1. EXECUTIVE SUMMARY

The Sparket.ai subnet represents the next major development in an existing ecosystem which is designed to democratize access to high-fidelity sports and live event data, and predictive intelligence. By leveraging crowdsourced participation and the latest advancements in AI/ML, Sparket disrupts the traditional centralized sports data model and replaces it with a transparent and decentralized marketplace. Sparket drastically reduces the cost of unique data sets for both the gaming industry and the public, and delivers accurate, low-latency data and wagering systems for any event, empowering emerging sports and gaming organizations to rapidly unlock new revenue streams. Grounded in a foundational patent (US20220188672A1) and trained on millions of proprietary betting data points, our platform provides a robust layer for odds origination, data validation, and custom peer-to-peer wagering.

The subnet project accelerates the grand vision that is already underway : Whether it's a traditional league, a niche local sport, or a Twitch streamer who wants to create markets on how many assists he'll get in the next round, Sparket can aggregate all available data sources to create the markets, odds, and settle the pools. Users can participate in custom wagers or earn rewards by providing data to the ecosystem. Businesses can ingest this data into their own models and processes, or host white-label markets fully powered by the Sparket engine.

The end goal: a self-sustaining ecosystem of event tracking, wagering+settlement, predictive intelligence, and analytics, all of which works to create valuable and actionable datasets and systems for businesses and consumers alike.

Sparket is already strategically positioned to capitalize on the booming wagering and prediction market with existing verticals, and the subnet will swiftly generate additional crucial data and intelligence, establishing a powerful feedback loop that drives strong growth and utility, for both Sparket and subnet participants.

2. TEAM

Sparket is an established B2B organization and was recognized as the 2025 Startup of the Year in the iGaming industry.

Sparket is reimagining the future of gaming with a B2B platform that lets its partners offer a 'bet on anything' system — sports, entertainment, or real-world outcomes — in a fun, social, and dynamic environment. Sparket powers technology behind some of the biggest names in the industry, such as Station Casinos (NASDAQ: RRR), Penn Entertainment (NASDAQ: PENN), Sega Sammy, and multiple tribal groups including Wondr Nation/ Foxwoods. They hold partnerships with up and coming sports leagues like Major League Rugby, the World Jai Alai League, and more.

The founders bring a unique blend of technical and financial expertise:

- Evan Fisher: Evan earned his MBA from Columbia Business School and spent 8 years at Google focused on operations building scalable, user-centric products.
- Aaron Basch: Aaron earned his MFE from UCLA Anderson. He previously created machine learning models for pricing alternative vehicle asset-backed securities—a

background directly applicable to the complex pricing models required for alternative betting markets.

Sparket.ai, for clarity, is a distinct entity established to develop data products for the Sparket platform and manage subnet operations. Its team consists primarily of developers and ML engineers with expertise in sports data, finance, and cryptocurrency.

3. THE PROBLEM: CENTRALIZED MODELS

The current sports data landscape is dominated by large incumbents such as Sportradar and Genius Sports, as well as fragmented specialty data providers. This structure has created primary market failures (and therefore, opportunities for disruption):

- **Prohibitive Cost and High Barrier to Entry:** Smaller organizations, individual bettors, and leagues face significant hurdles due to the prohibitively high cost of quality data, often resulting from manual entry, fragmented sources, and high official data fees. This cost, coupled with the expensive on-premises infrastructure and manual data-entry teams relied upon by centralized data companies, creates a high barrier to entry and leads to extreme distributions in quality data access and outcomes for participants. The reliance on this costly, centralized infrastructure also represents a significant sunk-cost risk as machine intelligence rapidly advances.

4. THE SOLUTION: DECENTRALIZED INTELLIGENCE

Sparket.ai leverages the Bittensor network along with existing systems to build a decentralized alternative: miners will become the computational backbone for an ecosystem of user participation that ultimately will attempt to remove much of the friction from current centralized models.

Instead of users betting on odds that are generated by a risk management team with a permanent house edge and minimal transparency, who are using courtside data collected by manual teams all over the world - what if the users collected the courtside data themselves? Like Uber, but for event data. In the same ecosystem, they can place wagers on events they watch in real-time, or simply participate for free and receive rewards for accurate and speedy updates on event state. The Sparket ecosystem will be able to create a separate user reward system through existing revenue streams and market fees, leaving tao-incentivized miners to do the heavy computational lifting.

