

DRM & Interoperability

Marlin, Coral & DECE



Digital Entertainment Content Ecosystem



Marlin





Marlin Functionality

- Device Bound Model
 - Still Useful for Rental
- Domain Bound Model
 - Current Wave, useful for ecosystems, subscriptions
- Ad Supported Model
 - Add Flexibility to the most common business model
 - Constrain ad skipping
 - Anonymous yet accurate reporting





Marlin Developer Community (MDC)

- The Marlin specifications were developed by the Marlin Developer Community (MDC).
- The MDC was created in 2005 by Intertrust, Panasonic, Philips, Samsung, and Sony.

Panasonic

PHILIPS

intertrust®



SONY





Marlin Partner Program

- The Marlin Partner Program (MPP) is a forum for solutions providers
- Today, over 35 partner companies provide expertise across the value chain
 - Includes Technology Solutions Providers and System Integrator's who provide solutions for adopters, including Set Top Box and mobile phone solutions
- MPP membership includes non-commercial access to SDKs.



Marlin Partner Network

Technology Solutions Providers



System Integrators



Content Aggregator/Solutions Providers



Device Maker





Marlin Trust Management

- The Marlin Trust Management Organization (MTMO), which is an entity distinct from the MDC
- The MTMO has a single trust authority to ensure maximum interoperability
- The MTMO uses a “delegated trust” model to give adopters maximum flexibility
- MTMO allows multiple entities to provide keys if they meet certain criteria; Intertrust operates, Seacert, one such trust service provider
- MTMO publishes compliance and robustness rules





www.seacert.com

- Provides infrastructure services (i.e., keys and secure digital certificates) to device makers and service providers who want to deploy domain-based media content distribution systems, including for Marlin and OMA DRM
- Easy-to-use, cost-effective comprehensive services
- Supports a variety of cryptographic standards and protocols and uses its expertise and experience to offer a customized and reliable implementation
- Over 30 global customers

Seacert Customers



BUFFALO

DigiOn

DMM.com

FUJITSU

HITACHI
Inspire the Next

I-O DATA

i-TEC

JVC KENWOOD
HOLDINGS

Designing The Future
KDDI

Leopalace 21

MITSUBISHI
ELECTRIC
Changes for the Better

NEC

Panasonic

PHILIPS
sense and simplicity

plala

SHARP

SoftBank

Soliton

SONY

SUMITOMO ELECTRIC NETWORKS, INC.

SYNCTV

TOSHIBA

USEN

YAHOO!
JAPAN



Market Adoption

- Marlin is used for content distribution and protection in:
 - Japanese national IPTV deployment (IPTV-ES specification)
 - Sony PlayStation Network, PS3, PSP, TVs, and other devices
 - SyncTV catch up TV service
 - Philips NetTV
- Marlin's simple licensing program
 - Minimizes market hurdles



Standards Adoption

The Marlin specifications have been adopted by other standards development organizations.



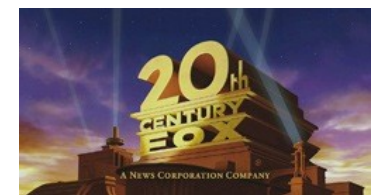
Digital Entertainment Content Ecosystem

- Marlin is the content protection technology selected by the Open IPTV
- DECE Approved DRM
- Bluewhale and Sushi have passed the ChinaDRM Forum conformance test suite



Studio Support

All major studios support Marlin to protect their content for rental, subscription and electronic sell through of their digital assets.



Japanese IPTV Device/Component Adopters

ACCESS™

BUFFALO™

CyberLink

DigiOn®

FUJITSU

FUNAI

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TOSHIBA

USEN

Japanese IPTV Service Adopters









Wasabi/Sushi SoC Ports

				
				
Vendor Models	7405	CE4100 (Sodaville)	8634 8654	7105
Presentation Framework	Flash Lite	Flash Lite	Flash Lite, Webkit	Opera
Streaming Video	Adaptive MP4,MP2TS	pre-alpha	pre-alpha	pre-alpha
Progressive Download	MP4/PDCF	pre-alpha	MP4/PDCF	alpha



Wasabi/Sushi PC Ports

			
Browser Playback			
	HTML5 pre-alpha	HTML5 pre-alpha	DirectX Plugin
Media Framework	Sample Player, GStreamer Plugin	Sample Player, GStreamer Plugin	Sample Player, WMP Plugin, GStreamer Plugin
Streaming Video	Adaptive MP4,MP2TS	Adaptive MP4,MP2TS	Adaptive MP4,MP2TS
Progressive Download	MP4/PDCF	MP4/PDCF	MP4/PDCF



