


A different flavor of the distributed transaction



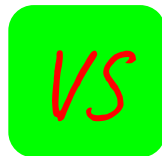
whoami

- Martin Štefanko
- Software engineer, Red Hat
- MicroProfile committer
- Microservices enthusiast
-  @xstefank

Saga



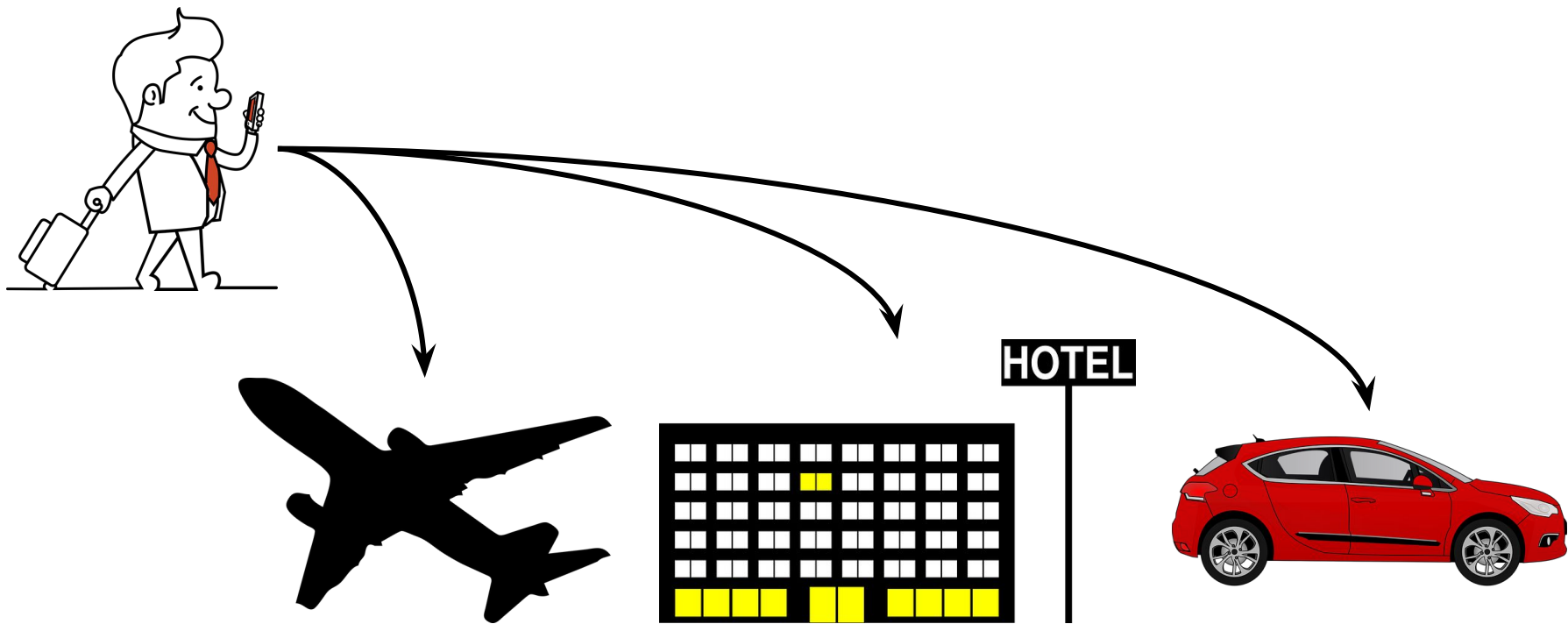
ACID



