vxSafenet

Nurturing Digital Futures.

Advancing Online Child Safety with Telco-Based Digital Wellbeing & Parental Control

by

VizuaMatix
powered by innovation

intel. NETWORK BUILDERS PARTNER

Presentation Structure

1. Pain Points related to Digital Wellbeing of children

2. How the world is responding to this grave social problem

3. Legacy solutions available in the market

4. The vxSafenet solution and its value proposition

5. Deep dive into the tech inside vxSafenet and Intel ISB ecosystem's support

6. Key benefits to telecom operators

7. Case Study

8. Q&A

Pain Points

Online Safety

- **94%** of youth aged 12 – 17 are internet users. (Unicef, Sep 2022)
- In UK, **one in 10 children** 'have watched pornography by the time they are nine. (TheGuardian.Com, Jan 2023)
- In Malaysia, **75% of teens** have watched pornography. (NST, 12th July 2023)
- **1 in 3 children under 18** years old has become a victim of online sexual predators. (Bukit Aman - Malay Mail, 10 April 2024)

Smart Phone Addiction

- Ideal screen time limit is **2 hours a day** for a 5-17 year old child. (www.osfhealthcare.org)
- Youths spend **more than 8.5 hours** a day on the screen. (www.commonsensemedia.org)
- Young adults who are addicted to smartphones suffer more from **stress & suicidal thoughts**. (A study by Sapien Labs)

Evidence

"Excessive use of mobile phones is impacting kids' dialectic memory"
- **Times of India**

"Social Media Played a Role In UK Teen's Death"
- **Bloomberg**

"In South Korea, a rehab camp for Internet-addicted teenagers" - **The Washington Post**

"Children aged five and under at risk of internet addiction"
- **The Guardian**

"Restricted from using smartphone, minor boy hangs self"
- **New Indian Express**

"65% children became device addictive during lockdown"
- **Times of India**

The Legacy Solutions

- Device-based (App-based) Parental Control Solutions.

- Been there for about a decade

- Yet, children's digital wellbeing has been deteriorating rapidly and has become a global catastrophe

Why App-based solutions have not done the job?

Complex & Intrusive – Needs to install the APP in child's phone and configure it.

Creates unnecessary friction and damages trust between the parent and the child.
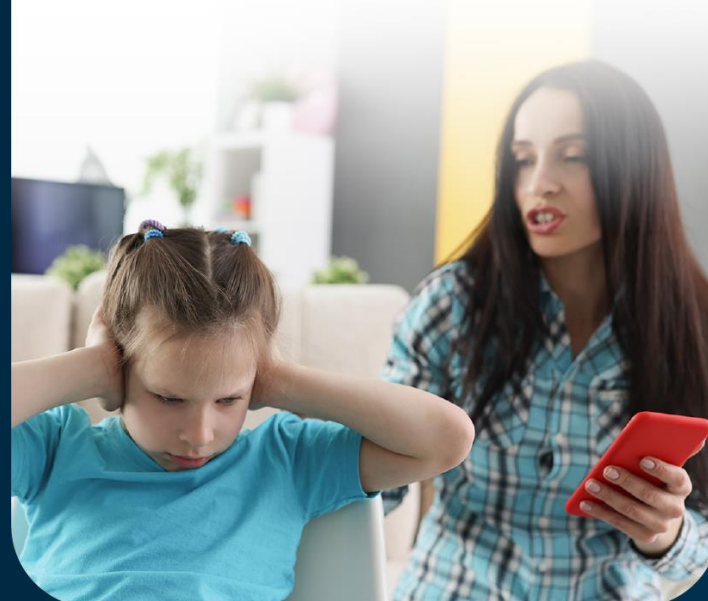
Most of these Apps could be bypassed by a smart kid

An intruder/child abuser can hack the App to gain control of the child's device.

Subscription to these Apps are costly, preventing Parental Control reaching the mass market.