Wasabi/Sushi Handset Ports

			
Media Framework	Wasabi w/Native Codecs alpha	Wasabi w/Native Codecs	Sushi Only
Streaming Video	Adaptive MP2TS pre-alpha	Adaptive MP4 pre-alpha	audio only
Progressive Download	MP4/PDCF/DCF	MP4/PDCF/DCF	MP4/PDCF/DCF





OMArlin

- Common File Format
 - DCF, PDCF
- Multiple Licenses for the Same File
 - Distributed with the file
 - Delivered later



Introduction to Coral

April 2010

CORAL
CONSORTIUM

Problem: How can we obtain 'equivalent' DRM licenses for two systems A and B ?

DRM License A

```
<?xml version="1.0" encoding="UTF-8"?>
<r:license
xmlns:r="urn:mpeg:mpeg21:2003:01-REL-R-NS"
xmlns:mx="urn:mpeg:mpeg21:2003:01-REL-MX-NS"
xmlns:dsig="http://www.w3.org/2000/09/xmlsig#"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:acme="urn:acme:REL-NS"
xsi:schemaLocation="urn:acme:REL-NS acme.xsd">
  <r:grant>
    <r:keyHolder licensePartId="John">
      ...
    </r:keyHolder>
  </r:grant>
</r:license>
```



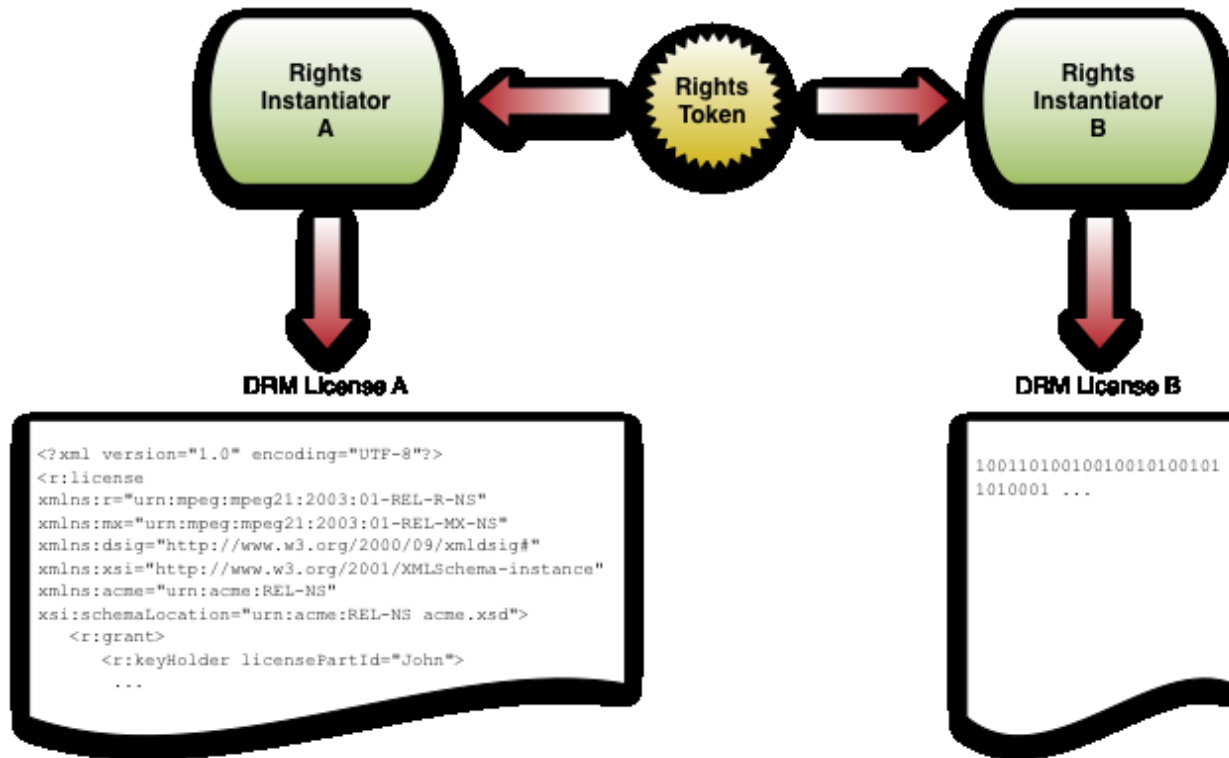
DRM License B

```
10011010010010010100101
1010001 ...
```

