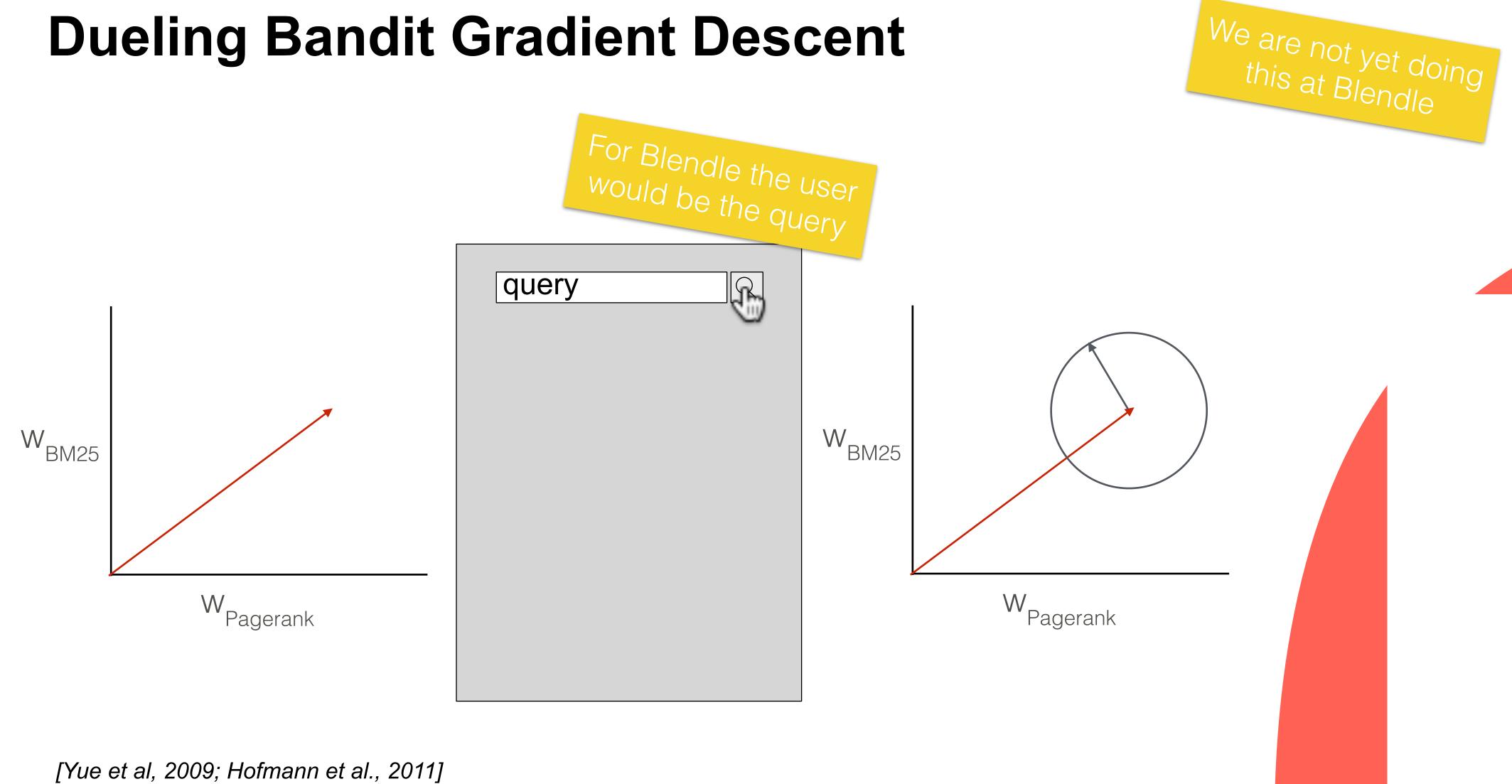


[Yue et al, 2009; Hofmann et al., 2011]

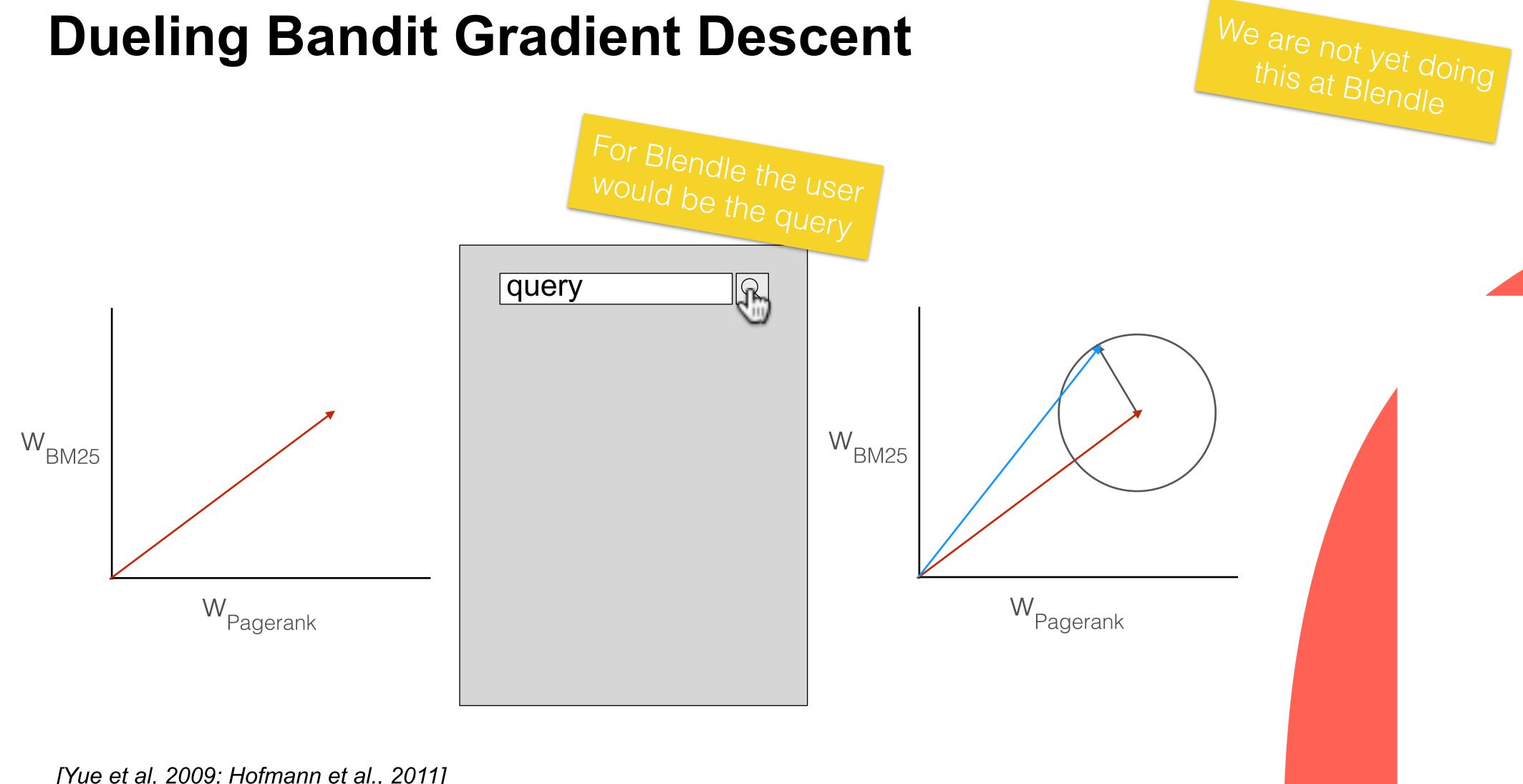






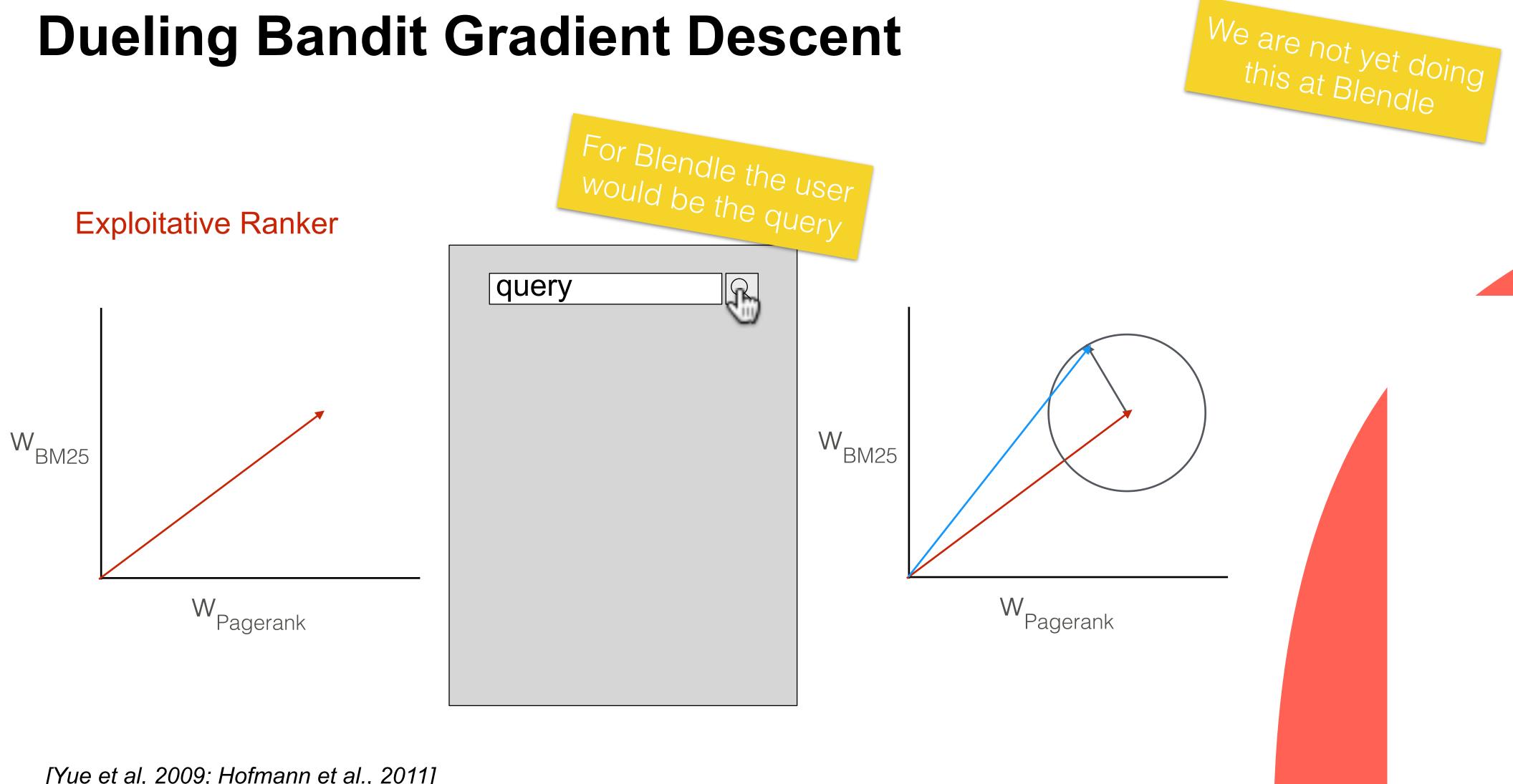






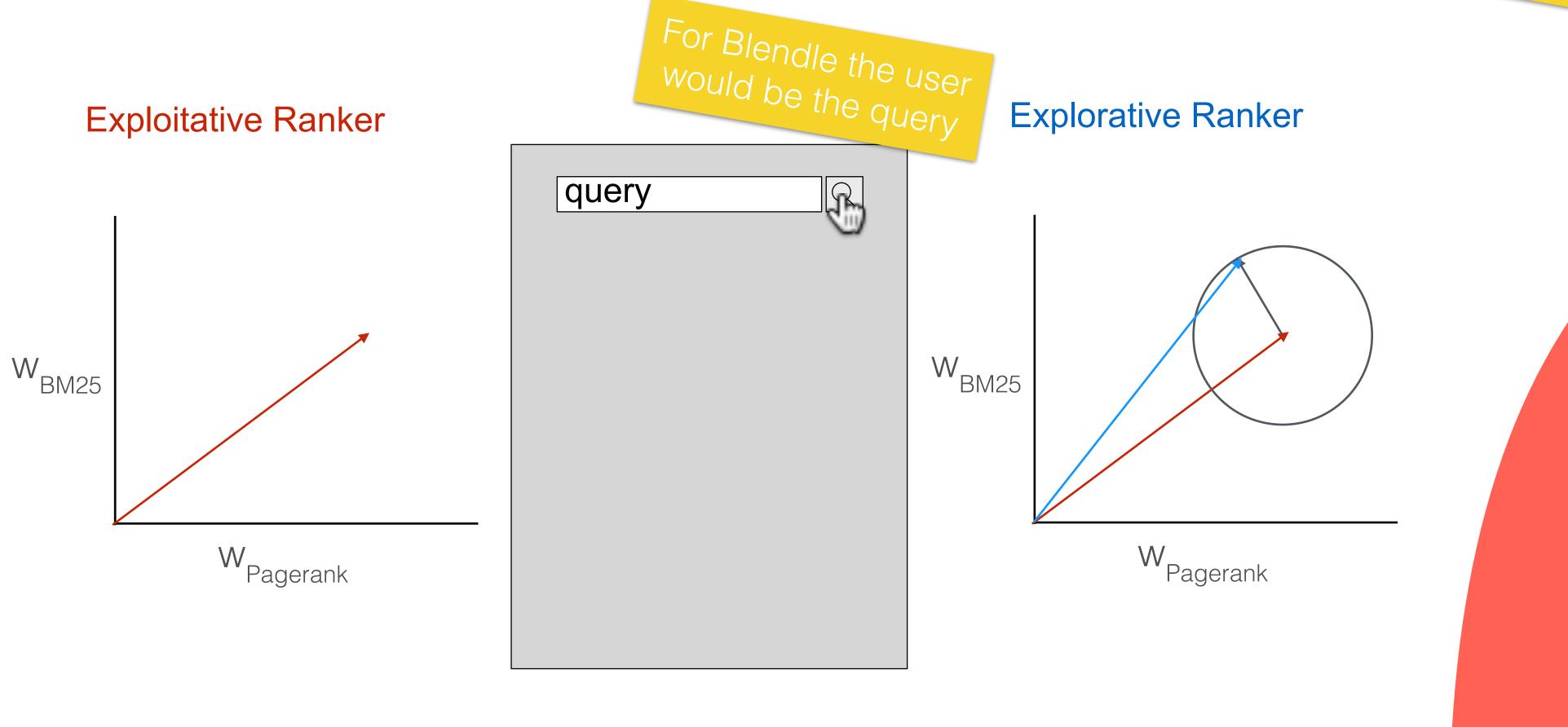
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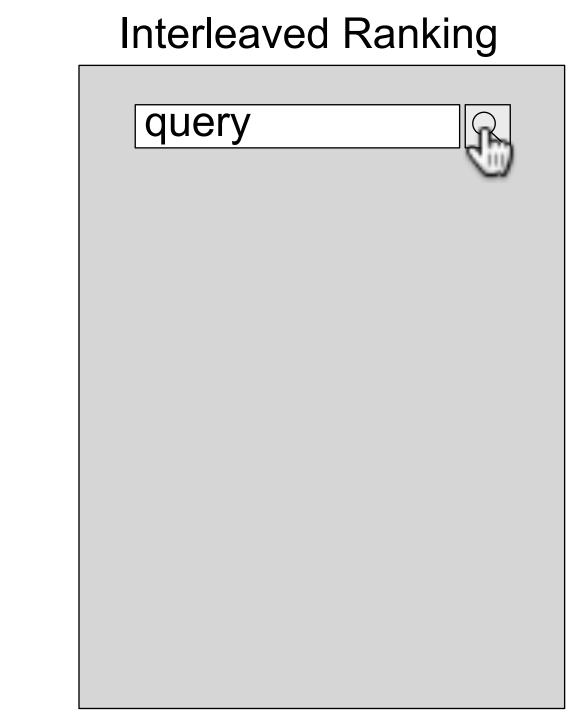
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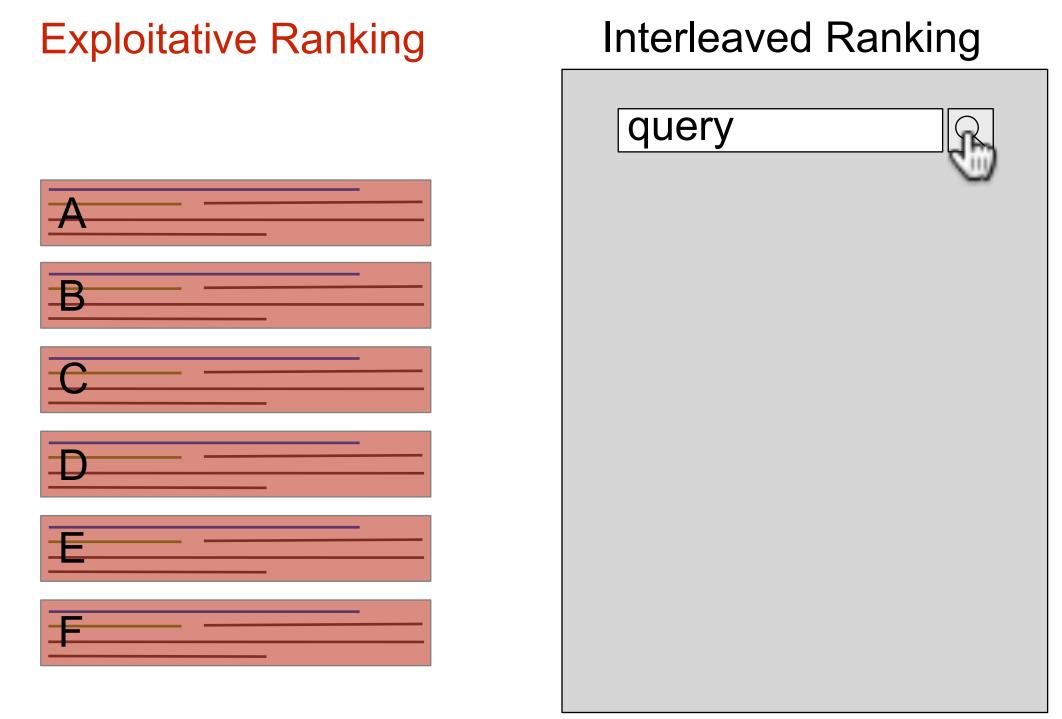
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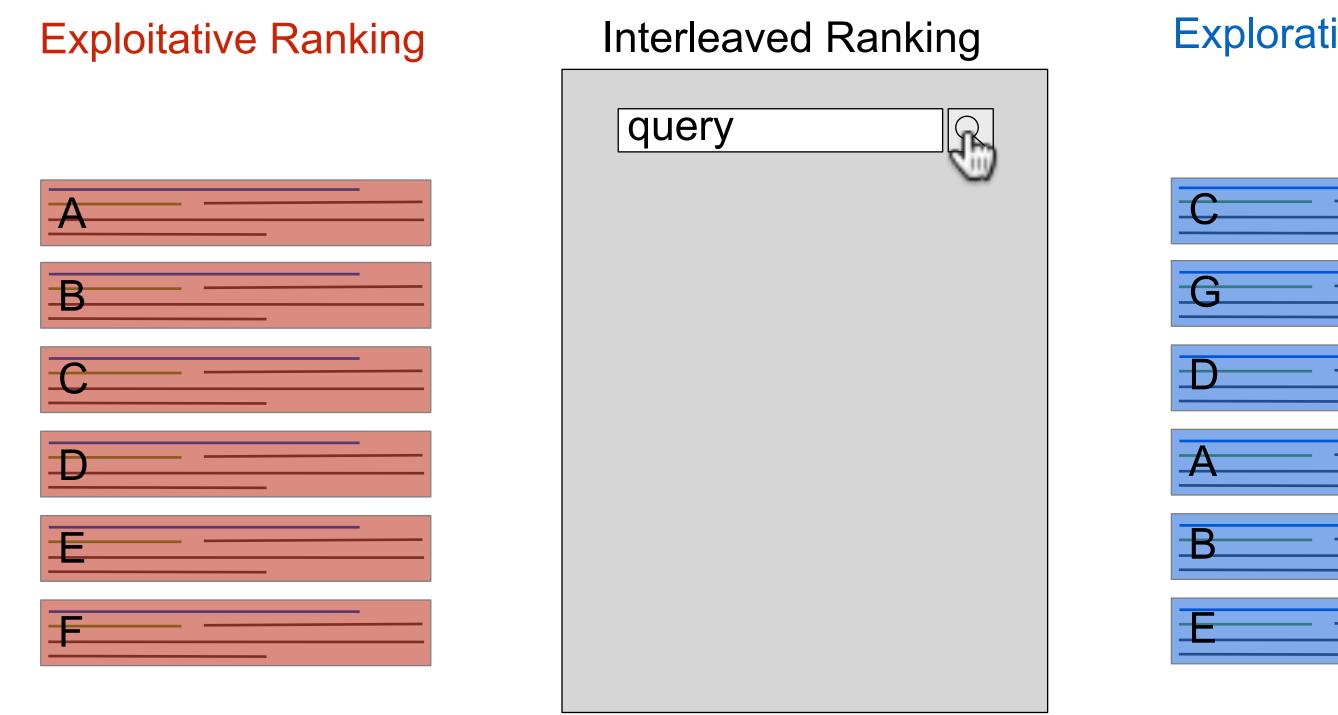








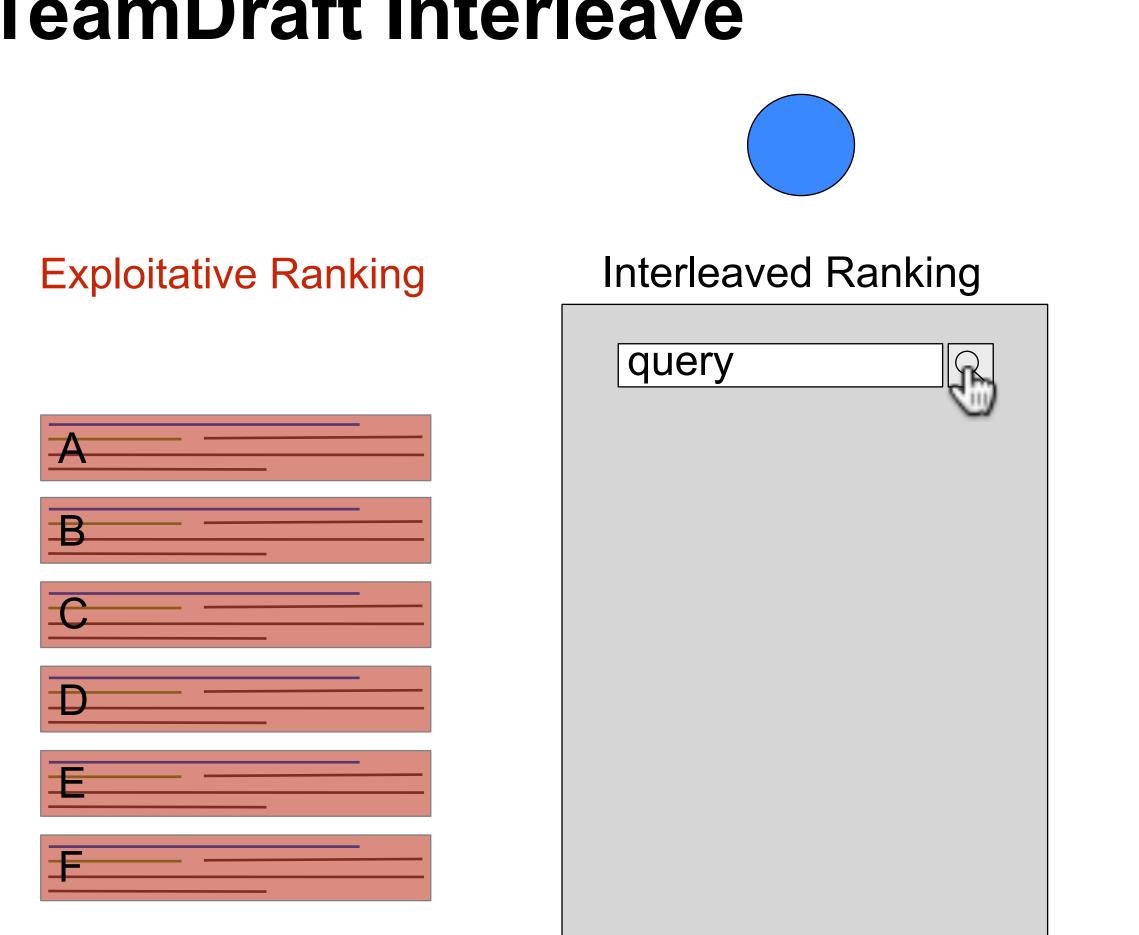






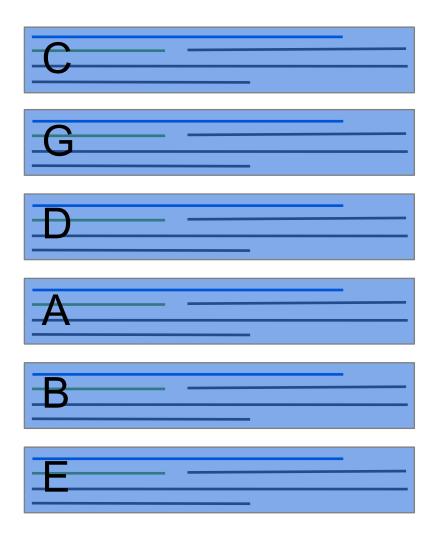


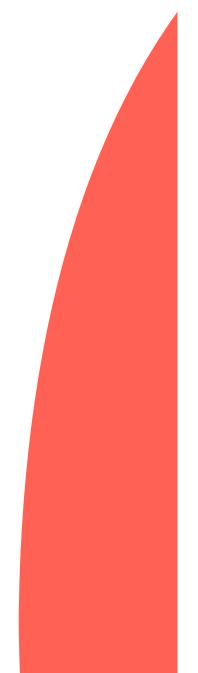
Explorative Ranking

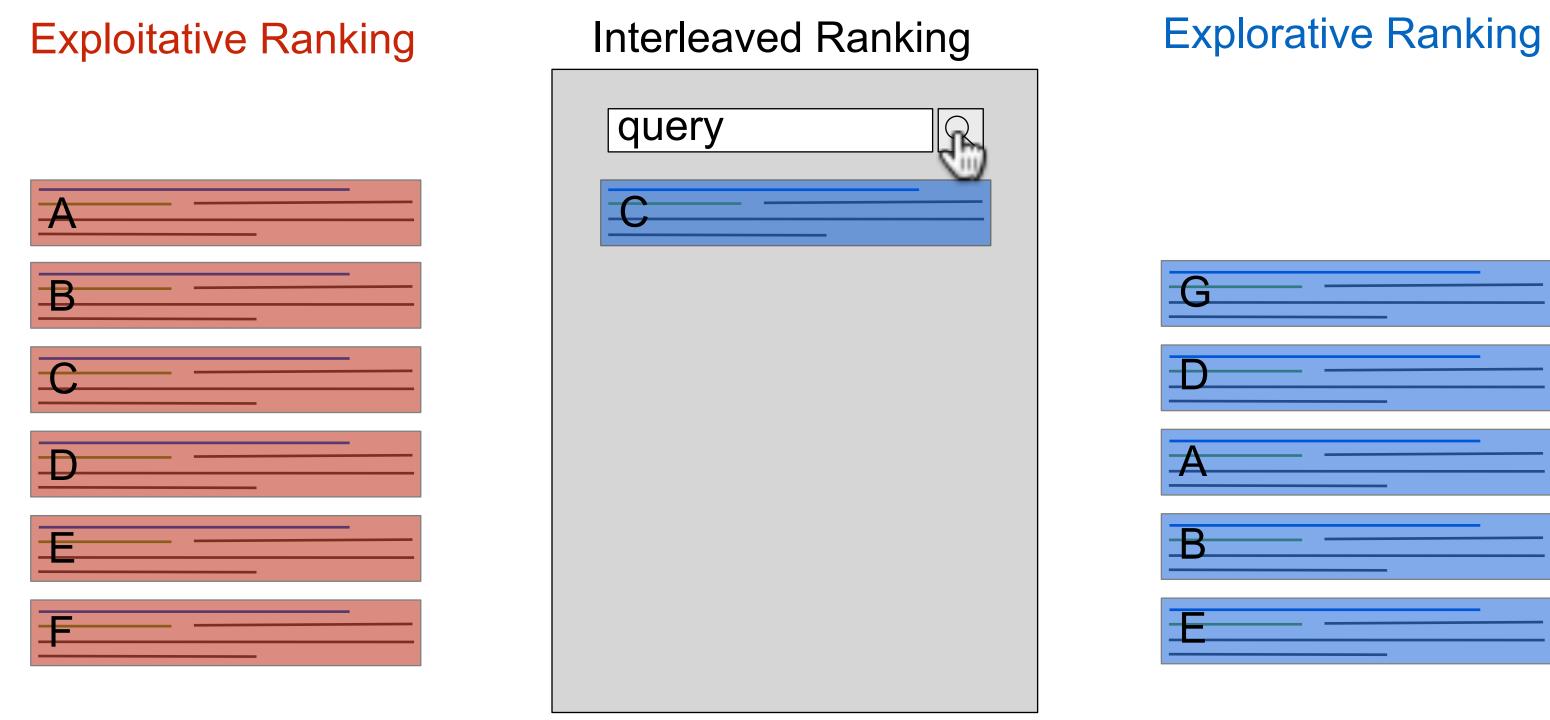




Explorative Ranking

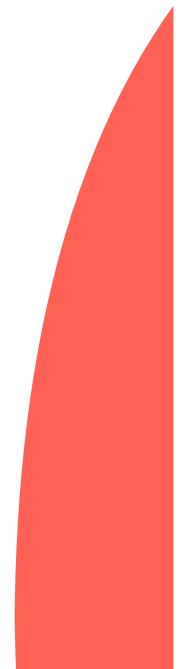




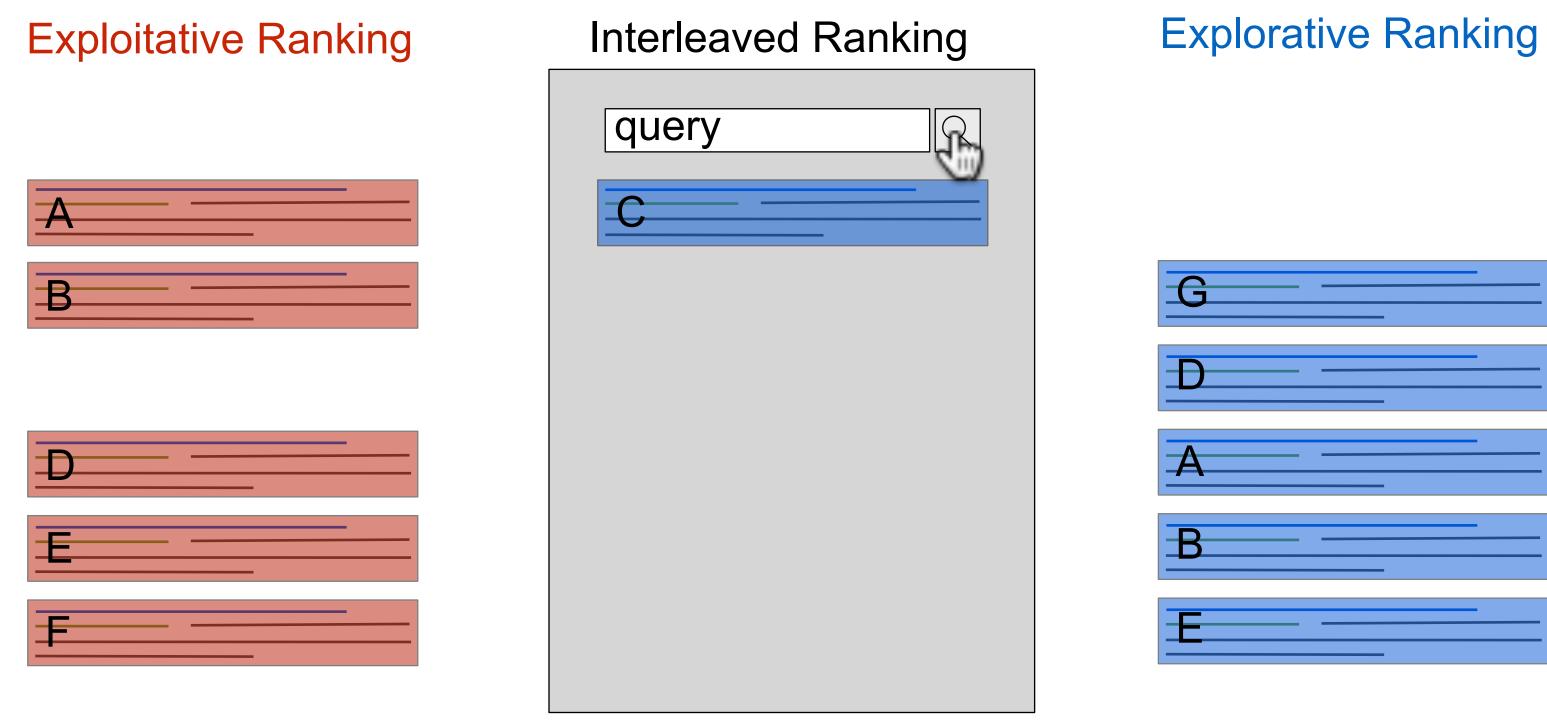






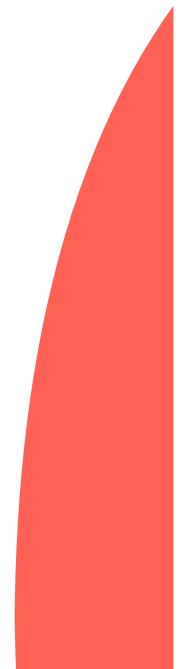




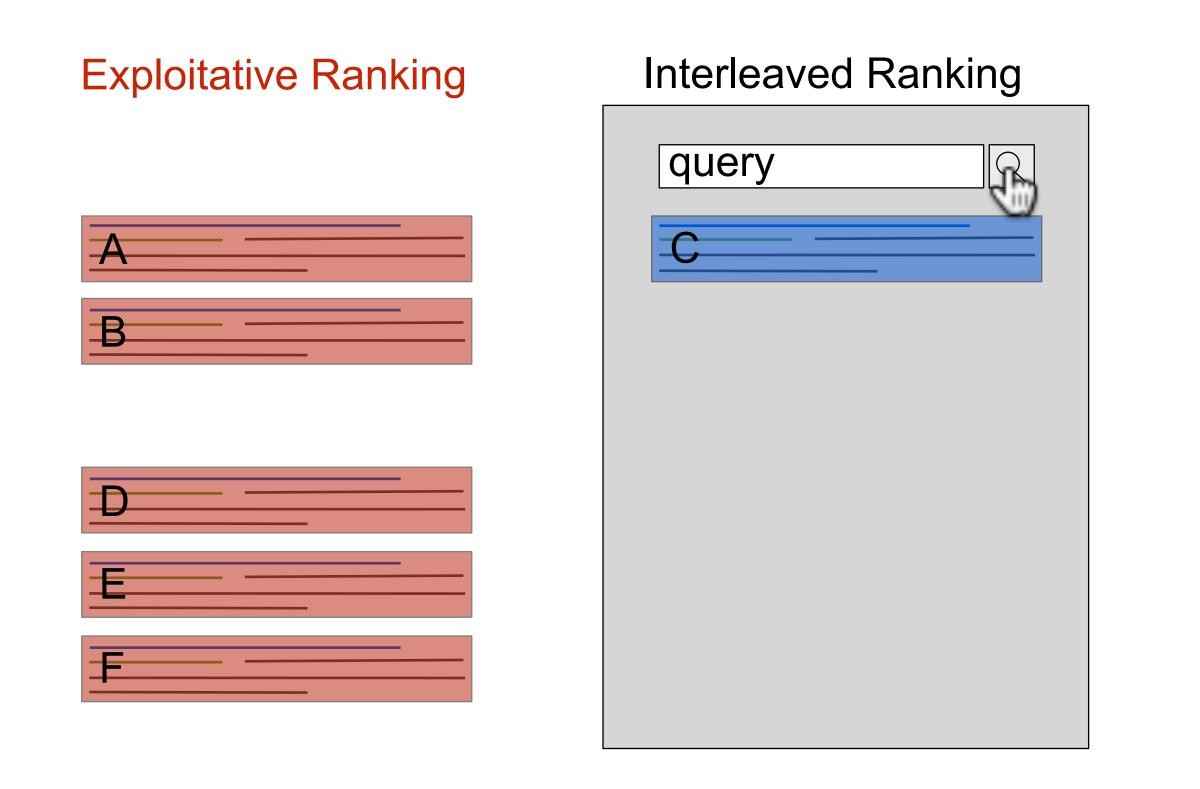








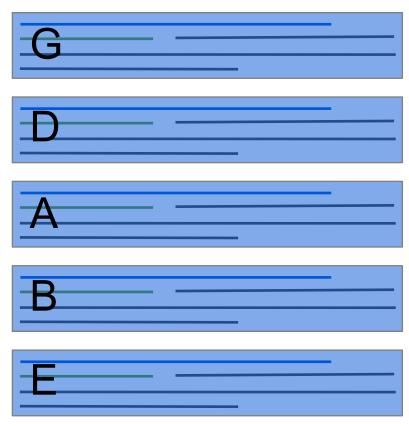


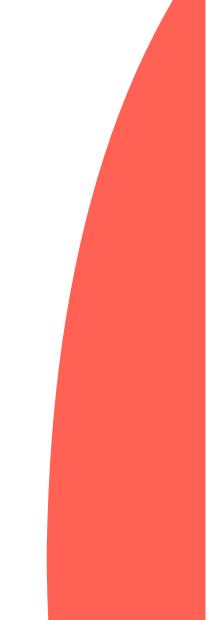


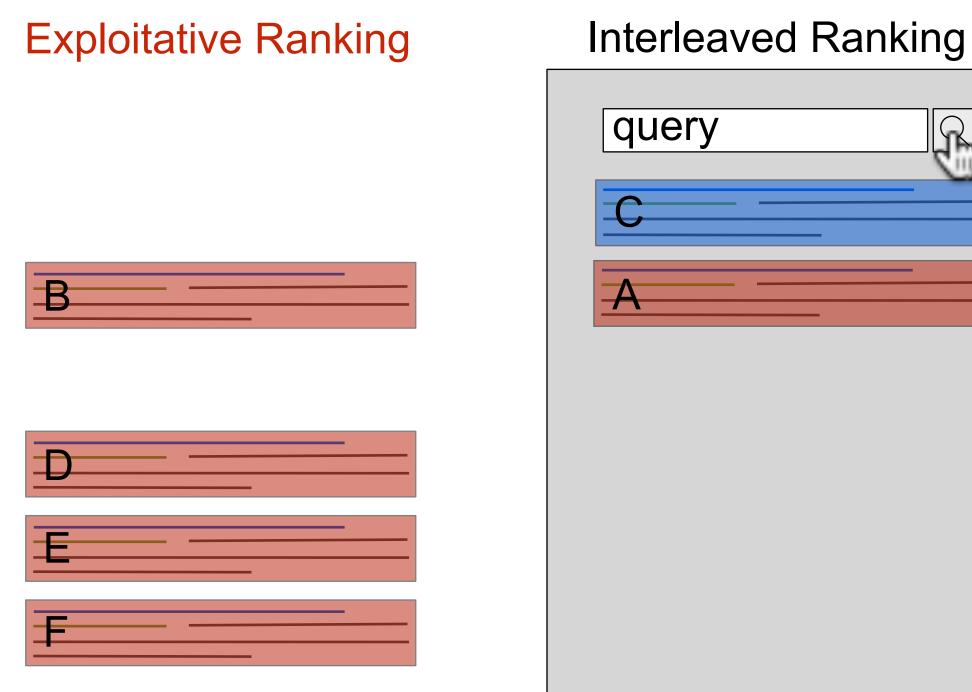




Explorative Ranking





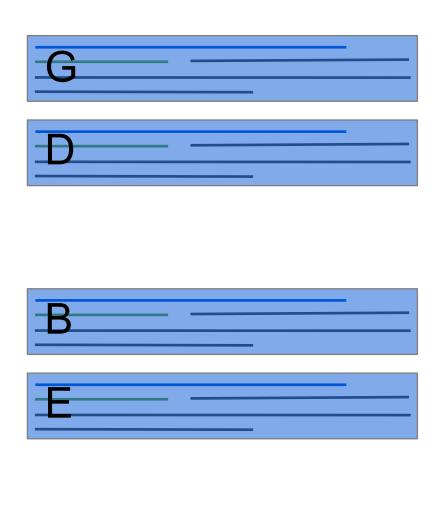


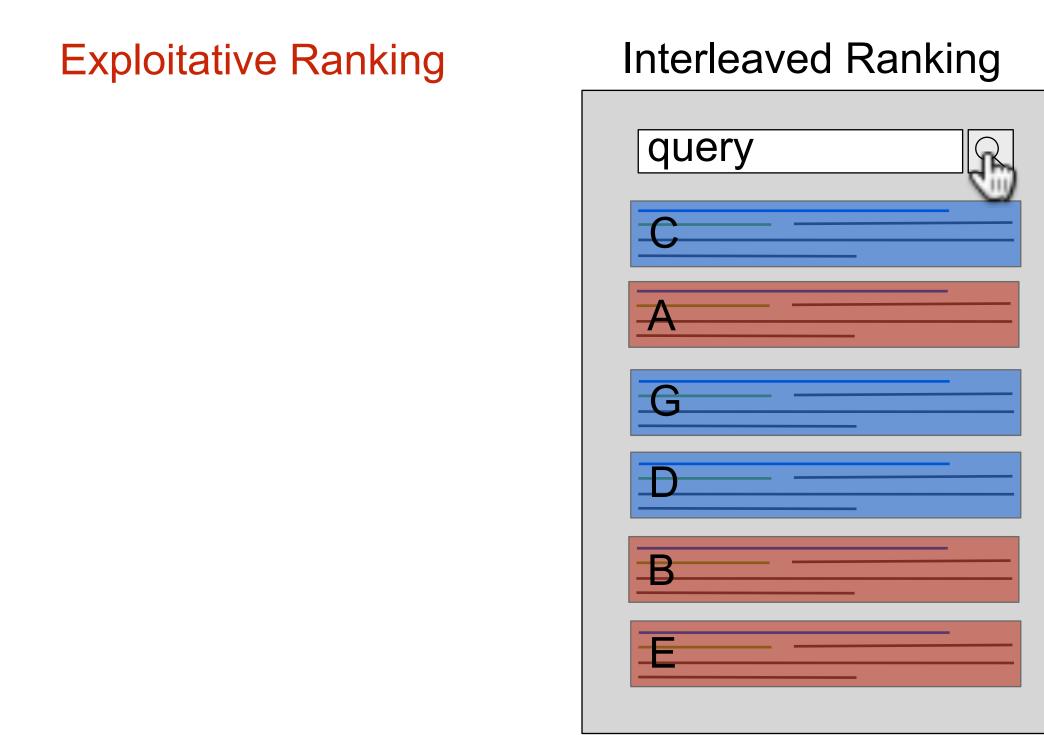




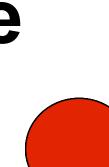
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Explorative Ranking

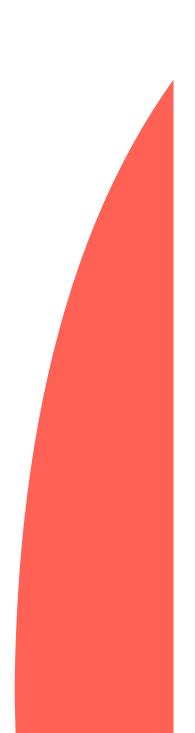




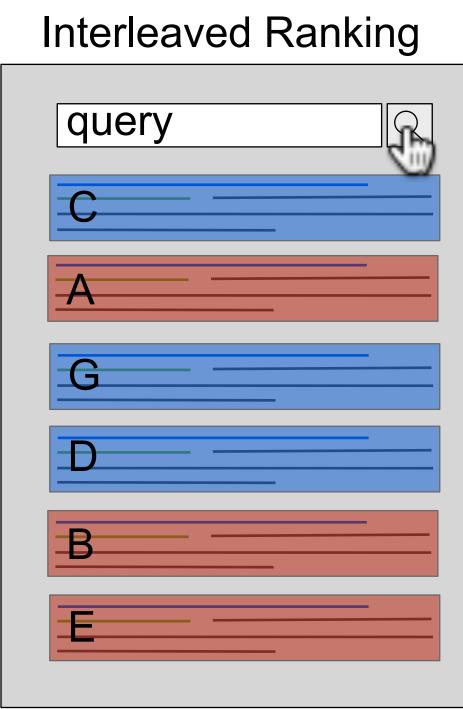
Radlinski, F., Kurup, M., & Joachims, T. (2008). How does clickthrough data reflect retrieval quality? In CIKM '08.



