HAN LONGEVITY Mainnet White Paper

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HANL connects biotechnology IP, physical products, consumer experience and research data

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Contents

1 Project overview

2 Vision and challenges

3 The BioBridge business ecosystem

4 The five stages of IP commercialization

5 HANL mainnet architecture

6 DRPoS consensus and node operations

7 HANL coin economics and supply policy

8 Product partner and community policies

9 The data economy and research collaboration

10 Mainnet transition and asset migration

11 Governance security and operating responsibilities

12 Roadmap and performance measures

13 Scope and matters requiring final approval

Appendix A Source treatment and changes

Appendix B Glossary

1 Project overview

1 1 Executive summary

HAN LONGEVITY is a BioBridge platform connecting intellectual property holders, research institutions, manufacturers, brands, specialists and consumers in biotechnology and healthcare. It links research, product development, sales, consumer experience and subsequent research through the HANL mainnet.

HAN LONGEVITY Mainnet is planned as an independent blockchain for ecosystem payments, settlement, deposits, participation rewards and verification records. HANL would evolve from a service token on an external chain into the mainnet's native coin, supporting both service use and network operation.

The core cycle is IP and research, planning and manufacturing, distribution and sales, review and data collection, and feedback into R&D. HANL connects transactions and contributions across these stages, while nodes validate and maintain the corresponding records.

1 2 Project identity

Item	Proposed specification
Project	HAN LONGEVITY
Network	HAN LONGEVITY Mainnet
Native coin	HANL
Business foundation	The HAN LONGEVITY BioBridge ecosystem for biotechnology and healthcare
Core functions	Payments, settlement, network fees, node participation, business deposits, contribution rewards and data access

1 3 Purpose of the mainnet

The purpose of HAN LONGEVITY Mainnet is to connect ecosystem transaction rules with network operating policies. Product payments, business settlement, review rewards, data access fees and node operations can use a common coin framework, with shared access to transaction and verification records.

2 Vision and challenges

2 1 Vision

HAN LONGEVITY aims to build a global ecosystem that connects biotechnology intellectual property with consumer experience, enabling research to become products and product experience to inform further research.

The platform connects R&D, skincare, wellness, life care, specialist services and data collaboration. HANL Mainnet provides a common foundation for recording transactions and contributions among participants.

2 2 Mission

Technology commercialization connects IP holders, research institutions, manufacturers and brands to support the development of real products.

Recognizing contributions allows useful research, education, reviews and surveys to lead to rewards and service use.

Research feedback makes information accumulated through product use and partner collaboration available for subsequent research and product improvement.

Connected operations link HANL payments and settlement with network validation and provide visibility into participation policies and fund disbursements.

2 3 Problems to address

IP holders and commercial partners often operate separately. HAN LONGEVITY intends to help technology owners find manufacturing, distribution and brand partners and agree on commercialization terms.

Consumer experience can remain confined to short promotional campaigns. The platform will define purpose, permission and quality requirements so that reviews and usage information can inform research.

Rewards can become disconnected from practical use. Participants should be able to use earned HANL for repeat purchases, education, membership and data services.

Records are distributed across organizations. Linking verification records for contracts, manufacturing, sales, settlement and data use can help partners reconcile their activities.

3 The BioBridge business ecosystem

3 1 Platform components

The R&D community supports IP introductions, research proposals, specialist reviews, collaboration applications and records of research contributions.

The product and service platform supports partner onboarding, product sales, manufacturing and distribution collaboration, specialist education, membership and community activities.

The R&D Data Market connects access, payments and contribution rewards for data, analytical reports and research support services whose usage rights have been verified.

HANL Mainnet processes coin transfers, deposit states, approved rewards, fees and verification histories for these services. Product information, member records and original source data are maintained in separate service systems.

3 2 Products and services

The business scope includes biotechnology, skincare, wellness, healthcare and life care products and services. It may extend to clinic-linked programs, education, membership, B2B networks and data services. Development, validation and approval status should be disclosed for each product.

Aptamer technology is the first IP commercialization direction identified in the existing HAN LONGEVITY materials. Those materials describe plans to develop medical devices and skin boosters through

collaboration among aptamer IP holders, research organizations and manufacturers. This revision retains that direction without adding a claim that collaboration, development or approvals have been completed.

