Unity + Photon

1. MultiPlayer Game

   – Game Server

2. 포톤 서버(Photon Server)

- Multiplayer Game mean ?

  – Any game that allows more than one player is considered multiplayer. A multiplayer game is most often played over the Internet, however, could be also a game played over a LAN (local area network) or dial-up connection. Split screen multiplayer gaming is popular with consoles, but usually only allows between two and four players.

  – Most multiplayer games connect players together via a multiplayer server, which lists all available online games and allow players to connect to a game or create a new game for others to join. Although main game servers are controlled by the developers, many games allow users to create and control private servers.

- Popular Unity Networking Frameworks
    - High-level Frameworks
        - P2P Style
            - Photon Unity Networking (PUN/PUN2)
        - Self-hosted / Dedicated Server
            - MLAPI
            - Mirror
            - Photon Bolt
            - Forge Networking Remastered
            - Photon Fusion
    - Low-level Framework
        - DarkRift2

1. 포톤 서버(Photon Server)

2. 아마존 게임 리프트 (Amazon GameLift)

3. 플레이팹 (PlayFab)

4. 프라우드넷

5. NHN Toast 게임 클라우드

6. 브레인 클라우드

Photon Server

- 포톤 서버
  - 포톤 엔진은 클라우드 서버를 관리할 수 있으며, 실시간 네트워크를 원활하게 사용이 가능
  - 온라인 매칭 기능이 있는 게임을 제작할 때 유용
    - 실시간, 턴제, MMO
    - 멀티플레이 툴 제공
    - 크로스 플랫폼
    - 아키텍쳐
    - 커스텀 서버 로직
    - 가격

Amazon GameLift

- 아마존 게임 리프트
  - 멀티플레이용 클라우드 서버를 제공하는 서버 호스팅 서비스
  - 처음부터 끝까지 관리해주기를 원하는 사용자, 필요한 기능 몇 개만 사용하려는 사용자들에게 추천
  - 필요한 기능만 선택할 수 있어, 서버 비용 절감 가능
    - 지역, 나라 제한이 없음
    - 안정적이고 안전
    - 오토 스케일링
    - 디도스 공격으로부터 보호
    - 실시간 모니터링 – 현재 서버 상태를 관리
    - 모든 게임 엔진 호환 및 크로스 플랫폼ㅇ르 지원
    - 사용한 기능만 지불
    - 사용자 매칭 기능을 설정할 수 있다
    - 대규모 매치를 지원
    - 일부의 기능을 무료로 사용할 수 있다

PlayFab

- 플레이팹
  - Microsoft에서 지원하는 서버 관리 서비스
  - 대규모 서버, 실시간 게임 플레이, 순위표와 결재 관리 서비스 등 다양한 기능들을 지원
    - 네트워크 간의 ID와 데이터를 연동할 수 있다
    - 안전하고 빠른 서버
    - 빠르고 유용한 채팅 기능
    - 순위표 기능
    - 수익 창출을 할 수 있다
    - 가격

PROUDNET

- 프라우드넷
  - 게임 서버를 쉽게 제작하기 위해 만들어진 서버 엔진
  - 와이파이 존을 벗어나도 연결이 끊어지지 않고 계속해서 플레이할 수 있다
  - 로그인, 매치메이킹, 인앱 구매 등 제공되는 기능이 부족
  - 개인 무료 라이선스 제공
  - 실시간 대규모 RPG, FPS에 적합
    - 여러 국가에 원활한 서비스 환경을 제공
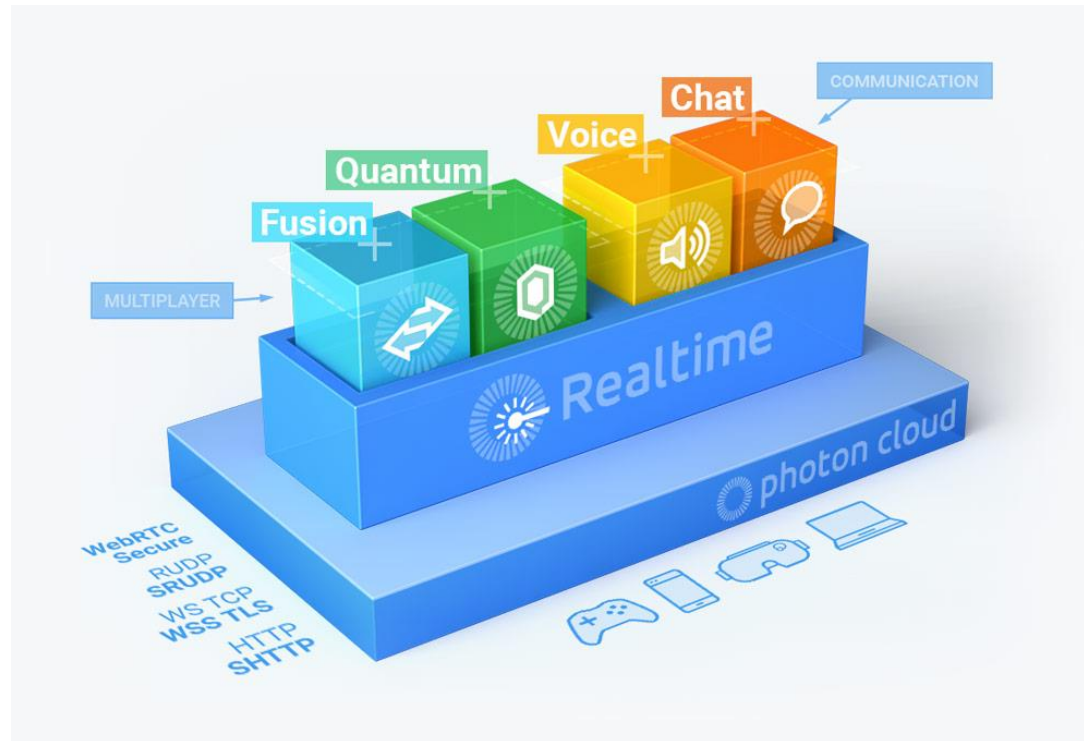   - 안정된 서버
    - 빠르게 문제를 해결할 수 있다
    - 가격

