

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION**

LUCIO DEVELOPMENT LLC,

Plaintiff,

vs.

ITTIAM SYSTEMS, INC.,

Defendant.

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Case No:

PATENT CASE

COMPLAINT

Plaintiff Lucio Development LLC (“Plaintiff” or “Lucio”) files this Complaint against Ittiam Systems, Inc. (“Defendant” or “ISI”) for infringement of United States Patent No. 7,069,546 (hereinafter “the ‘546 Patent”).

PARTIES AND JURISDICTION

1. This is an action for patent infringement under Title 35 of the United States Code. Plaintiff is seeking injunctive relief as well as damages.

2. Jurisdiction is proper in this Court pursuant to 28 U.S.C. §§ 1331 (Federal Question) and 1338(a) (Patents) because this is a civil action for patent infringement arising under the United States patent statutes.

3. Plaintiff is a Texas limited liability company with its office address at 555 Republic Dr., Suite 200, Plano, Texas 75074.

4. On information and belief, Defendant is a Delaware corporation with its principal place of business at 5832 Brookhaven Dr., Plano, TX 75093. On information and belief, Defendant may be served through its agent, The Corporation Trust Company,

Corporation Trust Center, 1209 Orange St., Wilmington, DE 19801.

5. This Court has personal jurisdiction over Defendant because Defendant has committed, and continues to commit, acts of infringement in this District, has conducted business in this District, and/or has engaged in continuous and systematic activities in this District.

6. On information and belief, Defendant's instrumentalities that are alleged herein to infringe were and continue to be used, imported, offered for sale, and/or sold in this District.

VENUE

7. Venue is proper in this District pursuant to 28 U.S.C. §1400(b) because acts of infringement are occurring in this District and Defendant has a regular and established place of business in this District at 5832 Brookhaven Dr., Plano, TX 75093.

COUNT I **(INFRINGEMENT OF UNITED STATES PATENT NO. 7,069,546)**

8. Plaintiff incorporates paragraphs 1 through 7 herein by reference.

9. This cause of action arises under the patent laws of the United States and, in particular, under 35 U.S.C. §§ 271, *et seq.*

10. Plaintiff is the owner by assignment of the '546 Patent with sole rights to enforce the '546 Patent and sue infringers.

11. A copy of the '546 Patent, titled "Generic Framework for Embedded Software Development," is attached hereto as Exhibit A.

12. The '546 Patent is valid, enforceable, and was duly issued in full compliance with Title 35 of the United States Code.

13. On information and belief, Defendant has infringed and continues to infringe one or more claims, including at least Claim 1, of the '546 Patent by making, using, importing,

selling, and/or offering for sale a software platform for embedded software development, which is covered by at least Claim 1 of the ‘546 Patent. Defendant has infringed and continues to infringe the ‘546 Patent directly in violation of 35 U.S.C. § 271.

14. Defendant, sells, offers to sell, and/or uses embedded software development packages including, without limitation, the adroitSDK software developer kit, and any similar products (“Product”), which infringe at least Claim 1 of the ‘546 Patent. The Product practices a method for producing embedded software. For example, Ittiam provides an adroitSDK which comprises SDK object code with simple C-callable interfaces, Patches for Board Support Packages (BSP), Platform Abstraction Layer (PAL) source code. Ittiam Systems and/or its customers specifically use Software Development kit (such as adroitSDK) which integrates with hardware platform (such as TI DM816x, ARM, NVidia Tegra X1 and/or Intel x86) to produce embedded software. Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.

