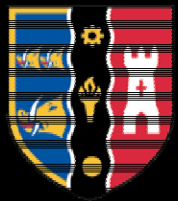


Fully Configurable Video Coding

Beyond Compression Standards

Iain Richardson

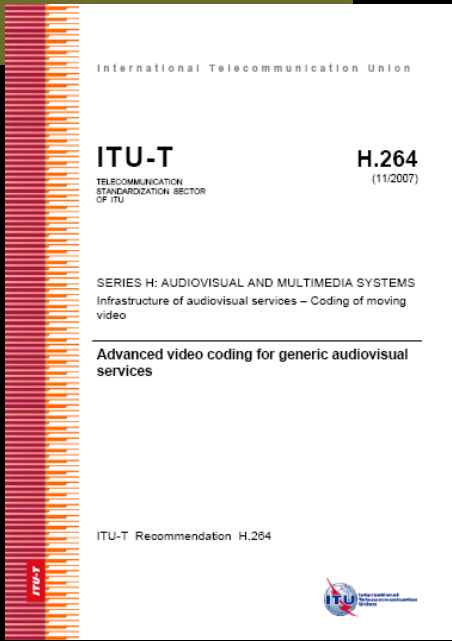
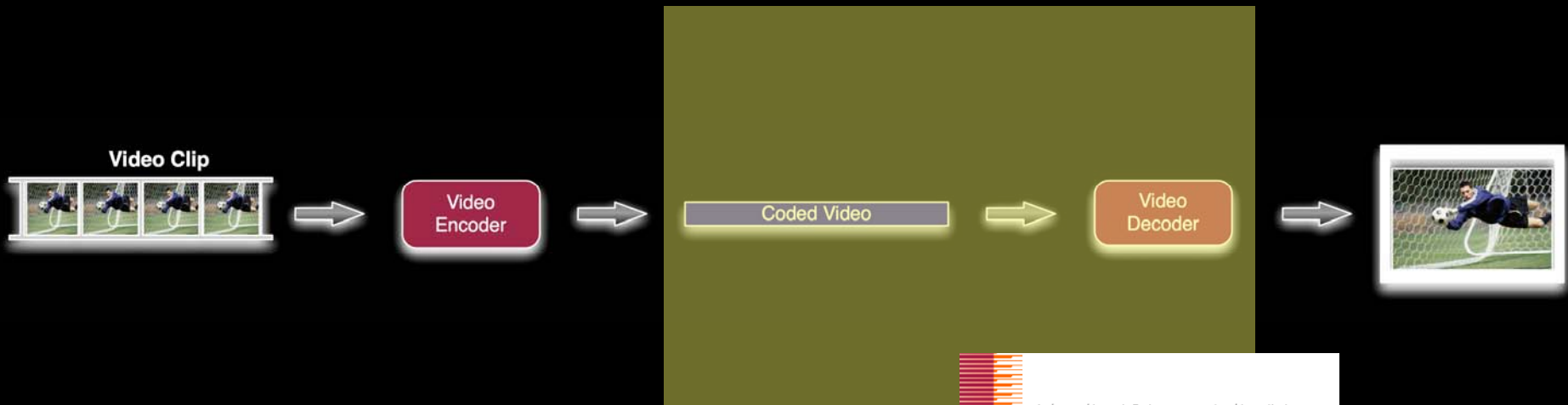


