Galan Bridgman

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Accomplished software architect, engineer, and technology leader with deep expertise in cloud-native solutions, serverless architectures, scalable media streaming technologies, video processing, and AI/ML applications. Demonstrated ability to architect scalable solutions, lead technical teams, and drive innovation in high-performance media and SaaS environments. Proven leadership experience as Director and CTO across several innovative organizations.

Professional Experience

Nov 2020 – Sep 2024 ***Amazon Web Services (AWS)*** ***Media Application Architect***

- Designed and built cloud-native applications for media enterprises, optimizing AWS scalability and cost efficiency.
- Created a custom serverless JITP workflow and migrated 4M+ videos with zero downtime.
- Built a compute scaling solution to orchestrate 20,000+ EC2 Spot Instances.
- Developed a real-time, multi-angle live streaming system using AWS Step Functions and Lambda.
- Developed and executed a live 3TB cross-account DynamoDB migration, ensuring continuous availability.
- Built a serverless Executive Dashboard integrating AWS Cost Explorer insights using React and Cloudscape.
- Built an end-to-end live streaming application using AWS Media Services within an orchestration layer.

May 2017 – Nov 2020 ***Thuuz Sports, Inc.*** ***Director of Video Services***

Architect and lead developer of a specialized video ingest pipeline that performs Machine Learning analysis in real time and delivers automated highlight reels with a patent-pending playback technology, revolutionizing the sports industry entertainment experience.
Pipeline was developed as a highly scalable solution using several technologies, including: AWS EC2/ECS/Docker, S3, Lambda, Fargate, also Python, ffmpeg, Terraform, multiple CDNs, DLVR, Blue Matador, PagerDuty, HLS, CMAF, Redis, Django, Bitmovin Player, and more. Customers include Fox Sports, NBC, IBM, Mediapro, Real Madrid, Tencent.

June 2016 – April 2017 ***Cloud Media Works, LLC*** ***CTO***

A startup that created a self-service and white-labeled B2C curated video content OTT service with several innovations in user interactivity, including 360 video, QR code and SMS "Take It With You™" video sharing, and video fingerprint-driven bookmarking and content discovery.

Utilized Azure VMs, Ubuntu, Node.js, StrongLoop and Loopback, Azure Queue, MongoDB, Redis, Angular, Javascript, Akamai, New Relic, Azure Media Encoder, C#, and Azure App Service Worker Roles.

August 2014 – June 2016 ***xTV Networks Ltd.*** ***Director of Platform Engineering***

Multiple roles at this startup in the corporate video / digital signage space. Responsibilities include:

- Architected and implemented a full video ingest, transcoding and delivery platform using C#/.NET Azure Web Roles, Service Bus Queues and Azure Media Encoders. Ingest can be user push via web or mobile app or YouTube pull. Includes cost vs. latency feedback loop for dynamic scaling.
- DevOps: Perform all IT and Cloud deployment and management tasks with Microsoft Azure Virtual Machines, Cloud Services, Storage, Service Bus, Encoding, Streaming and CDN services. Manage and deploy Node.js apps to dozens of Ubuntu Linux 14.04 VMs, as well as configuring MongoDB, Redis, haproxy, Countly, NGINX, Apache2, WordPress, SSL certs, Facebook App, and Gigya Dashboard, as well as deploying mobile apps to Apple Store and Google Play Store. Monitoring with New Relic APM and Synthetics. Wrote many BASH, Ansible and Mongo scripts. Managed CDN with Edgecast portal.
- Implemented REST APIs, media management and video playback systems using Node.js, HTML 5 & CSS 3, Bootstrap 3, Strongloop, and JWPlayer that plays content in Adaptive MP4, HLS, and MPEG-DASH formats. Built custom extensions for 360° VR Video and “Living Photos” for University of Michigan Football mobile app. Currently designing and implementing local video caching to Intel Compute Sticks with a Windows 10 Service.

April 2014 – July 2014 ***Winnov, LP*** ***Sr. Software Engineer***

- Developed prototype products for Infocomm on new encoder APIs using HTML5 canvas and video tags, streaming video with Websockets, SignalR for data, video, and RPC calls, Javascript, jQuery, and CSS 3.

- Created REST APIs with .NET Web API 2.0 for state management and archival enumeration.
- Created Visual Studio 2013 Language Service extension for a proprietary scripting language.
- Managed many services including Visual Studio Online, Office 365, and Team Foundation Server.