adroitSDK Highlights

- **Off-the-shelf** SDK configurations suited to multiple use cases
- Best-in-class quality, streaming latency* and channel density
- Robust, field-proven, standards-compliant
- Extensive configurability via simple C APIs
- Flexible usage and easy integration
 - SDK modules in object code with intuitive APIs
 - Sample application with source code
 - Source code licensing option
- Available on **multiple embedded & mobile processors**
 - ARM
 - TI DM816x, Sitara™ AM57x, OMAP4, etc.
 - NVIDIA Tegra X1, K1, etc.
 - Intel x86, Atom, Haswell, etc.
 - Qualcomm APQ8060/8074, etc.
 - Freescale iMX6, etc.
- Available on **multiple operating systems**
 - Linux
 - iOS
 - Android
 - Windows
- Long Term Support
- Source-code licensing option
- **Customizable**

* As low as 50msec glass-to-glass for 1080p60 video

Target Applications

- Intelligence Surveillance Reconnaissance (ISR)
- Industrial Automation and Robotics
- Enterprise/Broadcast Streaming
- Medical Imaging and Documentation
- Situational Awareness
- Unmanned Vehicle Navigation
- Digital Signage
- Graphics and Visualization

Source: https://www.ittiam.com/wp-content/uploads/2017/12/BR006_adroitSDK-multimedia-sdks-for-quick-application-development.pdf, page 1.

	Ittiam's adroitSDK	GStreamer (Open Source)
Application Software	Sample Application in Source code, easy to customize ✓	Not included ✗
Multimedia Pipelines (End-to-End Data Flow) (Ex: Encoder/Server, Decoder/Player, Recorder, Transcoder, Mixer, Hybrid combinations)	Pre-built pipelines with simple APIs to start, stop & configure ✓	Customers to build pipelines using available plug-ins or by developing custom plug-ins ⚠
Multimedia Framework	Patented framework used to realize multimedia pipelines ✓	Cumbersome system calls to run media pipelines ⚠
Sources (ex: V4L2, ALSA) Sinks (ex: V4L2, ALSA) Codecs (ex: H.264, AAC) Containers (ex: MP4) Protocols (ex: RTP)	Optimized Ittiam components (better channel density, latency, quality & interoperability) ✓	Uses Third Party Components, Not optimized for performance on specific processors ✗
Platform Abstraction Layer (PAL)	Quick porting enabled by PAL ✓	Porting done by platform vendors ✗
Board Support Package (BSP)	Optimized drivers ✓	Customer responsibility ✗
Hardware	TI, ARM, Nvidia, Intel, Linux, VxWorks, Windows, iOS, Android ✓	ARM, Intel, Linux, Windows, iOS, Android ⚠

Source: <https://www.ittiam.com/adroitsdk-vs-gstreamer-nuts-and-bolts-view/>

A Complete SDK Package Tailored to Your Unique Needs

- ▶ Sample application software (source code)
- ▶ SDK object code with simple C-callable interfaces
- ▶ (Optional) Platform abstraction layer (source code)
- ▶ (Optional) Patches for BSP, Third Party IPs (TPIPs)
- ▶ Documentation
 - User Manual (with API document)
 - Sample application build and run guide
 - Detailed performance specifications
 - (Optional) BSP build guide



Source: <https://www.ittiam.com/product/adroitsdk/>

In addition, adroitSDK offers key benefits that are unmatched in the industry.

1. **Off-the-shelf** availability on multiple processors (Texas Instruments, Nvidia, ARM, Intel)
2. **Optimized framework** for low-overhead operation to enable
 - a. High channel-densities
 - b. Multiple audio, video and metadata streams per channel
 - c. Efficient forking and merging of paths within media processing pipelines
3. **Sub-frame video processing** to achieve lowest possible end-to-end latency
4. **Optimized resource usage** (encoder/decoder instances, capture/display ports, hardware accelerators, memory regions/buffers, threads, sockets & network ports)
5. Seamless operation with all **standard I/O interfaces**
 - a. (Audio Video) HDMI/3G-SDI, etc.
 - b. (Storage) SATA, USB2.0, USB3.0, SD Card, etc.
 - c. (Network) Wireless (Wi-Fi), Ethernet, etc.
6. **Standards compliant** (ISO-IEC, MPEG, IETF, DVB-T, SMPTE, MISB, etc.) and widely interoperable with most commercial media servers and players
7. **Easy porting** on any hardware platform
 - a. Inherent compatibility with popular frameworks (XDM, OpenMax, Codec Engine, v4l2, etc.)
 - b. Cleanly abstracted platform abstraction layers that customers can easily modify
8. Deep and committed **customer support** to provide assistance during porting & integration by users.
9. **Quick customizations** to meet specific requirements for the customer product.
10. **No open source liabilities or risks** for product deployment.