**THE
ROBERT GORDON
UNIVERSITY**
ABERDEEN

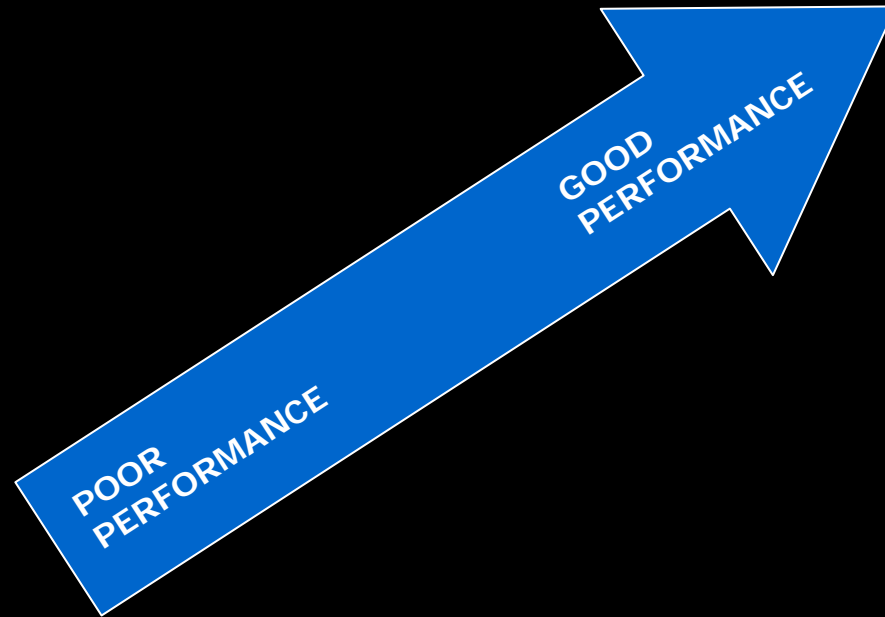


Centre for Video Communications

Setting the scene



**High quality
High compression
Low computation**

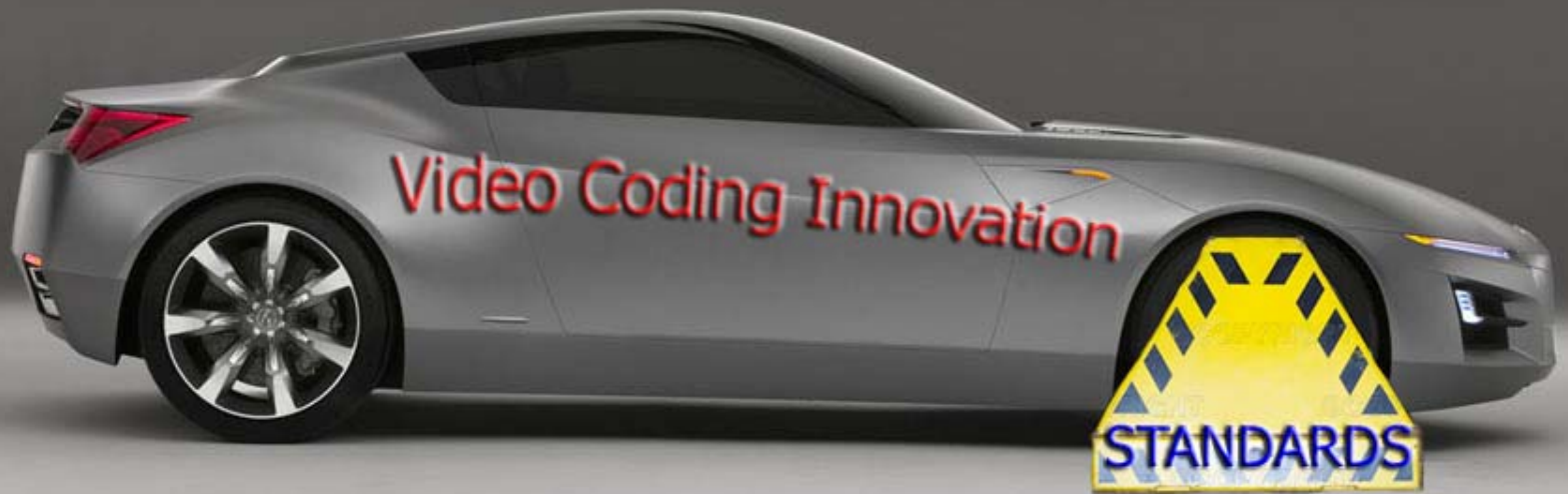


**Low quality
Low compression
High computation**

The problem with the status quo



Video Coding Innovation

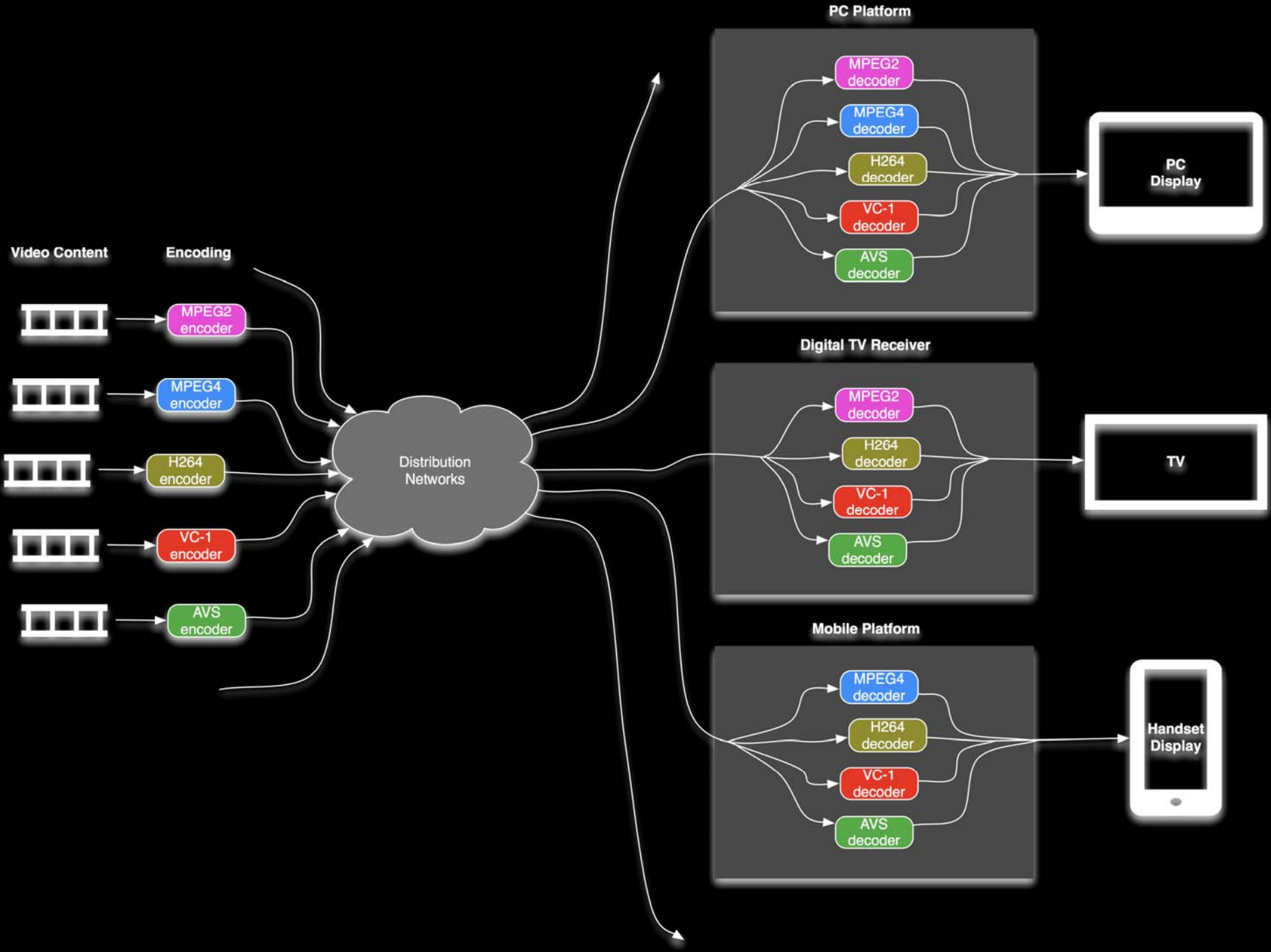


Video Coding Innovation

STANDARDS

CHEAP AS CHIPSETS

Why buy ONE chip
when you can buy THREE?

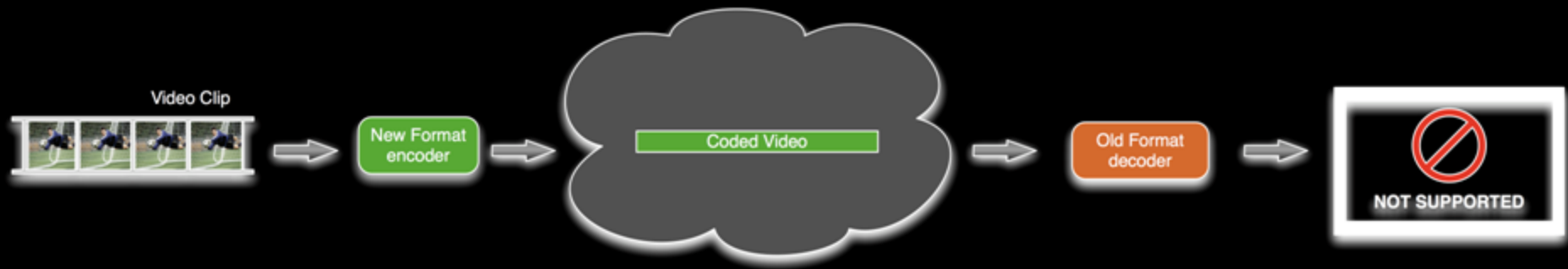


New Product Announcement

15th April 2009

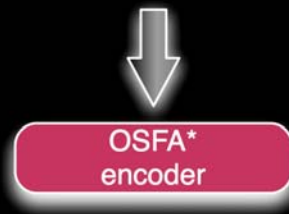
Look out for our brand-new video compression technology. It's miles better than H.264 and it will be featured in YOUR products by 2015.