Saga



Transactions today



Transactions today - ACID



Atomicity



Consistency



Isolation

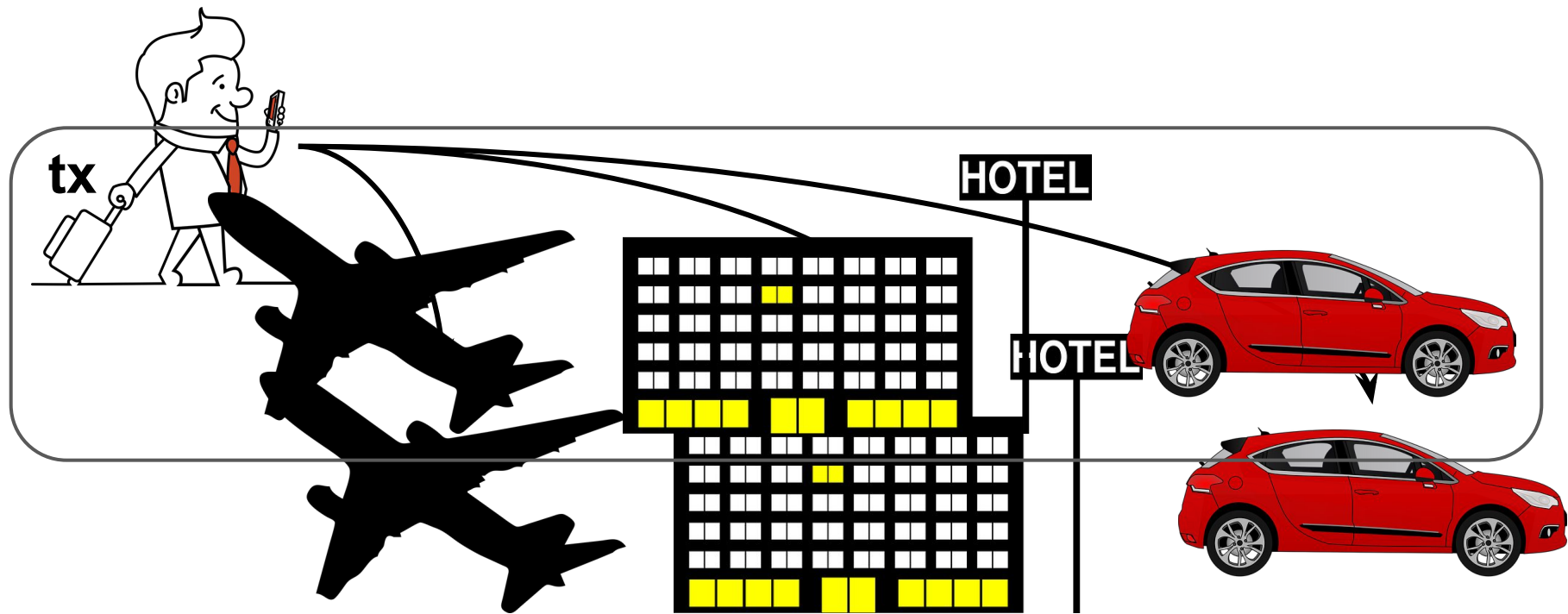


Durability

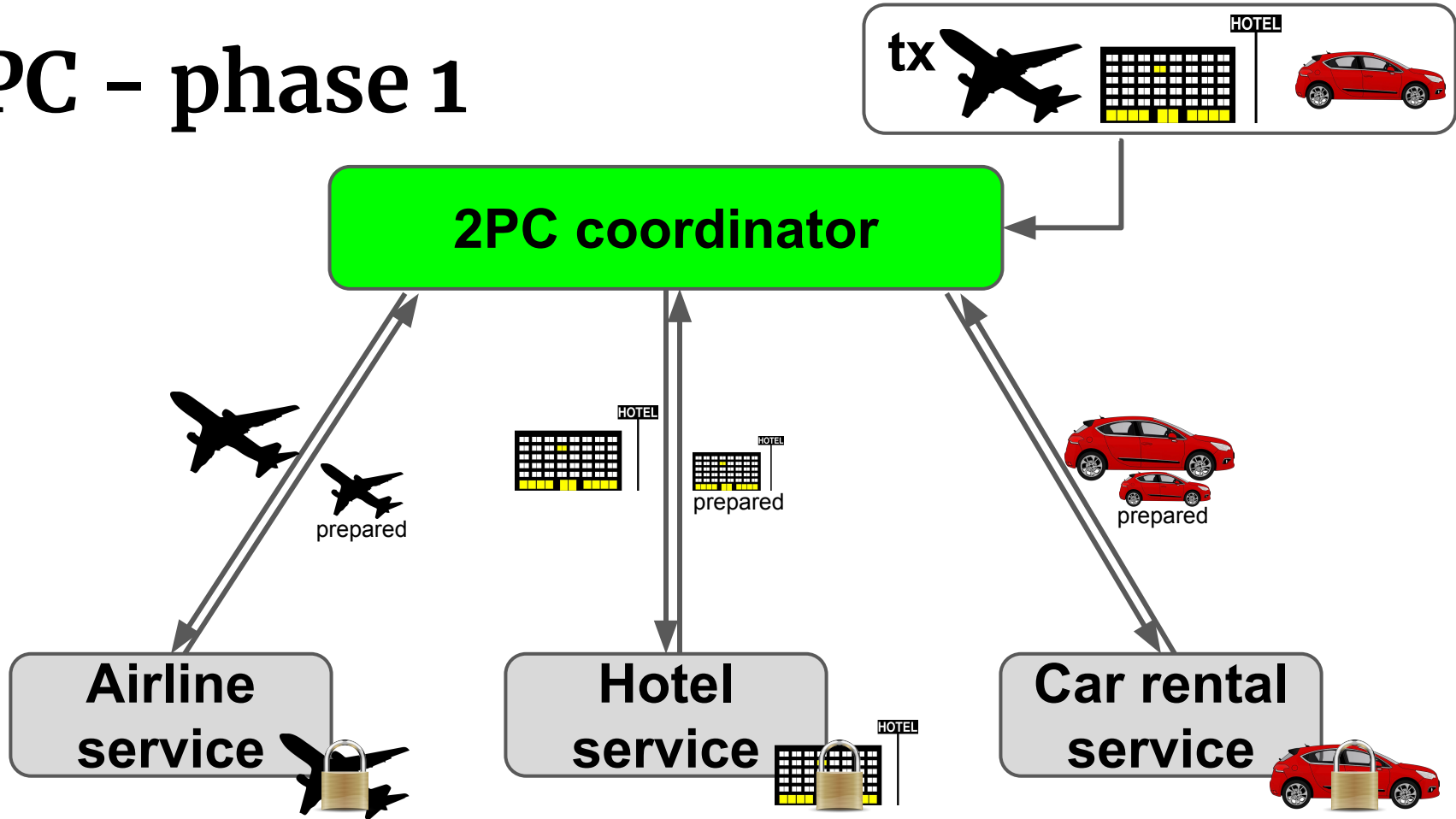
Transactions today - consensus

- Two-phase commit protocol (2PC)
- 3PC
- Paxos
