Google™ I/O 10

# Developing Android REST Client Applications

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5/20/2010

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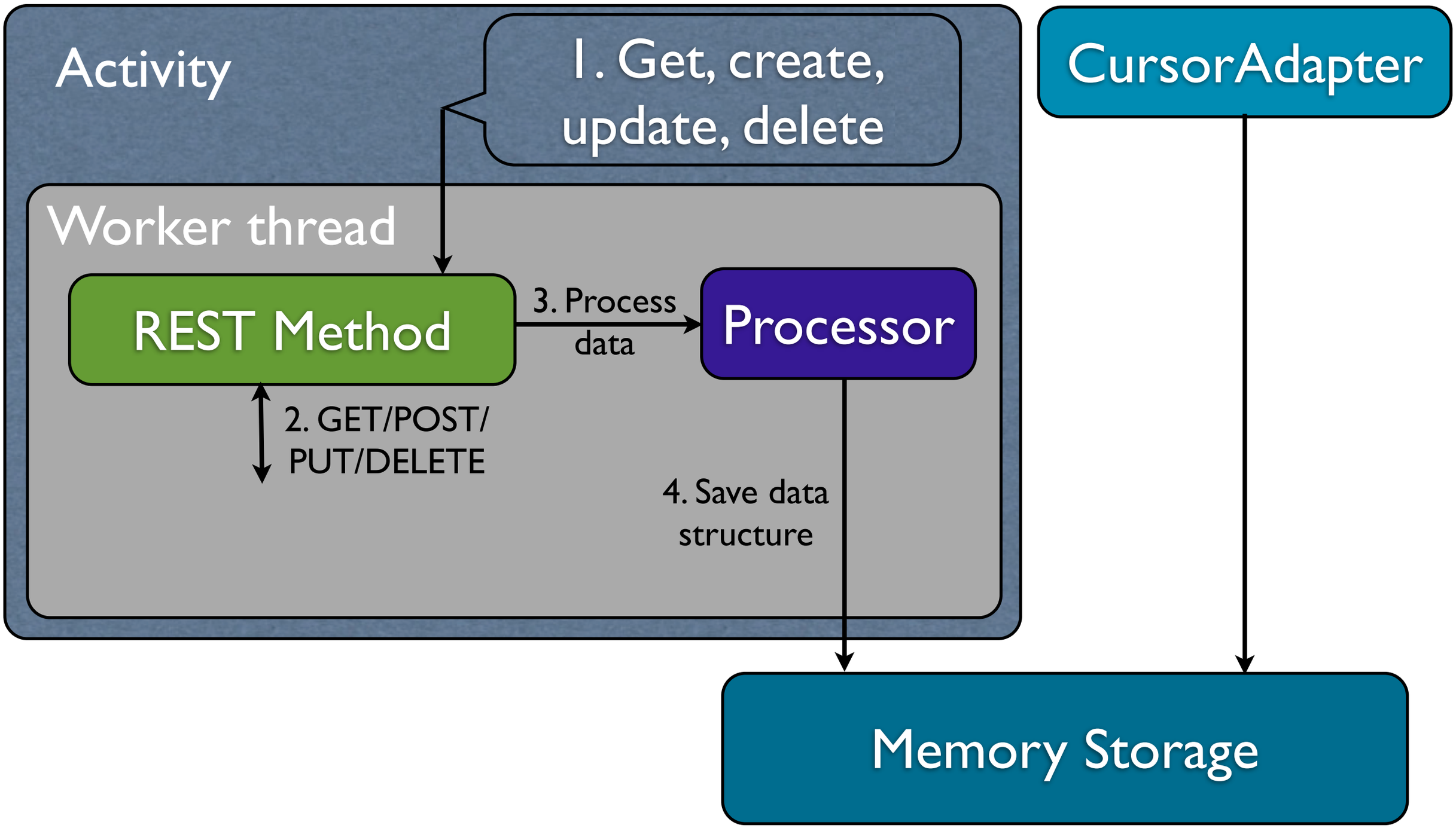
- REST: A broadly adopted architecture style
- A large number of REST APIs are available
- Why develop them if mobile friendly web sites already exist?

# Incorrect Implementation of REST Methods

"I haven't failed, I've found 10,000 ways that don't work."

- Thomas Alva Edison

# The Incorrect Implementation of REST Methods



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- Data is not persistently stored

# Implementing REST Methods

"There's a way to do it better ... find it."

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# REST Method Implementation Patterns

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- Introducing three design patterns to handle REST methods
  - Use a Service API
  - Use the ContentProvider API
  - Use the ContentProvider API and a SyncAdapter

