

Getting Started

Transform is a powerful cloud transcoding service that leverages Telestream's deep expertise in post-production, broadcast and OTT media distribution.

Transform provides a rich feature set including:

- All major video, audio, metadata and subtitle file formats.
- A broad range of video and audio codecs.
- Subtitle and closed caption insertion, extraction and conversion.
- High Dynamic Range (HDR) and Wide Color Gamut (WCG) color space conversion.
- Adaptive Bitrate (ABR) packaging for OTT delivery.
- Industry standard encryption formats and DRM providers.
- AD marker insertion and stream conditioning.
- Content assembly, video/graphic overlays and audio mixing.

This section introduces the core concepts you'll need to understand before using the Transform service through the web console or the API.

For tested composition examples and API templates, see:

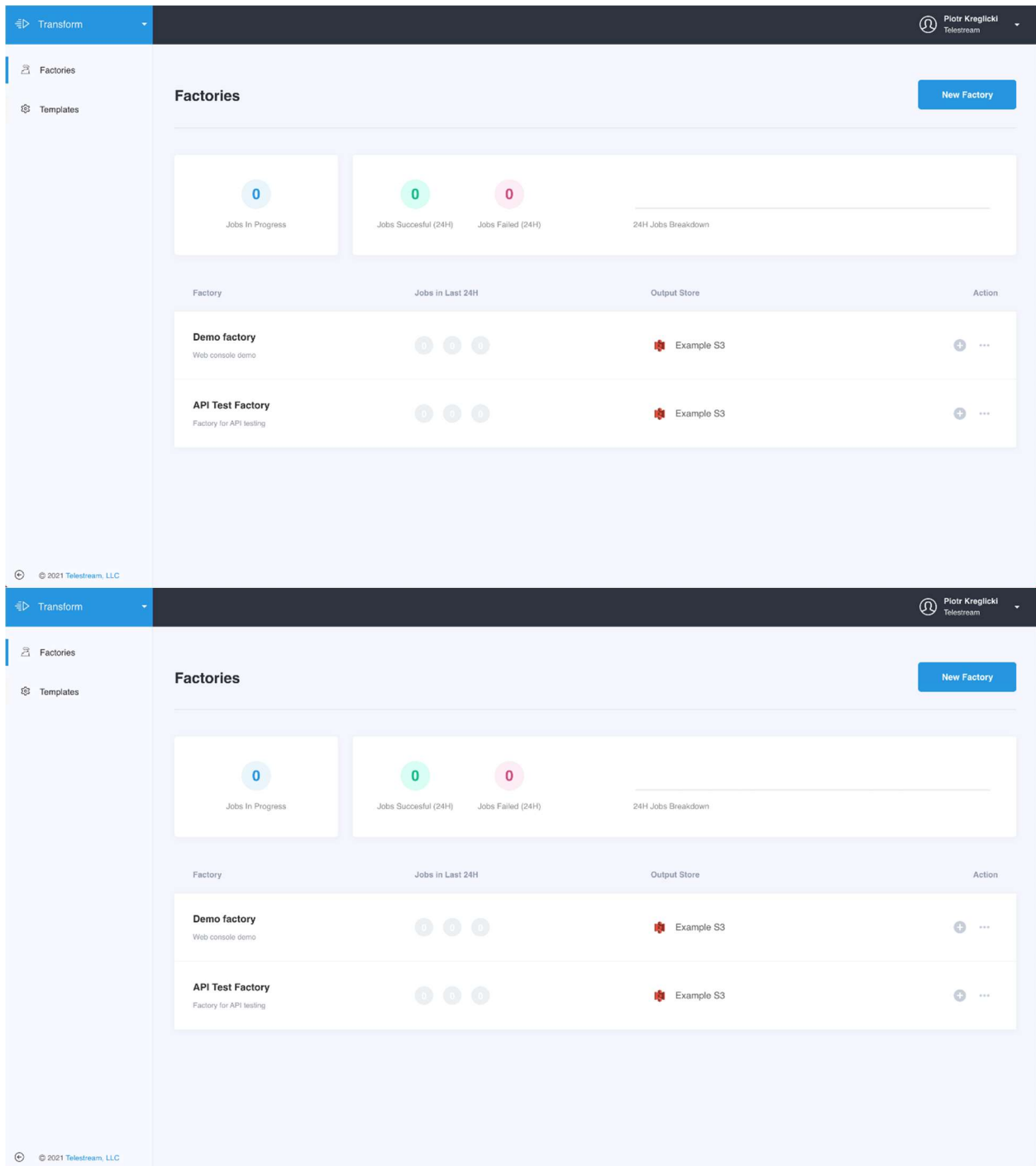
<https://bitbucket.org/Telestream/transform/>

factories

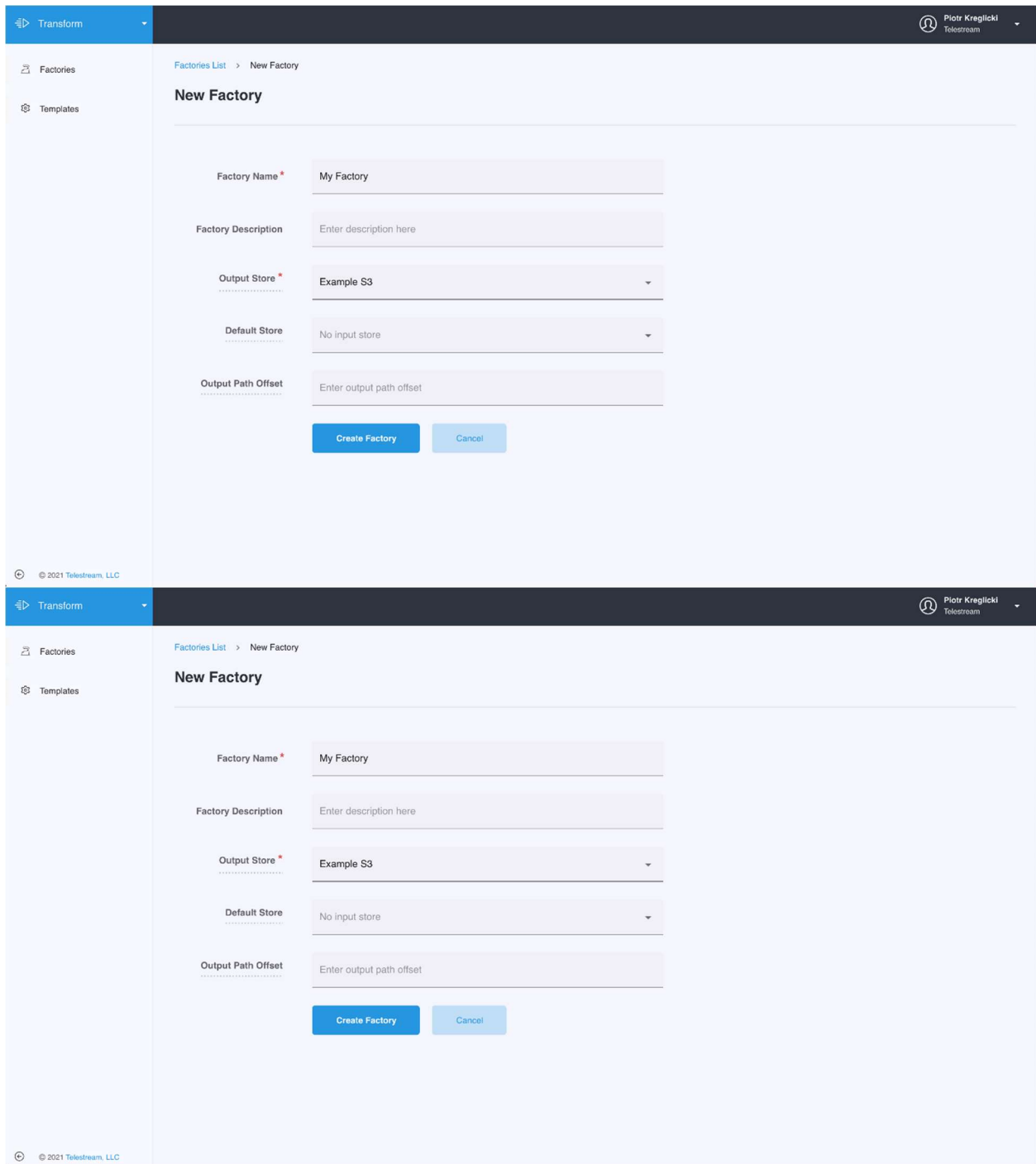
In the Transform service a **factory** is where you run transcoding jobs. Each factory has a name and a storage bucket at one of the supported cloud providers (AWS, Azure, Google, etc.). All media files produced by the factory are delivered to that storage bucket.

Factories allow you to group jobs and output media based on some specific criteria, for example, by environment (production or staging), by department, by client, by media type, etc.

Before you can run Transform jobs you need to create a factory. To create a factory using the web console login to your Telestream Cloud account, go to Transform dashboard and click `New Factory`.