How the World is Responding

China has laws that aims to limit screen time.[1]

France has banned mobile phones in schools.[2]

Plans to ban mobile phones for kids less than 13.[3]

UK is looking at banning Smart Phones for children aged below 16. – BBC.[4]

EU wants to puts an end to teen's Smart Phone addiction. Look at new "Rules" to address digital addiction.[5]

1. https://geographical.co.uk/culture/china-proposes-stricter-national-screen-time-limits-on-under-18s
2. https://www.forbes.com/sites/alexledsom/2019/08/30/the-mobile-phone-ban-in-french-schools-one-year-on-would-it-work-elsewhere/
3. https://www.lemonde.fr/en/france/article/2024/05/02/kids-and-screentime-what-the-committee-appointed-by-macron-recommends_6670225_7.html
4. https://www.bbc.com/news/articles/cjmm0zgx9zno
5. https://www.europarl.europa.eu/news/en/press-room/20231208IPR15767/new-eu-rules-needed-to-address-digital-addiction

The Solution

vxSafenet

The Most Advanced Telco-Based Digital Wellbeing & Parental Care Platform

Allows telecom operators to deliver

Safe and secure **child-friendly internet**

intel. NETWORK BUILDERS PARTNER

Value Proposition

Assures Online Safety

- Ensures **Clean Internet** for every child
- Complies with IWF, BpJM and CCCP
- Enforces **Safe-Search** at network level
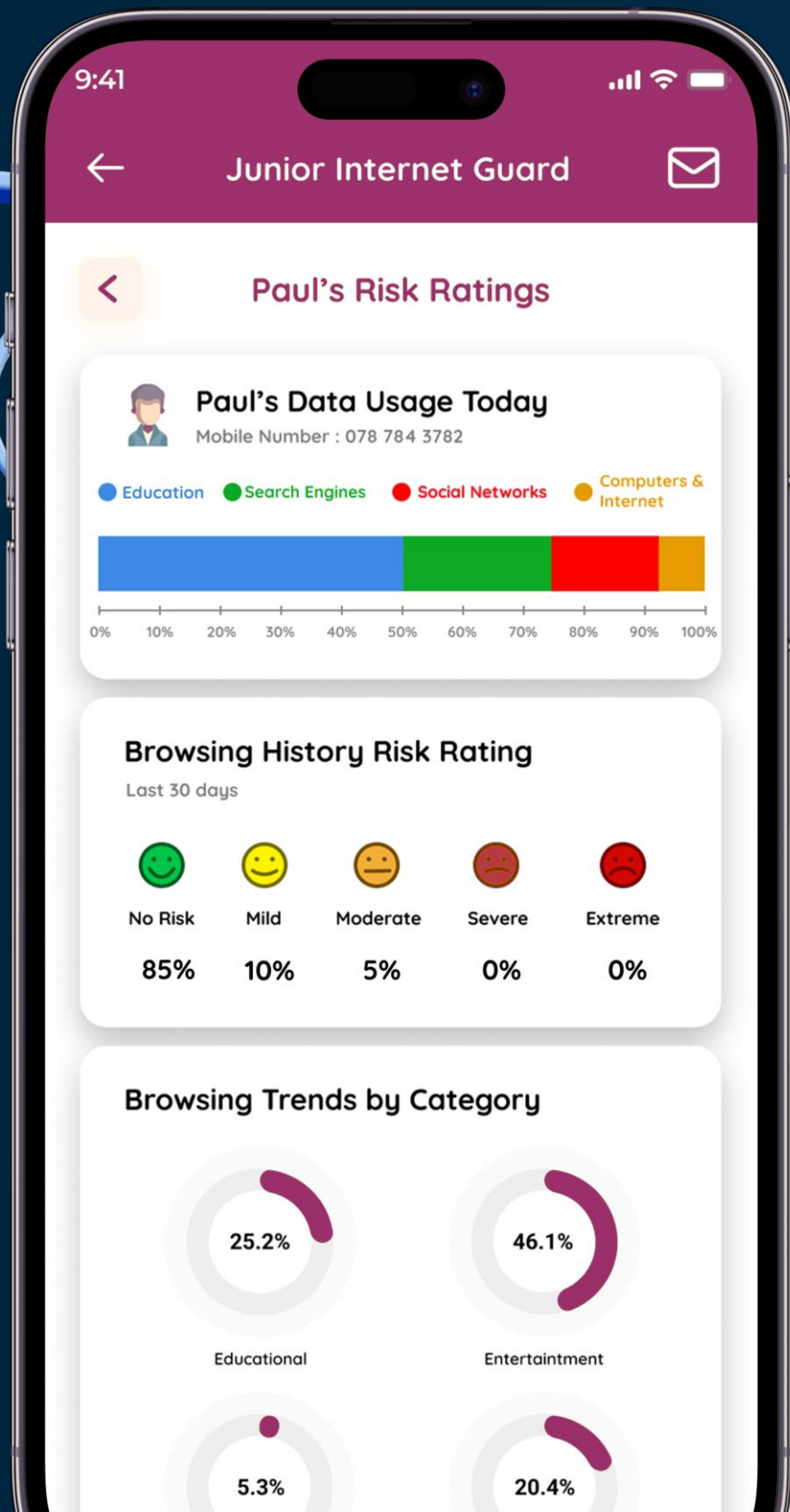

