

Introduction à FYFY

Family For unity

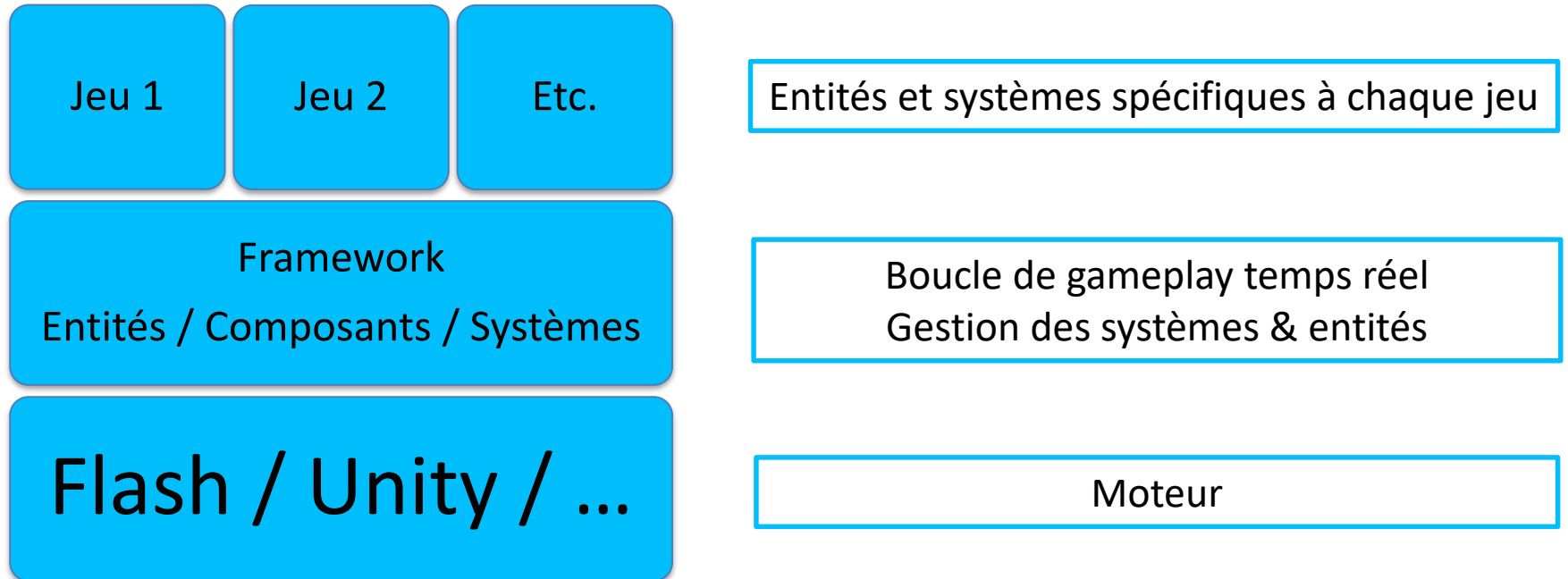
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