NHN Toast Game Cloud

- NHN Toast 게임 클라우드
  - 빠르게 게임을 개발하고 싶은 개발사, 게임 전문가의 컨설팅이 필요한 개발사, 게임 개발에만 집중하고 싶은 게임사, 글로벌 진출을 노리는 개발사에게 추천하는 서버 엔진
    - 로그인/인증
    - 결제/아이템
    - 지표/통계
    - 점검/알림
    - 게임 보안
    - 랭킹 제공
    - 가격

Photon

1. MultiPlayer Game

   – Game Server

2. 포톤 서버(Photon Server)

- Photon

- Fusion and Quantum are ESport grade multiplayer engines made for professional developers. They produce the highest performance no matter the gameplay or where you are on their planet.

- Photon Realtime

  - Photon Realtime is base layer for multiplayer games and higher-level network solutions. It solves problems like matchmaking and fast communication with a scalable approach. It is used by games and more specific multiplayer solutions PUN and Quantum.

  - The term Photon Realtime also wraps up comprehensive framework of APIs, software tools and services and defines how the clients and servers interact with one another.

  - These pages are primarily the manual for the client-side Realtime APIs, but will also provide overview of the structures that are involved.

- Photon vs Unity, Which is better ?
  - Both Unity and PUN have similar low-level APIs. But the architecture required for these libraries to use these APIs is the key differentiating factor between them.
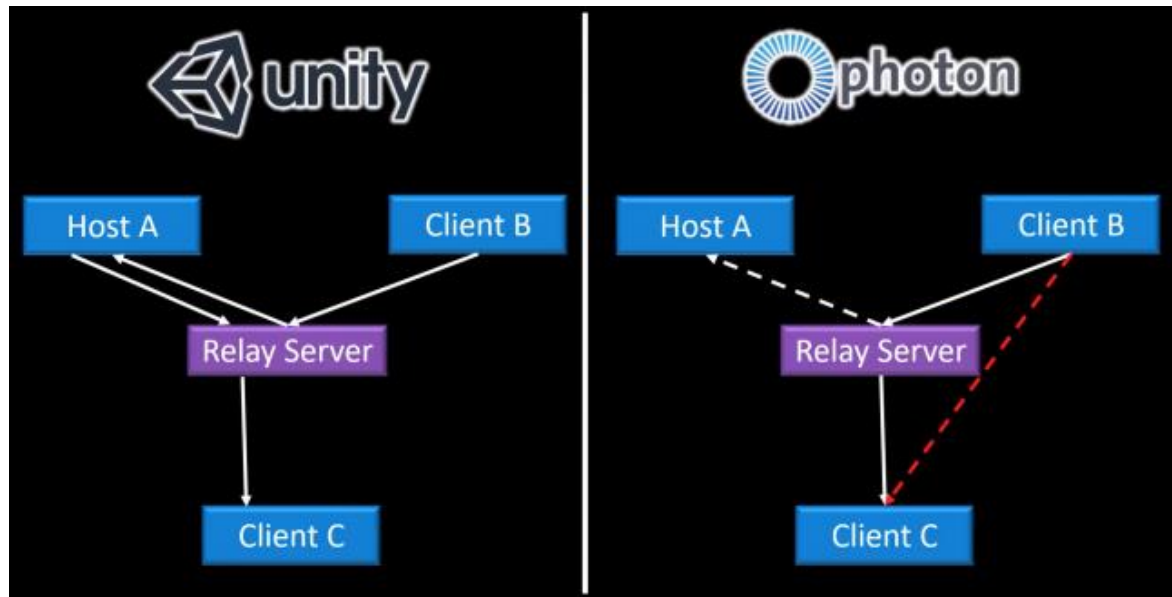

 - PUN is faster than Unity

- PUN vs Bolt 비교

	PUN/ PUN+	Bolt
CCU cost	PUN: 20 무료 CCU PUN+: $90 1회성 = 60개월 동안 CCU 100 무료	무료
호스팅 서비스	Photon Cloud, Photon Enterprise Cloud	Photon Squad
P2P	✘	✔
클라이언트/서버	✔	✘
Punchthrough	⊘ (not needed)	✔
Bit compression	✘	✔
Lag compensation	✘	✔
Platforms (WebGL 미포함)	대부분의 플랫폼	모든 메이저 플랫폼 XB1, PS4 ⊘
Authorative Server	✔ (Photon On-Premises)	✔
커스텀 인증	✔	⚠ (not built-in)
Webhooks 과 WebRPC	✔	✘
Server Plugins	✔ (Enterprise Cloud only)	✘
Steam integration	✘	⊘
마스터 서버	✔	✔ (Zeus)
자동화 메카님 네트워킹	⚠	✔
Playmaker 통합	✔	⚠ (partial)
Unity Networking 호환	✔ (Old Unity Networking only)	✘
Unity 4 FREE: Web, Standalone	✔	✘
Unity 4 FREE: iOS, Android	⚠ (PUN+ required)	✘
Unity 5	✔	✔
호스트 마이그레이션	⚠ (not built-in)	✘
Matchmaking (Room 과 Lobby 지원)	✔	⊘
Player 서비스 품질(QoS)	✔	✔