The bittensor network incentives are reserved for miners to provide odds origination, outcome verification, and agentic betting strategies, using whichever techniques they choose to compete with. As the user-generated courtside data stream expands, miners will utilize it to further inform their models or algorithms. The obvious path is to start with sports odds data because it is more structured, but such a system will be equally viable for any type of event which has a tradeable market. With a “critical-mass” level of participation and refinement, this system will be able to offer an equal or superior data product to industry incumbents at a small fraction of the cost.

Success in this project moves the industry away from centralized “truth sources” and toward a verifiable, distributed consensus stream for any conceivable event. Sparket.ai also envisions massive opportunities in educational and informational tools for users. Instead of just placing bets against the house, users can leverage ML-driven strategies and agents that suggest potential bets and provide “risk scores” to help participants bet safely, accurately, and with better expected outcomes.

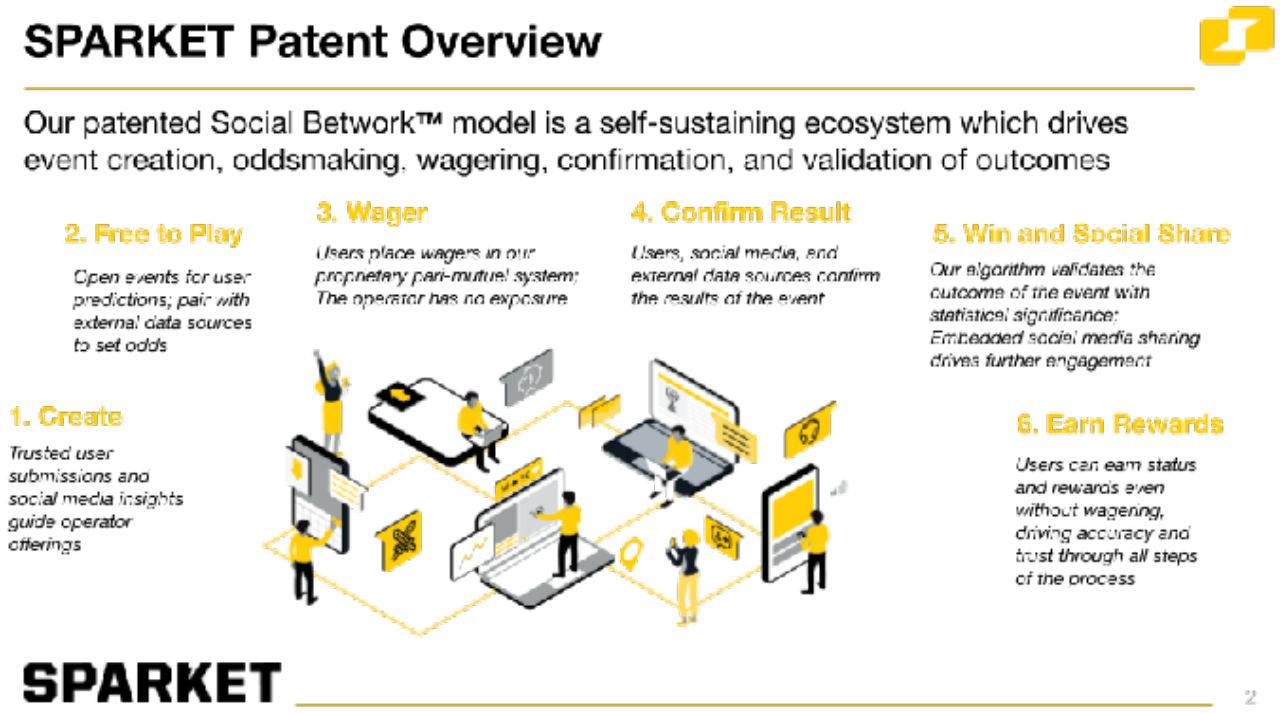
5. INTELLECTUAL PROPERTY: THE SPARKET.AI PATENT

A core competitive advantage of Sparket.ai is its foundational patent, which describes a system for a self-sustaining ecosystem across all elements of the data, prediction, and outcome verification of any potential betting market. The patent has priority back to 2020 and includes features like:

- User-generated propositions (custom bets)
- Odds management and dynamic adjustment based on demand/liquidity
- Settlement logic based on verified external data sources
- Blockchain integration for transparency, traceability, and smart contract enforcement

Central to the system is Sparket's ability to aggregate, normalize, and dynamically weight multiple data sources—including user-generated predictions, market activity, historical outcomes, and third-party verification feeds—to more accurately price events and resolve outcomes. As the platform scales, these weighted inputs continuously refine Sparket's AI models, improving market efficiency, fraud detection, and personalization.

