Rocket Sky
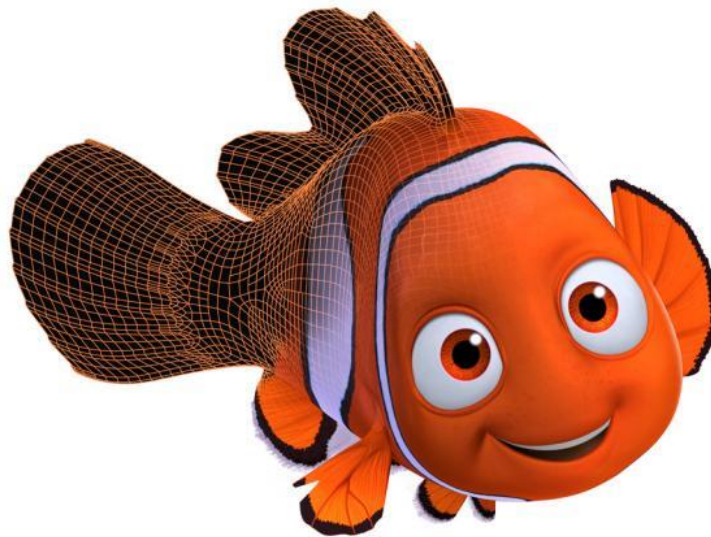
Animation Terms and Definitions

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3D stereoscopic The ability to create stereo images which, when animated and viewed through 3D active shutter glasses or using glasses with one red and one blue lens, will appear as a three-dimensional movie.

Alpha Channel An image channel that carries transparency information. An image already has three channels: red, green and blue (RGB). The alpha channel is the fourth channel (A). The matte, or the transparency information, is stored in this fourth channel. An image without an alpha channel is always opaque.

Animatic A movie with sound that is developed from the storyboard. The storyboard panel is exposed for the duration of the scene and at times, the characters are placed on a trajectory to indicate motion. The camera moves are also animated. The animatic is used to determine the rhythm of a project and provides a good overview of the project before beginning production.

Animation A simulation of movement created by displaying a series of pictures or frames.

Anime An animation style known for its sinister and dark feel; popular in Japan.

Arc Action rarely occurs in a straight-forward manner; rather it typically unfolds in what storytellers refer to as an arc. The purpose of a story arc is to move a character or situation from one state or scenario to the next.

Aspect Ratio The relationship between the width and height dimensions for any scene, frame or film format. Television ratio is 4:3 and widescreen ratio is 16:9.

Auto-feed An automated method of feeding drawings into a scanner in which multiple drawings are stacked into a sheet feeder. When the scanner is activated, the drawings are scanned consecutively, without further user intervention.

Automatic lip-sync detection Automatically mapping drawings in an element to the mouth chart generated for a sound. This can save time when lip-syncing a voice track.
An imaginary line around which an object rotates.

Axis For 2D graphics, there are two axes: X (horizontal and Y (vertical). For 3D graphics, there are three axes: X (horizontal, Y (vertical) and Z (depth). In animations that constantly rotate, the axis element specifies what axis the object rotates around. A negative number causes an animation to rotate counter clockwise whereas a positive number causes an animation to rotate clockwise.

Background The part of a scene that is farthest to the rear. The background is the artwork, or decor, against which the animation takes place.

Bézier A method of defining curved lines invented by French mathematician Pierre Bézier. A Bézier curve is a mathematical or parametric curve. Bézier curves use at least three points to define a curve.

Bitmap An image composed of pixels with a single resolution (size). If it is enlarged too much, it will lose definition and individual pixels will begin to appear. This is known as *pixelation*. Bitmap image files are defined as a standard rectangular mesh of individual pixels. Each individual pixel contains a value that represents a specific colour.

Breakdown In cut-out animation, breakdown is the action of breaking a character into pieces to create a puppet with articulations. To break down a character, the artist cuts parts, such as the hands and arms, from the character's model and pastes them in separate layers. Next, the joints are fixed and the pivots set. In traditional animation, a breakdown is an animation pose generally found between two key poses. The key poses are the main poses in an animation and the breakdowns are secondary poses, ones that help describe the motion and the rotation curve (usually referred to as an *arc*).

Camera shake occurs in a scene when the camera moves slightly and quickly in several directions. This gives the impression of an impact, vibration or, for example, bumps on the road.

Caption A text field containing dialogue, effects, sound or slugging information in a storyboard.