- Raft

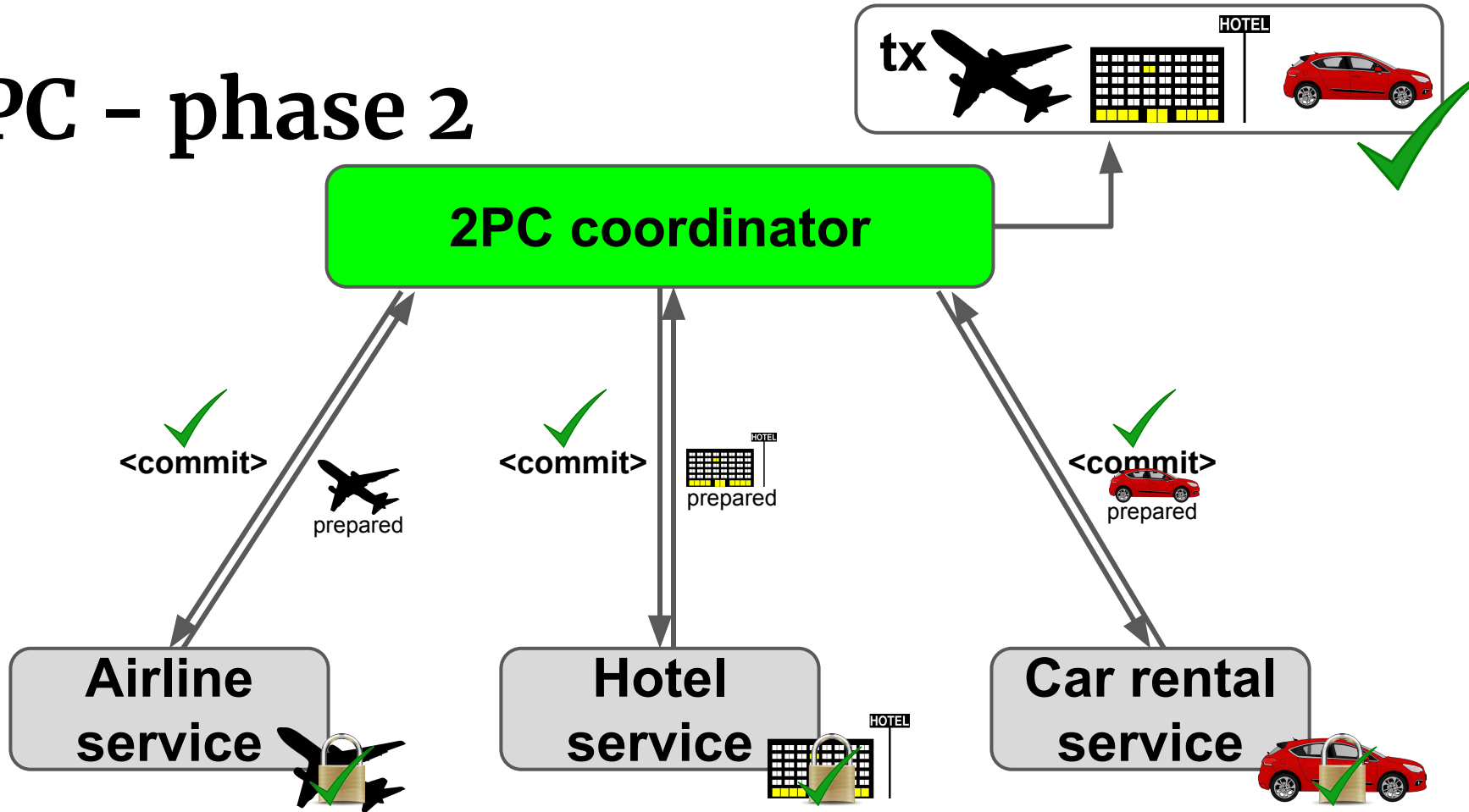
Transactions today - 2PC



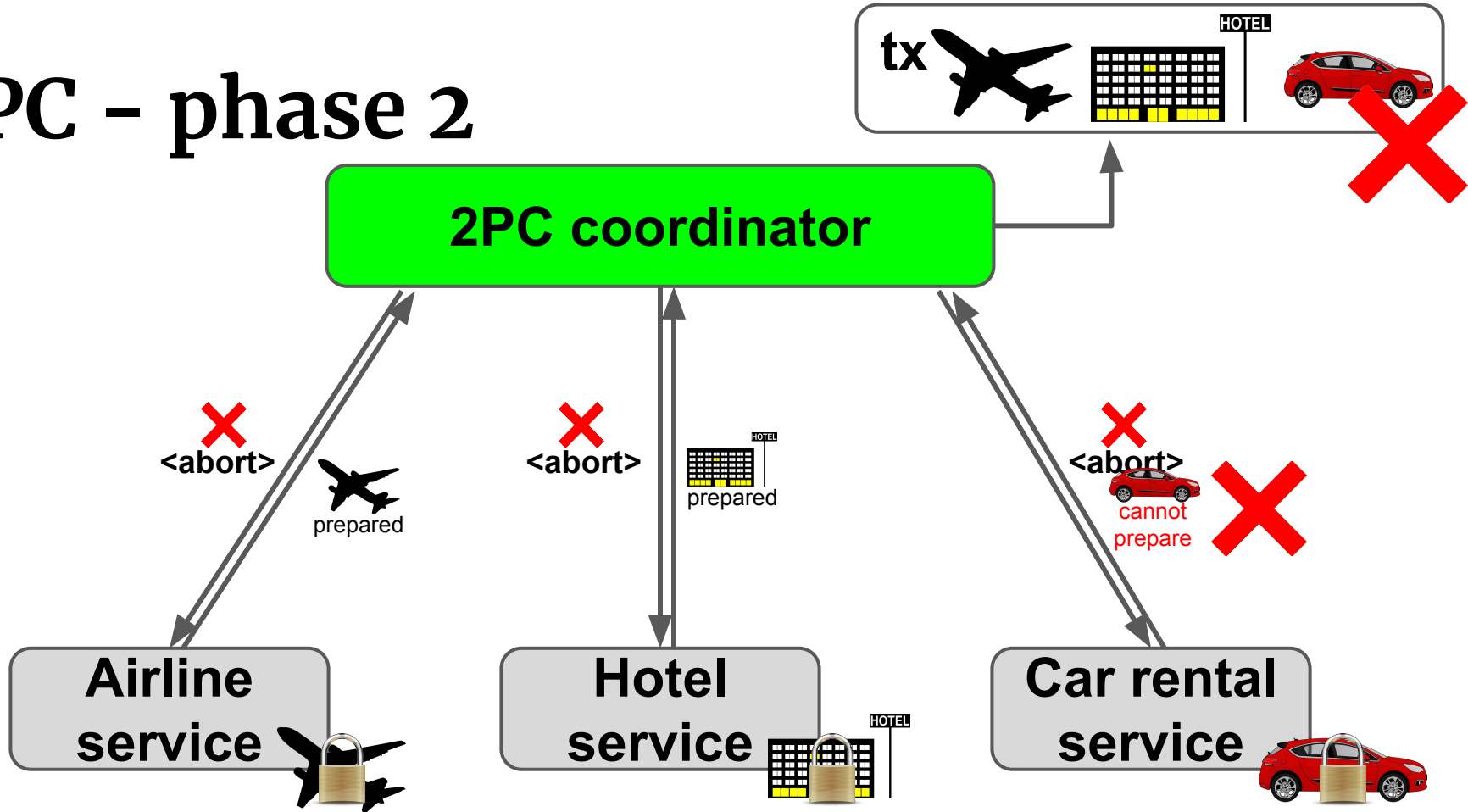
2PC - phase 1



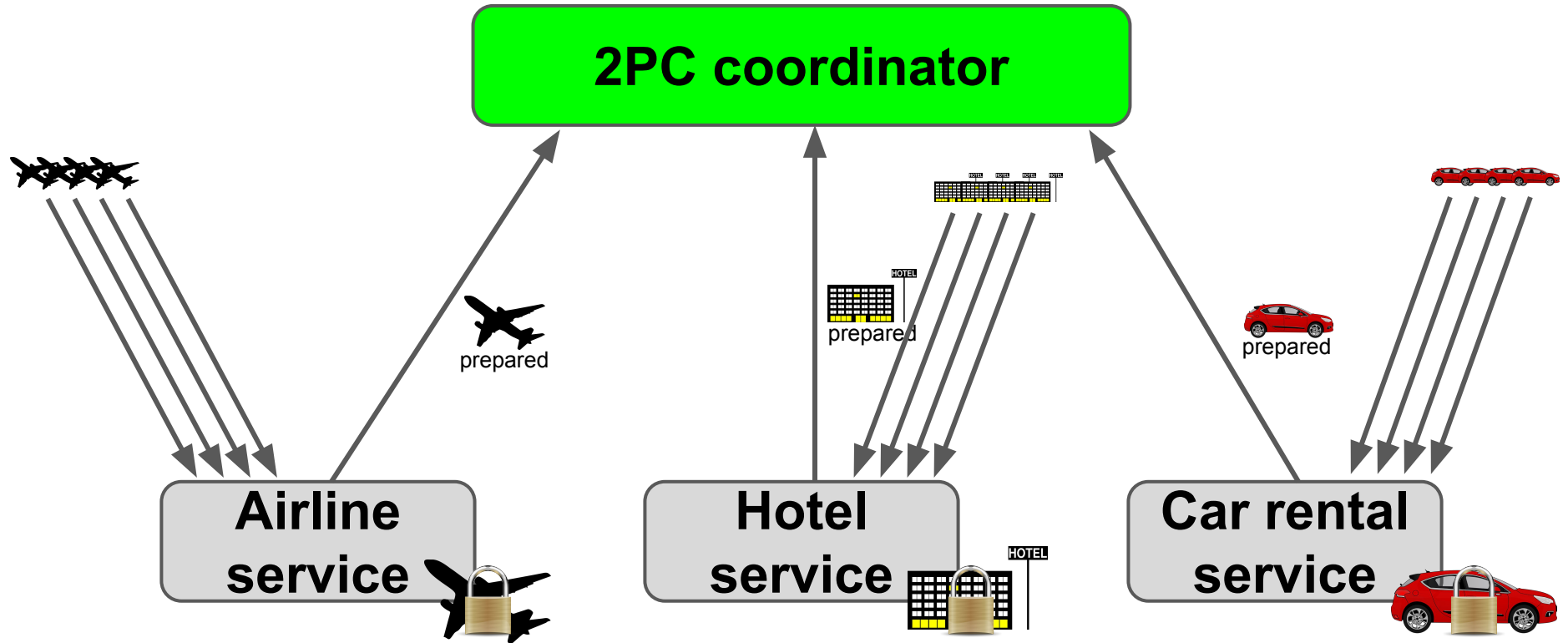
2PC - phase 2



2PC - phase 2



2PC - issues



Saga



The saga pattern

SAGAS

Hector Garcia-Molina

Kenneth Salem

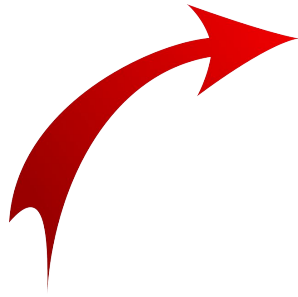
Department of Computer Science

Princeton University

Princeton, N J 08544

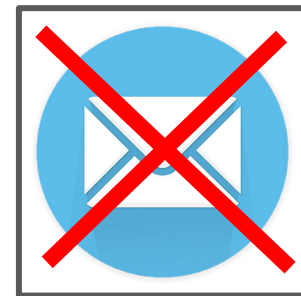
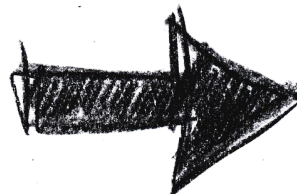
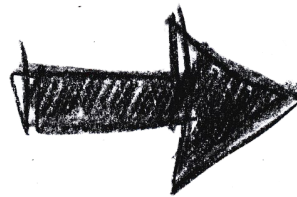
1987