# Implementing REST Methods

## Option A: Use a Service API

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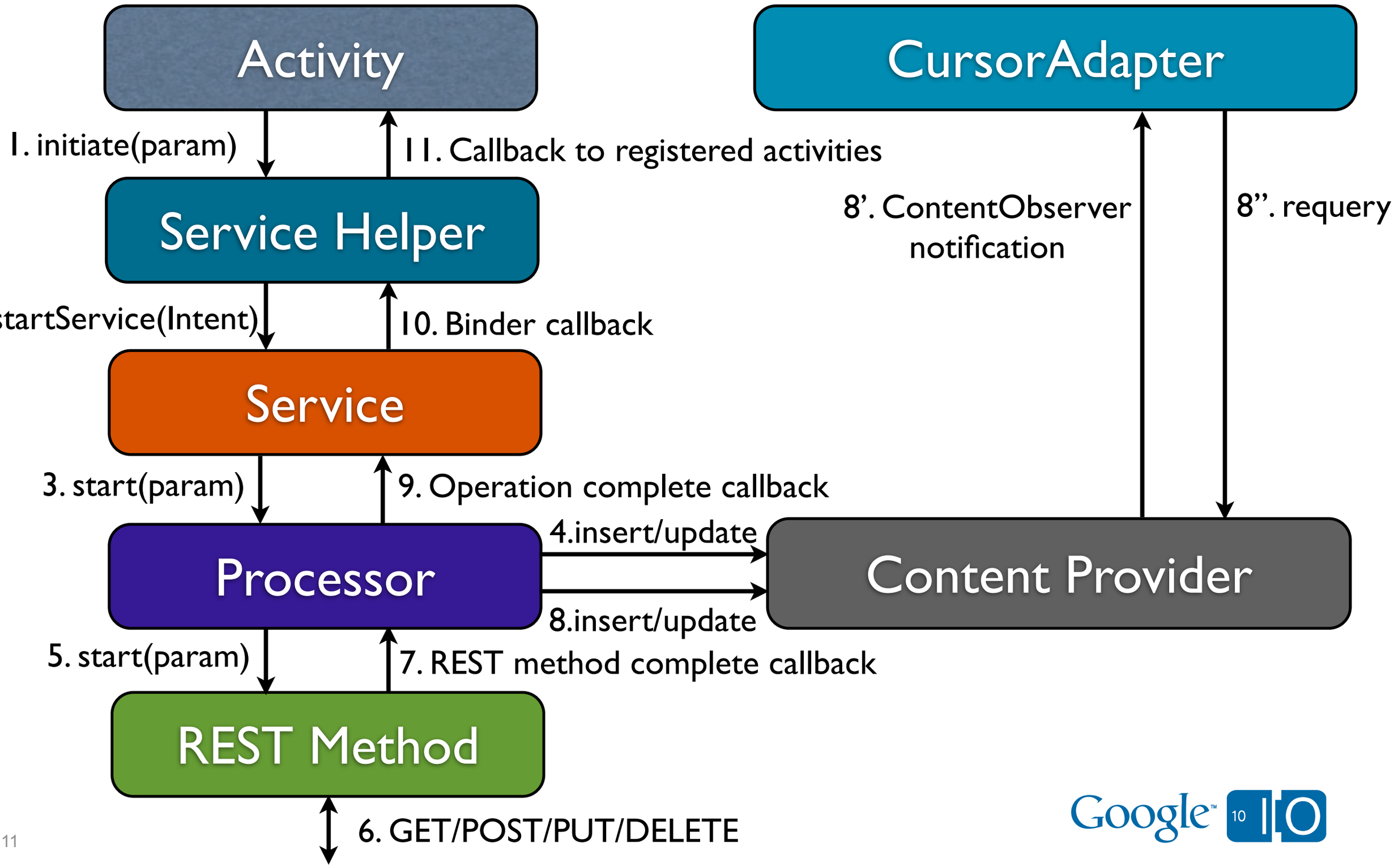

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- Run the REST method in a worker thread
- Use the Apache HTTP client