Cel In traditional animation, a cel (also known as *celluloid*) is a transparent sheet on which the animation is inked and painted before being sent to the camera. The picture's outline is drawn on the front of the cel and then coloured along the back.

Character Design Each character in an animated film is drawn from multiple angles in poster-style format, called a *model sheet*, which serves as a reference for the animators.

Chromatic Aberration In optics, chromatic aberration (CA), achromatism or chromatic distortion, is a type of distortion in which there is a failure of a lens to focus all colours to the same convergence point.

Clean up After rough drawings have been tested and approved, all the noise in the image (excess lines, notes, etc.) is removed to create final drawings which can be inked, painted and shot. The clean up process refers to either tracing a

clean line over a rough drawing to achieve the final version or removing dirt and extra lines left by the scanning process.

CMYK Acronym for Cyan, Magenta, Yellow, Black. These colours are the standard model used in a process called offset *printing*.

Colour Card A colour card is a card containing one solid colour that is the same size as the camera. The colour card fills the background with a solid colour when there is no background image included.

Colour Model The official colour design that must be used to paint the animation. A model is the definitive character, prop or location design that each artist must follow for the production.

Colour Wheel A display of the colour spectrum in the form of a circle.

Compositing is the action of incorporating all of a scene's elements to create the final result prior to rendering. For example, the compositing artist will import all the animation sequences, background, overlays and underlays in the scene and position them correctly. The artist will then set the camera frame and animate it, if needed. Finally, the animator will create all the computer-generated effects for the project.

Cross Dissolve An effect used to fade two scenes, one into the other.

Cut A direct transition between two scenes. When a cut is used, there are no transition effects inserted to pass from one scene to the next. The first scene ends and the second one starts immediately.

Cut-Out Animation The process known as *cut-out animation* is the action of animating characters made out of several pieces by moving them around frame by frame. Cut-out animation can either be computer generated or done traditionally using paper.

Cycle A group of images that together make up an action, such as walking. A cycle is an action repeated as a loop over a period of time. It can be a series of animated drawings or keyframes.

Dialogue The text spoken by a character in a movie or animation.

Dope Sheet Used by animators, directors and other members of a crew to track the sequence and timing of images, dialogue, sound effects, sound tracks and camera moves. Also known as an *exposure sheet.*

Doping To assign a particular drawing to a range of frames.

Double Bounce Walk In the key frames and passing positions in a double bounce walk, the body is lower than a reference line drawn in the upright position. During the in-betweens, the body is above this line giving the appearance of a bounce.

DPI Dots per inch is the standard measure of resolution for computerized printers. It is sometimes applied to screens, in which case it should more accurately be referred to as *pixels per inch*. Either way, the dot is the smallest discrete element making up the image.

Ease In animation, the ease, also known as *velocity*, is the acceleration and deceleration of a motion. It can be a motion created by a function curve, or a series of animated drawings. Other common terms for ease-in and ease-out are slow-in and slow-out.

Ease-in Gradual acceleration in the action. Also known as *slow-in*.

Ease-out Gradual deceleration in the action. Also known as *slow-out*.

Establishing Shot A scene in which the viewer can see the whole area in which a sequence is happening. For example, if a child is playing on the ground in front of his house, the establishing shot would be a scene where the viewer can see the house, the ground, a part of the street and the buildings around the central point of action. This helps the viewer understand the story location and scene orientation.

Exposure In animation, an exposure is the number of cels on which a drawing appears in the scene. For a drawing to appear longer, the exposure must be extended over a greater number of cels.

Exposure Sheet A sheet with several vertical columns and horizontal frames used to indicate a scene's timing. Each column represents a scene layer. The drawing numbers in each column are indicated and repeated over the particular amount of frames they need to appear. The exposure sheet is used by animators, directors and other members of a crew to track the sequence and timing of images, dialogue, sound effects, sound tracks and camera moves. Also known as a *dope sheet*.

Fade in/fade out Fade in or fade out is a transition effect used to open or close a sequence. A fade in occurs when the first scene appears progressively, from complete transparency to its complete opacity. A fade out occurs when the last scene progressively disappears, going from complete opacity to complete transparency.

Fast-in Dramatic acceleration at the start of the action.

Fast-out Dramatic acceleration at the end of the action.

Field A measurement unit used to calculate motion, registration and camera positioning. A standard animation scene will vary between 6 to 12 fields.

Field Chart A guide containing all the field units that animation and layout artists use to determine a scene size or camera motion.

Film-1.33 A resolution that is ideal for the widescreen film format that conforms to the standard 4:3 pixel aspect ratio.

