

# MMOX X.509 issues

Massively Multiparty online X (Games and applications)

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# Basic problem

- The Services engaged in creating an immersive space share content and control across trust boundaries
- Adding content (including the user's own state) to a immersive space requires trusting that space with your content
  - Merely entering a space entrusts the space, unlike fetching data from a web page
  - Placing content increasing the complexity
  - Activities mediated by the space add to the complexity

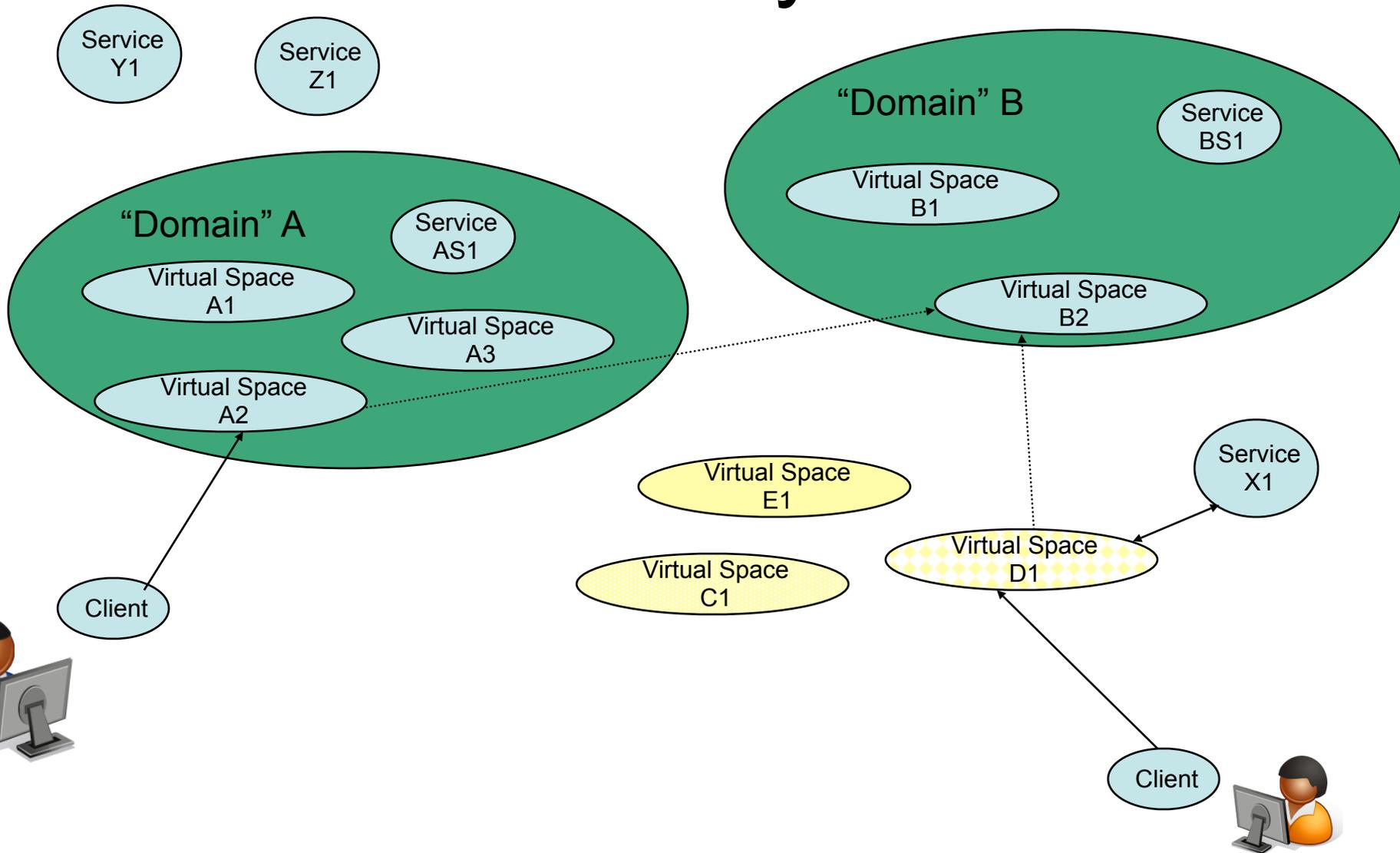
# Web of services

- Breaking out of current “walled gardens” means
  - Clusters of services with local trust models
  - Users moving between local clusters and remote clusters
- Factoring the problem into services means
  - We will need to be able to trust “foreign” services
  - We will be vulnerable to all the “usual” spoofing/fishing/replay attacks
- We want to enable enough security to permit clients, virtual spaces and services to chose to build as secured, or open solution as they desire and separate policy from mechanism

# Example

- Users starting in shared spaces, using items from those spaces local services, move to a third space, to discuss something
  - They each want their own “assets” stored in services non-local to the virtual space
  - The virtual spaces need sufficient authentication of the various services to provide the desired service

# Visually



# Basic approaches

- Use X.509 as a basic PKI tool to share certificates
- Actually using PKI in the large, across organizational boundaries, is a known hard problem – rarely done, and even less often done well
- We want to use X.509 as a building block to be able to tie specific services in large deployments to their “domain” membership
- Limit the potential explosion of relationships