# Interoperable DRM platform for IPTV

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### ETRI

# The Digital Media Project

o The DMP, a not-for-profit association of companies and organisations, believes that, to achieve the full potential of digital technologies

o An *Interoperable DRM Platform* (IDP) specification enables a horizontal DRM market
  - To support a wide variety of business models, the IDP must be a toolkit that value chain designers can draw from to set up the interoperable value chains of their interest.

o The IDP, now at version 2 (IDP-2), is an open business-agnostic specification of DRM tools

o IDP-2 shows how to configure the toolkit to serve a broad range of business cases

o A "**tool-kit**" specification

  • Tools implement Primitive Functions

o Includes

  • Certification and Registration Authorities

  • Use Cases and Value-Chains

  • Reference Software and Conformance

  • Mapping of Traditional Rights and Usages to the digital space

o Is being developed in Phases

  • IDP-1: Tools for **Portable Audio & Video Devices (PAV)**, Apr 2005

  • IDP-2: Tools for **Stationary Audio & Video Devices (SAV)**, Feb 2006

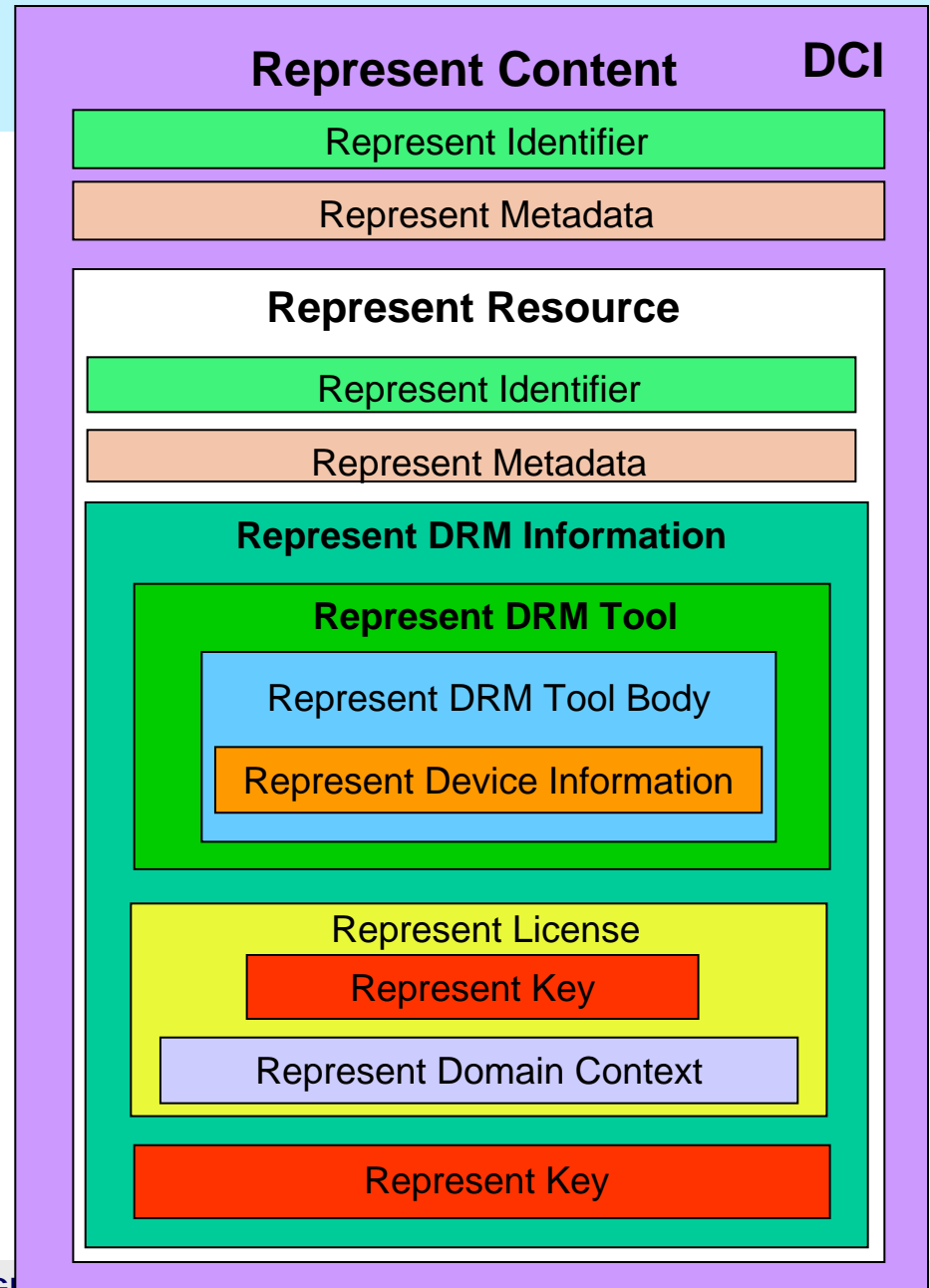  • IDP-3: Tools for **General Digital Media Value Chains**