- *Constraints*

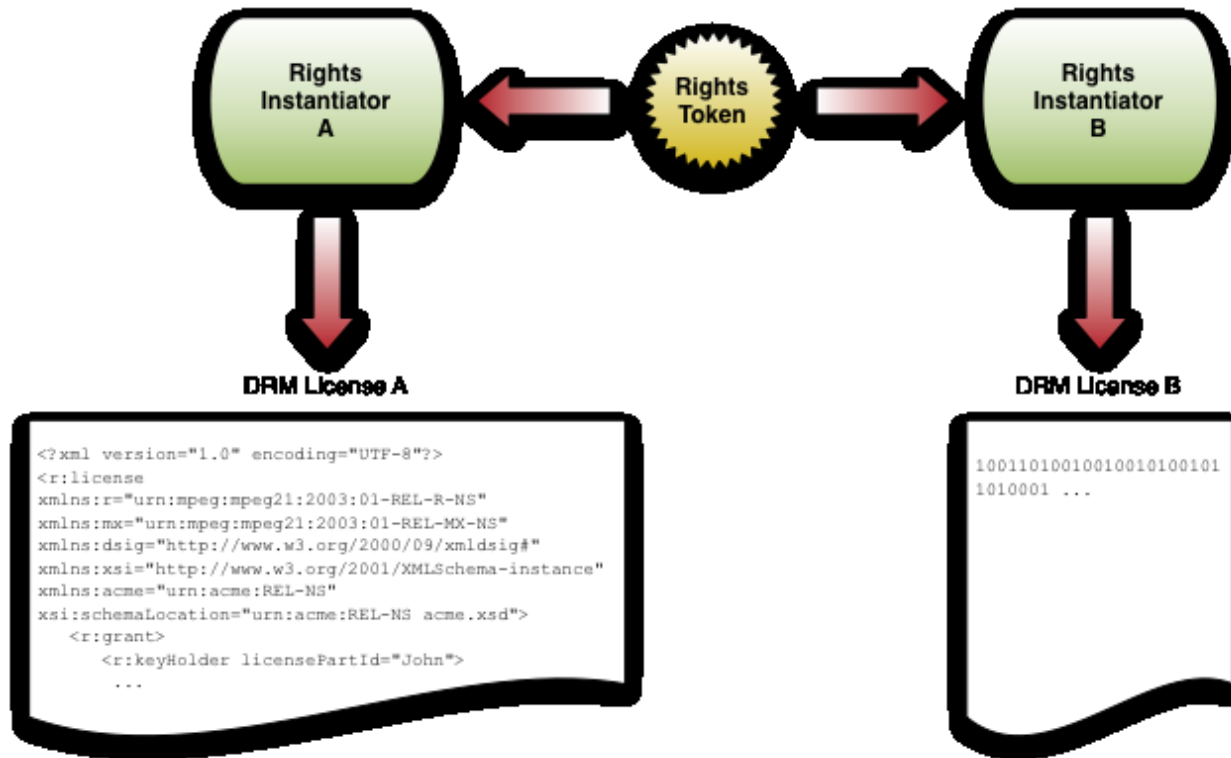
- DRMs have different, incompatible license formats
- DRM licenses may not be accessible
- Automated license translation difficult in general

Coral Architectural Approach



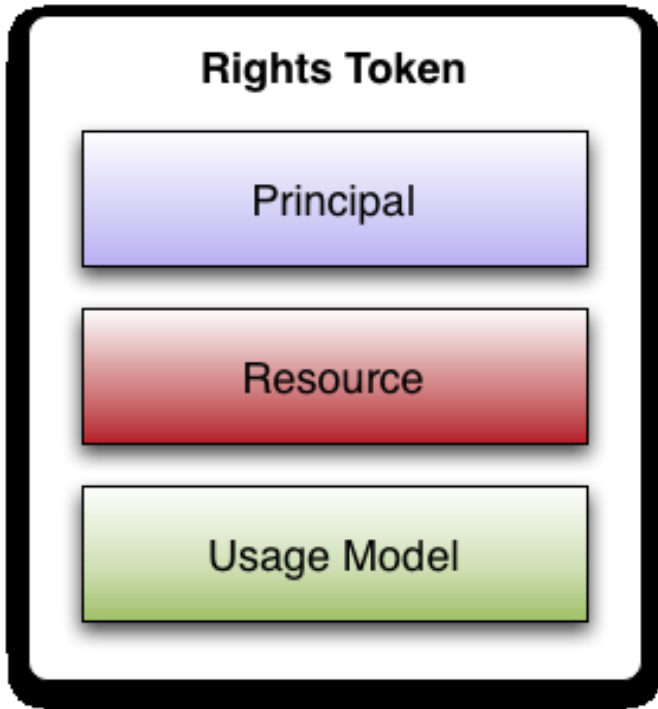
- DRM licenses are derived from Rights Tokens
- Rights Tokens encode usage models
- Licenses issued to enforce models