In the next step give the factory a name and select the `Output Store` where media files produced by the factory will be delivered. See [Getting Started - Stores Management](#) for instructions on creating a new object store.



Click `Create Factory` to finish. You will be taken to the newly created factory view.

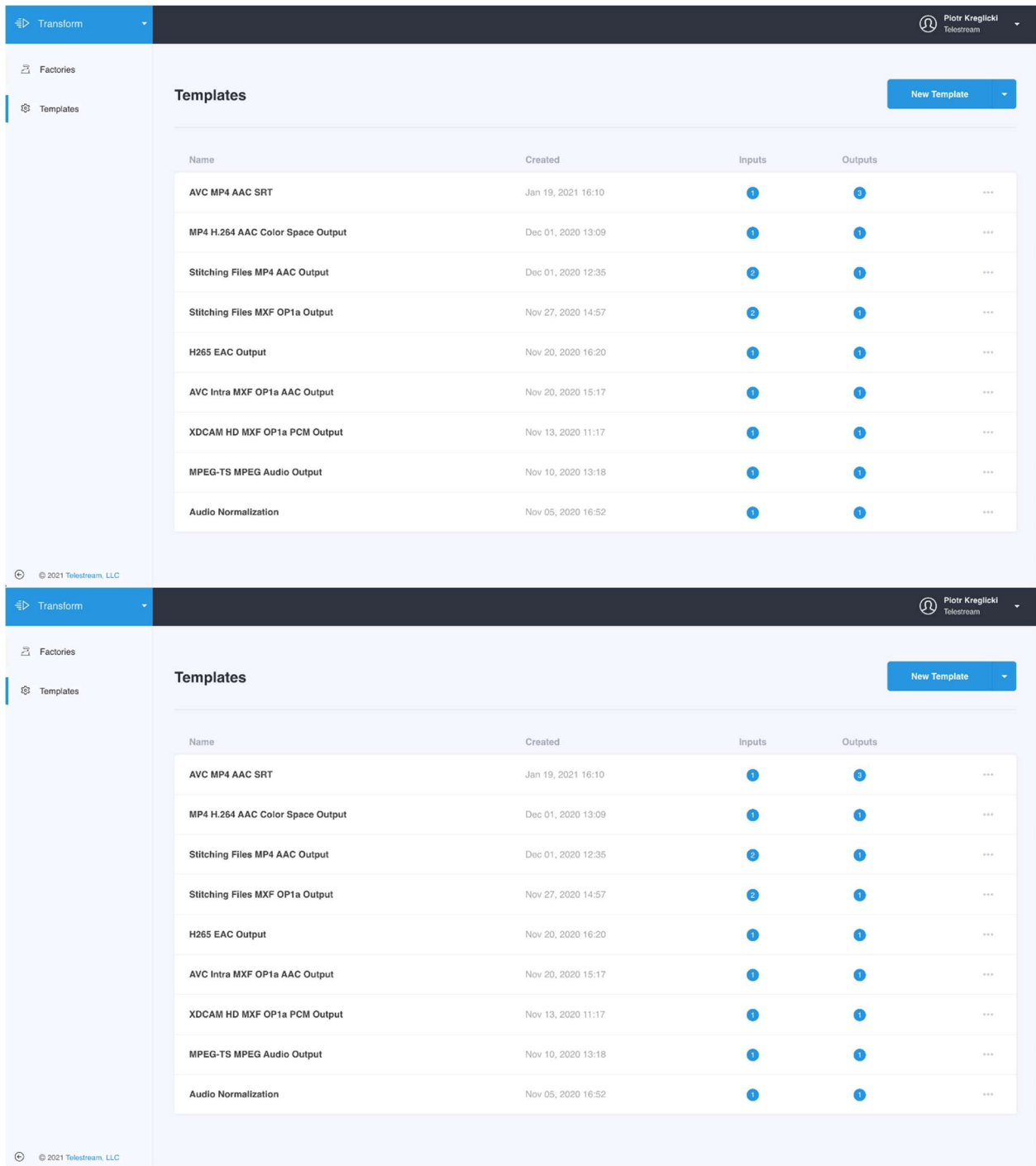
emplates

In the Transform service a **template** accepts one or more media input files and produces one or more output files. When you submit a job you specify a template

and a factory. The template determines the inputs you must provide with the job and the factory determines where the outputs are delivered.

Each template has a name and a **composition**. The composition determines how the video, audio and subtitle streams from the inputs are combined and converted to the output formats.

To create a template go to the Transform dashboard, select the `Templates` view and click `New Template`.



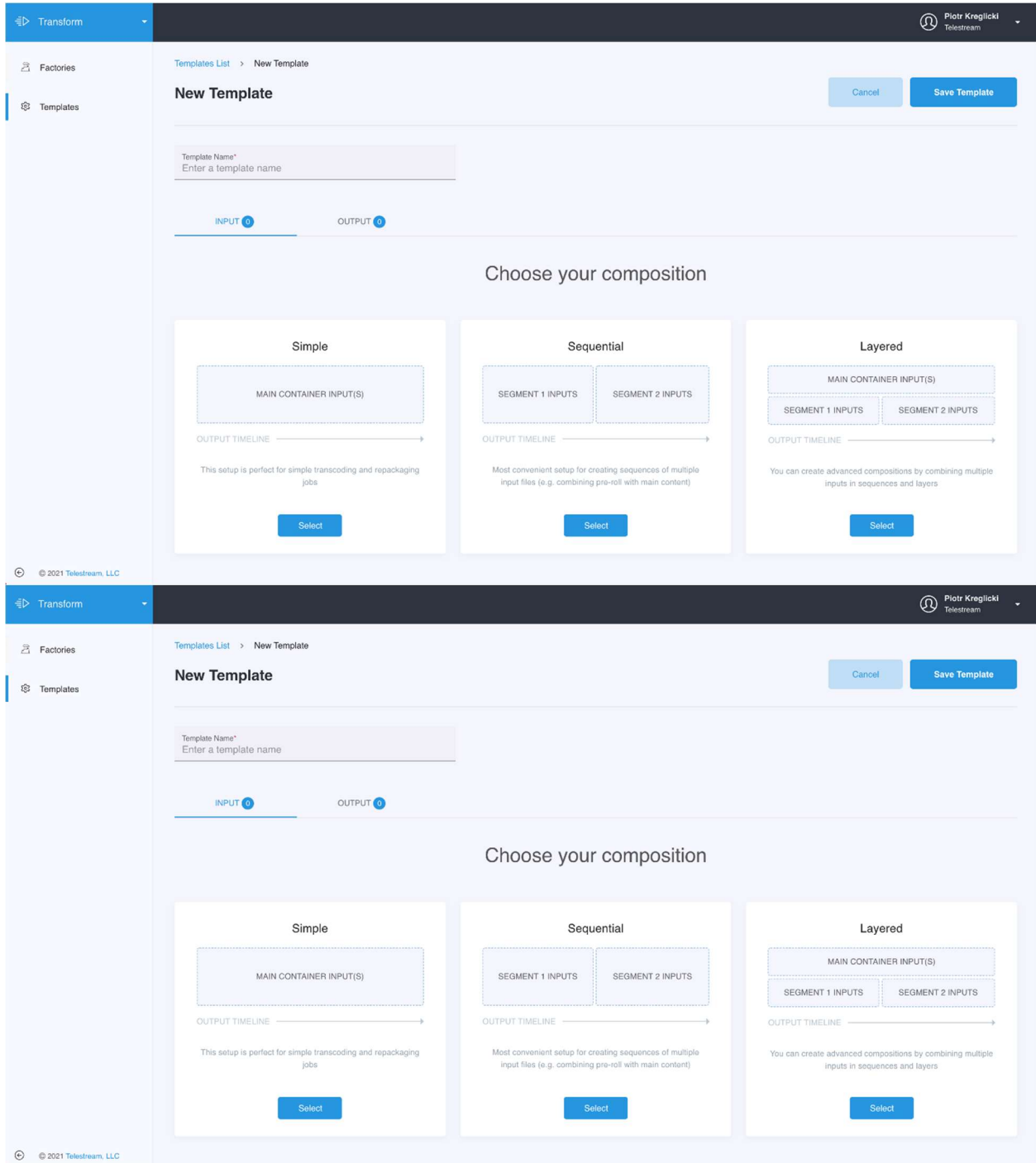
Templates List

Give the template a name and choose the type of composition you want to create. There are three starting points to choose from:

- **Simple** transcoding and repackaging typically from a single input.

