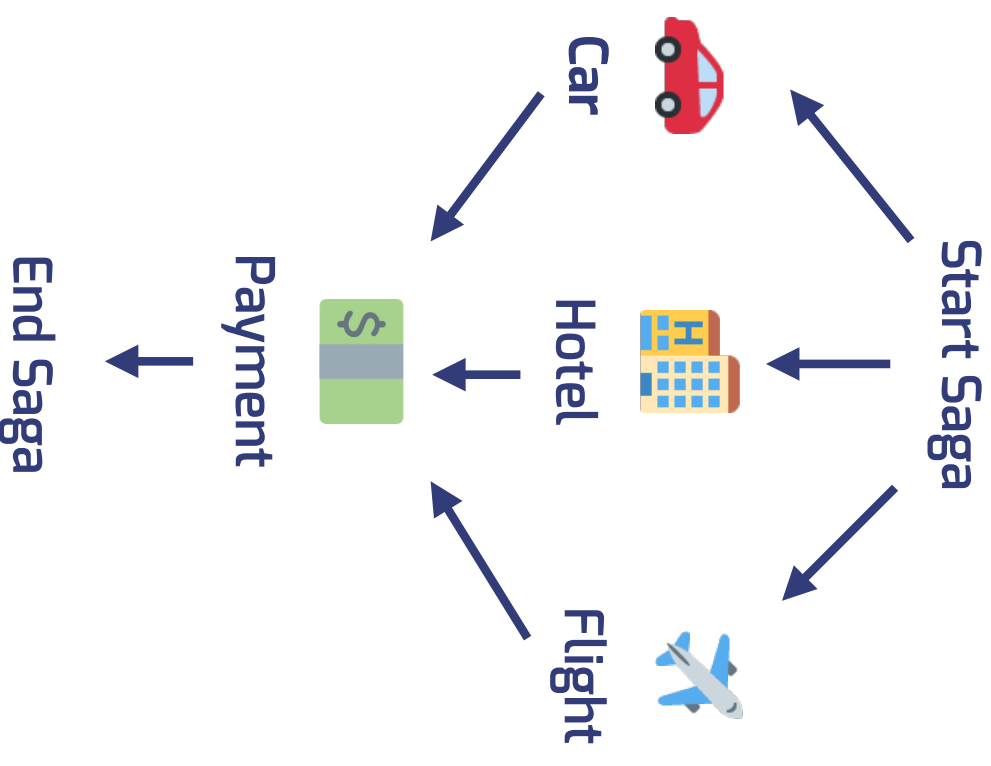


# *defining a* **Distributed Saga**

# *Distributed Saga*

## Directed Acyclic Graph



# *Distributed Saga* Vertex



**Name: Hotel**

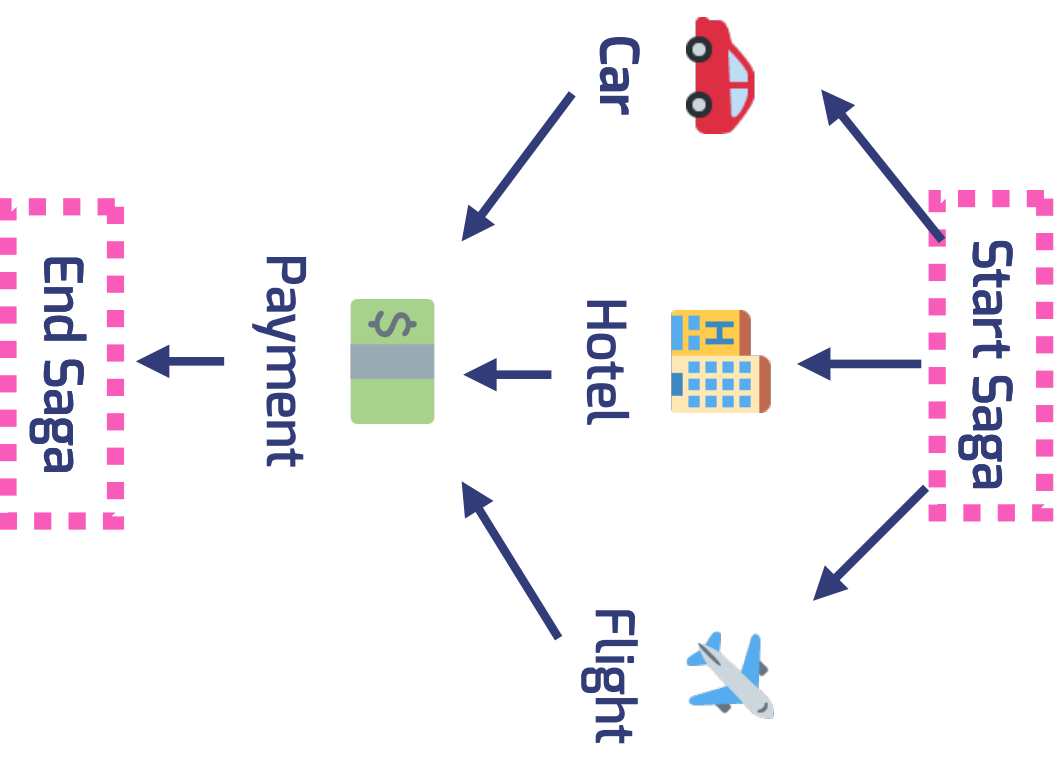
**Request: Book Hotel**

**Compensating Request: Cancel Hotel**

**Status: Not Completed**

# *Distributed Saga*

## Start & End Vertices

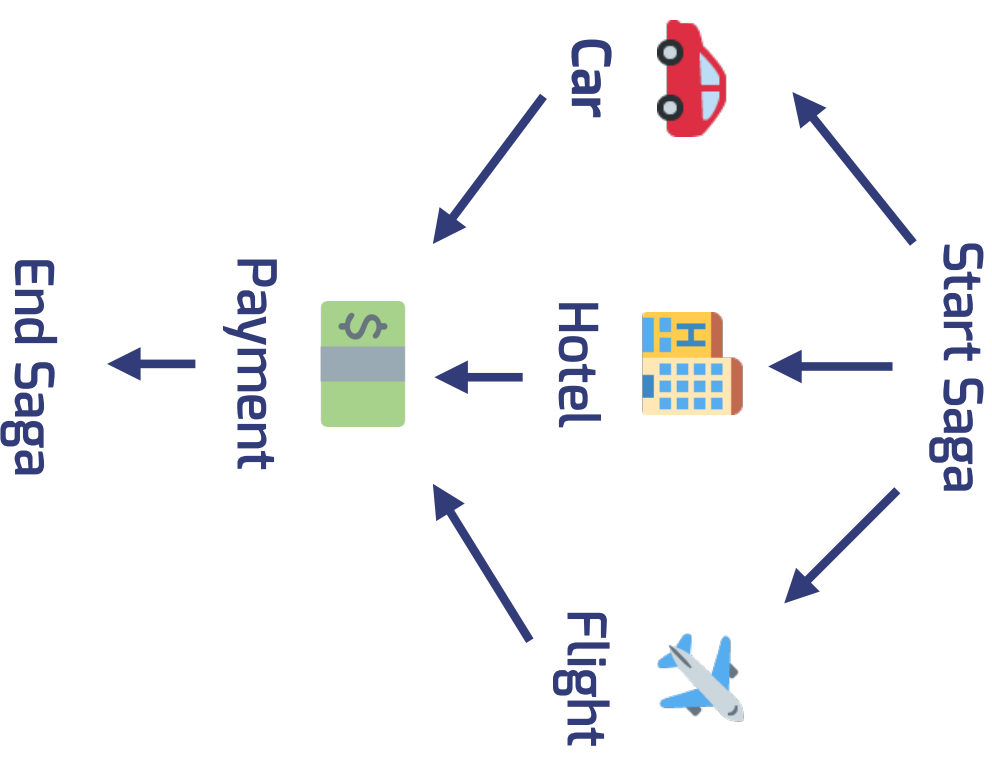
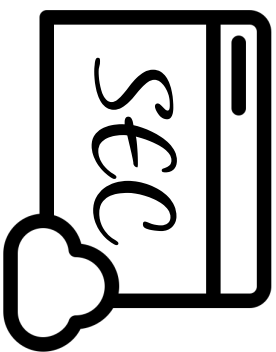


# Distributed Saga Log

*fault-tolerant & highly available*

# Saga Execution Coordinator

Saga Log

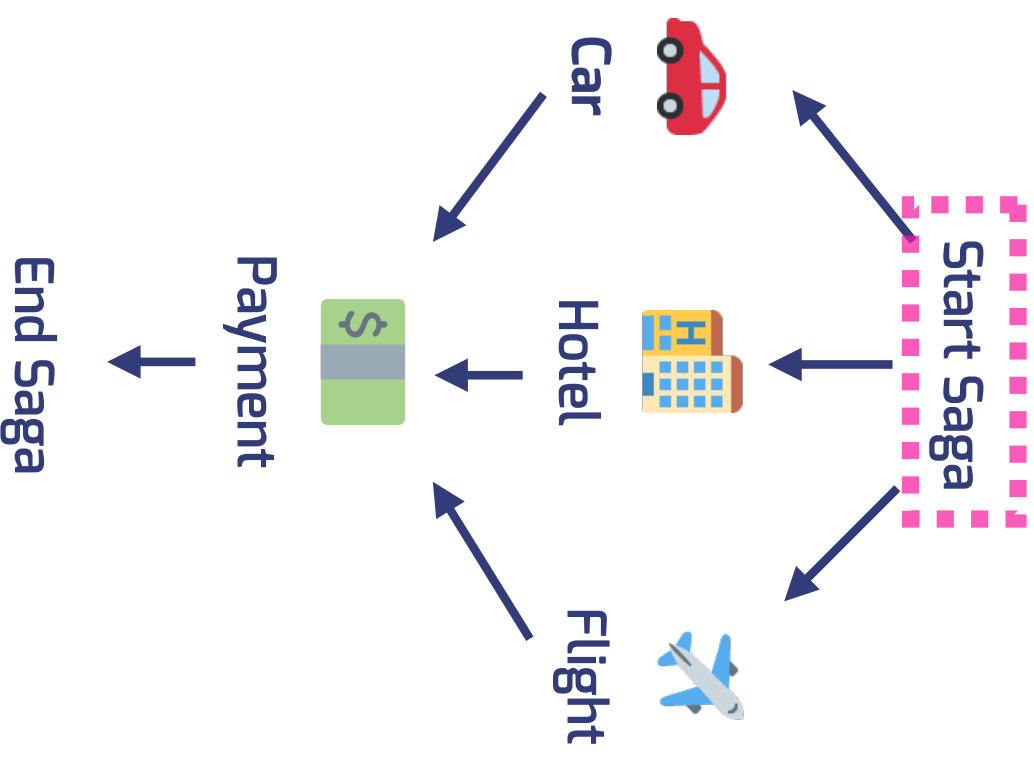
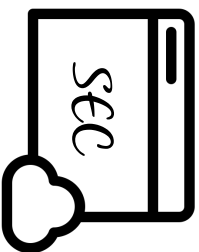


# *Executing a* Distributed Saga

# Saga Log

## Book Trip Request

```
{
  "Name": "Caitie McCaffrey",
  "Destination": "Malaga, Spain",
  "Start Date": "2017-05-17",
  "End Date": "2017-05-20",
  "Payment Token":
    "Tm90IG15IHJlYWwgY3JlZGl0IGNhcmQgaw5mbYAKQ==",
  "Price": "2500USD"
}
```



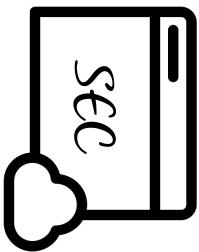


# Saga Log

## Book Trip Request

```
{  
  "Name": "Caitie McCaffrey",  
  "Destination": "Malaga, Spain",  
  "Start Date": "2017-05-17",  
  "End Date": "2017-05-20",  
  "Payment Token":  
    "Tm90IG15IHJlYWwgY3JlZGl0IGNhcmQgaw5mbYk6KQ==",  
  "Price": "2500USD"  
}
```

Start Saga



Start Saga



Car



Hotel



Flight



Payment

End Saga

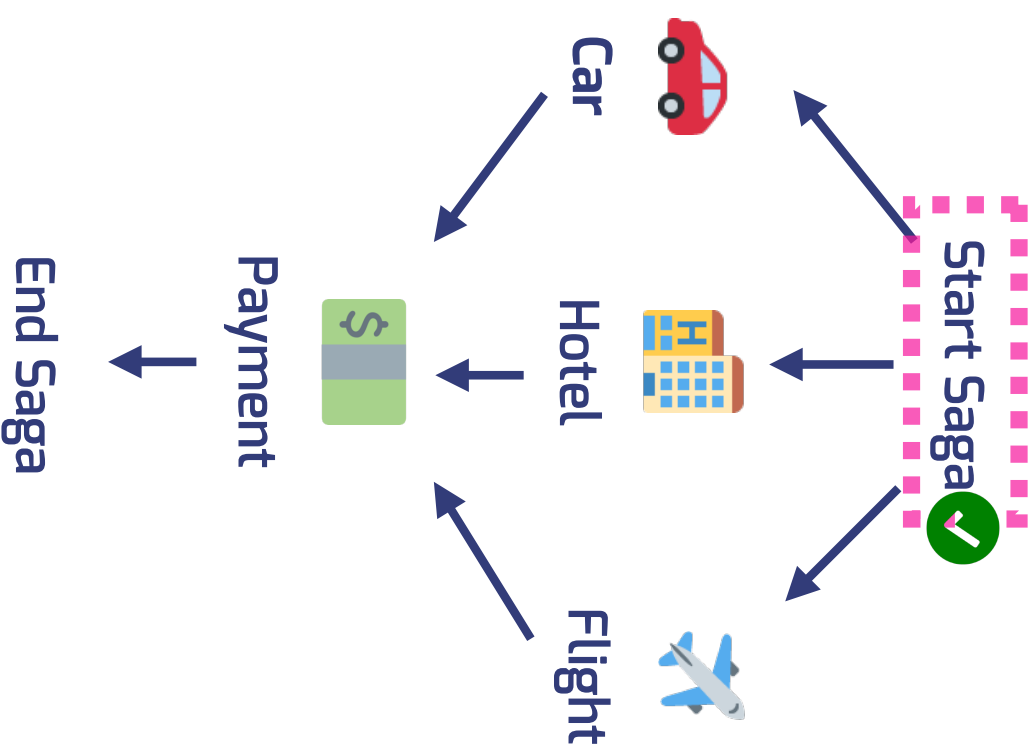
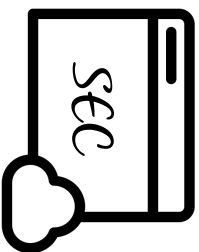
# Saga Log



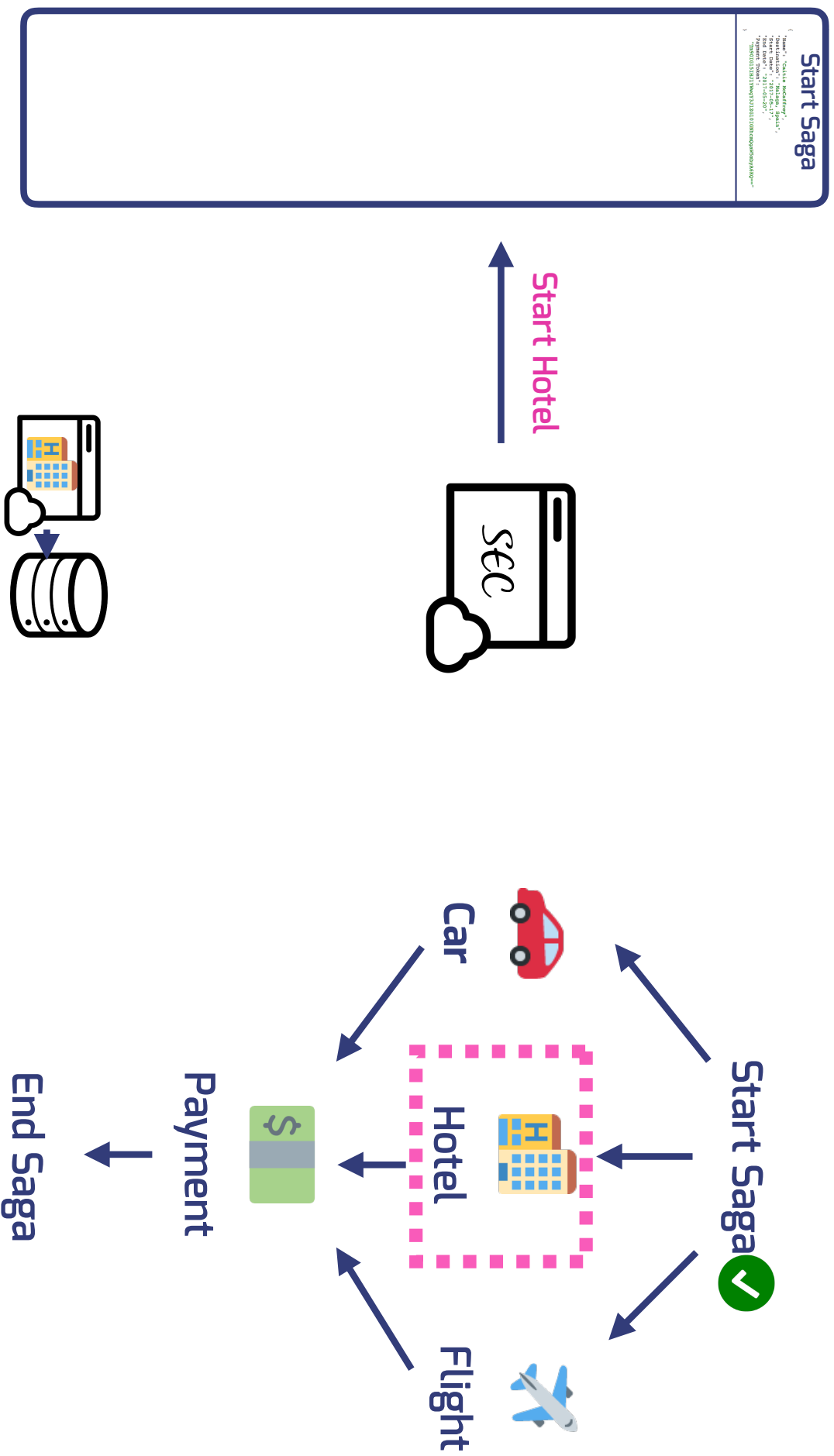
## Book Trip Request

```
{
  "Name": "Caitie McCaffrey",
  "Destination": "Malaga, Spain",
  "Start Date": "2017-05-17",
  "End Date": "2017-05-20",
  "Payment Token": "Tm90IG15IHJlYWwgy3JlZGl0IGNhcmQgaw5mbYk6KQ==",
  "Price": "2500USD"
}
```