The system can aggregate any data source including data feeds, scraping articles and social media posts, and user inputs. Each data source receives a rating that increases its trust score over time, and thereby improves the confidence of the associated data. Users receive incentives for accurate submissions.



Figures 9a and 9b (seen below) explain how user ratings are adjusted with an ELO-style system

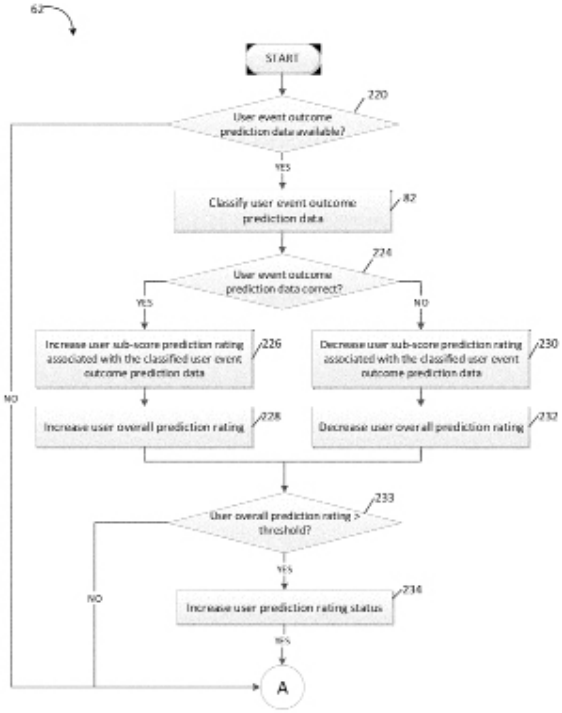


FIG. 9A

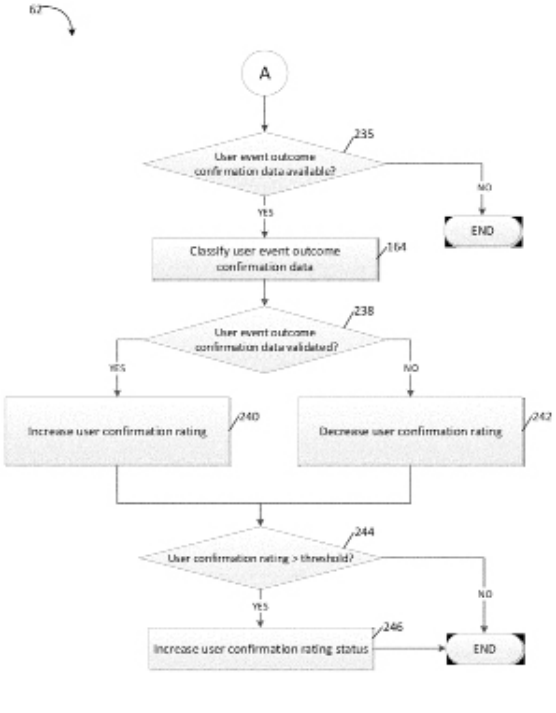


FIG. 9B

"This patent is a major milestone that validates a vision that Sparket had years ago—a future where AI can make wagering safer, more personalized, and radically more accessible," said Aaron Basch, co-founder of Sparket. "The groundwork we laid in 2020 is now paying off as the industry shifts toward intelligent, user-led platforms. What we're building is not just a betting system—it's a new layer of predictive engagement for the modern internet."

Evan Fisher, Sparket's other co-founder, emphasized the long-term commercial potential: "This IP could ultimately become the most valuable part of our company as a B2B service. We've already collected over 1 million data points from user behavior and market dynamics to train the model. That puts us in a unique position to power the next generation of AI-driven prediction markets for partners across media, sports, gaming, and beyond."

6. PRODUCTS AND SERVICES (CURRENT AND FUTURE)

Sparket offers a suite of data and wagering products which will continue to expand and improve with the addition of the subnet:

B2B "BET ON ANYTHING" ENGINE

- A white-label platform for sports leagues, media outlets, and tribal groups, directed primarily at smaller markets which traditionally face difficulties working with larger sportsbooks and data providers.