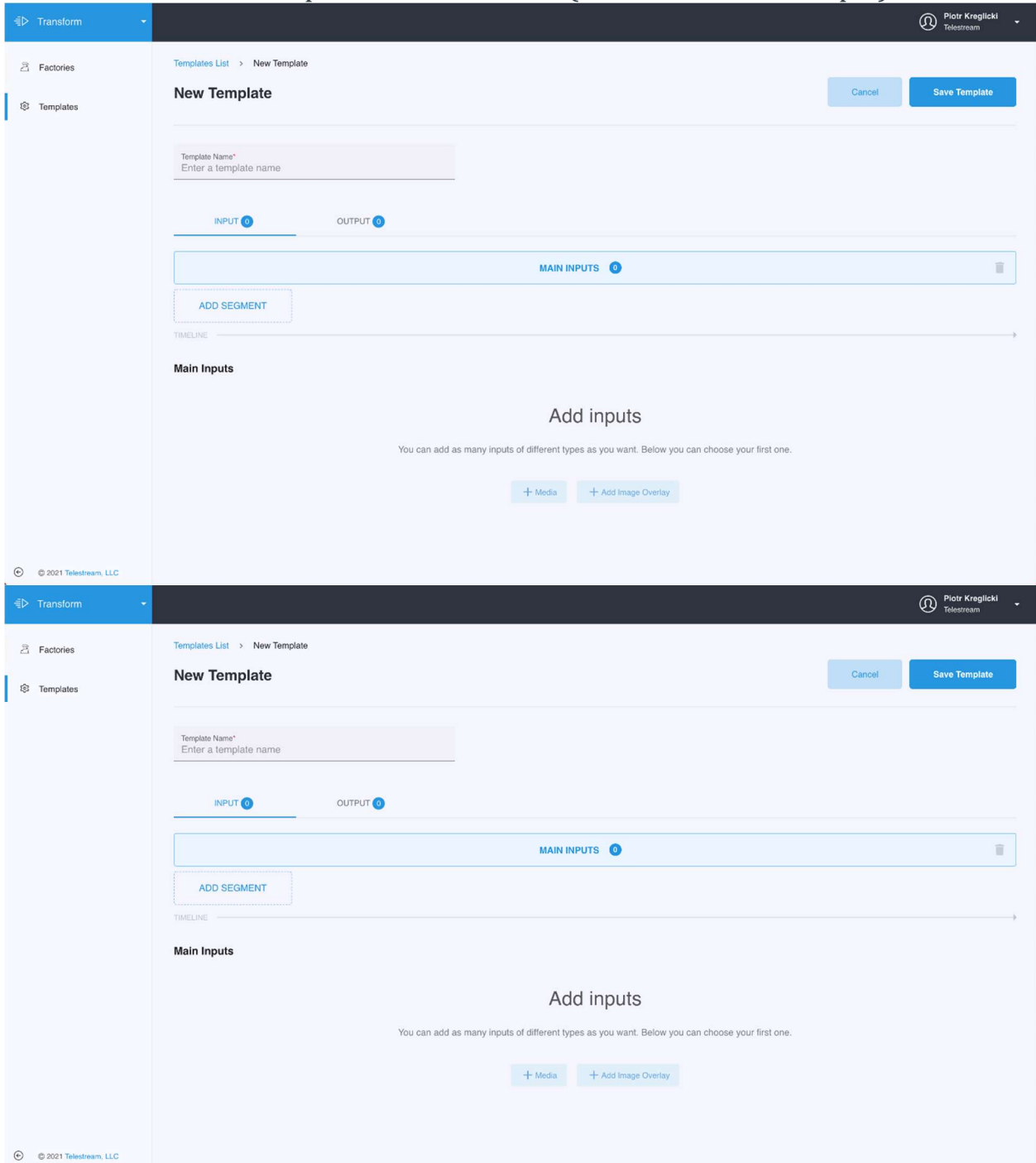
- **Sequential** combines multiple input segments e.g. adding a pre-roll to the main content.
- **Layered** combines sequences with overlays than span the entire composition.

In this tutorial you'll create a simple composition with one input and one output.



Boilerplate Compositions

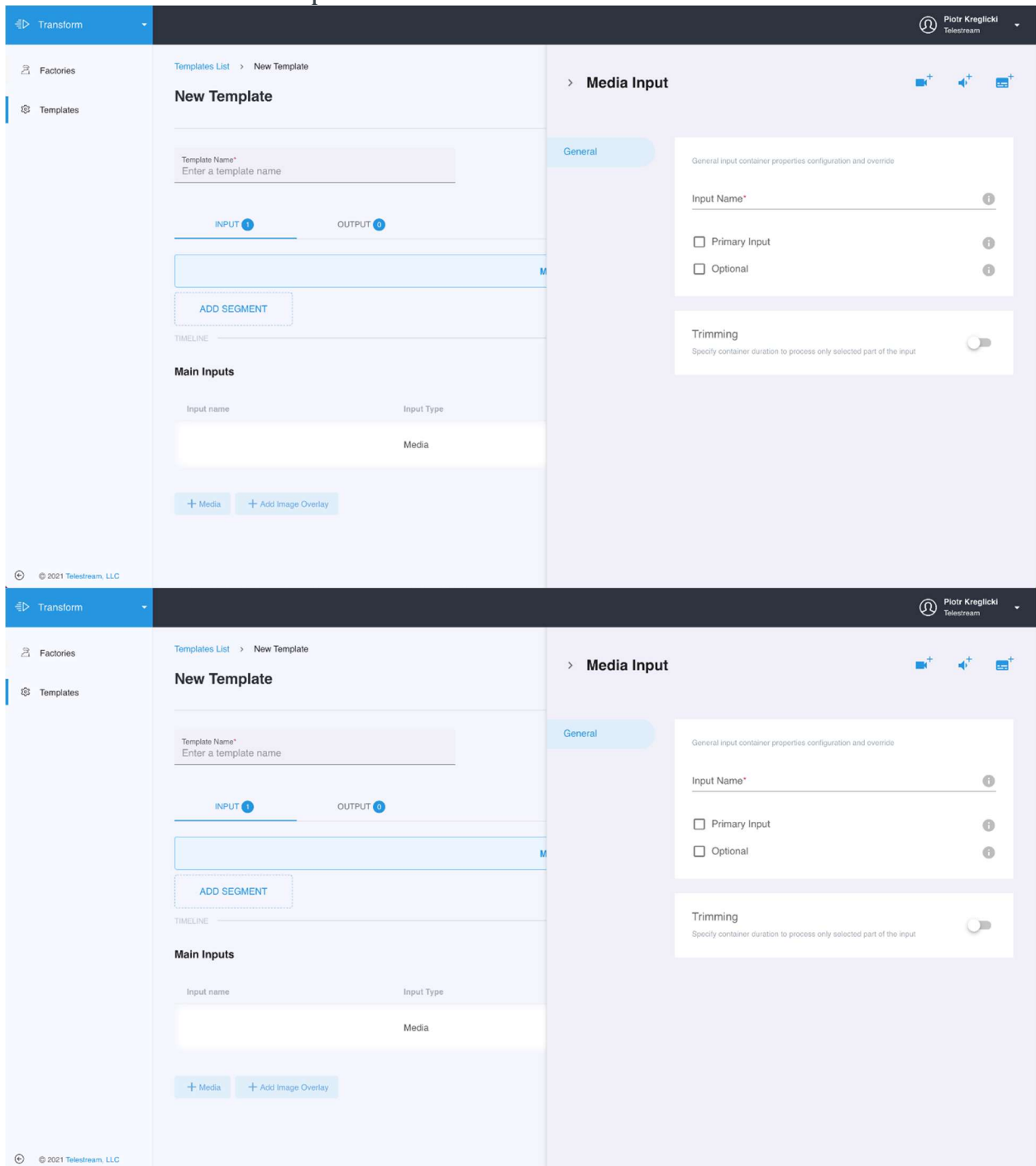
In the `New Template` view you add input and output containers to the composition. Click `+Media` to add an input media container (an MXF file for example).



Template Overview

In the `Media Input` drawer you configure the settings for this input. Each input in the composition has a unique name. When a job is submitted using this template you'll be prompted to provide a media file for each input name.