Coral Architectural Approach



- Allow DRM systems to work as designed
- Do not interfere with DRM protocols
- Require no changes from DRM systems

Anatomy of a Rights Token



- Rights Tokens
 - Provide a standard syntax for rights interchange
 - Adopters or groups of adopters specify semantics
 - Used only for derivation of DRM Licenses
 - No enforcement mechanism specified

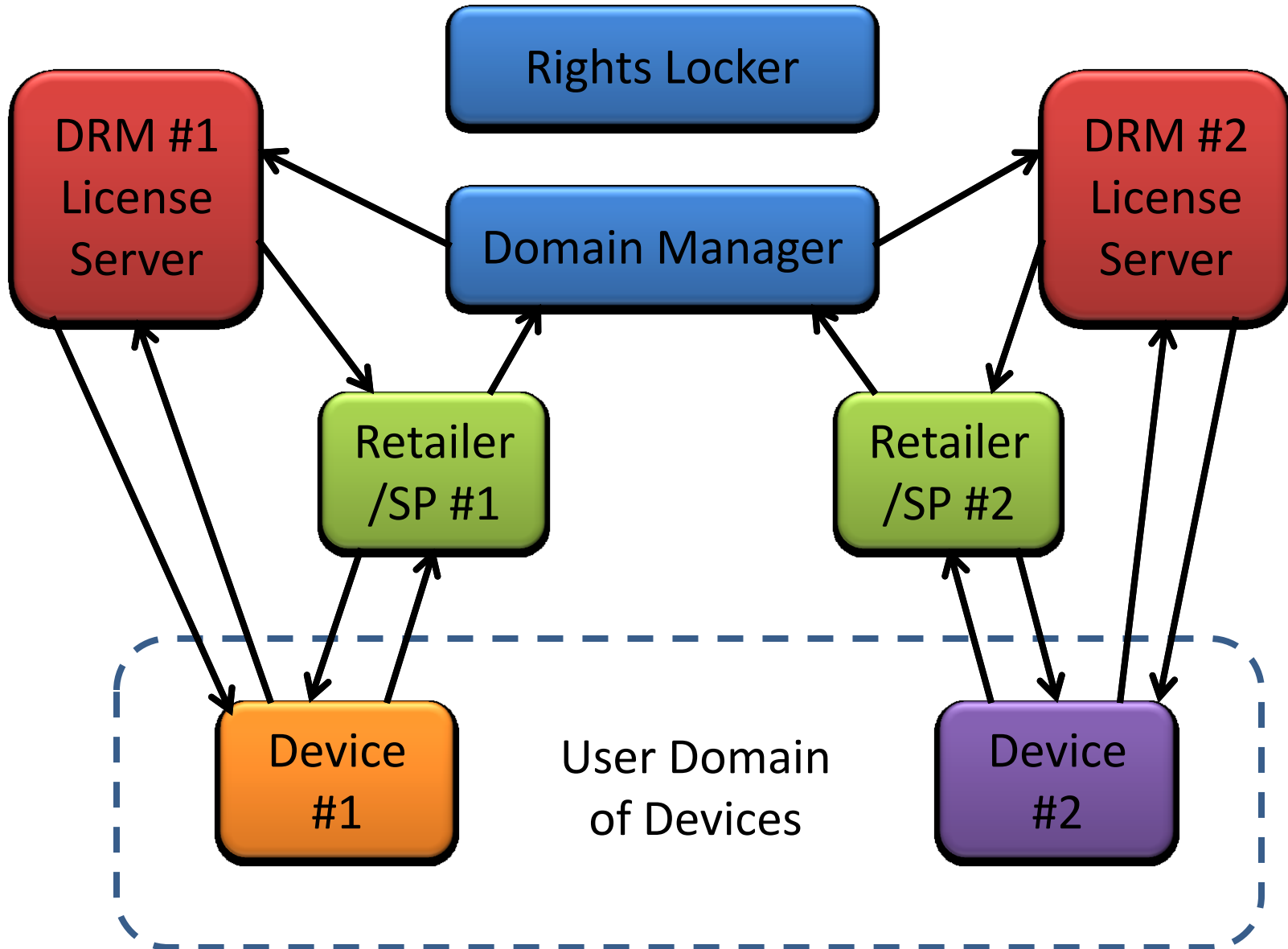
Coral DRM Integration Model

- Coral works through **integration**
- Native DRM functions are wrapped with standardized Coral interfaces
