

视觉云：释放智能视觉体验

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市场开拓总监
网络平台事业部



intel®

媒体转型

>\$102B

沉浸式媒体
(AR/VR)

\$95B By 2025

互联网直播
视频流增长

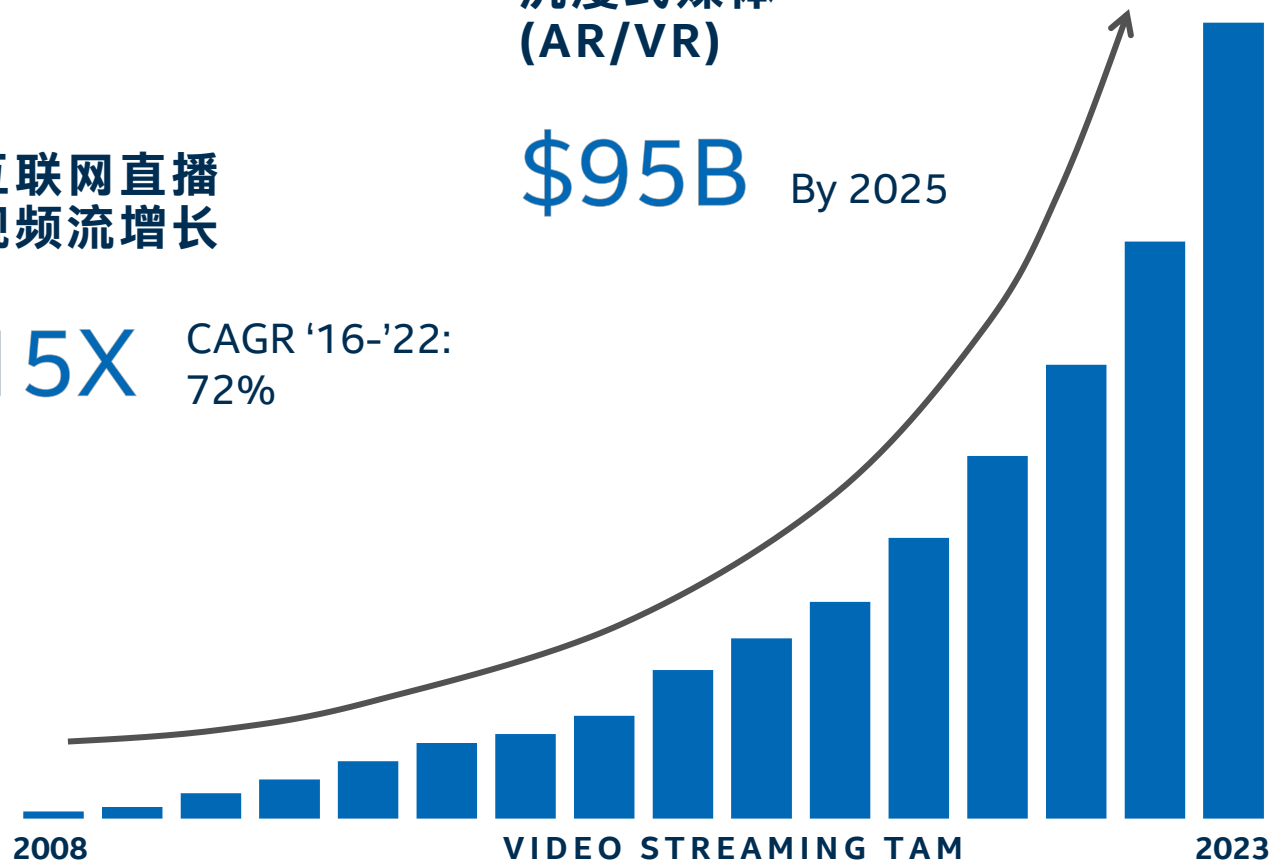
15X CAGR '16-'22:
72%

2025年
超高清IP视频流
将达到

20.7%

全球媒体分析

\$13B CAGR '17-'23:
25.7% By 2023



Video Streaming TAM: Video Streaming Market Predicted to Garner USD 102 Bn by Forecast 2023 | Augmenting Popularity of Online Video Streaming to Spur the Global Video Streaming Industry (Source: <https://www.globenewswire.com/news-release/2019/05/09/1820854/0/en/Video-Streaming-Market-Predicted-to-Garner-USD-102-Bn-by-Forecast-2023-Augmenting-Popularity-of-Online-Video-Streaming-to-Spur-the-Global-Video-Streaming-Industry.html>). Other data points from Cisco VNNI report