Explorative Ranking

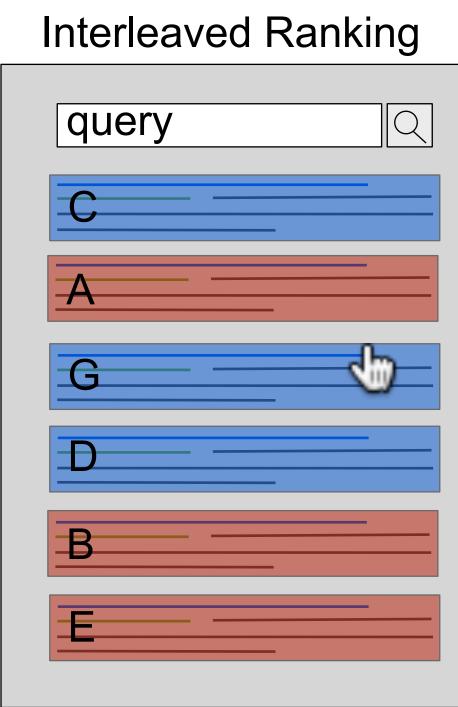






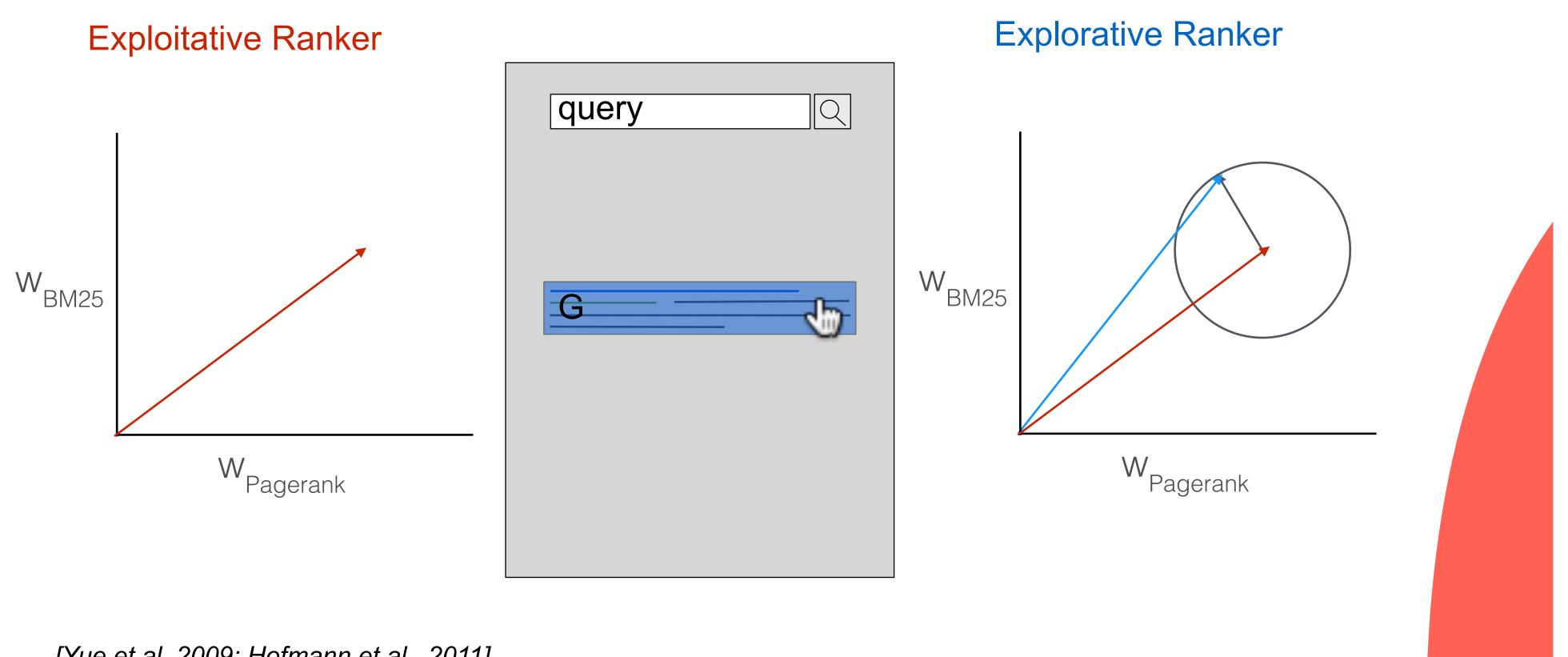






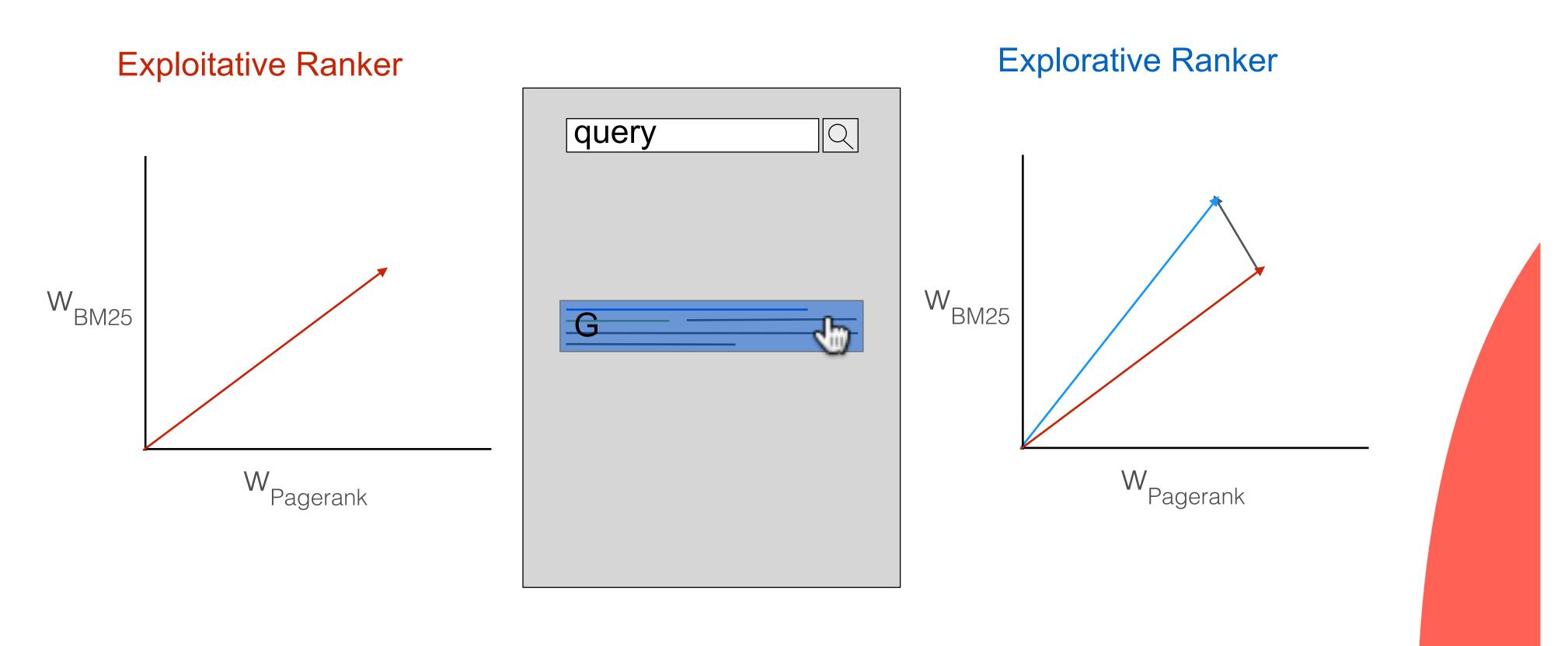






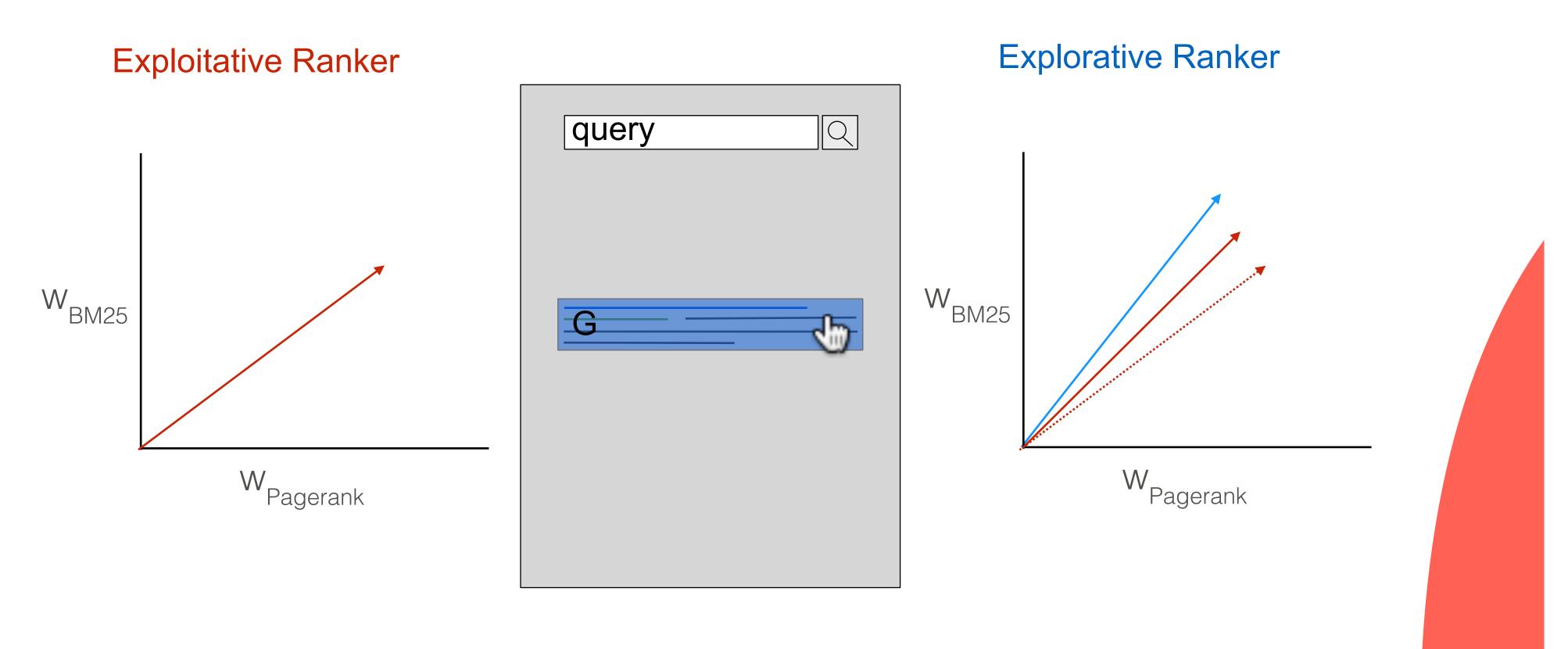
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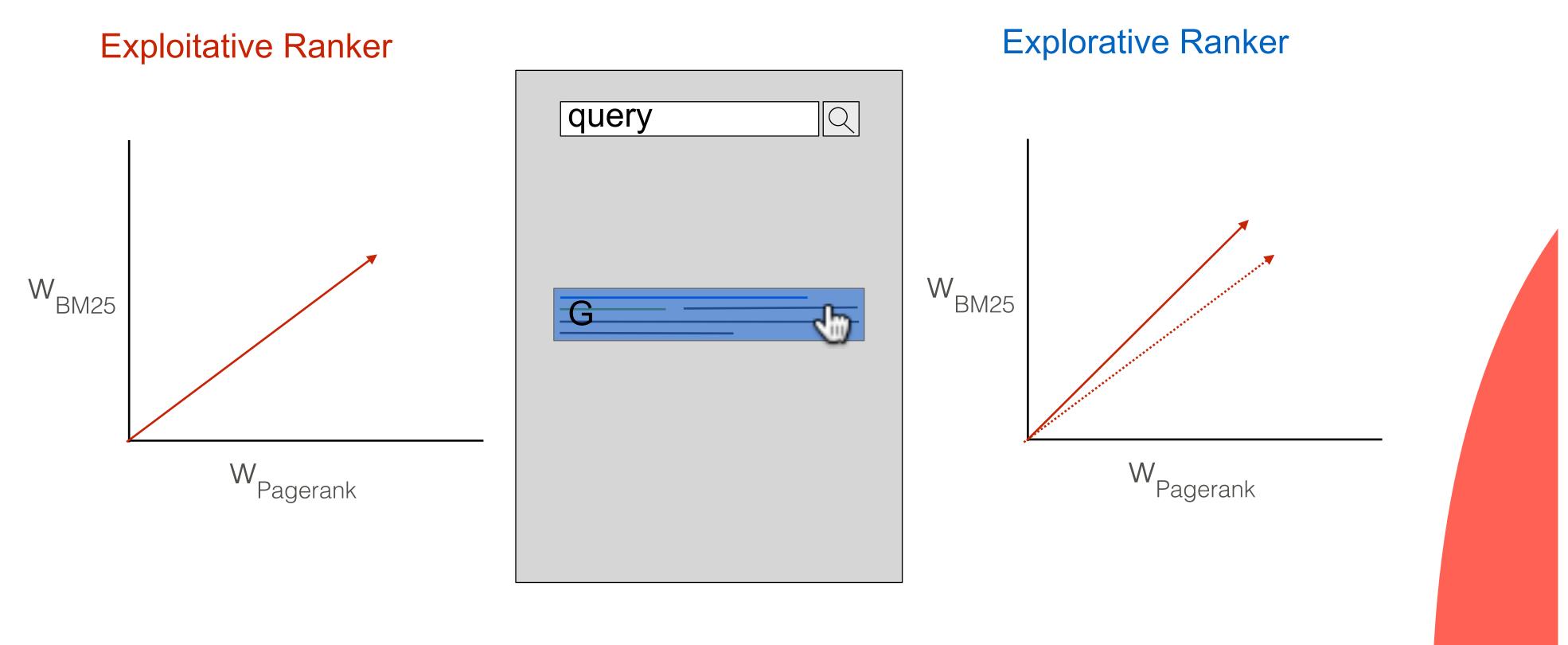
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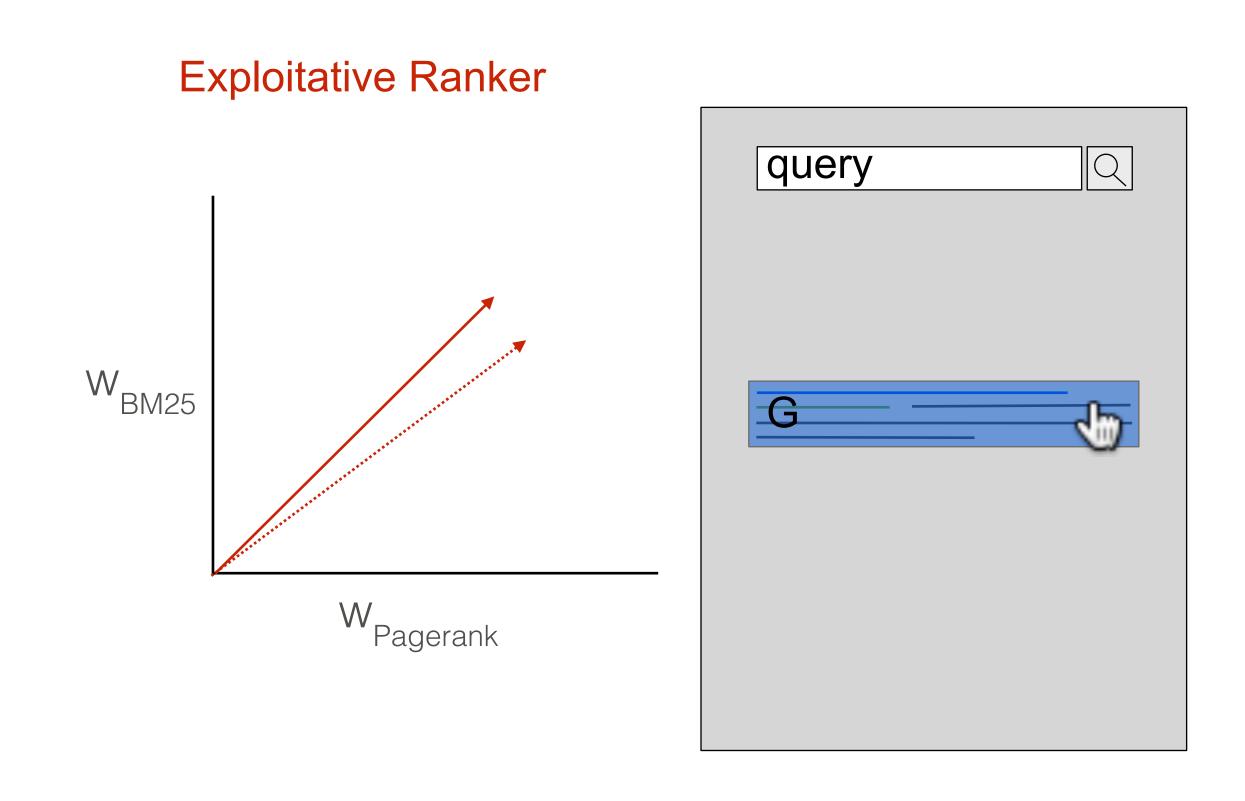
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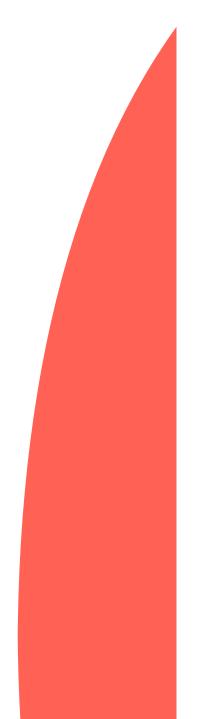
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[Yue et al, 2009; Hofmann et al., 2011]







Offline vs Online

Offline Learning

M Better studied, so more ML tools.

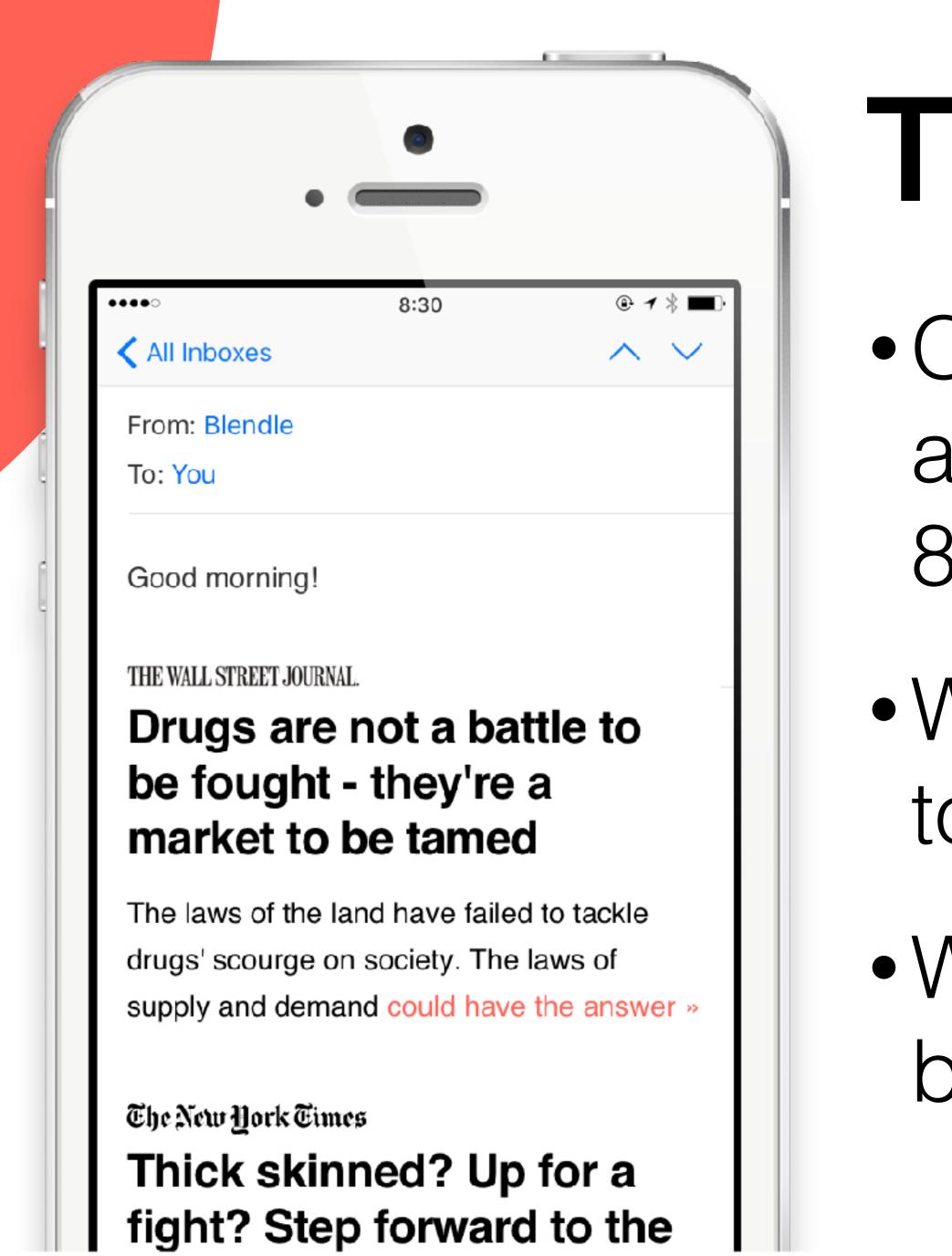
Not easily adaptable as things change.

Often (but not always) the method requires explicit annotations.

Online Learning

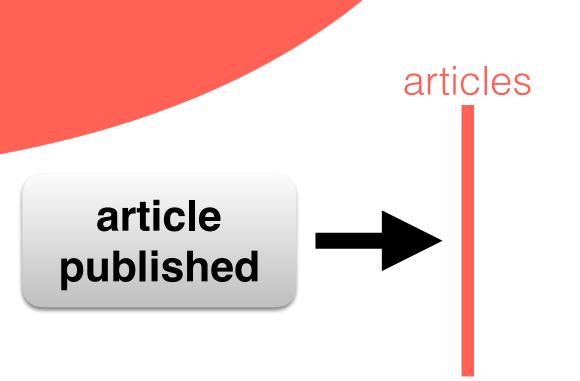
- **M** Better for a dynamic environnement
- More sample efficient since the algorithm plays an active role.
 - Can't (easily) go back and retrain.



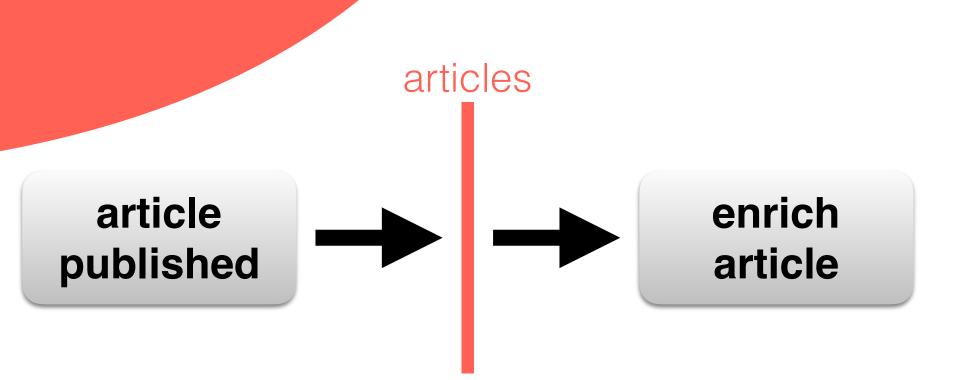


Timing problem

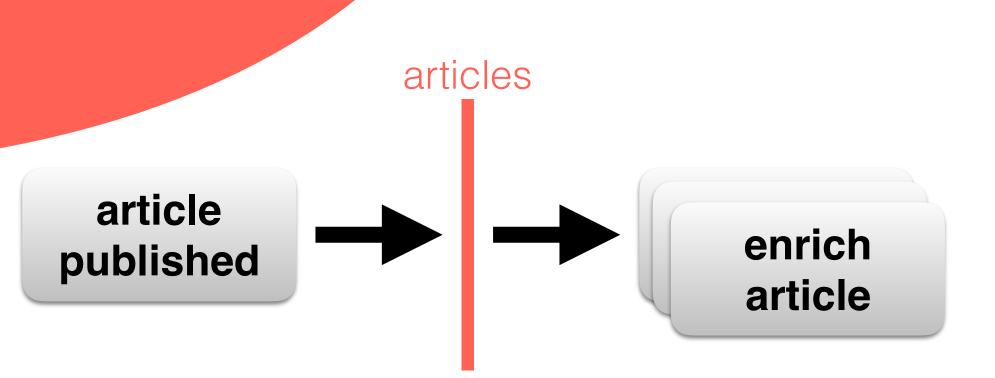
- Our editors wake up at 5am and are done reading at 8am
- Which is also when we want to send our newsletter
- We simply can't wait for a batch process



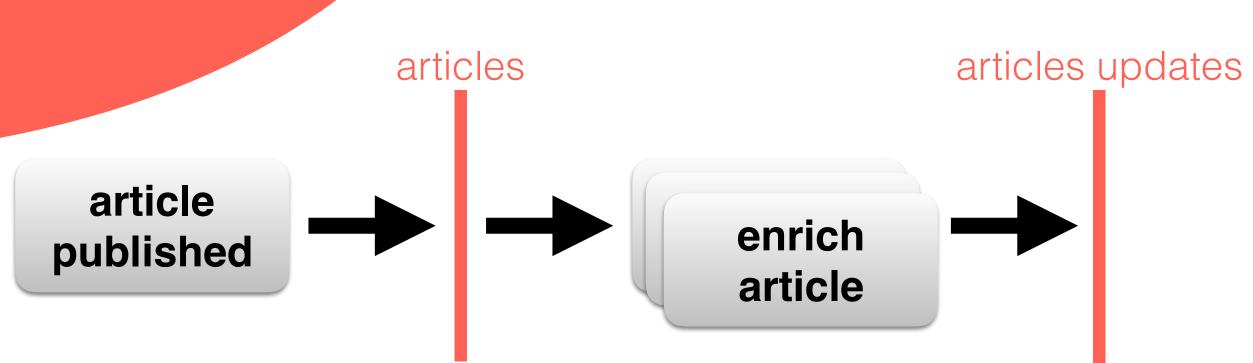




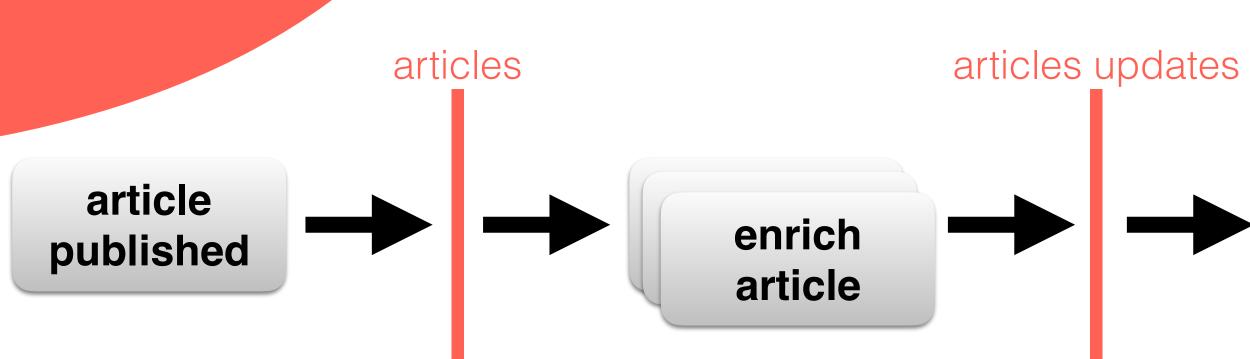






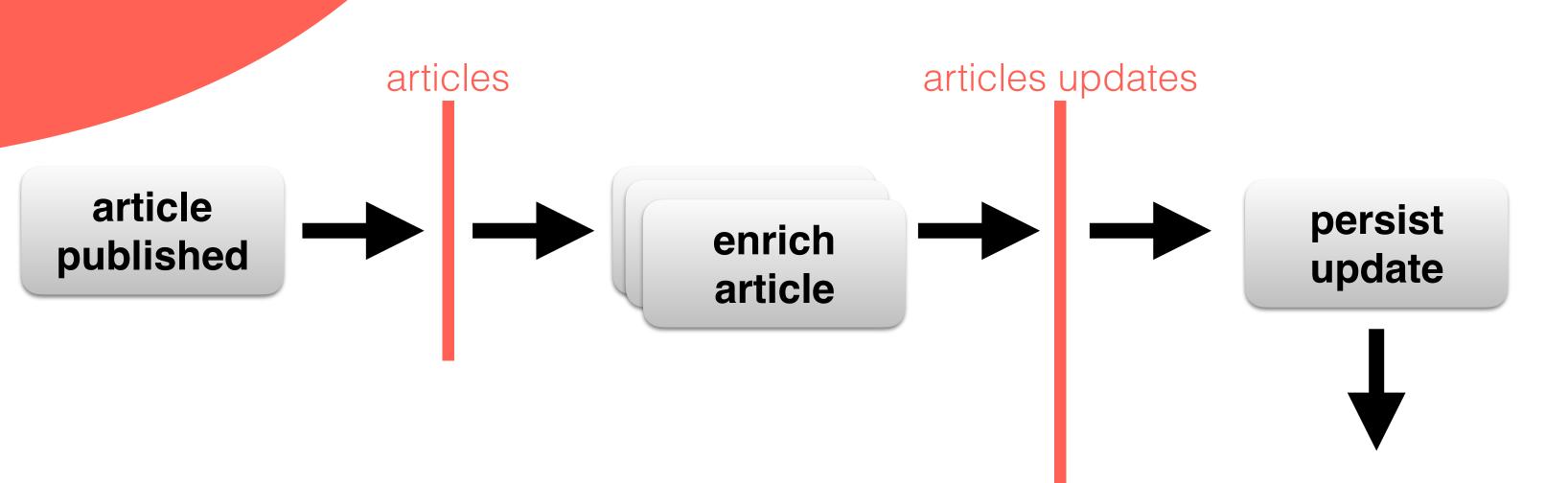




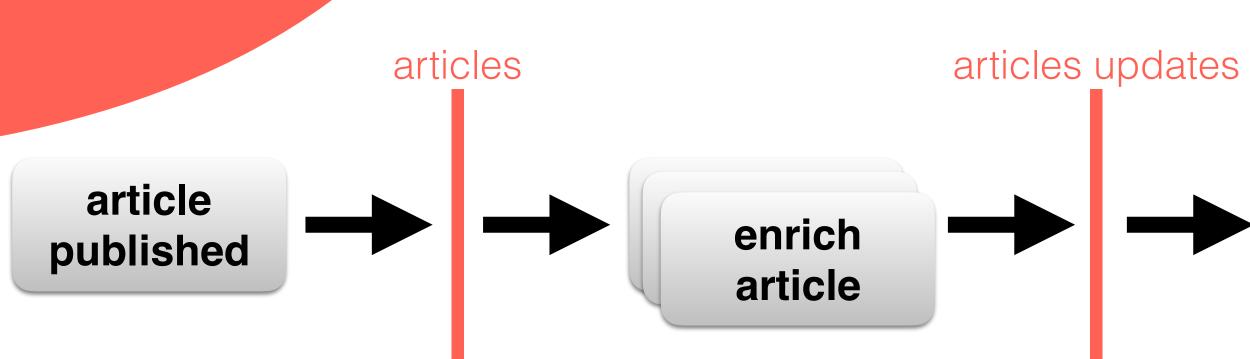




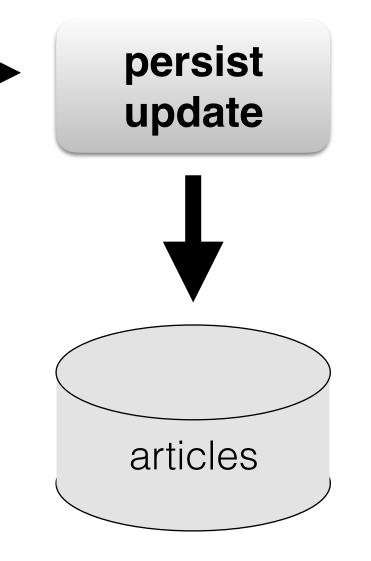
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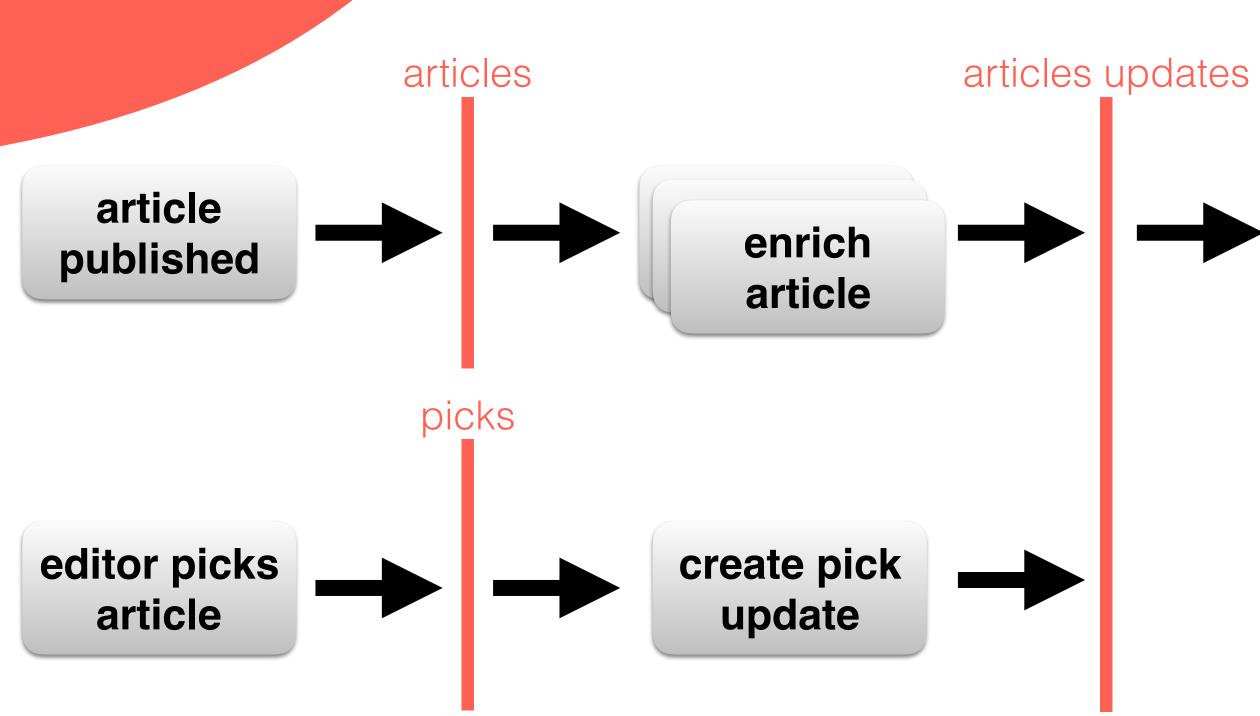




