Native Digital Ecosystem

Version 1.2

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1. Introduction

This document presents the entire Native Digital Ecosystem, which includes the Smart Dust, in all its current forms of application, the reading and authentication systems, the mobile applications, the marketplace, the metaverse and the Native Digital cryptocurrency.

2. ND Smart Dust media

2.1   Overview

This chapter introduces the different forms and commercial media in which Native Digital Smart Dust is currently available.

Table 1. List of all forms and commercial media.

Part number	Description	N. ICs	Application
SDVIA30	Vial of bulk ND Smart Dust ICs	30	Art, Industry, Fashion
SDREE20K	ND Smart Dust ICs in reel package	20.000	Art, Industry, Fashion
SDSTR10F	Sewable adhesive strip	10	Fashion
SDSTR20F	Sewable adhesive strip	20	Fashion
SDLBL30C	Adhesive label for canvas	30	Art
SDLBL30P	Adhesive label for paper	30	Art
SDPPR20A4	Handcrafted high quality A4 paper	20	Art
SDPPR20.35x50	Handcrafted high quality 35x50cm paper	20	Art
SDCNV20.40x40	Handcrafted high quality 40x40cm canvas	20	Art
SDCNV20.50x50	Handcrafted high quality 50x50cm canvas	20	Art
SDCNV30.50x70	Handcrafted high quality 50x70cm canvas	30	Art
SDCNV50.100x100	Handcrafted high quality 100x100cm canvas	50	Art

2.2 ND SD Vial

The vial containing Smart Dust composed of 30 ICs is designed to allow an artist to incorporate the unique digital DNA into his pictorial or sculptural artwork with the maximum operational freedom.

The Native Digital Smart Dust can be mixed with colors, thrown on the artwork and fixed with a resin, with vinyl glue or with any other type of adhesive, inserted into the back of the work, embedded in clay, etc.

Figure 1. Native Digital Smart Dust Vial with 30 ICs.

The authentication process requires that, after the creation of the dustized work, it has to be scanned with one of Native Digital Authentication scanners. At that moment the DNA of the work is generated, the DNA of the author can be integrated and the related NFT is generated.

Part number	Description	N. ICs	Application
SDVIA30	Vial of bulk ND Smart Dust ICs	30	Art, Industry, Fashion

Refer to the Smart Dust Datasheet for technical specifications.

2.3   ND SD Adhesive Label

With the pre-tokenized Native Digital Smart Dust Labels it is possible to make unique and tokenize as NFT in the blockchain any existing artwork or product.

The anti-counterfeiting feature is guaranteed by a super complex Native Digital DNA with 20 interconnected ICs.

Figure 2. Native Digital Smart Dust Labels.

These labels have a specific adhesive compound for different surfaces, which guarantees the impossibility of removing the label from the substrate: canvas, coated paper, photographic paper. Call us for other materials.

The authenticity of a labeled work is guaranteed by the embedded Native Digital DNA and its related NFT in the blockchain, which cannot be separated from the paper, unalterable over time, easy to read but impossible to replicate.

Once applied, it is easy to redeem the NFT related to the label scanning its unique QR code and following few simple steps on the Native Digital Marketplace.

Part number	Description	N. ICs	Application
SDLBL30C	Adhesive label for canvas	30	Art
SDLBL30P	Adhesive label for paper	30	Art

2.4 ND SD Sewable Adhesive Strip

With the pre-tokenized Native Digital Smart Dust sewable adhesive strips it is possible to embed easily the ND technology into any shirt, dress or fashion accessory. The anti-counterfeiting feature is guaranteed by a complex Native Digital DNA with 10 interconnected ICs.

Figure 3. Example of Native Digital Smart Dust Sewable Label.

These strips are available with specific adhesive compounds for different surfaces or as fusible interlinings. Call us for specific applications.

Part number	Description	N. ICs	Application
SDSTR10F	Sewable adhesive strip	10	Fashion
SDSTR20F	Sewable adhesive strip	20	Fashion

2.5 ND SD Reel

The reel is the standard format in which the Native Digital Smart Dust ICs are offered for massive industrial applications. Each reel contains 20k ICs, in a standard continuous tape for pick and place applications.

Figure 4. Native Digital Smart Dust Reel with 20.000 ICs.

Suitable to be integrated in the production processes of thermoplastic molding parts, in the manufacturing process of sneakers, in the production of medications, etc.