DATA

- **Pre-game Prediction Data and Odds**
  Advanced analytics and proprietary models for forecasting game outcomes and setting market lines.

- **In-Event Data Streams**
  Crowdsourced and consensus-secured data streams of in-game events
- **Post-Event Validation**
  Ensuring data accuracy and providing verified statistics.
- **Unique Data Sets**
  Accumulation and licensing of brand-new, high-value sports statistics derived from user behavior and market dynamics in both established and emerging markets.

THE SOCIAL BETWORK®(UPCOMING)

- A global community-driven marketplace where users speculate on outcomes of sports, entertainment, or social trends, submit event data and outcomes, and receive rewards for speed, accuracy, and consistency .
- Users can create and share their own unique wagers (e.g., “X celebrity will post on Twitter by Friday”).
- Wagering performance and parimutuel market lines serve as an additional data source for the platform.

CONSUMER BETTING SUBSCRIPTIONS (UPCOMING)

- Information, education, and execution for consumers - helping them to make more informed decisions, mitigate risks, and create sustainable strategies.
- From “analysis and information” all the way to “betting bots” , this product will offer a compelling suite of tools for consumers looking to improve their betting, in an industry where the odds are traditionally stacked against them.

7. DEVELOPMENT ROADMAP

The **Sparket.ai** subnet is poised to assist in building comprehensive datasets and intelligence to support the aforementioned products. The subnet will serve as a core infrastructure layer, testing arena, and intelligence engine for the Sparket platform.

The roadmap for the **Sparket.ai** subnet is divided into the following critical phases:

- **PHASE 00: LAUNCH & REFINEMENT:** Focused on testing subnet node applications, ensuring stability, and hardening the system against exploits. This phase establishes the baseline for odds origination and outcome verification for traditional major sports markets.
- **PHASE 01: LIVE BETTING INTELLIGENCE:** Launching live betting evaluation as “proof” of effective odds origination, as well as capturing execution data and intelligence. A key consideration in this phase is the evaluation of “betting agents” or whole strategies rather than just the bets themselves, capturing more intelligence value.
- **PHASE 02: PRODUCT DEVELOPMENT:** Expanding event coverage to broader events including alternative sports, pop culture, reality tv, and much more, and releasing initial versions of upcoming products for beta testing.
- **PHASE 03: GLOBAL SCALING:** In line with the patent, Sparket’s ecosystem works best when we have many thousands or even millions of users incentivized to submit odds, events, bets, and outcomes. Through affiliate programs, subnet partnerships and product refinement, we aim to create a compelling platform that naturally draws more user growth over time.

8. BUSINESS MODEL AND MONETIZATION

The global gambling and sports betting market is currently undergoing a seismic shift, evolving from a $100 billion industry into a massive, data-driven “predictive economy” projected to exceed $180 billion by 2030. This growth is increasingly fueled by the explosive rise of prediction markets, which have transitioned from niche academic

curiosities to high-liquidity financial platforms. In 2025 alone, prediction market trading volumes surged from under $1 billion to an estimated $40 billion, driven by a 400% growth rate in active users seeking a more transparent, peer-to-peer alternative to traditional sportsbooks. Unlike legacy “closed-loop” systems where bettors play against a house that limits winners and hides high fees in the “vig,” platforms like Polymarket and Kalshi represent the financialization of information. By treating event outcomes as tradable commodities, these markets offer a fairer ecosystem where liquidity is global, “winners” aren’t banned, and real-time odds serve as the world’s most accurate source of predictive truth.

By providing a crowdsourced and verifiable data source across any event, Sparket.ai is well positioned to monetize its service across multiple verticals. It will utilize three primary revenue streams, tightly coupled with existing verticals which are already generating cashflow for Sparket:

- **B2B DATA AND SOFTWARE SERVICES:** Licensing of proprietary, high-value data + systems to sportsbooks, prediction markets, oracles, market makers, data aggregators and other organizations. Note that Sparket is uniquely positioned to conduct this sales process as an established B2B player in this industry with existing relationships, clients, and contracts.
- **B2C SUBSCRIPTIONS:** Regular access to predictive models and validated datasets to individual bettors for use in making smarter wagers.
- **SPORTS LEAGUE LICENSING:** Partnering with sports leagues and media companies to provide more accurate data as an official data source for their events.