Can't wait that long ? TOUGH.



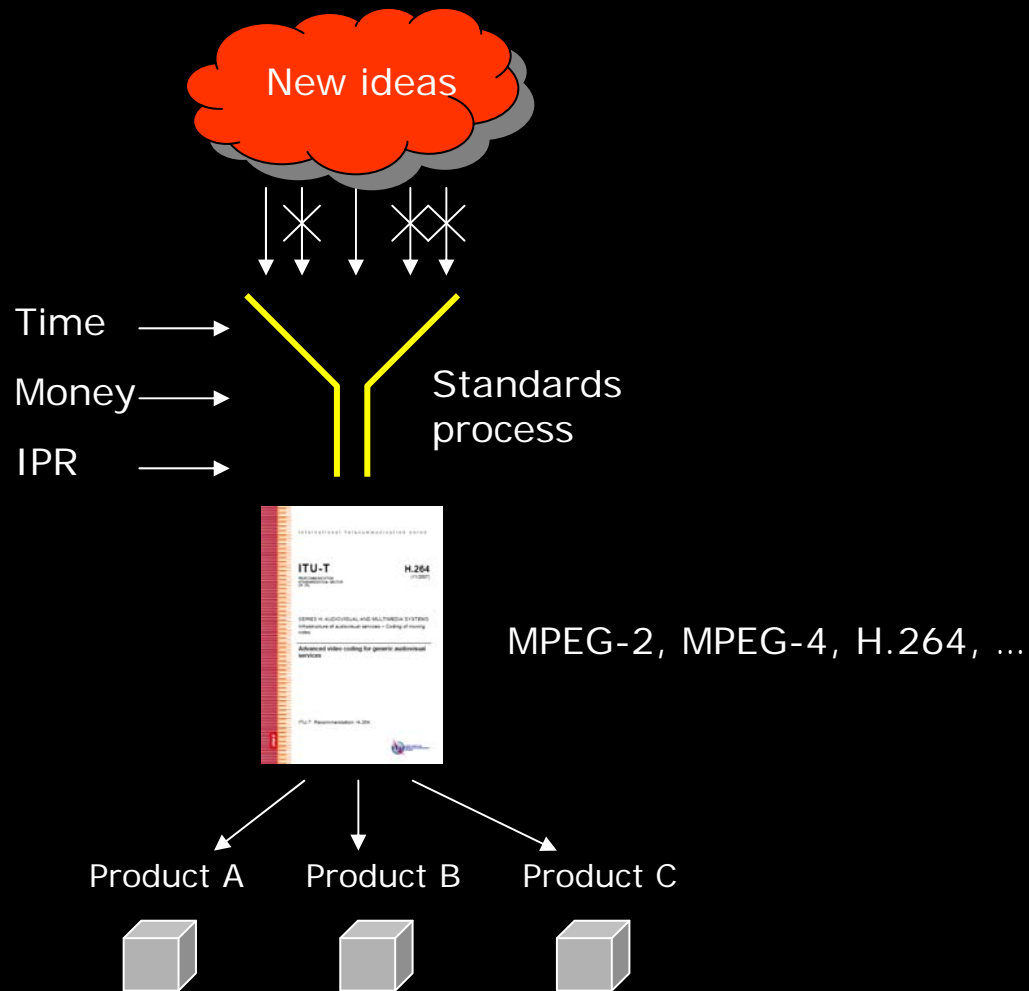
ONE SIZE FITS ALL

Standard X :
Guaranteed to be optimal
for every video clip?



