



技术开启新“视”界
Technology Bring New Vision

RealNetworks

Continuing Innovation in Video Technology

LiveVideoStack Beijing

Oct 19, 2018

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LiveVideoStack
— 音视频技术社区 —

CSDN

Agenda



Overview – China

- RealNetworks update
- Comparing China and US video markets
- Demo New Innovations
 - CODEC
 - Streaming
 - User experience
 - Computer Vision

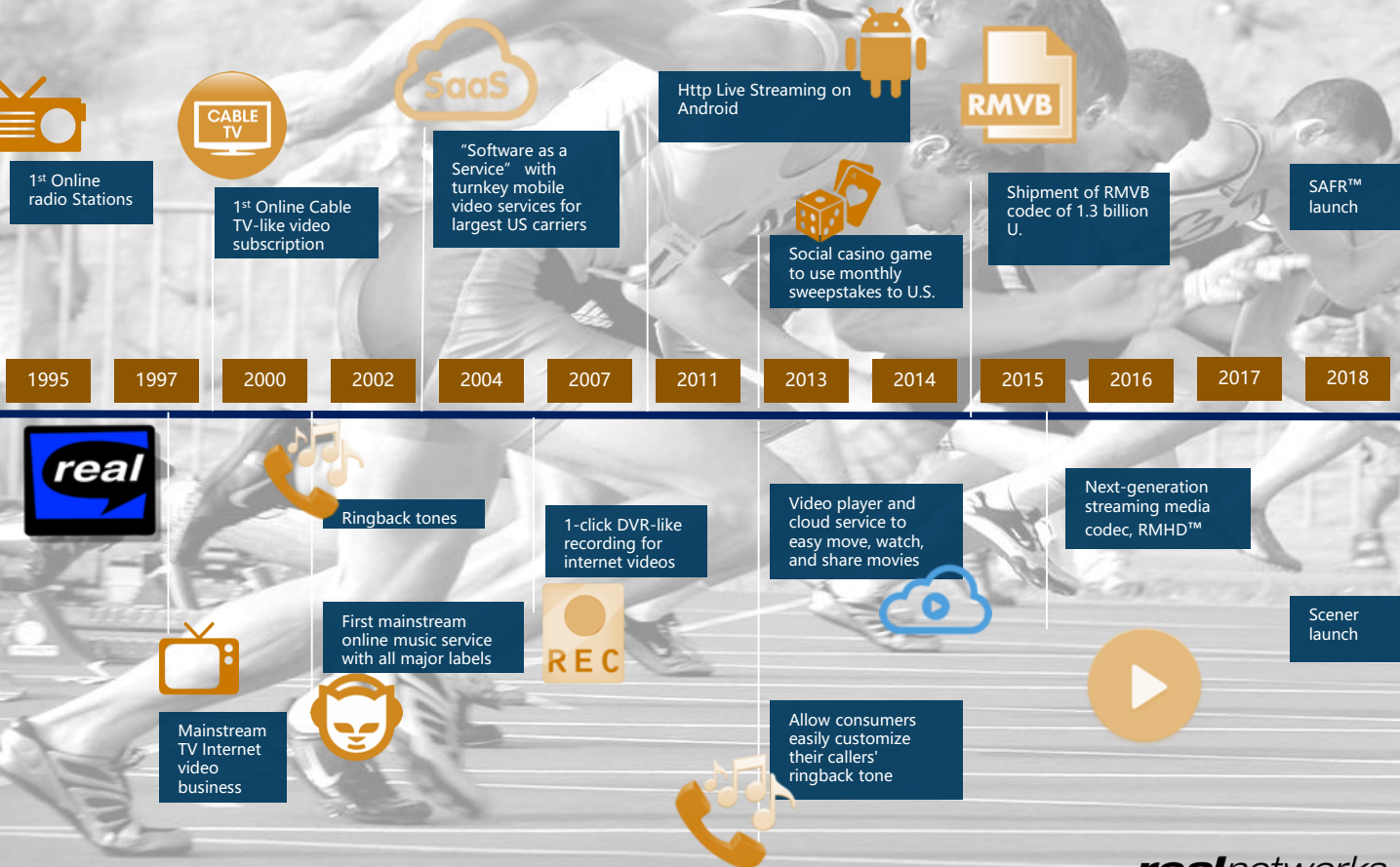
Exec Summary – Take Away

China leads the way in OTT.