- Design of Coral architecture reflects ‘typical’ DRM system architectures
- DRM systems have fundamental similarities:
 - WM-DRM
 - OMA DRM v2
 - Adobe
 - Marlin
 - Fairplay

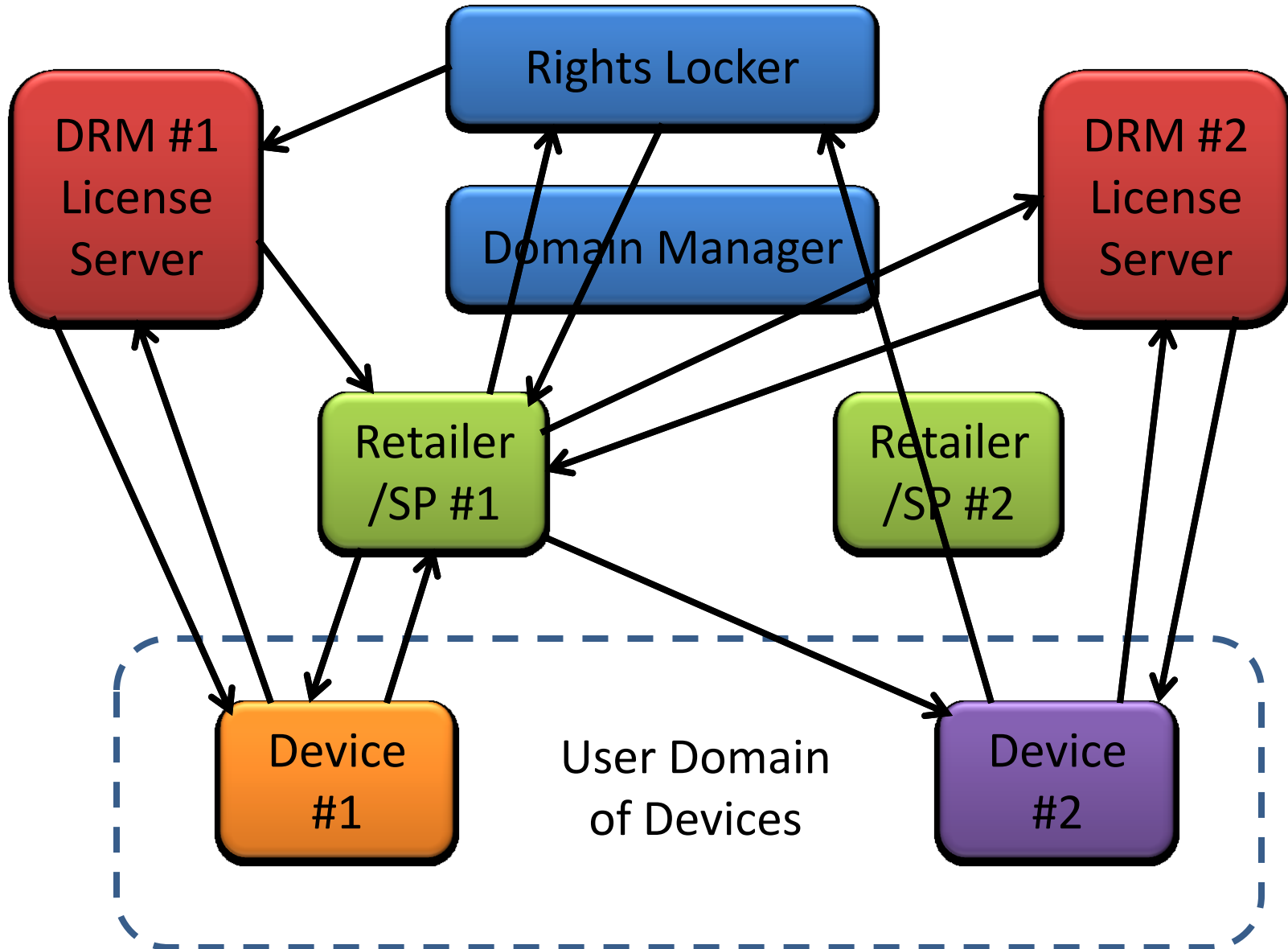
Coral DRM Integration Model

- Licenses
 - *Encode usage rules and conditions for content*
- License Servers
 - *Provide DRM licenses to clients*
- Clients
 - *Evaluate licenses and render content*
- Domains
 - *Authorization for a set of clients*
- Domain Managers
 - *Provide domain membership tokens to Clients*
- Triggers
 - *Cause clients to seek licenses, domain tokens*