Film-1.66 A resolution that is ideal for the widescreen film format that conforms to the 16:9 pixel aspect ratio. (The pixels are wider than they are high).

Flipping In traditional animation, flipping is the action of going through the drawings of an animation sequence very quickly in order to see the animation in motion. Flipping can also be the action of creating a mirror transformation of an object.

Follow-Through The secondary motion caused by the main action. For example, a character wearing a cloak is running. The main action is the body running. This will cause the cloak to follow the motion, although it will not move at the same time, but react a few frames later and follow the main motion curve.

Forward kinematics is a feature used to animate principally 3D characters and cut-out puppets with hierarchy. It is used to animate a puppet from one of parent parts, such as a shoulder, and make the rest of the arm move with it as a single piece.

Frame An animation frame is a single photographic image in a movie. In traditional animation, the North American standard generally contains 24 frames per second, while in Europe the standard is 25 frames per second.

Frame Rate The frame rate is the speed at which the frames are played. They are generally calculated by frame per second. For example, a scene could be played back at 12, 24, 25, 30 or 60 frames per second or any other number. This is the measurement of the frequency (rate) at which an imaging device produces unique consecutive images, called *frames*. The term applies equally to computer graphics, video cameras, film cameras, and motion capture systems. Frame rate is most often expressed in frames per second (fps) and in progressive-scan monitors as hertz (Hz).

Function A computer-generated motion, trajectory or path on which elements, other trajectories and effects parameters can be attached. The function can be controlled by adding keyframes and control points on the function curve.

Function Curve or F-Curve When something is "animated," it changes over time. This curve in shown as something called an F-Curve. Basically what an F-Curve does is it a interpolates between two animated properties. In Blender, animating an object means changing one of its properties, such as an objects location, or its scale.

Gamut The range of colours that a particular device can represent.

HDTV Acronym for High Definition Television which delivers a higher quality image than standard television because it has a greater number of lines of resolution. To take advantage of the superior quality and make full use of your resolution setting, the output device must be compatible with HDTV technology.

Hold A frame in the animation in which the character maintains its position without moving. A hold can be created between any two keyframes.

HSV Hue, Saturation, Value. A method of defining colours in terms of hue (tint), saturation (shade) and value (tone or luminance).

In-Between The drawings that exist between the key poses. These are drawn to create fluid transitions between poses.

Ink and Paint The ink and paint process is the action of painting the empty zones and colouring the lines on the final animation drawings, while following a colour model.

Interpolation The computer-generated motion created between two keyframes. You have the choice to create interpolation, or not, between your keyframes.

Inverse Kinematics (IK) A feature used mainly to animate 3D characters and cut-out puppets with hierarchy. Inverse kinematics will animate a puppet from one of the extremities, such as a hand, and make the rest of the body follow naturally.

Jump Cut A jerky cut between two scenes. Typically, a jump cut is not visually pleasing. It is generally caused by one scene ending, and a second one starting, with a similar image. The lack of difference causes the eye to see a little jump between the two scenes.

Key Pose Important positions in the action defining the starting and ending points of any smooth transition. Keys, or key poses, are the main drawings in an animation sequence describing the motion. For example, if an arm is waving, the keys will be of the arm at one extremity of the wave motion and the other extremity. By flipping those drawings, the animator can see the skeleton of the motion without having all the drawings.

Keyboard Shortcuts One or more keyboard keys which, when used, cause an operation to be performed.

Keyframe Important positions in the action defining the starting and ending points of any action. A keyframe is a computer-generated position at a specific moment (frame) on a given trajectory.

Layer In animation, a layer is an individual column, level or character. A scene's layers are superimposed to form the final image.
The communication step between the storyboard and the animation. It is the action of putting the storyboard on model. That is, drawing the character by following the design in the model pack, so the animator can start working.

Layout The layout artist draws the background, creates the camera and field guide matching the scene and camera motion. Lastly, the animator draws on model the main action poses.

Layout and Posing The action of putting on model (at the right scale) the storyboard for the animator to start working.

Layout Artist The artist who draws the background, and creates the camera and field guide to match the scene and camera motion. They will draw on model the main action poses.

Layout Planning Drawing of the main features of the scene used as reference when planning the animation and executing the initial stages of it.

Layout Process The communication step between the storyboard and the animation.

Library A storage area containing templates and assets that can be reused in any project or scene.

Light Table A device that allows you to see other layers in transparency while you are working on a particular layer.