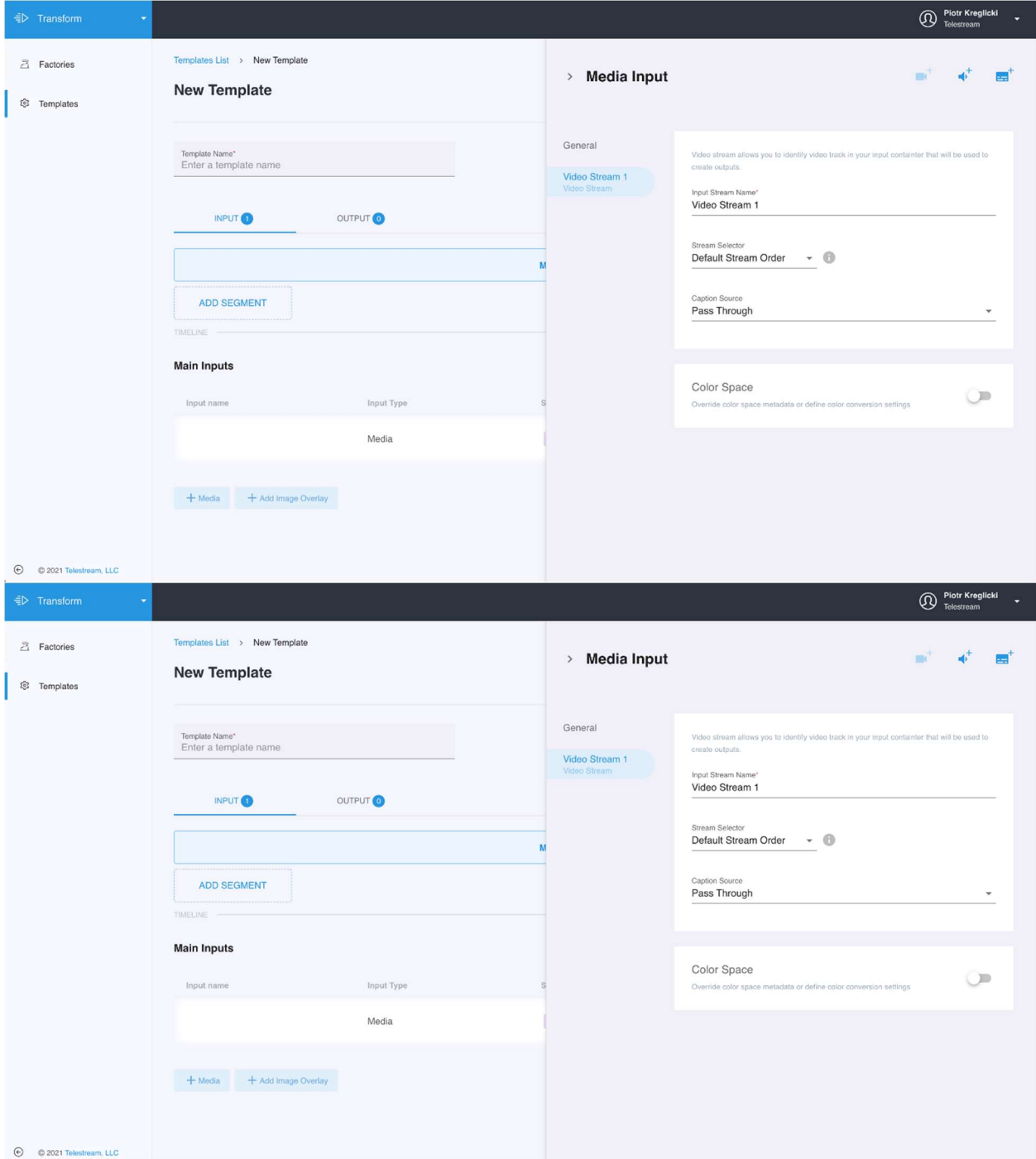
For each input you also select the video, audio and subtitle streams that will be used in the composition. Click the + camera icon in the upper right corner to add a video stream to this input.



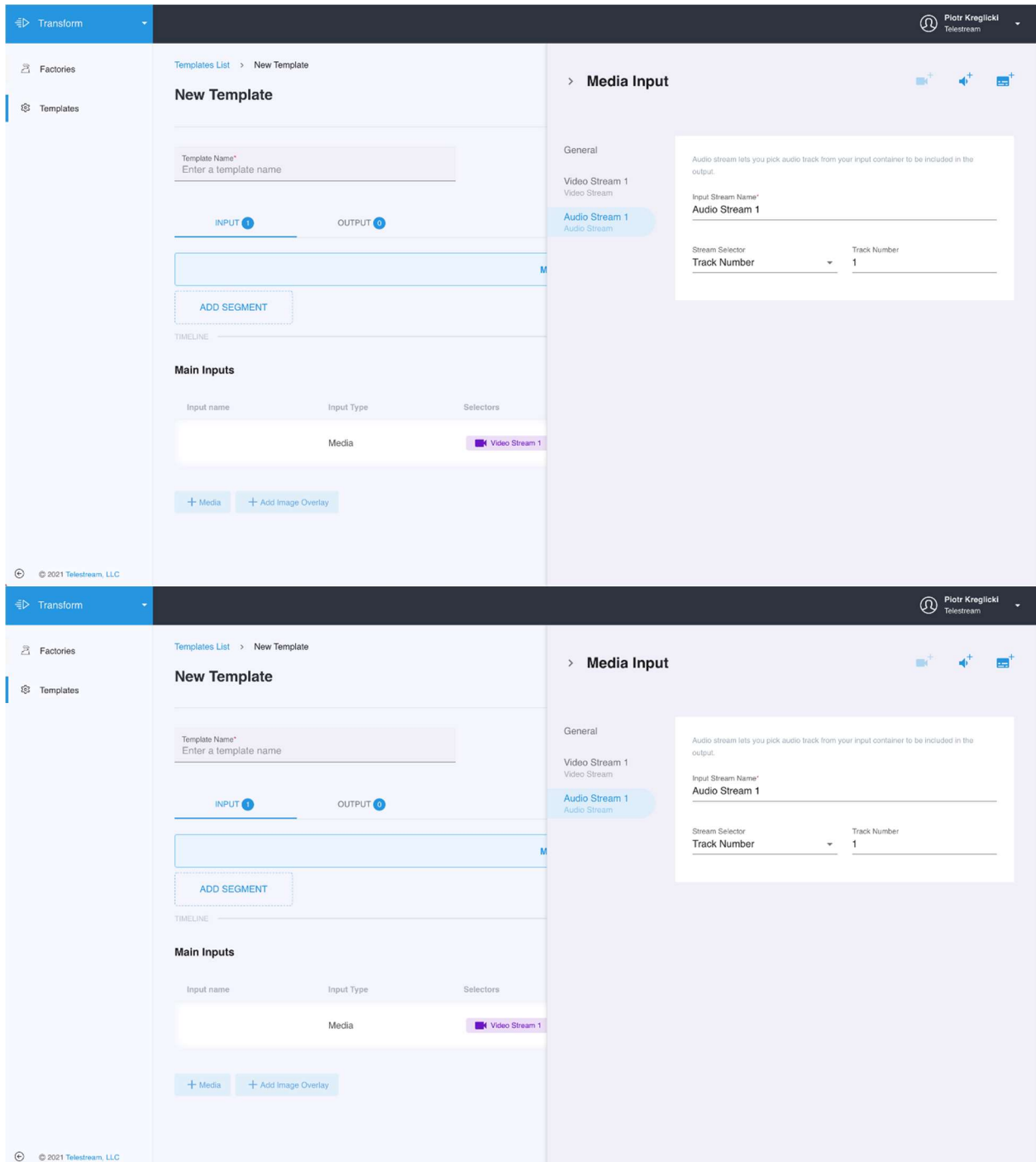
Input Configuration

Each input stream has a unique name for example V1, V2 etc. The name is used to route the input stream to an output.

For most input containers there is only one video stream so you can leave the `Stream Selector` at the default setting.