RealNetworks continues to innovate new video technologies.



+20 Years of Innovation.



RealNetworks is strong in China

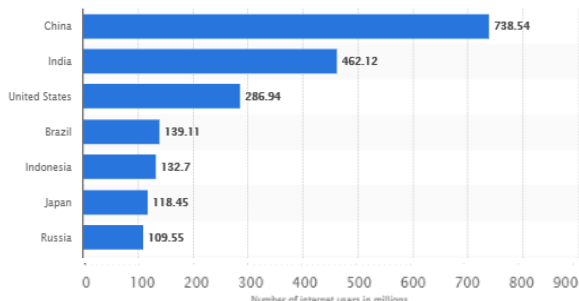


History of RN in China

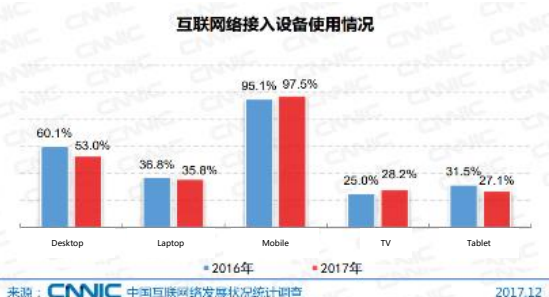
- Established Office in China 2005
- Licensed RealMedia CODEC in 1 Billion devices by 2014
- RMHD™, 11th codec version, Huawei OS integration 2015
- RMHD™ adopted by CIBN and StarsChina in 2018 for OTT



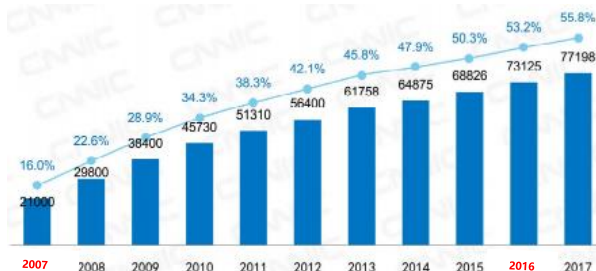
China OTT vs. US



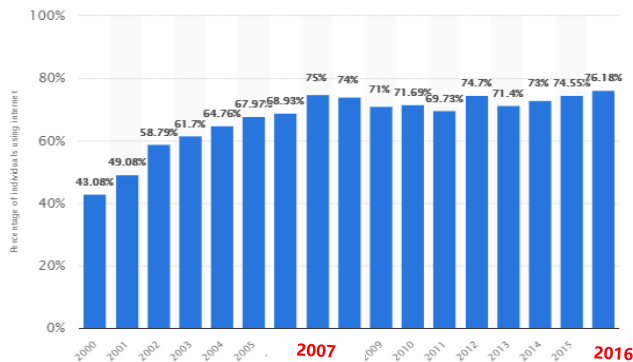
Global Internet users



Devices on internet (China)



Internet penetration of population in China



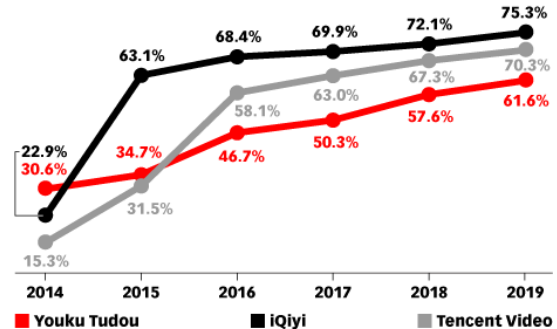
Internet penetration of population in US

China's Subscription OTT Video Market Is Booming

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- In 2018, close to 229 million people in China will watch video via a subscription streaming service that bypasses traditional distribution.

Subscription Over-The-Top (OTT) Video Service User Penetration in China, by Provider, 2014-2019
% of subscription OTT users



Note: individuals of any age who watch video via each provider mentioned using a paid subscription via app or website at least once per month; OTT video services are not mutually exclusive; there is overlap between groups; excludes Hong Kong
Source: eMarketer, Jan 2018

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www.eMarketer.com

- Content
 - ~15k VOD titles
 - 19 carousel channels
 - Membership: RMB 360 (US \$52) per year
- Users
 - 110 M active devices under regulation
 - 32 M actives subscribers on its own services





• Background

- StarsChina was founded in Nov 2013.
- A CIBN holding company (CIBN Oriental holds 51% shares of StarsChina)
- An emerging company to explore mobile OTT business

• Service

- Positioned as 'Mobile interaction media operator'
- Exclusively runs 'CIBN Mobile TV' service for China Radio International.
- App covers Android and iOS, services cover VOD and Live

• Users (2018)

- 430M registered users
- 2M daily active users.



