

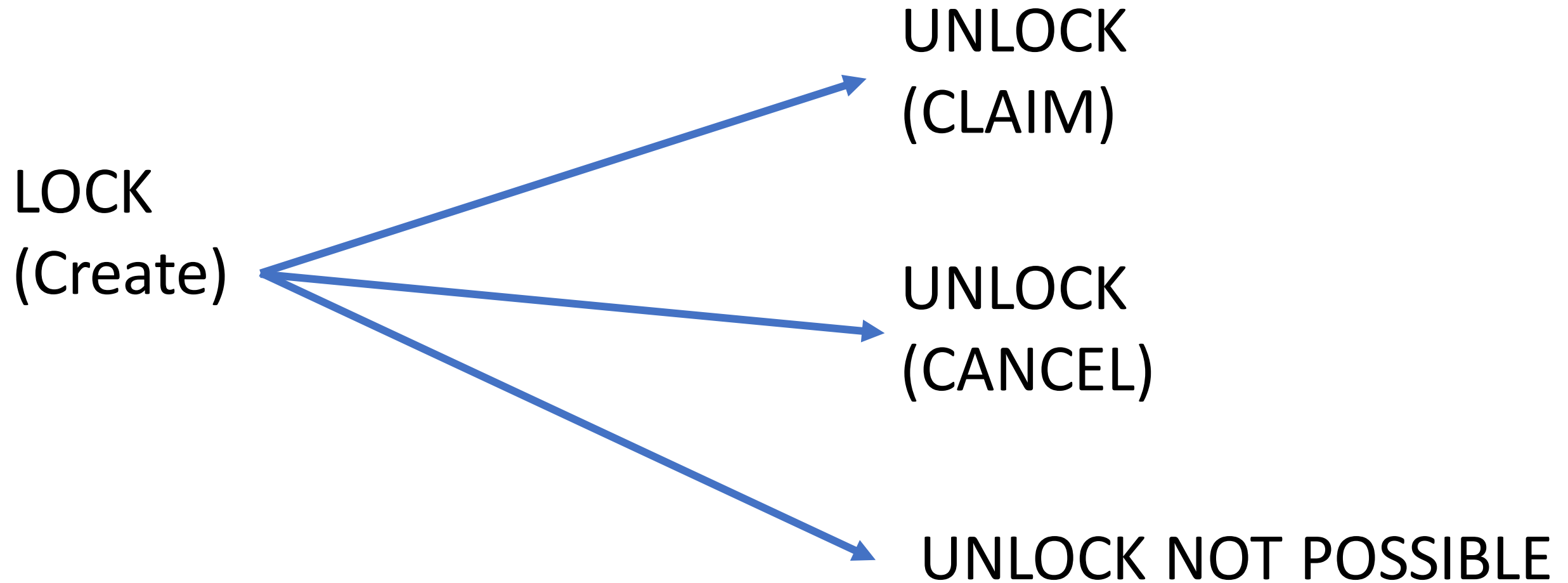
# Escrow Types & Interfaces

Luke Riley  
Quant Network

