# KatanaForFX: Intertwine FX and Lighting

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**Figure 1: We've made it easy for our FX department to generate renders (left) similar to the ones produced by the Lighting department (right). Images from *Dark Tower* ©2018 Sony Pictures Entertainment. All rights reserved.**

## ABSTRACT

On many shows we are working on at MPC, we have to deal with shots containing a high number of FX elements of various types (particles, volumes, animated geometry). A large majority of these effects are rendered by the Lighting department in Katana and Renderman eventually. However, the FX elements are crafted in either Houdini or Maya where the FX artists are also doing their renders, using Renderman or Mantra. The FX artists would often take great care in the shaders and materials they are using for presenting their work as they can have an important impact in the perceived shape and behaviour of their simulation, especially for volumes and particles. The usage of different softwares and renderers to produce the renders between the FX and Lighting departments lead to important differences between the dailies presented by FX and the renders done in Lighting, requiring more time for the Lighting artists to match the look approved in FX.

The KatanaForFX initiative put in place a new workflow to make it easy for FX artists to generate their final renders in Katana and Renderman, save their set up as a released asset and hand it to the Lighting artists without requiring any prior knowledge in Katana nor interrupting their usual workflows. KatanaForFX enables the FX artists to focus on the design of their simulation itself while presenting them with the look developed by the Lighting department. The Lighting artists can in turn receive exactly the settings defined by the FX departments to reproduce their renders as well as develop the materials and shaders for the FX elements simultaneously.


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## CCS CONCEPTS

• **Computing methodologies** → **Ray tracing**; *Simulation tools*;

## KEYWORDS

FX, Lighting, Rendering, Katana, Pipeline

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## 1 INTRODUCTION

At MPC, the Lighting department is responsible for rendering all the 3D elements composing the scene, including the FX elements, instead of seeing the FX renders going directly from FX to Compositing. This ensures we have a consistent way to hand the render elements to the Compositing department and reduce the time spent in FX on lighting and shading tasks.

On the other hand, the Lighting artists would need some time getting familiar with the FX elements they receive and, with the FX dailies generated out of Maya or Mantra, need to develop the matching materials in Katana. We have seen on occasions an important amount of time spent in discussions between the FX and Lighting departments about the FX caches and their render settings. The development of the KatanaForFX workflow enabled an easier and faster knowledge sharing between both departments for *Justice League* and its 13,000 FX elements in about 350 shots.

With our solution, Lighting artists develop materials for the FX elements in Katana and Renderman and FX artists are using them directly in their presentation renders. They can further tweak the render set up for specific effects on a shot by shot basis if it proves necessary. All the parameters and set ups defined in FX are then passed to Lighting as a subset of a Katana scene file which can be imported and re-used seamlessly. As the FX artists may not always

be familiar with Katana, we have automated the process such that the materials and light rigs developed in Lighting can be used by the FX department without even opening Katana.

The creation of the initial render passes and the material assignment is handled completely automatically by the system when we import the effect in Katana. On top of that, we have integrated the KatanaForFX workflow in our existing Renderflow tool [Auty et al. 2016] which is taking care of building a complete Katana scene and render it from the list of elements specified for a shot. With this, the FX artists don't need to open Katana to generate their Katana renders.

## 2 WORKFLOW

### 2.1 Show setup

At the beginning of a show, the FX and Lighting department will define together the types of effect required for the shots we are working on. The Lighting artists can start developing the materials for them and make them available to FX. In order to assign the materials automatically, we rely on the effect name. The FX department is responsible for defining the naming convention for the show which will be enforced when an effect is released in our asset management system.

### 2.2 Shots Production

While working on production shots, the FX artists will develop their simulation in Maya or Houdini and when they are sufficiently advanced to present them in the shot context they will launch a render with Renderflow. Renderflow is a stand-alone application which will take care of creating the required Katana components, build the Katana scene automatically and launch the render.

At that stage, the FX artist can validate their simulation in accordance to their materials but also that their caches are not missing any mandatory data necessary to the rendering process and that they are grouped in a meaningful and efficient way. Typically, some primitive variables might be missing or named incorrectly, due to the difference between the naming convention in Houdini and Renderman, or some caches might need to be broken in smaller elements in order to render on our farm without issue.

When reviewing the FX renders in daily sessions, notes could be made on the simulation itself, which would be addressed by the FX artist, or on the shading and lighting. The latter will be addressed directly by the Lighting department, making them available for FX immediately for later renders.

Once a particular effect is approved and is ready to be rendered by the Lighting department, the FX asset along with the Katana set up for it is added to the shot description. The Lighting artist will only need to import the shot description in Katana to obtain the same render for the FX elements than the one presented previously in FX. If an update to the FX cache is required after that, it will be automatically transferred to Lighting.

## 3 IMPLEMENTATION

The Lighting department creates a Katana scene which is used as a template and contains the nodes to import the FX elements, set the default parameters as they expect them, assign the materials and group the FX elements, based on their types, into collections.

**Figure 2: FX (left) and Lighting (right) renders with KatanaForFX on *A Wrinkle In Time*. ©2018 Walt Disney Pictures. All rights reserved.**

These collections can then be used to apply the same settings to all of its elements. The FX asset names are following a defined pattern which is used to determine automatically the material to assign to it as well as its collection.

All these Katana nodes defining the template are bundled together in a group, which is then saved as a Live Group. A Live Group is a Katana feature which enables to store a group of nodes in a separate file and reference that file in other Katana scenes. Any change to the Live Group is showing in all the Katana scenes referencing it. We release the FX Live Groups as assets in our asset management system and they follow the same approval process than the FX elements themselves.

If no change to the default assigned material is required, the FX artist don't need to open Katana as all this process will be done automatically for them. If any further tweak is required, the FX Live Groups can be edited and validated in Katana and a new version of it is released and made available to the Lighting department.

## 4 CONCLUSION AND FUTURE WORK

We have first developed the KatanaForFX workflow for the *Justice League* production and it has since been used in five production shows, *The Darkest Minds*, *A Wrinkle in Time*, *The Dark Tower*, *The New Mutants* and *Aquaman*. We are continuing to develop it as it has become a central tool between the FX and Lighting departments and is scheduled to be used on dozens of shows across our different MPC sites.

The KatanaForFX workflow has brought important improvements in the ability to validate renders done in Katana and Renderman, see Fig. 2, at the FX development level. Both departments are not necessarily working on the same shots at the same time and this can require FX artists to come back to a task they were not actively working once Lighting is picking it up. This issue has been notably reduced by the KatanaForFX solution with the ability for FX to validate their renders in Katana and for Lighting to receive the FX elements in a consistent way.

An issue we faced on *Justice League* where we started using this workflow was the difficulty to optimize FX globally across the entire show without causing significant changes to the look or schedule. The definition of a material library coupled to a multi-level system, e.g. where we can modify some parameters either locally or for all the effects on the show, will be leveraging these constraints significantly.

## REFERENCES

J. Auty, M. Chazot, R. Hernandez, and M. Romeo. 2016. Rapid, High Quality Dailies with RenderFlow for The Jungle Book. In *ACM SIGGRAPH 2016 Talks*.