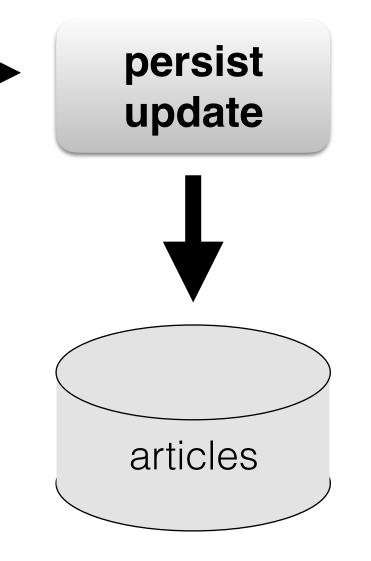


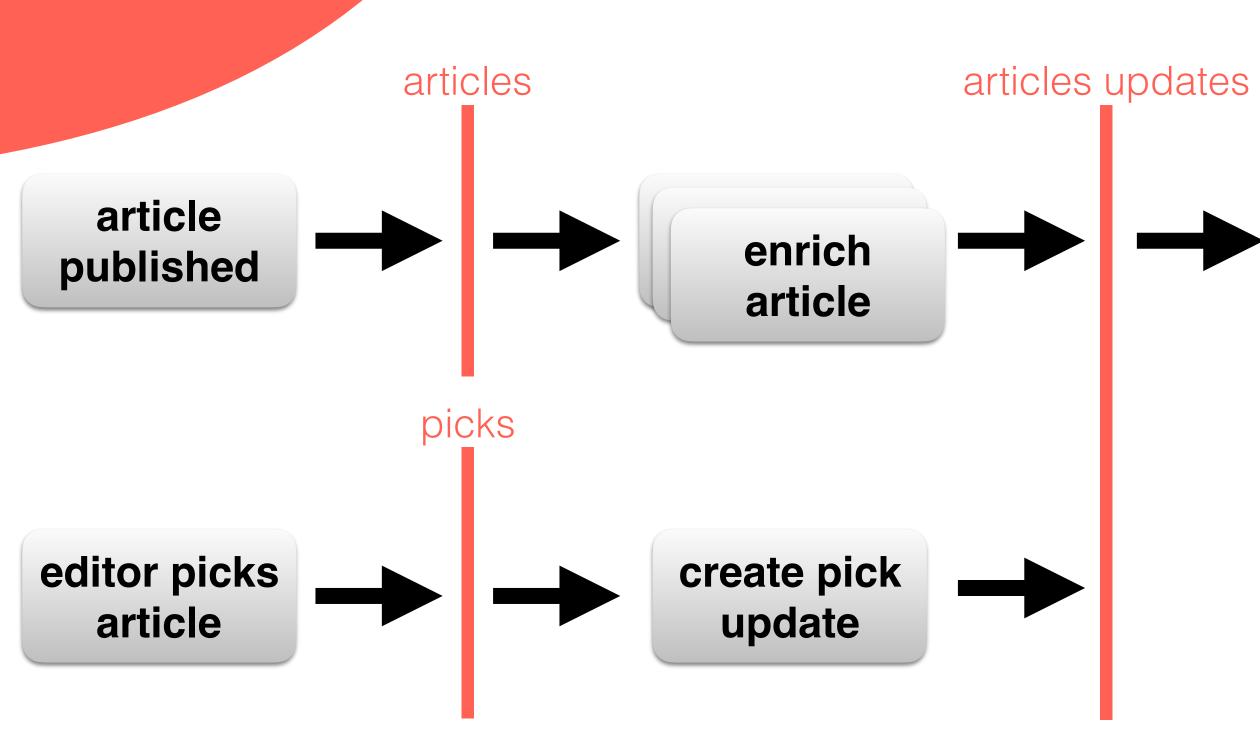




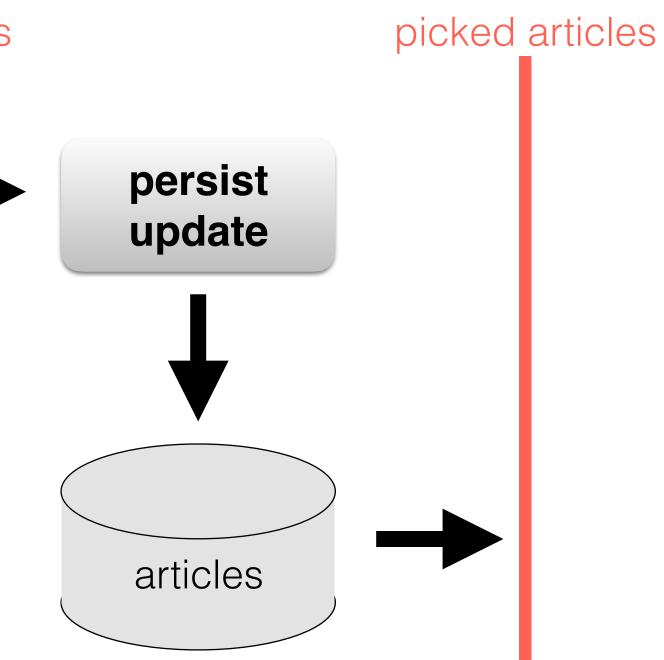


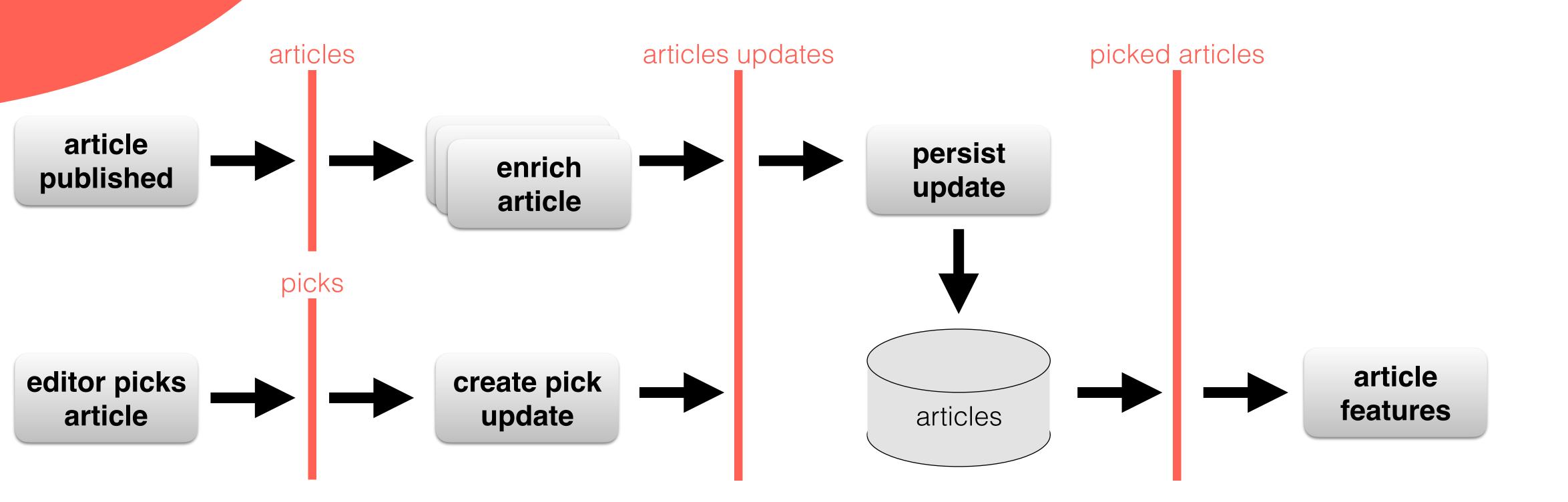




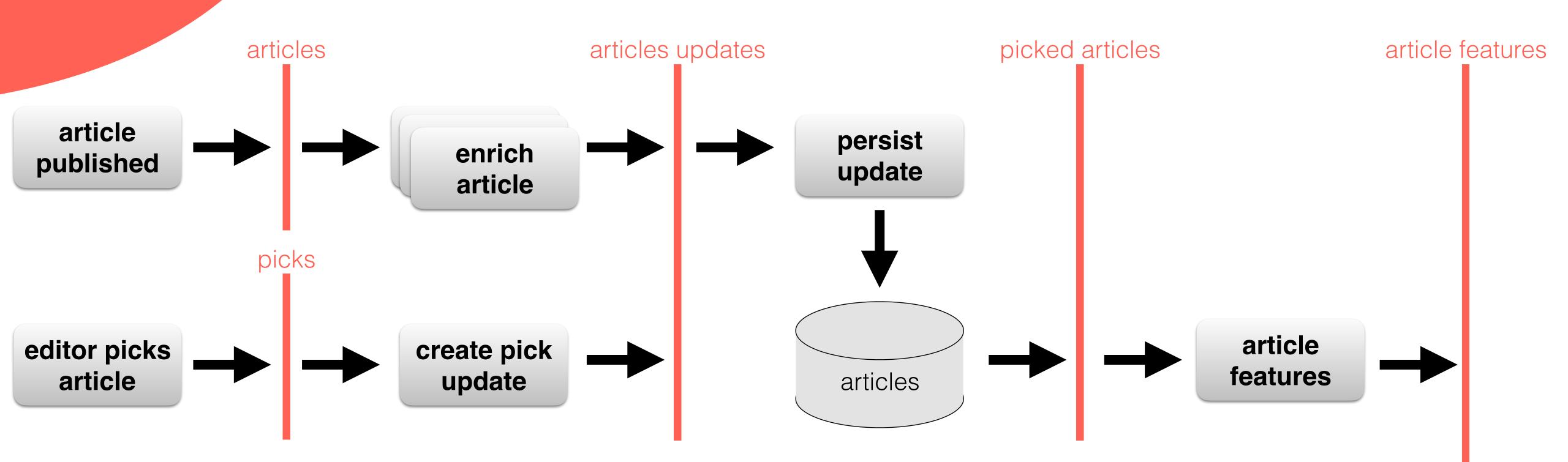




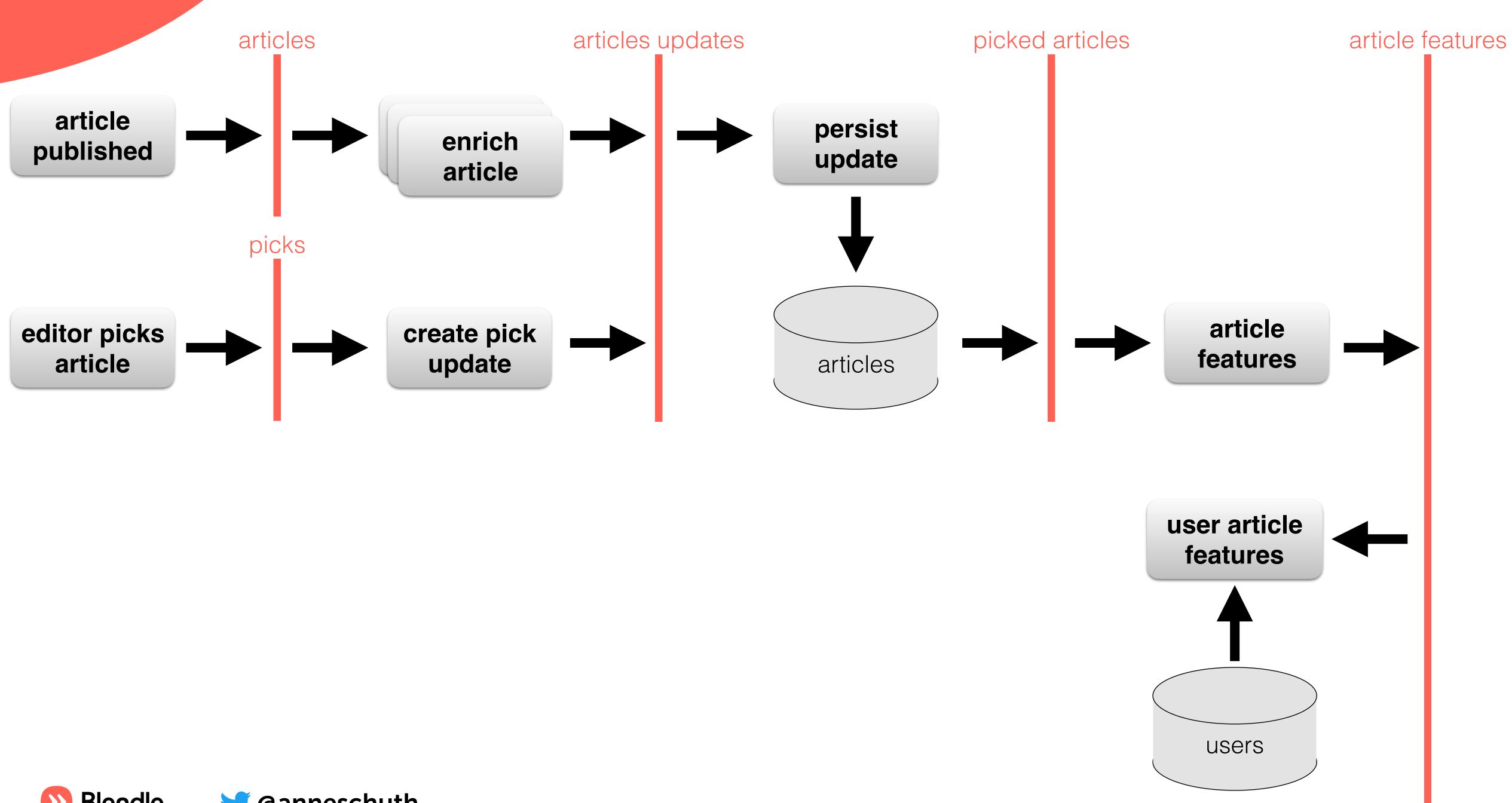




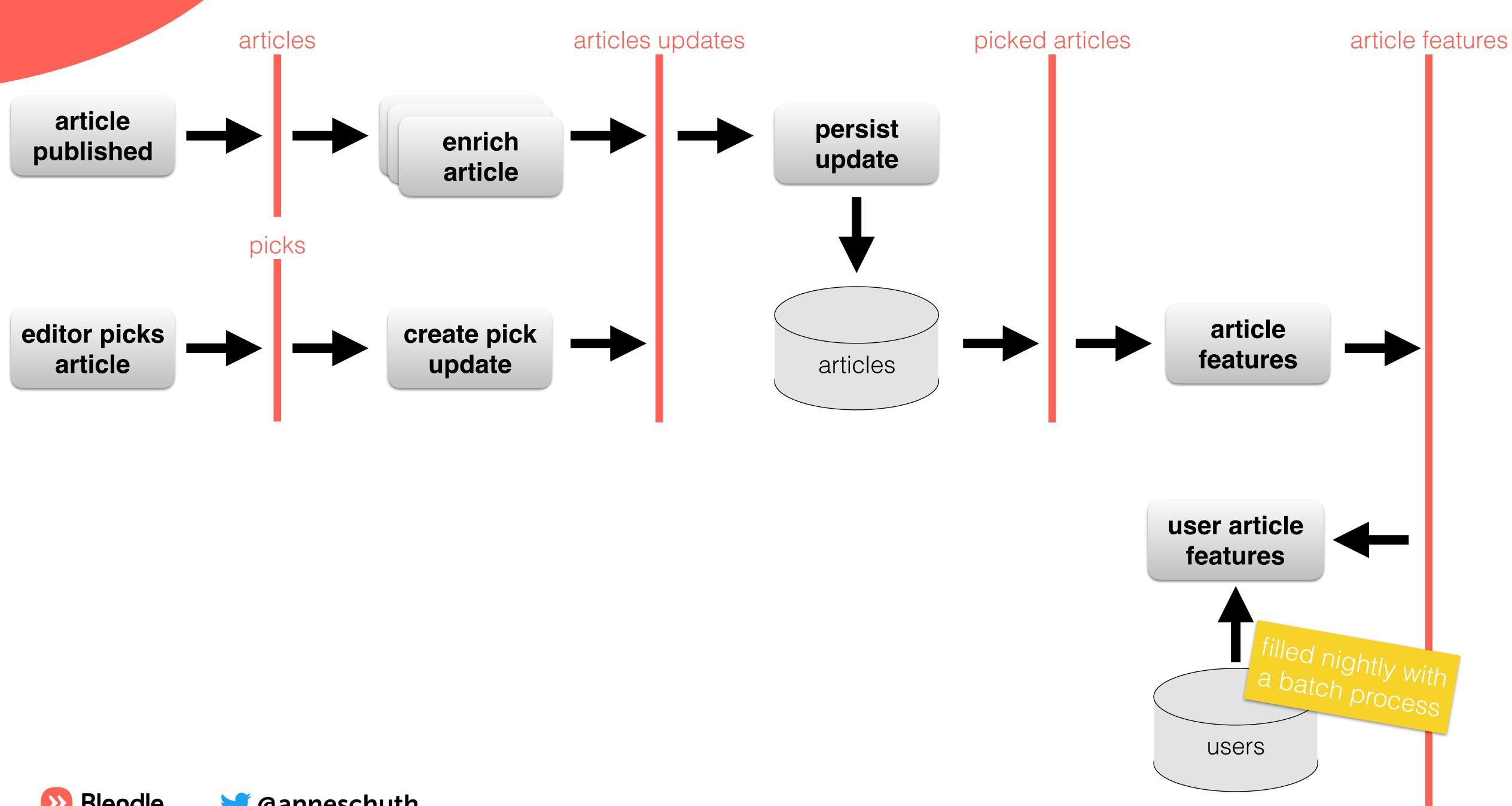




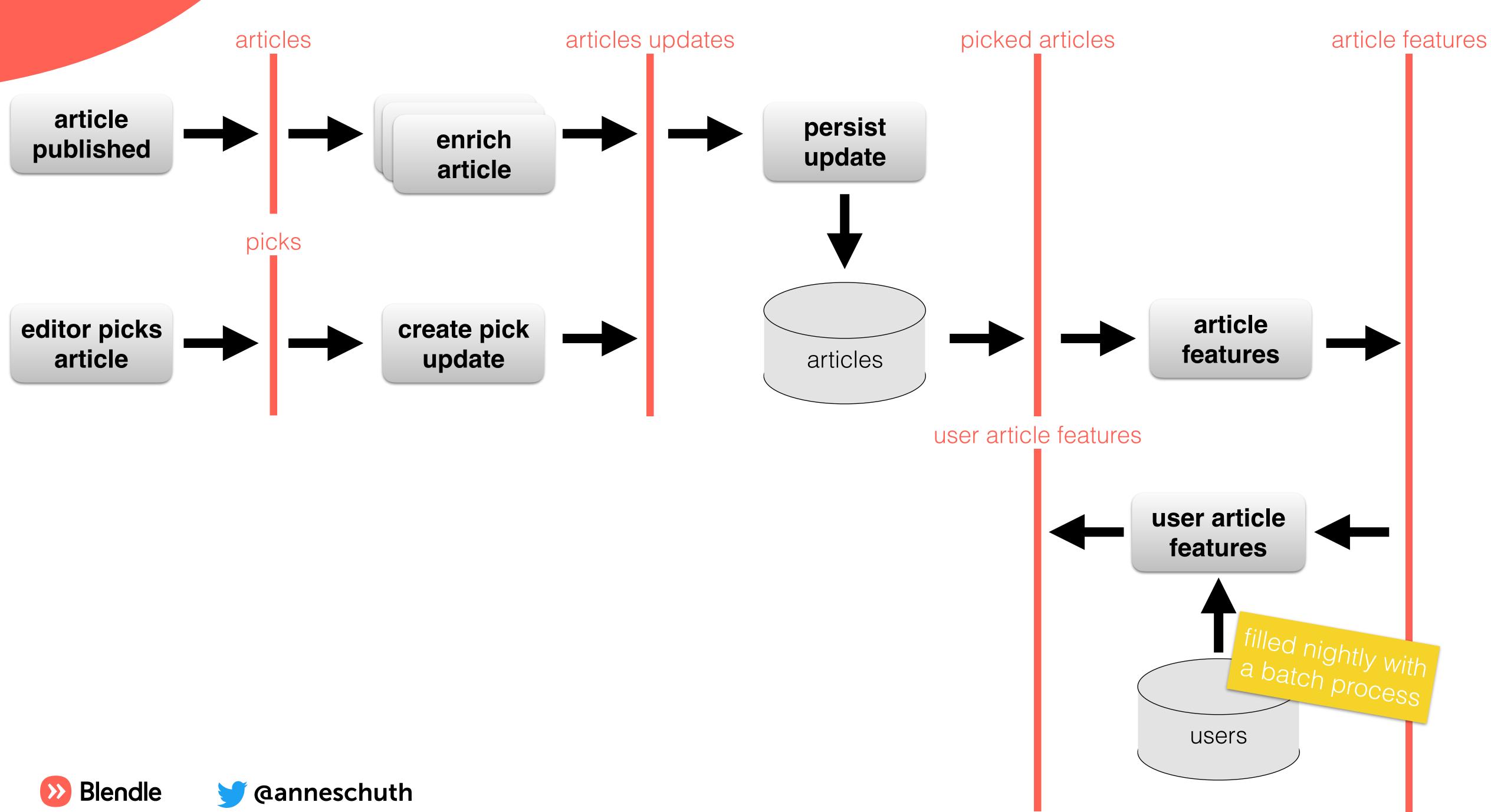




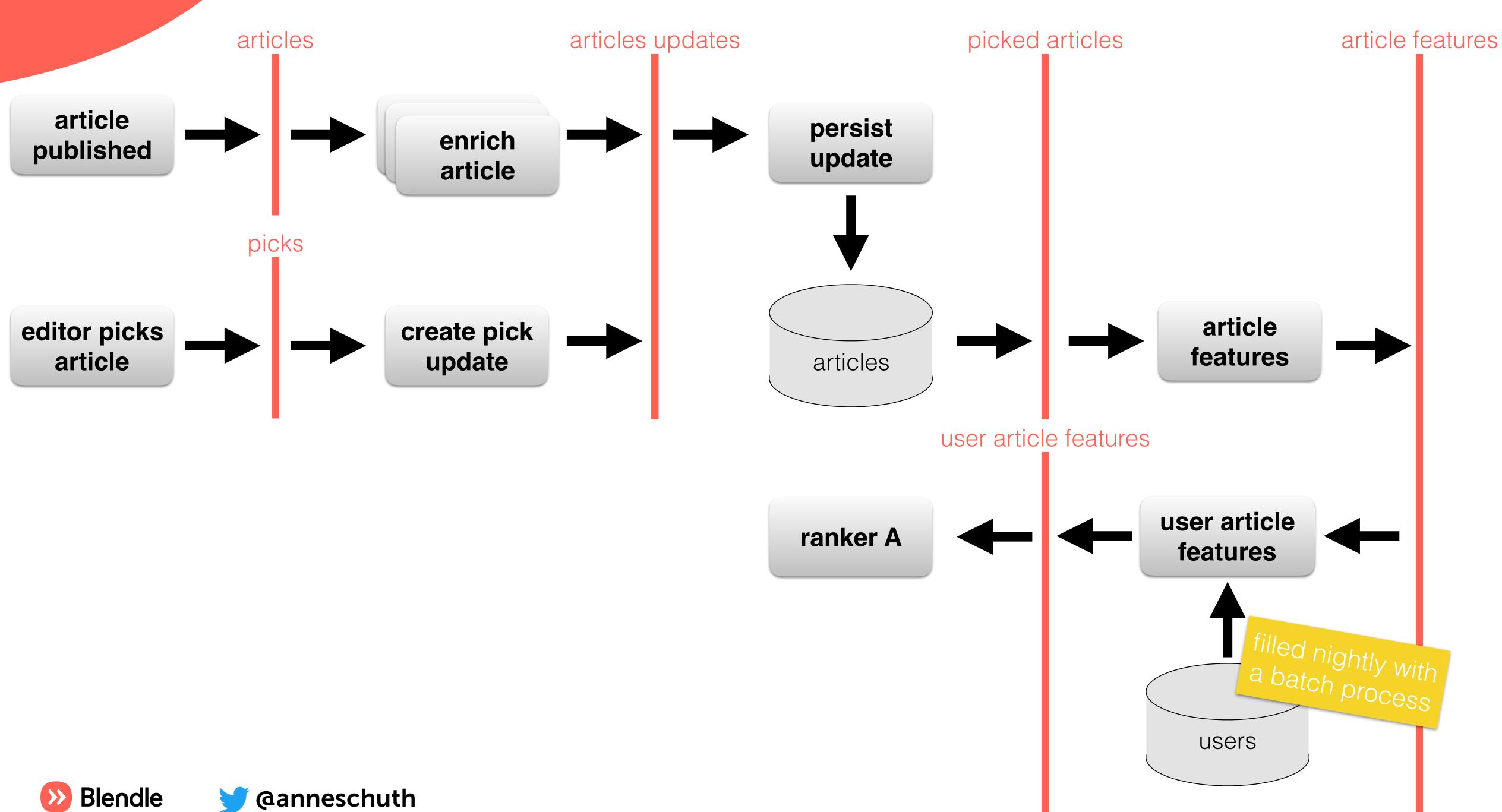




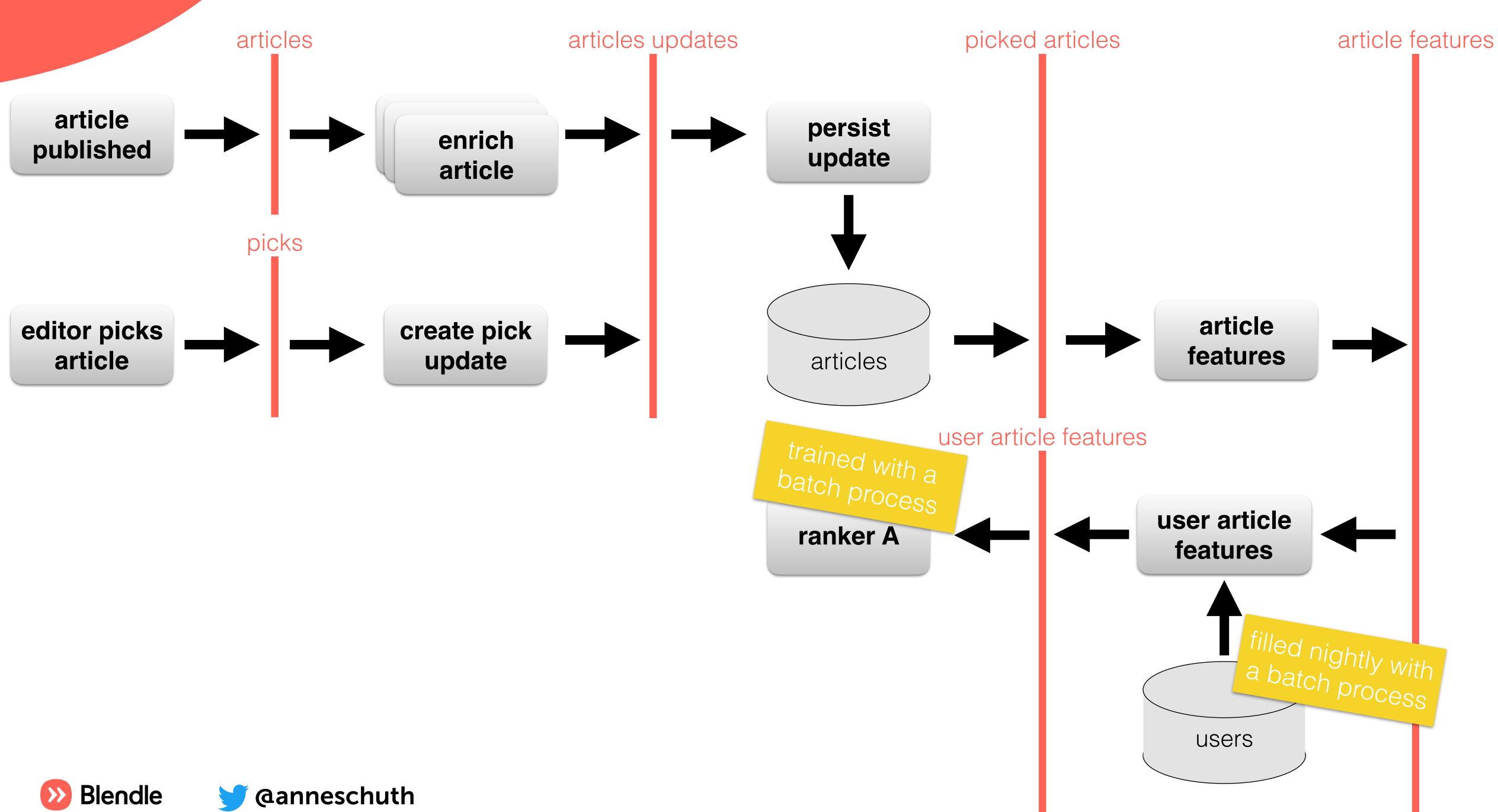




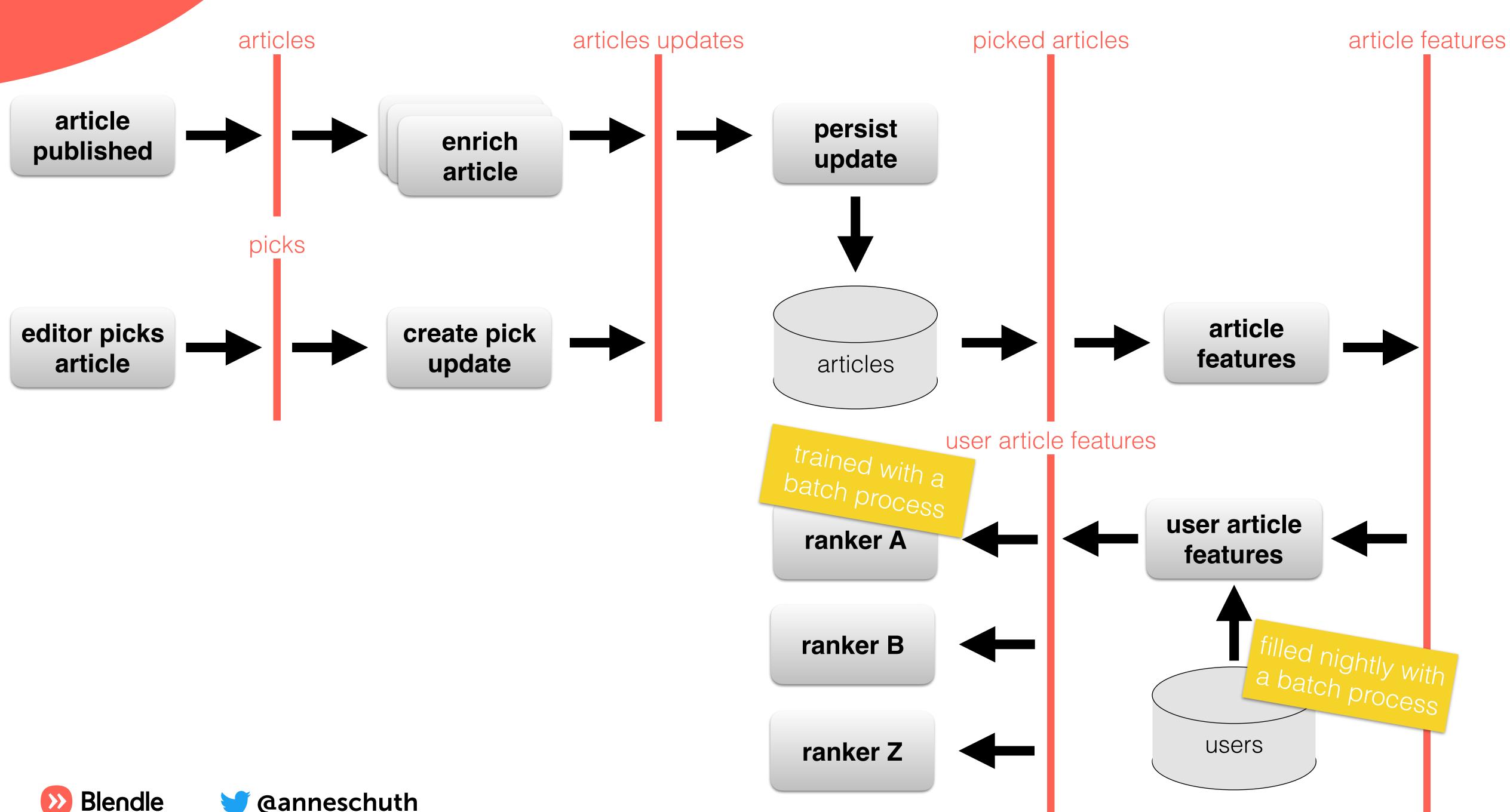




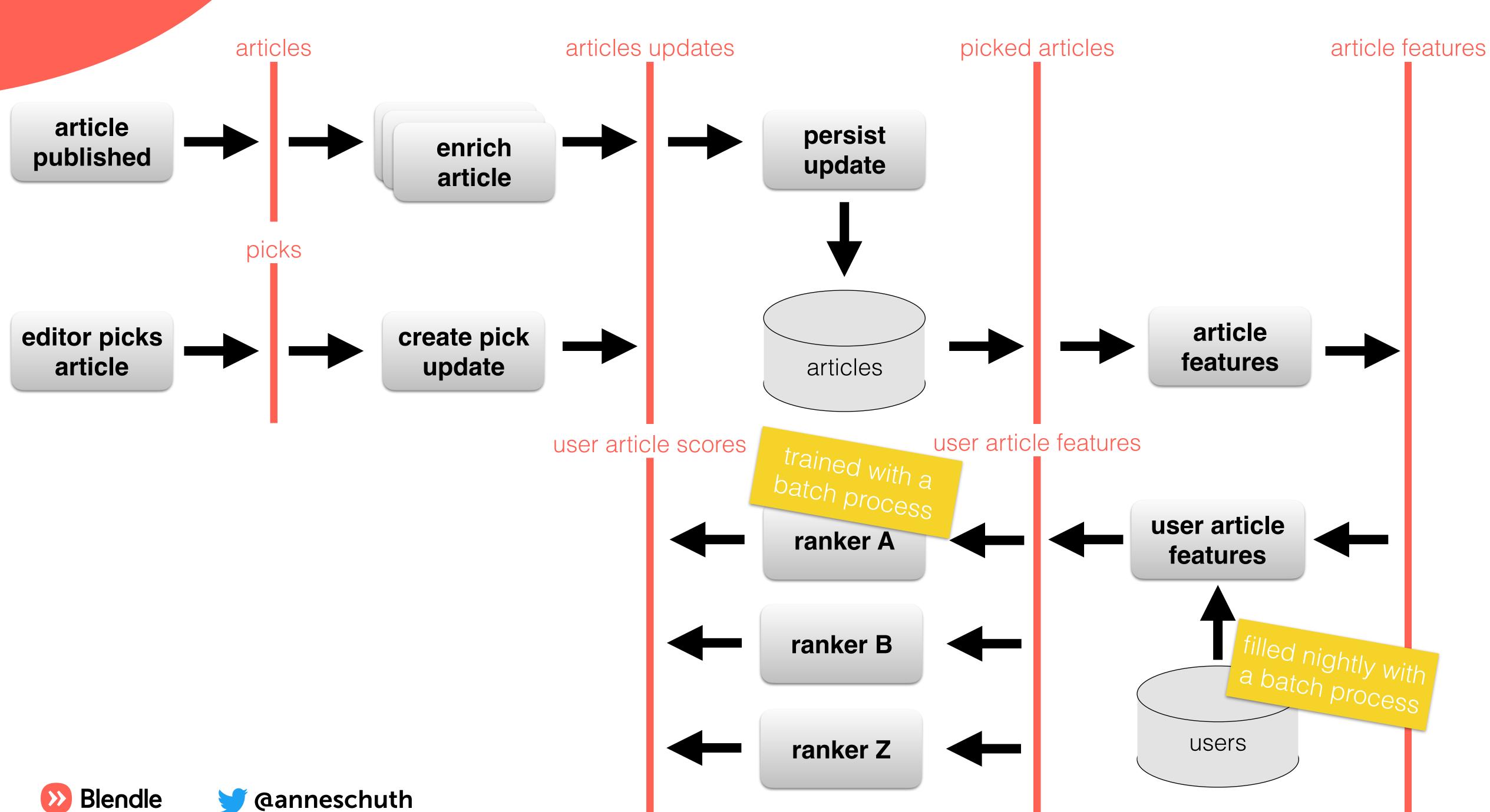




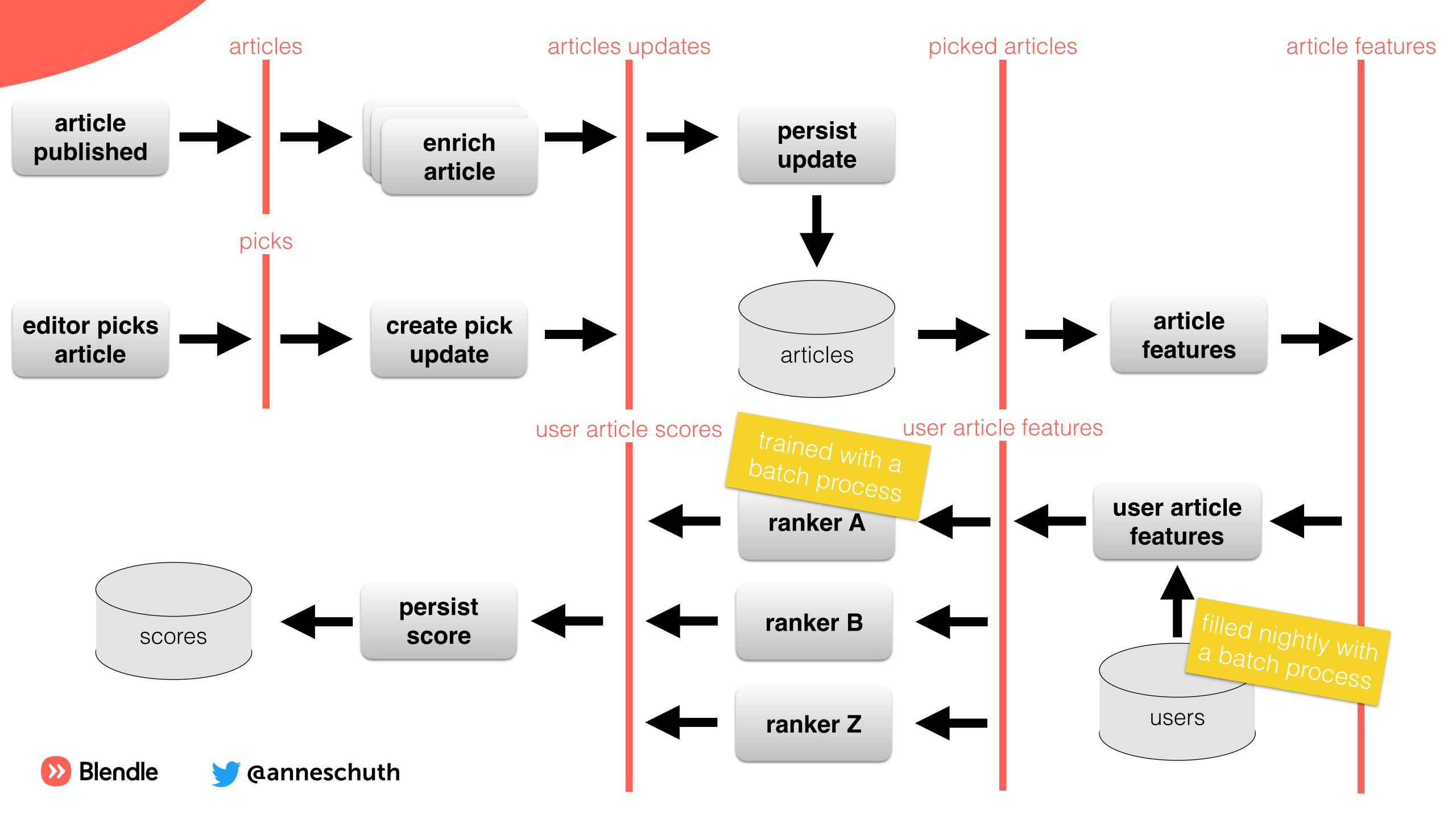


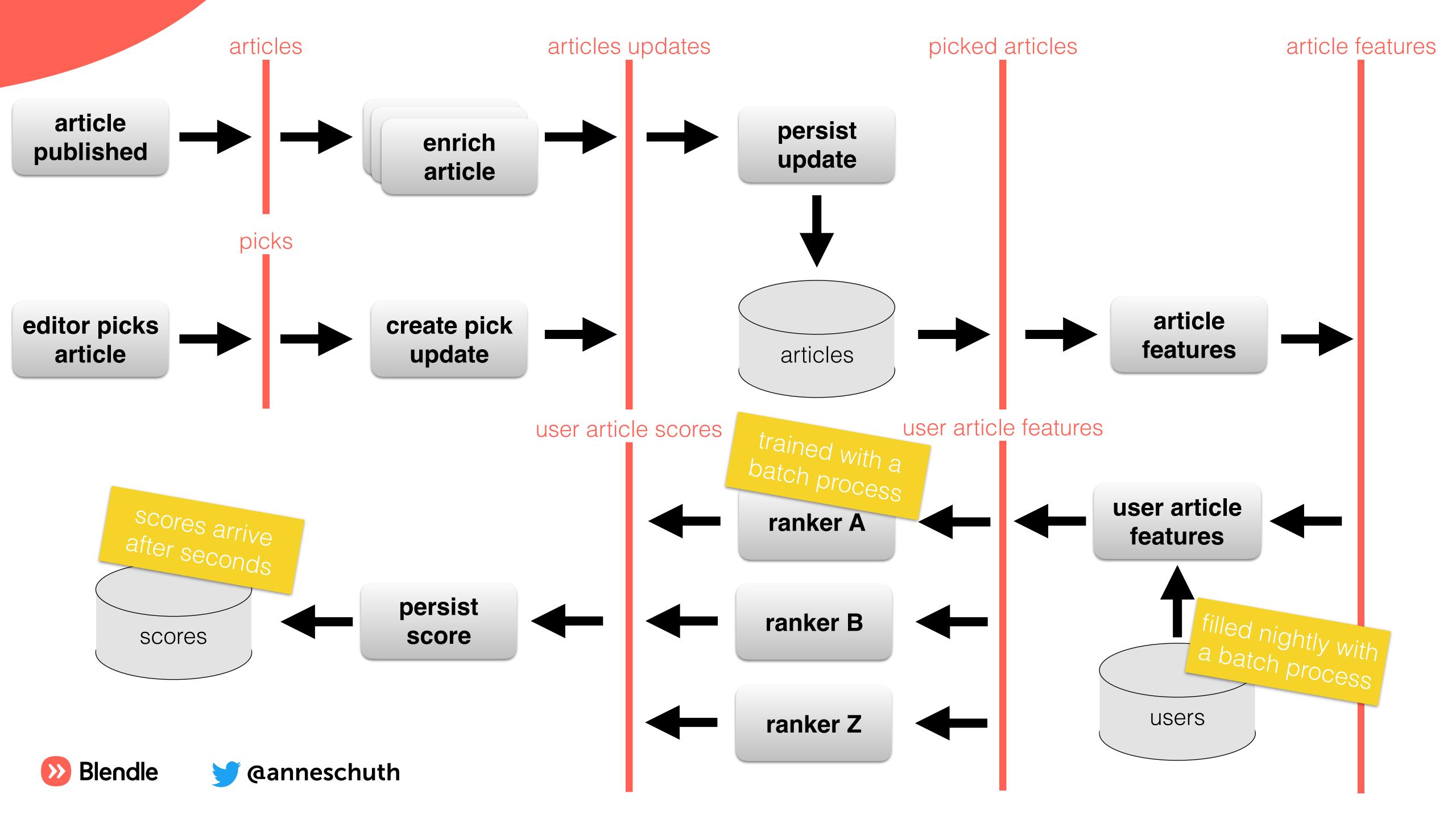


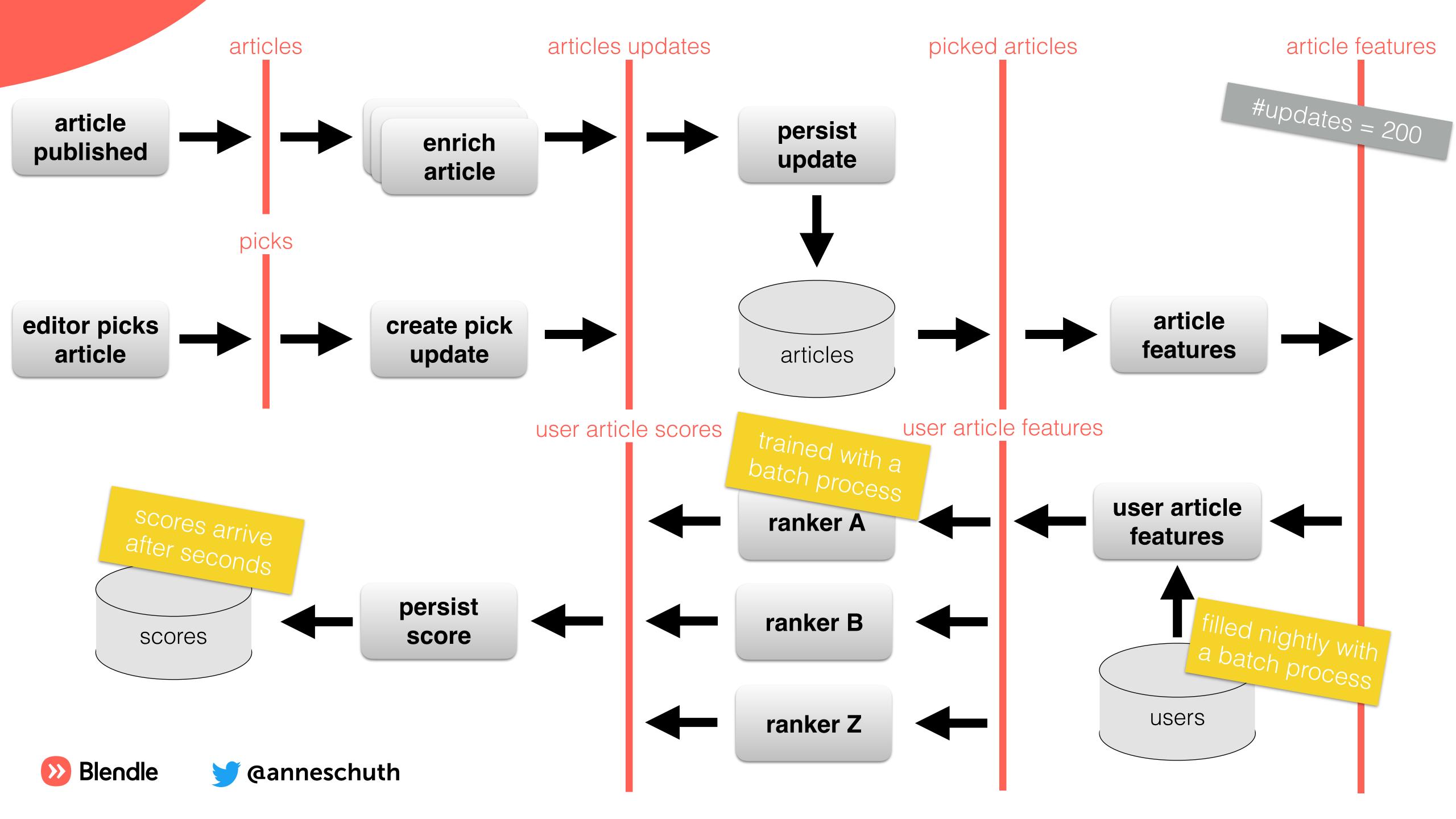


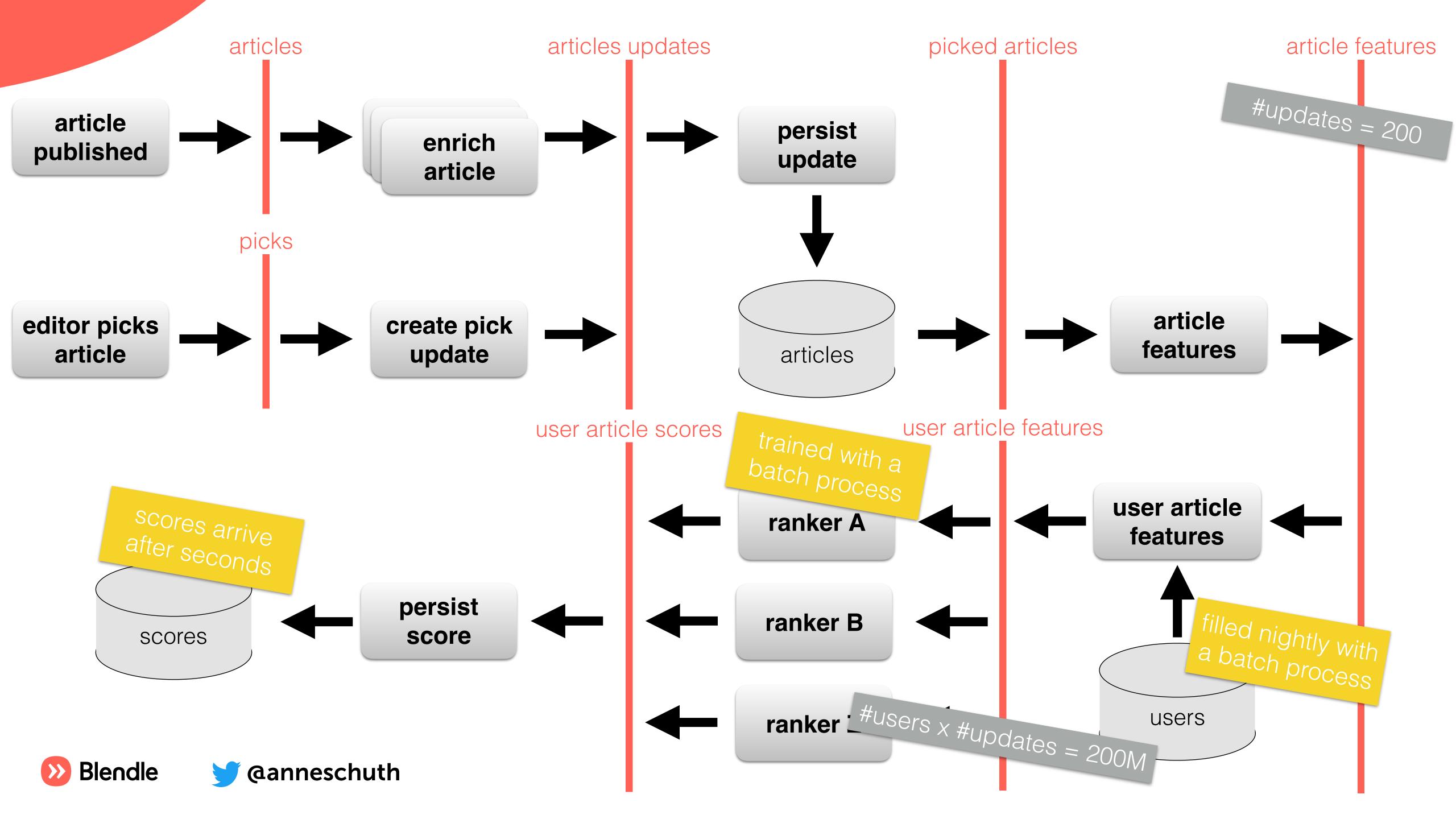


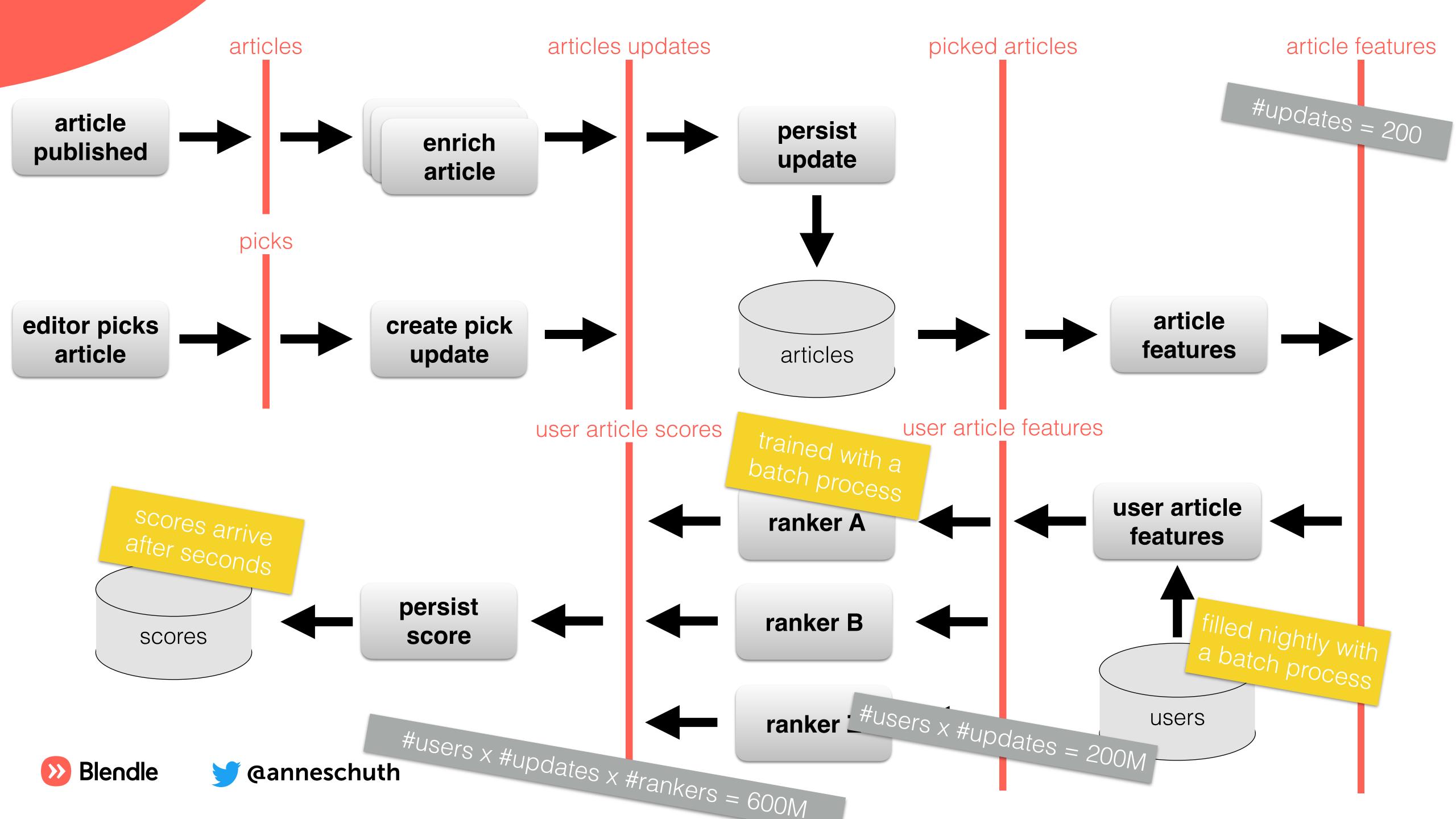


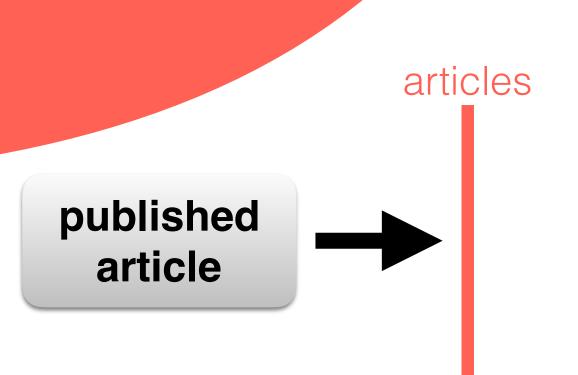




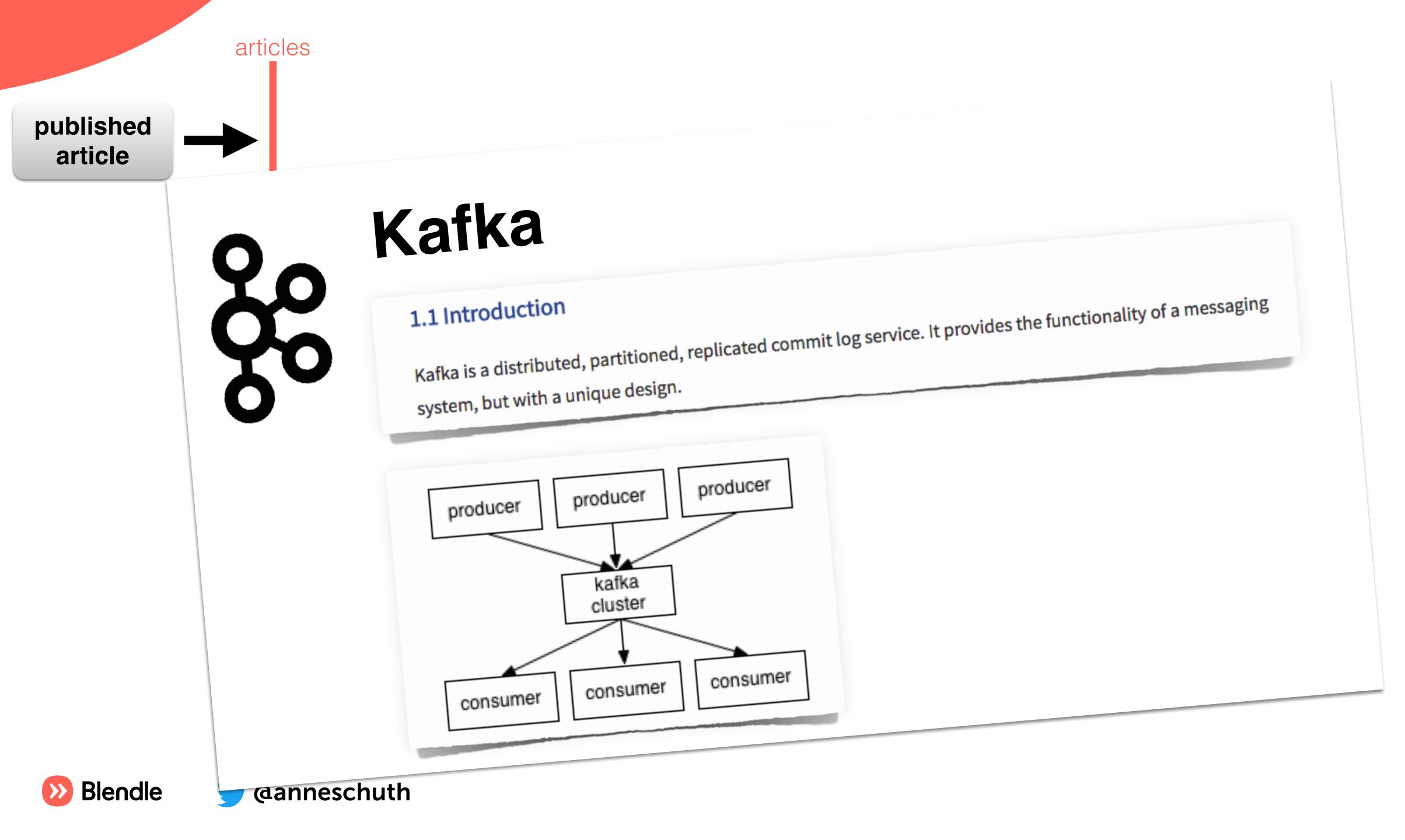


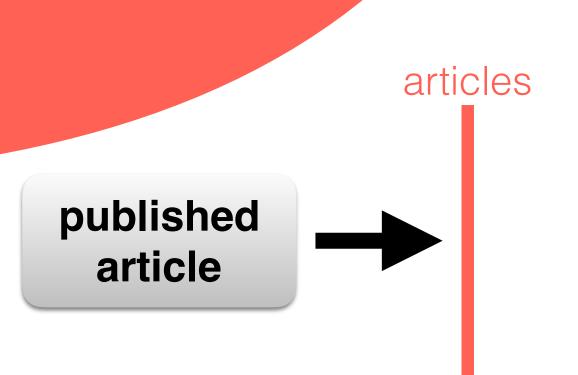




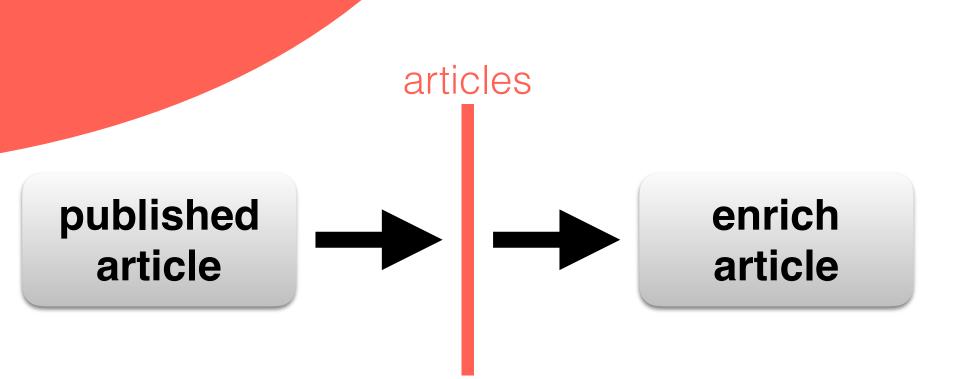




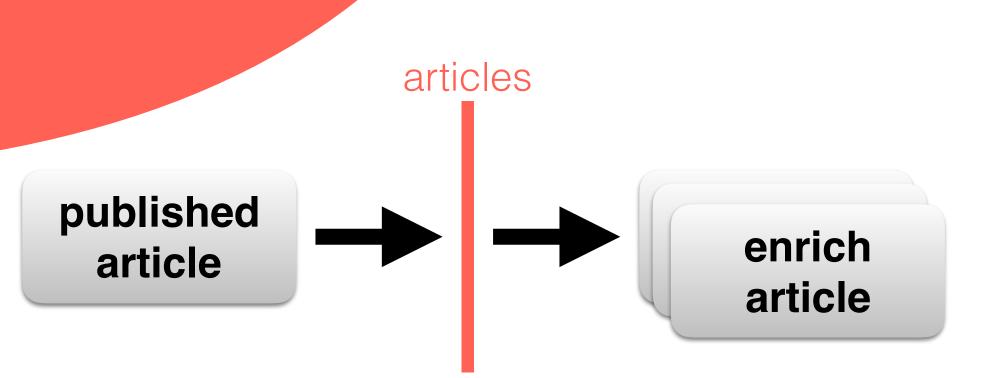




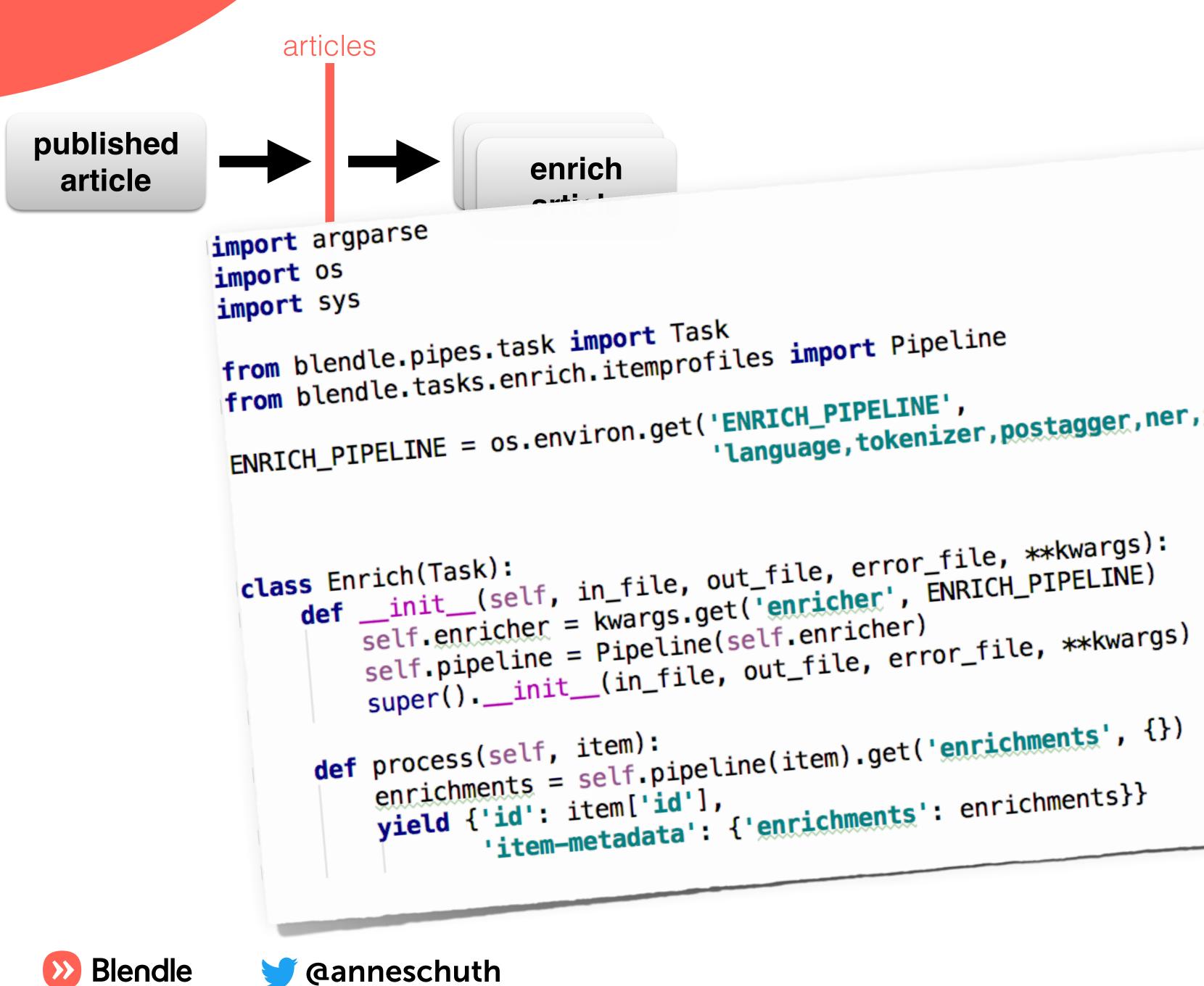




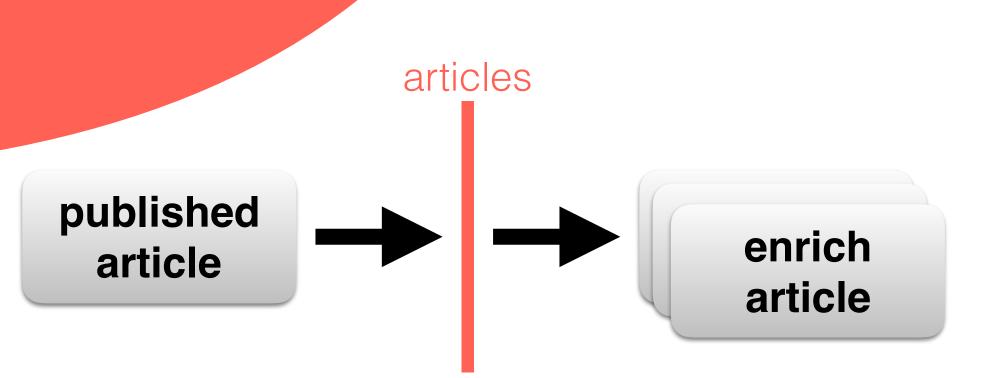




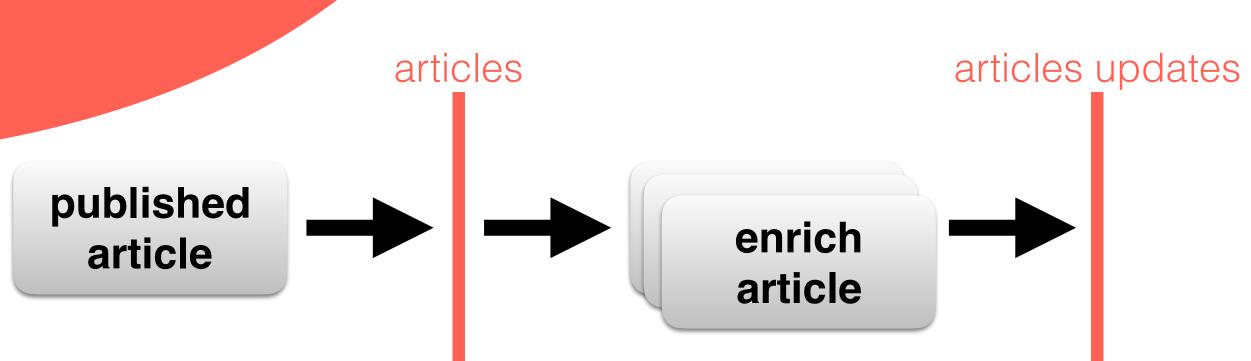




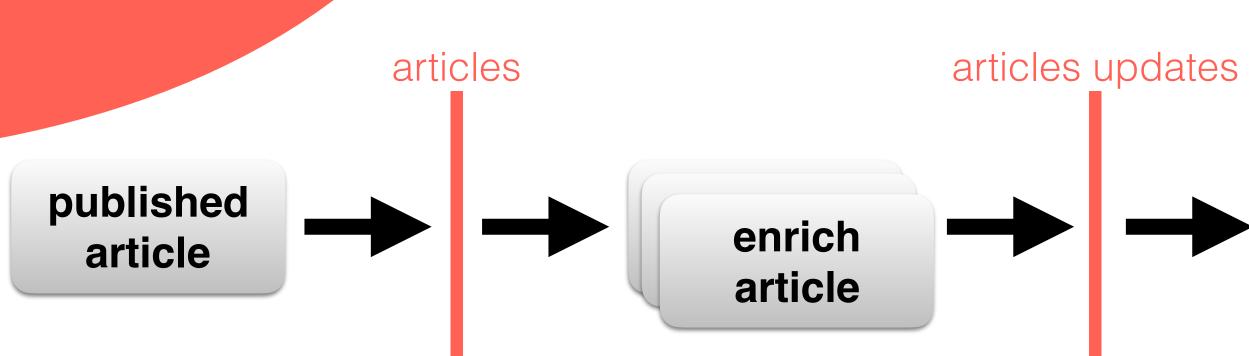
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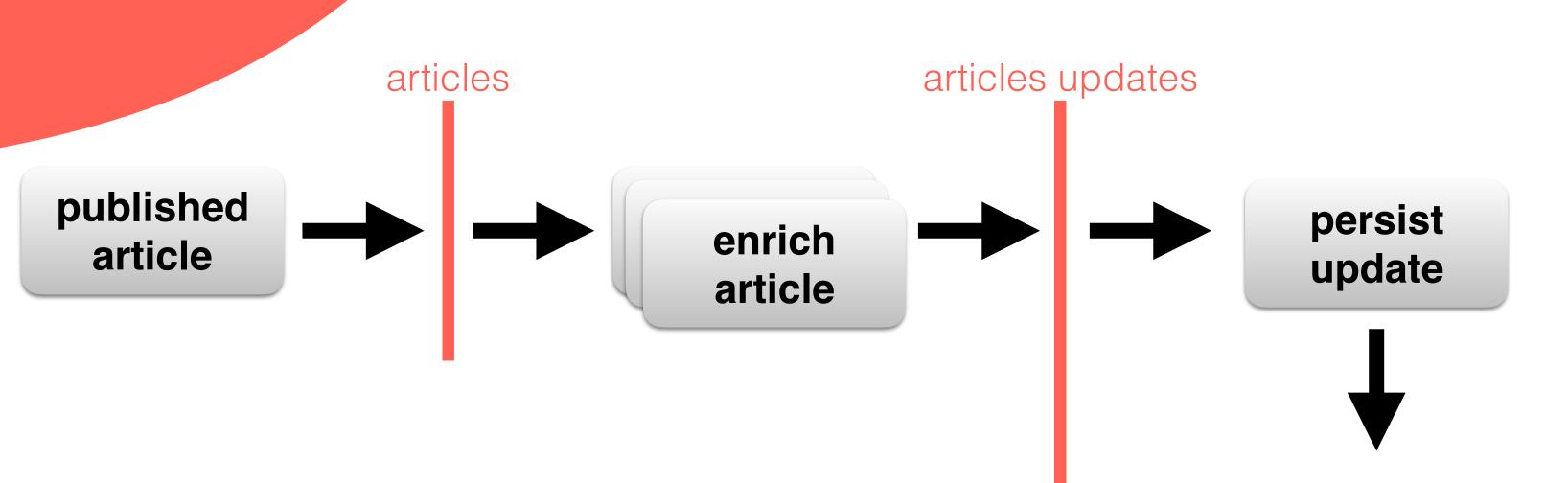




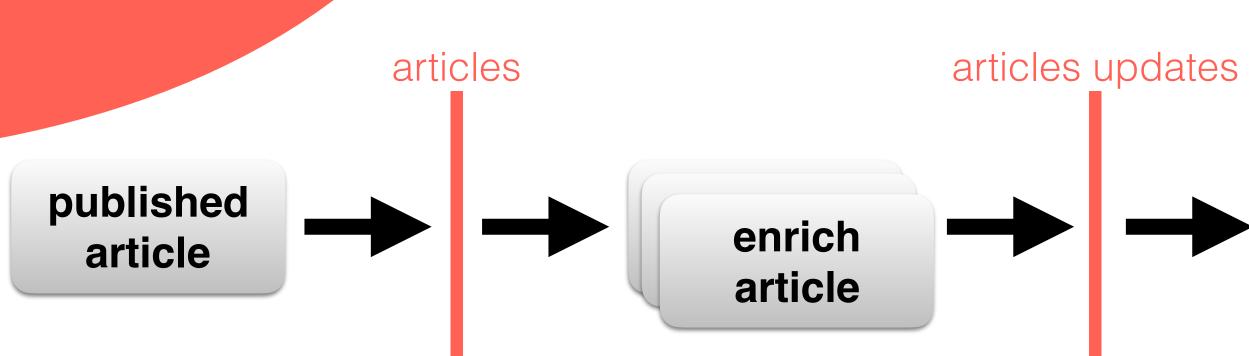




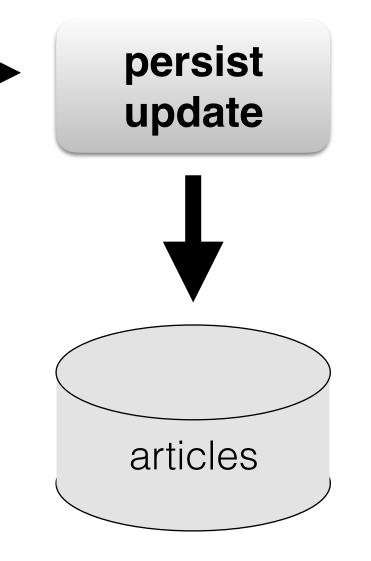
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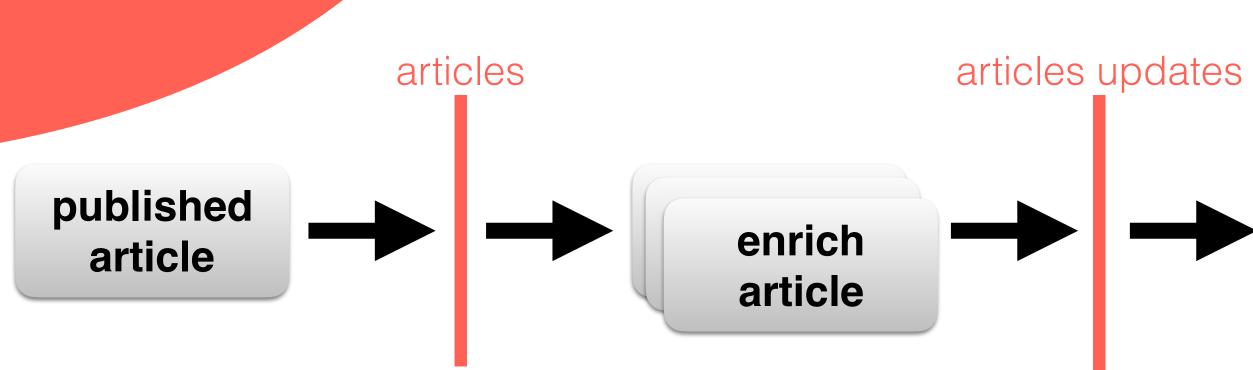