## What has the DMP standardised so far

o **Represent:**

- The Function of expressing information in a form that can be processed by a Device.

o **Protocols:**

- A description of Data formats and rules a Device must follow to exchange those Data with other Devices

o **Package:**

- The Function of Processing Content for the purpose of Delivering it between Devices

Example of an instance of the "Represent" technologies hierarchy

**Represent Content**     **DCI**

Represent Identifier

Represent Metadata

**Represent Resource**

Represent Identifier

Represent Metadata

**Represent DRM Information**

**Represent DRM Tool**

Represent DRM Tool Body

Represent Device Information

Represent License

Represent Key

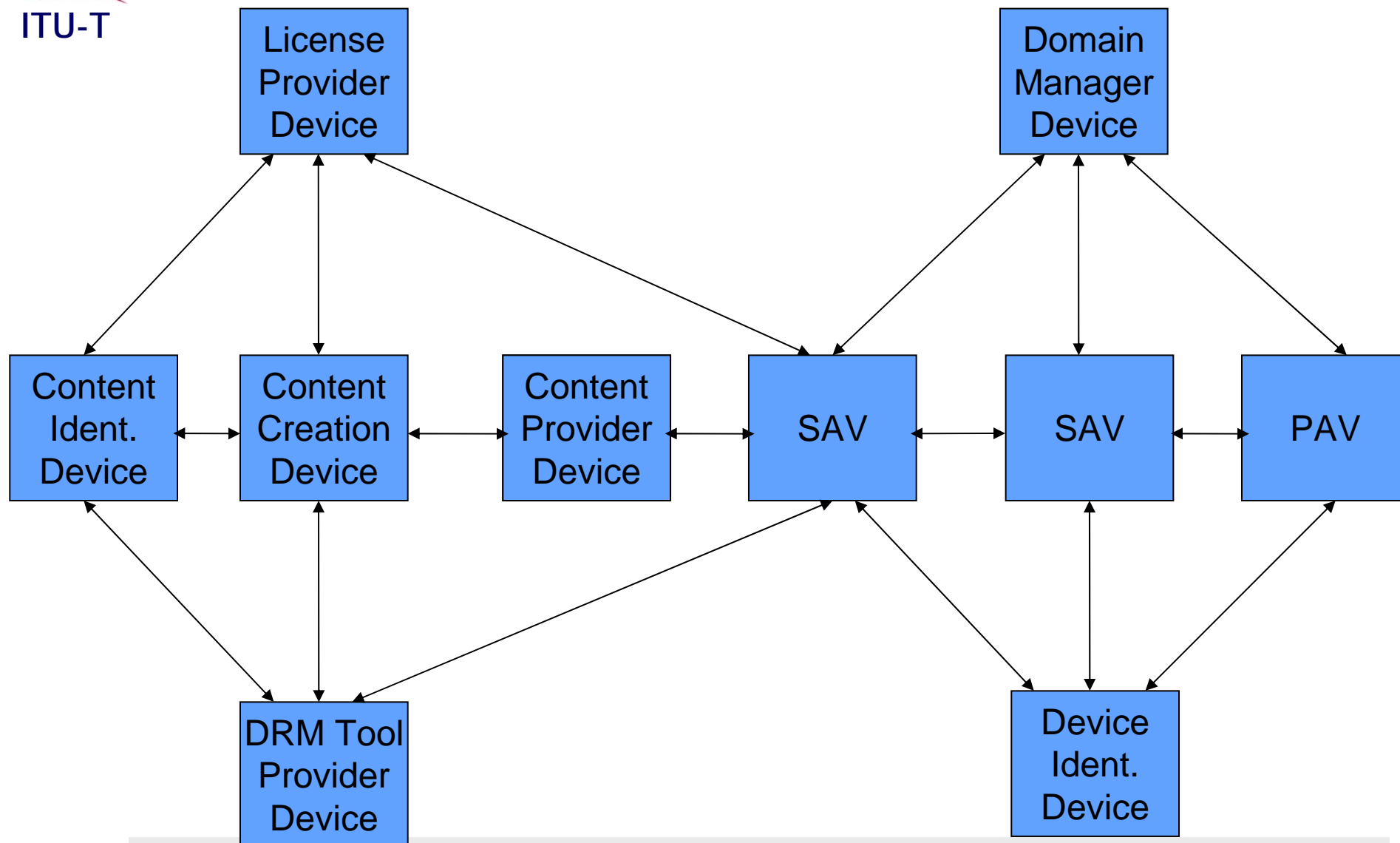Represent Domain Context

Represent Key

o **Protocols to Identify Entities:**

- Devices, Users

o **Protocols to Authenticate Entities**

- Devices, Users

o **Protocols to Manage Domain**

- Domain Administrator – DMD

- DMD-LPD

- Device/User - DMD

o **Protocols to Manage DRM Tools**

o **Protocols to Access**

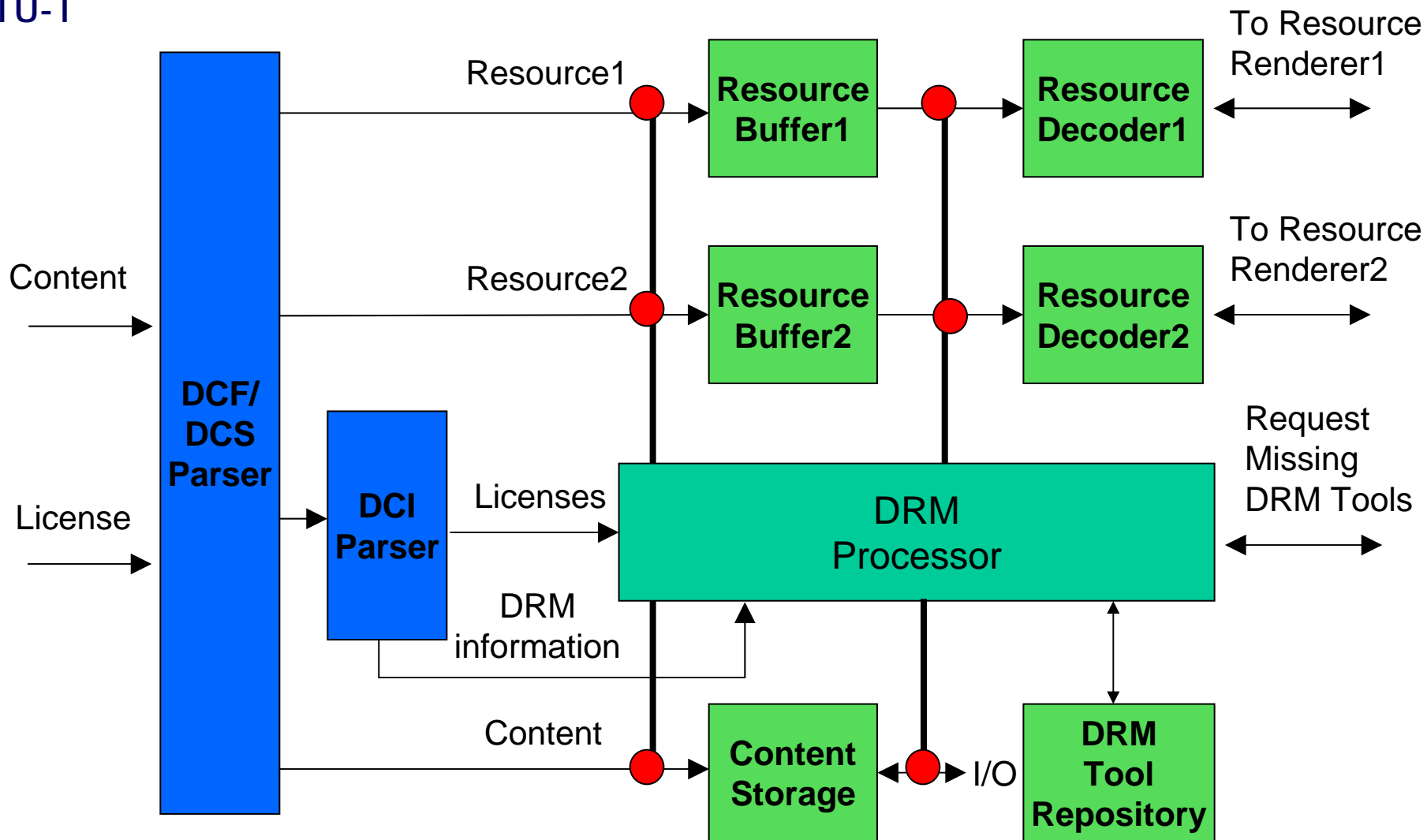o **Protocols to detect simultaneous Usage**

