KEVIN STAUNTON-LAMBERT BSCS
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EMPLOYMENT and EDUCATION (summary)

October 2016 - (present)
Switch Media *[Sydney, Australia]*
Solutions Architect - Research & Development
Streaming video engineer, tackling tough problems around the distribution of high quality encrypted video bitstreams to any player device anywhere in the world.
Foxtel and SBS OnDemand media stitching (SSAI embedding IAB VAST based ads)
HbbTV/SmartTV video streaming for Freeview Australia and New Zealand

March 2005 - October 2016
Kudelski/Nagra Media/OpenTV *[Sydney, Australia]*
Software Expert, innovations R&D group.
Developer of embedded Linux middleware for Asia-Pacific, European and US domestic digital television markets.
Foxtel (and Austar) set-top-box software engineer (all models over 12 year period)

May 2001 - Aug 2004
Cisco/Scientific Atlanta/PowerTV *[Cupertino, California, USA]*
Architect and senior lead developer of proprietary set-top-box middleware technology for US domestic, European and Japanese digital television markets.

June 1998 - May 2001
Virgin Media/ntl: *[Covent Garden London, UK]*
Senior developer of interactive television and broadband ISP services used by millions of UK subscribers across multiple platforms.

Sep 1996 - June 1998
Telecom Italia/TMI Telecom *[City, London, UK]*
Developer of a large data collection/reporting software to assess utilization and costs of the company wide-area-network.

Sep 1994 - June 1998
Huddersfield University *[Yorkshire, UK]*
Graduate B.Sc. Computer Science (Software Development)

EXPERIENCE

Development experience
- LLVM and GNU C/C++ cross compiler for embedded Linux (ARM, MIPS and x86)
- iOS, tvOS and macOS framework and applications (Obj-C and Swift)
- Android (TV and mobile) platforms AOSP and Java/Kotlin apps
- Python, PHP, golang, Node.js/JavaScript, Roku/BrightScript
- WindRiver vxWorks RTOS (MIPS32)
- Win32 API and Microsoft.NET and Xamarin/Unity3D (C/C++ and C#)

Standards
- OTT streaming, Live and VOD HLS/FPS, DVB/MPEG-DASH, MSS, ULL-CMAF
- W3C HTML/XML/CSS (including WebKit deployments)
- DVB Broadcasting, HbbTV 2.0.2 and FreeTV Australia operation standards
- Codecs: AV1, H.264, H.265 (including 4K encoding experience), AAC, AC3/EC3
- TV based standards (DSM-CC / HDMI / HDCP / EDID)
- Microsoft PlayReady DRM
- Widevine DRM

Test, debug and profiling tools
- GNU GDB/gconf/gprof including Linux kernel debug kdbg
- Trace32 MIPS debugger
- Coverity Prevent static analysis, ESLint
- Git, Perforce, Bamboo, Jenkins CI and Codecollaborator

SWITCH MEDIA (Sydney, Australia)

Solutions Architect for multiple media streaming services including:
Foxtel Go - Android AOSP including Google play services integrated set-top-box. Personal efforts included getting Google certification of set-up wraith application, ExoPlayer debugging and assistance with porting (cross-platform) Xamarin based front end streaming application
SBS OnDemand - embedded player with SSAI ad support for Chromecast, iPhone/iPad, AppleTV and Android tablet devices
Freeview New Zealand HbbTV application (runs on every TV on every channel in NZ)
Google Home integration

OzTAM (Nielsen) lead SDK maintainer - includes tvOS, iOS, Roku (BrightScript), Android, C# and JavaScript variants - this code (which quietly feeds back audience ratings) is deployed in every streaming device in Australia today

Research and production implementation of video and audio stream splitting, transport stream and fragmented MP4 manipulation (real-time live stitching) including low latency HLS TS + fMP4 and DASH fMP4/CMAF

This includes manipulation of FPS encrypted streams (though parallel
analysis of equivalent clear HLS stream in a secure location)
Machine-based video quality assurance on 4K streams (C/C++ OpenCV + FFmpeg libav)
Various ad triggering tech (SCTE) also ad replacement (removing existing broadcast ads and sticking in IAB VAST request based targeted ads)
macOS based stream diagnostics app (AVPlayer error logger)
Transport stream manipulation (e.g. rewriting timecode to playback without discontinuity)

Have presented my research publicly to technical audiences at conferences and tech meet-ups

NAGRA MEDIA/OPEN TV (Sydney, Australia)

Owner/Lead engineer for XSI (NDS Extensible SI used by BSkyB/FOXTEL/Sky Italia) middleware component.

Lead design and software implementation of embedded OpenTV middleware clients, controlling companion devices and Nagra broadcast solutions in Australia and the Asia-Pacific region.

• Executive level presentations of OpenTV5 PVR embedded Linux middleware onto Broadcom 97425 demonstration CATV set-top-box. Implementation of 'XSI' (propriatory event information) SI adaptor to scan and show live television for NewsCorp customers (SkyUK, SkyNZ, SkyItalia and Foxtel)

• WebKit integration to present HTML5/CSS3/JavaScript on Broadcom 97425, involving the integration of Qt4.8 and additional DirectFB integration and performance tuning (including OpenGL ES 2.0 GLES)

• DSM-CC server and client side test integration.

• SQLite events schedule search and filtering customer demonstrations.