3 3 Participants and responsibilities

Participant	Role
HAN LONGEVITY Foundation	Ecosystem policies, HANL usage and reward rules, support budgets and disclosure arrangements
Platform operator	Member, product, order, education, community and data services
IP holders and research institutions	Technology introductions, research, usage rights and collaboration terms
Manufacturers brands and distributors	Product planning, production, quality management, sales and settlement
Specialists	Technical and product reviews, education and research advice
Consumers and community members	Product use, reviews, surveys and useful data or feedback
BP and BO operators	Block production and validation, network monitoring and availability
HANL holders	Service use, selection of eligible nodes and governance participation

IP usage rights and entitlement to sales proceeds are determined by agreements among participating businesses. Node eligibility does not automatically confer authority to assess products or ownership of intellectual property.

3 4 Revenue model

Product sales may generate revenue for operators or partners, as well as sales-related fees.

Membership and education may generate fees for programs, seminars, educational content and subscriptions.

B2B services may generate fees for onboarding, promotional channels, joint marketing, settlement and service integration.

Data collaboration may generate fees for data access, analytical reports and collaborative research support.

Network services may generate HANL transaction fees and network usage fees paid by service operators.

Business revenue, network fees and ecosystem reward reserves should be managed separately. Product sales proceeds are not assumed to belong entirely to the Foundation. Entitlement to revenue and responsibility for costs are determined by contracts and published policies.

4 The five stages of IP commercialization

4 1 Phase 1 IP and research

IP holders, universities, laboratories and inventors introduce technologies and research topics within an agreed disclosure scope and with an identified source. Researchers and companies propose follow-up research or combinations of technologies and assess commercialization opportunities.

HANL can support rewards for verified IP introductions and research contributions, payments for research support services and funding participation in approved joint research programs. Business deposits and research funding participation should use accounts and rules separate from consensus staking.

Outputs include IP introduction histories, contract versions, contribution approvals, patent and research materials, and collaboration plans. Trade secrets and confidential research originals should not be written directly to a public chain.

4 2 Phase 2 Planning and manufacturing

Brands and OEM or ODM partners agree on product concepts, specifications, manufacturing conditions, inspection and settlement. Required quality reviews and launch requirements are assessed for each product.

HANL can support manufacturing payments, conditional settlement, partner onboarding deposits and quality assurance deposits. Settlement is designed to execute after approved conditions, such as completed inspection, have been confirmed.

Outputs include product plans, manufacturing and inspection references, applicable approval materials and finished goods. Blockchain records help verify the history of submitted information; they do not independently determine product quality.

4 3 Phase 3 Distribution and sales

Brands, distributors and marketers operate online and offline sales channels. Consumers may use fiat currency, HANL or other supported payment methods for products and services.

HANL can support product and program payments, sales incentive settlement and distribution collaboration services. Payment discounts and special purchase access are determined by product-specific policies.

Records include order, payment and refund references, verified sales performance and revenue. Sales incentives should account for cancellations, refunds and fraudulent transactions before payment, with controls against duplicate settlement.

4 4 Phase 4 Data contributions and community participation

Verified purchasers and other participants provide permitted information, including reviews, surveys, changes observed during product use and adverse reactions. The platform verifies actual use and information quality to operate Review to Earn, or R2E, rewards.

HANL can support valid review and data contributions, education and community rewards, membership deposits and repeat purchases. Rewards should not depend on whether the review is favorable.

Outputs include approved contribution and reward records, controlled original data and aggregated findings for product improvement. Consumer reviews are reference material for research and do not automatically become clinical trial findings or proof of efficacy.

4 5 Phase 5 Data feedback and the R&D marketplace

Brands, analysts and researchers use permitted data and reports to improve products and investigate new IP. The purpose of use, access conditions and reward scope are defined first.

HANL can support paid data and analytical reports, collaboration services, contractual contribution rewards and data royalties. Payment in HANL does not confer unrestricted access to all information.

Outputs include data access approvals, settlement records, product improvement plans and insights for subsequent research. Royalties arising from the use of contributed data in new IP development depend on the payment conditions in the relevant contract.