Final View
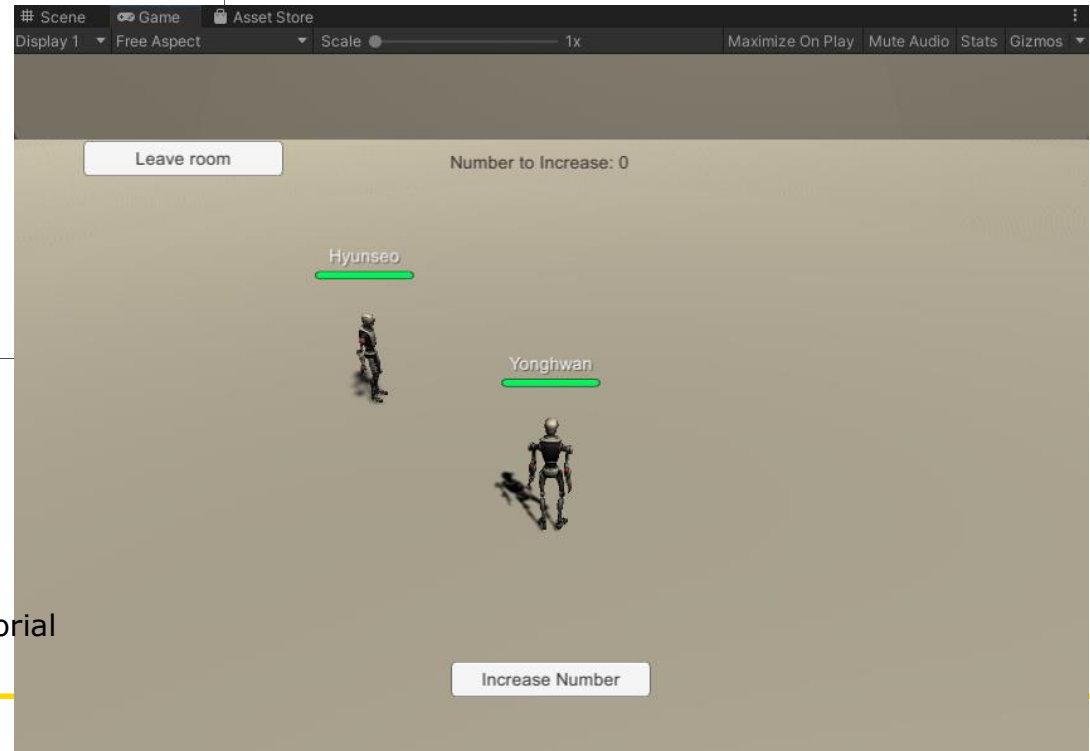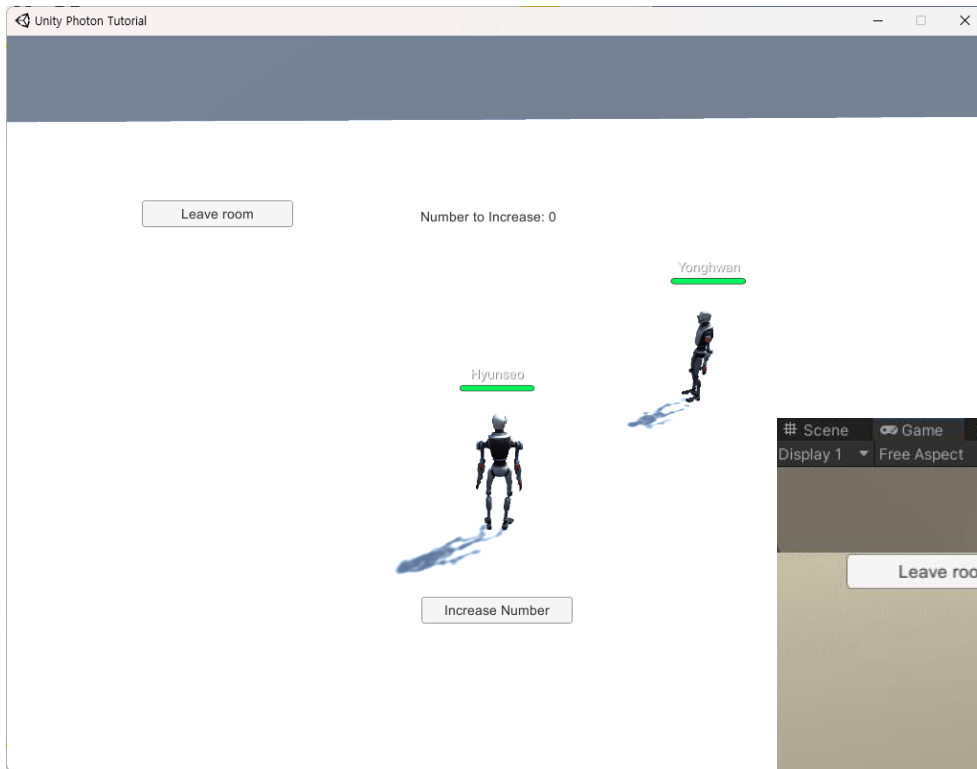
- Photon Bolt