Prevents Device Addiction

- Allows **Screen-Time** Controls
- Allows **Data Limits**
- Set **Blackout time** periods

Overcomes Ineffective Solutions

- No intrusive Apps on the child device
- Yet, comprehensive controls by parents
- Cannot be easily bypassed by children
- Simple activation and highly affordable
- No security threats on device due to 3rd party Apps

Key Features

Paul's Risk Ratings — mobile app screen showing data usage, browsing history risk rating, and browsing trends by category.

Set screen time limits for specific services

Give data allowances for specific services

Allocate and reserve data quotas for productive apps

Internet free of malware and harmful content

Foolproof SafeSearch on Google and YouTube

Real-time analytics and Online Risk Rating

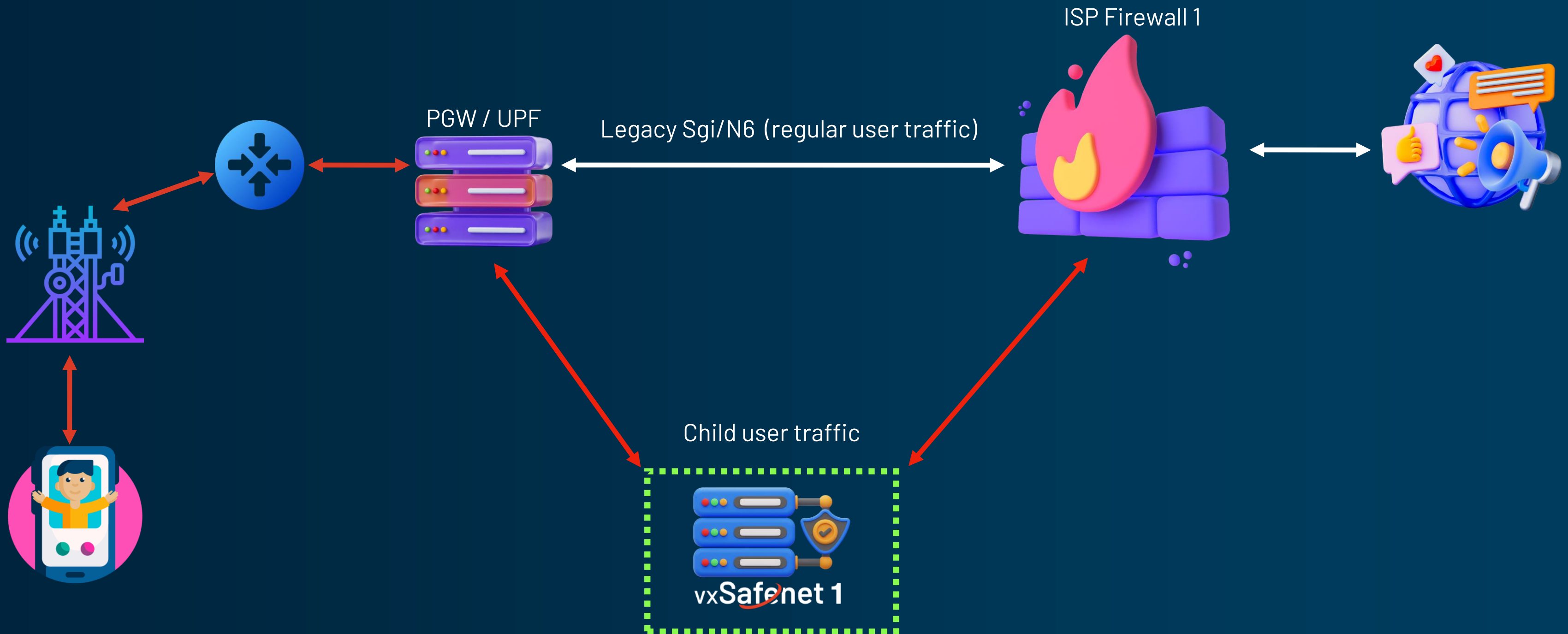# All-in-One Solution

Fully automated Service Provisioning

✓ Built-in Postpaid and Pre-paid activation with renewal logics
✓ Pro-rated charging for low balance subscribers
✓ Integration with Self-care App
✓ Activation through Self-care App, Web portal, USSD, SMS, IVR and CRM
✓ Integration with Billing and Charging
✓ Support free data packs with service activation.
✓ Activation using account balance, credit card or top-up/reload/recharge
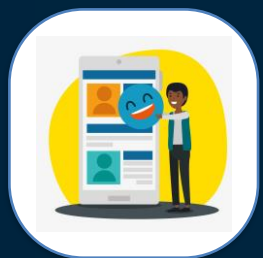
Customizable User Interface

✓ Parent User Interface can be seamlessly integrated with existing Self-care App and Web portal of the CSP
✓ Displays service activation status on the Self-care App
✓ Multiple child management by one parent
✓ Ability to Switch/Change parent number
✓ Receive email and SMS alert on child trying to access blocked content
✓ In-depth analytics of child's Internet usage

Technology Description (Mobile Networks)

ISP Firewall 1

PGW / UPF

Legacy Sgi/N6 (regular user traffic)

Child user traffic

vxSafenet 1

Technology Description (Fixed Networks)