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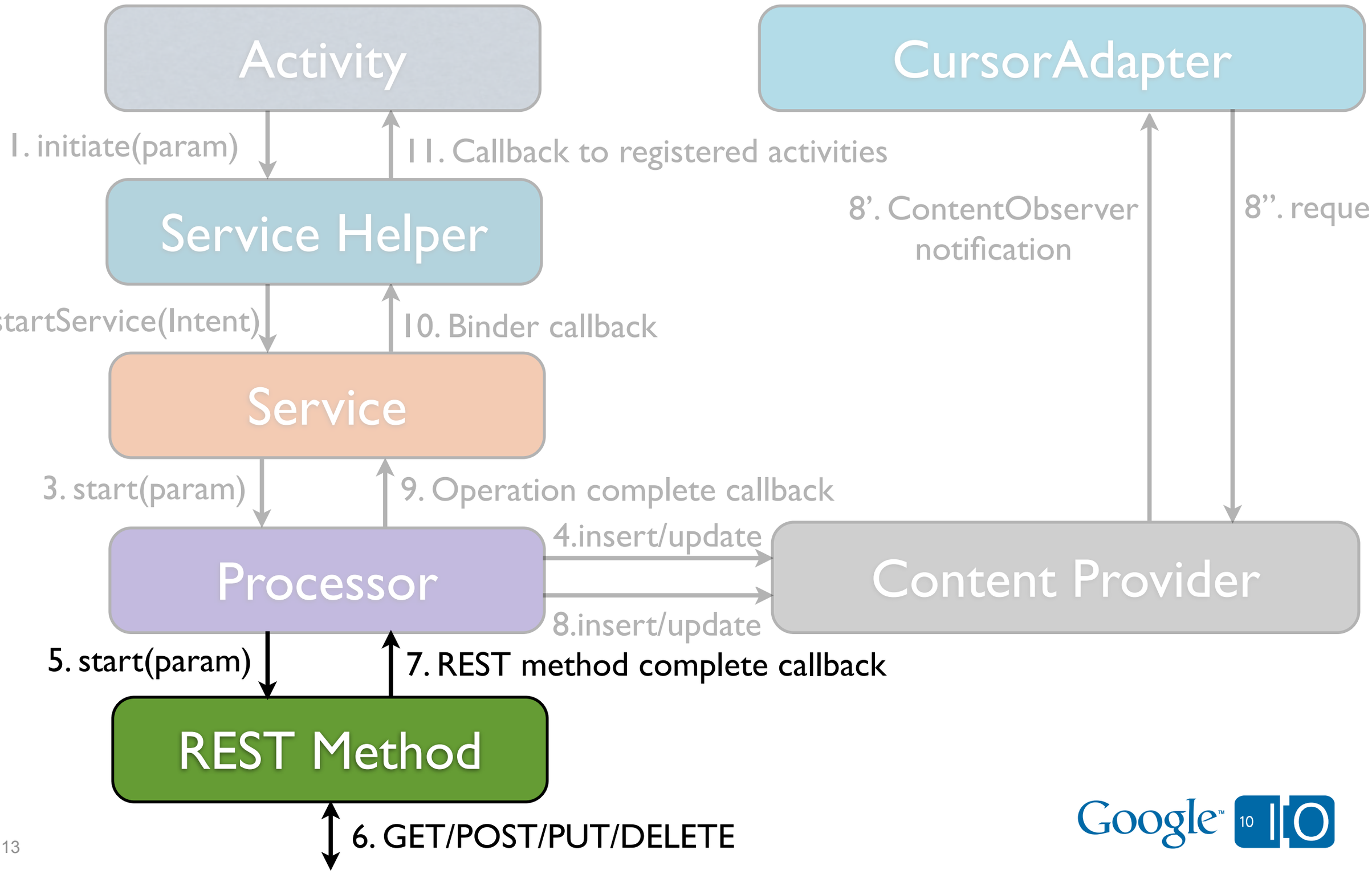
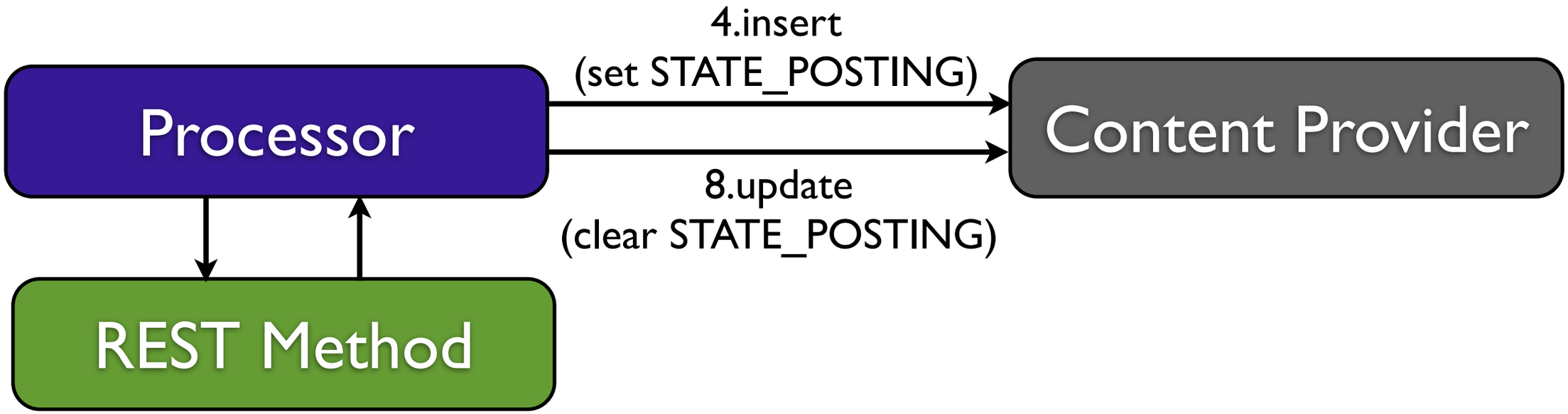


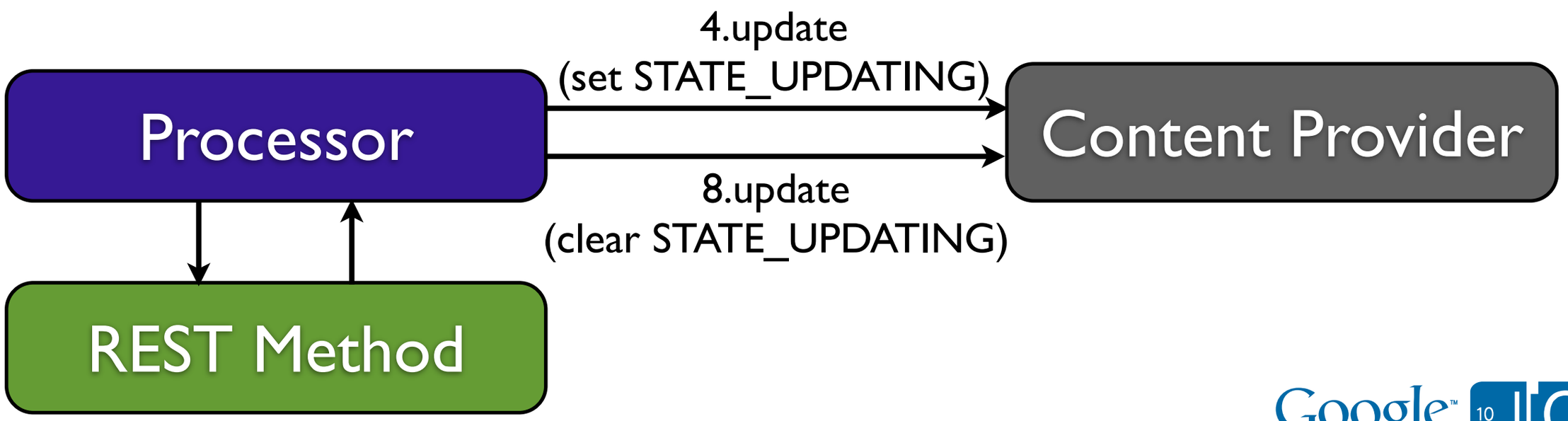
# The Processor (POST & PUT)