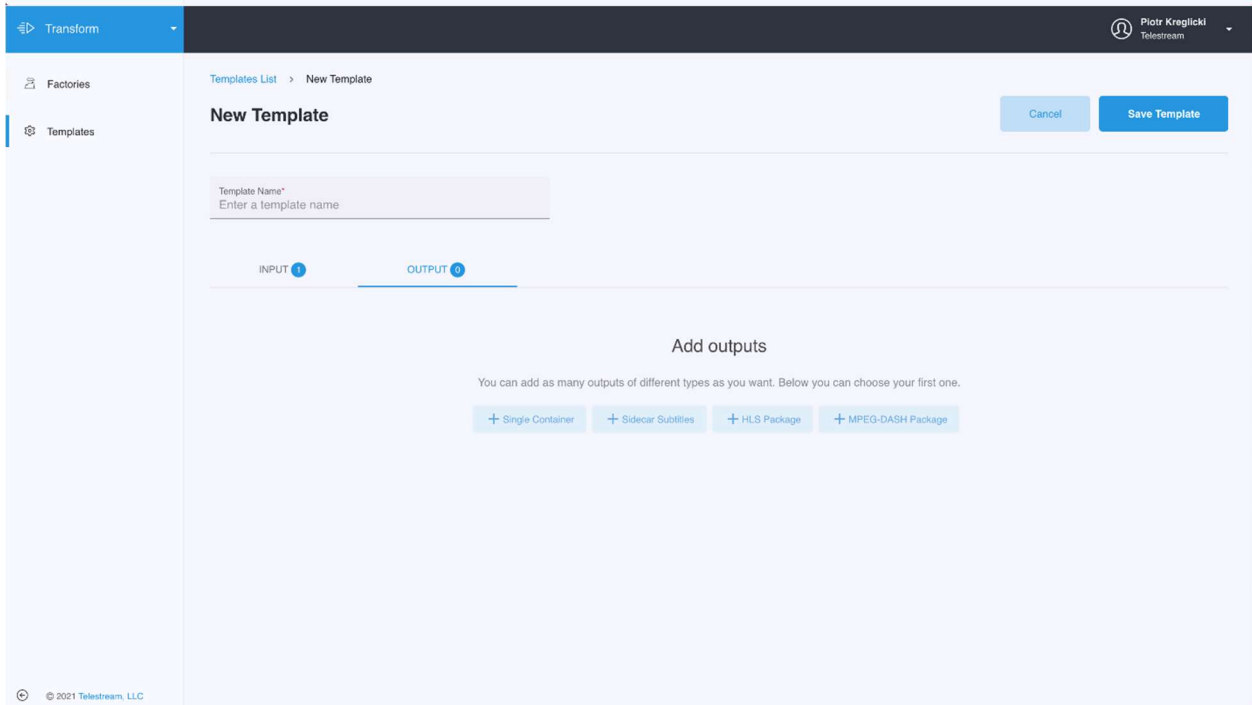
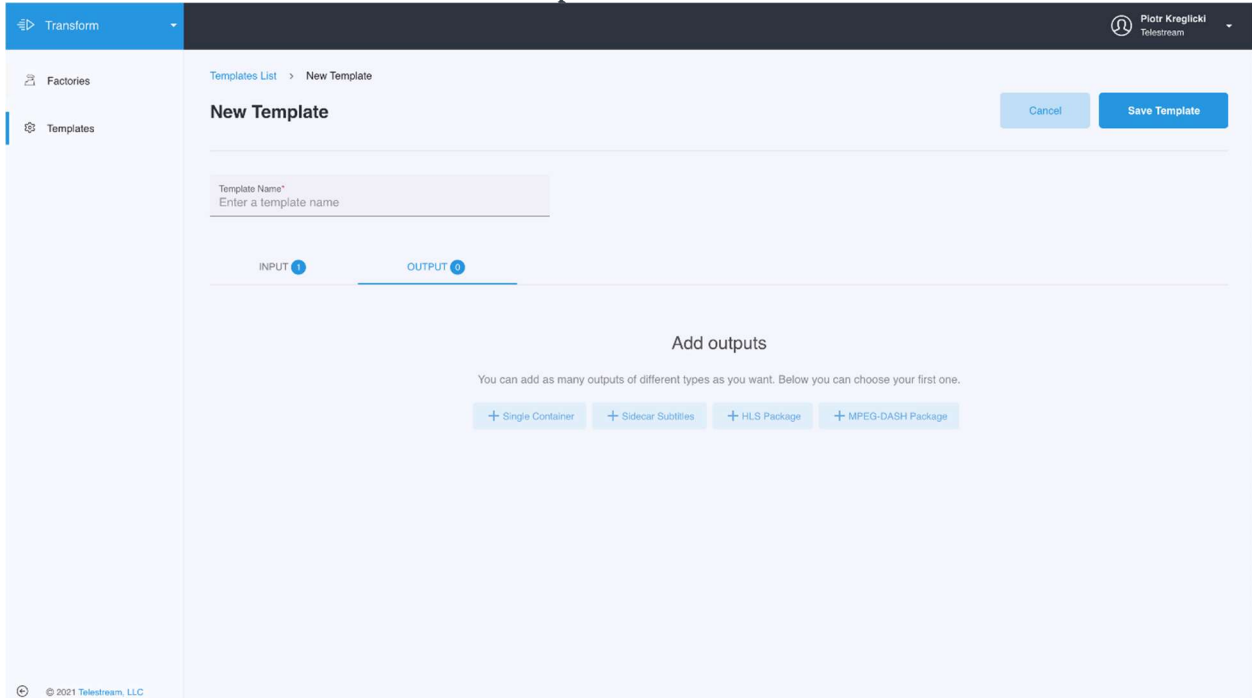
It's very common for an input to contain multiple audio streams. In this case you can select a specific stream using a track number, PID or language. In this example we use the track number (starting at track 1).



Select the **Output** tab to add outputs to the composition. You can add several different types of outputs:

- single file containers
- sidecar subtitle and metadata files
- adaptive bitrate (ABR) packages

Click `+Single Container` to add an output.

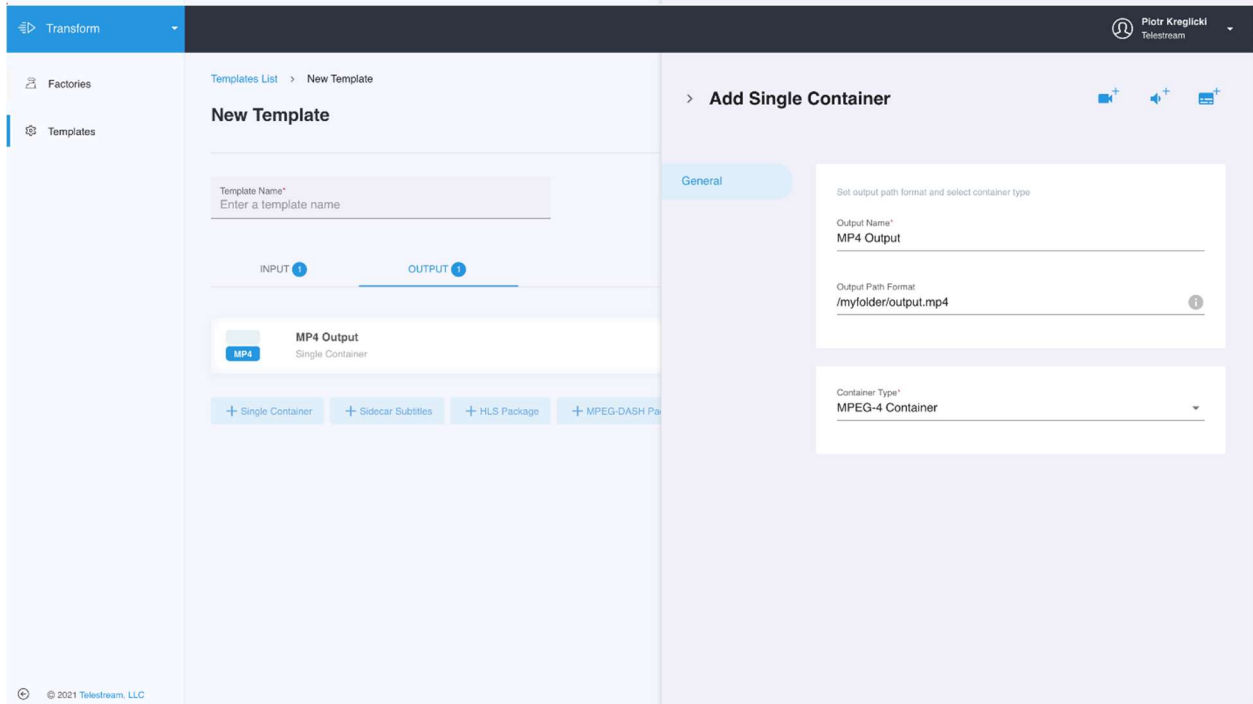
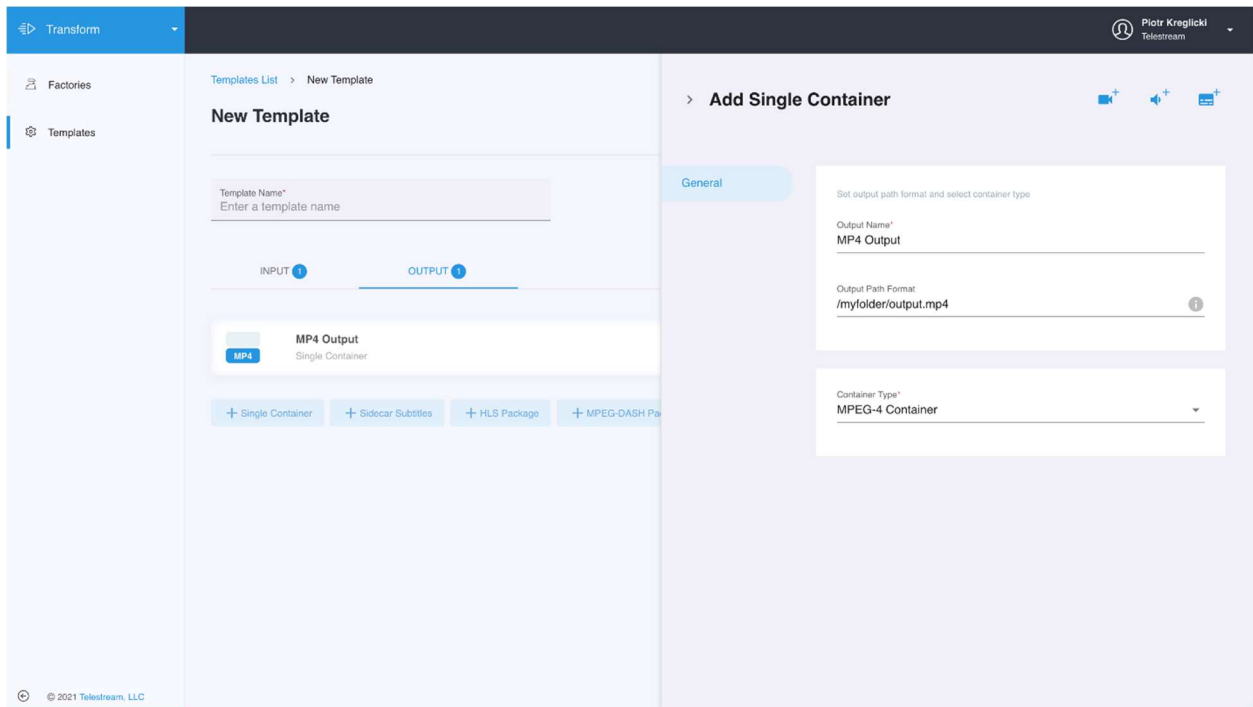


In the `Single Container` drawer you configure the settings for this output. Each output in the composition has a unique name. When a job is submitted using this template you'll provide a media file path for each output name.

