

ICE-AR Application Progress

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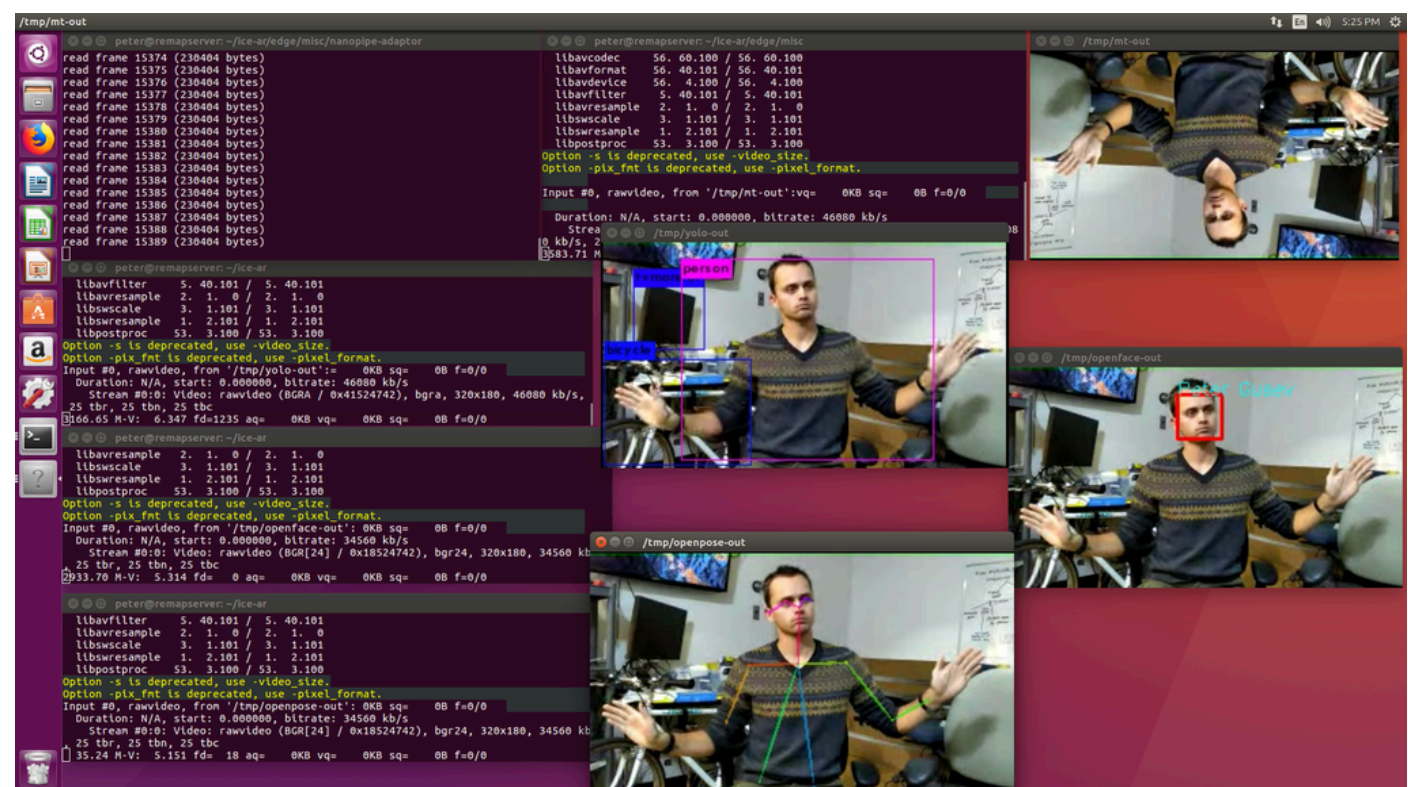
Mobile Terminal (Unity/AR Core on Android)