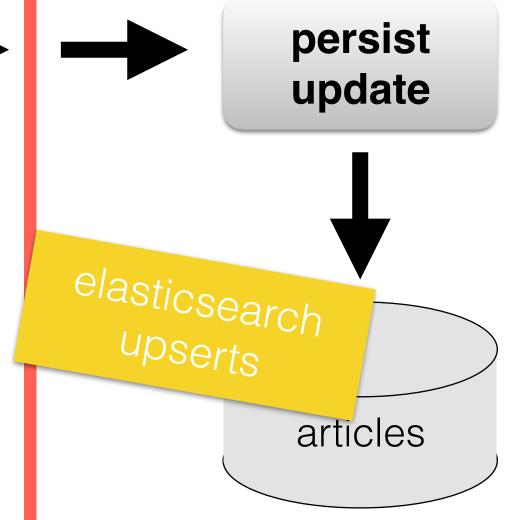


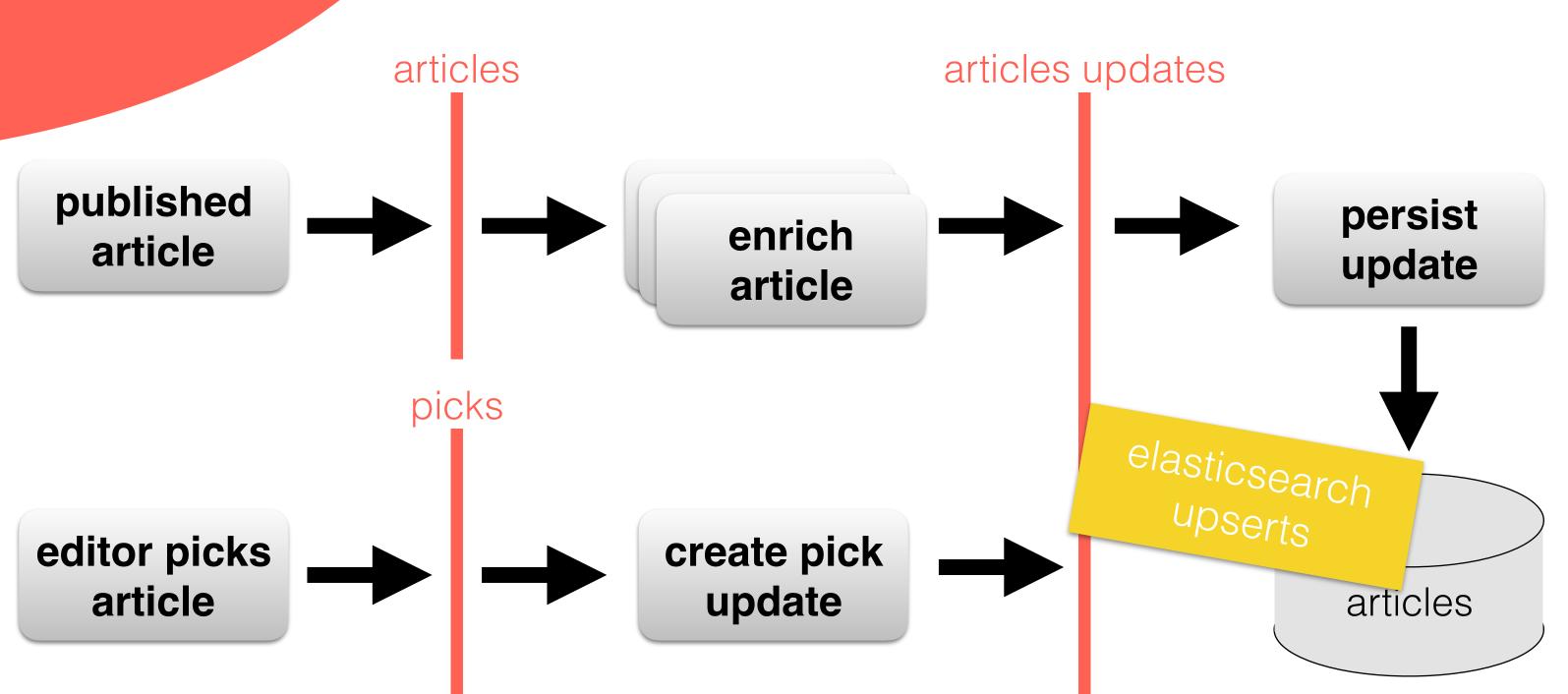




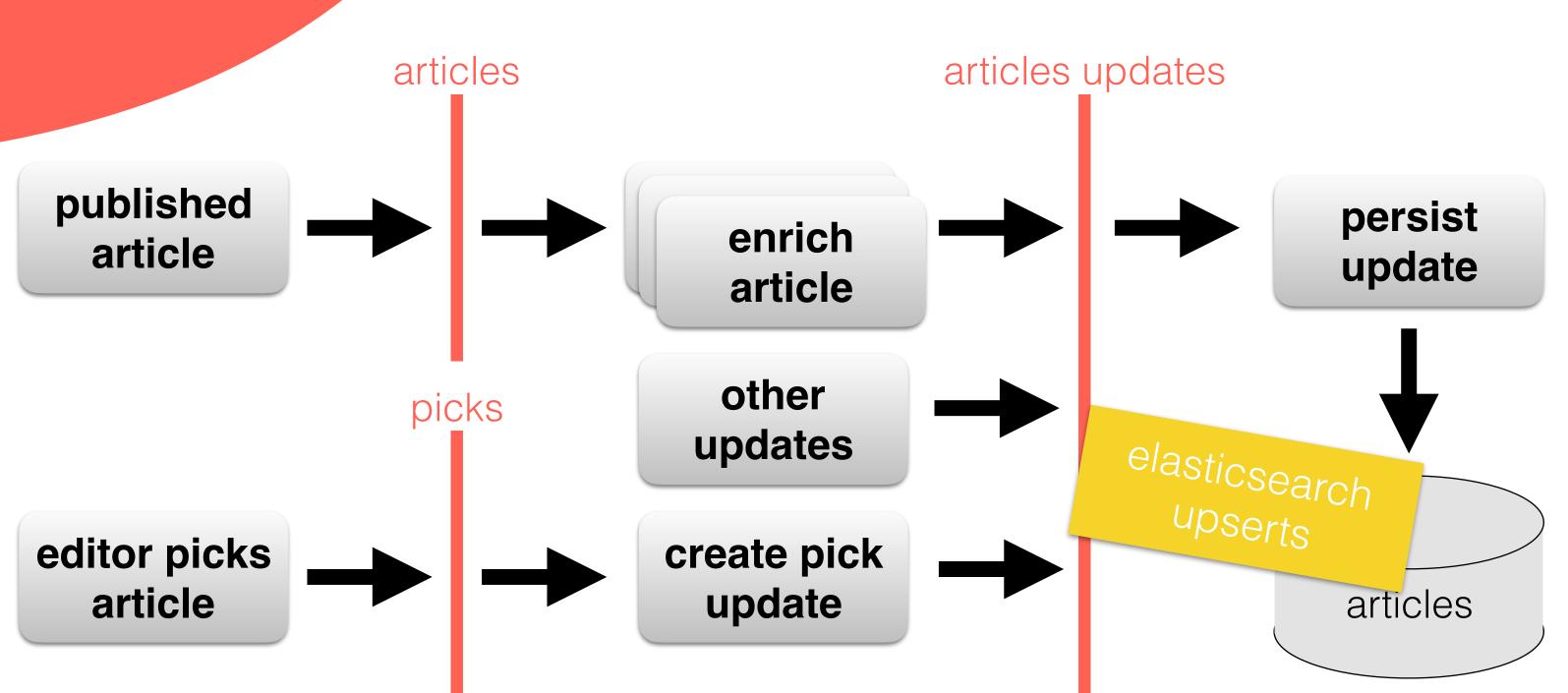




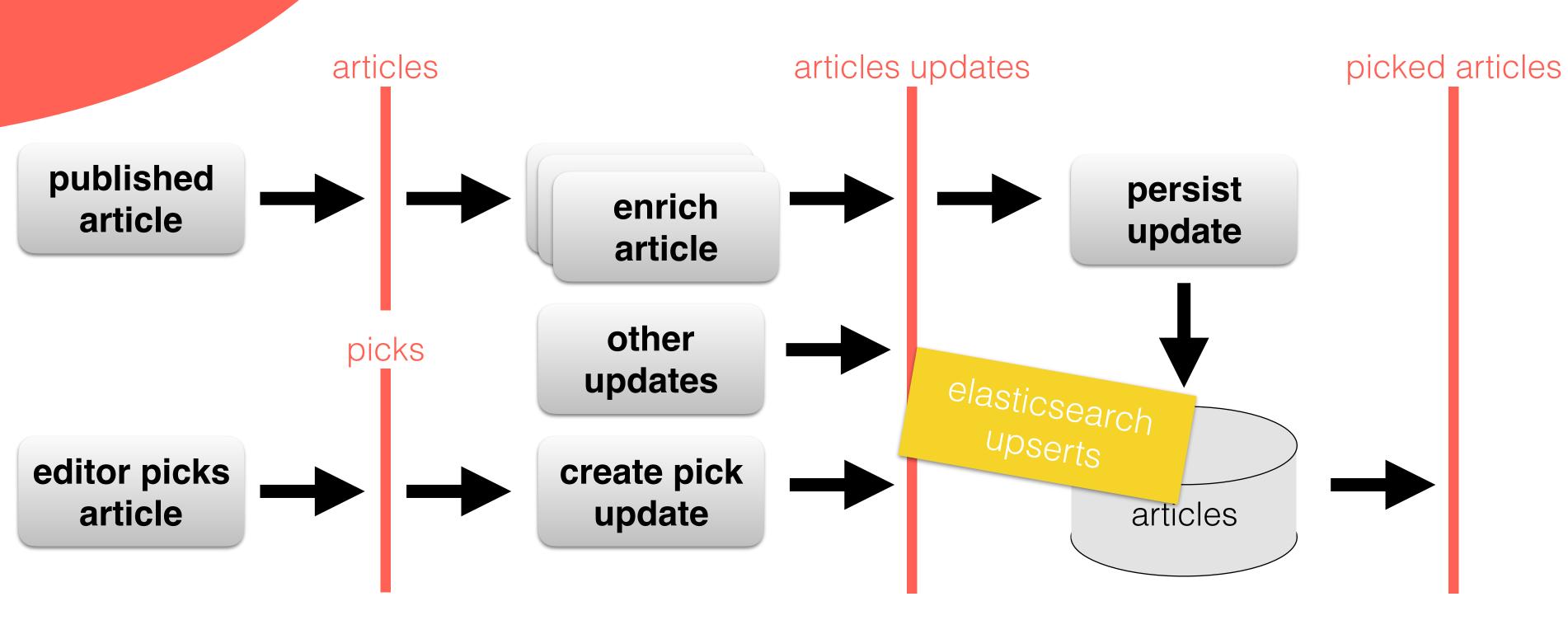




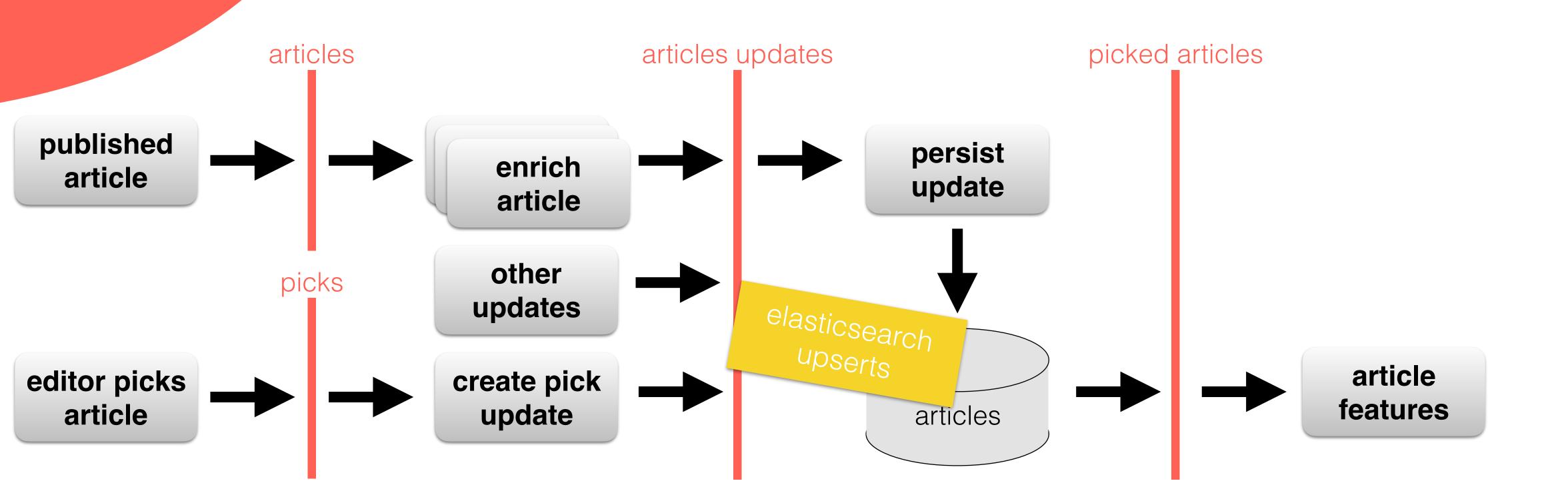




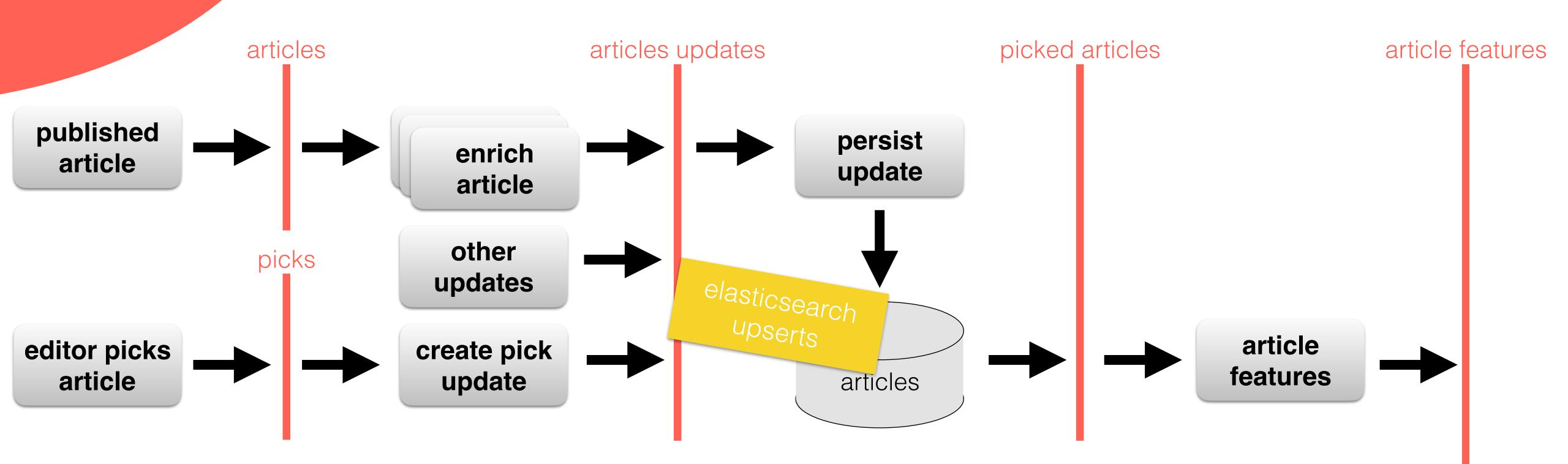




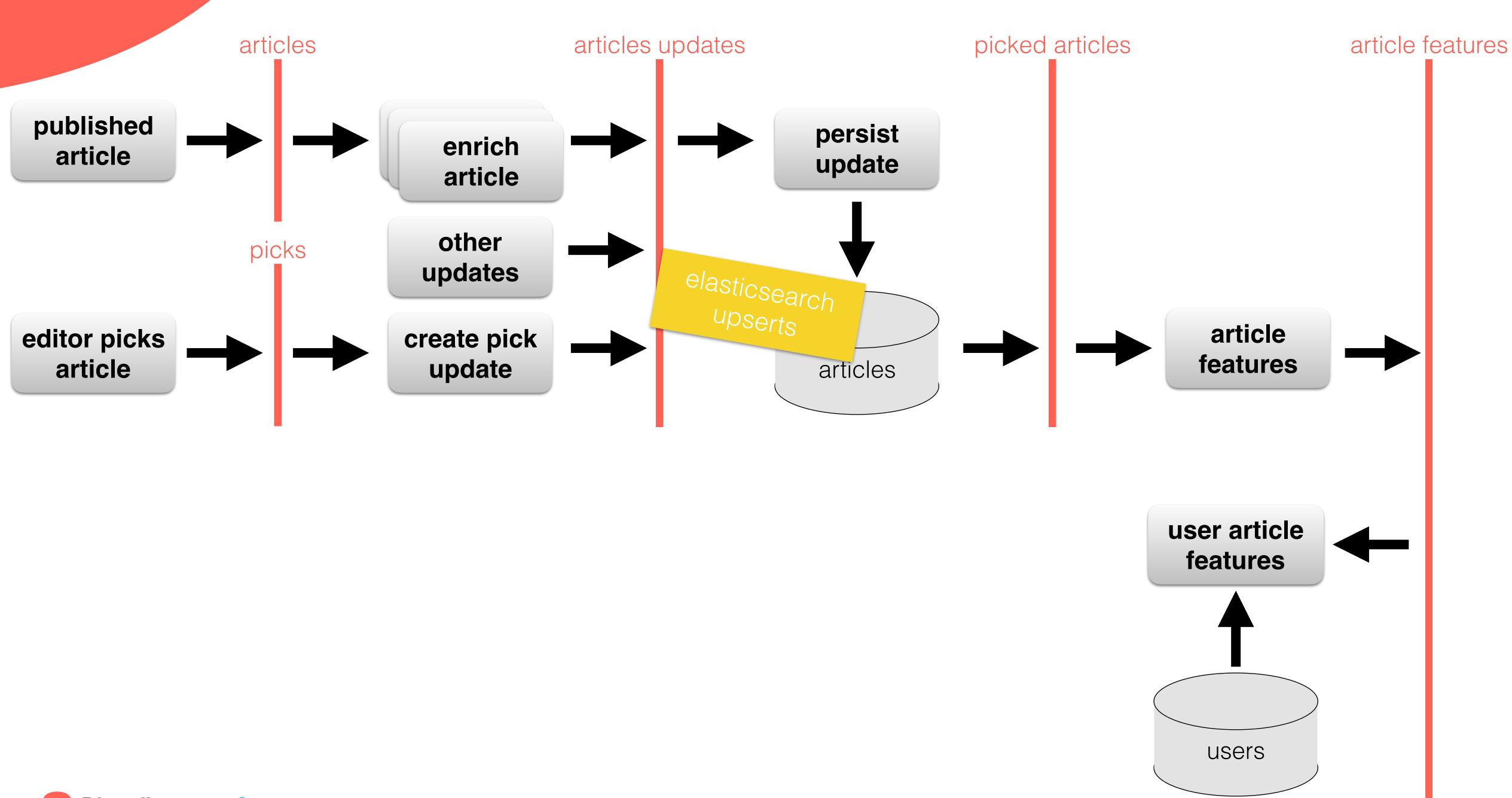




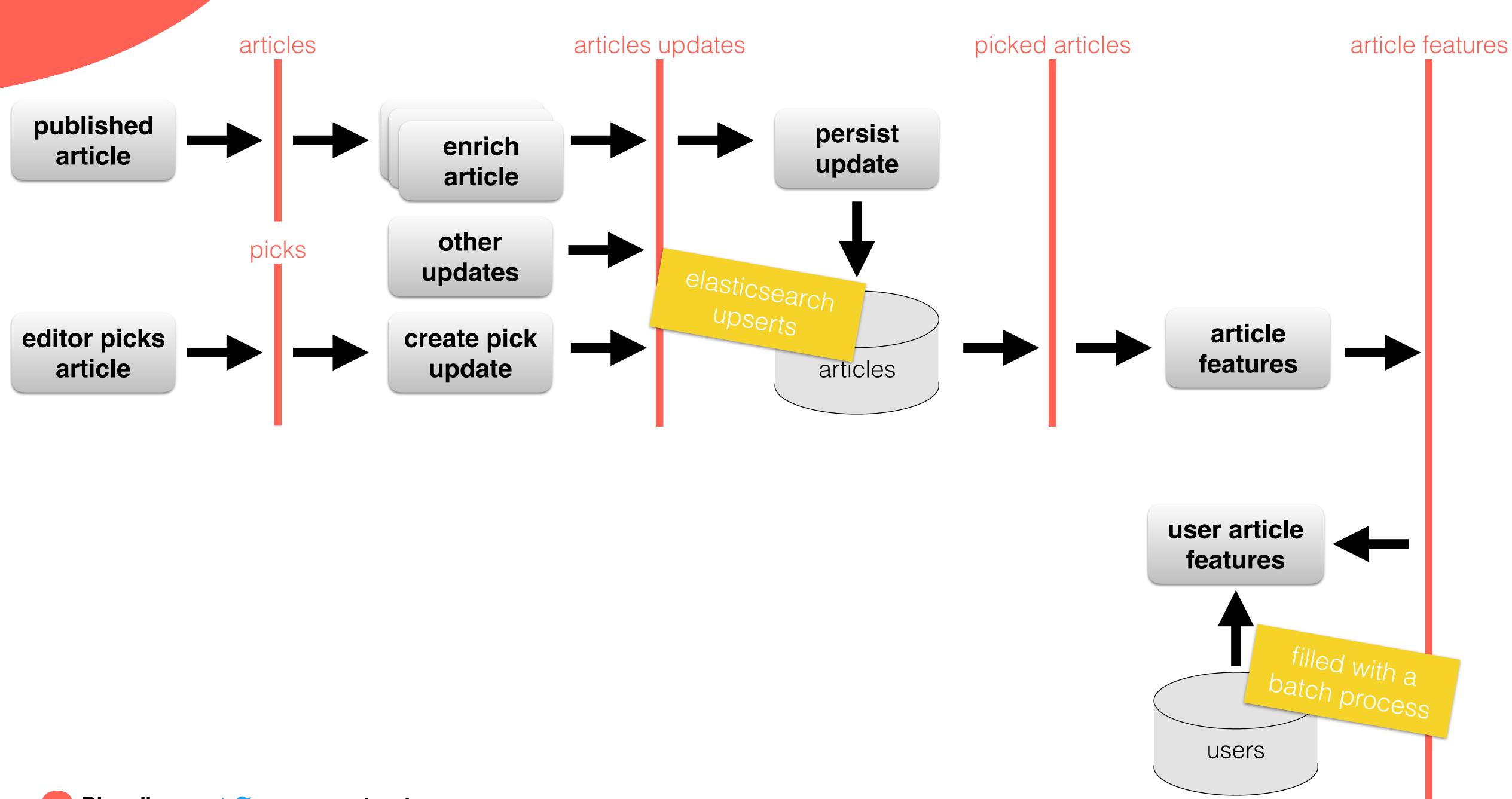




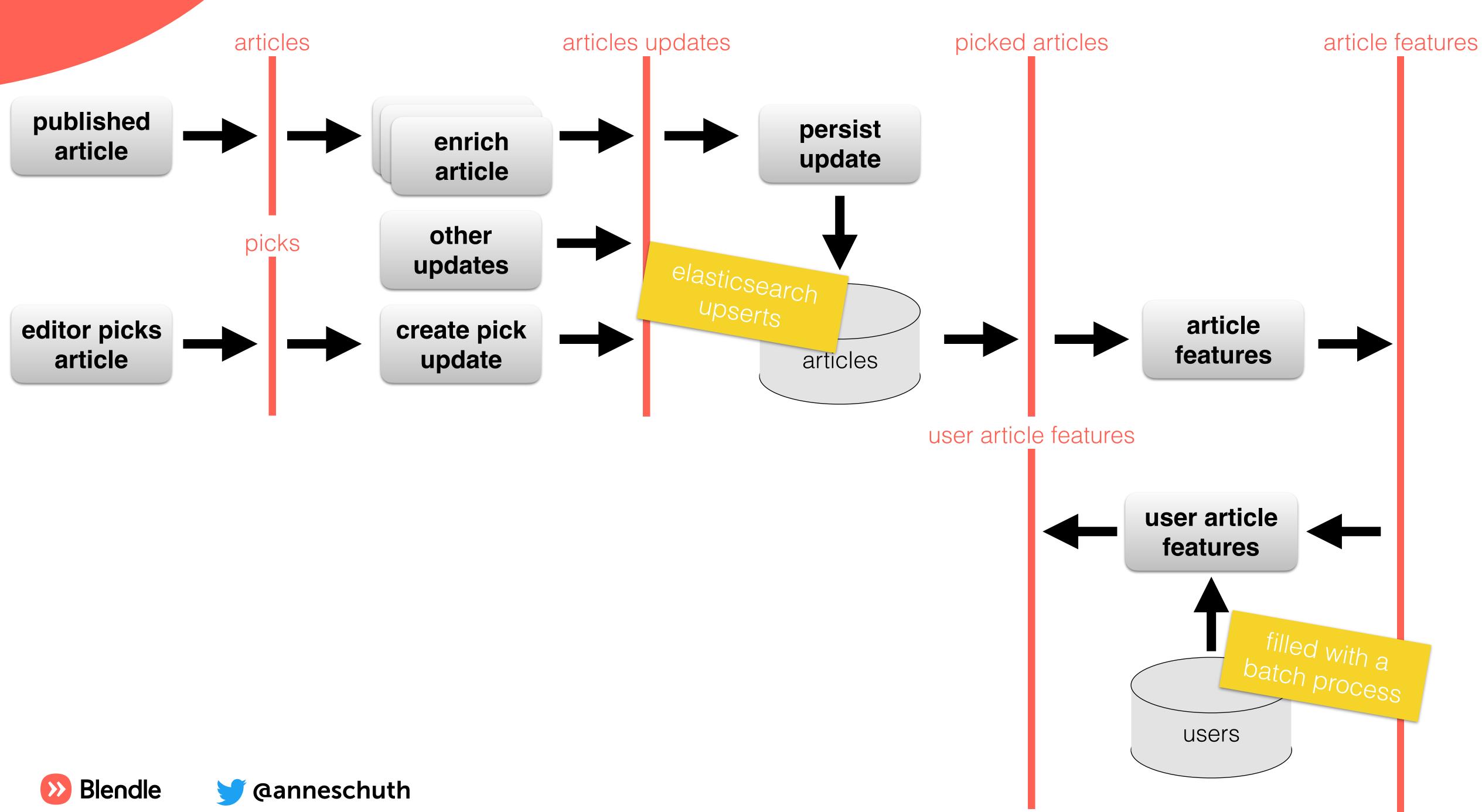




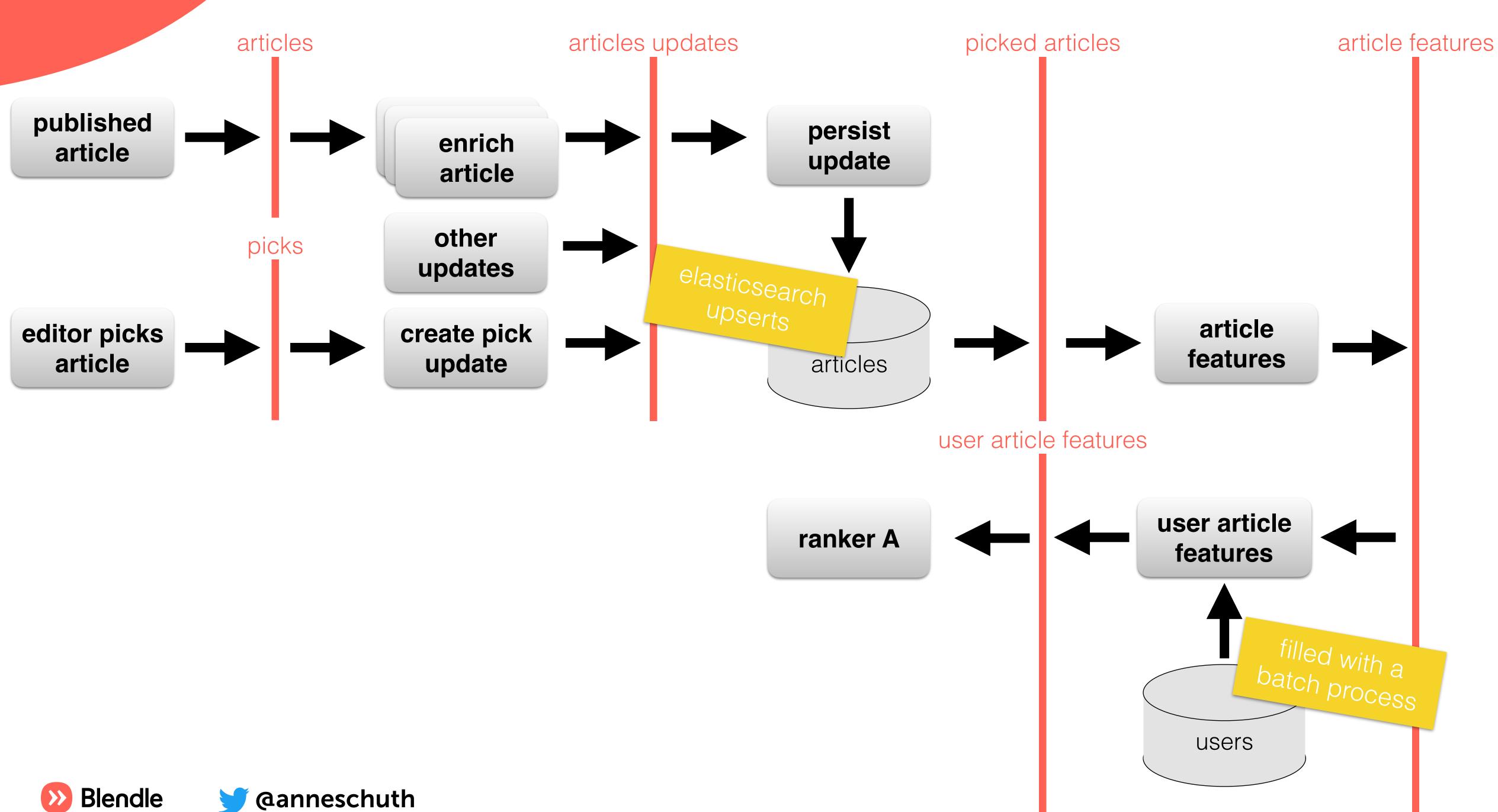




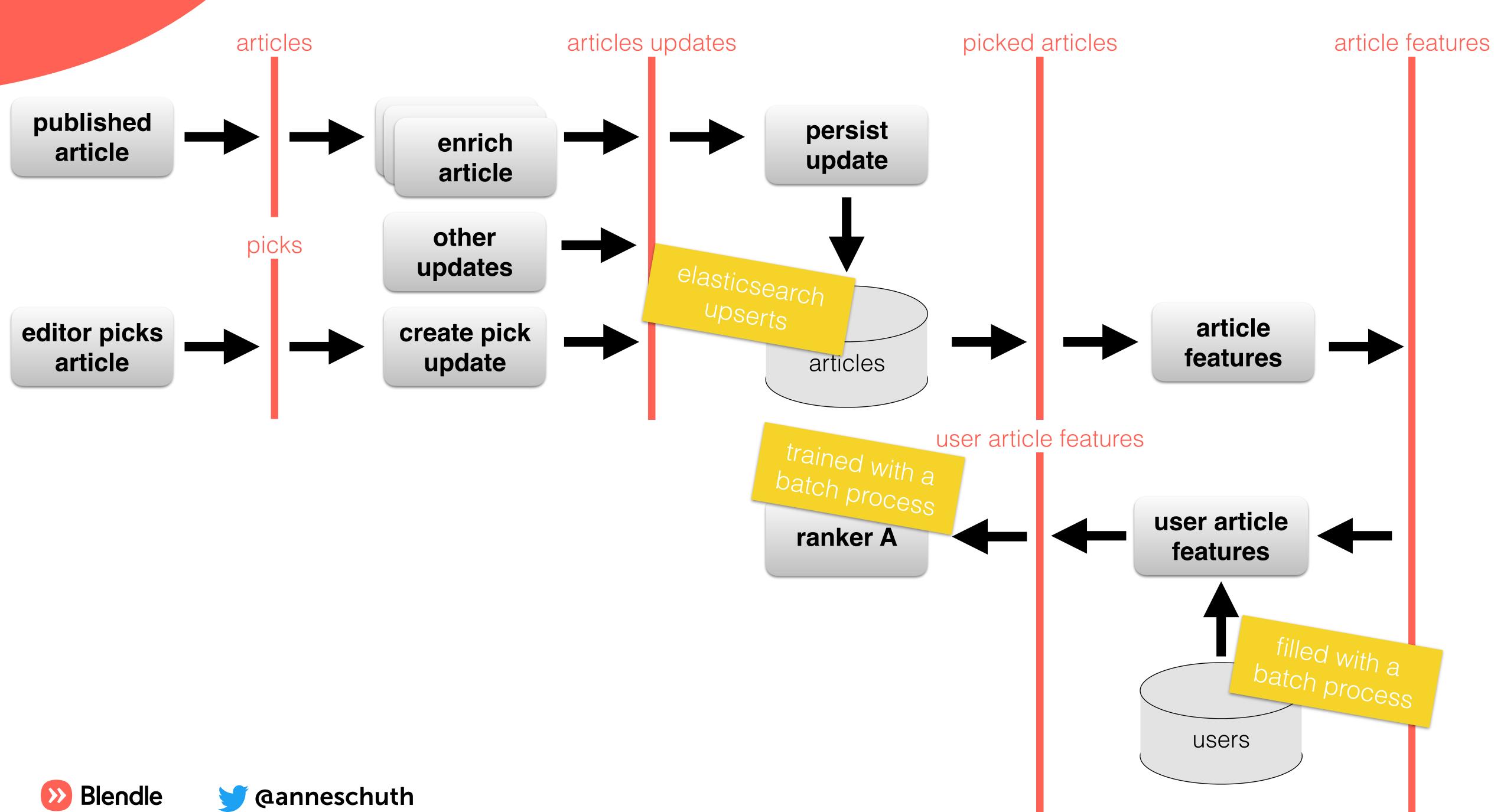




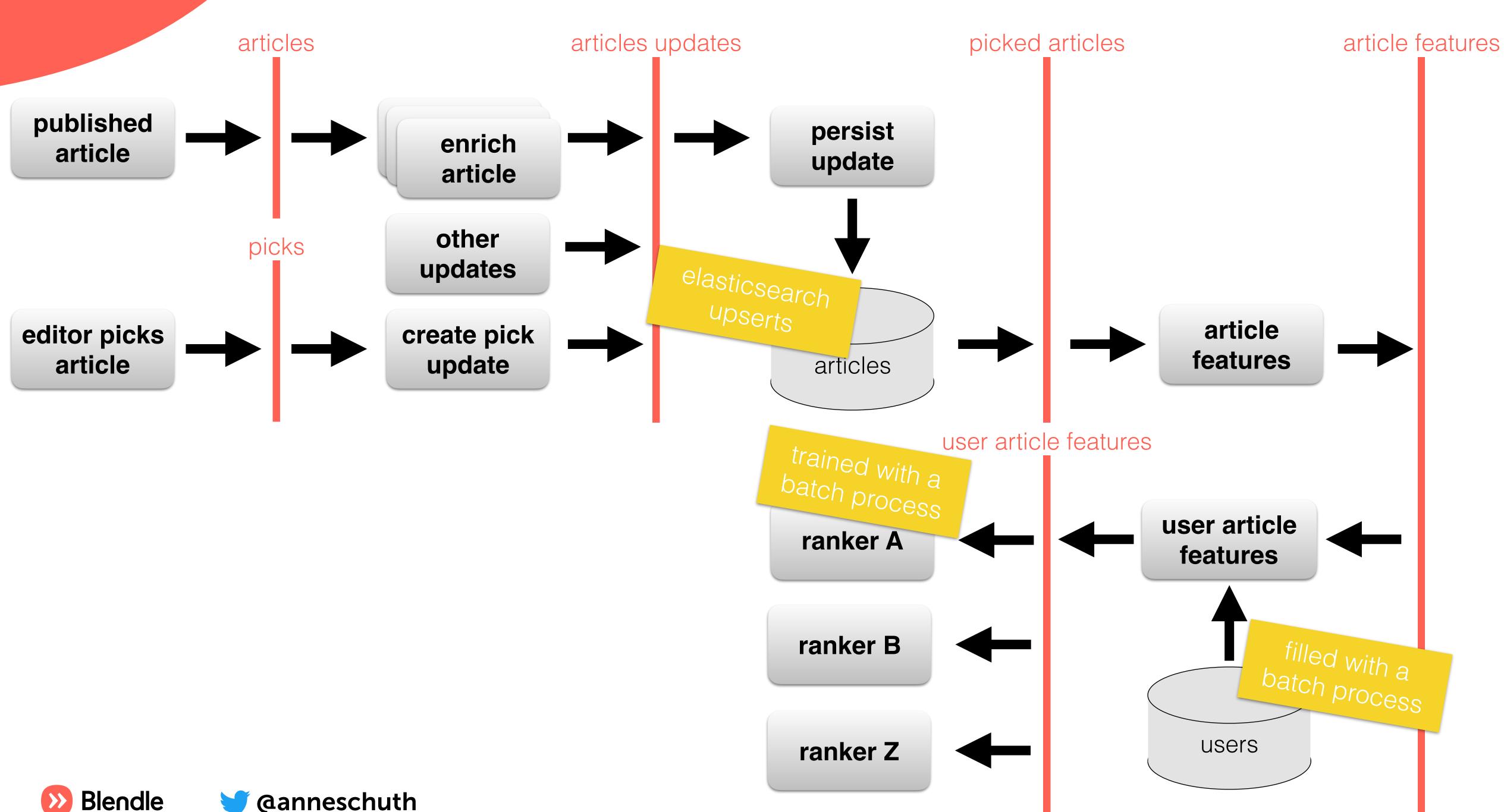




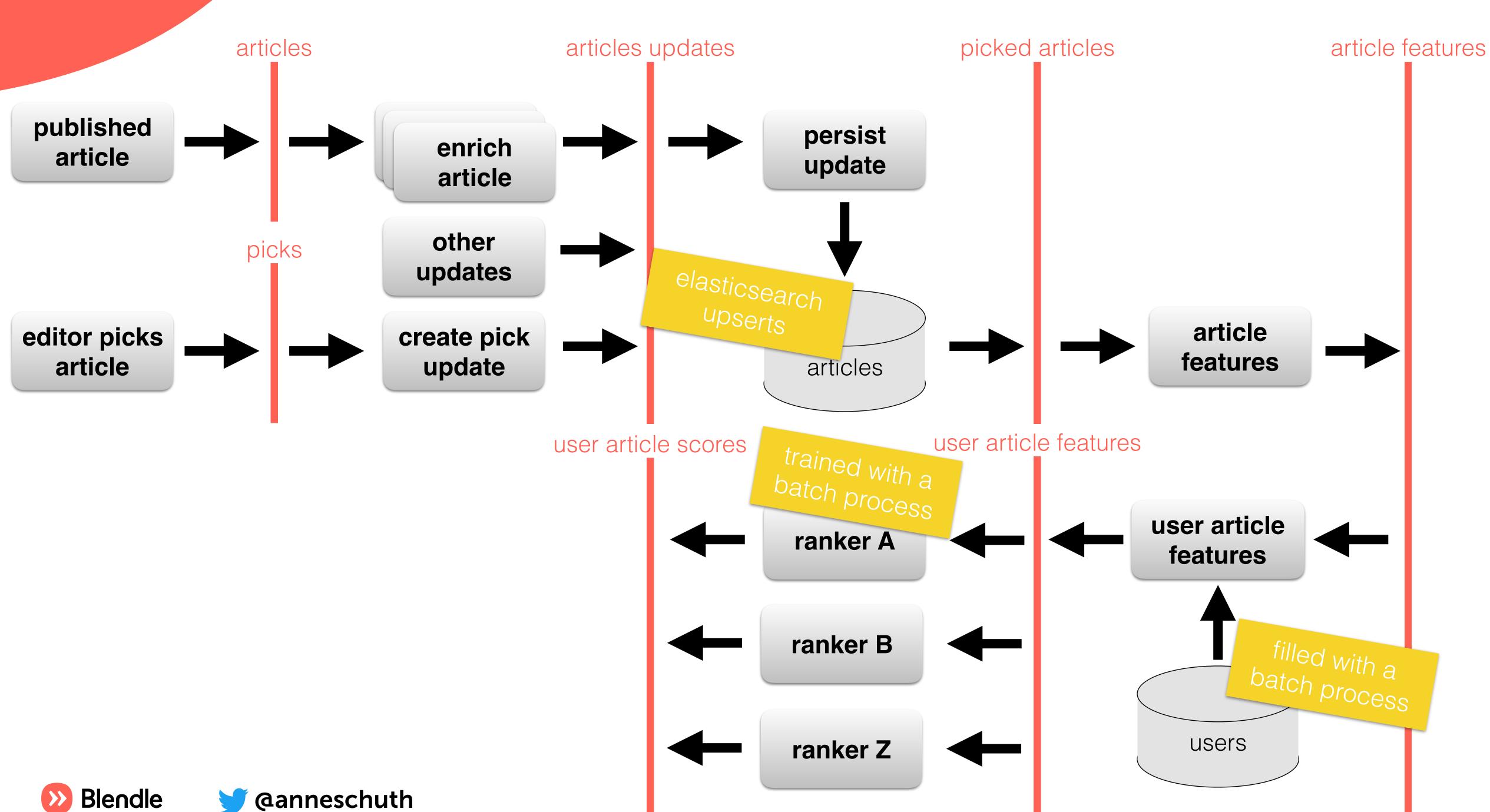




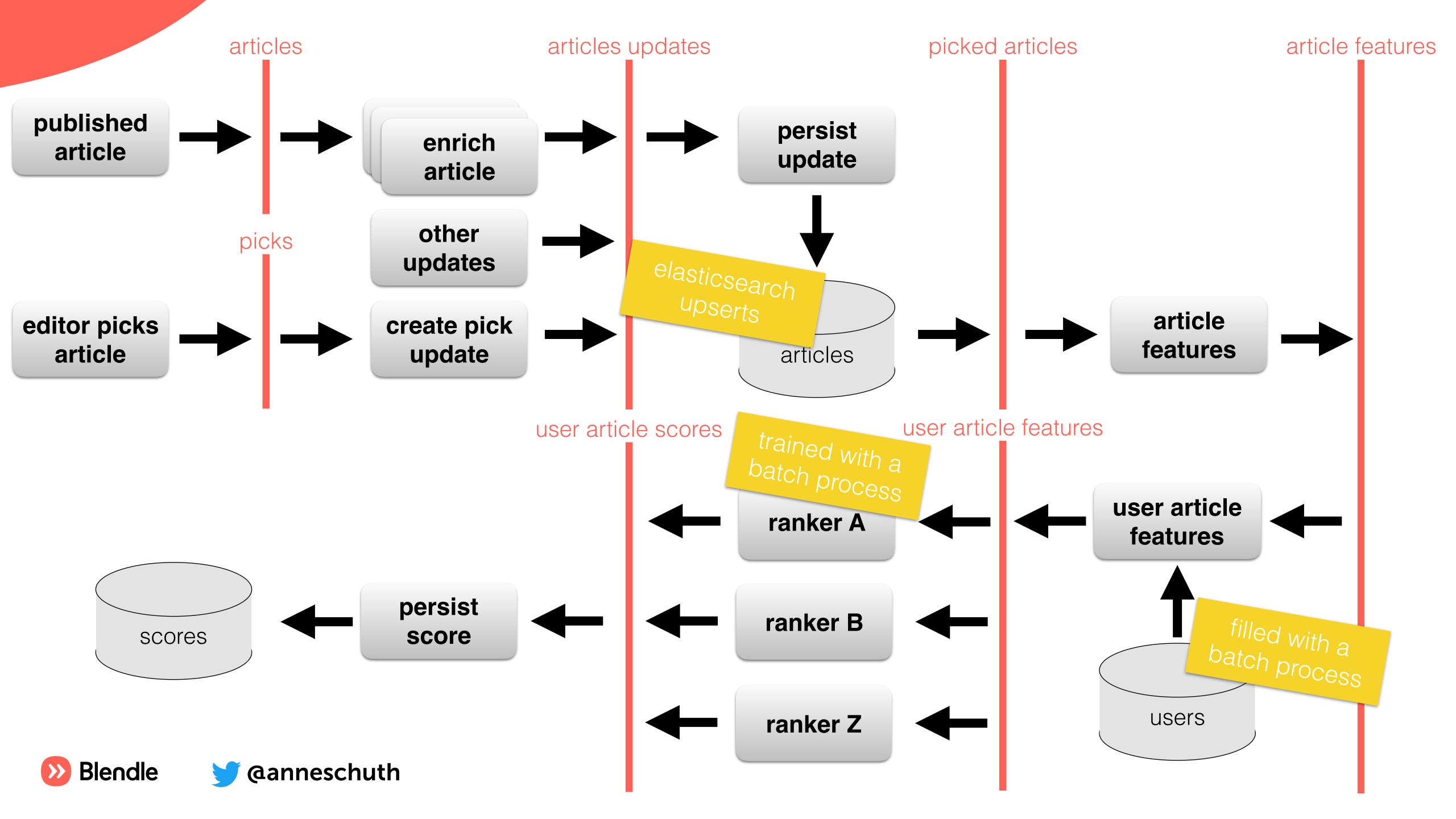


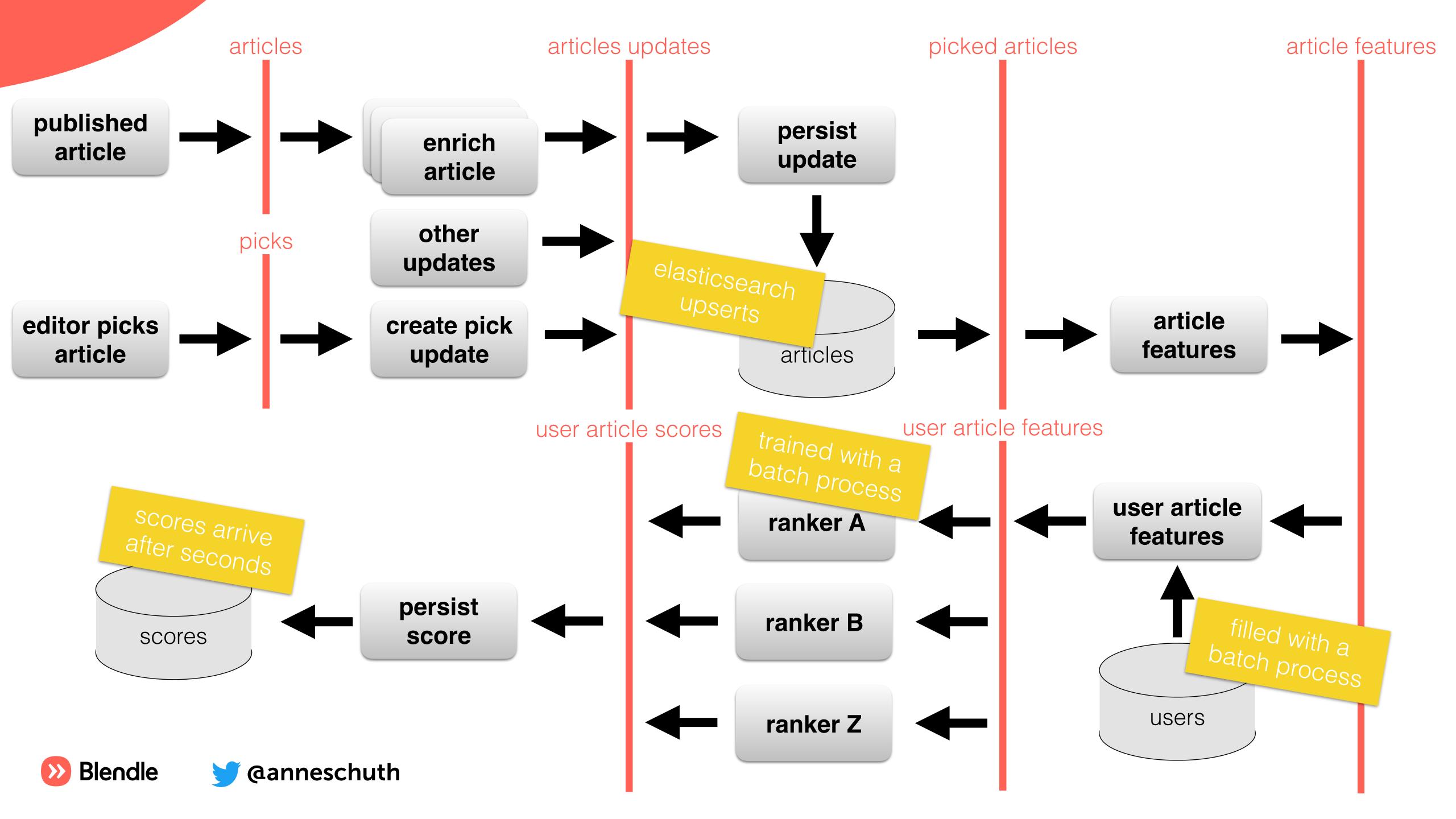


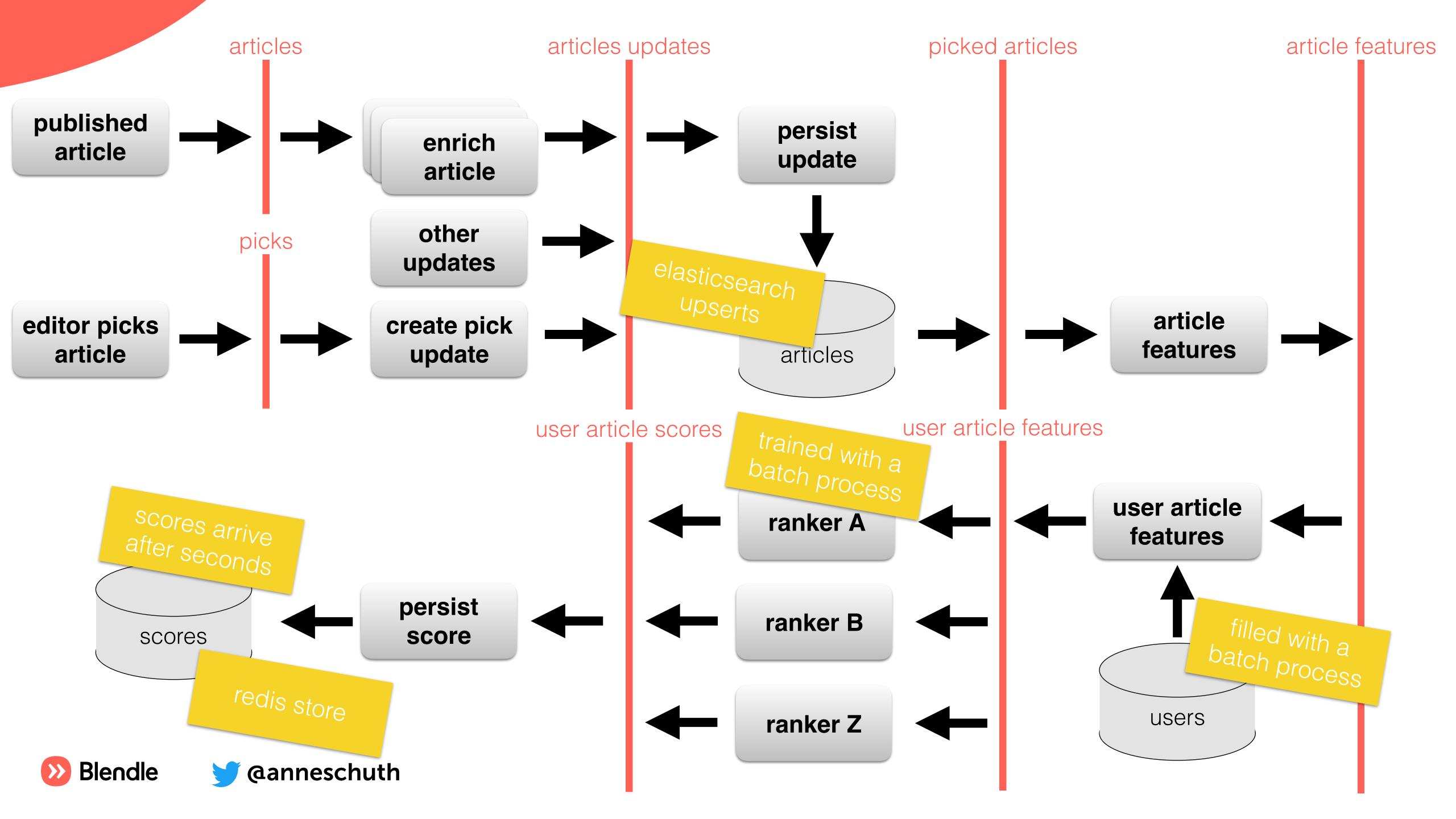


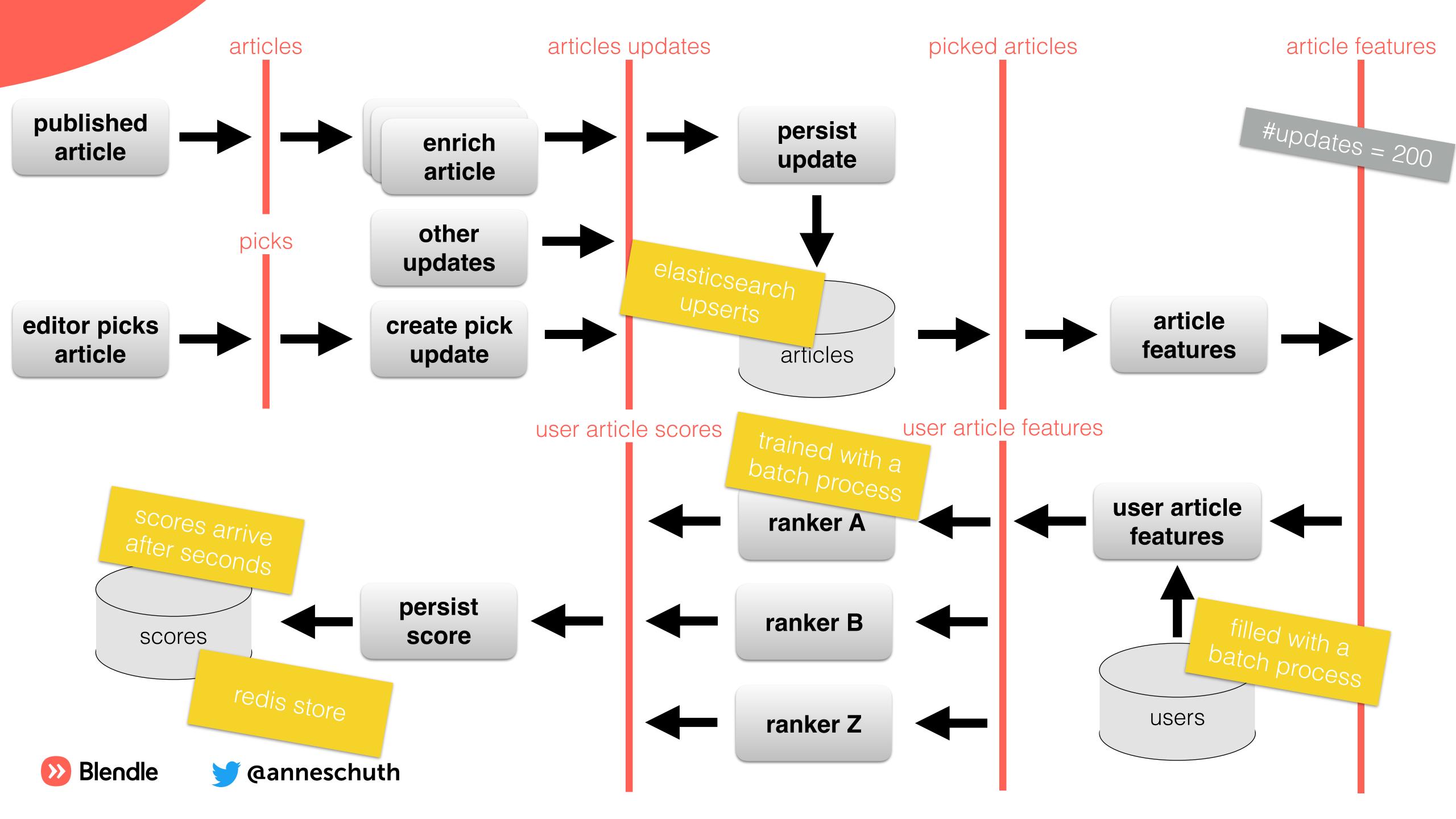


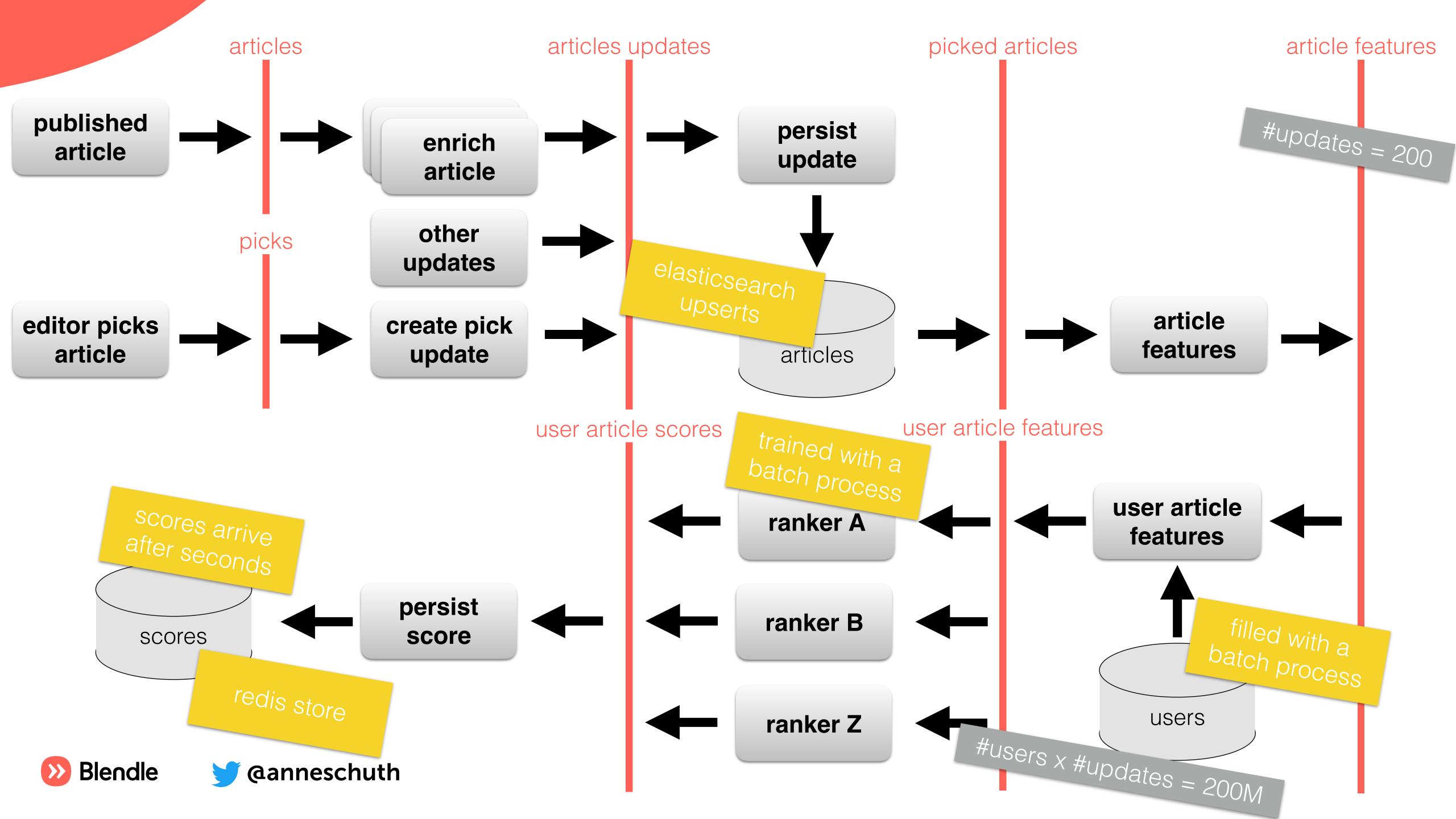


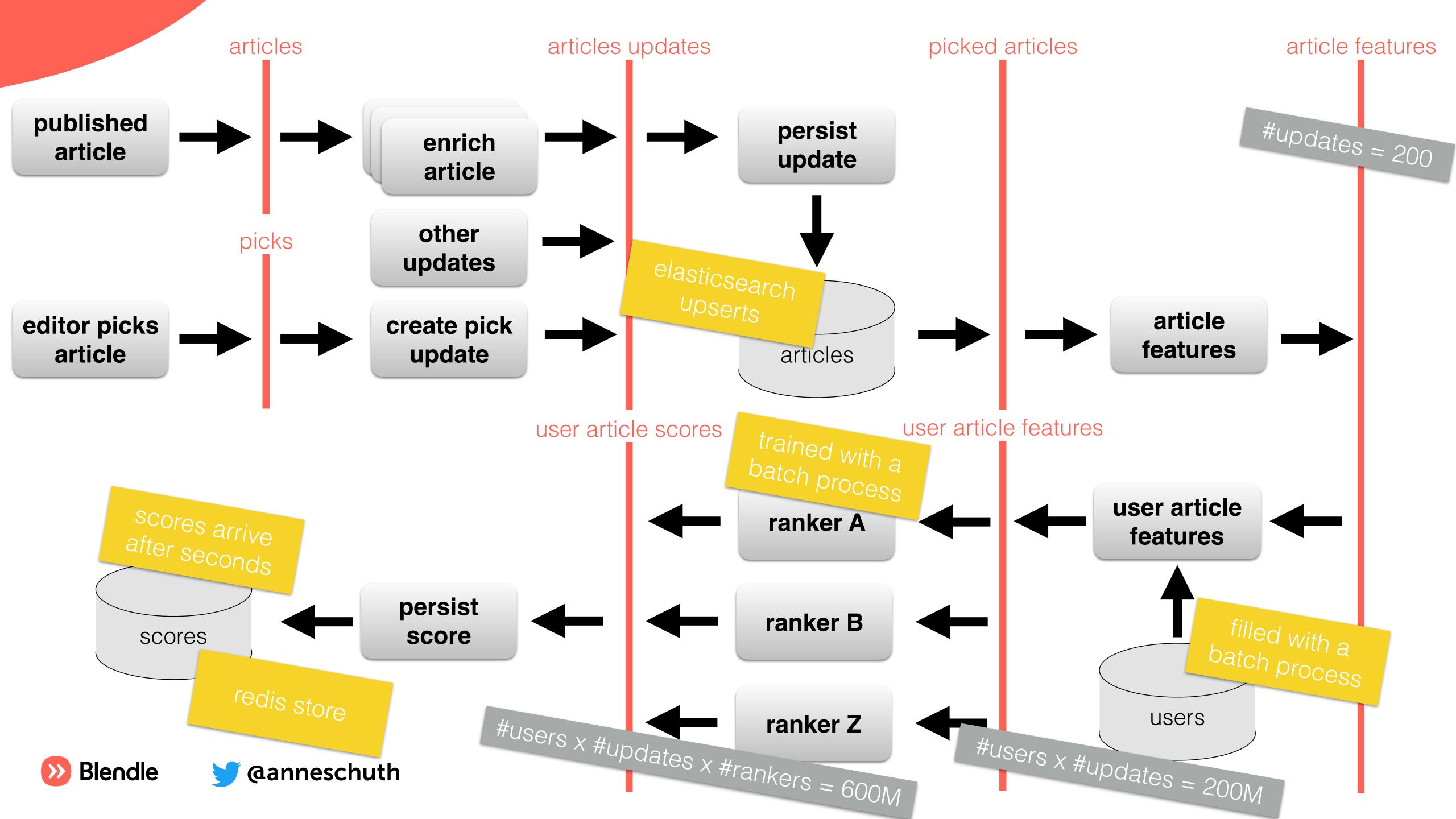