Alternatively you can enter the path in the output settings. Output paths allow you to deliver files to a specific folder in the storage bucket. Output paths can include tokens that are replaced for each job, for example the `$original$` token will be replaced with the input file name.

See the [Path Templates](#) reference for more details.

Select the output `Container Type`. In this example we will create an MP4 output file.



Click the + camera icon in the upper right corner to add a video stream to the output. Select the video `Input Stream` that will be routed to this output (`Video Stream 1` in this example).

Select a `Video Format` for this output and configure the codec properties (resolution, bit rate, etc.). In this example the stream will be transcoded to H.264.

Transform

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Factories

Templates

Templates List > New Template

New Template

Template Name*
Enter a template name

INPUT 1

OUTPUT 1

MP4 Output
Single Container

MP4 Video Output 1

+ Single Container + Sidecar Subtitles + HLS Package + MPEG-DASH Pa

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> Add Single Container

General

Set your video output stream properties, including input streams, video codec, captions burn in, etc.

Video Output 1
Video

Output Stream Name
Video Output 1

Input Stream*
Video Stream 1

Add Image/Video Overlay

Video codec
H.264 (AVC)

Resolution
1920 x 1080

Bitrate (bits/s)
500000

Frame Rate
Same as source

Field Order
Same as source

Pixel Aspect Ratio

Transform

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Factories

Templates

Templates List > New Template

New Template

Template Name*
Enter a template name

INPUT 1

OUTPUT 1

MP4 Output
Single Container

MP4 Video Output 1

+ Single Container + Sidecar Subtitles + HLS Package + MPEG-DASH Pa

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> Add Single Container

General

Set your video output stream properties, including input streams, video codec, captions burn in, etc.

Video Output 1
Video

Output Stream Name
Video Output 1

Input Stream*
Video Stream 1

Add Image/Video Overlay

Video codec
H.264 (AVC)

Resolution
1920 x 1080

Bitrate (bits/s)
500000

Frame Rate
Same as source

Field Order
Same as source

Pixel Aspect Ratio

Follow the same steps to add an audio stream to this output. In this example the audio stream will be transcoded to AAC.

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Factories

Templates

Templates List > New Template

New Template

Template Name*
Enter a template name

INPUT 1

OUTPUT 1

MP4 Output
Single Container

Video Output 1

+ Single Container + Sidecar Subtitles + HLS Package + MPEG-DASH Pa

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Add Single Container

General

Configure audio output stream properties like audio codec, channels configuration, etc.

Video Output 1
Video

Output Stream Name*
Audio Output 1

Input Stream*
Audio Stream 1

Audio codec
AAC (Advanced Audio Codec)

AAC Profile
Low Complexity

Sample Rate
Same as source

Bitrate (kb/s)
96000

Channels Configuration
Stereo (L,R)

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Factories

Templates

Templates List > New Template

New Template

Template Name*
Enter a template name

INPUT 1

OUTPUT 1

MP4 Output
Single Container

Video Output 1

+ Single Container + Sidecar Subtitles + HLS Package + MPEG-DASH Pa

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Add Single Container

General

Configure audio output stream properties like audio codec, channels configuration, etc.

Video Output 1
Video

Output Stream Name*
Audio Output 1

Input Stream*
Audio Stream 1

Audio codec
AAC (Advanced Audio Codec)

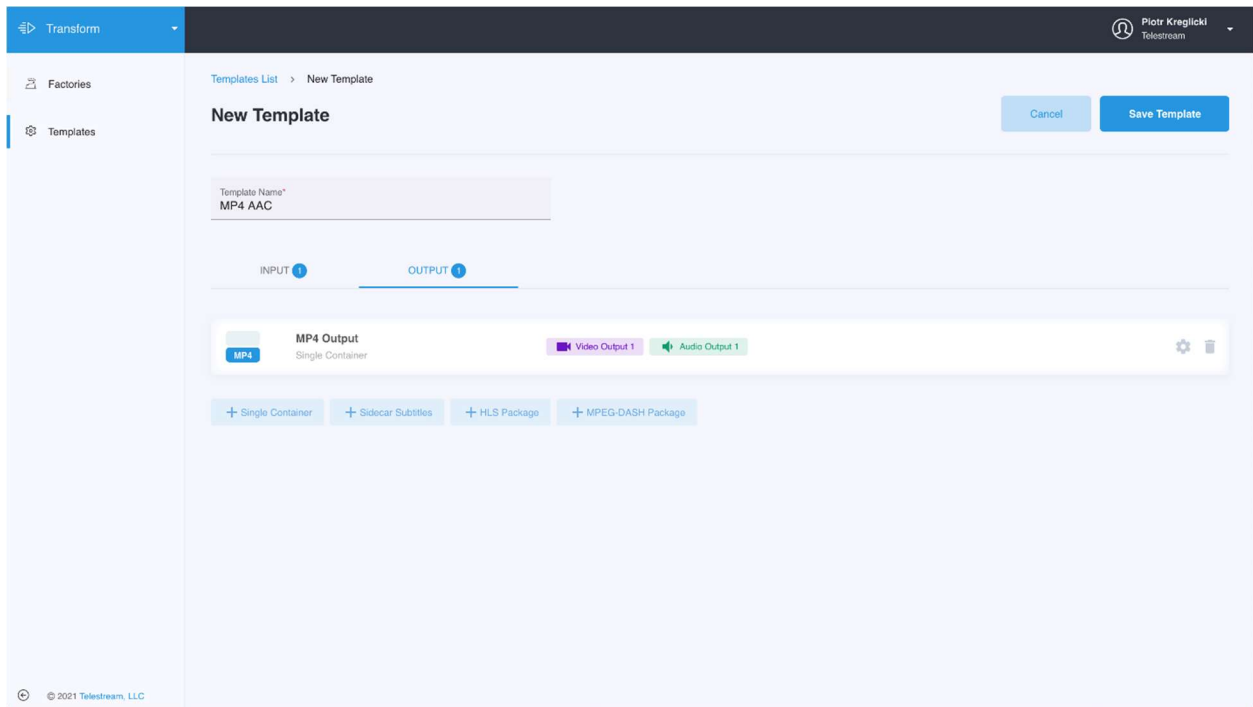
AAC Profile
Low Complexity

Sample Rate
Same as source

Bitrate (kb/s)
96000

Channels Configuration
Stereo (L,R)