4 6 Sustaining the cycle

Researchers can use earned HANL for research materials and education; consumers can use it for repeat purchases and membership; businesses can use it for onboarding, promotion and data services. Repeated service use should generate further partner collaboration and useful information.

The priority is to establish products and services that participants repeatedly use. Sales and service revenue, operating costs and reward budgets should be managed together to build an ecosystem grounded in actual use.

5 HANL mainnet architecture

5 1 Architecture by function

Layer	Functions	Implementation direction
Mainnet core	DRPoS block production and validation, HANL balances and transfers, finality status	Apply after source code and consensus specification validation
Integration	RPC and APIs, wallet connections, transaction submission and queries, service events	Define authorization, duplicate processing and recovery controls
Business services	Commerce, B2B settlement and deposits, education, membership, research and community rewards	Introduce in stages under service contracts and operating terms
Data management	Original data, consent, permissions, usage logs and reports	Manage separately from on-chain references
Operations	Explorer, node monitoring, financial reconciliation and testing environments	Connect public measures with operational records

5 2 On-chain and off-chain records

The proposed on-chain scope includes HANL transactions, deposit states, reward and burn execution records, and necessary verification references. Orders, member information, usage photographs, research originals and personal or health-related data are managed in access-controlled off-chain storage.

Hashes and references should also be assessed for possible linkage to individuals, with public disclosure minimized. Procedures for deleting originals or stopping their use must account for the persistence of public-chain records.

5 3 Executing business conditions

Smart contracts or validated protocol functions are intended to execute approved payment, deposit and settlement conditions. Responsible parties verify manufacturing inspections, refund status, review authenticity and data usage rights, then submit the approved result.

Systems that supply external facts should include approver signatures, separation of permissions, change histories, duplicate-payment prevention and dispute procedures. The availability of API calls does not establish that arbitrary contract logic can execute safely.

5 4 Wallets and service access

The HANL wallet should distinguish balances, transfers, fees, deposit types, release conditions and transaction status. Submission, block inclusion and final confirmation should be displayed separately.

Service operators may sponsor network fees to simplify consumer payments. Sponsored fees and movements of user assets should be recorded separately, with transaction, budget and rate limits.

6 DRPoS consensus and node operations

6 1 Basic consensus design

The design combines continuity among representative operators with rotating participation by general nodes. Random BO participation alone does not establish resistance to collusion or attacks. Security must be assessed against the randomness mechanism, candidate eligibility, finality rules and explicit attack assumptions.

6 2 Block Producers

BPs are representative operators elected for a defined term to produce and validate blocks and maintain network availability. Eligible candidates must satisfy requirements for accountable operating identity, system capacity, availability, security and operator bonds.

The model draws on monthly re-election and consideration of holdings over a month. The HANL baseline is an election among eligible candidates by holders, followed by reassessment at the end of the term. Vote calculations, delegation and withdrawal, election frequency and duplicate-vote prevention require a separate specification.

A BP operator bond supports network operating responsibilities. Rules for failure or violation findings, repayment, deductions and appeals must be defined separately from manufacturers' quality assurance deposits.

6 3 Block Observers

BOs are operators selected from an eligible general-node pool for each round to participate in block production and validation and observe abnormal network conditions. In this baseline, BOs do more than monitor externally.

The six selected BOs participate in the production schedule for that round. BOs are selected again for the next round. Candidate-pool size, eligibility, consecutive selection and bonding requirements remain subject to implementation validation.

The label general node does not imply that low-capacity equipment can produce every block. Minimum specifications, synchronization and connectivity requirements must reflect the actual production and validation workload.

6 4 Block production sequence

1. Register and assess candidates. Verify BP and BO eligibility, synchronization and security conditions.

2. Elect BPs. Select eligible representatives under the defined voting rules.

3. Select BOs. Randomly choose BOs from the eligible pool for the round.

4. Set the production schedule. Combine BPs and selected BOs into a block production order.

5. Produce and validate blocks. The assigned node proposes a block in its slot, and participating nodes validate the transactions and block.

6. Rotate the round. Retain BPs during their elected term and select BOs for the next round.

7. Confirm and settle. Update transaction status and rewards after checking finality requirements and valid contribution records.