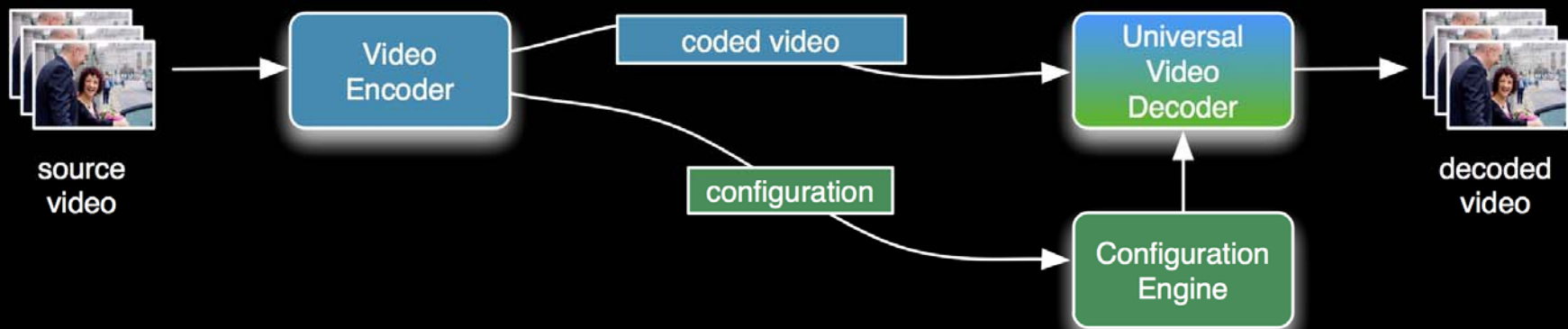
*One Size Fits All

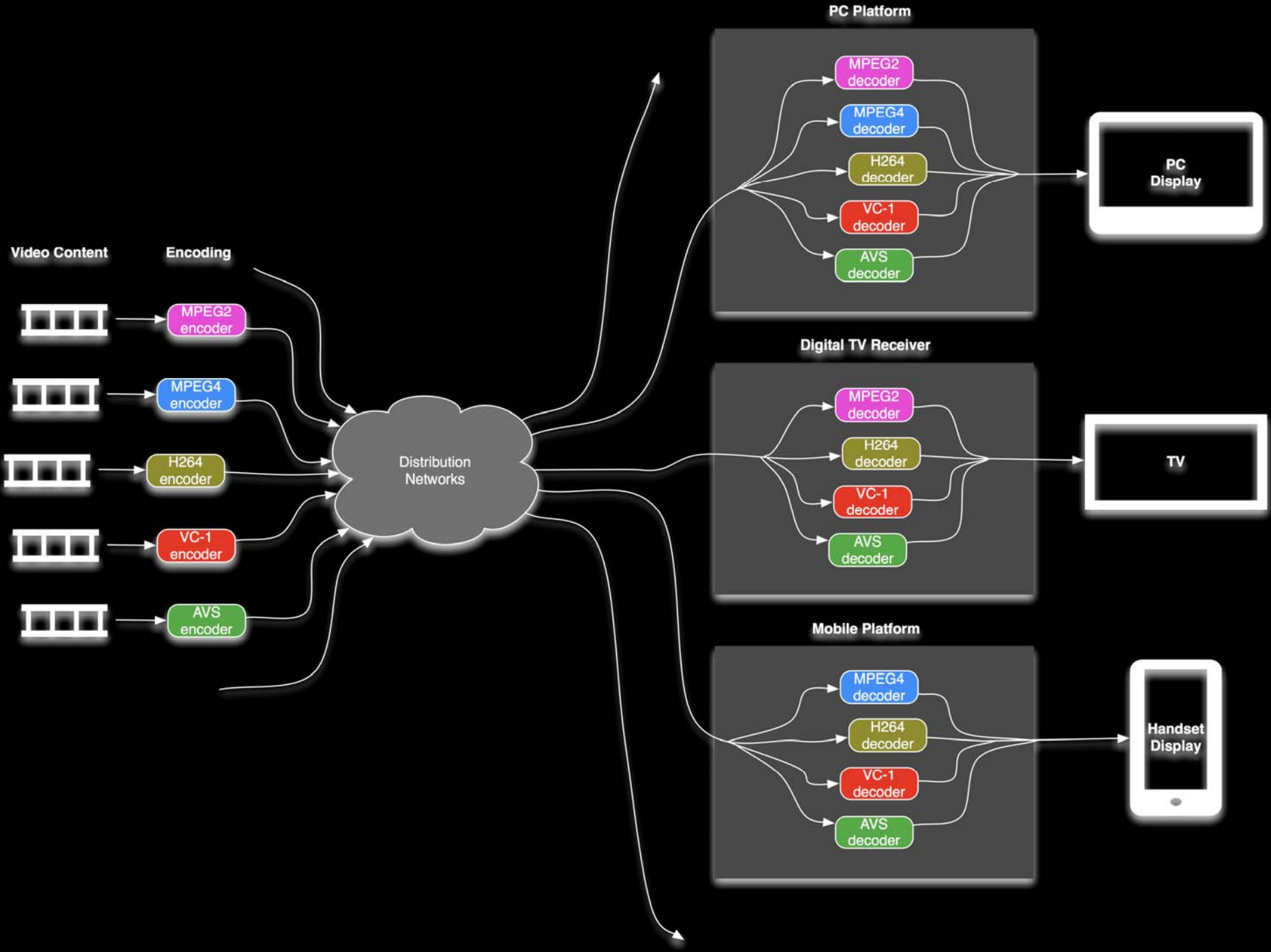


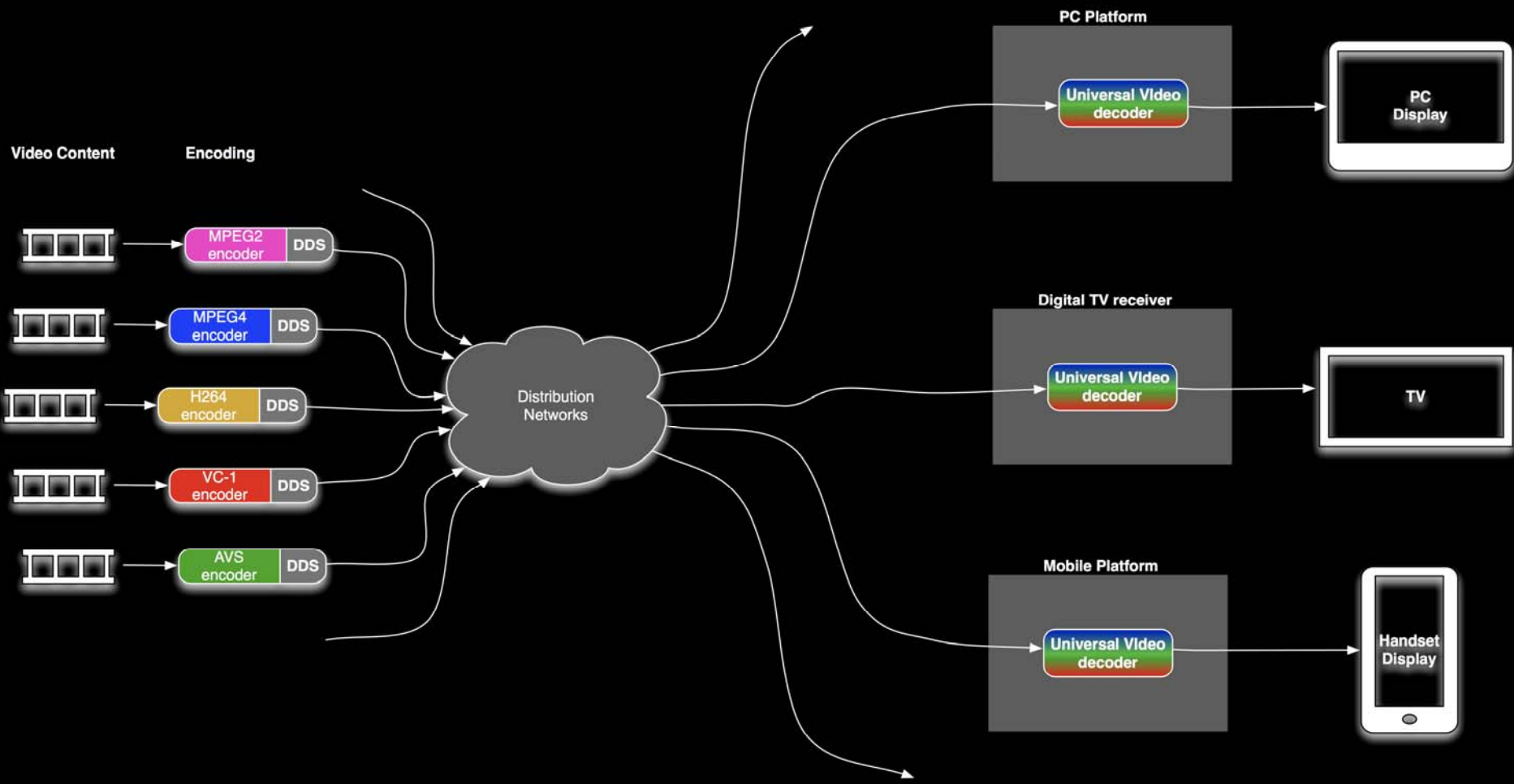


A new approach

Fully Configurable Video Coding







Video Content

Encoding

Distribution Networks

PC Platform

Universal Video decoder

PC Display

Digital TV receiver

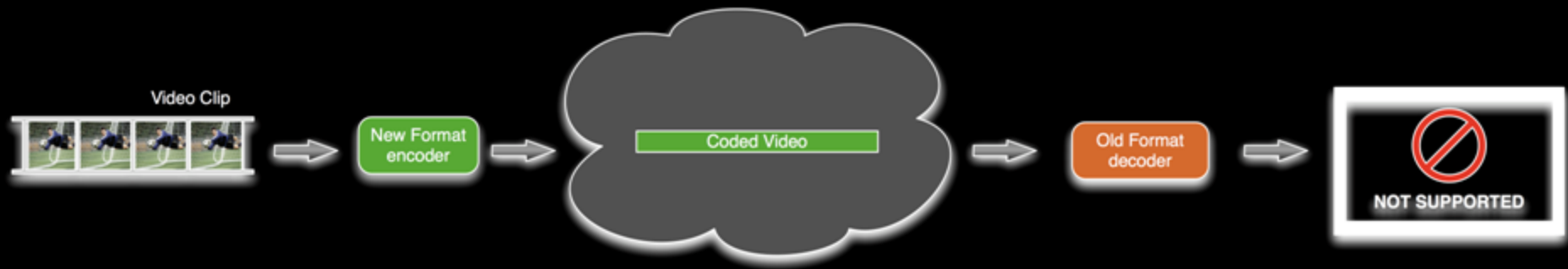