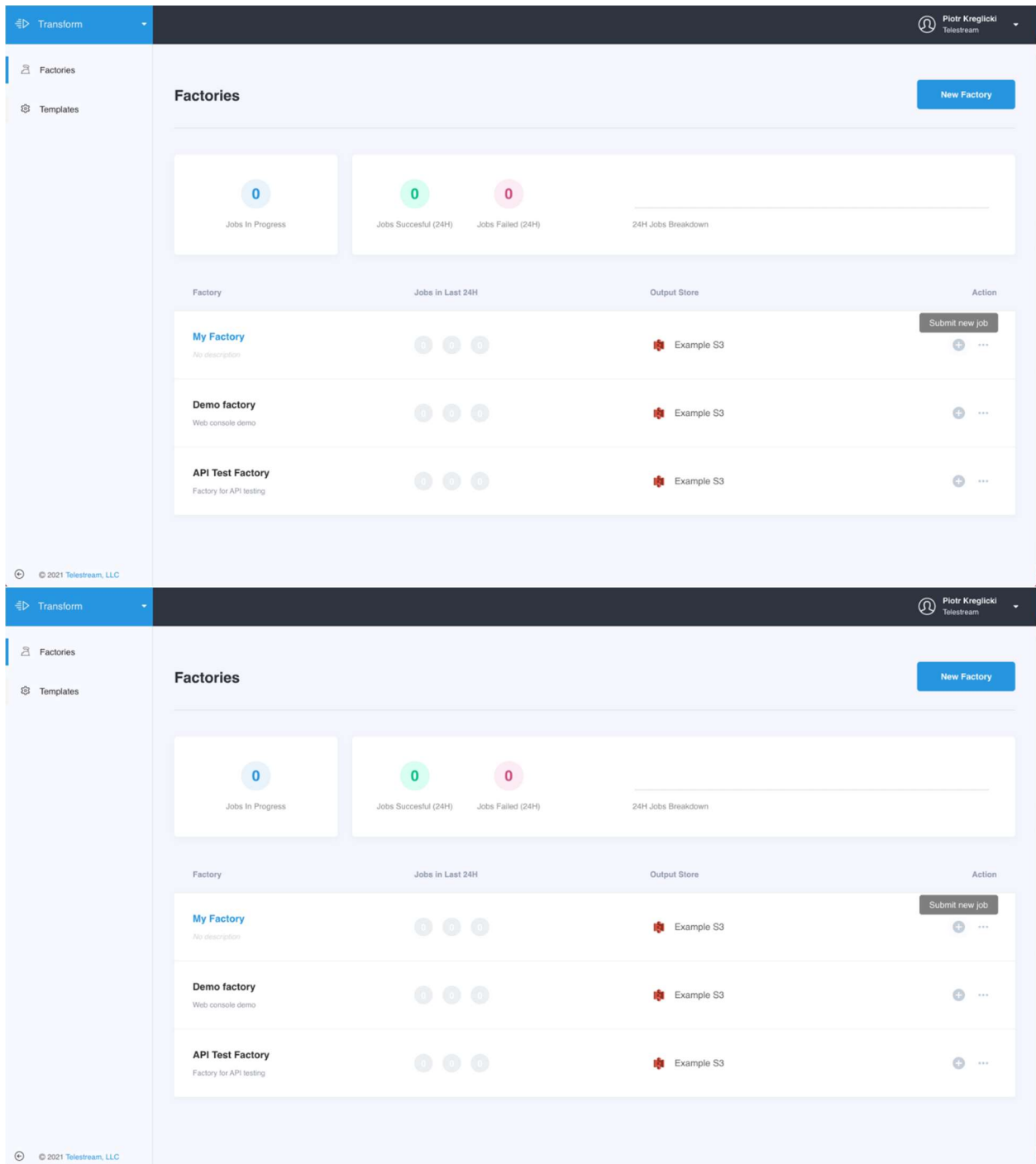
Close the drawer and click **Save Template**.



Jobs

When you submit a job you specify a template and a factory. The template specifies the input files required to process the job. Output files produced by the job are delivered to the storage bucket associated with the factory.

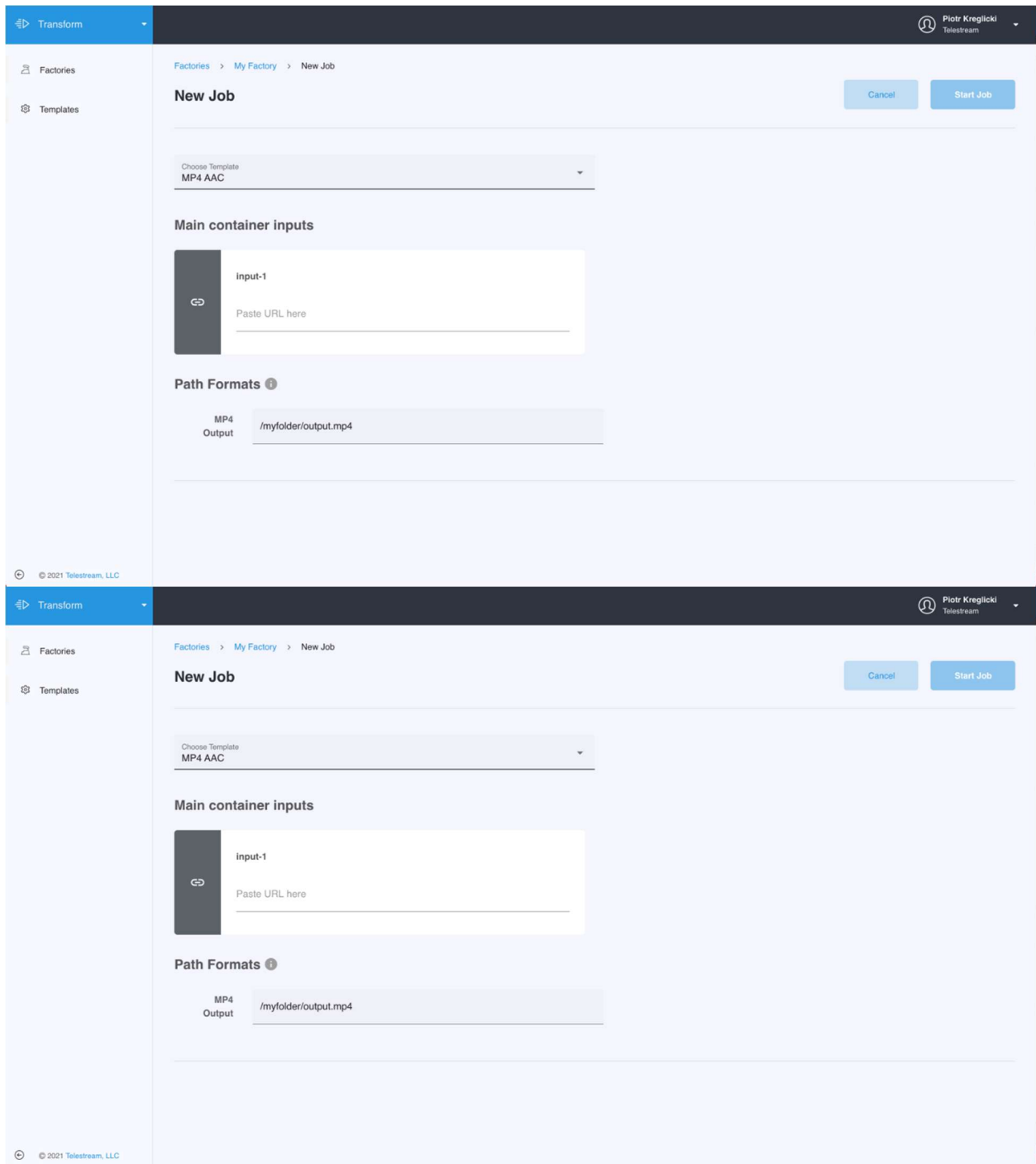
From the Transform dashboard select the `Factories` view. Click the + icon to submit a job to a specific factory in the list.



Choose a template to process the job. The `New Job` view displays a list of inputs required by the template.

Enter or paste a file URL for each required input. Alternatively you can browse or drag local files into the view. Local files will be automatically uploaded to the Telestream Cloud.

Click `Submit Job` to start processing.



The factory view will display the current status and progress of the job: preparing, processing, uploading, success or error.

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Factories > My Factory Submit Job

My Factory

1

Jobs in Progress

0

Jobs Successful (24H)

0

Jobs Failed (24H)

24H Breakdown

Job Status	Job ID	Job Template	Created At	Processing Time	Outputs	Action
Processing	ea6b0a9632a74a53e066fb70cf36cb1	MP4 AAC	Feb 16, 2021, 4:34 PM	-	1	...

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Factories > My Factory Submit Job

My Factory

1

Jobs in Progress

0

Jobs Successful (24H)

