

WHITE PAPER

The background is a complex, layered composition of blue-toned abstract elements. It includes architectural details like a grid-like structure on the left and a series of white, oval-shaped openings in the center. Overlaid on these are sharp, diagonal lines and a network of thin, light-blue lines that suggest a technical or digital theme. The overall effect is one of modernity and complexity.

Traditional Workflow



Toon Boom Animation Inc.

White Paper: Traditional Workflow

This paper presents an overview of the benefits of setting the correct workflow for a traditional animation production.

In this document, you will find information about the workflow and tasks of a traditional animation production, how to breakdown and organize your team, how many people you need, as well as how long each task generally takes.

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Integrate Harmony to Your Traditional Workflow

This chapter explains how the techniques and tools used to produce animation with the Harmony Solution can be used in an actual production setting. We suggest different ways to integrate Harmony to your traditional animation workflow.

You will learn how to organize your tasks and create your specific pipeline. The distribution of the tasks depends on the animation techniques used and the size of the team.

This chapter was divided in two categories covering the different user types and studio sizes, workflow suggestion, team organization and the system requirements necessary to your production:

- Integration for a Small and Medium Studio on page 2
(from 2 to 35 users)
- Integration For a Large Studio on page 8
(more than 35 users)

Each section includes: workflow examples, suggested task distribution and tips to help you work more efficiently.

See also the following White Papers:

- Production Considerations
- Harmony and the Art Director
- Harmony and your IT Department
- Cut-out Workflow
- Tradigital Workflow

Integration for a Small and Medium Studio

Small and medium studios are composed of between 2 and 35 users. Depending on the team size, the tasks will be divided differently among them.

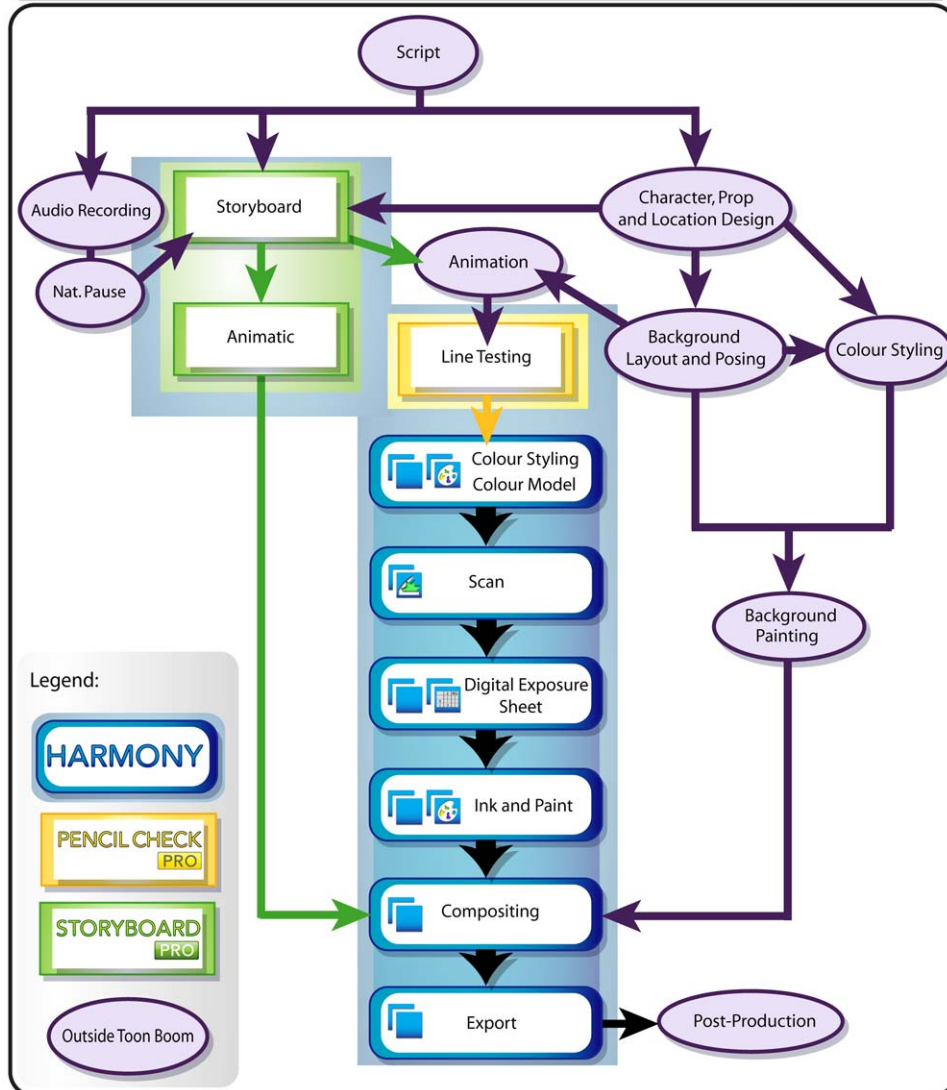
Structure and organization is very important to the running of a studio. Because there is more than one person working on the same project, communication and consistency of a uniform style over the entire project. is important. The Harmony Solution has an integrated pipeline and optimized tools to create a fast, high quality and structured animation.