视觉体验转向



媒体转型：不再是往日的媒体

服务供应商的痛点

没有单一的设计



端到端平台考虑



不断变化的需求



TCO

提供视觉云服务需要具备什么条件？

广泛软硬件架构

服务创新平台

生态系统合作



视觉云工作负载

媒体处理



媒体分析



沉浸式媒体



云图形



云游戏



Visual Cloud Content Delivery

压缩, TCO, 带宽

时延、带宽、推理
算力

时延、带宽、渲染
能力

时延、渲染能力

时延、编码和渲
染能力

行业挑战

Visual Infrastructure Division:

通过按需云、转换网络和边缘处理释放智能视觉体验



参考流程图/
工业标准框架

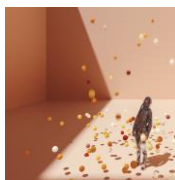
只能广告
插入



智慧城市交
通管理



互动
光线追踪



视频会议



游戏串流



360 & Volumetric
串流



CDN 转码



功能构建模块

解码

推理

渲染

编码

软件平台

可扩展视频技术, x264,
x265

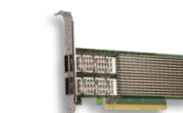
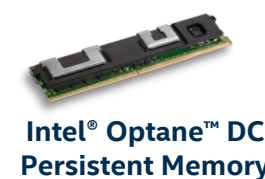
OpenVINO™ Toolkit

Intel® OneAPI
Rendering Toolkit

可扩展视频技术 av1, vp9,
hevc, avs3

OneAPI

硬件平台



Intel® Ethernet
Network Adapter

Github.com/OpenVisualCloud

Intel® Server GPU

高密度手游云游戏和媒体串流

支持广泛的编解码: AVC, HEVC, MPEG2, VP9 & AV1 (解码)

开源、异构、带有英特尔 MEDIA SDK 行业标准媒体框架 (FFMPEG)



高密度、低成本 (TCO)

优质的 CAPEX & OPEX

降低安卓云游戏入门门槛

Intel® Server GPU

Intel's First Xe Architecture Based Discrete Graphics Processing Unit For Data Centers.

Intel® Server GPU - Customer Testimonial

Alibaba Group | APSARA
英特尔 阿里云

英特尔阿里云应用平台的合作

- 基于英特尔®至强®可扩展处理器和Intel® Server GPU的服务器和虚拟化计算
- 强大的云计算存储渲染编解码能力
- 打造全新客户体验
- 软硬结合
- 全栈合作
- 端到端优化
- 敏捷开发
- 高密度、低成本
- TTM

intel 阿里云

英特尔 SVT 介绍

可扩展视频技术 (SVT) 是由英特尔开发的无标准限定新兴领域的编码器核心架构
(参考: https://01.org/sites/default/files/documentation/svt_aws_wp.pdf)

- 充分可扩展 为多核CPU平台提供更高的编码速度

通过以下方式充分优化达到最佳速度、质量和延迟的平衡:

- 维度 (进程, 图像和分段) 并行化
- 基于SB的多路分块判决
- 基于块的多阶段和多分类的模式判决
- 优化预测和编码算法的复杂度

Q1'20

SVT-AV1

- VOD Optimization
- Product level feature implementation
- Low delay prediction structure support

