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## CERTIFIED ICC PROFILES USING NON-FUNGIBLE TOKENS (NFT)

HP INC

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## Certified ICC profiles using Non-Fungible Tokens (NFT)

### Text

ICC profiles are a widely used technology in graphic industry and allow to print consistent color contents connecting several devices like scanner, displays and printers. The solution described below enables ICC profile creators to distinguish and trade their work thru the Non-Fungible Tokens (NFT) technology.

Current specifications of ICC profiles v2, v4 and v5 are maintained by the International Color Consortium ([www.color.org](http://www.color.org)) and contains a simple manufacturer string description that should allow to identify the company that created that specific profile. There is no mechanism to prevent a user from tweaking the profile with commercially available software without removing or modifying this tag, or there is nothing that prevents a user from generating an ICC profile claiming that comes from a manufacturer, like HP.

NFTs are the most elegant and cheap solution to identify the ownership and the authenticity of that profiles, since it allows to link the ICC profiles with an unmodifiable public blockchain.

In the past there was some conventional approach, adding some “secret” tag to ICCs that only the manufacturer can decode: a practice that is not recommended by the ICC consortium anymore. Some other companies have added GUIDs or custom CRC codes, but in this case, there will not be any public proof of ownership.

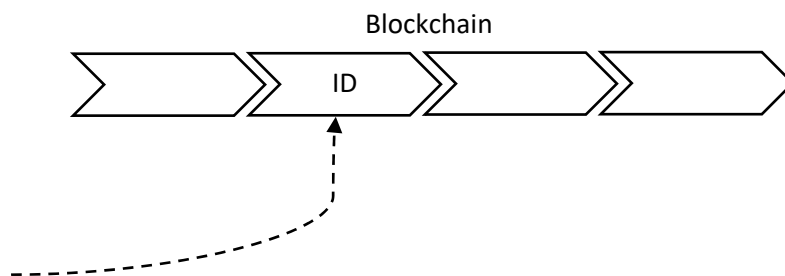
Considering, as an example, the Ethereum NFT interface (<https://eips.ethereum.org/EIPS/eip-721>), each ICC profile can be described by a unique 256-bit ID stored in the ICC metadata section, created with a method that allows to link the manufacturer (HP or the media supplier) and the ICC footprint itself.

Once the ID is created and written into the ICC profile, a blockchain contract is created for that ID and the ownership is assigned to the creator. All the users can check using the public blockchain the ownership of that ICC profile.

This technique applies to a variety of use cases: these are examples of ICC profiles related to printing output.

- 1) When the ICC pretends to be an official HP profile, the contract will never be traded and the ownership still to HP.
- 2) When the ICC refers to a profile for a specific media created by a dealer, the contract will never be traded and the ownership still to the media dealer or is in his hands how to deal with it.
- 3) When the ICC is created by a dealer for a specific purpose of a customer, the contract is initially assigned to a dealer, and later transferred (sold) to the user. Now the ownership is publicly and uniquely transferred to the user that paid for the services.

Many other cases can be identified in printing and other ICC fields of application like displays and scanners.





The main advantage of the solution is the public recognized proof of ownership and authenticity of an ICC profile, that can be done using the Proof of Stake (PoS) or Proof of Work (PoW) functionality of NFTs. Another advantage is the ability to trade or transfer a specific ICC profile, linking physical service activities with digital tokens.

*Disclosed by Alessandro Beltrami, HP Inc.*