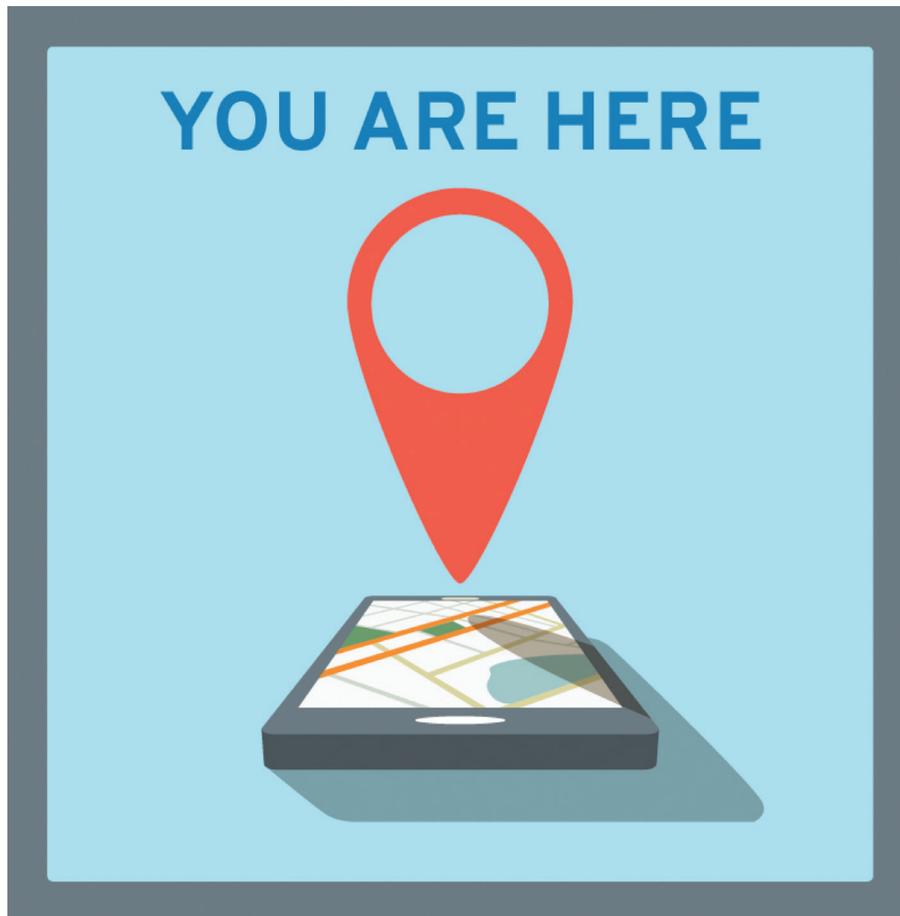


Streaming Apps



How do you know which streaming app platform to go with, and who do you approach to help you? The number of over-the-top (OTT) platforms on the market is larger than ever. iOS, Android, FireTV, Roku, Android TV, the list goes on and on...

With our end-to-end streaming solution, Tulix helps customers build a cost-effective streaming app strategy to bring their content where the viewers are. We work with our customers to identify what solution will be most effective for them. Whether their goal is to grow viewership, add new features to existing apps or expand to other platforms, we can help.

Beginner, expert or somewhere in between?

Our customers come from all over the streaming map. Some are seasoned veterans who know exactly what they need and how they will get there, others are just starting out and are grappling with terminology, best practices and even trying to get the acronyms straight. Don't worry if you have questions. We have answers.

We thought the easiest way to explain our services is to introduce you to a few of our *typical customers*. You might see yourself in a particular example, or maybe you share some traits with all of them.

- Mr. Mystified, you don't know what you need to know.

- Mr. & Mrs. NeedItYesterday, you're both in a hurry and you're bickering.
- Mrs. MixAndMatch, you're an expert and you're in trouble.

If you have lots of experience, you might want to go to Mrs. MixAndMatch's profile. Otherwise, meet our cast of characters.

Mr. Mystified

Is new to streaming. He has a library of static content on YouTube and he wants his own custom VOD app to grow his audience. He's had some success in establishing his web presence and wants to



expand to other platforms, but has no idea where to start.

Technical App-titude: Beginner, basic streaming knowledge

Content: Library of VOD content he would like to stream

Business Model: Free with sponsored content or advertising

Objective: Grow viewer base

App Strategy: Needs guidance

Questions:

What kind of content are you looking to stream and where would viewers want to see that content?