Pricing Strategy: Pricing strategies vary widely by product, but the core thesis is this: By leveraging decentralization and gamification, Sparket.ai can offer pricing significantly lower than industry incumbents, accommodating a wider range of customers.

9. INCENTIVE MECHANISM

The current subnet incentive mechanism design evaluates each miner submission against the closing line and the realized outcome to reward early, sharp, and original probabilities rather than late copies. Miners also submit outcomes for finished events, and validators record the settled result to score accuracy.

Note: This section describes the initial design of the Incentive Mechanism, it is guaranteed that it will evolve over time. This section should not be used for miner/validator reference, the subnet documentation will cover the current state of the IM.

SCORING EQUATIONS WALKTHROUGH (END-TO-END)

This walkthrough follows the full scoring path from raw data ingestion to the final SkillScore. Each step explains the surrounding logic and the equations used to transform data into the final composite.

Step 1: Ingest data and define ground truth
Validators ingest provider odds from major sportsbooks and build a consensus closing line for each market and side. Outcomes are recorded when events settle. These two data sources power the two task tracks: odds origination (vs close) and outcome verification (vs realized result).

Notation used throughout:
- Miner odds: O_miner
- Closing odds: O_close
- Miner probabilities: p_miner or p_k
- Closing probabilities: p_close

- Realized outcome vector: y_k (one-hot)
- Submission time: t_submit
- Event start time: t_start
- Minutes to close: t_min
- Decay weight: w_i

Step 2: Score odds origination per submission
Each submission is compared to the closing line. These are the raw signals for economic edge and market efficiency.

$$CLV_{odds} = \frac{O_{miner} - O_{close}}{O_{close}}$$
$$CLV_{prob} = \frac{p_{close} - p_{miner}}{p_{close}}$$
$$CLE = O_{miner} \cdot p_{close} - 1$$
$$MES = 1 - \min\left(1,\ |CLV_{prob}|\right)$$

Step 3: Score outcome accuracy per submission
Once outcomes settle, submissions are scored against the realized result. These raw accuracy metrics feed forecast quality (FQ) and relative skill (PSS).

$$Brier = \sum_{k} \left(p_k - y_k\right)^2$$
$$LogLoss = -\log\left(p_{k^*}\right)$$

Step 4: Convert accuracy into relative skill (PSS)
PSS compares the miner to the market baseline, yielding a relative skill signal that is robust to market difficulty.

$$PSS = 1 - \frac{Score_{miner}}{Score_{baseline}}$$
$$PSS_{brier} = 1 - \frac{Brier_{miner}}{Brier_{baseline}}$$
$$PSS_{log} = 1 - \frac{LogLoss_{miner}}{LogLoss_{baseline}}$$
$$PSS_{blend} = \frac{PSS_{brier} + PSS_{log}}{2}$$

Step 5: Apply time-to-close adjustment
Outcome skill is time-adjusted to reward early correct signals and reduce credit for late copy-trading.

$$f(t) = \begin{cases} f_{min}, & t \le t_{min} \\ 1, & t \ge t_{max} \\ f_{min} + (1 - f_{min})\,\frac{\log t - \log t_{min}}{\log t_{max} - \log t_{min}}, & t_{min} < t < t_{max} \end{cases}$$
$$Score_{time} = \begin{cases} Score \cdot f(t), & Score \ge 0 \\ Score \cdot \left(c + (1-c)(1 - f(t))\right), & Score < 0 \end{cases}$$

Step 6: Aggregate with decay and compute n_eff
All per-submission metrics are aggregated over a rolling window with exponential decay. This emphasizes recent performance.

$$w_i = \exp\left(\ln(0.5) \cdot \frac{age_i}{half\_life}\right)$$
$$\overline{x} = \frac{\sum_i w_i x_i}{\sum_i w_i}$$
$$\sigma = \sqrt{\frac{\sum_i w_i (x_i - \overline{x})^2}{\sum_i w_i}}$$
$$n_{eff} = \frac{\left(\sum_i w_i\right)^2}{\sum_i w_i^2}$$

Step 7: Shrink toward population mean
To reduce small-sample volatility, metrics are shrunk toward the population mean when n_eff is low.

$$\alpha = \frac{\log(1 + n_{eff})}{\log(1 + n_{eff} + k)}$$
$$x_{shrunk} = \alpha \cdot x + (1 - \alpha) \cdot \mu$$

Step 8: Compute rolling aggregates
These aggregates summarize the miner's performance over the window.