Regular user traffic

Child user traffic

child user traffic

Regular user traffic

Child user traffic

vxSafeHome

BRAS

vxSafenet 1

ISP Firewall
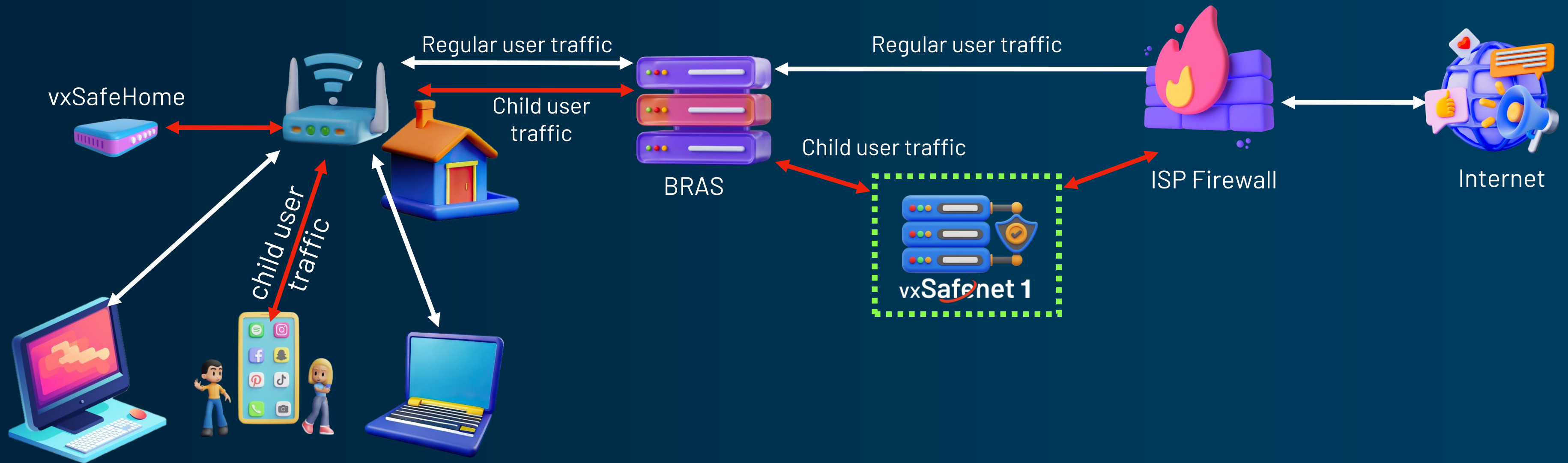
Internet

- The new vxSafeHome device will fit to any broadband router and ensure, child devices be provided with Child friendly Internet while all other devices at home will have regular internet access without any controls.

What's inside?

- **vxDPI-NG**: Purpose-built network traffic sensor and filter for Digital Wellbeing and Security with Next Generation Deep Packet Inspection (DPI) capabilities

- **vxPolicy**: Parental Control Policy engine tightly integrated with the vxDPI-NG

