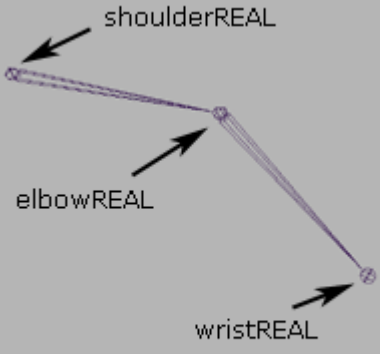
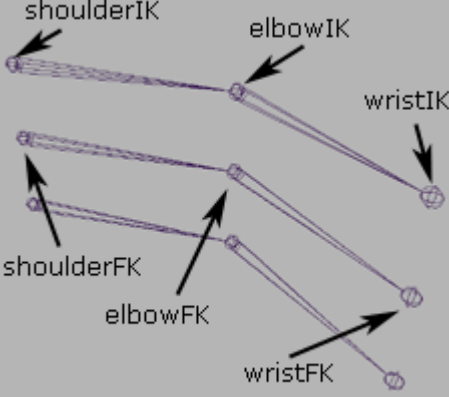
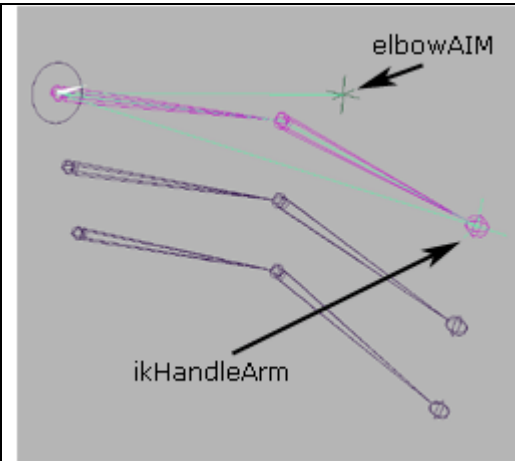


## Rigging101 - IK/FK Switching

IK/FK switching set-up is mainly used for the arms. But it can be implemented in other parts of the body, like the feet. Some people like to animate the arms using FK and some using IK. Depending on the production, it's sometimes necessary to be able to cater for everybody. This can be done by either creating an FK set-up and also a different set-up using IK so the different people can choose the one that they feel most comfortable with.

Most people are comfortable using FK for the arms. But there are times when a character required to rest the hand on a table, or push off or grab an object. This is done better with IK. So it's necessary to be able to switch from FK to IK on the fly. This is where the IK/FK Switching comes into play.

 <p>A diagram showing a single arm rig with three bones. The top bone is labeled 'shoulderREAL', the middle bone is 'elbowREAL', and the bottom bone is 'wristREAL'. Arrows point from the text labels to the corresponding bone endpoints.</p>	<p><b>Bones</b> Start with the bones for the arm that will be used for skinning.</p> <p><b><i>shoulderREAL-&gt;elbowREAL-&gt;wristREAL</i></b></p>
 <p>A diagram showing two duplicated arm rigs. The top rig is for IK, with bones labeled 'shoulderIK', 'elbowIK', and 'wristIK'. The bottom rig is for FK, with bones labeled 'shoulderFK', 'elbowFK', and 'wristFK'. Arrows point from the text labels to the corresponding bone endpoints.</p>	<p><b>Duplicate Bones</b> Create the FK and the IK arms by duplicating the REAL bones. (For visualization purposes the picture shows them one above the other, but they should all be shearing the same space) Name them: <b><i>shoulderFK-&gt;elbowFK-&gt;wristFK</i></b> <b><i>shoulderIK-&gt;elbowIK-&gt;wristIK</i></b></p>



### IK RP Solver

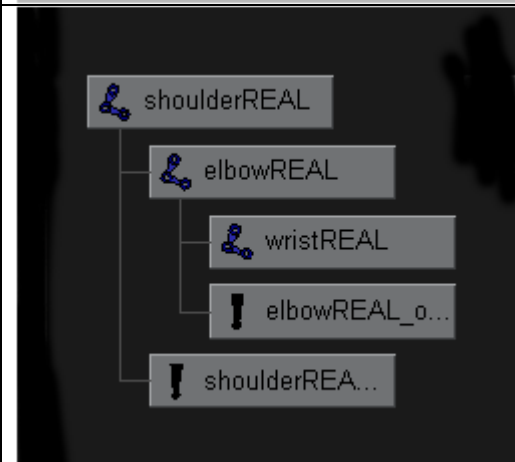
Create an ikRPSolver from the *shoulderIK* to the *wristIK*.

