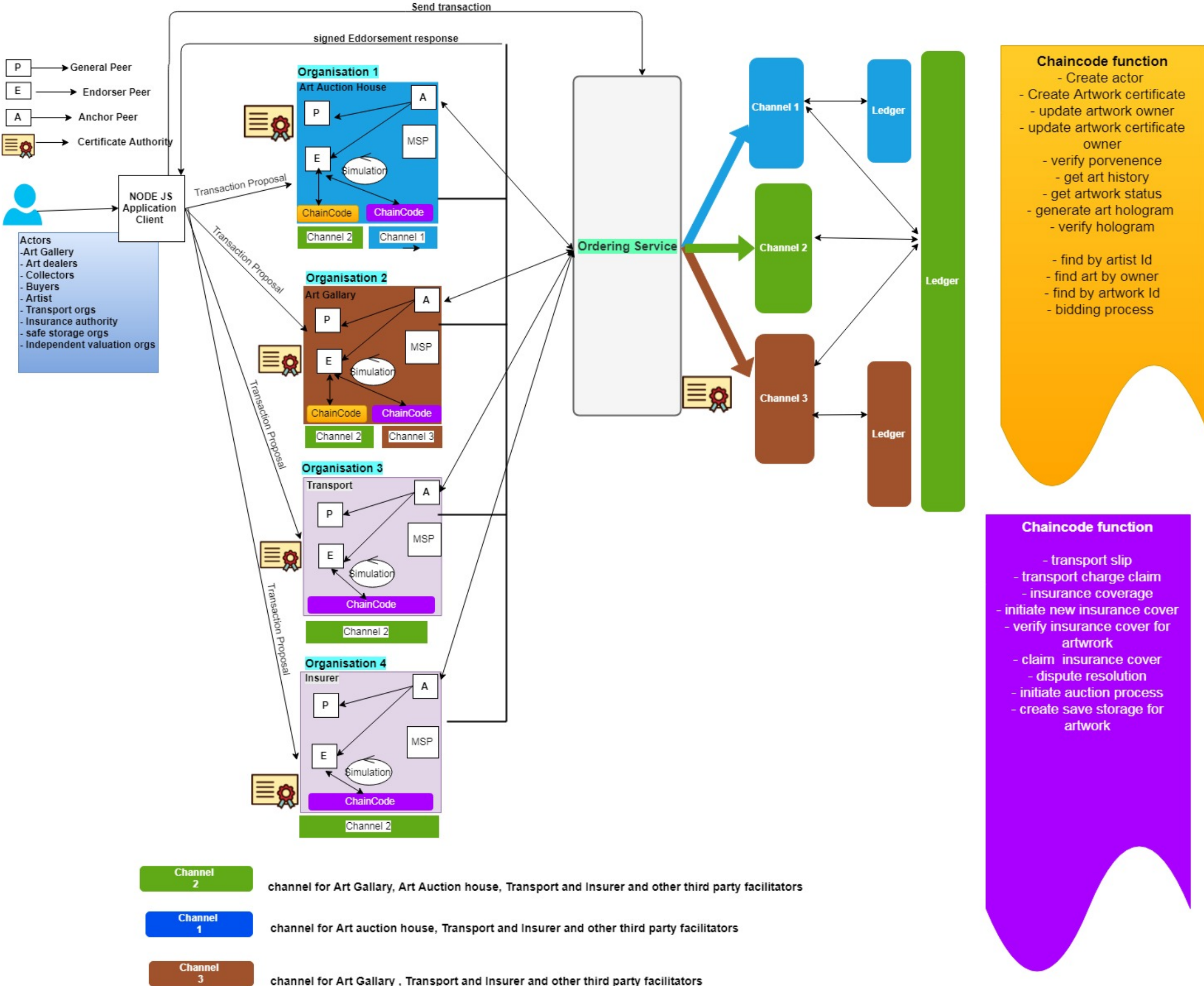Design a network to help the art market. Think about Peers, CA, Channels and Smart Contracts. Make a critical analysis.

```
In the above network diagram , Organisation 3 and Organisation 4 would have access to ALL the channels. This will
allow these two organisation to collaborate with other organisations (Org1 and Org2) in their respective
channels.
```

There are so many aspect to consider to propose this network. In this diagram, my main focus is to capture the high level market behavior that focuses on provenance, protection and authenticity of digital artwork, digital representation of physical art works and art auction.

I have considered 4 organisations, two chain codes and three channels.
Each organisations have their own Certificate authority and each peer roles and policies are defined inside MSP.
I have defined three channels.
- Channel 1 is defined only for Auction house and facilitators.
- Channel 2 is defined for all the actors in this network. This is useful for the coordination and sync between auction house and galleries. Couple of use cases that would be facilitated by this channels are
  - Gallery buy the art work from Auction house
  - Gallery insured their art works and transport their art works for auction to the auction house
- Channel 3 is defined only for gallary and facilitators.

Below are high level details of the organisation.
Organisation 1 : Art auction house :
- They facilitates in art auction process. Their scope of operations includes :
  - Art provenance - rely on trusted organisation to ensure physical art work provenance, authenticity and past owner details
  - Arrange for insured and safe transportation - bring art works to their ware house
  - Art valuation - independent art work evaluation and valuation
  - Facilitate end-end art auction process.

Organisation 2 : Art Gallary :
- They promote their own set of artist and their art works
- They do buy artworks based on the prevalent customer choice and social taste
- Art provenance - rely on trusted organisation to ensure physical art work provenance, authenticity and past owner details
- Arrange for insured and safe transportation - bring art works to their ware house
- Art valuation - independent art work evaluation and valuation

Organisation 3 : Transport :
- They facilitate in artworks transportation.

Organisation 4 : Insurer :
- They provides different kind of insurance to the art works. Couple of insurances are safe transport insurance, safe storage insurance ..

Chain code 1 (Yellow) : All of its functionalities are tailored to create, maintain and authenticate the artworks and actors in this network.   It provides below functionalities
- Create actor - Each participant in this network will have an unique identity. This network supports below actors
  - Art Gallery representative
  - Art dealers
  - Art auction house representative
  - Collector
  - independent Buyers
  - Artist
  - Transport organisation representative
  - Insurance authority representative
  - Independent Valuation organisation representative
  - Storage organisation representative
- Create artwork certificate - Based on unique parameters, create the artwork certificate.
- Generate art hologram - This will help to authenticate the physical art work with its corresponding certificate.
- Update artwork Owner
- Update artwork certificate owner
- Verify provenance
- verify certificate
- verify hologram
- Get art work history
- get art work current status
- find by artist ID
- find by art work Id

Chaincode 2 (blue/pink) : All of its functionalities are designed to supports facilitators in the art market and allow them to actively participate in this network.
Below are list of identified facilitators
- Transport organisation representative
- Insurance authority representative
- Independent Valuation organisation representative
- Storage organisation representative

Below are supported functionalities
- Transport slip - Contractual receipt between transport Org and auction house, gallary or artist
- transport charge claim - Once the transport is successfully done, transport org can claim it. This will be bound through chaincode as a smart contract
- Insurance coverage - Provide insurance coverage for the art work
- Insurance claim - Based on certain parameters, other party can claim it. These conditions are bound through smart contract code in chain code.
- Verify insurance cover for art work
- Dispute resolution - chain code functionalities
- Create save storage for art work