June 2011 – December 2013 ***Hitlab USA, Inc.*** ***Director of Software Engineering***

Served as architect and lead developer for a REST, CRUD and SQL backend service on the .NET stack on Azure providing internal and partner data services; advising and supporting IT services for a global LAMP stack application on AWS; and a lead developer of a client-server music discovery and delivery application built for Web, iOS, and Android clients utilizing a revolutionary, patented music analysis and pattern-matching technology that delivered newly discovered emerging artists to the Grammys 3 years running. Responsible for IT infrastructure in the California office, and advising on DevOps, continuous delivery, agile process, and Dev and IT technologies corporate-wide.

February 2007 – June 2011 ***iSCORR Media, Inc.*** ***CTO***

Software Architect, Development Manager and Lead Developer for projects including a LAMP stack backend, an HTML/CSS/jQuery client, an iOS app, and a variety of Flash streaming, Smooth Streaming, and HTTP Live Streaming (HLS) players. Architected a highly scalable REST API in preparation for the commercial launch of a site requiring support for 5 million simultaneous users via cloud services.

July 2010 – October 2010 ***AccessKeyIP, Inc.*** ***Consultant***

Developed a Windows IPTV Client app in C# utilizing DirectShow filter graphs to tune and stream a proprietary low-latency video feed from their customized servers, as well as a DirectShow network source filter in C++ to encapsulate their RTP-based protocol and inject the stream into the graph. The customer was a network TV affiliate requiring low-latency video feeds to field reporters.

July 2008 – April 2010 ***ZillionTV Corporation*** ***Director of Encoding Services***

- Encoded, QC'd and ingested over 5,000 video assets over a 10-month period, including Tier 1 features and episodic, trailers, ads, and many Tier 2 and 3 titles. Video quality was the highest in the industry for the bitrate.
- Managed post-house relationships with Technicolor, Deluxe, Ascent Media and others, and studio relationships for technical issues on video, metadata, and artwork with NBC-Universal, Paramount, Sony, Warner Bros., Lionsgate, MLB, Disney, etc.
- Created encoding workflows with Inlet Technologies' Fathom and Armada products targeting H.264 and AC-3 encodes within MPEG-2 Transport Stream wrappers.
- Built profiles and compared encodes from Inlet, Rhozet, Digital Rapids and Ateme for testing against both Streaming 21 and Edgeware streaming servers, for target SOCs Sigma 8654 and NVIDIA Tegra 600 Series.
- Created XML metatdata schema using Altova XMLSpy, and XML/Excel conversions with Altova MapForce.
- Verified TS compliance & video quality: Tektronix MTS400, Manzanita Analyzer, Baton, Cerify and Video Clarity.
- Wrote and maintained external documentation for content providers and encoding partners.
- Created AVISynth scripts for custom processing of problematic video sources.
- Used DG FastChannel for ad acquisition and Aspera for efficient mezzanine and target file transfer.
- Developed Aspera and FTP scripts in Perl for event-based file transfer and ingest automation.
- Developed DirectShow source filter to "stream" from standard web servers, as well as numerous tools in C#, especially targeting XML manipulation, data extraction, and process automation.

July 2006 – February 2007 ***DextriMedia, Inc.*** ***President / CEO***

Co-founder of a video encoding lab specializing in the VOD encoding needs of the IPTV industry, with emphasis on the VC-1 and H.264 codecs and the Microsoft Mediaroom platform.

August 2005– June 2006 ***Microsoft Corporation*** ***Consultant***

A software developer on Microsoft's next-generation TV product, the Mediaroom (IPTV) platform. Primarily responsible for STB client code, including SAP, audio sync, VOD playback, and general maintenance. Most work was on Windows CE 5.0 under Platform Builder, with some on Windows XP under Visual Studio 2005. Worked extensively with content in the VC-1 and H.264 formats, in both WMV and MPEG-2 TS bitstreams.

July 2003 – July 2005 ***Akimbo Systems, Inc.*** ***Sr. Software Engineer***

Created a new consumer electronics product (STB) using Windows CE 5.0, Windows Media 9, and Windows Media Rights Management 9.0. Released in October 2004, and won the "Best of Innovations Award" at CES 2005.

Responsibilities included implementation of the Microsoft DRM (Digital Rights Management) on both client and license server, and all video playback technologies using Windows Media 9 WMV, DirectShow, and Windows Media Format SDK v9, which was used to support trick mode playback. Also worked on optimizing the WMV9 encoding profiles to provide optimal playback experience on the relatively low-powered box.

March 2003 – May 2003 ***MOTO Development Group*** ***Consultant***

Developed an audio module for the Athena PC, a next-generation PC prototype shown by Microsoft at WinHEC 2003. Telephony functionality was implemented using DirectSound and packaged in a COM object, enabling speakerphone and Bluetooth handset conversations through a PC to both POTS and PBX phone systems.

