Introduction to the ISCC
International Standard Content Code
INFRA II Tekniikka (2/3)

Sebastian Posth
ISCC Foundation
Sebastian Posth

- Background in digital book publishing – entrepreneur and consultant on digital distribution, data analytics, digital innovation and DLT
- CEO Posth Werk BV*
- Director ISCC Foundation*

*Both organisations registered in the EU Transparency register
“The problems relating to licensing markets in Europe are caused by the fact that works and rightholders are often not being properly identified in the digital environment.”

“Investing in the copyright data infrastructure … can/would improve the efficiency of licensing, and allow automated processes for distribution of revenue streams”

*Developing the Copyright Infrastructure – Stocktaking of work and progress under the Finnish EU Presidency*
What effect will blockchain technology have on global media distribution and licensing business?
Goal of the Project

Developing open standards, technologies and applications that establish media content as the subject of transactions* on blockchains

* No content is stored on the blockchain
BLOCKCHAINS FOR SOCIAL GOOD
Suggestion for an Open Layered Blockchain Ecosystem

Applications
Open Innovation

Building Blocks
Chain Agnostic Standards

Blockchain
Protocol-Layer Services
Suggestion for an Open Layered Blockchain Ecosystem

Applications
Open Innovation

Building Blocks
Chain Agnostic Standards

Blockchain
Protocol-Layer Services

INTERFACES
SHOPS
BUSINESS MODELS

CONTENT IDENTIFIERS
ATTRIBUTION
SMART LICENSES

DATA STREAMS
NATIVE TOKENS
ON-CHAIN GOVERNANCE
Suggestion for an Open Layered Blockchain Ecosystem

Applications
Open Innovation

Building Blocks
Chain Agnostic Standards

Blockchain
Protocol-Layer Services

- Interfaces
- Shops
- Business Models
- Content Identifiers
- Attribution
- Smart Licenses
- Data Streams
- Native Tokens
- On-Chain Governance
The ISCC is an **open and decentralized** identifier for digital assets that uses fingerprinting technology for advanced and automated content identification.

- Universal standard identifier for digital content files in **all media formats** (text, image, audio, video).
- Suggested **cross-industry standard** for all media sectors.
Anyone with access to the content can generate the ISCC, decentrally, without metadata or manual effort.

Rightsowners can connect metadata, rights management information and other content-related information to the ISCC.

With the ISCC, anyone can find the metadata and licensing terms provided by the rightsowner.
As an open, interoperable ISO standard the ISCC will ensure transparency of digital content identification.

Open specification (https://iscc.codes/) and open source development (https://github.com/iscc/) are maintained by a not-for-profit foundation.

The ISCC has been developed as a blockchain-agnostic standard, but it can also be used off-chain, even offline.
This is a test tweet, there is nothing to see here, please proceed to the cat videos.
ISCC://CC5dAy3jEaa4K-CYNHivFsfnJAL-CDXESuyPYvF7P-CRMLazWx3C72w

Metadata

```
{
  "title": "owl-4819550_640",
  "extra": "Pixabay",
  "tophash": "93c00f180bc998a708de749ba09a146009d174b89ef51277f836d08d78666a"
}
```

TXID: 8239a2e95d380e9320f4ea2addfe9aad2acb78db017ff92c94330ae3d8ebee3 OUTPUT: 0

Matching SmartLicenses

<table>
<thead>
<tr>
<th>LicenseID</th>
<th>Rights</th>
<th>ISCC</th>
<th>TM</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>c7f820...</td>
<td>['ADAPT', 'ATTRIBUTION', 'REPRODUCE', 'SHARE']</td>
<td>CC5dAy3jEaa4K-CYNHivFsfnJAL-CDXESuyPYvF7P-CRMLazWx3C72w</td>
<td>ATTESTATION</td>
<td>Read</td>
</tr>
</tbody>
</table>

Example: https://explorer.coblo.net/stream/iscc/8239a2e95d380e9320f4ea2addfe9aad2acb78db017ff92c94330ae3d8ebee3:0/
SMART-LICENSE://c7f02087-a324-4698-b1d4-23b58e89c8aa-CC5dAy3jEaa4K-CYNHiVFsfNjAL-CDXESuyPYvF7P-CRMLazWx3C72w