  - Photon Cloud Service
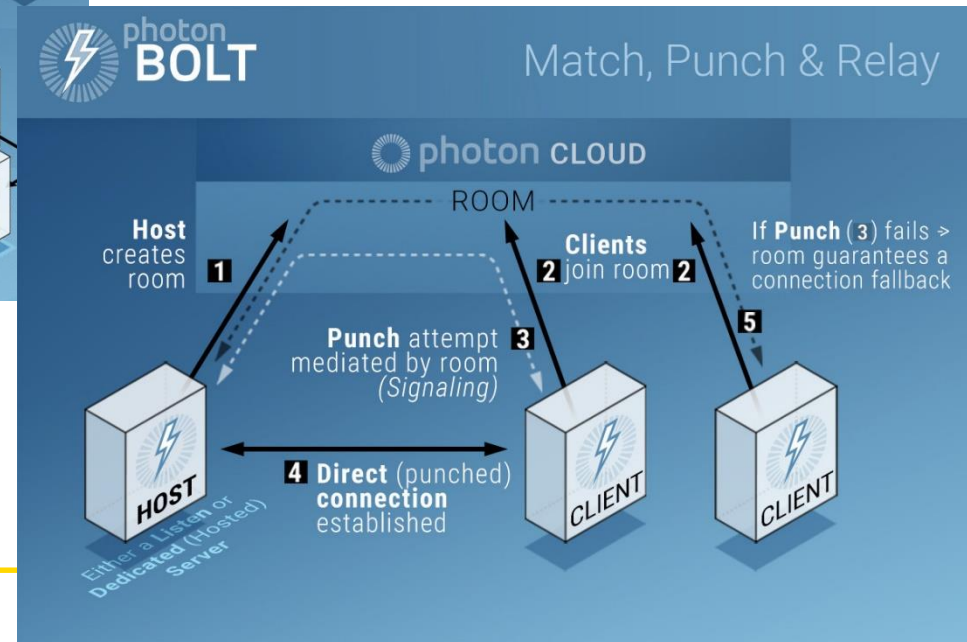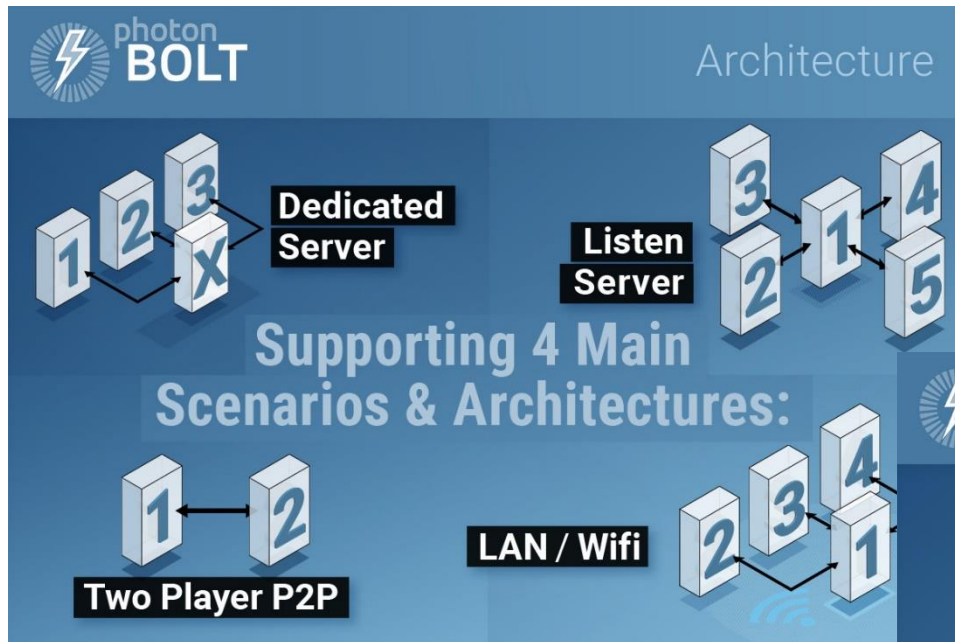
- Multiplayer Game
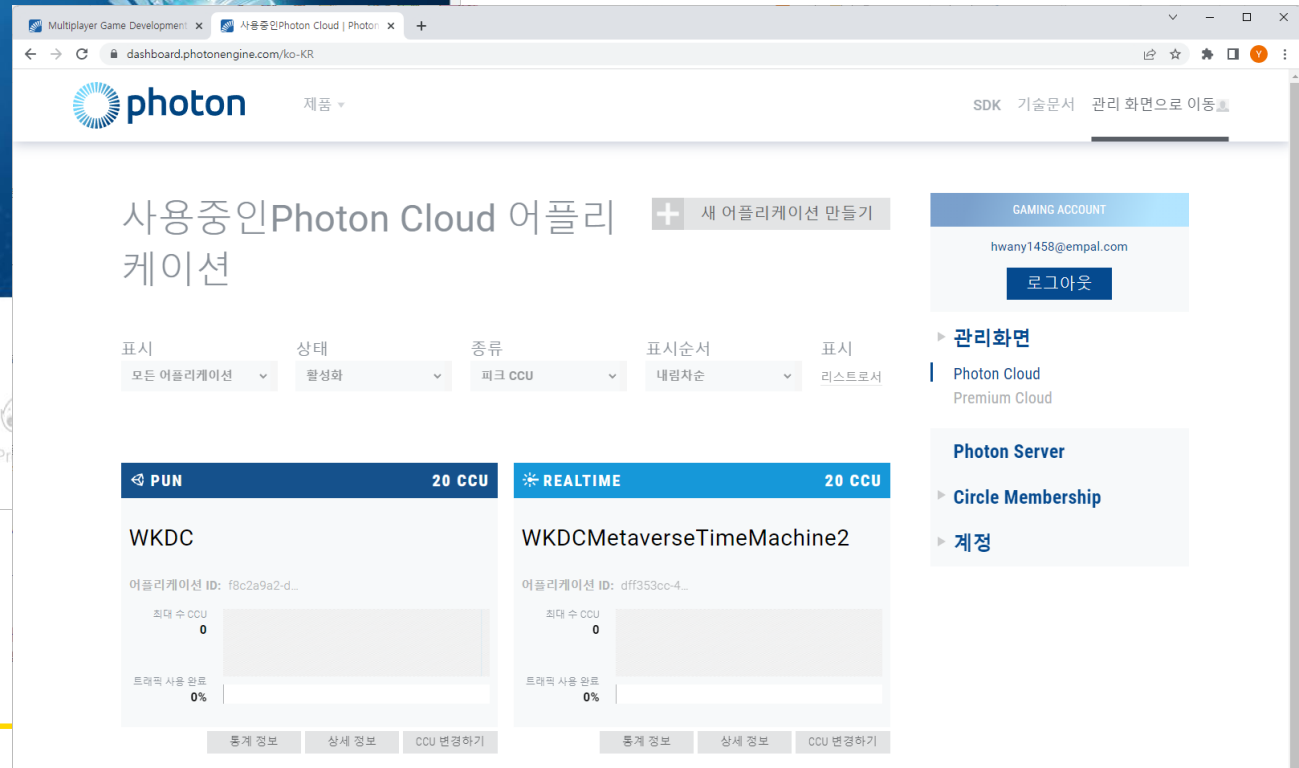