Small and medium teams can structure their pipelines in different ways. In this chapter we will show you the most popular workflow examples as well as corresponding staffing levels and quotas for an average medium complexity production. These amounts can vary according to the project quality, complexity and schedule. We do not include system administrators, supervisors, producers and directors in these numbers.

Workflow Suggestion

First of all, take a look at the workflow example and analyze the order of the steps and organization.

Traditional Workflow : Small & Medium Studio



In this example, we suggest a pipeline structure to keep the production organized.

We suggest that you use Toon Boom Storyboard Pro to create the storyboard with. It has the advantage of being totally digital and compatible with the Harmony Solution. It automatically creates a layout directly out of the storyboard, the project's scenes and the scene's length. There is no time lost in scanning the whole board and importing it to the project. Also, you can easily print out a version of the whole storyboard or only some panels for the animation step.

Also, during the animation process, the scenes are regularly passed through the line-testing process, which consists of quickly testing the rough key poses of an animation to see if the animation is going in the right direction. Toon Boom has efficient software used to accomplish line-tests: Toon Boom Pencil Check Pro.

Starting

Approval and Tracking Manager

Throughout the production, the manager will have to rely on an approval and tracking system. Using Toon Boom Manager, the manager will easily keep track of the recommended production trackings which are the approval processes for the Design and Animation related steps:

Design Tasks Approval Steps:

- **Entry** = creates a blank scene that can be named and saved in the correct location on the Database that comes with Harmony.
- **Design** = when a scene is being worked on it will be at this level.
- **Design Supervisor** = when a design is finished it will be advanced here for the Supervisor's approval.
- **Design Director** = if the Supervisor approves of the design, it will be advanced to the Director for his approval.
- **Colour Styling** = level where final palettes will be created and final colours will be chosen.
- **Director Colour** = level where the Director will approve of the colours (*Optional level. This can be the place where colours are final and approved).
- **Art Direct** = this is a level where the Art Director can make adjustments to the palettes.
- **Director Colour Final** = Art Directed palette adjustments approved (*Optional level. This can be done at the Colour Styling level).
- **Ready for Animation** = the design is ready for Animators to use in production.

Animation Tasks Approval Steps:

- **Scene Building** = using the Export to Harmony command from Storyboard Pro, scenes are built to the correct length with the sound and a leica (animatic) for each scene in a format which can be imported directly in Toon Boom Server.
(Note: Editing will have to create separate audio and leica files that will be used for this process.)
- **Scene Set-up** = Set-up people will build the libraries and populate the Networks in preparation for animation.
- **Animation** = when scenes are being animated will be on this level.
- **Animation Director** = level where the Animation Director will look at the scenes and either send it to the Director, or send it back to Animation for revisions.
- **Director** = level where the Director will look at scenes and advance it to composite, or send it back for revisions.
- **Composite** = level where Editing will take the frames and import them into the editing software as a frame sequence and render the final scene .mov file.
- **Complete** = scene is placed here after everything is finished.
- **Retake** = after the final colour has been cut together final adjustments to the Animation may be required. Scenes needing revision are placed here, and will be advanced from here to Animation Director and follow the same approvals steps from there to Complete.

The Script

All projects start with a script, this comes from either the studio itself or the client requesting the project.

By closely following the script, the design team will begin the character, props and locations and design. The storyboard artist will start working on the storyboard.

Pre-Production Variants

Designs

The design team will take the character, prop and location in charge as soon as the script is locked.

For a traditional project, the designs will be done on paper. They will be cleaned up, added to the Model Pack and sent to colour styling.

The number of designers required depends on the project content and the time allocated to the pre-production. For a small studio there will be generally one designer for the characters, props and locations all together. For a medium studio, it is more likely to be one designer for the characters and props and another one for the locations.

- **Small Studio:**

- ⇒ 1 Designer (Character, Prop and Location)
- Medium Studio:
 - ⇒ 1 Character and Prop Designer
 - ⇒ 1 Location Designer

Dialogue and Nat Pause

The dialogue is recorded from the script. This audio recording step often takes place outside of the animation studio and is handled by one person in charge of that task. The dialogue is broken down for the animators and depending on the planning, also for the storyboard.