Processor

## POST



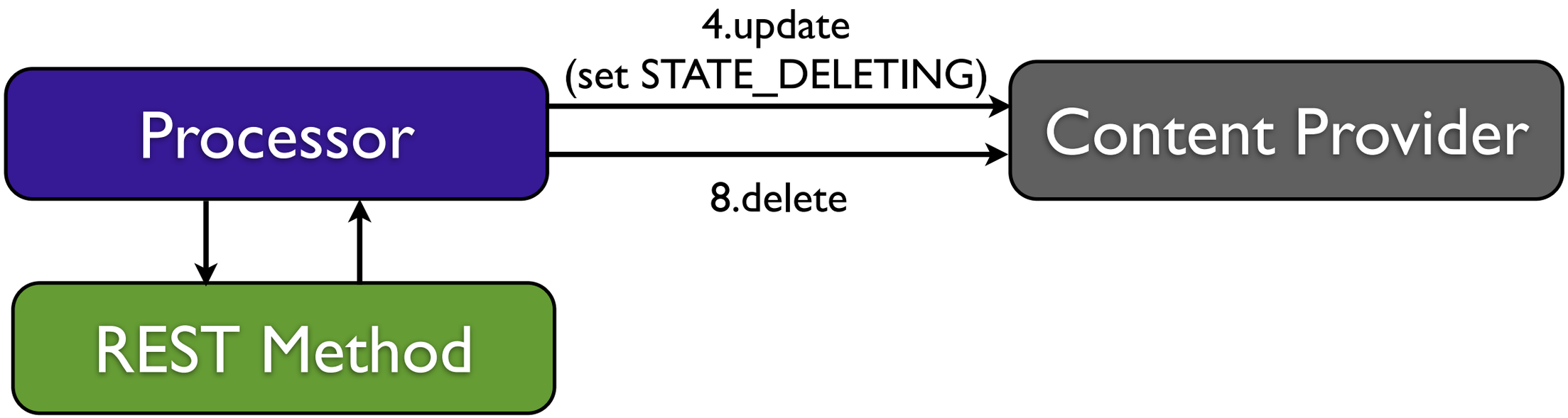

## PUT



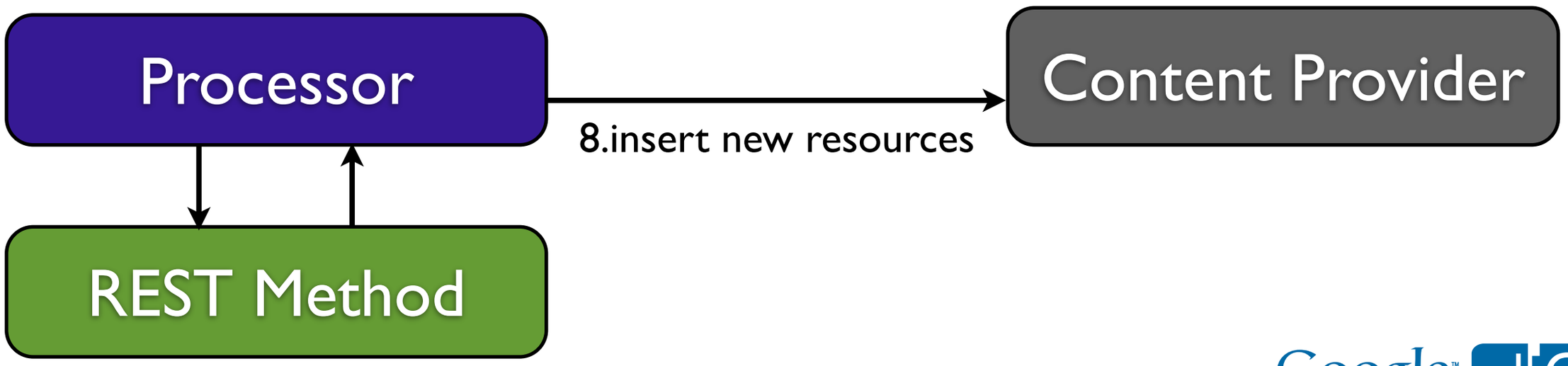
# The Processor (DELETE & GET)