# Overview of DMP Devices

ITU-T



License Provider Device

Domain Manager Device

Content Ident. Device

Content Creation Device

Content Provider Device

SAV

SAV

PAV

DRM Tool Provider Device

Device Ident. Device

# SAV architecture (high level)

ITU-T



Content

License

DCF/ DCS Parser

DCI Parser

Resource1

Resource2

Licenses

DRM information

Content

Resource Buffer1

Resource Buffer2

DRM Processor

Content Storage

I/O

Resource Decoder1

Resource Decoder2

DRM Tool Repository

To Resource Renderer1

To Resource Renderer2

Request Missing DRM Tools
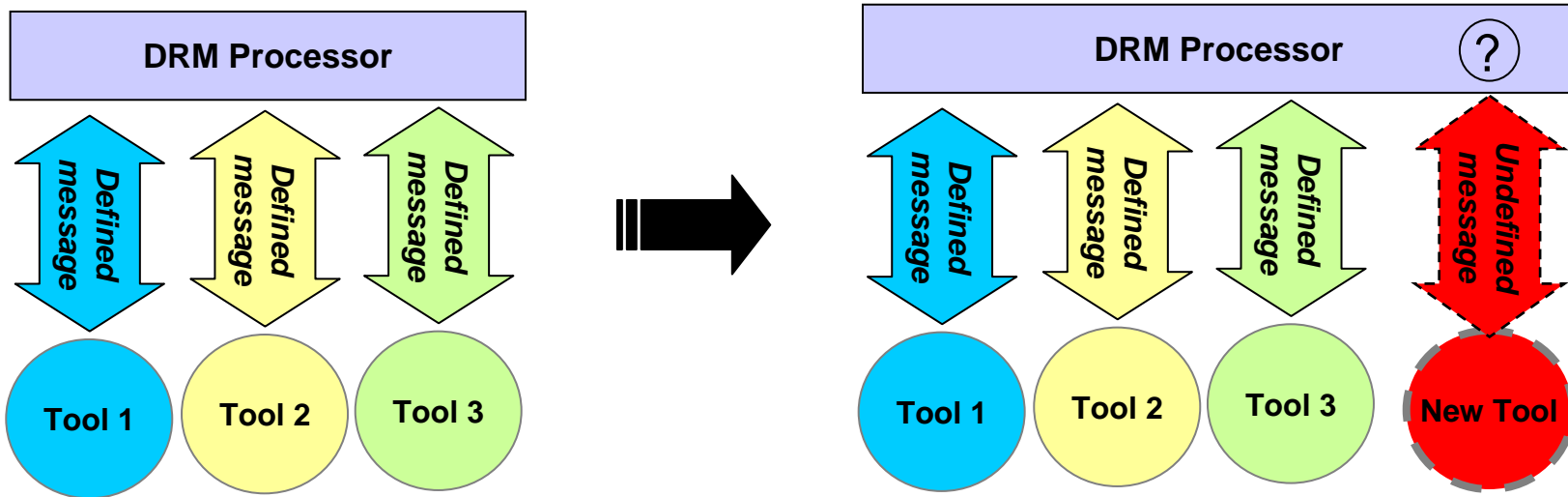
# DRM Tool Interoperability

🔵 DRM Tool Method : Make DRM functions (such as authenticate, decrypt, detect watermark signal) as plug-in tool