Phone UI screen capture

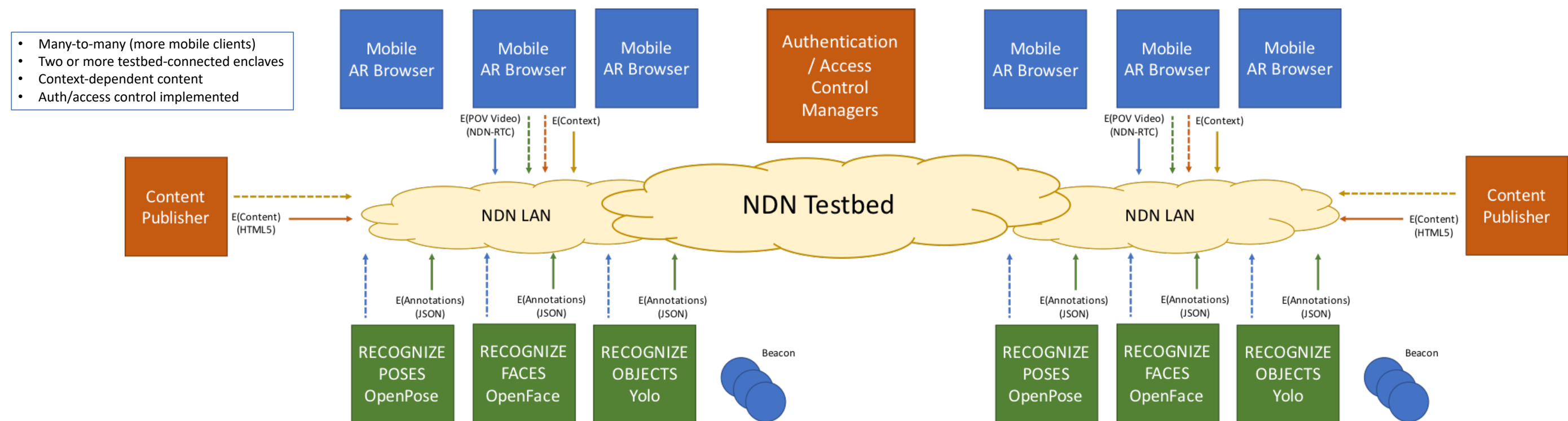
- Augmented reality cognitive / memory aid application prototype.
- Publish POV video via native NDN-RTC, consume context from the edge.
- New “Common Name Library” high-level API for the C# Unity application.
- Request “best match” for current scene from remote repo, fetch associated “memory” frames and display them. (Context-content loop.)
- Associate context with location via AR SDK odometry.
- Also consume and store local IoT data over NDN/Bluetooth.

Edge Node (Dockerized C++)