Processor

## DELETE




## GET



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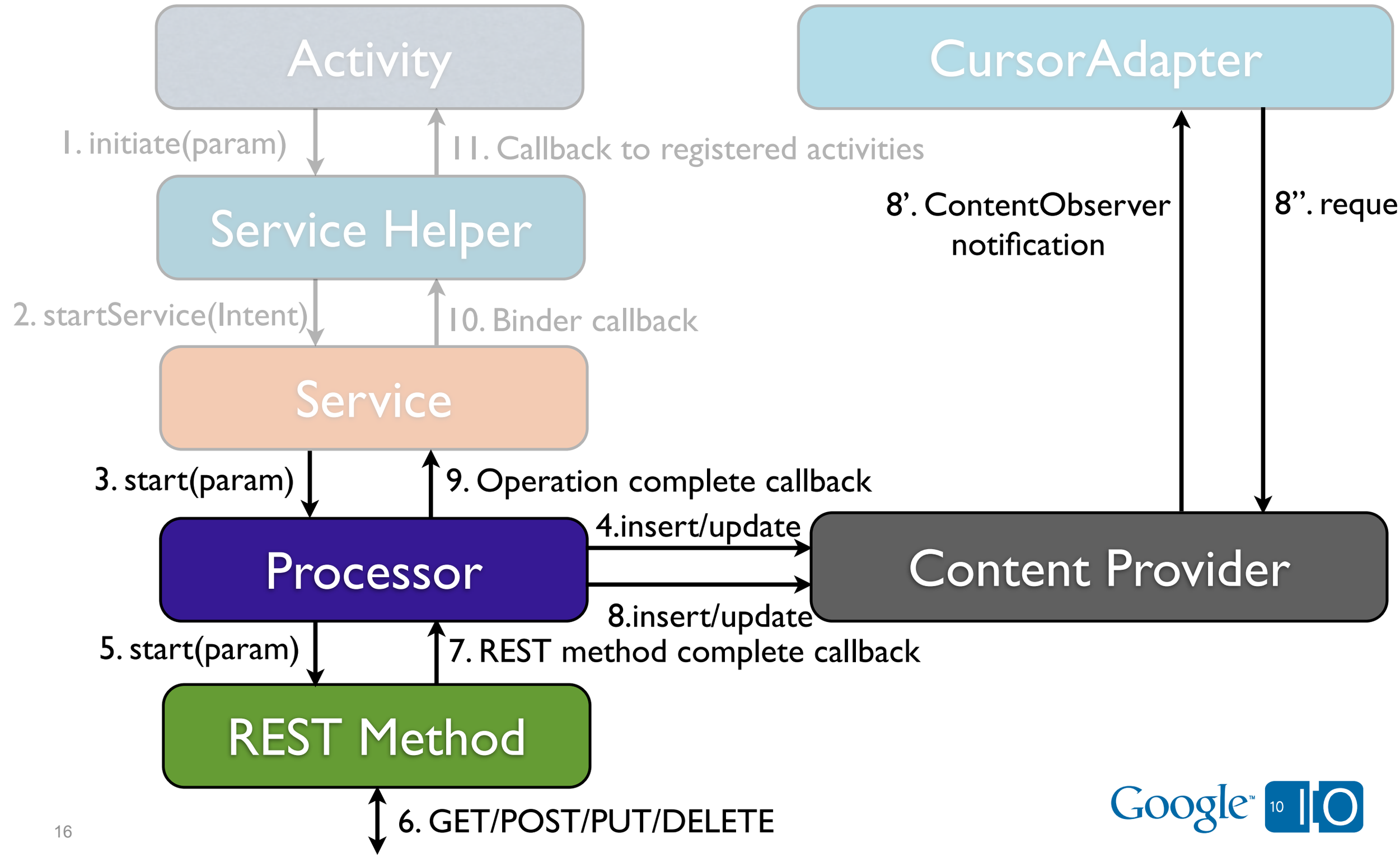

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- Forward path: receives the Intent sent by the Service Helper and starts the corresponding REST Method
- Return path: handles the Processor callback and invokes the Service Helper binder callback
- It can implement a queue of downloads

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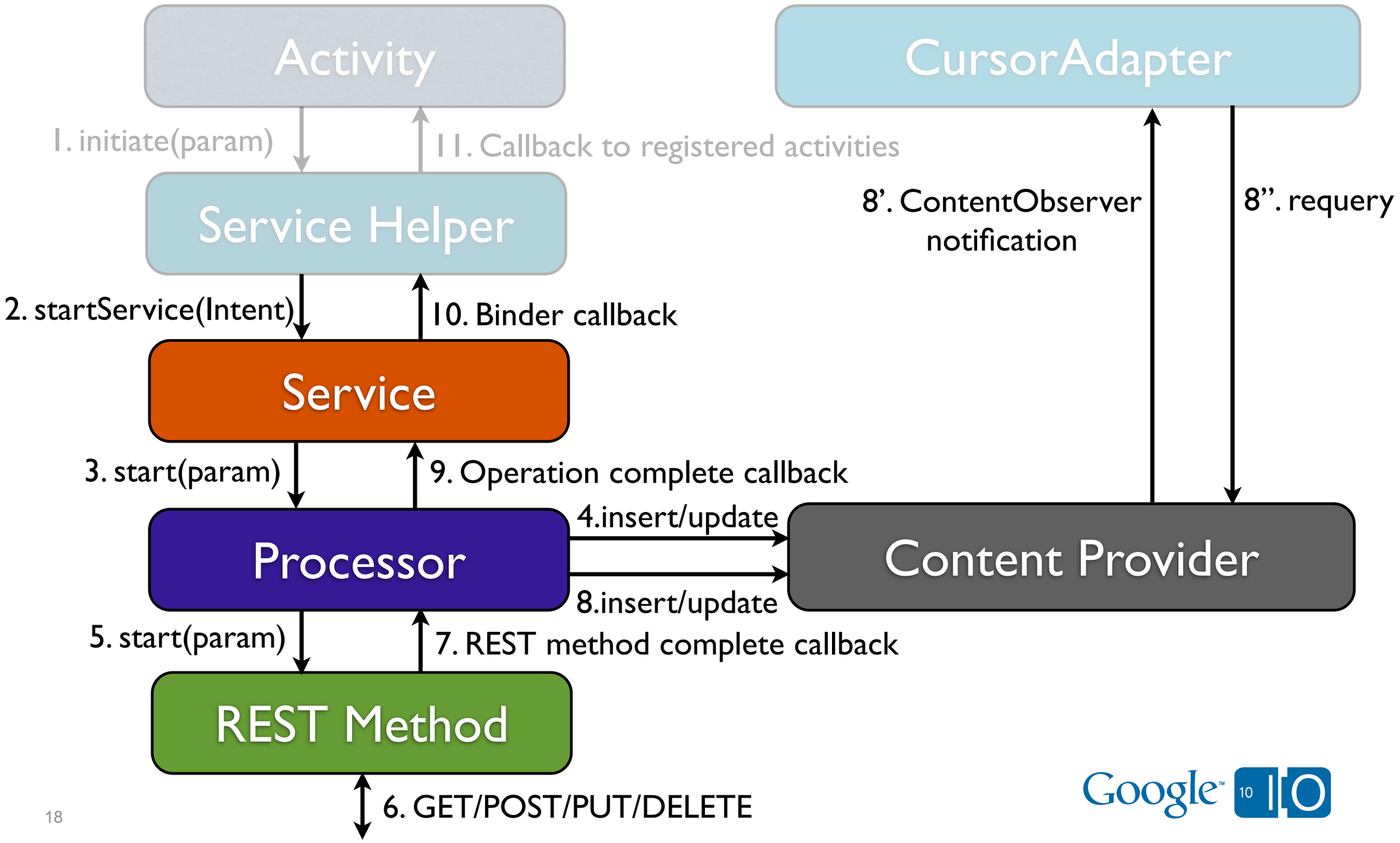