Part number	Description	N. ICs	Application
SDREE20K	ND Smart Dust ICs in reel package	20.000	Art, Industry, Fashion

Refer to the Smart Dust Datasheet for technical specifications.

2.6 ND SD Paper

The Native Digital craft paper embeds our Smart Dust and is already authenticated through the unique Native Digital DNA and connected to a specific NFT in the blockchain. When the ND SD paper is received, it's easy to redeem its NFT scanning its unique QR code and following few simple steps on the Native Digital Marketplace.

Figure 5. Native Digital Smart Dust Paper 35x50cm with 20 ICs.

The authenticity of the work is guaranteed by the embedded Native Digital DNA, which cannot be separated from the paper, unalterable over time, easy to read but impossible to replicate.

Part number	Description	N. ICs	Application
SDPPR20A4	Handcrafted high quality A4 paper	20	Art
SDPPR20.35x50	Handcrafted high quality 35x50cm paper	20	Art

2.7   ND SD Canvas

A Native Digital Canvas incorporates the ND Smart Dust, is already authenticated through the unique Native Digital DNA and connected to a specific NFT in the blockchain. When you receive the canvas, you can easily redeem its NFT scanning a QR code on the back of the canvas and following few simple steps on the Native Digital Marketplace.

Figure 6. Native Digital Smart Dust Canvas 50x50cm with 20 ICs.

The authenticity of the work is guaranteed by the Native Digital DNA of the canvas, which cannot be separated from it, unalterable over time, easy to read but impossible to replicate.

Part number	Description	N. ICs	Application
SDCNV20.40x40	Handcrafted high quality 40x40cm canvas	20	Art
SDCNV20.50x50	Handcrafted high quality 50x50cm canvas	20	Art
SDCNV30.50x70	Handcrafted high quality 50x70cm canvas	30	Art
SDCNV50.100x100	Handcrafted high quality 100x100cm canvas	50	Art

3. ND Authenticators

3.1 ND SD Fixed Authenticator

Computerized electromagnetic scanning system, which allows to identify and locate all the Smart Dust ICs dispersed inside an artwork, calculate its DNA, encrypt it and store it simultaneously in the distributed memory of the Smart Dust and in the blockchain.

Figure 7. Native Digital Authentication fixed reader 250x250 cm.

This tool allows to authenticate works in which the Smart Dust (ND SD Vial or Reel) has been dispersed directly. In the case of pre-tokenized labels, paper and canvas, the detection of the Smart Dust ICs and the calculation of the DNA is done in production.

3.2 ND SD Handheld BT Authenticator

This portable device with Bluetooth connection allows to read the Native Digital Smart Dust DNA and authenticate a dustitized work or product quickly and easily using an App on mobile phone automatically interfaced to the Native Digital authentication server.
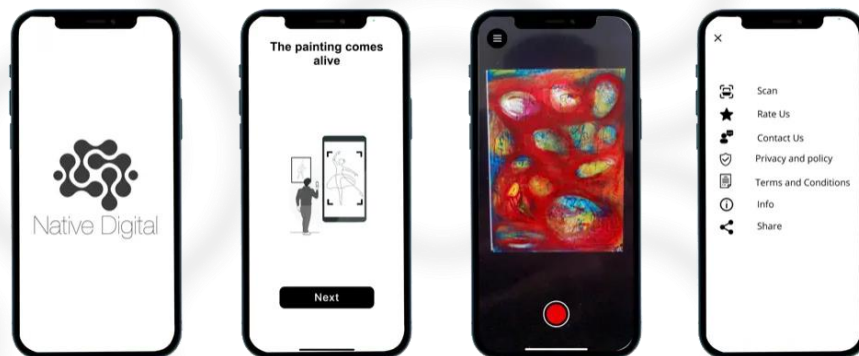

Figure 8. Native Digital Authentication handheld reader.

Can be used at the retail level to authenticate a Smart Dust-enhanced garment.

4. ND Smartphone Applications

4.1 ND Augmented Reality App

Native Digital AR allows artists to bring their artwork to life using augmented reality, adding incredible levels of multimedia animations. Native Digital assists artists in their creative process by providing all necessary technical support and reducing complexity to zero.