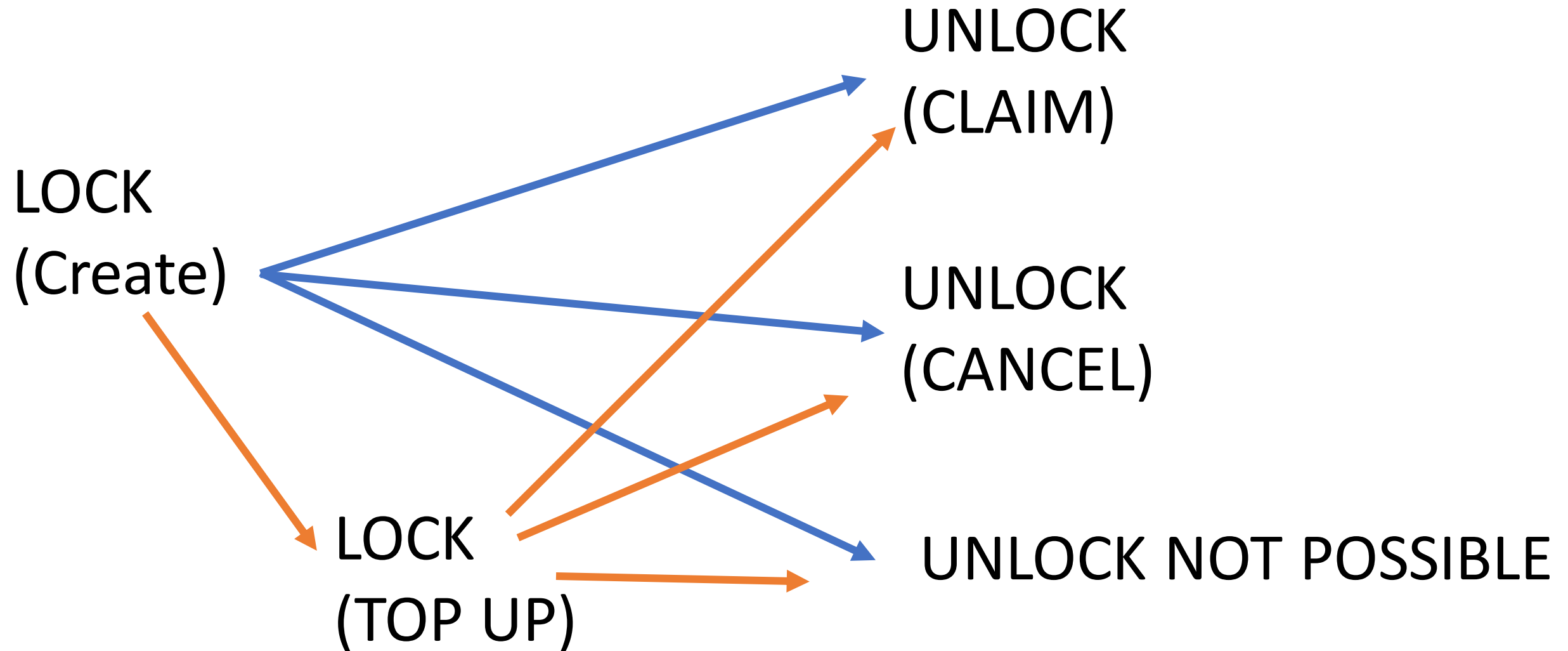
# Escrows in DLNs

- Escrow actions
- Escrow categories
- Escrow interface

