Adding SALT™ to Product Lifecycle Management (PLM) for IP tracking and Silicon Configuration

Enabling Silicon-as-a-Service
Algodone at a Glance

When/Where
- Founded in 2015
- HQ in Montpellier, France

Founders
- Jérôme Rampon
- Gaël Paul
- Professor Lionel Torres

Vision
- Enabling Silicon-as-a-Service

Technology
- Silicon Activation Licensing Technology (SALT)™
Algodone Silicon-as-a-Service Portfolio

Silicon Activation Licensing Technology (SALT™)

PLM Interoperability

SALT™ Trace
Traceability Verifiability

SALT™ Config
Flexible Configuration

SALT™ Meter
Protection Metering
Today’s Complex SoCs: Lots of Party IPs

- Processor cores
- Memory blocks
  - ROM, RAM, flash
- Timing sources/clock generators
- Peripherals
- External interface for communication
  - USB, FireWire, Ethernet, USART, SPI, HDMI
- Analog interface
  - A-D/D-A converters
- Voltage regulators or power management circuits

IP Management: Nightmare for Operations and Finance

Internal Challenges:
- IP info scattered in different databases, in different formats, time consuming to correlate and prove accuracy

External Challenges:
- Many IP vendors with different compliance requirements, hard to provide accurate royalty reporting, risk of costly audit
Intel Speaks of the Challenge of IP Tracking

The complexity of keeping track of IP versions and IP drops within the SOC execution schedule becomes a very hard and tedious problem to resolve... To determine this, it takes several weeks and even months of human glue effort to create a detailed list of all IP’s in the SOC BOM.

Mukund Pai, et al, Intel, Published on Design & Reuse
The Solution: Add SALT Trace to PLM

The goal: IP tracking throughout product life cycle so as to provide real time dashboards including:

- All SOC configuration deployed
  - In term of IP provider reference number, features, monetization
- Licenses fees aggregation based on license models defined in PLM with data volumes
High Performance Semiconductor

Achieve higher efficiency and zero re-spins in developing IOT-ready Systems-On-Chip

- Semiconductor Packaging Performance
- Semiconductor Verification & Validation
- Semiconductor IP Management
- Semiconductor Architecture Design
- Semiconductor Materials Optimization
- Functional Safety Delivery (ISO26262)
SALT Trace Feature: Silicon Licensing

Unique Chip ID based Silicon Licensing for IP Activation & Configuration

Accurate and Verifiable
SALT Trace Feature: Secure Data Retrieval

On-chip Secure Retrieval of Sensitive IP Info:
- Vendor
- Library
- Name
- Version
- Configuration

Accurate and Verifiable
SALT Trace Feature: 3rd Party Transparency

Sensitive IP Data

Accurate and Verifiable

Silicon Activation License

Independent trusted 3rd Party Maintains Secure Storage and Communication
SALT Trace & DS 3D Interoperability Overview

1. Setup SaaS
2. Get Device ID
3. Create License
4. Report Volume

Chip Specification IP Requirements → Chip Design & Engineering → Chip Manufacturing → Chip Sales

3D Experience High Performance Semiconductor Platform – Semiconductor IP Management

SALT License
**SALT Trace: In a SoC Development Flow**

- **Marketing**
  - Define product requirements (MPR), including IP requirements (IPR) in 3D Experience

- **Design**
  - Tag IPs with DRM controller, IP activator and chip ID generator at design level

- **Test**
  - Extract chip ID, install IP activation license provisioned by Algodone

- **Finance**
  - Query IP usage anytime, anywhere

**Algodone SaaS Integrated in 3D Experience**

**IP Requirements**

**License**

**chip ID**

**IP Usage**
Your Life with SALT Trace

- Accurate and verifiable IP information at your fingertip
- Ease query based on a specific vendor, or IP or SoC

**Realtime IP dashboard reported back in PLM tool (Volumes & licensing fees)**

<table>
<thead>
<tr>
<th>Vendor View</th>
<th>IP View</th>
<th>SoC View</th>
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</thead>
<tbody>
<tr>
<td>Processor Core Vendor</td>
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</table>

Accurate and Verifiable IP Usage at a Glance
SALT Trace: Benefit Summary

Easy adoption & deployment through PLM Integration

- Integrated with popular PLM platforms, SALT Trace offers easy adoption and push-button end-to-end IP management solution

Secure and tamper-proof sensitive data retrieval

- Secure communication of IP info and activation licensing through secure on-chip tag and in-cloud SaaS infrastructure

Traceable & verifiable IP info throughout product life cycle

- Tracking IP info from marketing requirements to chip production and sales by extracting accurate IP usage on chip non-intrusively and securely
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