Link to Apple Store for iPhone:

https://apps.apple.com/ch/app/native-digital-ar/id6444181283?l=it

Link to Google Play Store for Android:

https://play.google.com/store/apps/details?id=com.Euphoria.NativeDigitalAR

The connection with the Native Digital Smart Dust DNA integrated within the artwork allows to bring the user experience to an unprecedented level. The natively tokenized artworks, through this App can be purchased as NFT on the Native Digital marketplace.

4.2   ND3D Scanning Device

The Native Digital portable three-dimensional scanning system is a smartphone appliance controlled by a specific Native Digital application. It allows to capture three-dimensional models with sub-millimeter resolution in seconds.

These templates are automatically sent and processed by Native Digital centralized post-processing processes, depending on specific subscriptions. For more details, refer to Body Measurement Service and Sculptural Model Production Service.
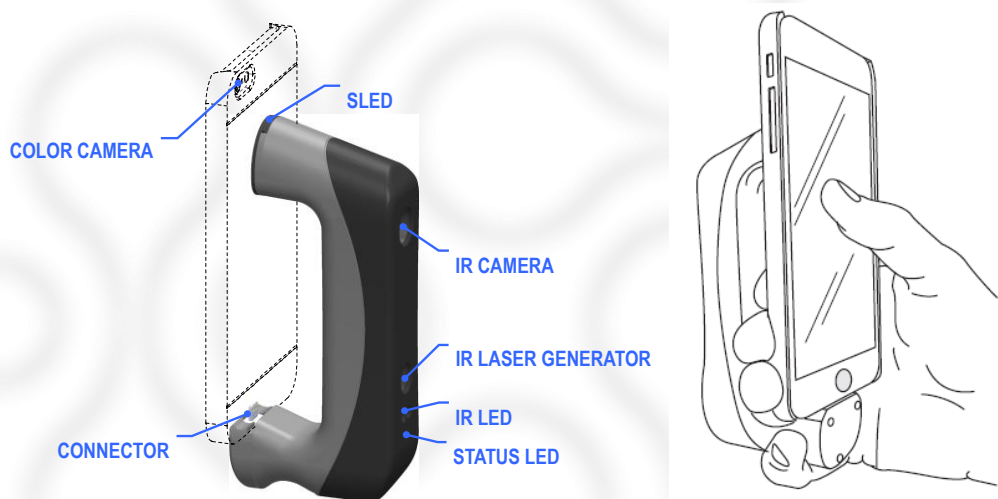

Figure 9. Native Digital 3D handheld scanner.

For more technical specifications refer to the ND Handheld 3D Scanning Device datasheet.

5. ND Web services

5.1 ND Body Measurement Service

This Web application receives the models from the Native Digital 3D scanning mobile device as input and processes them automatically in order to extract a three-dimensional avatar of the customer and all his body measurements. This enables a set of services:

- the virtual dressing room, for the automatic assessment of the level of comfort relating to a given item of clothing for online purchase;
- the paper pattern, for the creation of a custom-made garment;
- the three-dimensional avatar, for gaming and metaverse applications.
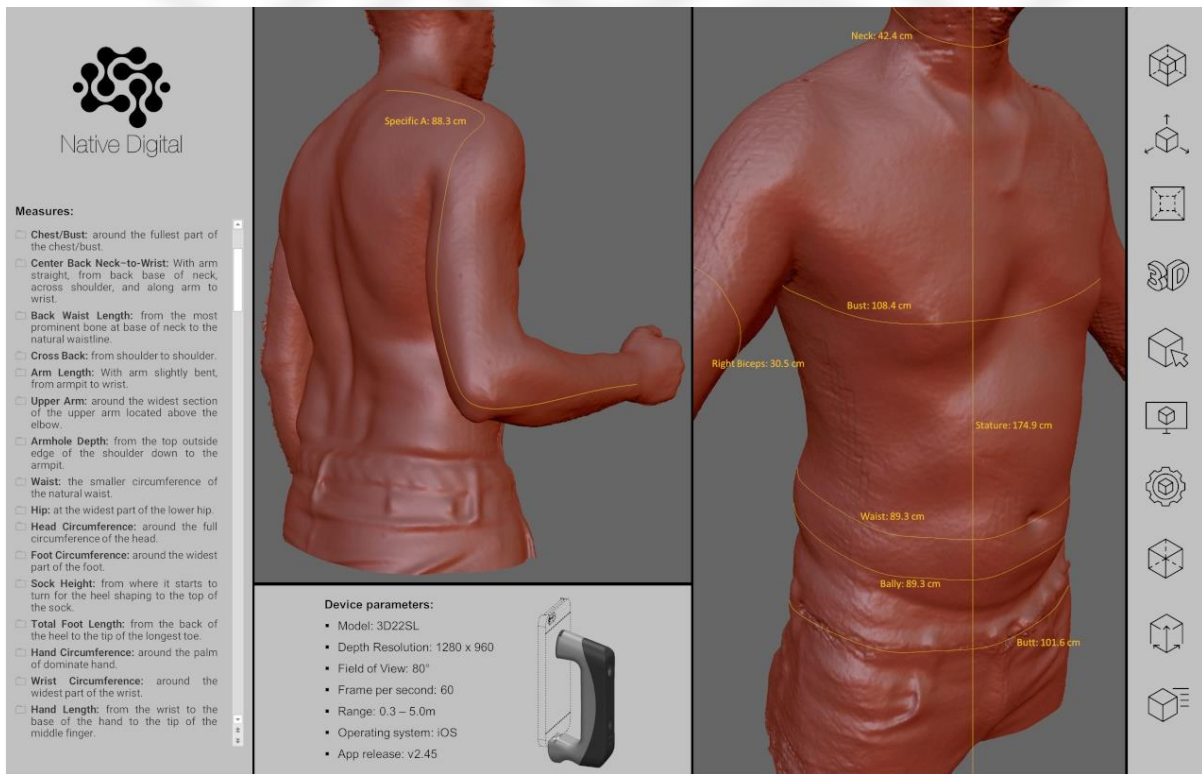

Figure 10. Native Digital Body Measurement service web service.

5.2   ND Sculptural Model Production Service

This web application receives three-dimensional scan data from the ND Handheld 3D scanning system and allows the artist to choose from a menu the type of processing to apply to the model: correct scan defects, add details, produce an animated (rigged) avatar. Furthermore, the artist can choose a physical production process of the model by selecting the preferred 3D printing technology, choose the printing material (from wax, to different types of plastics, to different types of metal), choose the dimensions (from a few centimeters to meters), or start the production process in the foundry.

Figure 11. Elaborated 3D scanning, ready for a high-resolution 3D printing in wax, and afterwards lost wax manufacturing process in the foundry.

This way, the artist has the possibility to considerably optimize the working time on his artwork.

5.3   ND NFT Marketplace

The Native Digital NFT (Non-Fungible Token) Marketplace is such a marketplace that functions as a public Blockchain platform. It is a platform that makes it simple to store and sell NFTs, in particular the Native Digital Smart Dust DNA NFTs. These tokens are available for purchase or auction at a set price.

To store and trade NFT tokens it is needed a crypto wallet. If the user doesn't have it, the marketplace guides the user through few simple steps to create it. Users have to create an account, upload digital artworks (through the Native Digital App), and sell their work on the marketplace.
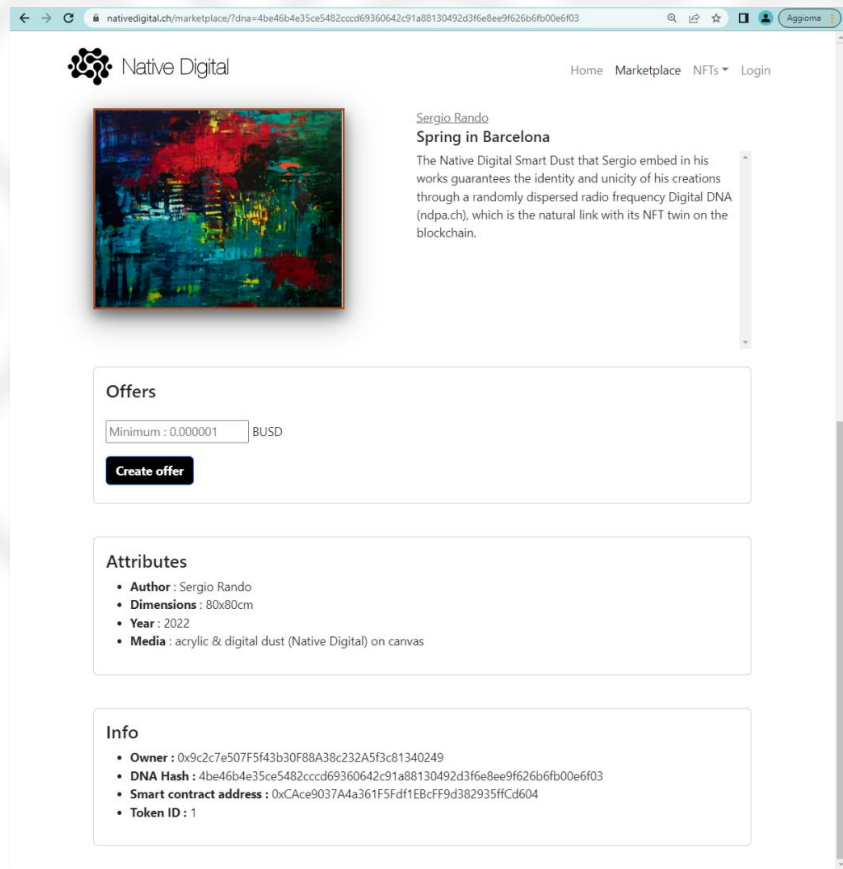

