Promises and perils of identity merging

Eleni Constantinou

University of Mons

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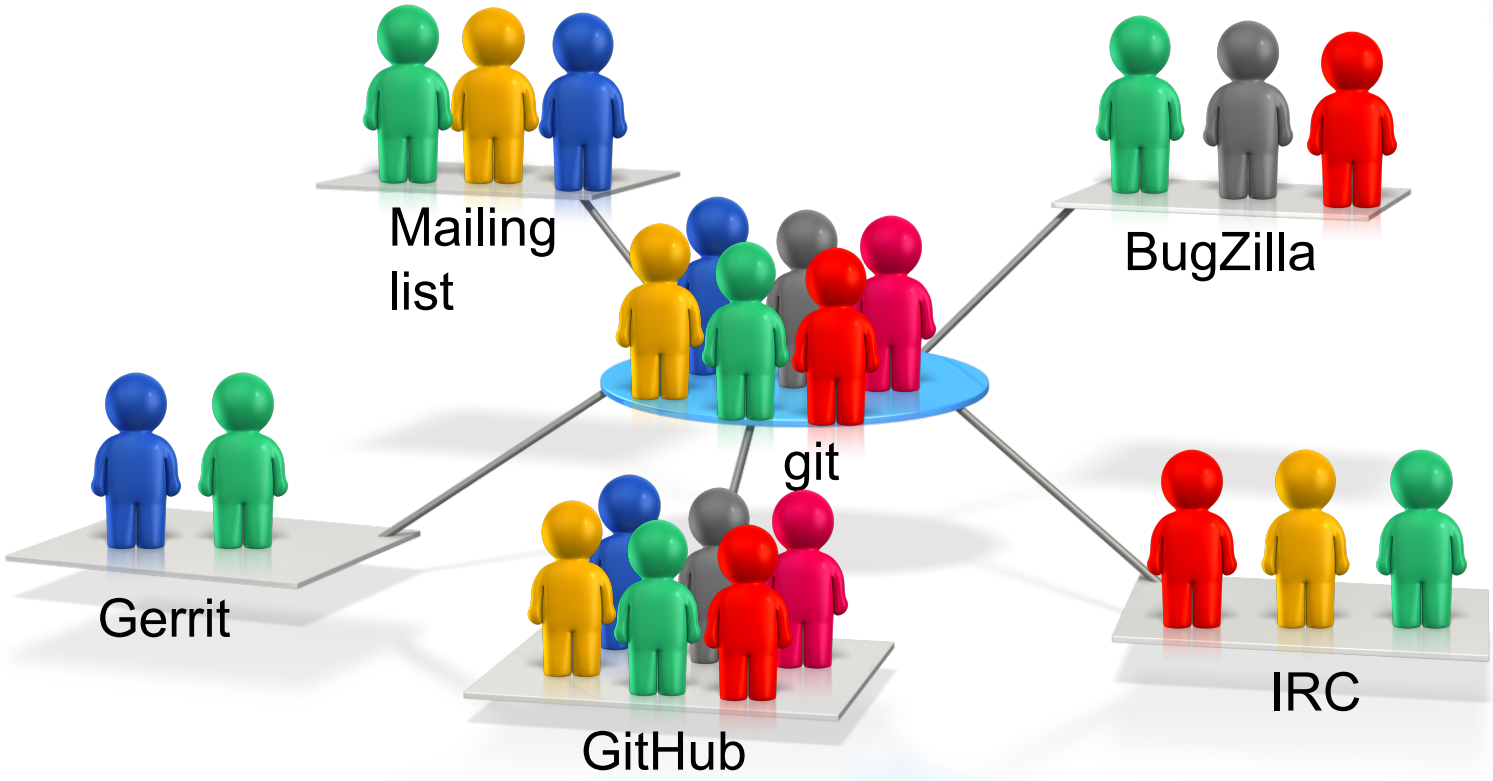
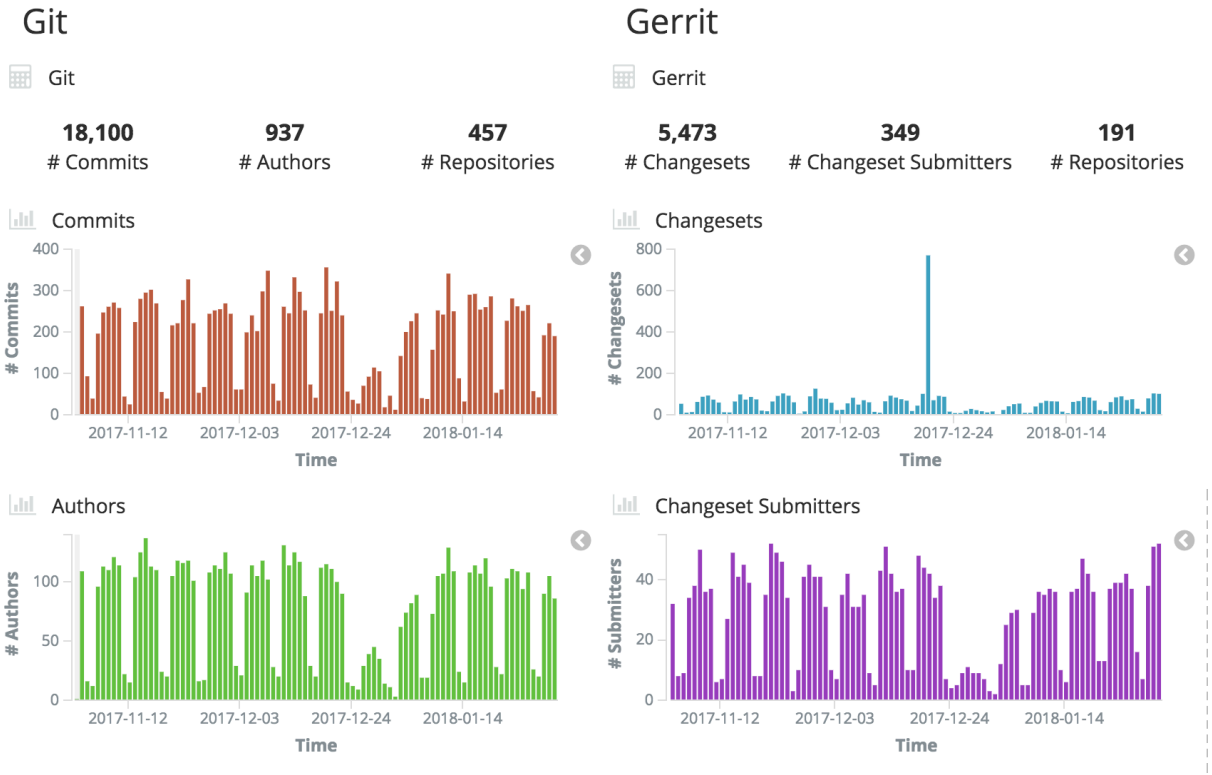
Collaboration