Saga - compensations



Order	Products	Description
65	X-wing	Personal starfighter
66	Jedi situation	TBD

Saga - compensations

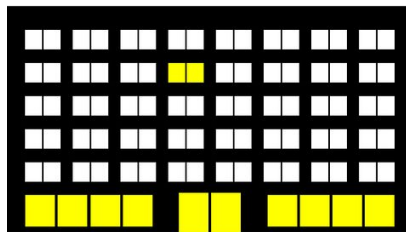


Applying the Saga Pattern • Caitie McCaffrey

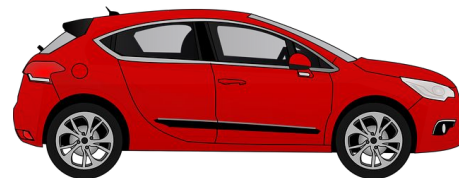


Saga

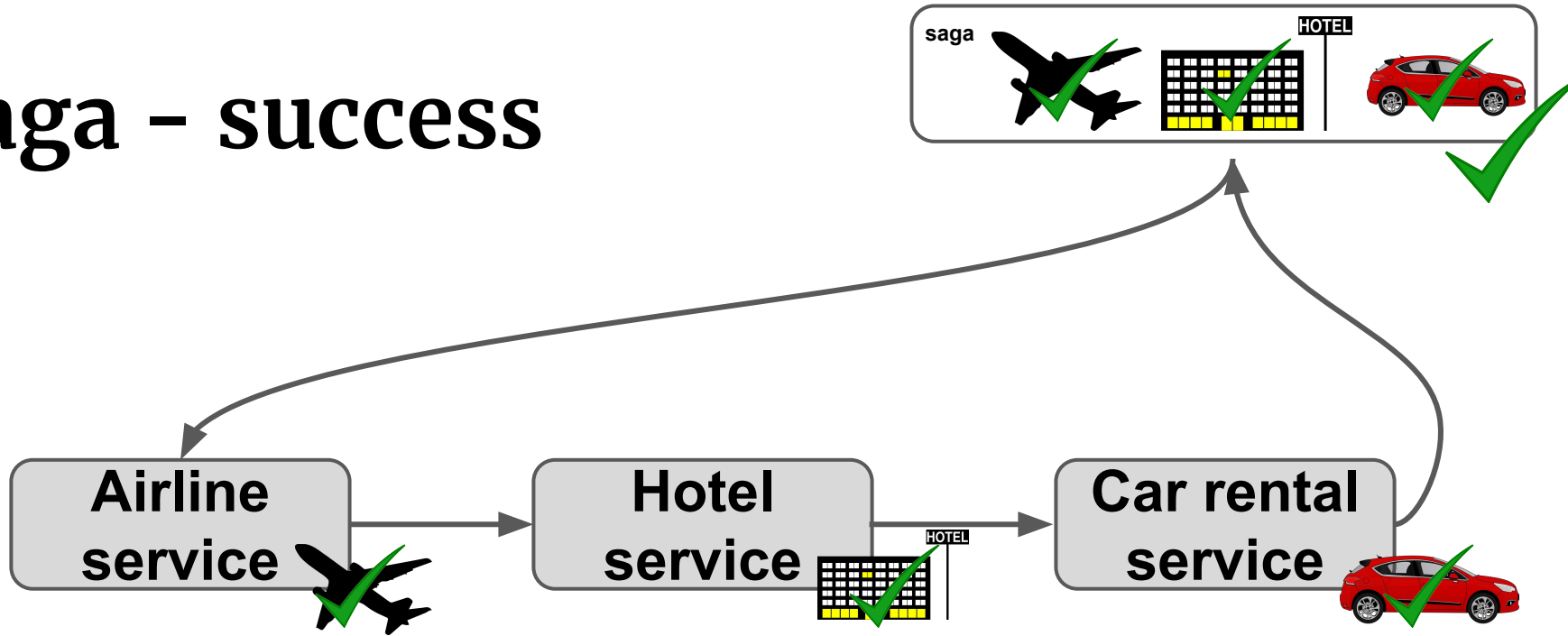
saga



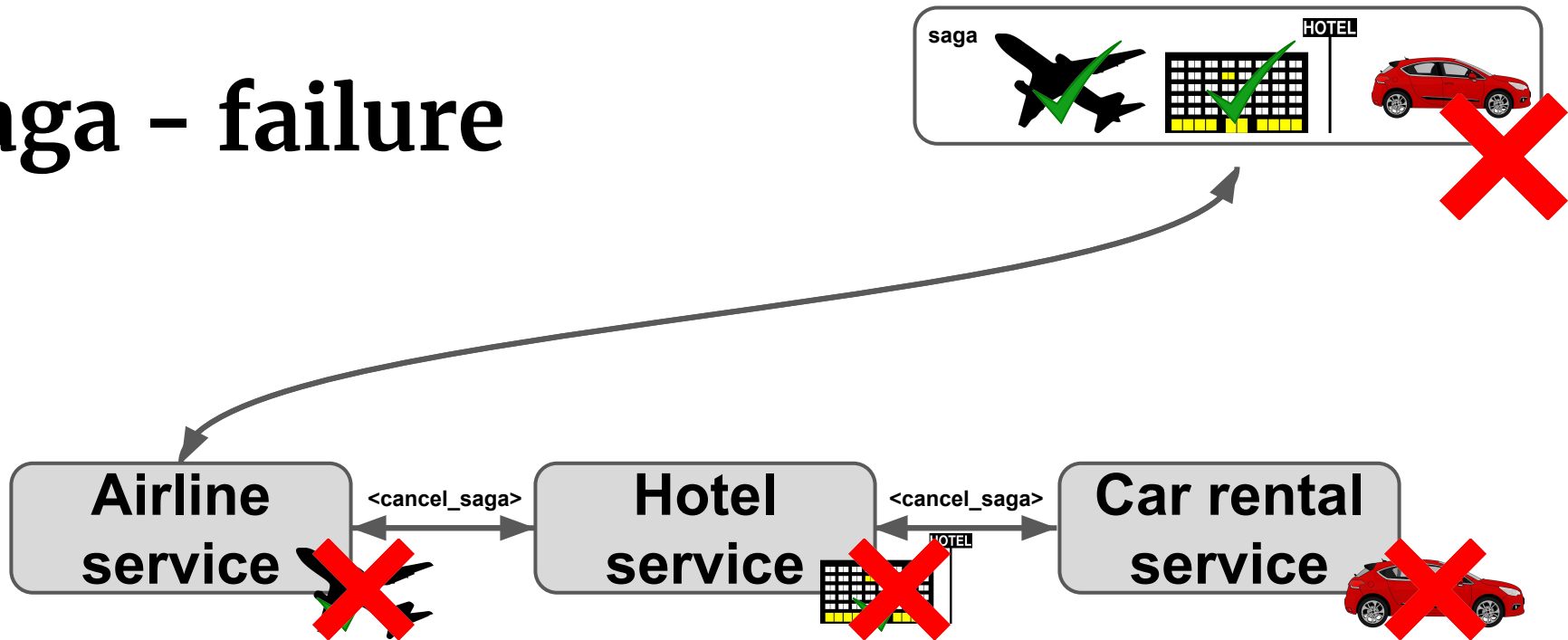
HOTEL



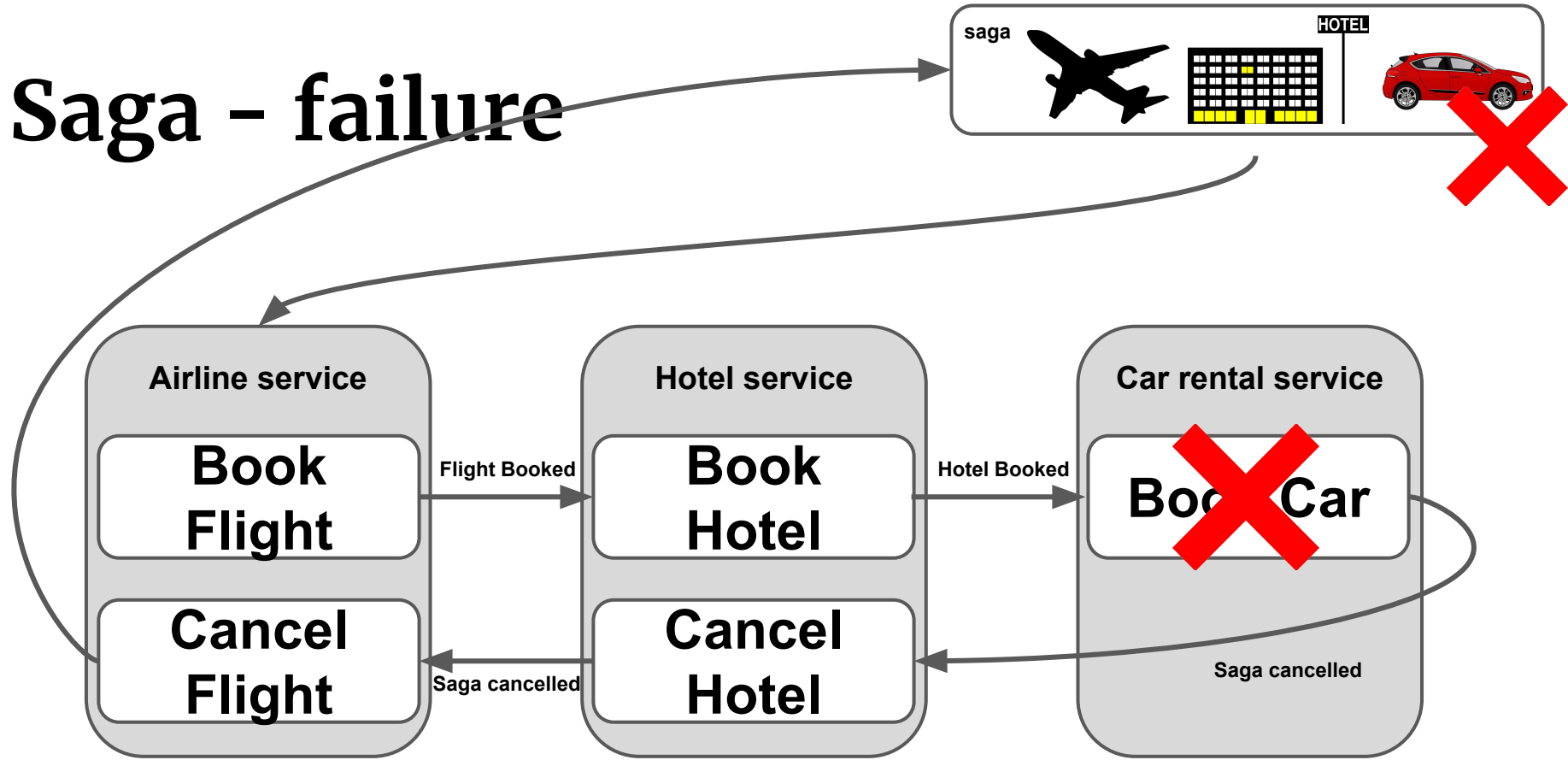
Saga - success



Saga - failure



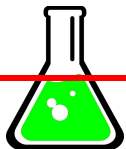
Saga - failure



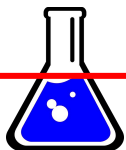
ACID vs BASE



Atomicity



~~Consistency~~



~~Isolation~~



Durability



Basically Available

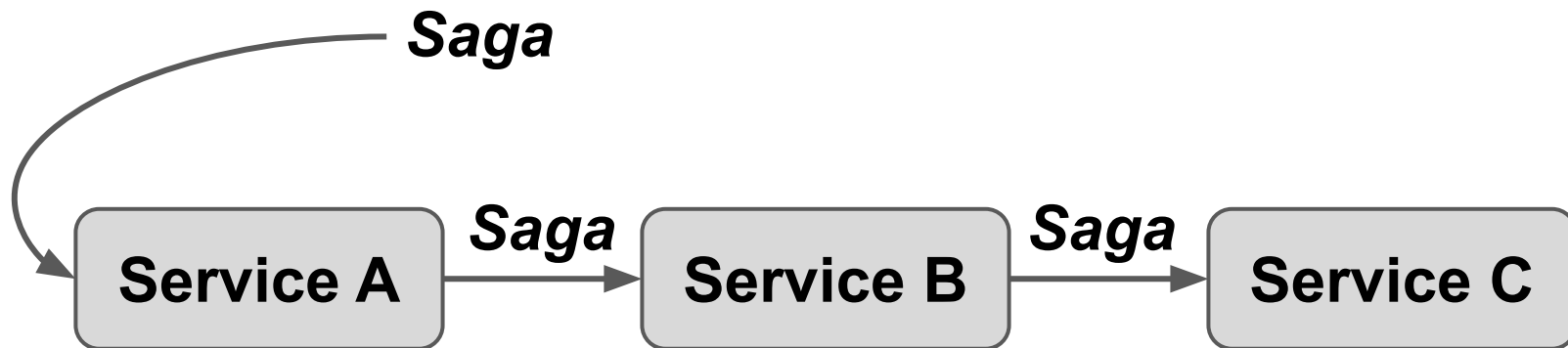


Soft state

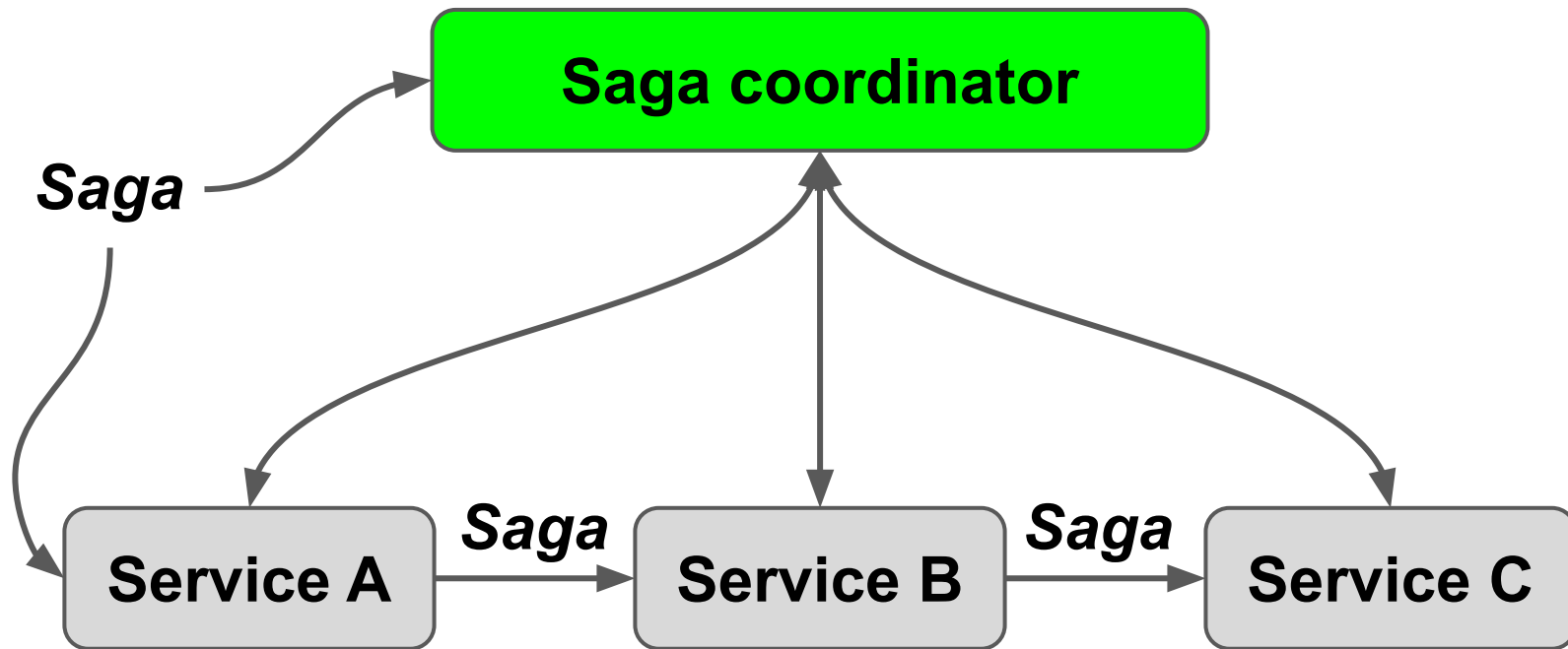


Eventual consistency

Decentralization vs Orchestration



Decentralization vs Orchestration



MicroProfile LRA

(Long Running Actions)

<https://github.com/eclipse/microprofile-lra>

<https://github.com/jbosstm/narayana/tree/master/rts/lra>