Figure 12. A Native Digital Marketplace page of an artwork in a collection.

The users can list their assets to exhibit their effort and can specify which payment tokens they want to receive and set fees. The next step is to put the products for sale on the market. Users

have the option of bidding on a fixed price or an auction. When a user sells an item, a transaction is produced in the user's wallet to start a private transaction smart contract.

The ND SD NFT marketplace deploys smart contracts, a type of transaction protocol. These protocols control the connections between the supplier and the buyer.

Furthermore, these smart contracts include NFT-specific identifying data, like the ND Smart Dust DNA. As a result, buying and selling tokens becomes more accessible, convenient and secure.

5.4   ND Authentication Service

The authentication service is a system to interface all the devices to the blockchain. In particular it makes it possible to calculate the DNA out of the data stream read with a scanner. That can be used to generate the DNA for the first time and burn it in the memory of the Smart Dust ICs or to authenticate an existing NFT/Physical product with ND Smart Dust inside.

It doesn't have a user interface, but it exposes APIs for programmers.

5.5   ND Metaverse Gallery

The ND Metaverse Gallery represents a space for art, artists and collectors. We host multiple events for artists and collectors and provide them with space to present themself, share ideas and build communities. We provide space to other content creators and event organizers in the art and NFT space.
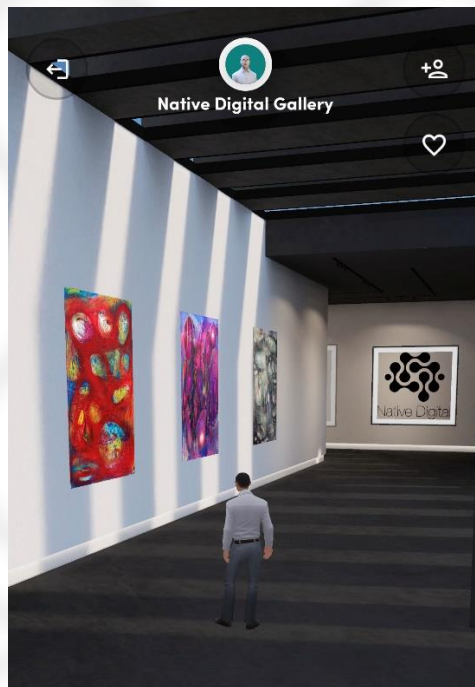

Figure 13. Native Digital Metaverse Gallery.

Whether on the webXR version or the downloaded and persistent PC Client version, we are available to meet and discuss any potential projects.

For artists and collectors we offer frequent exhibitions with networking, drops, short-form long-form interviews, and invitations as guests to our podcasts.

For curators and galleries, we offer one of the floors in our top location metaverse properties. We are looking for at least one exhibition or another onsite event with audience each week that will also change installed art to keep the exhibit fresh and interesting for visitors.

6. ND Crypto

6.1 ND Crypto-currency (NDC)

By creating a profile in the Native Digital marketplace, the user will be able to upload funds to his profile using cryptocurrencies or simply Paypal or credit card. These funds are converted into NDC, the Native Digital cryptocurrency, and allow you to make purchases on the marketplace. The process of converting, debit or credit to your credit card is made particularly simple.