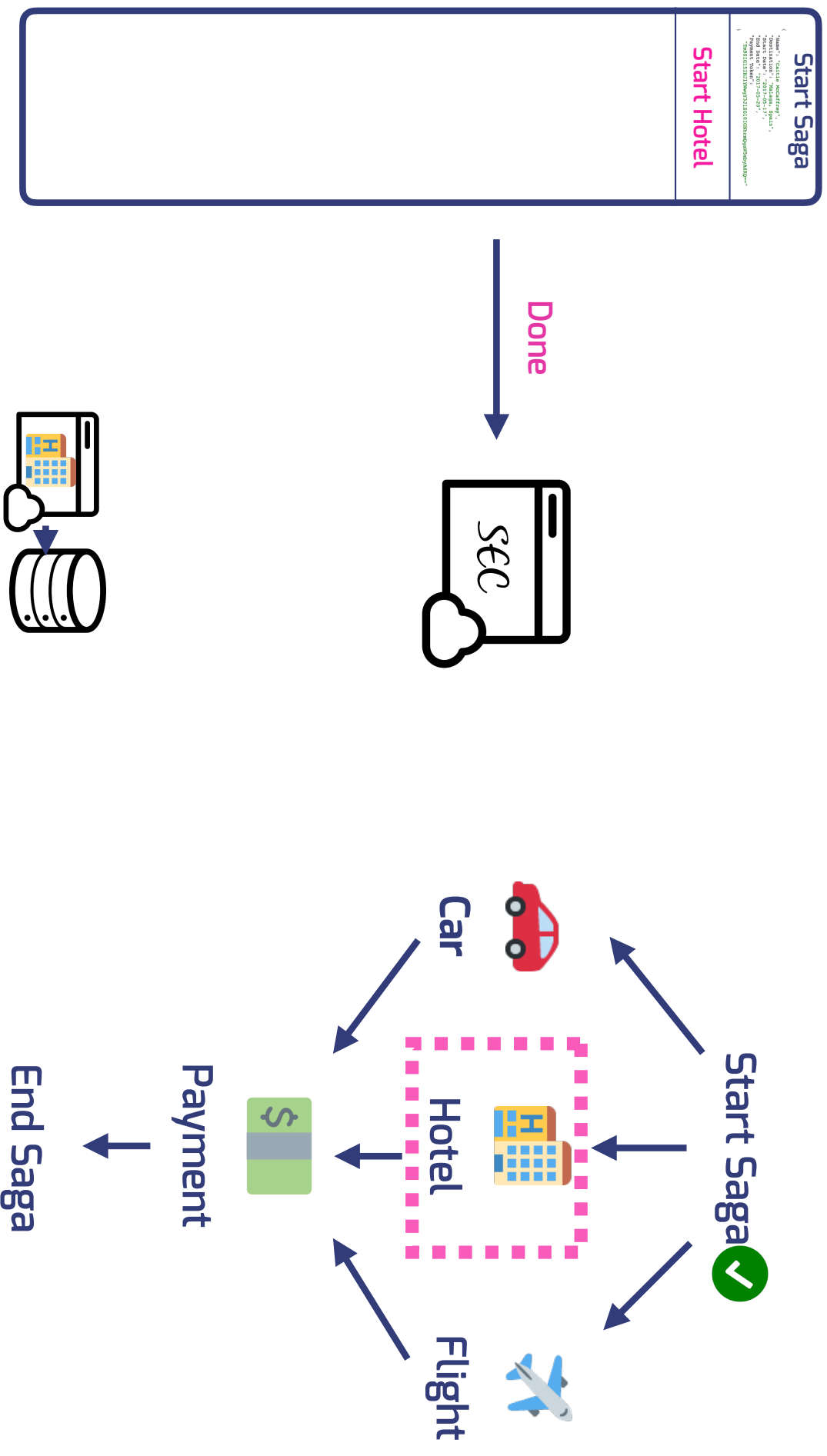
Done



# Saga Log

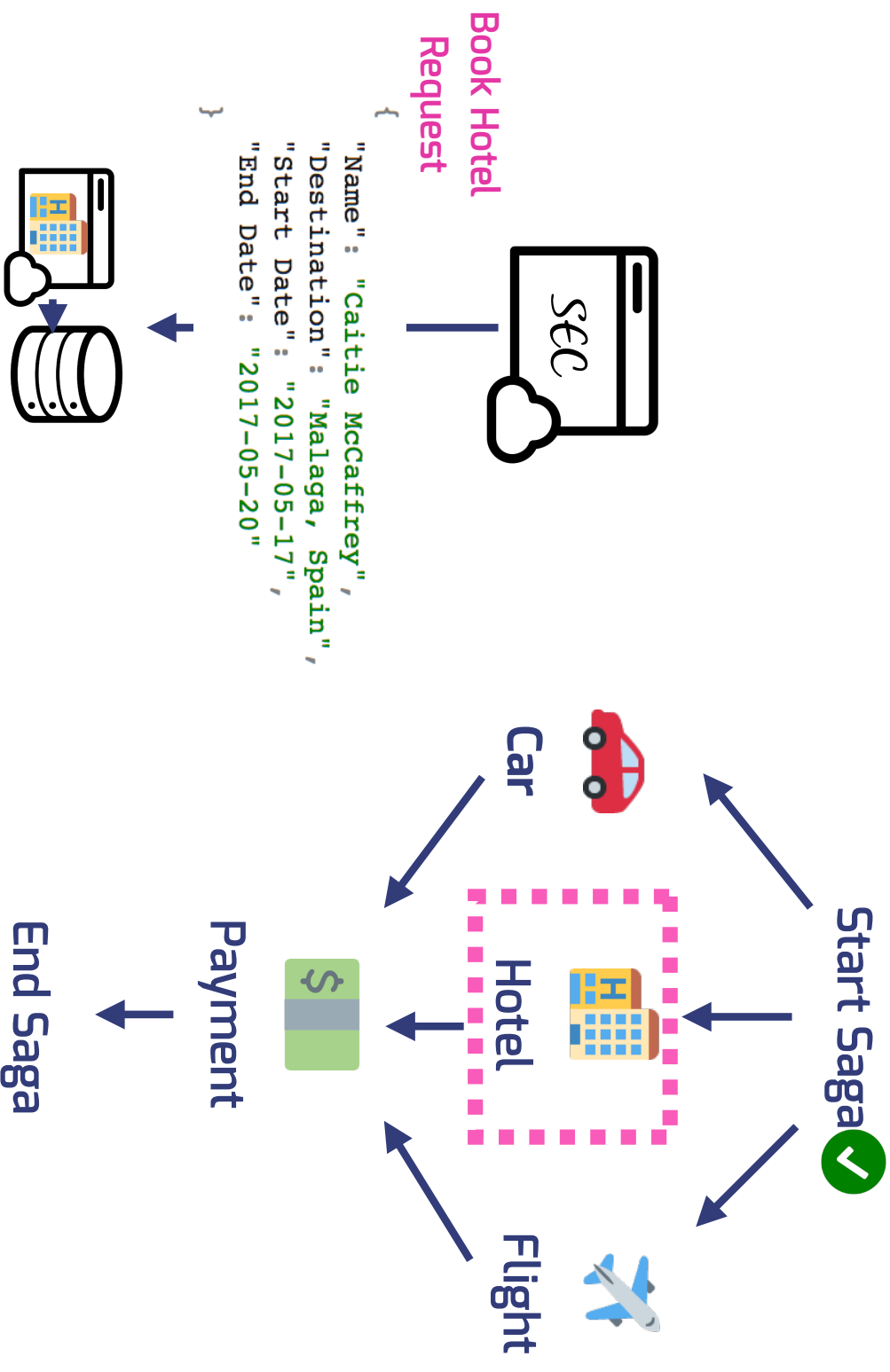


# Saga Log



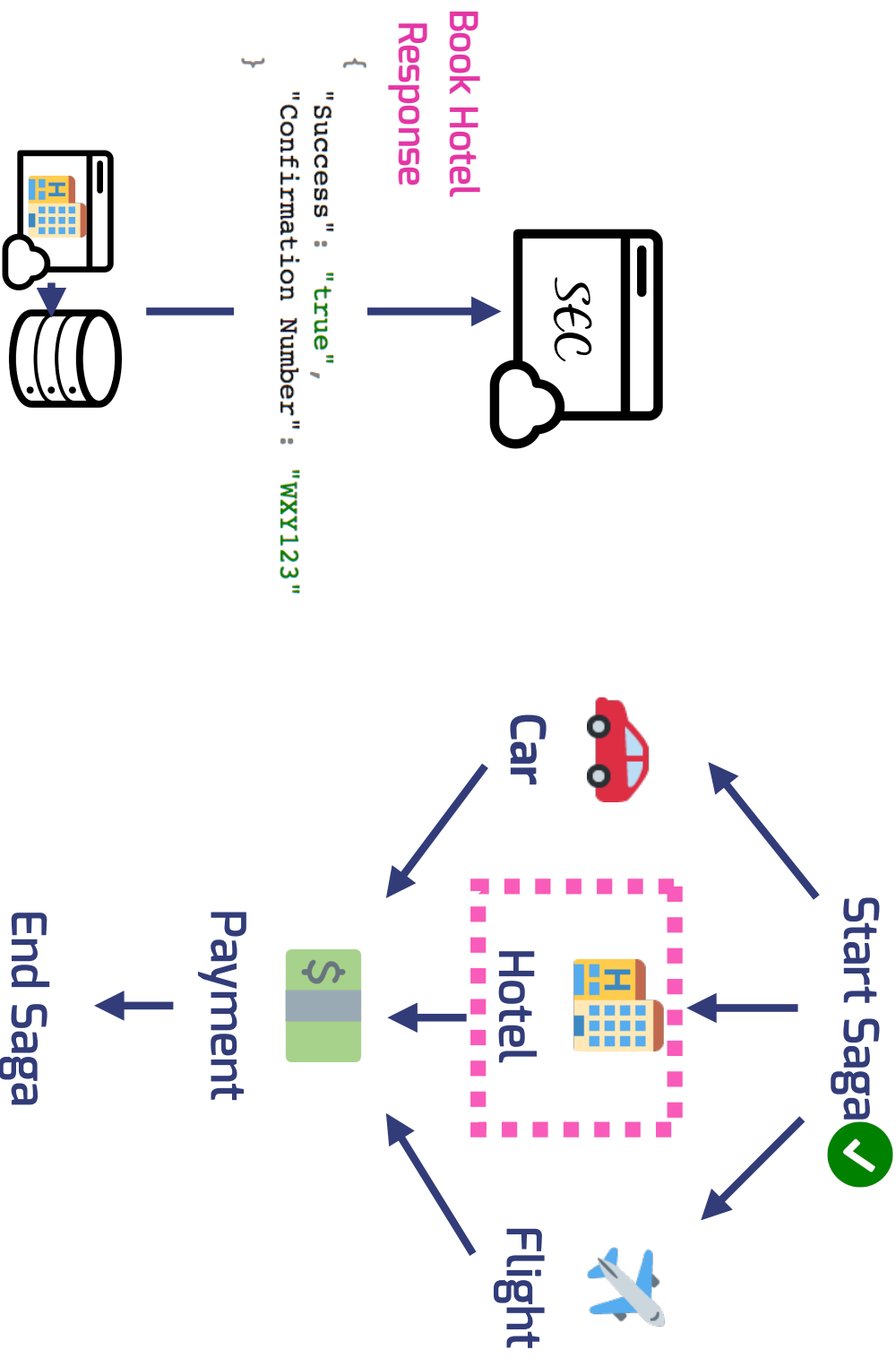
# Saga Log

<pre>{   "name": "Caitie McCaffrey",   "destination": "Malaga, Spain",   "start Date": "2017-05-17",   "end Date": "2017-05-20",   "payment Status": "Not Paid",   "start Saga": "2017-05-17 13:05:00",   "end Saga": "2017-05-17 13:05:00" }</pre>	<b>Start Saga</b>
	<b>Start Hotel</b>



# Saga Log

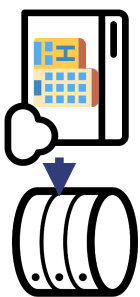
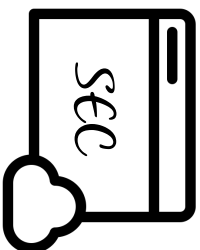
<pre>{   "name": "Saga Manager",   "timestamp": "2020-01-01T00:00:00.000Z",   "data": {     "id": "123456789",     "status": "STARTED",     "message": "Saga started"   } }</pre>	<b>Start Saga</b>
	<b>Start Hotel</b>



# Saga Log



End Hotel



Start Saga ✓



Car



Hotel



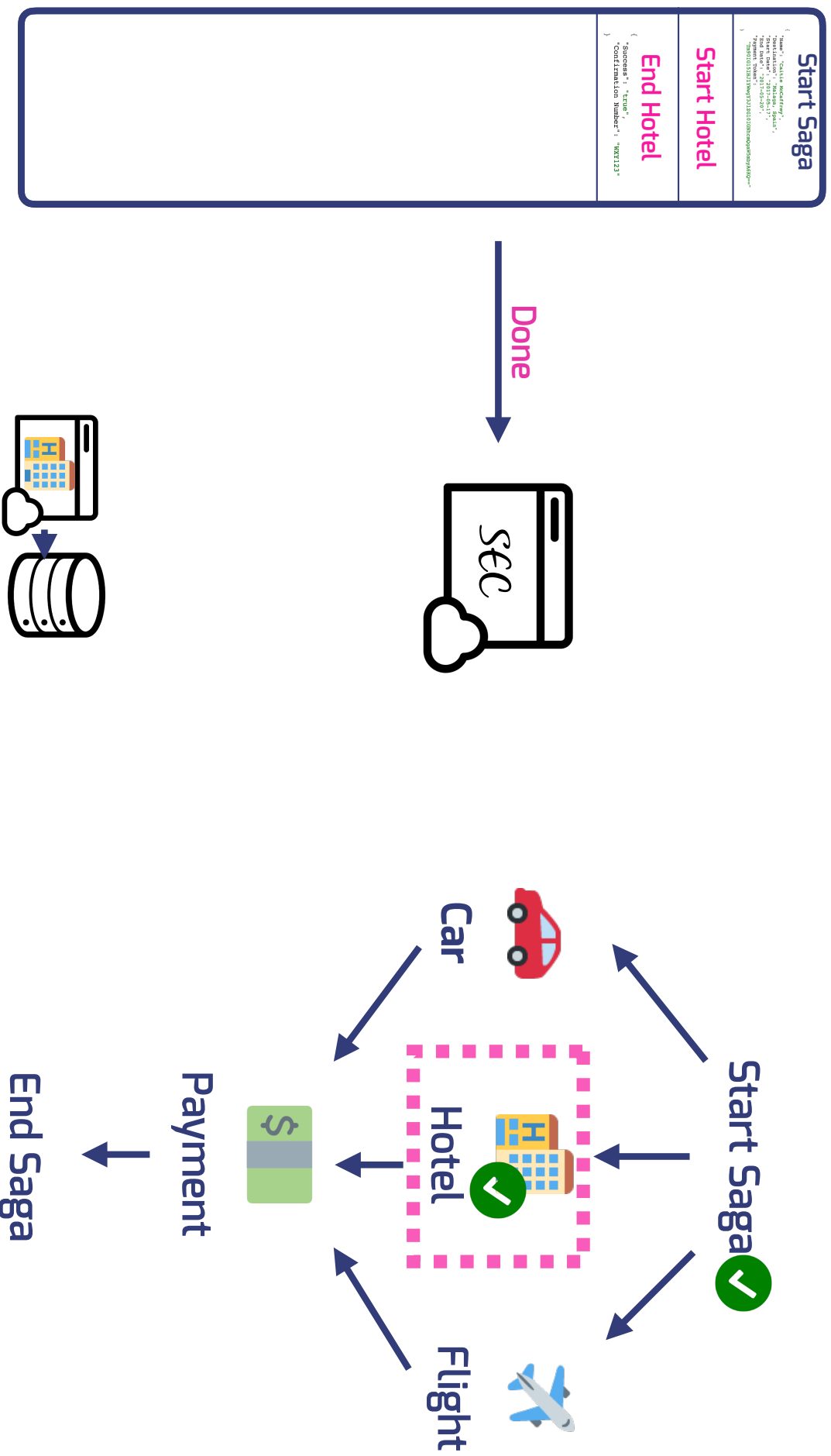
Flight



Payment

End Saga

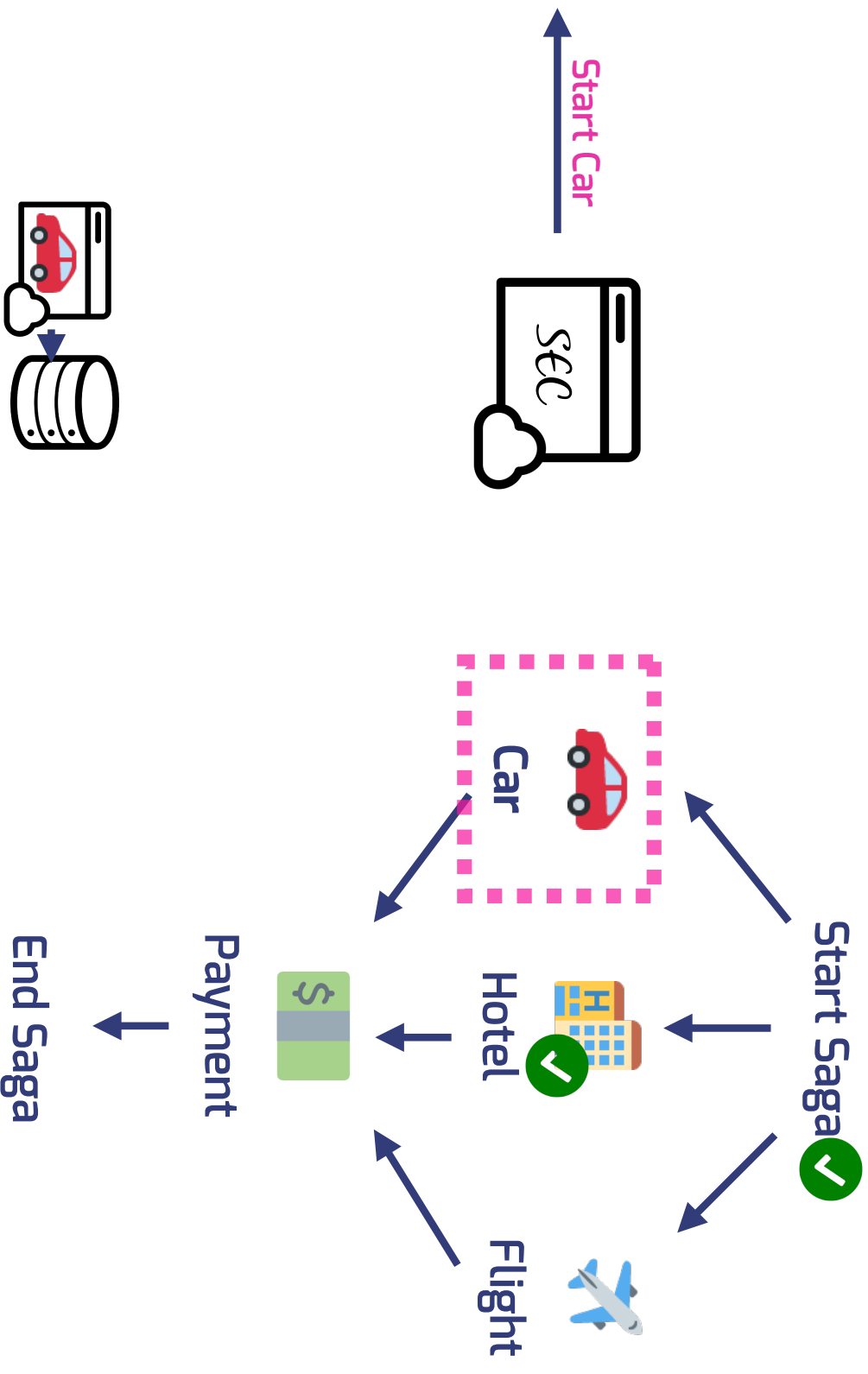
# Saga Log





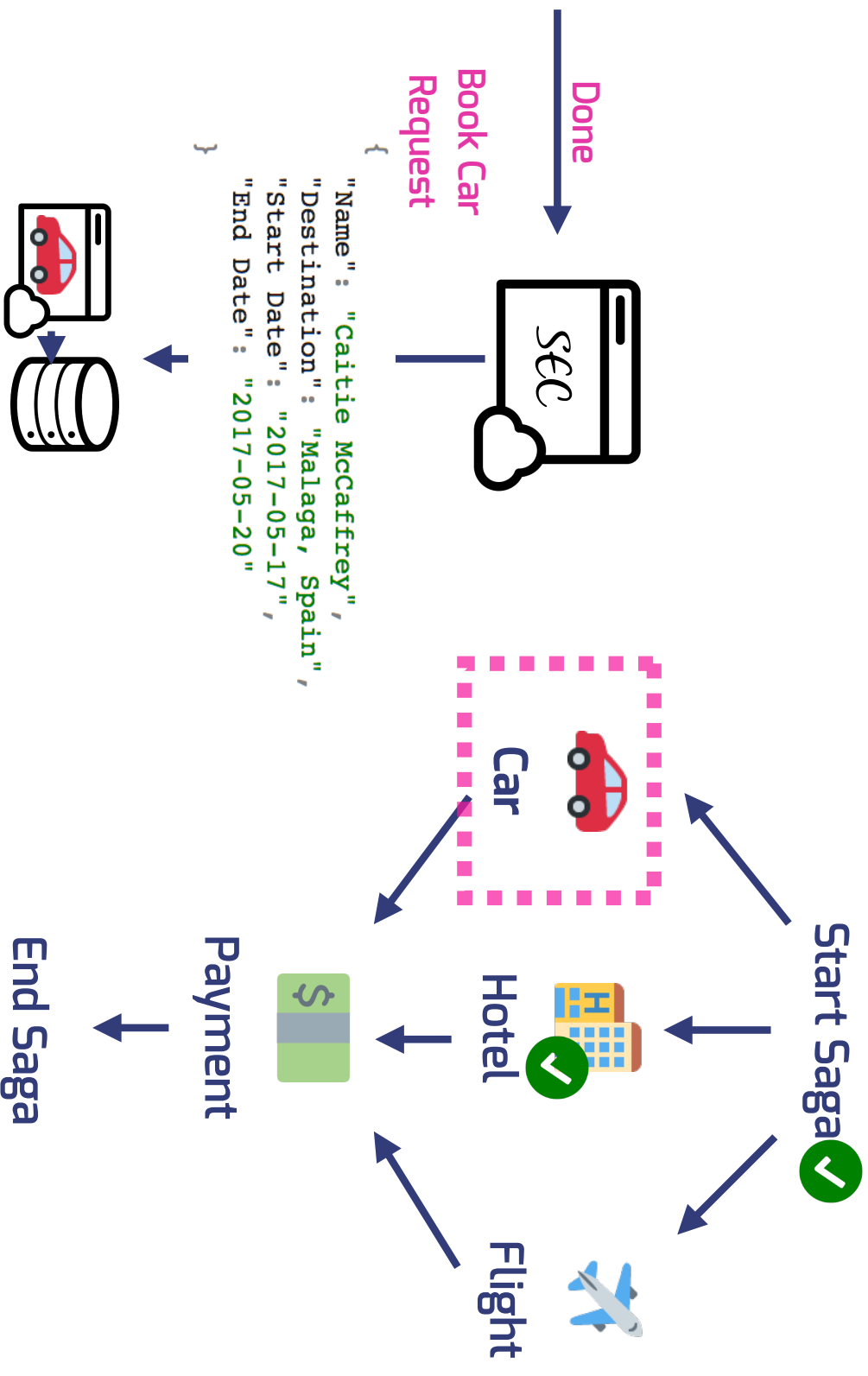
# Saga Log

<pre> {   "name": "Sofia Academy",   "description": "Sofia Academy",   "location": "Sofia, Bulgaria",   "year": 2015,   "end date": "2015-05-20",   "start date": "2015-05-20",   "url": "https://www.sofiaacademy.org/" } </pre>	Start Saga
<pre> {   "name": "Sofia Academy",   "description": "Sofia Academy",   "location": "Sofia, Bulgaria",   "year": 2015,   "end date": "2015-05-20",   "start date": "2015-05-20",   "url": "https://www.sofiaacademy.org/" } </pre>	Start Hotel
<pre> {   "name": "Sofia Academy",   "description": "Sofia Academy",   "location": "Sofia, Bulgaria",   "year": 2015,   "end date": "2015-05-20",   "start date": "2015-05-20",   "url": "https://www.sofiaacademy.org/" } </pre>	End Hotel
<pre> {   "name": "Sofia Academy",   "description": "Sofia Academy",   "location": "Sofia, Bulgaria",   "year": 2015,   "end date": "2015-05-20",   "start date": "2015-05-20",   "url": "https://www.sofiaacademy.org/" } </pre>	Conf Institution Number: 1 "WY123"