Ambitious Requirements

- What are the main drivers for CIBN seeking new technology?
 - To take the user experience to higher level
 - To deliver higher video quality as well as save CDN cost
 - To expand HD video service to wider coverage
 - Compelling business value to CIBN
 - Possibility to build a unique ecosystem for new video consumption model



Commercial and Technical Problems



OTTs want to:

- Improve Video Quality
 - To make video look better requires more data which increases cost for storage and network
 - Then the playback requires more powerful processing resources from device
- Improve Streaming Performance
 - Faster startup and smoother playback requires reducing bitrate
 - Reducing bitrate reduces quality
- Reduce CDN costs
 - CDN is the second highest cost for most OTTs after content acquisition.
- Regain CODEC control
 - H.265 is good but patent situation is complicated and risky
 - H.265 patent pools don't provide any customer support nor optimization

Real's solution

- Software CODEC
 - Ease the deployment – Customer simply installs / upgrades software
 - Integration – OTT can integrate an SDK into their app
 - Works on Android, iOS, Linux, Windows. Some phones provide native support.
- Android SDK
 - Works on OTT boxes
 - Works on mobile phones
 - Works on Smart TVs
- Encoder
 - Runs on Windows for end users or short term trial
 - Runs on Linux for commercial



Play tomorrow's content on today's networks and devices

High-efficiency mobile video compression

RealMedia® HD delivers stunning image quality for today's and tomorrow's media experiences. RealMedia HD is engineered to provide optimal results for ultra-high-definition content, including 1080p, 4K and even 8K.

Next generation streaming media codec

Huge bandwidth savings
Play crystal-clear 4K at 5 Mbps or Full HD at 1.5 Mbps.

Dramatically faster encoding speed
Encode the same source video approximately twice as fast as H.265, and four times as fast as VP9 encoder, without sacrificing quality!

Quality delivery on current networks
Ensure faithful reproduction of 1080p and 4K content when streamed over current-generation networks.

Efficient hardware utilization
RealMedia HD's low-complexity codec minimizes CPU load, heat and battery drain.

High quality with fewer compromises
RealMedia HD provides visibly higher quality at any given bitrate vs. H.264, H.265 and VP9.

Support for next-generation media
Prepare for the future with a codec designed for 1080p, 4K, 8K, 360°, VR and more.

Seamless device integration

- RealMedia HD is available for embedded devices.
- RealMedia HD SDK supports Windows, iOS and Android devices.
- RealProducer™ is available for content producers interested in generating RMHD content.

Provides advantages for:

Service operators
Ensure superior experience while drastically reducing encoding and storage costs.

OEMs
Get crystal-clear 1080p and 4K decoding, even on modest hardware.

Chipset vendors
RealMedia HD RTL/FPGA hardware development program, enabling chipset vendors and their customers to implement RMHD decoder with high efficiency.

Proud to partner with:

CIBN 互联网电视

amlogic

CHINA
ChinaTV

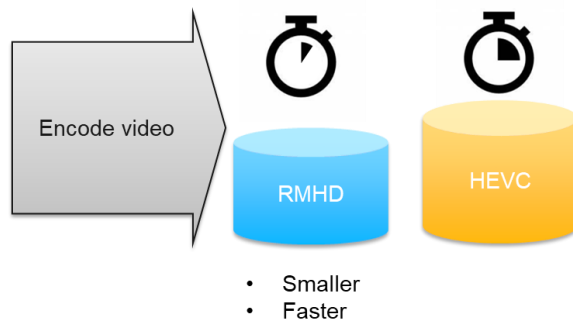
Need more information?