If your content is primarily long form content, which is anything that is typically more than ten minutes in length, then devices that offer a TV-like experience like Roku and Amazon Fire TV may be optimal for you. For shorter form videos and live content that is more likely to be consumed on the go, apps for mobile delivery like iOS and Android might be a better fit.

Are you looking to build a simple app to reach as many people as possible or do you want to build a very sophisticated app for one platform first?

You likely have a budget with an upper limit on what you are willing or able to spend on streaming and application services. Complex, feature rich applications are great and likely to be well received by viewers, but generally cost quite a bit more than basic, content-focused applications. There's a good chance you'll have to compromise on either features or breadth.

What's more important to you: discoverability or accessibility? Are you looking to expand to a new audience, or give your existing viewers new means to watch your content?

Unless you plan on launching on all devices at once, you'll likely want to select the initial apps you deploy on to ensure your content reaches the highest possible number of viewers. If you're just starting up and don't already have an established viewer base, you'll want to choose platforms that make it easy for potential viewers to discover your content.

Recommendations:

A Roku or Amazon Fire TV channel can provide higher potential for discoverability in Mr. Mystified's case, since the app stores on these devices let users browse specifically for video content. Once he grows his viewer base, he can then look

to expand to mobile apps and other platforms.

Tulix Solution:

- Encoding and transcoding
- CDN
- Content management systems
- Authentication
- Monetization - subscription, pay-per-view and advertising
- Analytics
- Applications and more.

Tulix provides end-to-end streaming solutions that include all components Mr. Mystified may need, from source to delivery. Even more importantly (at least



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for Mr. Mystified), we take a consultative approach, analyzing goals and budget to make recommendations for what we think will be the most effective streaming strategy.

Benefits:

- Consultation and evaluation to come up with an effective streaming solution and app streaming strategy.
- Compatibility, ease of mind and rapid deployment.
- No technical knowledge required. We provide the entire streaming infrastructure and help optimize encoding configurations.
- Content delivery to custom apps on all major platforms. Live, linear playout, and VOD content uploaded via our content management system

synchronizes across all platforms and can be monetized with subscription, pay-per-view billing or ad-insertion.

- We optimize applications and web players to work on all platform devices. Stable and high-quality content delivery is what is most important to viewers.

Mr. & Mrs. NeedItYesterday

Have a traditional religious broadcast background. They have an established viewer base for their 24/7 linear channel that they broadcast via satellite. They do a basic web stream for desktop and mobile devices and are now looking to enhance the viewer experience through custom apps and additional features, like VOD and DVR.

By now, they're fairly familiar with streaming and have a solid grasp of the options available to them. While they know what they need, finding the right vendor(s) is a significant hurdle for them. They want to be quick to market, but they are arguing with each other about the best route to take.

Technical App-titude: Intermediate, able to encode their own content.

Content: Live streaming and broadcast channels, plus an archive of videos they can use for VOD.

Business Model: Free and premium archive access

Primary Objective: Increase content consumption by existing viewer base by providing more options to watch.

App Strategy: Provide viewers with options to watch their content that





complements their satellite broadcasting through mobile streaming applications. Publish an app to iOS and Android.

Questions:

How willing are you to regularly dedicate resources to your streaming operations?

Beyond money, your streaming solution will require time and human resources. A 24/7 live stream almost runs itself, barring any encoder malfunctions. But if you want to have a regularly updated VOD library, you'll need someone to manage it and encode videos for upload.

If you plan to monetize some or all of your content, you'll need someone to interact with customers to field questions, feedback and complaints. The latter is probably the greatest headache, so you'll want to be sure that your streaming solution is stable and works well on all devices and regions you deliver to.

What monetization strategy do you think will work best for you, given the type of content and your audience?

A small library of VOD doesn't lend itself well to a subscription model, since it won't take long before a subscriber has watched everything and no longer feels like they're getting any value out of paying a monthly fee. Likewise, advertising to a religious audience may be difficult. The random ads served by an ad network may not be well received and the broadcaster may not have the resources or weight to sell its own sponsorship packages. Figuring out a sustainable model is a crucial step early in the process, as switching to a different one later down the road can be very difficult or cost-prohibitive.

Recommendations:

Mr. & Mrs. NeedItYesterday's primary goal is to give their existing viewers

additional options beyond the living room. By having custom mobile apps developed, viewers can have content at their fingertips anytime they want, even while on the road. As the most popular mobile platforms, iOS and Android are probably a great place to start.

