

Build

Connect Transform

2025







ENERGY WEB INTRODUCTION Energy Web at a glance



Energy Web is a technology company that builds open source digital technology to accelerate decarbonization

energy companies

WESTERN EUROPE AND AUSTRALIA

Business model =

SOFTWARE SERVICES, LICENSES, **GOVERNMENT CONTRACTS, AND PHILANTHROPY**

Energy Web's Global Ecosystem

VISION

Our name is our vision - an interconnected Energy Web empowering a sustainable, decentralized, and resilient global energy future.

MISSION

Energy Web unites policymakers, leading enterprises, and innovators to collaboratively accelerate and transform global energy markets through Web3 technologies. We pioneer market standards, drive regulatory innovation, and unlock unparalleled liquidity, efficiency, and compliance-shaping a trusted digital infrastructure for the energy transition.



All logos represent current or previous collaborations and partnerships.



Introducing Green Proofs



GREEN PROOFS Introducing Green Proofs

Green Proofs is a comprehensive software solution for companies to demonstrate that they and their products are sustainable.



LAUNCH GREEN PRODUCT REGISTRIES Scale markets for emerging green commodity types



SOURCE AND SELL GREEN PRODUCTS

Buy and sell low-carbon services and commodities



PROVE YOUR COMPANY AND PRODUCTS ARE GREEN

Showcase sustainability efforts with verifiable data

GREEN PROOFS Green Proofs Solution



IMPACT

Blockchain-backed proof of clean energy use

BENEFIT

Boosts brand trust and streamlines sustainability compliance



www.gp4btc.org



IMPACT

Charge EVs with renewable energy to reduce fossil fuel

BENEFIT

Offer your customers 100% clean charging solutions they can trust!



IMPACT

Accelerate aviation decarbonization with seamless access to sustainable aviation fuel!

BENEFIT

Elevates brand with emissions compliance and sustainability leadership

www.safcregistry.org





IMPACT

Enhances sustainability, transparency, and efficiency throughout the shipping industry

BENEFIT

Certifies clean fuel use for greener shipping

www.energyweb.org/maritime



www.autogreencharge.com



WHAT IS GREEN PROOFS? Who it's for and focus areas



BUSINESS APPLICATIONS Launch Green Product Registries



Design and launch your own product registry

- types.
- claim schemes.
- certificates for commodities and their attributes.

Deploy registries to scale markets for emerging green commodity

Enable transparent, scalable, and credible tracking and book-and-

Help participants securely book, exchange, and retire digital

Spearhead your own registry or partner with industry consortia

BUSINESS APPLICATIONS Source and sell green products



Buy and sell low-carbon services and commodities

Use Green Proofs platforms for sustainable aviation fuel, sustainable shipping services, green EV charging, low-carbon compute, and climate-aligned

- Reduce their corporate emissions (scope 1, 2, 3)
- Prove emissions metrics using pioneering Worker Node
- Streamline market access for green commodities
- Source verifiably sustainable materials for producing and marketing finished green products

SAFC

Boost eco-friendly aviation fuel demand





WORKER NODE NETWORKS IN GREEN PROOFS SAFc Registry Use Case



Katalist

KATALIST

Promote Sustainable Fuels for Shipping



Fueling change, starting today

The trusted non-profit platform pushing maritime decarbonization forward, developed by Fonden Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping and RMI. Katalist provides companies with the independent, verified solutions they need to decarbonize their businesses today and take the lead on reshaping the future of the maritime industry.

About us Documentation Get started

Book a demo

MARITIME Challenge

As a **shoe company** it's much easier to create a sustainable shoe, but have little control over your transportation.

As a **shoe buyer** it's hard to figure out if a shoe transportation is sustainable or not, especially when it travels by sea.



35 years For a ship to be replaced with a sustainable one

100.000

Number of commercial vessels in operation

300M tons

Amount of fuel burned per year

3% Shipping's share of global emissions

Maritime Book and Claim (MBC)

Simplify the process of registering the usage and ownership of sustainable fuel for all the actors involved in the shipping part of the supply chain.



Ship operator





Freight forwarder



MBC Registry Mechanism

The road from the country of assemble to your home is rather a complex one.



GP4EV

Powering E-Mobility with Green Charge



Ever wondered how green your electric vehicle really is?

AUTOGREENCHARGE

Apply Now



AutoGreenCharge

AUTO GREEN CHARGE	Connect your vehicle	Control your data	
	Vehicle Rivian Image: Subaru	 ✓ Vehicle Tesla Model 3 • 06. Februar 14:15 uhr 13.283 km Øf 60% Last Charging Session Fr 27. Jan, 16:30 - 16:54 do WW 	
w.ww.autogreencharge.com		Green Proofs - Pending	



GP4BTC

Reducing Bitcoin-adjacent emissions



Clean energy is a competitive advantage.