Nat Pause is used by the Storyboard Artist to hear what the characters are saying and how it is said so they could draw the correct expression. It is important to minimize the revision to the visuals. You don't want an angry expression when the character sounds happy.

- Small and Medium Studios:
 - ⇒ 1 person in charge of the audio recording

Storyboard

The storyboard can be started in parallel with the design and the audio recording, but some studios may wait until the designs and the audio recording are locked.

In a small studio, there are generally one to two storyboard artists. In a medium studio, it can go up to three, but it will be normally two.

TIP:  A storyboard artist has normally between 3 to 4 weeks to create a 22 minutes episode. To determine how many storyboard artists are required, calculate the amount of time allocated for the project to be completed. On average, a storyboard artist will create between three and four storyboards per series.

- Small Studio:
 - ⇒ 1 to 2 storyboard artists
- Medium Studio:
 - ⇒ 2 to 3 storyboard artists

Animatic

The animatic is created from the storyboard. Before the animatic can be created the storyboard has to be completed, approved and locked. Only one person is in charge of the animatic production, this ensures consistency throughout the whole production. It may occur that a second person will help with this task if there is a rush on, but it is generally handled by one person.

If the storyboard is done on paper, a person will have to be added to the team to scan the storyboard and prepare it for the animatic. In a small team, the animatic person can take care of the scan, in a bigger one, a person can be assigned to that specific task.

- Small Studio:
 - ⇒ 1 animatic person (also in charge of the scan)
- Medium Studio:
 - ⇒ 1 animatic person
 - ⇒ 1 storyboard scan person* (Could also be the animatic person)

**If the storyboard is created on paper.*

Colour Styling

Colour styling can be done before or after the animation. It doesn't really have an impact on the pipeline. It can be done on paper, directly within Harmony Solution or in an external software. You can save time by doing it directly in Harmony as you create your palettes and colour models at the same time.

If the backgrounds are painted in an external software, it is recommended that you do the locations (key backgrounds) colour styling in that same external software.

For both small and medium teams one colour stylist is generally enough, especially if it is done in Harmony.


- Small and Medium Studios:
 - ⇒ 1 colour stylist (can also be a colourist or compositor)

Production

Background Layout and Posing

For the traditional production, the layout and posing step is very important to communicate the storyboard information very clearly to the animators.

In both small and medium studios, background layout and posing will be handled by the same person. The background layouts will be done by one person or team and the posing by another one. For the small studio with a limited amount of resources, the storyboard artist or the animator will create the layout and posing.

 **TIP:** *To produce a full 22 minutes episode in one week, about 300 scenes (150 to 160 original backgrounds, the rest is reused), it requires about four to five layout artists. It takes about the same amount of posing artists to create the posing for one episode per week.*

- Small Studio:
 - ⇒ 1 to 2 layout and posing artist (storyboard artist or animator)
- Medium Studio:
 - ⇒ 2 to 3 background layout artists
 - ⇒ 1 to 2 posing artists (can be the background artists)

Background Colouring


Backgrounds can be painted using the Harmony Solution or in an external software. On a small team, one person can handle the background painting and on a medium team, there will probably be two people painting the backgrounds.

- Small Studio:
 - ⇒ 1 background colourist
- Medium Studio:
 - ⇒ 2 background colourists

Animation and Line-test

In a traditional animation, the animation and the clean up are done on paper, assisted by the layout and posing. The animation is one of the longest steps in a production. So the main part of the team should be composed of animators and clean up artists.

For a small team, there will be from one to three animators handling the rough animation, the in-betweens and the clean up. On a medium team, the rough animation and the in-betweens will be done by two to four animators, they will be assisted by clean up artists who will trace their animation.

 **TIP:** *The animation quotas depend on the animation quality requested. A competent animator can produce up to seven to 10 seconds of animation per week for medium complexity. For lower complexity of animation, they can produce up to 10 to 12 seconds. For a very good animation quality, the productivity drops to three to five seconds per week.*

- Small Studio:
 - ⇒ 1 to 3 animators (rough, in-betweens, clean)
- Medium Studio:
 - ⇒ 2 to 5 animators (rough, in-betweens)
 - ⇒ 2 to 5 clean up artists

Line-test

During the animation process, the scenes are regularly passed through the line-testing process, which consists of quickly testing the rough key poses of an animation to see if the animation is going in the right direction. Toon Boom has efficient software used to accomplish line-tests: Toon Boom Pencil Check Pro. On a small or medium team 1 person will be assigned to the line-test task. In some studios, the line-testing is done by the animators themselves, in this case, the team will not require an extra line-test person.