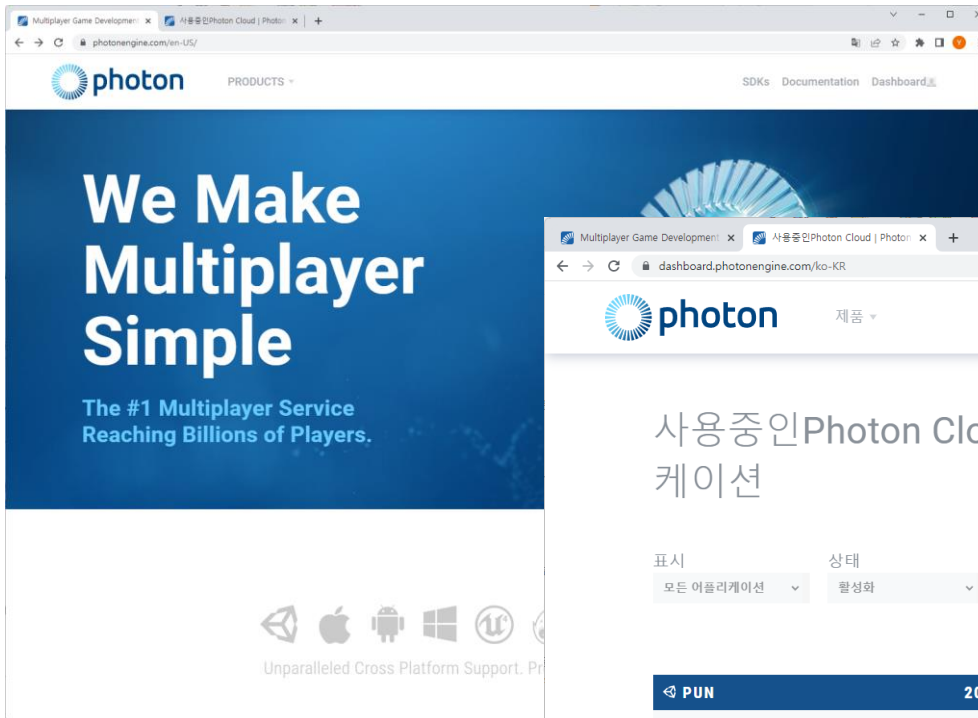 - Photon Cloud Service
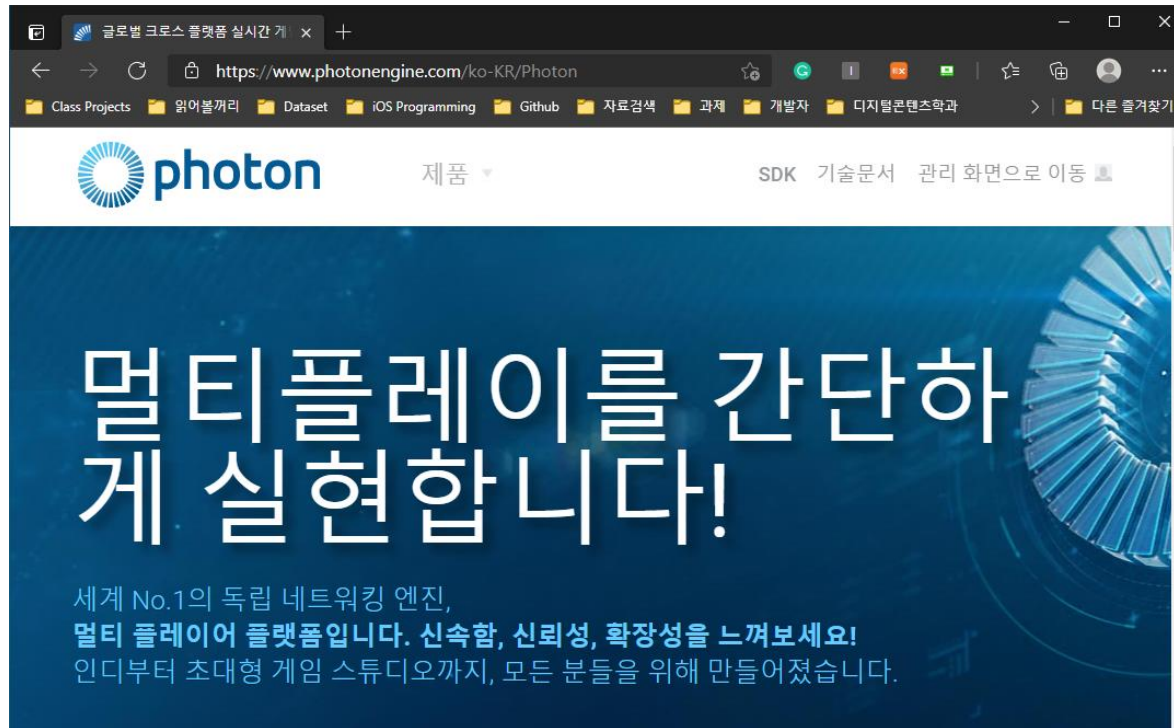
- How to add PUN to Unity