**DRM Processor**

Defined message · Defined message · Defined message

Tool 1 · Tool 2 · Tool 3

➡️

**DRM Processor** ❓

Defined message · Defined message · Defined message · Undefined message

Tool 1 · Tool 2 · Tool 3 · New Tool

**Interface Message gets increase as new tool appears!**
- Increase complexity of interoperability

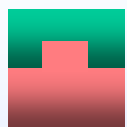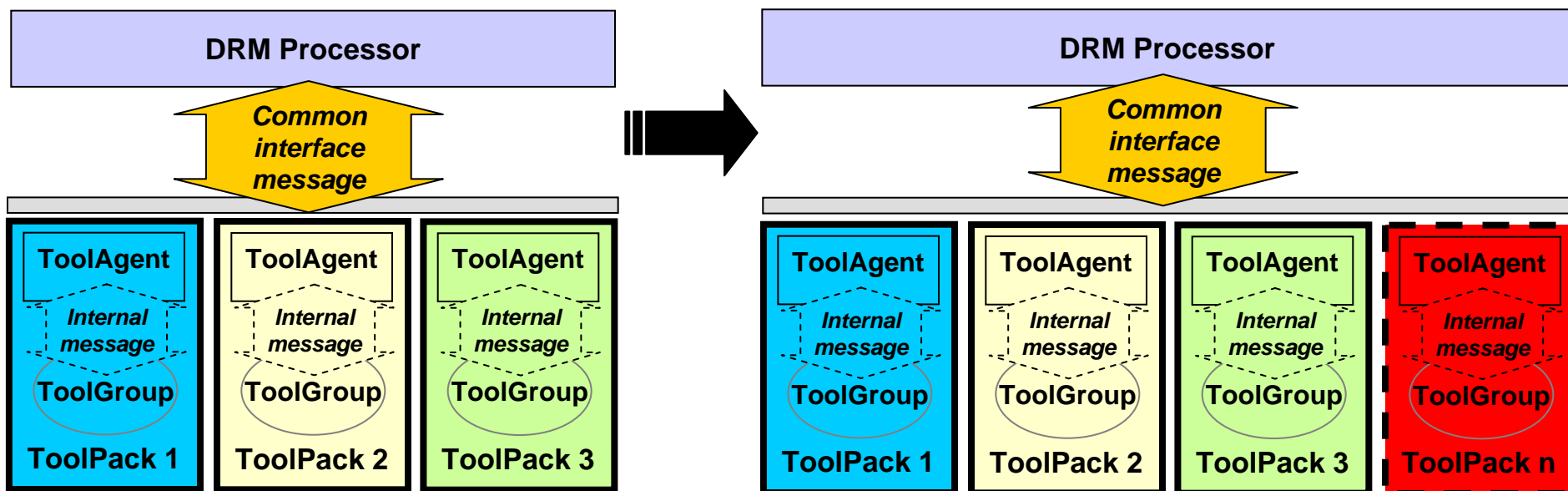**Tool's functional information can be open to DRM Processor!**
- Tool Providers hesitate to provide their tools

# ToolPack Interoperability

● Advanced DRM Tool Method : Aggregate DRM tools into a Tool Group and operates the Tool Group by Tool Agent

**DRM Processor**

*Common interface message*

| ToolAgent | ToolAgent | ToolAgent |
|---|---|---|
| *Internal message* | *Internal message* | *Internal message* |
| ToolGroup | ToolGroup | ToolGroup |
| **ToolPack 1** | **ToolPack 2** | **ToolPack 3** |

**DRM Processor**

*Common interface message*

| ToolAgent | ToolAgent | ToolAgent | ToolAgent |
|---|---|---|---|
| *Internal message* | *Internal message* | *Internal message* | *Internal message* |
| ToolGroup | ToolGroup | ToolGroup | ToolGroup |
| **ToolPack 1** | **ToolPack 2** | **ToolPack 3** | **ToolPack n** |

Common Interface Message gets simplified and easy to add new tool!
- Increase interoperability

DRM processor is unaware of Tool's functional information!
- Increase Tool security

# The DMP reference software: "Chillout"

o The DMP is currently developing the IDP reference software, name "Chillout"

o Open source (almost)
   - Chillout is currently provided as a set of Java libraries

o Chillout can be used to
   - Set up interoperable value chains for use by independent users
   - Test conformance of implementations