- **vxSafenet-Core**: Business logics, dynamic service provisioning engine, billing/charging integration, HSS/UDM integration, API Gateway

- **vxSafenet-UserApp**: Responsive Web App (Parent & Child Interfaces), which can be integrated to existing Self-care App of the CSP

- **vxSafenet-AdminApp**: Web portal for CSP authorised users to manage the service. This includes a dedicated portal for Customer Care Agents

- **vxAnalytics**: Data analytics module with mediation

- **vxHome-Gateway**: An additional drop-in device designed for home WiFi users or Fixed Broadband users with/without CSP-provided services.
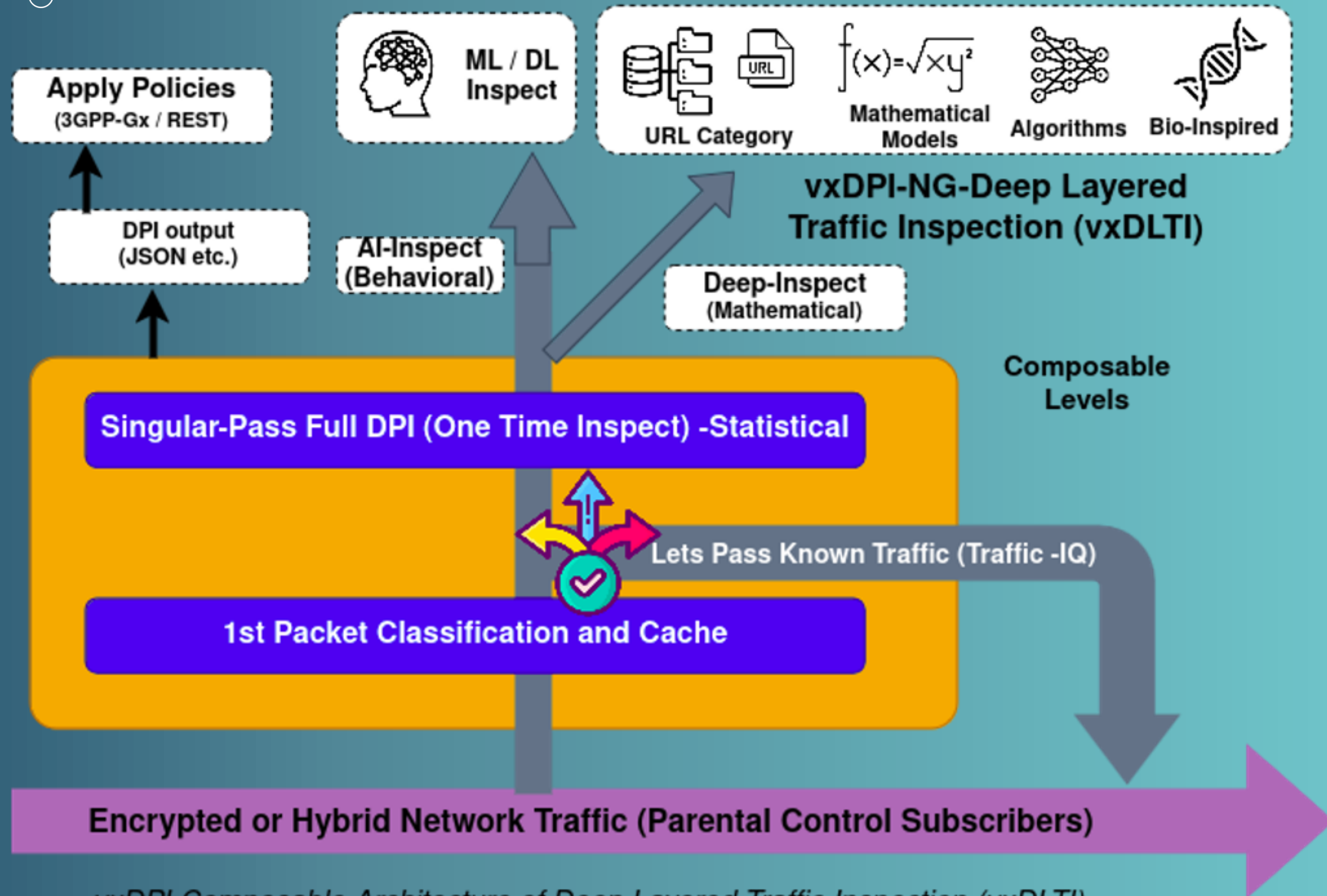
What's inside: vxDPI-NG

