FEDERATED LEARNING FOR SMART COMMUNITY COLLABORATION: LEVERAGING DECENTRALIZED SELECTIVE SHARING

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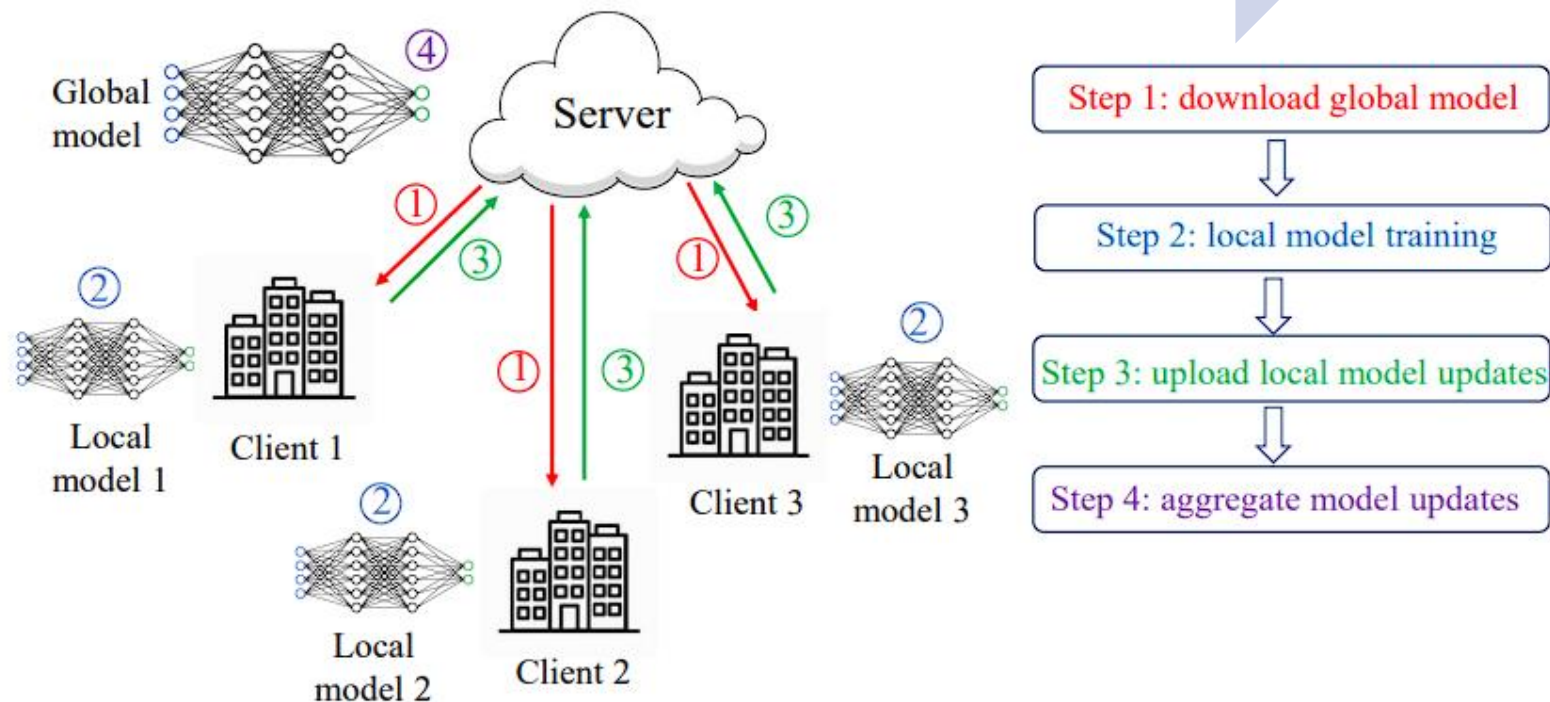IPPARIS HPDA/PDS MASTER PROJECTS
2023-2024