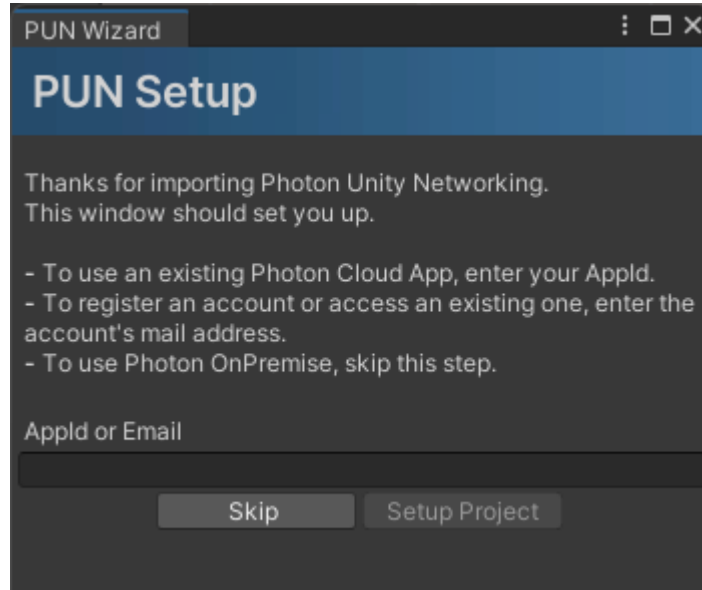– 회원 가입 및 AppID 부여

  • 신규 가입 [https://dashboard.photonengine.com/ko-KR/account/SignUp]

– Create New Unity Project

– Import Photon Unity Networking (PUN)2 Package
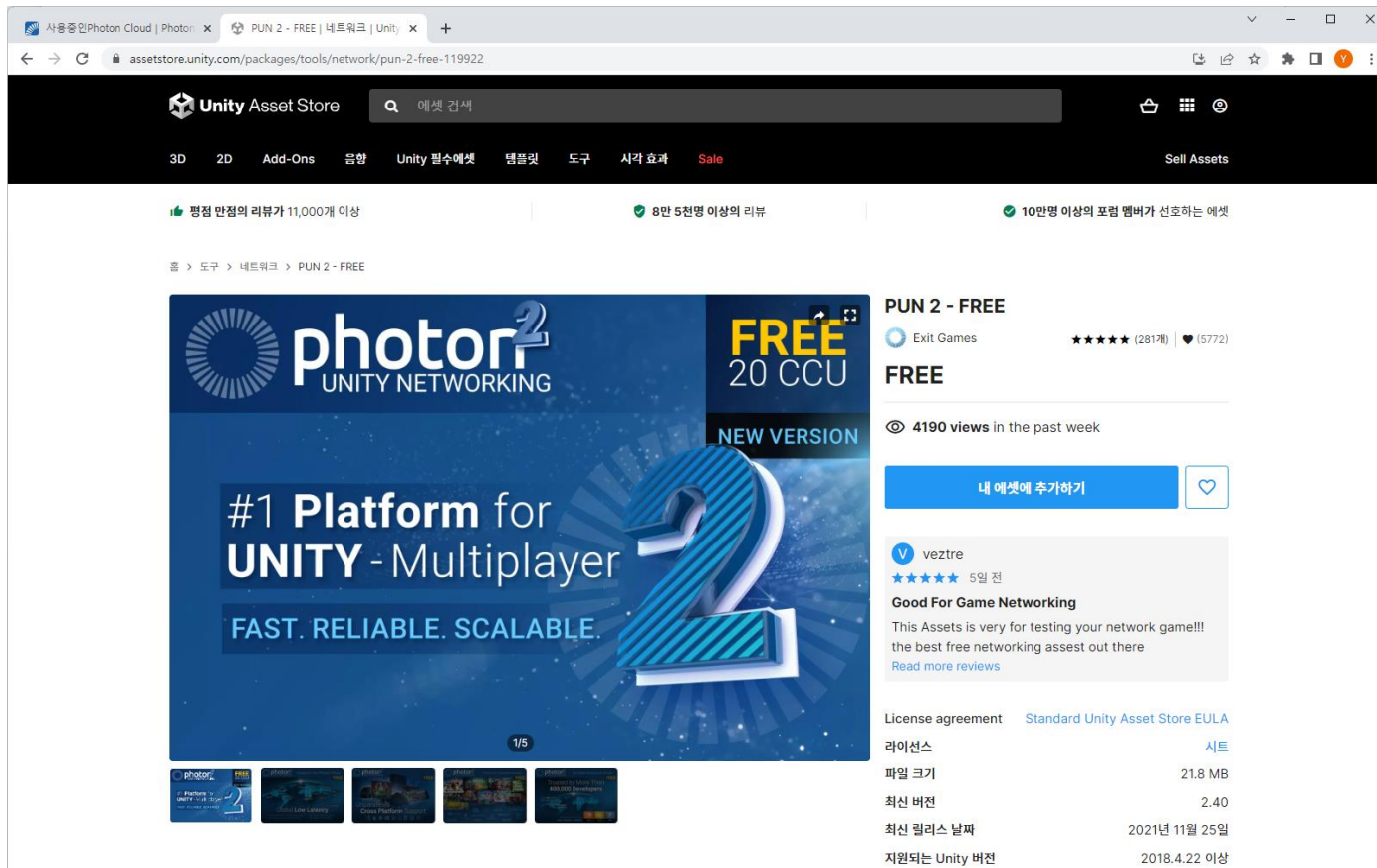
- PUN Setup