- Small Studio:
 - ⇒ 1 Line-test person
- Medium Studio:
 - ⇒ 1 Line-test person

Scan

The Scan step is the gateway between traditional and digital animation. To import the animation drawings in to the project, a person is assigned to the scan task. Normally, one person or most two people are enough to handle a small project. It depends on the project size, the amount of scanners and if there are one, two or 3 three shifts per day.

The scan is done prior to the exposure sheet. Once the drawings are scanned in, the person in charge of the exposure sheet will see the timing.

- Small and Medium Studios:
 - ⇒ 1 to 2 scan persons


Exposure Sheet

The Exposure Sheet person will reproduce the animator's paper x-sheet either from scanned drawings or for the drawings to be scanned in. It is a straight forward task generally handled by one person on a small team. Often, it will be the scan person who will handle the digital exposure sheet. In a bigger team one or two persons are enough, unless it is a very large project that has to be completed fast.


- Small Studio:
 - ⇒ 1 exposure sheet person (can be the scan person)
- Medium Studio:
 - ⇒ 1 to 2 exposure sheet person (can be the scan persons)

Ink and Paint and Compositing

The Ink and Paint process is probably the longest digital step. It requires cleaning all of the drawings, inking lines and filling all of the colours on all drawings. The length of time this procedure takes is dependent of the complexity of the drawings, if there are a lot of details and lines to be inked, the colour step will be longer.

TIP:  A ratio of three to four colourists to each compositor is recommended. Although for a small team, there will be generally one colourist who will also do the compositing. On a larger team, there will be one or two colourists and one compositor. At times when the compositor has a low workload he will help the colourists.

The rendering step is generally handled by the compositor.

TIP:  About five compositors are required to composite a full 22 minutes, medium complexity, per week. A colourist can, for a medium complexity show, paint 400 to 500 drawings per day.

- Small Studio:
 - ⇒ 1 colourist/compositor
- Medium Studio:
 - ⇒ 1 to 2 colourists
 - ⇒ 1 compositor (helping the colourists)

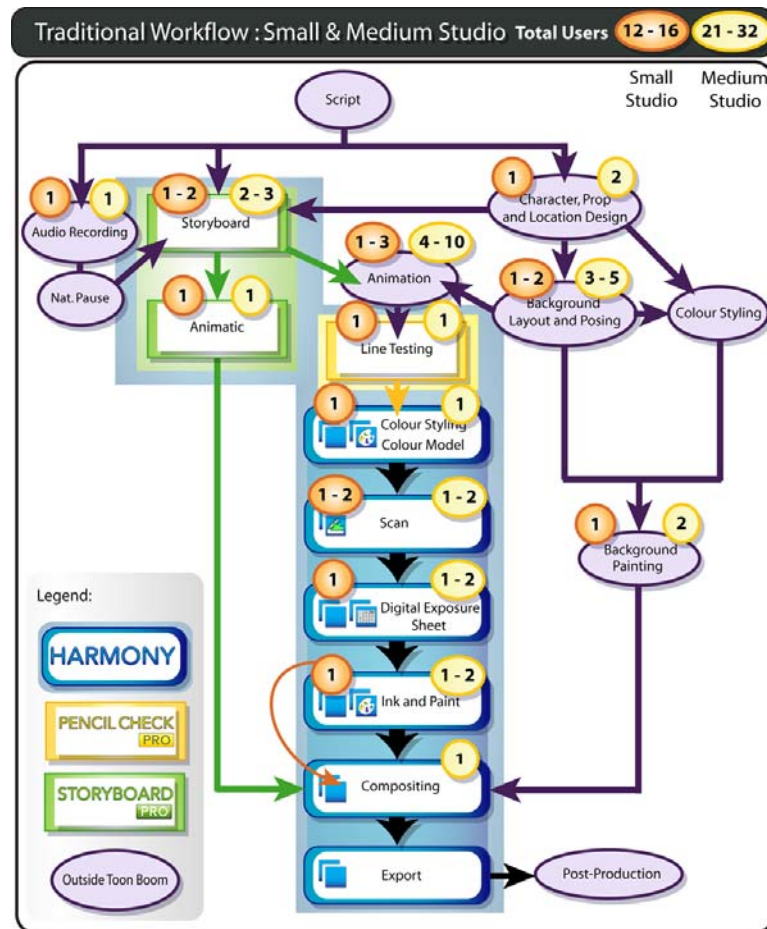
Post-Production

When all the scenes are rendered out, the user will assemble them in an external application and add the sound to the project. The final effects and filter will be added. The final step will be to render out to the master and distribute it, unless there is dubbing to be done. In a small and medium team, a single person is sufficient to create the final editing. Very often, the final transfer will be done by an external post-production company

- Small and Medium Studios:
⇒ 1 final editing person

Project Requirements

To create a traditional project, a small or medium studio needs:



This numbered chart is based on information collected amongst established studios.