Slot skipping, timeouts, replacement producers, network partitions and chain reorganizations require separate consensus rules. Services must not treat transactions as finally settled before the specified finality conditions are satisfied.

7 HANL coin economics and supply policy

7 1 Native coin specification

Item	Planning baseline
Name and symbol	HAN LONGEVITY Mainnet Coin, HANL
Issuance platform	HAN LONGEVITY Mainnet
Supply reference	Recommendation to retain 10,000,000,000 HANL from the existing HAN LONGEVITY plan
Issuance approach	Recommended allocation and phased circulation within a maximum of 10 billion; genesis issuance mechanics to be finalized
Uses	Service payments, settlement, fees, node participation and bonds, business deposits, rewards and data access

Item	Planning baseline
Existing BSC HANL	Separate migration policy if actual issuance and circulation are verified

7 2 Allocation framework

Allocation	Share	HANL amount
Ecosystem development and participation rewards	50%	5,000,000,000
Team and core contributors	10%	1,000,000,000
Liquidity provision	10%	1,000,000,000
Strategic partners	10%	1,000,000,000
Seed and private investors	10%	1,000,000,000
Marketing and community expansion	5%	500,000,000
Foundation operations and reserves	5%	500,000,000
Total	100%	10,000,000,000

7 3 Sources of demand

Service demand includes products, membership, education and specialist programs. Business demand includes onboarding, promotion, manufacturing and distribution settlement, quality assurance deposits and data or reports.

Network demand includes transaction fees, eligible operator bonds and approved participation conditions. Research and community activity includes collaboration, contribution rewards and reuse of services.

7 4 Network and platform fees

Network fees cover coin transfers and approved on-chain processing. Platform fees compensate for business services such as product sales, onboarding, education and data access. Product proceeds payable to sellers must remain distinct from both fee categories.

The design uses HANL for network fees and permits service operators to sponsor some users' costs. Charging units, minimum fees, computation and storage charges and fee-change procedures require a separate specification.

7 5 Reward funding and sustainability

Research, review and community rewards are disbursed from approved ecosystem budgets. Sales incentives and data royalties are funded under the relevant service or contract and are kept separate from node rewards.

Total HANL disbursements must remain within supply and allocation balances. Period budgets, payment limits and projected reserve exhaustion should be monitored. If fee revenue is insufficient, reward amounts, operating costs and subsidy policies should be reassessed.

7 6 Burn policy

Business-funded buybacks and burns may use an approved budget drawn from revenue or earnings that actually belong to the responsible operator. The 5% to 10% figure in the original proposal is not a fixed rate.

Platform-fee burns may apply to part of the HANL fees earned by the platform. Product proceeds, refund funds, customer deposits and node rewards are not available for discretionary burning.

Network-fee burning requires a separate decision after validating node funding and allocation. Any adopted policy must prevent the same fee amount from being counted both as node compensation and as a burn.

Penalty burns would require verified violations and an appeal process. Amounts needed for compensation must be identified first, and the same HANL cannot fund compensation and a burn simultaneously.

Burn amounts, funding sources, executing wallets and transactions should be disclosed. Burning permanently reduces supply, while deposits temporarily lock coins. Circulating supply can increase through vesting releases even when burns occur, so both measures should be reported.

7 7 Separate deposit categories

Category	Purpose	Release or payment basis
Node operator bond	Operating accountability and eligibility	Exit, violation findings and appeal rules
B2B quality assurance deposit	Contractual responsibilities of manufacturing and sales partners	Inspection, claims and compensation conditions
Membership deposit	Service tiers and benefits	Duration, withdrawal and benefit termination rules
Research program participation	Funding or contractual rights in a particular project	Project contract, loss allocation and outcome conditions

8 Product partner and community policies

8 1 B2B partners

IP holders, manufacturers and brands are onboarded after their business scope, contractual responsibilities, disclosable information and service readiness are assessed. The existing mandatory-deposit concept is retained, with eligible activities, amounts, release and deduction conditions determined by business type.

Where responsibility for counterfeits or defects is established, a quality assurance deposit may fund compensation under the contract. A complaint alone does not trigger an immediate deduction; evidence review, responsible-party assessment and appeals are required.

Strong operating performance may qualify partners for promotional tools, service access or reduced sales fees. Deposit interest and APR are not fixed benefits; they may be considered only when funding and payment conditions have been separately established.