Email us: bizdev@realnetworks.com
Visit us: partners.realnetworks.com

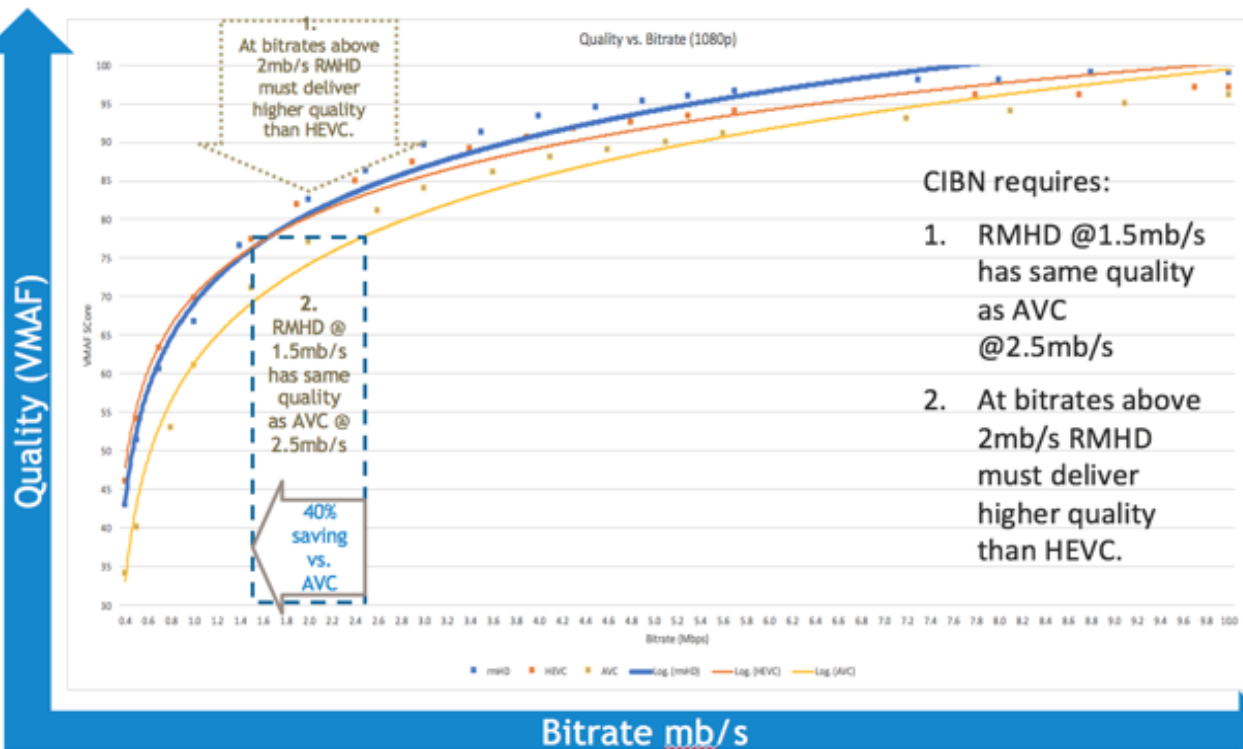
Introducing RealMediaHD™



- Software Defined CODEC for a Software Defined Network
 - Best balance of quality vs. efficiency
 - High efficiency: smaller files, faster software encode vs. h.265 and VP9
 - High resolution: natively supports 4k, 8k
 - Low CPU consumption: mobile friendly (8-11% more battery consumption vs H.264 software decoder)
 - Moore's Law wins
 - Greater device coverage