Integration For a Large Studio

Large studios are composed of more than 35 users. Depending on the team size, the tasks will be divided differently among the team.

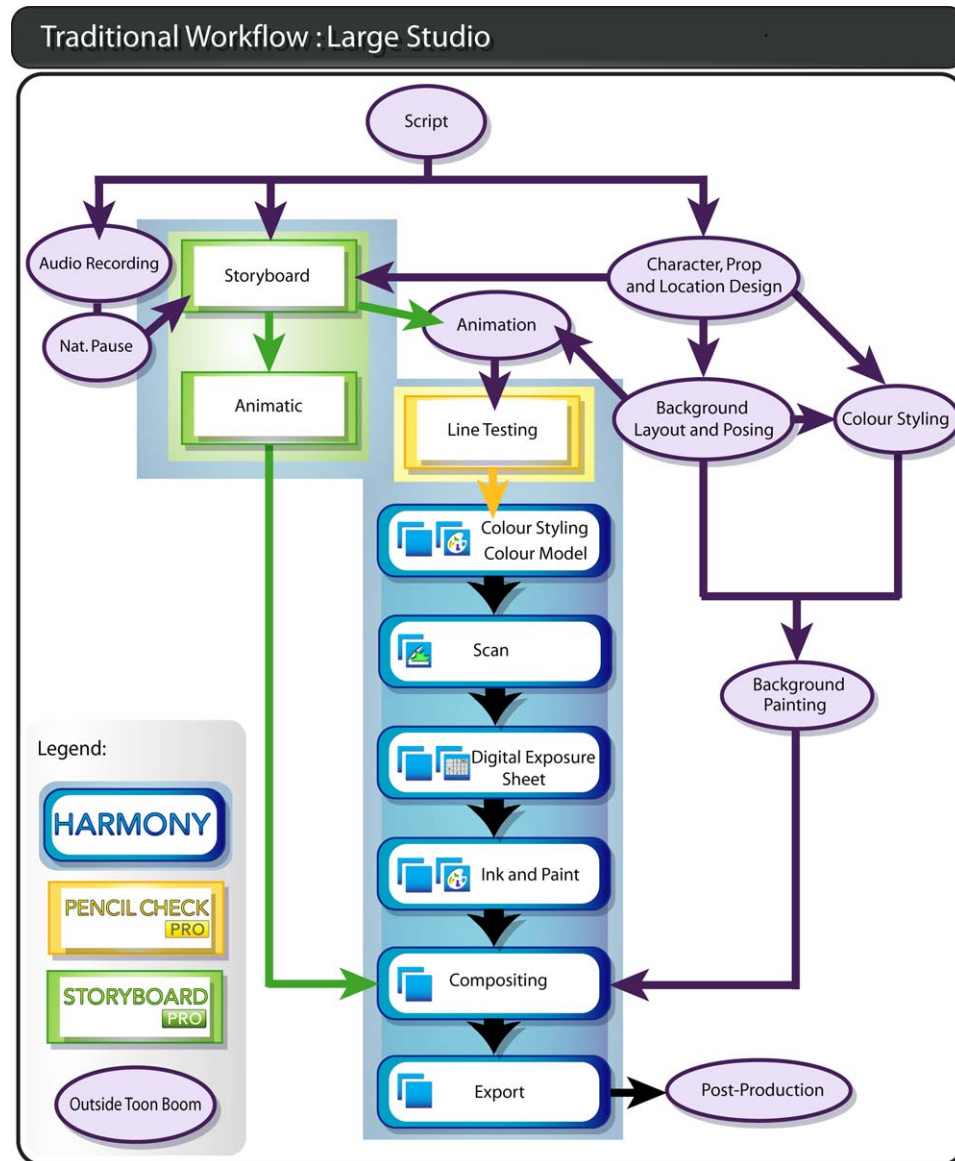
Structure and organization is very important to the running of a studio. Because there is more than one person working on the same project, communication and consistency of a uniform style over the entire project is important. The Harmony Solution has an integrated pipeline and optimized tools to create a fast, high quality and structured animation.