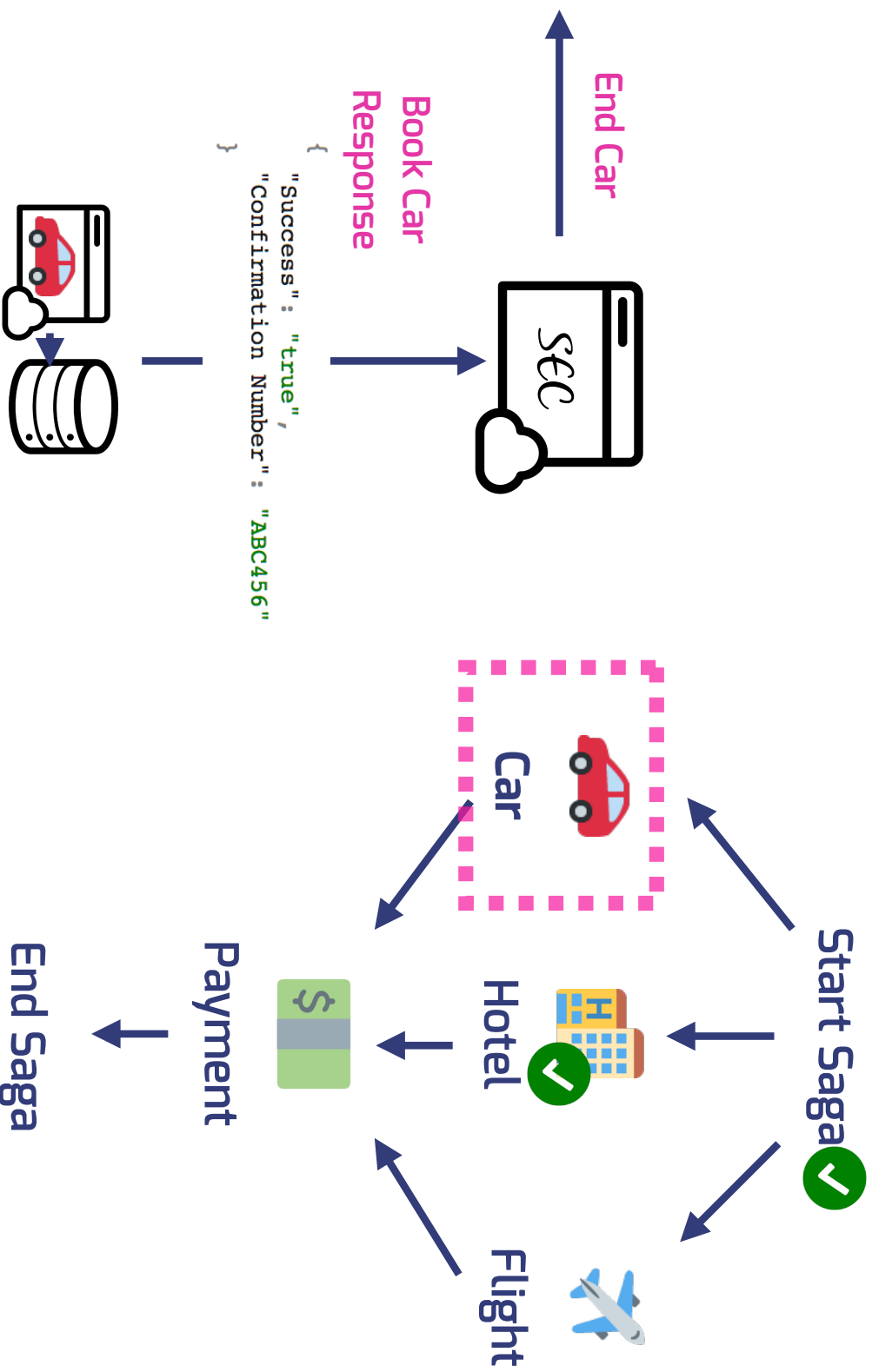


# Saga Log

<pre>{   "name": "SAGA HOTEL",   "description": "SAGA HOTEL",   "location": "123 Main St",   "rating": "4.5",   "phone": "555-123-4567",   "email": "info@sagahotel.com",   "website": "http://www.sagahotel.com",   "social": {     "facebook": "sagahotel",     "twitter": "sagahotel",     "instagram": "sagahotel"   },   "amenities": [     "Free WiFi",     "24-hour Front Desk",     "Pet-friendly",     "Parking",     "Room Service",     "Concierge",     "Laundry",     "Dry Cleaning",     "Bicycle Rental",     "Airport Shuttle"   ],   "rooms": [     {       "room": "Single Room",       "price": 120,       "availability": "Available"     },     {       "room": "Double Room",       "price": 180,       "availability": "Available"     },     {       "room": "Suite",       "price": 250,       "availability": "Available"     },     {       "room": "Presidential Suite",       "price": 450,       "availability": "Available"     }   ],   "reviews": [     {       "review": "Great stay at SAGA HOTEL. The room was clean and comfortable. The staff was friendly and helpful. I would definitely stay here again.",       "rating": "5",       "author": "John Doe",       "date": "2023-10-15"     },     {       "review": "SAGA HOTEL is a great place to stay. The location is convenient and the amenities are excellent. The staff was very professional and the service was top-notch.",       "rating": "4",       "author": "Jane Smith",       "date": "2023-10-10"     },     {       "review": "I had a wonderful stay at SAGA HOTEL. The room was spacious and the view was amazing. The staff was very attentive and the food was delicious.",       "rating": "5",       "author": "Mike Johnson",       "date": "2023-10-05"     }   ],   "contact": {     "phone": "555-123-4567",     "email": "info@sagahotel.com",     "website": "http://www.sagahotel.com"   } }</pre>	Start Saga
<pre>{   "name": "Start Hotel",   "description": "Start Hotel",   "location": "123 Main St",   "rating": "4.5",   "phone": "555-123-4567",   "email": "info@starthotel.com",   "website": "http://www.starthotel.com",   "social": {     "facebook": "starthotel",     "twitter": "starthotel",     "instagram": "starthotel"   },   "amenities": [     "Free WiFi",     "24-hour Front Desk",     "Pet-friendly",     "Parking",     "Room Service",     "Concierge",     "Laundry",     "Dry Cleaning",     "Bicycle Rental",     "Airport Shuttle"   ],   "rooms": [     {       "room": "Single Room",       "price": 120,       "availability": "Available"     },     {       "room": "Double Room",       "price": 180,       "availability": "Available"     },     {       "room": "Suite",       "price": 250,       "availability": "Available"     },     {       "room": "Presidential Suite",       "price": 450,       "availability": "Available"     }   ],   "reviews": [     {       "review": "Great stay at Start Hotel. The room was clean and comfortable. The staff was friendly and helpful. I would definitely stay here again.",       "rating": "5",       "author": "John Doe",       "date": "2023-10-15"     },     {       "review": "Start Hotel is a great place to stay. The location is convenient and the amenities are excellent. The staff was very professional and the service was top-notch.",       "rating": "4",       "author": "Jane Smith",       "date": "2023-10-10"     },     {       "review": "I had a wonderful stay at Start Hotel. The room was spacious and the view was amazing. The staff was very attentive and the food was delicious.",       "rating": "5",       "author": "Mike Johnson",       "date": "2023-10-05"     }   ],   "contact": {     "phone": "555-123-4567",     "email": "info@starthotel.com",     "website": "http://www.starthotel.com"   } }</pre>	Start Hotel
<pre>{   "name": "End Hotel",   "description": "End Hotel",   "location": "123 Main St",   "rating": "4.5",   "phone": "555-123-4567",   "email": "info@endhotel.com",   "website": "http://www.endhotel.com",   "social": {     "facebook": "endhotel",     "twitter": "endhotel",     "instagram": "endhotel"   },   "amenities": [     "Free WiFi",     "24-hour Front Desk",     "Pet-friendly",     "Parking",     "Room Service",     "Concierge",     "Laundry",     "Dry Cleaning",     "Bicycle Rental",     "Airport Shuttle"   ],   "rooms": [     {       "room": "Single Room",       "price": 120,       "availability": "Available"     },     {       "room": "Double Room",       "price": 180,       "availability": "Available"     },     {       "room": "Suite",       "price": 250,       "availability": "Available"     },     {       "room": "Presidential Suite",       "price": 450,       "availability": "Available"     }   ],   "reviews": [     {       "review": "Great stay at End Hotel. The room was clean and comfortable. The staff was friendly and helpful. I would definitely stay here again.",       "rating": "5",       "author": "John Doe",       "date": "2023-10-15"     },     {       "review": "End Hotel is a great place to stay. The location is convenient and the amenities are excellent. The staff was very professional and the service was top-notch.",       "rating": "4",       "author": "Jane Smith",       "date": "2023-10-10"     },     {       "review": "I had a wonderful stay at End Hotel. The room was spacious and the view was amazing. The staff was very attentive and the food was delicious.",       "rating": "5",       "author": "Mike Johnson",       "date": "2023-10-05"     }   ],   "contact": {     "phone": "555-123-4567",     "email": "info@endhotel.com",     "website": "http://www.endhotel.com"   } }</pre>	End Hotel
<pre>{   "name": "Start Car",   "description": "Start Car",   "location": "123 Main St",   "rating": "4.5",   "phone": "555-123-4567",   "email": "info@startcar.com",   "website": "http://www.startcar.com",   "social": {     "facebook": "startcar",     "twitter": "startcar",     "instagram": "startcar"   },   "amenities": [     "Free WiFi",     "24-hour Front Desk",     "Pet-friendly",     "Parking",     "Room Service",     "Concierge",     "Laundry",     "Dry Cleaning",     "Bicycle Rental",     "Airport Shuttle"   ],   "rooms": [     {       "room": "Single Room",       "price": 120,       "availability": "Available"     },     {       "room": "Double Room",       "price": 180,       "availability": "Available"     },     {       "room": "Suite",       "price": 250,       "availability": "Available"     },     {       "room": "Presidential Suite",       "price": 450,       "availability": "Available"     }   ],   "reviews": [     {       "review": "Great stay at Start Car. The room was clean and comfortable. The staff was friendly and helpful. I would definitely stay here again.",       "rating": "5",       "author": "John Doe",       "date": "2023-10-15"     },     {       "review": "Start Car is a great place to stay. The location is convenient and the amenities are excellent. The staff was very professional and the service was top-notch.",       "rating": "4",       "author": "Jane Smith",       "date": "2023-10-10"     },     {       "review": "I had a wonderful stay at Start Car. The room was spacious and the view was amazing. The staff was very attentive and the food was delicious.",       "rating": "5",       "author": "Mike Johnson",       "date": "2023-10-05"     }   ],   "contact": {     "phone": "555-123-4567",     "email": "info@startcar.com",     "website": "http://www.startcar.com"   } }</pre>	Start Car



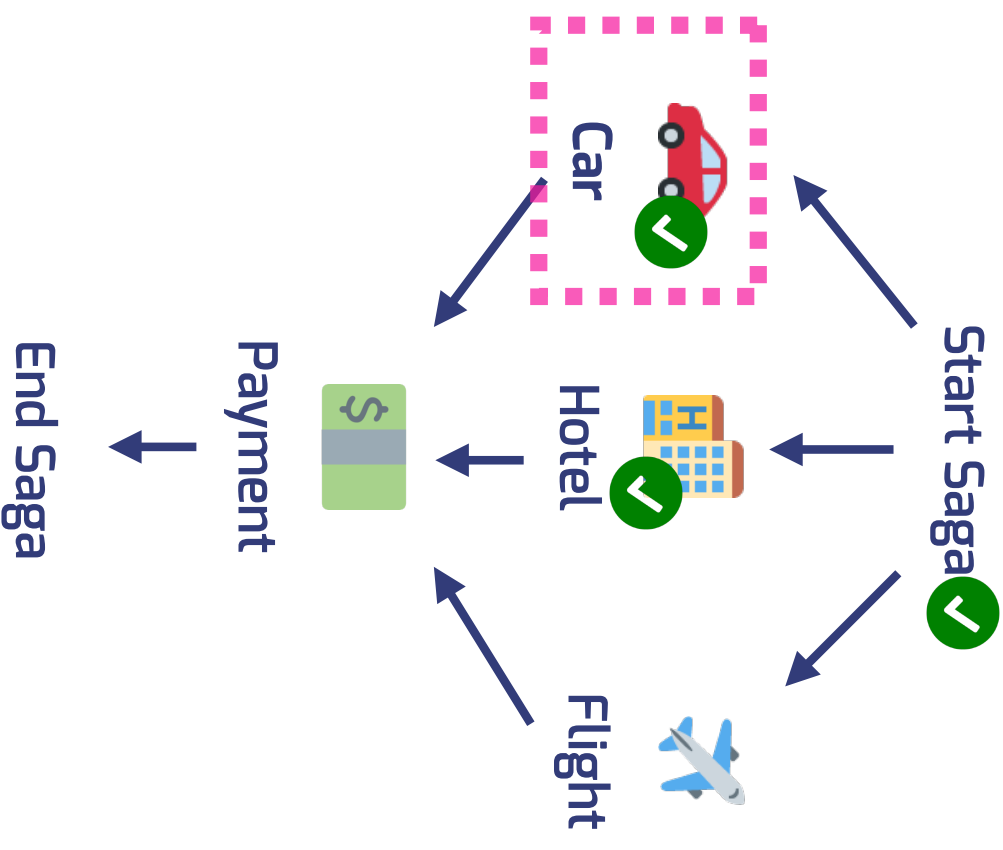
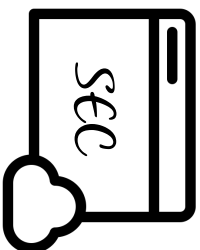
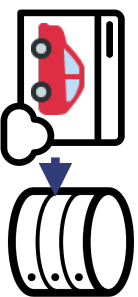
# Saga Log

[illegible]

# Saga Log

<pre>{ "name": "Start Saga",   "timestamp": "2024-01-01T12:00:00Z",   "status": "Success",   "confirmationNumber": "ABC123",   "parentSagaId": null }</pre>
Start Hotel
End Hotel <pre>{ "Success": "true",   "Confirmation Number": "XYZ123" }</pre>
Start Car
End Car <pre>{ "Success": "true",   "Confirmation Number": "ABC456" }</pre>

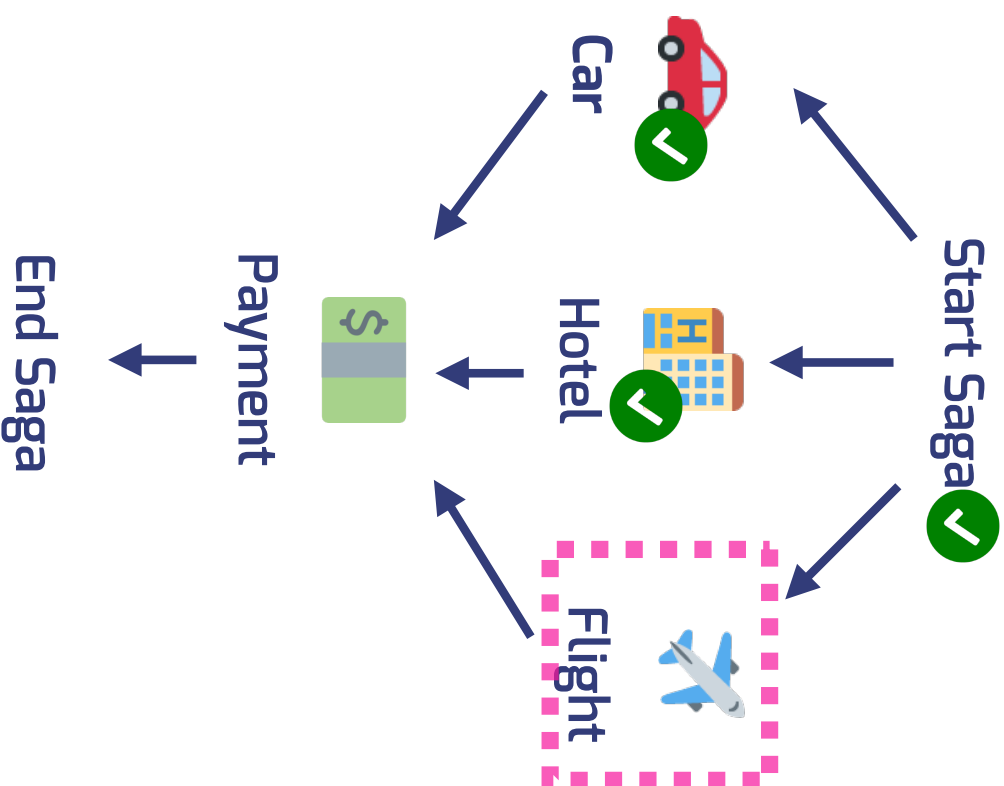
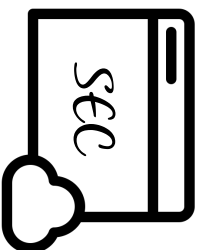
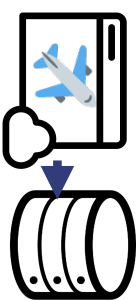
Done



# Saga Log

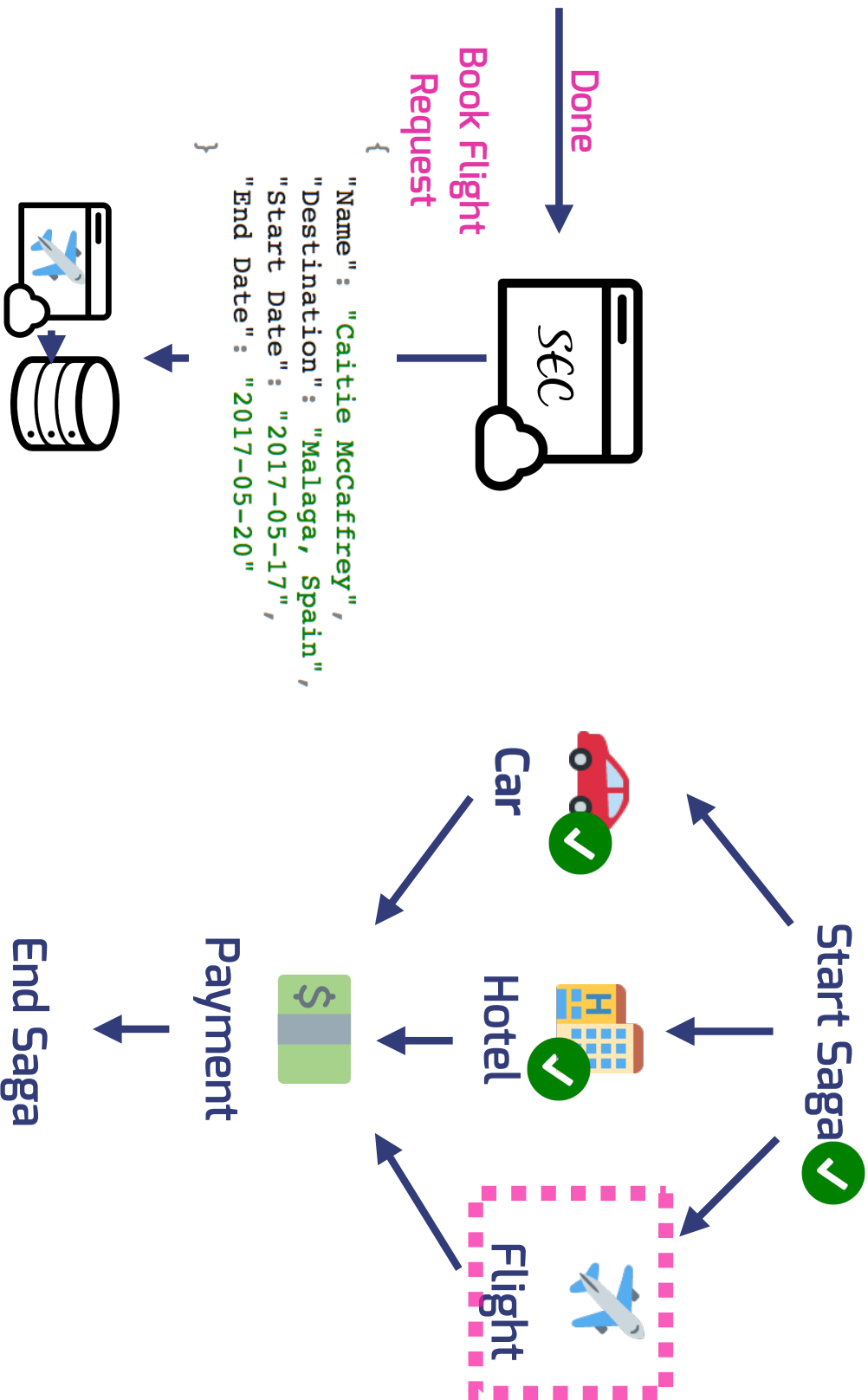
<pre>{ "name": "Saga 00000001",   "timestamp": "2020-01-01",   "start time": "2020-01-01",   "end time": "2020-01-01",   "parent": null,   "status": "Succeeded",   "confirmation number": "ABC456" }</pre>
Start Saga
Start Hotel
End Hotel <pre>{ "Success": "true",   "Confirmation Number": "XYZ123" }</pre>
Start Car
End Car <pre>{ "Success": "true",   "Confirmation Number": "ABC456" }</pre>

Start Flight



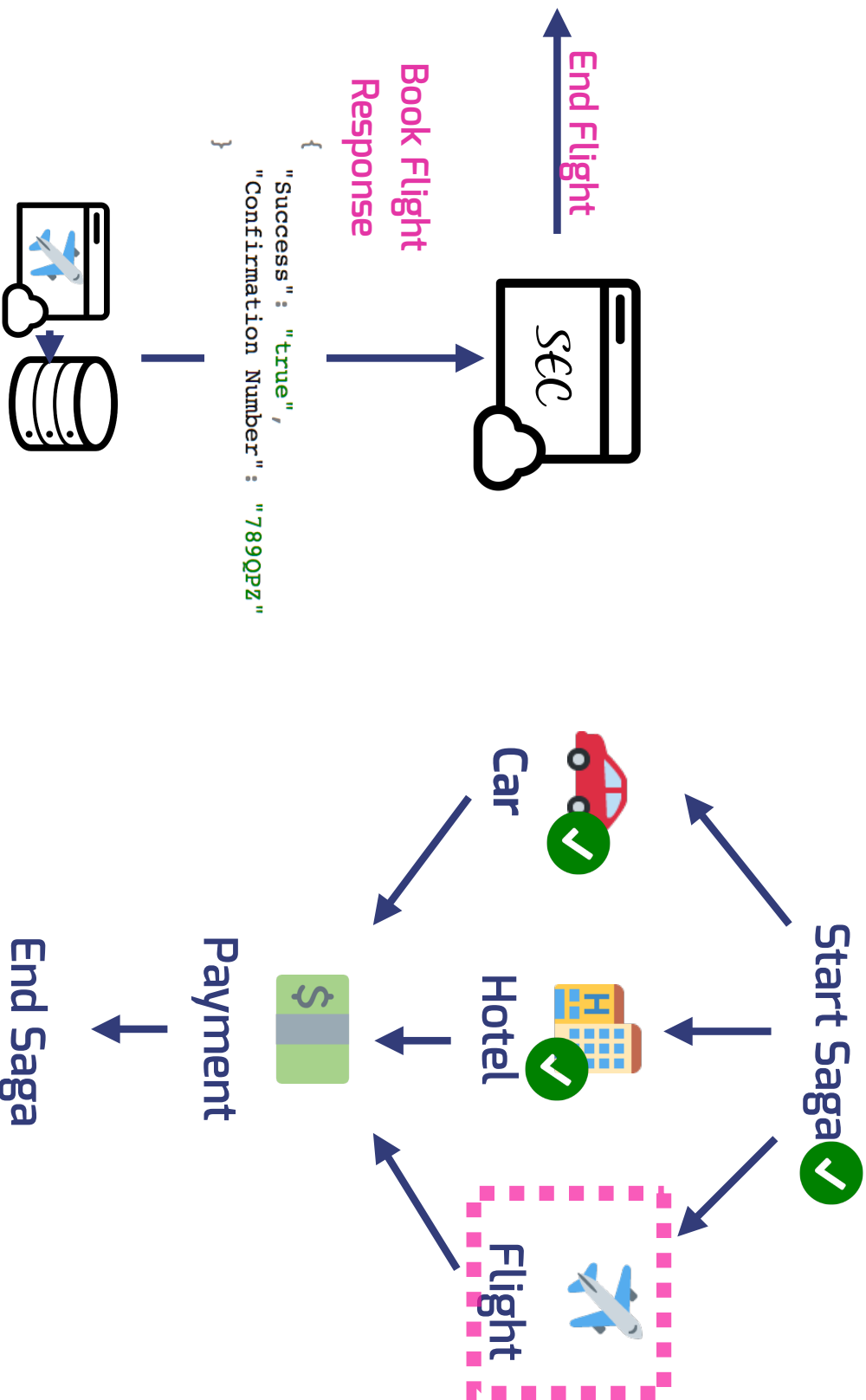
# Saga Log

<pre>{   "name": "Caitie McCaffrey",   "destination": "Malaga, Spain",   "start date": "2017-05-17",   "end date": "2017-05-20",   "payment status": "PAID",   "confirmation number": "ABC456" }</pre>
Start Saga
Start Hotel
End Hotel { "Success": "true", "Confirmation Number": "XYZ123" }
Start Car
End Car { "Success": "true", "Confirmation Number": "ABC456" }
Start Flight



# Saga Log

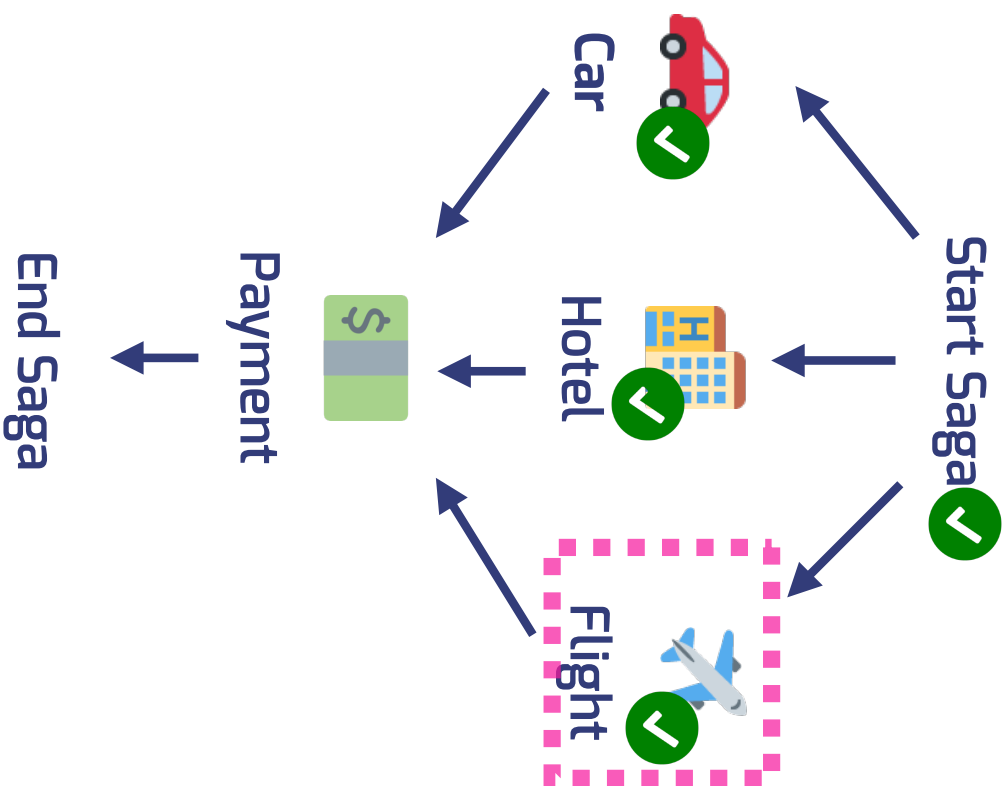
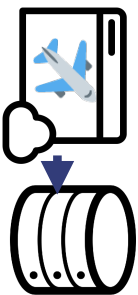
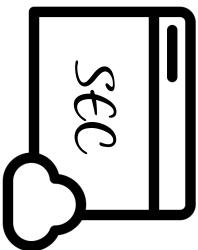
<pre>{ "name": "Start Saga",   "timestamp": "2020-01-01T12:00:00Z",   "data": { "id": "123456789",             "type": "Saga",             "status": "Running" },   "parent": null,   "children": [ ] }</pre>
Start Hotel
<pre>{   "Success": "true",   "Confirmation Number": "WXY123" }</pre>
End Hotel
Start Car
<pre>{   "Success": "true",   "Confirmation Number": "ABC456" }</pre>
End Car
Start Flight