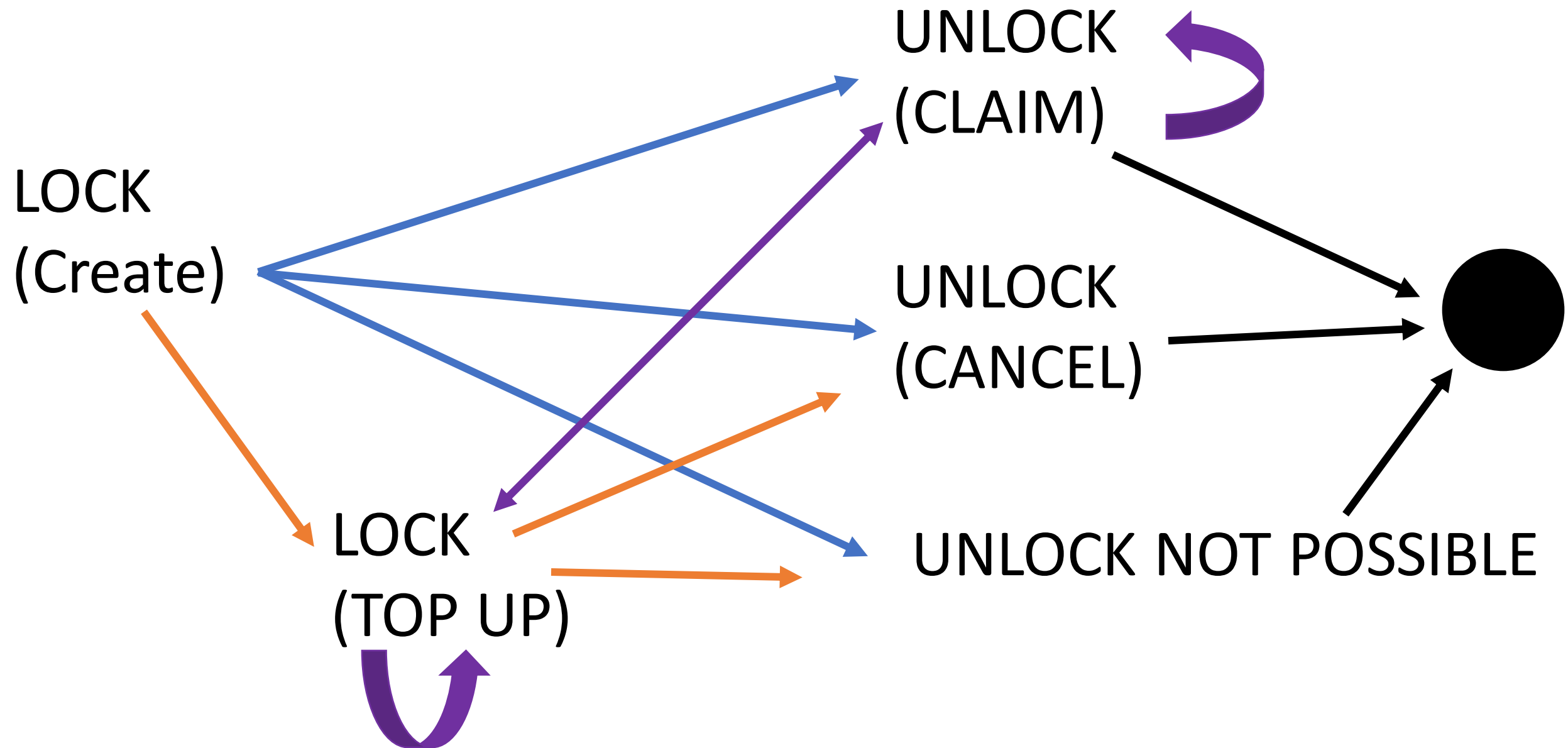
# High Level (Actions)



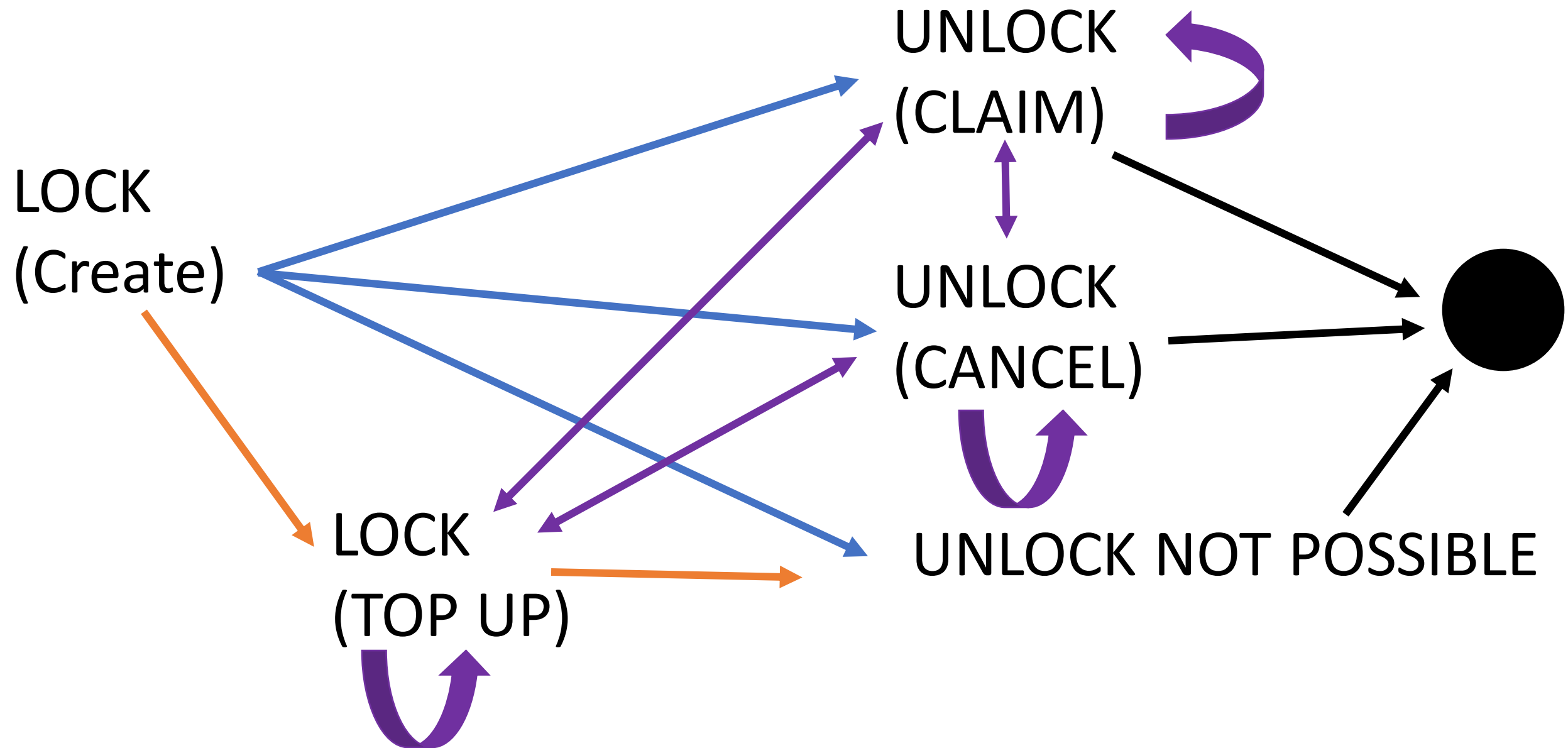
# High Level (Actions)