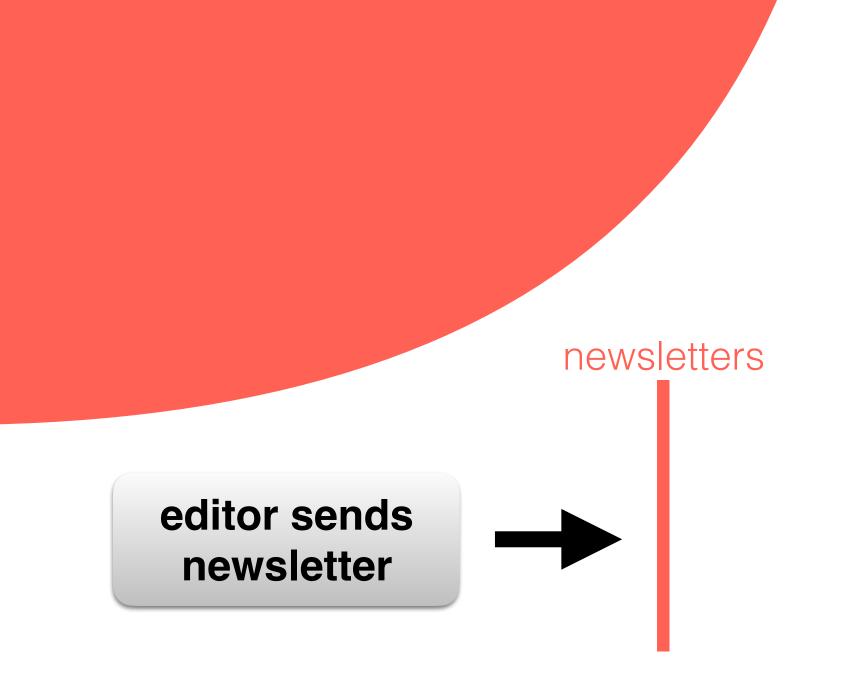




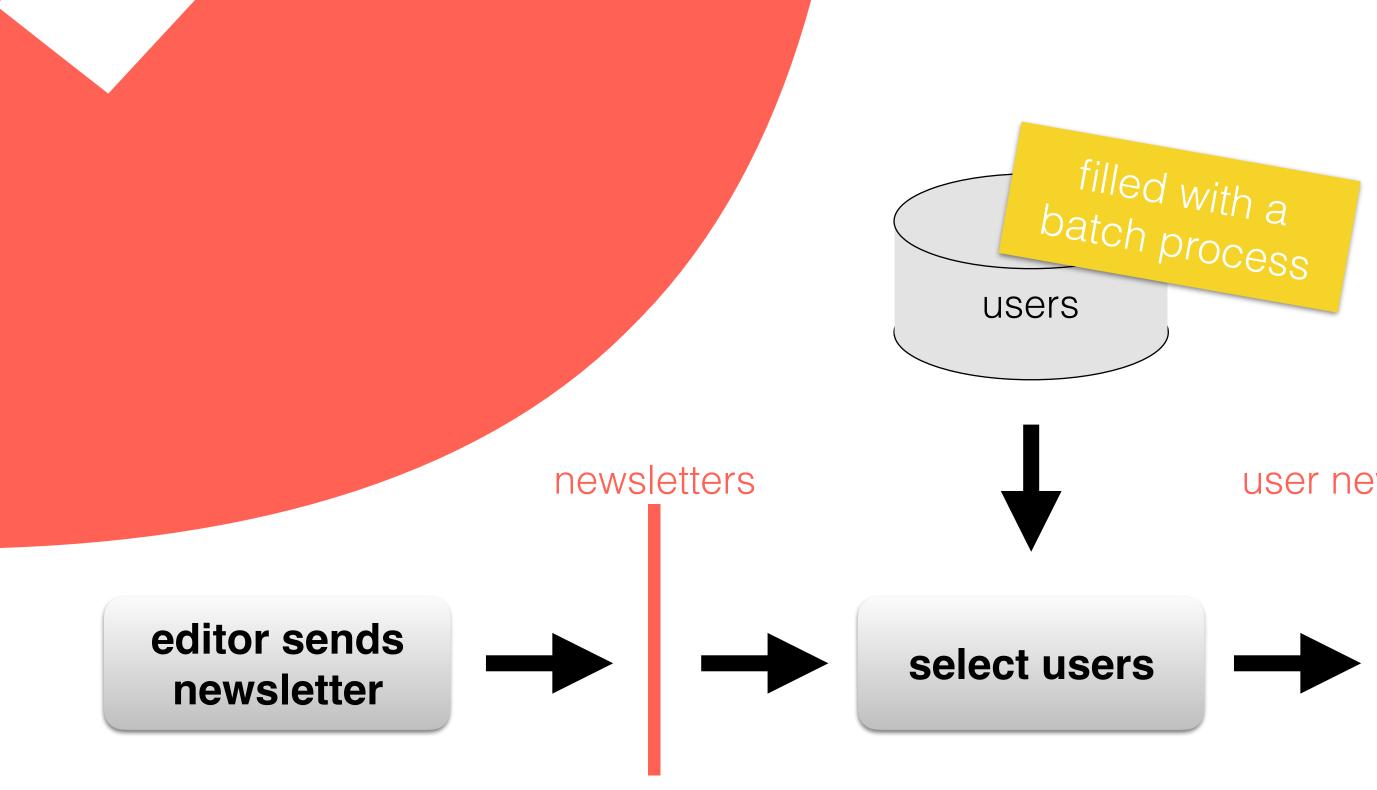






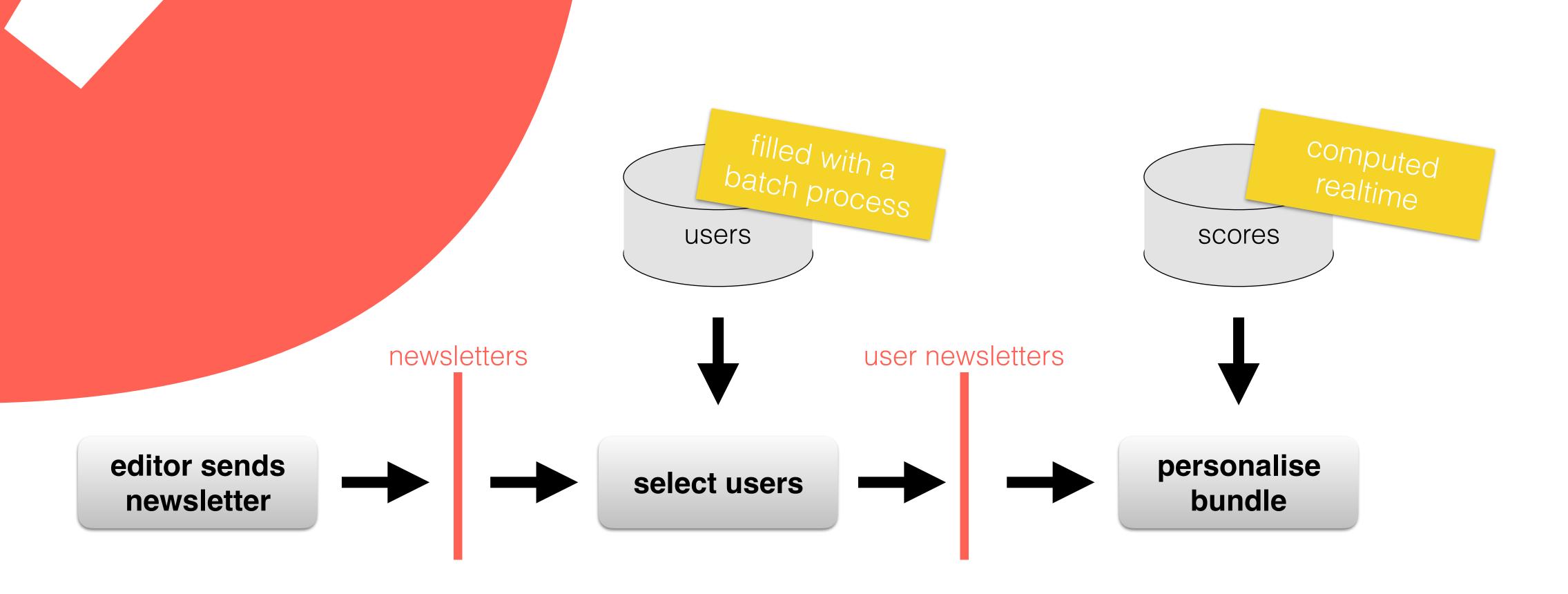




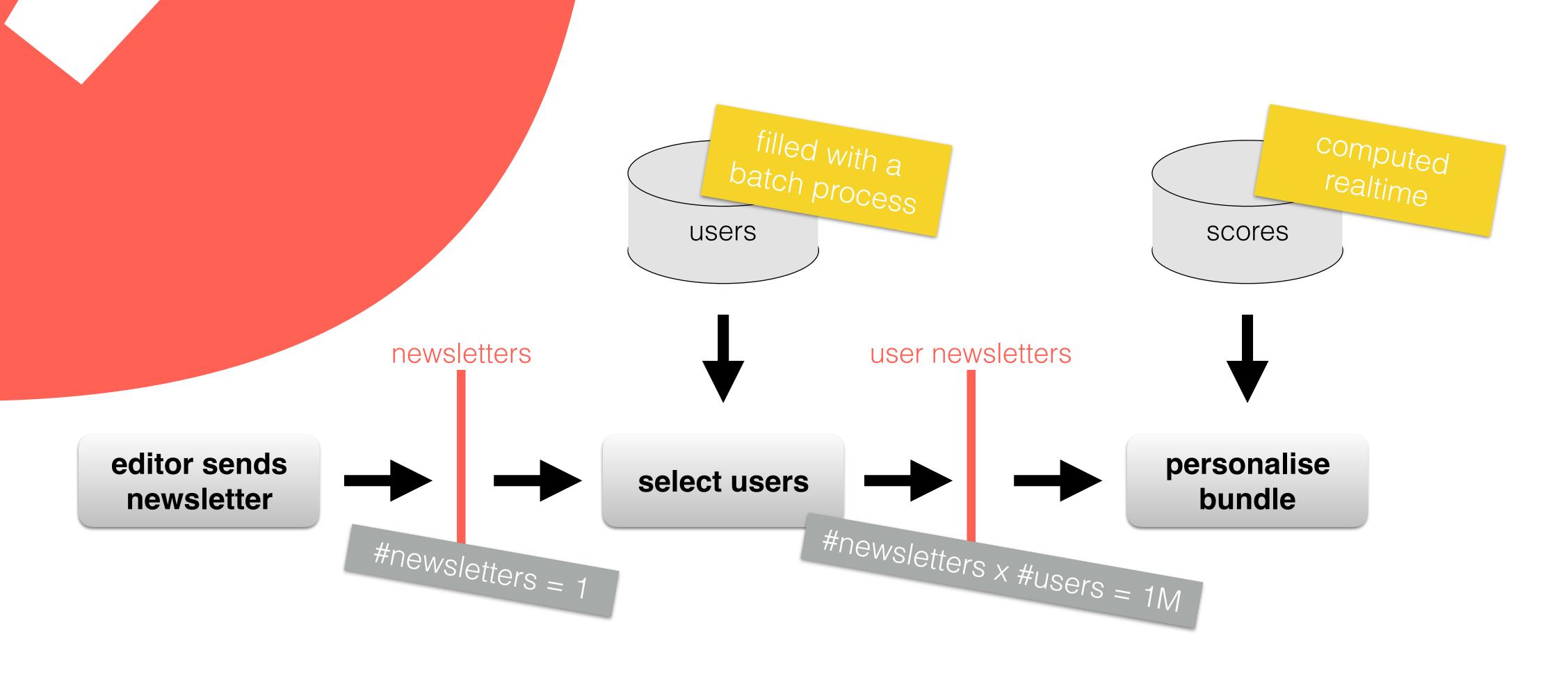




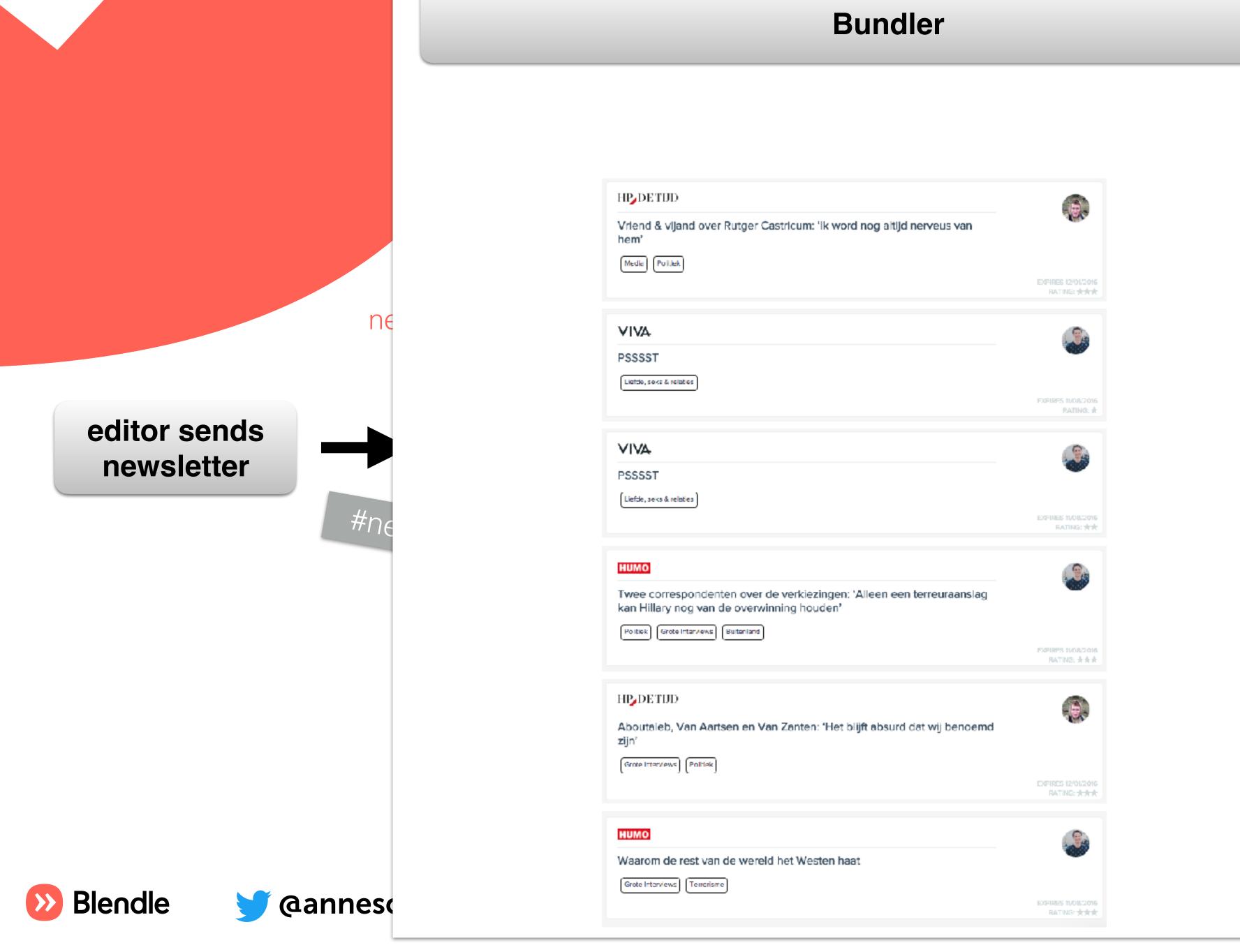
user newsletters



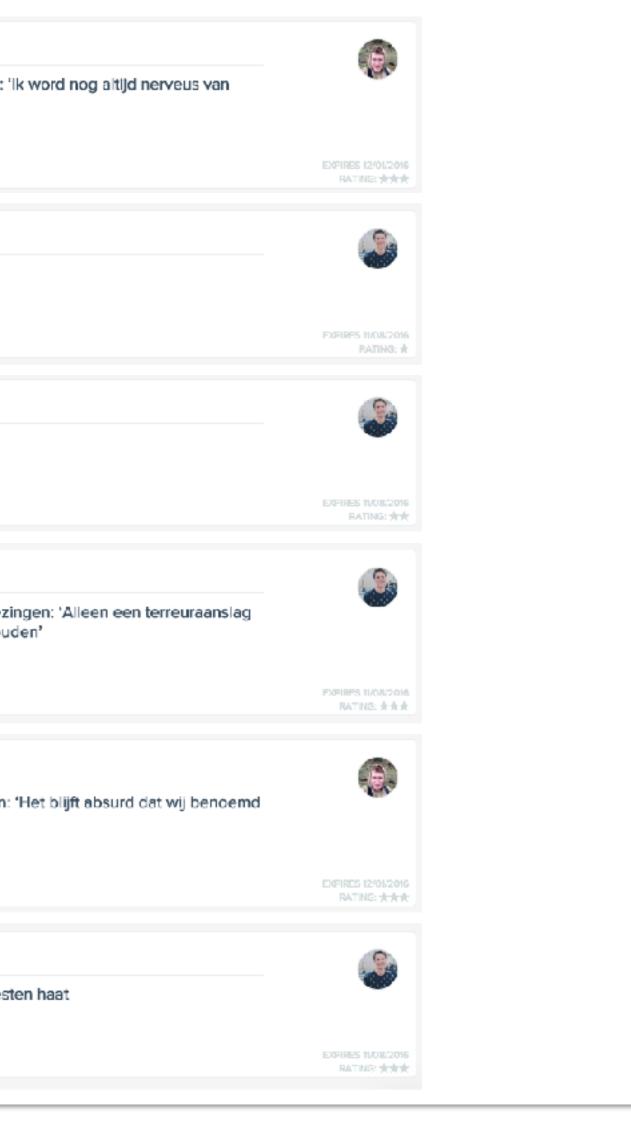


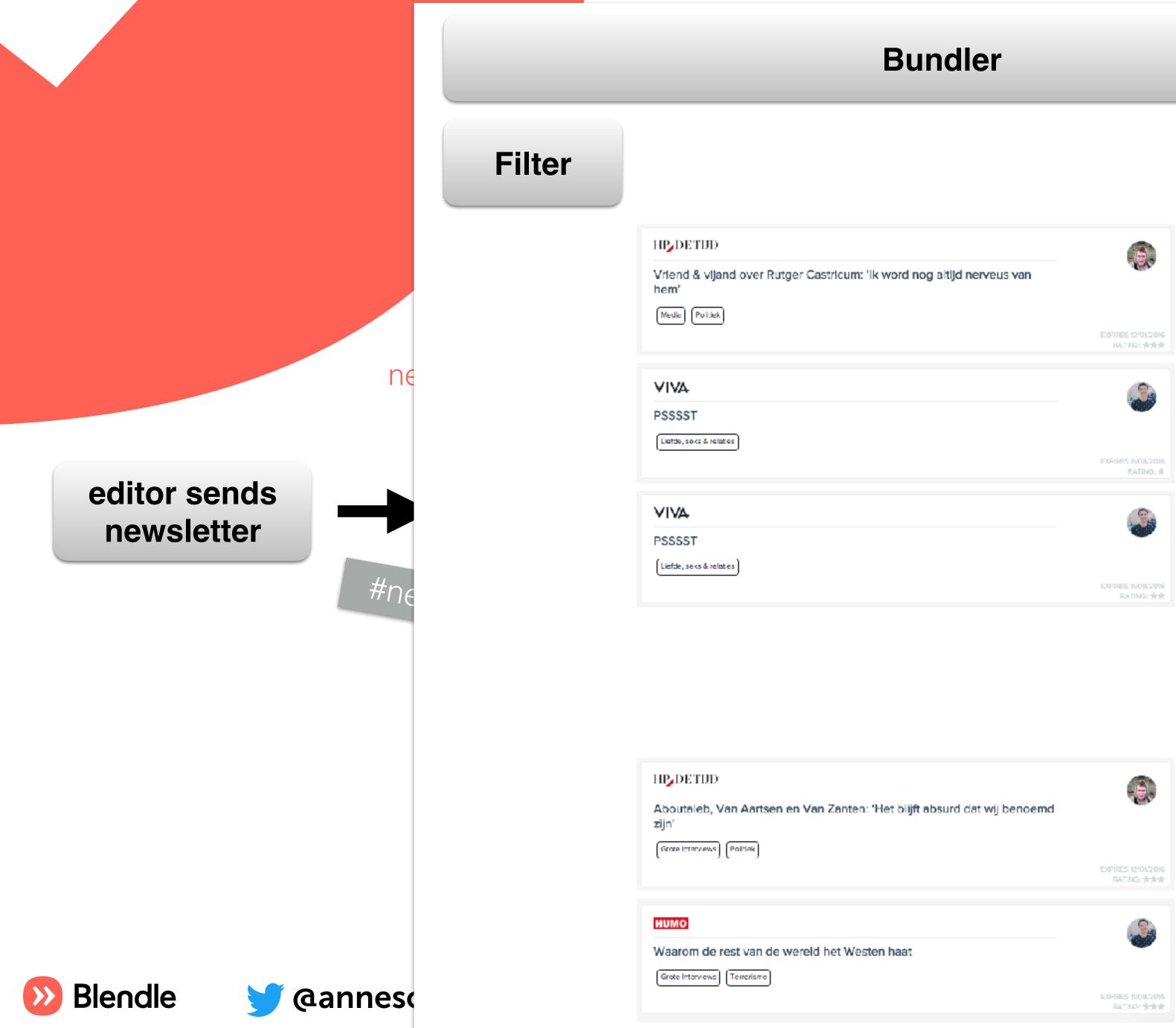


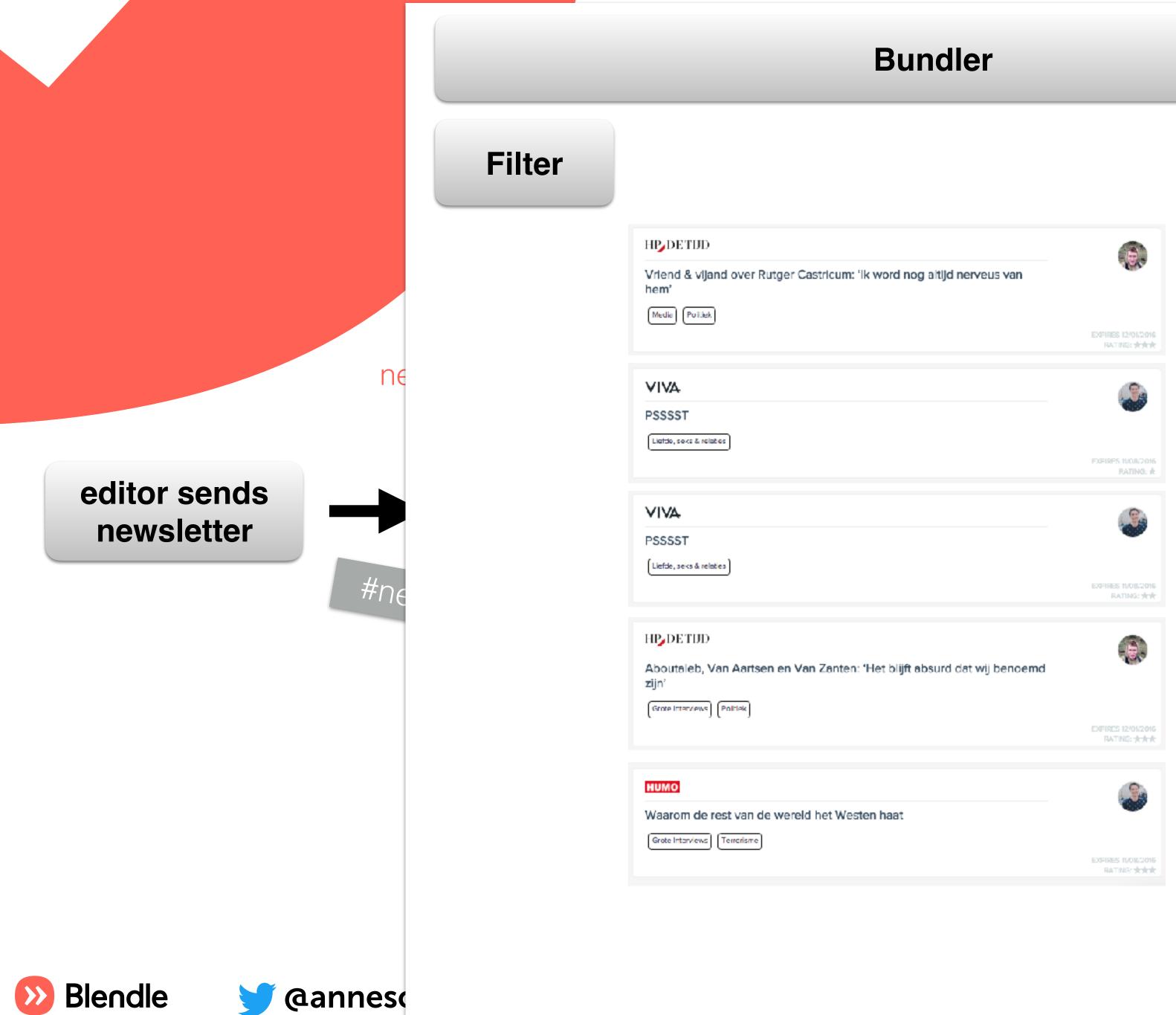




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ne		VIVA PSSSST Liettle, seks & relaties
editor sends newsletter #ne		VIVA PSSSST (Liefde, seks & relaties)
		HUMO Twee correspondenten over de verkiezi kan Hillary nog van de overwinning houe Politiek Grote Interviews Buitenland
		HP DE TUD Aboutaleb, Van Aartsen en Van Zanten: zijn' (Grote Interviews) (Politiek)
Blendle @annesc		HUMO Waarom de rest van de wereld het West Grote Interviews Terrerisme