- Classification & Metadata Extraction
  - Broadest protocol & application coverage in the industry
  - Endpoint identification (device type, subscriber)
  - Delivers granular metadata specific to cybersecurity requirements (domain fronting, evasive traffic with DGA etc.)
  - Flow level risk identification
  - Categorization of encrypted traffic with ML/DL and extended models
  - Extended coverage for Cloud services, SCADA and IoT protocols and metadata
  - Cryptocurrencies & mining pools detection
  - Detection of popular VPN's
  - Flow data export to open formats (json etc.)
  - Pre-integrated URL categorization DB

What's inside: vxDPI-NG

- Easy Integration to Telco / CSP core networks

- Per-CPU Core performance of 10 Gbps on **Intel XEON 4th Gen Gold-6438N-SPR MCC**

- 12 million in-memory compressed domain list

- 110M+ offline URL Category DB

- Integrated Radius Probe for gain insights of subscriber info and lawful inspection requirements.

- vxDPI-NG-Lite: Device detection and device based policy enforcement in Fixed Broadband network

- vxDLTI: Deep Layered Traffic Inspection. The vxDPI-NG classification pipeline is designed with a layered and composable architecture. Each classification layer is unique, leveraging a variety of classification algorithms, including AI/ML and sophisticated mathematical models.

What's inside: vxDPI-NG

vxSafenet
Nurturing Digital Futures.

Apply Policies
(3GPP-Gx / REST)

ML / DL Inspect

URL Category Mathematical Models Algorithms Bio-Inspired

$f(x)=\sqrt{xy^2}$

vxDPI-NG-Deep Layered Traffic Inspection (vxDLTI)

DPI output (JSON etc.)

AI-Inspect (Behavioral)

Deep-Inspect (Mathematical)

Composable Levels

Singular-Pass Full DPI (One Time Inspect) -Statistical

Lets Pass Known Traffic (Traffic -IQ)

1st Packet Classification and Cache

Encrypted or Hybrid Network Traffic (Parental Control Subscribers)

vxDPI Composable Architecture of Deep Layered Traffic Inspection (vxDLTI)

