

```
// View Controller, swift
import UIKit
import SceneKit
import ARKit
```

```
// TurboSquid → dae format
perceptive ⇒ front
convert dae to scn file
```

```
class ViewController: UIViewController, ARSCNViewDelegate {
    var sceneView: ARSCNView!
    var planes = [OverlayPlane]()

    override func viewDidLoad() {
        super.viewDidLoad()
        self.sceneView = ARSCNView(frame: self.view.frame)
        self.sceneView.debugOptions = [ARSCNDebugOptions.showFeaturePoints, ARSCNDebugOptions.showWorldOrigin]
        self.view.addSubview(self.sceneView)
        sceneView.delegate = self
        sceneView.showsStatistics = true

        let missileScene = SCNScene(named: "art.scnassets/missile-1.scn")
        // let missileNode = missileScene?.rootNode.childNode(withName: "missile", recursively: true)
        // missileNode?.position = SCNVector3(0, 0, -0.5)
        let missile = Missile(scene: missileScene!) // missile is a node with sub nodes
        missile.name = "Missile" // give the node a name
        missile.position = SCNVector3(0, 0, -4)
        let scene = SCNScene()
        scene.rootNode.addChildNode(missile) // missileNode
        sceneView.scene = scene

        registerGestureRecognizer()
    }
}
```

```
private func registerGestureRecognizer() {
    let tapGestureRecognizer = UITapGestureRecognizer(target: self, action: #selector(tapped))
    self.sceneView.addGestureRecognizer(tapGestureRecognizer)
}
}
```

```
@objc func tapped(recognizer: UIGestureRecognizer) {
    guard let missileNode =
        self.sceneView.scene.rootNode.childNode(withName: "Missile", recursively: true) else {
        fatalError("Missile not found")
    }
    guard let smokeNode = missileNode.childNode(withName: "smokeNode", recursively: true) else {
        fatalError("no smoke node found")
    }
    smokeNode.removeAllParticleSystem()
    let fire = SCNParticleSystem(named: "fire.scnp", inDirectory: nil)
    smokeNode.addParticleSystem(fire!)

    missileNode.physicsBody = SCNPhysicsBody(type: .dynamic, shape: nil)
    missileNode.physicsBody?.isAffectedByGravity = false
    missileNode.physicsBody?.damping = 0.0 // friction → default is 1
}
```



missileNode.physicsBody?.applyForce(SCNVector3(0,100,0), asImpulse: true)

}

↓ other delegate functions

// Missile.swift

import Foundation

import SceneKit

import ARKit

class Missile : SCNNode {

private var scene : SCNScene!

init(scene : SCNScene) {

super.init()

self.scene = scene

setup()

}

private func setup() {

guard let missileNode = self.scene.rootNode.childNode(withName: "missileNode", recursively: true),

let smokeNode = self.scene.rootNode.childNode(withName: "smokeNode", recursively: true)

else {

fatalError("Node not found")

}

new file → search partial → SceneKit Particle System File

⇒

let smoke = SCNParticleSystem(named: "smoke.scnp", inDirectory: nil)

smokeNode.addParticleSystem(smoke!)

self.addChildNode(missileNode)

self.addChildNode(smokeNode)

}

required init?(coder aDecoder: NSCoder) {

super.init(coder: aDecoder)

}

}