SVT-HEVC

- Optimizations to 8k live encoding

SVT-VP9

Bug fixes and maintenance

SVT-AVS3

- Available under eval license

Q2'20

SVT-AV1

- Further VOD optimization for specific deployments

SVT-AVS3

- Quality optimization to VOD use cases

SVT-VP9 / SVT-HEVC

Bug fixes and maintenance

Q3'20

SVT-AV1

- Adopted by the AOM Software implementation work group (SIWG)

SVT-AVS3

- Continued optimizations towards Live and VOD

SVT-VP9 / SVT-HEVC

Bug fixes and maintenance

Q4'20

SVT-AV1

- Adopted by the AOM Software implementation work group (SIWG)

SVT-AVS3

- Continued optimizations towards Live and VOD

SVT-VP9 / SVT-HEVC

- Bug fixes and maintenance

Learn More: <https://01.org/svt>

SVT-AV1

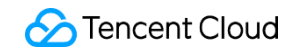
AOMedia Software Implementation Working Group to Bring AV1 to More Video Platforms

Initiative to Focus on Enhancing Video Streaming Experiences at Scale by Developing a Production-Ready AV1 Encoder Model and Implementations Using the Open-Source SVT-AV1 Codec

August 20, 2020 12:00 PM Eastern Daylight Time

WAKEFIELD, Mass.--(BUSINESS WIRE)--The [Alliance for Open Media](#) (AOMedia) today announced the formation of the AOMedia Software Implementation Working Group (SIWG), a member-driven initiative to aid the development of AOMedia AV1 products and services. The SIWG will use the [Scalable Video Technology for AV1 \(SVT-AV1\) encoder](#) developed by Intel in [collaboration with AOMedia member Netflix](#). The goal is to create AV1 encoder implementations that deliver excellent video compression across applications in ways that remove computational complexity trade-offs for an ever-growing video delivery marketplace. Open to all AOMedia members, which include [leading internet and media technology companies](#), the SIWG Co-Chairs will be Facebook's Ioannis Katsavounidis and Tencent's Xiang Li and Intel's Hassene Tmar will serve as the Software Coordinator.

SVT-AV1 Ecosystem



Kingsoft Cloud



可扩展视频技术- AVS3 (SVT-AVS3)

卓越的视频质量和高压压缩效率



CO-DEVELOPMENT

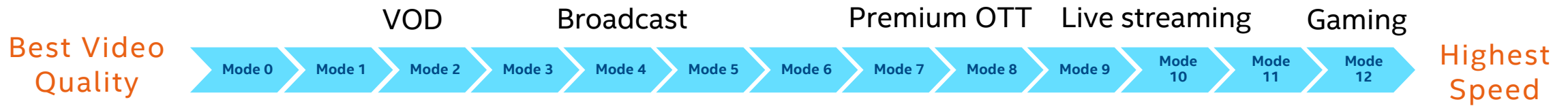
VOD → Live

性能可扩展性

TCO:

与 X265 1080P 内容
相同质量模式下

码率节省 ~20%-35%



生态系统
合作伙伴:

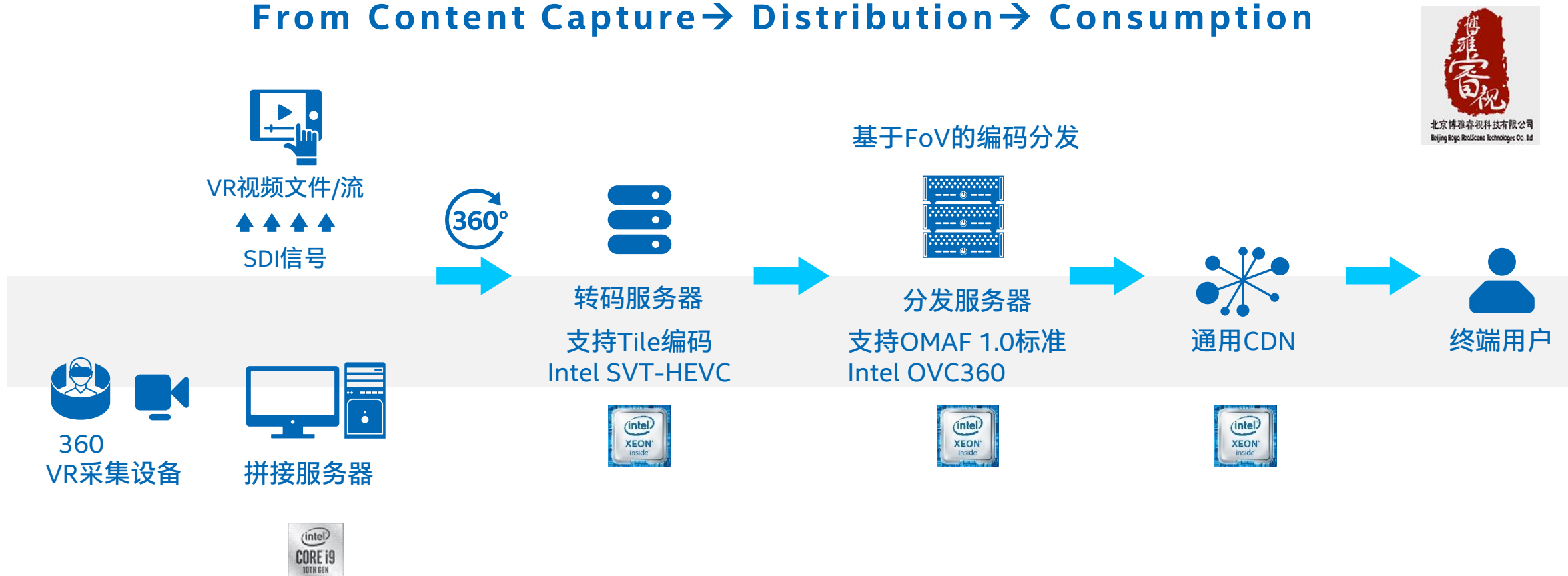


Learn More: <https://01.org/svt>

ECOSYSTEM COLLABORATIONS:

360全屏直播

From Content Capture → Distribution → Consumption



高效的映射格式 + 基于视角的传输 = 带宽节省 + 体验提升

ECOSYSTEM COLLABORATIONS:

媒体分析



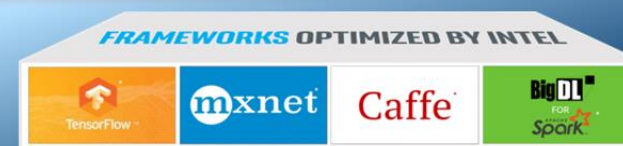
编解码+AI 整体解决方案

PONTUS视频AI分析系统
多路高清/超高清视频实时智能分析

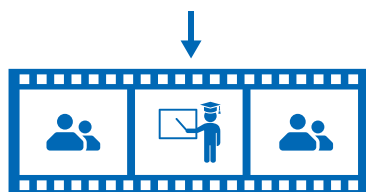
@PONTUS



Visual Cloud Accelerator Card - Analytics
Celestica



OpenVINO™



智能实时广告插入



智慧工厂



表情



防火



人群



渣土车



车辆

总结

广泛的视觉体验正在云端和边缘爆发性增长

企业组织和服务提供商需要更具可伸缩性的基础架构以及一系列软硬件和开源工具。

基于英特尔的解决方案是平衡的产品组合，提供更佳体验和TCO – 没有一刀切的解决方案。

视觉云已到来，你准备好了吗？

More Information

- [Visual Cloud](#)
- [Open Visual Cloud](#)
- [Intel® Network Builders](#)
- [01.ORG/OpenVisual Cloud](#)
- [The Intel® Server GPU – Ideal for Android Cloud Gaming and OTT Live Streaming](#)
- [Why More Companies Are Using the Open Source AV1 Video Codec](#)
- [AOMedia Software Implementation Working Group to Bring AV1 to More Video Platforms](#)

www.intel.com/visualcloud

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- Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure.
- Your costs and results may vary.
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