Metadata

```json
{
  "rights_modules": [
    "ADAPT",
    "ATTRIBUTION",
    "REPRODUCE",
    "SHARE"
  ],
  "template": "42bc3f823c9d6bf3735b8ce879ea16763c3ed3a34fa2d8358e3b0c9f32dea",
  "transaction_models": [
    "ATTESTATION"
  ]
}
```

TXID: 966cbf63dc5420dc8eb37b147558bb667dd05d9e019619a754429e8ca8f96f OUTPUT: 0
Content Blockchain B2C Smart License

AD-AT-IA-RS-Experimental Version 1.0

Preface

Today, professional and commercial digital content licensing is a complex issue mostly dealt with by specialized lawyers. The idea behind smart licenses is to provide an easy-to-use license construction kit that even legal laypersons can handle. In our smart license generator any interested rights owner (licensor) can choose from a limited number of rights modules. Their combination, supplemented by some standard terms and conditions form the content of the smart license, i.e., the use rights, that the licensor wants to grant you (the licensee).

The smart licenses, alongside with basic metadata are publicly registered on the Content Blockchain in a secure and reliable, open and transparent, automated and machine-readable way.

For the avoidance of doubt, this smart license does not apply where a license is not needed (e.g., where limitations of copyrights apply like the quotation right). Nothing in this license shall be construed as excluding or limiting statutory freedoms allowed for by exceptions and limitations, fair use, fair dealing and related doctrines.

Subject to the terms and conditions of this smart license, the Licensor hereby offers you a non-exclusive worldwide license for the duration of the copyright to use the licensed material under its terms and conditions. By performing the act that the licensor has defined as a declaration of acceptance to his offer, you accept and agree to be bound by the terms and conditions of this smart license.

Licensed material: The artistic, scientific or literary work, database, or other copyright protected material to which the licensor applied this smart license. The licensed material is identified by a unique ISCC.

Licensor: The individual(s) or entity(ies) granting rights under this license. The licensor can be the creator or another copyright owner (like e.g. a publisher).

Rights Module: A standardized section of the smart license that describes a certain kind of use. The licensor can choose from a number of rights modules to define the scope of his/her smart license.

Rights Profile: The combination of rights modules the licensor chose for his smart license. Smart license: The sum of rules that apply for the use of the licensed material.

2. Licensing conditions

You may use the licensed material to the extend and under the conditions defined hereafter:

2.1. Licensed Rights (rights modules)

Adapt: You may modify, alter or change the licensed material in any way (e.g. remixing, transforming, shortening, translating, synchronizing, combining with other material).

Adaptations may also be shared.

Resale: You may permanently transfer the smart license to a third party against compensation. The smart license can only be resold once and in its entirety. By reselling it you automatically lose your own rights to use the licensed material. Also, you are obliged to delete your copy(ies) of the licensed material. The resale transaction will be registered on the blockchain.

All rights that are not mentioned above are reserved.

2.2 Restrictions

2.3 Obligations

Attribution: You have to post notices that are supplied with the licensed material when you share or distribute it. Under this obligation you have to:

- Retain credits to the creator and/or the copyright owner;
- Retain copyright notices;
- If so stipulated by the licensor retain an URL or hyperlink to an online source of the licensed material.

Example: https://smartlicense.coblo.net/smartlicense/c7f02087-a324-4698-b1d4-23b58e89c8aa/
Transaction Details:

- Hash: F96de4b40b6a15b51de11a1c55030d8a1f9780b8118053330b1063828d4b
- Blockhash: 2c89368c4f37230a34a03f4999ed2e639f72195d2d6c2af5f03342f81c1bc974e9
- Block time: 2020-08-08 11:09
- Confirmations: 122213