All these make adroitSDK stand tall among a bevy of competitor SDKs that merely provide a subset of use cases, use frameworks that are not optimized for any processor, and offer limited or no customer support! It's not a surprise therefore that **adroitSDK has been a part of thousands & thousands of units of end-equipment manufactured by Tier-1 OEMs/ODMs worldwide**. Its success story spans across several products for Surveillance, Broadcast, Industrial, Enterprise, Medical and Defense markets.

Source: <https://www.ittiam.com/adroitsdk-vs-gstreamer-nuts-and-bolts-view/>

15. The Product practices providing one or more generic application handler programs. Each program has code for performing generic functions common to multiple hardware modules used in a communication system. For example, adroitSDK Package includes Patches for Board Support Package (BSP), Platform Abstraction Layer (PAL) comprises at least code files which provide common and generic functions for multiple hardware platform (such as TI DM816x, ARM, Nvidia Tegra X1, Intel x86). Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.

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 - ▶ SDK object code with simple C-callable interfaces
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Source: <https://www.ittiam.com/product/adroitsdk/>

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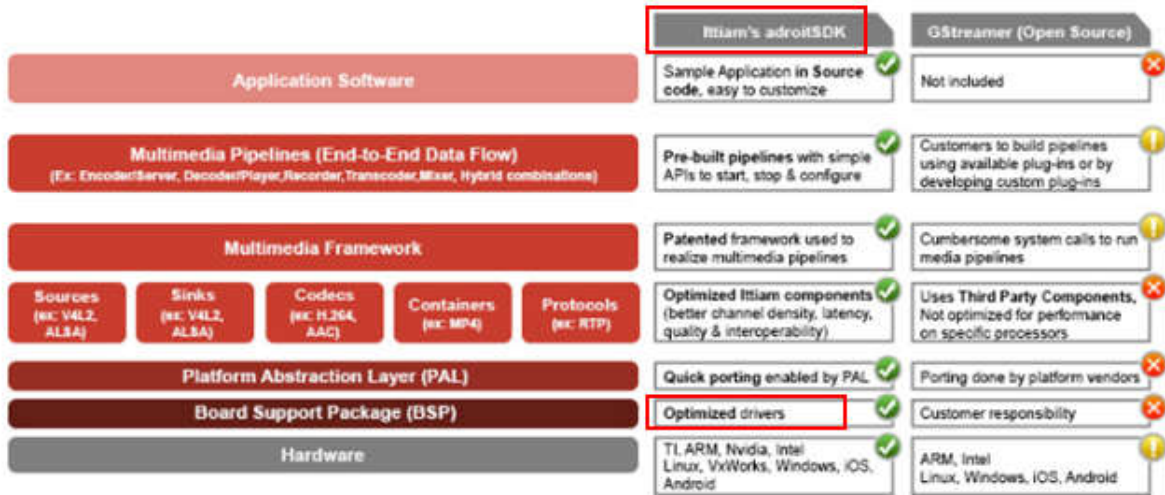
1. **Off-the-shelf** availability on multiple processors (Texas Instruments, Nvidia, ARM, Intel)
2. **Optimized framework** for low-overhead operation to enable
 - a. High channel-densities
 - b. Multiple audio, video and metadata streams per channel
 - c. Efficient forking and merging of paths within media processing pipelines
3. **Sub-frame video processing** to achieve lowest possible end-to-end latency
4. **Optimized resource usage** (encoder/decoder instances, capture/display ports, hardware accelerators, memory regions/buffers, threads, sockets & network ports)
5. Seamless operation with all **standard I/O interfaces**
 - a. (Audio Video) HDMI/3G-SDI, etc.
 - b. (Storage) SATA, USB2.0, USB3.0, SD Card, etc.
 - c. (Network) Wireless (Wi-Fi), Ethernet, etc.
6. **Standards compliant** (ISO-HEC, MPEG, JETF, DVB-T, SMPTE, MISO, etc.) and widely interoperable with most commercial media servers and players
7. **Easy porting** on any hardware platform
 - a. Inherent compatibility with popular frameworks (XDM, OpenMax, Codec Engine, v4l2, etc.)
 - b. Cleanly abstracted platform abstraction layers that customers can easily modify
8. Deep and committed **customer support** to provide assistance during porting & integration by users.
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10. **No open source liabilities or risks** for product deployment.