Software analytics



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Software analytics

Bitergia analytics

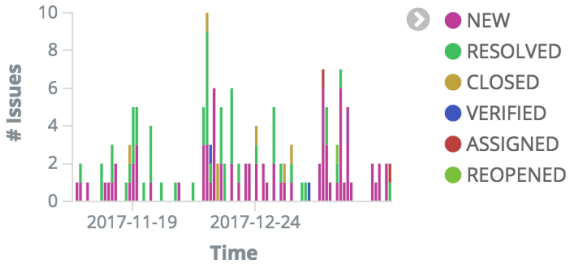
Author	Commits	Projects	Added Lines	Removed Lines	Avg. Files
	372	4	164707	150748	13.898

Bugzilla

Issues

144	2	21
# Issues	# Submitters	# Products

Issues

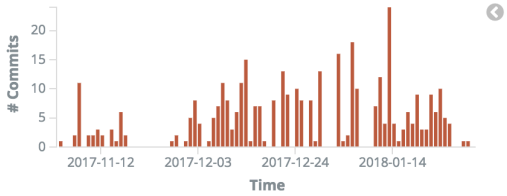


Git

Git

373	1	4
# Commits	# Authors	# Repositories

Commits



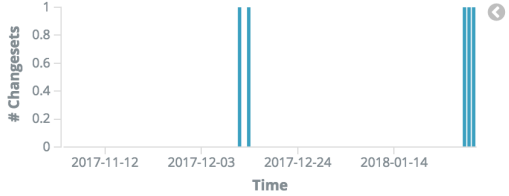
Authors

Gerrit

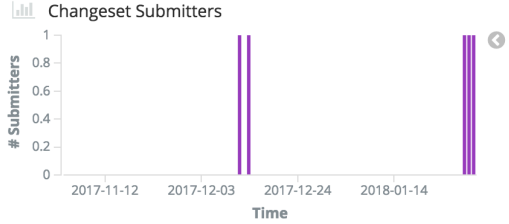
Gerrit

5	1	1
# Changesets	# Changeset Submitters	# Repositories

Changesets



Changeset Submitters



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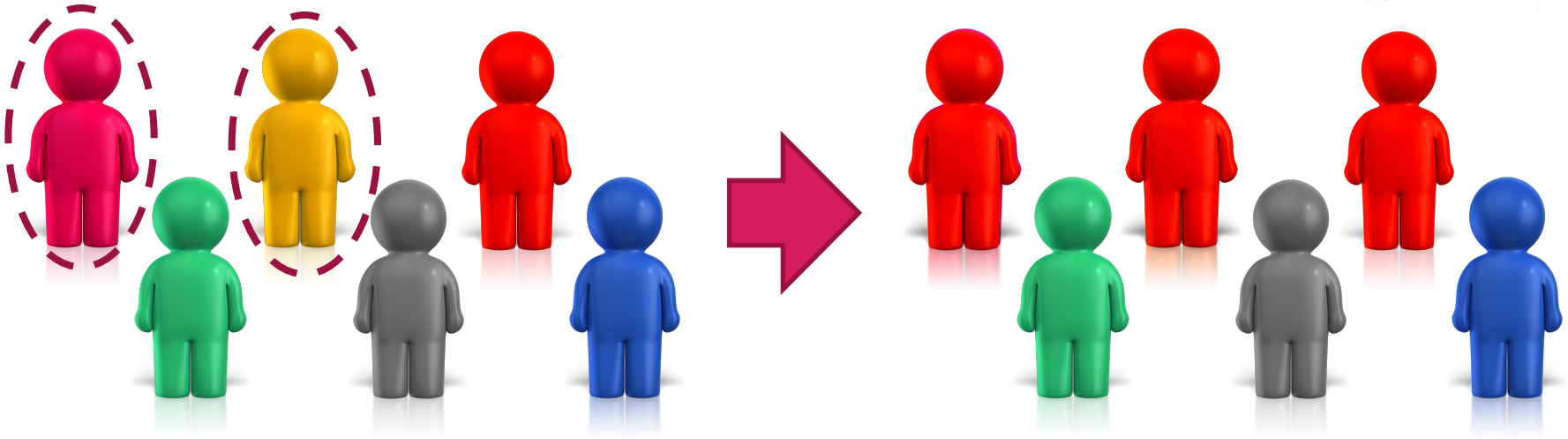
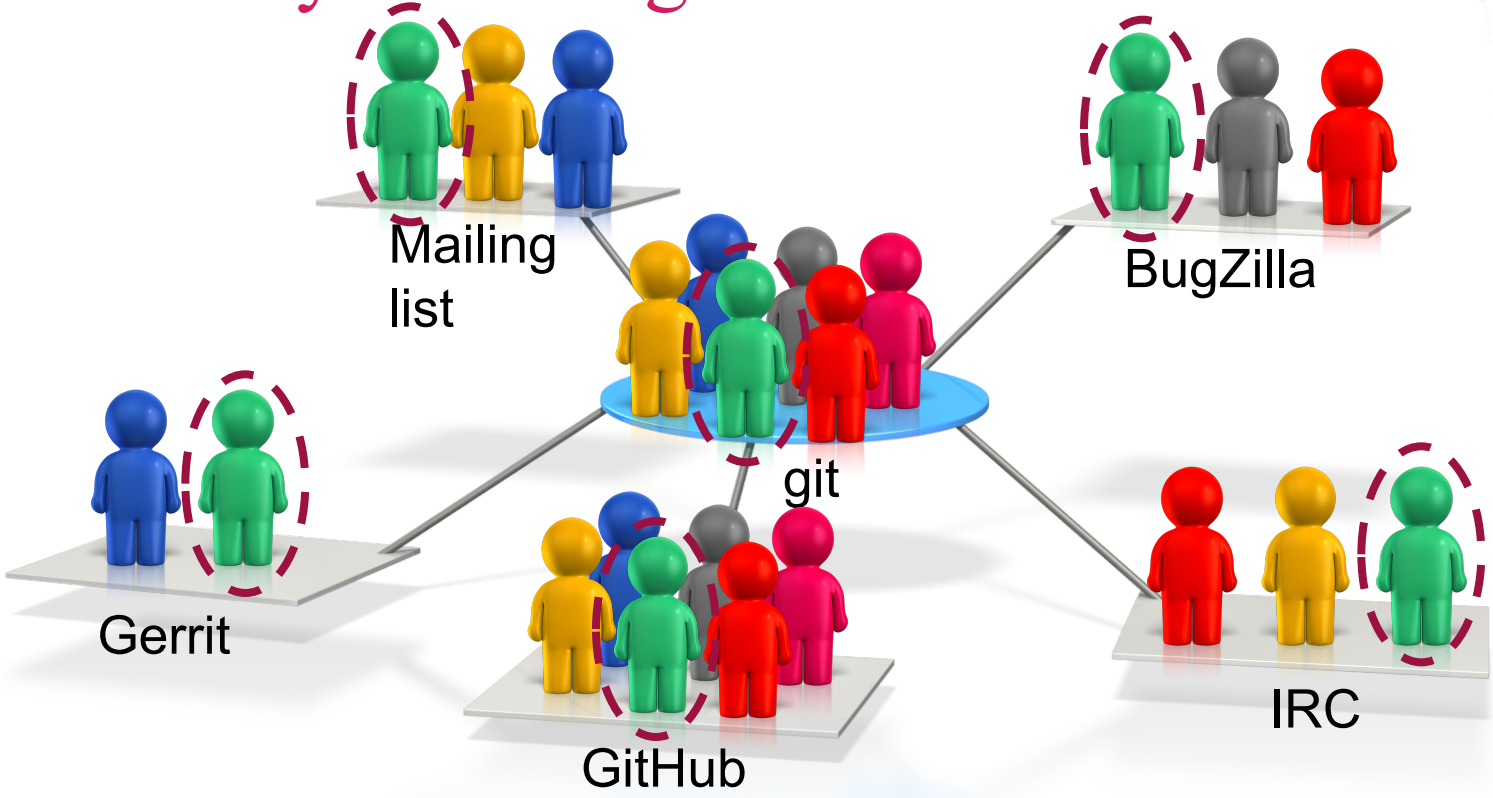
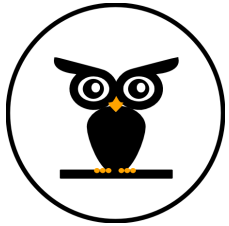
Identity merging