With an already high burden of running the day-to-day operations of a television channel, Mr. & Mrs. NeedItYesterday may not have the resources to dedicate to maintaining a large VOD library. Instead, they could opt to use an automatic DVR feature like Tulix's that records their live stream and makes it available in VOD format on their applications and website.

Their channel is free to watch and they probably want to keep it that way. However, to give their viewers a way to support them, the couple may want to make the recorded DVR content available for a small monthly subscription. Unlike a static VOD library, the DVR content is always "fresh," so it probably won't be hard to retain subscribers, making it a sustainable monetization model.

Tulix Solution:

- Encoding and transcoding
- Live and DVR streaming
- Subscription billing system
- Mobile apps and more.

Mr. & Mrs. NeedItYesterday can deploy their solution quickly and without much work on their part. The reliability of the system and automated components (DVR archiving and subscription billing) means the couple save precious time that they can dedicate to the more important day-to-day activities related to managing their channel.

Benefits:

- No technical knowledge required. We provide the entire streaming

infrastructure.

- App content delivery on all major platforms. Live and DVR are fully automated on all platforms. VOD content is published via the CMS and synchronizes instantly across all devices.
- Fully integrated subscription monetization system. Subscribers register once, can use their accounts on all platforms and all revenue goes directly to the content owner.
- Optimized applications and content delivery. We optimize delivery to all devices to ensure stability and quality. Satisfied viewers mean higher subscriber retention and less time wasted on viewer technical support.

Mrs. MixAndMatch

Meet Mrs. MixAndMatch, who carefully selected every component of her streaming solution to best match her particular needs – usually some combination of price, performance, quality and features. She might have services from half a dozen suppliers and a different app developer for each platform. She's customized everything, which means she's getting exactly what she wants, until she's not.

Technical App-titude: Expert, seasoned streaming veteran with a complex, modular solution

Content: Live and VOD

Business Model: Pay-per-view

Primary Objective: Increase the stability and quality of existing streaming solution.

App Strategy: Wants to be on all major devices and have a wealth of features. Will comparison shop to find the "perfect" developer for each platform.

Questions:

How do you ensure the provider(s)

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you choose will integrate with your existing solution?

It's possible to lower costs by making vendors compete for each component of the solution. The more budget conscious, for example, might shop for the CDN with the lowest bandwidth prices and then find a separate app developer with the lowest development prices to integrate with. There are a lot of potential pitfalls with this approach. While the initial costs may seem lower than going with a turnkey solution, there are often hidden costs that don't appear until later.

One of these is unexpected compatibility issues that may arise during the course of development. For example, an app developer may not have a full scope of what it will take to integrate a

specific CDN. If integration turns out to be more complex than expected, the associated costs will more than likely get passed on to the customer.

When customers say they can't watch your stream, your point of failure could be at multiple points. How do you determine where the problem lies and who is responsible for fixing it?

Say that one day, all of the streams on your app go down and you're fielding calls left and right from viewers who don't know why. Who do you contact, your CDN or the developer who manages the app?

For companies like Tulix, where we frequently provide every component of the streaming solution, the customer turns to us to fix any problems that may arise and it

is our responsibility to determine their root and fix them as quickly as possible. Mrs. MixAndMatch most likely has a solution that works very well when it, well, works. When things fail, it could be the DRM servers, CMS, API issues, billing system bugs... She's picked so many different suppliers, it can be very hard to even know where the problem is, much less how to troubleshoot it. Similarly, the vendors she contacts may not be inclined to take responsibility for fixing a problem, since the break in the chain could potentially be from any of the other components they do not provide.

Recommendations:

Every third party component in Mrs. MixAndMatch's solution is a potential point of failure. There's nothing intrinsically wrong with a modular solution, but she should ask herself whether she could make improvements by consolidating (or removing) some components. This may come with some short-term expenses, but she will likely recoup those through the results of the improvements she makes (higher viewership, better viewer retention and more revenue).