# Saga Log

<pre>{   "name": "Saga ABC123",   "timestamp": "2024-01-01T10:00:00Z",   "start_date": "2024-01-01",   "end_date": "2024-01-01",   "status": "In Progress",   "current_step": "Start Hotel",   "steps": [     {       "step": "Start Hotel",       "status": "Success",       "confirmation_number": "HTX123"     }   ] }</pre>
Start Hotel
End Hotel
Start Car
End Car
Start Flight
End Flight

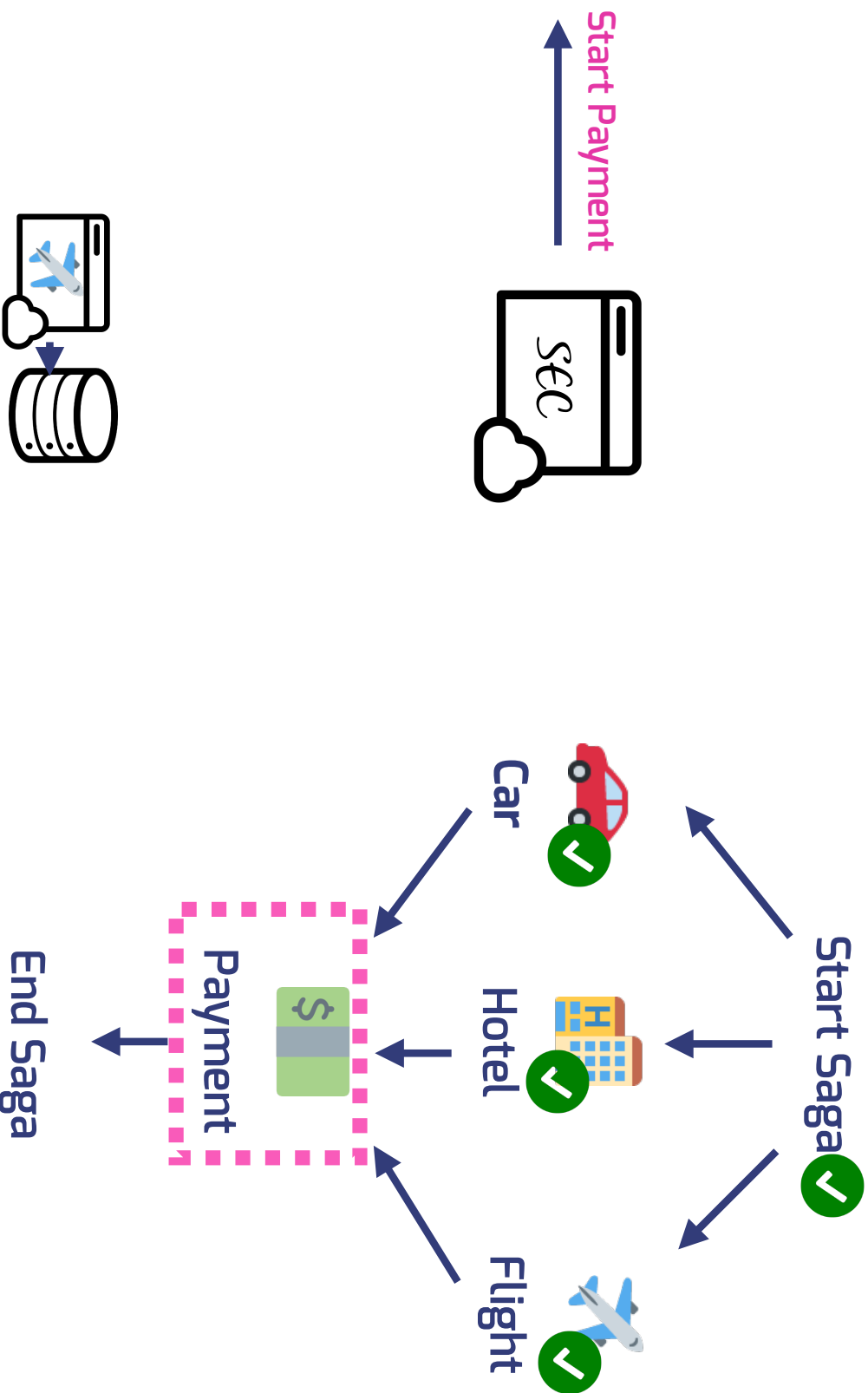
Done





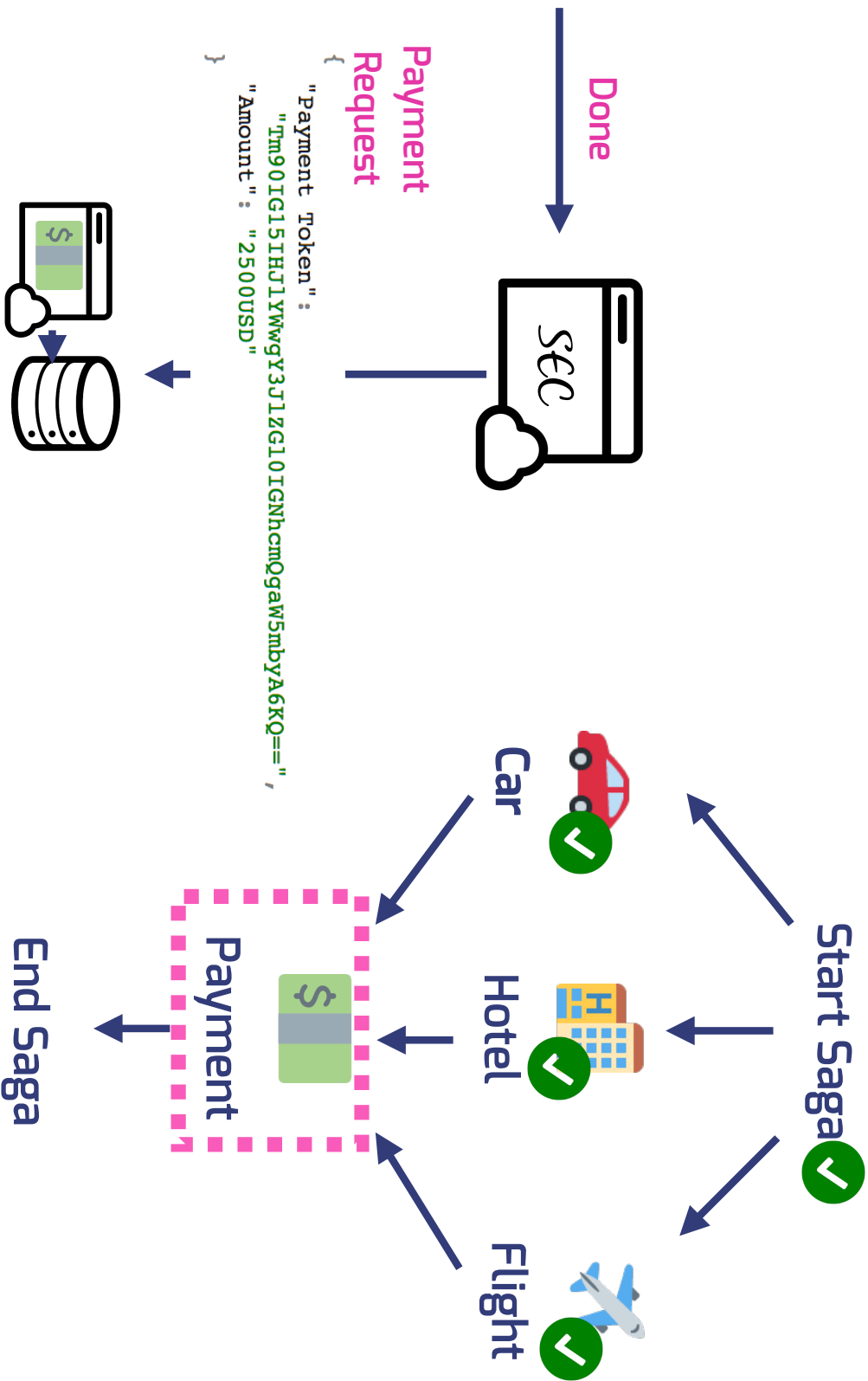
# Saga Log

<pre> {   "name": "Galaxy Academy",   "description": "The Galaxy Academy is a leading institution for advanced space exploration and technology training. It offers a wide range of courses, from basic space science to cutting-edge robotics and artificial intelligence. The academy is located in a state-of-the-art facility on the outskirts of the city, providing students with a unique learning environment. The academy's motto is 'Exploring the Frontiers of Knowledge'." } </pre>
<h3>Start Hotel</h3>
<pre> {   "success": "true",   "confirmation Number": "WV123" } </pre>
<h3>Start Car</h3>
<pre> {   "success": "true",   "Confirmation Number": "ABC456" } </pre>
<h3>Start Flight</h3>
<h3>End Flight</h3> <pre> {   "success": "true",   "Confirmation Number": "789012" } </pre>



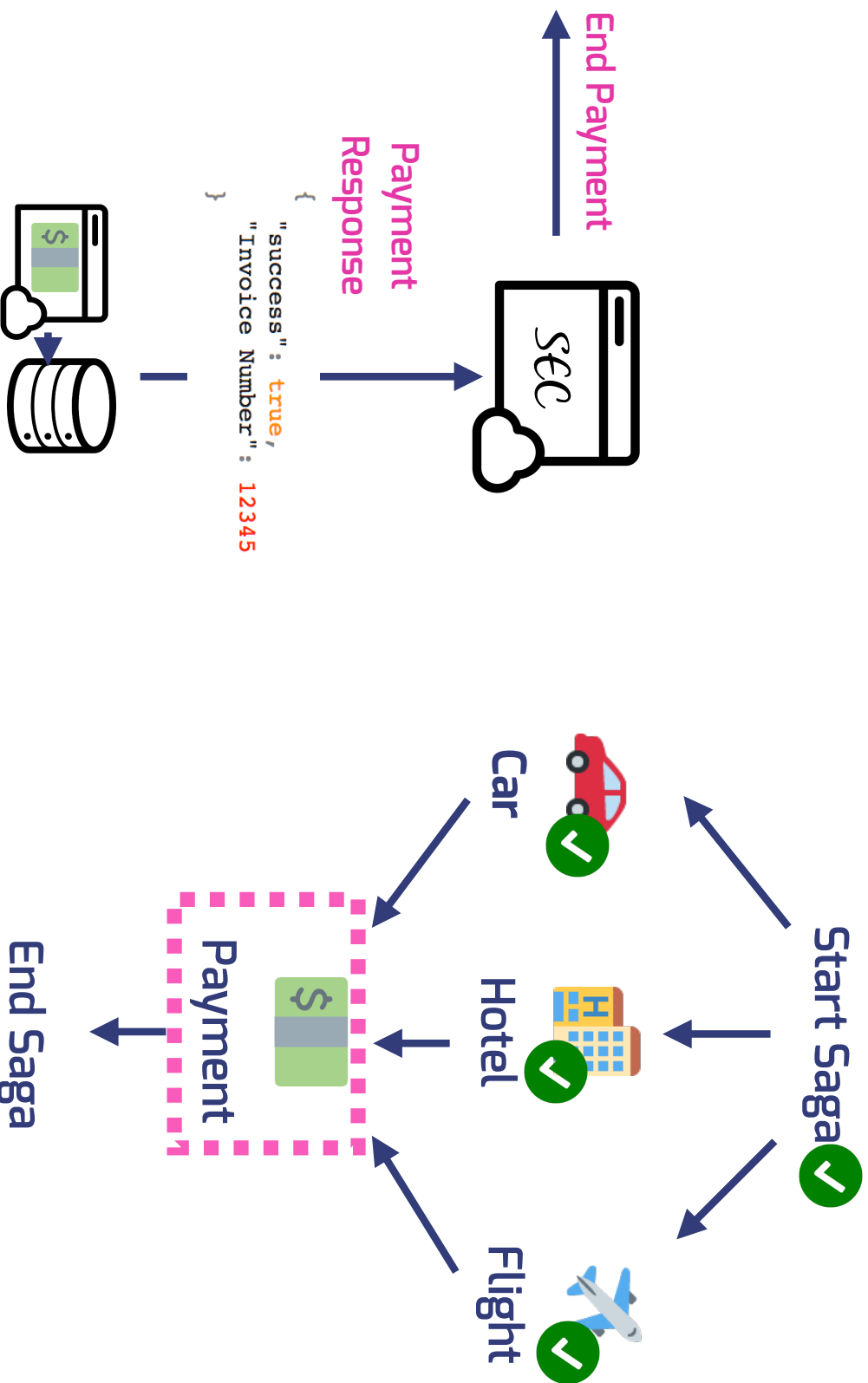
# Saga Log

<pre>{   "name": "Start Saga",   "timestamp": "2024-01-01T12:00:00Z",   "status": "Success",   "data": {     "Payment Token": "Tm90IG15IHJlYWwgy3JlZG10IGNhcmQgaW5mbyA6KQ=="   } }</pre>
Start Hotel
End Hotel
Start Car
End Car
Start Flight
End Flight
Start Payment



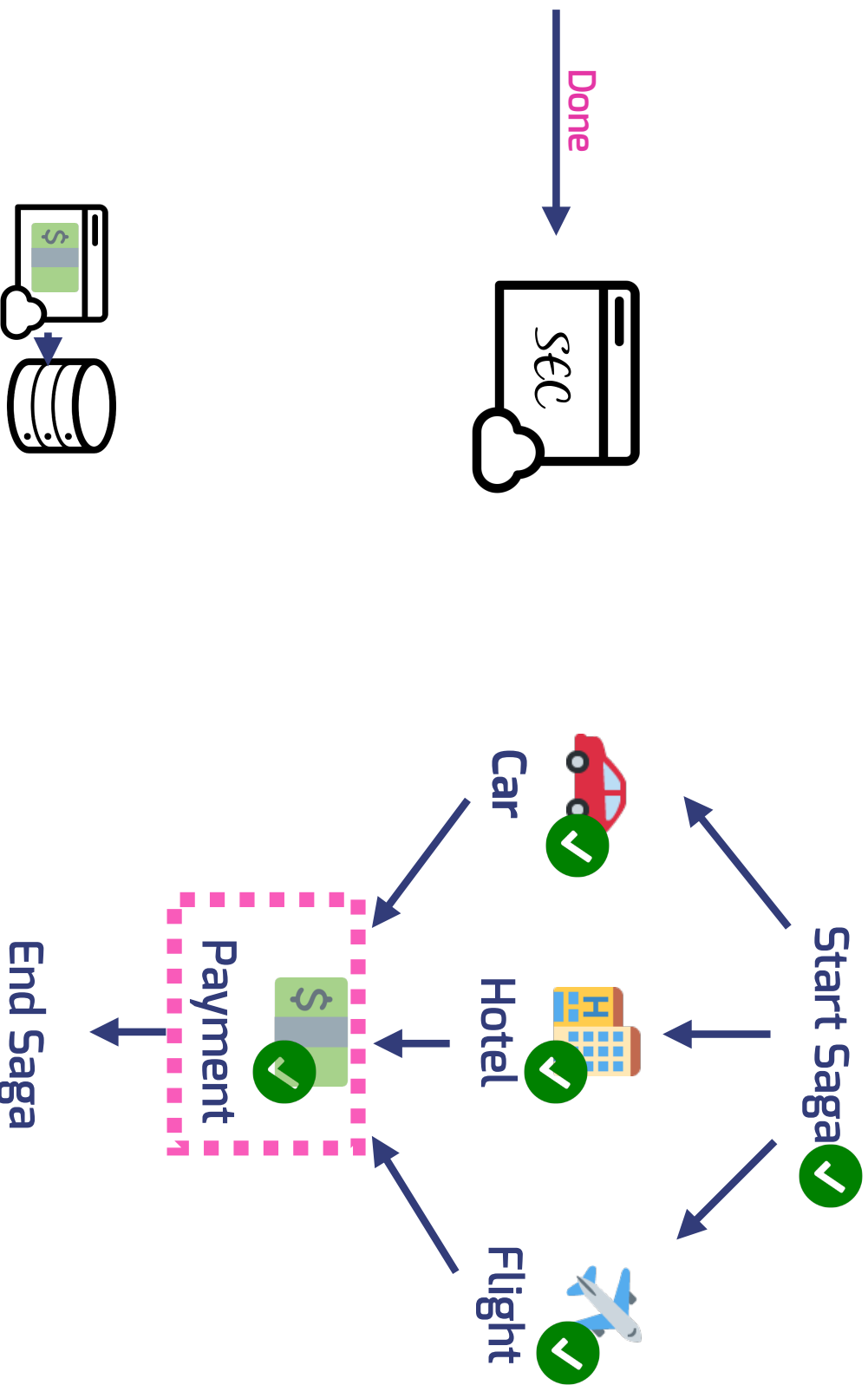
# Saga Log

<pre> {   "name": "SAGA Academy",   "description": "SAGA Academy is a leading institution in the field of aviation and aerospace education, offering a wide range of courses and programs for students interested in the industry.",   "location": "1234 Main St, Suite 500, New York, NY 10001",   "contact": {     "phone": "+1 (212) 555-1234",     "email": "info@sagaacademy.com",     "website": "http://www.sagaacademy.com"   },   "social": {     "facebook": "https://www.facebook.com/sagaacademy",     "twitter": "https://twitter.com/sagaacademy",     "instagram": "https://www.instagram.com/sagaacademy"   },   "founded": 2010,   "founder": "John Doe" }</pre>
<h3>Start Hotel</h3>
<pre> {   "name": "SAGA Hotel",   "description": "SAGA Hotel is a luxury hotel located in the heart of New York City, offering a wide range of amenities and services for guests.",   "location": "1234 Main St, Suite 500, New York, NY 10001",   "contact": {     "phone": "+1 (212) 555-1234",     "email": "info@sagahotel.com",     "website": "http://www.sagahotel.com"   },   "social": {     "facebook": "https://www.facebook.com/sagahotel",     "twitter": "https://twitter.com/sagahotel",     "instagram": "https://www.instagram.com/sagahotel"   },   "founded": 2010,   "founder": "John Doe" }</pre>
<h3>Start Car</h3>
<pre> {   "name": "SAGA Car",   "description": "SAGA Car is a leading car rental company, offering a wide range of vehicles and services for customers.",   "location": "1234 Main St, Suite 500, New York, NY 10001",   "contact": {     "phone": "+1 (212) 555-1234",     "email": "info@sagacar.com",     "website": "http://www.sagacar.com"   },   "social": {     "facebook": "https://www.facebook.com/sagacar",     "twitter": "https://twitter.com/sagacar",     "instagram": "https://www.instagram.com/sagacar"   },   "founded": 2010,   "founder": "John Doe" }</pre>
<h3>Start Flight</h3>
<pre> {   "name": "SAGA Flight",   "description": "SAGA Flight is a leading flight booking and travel agency, offering a wide range of services for customers.",   "location": "1234 Main St, Suite 500, New York, NY 10001",   "contact": {     "phone": "+1 (212) 555-1234",     "email": "info@sagafly.com",     "website": "http://www.sagafly.com"   },   "social": {     "facebook": "https://www.facebook.com/sagafly",     "twitter": "https://twitter.com/sagafly",     "instagram": "https://www.instagram.com/sagafly"   },   "founded": 2010,   "founder": "John Doe" }</pre>
<h3>End Flight</h3>
<pre> {   "name": "SAGA End Flight",   "description": "SAGA End Flight is a leading flight booking and travel agency, offering a wide range of services for customers.",   "location": "1234 Main St, Suite 500, New York, NY 10001",   "contact": {     "phone": "+1 (212) 555-1234",     "email": "info@sagafly.com",     "website": "http://www.sagafly.com"   },   "social": {     "facebook": "https://www.facebook.com/sagafly",     "twitter": "https://twitter.com/sagafly",     "instagram": "https://www.instagram.com/sagafly"   },   "founded": 2010,   "founder": "John Doe" }</pre>
<h3>Start Payment</h3>