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- Prepare and send the Service request
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  - Call startService(Intent)
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  - Add the operation type and a unique request id
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  - Add the binder callback
  - Call startService(Intent)
  - Return the request id
- Handle the callback from the service
  - Dispatch callbacks to the user interface listeners

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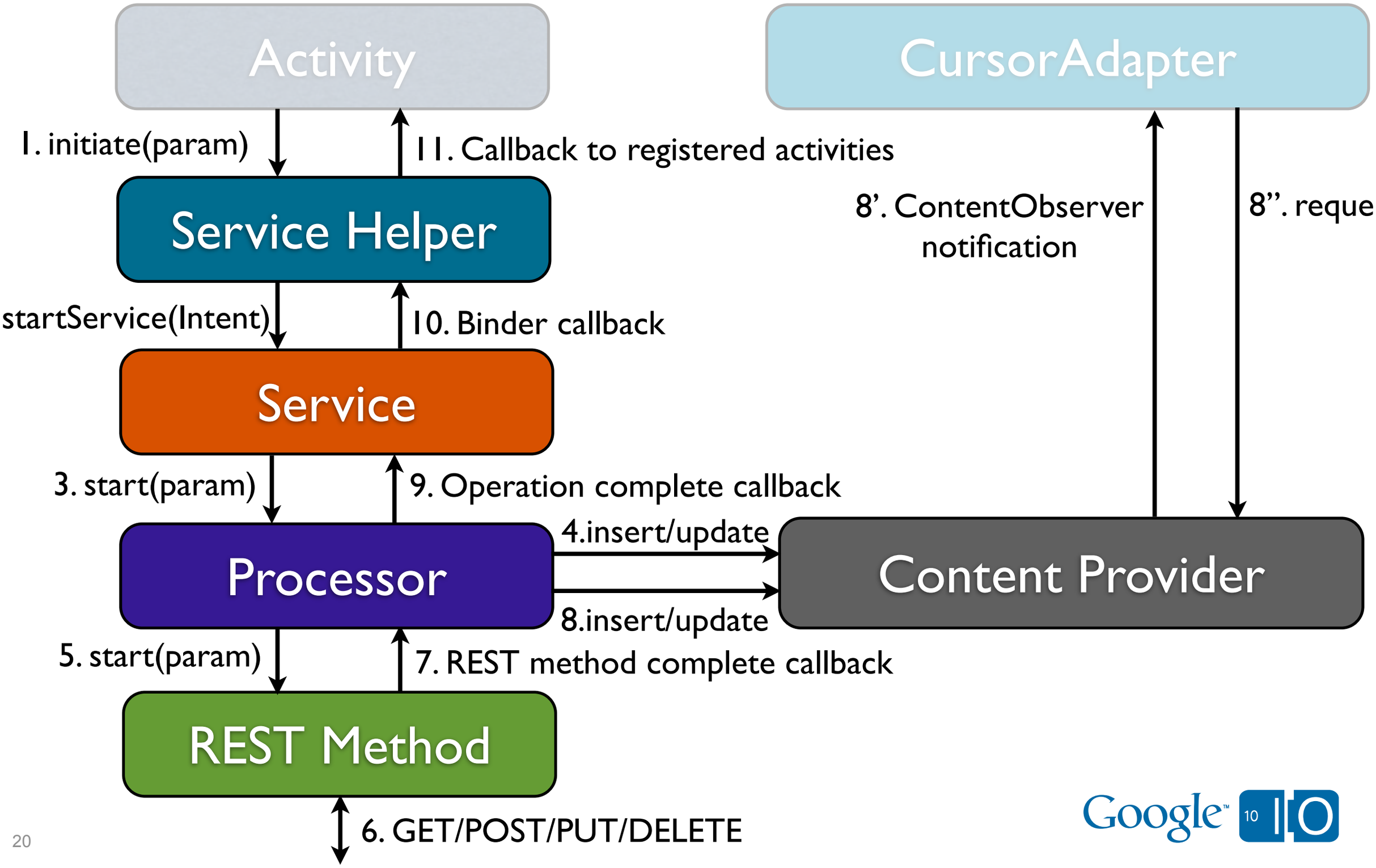

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Activity & CursorAdapter

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- Consider these cases:
  - The Activity is still active when the request completes
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  - The Activity is paused when the request completes and then Activity is resumed
- The CursorAdapter handles the ContentProvider notification by implementing a ContentObserver