Identity matching



SortingHat



id	name	email	username	source	uuid
0cac4ef	Quan Zhou	quan@bitergia.com	NULL	git	0cac4ef
0ef1c4a	Jesus M. Gonzalez-Barahona	jgbarah@gmail.com	NULL	git	0ef1c4a
11cc034	quan	zhquan7@gmail.com	NULL	git	11cc034
35c0421	Alberto Martín	alberto.martin@bitergia.com	NULL	git	35c0421
37a8187	Alberto Martín	albertinisg@users.noreply.github.com	NULL	git	37a8187
3ca4e85	Daniel Izquierdo Cortazar	dicortazar@gmail.com	NULL	git	3ca4e85
4fcec5a	dpose	dpose@sega.bitergia.net	NULL	git	4fcec5a
5b358fc	dpose	dpose@bitergia.com	NULL	git	5b358fc
692ad15	Andre Klapper	a9016009@gmx.de	NULL	git	692ad15
6dcf98c	Daniel Izquierdo	dizquierdo@bitergia.com	NULL	git	6dcf98c
75fc28e	Santiago Dueñas	sduenas@bitergia.com	NULL	git	75fc28e
7ad0031	Alvaro del Castillo	acs@thelma.cloud	NULL	git	7ad0031
8fac15f	alpgarcia	alpgarcia@gmail.com	NULL	git	8fac15f
9aed245	Alvaro del Castillo	acs@bitergia.com	NULL	git	9aed245

Identity merging

Username:
econst
Full name:
Eleni Constantinou
Email address:
eleni.constantinou@umons.ac.be

GitHub

Username:
econstan
Full name:
Eleni Constantinidou
Email address:
el.const@mydomain.com

GitHub

Identity merging

Username:
econst
Full name:
Eleni Constantinou
Email address:
eleni.constantinou@umons.ac.be

GitHub

Username:
econstan
Full name:
Eleni Constantinidou
Email address:
el.const@mydomain.com

GitHub

Individuals use labels that do not reflect their identity

sigma-lambda-stop

titib

Identity labels might need pre-processing

jon.doe@users.noreply.github.com

j.doe@apple.com

jon.doe@gmail.com

jon.doe@google.com

Some identities do not correspond to humans

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Individuals use common labels

root

unknown

admin

root@localhost.localdomain

Individuals use very similar labels for their identities

j.wright@apple.com

j.wright@gmail.com

j.wright@amazon.com

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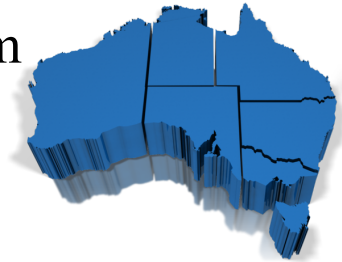
Individuals use very similar labels for their identities

j.wright@apple.com

j.wright@gmail.com

j.wright@amazon.com



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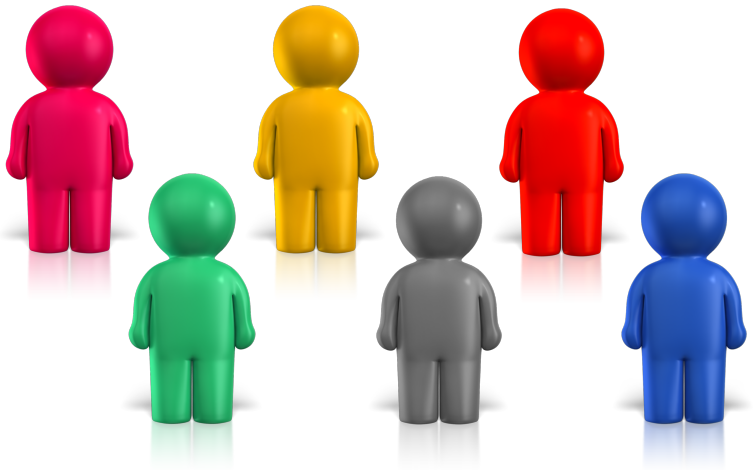
Identity merging accuracy depends on the examined set of identities