# Saga Log

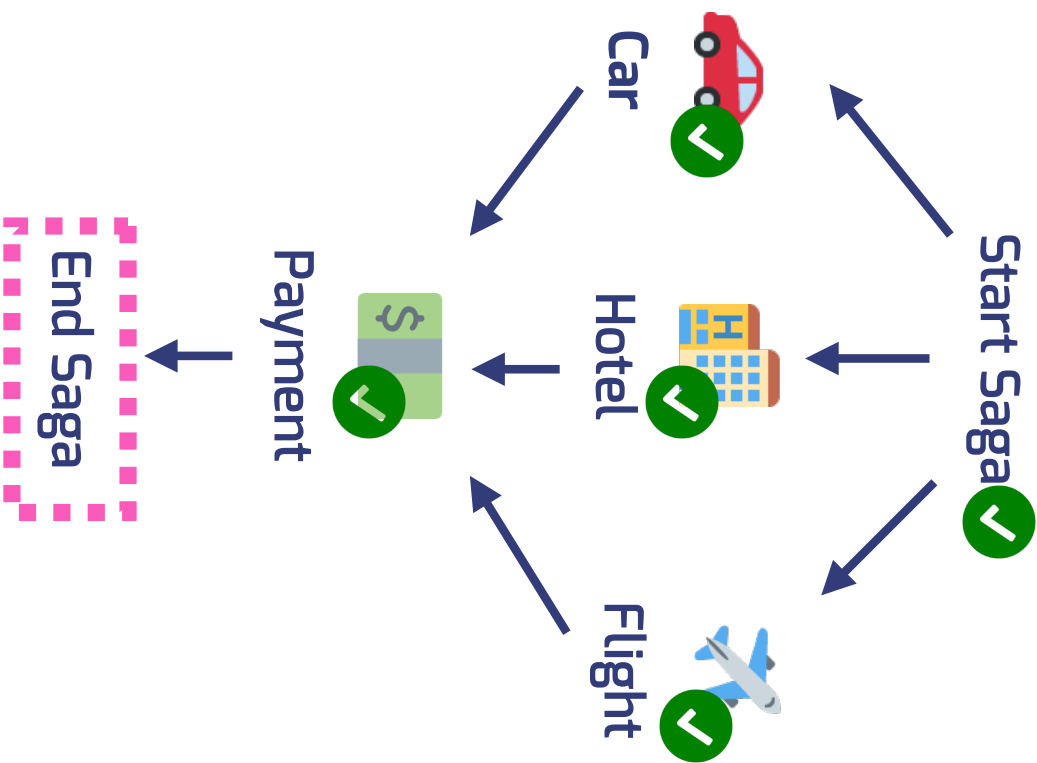
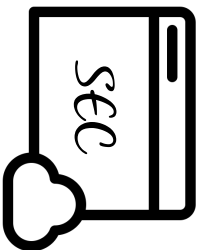
<pre>{   "name": "SAGA Academy",   "description": "A leading provider of coding bootcamps and digital marketing courses.",   "website": "https://www.sagaacademy.com",   "email": "info@sagaacademy.com",   "phone": "+1-800-555-1234",   "socialMedia": {     "facebook": "sagaacademy",     "twitter": "@sagaacademy",     "instagram": "sagaacademy"   },   "address": {     "street": "123 Main St",     "city": "New York",     "state": "NY",     "zip": "10001"   },   "employees": 150,   "founded": 2015,   "status": "Active" }</pre>
<h2>Start Saga</h2>
<pre>{   "id": "SAGA-001",   "type": "Hotel",   "name": "SAGA Hotel",   "description": "A modern hotel with comfortable rooms and excellent service.",   "address": {     "street": "456 Main St",     "city": "New York",     "state": "NY",     "zip": "10001"   },   "phone": "+1-212-555-7890",   "email": "reservations@sagahotel.com",   "website": "https://www.sagahotel.com",   "rating": 4.5,   "amenities": [     "Free WiFi",     "24-hour Front Desk",     "Room Service",     "Parking"   ],   "rooms": 100,   "status": "Open" }</pre>
<h2>Start Hotel</h2>
<pre>{   "id": "SAGA-002",   "type": "Hotel",   "name": "SAGA Hotel",   "description": "A modern hotel with comfortable rooms and excellent service.",   "address": {     "street": "456 Main St",     "city": "New York",     "state": "NY",     "zip": "10001"   },   "phone": "+1-212-555-7890",   "email": "reservations@sagahotel.com",   "website": "https://www.sagahotel.com",   "rating": 4.5,   "amenities": [     "Free WiFi",     "24-hour Front Desk",     "Room Service",     "Parking"   ],   "rooms": 100,   "status": "Open" }</pre>
<h2>End Hotel</h2>
<pre>{   "id": "SAGA-003",   "type": "Car",   "name": "SAGA Car",   "description": "A sleek, modern car with top-notch performance.",   "address": {     "street": "789 Main St",     "city": "New York",     "state": "NY",     "zip": "10001"   },   "phone": "+1-212-555-4321",   "email": "sales@sagacar.com",   "website": "https://www.sagacar.com",   "rating": 4.8,   "features": [     "Automatic",     "Air Conditioning",     "Bluetooth",     "GPS Navigation"   ],   "status": "Available" }</pre>
<h2>Start Car</h2>
<pre>{   "id": "SAGA-004",   "type": "Car",   "name": "SAGA Car",   "description": "A sleek, modern car with top-notch performance.",   "address": {     "street": "789 Main St",     "city": "New York",     "state": "NY",     "zip": "10001"   },   "phone": "+1-212-555-4321",   "email": "sales@sagacar.com",   "website": "https://www.sagacar.com",   "rating": 4.8,   "features": [     "Automatic",     "Air Conditioning",     "Bluetooth",     "GPS Navigation"   ],   "status": "Available" }</pre>
<h2>End Car</h2>
<pre>{   "id": "SAGA-005",   "type": "Flight",   "name": "SAGA Flight",   "description": "A direct flight from New York to Los Angeles.",   "address": {     "street": "101 Main St",     "city": "New York",     "state": "NY",     "zip": "10001"   },   "phone": "+1-212-555-9876",   "email": "bookings@sagafly.com",   "website": "https://www.sagafly.com",   "rating": 4.2,   "status": "On Schedule" }</pre>
<h2>Start Flight</h2>
<pre>{   "id": "SAGA-006",   "type": "Flight",   "name": "SAGA Flight",   "description": "A direct flight from New York to Los Angeles.",   "address": {     "street": "101 Main St",     "city": "New York",     "state": "NY",     "zip": "10001"   },   "phone": "+1-212-555-9876",   "email": "bookings@sagafly.com",   "website": "https://www.sagafly.com",   "rating": 4.2,   "status": "On Schedule" }</pre>
<h2>End Flight</h2>
<pre>{   "id": "SAGA-007",   "type": "Payment",   "name": "SAGA Payment",   "description": "A successful payment for a hotel stay.",   "address": {     "street": "202 Main St",     "city": "New York",     "state": "NY",     "zip": "10001"   },   "phone": "+1-212-555-6543",   "email": "payments@sagapay.com",   "website": "https://www.sagapay.com",   "rating": 4.9,   "status": "Completed" }</pre>
<h2>Start Payment</h2>
<pre>{   "id": "SAGA-008",   "type": "Payment",   "name": "SAGA Payment",   "description": "A successful payment for a hotel stay.",   "address": {     "street": "202 Main St",     "city": "New York",     "state": "NY",     "zip": "10001"   },   "phone": "+1-212-555-6543",   "email": "payments@sagapay.com",   "website": "https://www.sagapay.com",   "rating": 4.9,   "status": "Completed" }</pre>
<h2>End Payment</h2>
<pre>{   "id": "SAGA-009",   "type": "Invoice",   "name": "SAGA Invoice",   "description": "An invoice for a hotel stay.",   "address": {     "street": "303 Main St",     "city": "New York",     "state": "NY",     "zip": "10001"   },   "phone": "+1-212-555-3210",   "email": "invoices@sagainv.com",   "website": "https://www.sagainv.com",   "rating": 4.7,   "status": "Issued" }</pre>
<h2>Start Invoice</h2>
<pre>{   "id": "SAGA-010",   "type": "Invoice",   "name": "SAGA Invoice",   "description": "An invoice for a hotel stay.",   "address": {     "street": "303 Main St",     "city": "New York",     "state": "NY",     "zip": "10001"   },   "phone": "+1-212-555-3210",   "email": "invoices@sagainv.com",   "website": "https://www.sagainv.com",   "rating": 4.7,   "status": "Issued" }</pre>
<h2>End Invoice</h2>



# Saga Log

<div><div>Start Saga</div><div><pre>{ "name": "Saga 00000000",   "timestamp": "2020-01-01",   "start time": "2020-01-01",   "end time": "2020-01-01",   "parent id": "00000000000000000000000000000000",   "children": [{"id": "00000000000000000000000000000000"}]}</pre></div></div>
<div><div>Start Hotel</div><div><pre>{   "Success": "true",   "Confirmation Number": "WY113" }</pre></div></div>
<div><div>End Hotel</div><div><pre>{   "Success": "true",   "Confirmation Number": "WY113" }</pre></div></div>
<div><div>Start Car</div><div><pre>{   "Success": "true",   "Confirmation Number": "ABC456" }</pre></div></div>
<div><div>End Car</div><div><pre>{   "Success": "true",   "Confirmation Number": "ABC456" }</pre></div></div>
<div><div>Start Flight</div><div><pre>{   "Success": "true",   "Confirmation Number": "789012" }</pre></div></div>
<div><div>End Flight</div><div><pre>{   "Success": "true",   "Confirmation Number": "789012" }</pre></div></div>
<div><div>Start Payment</div><div><pre>{   "Success": "true",   "Invoice Number": "12345" }</pre></div></div>
<div><div>End Payment</div><div><pre>{   "Success": "true",   "Invoice Number": "12345" }</pre></div></div>

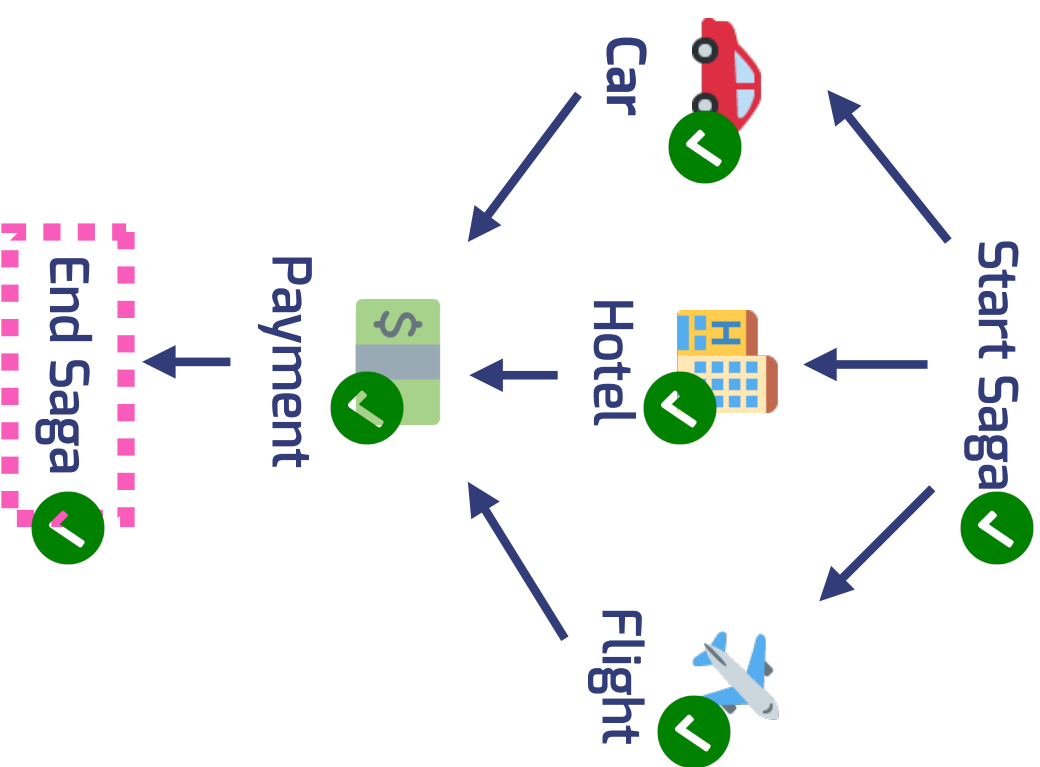
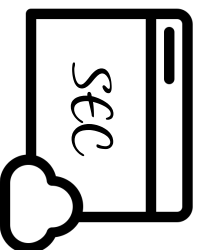
End Saga



# Saga Log

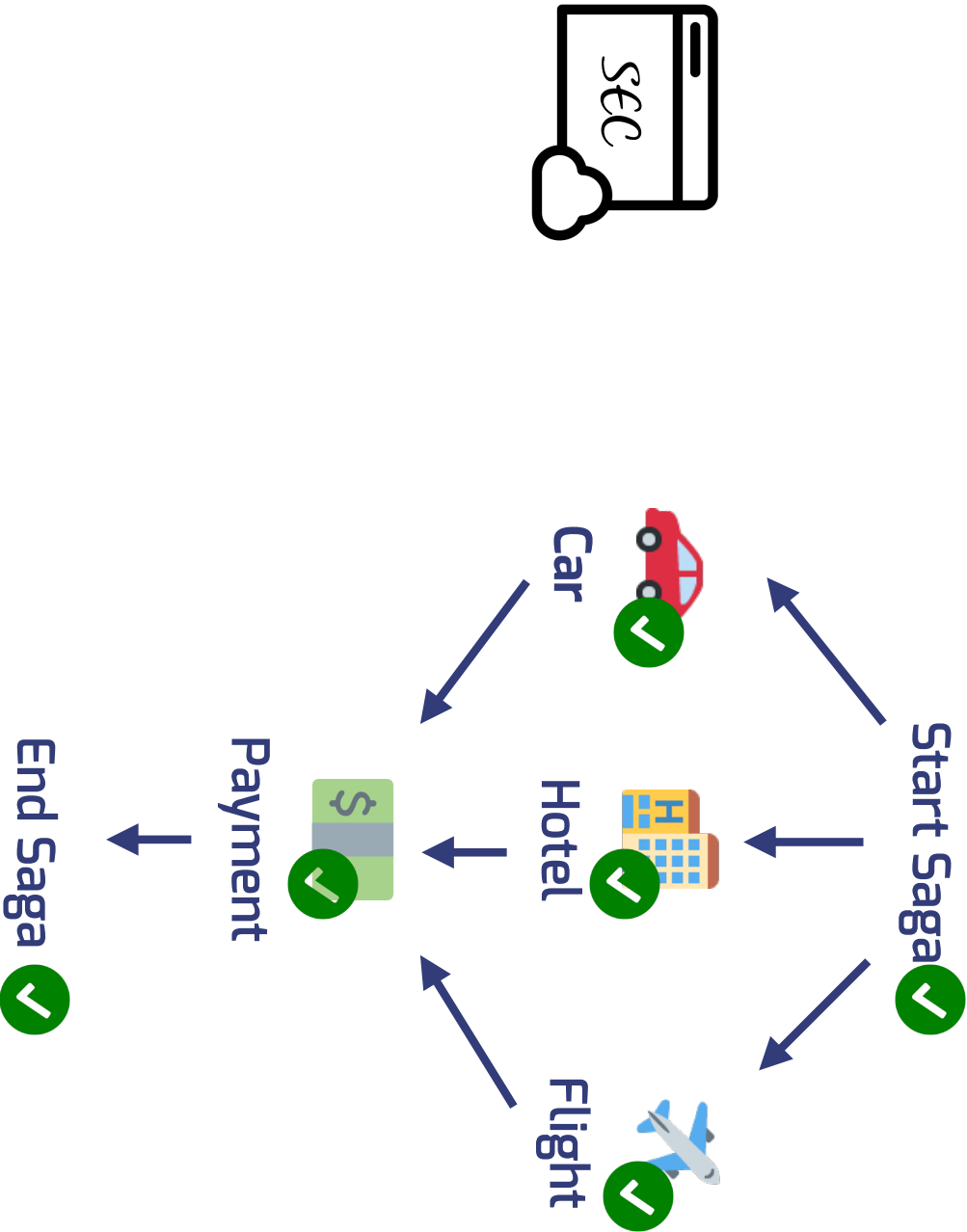
<pre> {   "name": "Catalia Rodriguez",   "registration": "78456123",   "phone": "011-9876-5432",   "email": "catalia@pilot.com",   "created_at": "2023-10-27",   "updated_at": "2023-10-27",   "status": "ACTIVE",   "confirmation_number": "WY1123" } </pre>	<h2>Start Saga</h2> <h3>Start Hotel</h3>
<pre> {   "success": "true",   "confirmation_number": "WY1123" } </pre>	<h3>End Hotel</h3>
<h3>Start Car</h3>	<h3>Start Car</h3>
<pre> {   "success": "true",   "confirmation_number": "ABC567" } </pre>	<h3>End Car</h3>
<h3>Start Flight</h3>	<h3>Start Flight</h3>
<pre> {   "success": "true",   "confirmation_number": "789012" } </pre>	<h3>End Flight</h3>
<h3>Start Payment</h3>	<h3>Start Payment</h3>
<pre> {   "success": "true",   "invoice_number": "12345" } </pre>	<h3>End Payment</h3>
<h3>End Saga</h3>	<h3>End Saga</h3>

Done



# Saga Log

Start Saga
<pre>{ "name": "Saga ABC456",   "timestamp": "2024-01-01",   "start time": "2024-01-01",   "end time": "2024-01-01",   "parent saga": "ABC456",   "status": "Succeeded",   "confirmation number": "789012" }</pre>
Start Hotel
<pre>{   "Success": "true",   "Confirmation Number": "WXY123" }</pre>
Start Car
<pre>{   "Success": "true",   "Confirmation Number": "ABC456" }</pre>
Start Flight
<pre>{   "Success": "true",   "Confirmation Number": "789012" }</pre>
End Flight
Start Payment
End Payment
<pre>{   "success": true,   "Invoice Number": 12345 }</pre>
End Saga

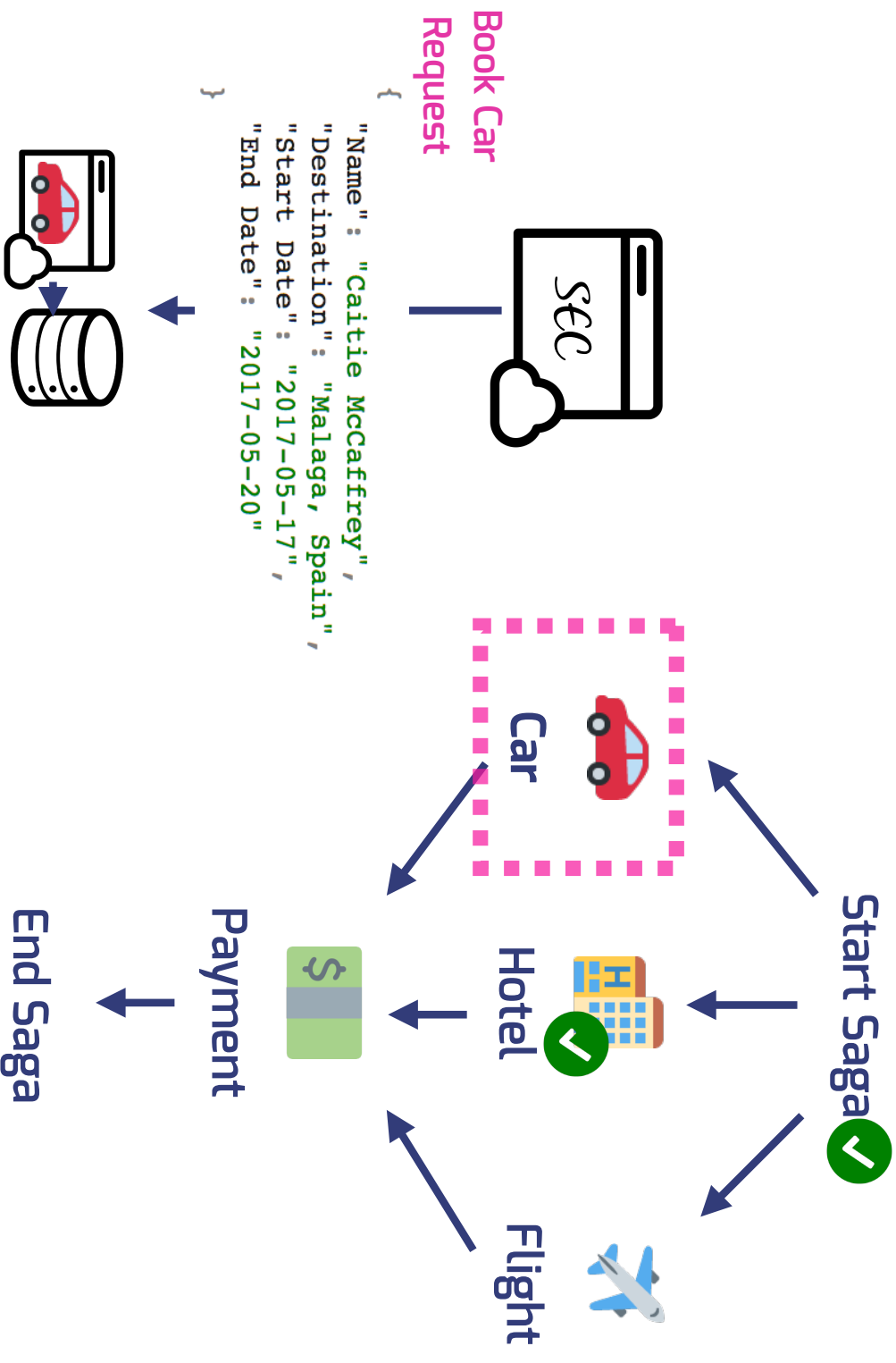


# *Failure of a* Distributed Saga



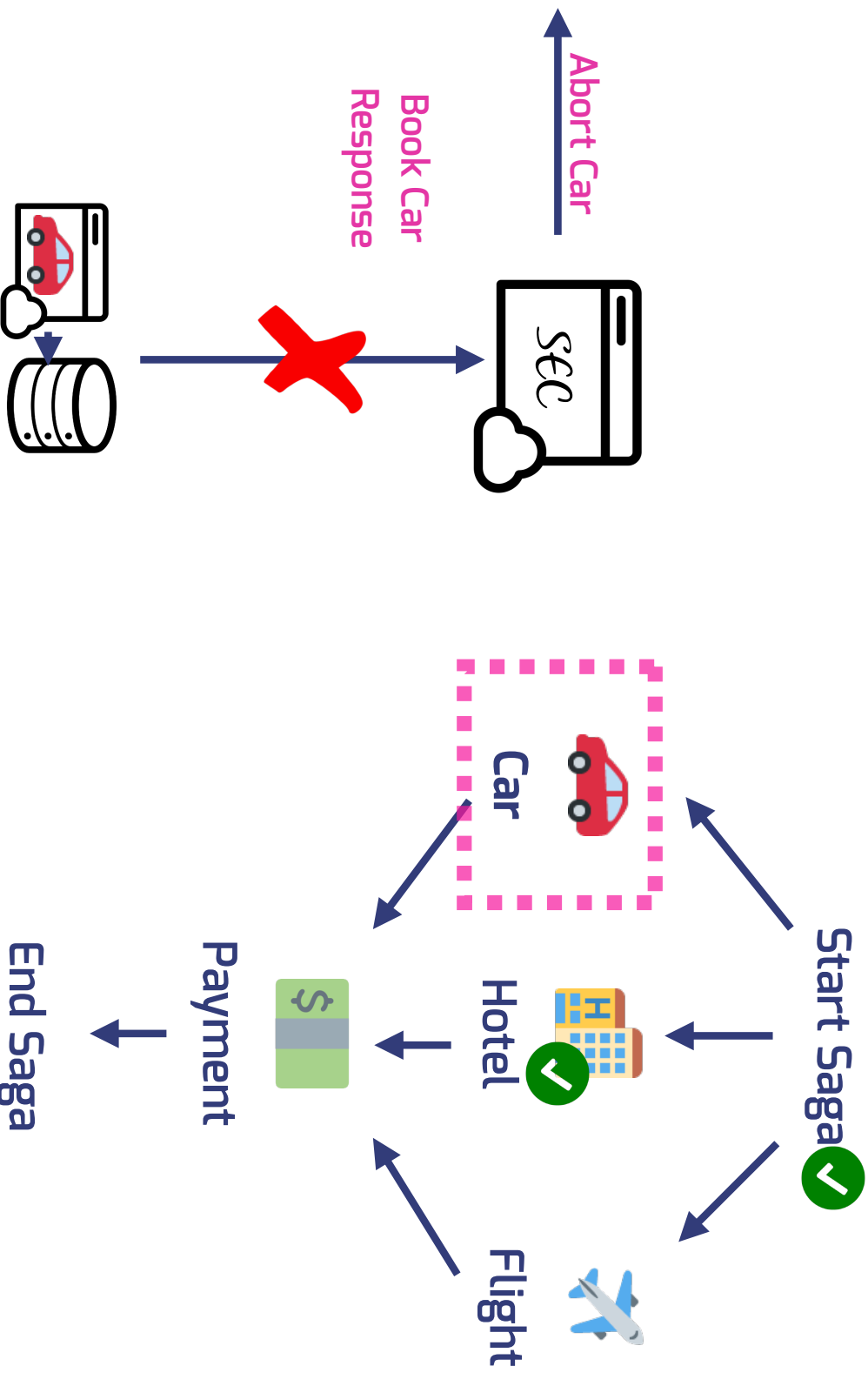
# Saga Log

<pre>{ "name": "Caitie McCaffrey",   "destination": "Malaga, Spain",   "start date": "2017-05-17",   "end date": "2017-05-20",   "payment status":     { "status": "PAID", "amount": 1180.00, "currency": "AUD" } }</pre>
Start Saga
Start Hotel
End Hotel <pre>{   "Success": "true",   "Confirmation Number": "WY113" }</pre>
Start Flight
Start Car



# Saga Log

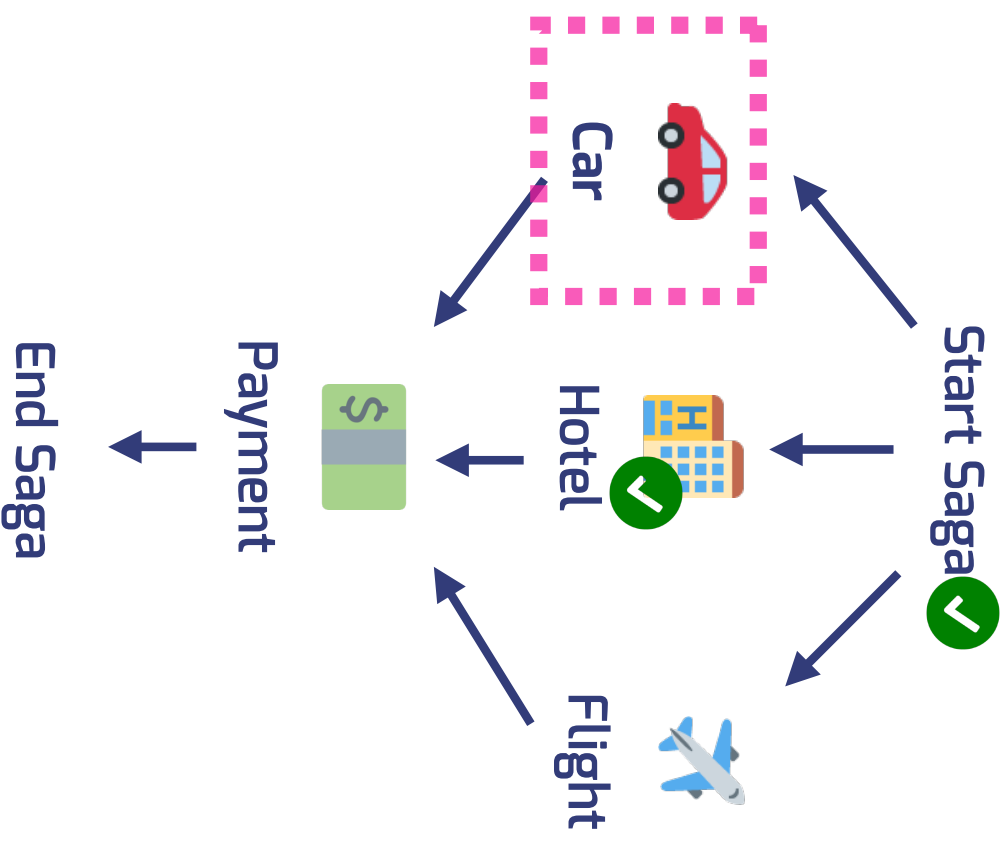
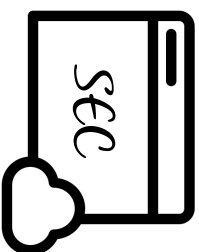
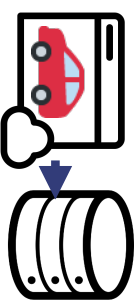
<pre>{ "name": "Saga Manager",   "timestamp": "2020-01-01",   "startSaga": "12345-6789",   "endSaga": "12345-6789",   "paymentStatus": "PENDING",   "confirmationNumber": "WXY123" }</pre>
Start Saga
Start Hotel
End Hotel
Start Flight
Start Car