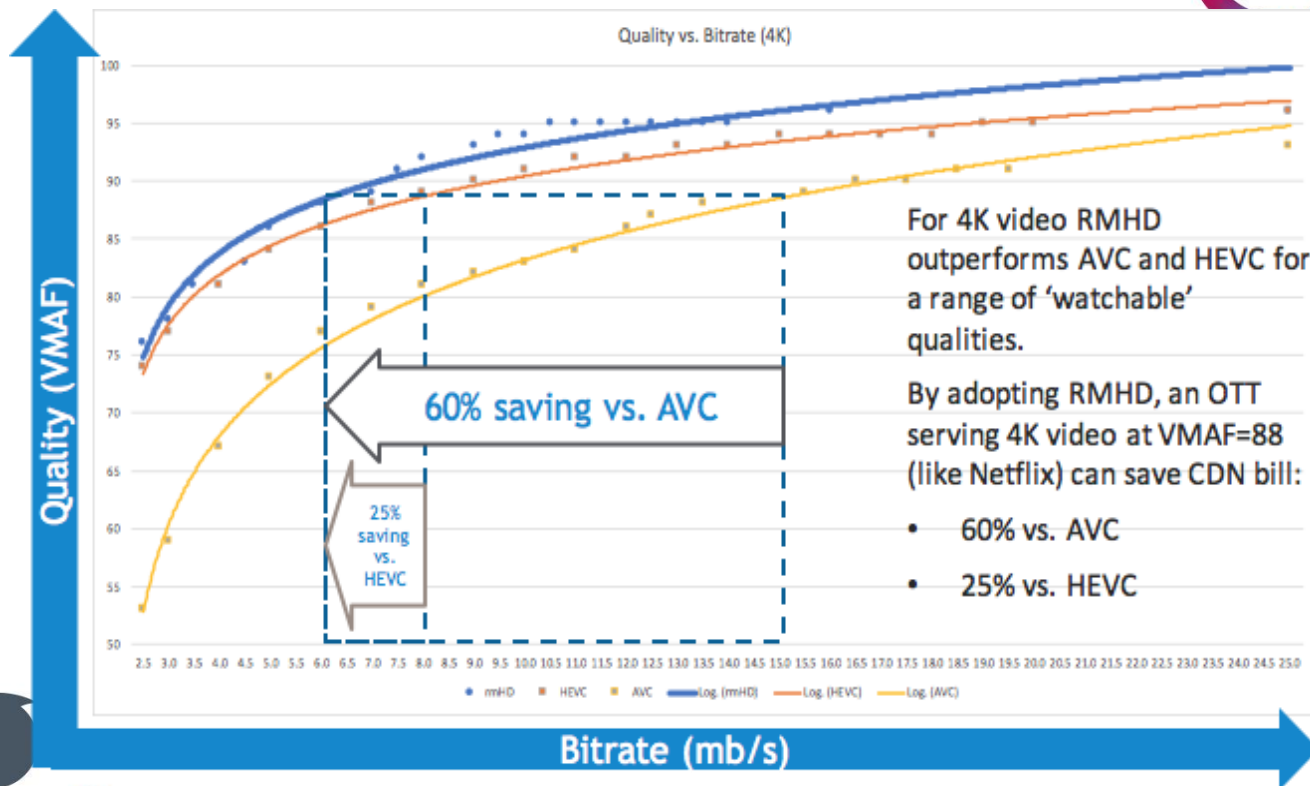


RMHD™ Compression Performance 1080p



RMHD™ offers cost reduction and service enhancement vs. AVC.

RMHD™ Compression Performance 4K



RMHD™ offers room for growth to 4K

Superior Streaming



- Low-latency HLS streaming
 - Leveraging learning from RTSP. Move buffering logic from server to client.
 - Fast start up
 - Fast seeking
 - Low latency
 - CDN friendly



Low latency HLS Live Streaming

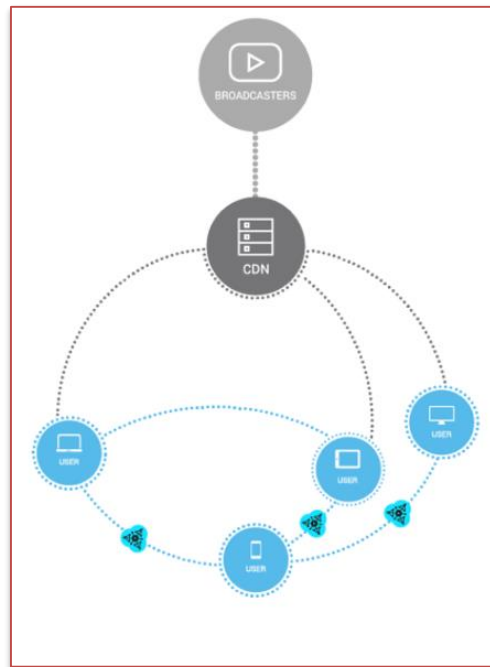


- Use chunked transfer encoding to allow downloading of partial segment as it is being generated.
- Use template to predict future segment URL to eliminate segment discovery delay.
- Pre-generate future segment file place holders to avoid segment downloading http 404 error.
- RMHD™ codec is great for low latency live streaming:
 - Low complexity
 - Short PBBP interframe dependency
 - High compression efficiency

CDN and P2P



- RealNetworks RMHD Live Streaming solution is CDN friendly. It uses only standard HTTP/1.1 protocol.
- The RMHD™ live streaming is P2P agnostic. It can be easily integrated with P2P solution such as Streamroot DNA.



Introducing Scener: social video for OTT

A 'social layer' sidebar for all OTT shows + movies with social video from influencers and consumers.