Universal Video decoder

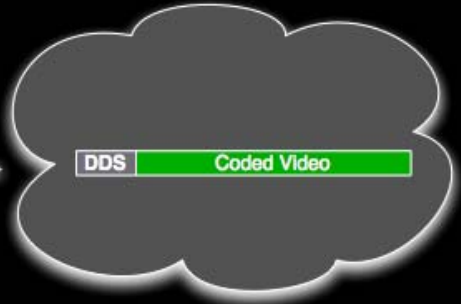
TV

Mobile Platform

Universal Video decoder

Handset Display

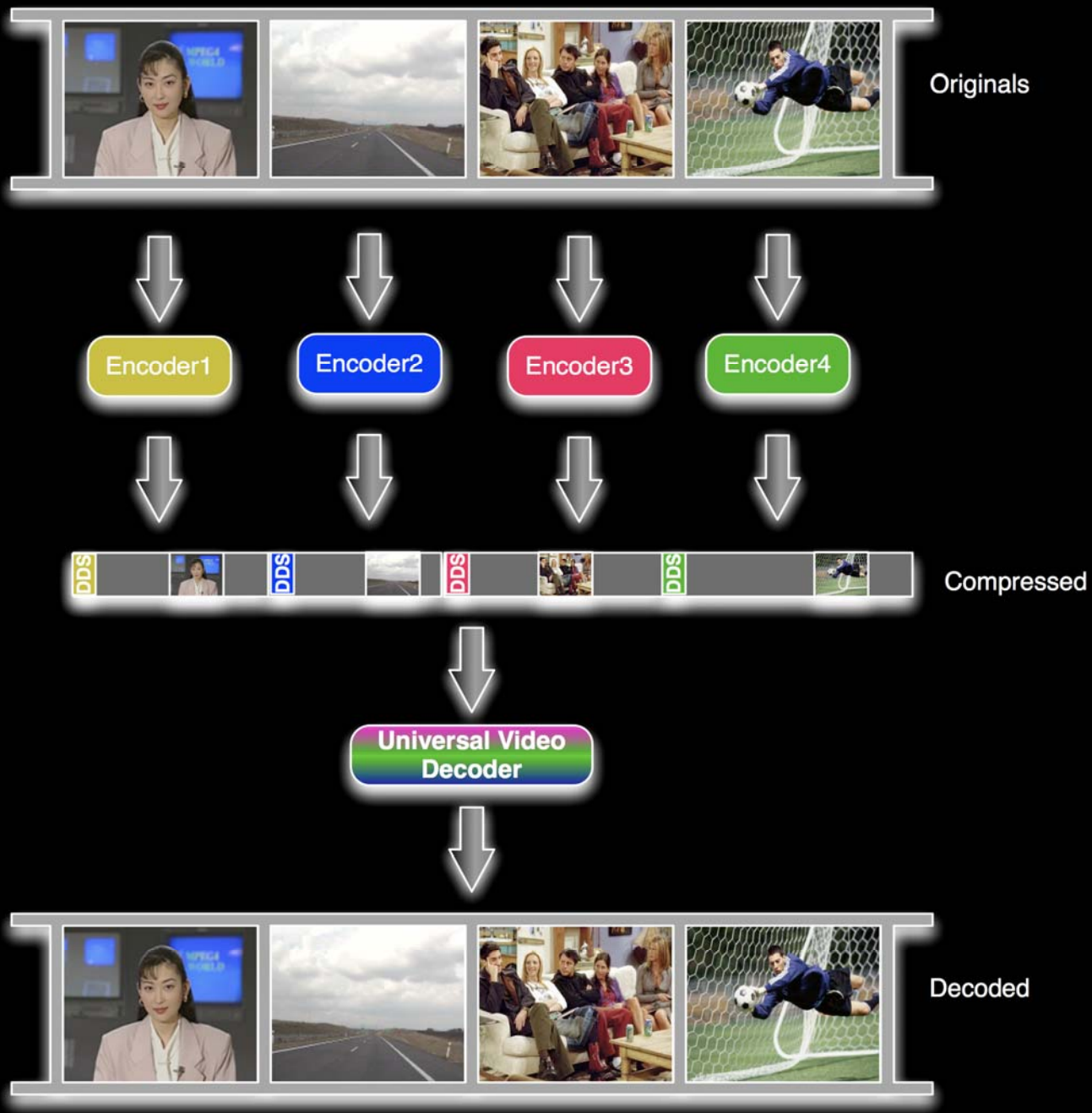






*One Size Fits All

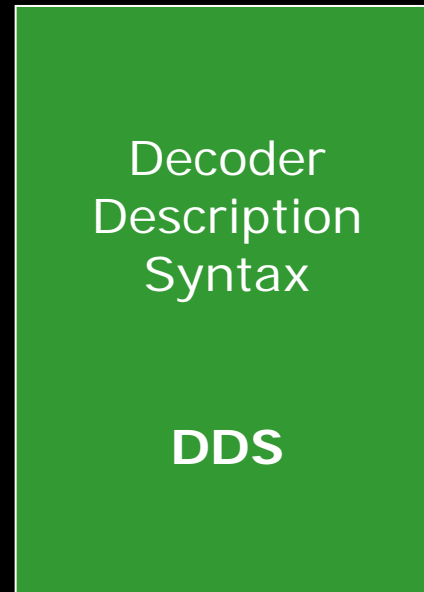


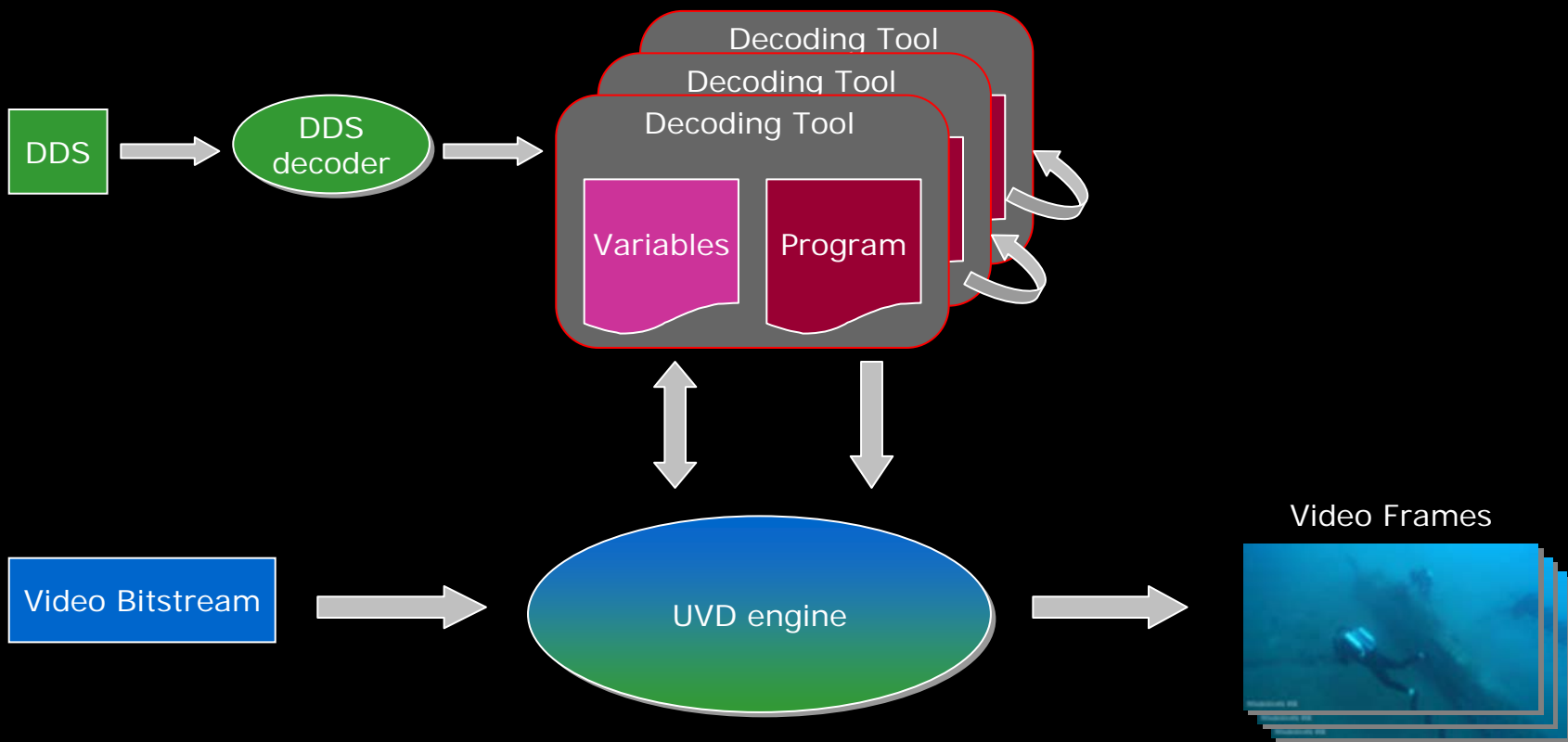


How it works

Video decoding process

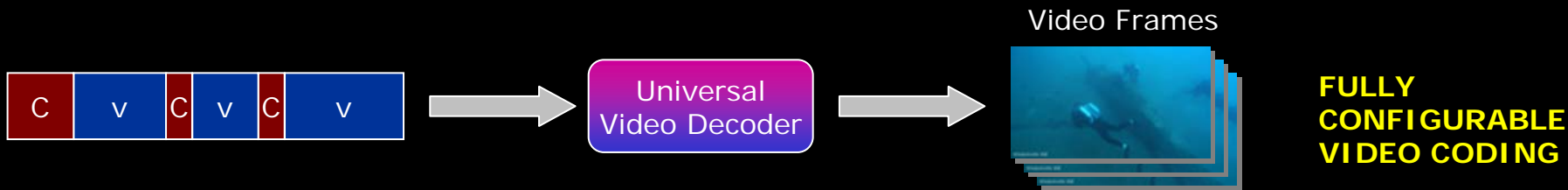