# Saga Log

<pre>{ "name": "Start Saga",   "timestamp": "2020-01-01T12:00:00Z",   "status": "Success",   "message": "Saga started",   "payload": {     "confirmationNumber": "WXY123"   } }</pre>
Start Hotel
End Hotel
Start Flight
Start Car
Abort Car

Done



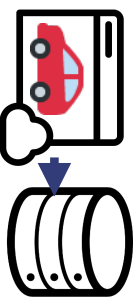
# Saga Log

<pre> {   "name": "Oasis Academy",   "description": "An elite boarding school",   "location": "Bosnia, 2024",   "founded": "2010-05-01",   "headmaster": "2017-06-15",   "staff": [     {       "id": 1,       "name": "John Doe",       "role": "Teacher",       "salary": 50000,       "hire_date": "2015-03-10"     },     {       "id": 2,       "name": "Jane Smith",       "role": "Teacher",       "salary": 60000,       "hire_date": "2016-07-20"     },     {       "id": 3,       "name": "Michael Brown",       "role": "Teacher",       "salary": 55000,       "hire_date": "2018-01-15"     },     {       "id": 4,       "name": "Emily White",       "role": "Teacher",       "salary": 52000,       "hire_date": "2019-09-01"     },     {       "id": 5,       "name": "David Green",       "role": "Teacher",       "salary": 58000,       "hire_date": "2020-11-10"     },     {       "id": 6,       "name": "Sarah Black",       "role": "Teacher",       "salary": 54000,       "hire_date": "2021-04-05"     },     {       "id": 7,       "name": "Robert Grey",       "role": "Teacher",       "salary": 56000,       "hire_date": "2022-08-25"     },     {       "id": 8,       "name": "Lisa Pink",       "role": "Teacher",       "salary": 53000,       "hire_date": "2023-02-18"     },     {       "id": 9,       "name": "James Blue",       "role": "Teacher",       "salary": 57000,       "hire_date": "2023-10-03"     },     {       "id": 10,       "name": "Amanda Yellow",       "role": "Teacher",       "salary": 51000,       "hire_date": "2024-01-22"     }   ],   "students": [     {       "id": 101,       "name": "Alice Johnson",       "age": 16,       "grade": "10th",       "enrollment_date": "2020-09-01"     },     {       "id": 102,       "name": "Bob Williams",       "age": 17,       "grade": "11th",       "enrollment_date": "2019-09-01"     },     {       "id": 103,       "name": "Charlie Davis",       "age": 15,       "grade": "9th",       "enrollment_date": "2021-09-01"     },     {       "id": 104,       "name": "Diana Miller",       "age": 18,       "grade": "12th",       "enrollment_date": "2018-09-01"     },     {       "id": 105,       "name": "Ethan Wilson",       "age": 16,       "grade": "10th",       "enrollment_date": "2022-09-01"     },     {       "id": 106,       "name": "Fiona Moore",       "age": 17,       "grade": "11th",       "enrollment_date": "2020-09-01"     },     {       "id": 107,       "name": "George Taylor",       "age": 15,       "grade": "9th",       "enrollment_date": "2023-09-01"     },     {       "id": 108,       "name": "Hannah Lee",       "age": 18,       "grade": "12th",       "enrollment_date": "2019-09-01"     },     {       "id": 109,       "name": "Ivan King",       "age": 16,       "grade": "10th",       "enrollment_date": "2021-09-01"     },     {       "id": 110,       "name": "Julia Hall",       "age": 17,       "grade": "11th",       "enrollment_date": "2022-09-01"     }   ],   "facilities": [     {       "id": 1,       "name": "Sports Ground",       "type": "Sports",       "area": 5000,       "status": "Active"     },     {       "id": 2,       "name": "Library",       "type": "Academic",       "area": 2000,       "status": "Active"     },     {       "id": 3,       "name": "Art Studio",       "type": "Creative",       "area": 1500,       "status": "Active"     },     {       "id": 4,       "name": "Music Room",       "type": "Creative",       "area": 1800,       "status": "Active"     },     {       "id": 5,       "name": "Gymnasium",       "type": "Sports",       "area": 3000,       "status": "Active"     },     {       "id": 6,       "name": "Dance Studio",       "type": "Creative",       "area": 1200,       "status": "Active"     },     {       "id": 7,       "name": "Cafeteria",       "type": "Dining",       "area": 2500,       "status": "Active"     },     {       "id": 8,       "name": "Auditorium",       "type": "Performance",       "area": 4000,       "status": "Active"     },     {       "id": 9,       "name": "Observatory",       "type": "Science",       "area": 1000,       "status": "Active"     },     {       "id": 10,       "name": "Greenhouse",       "type": "Gardening",       "area": 800,       "status": "Active"     }   ],   "staff_roles": [     {       "id": 1,       "name": "Principal",       "role": "Principal",       "salary": 120000,       "hire_date": "2010-05-01"     },     {       "id": 2,       "name": "Vice Principal",       "role": "Vice Principal",       "salary": 80000,       "hire_date": "2012-03-15"     },     {       "id": 3,       "name": "Headmaster",       "role": "Headmaster",       "salary": 90000,       "hire_date": "2017-06-15"     },     {       "id": 4,       "name": "Deputy Headmaster",       "role": "Deputy Headmaster",       "salary": 70000,       "hire_date": "2018-01-10"     },     {       "id": 5,       "name": "School Counselor",       "role": "School Counselor",       "salary": 45000,       "hire_date": "2019-08-20"     },     {       "id": 6,       "name": "Career Advisor",       "role": "Career Advisor",       "salary": 40000,       "hire_date": "2020-11-05"     },     {       "id": 7,       "name": "IT Support",       "role": "IT Support",       "salary": 35000,       "hire_date": "2021-04-12"     },     {       "id": 8,       "name": "Maintenance",       "role": "Maintenance",       "salary": 30000,       "hire_date": "2022-07-28"     },     {       "id": 9,       "name": "Security Guard",       "role": "Security Guard",       "salary": 25000,       "hire_date": "2023-01-09"     },     {       "id": 10,       "name": "Janitor",       "role": "Janitor",       "salary": 20000,       "hire_date": "2023-09-24"     }   ] } </pre>	Start Saga
Start Hotel	
End Hotel	
Start	
Stop	
All	

# Rollback Recovery

Start Saga ✓

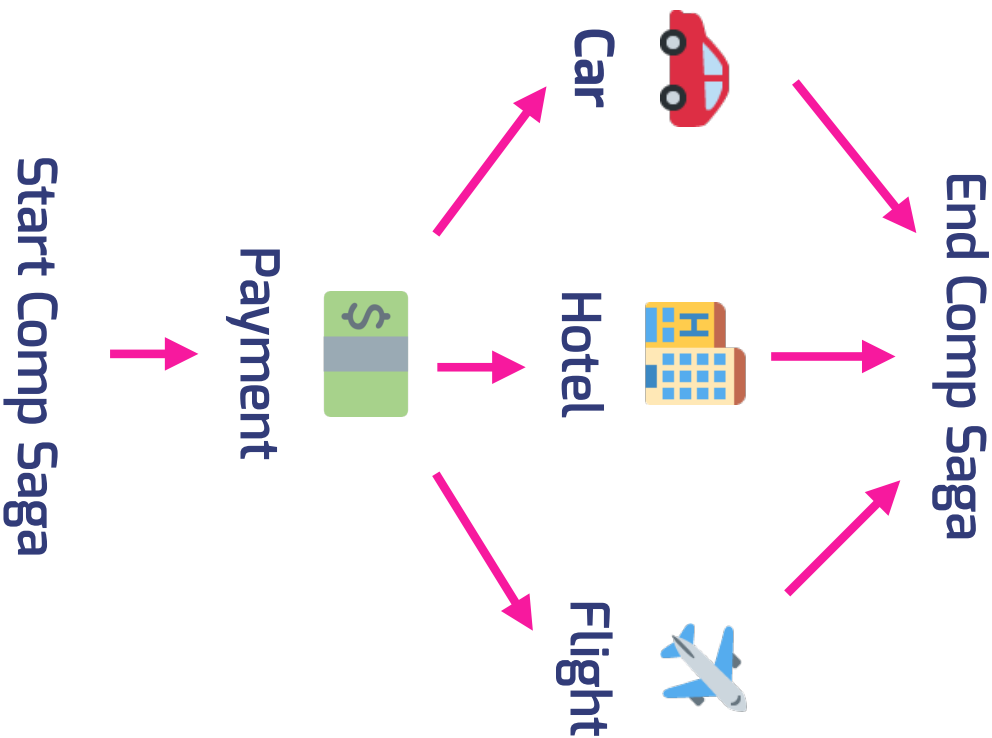
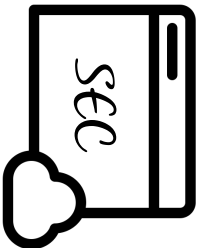
## End Saga



bht

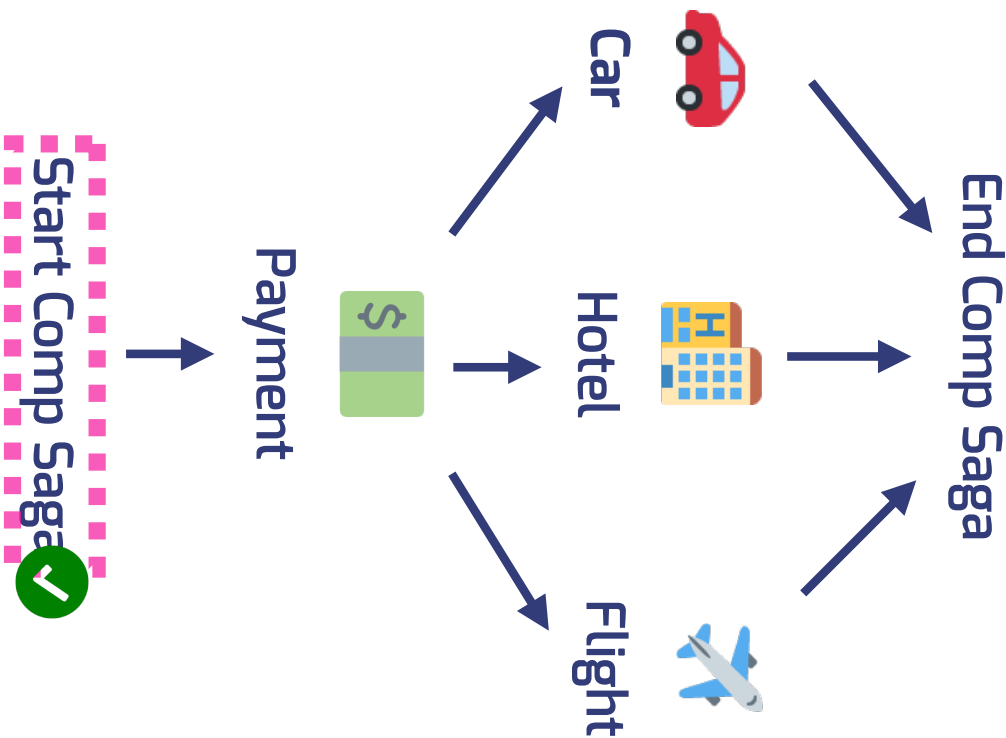
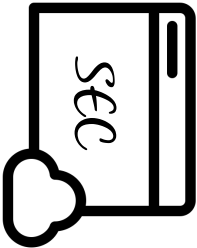
Saga Log

<pre>{   "name": "Saga 00000001",   "timestamp": "2020-01-01T12:00:00.000Z",   "startEvent": "StartSaga",   "endEvent": "EndSaga",   "paymentStatus": "PENDING",   "confirmationNumber": "WXY123" }</pre>
Start Saga
Start Hotel
End Hotel
Start Flight
Start Car
Abort Car



# Saga Log

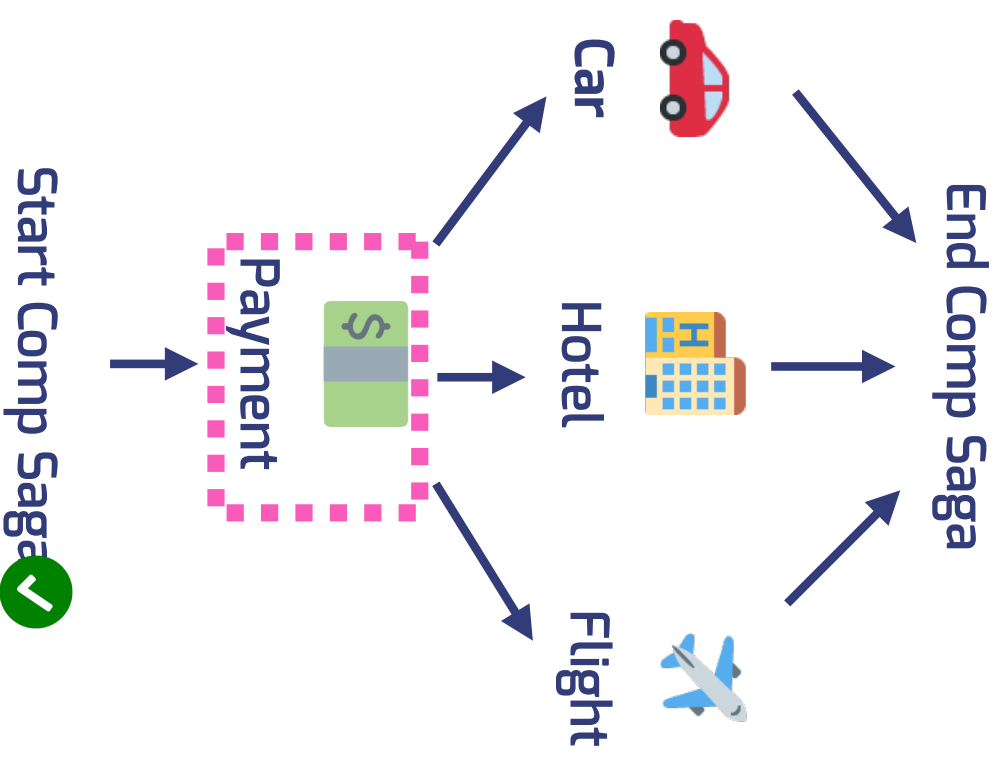
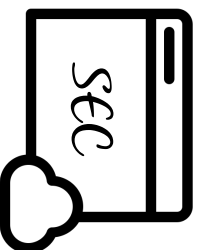
<pre>{   "name": "Saga 00000001",   "timestamp": "2020-01-01T12:00:00Z",   "startEvent": "StartSaga",   "endEvent": "EndSaga",   "paymentStatus": "PAID",   "confirmationNumber": "WY123" }</pre>
Start Saga
Start Hotel
End Hotel
Start Flight
Start Car
Abort Car



# Saga Log

[illegible]

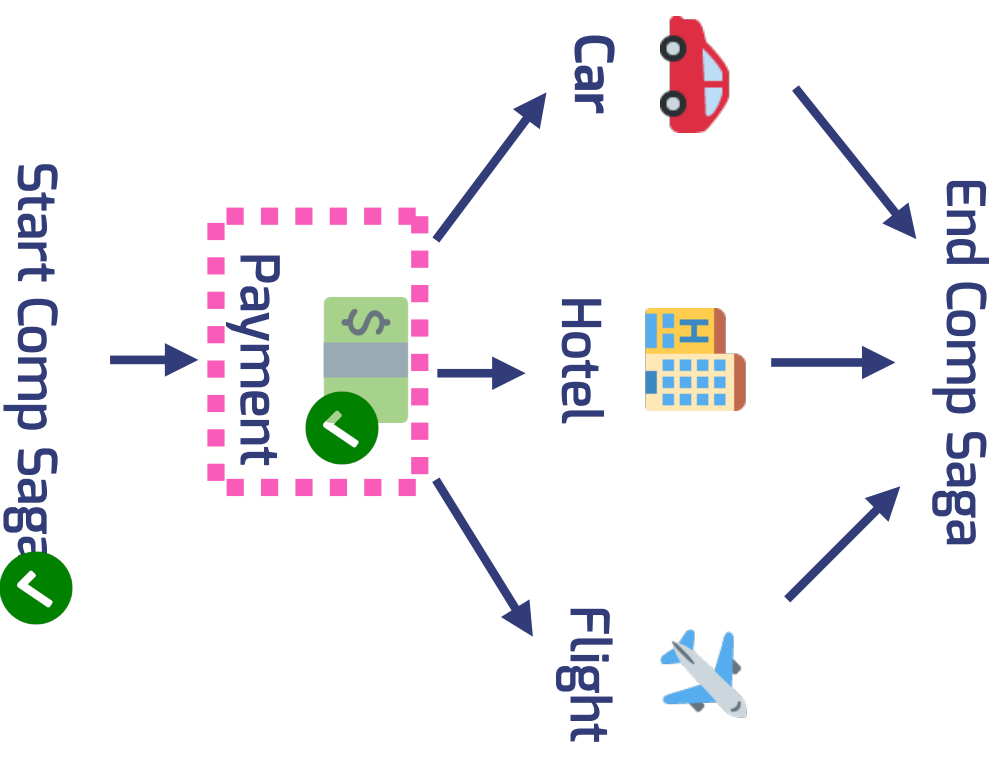
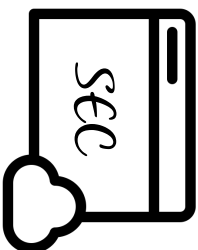
## Payment Log Entries?



# Saga Log

<pre>{   "name": "Travel Booking",   "description": "Reserve travel",   "start_date": "2020-01-01",   "end_date": "2020-01-01",   "payment_status": "PAID",   "confirmation_number": "WY123" }</pre>
Start Saga
Start Hotel
End Hotel
Start Flight
Start Car
Abort Car

{ }

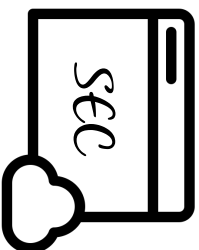




# Saga Log

<pre>{ "name": "Saga 00000001",   "timestamp": "2020-01-01",   "start time": "2020-01-01",   "end time": "2020-01-01",   "payment status": "Success",   "confirmation number": "WY123" }</pre>
Start Saga
Start Hotel
End Hotel
Start Flight
Start Car
Abort Car

Car Log  
Entries?



Hotel



Flight

End Comp Saga



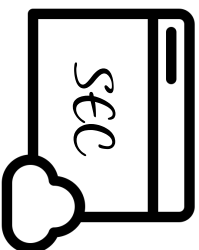
Payment

Start Comp Saga ✓

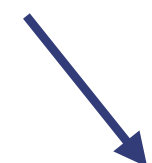
# Saga Log

<pre>{ "name": "Saga 00000001",   "timestamp": "2020-01-01",   "start time": "2020-01-01",   "end time": "2020-01-01",   "payment status": "Success",   "confirmation number": "WY123" }</pre>
Start Saga
Start Hotel
End Hotel
Start Flight
Start Car
Abort Car

{ Start, Abort }



End Comp Saga



Hotel



Flight



Payment

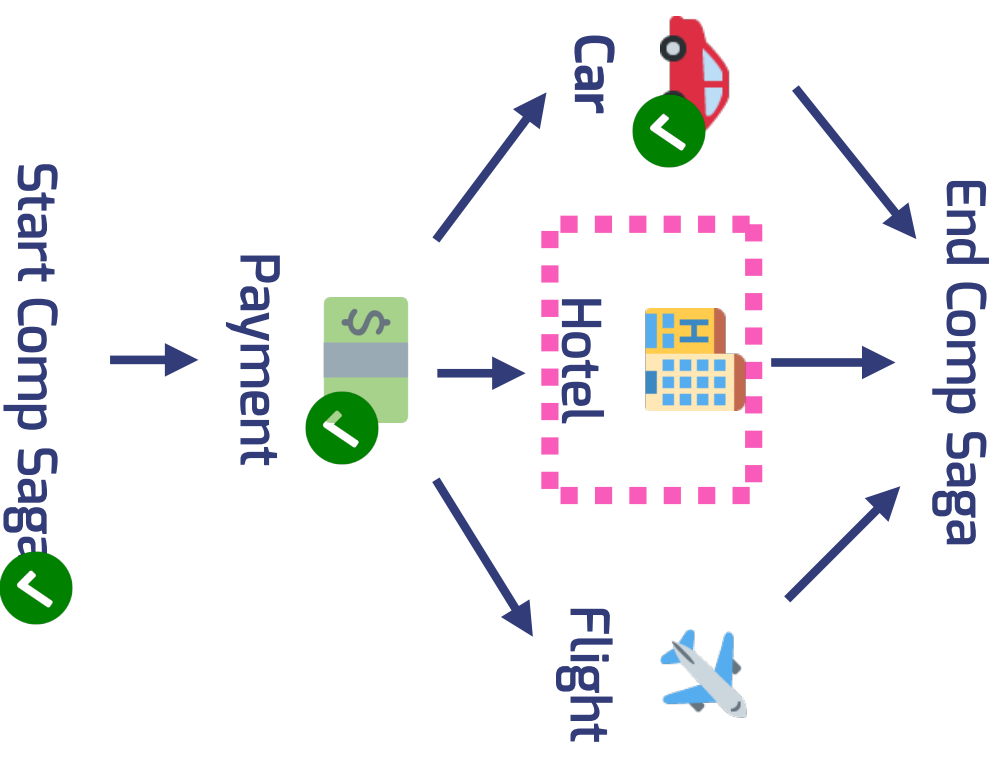
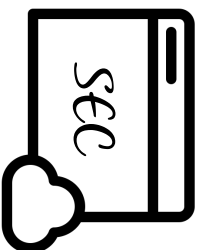


Start Comp Saga ✓

# Saga Log

<pre>{ "name": "Saga 00000001",   "timestamp": "2020-01-01",   "start time": "2020-01-01",   "end time": "2020-01-01",   "payment status": "Success",   "confirmation number": "WY123" }</pre>
Start Saga
Start Hotel
End Hotel
Start Flight
Start Car
Abort Car

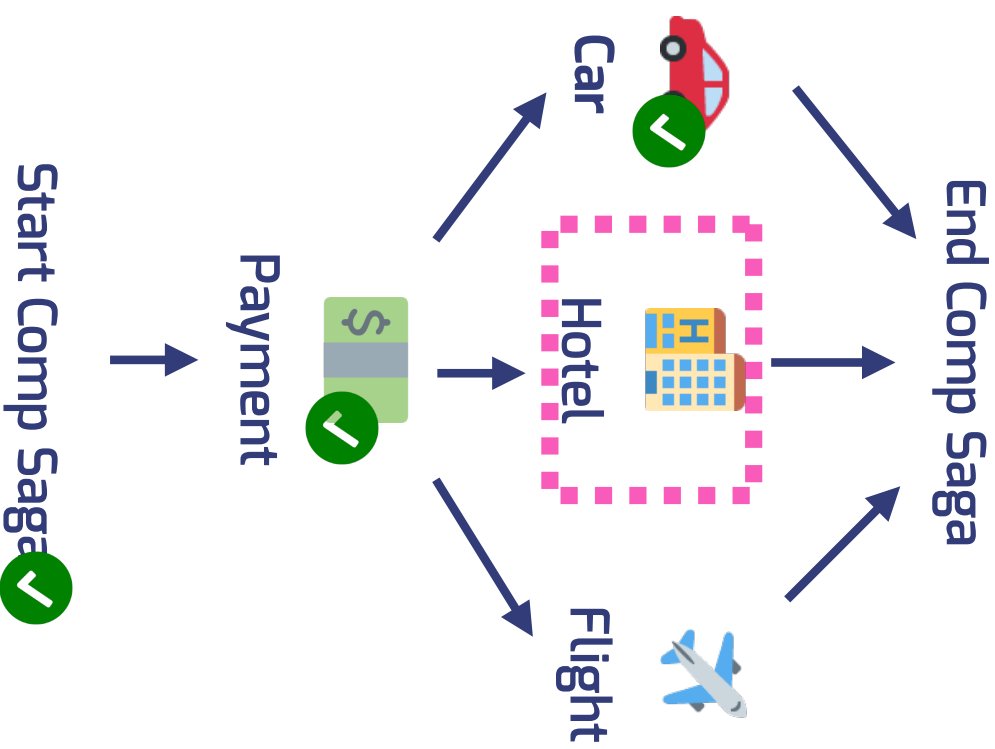
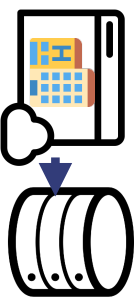
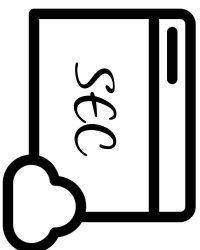
Hotel Log  
Entries?