All these make adroitSDK stand tall among a bevy of competitor SDKs that merely provide a subset of use cases, use frameworks that are not optimized for any processor, and offer limited or no customer support! It's not a surprise therefore that **adroitSDK has been a part of thousands & thousands of units of end-equipment manufactured by Tier-1 OEMs/ODMs worldwide**. Its success story spans across several products for Surveillance, Broadcast, Industrial, Enterprise, Medical and Defense markets.

Source: <https://www.ittiam.com/adroitsdk-vs-qstreamer-nuts-and-bolts-view/>

16. The Product practices generating specific application handler code to associate the generic application functions with specific functions of a device driver for at least one of the types of the hardware modules. For example, in addition to the Platform Abstraction Layer

(PAL) adroitSDK Package includes patches of Board Support Package (BSP) comprises code files (“specific application handler code”) that are specific to hardware platform (such as TI DM816x, ARM, Nvidia Tegra X1, Intel x86). Further, BSP code files are generated based on drivers used for hardware. Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.



Source: <https://www.ittiam.com/adroitsdk-vs-gstreamer-nuts-and-bolts-view/>

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Source: <https://www.ittiam.com/product/adroitsdk/>

17. The Product practices defining a specific element in the specific application handler code to be handled by one of the generic application functions for the at least one of the types of the hardware modules, and registering one of the specific functions of the device driver for use in handing the defined specific element. For example, adroitSDK generates system-specific application handler code by defining a specific element such as code files which defines data structure (“specific element”) in the user generated code based on the hardware module that are handled by one or more generic application functions in the Platform Abstraction Layer (PAL). Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.

	Ittiam's adroitSDK	GStreamer (Open Source)
Application Software	Sample Application in Source code, easy to customize ✓	Not included ✗
Multimedia Pipelines (End-to-End Data Flow) (Ex: Encoder/Server, Decoder/Player/Recorder, Transcoder, Mixer, Hybrid combinations)	Pre-built pipelines with simple APIs to start, stop & configure ✓	Customers to build pipelines using available plug-ins or by developing custom plug-ins ⚠
Multimedia Framework	Patented framework used to realize multimedia pipelines ✓	Cumbersome system calls to run media pipelines ⚠
Sources (ex: V4L2, ALBA) Sinks (ex: V4L2, ALBA) Codecs (ex: H.264, AAC) Containers (ex: MP4) Protocols (ex: RTP)	Optimized Ittiam components (better channel density, latency, quality & interoperability) ✓	Uses Third Party Components, Not optimized for performance on specific processors ✗
Platform Abstraction Layer (PAL)	Quick porting enabled by PAL ✓	Porting done by platform vendors ✗
Board Support Package (BSP)	Optimized drivers ✓	Customer responsibility ✗
Hardware	T1 ARM, Nvidia, Intel, Linux, VxWorks, Windows, iOS, Android ✓	ARM, Intel, Linux, Windows, iOS, Android ⚠