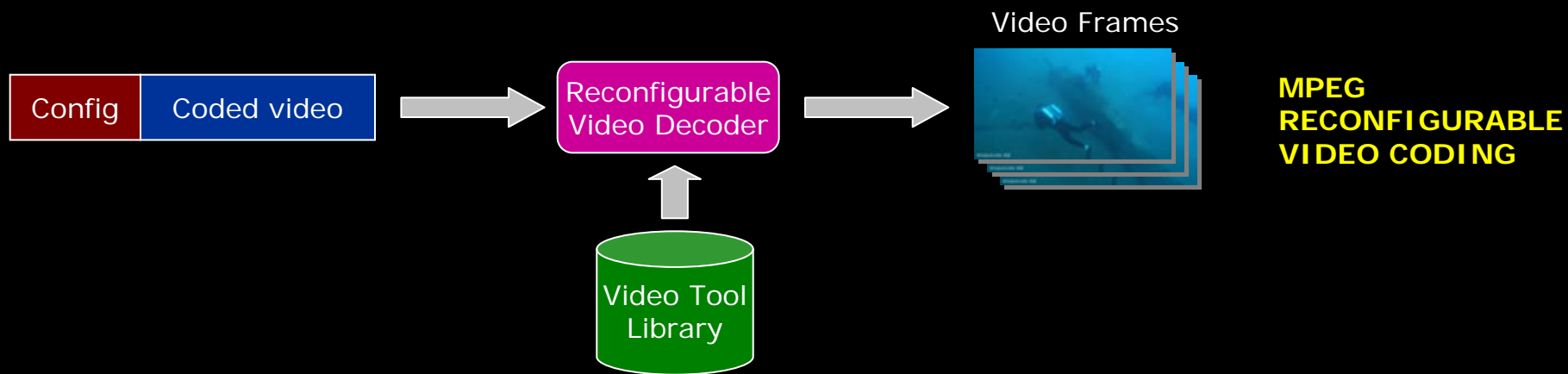
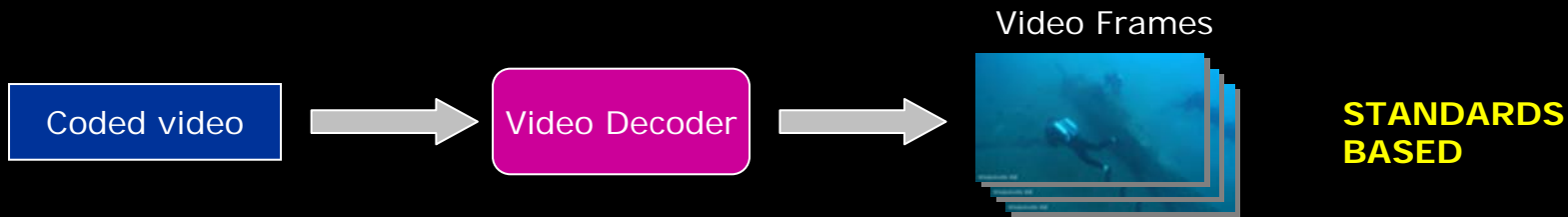
Bitstream decoding
Data manipulation
Arithmetic + logic
Video signal processing
Control flow
Video output
....





Demonstration

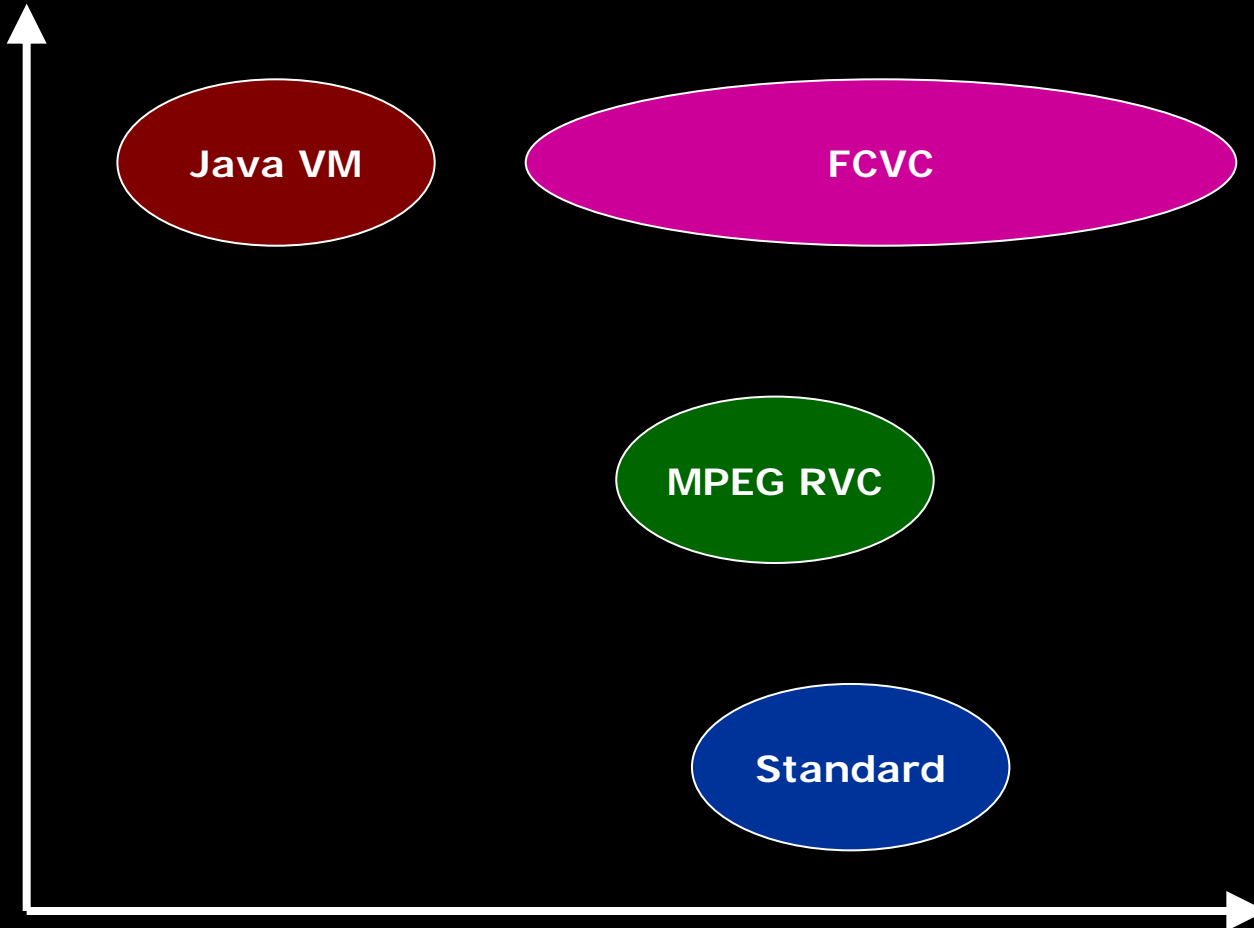




	Standards based	MPEG Reconfigurable Video Coding	Java Virtual Machine	Fully Configurable Video Coding
Syntax + decoder design	Fixed	Modular (fixed library)	Fully flexible	Fully flexible
Time to market for new ideas	Slow	Medium	Fast	Fast
Support for multiple formats	One decoder per format	One decoder + tool library	One decoder	One decoder
Computational performance	Fast	Medium/Fast?	Slow	Medium/Fast?
Support for adaptive coding	No	No (fixed at run-time)	Maybe	Yes