- Uses Chrome to overlay with OTT services, preserving underlying copyright and driving subscriptions.
- Leverages patent-pending sync to bring video and comments in line with key moments in scripted content.
- Supports 'live' watch parties scheduled by influencers or studios for big scripted show / movie launch moments.
- Activates long tail with evergreen synced social video experience that captures reactions and syncs with content to avoid spoilers.
- Anyone can host their own video commentary and share it with friends or use it to build audience.



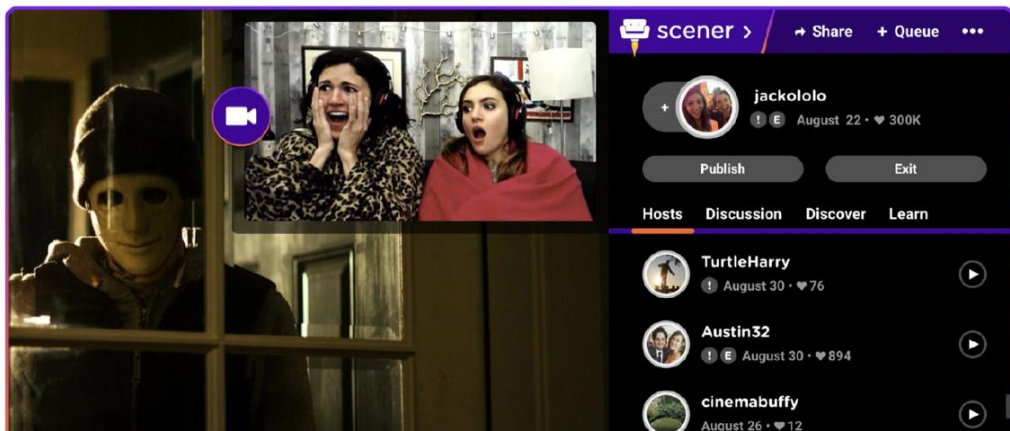
scener.com



- Social viewing
- Record audience commentary
- See the reactions of your friends when you watch TV

Our solution

- Launched Scener V1 (Sep 5th 2018)
 - Chrome extension for PC & Mac
 - Supports Netflix, Hulu, YouTube
- Enthusiastic press momentum behind launch
- Several patents pending on the 'social watching' experience
- Big plans for mobile, partnerships, and influencer content