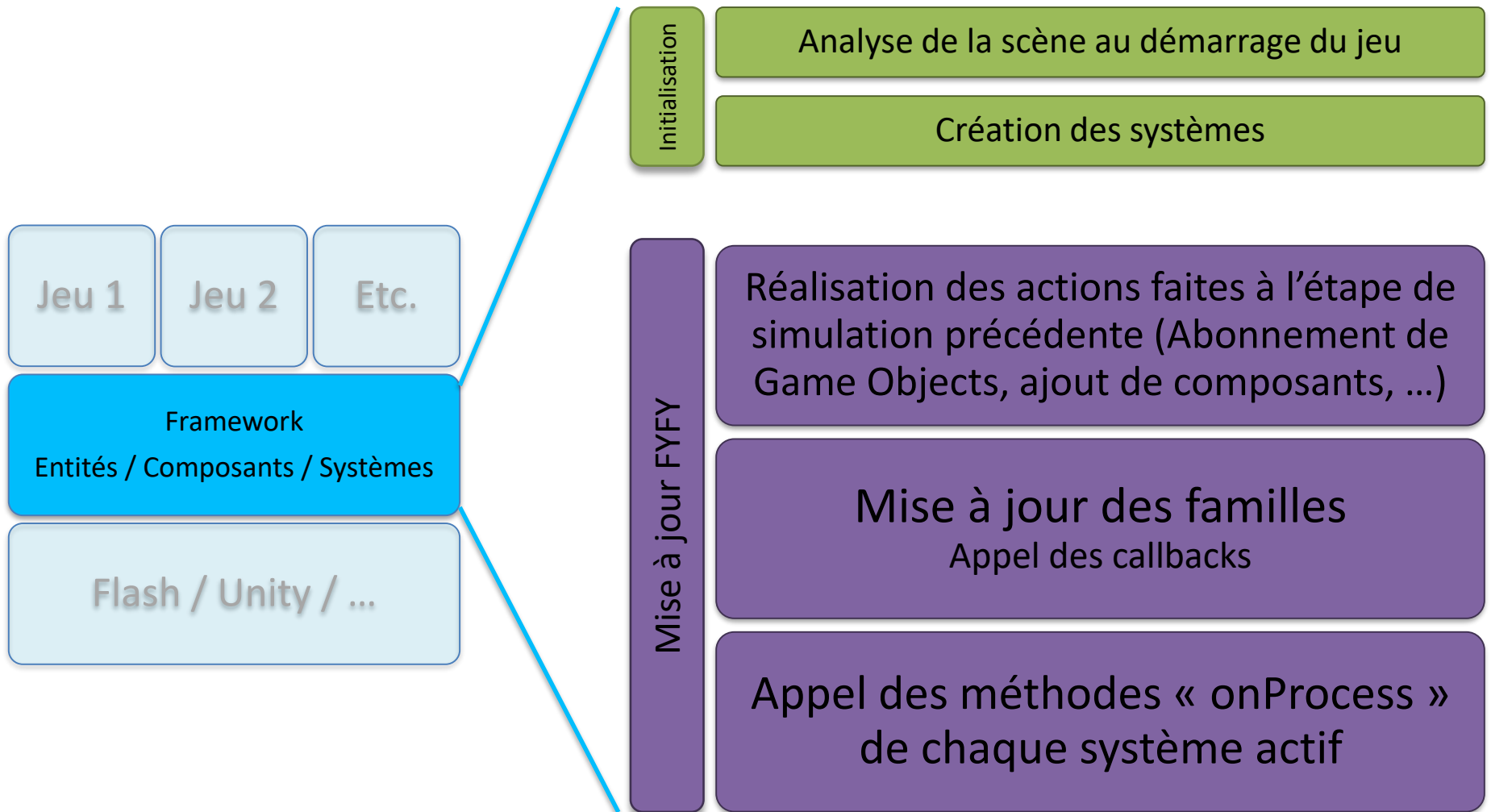
Retour sur l'architecture générale d'ECS