November 2000 – December 2002 ***Storymail, Inc.*** ***Director of Engineering***

Provided engineering direction for the development of the StoryTeller engine on Win32, Mac, Palm and WinCE platforms, including ActiveX and Netscape Plugin hosts, AOL client support, and a POP3 proxy.

Designed StoryServer 2.0 API and backend to support campaign management, tracking statistics, and eCommerce.

Ported the StoryTeller engine to the WinCE platform. Optimized display performance by re-writing video format transformations to provide direct screen buffer access for the StrongARM processor architecture.

Refined techniques for delivery of Storymail-enabled rich email messages in accordance with MIME, SMTP and POP3 specs, as well as hybrid AOL HTML-based emails.

October 1999 – October 2000 ***Visualize Video Corporation*** ***CTO***

Architected a highly scalable, high availability Internet site with load balanced web and video servers and clustered SQL and mail servers, and a robust backend storage solution using EMC Symmetrix and Celerra servers.

Architected and lead the design and implementation of a next-generation video mail technology utilizing client-side compression and streaming video technology making the creation of video mails extremely easy for users.

Client-side technologies include an ActiveX control for video encoding using the Microsoft Windows Media Format SDK, and one for background uploading of video to the video server farm with transmission error recovery.

Server-side technologies include IIS, Java servlets using Jrun as the run-time environment, SQL Server 7, and Mailsite mail server accessed using the Java Mail API.

February 1999 – October 1999 ***PE BioSystems*** ***Consultant***

Assisted in the development of DNA analysis software. Taught their Mac developers classes on COM and on the Win32 platform and development tools. Developed a component that searches protein databases such as Proteome. Also designed the object models for all components of the BioToolbox (the organic subset) for the “Analyst” application.

December 1995 - February 1999 ***Starlight Networks, Inc.*** ***Principal Architect***

Responsibilities included visionary, architect, design lead, project manager and developer for a new product category called Network Delivery Management. This product, released as StarCenter 1.0, addressed digital video content management and content delivery issues for streaming video deployments.

Designed and implemented ActiveMovie (now DirectShow) source filters to stream digital video from Starlight servers to Windows clients. Later updated the source filter to support the Windows Media Player.

Participated in a Market Validation special project to quantify the streaming video market segments and address product usage issues with existing customers, and formulate new product development plans based on feedback.

Initiated Starlight's first foray into the “Internet world” by designing and implementing a Netscape plugin to stream video from Starlight's servers to a web browser on Windows clients. Later architected the ActiveX version for IE which grew into Starlight’s new COM- and Winsock-based client architecture using Internet protocols.

March 1995 - November 1995 ***The San Francisco Canyon Company, Inc.*** ***Vice President of Engineering***

Responsibilities included project management for both Windows and Mac projects, corporate IT, corporate administration, and software architecture and development. Personal projects included a realtime sound mix DLL for a children’s edutainment title developed for Mindscape; a project for Starlight Networks to provide live MPEG capture, playback and multicasting capability via LAN or satellite for their StarCast product; technical management for the development team that wrote Mavis Beacon Teaches Typing for Kids for the Mac for Mindscape. Also served as Dev Lead for a staff of nine developers working on 3-4 titles concurrently.

December 1994 - March 1995 ***Bröderbund Software*** ***Consultant***

External project manager and developer for a specialized sprite-based codec for QuickTime for Windows that was productized and used in several children's computer games.

October 1994 - December 1994 ***And Interactive*** ***Consultant***

External project manager and developer for a Director XObject to provide MCI control of multi-vendor digital video playback from Director scripts.

April 1994 – October 1994 ***Apple Computer*** ***Consultant***

Responsible for lead development and project management for QuickTime VR for Windows, a low-storage version of Virtual Reality patented by Apple's Advanced Technology Group. Tasks included porting a panorama controller and an object controller from the Macintosh to the Windows environment as a QuickTime component, and also providing external control to Director Lingo scripts via a Director XObject interface. Converted component and XObject frameworks and supporting C++ classes to the Microsoft Visual C++ environment. Product first appeared as part of the Star Trek: The Next Generation Interactive Technical Manual on from Simon & Schuster.

March 1994 - April 1994 ***Apple Computer*** ***Consultant***

Implemented support for Music tracks in QuickTime for Windows 2.0. QuickTime-format music data is processed, sequenced and converted into standard sequenced MIDI instructions, and the Windows multimedia timers are used to accurately deliver the MIDI events. Contains dynamic channel usage optimizations to support as many instruments in a score as possible at run-time based on the user's sound card and sound driver capabilities.

October 1993 - March 1994 ***Intel Corporation*** ***Consultant***

Developed a QuickTime for Windows codec implementing Intel's HQV IV31 (Indeo) decompression algorithm. Included optimization paths for a wide variety of video hardware configurations to provide the highest possible video quality at the greatest possible speed. Included special routines for fast YUV to RGB color space conversion and smart dithering for 8-bit targets. Performance exceeded expectations and surpassed performance of the Video for Windows version.