# Saga Log

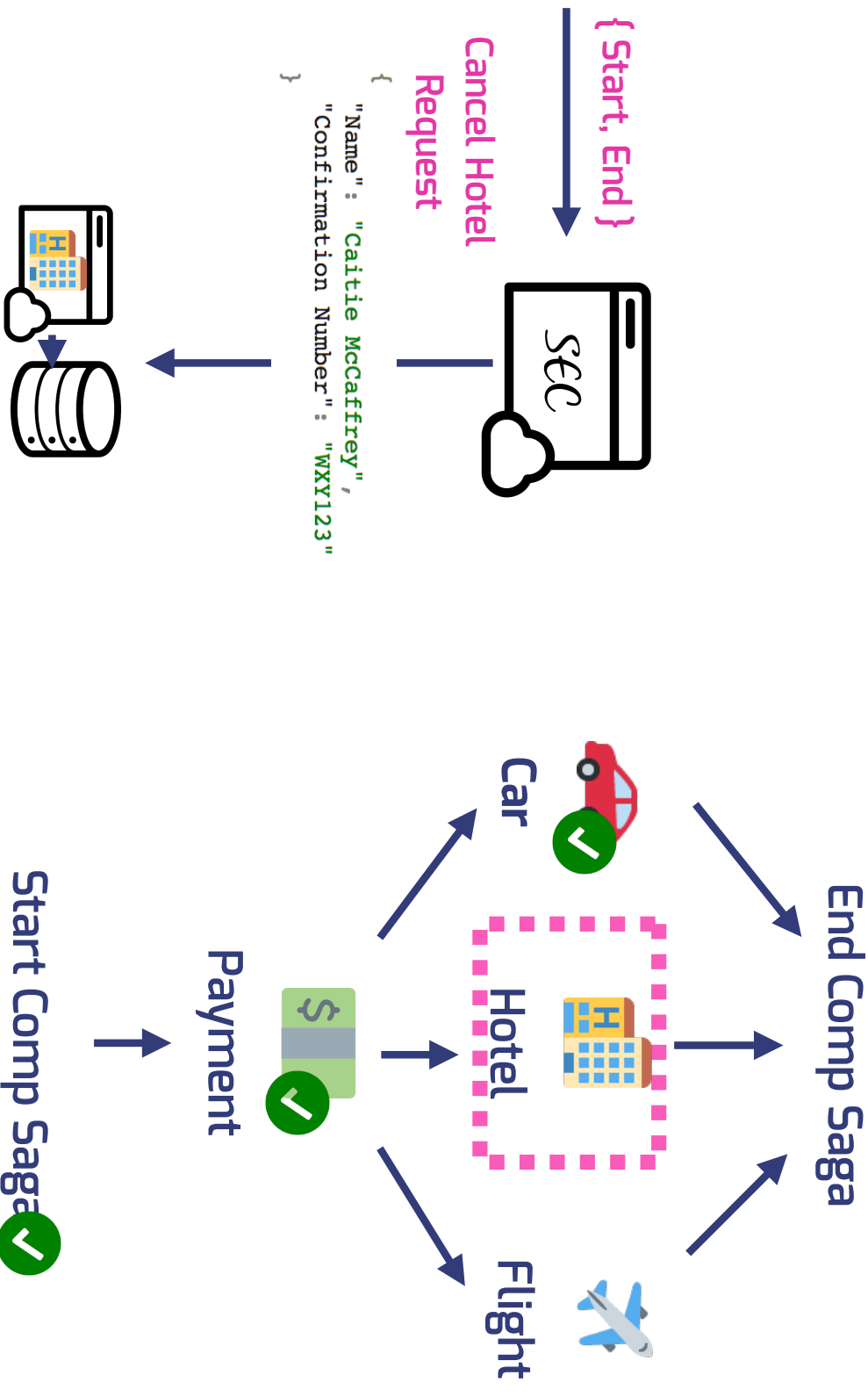
<pre>{ "name": "Saga 00000001",   "timestamp": "2020-01-01",   "start time": "2020-01-01",   "end time": "2020-01-01",   "payment status":     { "timestamp": "2020-01-01 13:05:00", "status": "OK" } }</pre>
Start Saga
Start Hotel
End Hotel <pre>{   "Success": "true",   "Confirmation number": "WY123" }</pre>
Start Flight
Start Car
Abort Car

{ Start, End }



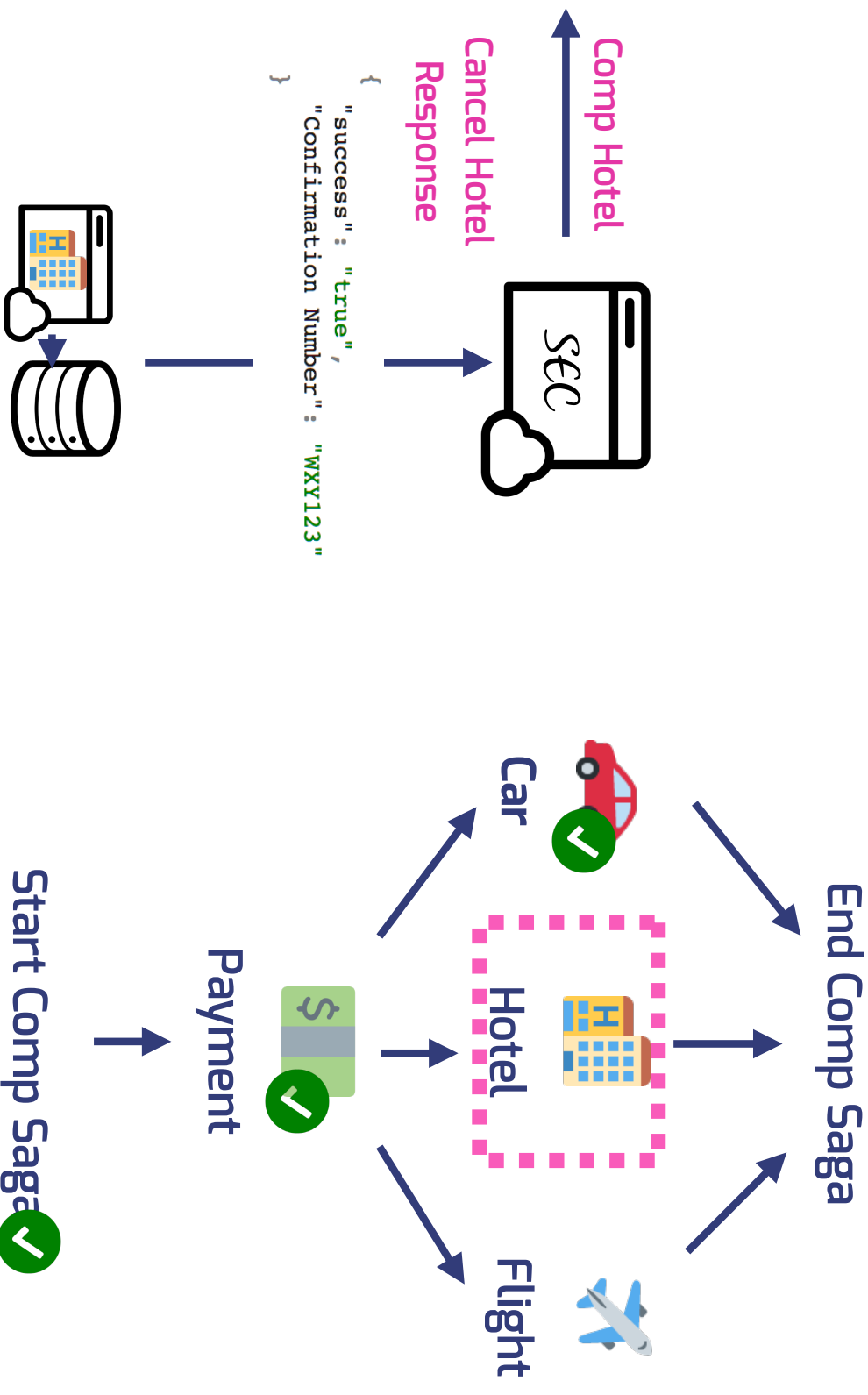
# Saga Log

<pre>{ "name": "Caitie McCaffrey",   "confirmation": "WXYZ1234",   "start_date": "2020-01-01",   "end_date": "2020-01-01",   "payment_status": "PAID",   "confirmation_number": "WXYZ1234" } }</pre>
Start Saga
Start Hotel
End Hotel <pre>{ "Success": "True",   "Confirmation Number": "WXYZ123" }</pre>
Start Flight
Start Car
Abort Car



# Saga Log

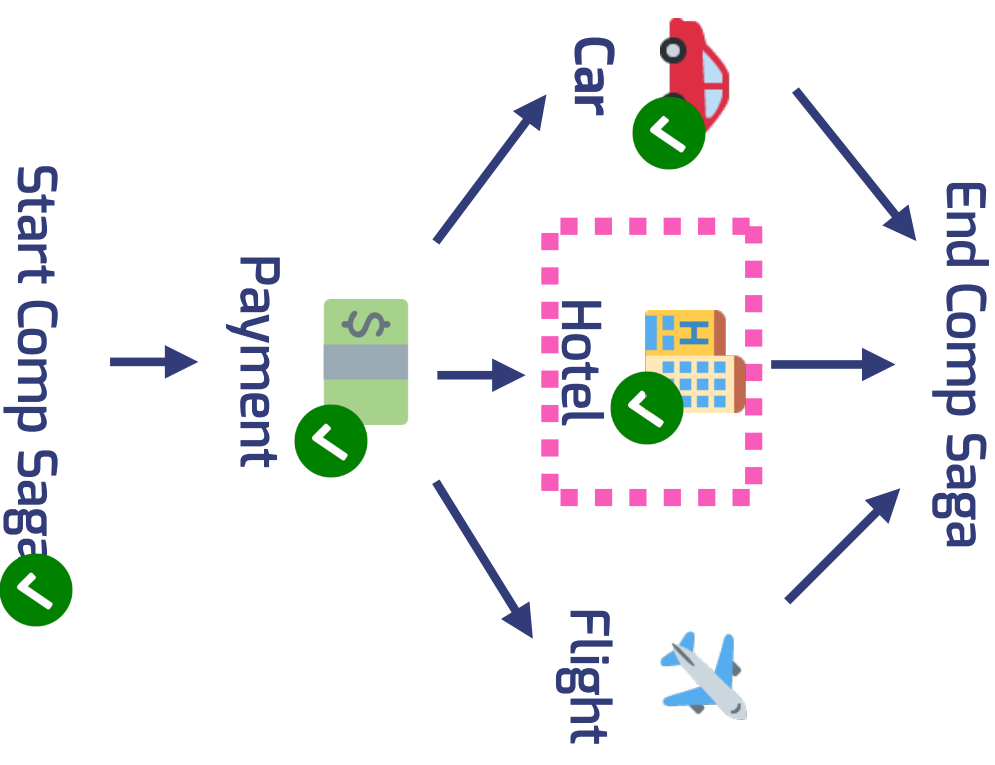
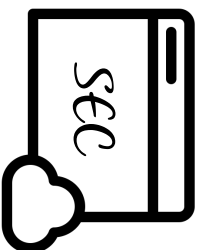
<pre>{ "name": "Start Saga",   "timestamp": "2020-01-01",   "start time": "2020-01-01",   "end time": "2020-01-01",   "payment status": "Success",   "confirmation number": "WXYY123" } }</pre>
Start Hotel
End Hotel
Start Flight
Start Car
Abort Car



# Saga Log

<pre>{   "name": "Start Saga",   "timestamp": "2020-01-01T12:00:00Z",   "data": {     "id": "123456789",     "type": "Saga",     "status": "Active"   } }</pre>
Start Hotel
End Hotel <small>{ "Success": "True", "Confirmation Number": "WY123" }</small>
Start Flight
Start Car
Abort Car
Comp Hotel

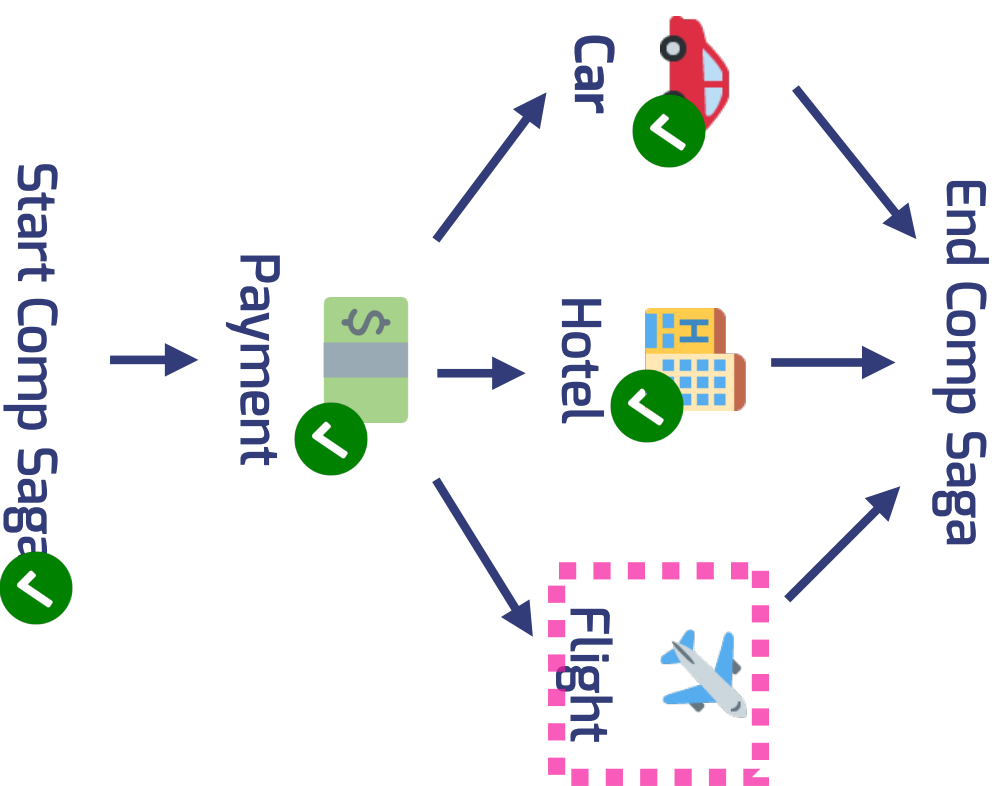
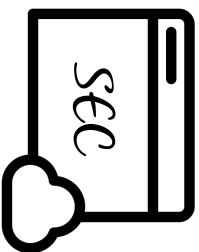
Done



# Saga Log

<b>Start Saga</b> <pre>{ "name": "Start Saga",   "timestamp": "2020-01-01T12:00:00",   "status": "Success",   "parent": null,   "payment": null,   "confirmationNumber": "WY123" }</pre>
Start Hotel
End Hotel <pre>{ "Success": "True",   "Confirmation Number": "WY123" }</pre>
Start Flight
Start Car
Abort Car
Comp Hotel

Flight Log  
Entries?

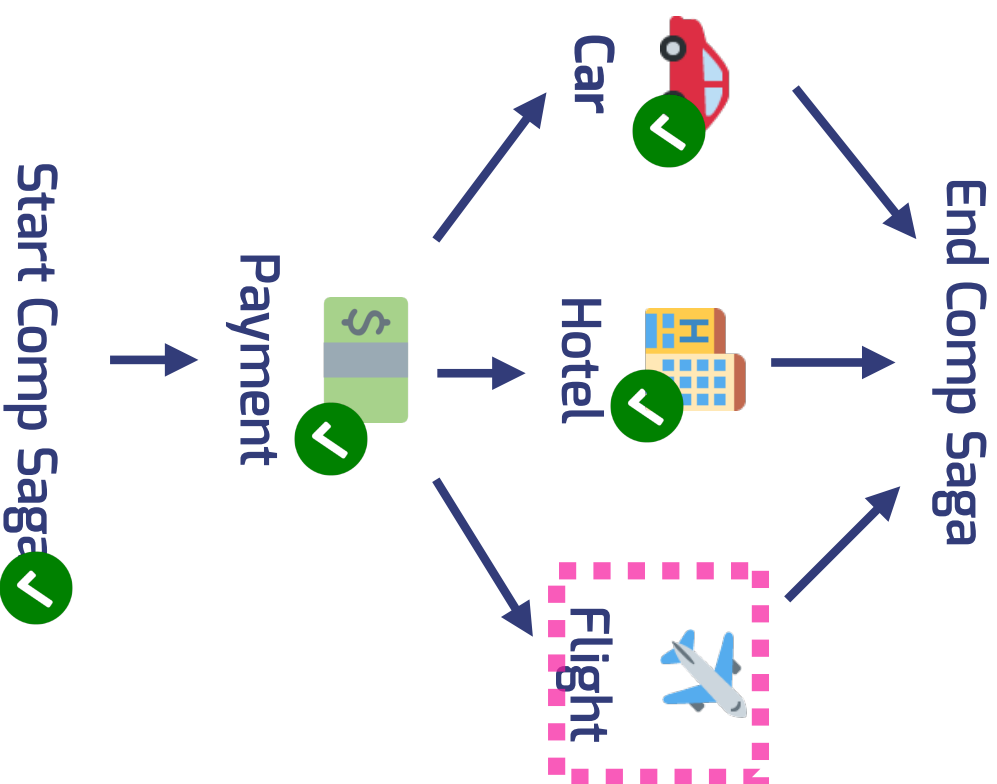
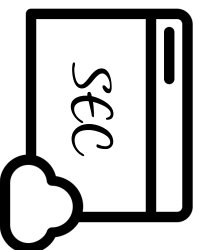




# Saga Log

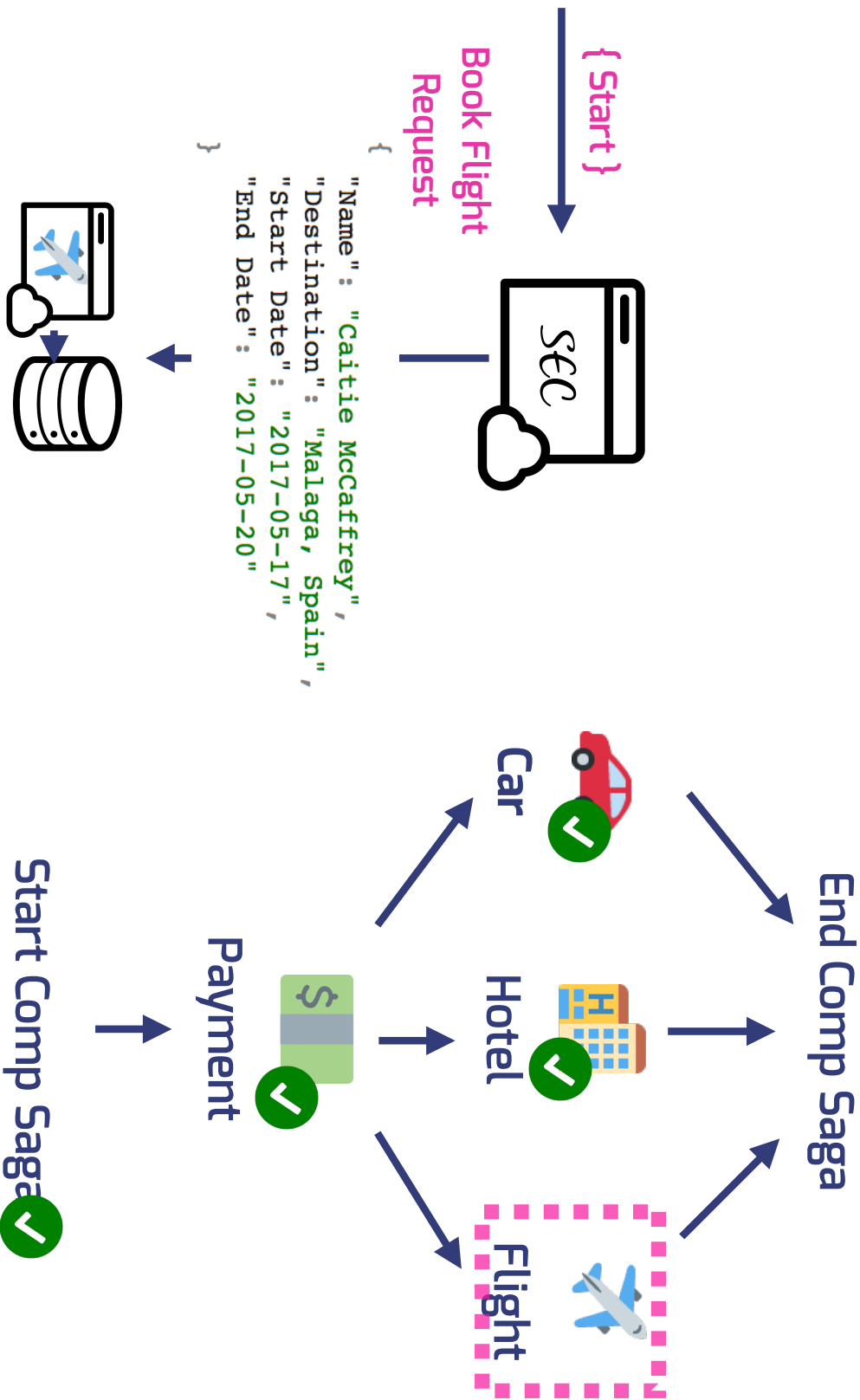
<b>Start Saga</b> <pre>{ "name": "Saga 00000001",   "timestamp": "2020-01-01",   "start time": "2020-01-01",   "end time": "2020-01-01",   "parent": "Saga",   "context": "Saga",   "confirmation number": "WY123" }</pre>
Start Hotel
End Hotel
Start Flight
Start Car
Abort Car
Comp Hotel