Secure, Accurate Facial Recognition

Recognize every fan,
customer, employee, or guest
– and get actionable insights

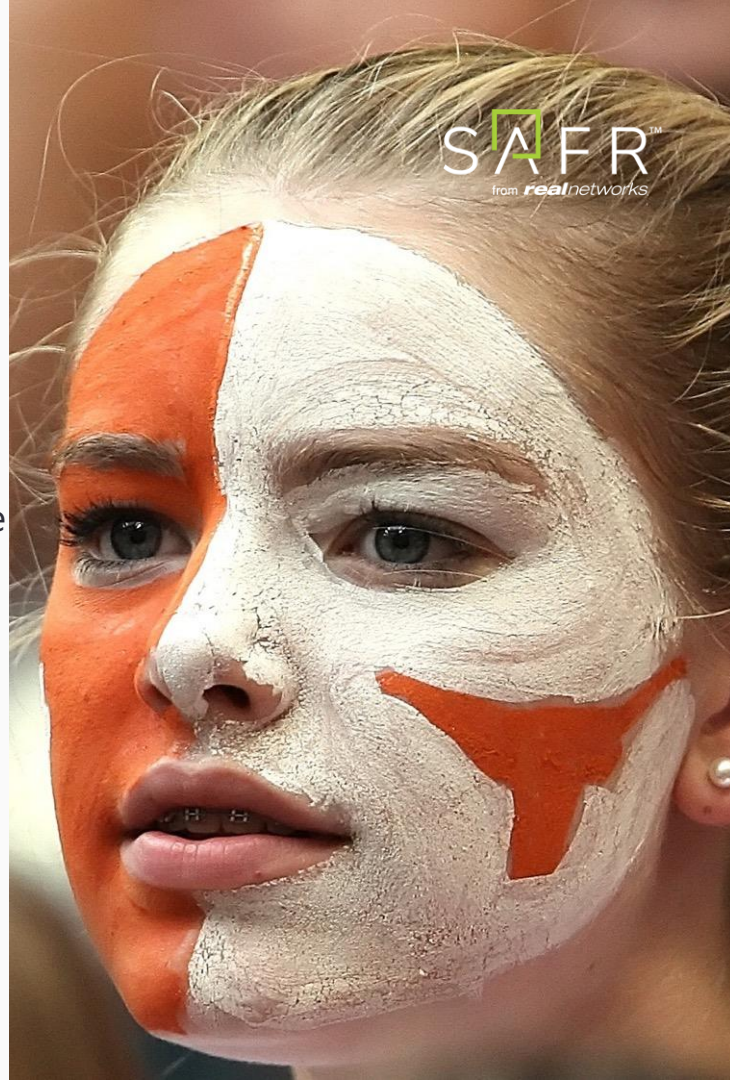




SAFR from RealNetworks is a highly accurate facial recognition platform powered by artificial intelligence that works with IP cameras and readily available hardware to match faces in real time

INDUSTRY-LEADING PERFORMANCE

- Scalable: can reliably match against millions of faces in under a second
- Designed specifically to recognize faces in real-world conditions, including people in motion, in dim lighting, and at occluded angles
- Non-literal matching: handles multiple variations, including masks, makeup, spectacles, hair styles, and aging
- High tolerance to yaw, tilt, and rotation
- Allows error rate tuning to minimize false rejections and false acceptances, or to optimize between the two



Performance even in adverse settings

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Scale



Pose



Occlusion



Expression



Makeup



Illumination



SAFRTM
from *realnetworks*.

realnetworks.

RealNetworks computer vision topped the list for “labeled faces in the wild” (LFW) achieving a 99.8% accuracy in a test conducted by the University of Massachusetts and 0.048 for Wild Faces FNMR according to the National Institute of Standards and Technology (NIST).

**99.8%****LFW FACES**

University of MA 2017

NIST**0.048****WILD FACES FNMR***

National Institute of Standards and Technology 2018

*The NIST Wild Faces FNMR (false non-match rate) score of 0.048 indicates that the RealNetworks computer vision algorithm correctly recognizes a camera unaware individual from an imperfect image in 95.2% of cases while perfectly differentiating a population of 10,000 people.



VIP IDENTIFICATION

- Fast lane access
- Concession preferences
- Merchandise discounts
- Loyalty awards

SECURE AREA MONITORING

- Access control
- Intruder/offender database alerts
- Loss prevention
- In/Out tracking

LIVE DATA COLLECTION

- Guest demographics
- Merchandise sales
- Loyalty analysis
- Concessions

VISITOR ID & SCREENING

- Reduce entry friction with face ticket
- ID VIPs for special greeting or premium
- “Face Pay” at concession or merchandise stands
- Locate lost loved ones
- Deliver VIP messages
- Earn loyalty rewards as you traverse the venue



BEYOND IDENTIFICATION

Gather and compile valuable demographic data

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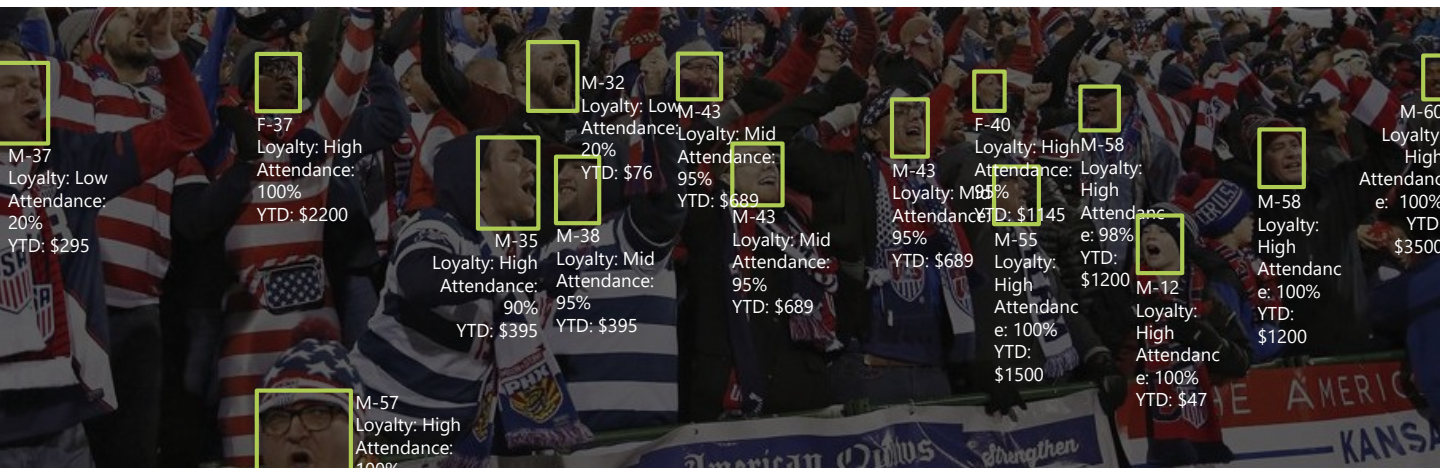