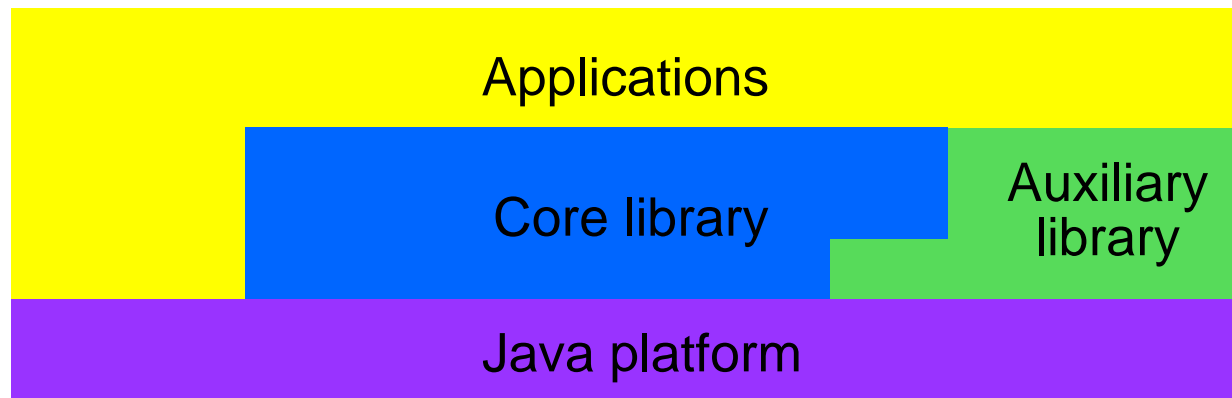o Chillout is released under Mozilla Public Licence (MPL) 1.1

**ITU-T**

o **Core library**
  - implements the IDP specification

o **Auxiliary library**
  - encapsulates a number of functionalities

o **Utility library**
  - provides common functionalities

o **Applications**
  - contains a set of sample applications

Applications

Core library

Auxiliary library

Java platform
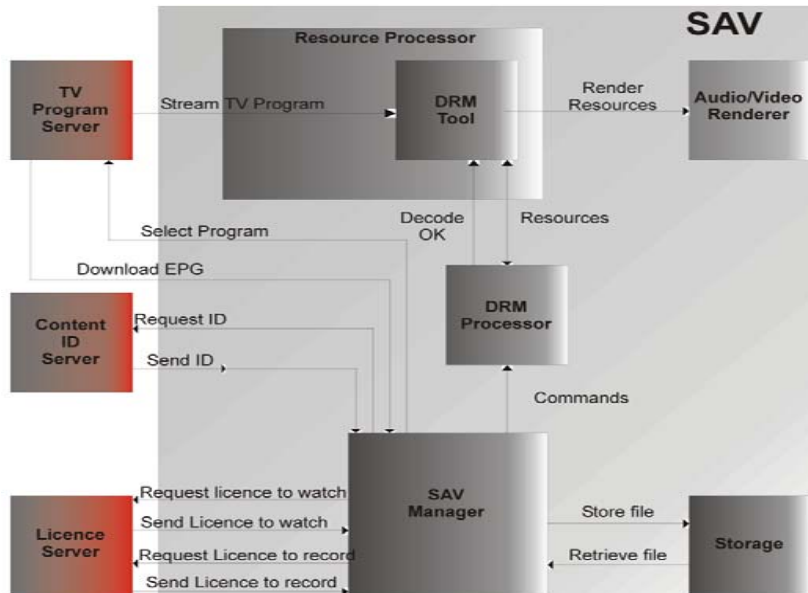
# "Chillout" demo at IBC 2006

o The IBC demo is fully implemented using Chillout libraries

  • N.B: This demo shows the Chillout flexibility, not the specific business model

# Media Streaming Player in MPEG-A

o The purpose of ISO/IEC 23000-5 is

- to specify a *streaming* format for applications where *governed* audio and video information is streamed to an end-user device over a variety of transport protocols (e.g. MPEG-2 TS or RTP/IP) with an emphasis on the means to achieve use of streamed resources as per the governance information.

- offers a standardised solution for the streaming of audio-visual information and related data to facilitate simple and fully interoperable exchange across different devices and platforms. This will enable the implementation of a variety of business models based on the use of governed resources.

o At the 77th MPEG meeting (July 2006), the Media Streaming Player became a new MPEG-A: Multimedia Application Format (MAF) Under Development

- N8362 - Working Draft of ISO/IEC 23000-5 Media Streaming Player

- N8364 - Working Draft of IPMP Extensions XML Messages

- N8363 - Working Draft of Media Streaming MAF Technologies

o DMP site

- IDP-2 Specification

    http://www.dmpf.org/project/ga09/ idp-2.html

- IDP-2 overview

    http://www.dmpf.org/docs/idp-2_overview.htm

o MPEG site

- The MPEG Home Page

    http://www.chiariglione.org/mpeg/

- MPEG@NIST site

    http://mpeg.nist.gov/