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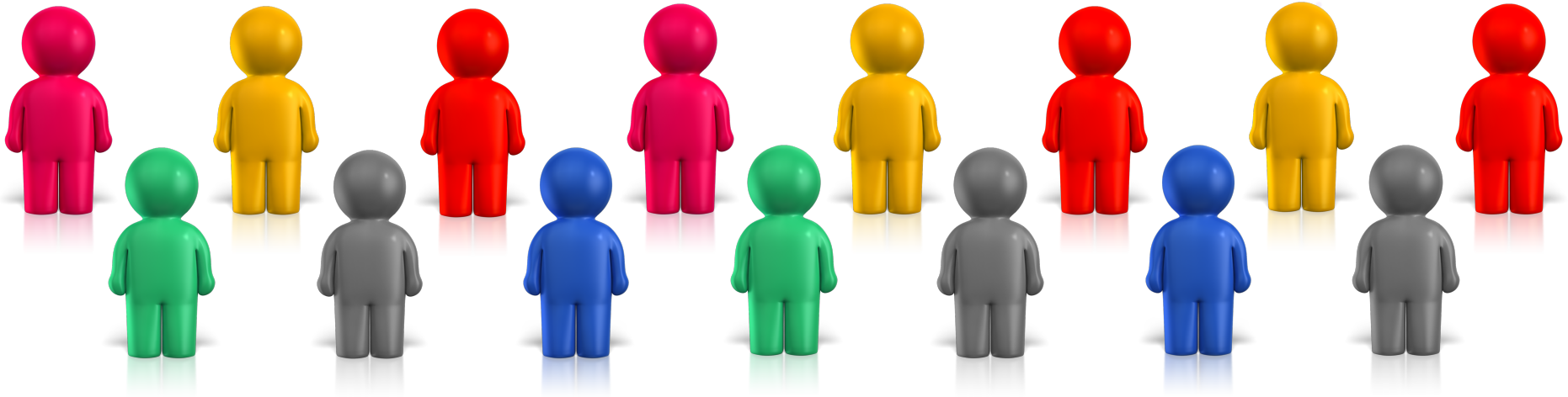
Identity merging accuracy depends on the examined set of identities



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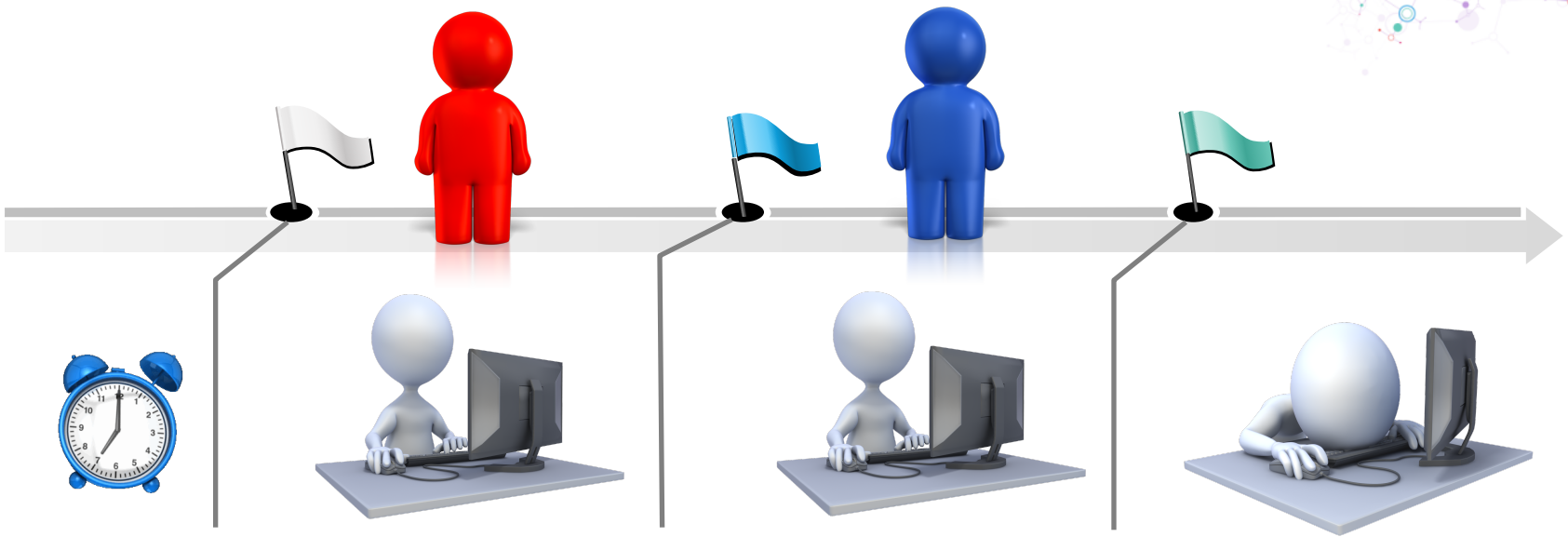
Different platforms provide different identity information