Line of Action The direction that the action will follow. Also known as *path of action*.

Lip-Sync The process of synchronizing a character's mouth to sounds in the dialogue soundtrack. The mouth is adjusted frame-by-frame to match the sound of the dialogue and provide the illusion that the character is speaking. Lip-sync can be used for any sound sequence, not only speech, you could for instance have a bird chirping or a wolf howling at the moon.

Low Resolution A format that is ideal for videos destined for the web, where size and fast download of a video file take precedence over quality. A low-resolution image is one that lacks fine detail.

Manual Lip-Sync Detection The manual swapping of mouth position drawings to match a voice track. For this process, both sound scrubbing (listening to a sound wave broken up frame-by-frame) and drawing substitutions are used.

Master Palette A group of colours attributed to a character or prop. The palette is used throughout the entire production to maintain consistency in the look and to ensure that the same colours are used throughout the production. Also known as *palette*.

Model/Colour Model The definitive character, prop or location design each artist must follow for a production. A colour model is the official colour design that must be used to paint the animation.

Morphing A feature for creating computer-generated drawings between a source drawing and a destination drawing. Animation created with the morphing feature can be reused in different projects.

Motion Keyframe A keyframe with computer-generated interpolation.

Mouth Chart A chart based on the eight animation phonemes (A, B, C, D, E, F, G, and X, which is used to represent silence) used for lip-sync.

Multiplane The effect of passing through multiple levels of drawings to create a sense of depth in a shot. A multiplane is a scene in which the layers are placed at different distances from the camera so that when the camera moves, a depth illusion occurs. With a multiplane, all the perspective and scale is calculated automatically.

NTSC The standard analogue television broadcasting system used in North America. NTSC conforms to North American standards on how rectangular pixels are displayed for computer and television screens.

Nudge A small push (left, right, up, down, forward or backward) done with the keyboard arrow keys on a selected element. Nudging is used to move a selection very slightly and precisely.

Onion Skin A feature that lets you see the previous and next drawings of a sequence.

Overlay A part of the scene environment, such as a chair or a bush, that is placed in front of the main animation.

PAL A resolution that works best with the European format for television and computer screens, as the rectangular pixels are displayed at a different orientation.

Palette/Master Palette A palette or master palette is a group of colours attributed to a character or a prop. The palette is used throughout the entire project to maintain a consistency in the look and avoid the colour changing during the animation. Also referred to as a master palette.

Palette Style A palette style is a second version of an existing palette with a slight change in the tint and value. A palette style can be used to create the night version of a palette. It may also be called a clone palette.

Pan To move the camera across the scene in any direction.

Panel In a storyboard, a panel is a frame in a shot. A shot can be composed of one or several panels.

Paperless Animation/Tradigital The paperless animation process is the action of animating digitally. The main paperless animation process is to draw, frame by frame, the animation directly in the software.

Passing Position When drawing a walk sequence for a character, the passing position is the point at which one leg passes the other.

Path of Action Direction that the action will follow. Also known as *line of action*.

Peg In traditional animation, a tool used to ensure accurate registration of action as cel layers move. In digital animation, in which you are doing a more advanced puppet rigging, you can use peg layers. Peg layers are trajectory layers

that do not contain drawings. They are motion paths that you can use to add path articulations. For the latter, you can also use an inverse kinematics tool.

Phoneme A unit of sound in a language.

Pivot The point around which a peg or drawing rotates.

Pixel The smallest element of an image displayed on a monitor or TV screen.Pixel, short for *picture element*, is a single point in a graphic image. It is a small sample of an image, a dot, a square, or a very small section made out of smooth filtering. If you zoom in close enough on a digital image, you will see the pixels, which look like small squares of different colours and intensity.

Pose-to-Pose Animation The pose-to-pose animation process is the action of creating all the main action poses, called *key poses*, and then placing the secondary poses between the keys. The secondary poses are called *breakdown*. Finally, the animator fills the gaps with the in-between drawings to achieve a smooth animation.

Rendering The final step when animating by computer. During rendering, the computer takes each pixel that appears on screen and processes all of the components, as well as adding motion blur before it produces a final image. The process of calculating the final images after the compositing process.

Resolution The size of a scene, generally calculated in pixels. For example, the NTSC resolution is 720 x 480. The resolution should match the final output: HDTV, film-1.33, film-1.66, NTSC, PAL, low.

RGB Red, Green, Blue. A method of defining colour by specifying amounts of these three colour components.

Rigging The process of attaching the various parts of a cut-out puppet.