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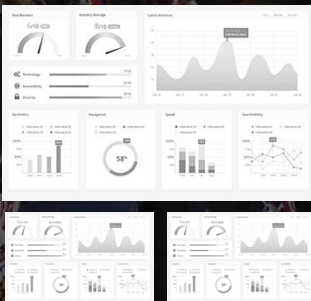
SAFRTM
from *real*networks.



CAPTURE

Attendance
Demographics
Time on Site
Vendors Frequented
Concession Spend
Merchandise SKUs
And More

REPORT



Dashboards, POS,
CRM

APPLICATIONS

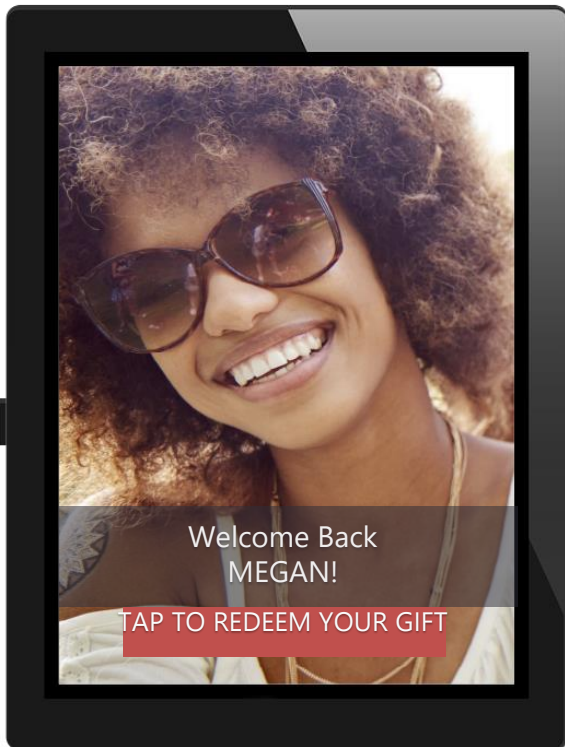
VIP Rewards
Merchandising
1:1 Direct Marketing
Loyalty Incentives
Forecasting
Staffing
And More

*real*networks.



DIGITAL SIGNAGE

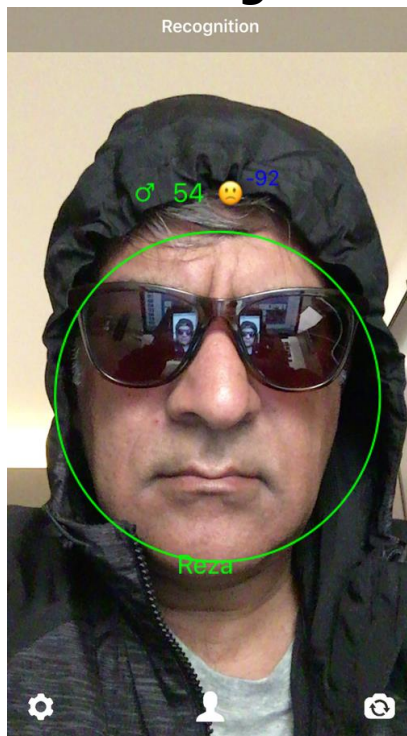
DIGITAL SIGNAGE



- Deliver VIP messages
- Embed SAFR into existing in-store devices to capture demographics, record sentiment, and evaluate trends and behaviors
- Identify user profiles and preferences for recommendations and premiums.
- Create contextual signage based on guest profile
- Operate interactive mirrors with greater relevance



SAFR™ Video Facial Recognition



RealMediaHD™ Streaming in StarsChina



Thank you Any Questions?

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