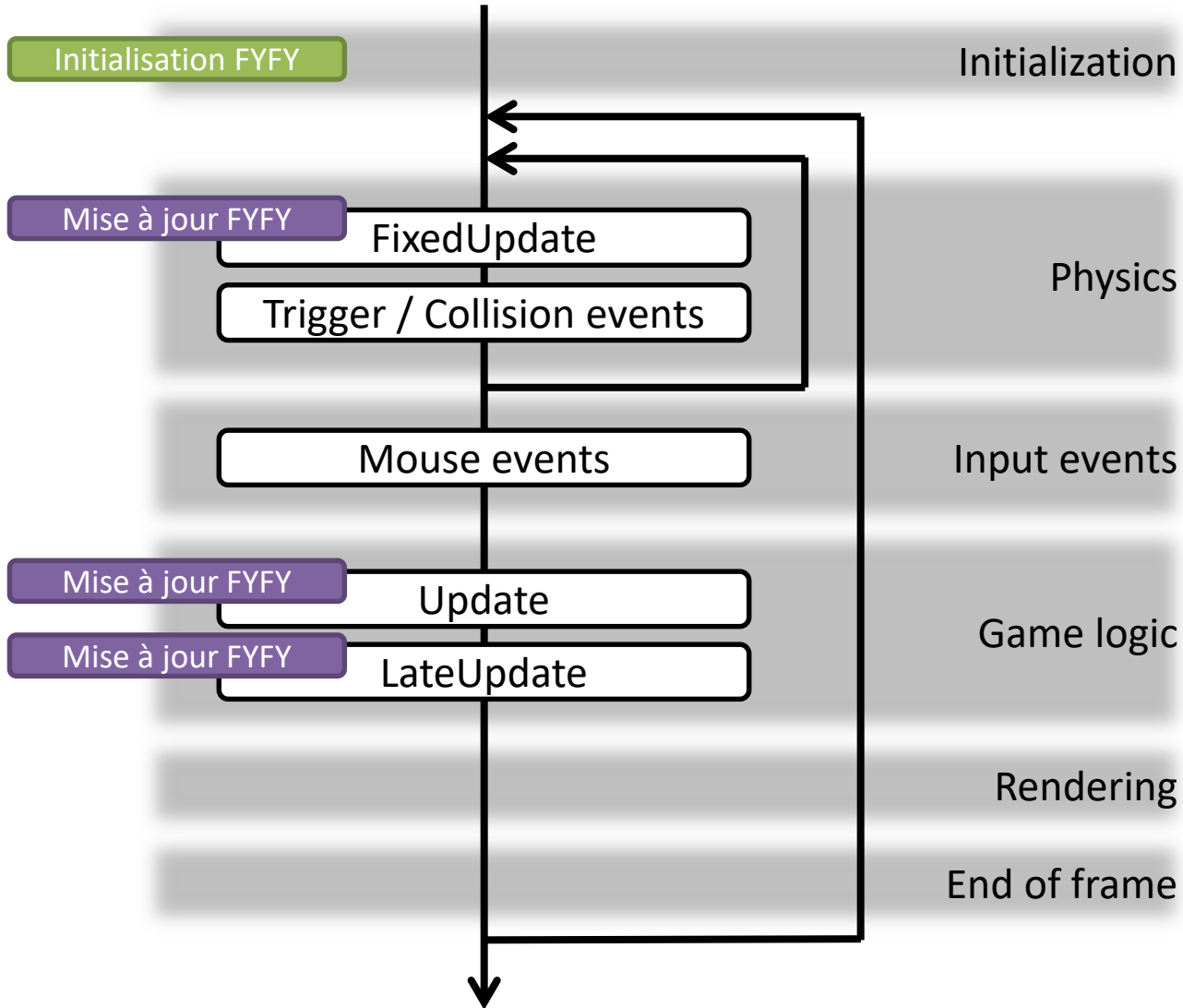
ECS et Unity

- Unity intègre un ECS (Job System, Burst Compiler...)
 - Optimisation des performances :
 - Approche classique : 18 500 GameObject à 28 Fps
 - Approche ECS : 156 000 Entities à 30 Fps
 - <https://unity3d.com/fr/learn/tutorials/topics/scripting/introduction-ecs?playlist=17117>
 - Difficulté : Avancée
- Pourquoi FYFY ?
 - Rendre plus accessible l'ECS
 - Intégration à l'environnement Unity plus « classique »
 - Contrepartie : pas plus performant que l'approche classique
 - Fournit un cadre méthodologique de conception