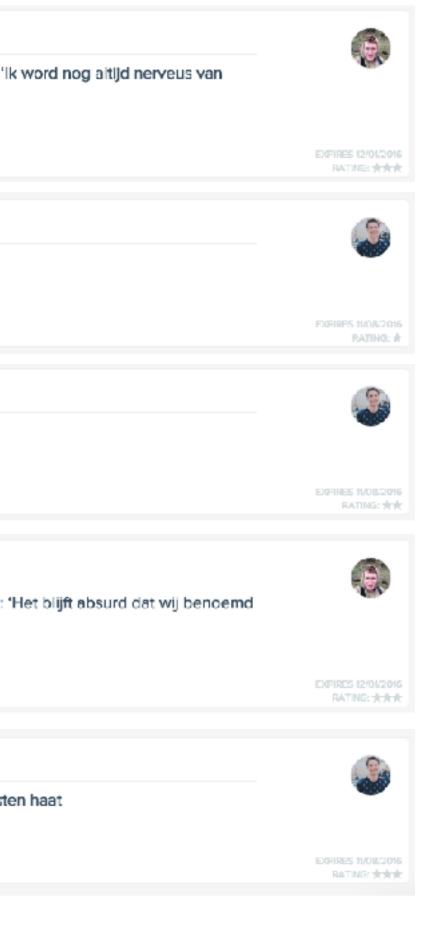






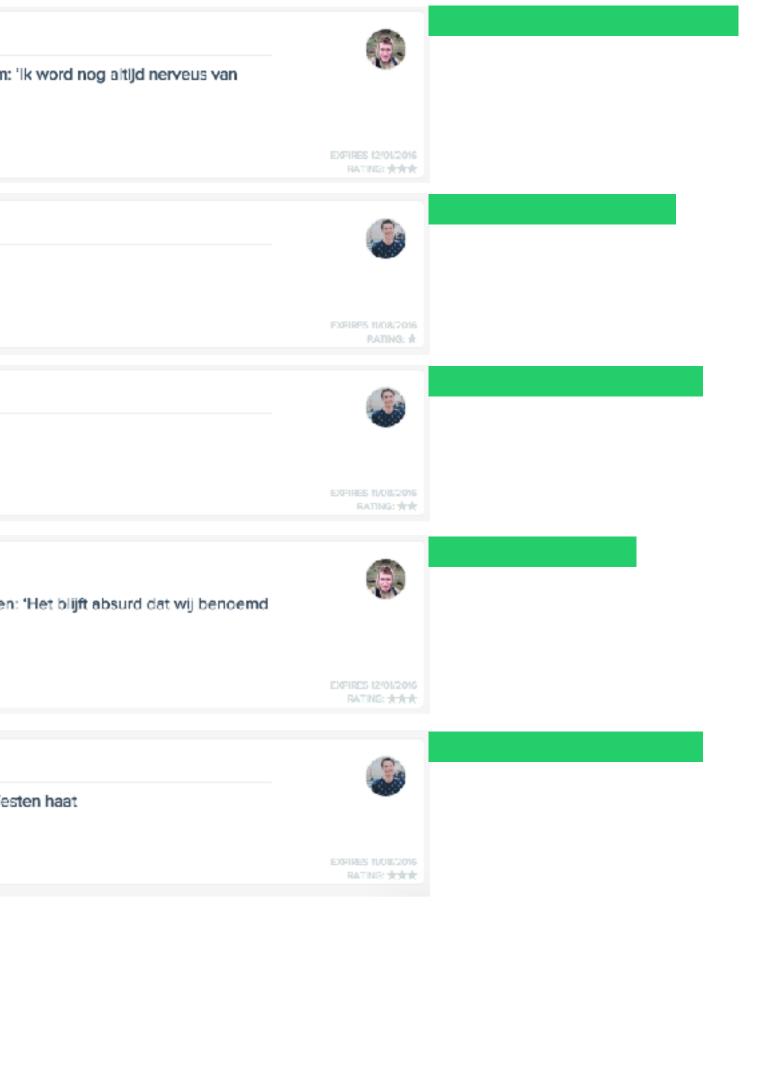


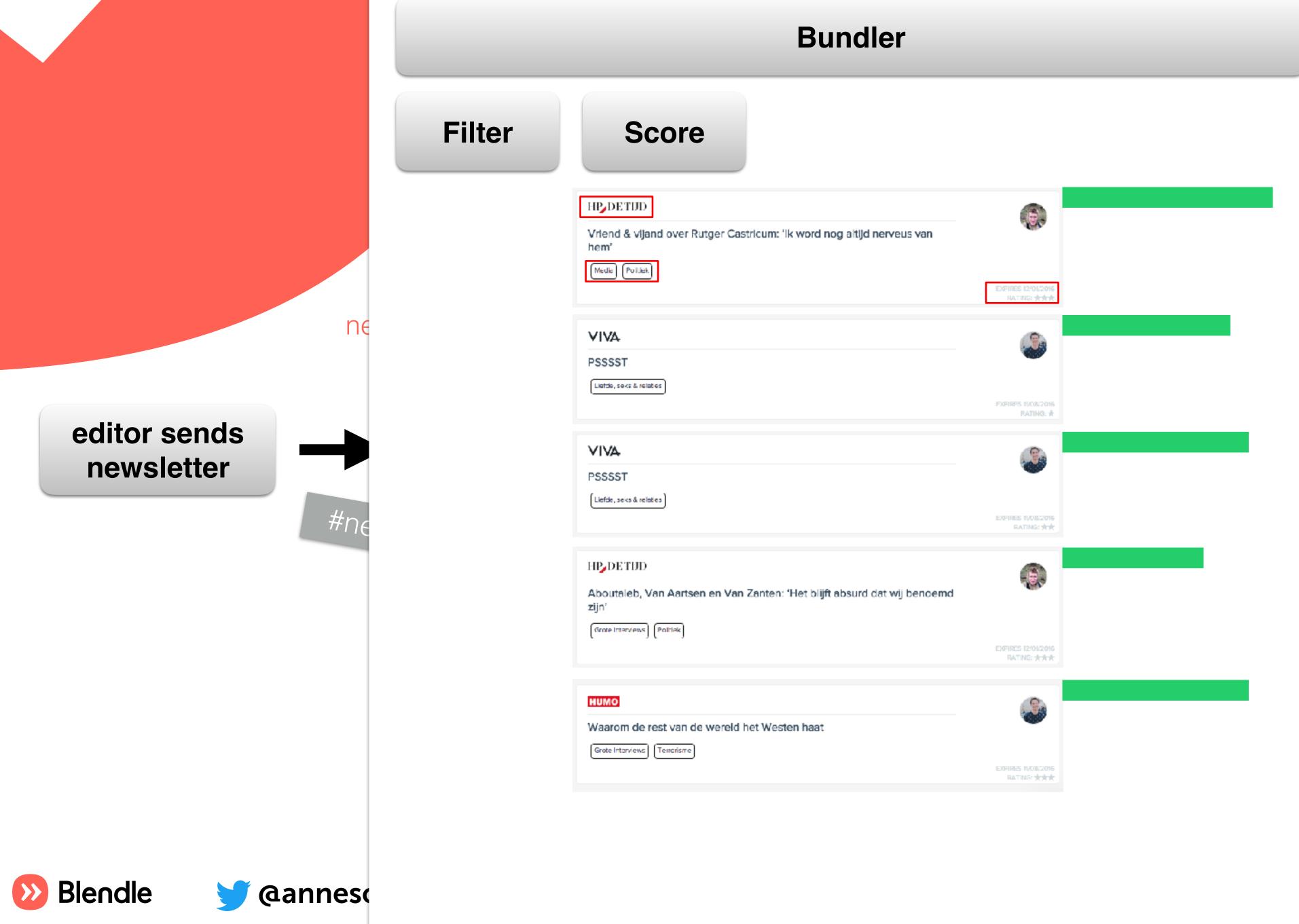
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	Filter	Score
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ne		VIVA PSSSST Lietto, seks & relation
editor sends newsletter #ne		VIVA PSSSST (Liefde, seks & relaties)
		HP DETUD Aboutaleb, Van Aartsen en Van Zanten: 'Het blijft absurd zijn' (Grote Interviews) (Politiek)
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Blendle Gannes		



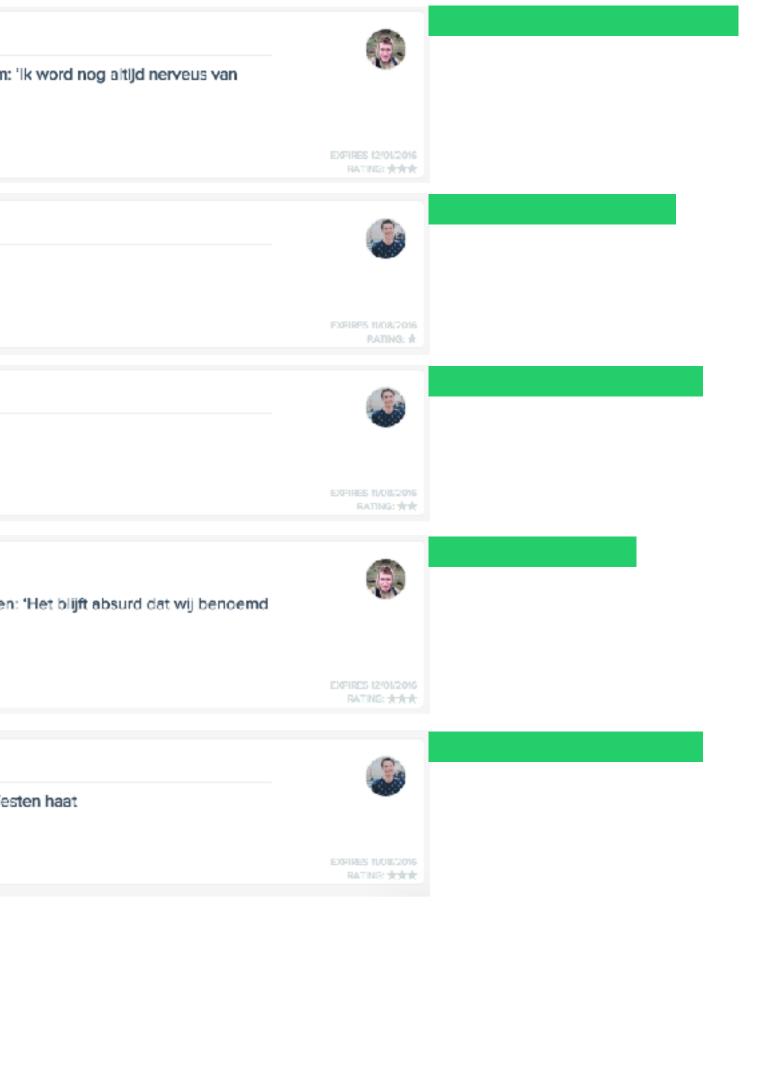


Bund
um: 'lk word nog altijd
nten: 'Het blijft absurd
Westen haat
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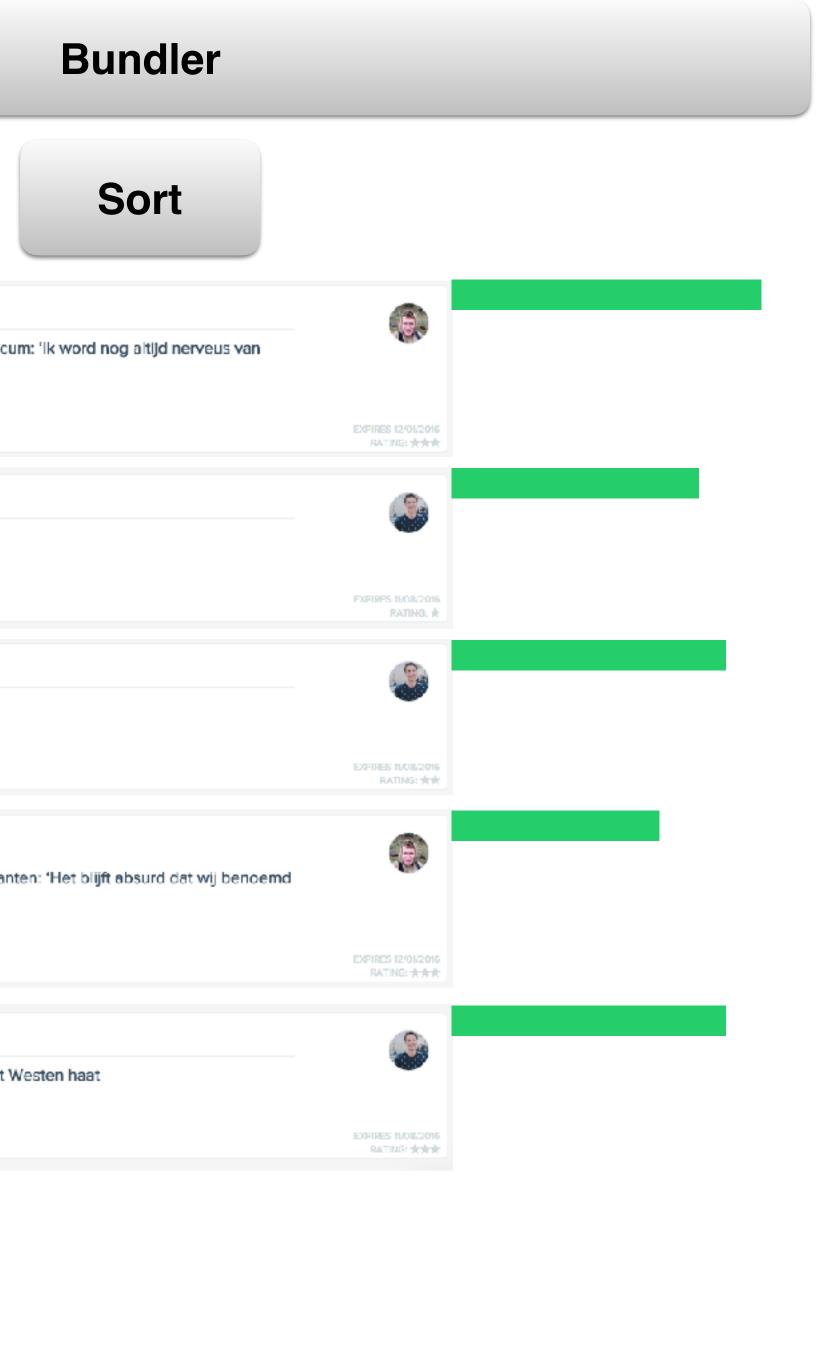




Bund
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Westen haat
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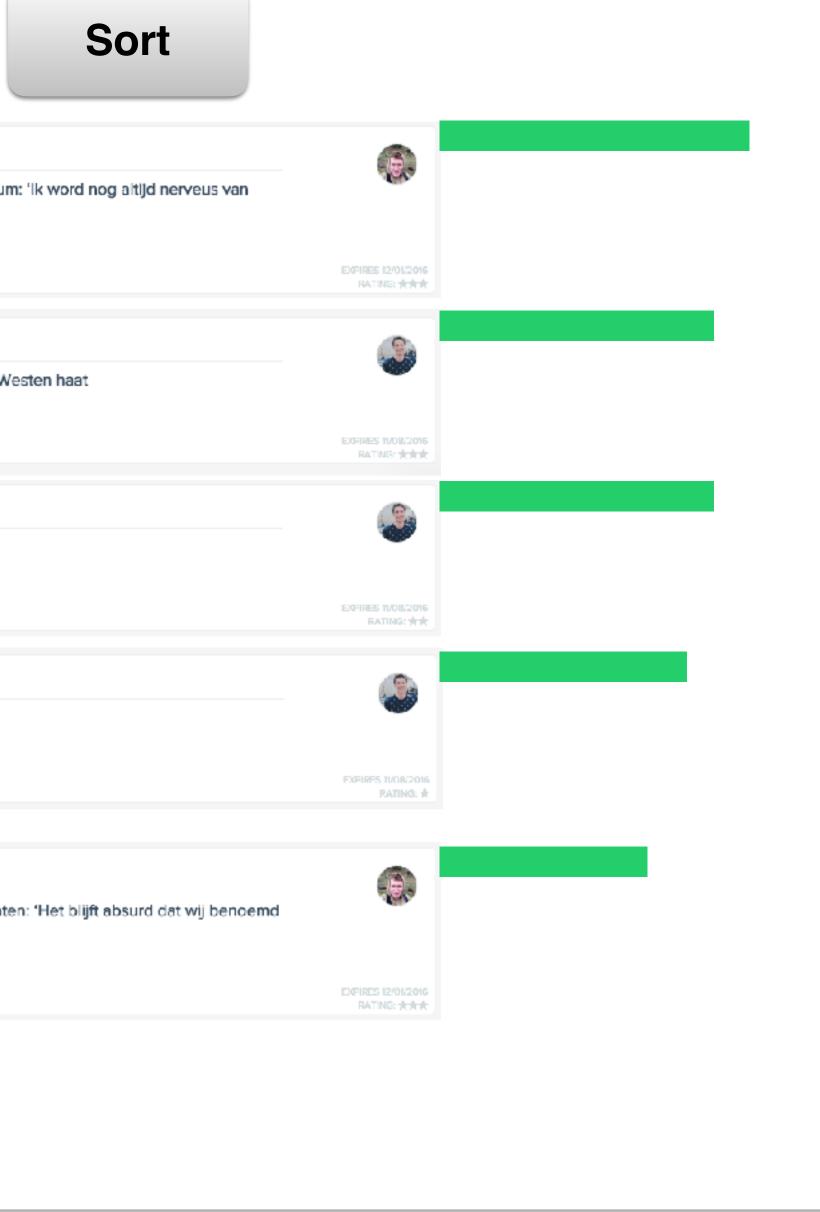


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	VIVA PSSSST Liefdo, soks & relatios
	VIVA PSSSST (Liefde, seks & relaties)
	HP DE TUD Aboutaleb, Van Aartsen en Van Zanten: 'H zijn' (Grote Interviews) (Politiek)
	HUMO Waarom de rest van de wereld het Wester Grote Interviews Terrorisme

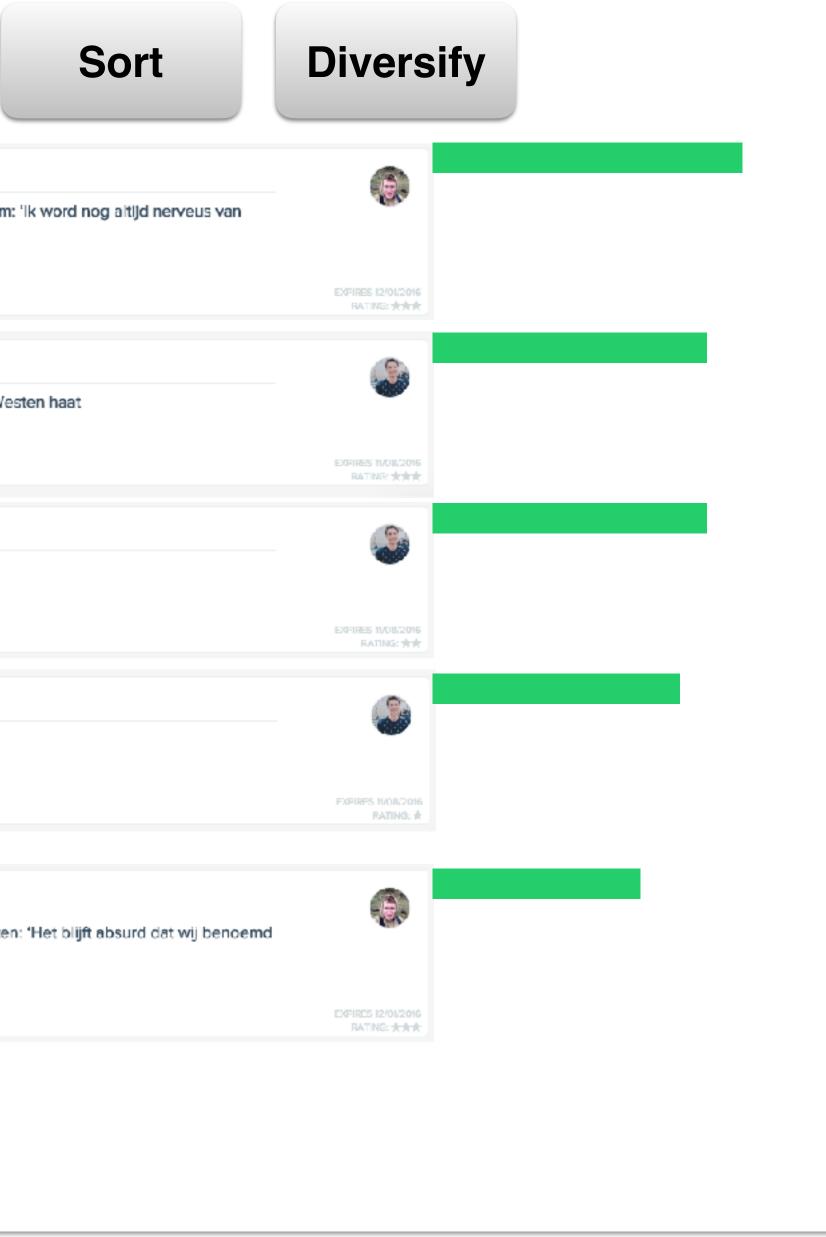


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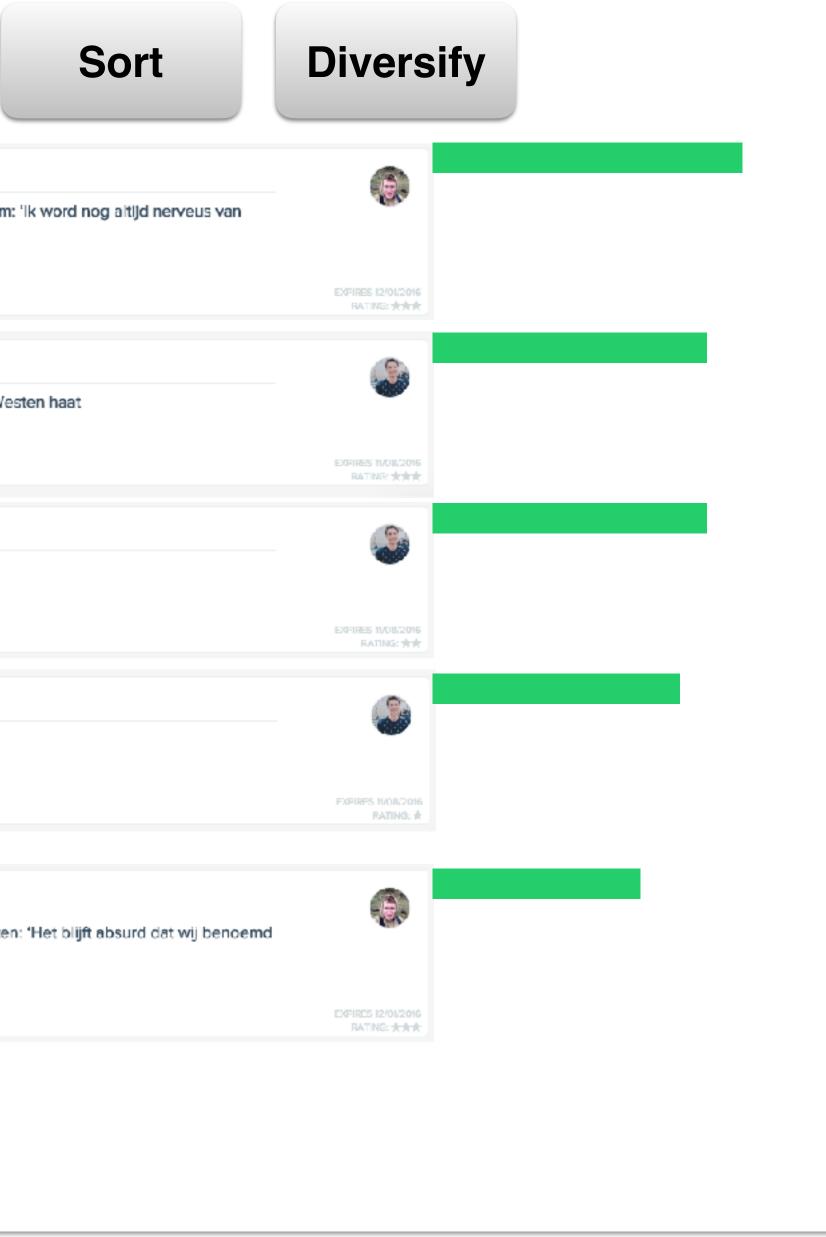
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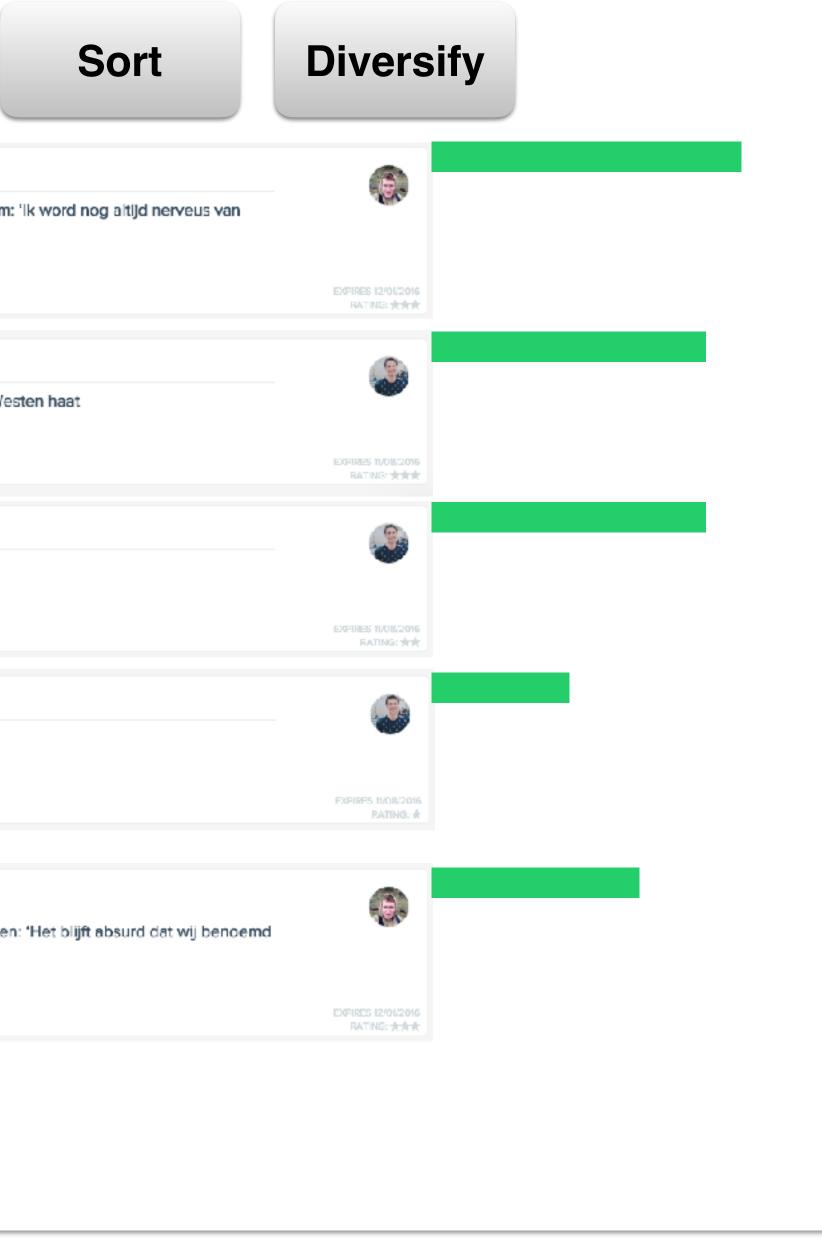
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Blendle Gannes		



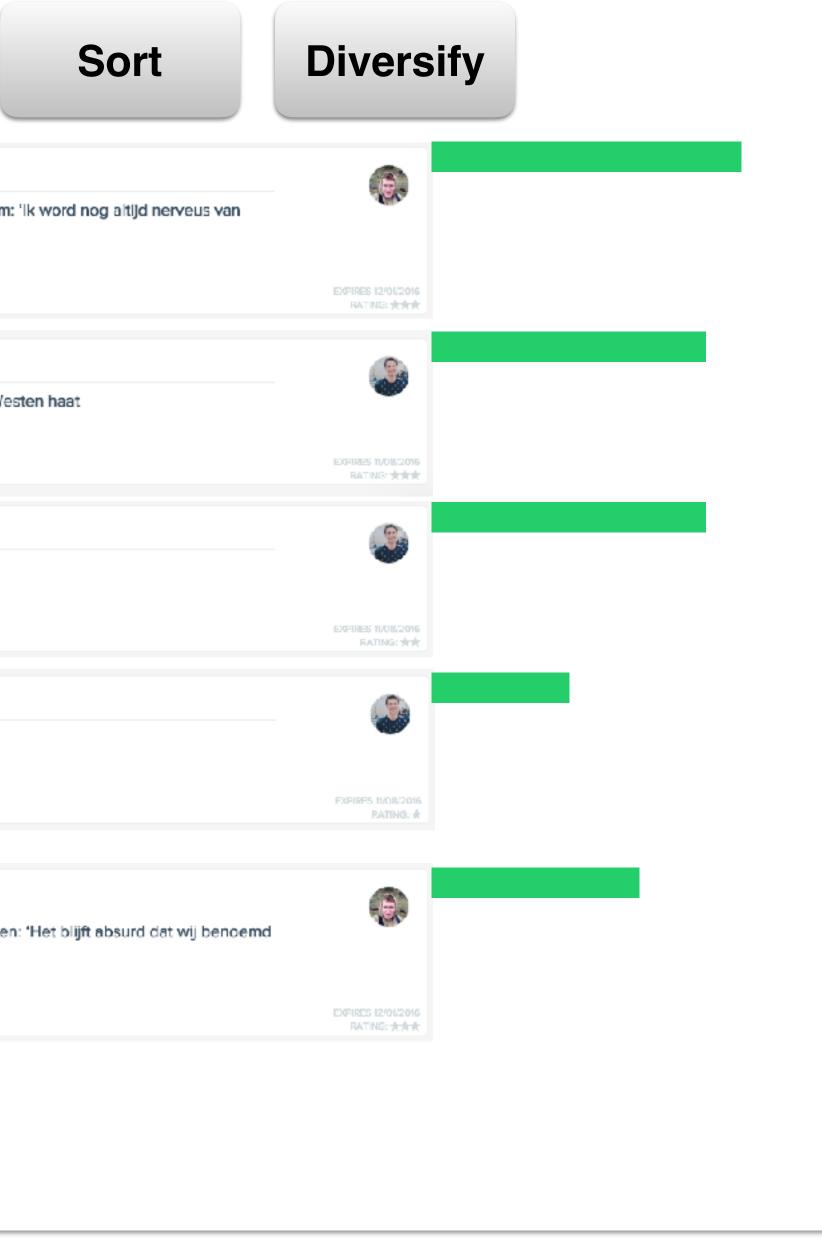
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editor sends newsletter #	ne	VIVA PSSSST (Liefde, seks & relations)
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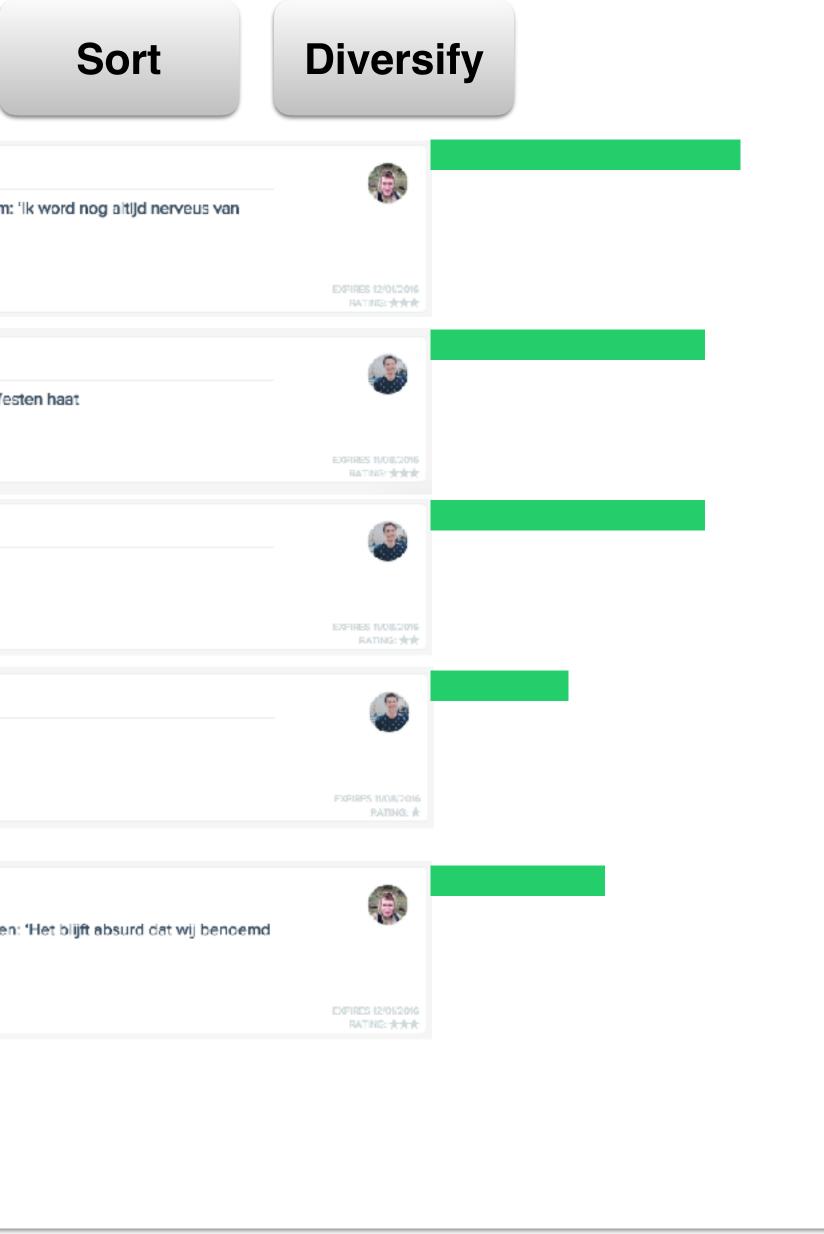
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editor sends newsletter #	ne	VIVA PSSSST (Liefde, seks & relations)
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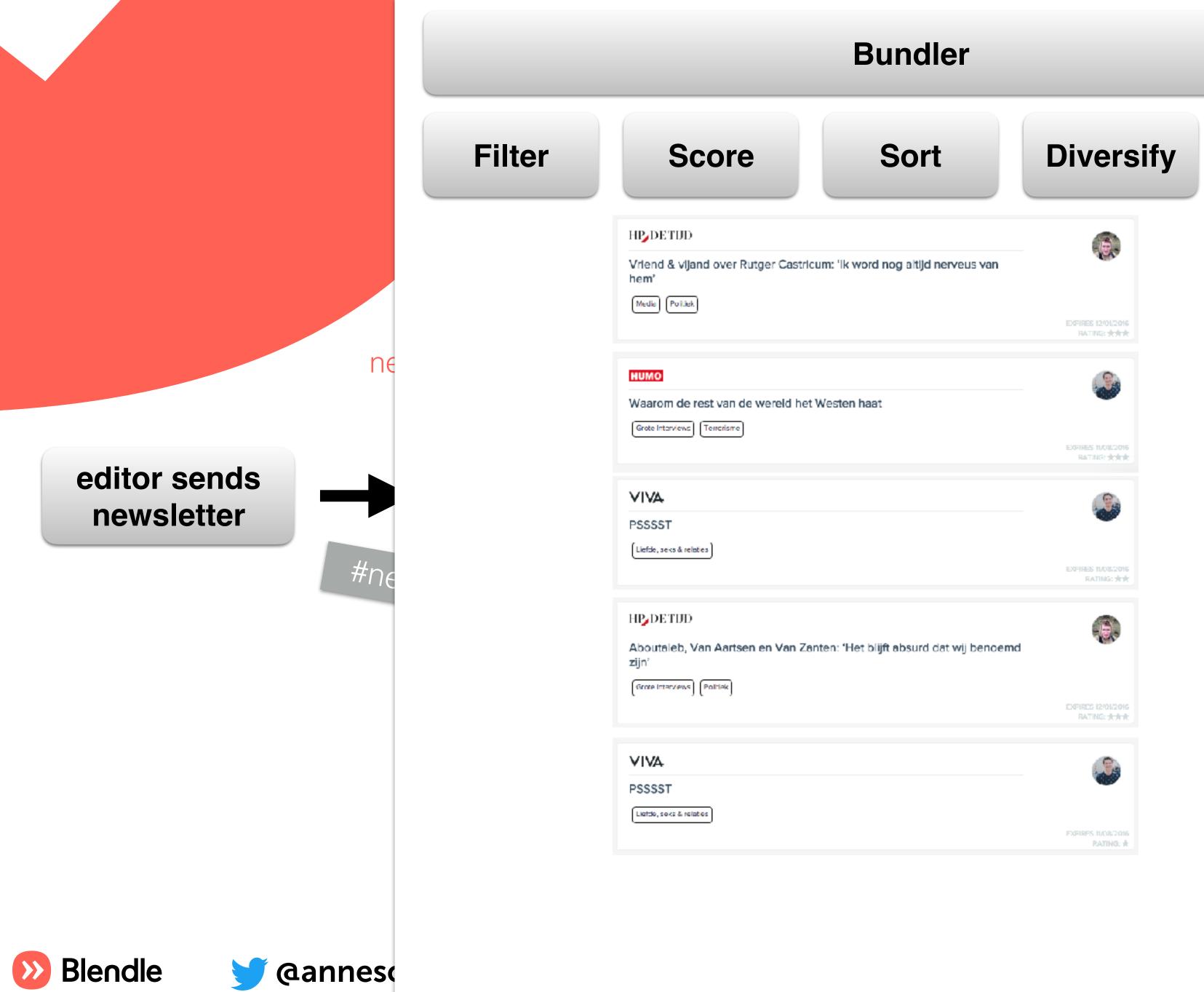


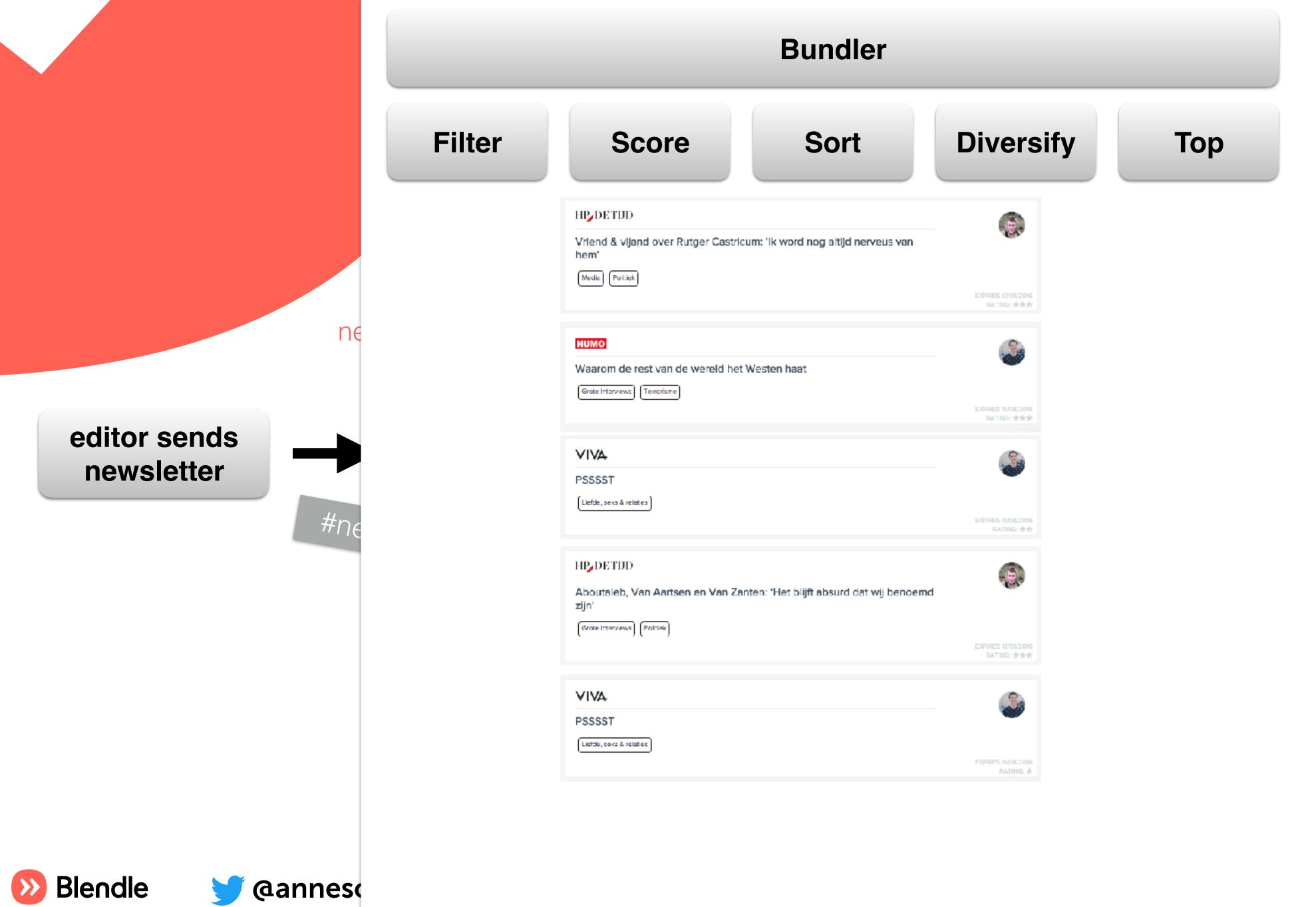
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editor sends newsletter #ne		VIVA PSSSST (Liefde, seks & relaties)
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Blendle @annesc		