Joining a Domain



Purchasing Content



Coral Specifications – Three Layers

Ecosystems

Combinations of Core Architecture Components
Layer Semantics over Core Architecture
Specify a set of consensus Usage Models and mappings

Core Architecture

Basic Interfaces and Data Structures
Focus on standardize syntax
Authentication and Authorization specifics

NEMO

Secure Trusted Messaging Architecture
Service-oriented Design
Specifications for authentication and authorization



THE FUTURE

OF ENTERTAINMENT STARTS HERE.

Digital Entertainment Content Ecosystem

Who is DECE

- Digital Entertainment Content Ecosystem, LLC -

- U.S. limited liability company (legal entity), with first members in June 2008
- Open for international participation by any company/trade association engaged in business related to digital entertainment content (over 40 member companies as of today)
- Organized to develop and license specifications for ecosystem of distributing digital entertainment content

DECE Goals

- Create the best consumer experience for digital content distribution:
 - progressive download, burn, stream (remote access)
 - an open market -- choice of interoperable devices, online retailers
 - value-added services
- Develop and license specifications
- Establish a consumer brand and deliver on its promise to consumers
- Enable efficiencies for DECE adopters and infrastructure providers
- Build on existing industry standards

DECE Participants (*partial list*)



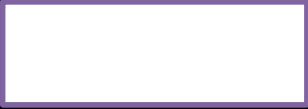


Electronic Sell-Through Today



- Silo services limit consumers into a single device platform and a single retailer for purchasing content
- Every additional service silo further fragments the market
- It is another format war, but with online services
- Content delivered from a single network service to a single device platform lowers the consumer's perceived value of ecosystem

Standards Format Roadmap

Product/ Format	Resolution	Distribution Channel	Business Model
	STANDARD-DEF	PHYSICAL	<ul style="list-style-type: none"> • SELL-THROUGH • RENTAL • SUBSCRIPTION
	HIGH-DEF	PHYSICAL	<ul style="list-style-type: none"> • SELL-THROUGH • RENTAL • SUBSCRIPTION
	MULTI-DEF	DIGITAL	<ul style="list-style-type: none"> • SELL-THROUGH • RENTAL • SUBSCRIPTION

The Open Marketplace for DVD



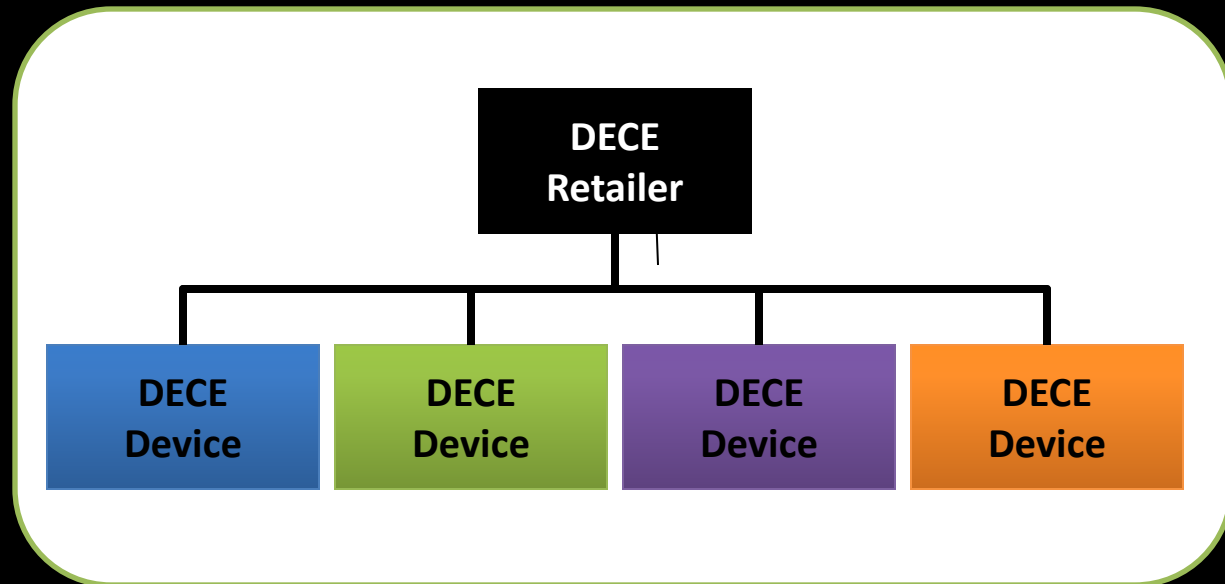
- Defined Standard with a choice of storefronts and devices
 - Approved format
 - Single usage model providing consistent experience