GitHub	Mailing list	StackOverflow
Username: jdoe	**Username:**	**Username:** Jon Doe
Full name: Jon Doe	**Full name:** Jon Doe	**Full name:**
Email address: jon.doe@gmail.com	**Email address:** jon.doe@gmail.com	**Email address:**

Different platforms provide different identity information

GitHub	Mailing list	StackOverflow
Username: jdoe	**Username:**	**Username:** jon
Full name: Jon Doe	**Full name:** Jon Doe	**Full name:**
Email address: jon.doe@gmail.com	**Email address:** jon.doe@gmail.com	**Email address:**

Individuals use multiple identities in a different capacity



j.doe@apple.com

j.doe@gmail.com

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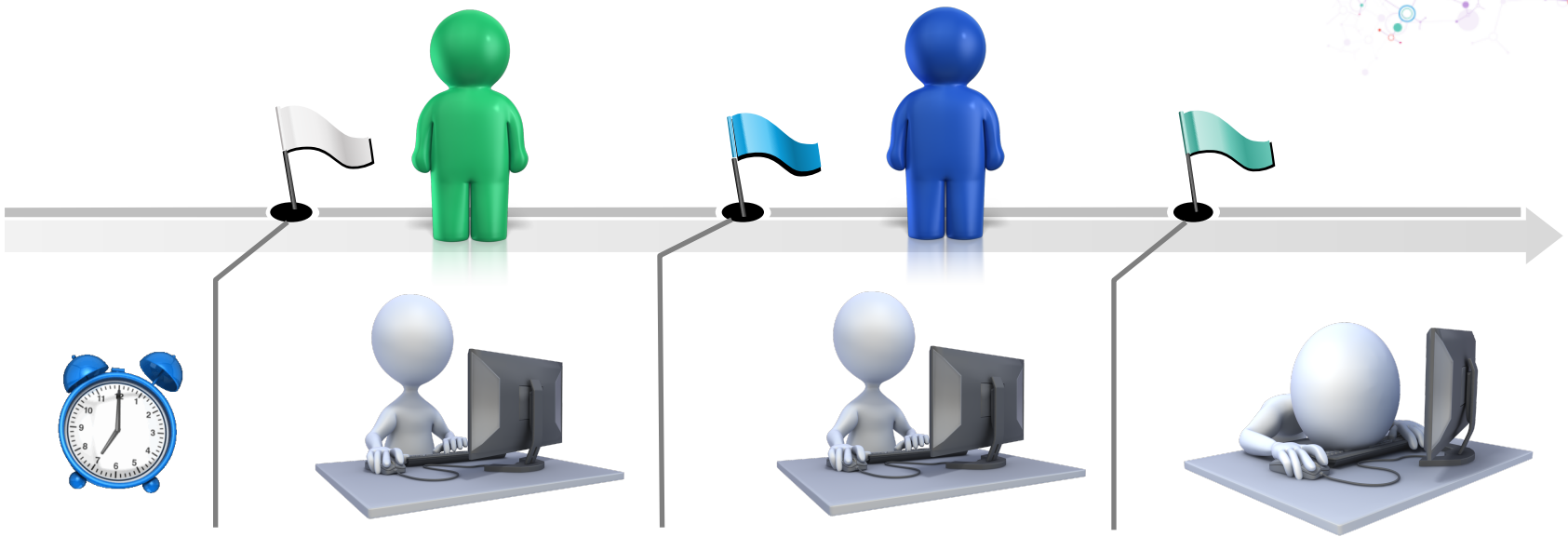
Individuals use multiple identities in a different capacity