Rotary Table Equivalent to the animation disk/table, a device that allows you to rotate the workspace for greater comfort while drawing.

Rotoscoping An animation technique in which animators trace over live-action film movement, frame by frame, for use in animated films. The act of sketching over live-action footage to create an animated sequence.

Roughs is a common name in an animation movie for a drawing that is used as a reference but which does not form part of the final image. A layout is a rough. The skeleton sketch of an animation or design. Roughs mainly consist of sketch lines and shapes, but can also contain design details.

Safe Area The zone at the center of a scene's frame that is safe from being cropped by the TV frame. As a TV frame cuts a margin off the original frame size, maintaining a safe area ensures that the scene's main action will remain clearly visible once the film is screened on television.

Scene A shot in a movie or show. A sequence is composed of several scenes. A scene changes to another scene by a simple cut or transition.

Script The original text containing all the movie or show information. In animation, the script contains all of the location descriptions, dialogue, time and more. A project starts with a script.

Sequence A series of scenes or shots forming a distinct part of the story or movie, usually connected by unity of location or time.

Shot A scene in a movie or show. A sequence is composed of several shots. A shot changes to another shot by a simple cut or transition.

Slow-in The gradual acceleration in the action. Also known as *ease-in*.

Slow-out The gradual deceleration in the action. Also known as *ease-out*.

Slugging To indicate the start and stop times of dialogue and relevant actions.

Scrubbing or Sound Scrubbing A process that lets you watch video or hear sound in real time while you move the playhead forward or backward along the timeline. This is very useful for finely-tuning a lip-sync.

Stop-Motion Keyframe A keyframe with no computer-generated interpolation.

Storyboard A visual plan of all the scenes and shots in an animation. The storyboard indicates what will happen, when it will happen and how the objects in a scene are laid out.

Straight-Ahead Animation A technique in which an entire sequence is drawn from the first position to the last, in order. There is very little planning in this methodology. Where the character ends up and how it gets there can be a surprise for both the audience and the animator. While this approach is spontaneous and creative, it can create inaccurate results.

Strokes Invisible vector lines forming the drawing zones. They can be adjusted with Bézier handles.

Symbol A symbol combines animation, artwork or layers into a single object that you can control in one layer. You can also create symbols out of each body part in your cut-out puppets. You can place whatever you want in a symbol. You can use symbols to animate a puppet or create reusable animations such as blinking.

Tablet/Pen A device used in conjunction with, or instead of, a mouse to move a mouse pointer (sometimes referred to as the *cursor*) around the computer screen.

Template An asset stored in the library that can be reused in any project. A template can be a drawing, a series of keyframes, a sound file, a panel, a cut-out character, an effect, a trajectory, an animation, or anything else used in the animation.

Thumbnail A very small image used as a reference or indicator.

Timecode The timing information printed on a movie clip to indicate the scene, hour, minute and second that is currently displayed on the screen.

Timeline A horizontal representation of a scene's elements, timing and keyframes.

Trace and Paint After the rough animations have gone through cleanup and a final line or pencil test, each drawing is traced and painted for the final animation. In today's digital world, this may be done in a variety ways other than the traditional celluloid or acetate methods.

Track Breakdown The breakdown of an animated film's soundtrack into individual sounds to produce the precise frame-by-frame position of each sound.

Traditional Animation A type of animation process whereby all the animation sequences are drawn by hand on paper before scanning or inking them on cels.

Trajectory A computer-generated path or trajectory that elements can follow. The trajectory can be controlled by control points, keyframes and velocity.

Transition An effect placed between two scenes as they pass from one to the other. Common transition effects are cross-dissolve and wipe.

Underlay In animation, an underlay is a specific part of the decor placed behind the main animation.

Vector A vector-based image is composed of points and Bézier curves. The computer reads the points and traces the segments, linking them to reproduce the image shape. There is no fixed size or resolution in a vector image. The graphic can be enlarged and distorted as much as desired and the system will simply recalculate the segments and rebuild the shapes. Vector images are translated and displayed in pixels once the calculation is done.

Velocity In animation, the velocity, also known as *ease*, is the acceleration or deceleration of a motion. This can be achieved by a function curve, or via a series of animated drawings. Other common terms for ease-in and ease-out are *slow-in* and *slow-out*.

Walk Cycle A series of drawings "on the spot" that describe the walk for a character. The illusion of movement is created by the use of background pans. To avoid making innumerable drawings, animators routinely make a walk cycle for a character.

Zone An area which can be painted with colour.