THE BALANCE OF COLLABORATION & PRIVACY IN THE DIGITAL AGE

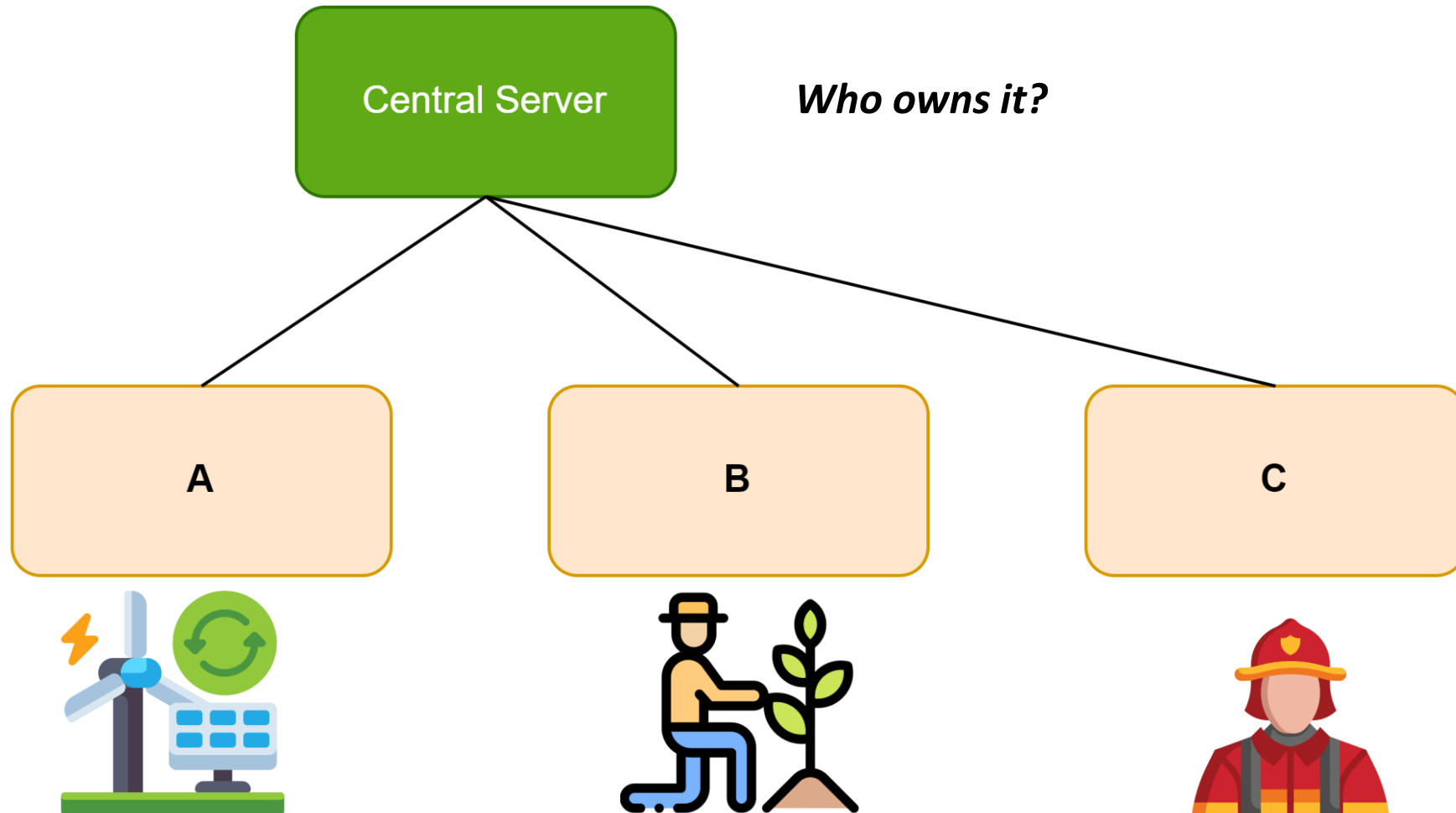**The Vision**: A network of smart communities, rich in insights, on the brink of collaborative machine learning.

The Challenge: How can these communities collaborate without sacrificing autonomy and data privacy?

**The Traditional Flaw:** Centralized data aggregation risks privacy and increases data transfer overheads.

The Promise of Federated Learning: Local dataset training with shared model updates, prioritizing privacy.