j.doe@amazon.com

j.doe@gmail.com

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The label set associated with identities is incomplete

Username:
econst
Full name:
Eleni Constantinou
Email address:
eleni.c@domain1.com

GitHub

Username:
elconst
Full name:

Email address:
eleni.c@domain2.com

GitHub

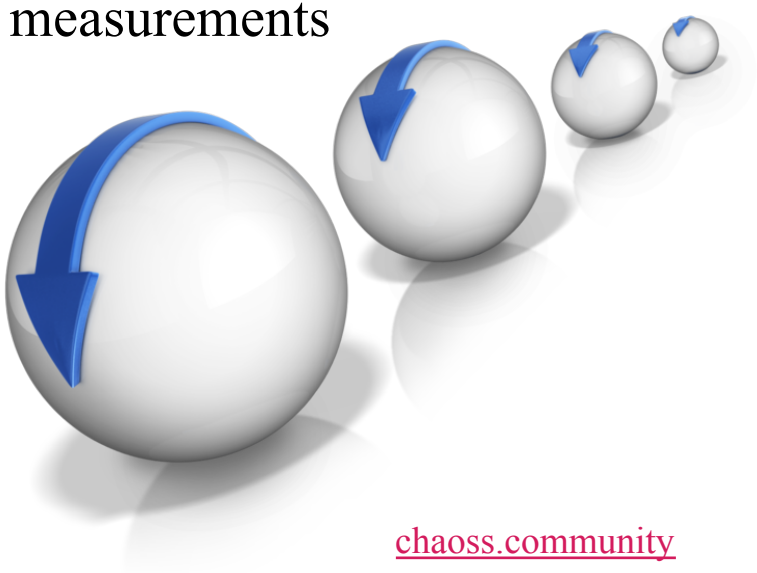
Impact of erroneous merges

Underestimate individuals' activity

Overestimate community joining/leaving measurements

Snowball effect

Cost of fixing erroneous merges



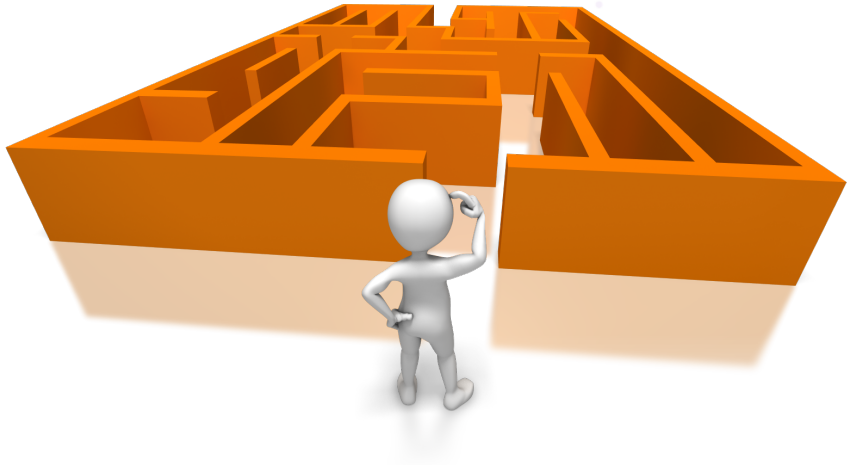
Conclusion

Merging identities is hard

Automation should be limited

Manual inspection

Consider additional information (when available)



Thank you!

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