1. Introduction
At Industrial Light + Magic we have a rich history of doing effects for features, but when Gore Verbinski (with whom we did the "Pirates of the Caribbean" films) approached us in the middle of 2008 to make an entire CG animated feature, we had to face a lot of new challenges.

2. Materials
From early on the show, we setup a material library and ran turntables with all the importance-based materials in the library to study how the materials worked with occlusion and shadows.

In Rango (as in no show we've done before at ILM), everything visible in frame (every single object and prop) had to be created (either locally or by 3rd party vendors). Besides the 60 main characters in the movie, there were approximately 1000 props needed. To ease the task of look dev for these props, some basic procedural displacement materials were also provided in the library.

We also tested the materials under different environments and used these turntables to quickly detect any visual artifacts or problems every time a new set of shaders was rolled out.

3. Lighting
In every single show that we work on we always could extract clues for lighting from the plates or references from set, but "Rango" was a totally new situation, although this lack of references was also an opportunity for trying new things.

The light rigs for each sequence were setup the in the most simple way - initially a key, ambient and a reflection light. This convention was followed for all the exterior sequences and some of the interiors. Instead of 360 degrees environments captured on set (as we do in conventional shows), for the ambient and reflection lights we used maps created from renders of the virtual set provided by the Digital Matte department. Such maps were also used in the library. For the exteriors and interiors the key light was a customized version of the distant light shader constrained via a switchable constrain to the skydome.

We had a way to clone the distant key light on a character basis which allowed us for better interaction and improved deep shadows. In this setup you could rotate the whole rig to make the most general changes, or just rotate the key and just the cloned lights would follow, or (for the more specific tweaks) you could move just the cloned lights around the character(s).

Except for the light setup in the "campFire" and "Subterranean Journey" sequences (which were using multiple area lights at the center of the fire) all of the others exteriors are using the same simple format light rig of Distant Key, ambient and reflection lights. The light rig had two main switches: one to activate a sun reflection card (to provide for a softer sun reflection - mimicking the sun halo visible in "real life" reflections) and another switch to turn on the blurred effect bounce card beauty lighting to final the shot.

4. Compositing
Originally planned as basic A over B, the composites quickly grew into a much more detailed process. The increased complexity made compositing more akin to working on a feature film. The director required specific beauty lighting for each shot, choreographed and lens accurate depth of field (all done in the composite by a custom tool), varied atmospheric and photographic effects, (light aberrations, correct anamorphic flaring, heat ripple, camera jitter) Additional elements such as dust, foot prints, water, dirt and more detailed levels of character integration became increasingly necessary. For this we had to quickly and efficiently change our comp treatment.

The Rango lighting and compositing team managed to complete 1550 shots (with a total of 36 compositors and 56 lighting TDs at our peak).