A large team can structure their pipelines in different ways. In this chapter we will show you the most popular workflow examples as well as corresponding staffing levels and quotas for an average medium complexity

production. These amounts can vary according to the project quality, complexity and schedule. We do not suggest system administrators, supervisors, producers and directors in these numbers.

Workflow Suggestion

First of all, take a look at the workflow example and analyze the order of the steps and organization.



In this example, we suggest a pipeline structure to keep the production organized.

We suggest that you use Toon Boom Storyboard Pro to create the storyboard with. It has the advantage of being totally digital and compatible with the Harmony Solution. So it automatically creates a layout directly out of the storyboard, the project's scenes and the scene's length. There is no time lost in scanning the whole board and importing it to the project.

Also, during the animation process, the scenes are regularly passed through the line-testing process, which consists of quickly testing the rough key poses of an animation to see if the animation is going in the right direction. Toon Boom has efficient software used to accomplish line-tests: Toon Boom Pencil Check Pro.

Dividing the Work Between Studios

Large productions may be divided amongst many studios. For example; the scripts, designs, storyboard and colour models will be done in one studio. The layout, animation, clean up and scan will be done in a second and the ink and paint and compositing will be in a third. Often the renders will be sent back to the first studio where the final editing will be completed.



The division of work exists for many reasons; costs, number of personnel required, studio's speciality, co-productions, subventions, etc.

The traditional animation process involves a lot of people, steps, and material handling. It is a beautiful but also long technique. To save time and money the work may be split among several studios. This provides work to many people in different countries, however, both quality control and communication can be problematic as you may have to deal with time zone differences and language barriers that can slow down the process.

Toon Boom provides a straightforward integrated pipeline to help studios maintain a structured production. You can further improve your process by using Toon Boom Storyboard Pro to create a digital storyboard with, this also reduces the amount of paper handling and shipping. Communications can be done faster and more efficiently.

Starting

Approval and Tracking Manager

Throughout the production, the manager will have to rely on an approval and tracking system. Using Toon Boom Manager, the manager will easily keep track of the recommended production trackings which are the approval processes for the Design and Animation related steps:

Design Tasks Approval Steps:

- **Entry** = creates a blank scene that can be named and saved in the correct location on the Database that comes with Harmony.
- **Design** = when a scene is being worked on it will be at this level.
- **Design Supervisor** = when a design is finished it will be advanced here for the Supervisor's approval.
- **Design Director** = if the Supervisor approves of the design, it will be advanced to the Director for his approval.
- **Colour Styling** = level where final palettes will be created and final colours will be chosen.
- **Director Colour** = level where the Director will approve of the colours (*Optional level. This can be the place where colours are final and approved).
- **Art Direct** = this is a level where the Art Director can make adjustments to the palettes.
- **Director Colour Final** = Art Directed palette adjustments approved (*Optional level. This can be done at the Colour Styling level).
- **Ready for Animation** = the design is ready for Animators to use in production.

Animation Tasks Approval Steps:

- **Scene Building** = using the Export to Harmony command from Storyboard Pro, scenes are built to the correct length with the sound and a leica (animatic) for each scene in a format which can be imported directly in Toon Boom Server.
(Note: Editing will have to create separate audio and leica files that will be used for this process.)
- **Scene Set-up** = Set-up people will build the libraries and populate the Networks in preparation for animation.
- **Animation** = when scenes are being animated will be on this level.
- **Animation Director** = level where the Animation Director will look at the scenes and either send it to the Director, or send it back to Animation for revisions.
- **Director** = level where the Director will look at scenes and advance it to composite, or send it back for revisions.
- **Composite** = level where Editing will take the frames and import them into the editing software as a frame sequence and render the final scene .mov file.
- **Complete** = scene is placed here after everything is finished.
- **Retake** = after the final colour has been cut together final adjustments to the Animation may be required. Scenes needing revision are placed here, and will be advanced from here to Animation Director and follow the same approvals steps from there to Complete.

The Script

All projects start with a script, this comes from either the studio itself or the client requesting the project.

By closely following the script, the design team will begin the character, props and locations and design. The storyboard artist will start working on the storyboard.

Pre-Production Variants

Designs

The design team will take the character, prop and location in charge as soon as the script is locked.

For a traditional project, the designs will be done on paper. They will be cleaned up, added to the Model Pack and sent to colour styling.

The number of designers required depends on the project content and the time allocated to the pre-production. For a large studio there will be generally one or two designers for the characters, one for the props and one or two for the locations.

- Large Studio:
 - ⇒ 1 to 2 Character Designers
 - ⇒ 1 Prop Designer
 - ⇒ 1 to 2 Location Designers

Dialogue and Nat Pause

The dialogue is recorded from the script. This audio recording step often takes place outside of the animation studio and is handled by one person in charge of that task. The dialogue is broken down for the animators and depending on the planning, also for the storyboard.