GP4BTC helps Bitcoin miners measure and manage their energy footprint to help accelerate decarbonization.

Explore the data

Get involved

Trusted by mining companies worldwide



𝔅 LANCIUM





SOURCE AND SELL GREEN PRODUCTS Green Proofs for Bitcoin (GP4BTC)

Green Proofs for Bitcoin helps companies reduce emissions associated with their crypto activities



Helps companies direct their business towards climate-aligned Bitcoin mining operations

Spotlights contributions of climate-conscious miners to grid decarbonization

Developed with 35+ crypto & energy market

SOURCE AND SELL GREEN PRODUCTS Green Proofs for Bitcoin (GP4BTC)

What we need

Industry agreement on what constitutes climate-aligned mining

Method to measure alignment of mining companies with this definition

Ways to meet/drive investor demand for climate-aligned mining

Ways to reward climate-aligned mining



Green Proofs for Bitcoin

Shared framework for assessing climate impact of mining operations

Independent miner evaluation services

One-stop shop for market participants to discover and do business with climate-aligned miners

ROI for climate-aligned mining

CASE STUDY Paypal

SCOPE

Collaborate with PayPal and DMG to develop a scalable platform for certified miners to participate in a new green mining initiative incentivizing climate-aligned Bitcoin miners

GOALS

- Reward climate-aligned miners with bitcoins in a trust-independent manner
- Increase the likelihood of routing on-chain transactions to climate-aligned miners



GREEN MINING INITIATIVE SOLUTION:

- sources
- these miners
- script



Identifies miners using low-emissions energy

• Preferentially routes on-chain transactions to

• Rewards these miners using a 1-of-n multisig

WORKER NODE NETWORKS IN GREEN PROOFS GP4BTC Use Case



Digital Spine Solution: Transforming Data Management



More DERs, more renewables = increased complexity



DIGITAL SPINE DERs can become powerful tools



Electric utilities and regulators today

Energy market participants do not have the tools needed to unlock the potential of distributed energy resources

Have little to no visibility where **DERs are on their system**, let alone understand what they are capable of

Cannot communicate or interact with DERs at the speed necessary to increase grid flexibility

Do not have a framework for **coordinating DER behavior** across the transmission and distribution interface

Do not have the tools necessary to **plan for the future** considering the fundamental role DERs will play



DIGITAL SPINE Unlocking Flexibility with Digital Grid Solutions

A **Digital Spine** is a solution to sharing Data Exchange for all Distributed Energy Assets in a country/region



Grid Management

IMPACT

Revolutionizes grid management by fully unlocking the potential of distributed energy resources (DERs)

BENEFIT

Enabling greater grid flexibility, efficiency, and fostering a sustainable, resilient energy future for all stakeholders.



DIGITAL SPINE Conceptual Diagram



DIGITAL SPINE AND AEMO

Australia moves to full Production Environment



Aggregators, Distribution utilities targeted for enrollment to platform

~12 different use cases
will be supported

launch, second phase runs throughout 2024

EW Digital Spine's Architecture

BAU: Point to point data exchange

All participants responsible for bilateral integrations with counterparties

Highly flexible, but increases cost and complexity

Limits data visibility

Heterogeneous cybersecurity patterns

() https://aemo.com.au/initiatives/major-programs/nem-distributed-energy-resources-der-program/der-demonstrations/project-edge/project-edge-reports/der-data-exchange



EW Digital Spine's Architecture

Centralised Data Hub

Standardizes integration and security

Adds significant IT and security burden to central administrator

More rigid and difficult for participants to organically develop independent applications.



() https://aemo.com.au/initiatives/major-programs/nem-distributed-energy-resources-der-program/der-demonstrations/project-edge/project-edge-reports/der-data-exchange

EW Digital Spine's Architecture

Decentralised Data Storage Hub

Gateway model standardizes integration without requiring one single entity to hold large amounts of data

Highly flexible options for gateway hosting and integration for internal participant systems.

() https://aemo.com.au/initiatives/major-programs/nem-distributed-energy-resources-der-program/der-demonstrations/project-edge/project-edge-reports/der-data-exchange



DIGITAL SPINE EW Digital Spine's Architecture



https://aemo.com.au/initiatives/major-programs/nem-distributed-energy-resources-der-program/der-demonstrations/project-edge/project-edge-reports/der-data-exchange ()

High-Level Diagram (Ecosystem)



Introducing Worker Node Networks



WORKER NODE NETWORKS (OTHER INDUSTRY USE-CASES)