intel. NETWORK BUILDERS PARTNER
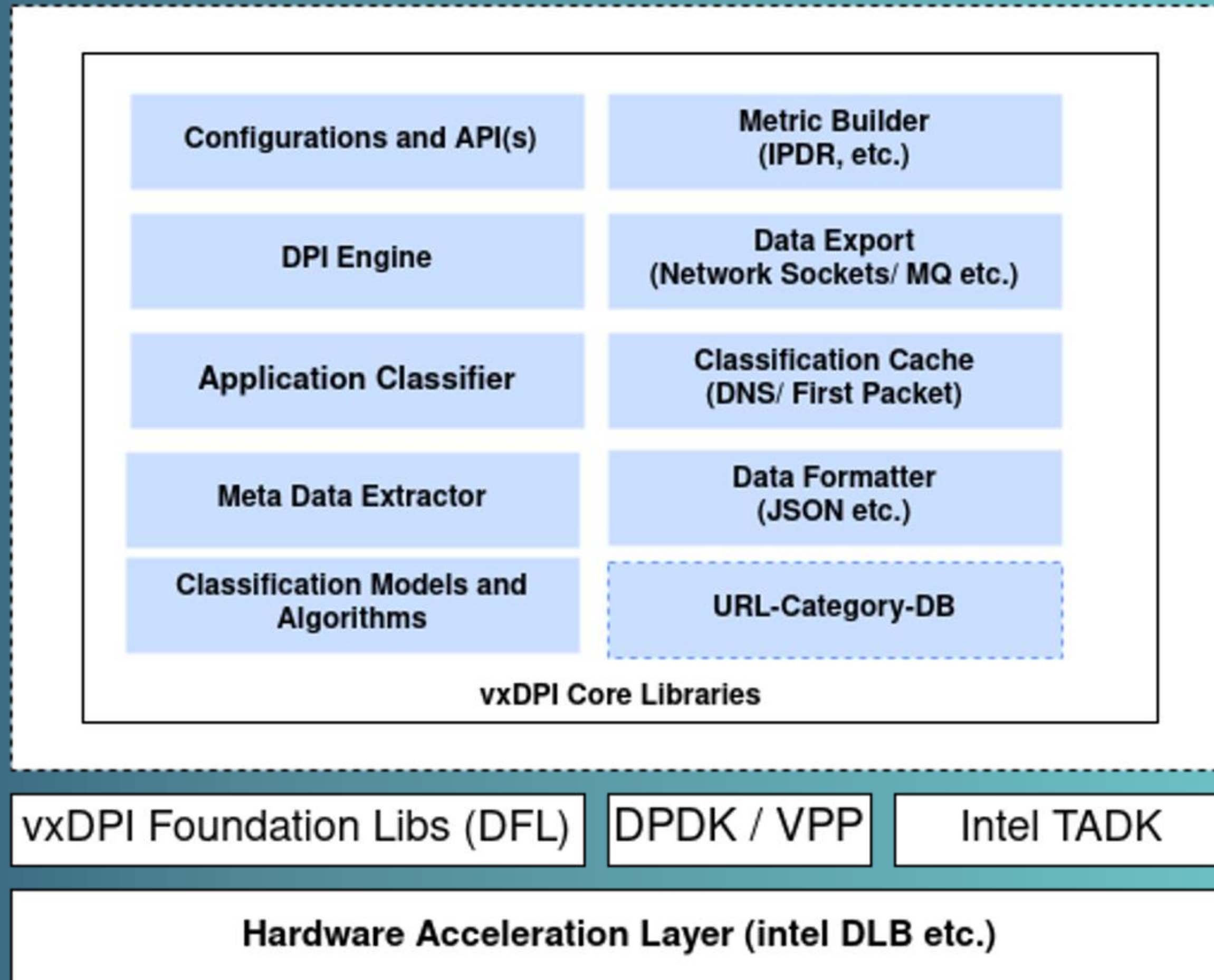
What's inside: R&D setup at Intel Test Lab

vxSafenet
Nurturing Digital Futures.

Node-02-Intel(R) Xeon(R) Platinum 8260M-CLX
384GB -DDR4-2933

Config-B -Traffic Generator

TRex
Realistic Traffic Generator

User Space (DPDK)

DPDK

PMD   **PMD**

Kernel Space

NIC Port-0   NIC Port -1

Intel -E810-100Gbps

Node-01 -Intel(R) Xeon(R) Gold 6438N-SPR_MCC
512GB-DDR5-4800

Config-A -Device Under Test (DUT)

vxDPI-NG

Deep Layered Traffic Inspection(vxDLTI)

vxDPI-NG Foundation Libs (DFL)

Intel TADK + DPDK Event Lib

Env.Abstration Layer (EAL)

User Space (DPDK)

DPDK

PMD   **PMD**

Kernel Space

NIC Port-0   NIC Port -1

Intel -E810-100Gbps

vxSafenet

Built and Tested to the Highest Standards

Application testing at Intel's Networking and Edge Testbed laboratory.