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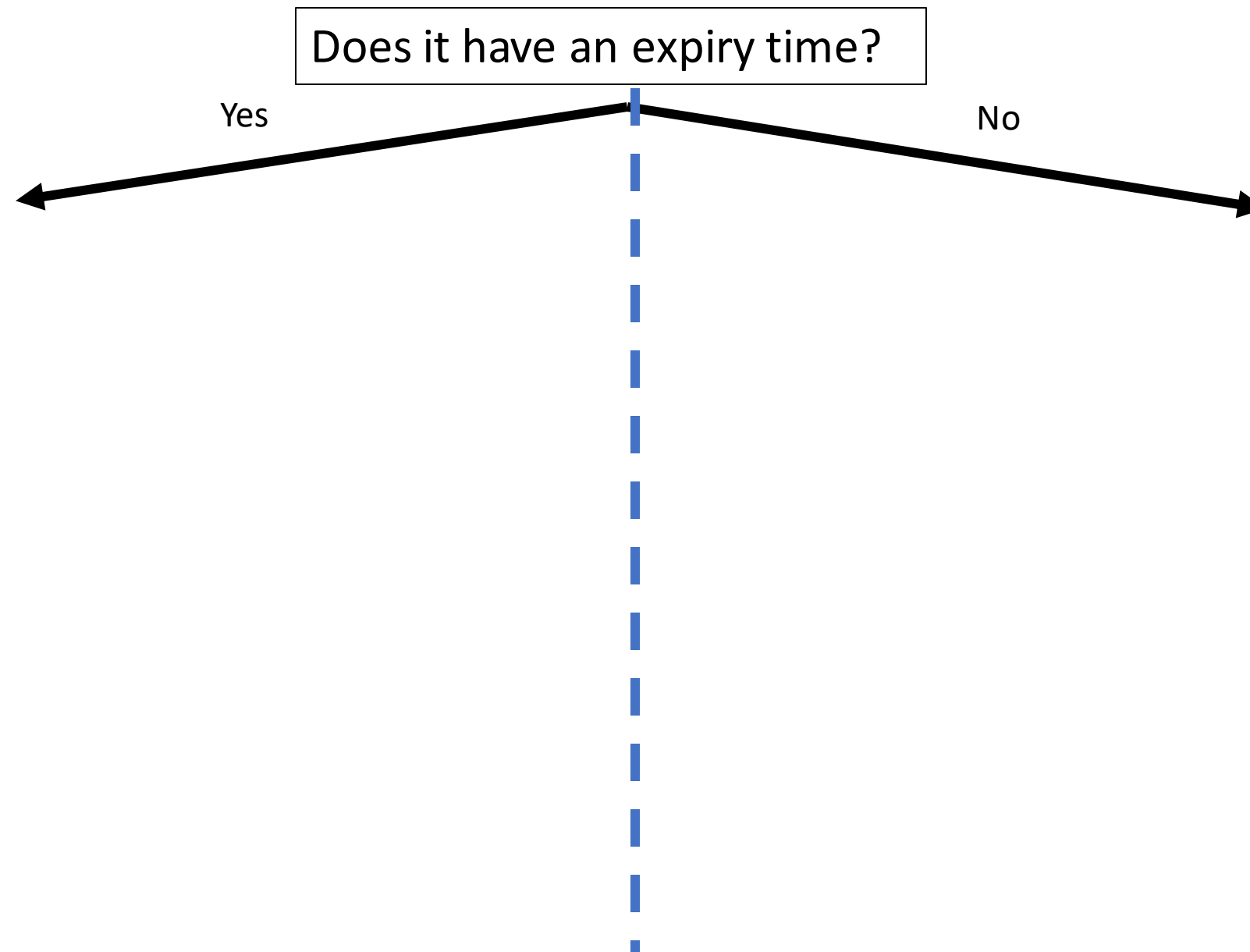