Inputs / Outputs

```
{
  "type": "stream",
  "name": "iscc",
  "createTxD": "9dc120f0f3bab1bf3cc53010a0a74f16496f137f3cbbdd9a89b5064ae60304c070",
  "streamRef": "22580-300-4a566",
  "publishers": ["2QR7wJp3NPVq3tQfQfEX7M7JoQFcvaM8Zkd"],
  "keys": ["1C5dAy3jEaa4K", "CYNHiw5SNJAL", "CDXE5uyP5YVFf", "CRMLazWx3C72w"],
  "offchain": false,
  "extra": "Pixabay",
  "hash": "93c080f180bc9998f79de749ba09a146009d174b98ef51277f836d007d8666a",
  "title": "owl-4819550.640"
}
```

```
{
  "value": 99.99994477
}
```

```
{ "scriptPubKey": {
  "asm": "OP_DUP_OP_HASH160 58f0e46ea380645957af055577c5f9905c7b7b3d OP_EQUALVERIFY OP_CHECKSIG"
}
```

```
{ "addresses": ["2QR7wJp3NPVq3tQfQfEX7M7JoQFcvaM8Zkd"]
}
```
Layer 3: Open Content Certification Protocol (OCCP)

Layer 2: Decentralised Cross-Chain Registry Protocol

Layer 1: International Standard Content Code (ISCC)

OCCP: https://github.com/licium/OCCP
NID - Normenausschuss
Information und Dokumentation
AA - Arbeitsausschuss 09

TC 46/SC 9/WG 18
International Standard Content Code

Normungsantrag ✔

Preliminary Work Item ✔
What is needed to speed up ISCC-development?

- More support for the ISCC!
- More testing and feedback from various (industry) sectors
- More use cases and implementations in user applications and services
- More funding to pay developers (= faster development of open source tools for users of the ISCC system)
Get familiar with the ISCC on:

iscc.codes

Sebastian Posth

posth@iscc.foundation

+31 6 12676726
<table>
<thead>
<tr>
<th></th>
<th>Meta-ID</th>
<th>Content-ID</th>
<th>Data-ID</th>
<th>Instance-ID</th>
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<tbody>
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<td>CCDsTERz4UQV5</td>
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<td>CRmPuPvEuwnQ9</td>
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<td>100%</td>
<td>56.25 %</td>
<td>Unique</td>
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</table>

https://iscc.codes | https://github.com/iscc
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<thead>
<tr>
<th>Print-Produkt PDF File 9783570103555.pdf</th>
<th>Digitales Produkt EPUB File 9783641231286.epub</th>
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https://iscc.codes | https://github.com/iscc
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<tr>
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<td>CDDjgNZYjcrJ6</td>
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</tr>
<tr>
<td>Similarity</td>
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<td>81.25%</td>
<td>59.38 %</td>
<td>Unique</td>
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https://iscc.codes | https://github.com/iscc
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<tr>
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<td>CDdL3CCU5Pd7z</td>
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**Similarity**: 100%

**Unique**: https://iscc.codes | https://github.com/iscc
ISCC codes create an emergent overlay structure of content relations.

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<tr>
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<th>Meta-ID</th>
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<th>Data-ID</th>
<th>Instance-ID</th>
<th>Explanation</th>
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<td>=</td>
<td>=*</td>
<td>Totally identical file (same metadata, content structure, file encoding and file)</td>
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<tr>
<td>2</td>
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<td>=</td>
<td>=*</td>
<td>Different metadata, same content, file encoding and identical file &gt; e.g. a special edition or inconsistent metadata</td>
</tr>
<tr>
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<td>=</td>
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<tr>
<td>5</td>
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<td>= or ~</td>
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</tr>
<tr>
<td>6</td>
<td>= or ~</td>
<td>= or ~</td>
<td>= or ~</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>7</td>
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<td>=</td>
<td>= or ~</td>
<td>=</td>
<td>=</td>
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<tr>
<td>8</td>
<td>=</td>
<td>=</td>
<td>= or ~</td>
<td>=</td>
<td>=</td>
</tr>
</tbody>
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* = compare top-hash of both files to be sure there is no accidental Instance-ID collision.
## Multiple ISBN versus multiple ISCC

Book: Kaiserschmarrn - A Royal Dish

<table>
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<th>ISBN</th>
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Estimated Similarity of Meta-ID: 100.00 %
Estimated Similarity of Content-ID Text: 90.62 %
Estimated Similarity of Data-ID: 45.31 %
Paper: Neural Computation of Surface Border Ownership and Relative Surface Depth from Ambiguous Contrast Inputs

<table>
<thead>
<tr>
<th>Host</th>
<th>DOI</th>
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<tbody>
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Estimated Similarity of Meta-ID: 100.00 %
Estimated Similarity of Content-ID Text: 84.38 %
Estimated Similarity of Data-ID: 53.12 %