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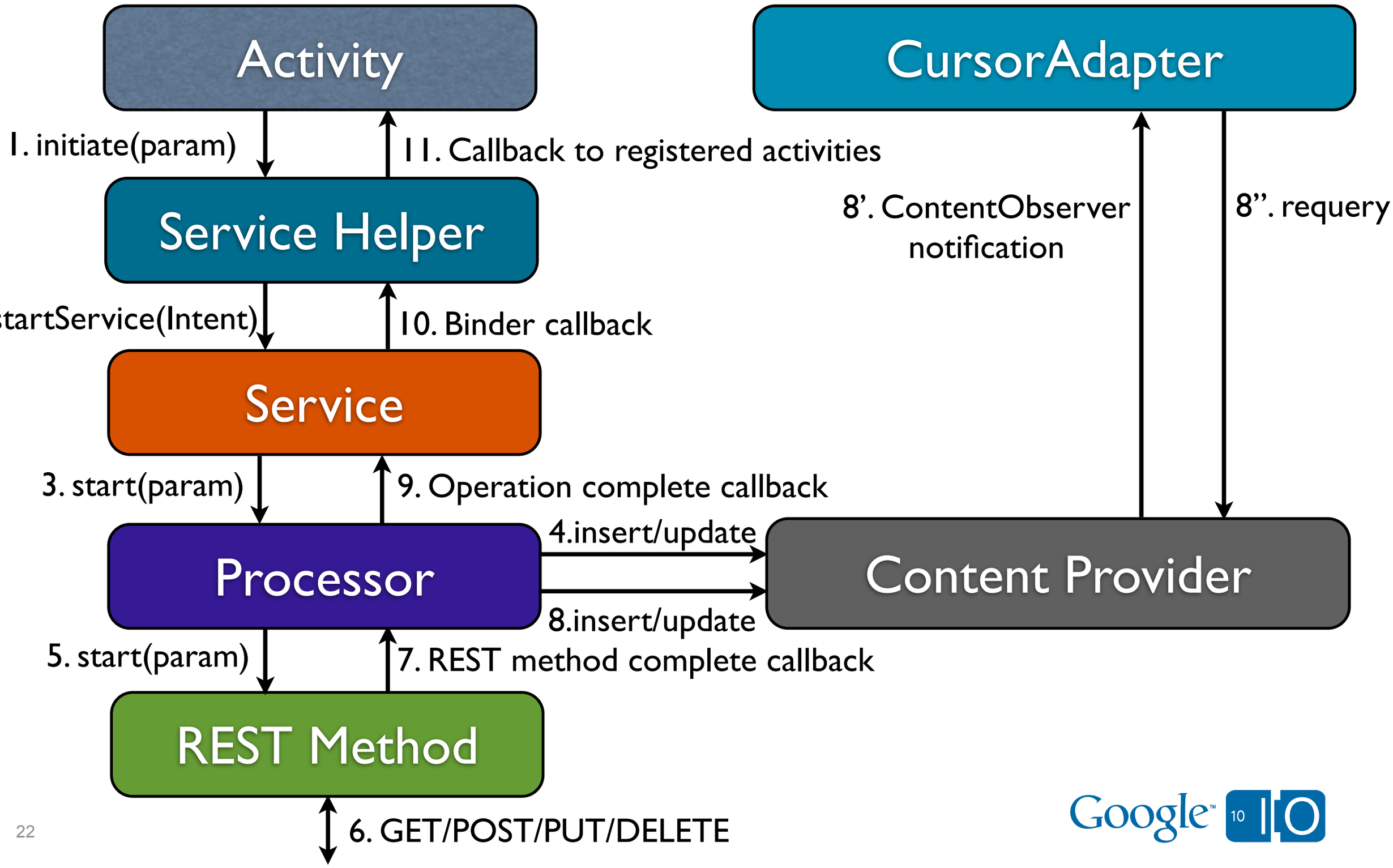

# Implementing REST Methods

## Option B: Use the ContentProvider API

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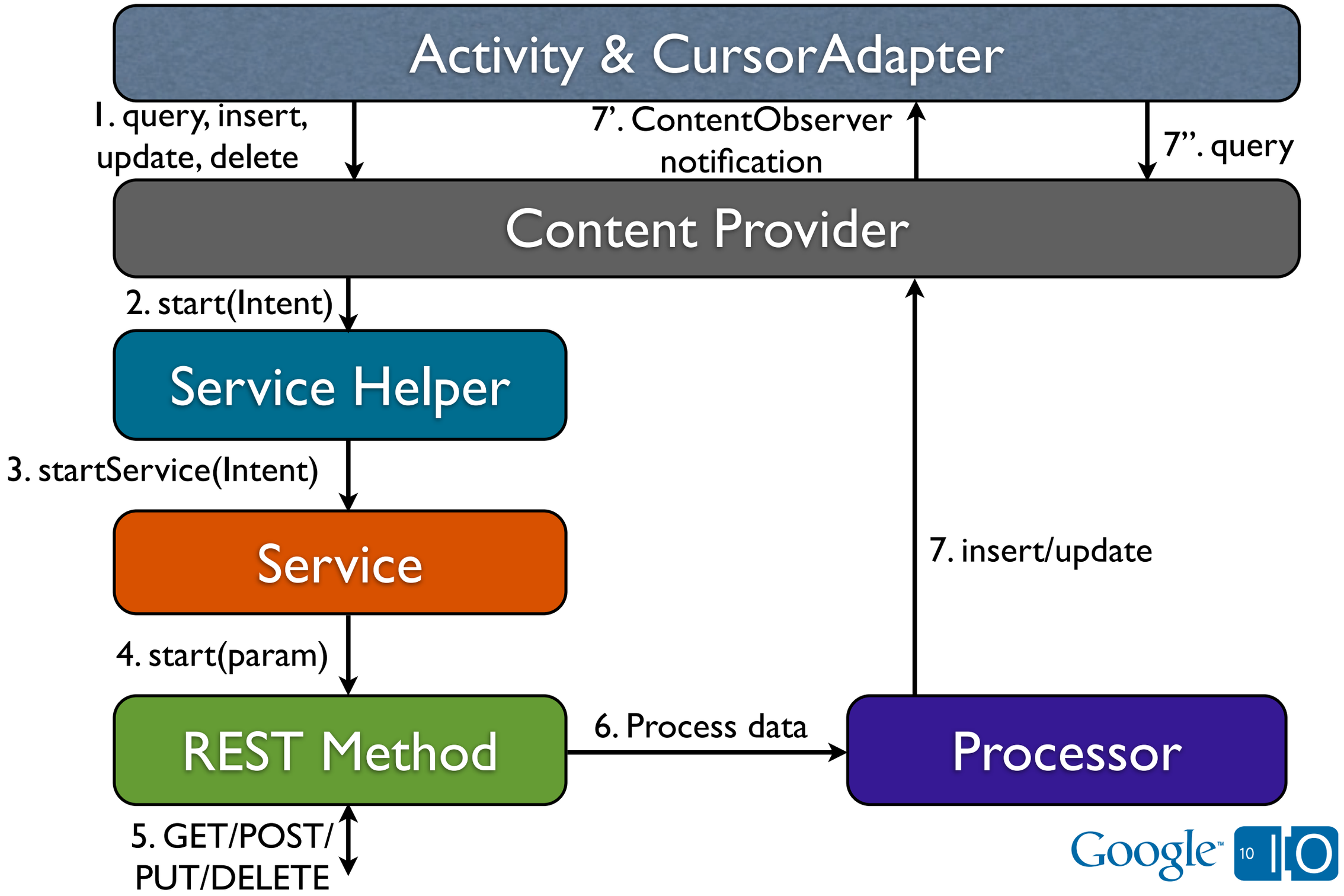