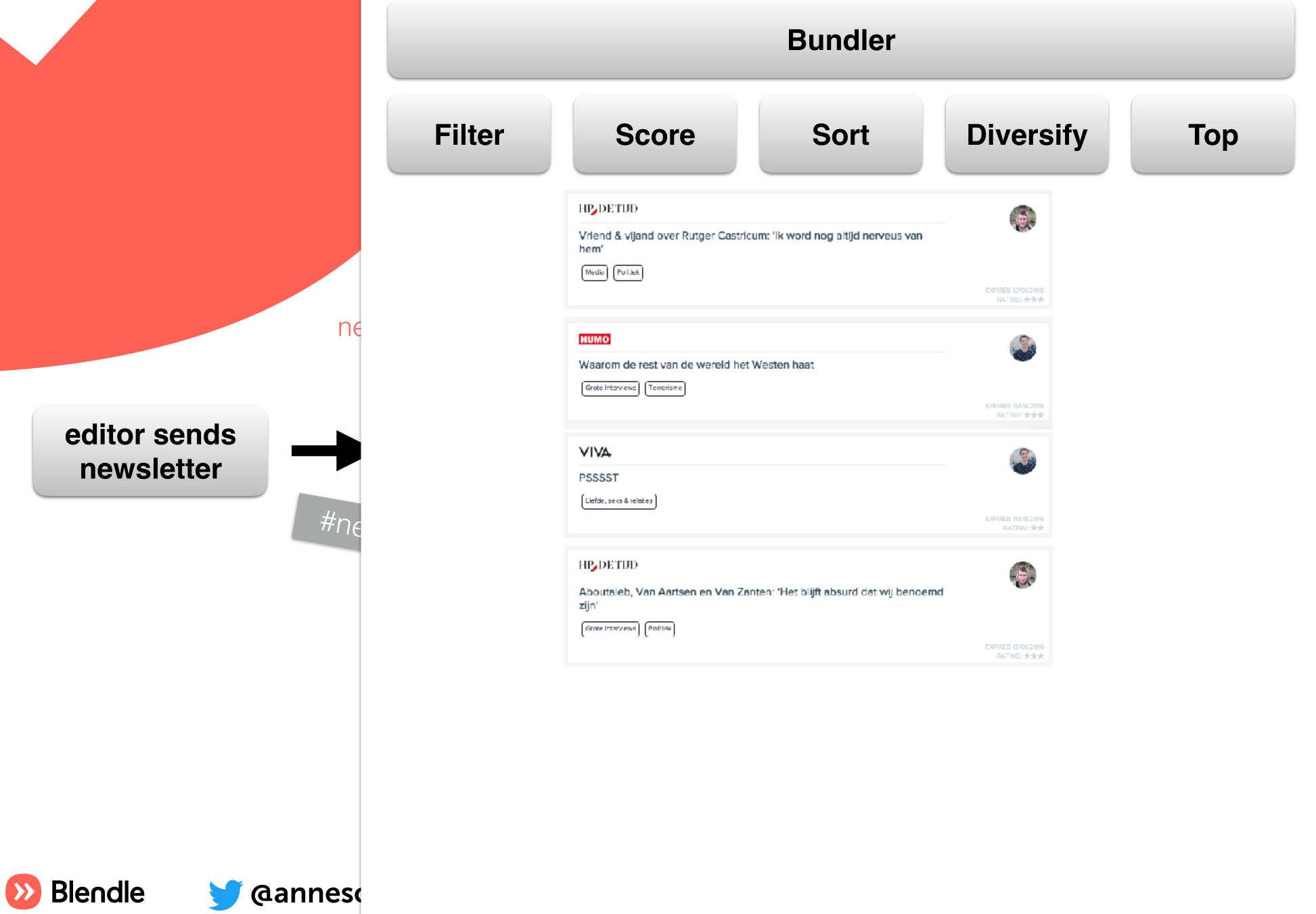


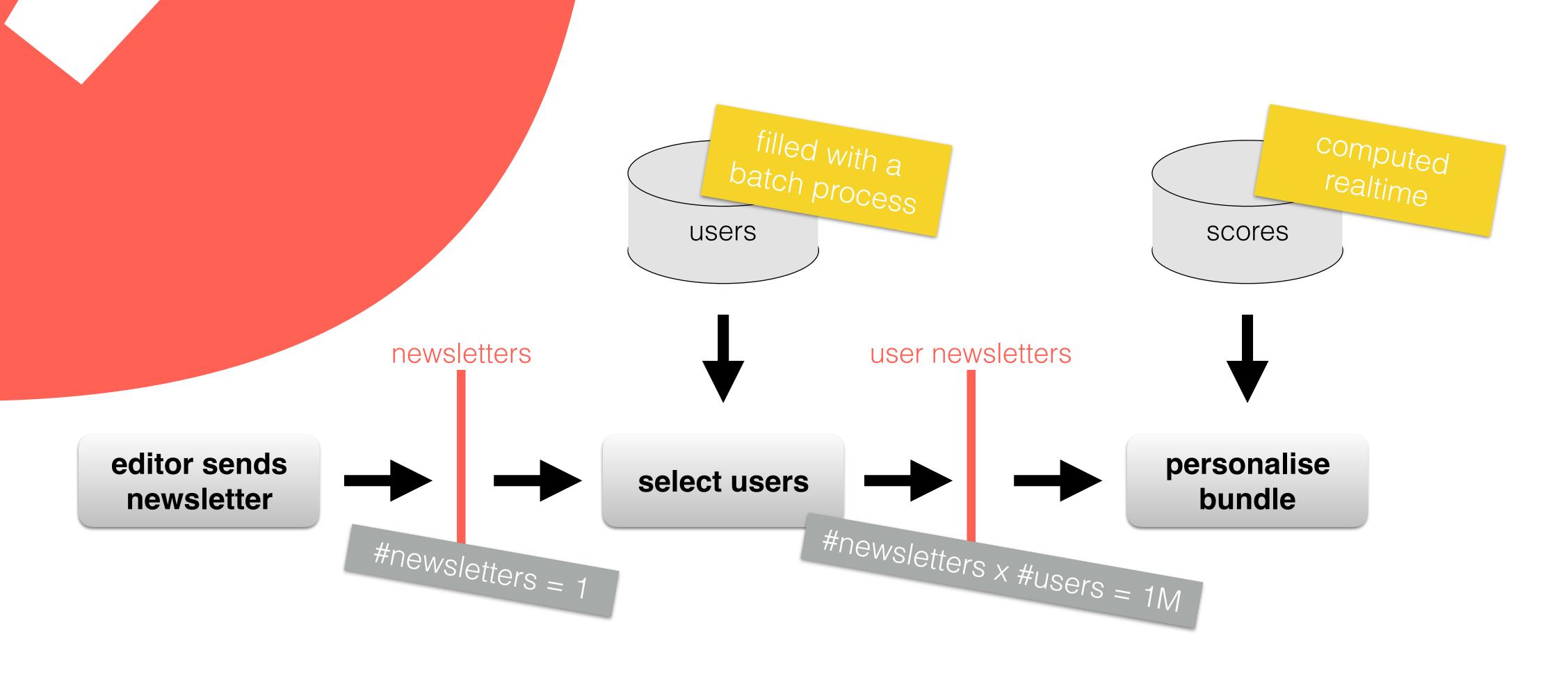
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editor sends newsletter #ne		VIVA PSSSST (Liefde, seks & relaties)
		VIVA PSSSST Liette, seks & relation
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Blendle @annesc		



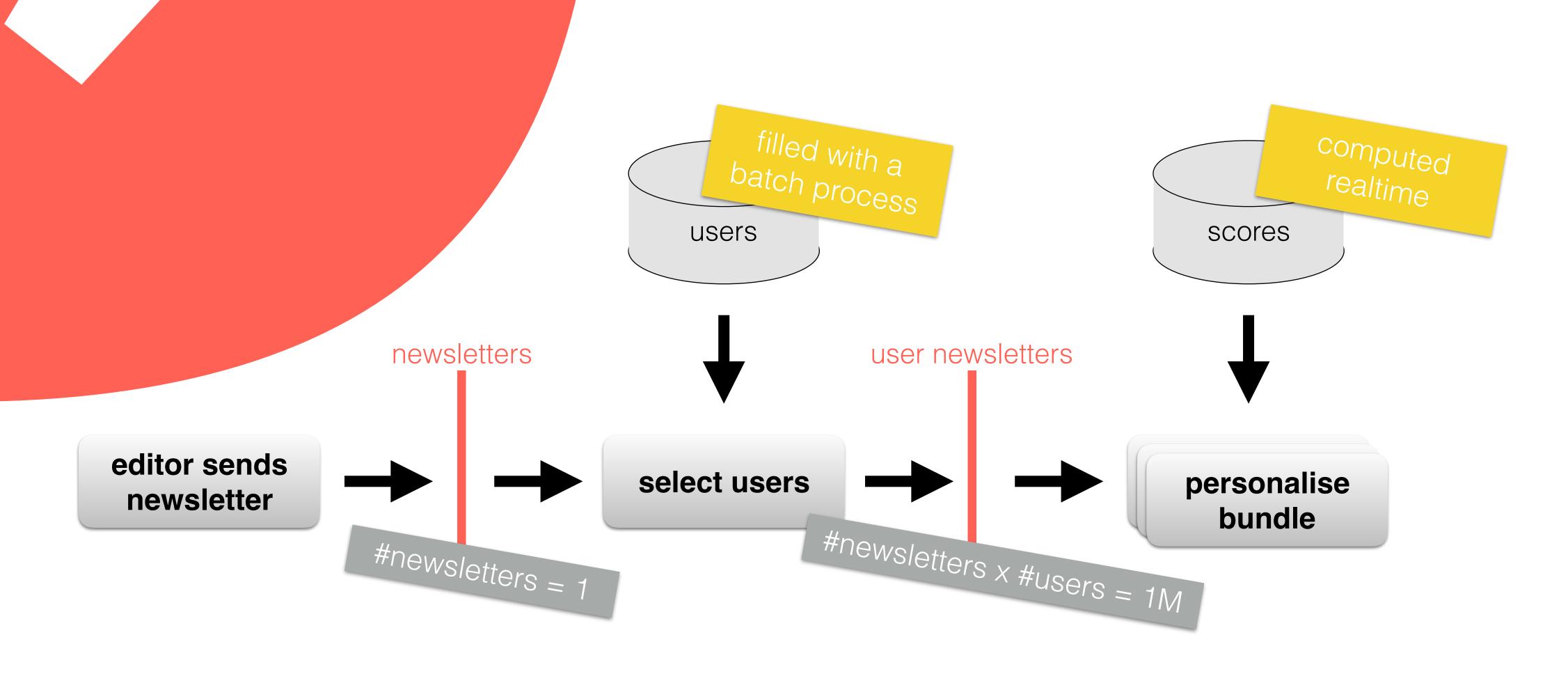




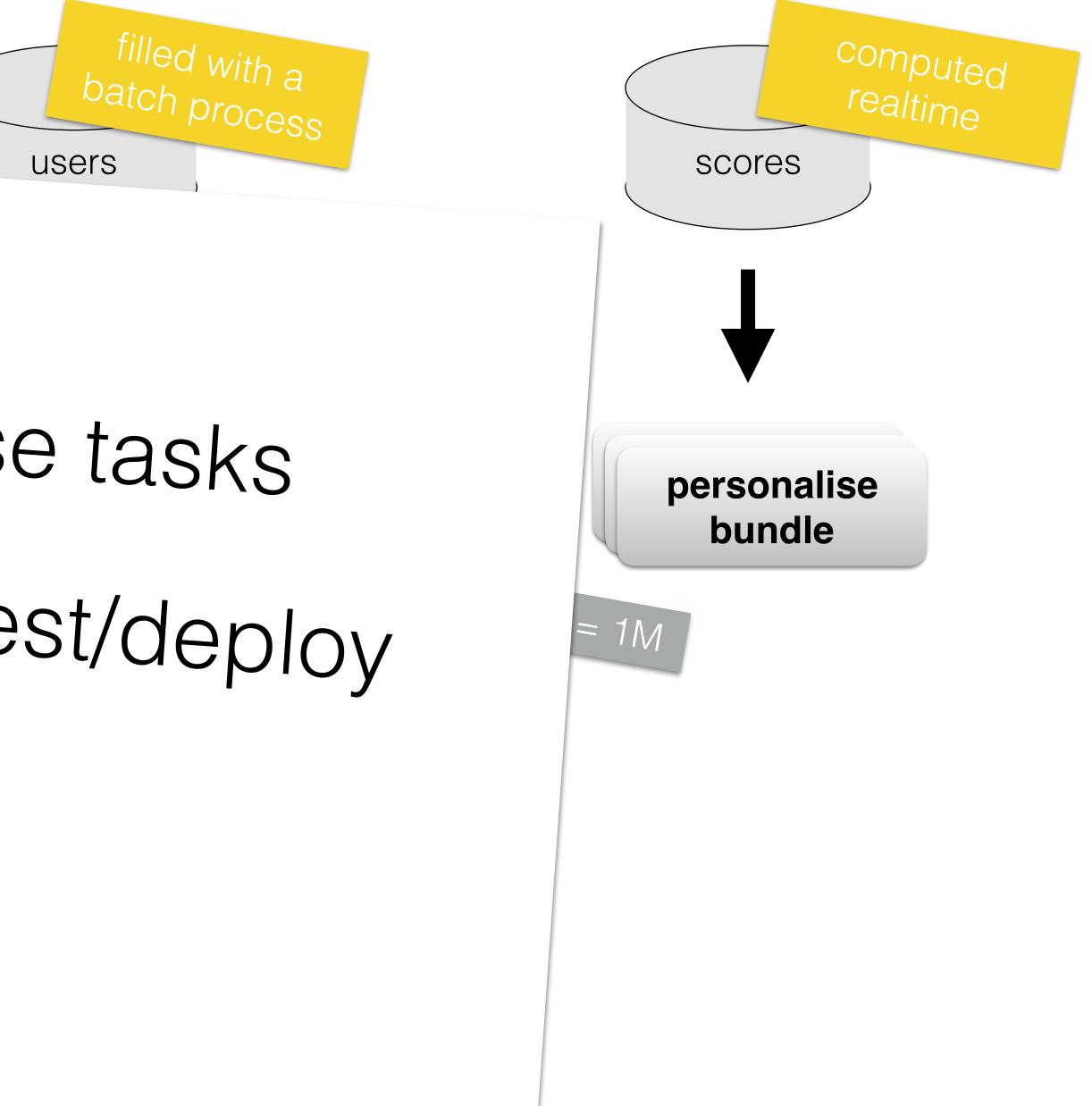


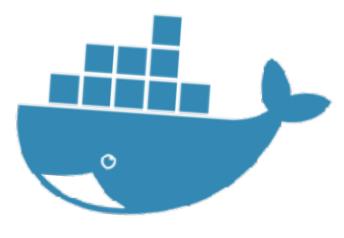








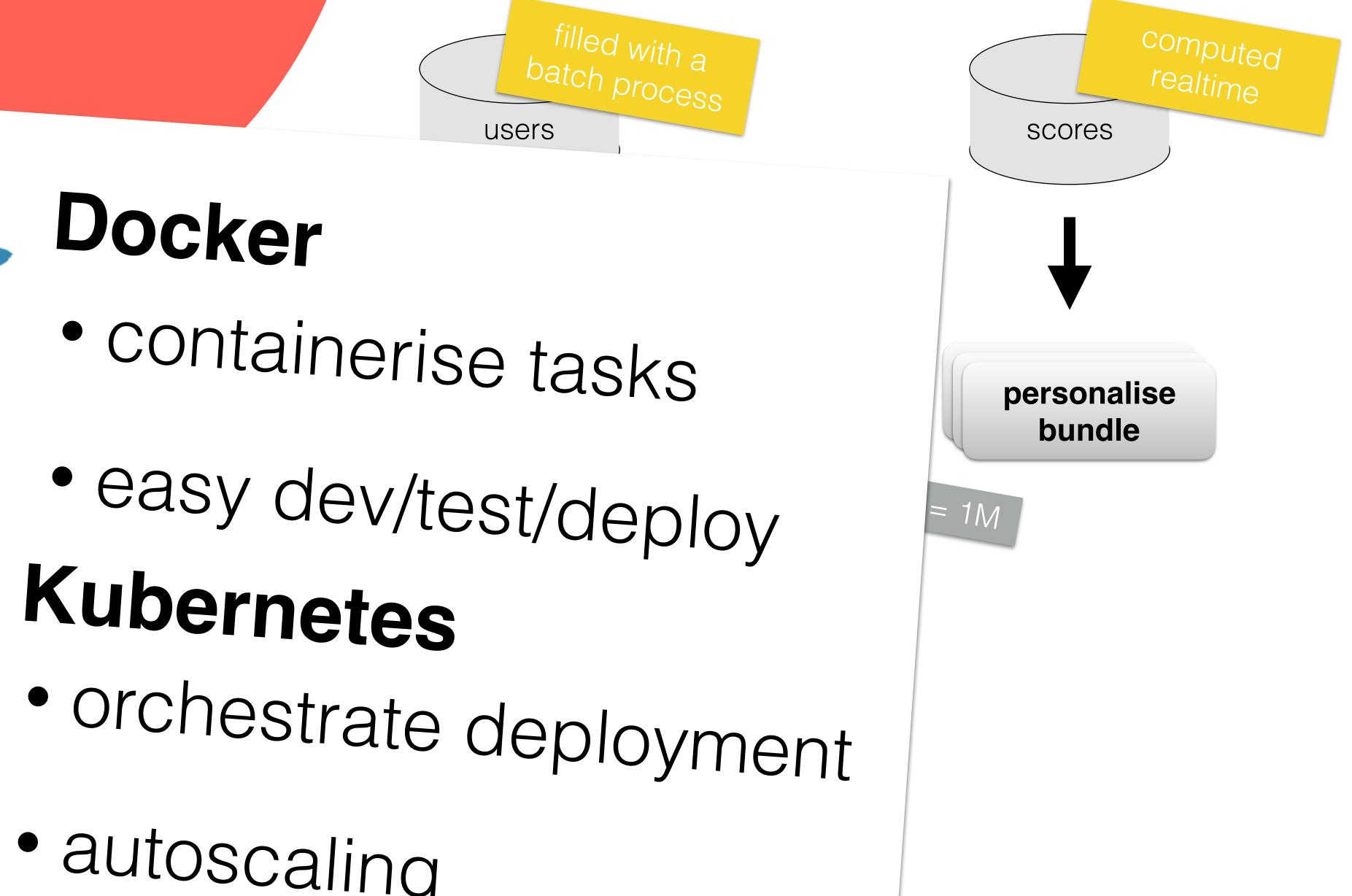


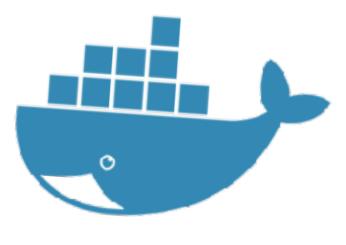


Docker

Containerise tasks

easy dev/test/deploy





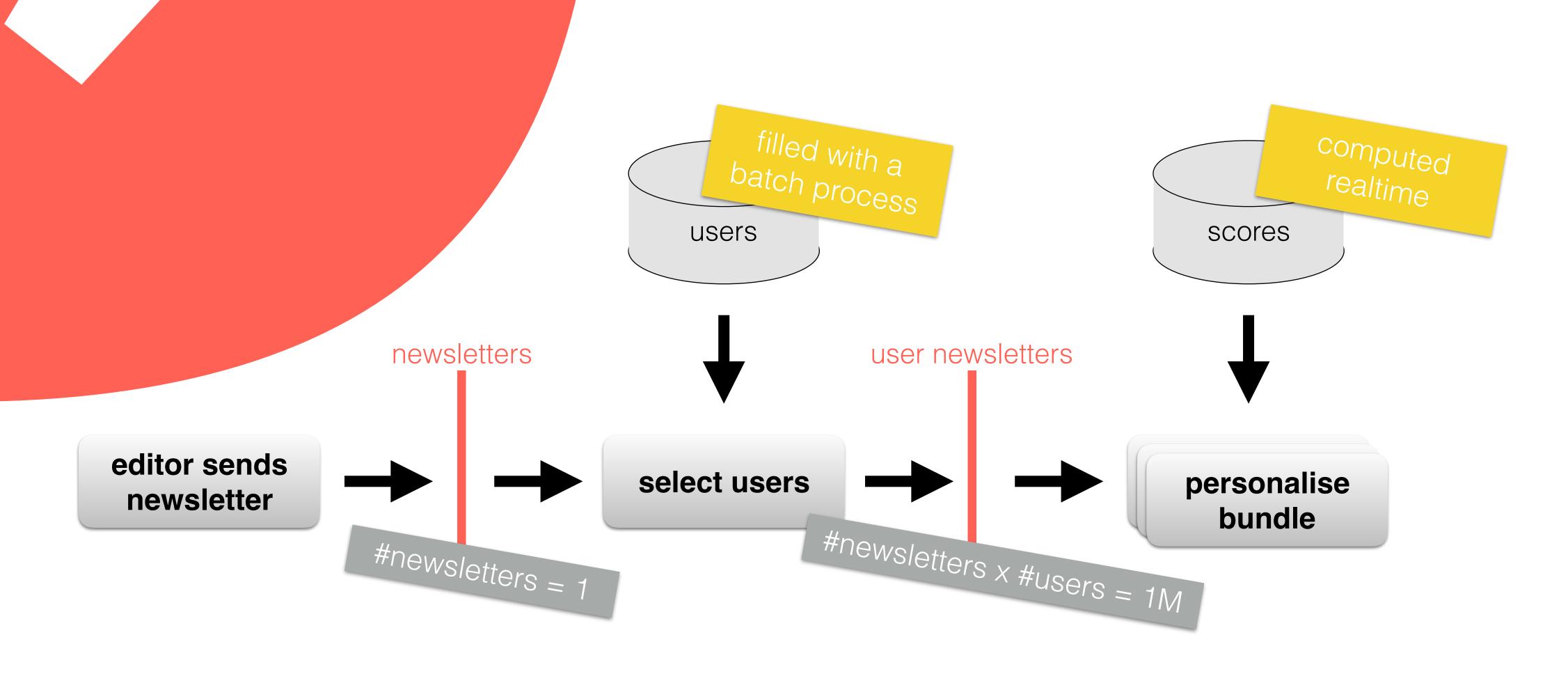
Docker

Containerise tasks

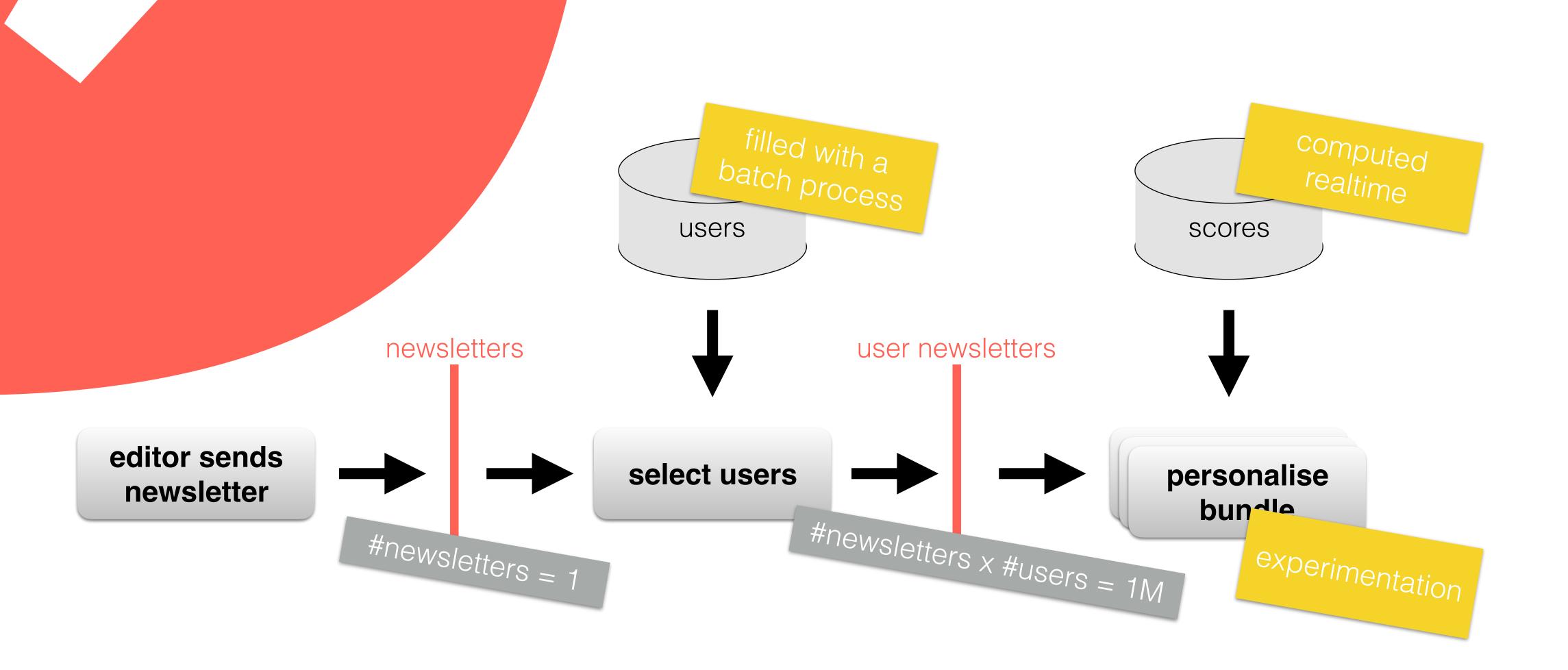


 easy dev/test/deploy Kubernetes

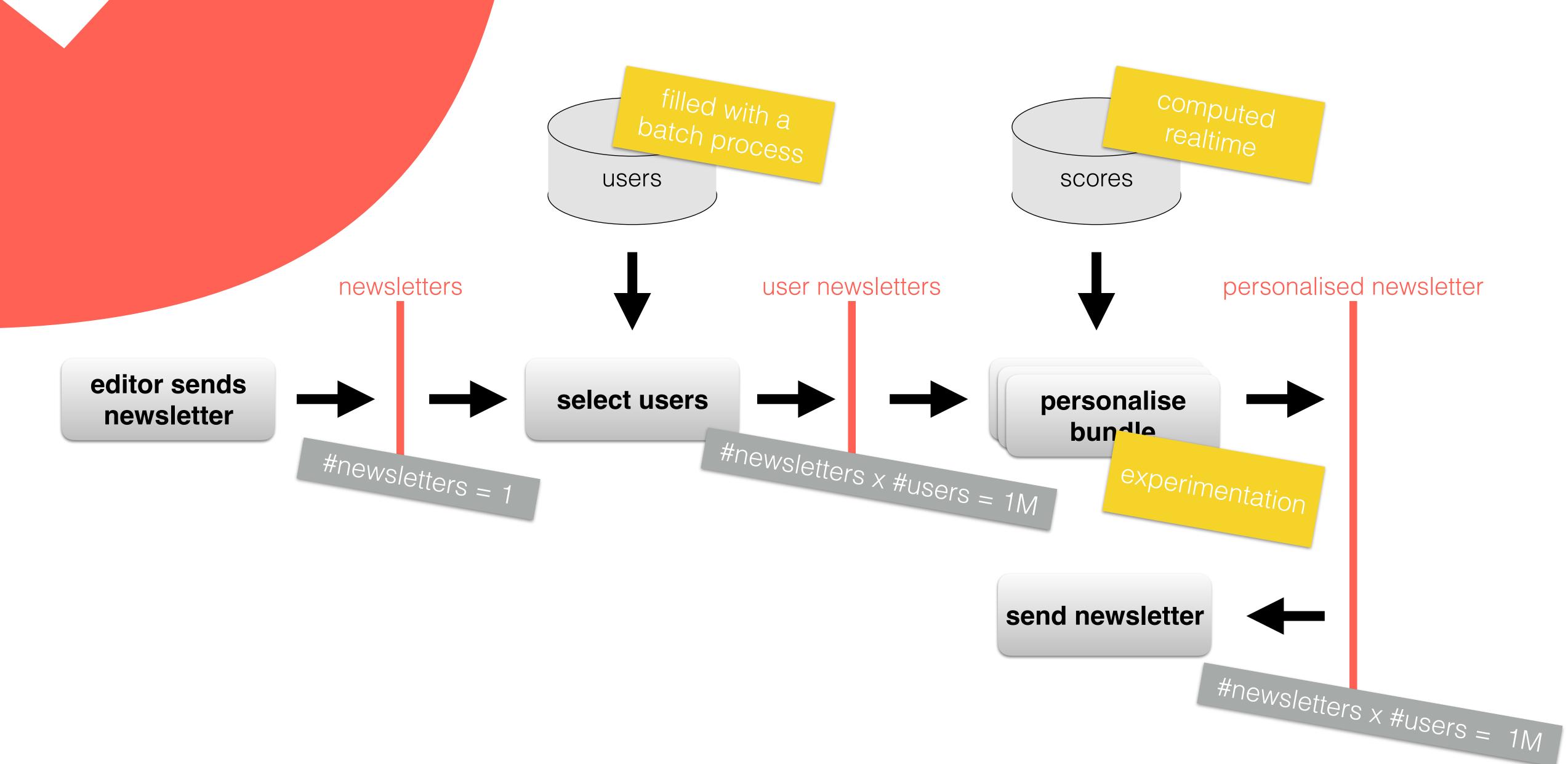
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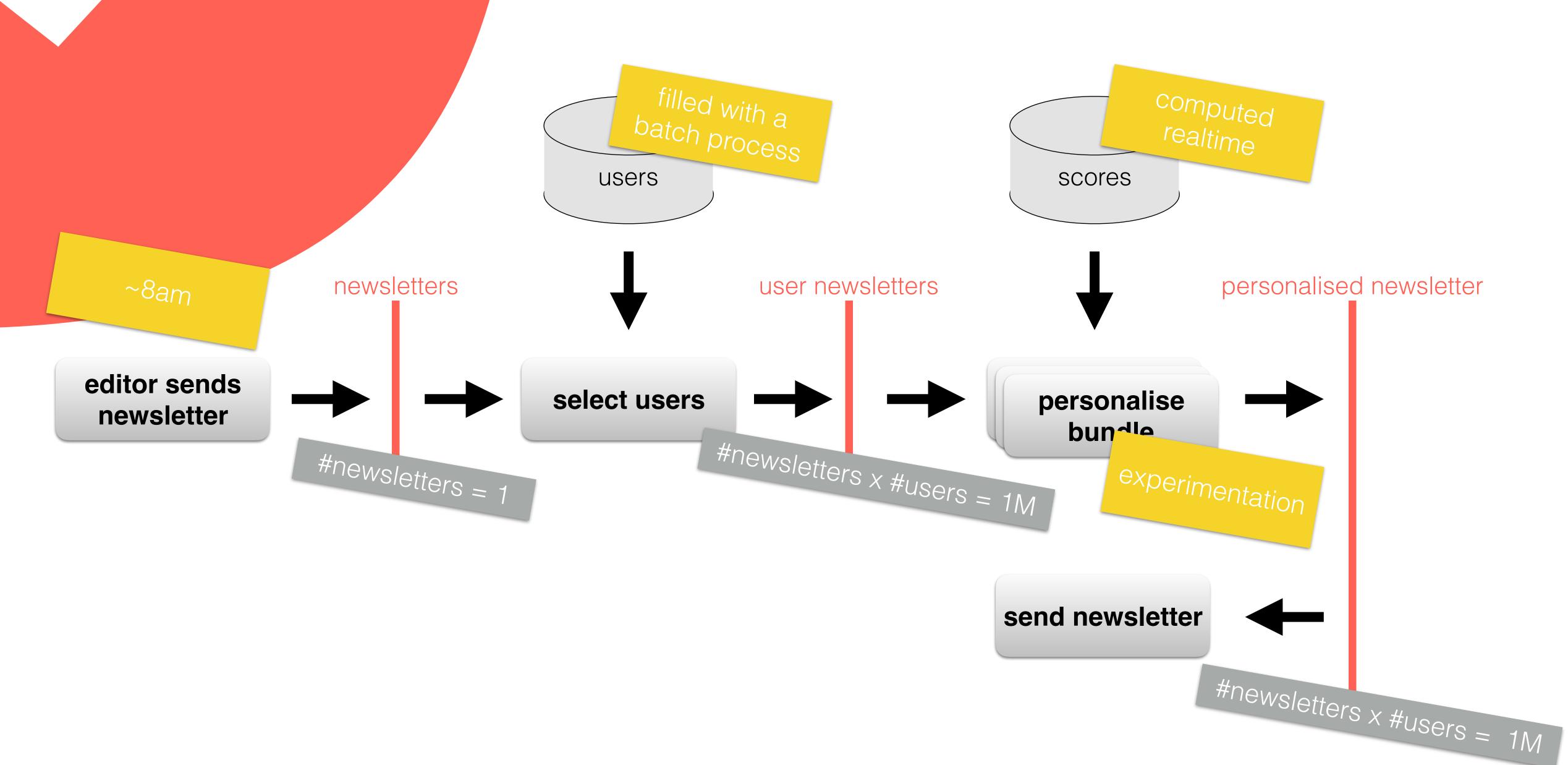








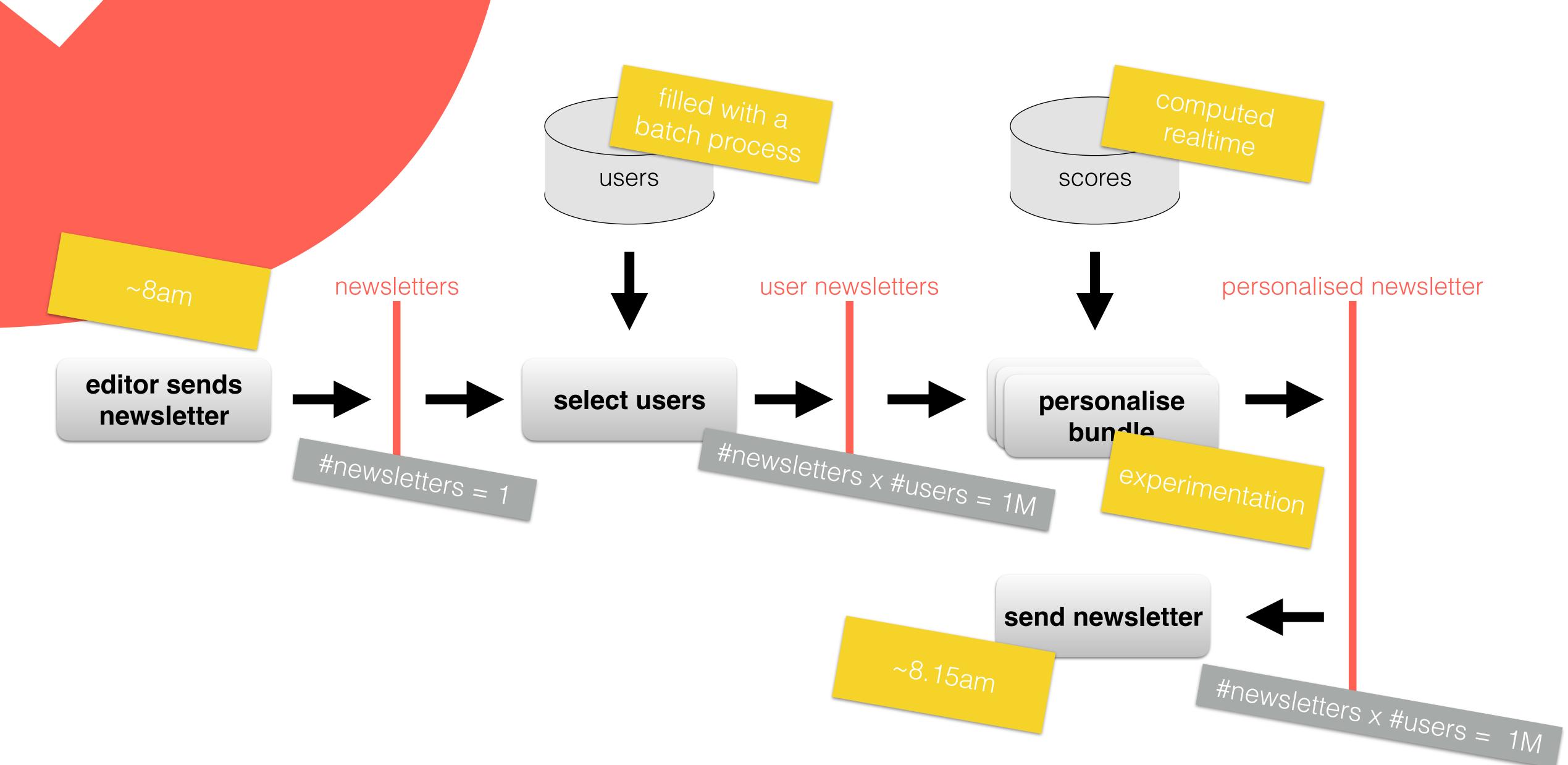




















Data Pipelines Start like this.

6 cloudera

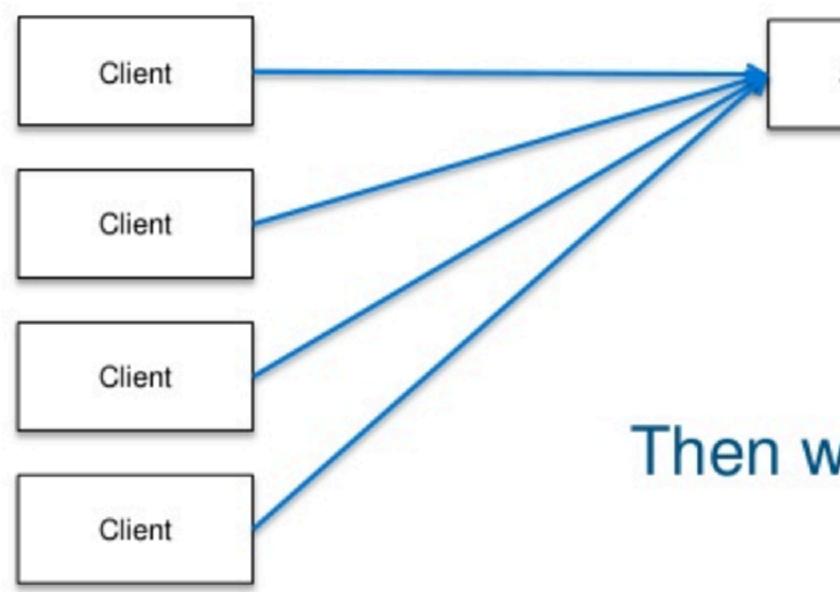
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Source







7 cloudera

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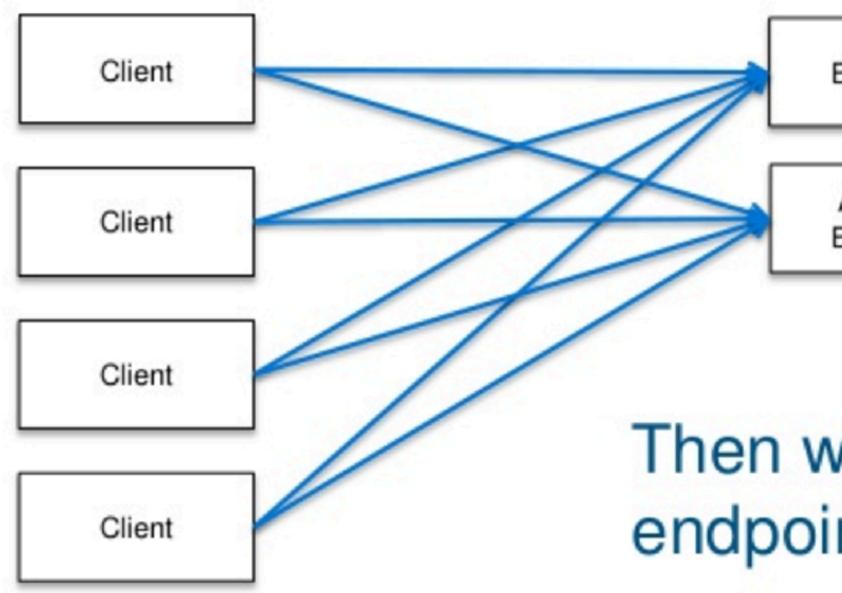
Source

Then we reuse them





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8 cloudera

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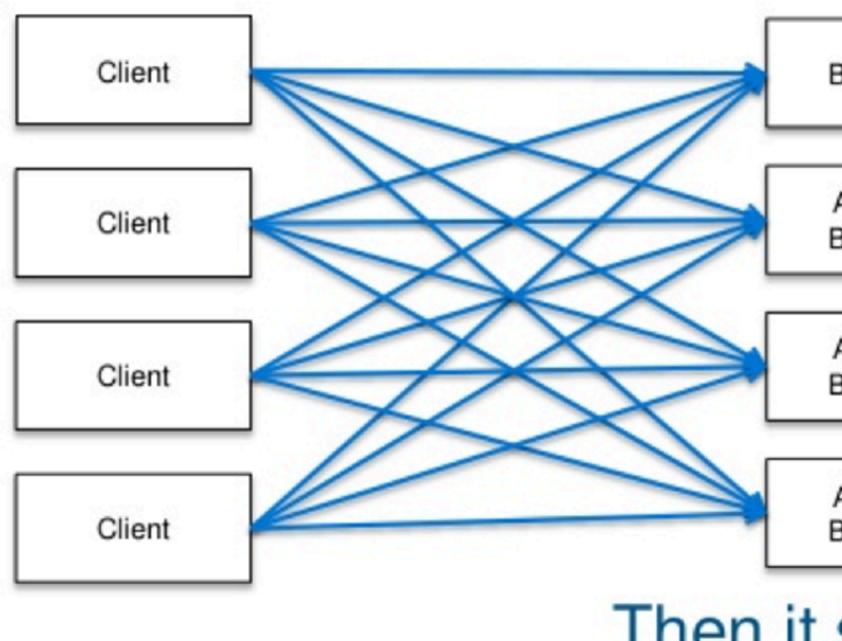
Backend	
Another Backend	1

Then we add additional endpoints to the existing sources





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9 cloudera

• •

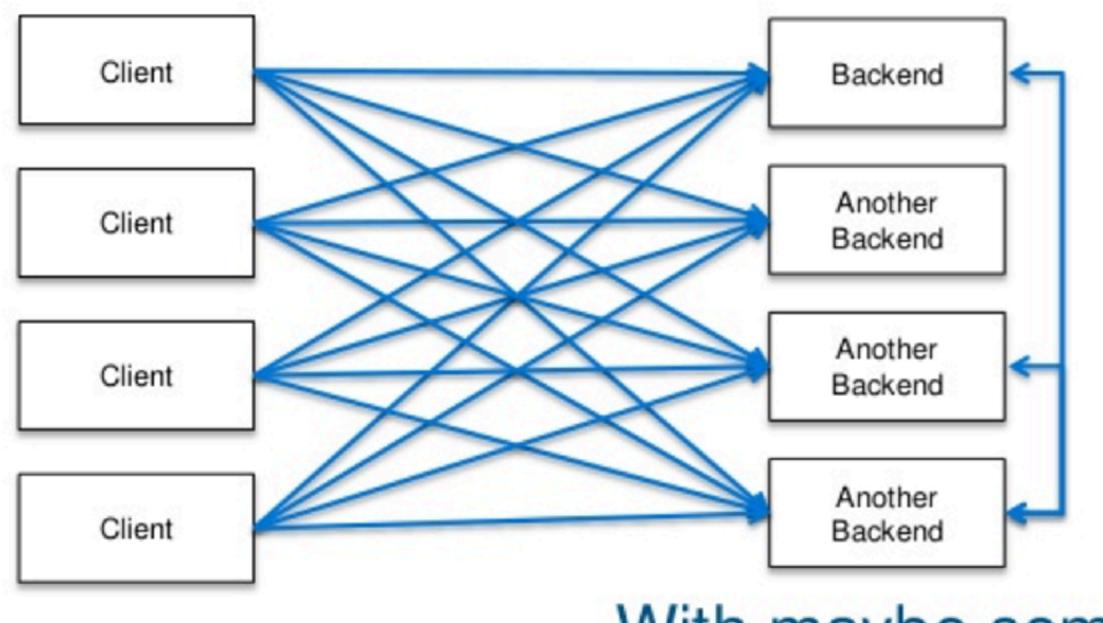
Backend	
Another	
Backend	
Another	
Backend	
Another Backend	

Then it starts to look like this





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With maybe some of this

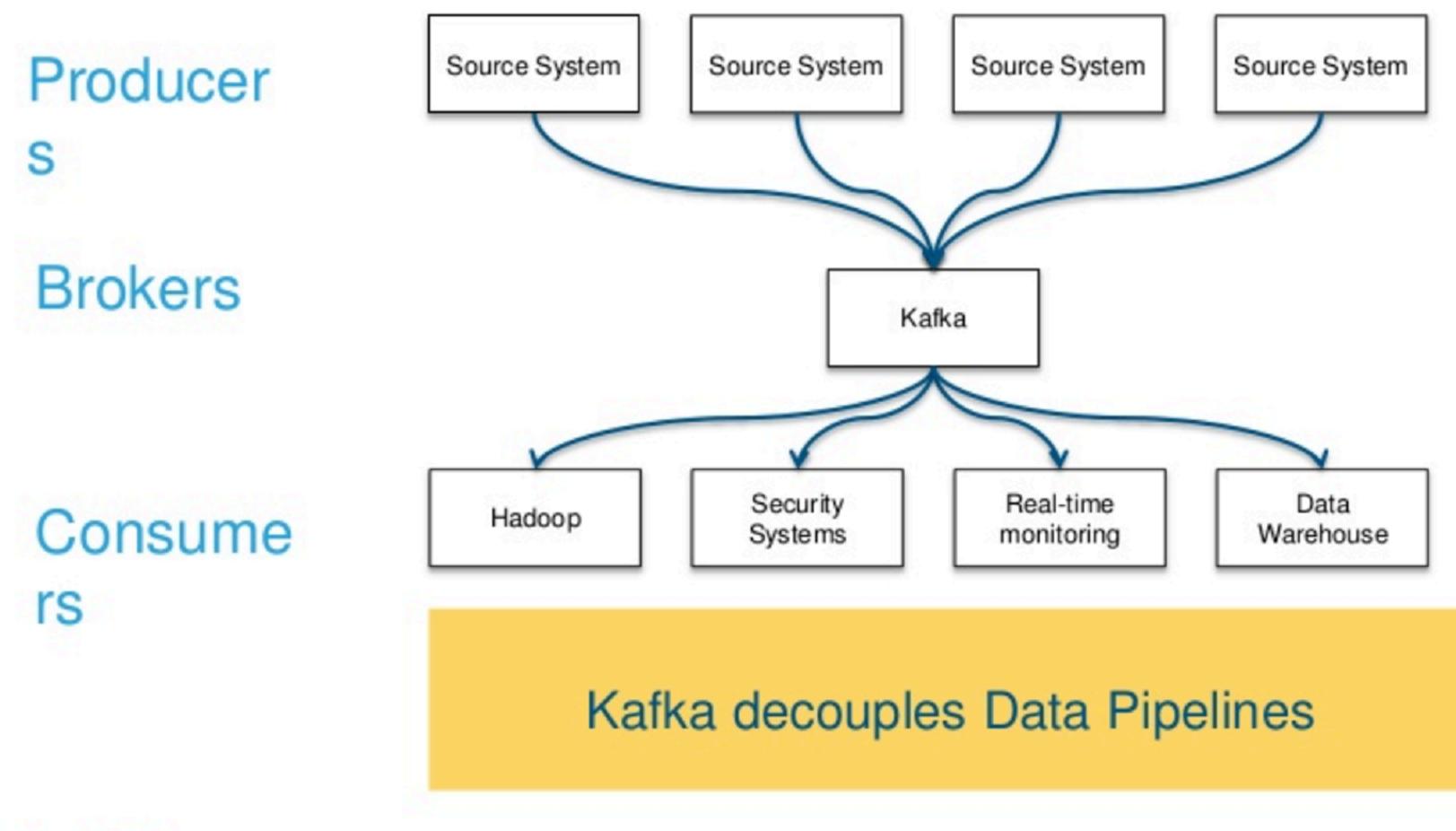
As distributed systems and services increasingly become part of a modern architecture, this makes for a fragile system 10**cloudera**