0

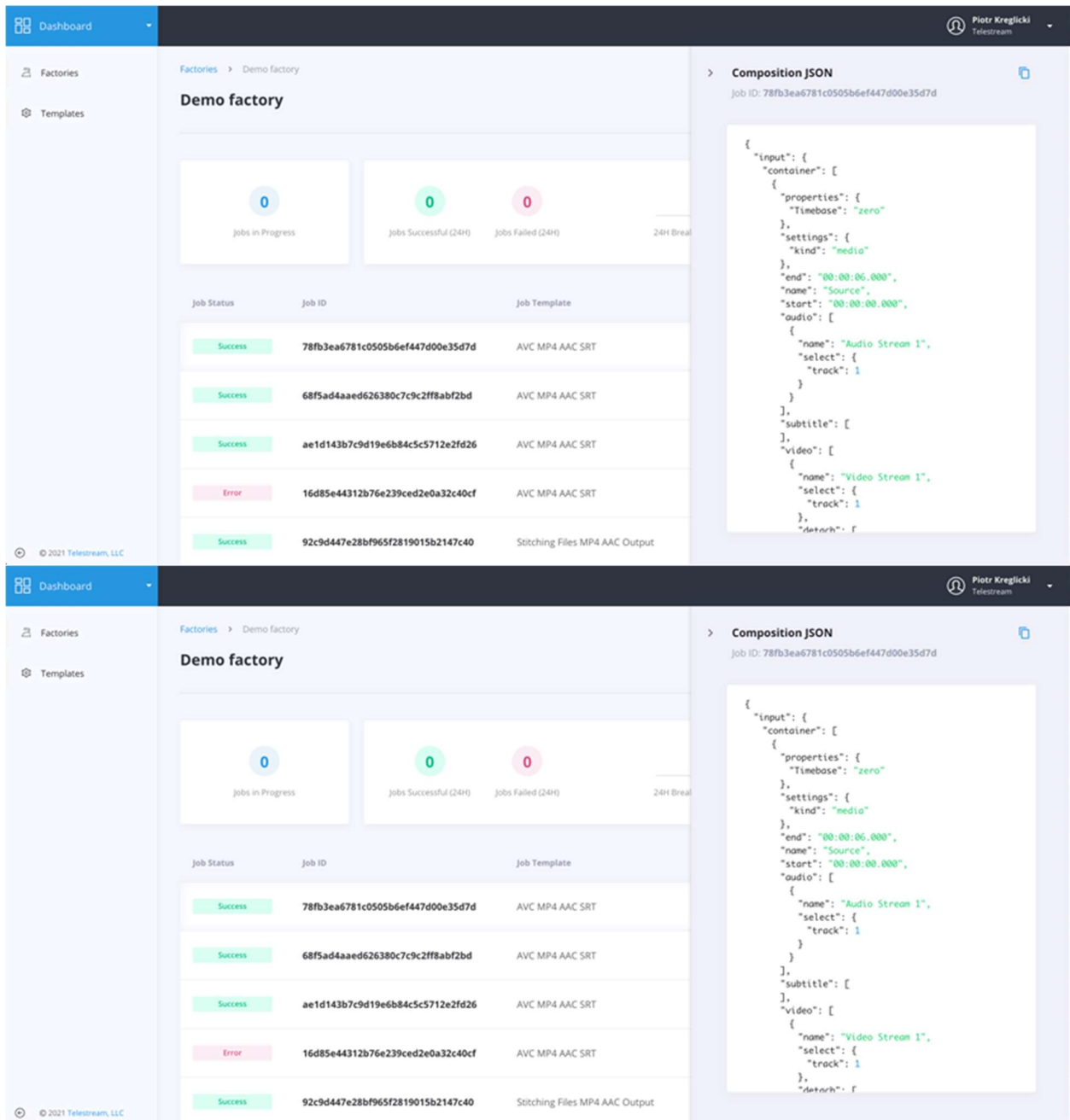
Jobs Failed (24H)

24H Breakdown

Job Status	Job ID	Job Template	Created At	Processing Time	Outputs	Action
Processing	ea6b0a9632a74a53e066fb70cf36cb1	MP4 AAC	Feb 16, 2021, 4:34 PM	-	1	...

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Select the Show Composition JSON action to view the composition JSON that was processed.



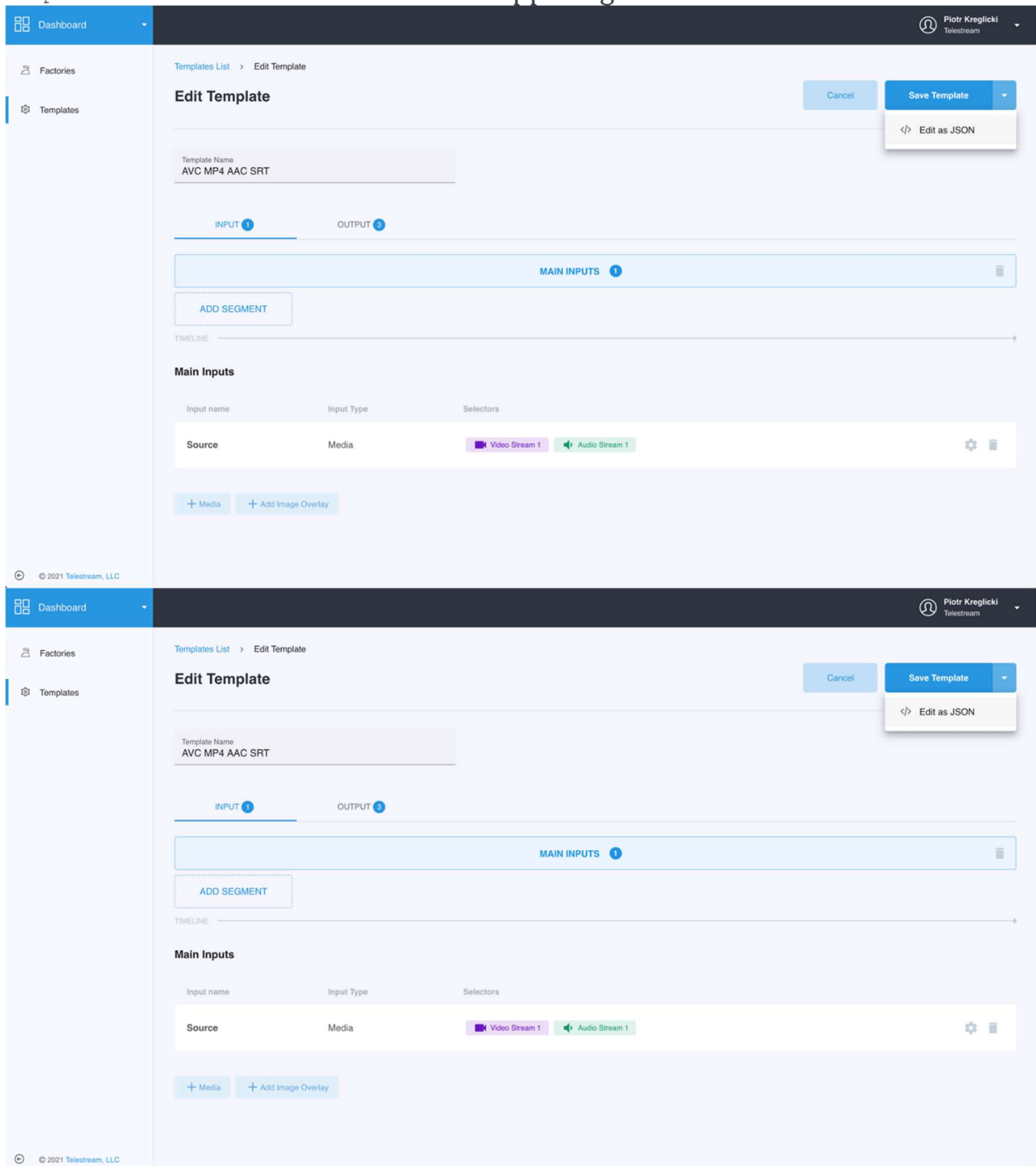
Drawer with jobs JSON composition

Compositions

In the [Templates](#) topic you created a simple composition visually using the Transform web console. The visual user interface supports many common transcode and packaging workflows.

To access features that are not available in the visual user interface you can directly edit the JSON version of a composition.

From the Templates list select the template you want to edit. In the Edit Template view select Edit as JSON in the upper right corner.



You will be prompted to either convert the template directly to JSON format or to create a JSON editable copy of the template. JSON templates cannot be edited visually.



Edit as JSON

If you edit this template as JSON you will lose the ability to edit it using visual editor. If you want to keep this ability, create a duplicate of this template.

Create a copy to edit as JSON

Cancel

Edit as JSON



Edit as JSON

If you edit this template as JSON you will lose the ability to edit it using visual editor. If you want to keep this ability, create a duplicate of this template.

Create a copy to edit as JSON

Cancel

Edit as JSON

The `Edit Template` view will display the editable JSON composition.

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Factories

Templates

Templates List > New JSON Template

Edit Template Cancel Save Template

Template Name
AVC MP4 AAC SRT_copy

Composition JSON
Paste your composition JSON here to generate your template config.

```
Code powered by ace
1- {
2-   "input": {
3-     "container": {
4-       "properties": {
5-         "Timebase": "zero"
6-       }
7-     },
8-     "settings": {
9-       "kind": "media"
10-     },
11-     "end": "00:00:06.000",
12-     "name": "Source",
13-     "start": "00:00:00.000",
14-     "audio": {
15-       {
16-         "name": "Audio Stream 1",
17-         "select": {
18-           "track": 1
19-         }
20-       }
21-     },
22-     "subtitle": [],
23-     "video": {
24-       {
25-         "name": "Video Stream 1",
26-         "select": {
27-           "track": 1
28-         }
29-       },
30-       "detach": {
```

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Factories

Templates

Templates List > New JSON Template

Edit Template Cancel Save Template

Template Name
AVC MP4 AAC SRT_copy

Composition JSON
Paste your composition JSON here to generate your template config.

```
Code powered by ace
1- {
2-   "input": {
3-     "container": {
4-       "properties": {
5-         "Timebase": "zero"
6-       }
7-     },
8-     "settings": {
9-       "kind": "media"
10-     },
11-     "end": "00:00:06.000",
12-     "name": "Source",
13-     "start": "00:00:00.000",
14-     "audio": {
15-       {
16-         "name": "Audio Stream 1",
17-         "select": {
18-           "track": 1
19-         }
20-       }
21-     },
22-     "subtitle": [],
23-     "video": {
24-       {
25-         "name": "Video Stream 1",
26-         "select": {
27-           "track": 1
28-         }
29-       },
30-       "detach": {
```

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See the [Compositions](#) section for an overview of the schema. See the [Schema Reference](#) for complete details