# A Simple Pattern for the REST of us

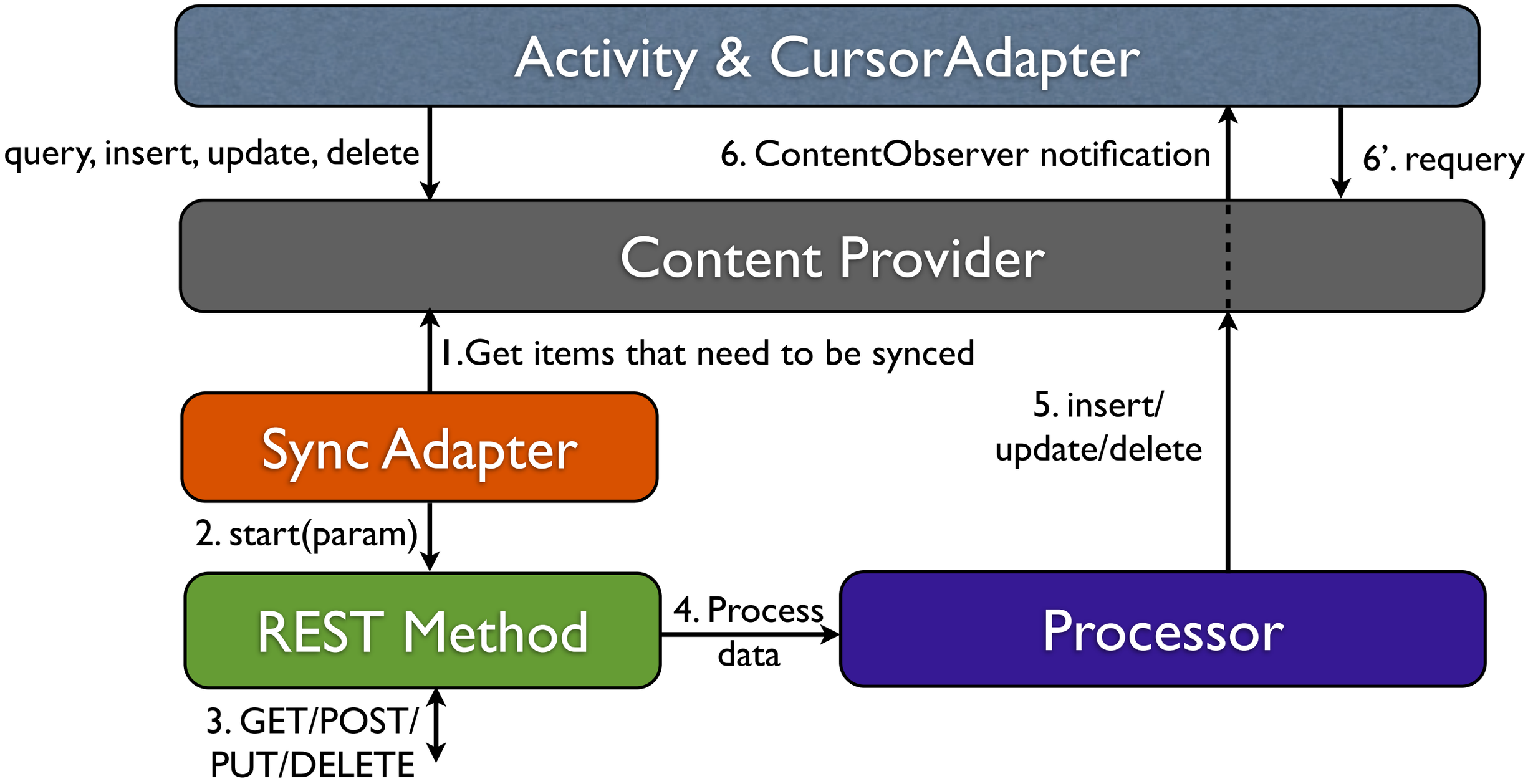
## Option C: Use a ContentProvider API and a SyncAdapter

"To have a great idea, have a lot of them."

-Thomas Alva Edison

# A Simple Pattern Using the ContentProvider API

## Use a sync adapter to initiate all your REST methods



# Conclusions

"The value of an idea lies in the using of it."

- Thomas Alva Edison

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- Do not implement REST methods inside Activities
- Start long running operations from a Service
- Persist early & persist often
- Minimize the network usage
- Use a sync adapter to execute background operations which are not time critical
  - New in Froyo: Android Cloud to Device Messaging

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