All network elements of the platform have been tested rigorously.

Adherence to TM Forum Open API Standards.

TM Forum's Open API is a global initiative to enable seamless connectivity, interoperability and portability across complex ecosystem services.

3GPP-compliant, 5G-ready platform.

Tested and Certified in Dell Labs

Key Benefits to Telecom Operators

vxSafenet
Nurturing Digital Futures.

Powerful service to **attract new customers**

Add strong **stickiness** to customers and **reduce churn**

New revenue stream from subscriptions

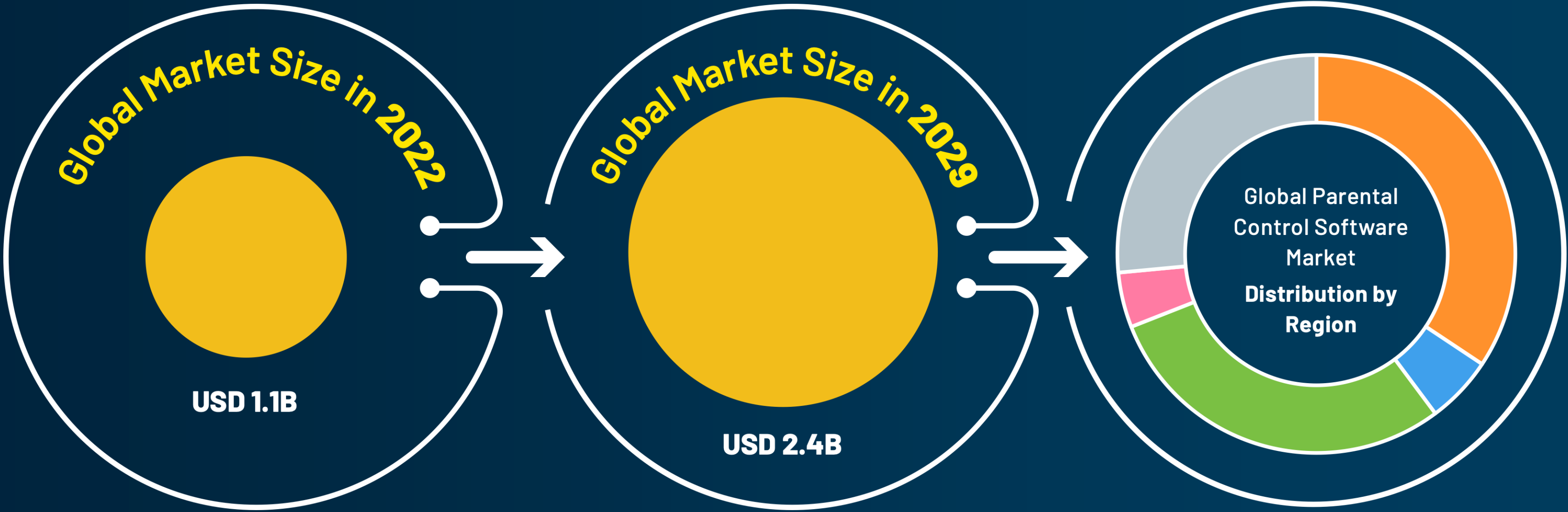**Increase ESG rating** by providing a service which makes a powerful social impact

Leverage branding benefits **as a Child Friendly network**

1st IN THE REGION

intel. NETWORK BUILDERS PARTNER

The Market

vxSafenet

With 12.1% CAGR, the Parental Control market size is expected to reach **USD 2,453.8 million in 2029** - Fortune Business Insights

USD 2,453.8 million

Global Market Size in 2022

USD 1.1B

Global Market Size in 2029

USD 2.4B

Global Parental Control Software Market **Distribution by Region**

- North America
- Europe
- Asia Pacific
- South America
- Middle East and Africa

intel. NETWORK BUILDERS PARTNER