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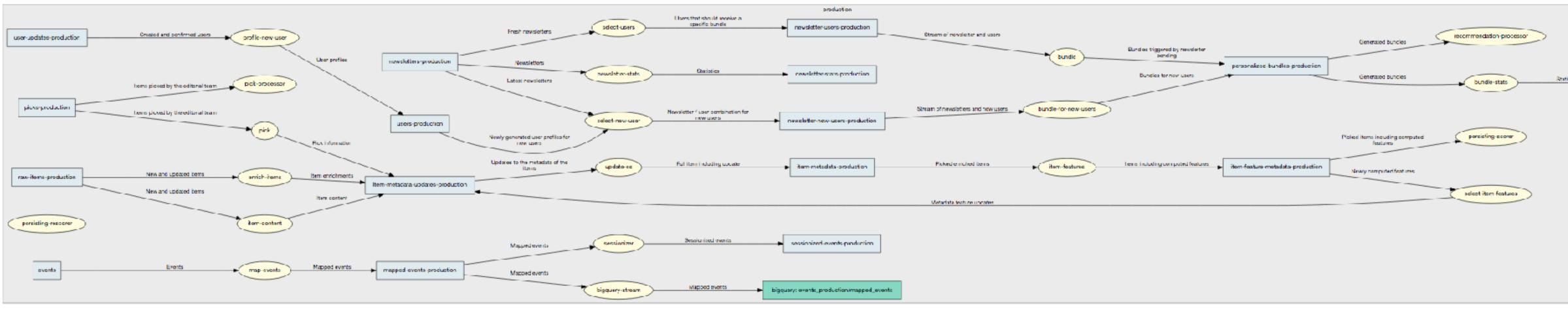
11cloudera

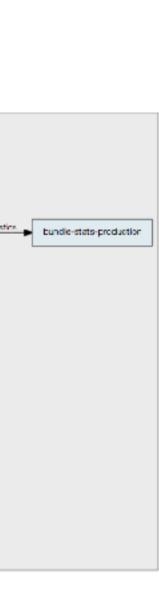
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Streaming Architecture





blendle-streaming git:(master) / ./script/deploy staging

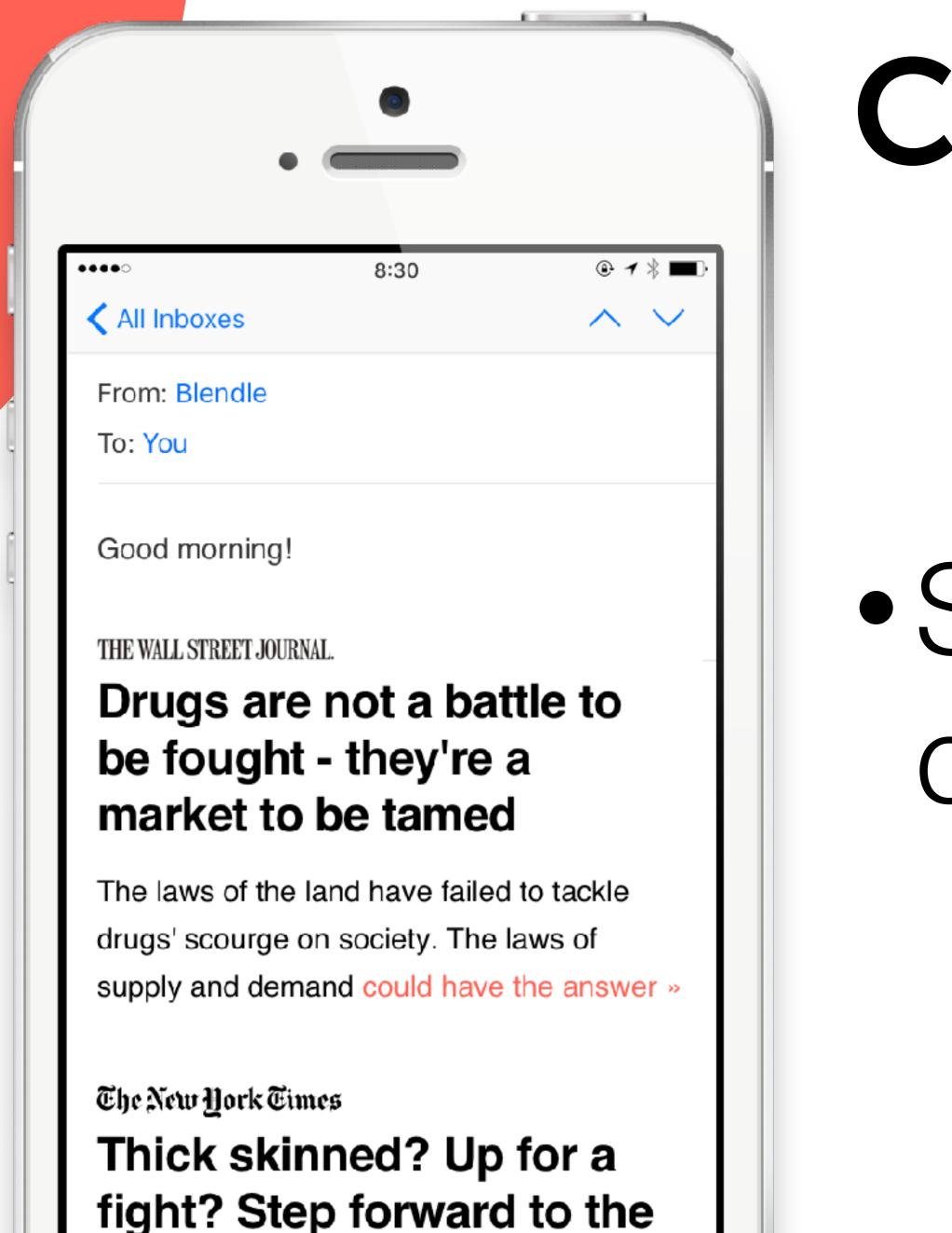
A



blendle-streaming git:(master) / ./script/deploy staging

A

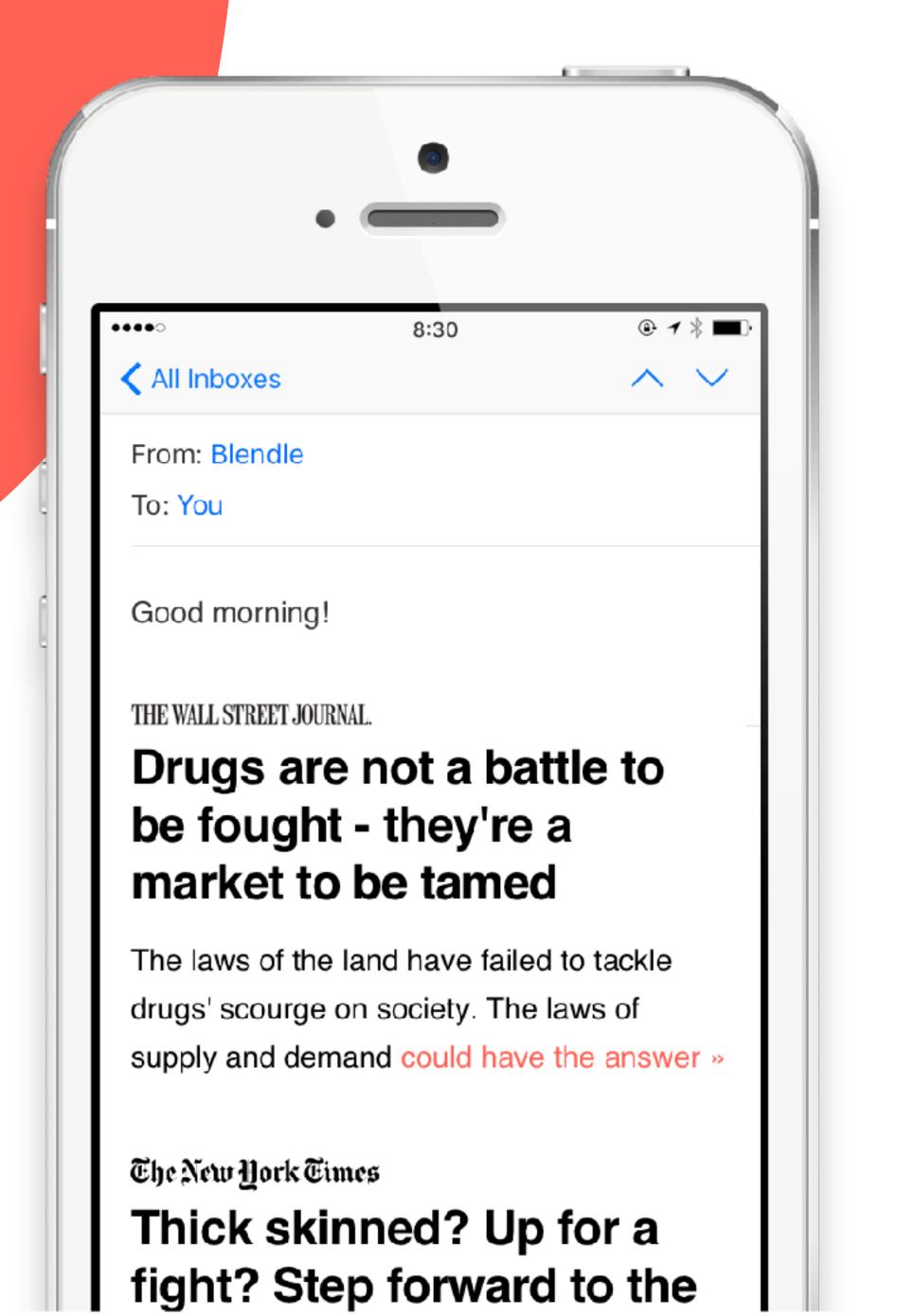




Cold start problem

So we enrich our content





 So we precompute as much as possible

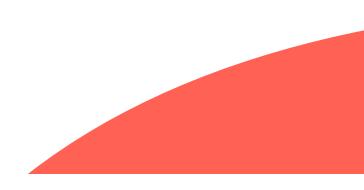
Timing problem









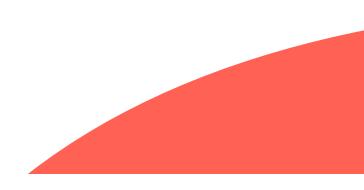




Spark - processing large data









Spark - processing large data

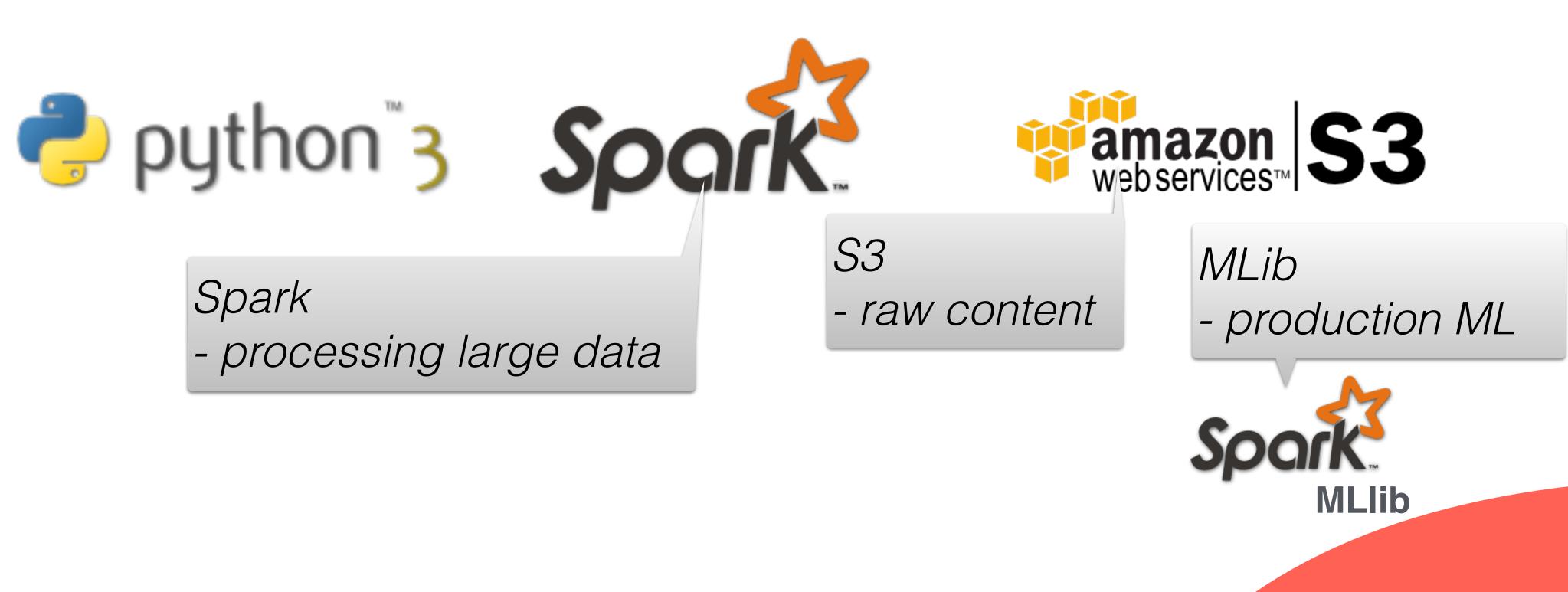




MLib - production ML











Spark - processing large data







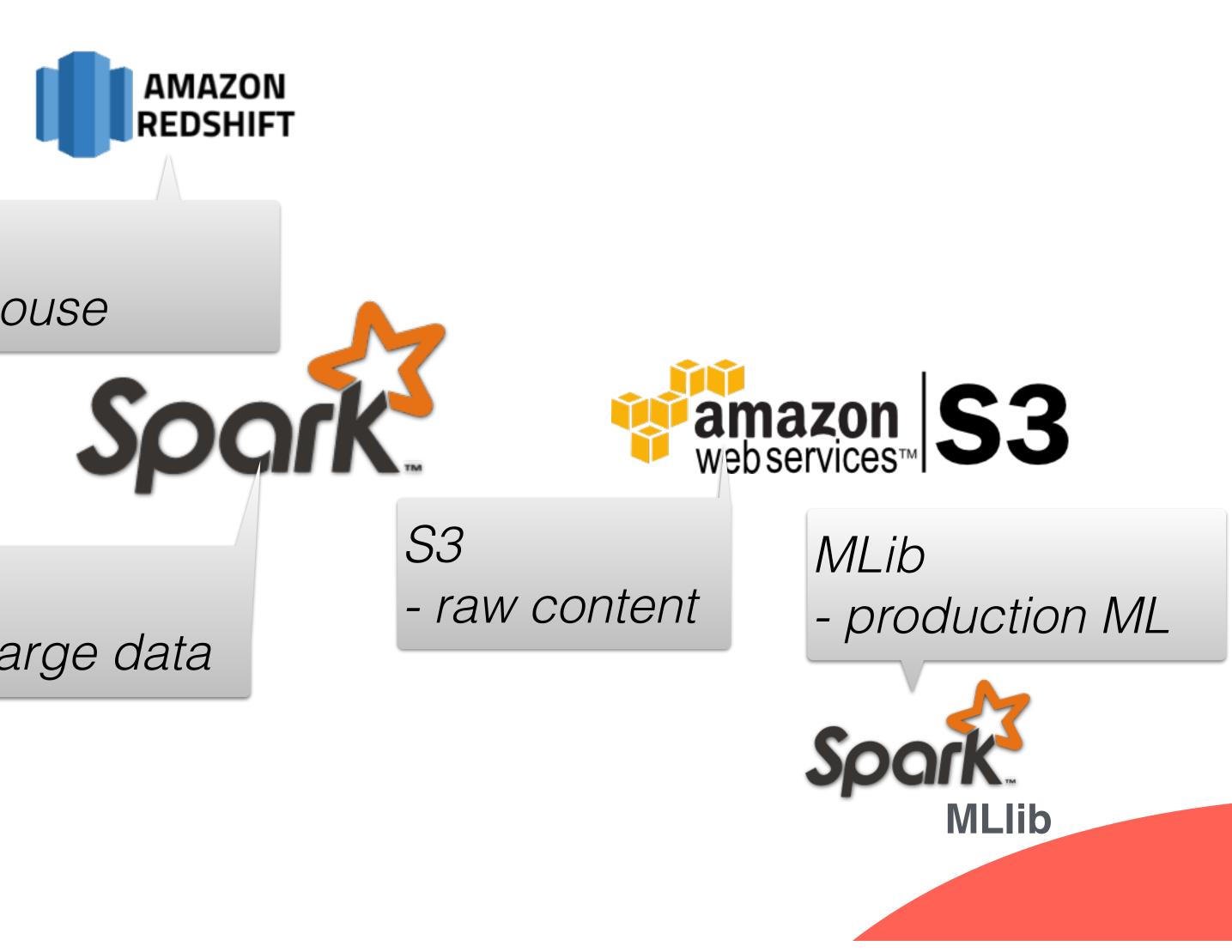


Database - data warehouse



Spark - processing large data





Blendle

Luigi - plumbing

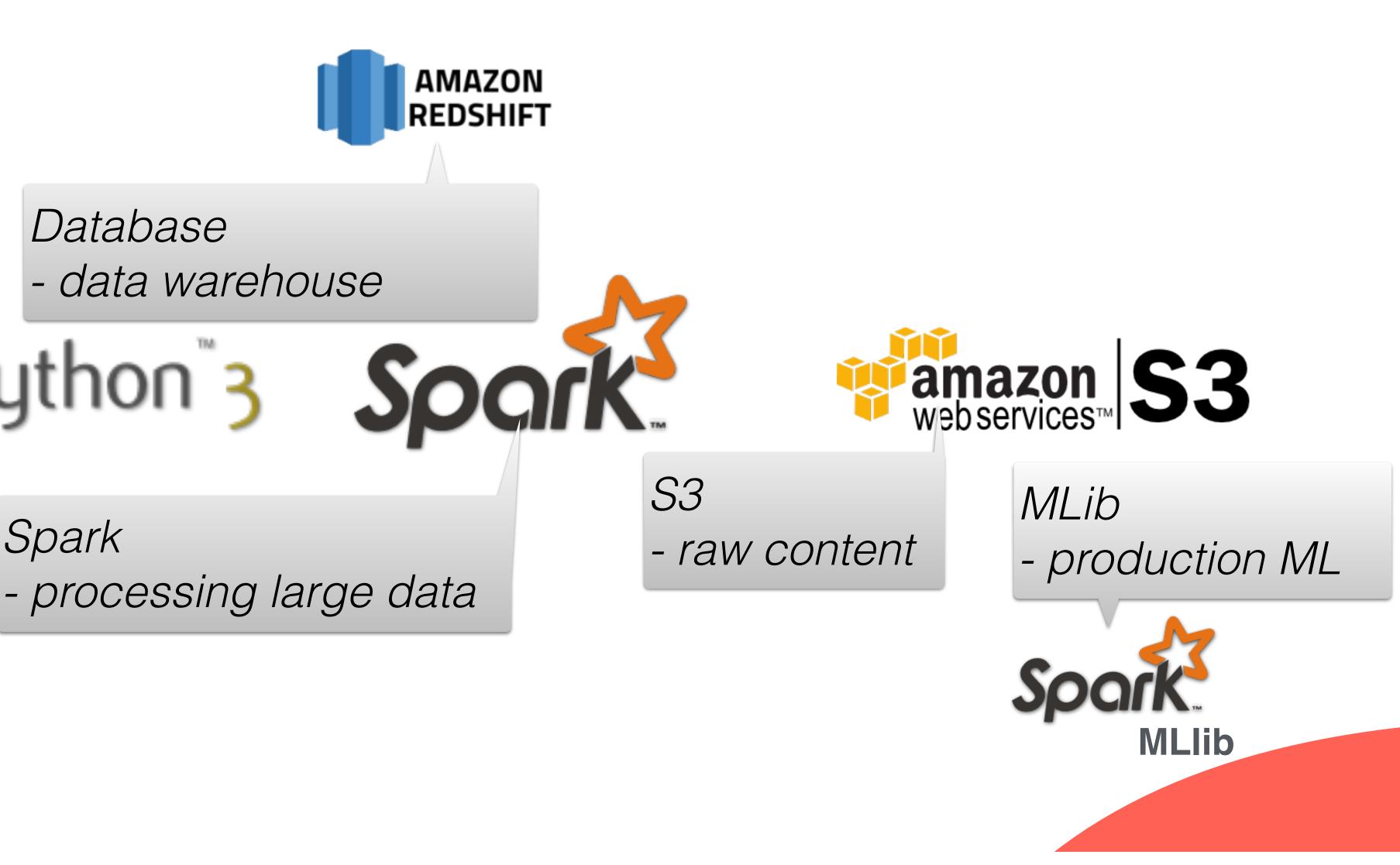
🤟 @anneschuth



Database - data warehouse

epython[®]3

Spark





Database - data warehouse



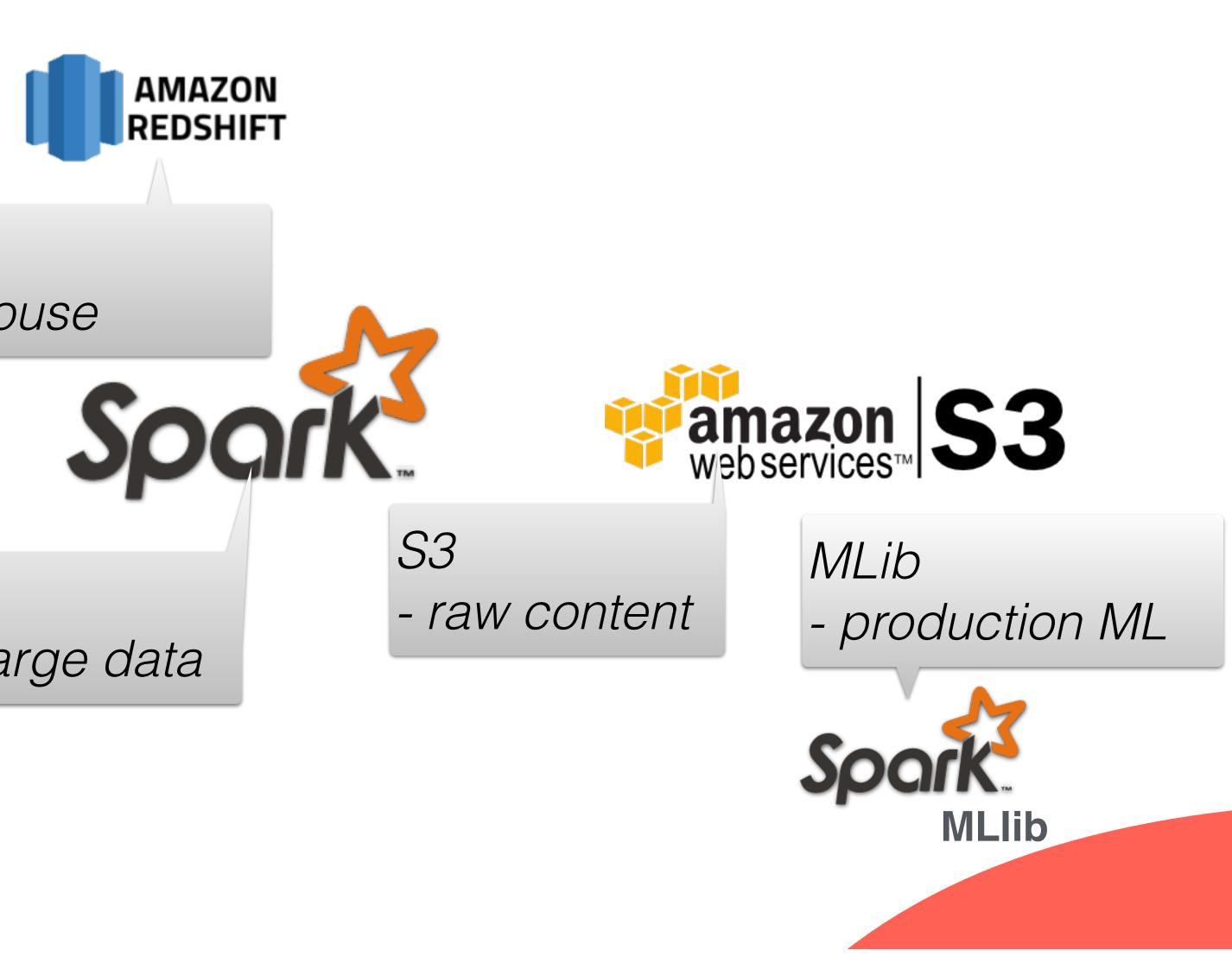
Spark - processing large data







🥑 @anneschuth





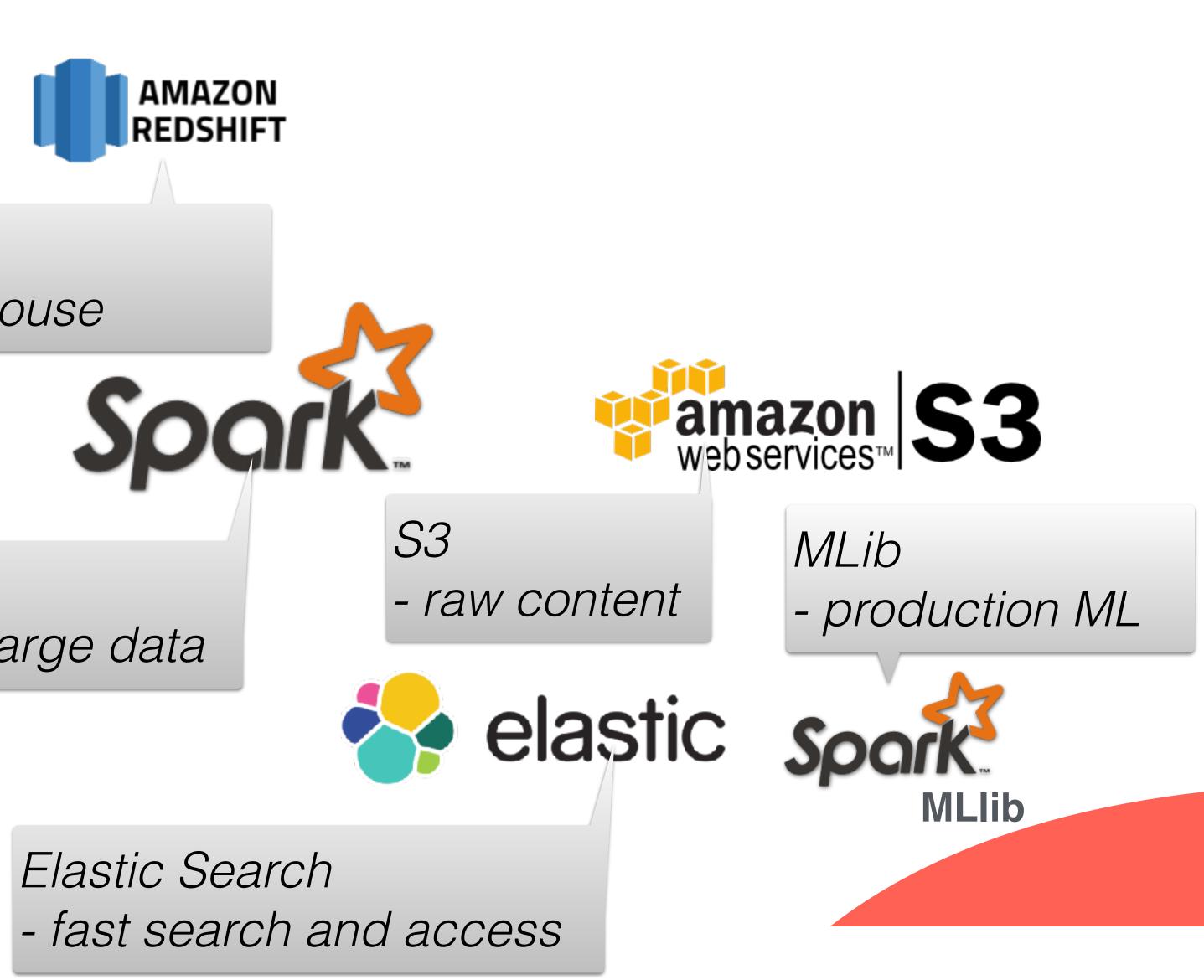
Database - data warehouse

epython[®]3

Spark - processing large data



Luigi - plumbing





Database - data warehouse

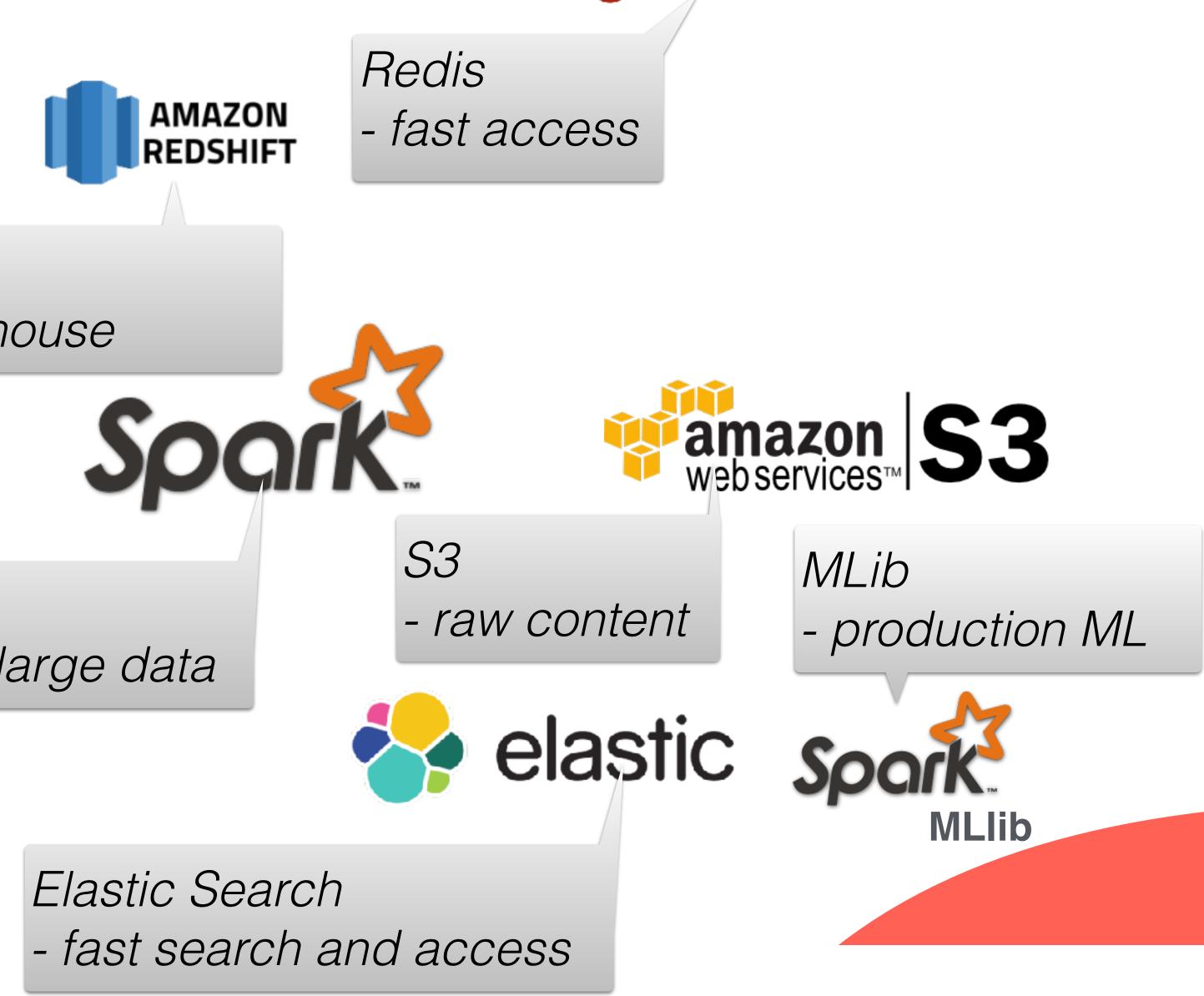
epython[®]3

Spark - processing large data



Luigi - plumbing







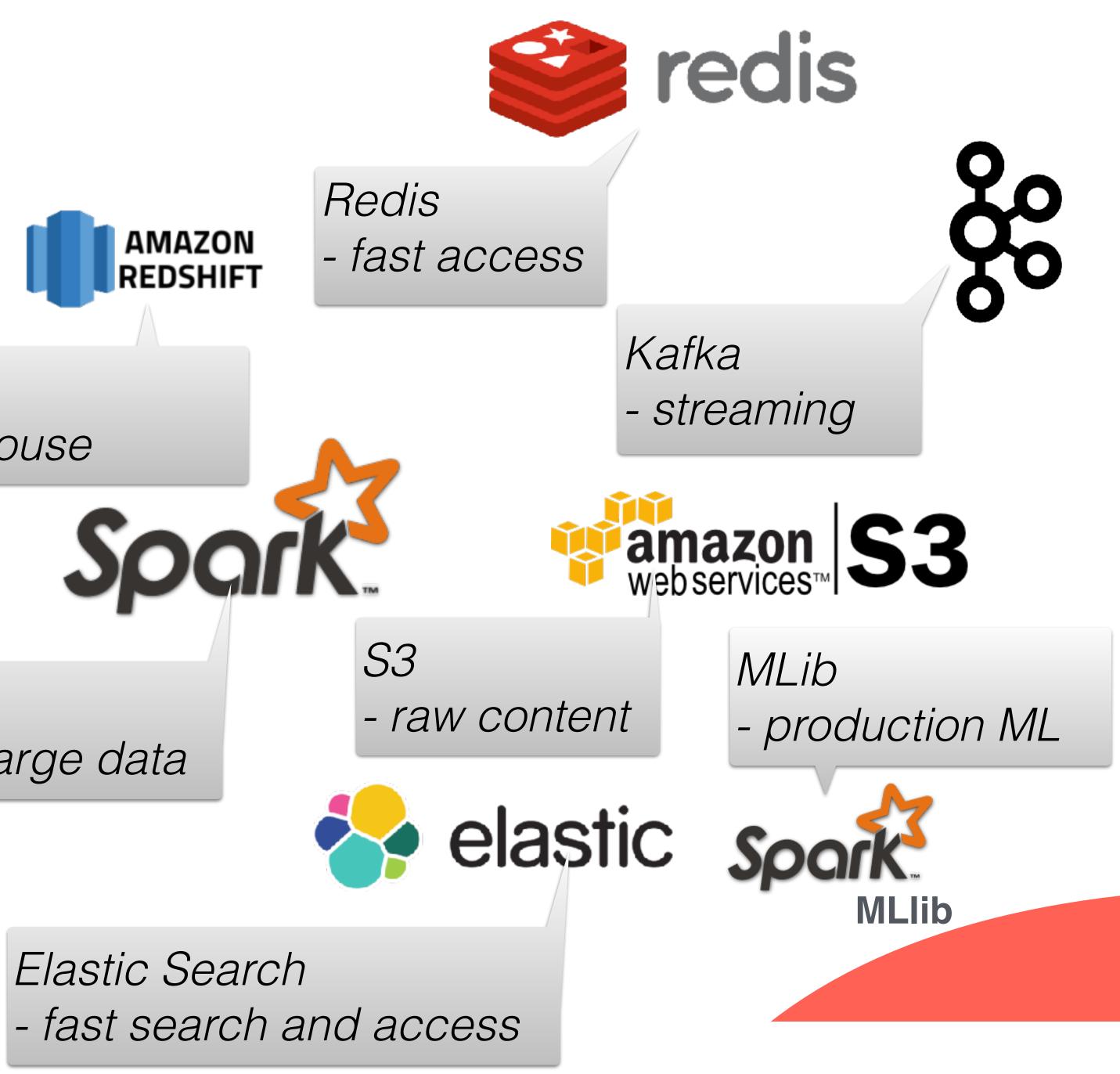
Database - data warehouse

erig python[™] 3

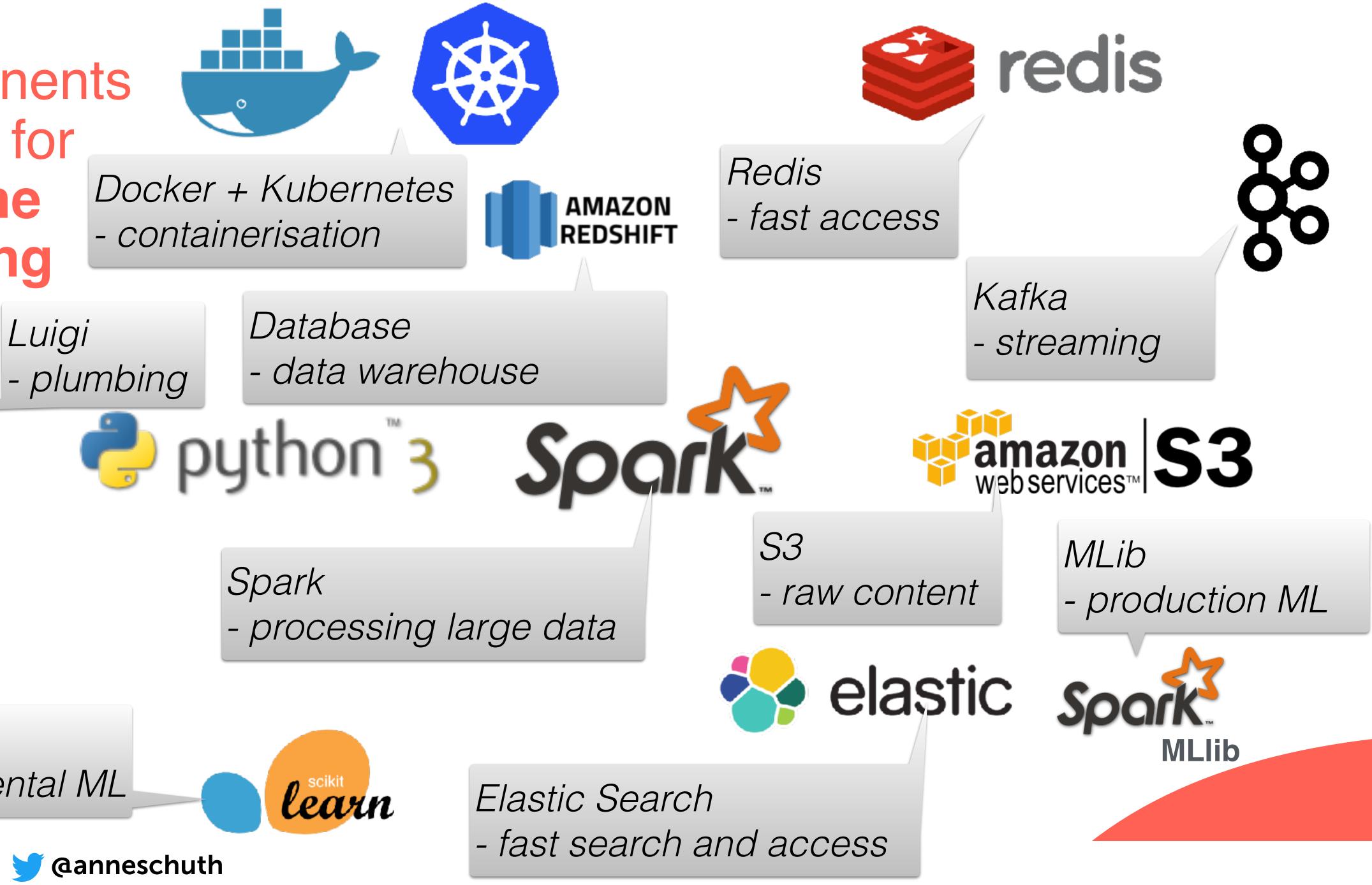
Spark - processing large data



Luigi - plumbing



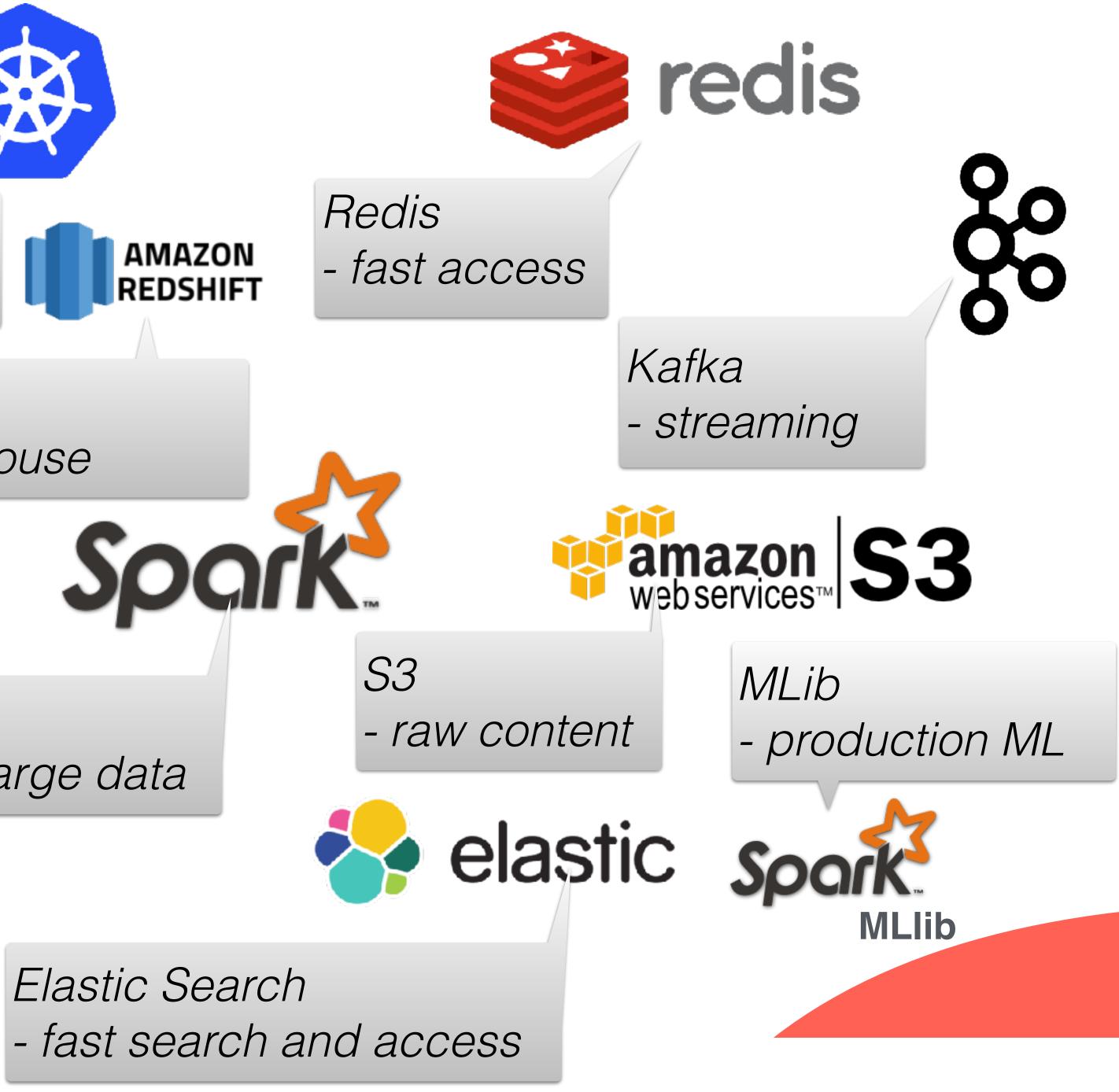
Blendle

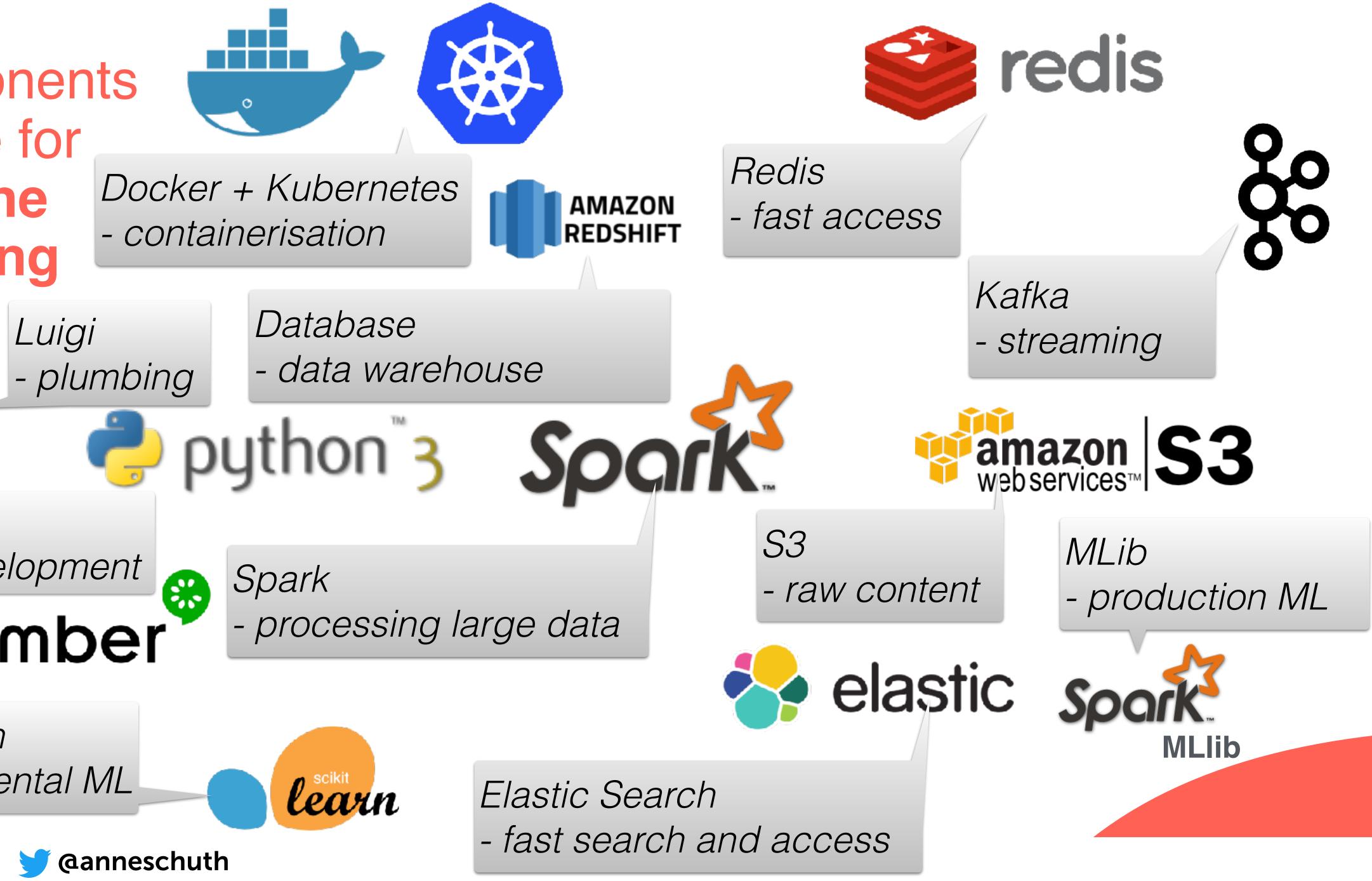


Docker + Kubernetes - containerisation



Scikitlearn - experimental ML





Docker + Kubernetes - containerisation

Cucumber - BDD development

cucumbei

Scikitlearn - experimental ML







Computer Vision





- Computer Vision
 - Death Recognition





- Computer Vision
 - Death Recognition
 - 'Share from the newspaper'





- Computer Vision
 - Death Recognition
 - 'Share from the newspaper'
 - Find Replacement Images





- Computer Vision
 - Death Recognition
 - 'Share from the newspaper'
 - Find Replacement Images
 - •Sudoku





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 - Death Recognition
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- Machine Learning





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 - Editorial Pick Prediction





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 - Reactions on Twitter