LRA - dependencies

API

```
<dependency>
  <groupId>org.eclipse.microprofile.lra</groupId>
  <artifactId>microprofile-lra-api</artifactId>
  <version>1.0-RC1</version>
</dependency>
```





Narayana



```
<dependency>
  <groupId>org.jboss.narayana.rts</groupId>
  <artifactId>narayana-lra</artifactId>
  <version>${version.narayana}</version>
</dependency>
```


Thank you

-  @xstefank
-  xstefank
- mstefank@redhat.com

Code

<http://bit.ly/microprofile-demo>

Slides

<http://bit.ly/openhouse-mp>

Resources

- https://pixabay.com/users/GraphicMama-team-2641041/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=159766 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=1597966
- https://pixabay.com/users/OpenClipart-Vectors-30363/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=1293790 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=1293790
- https://pixabay.com/users/kerr63-438900/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=1205413 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=1205413
- https://pixabay.com/users/OpenClipart-Vectors-30363/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=1300467 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=1300467
- https://pixabay.com/users/Clker-Free-Vector-Images-3736/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=308589 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=308589
- https://pixabay.com/users/Clker-Free-Vector-Images-3736/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=305245 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=305245
- https://pixabay.com/users/OpenClipart-Vectors-30363/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=146096 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=146096
- https://pixabay.com/users/jarmoluk-143740/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=256319 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=256319
- https://pixabay.com/users/paologhedini-422890/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=937110 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=937110
- https://pixabay.com/users/OpenClipart-Vectors-30363/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=156792 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=156792
- https://pixabay.com/users/geralt-9301/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=2079328 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=2079328
- https://pixabay.com/users/mohamed_hassan-5229782/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=289806 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=289806
- https://pixabay.com/users/Deans-Icons-2620543/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=1454731 from https://pixabay.com/?utm_source=link-attribution&utm_medium=referral&utm_campaign=image&utm_content=1454731
- <https://gph.is/1F6T8XQ>