• Design and development to support catch up TV and search services by integrating OpenTV2 middleware metadata abstraction API with SQLite into existing deployed MIPS32 set-top boxes. (deployment pending)

• Customer CEO presentations of HTTP with cross-origin support to existing OpenTV2 middleware to support HTML5 companion device remote controls for PVR boxes. Android/iOS controlling Foxtel set-top boxes tuning, playback and search services. (demoware)

• Design and integration of PVR2 solution for Austar. (deployed)

• Design and integration of Terrestrial television support for Austar. (deployed)

• Design and integration of Notify OMM services for FOXTEL. (deployed)

CISCO/SCIENTIFIC ATLANTA/POWER TV (Cupertino, California)

Design and implementation of component-ware support to an existing XML/JavaScript based middleware solution. This work enabled rapid development of all styles of application via an independent modular approach within multiple teams, suppliers and target platform configurations.

The role required continuous full UML lifecycle software design and provisioning with strict adherence to various leading industry standards from such groups as the W3C (XML/Scripting), MPEG (A/V and data standards), ATSC, DVB and ARIB/Japan Cable Labs.

In equivalent .NET terms this 3-year effort was akin to implementing the IUnknown abstract base class, creating a named class registry, supporting referenced based dynamic loading/unloading of modules (DLL), as well as providing multi-threaded UI management to a given device context.

Other supporting code that I built upon this support architecture included:

• Shared object libraries. For example graphics libraries such as JPEG, GIF and PNG, thus saving the developer from the time and effort of incorporating their versions of these common libraries and also greatly reducing the overall application footprint in the process.

• Multi-threaded animated sprite library providing the customer with the ability to create smooth interactive user interfaces as well as basic Macromedia Flash style games.

• Unicode string pool to support user interfaces for characters in all languages. This class handled pre-allocated blocks of string memory which removes the possibility of physical memory fragmentation which are known performance drags..

Contributions to the actual XML/JavaScript middleware platform code included:

• XML processor look ahead heuristics. Such that the processor can second guess the remainder of a line and groups of similar lines of XML to enable significantly faster parsing and DOM object creation.

• Swappable skin-based user interface wrappers. This allows the end-user to dynamically on the fly change the way the entire application appears to their liking. Similar to XP themes and Avalon use in Microsoft Longhorn platform.

• Development of Japanese IME (Input Method Engine) which involved some understanding of Kana's and Kanji dictionaries. (the engine itself was built from both Slangsoft and Agfa libraries IME libraries)

Lead developer of the Japanese on-screen electronic program schedule guide (EPG) currently in test for a large Japanese MSO for which a patent has since been filed for as myself the author.

Microsoft Visual C++ .NET 2003 emulator to allow rapid application development of interactive digital television applications using an ordinary desktop PCs running Microsoft Windows. This project saved countless man-hours of developer time whilst also removing some dependency on the final customer product being available.

Other tools I have help develop include a WYSIWYG tool to allow graphical content authors to see their handy work on a real television set in real time from their PC.

Extensive use of UML, Visual C++ .NET 2003, GNU C/C++ and assembler has contributed to my strong object oriented component-ware development skills and deep understanding and appreciation of the .NET framework currently used in all modern Microsoft operating systems.

NTL: / VIRGIN MEDIA (London, UK)

My role included design and development of both client and server based applications and application components.

One back office system that I personally developed was creating an efficient HTTP content re-director which I chose to developed using Microsoft IIS ISAPI filter technology.

The module developed efficiently reformed the data responses (in multiple threads) as they leave the Windows IIS server cluster to support the multitude of simultaneous connected clients.

In this instance the filter required significant logic and appreciation of the capabilities of each connecting client based on their HTTP referrer due to the issue that the DHTML and user interface restrictions vary considerably between the various supported web browser clients.

Another Microsoft windows based solution included development of a windows desktop information ticker service. This involved creating a shared ActiveX component that in turn used the common .NET WiiInet services to connect to the news feed URL. Using the .NET MSXML processor I then extracted the response data from the call over the Internet.

I also provided an ActiveX container program in the form of a Microsoft windows shell extension (Win32) enabling the ticker component to be docked in the Windows task bar or as a floating window component on the users desktop. This project also made its way from ntl: to the BBC and can be downloaded today via their news.bbc.co.uk web site.

This project also lead to a minor offshoot cross platform solution to allow Apple Macintosh and Linux home users to gain access to this service. This I chose to implement at the time via a Java applet embedded in the web page on the ntl: website.

Other duties whilst employed by ntl: included general admin of the ISP services and the MS SQL Server based billing system.

Skills developed included: XML/JavaScript, VxWorks, SQL Server (Transact-SQL), MS WebTV/WinCE, MS IIS/ISAPI, Windows NT Server, TCP/UDP/IP, Sockets, DNS, Perl and Sun OS Solaris UNIX.

TMI / TELECOM ITALIA (London, UK)

(one full year as part of undergraduate course and later part-time contractural whilst an undergraduate)

Development of easy to use project tracking (database) solution between London and Rome.

Other duties included general local and wide area network user support.

Skills developed included: TCP/IP, Novell Netware 4.11, V.90/X.25/Frame Relay. Basic Cisco, Motorola switches and NewBridge NetCool admin, Microsoft Access JET, Microsoft Visual Basic and Borland Turbo C++ (DOS).

EDUCATION

Graduate of Computer Science (Software Development) BSCS 2.1 with honours awarded for my dissertation, Interconnecting World Wide Web with Databases (1997/98) demonstrated how multiple tier enterprise technologies were evolving at the time, in particular, focus was given to ISAPI, ASP and ADO all new technology still under development at this time

My education and skills have been asserted by both the United States government and also the Australian Computer Society (ACS).