# High Level (Categories)

## **Defined by:**

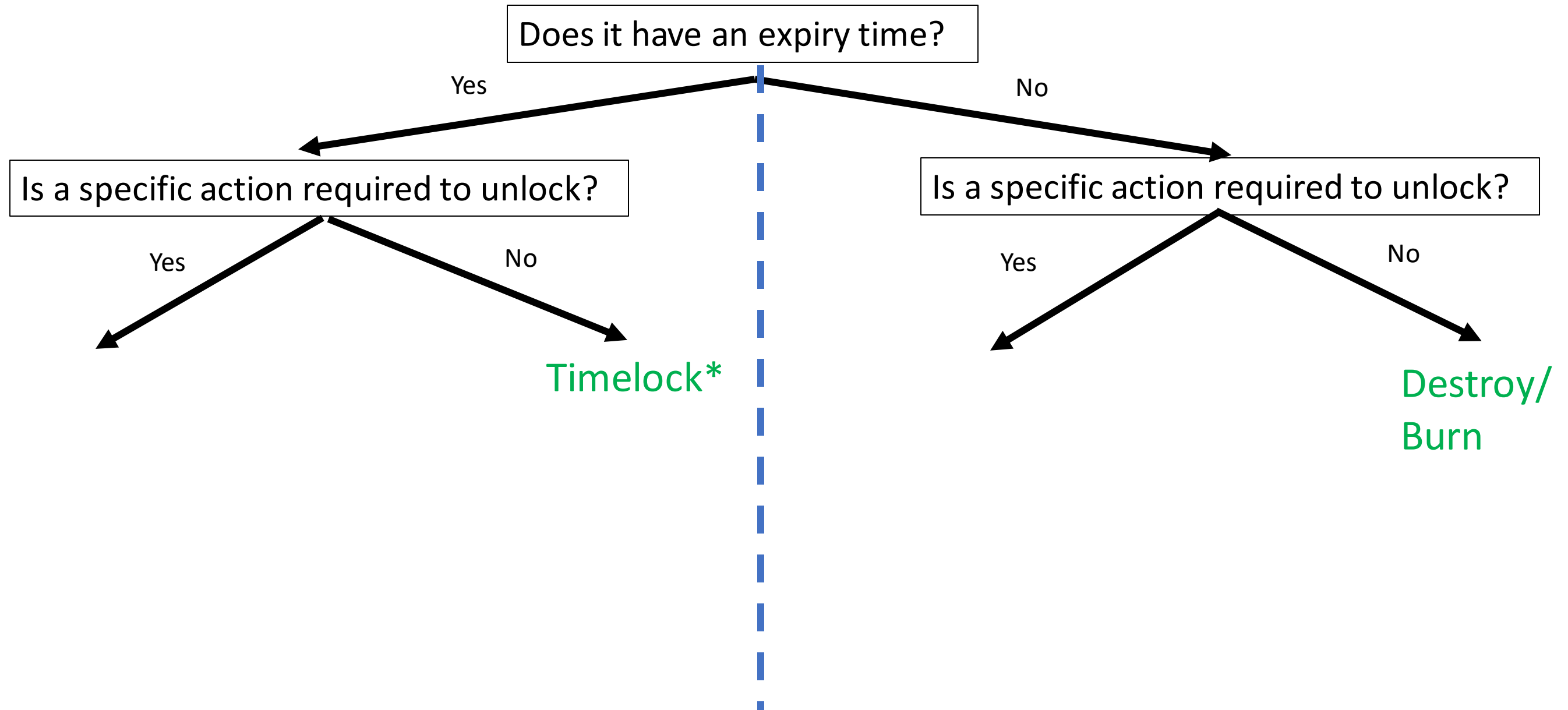
- Time
- Action
  - Repeated Action?
- Permission