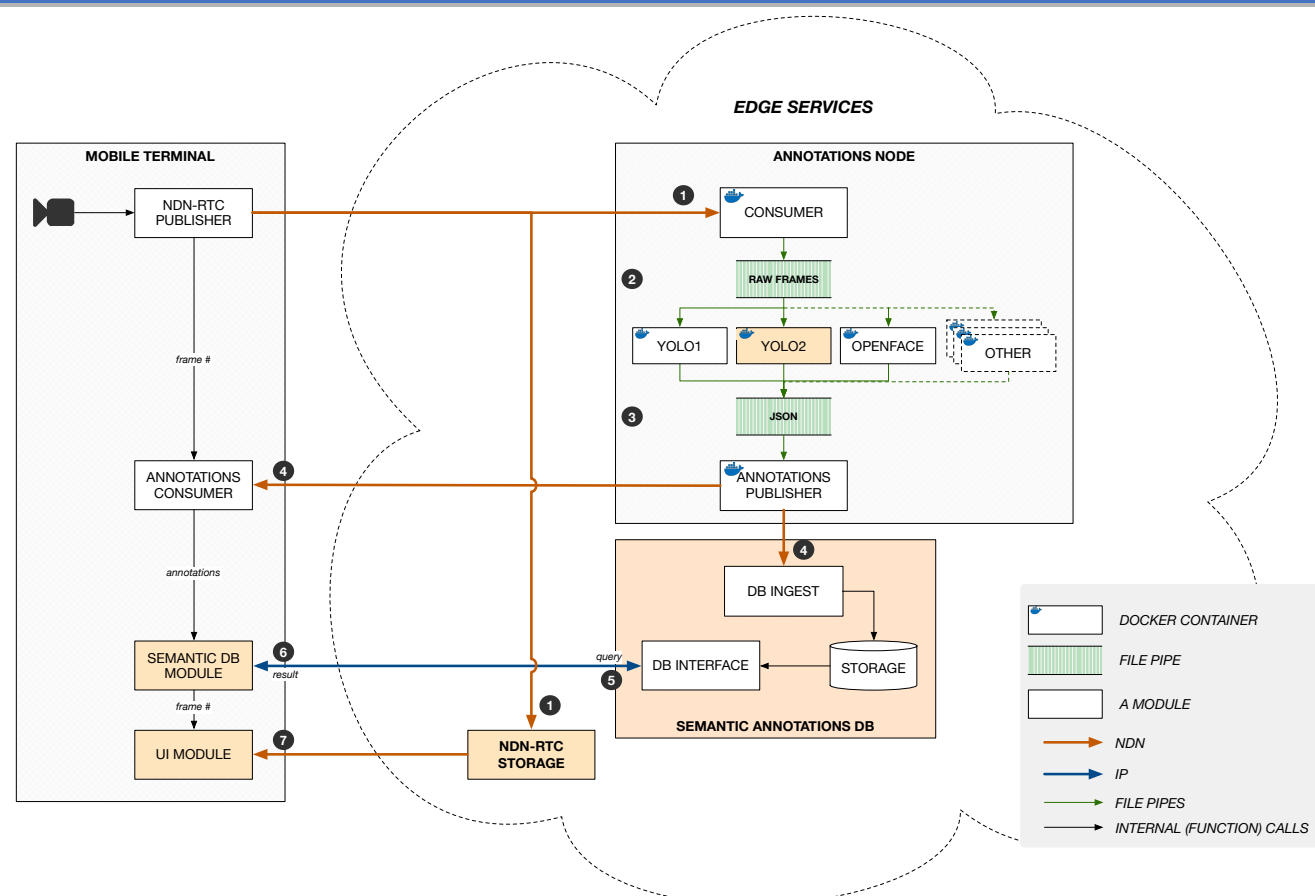


- Consume NDN-RTC video feeds from mobiles.
- One-to-many fanout to services handled intrinsically by NDN.
- Process “in realtime” using accelerated ML packages.
- Publish resulting semantic scene descriptions (context) as NDN data.
- Store context in a local repository.
- Use of (updated) NDN Common Client Libraries.

Prototype Deployment Plan for 2018



Current system



Next Steps: Integrate Other Research Results

- Self-learning of available edge services => mobility between enclaves.
- Schematized trust => publisher mobility, terminal authorization.
- Acceleration-as-a service => on-demand availability via NDN.
- Further performance optimizations based on cross-layer research.

References and Codebase

1. Burke, J., 2017, July. Browsing an Augmented Reality with Named Data Networking. In Computer Communication and Networks (ICCCN), 2017 26th International Conference on (pp. 1-9).
2. Shang, W., Wang, Z., Afanasyev, A., Burke, J. and Zhang, L., 2017, April. Breaking out of the cloud: local trust management and rendezvous in named data networking of things. In Internet-of-Things Design and Implementation (IoTDI), 2017 IEEE/ACM Second International Conference on (pp. 3-14).

ICE-AR prototype: <https://github.com/remap/ice-ar>
NDN-RTC: <https://github.com/remap/ndnrtc>
BTLE Beacons: <https://tinyurl.com/ywcraya3>
Common Client Lib: <https://github.com/named-data/ndn-dot-net> (C#)
Common Name Lib: <https://github.com/named-data/PyCNL> (Python)