Use Case & Status	High Level Description	Category
SAFC		
Sustainable Aviation Fuel Certificates Status: Live on Prod	Ensuring trust and transparency in Sustainable Aviation Fuel Certificates to drive sustainable aviation demand and scale adoption.	Verifiability Trustless Execution (Decentralizato
GP4EV		
Autogreencharge Status: Live on Beta	The Green Proofs for EVs (GP4EV) system ensures that electric vehicle (EV) charging is green by managing and verifying green certificates for each charging session	Verifiability Trustless Execution (Decentralizato
GP4BTC		
Green Proofs for BTC Status: Live on Prod with further development	Empowering Bitcoin miners with tools to showcase sustainable energy use with a goal to make sustainable Bitcoin mining ubiquitous and accelerate the clean energy transition.	Verifiability Trustless Execution (Decentralizate
Omega-X		
European-commision research project Status: In-development	Trust-less verification of settlement for consumption and production for EV owners and Solar prosumers (Green EV charging), with cross-country OCN	Verifiability Trustless Execution (Decentralizato
InEEXs		
European-commision research project Status: In-development	Tokenisation of Energy Performance Contracts and digitalisation of MRV (Monitoring, Reporting & Verification) process using blockchain technology in 4 different pilot-countries	Verifiability Verifiability



WORKER NODE NETWORKS (OTHER INDUSTRY USE-CASES)

Use Case & Status	High Level Description	Category
NTELLIGENT & U2DEMO		
European-commision research project Status: In-development	Open source P2P reference architecture and platform for energy trading	Verifiability Verifiability (Decentralization
ECS4DRES		
European-commision research project Status: In-development	Decentralised solution for generating green certificates to trace the origin of the energy, specifically green hydrogen.	Verifiability Trustless Execution (Decentralizate
24/7 Matching		
Renewable electricity matching Status: POC	Building a traceability platform for 24/7 renewable electricity tracking and matching for Enterprise energy consumers that are interested in accurately measuring (and mitigating) their carbon footprint through the procurement of renewable electricity.	Verifiability Trustless Execution (Decentralizat
OEP/ZEL		
Operating Envelope / Zero Export partioning Status: POC	An "operating envelope passthrough" refers to a mechanism that allows for adjustments in the operational limits or envelopes of generating units or electrical systems. A ZEL Request refers to a "Zero Export Limit" request. This request is made by generators or dispatchable assets to set their output to zero, often indicating that they are not able to inject power into the grid for a specific reason.	Verifiability Verifiability



WORKER NODE NETWORKS IN GREEN PROOFS Green Proof as a Service



THE GREEN PROOFS DIFFERENCE Our Special Sauce



Using innovative Worker Node Network technology, prove to stakeholders that your environmental claims are correct and credible - without revealing underlying data.

PROTECT YOUR DATA



Leverage Green Proofs's robust privacy features to manage access to data and comply with regulation.

CHOOSE YOUR OWN ADVENTURE



Customize front- and back-end features, integrations, and more to support your business needs.

THE GREEN PROOFS DIFFERENCE Worker Node Networks - Overview



SmartFlow

Deploy Solutions in Minutes





ENERGY WEB LAUNCHPAD Introduction



LAUNCHPAD

Platform offering various EnergyWeb ecosystem products in full enterprise-grade SaaS manner



SMARTFLOW

EW Product allowing for creation of Worker Node Networks and Worker Node Solutions along with underlying business logic reflecting various business use cases and allowing their execution in decentralised manner

ENERGY WEB LAUNCHPAD Introduction

Launchpad is a platform offering various EnergyWeb ecosystem products in full enterprise-grade SaaS manner



ENERGY WEB LAUNCHPAD How EW Launchpad addresses and supports our approach



ENERGY WEB LAUNCHPAD Benefits & Why would you use SmartFlow?

	With Smartflow	Without Smartflow
1. No-code Logic C	reation	
<pre>[ws]/wss://tester.energyweb.org</pre>	- function 4 - f markle	etree
	function 3	debug 8
3. Decentralized Deployment & Execution		
worker node	worker node worker node	worker node worker node





worker node

Carbon Aware -Decentralized Computation



CARBON AWARE - DECENTRALIZED COMPUTATION Typical carbon aware software approaches



CARBON AWARE - DECENTRALIZED COMPUTATION Typical carbon aware software approaches





How EnergyWeb's open-source, decentralised, Carbon-Aware nomination works



Detailed system components architecture



ENERGY WEB Partnering with Energy Web

Why This is a Game-Changing Collaboration Opportunity?

SUSTAINABLE CLOUD COMPUTING

Actively reduces emissions in real time rather than relying on offsets.

- Dynamically optimizes workloads based on real-time carbon intensity.
- Adapts to existing cloud and IT environments with minimal effort, avoiding major reconfiguration.

Key Benefits of Partnering with Energy Web

Market Leadership & Competitive Edge

- Lead in real-time carbon-aware computing innovations.
- Strengthen sustainability positioning in cloud services.
- Differentiate with proactive emissions reduction & ESG alignment.