August 1993 - October 1993 ***Media Vision, Inc.*** ***Consultant***

Developed a Windows DLL providing direct hardware write support and a faster replacement for DrawDibDraw for the Media Vision CD title "Quantum Gate" using Video for Windows.

May 1993 - June 1993 ***Starlight Networks, Inc.*** ***Consultant***

Analysis and implementation recommendations for providing dynamic stream thinning technology for QuickTime for Windows and Video for Windows. Detailed several techniques to scale digital video at the streaming server to maximize network video streams without exceeding available network bandwidth.

March 1992 - May 1993 ***Apple Computer*** ***Consultant***

Responsible for planning and development of several components of Apple's QuickTime for Windows product. For version 1.0, areas of responsibility included the Sound Manager, which converted Mac-format sound data to the appropriate Windows-format sound data for the sound card available at run-time, and also scaled the sound data for proper playback rates for the peculiar playback characteristics of a wide variety of sound cards. Also responsible for the Application/QuickTime glue code allowing Windows applications to be fully QuickTime-enabled if QuickTime was present, but otherwise un-hindered if it was not. Developed the Data Handler for optimizing data streaming requirements peculiar to playing QuickTime movies from hard disk, network or CD-ROM.

Responsibilities with QuickTime for Windows 1.1 included evolving the glue code into a fully-functional Component Manager that is significantly superior to the dynamic linking capabilities available with the standard Windows DLL method. Also performed other Data Handler, Sound Manager and Toolbox optimizations to improve data throughput, reduce CPU utilization, reduce I/O idle time, and increase video playback rates.

November 1991 - February 1992 ***Apple Computer*** ***Consultant***

Co-developer of the QuickTime for Windows prototype unveiled in the MacWorld 1992 keynote.

Core Competencies

Languages / Frameworks	Python, Node.js, C#, C++, SQL, Javascript, Bootstrap, Strongloop, PHP, Objective C, Xamarin, Appcelerator Titanium, Apache Cordova (PhoneGap), x86 Assembly, Visual Basic, Perl
Software Dev. Tools	PyCharm, Microsoft Visual Studio Code & Studio (C++, C#, Visual Basic), Git, Mercurial, Mantis, Xcode, Microsoft Expression Encoder, Eclipse, SourceSafe, Perforce, CVS, WinICE, WinDbg, Microsoft Platform Builder, Ansible, Terraform, CloudFormation, several tools for Agile methodologies (Clubhouse.io, JIRA, Phabricator)
Technologies / APIs	AWS (Lambda, API Gateway, DynamoDB, EC2, ECS, S3, CDK, IAM, Step Functions, Glue, CloudWatch, CloudFront), Azure (VMs, Queue, Media Encoder, Worker Roles), AWS Elemental MediaConvert, MediaLive, MediaTailor, and Elemental Link, REST & GraphQL APIs, .Net Framework, Silverlight, DirectShow, DirectX, IIS Smooth Streaming, Direct Media Objects (DMO), several Microsoft SDKs (Windows Media Player, Windows Media Format, Windows Media Rights Management, Win32, WinCE, etc.), ASF, H.264, MPEG, HLS, MPEG-DASH, CMAF, Zixi, SRT, WebRTC, ffmpeg, AVISynth, LAME, VirtualDub, WordPress, MySQL, MongoDB, New Relic, PubNub, Gigya, Countly, Basecamp, GitHub, CI/CD Pipelines, Bitbucket, Kubernetes, Docker, AI/ML (AWS Bedrock, GPTs, LLMs, OpenAI API)
Operating Systems	Linux, macOS, iOS, Android, Windows 3.0 – 10, Windows Server 2012 and earlier, Windows Mobile (WinCE 3.0 – 5.0), Windows Phone 7 & 8, Unix, CP/M, DOS, OS/2

Certifications

AWS Certified Solutions Architect - Associate (2024)

AWS Certified Cloud Practitioner (2021)

Education

BSCS and BSEE double major, three years of undergraduate studies. (Incomplete; started a business.)

Publications / Presentations / Industry Affiliations / Patents

Columnist for DV Web Video Magazine, and for Microsoft's Windows Expert Zone as a Digital Media specialist.

Microsoft MVP for Digital Media from 2002 through 2006.

Speaker at DV Expo in Long Beach, CA, March 2000 on automating backend video post-production procedures.

One patent pending (Nov 2015) on QR Code video context acquisition and subsequent playback.

One patent pending (2020) on precision HLS stitching for dynamic realtime sports highlight reels.