The Open Marketplace for Digital



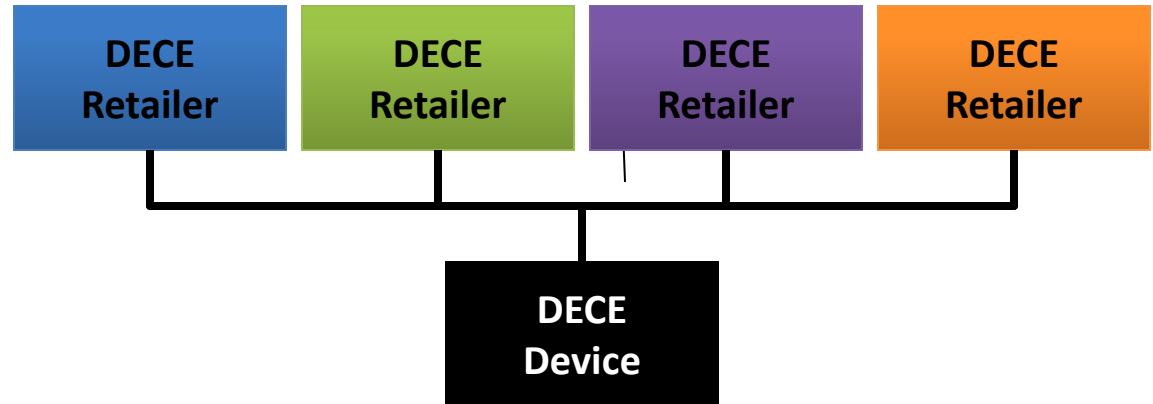
- Domain usage model
- Rights locker
- Cross-platform
- Remote access
- Sharing within a family
- Export to DVD / Flash Memory

Service Perspective: Scalability



- A retail service in an open marketplace is not limited to a single device platform and can reach a mass market of devices

Device Perspective: Scalability



- A device in an open marketplace is not limited to a single service silo and can receive content from a mass market of retail services

DECE Will Deliver...

- **Digital product definition (akin to DVD)**
 - common media format accessed by multiple devices
 - uniform usage model
- **Centralized cloud service platform**
 - cloud-based functionality helps retailers reduce costs, gain efficiencies
 - coordinates essential data between online retailers and devices
 - provides virtual content rights locker
 - standardized web services for device and user management, identity management and federation
- **Brand and Conformance System**
 - drives affinity through a great customer experience
 - promotes “DECE” brand awareness to improve consumer confidence
- **Supply chain optimization** and efficiencies to lower operating costs

DECE Ecosystem Roles



Licenses content into the Ecosystem

Manages DECE Locker Accounts/Device Domains
Facilitates cross-service and device compatibility