Nat Pause is used by the Storyboard Artist to hear what the characters are saying and how it is said so they could draw the correct expression. It is important to minimize the revision to the visuals. You don't want an angry expression when the character sounds happy.

- Large Studio:
 - ⇒ 1 person in charge of the audio recording

Storyboard

The storyboard can be started in parallel with the design and the audio recording, but some studios may wait until the designs and the audio recording are locked.

In a large studio, there will generally be four to six storyboard artists per production. This amount can vary a lot. If the storyboards are simple and fast to create, a studio can handle the work using only four storyboard artists

TIP:  A storyboard artist has normally between 3 to 4 weeks to create a 22 minutes episode. To determine how many storyboard artists are required, calculate the amount of time allocated for the project to be completed. On average, a storyboard artist will create between three and four storyboards per series

- Large Studio:
 - ⇒ 4 to 6 storyboard artists

Animatic

The animatic is created from the storyboard. Before the animatic can be created the storyboard has to be completed, approved and locked. Only one person is in charge of the animatic production, this ensures consistency throughout the whole production. A second person may help with this task if there is a rush on.

Large studios can have more than one animatic person per production depending on the delays.

NOTE:

If the storyboard is done on paper, a person will have to be added to the team to scan the storyboard and prepare it for the animatic. In a small team, the animatic person can take care of the scan, in a bigger one, a person can be assigned to that specific task.

If the storyboard is created with Toon Boom Storyboard Pro, the storyboard artist can easily create the animatic and this way, really show and set the timing he has in mind.

- Large Medium Studio:
 - ⇒ 1 to 3 animatic person
 - ⇒ 1 storyboard scan person* (Could also be the animatic person) *If the storyboard is created on paper.

Colour Styling

Colour styling can be done before or after the animation. It doesn't really have an impact on the pipeline. It can be done on paper, directly in Harmony or in an external software. You can save time by doing it directly in Harmony as you create your palettes and colour models at the same time.

If the backgrounds are painted in an external software, you should do the locations (key backgrounds) colour styling in that same external software.

For a large studio, two colour stylists are often enough.


- Large Studios:
 - ⇒ 2 colour stylists

Production

Background Layout and Posing

For the traditional production, the layout and posing step is very important to communicate the storyboard information very clearly to the animators.

In general, a large studio split the layout and the posing tasks in 2 teams. One team will take care of the background layout while the other one will do the posing. A medium complexity level project can be handled by 4 to 6 background layout artists and 4 to 6 posing artists. If the backgrounds are very complex and detailed, the amount of people will obviously increase.

TIP:  To produce a full 22 minutes episode in one week, about 300 scenes (150 to 160 original backgrounds, the rest is reused), it will request about four to five layout artists. It takes about the same amount of posing artists to create the posing for one episode per week.

- Large Studio:
 - ⇒ 4 to 6 background layout artists
 - ⇒ 4 to 6 posing artists (can be the background artists)

Background Colouring


Backgrounds can be painted in Harmony or in an external software. On a large project, the background colourist team is four to five persons per production.

- Large Studio:
 - ⇒ 4 to 5 background colourists

Animation and Line-test

In a traditional animation, the animation and the clean up are done on paper, assisted by the layout and posing. Animation is one of the longest steps in a production. So the main part of the team should be composed of animators and clean up artists.

The number of animators in a studio varies a lot, especially if the studio doing animation for other studios and working on many projects at the same time. The average studio will have between 20 to 30 animators per production. A large studio will often divide the animation between animators and assistant animators. The animators will animate the key and break-down drawings and the assistants will animate the in-betweens, there will be 15 to 25 assistants. The clean up artists trace the animation, as this step can be even longer than the animation itself, there will be the same number or more clean up artists required. Some studios combine the assistants and the clean up artists into one team.

 **TIP:** The animation quotas depend on the animation quality required. An up-to-speed animator can produce up to seven to 10 seconds of animation per week for a medium complexity. For a lower complexity of animation, they can produce up to 10 to 12 seconds. For a very good animation quality, the productivity drops to three to five seconds per week.

- Large Studio:
 - ⇒ 20 to 30 animators
 - ⇒ 15 to 25 assistant animators
 - ⇒ 25 to 35 clean up artists

Line-test

During the animation process, the scenes are regularly passed through the line-testing process, which consists of quickly testing the rough key poses of an animation to see if the animation is going in the right direction. Toon Boom has efficient software used to accomplish line-tests: Toon Boom Pencil Check Pro. On a Large team 1 person will be assigned to the line-test task. In some studios, the line-testing is done by the animators themselves, in this case, the team will not require an extra line-test person.