Enterprise Adoption & Customer Reach

- Access Energy Web's enterprise clients via Launchpad BYOC.
- · Enable businesses to reduce their cloud carbon footprint dynamically.
- · Expand market reach with trusted sustainability credentials.

OPEN-SOURCE & COLLABORATIVE

Drives transparency, trust, and innovation across industries.



Zero trust testing and roll-out across fully custom compute networks



EW Circles -Approach







EW Circles Purpose and Objectives

Established to address specific challenges and requirements in the areas of energy, sustainability, and grid management.

Demands driven by regulation, technological changes, or the transition to sustainable and digital models.

Understand the challenges and problem statements on customer side

Developing practical solutions to meet market demands Serve as a platform for both members and nonmembers to connect, exchange ideas, build applications, and collaboratively discuss and create use cases.

Facilitate networking, knowledge-sharing, and innovation, helping to shape and implement solutions that will benefit the broader industry and energy ecosystem.

EW Circles Focus Areas

UNIVERSAL ENERGYID

Decentralized identity and verifiable credentials for energy sector

SUSTAINABLE ELECTRIC VEHICLE CHARGING

Electric mobility decarbonisation via verifiable proofs

ADVANCED GRID MANAGEMENT

Control and optimize DERs in real-time, paving the way for a more resilient and decarbonised energy grid

GLOBAL ENERGY DIGITALSTORE

Availability of different Apps or Data for Energy Market Services, apps like matching, forecasting, etc. and Data such as various public or private data streams

CSRD READINESS

Corporate Sustainability Reporting Directive

CARBONAWARE COMPUTE

Sustainable nomination and load balancing of distributed compute resources

GLOBAL RESPONSIBLE COMMODITIES MARKETPLACE

Unified marketplace of responsible commodities connected to individual registries



EW Circles Empowering Future Growth Through R&D Investment



Enter Innovation Funnel

Formalize within the project pipeline

Energy ID Universal EnergyID & Credential Ecosystem

UNIVERSAL ENERGYID & CREDENTIALS ECOSYSTEM Introduction to the Initiative

UNIVERSAL ENERGYID & CREDENTIALS ECOSYSTEM Background & Motivation

Distributed Energy Resources (DERs) Expansion

Rising **Demand** for Consumer Flexibility

Complex Electric **Mobility** Infrastructure

New Business Models in Energy

UNIVERSAL ENERGYID & CREDENTIALS ECOSYSTEM Use Case - 1, Unique Identification of Assets & Verifiable Attributes

- Has Unique EnergyID
- Can Prove its Identity
- Can Present Verifiable Credentials
- Assets Owned by Customers

- Governs the Identification Schemes
- Governs the Credentials Schema Standardisation
- Governs the issuer roles
- Issuers of the Verifiable Credentials

UNIVERSAL ENERGYID & CREDENTIALS ECOSYSTEM Use Case - 2, Data Spaces for Sovereign Data Exchange

UNIVERSAL ENERGYID & CREDENTIALS ECOSYSTEM Use Case - 3, Streaming Payments for Energy Transactions

Energy being consumed or produced is authentic and trustworthy enabling accurate billing.

Automated and scalable payment processing.

EU-FUNDED PROJECTS About

€95.5 billion

The EU's key funding programme for research and innovation

- It tackles climate change
- Helps to achieve the UN's Sustainable Development Goals
- Boosts the EU's competitiveness and growth

Digital Europe

€7.5 billion

Digital Europe aims to deploy digital technologies in a scalable and sustainable way

Strengthening Europe's competitiveness and strategic autonomy

Building the strategic digital capacities of EU Member States

Energy Web Projects in Europe

Energy Web Projects in Europe

BELGIUM	SPAIN	PORTUGAL
OMEGA-X INTELLIGENT U2DEMO SINOGENNES	OMEGA-X ECS4DRES INTELLIGENT SINOGENNES	OMEGA-X INTELLIGENT U2DEMO SINOGENNES
INEEXS CIRPASS	InEExS CIRPASS	NETHERLANDS
		ECS4DRES
OMEGA-X	OMEGA-X	U2DEMO CIRPASS
U2DEMO	U2DEMO	NORWAY
CIRPASS	INEEXS	OMEGA-X
AUSTRIA	CIRFASS	SWEDEN
NTELLIGENT	IRELAND	CIRPASS
CIRPASS	OMEGA-X	
	INTELLIGENT	SLOVAKIA
ESTONIA	CIRFASS	U2DEMO
CIRPASS	LUVENDOUDO	
	LUXEMBUURG	FINLAND
SINOGENNES	CIRPASS	InEExS

Thank you!

If you are interested in learning more about Energy Web, reach out to us:

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	www.energyweb.org