# High Level (Categories)

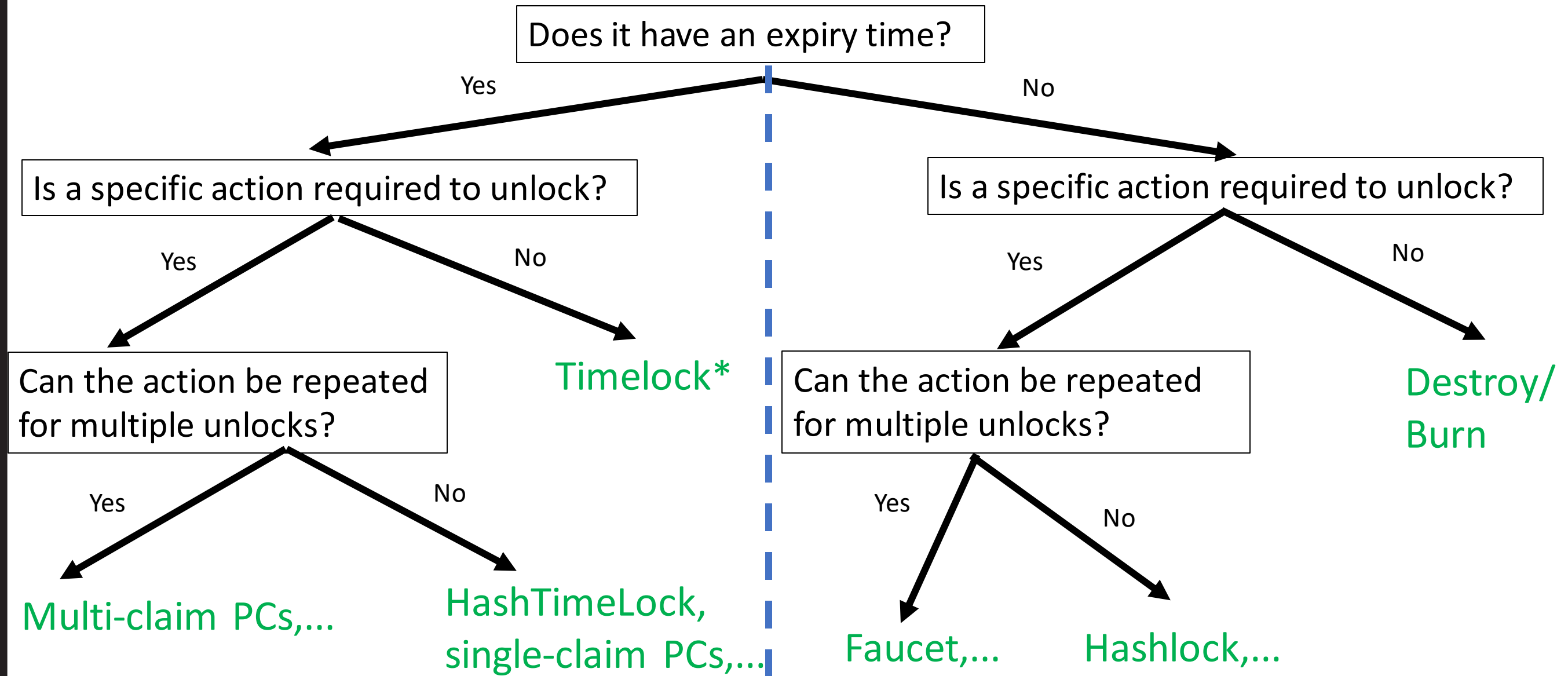




# High Level (Categories)



# High Level (Categories)



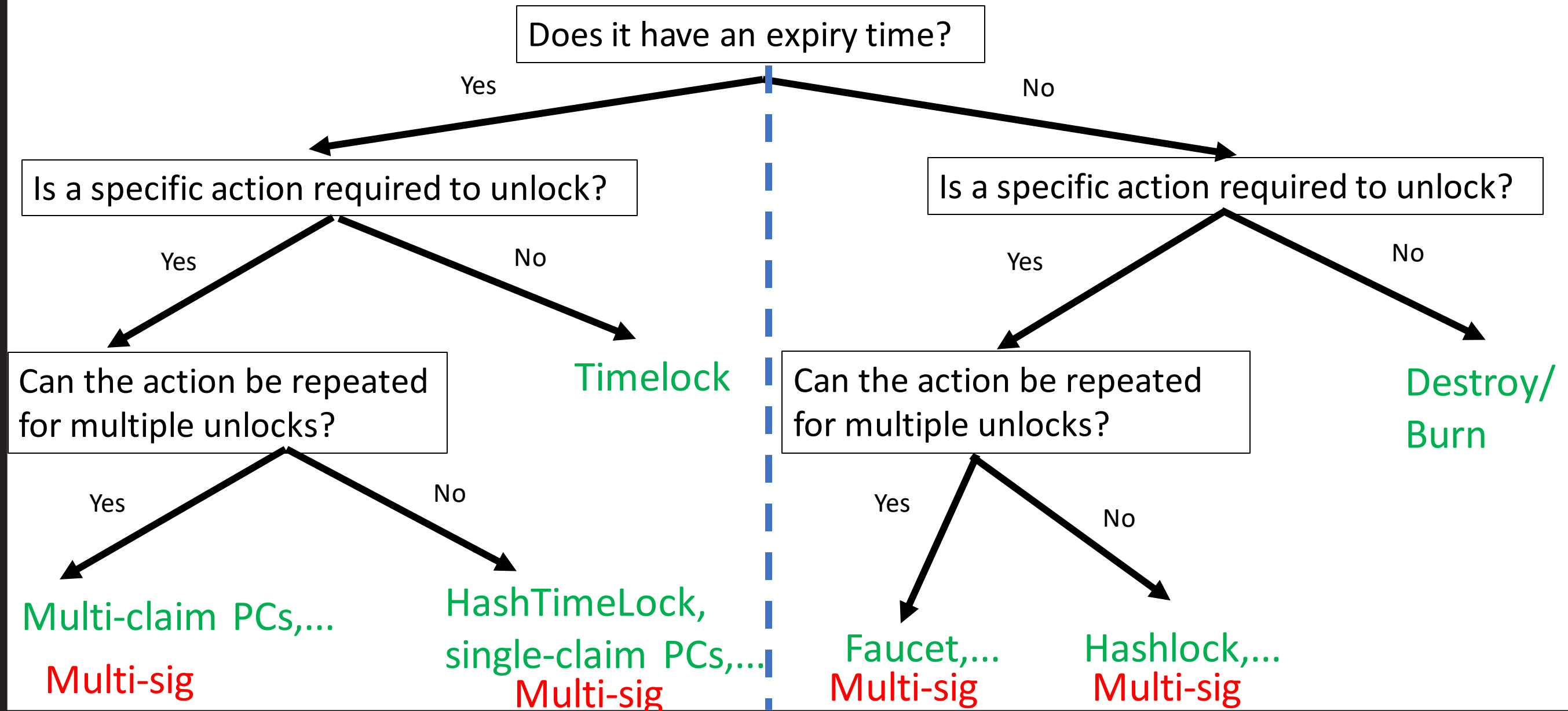
# High Level (Categories)

## Defined by:

- Time
- Action
  - Repeated action?
- Permission

To understand the type of escrow we are actually dealing with we need to consider all 4 sections...