Global model

Server

Local model 1   Client 1

Local model 2   Client 2

Client 3   Local model 3

Step 1: download global model

Step 2: local model training

Step 3: upload local model updates

Step 4: aggregate model updates

Project Proposal: Federated Learning for Smart Community Collaboration: Leveraging Decentralized Selective Sharing

PIONEERING INCLUSIVE & DECENTRALIZED COLLABORATION

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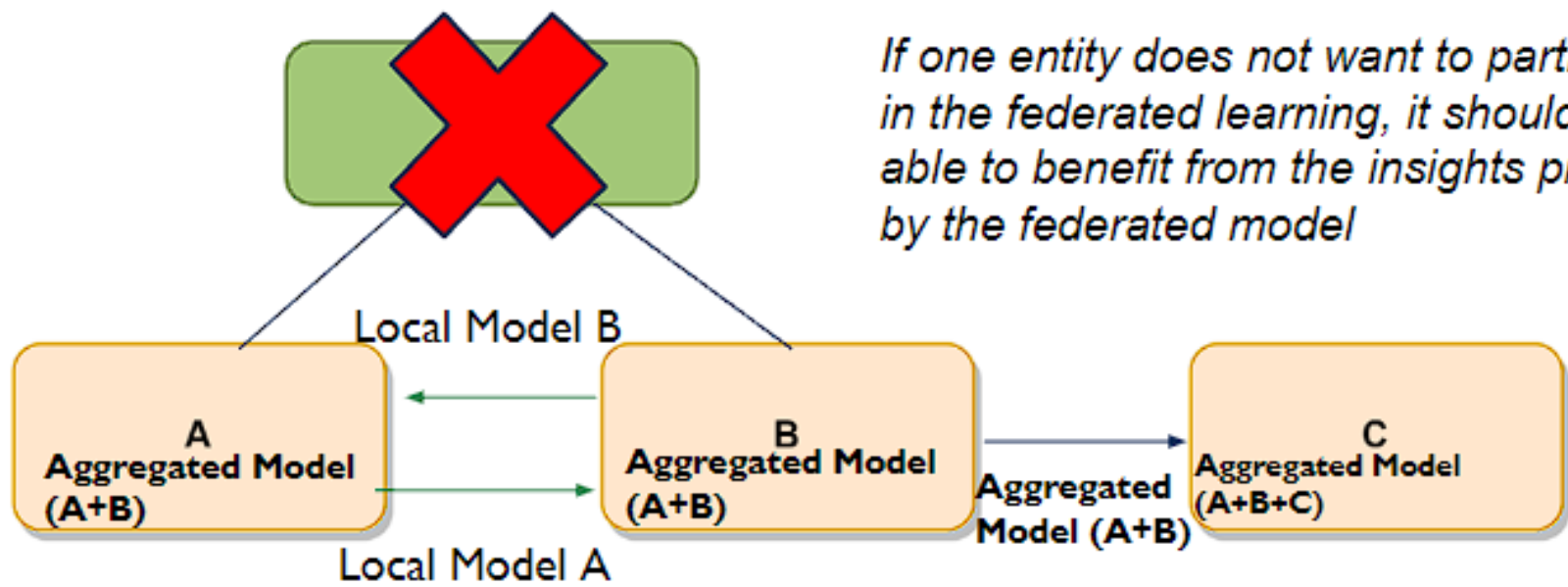
SHAPING THE FUTURE OF FEDERATED COLLABORATION

Selective Participation

- Design a system for optional community involvement.
- Ensure non-participants still benefit from collaboration.
- Dynamic Integration
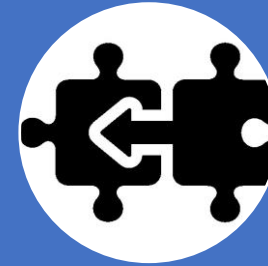
Seamless integration of insights for all communities.

- Eliminate the need for manual interventions.
- Data Privacy & Custom Rulesets

Robust and transparent selective sharing mechanism.

- Minimal data sharing to prioritize privacy.
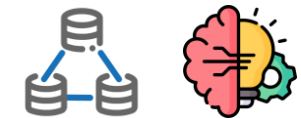- Empower communities to set their data and model rules.

Research Challenges for system design

English proficiency.
Familiarity with distributed systems, ML models and algorithms
A good attitude!

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