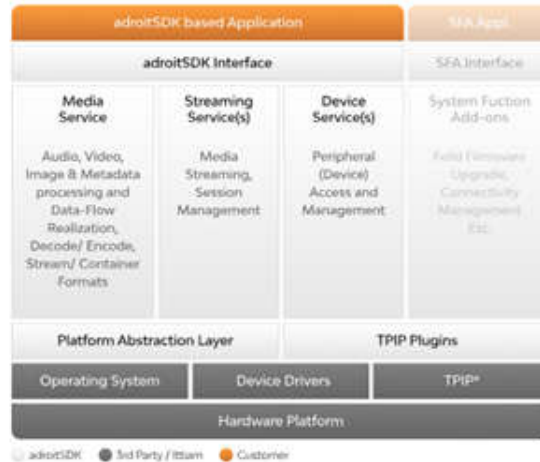
Source: <https://www.ittiam.com/adroitsdk-vs-gstreamer-nuts-and-bolts-view/>

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▶ Documentation

User Manual (with API document)
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Source: <https://www.ittiam.com/product/adroitsdk/>

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4. **Optimized resource usage** (encoder/decoder instances, capture/display ports, hardware accelerators, memory regions/buffers, threads, sockets & network ports)
5. Seamless operation with all **standard I/O interfaces**
 - a. (Audio Video) HDMI/3G-SDI, etc.
 - b. (Storage) SATA, USB2.0, USB3.0, SD Card, etc.
 - c. (Network) Wireless (Wi-Fi), Ethernet, etc.
6. **Standards compliant** (ISO-IEC, MPEG, IETF, DVB-T, SMPTE, MISB, etc.) and widely interoperable with most commercial media servers and players
7. **Easy porting** on any hardware platform
 - a. Inherent compatibility with popular frameworks (XDM, OpenMax, Codec Engine, v4l2, etc.)
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Source: <https://www.ittiam.com/adroitsdk-vs-gstreamer-nuts-and-bolts-view/>

18. The Product practices compiling the generic application handler programs together with the specific application handler code to produce machine-readable code to be executed by an embedded processor in the at least one of the types of the hardware modules.

For example, when a specific application is needed for a particular hardware, the generic functions and the specific functions are compiled together to yield a machine readable code. Ittiam Systems and/or its customers compile the generic functions and the specific functions using adroitSDK or any other IDE supported by Ittiam Systems. Certain elements of this limitation are illustrated in the screenshots below and in the screenshots referenced in connection with other elements herein.

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Source: <https://www.ittiam.com/adroitSDK-vs-gstreamer-nuts-and-bolts-view/>

19. Defendant's actions complained of herein will continue unless Defendant is enjoined by this court.

20. Defendant's actions complained of herein are causing irreparable harm and monetary damage to Plaintiff and will continue to do so unless and until Defendant is enjoined and restrained by this Court.

21. Plaintiff is in compliance with 35 U.S.C. § 287.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff asks the Court to:

(a) Enter judgment for Plaintiff on this Complaint on all causes of action asserted herein;

(b) Enter an Order enjoining Defendant, its agents, officers, servants, employees, attorneys, and all persons in active concert or participation with Defendant who receive notice of the order from further infringement of United States Patent No. 7,069,546 (or, in the

alternative, awarding Plaintiff a running royalty from the time of judgment going forward);

(c) Award Plaintiff damages resulting from Defendant's infringement in accordance with 35 U.S.C. § 284;

(d) Award Plaintiff pre-judgment and post-judgment interest and costs; and

(e) Award Plaintiff such further relief to which the Court finds Plaintiff entitled under law or equity.

Dated: June 27, 2019

Respectfully submitted,

/s/ Jay Johnson

JAY JOHNSON

State Bar No. 24067322

D. BRADLEY KIZZIA

State Bar No. 11547550

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ATTORNEYS FOR PLAINTIFF

EXHIBIT A