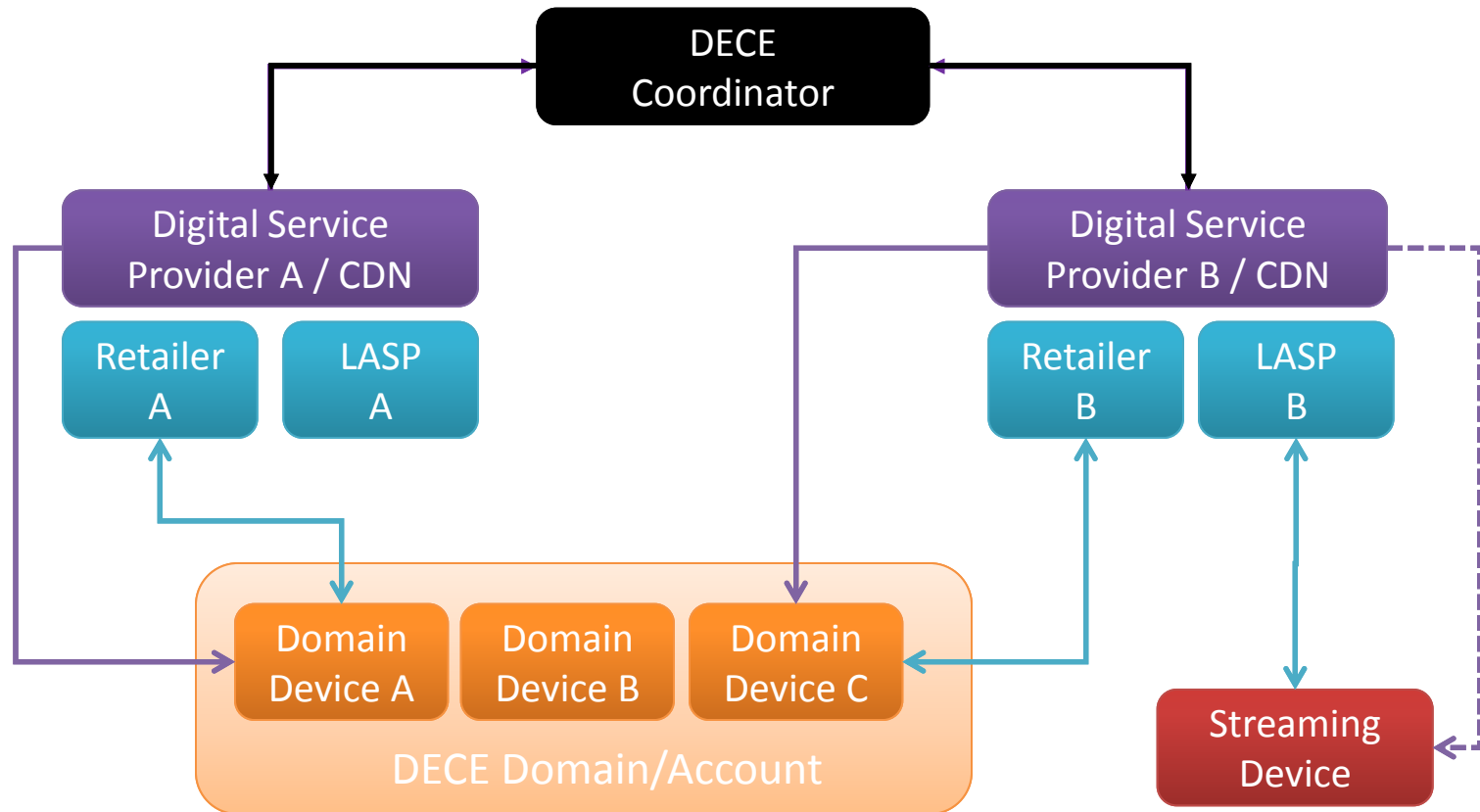
Customer-facing storefront service
Sells DECE content

Consumer-facing streaming service
Sells DECE content-access service

Interfaces to DECE Coordinator
Provides content fulfillment services

Manufacturer of compliant devices
Plays ecosystem content

DECE Ecosystem Architecture



What We All Gain

Content Owners

- Enhanced value of content
- Supply chain optimization
- Competitive marketplace
- Solution to interoperability
- Mass market for digital content

Online Retailers / Service Providers

- Enhanced value of service
- Content has higher value
- Robust marketplace
- Increased device reach
- Solution to interoperability
- Mass market for digital content

CE/IT Companies

- Enhanced value of devices
- Lower barrier to entry
- Competitive marketplace
- Greater access to content
- Solution to interoperability
- Mass market for devices

Consumer

- Purchasing an experience, not a format
- New ways to acquire and access content
- Authorized sharing within household
- Greater choice of interoperable devices
- Choice of digital retailers

Progress

- Coordinator has been selected
 - Neustar
- DRMs have been selected
 - Marlin
 - OMA
 - PlayReady
 - Adobe
 - Widevine
- Format
 - Nearly Complete
 - Common File supported

Summary

- Entertainment 1.0 = physical (DVD) distribution
- Entertainment 2.0 = ubiquitous content availability through cloud services
 - More ways to acquire and use content
 - Seamless integration between digital and physical media (Flash, DVD, BD)
- DECE:
 - Developing ecosystem to enable an interoperable Entertainment 2.0 platform and value-added services
 - Goal: wide implementation in global market



<http://www.decellc.com>
info@decellc.com