Boucle de simulation de FYFY

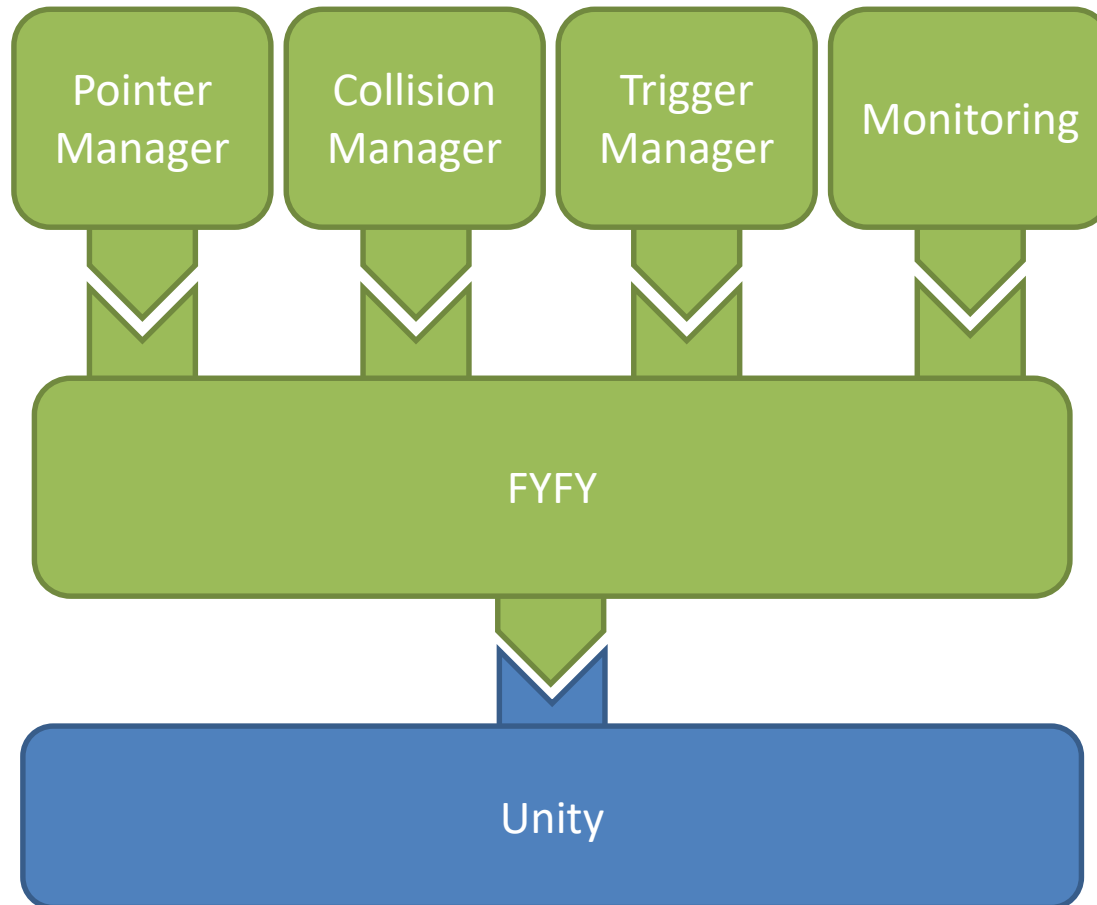


Unity flowchart et intégration FYFY



https://docs.unity3d.com/uploads/Main/monobehaviour_flowchart.svg

Architecture de FYFY



FYFY API

- Création d'un composant

```
using UnityEngine;

public class Move : MonoBehaviour {
    // Advice: FYFY component aims to contain only public
    // members (according to Entity-Component-System paradigm).
    public float speed = 2.5f;
}
```