– 실습에서는 wonkwangdc@gmail.com (wkdc2017)로 로그인

– PUN2 Free 패키지를 임포트

– AppID = 82767307-1b26-4f42-a0c3-7d663f3ff5e5

Photon Cloud

- Basically, it's a bunch of machines with the Photon Server running on them. This "cloud" of servers is maintained by Exit Games and offered as hassle-free service for your multiplayer games. Servers are added on demand, so any number of players can be dealt with.

- Even though Photon Cloud is not completely free, the costs are low, especially compared to regular hosting.

- Photon Unity Networking will handle the Photon Cloud for you but this is what's going on internally in a nutshell:

- Everyone connects to a "Name Server" first. It checks which app (with the AppId) and which region the client wants to use. Then it forwards the client to a Master Server.

- The Master Server is the hub for a bunch of regional servers. It knows all rooms for this region. Any time a room (match / game) gets created or joined, the client gets forwarded to one of the other machines, called "Game Server".

- The setup in PUN is ridiculously simple and you don't have to care about hosting costs, performance or maintenance.

- Development
  - Each section of this study covers a specific part of the project development stage. The level of assumption on scripting and Photo knowledge increases gradually.
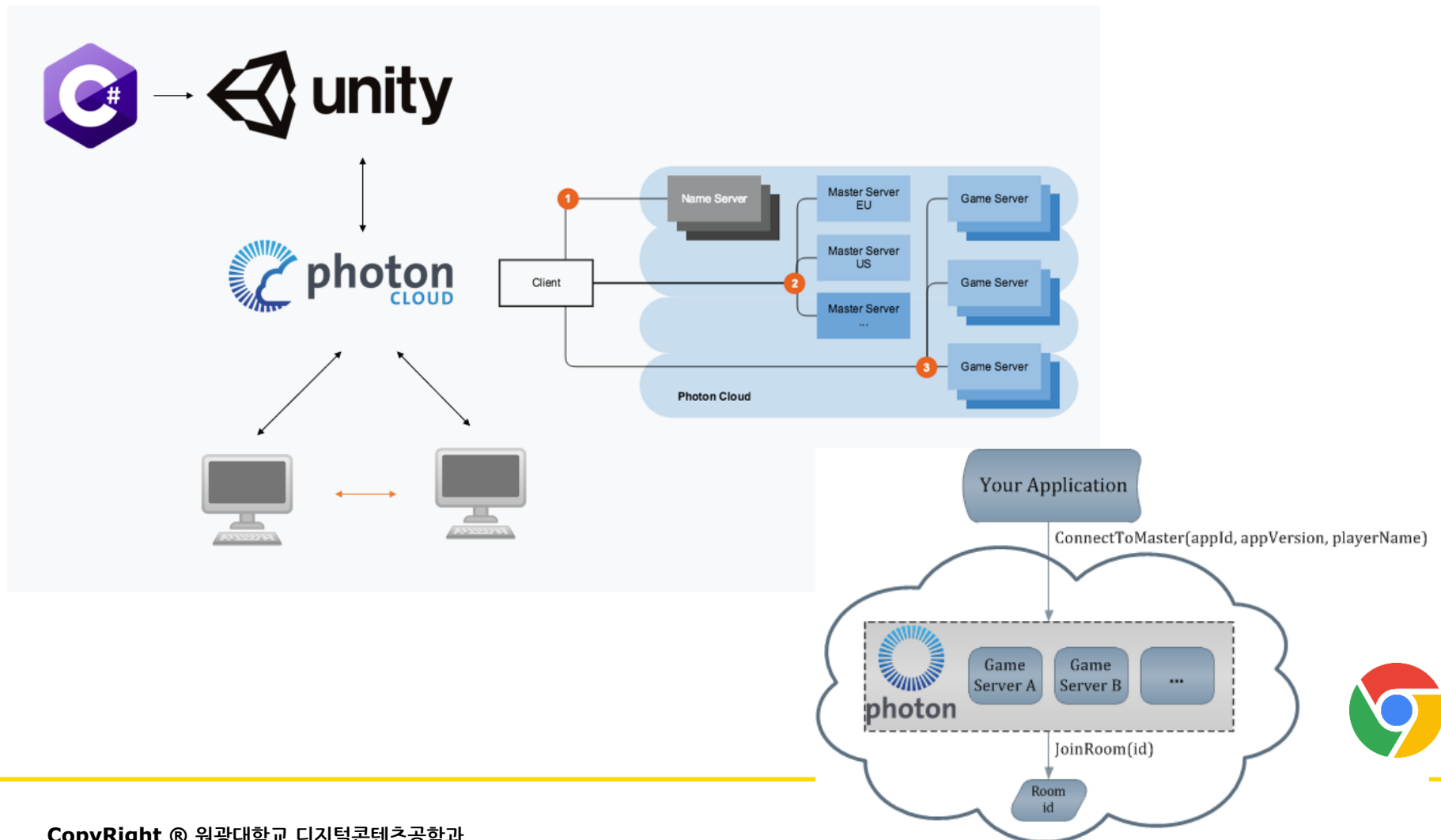   1. Creating the basic Lobby Scene.
    2. Improving the Lobby Scene with a User Interface (UI).
    3. Creating the Game Scenes.
    4. Implementing Levels loading.
    5. Creating the basic Player Prefab.
    6. Making the camera follow your player.
    7. Modifying the Player Prefab to add network features.
    8. Player Instantiation and Scene Switching.
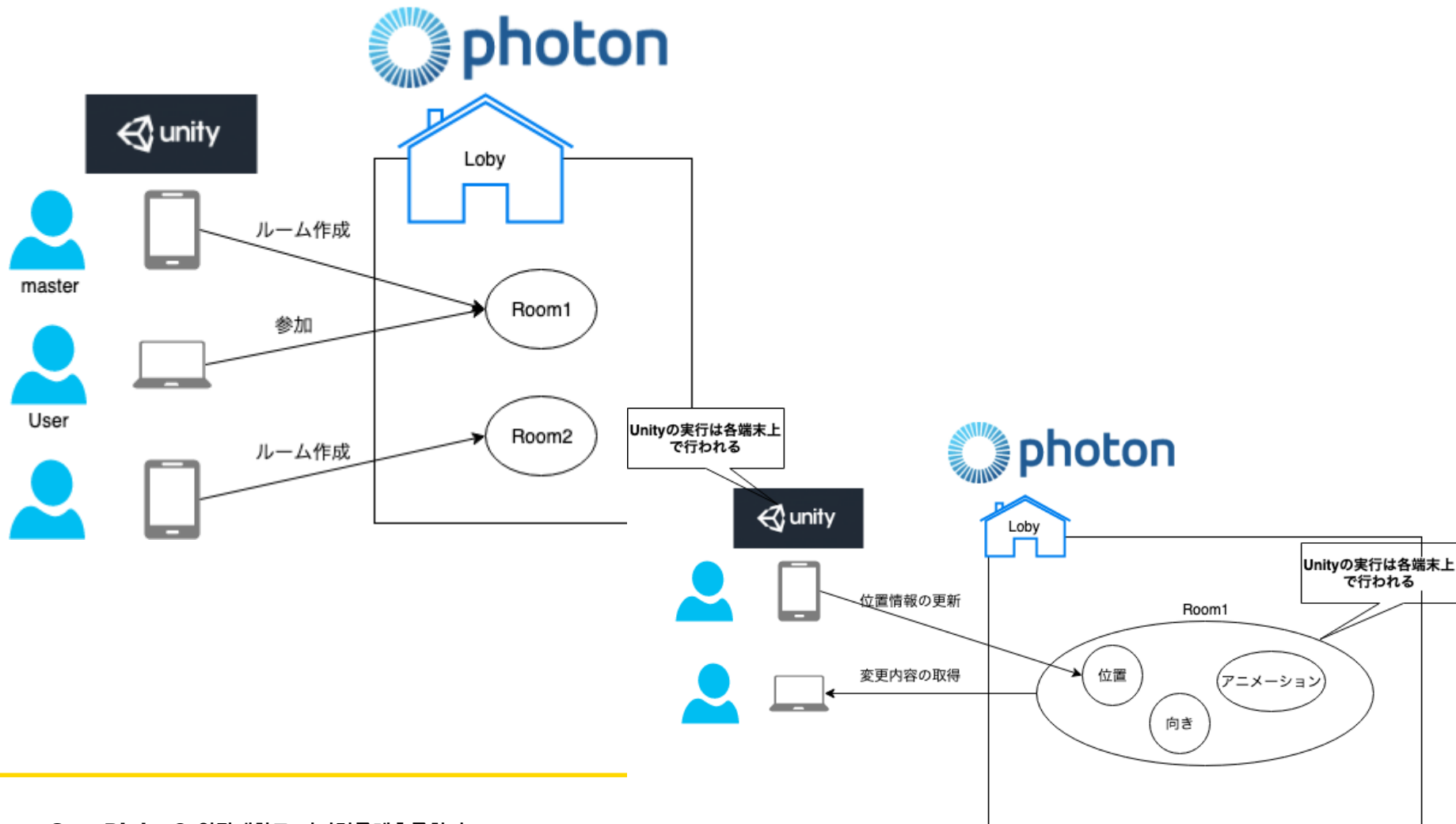   9. Player User Interface (UI).

https://doc.photonengine.com/en-us/pun/v2/demos-and-tutorials/pun-basics-tutorial/intro

https://doc.photonengine.com/ko-kr/pun/v2/demos-and-tutorials/pun-basics-tutorial/intro

- Steps;

- Diagram to join to a room

1. Animated Character
2. Environment Map
3. Photon Server Setting (App ID) – www.photonengine.com
4. Photon Server 접속 및 Room 입장

   PhotonNetwork.AutomaticallySyncScene = true;

   PhotonNetwork.JoinLobby();

   JoinRoom();

   PhotonNetwork.Instantiate(playerModel ..);

   [PunRPC]
5. Photon Chat 구현

Final View

- Where to Go from here …
  - PlayFab for Photon, Unity