Digital credentials may represent partner status and internal platform permissions. They do not automatically constitute product approval, a statutory license or ownership of IP.

8 2 Consumer membership

Consumers may participate in product use, reviews, surveys, BioQuest, education and community activities, earning HANL for valid contributions. Membership is designed to provide service benefits.

Tier	Existing benefit concept	Revised application principle
Basic	Standard participation and review rewards	Apply valid-contribution criteria and period reward limits
Premium	Additional benefits subject to deposits	Finalize deposit amounts, duration and multipliers before service launch
VVIP	Priority product trials and purchasing or shipping benefits	Set scope according to actual product and delivery costs

The source's examples of 10, 15 and 20 HANL per review, 1.5x and 2x reward multipliers, a permanent 20% discount and unlimited free delivery are illustrative. This revision does not adopt them as guaranteed terms.

8 3 Review rewards and abuse controls

Reward review considers purchase or participation history, information quality, duplication and rights to supply the material. Exclusion and enforcement rules should cover copied reviews, fabricated purchases, duplicate accounts and automated mass submissions.

Reviewers must be able to report unfavorable experiences and adverse reactions. Reporting, consultation and product-safety responses should be handled independently of rewards, with publication scope and consent addressed separately.

8 4 Payments refunds and settlement

Before ordering, users should receive the pricing basis, HANL conversion timing, payment validity period, treatment of price changes and refund rules. Orders should record the coin quantity and reference price, with cancellations and refunds reconciled against processing records.

Procedures should address payment failures, duplicate transfers, incorrect networks or addresses and delayed finality. Shipping or incentive settlement should follow confirmation criteria appropriate to the consensus rules and service risk, rather than block inclusion alone.

9 The data economy and research collaboration

9 1 The R&D Data Market

The R&D Data Market connects datasets, aggregated information, analytical reports and research support services with defined permissions and usage conditions. Paid use is designed to settle in HANL, with user eligibility and purpose checked before payment.

The process comprises contribution, consent and rights checks, quality review, application and approval, HANL payment, permitted service access and contractual contribution rewards. Access approval and coin payment are verified separately.

9 2 Categories of information

IP and research materials require confirmation of the rights holder and contractual usage scope. Manufacturing and quality records require defined partner responsibilities and disclosure limits. Reviews, usage photographs and adverse-reaction information require separate purposes and access groups.

Usage rights, quality and actual research demand take priority over data volume. The origin, processing history, limitations and version of each dataset should be recorded so users can assess the scope of analytical findings.

9 3 Consent retention and access

Contributors should be informed of collection purposes, users, third-party disclosure, retention and reward conditions. Consent for service operation, research and marketing should be distinguished according to purpose.

Original data should be held in storage with access controls, encryption, change histories and usage logs. De-identified information should still be assessed for re-identification risk. Procedures should cover withdrawal of use, deletion requests and subsequent processing.

Only necessary reference records should be written to HANL Mainnet. Access to originals is controlled by a permissions system, and neither HANL holdings nor node status should independently authorize access to sensitive source data.

9 4 Contribution rewards and royalties

Rewards for supplying data and royalties for subsequent use are separate policies. Submission rewards depend on approval of a valid contribution and the applicable budget. Royalties depend on actual contractual conditions being fulfilled.

Contracts should define covered data, contribution assessment, revenue or usage-fee calculations, deductible costs, payment periods and dispute handling. The development of subsequent IP does not automatically create unlimited lifetime payments to every contributor.

9 5 DeSci and BioDAO programs

HAN LONGEVITY retains the direction of decentralized science, or DeSci, and BioDAO programs through which researchers and communities propose and support research. Each program should first define objectives, responsible institutions, budgets, milestones and disclosure scope.

Contribution rewards, sponsorship and outcome-linked participation should be distinguished by program. Outcome-linked participation requires a separate agreement addressing IP rights, fund management, losses on failure, outcome calculations and distribution, supported by the necessary specialist review.

Ordinary HANL ownership, node participation and membership deposits do not automatically grant a share of research proceeds. Research funding participation should be introduced separately from basic payment and reward services, starting with programs whose conditions are ready.

10. Disclaimer

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