FYFY API

- Création d'un système

```
using UnityEngine;
using FYFY;

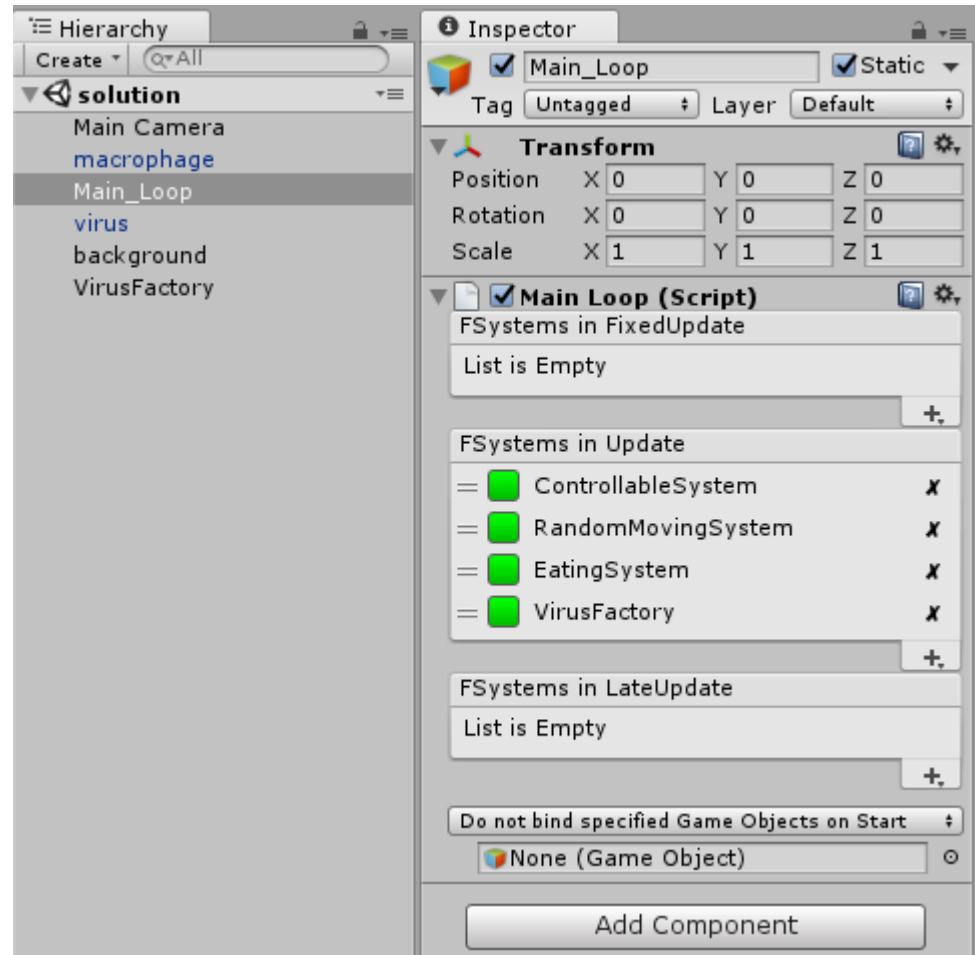
public class ExempleSystem : FSystem {
    // Use this to update member variables when system pause.
    // Advice: avoid to update your families inside this function.
    protected override void onPause(int currentFrame) {
    }

    // Use this to update member variables when system resume.
    // Advice: avoid to update your families inside this function.
    protected override void onResume(int currentFrame){
    }

    // Use to process your families.
    protected override void onProcess(int familiesUpdateCount) {
    }
}
```


FYFY API

- Main_Loop



FYFY API

- **GameObjectManager**
 - Abonnement d'un GameObject

```
GameObjectManager.bind (go);
```

- Ajout dynamique d'un Composant

```
GameObjectManager.addComponent<SphereCollider> (go, new { radius = 2f });
```

- Suppression dynamique d'un Composant

```
GameObjectManager.removeComponent<SphereCollider> (go);
```

- Désabonnement d'un GameObject

```
GameObjectManager.unbind (go);
```

FYFY API

- FamilyManager et Matchers (AllOf, AnyOf, NoneOf)

```
Family myFamily = FamilyManager.getFamily (  
    new AllOfComponents (typeof (Move), typeof (RandomTarget)),  
    new NoneOfComponents (typeof (Velocity)));
```

- Parcours d'une famille

```
for (GameObject go in myFamily) {  
    // Récupération des composants  
    Move mv = go.GetComponent<Move> ();  
    RandomTarget rt = go.GetComponent<RandomTarget> ();  
    Velocity vt = go.GetComponent<Velocity> ();  
    // Exploitation des composants  
    ...  
}
```