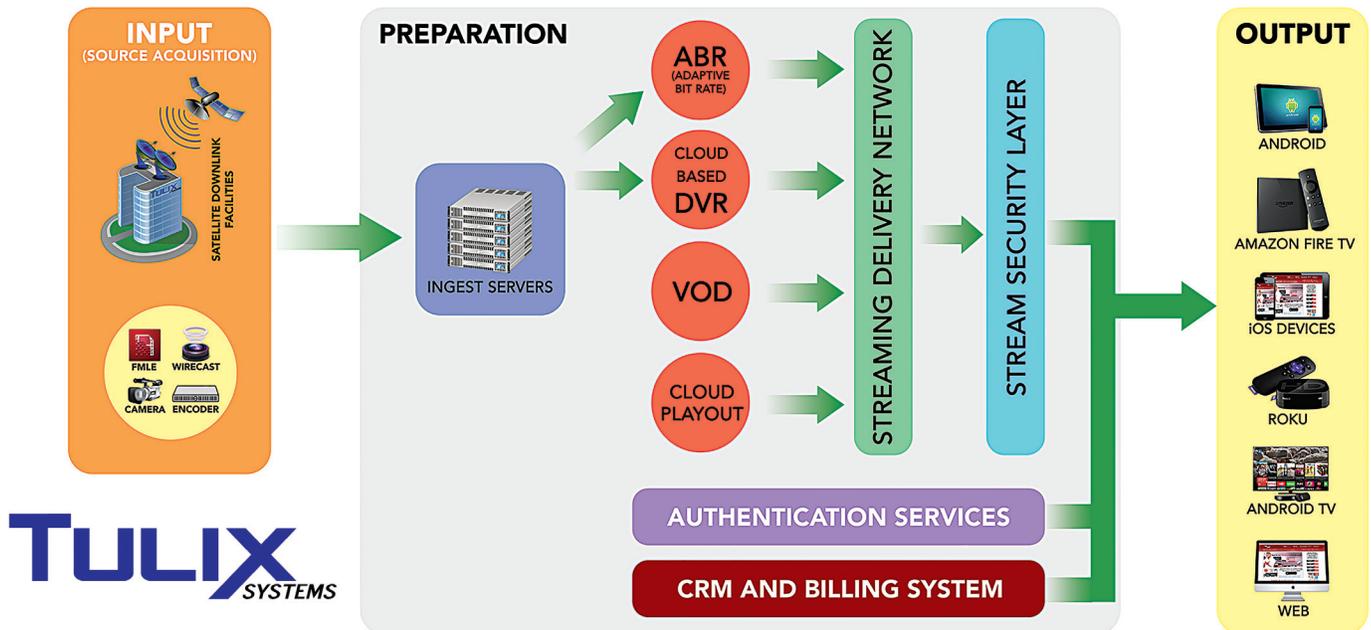
Tulix Solution:

At the end of the day, what gets people coming (and returning) to your website and apps, isn't Twitter integration, electronic programing guide, or push notifications. It's content. Sacrifice quality for low cost when choosing your CDN, or focus too heavily on features in picking your app developer and you may find that you're shooting yourself in the foot. The apps we build are streaming apps first and everything else second.

Our number one priority is delivering streams that work on all devices, load



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quickly and look good. That's not to say that features aren't important in distinguishing yourself and providing a premium viewer experience, but your viewers won't stick around to enjoy them if they cannot watch your content.

Benefits:

- Analysis and consultation. We look at your existing solution and help you trim the fat to see what you can consolidate to increase the stability, quality and cost-effectiveness of your solution.
- System integration experience. We're used to working with modular streaming solutions, so we know what it takes to integrate the various components. Already have a CDN, content management system and DRM solution, but need a custom-built app? We can help and we know what we're doing.

- Streaming expertise. All of our services and products were built around streaming. We're not an app developer, we're a streaming app developer. We're not a content delivery network, we're a streamed content delivery network. No matter what component of your solution we provide, it will be optimized for streaming.

Tulix's App-titude

For those who need it, Tulix provides end-to-end streaming solutions that include everything required to deliver content. All components are already fully integrated and the entire system is operated by one provider, ensuring stability and quality. The result: fewer headaches. We take a consultative approach, analyzing goals and budget to make recommendations for what we think will be the most effective streaming strategy for each customer.

If you already have most services, but are looking for a specific piece of the puzzle, we do that too. We have extensive system integration experience and are used to working with modular streaming solutions, so we know what it takes to integrate the various components. We work with a variety of vendors to ensure we find the best solution for your needs, from encoders to streaming servers.

All of our services, from content delivery to application development, are done with streaming as the central focus. Whether you use just some or all components of our end-to-end solution, know that every piece will be optimally configured for streaming.

Get in touch to see how we can help you better deliver your streaming, 1-800-59-TULIX or www.tulix.com.