Name it: **ikHandleARM**

Add a locator.

Name it: **elbowAIM**

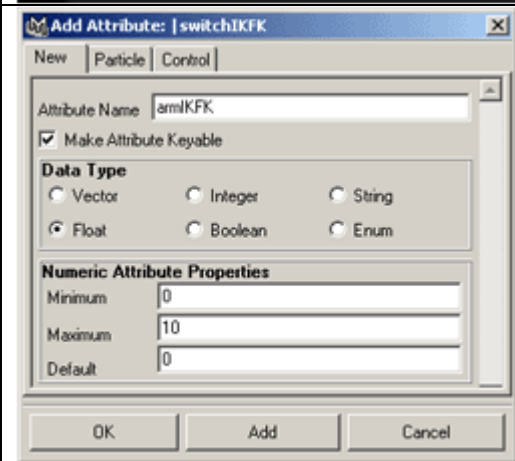
And pole constrain it to the *ikHandleARM*.



### Constraining the bones

Constrain the orientation of *shoulderREAL* to both the *shoulderFK* and *shoulderIK*.

Do the same for *elbowREAL*.

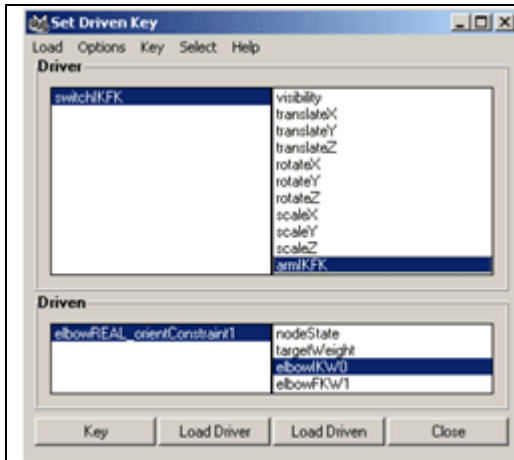


### Controller

Create a locator.

Name it: **switchIKFK**

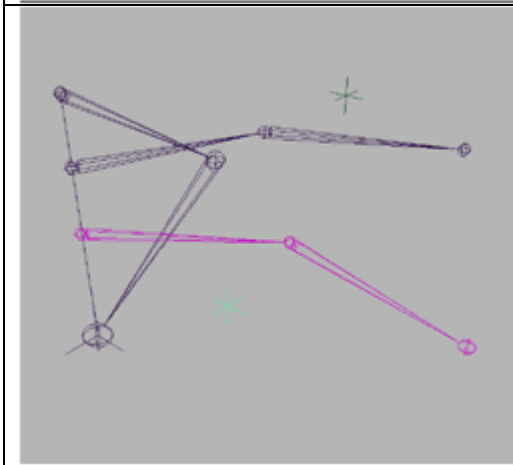
Add an attribute called "armIKFK" with a range of 0 to 10.



### Set Driven Key

Select as your driver the locator *switchIKFK*. As the driven, select the *elbowREAL\_orientConstraint1*. (You can select it on your Hypergraph)  
You'll have *elbowIKW0* and *elbowFKW1* as attributes.

Create a Set Driven Key with *armIKFK* set to 0 and *elbowIKW0* set to 1 and *elbowFKW1* to 0. Create a Set Driven Key with *armIKFK* set to 10 and *elbowIKW0* set to 0 and *elbowFKW1* to 1. Do the same for the shoulder.



### Working with IK/FK Switch

As default, IK is on. You can move the IK arm and the REAL arm will follow. If you want to change to FK mode, simple select the locator *switchIKFK* and change *armIKFK* to 10. You can animate this over time for a smooth transition between IK and FK.