{ Start }



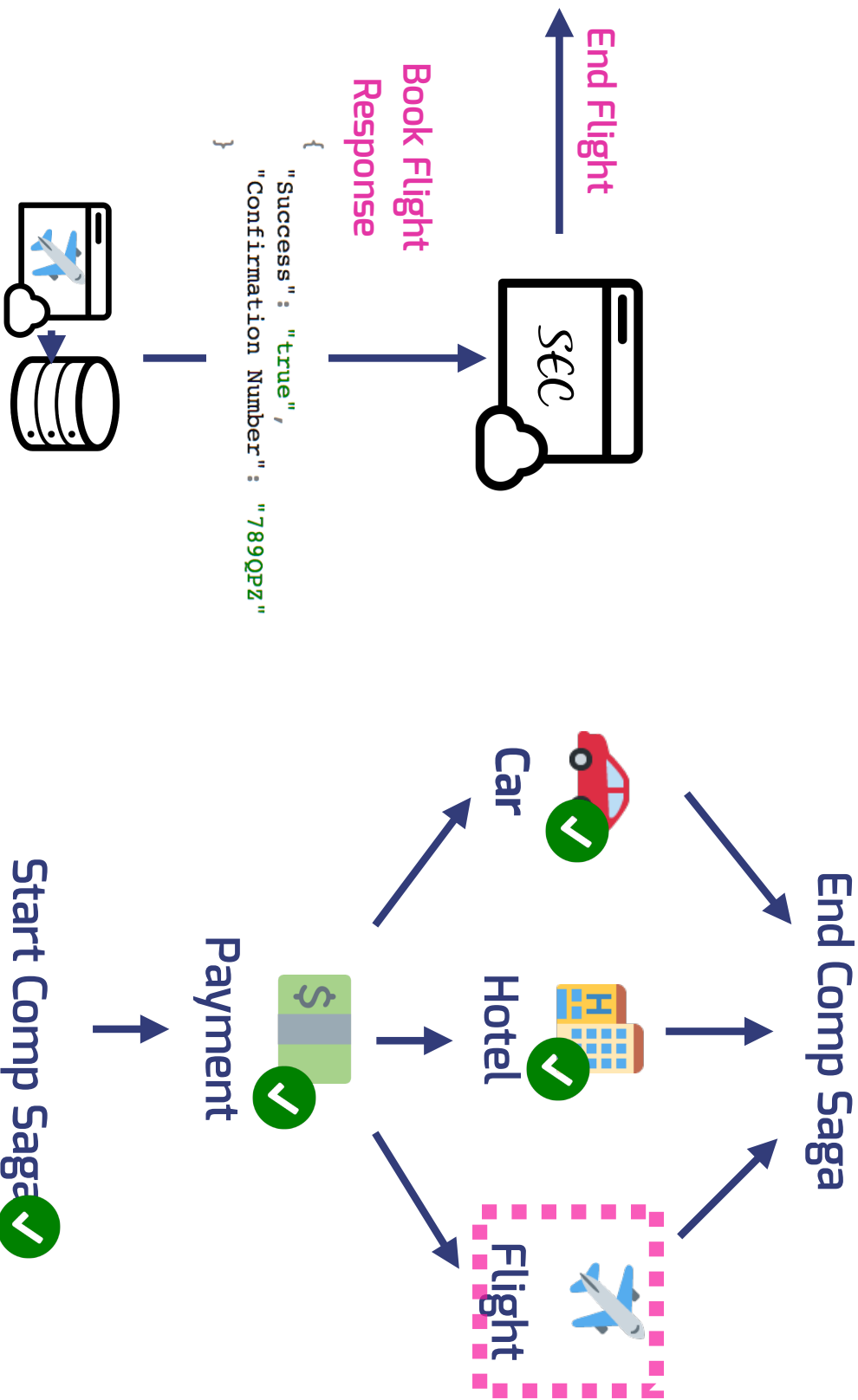
# Saga Log

<pre>{ "name": "Caitie McCaffrey",   "destination": "Malaga, Spain",   "start date": "2017-05-17",   "end date": "2017-05-20",   "payment status":     { "status": "PAID", "amount": 1180.00, "currency": "AUD" } }</pre>
Start Saga
Start Hotel
End Hotel { "Success": "true", "Confirmation Number": "WY113" }
Start Flight
Start Car
Abort Car
Comp Hotel



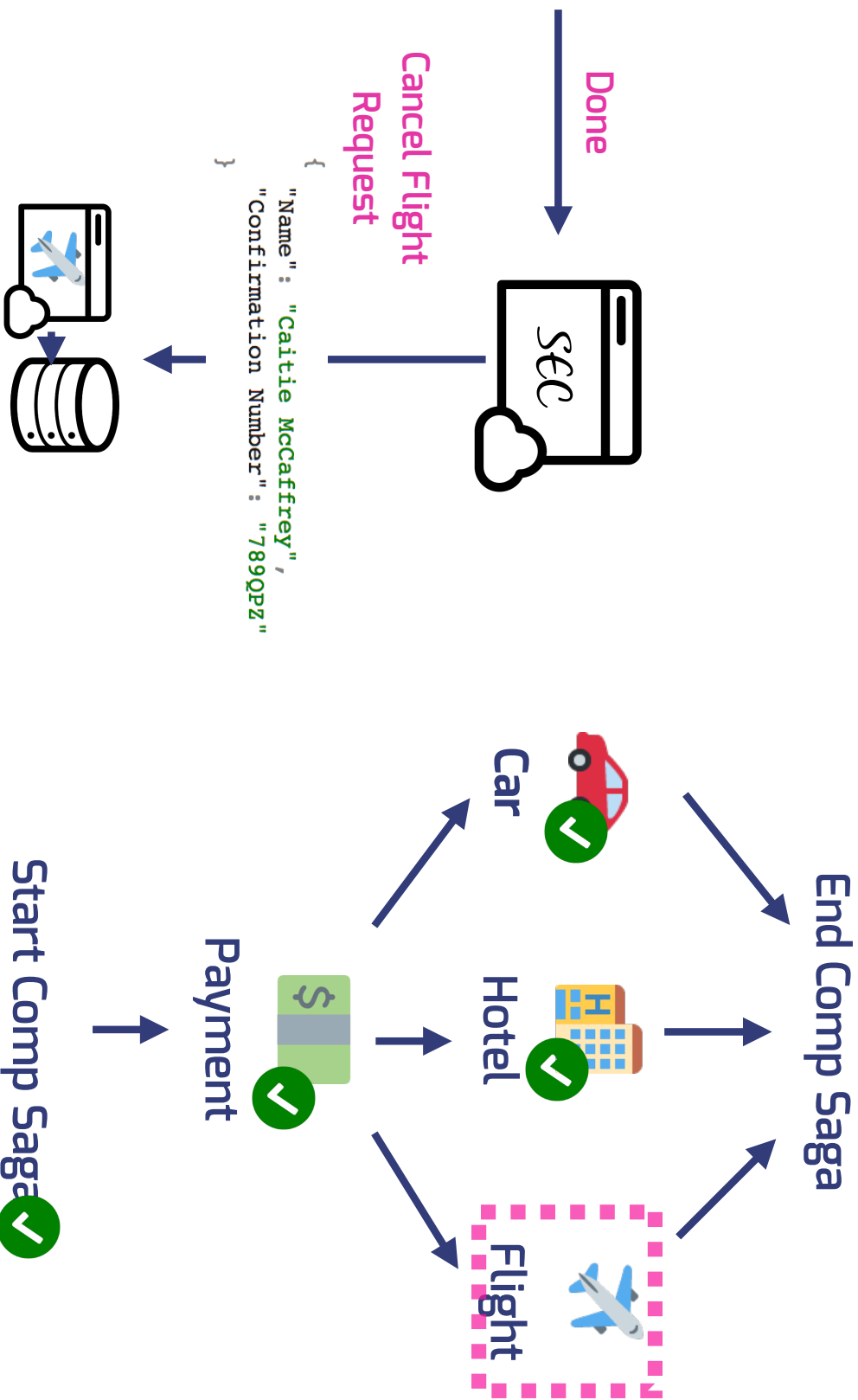
# Saga Log

<pre>{   "name": "Saga 00000001",   "timestamp": "2020-01-01T12:00:00Z",   "startEvent": "Start Saga",   "endEvent": "End Saga",   "status": "In Progress",   "message": "Saga 00000001 is in progress" }</pre>
Start Hotel
End Hotel <pre>{   "Success": "true",   "Confirmation Number": "WY123" }</pre>
Start Flight
Start Car
Abort Car
Comp Hotel



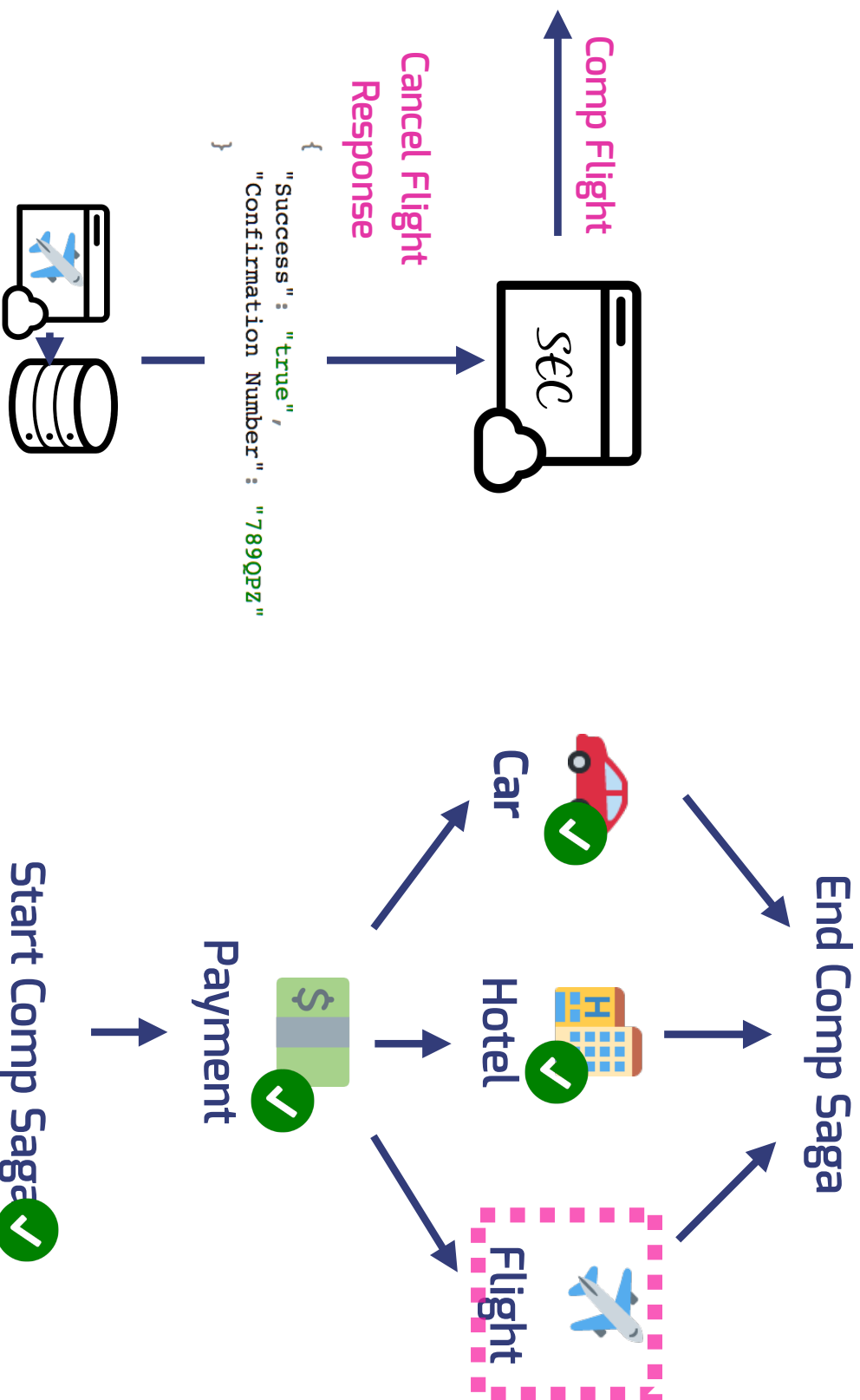
# Saga Log

<pre>{ "name": "Caitie McCaffrey",   "confirmation": "789QPPZ",   "start_date": "2020-01-01",   "end_date": "2020-01-01",   "payment_status": "PAID",   "confirmation_number": "789QPPZ" }</pre>
Start Saga
Start Hotel
End Hotel <pre>{   "Success": "true",   "Confirmation Number": "789QPPZ" }</pre>
Start Flight
Start Car
Abort Car
Comp Hotel
End Flight <pre>{   "Success": "true",   "Confirmation Number": "789QPPZ" }</pre>



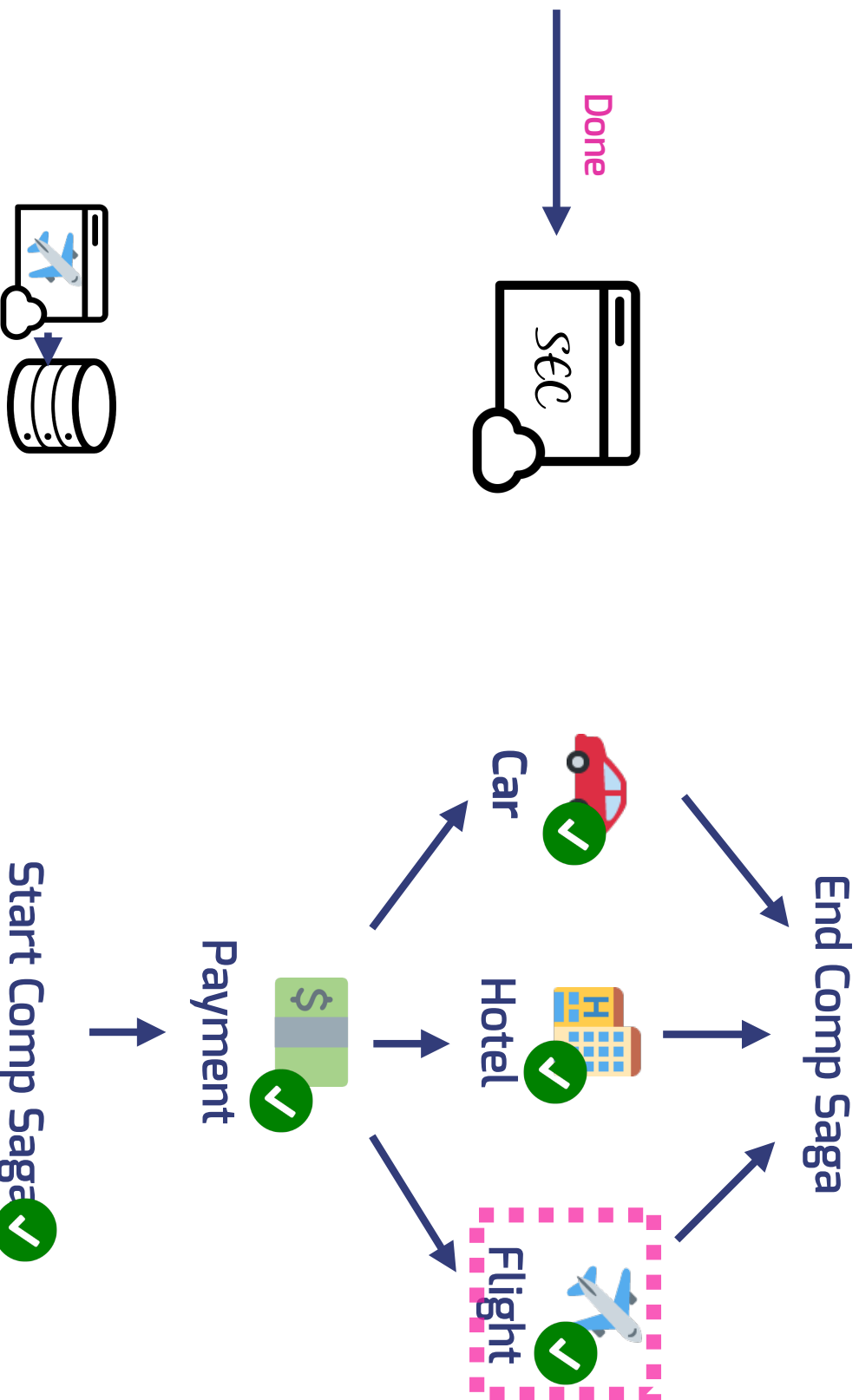
# Saga Log

<pre> {   "name": "Galaxy Explorer",   "description": "Interstellar travel",   "status": "In Progress",   "created_at": "2023-01-15",   "updated_at": "2023-03-20",   "lead_engineer": "John Doe",   "team_lead": "Jane Smith",   "project_id": "PXY123",   "launch_date": "2025-06-01",   "budget": 50000000,   "current_phase": "Development" } </pre>
Start Hotel
End Hotel
Start Flight
Start Car
Abort Car
Comp Hotel
End Flight
<pre> {   "Success": "true",   "Confirmation Number": "WY123Z" } </pre>



# Saga Log

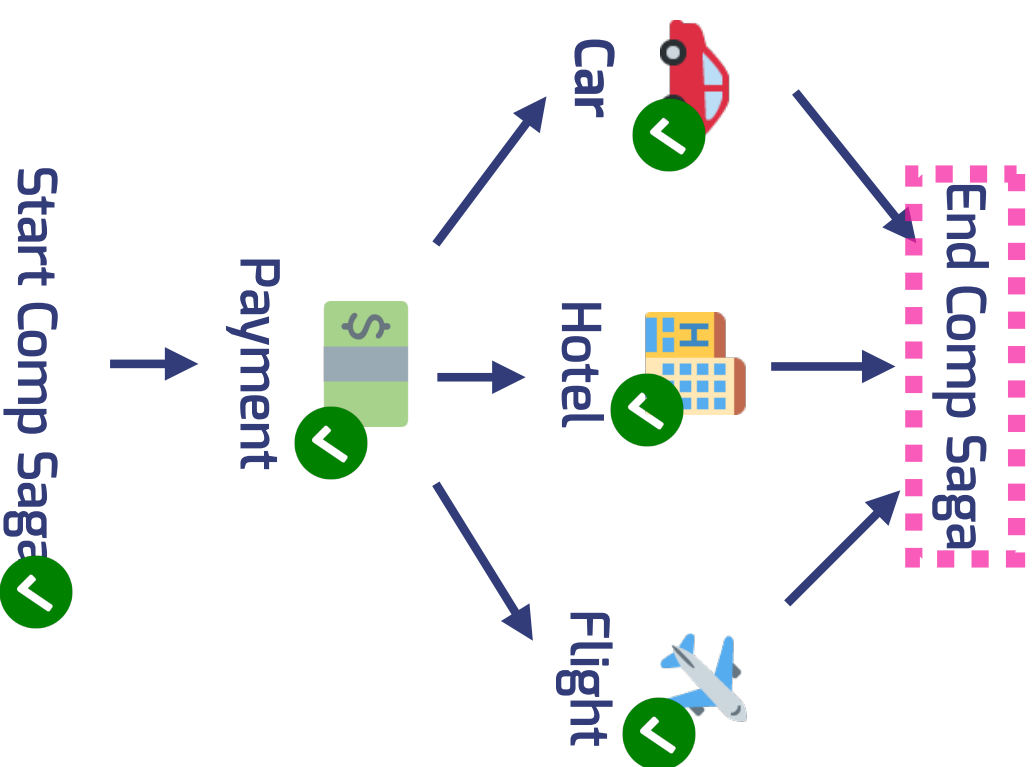
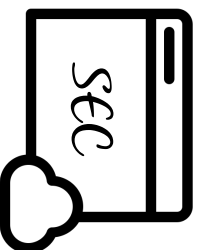
<pre> {   "name": "Galaxy Explorer",   "description": "Next-gen space exploration vehicle.",   "installation": "sudo ./install.sh",   "dependencies": [     "python3",     "git",     "curl"   ],   "releaseDate": "2023-09-15",   "version": "1.0.0",   "author": "AstroTech Labs",   "license": "MIT",   "contact": "support@astrotechlabs.com" } </pre>
Start Saga
Start Hotel
End Hotel
Start Flight
Start Car
Abort Car
Comp Hotel
End Flight
Comp Flight



# Saga Log

<pre>{   "name": "Galaxy Explorer",   "description": "Interstellar travel",   "status": "In Development",   "created_at": "2023-01-15",   "updated_at": "2023-05-20",   "lead_engineer": "John Doe",   "team_lead": "Jane Smith",   "project_manager": "Alex Johnson",   "budget": 15000000,   "start_date": "2023-06-01",   "end_date": "2025-12-31",   "progress": 75,   "risk_level": "High",   "dependencies": [     "Quantum Leap Initiative",     "Advanced Propulsion System",     "AI Navigation Module",     "Life Support Systems Upgrade",     "Deep Space Communication Array"   ],   "tags": [     "Space Exploration",     "Advanced Technology",     "High Risk",     "Long Duration",     "Interplanetary"   ],   "notes": "Project is on track, but budget review needed for the propulsion system upgrade." }</pre>
Start Saga
Start Hotel
End Hotel
Start Flight
Start Car
Abort Car
Comp Hotel
End Flight
Comp Flight

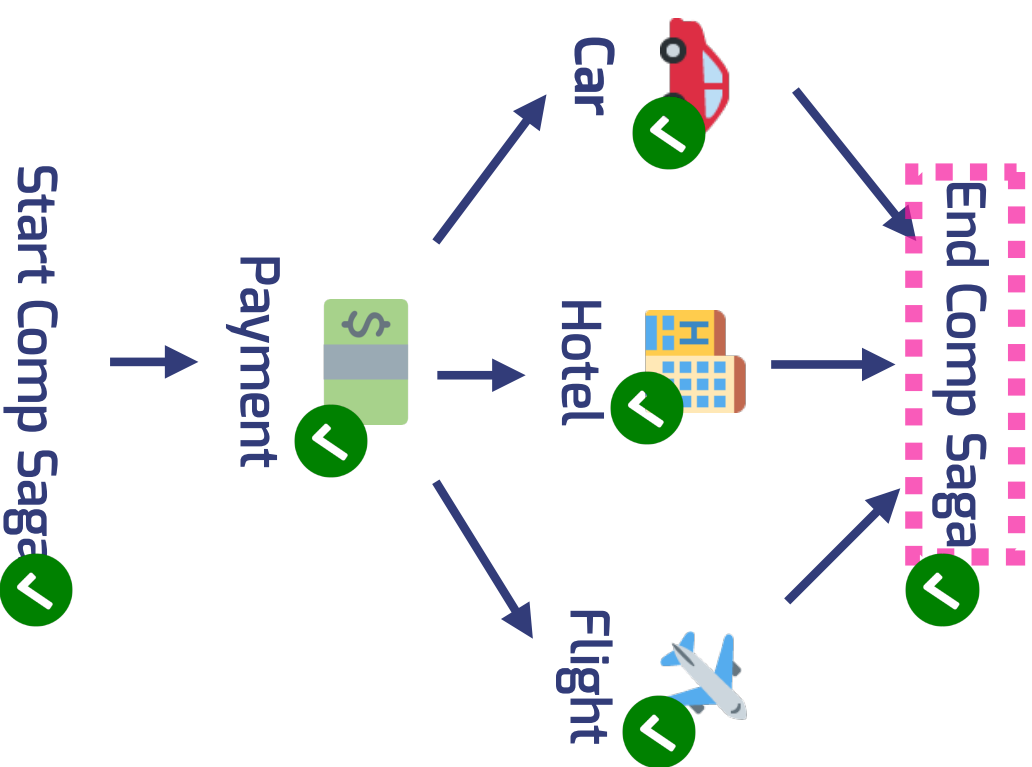
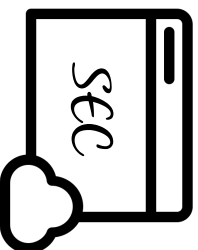
# End Saga



# Saga Log

<pre>{ "name": "Saga 00000001",   "timestamp": "2020-01-01",   "start time": "2020-01-01",   "end time": "2020-01-01",   "payment status": "Success",   "confirmation number": "WY123" }</pre>
Start Saga
Start Hotel
End Hotel
<pre>{ "Success": "true",   "Confirmation Number": "789012" }</pre>
Start Flight
Start Car
Abort Car
Comp Hotel
End Flight
Comp Flight
End Saga

Done





# Distributed Saga Guarantee

**All requests were completed successfully**



*Book Hotel*



*Book Car*



*Book Flight*



*Charge Money*

**Or a subset of requests and the corresponding compensating requests were executed**



*Book Hotel*



*Book Car*



*Cancel Hotel*



*Cancel Car*