FLEXIBILITY

- Multi-format
- Time to market
- Adaptive



Java VM

FCVC

MPEG RVC

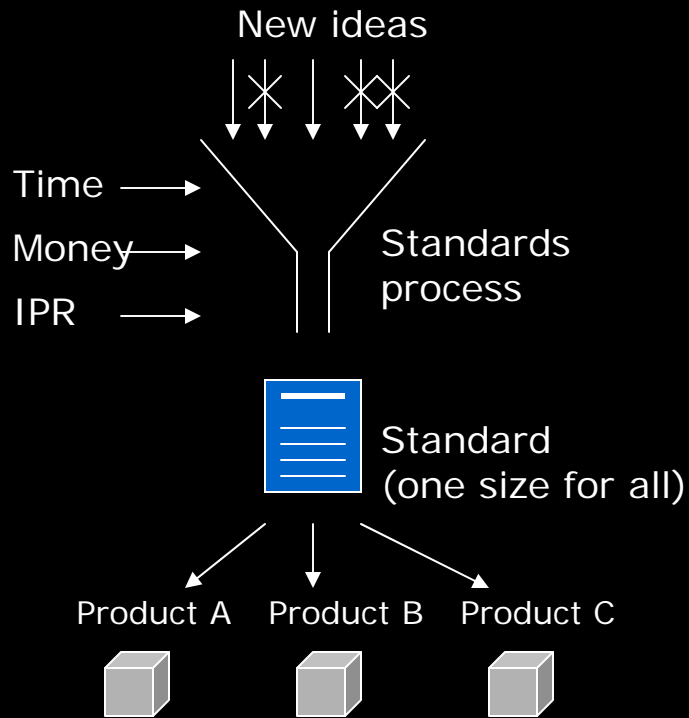
Standard

PERFORMANCE

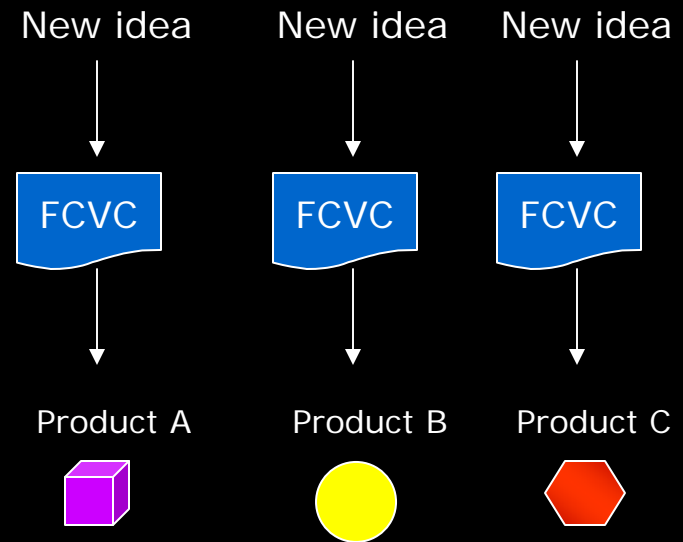
- Compression
- Quality
- Speed

Outlook

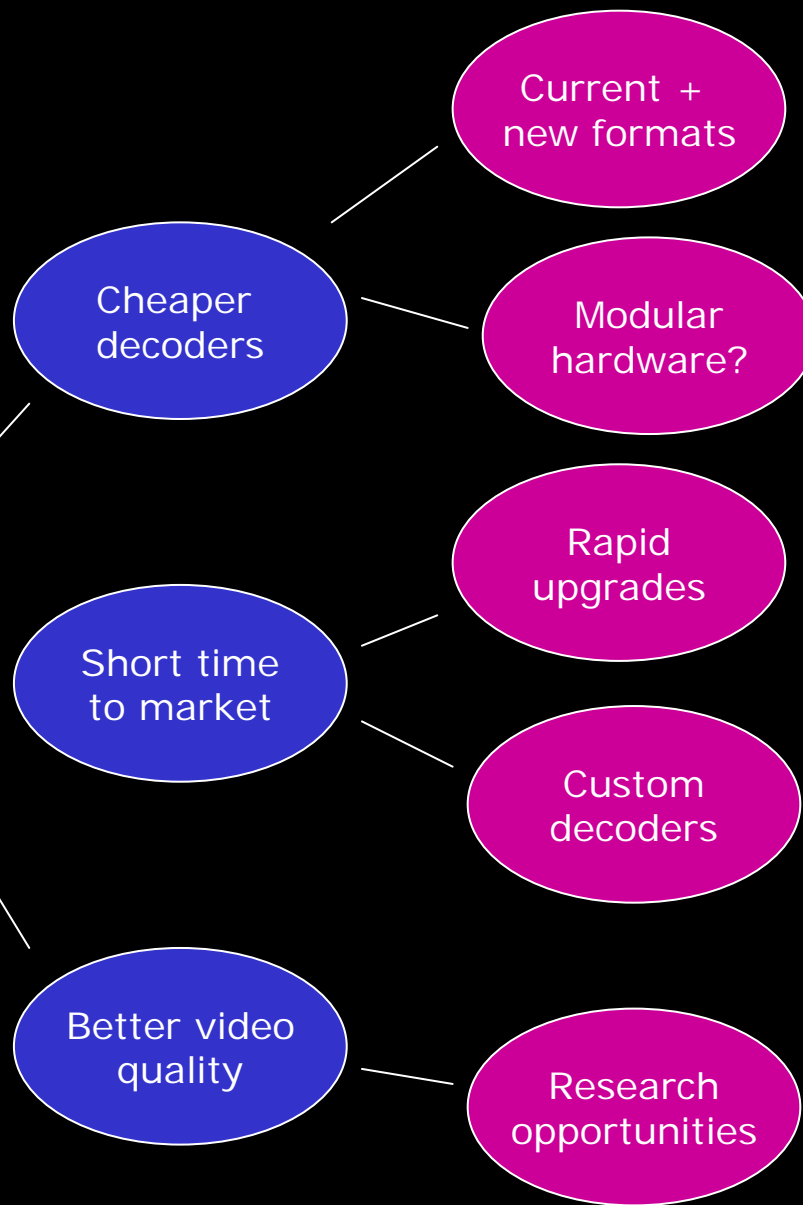
Status Quo:



Fully Configurable:



Benefits



Challenges

Adaptive coding algorithms

UVD

Fast Software UVDs

Efficient Hardware UVDs

DDS

Standardize DDS

Transport protocols

Standard decoders in DDS

www.openvideocoding.org