- Large Studio:
 - ⇒ 1 Line-test person

Scan

The Scan step is the gateway between traditional and digital animation. To import the animation drawings in to the project, there are two to three people assigned to the scan task. It depends on the project size, the amount of scanners and if there are one, two or three shifts per day.

The scan is done prior to the exposure sheet. Once the drawings are scanned in, the person in charge of the exposure sheet will see the timing.

- Large Studio:
 - ⇒ 2 to 3 scan persons

Exposure Sheet


The Exposure Sheet person will reproduce the animator's paper x-sheet either from scanned drawings or from the drawings to be scanned in. It is a straight forward task and in a large team it is generally handled by three to four people. Sometimes, the scan persons will also do the exposure sheet.


- Large Studio:
 - ⇒ 4 exposure sheet persons (can also be the scan person)

Ink and Paint and Compositing

The Ink and Paint process is probably the longest digital step. It requires cleaning all the drawings, inking the lines and filling all the colours on all the drawings. This also depends on the complexity of the drawings, if there are a lot of details and lines to be inked, the colour step will be longer.

 **TIP:** A ratio of two to three colourists per compositor is recommended.

 **TIP:** On a large series, there will be generally four to five compositors and eight to 10 colourists. The rendering step is generally handled by the compositor.

 **TIP:** About five compositors are required to composite a full 22 minute, medium complexity show per week. A colourist can paint about, for a medium complexity show, 400 to 500 drawings per day.

- Large studio:
 - ⇒ 8 to 10 colourists
 - ⇒ 4 to 5 compositors

Post-Production

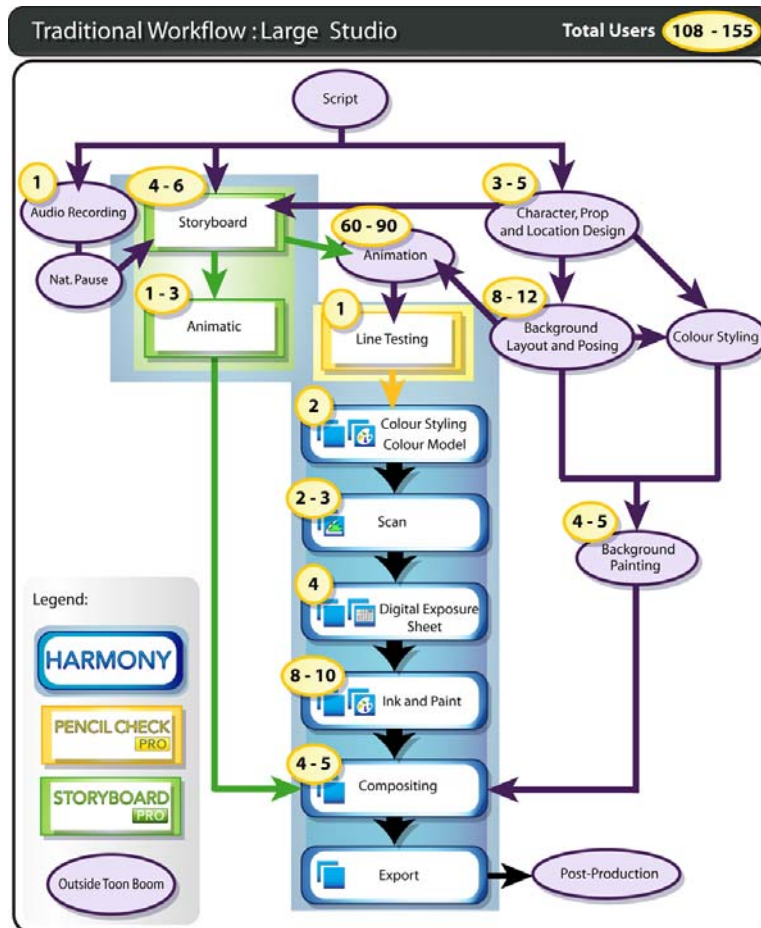
When all the scenes are rendered out, the user will assemble them in an external application and add the sound to the project. The final effects and filter will be added. The final step will be to render out to the master and distribute it unless there is dubbing to be done.

The final editing will be generally done by one person to keep the flow constant over the whole episode or movie. Very often, the final transfer will be done by an external post-production company.

- Large studio:
 - ⇒ 1 final editing person

Project Requirements

To create a traditional project, a large studio requires:



This numbered chart is based on information collected amongst established studios.