# High Level (Categories)



# High Level (Categories)

## **Defined by:**

- Time
- Action
  - Repeated action?
- Permission
  - UserId(s)
    - Individual or multi-sig calls?
  - DLT state pre-requisites (e.g. user role, previous action requirement,...)

# High Level (Categories)

We also need to  
consider how escrows  
are topped up....

# High Level (Accounts + UTXO top ups)

## Accounts:

- Know escrow address
- *(Possibly)* know smart contract function to call
- *(Possibly)* requires permission to call function

## Result:

- Balance of address state changed
- Escrow remains at same state location

## UTXOs:

- Know escrow UTXO
- *(Possibly)* know UTXO smart contract function to call
- **Definitely** requires permission to spend UTXO

## Result:

- New UTXO generated with a greater balance
- Escrow changes state location

# Escrow Interface

**Id** *(separate to tx Id)*  
**Location** *(which DLT, which network...)*  
**Type** *(defines action required or not: e.g. hashtimelock, multi-sig,...)*  
**Timelocked** *(true/false)*  
**ExpiryTime** *(if timelocked – when will it currently expire?)*  
**MultipleClaimsAllowed** *(true/false)*  
**MultipleCancelsAllowed** *(true/false)*  
**Permissions** *(a list of addresses, and any another additional requisites)*  
**ActionLockSpecificParams** *(current params required for unlock e.g. hashlock, PC nonce,...)*  
...

**\*\*Its these params  
that need to go into  
our crash recover  
mechanism???**



# Escrow Interface

<b>Id</b>	<i>(separate to tx Id)</i>	<b>**Its these params that need to go into our crash recover mechanism???</b>
<b>Location</b>	<i>(which DLT, which network...)</i>	
<b>Type</b>	<i>(<u>defines action required or not</u>: e.g. hashtimelock, multi-sig,...)</i>	
<b>Timelocked</b>	<i>(true/false)</i>	
<b>ExpiryTime</b>	<i>(if timelocked – when will it currently expire?)</i>	
<b>MultipleClaimsAllowed</b>	<i>(true/false)</i>	
<b>MultipleCancelsAllowed</b>	<i>(true/false)</i>	
<b>Permissions</b>	<i>(a list of addresses, and any another additional requisites)</i>	
<b>ActionLockSpecificParams</b>	<i>(current params required for unlock e.g. hashlock, PC nonce,...)</i>	
<b>Origin[]</b>	<i>(where has the escrow funds from? - possibly a growing list)</i>	
<b>Destination[]</b>	<i>(where will the escrowed funds go in the future? - can be empty if unknown yet)</i>	
<b>SubsequentCalls = ...</b>	<i>(details escrow actions)</i>	
<b>History = ...</b>	<i>(details escrow history)</i>	

# Escrow Interface

**\*\*Its these params  
that need to go into  
our crash recover  
mechanism???**

**SubsequentCalls = {**

- UnlockClaim: {
    - ResourceType: {smartContract,UTXO, WorkFlow, API,...}
    - ResourceId/Uri: e.g. smartContractId, UTXOId, WorkFlowId, APIId,...
    - ResourceFunction: e.g. smartContractFunction, WorkFlowFunction, APIEndPoint,...
    - ResourceFunctionParameters: e.g. key, value, type}
  - UnlockCancel: {
    - ...}
  - LockTopup/Fund: {
    - ...}
- }
- ...

# Escrow Interface

**\*\*Its these params  
that need to go into  
our crash recover  
mechanism???**

## History:

- **TransactionId** *(transactionIds are the link to confirmation time)*
- **ActionCategory** *(LOCK, LOCK\_TOPUP, UNLOCKED\_CLAIM,...)*
- **Origin[]** *(did anyone fund the escrow on this transaction? If so – how much?)*
- **Destination[]** *(did anyone claim from the escrow on this transaction? If so – how much?)*
- **Balance** *(how much remaining in the escrow after this tx)*
- **Status** *(LOCKED, UNLOCKED\_OPEN, UNLOCKED\_CLOSED, DESTROYED,..)*
- **ActionLockSpecificParams** *(can change over time e.g. multi-sig threshold, PC nonce,...)*