$$ES_{adj} = \frac{ES_{mean}}{ES_{std}}$$
$$FQ = 1 - 2 \cdot Brier_{mean}$$

Step 9: Calibration and sharpness
Calibration evaluates statistical reliability; sharpness rewards decisiveness.

$$logit(\hat{p}) = a + b \cdot logit(p)$$
$$CAL = \frac{1}{1 + |b - 1| + |a|}$$
$$Sharp = \min\left(1,\ \frac{Var(p)}{Var_{target}}\right)$$

Step 10: Originality and lead-lag
Originality measures independence from the market; lead-lag measures whether signals tend to move before consensus.

$$\rho = corr(p_{miner}, p_{market})$$
$$SOS = 1 - |\rho|$$
$$Lead = \frac{Moves_{led}}{Moves_{matched}}$$

Step 11: Normalize metrics across miners
Metrics are normalized to a common 0–1 scale for combination.

$$FQ_{norm} = \frac{FQ + 1}{2}$$

$$z = \frac{x - \mu}{\sigma}$$

$$Norm = \frac{1}{1 + e^{-\alpha z}}$$

$$Norm = \frac{rank(x)}{n + 1}$$

Step 12: Build dimension scores
Normalized components are grouped into four dimensions aligned to the tasks.

$$ForecastDim = w_{fq} \cdot FQ_{norm} + w_{cal} \cdot CAL$$
$$SkillDim = PSS_{norm}$$
$$EconDim = w_{edge} \cdot ES_{norm} + w_{mes} \cdot MES$$
$$InfoDim = w_{sos} \cdot SOS + w_{lead} \cdot Lead$$

Step 13: Final SkillScore
The final SkillScore is the single composite used for chain weights.

$$SkillScore = w_{outcome\_accuracy} \cdot ForecastDim + w_{outcome\_relative} \cdot SkillDim + w_{odds\_edge} \cdot EconDim + w_{info\_adv} \cdot InfoDim$$
$$w_{outcome\_accuracy} = 0.10,\ w_{outcome\_relative} = 0.10,\ w_{odds\_edge} = 0.50,\ w_{info\_adv} = 0.30$$

Over time, as many miners submit, normalization and shrinkage concentrate rewards around consistent signal rather than noise: copy-trading tends to converge on the close, which depresses SOS/lead scores and time-adjusted PSS, while genuinely early and calibrated signals sustain higher composite scores. As the miner population grows + improves, z-score or percentile normalization becomes more discriminative, so small, noisy deviations wash out and stable, information-leading behavior compounds. The expected equilibrium is a market where the dominant strategy is to publish honest probabilities early, maintain calibration, and introduce independent information that survives to the close; miners who only mirror consensus lines or submit late can participate but will asymptotically earn less weight and emission share.

TL;DR:
This IM essentially challenges miners to beat the major sportsbook odds measurably and consistently - an exceedingly difficult task. We expect that it will take significant time for miners to build successful systems, and that only a few miners out of the total will achieve significant success (and therefore the lion's share of reward).

10. TOKENOMICS

Under certain circumstances, Sparket.ai may allocate resources toward the discretionary acquisition of subnet Alpha Tokens via the protocol AMM, and/or protocol-defined supply-adjustment mechanisms that may result in the permanent removal of tokens from circulation.

These mechanisms are intentionally included to support anticipated use cases in which aligning subnet growth, incentive coordination, and Alpha Token utilization is considered

useful to the subnet's long-term operation. Any such actions, if undertaken, remain discretionary and subject to subnet conditions, operational priorities, and technical considerations, with no commitment as to timing, frequency, volume, or price.

In addition, Sparket.ai may explore and introduce complementary incentive mechanisms designed to increase Alpha Token participation, retention, and distribution within the subnet and greater crypto community. The possible inclusion of these mechanisms reflects a design preference for aligning subnet success with token-based coordination, rather than a guarantee of any specific economic outcome.

For clarity, the subnet Alpha Token does not represent any claim on Sparket.ai and/or Sparket revenues, products, or commercial activities, regardless of whether such activities generate cashflow. Participation in the subnet or use of the Alpha Token should not be construed as an investment, and no expectation of profit or financial return is implied.

11. CONCLUSION

Sparket.ai represents a new layer of predictive engagement. By combining advanced financial engineering, a foundational patent, and the decentralized power of Bittensor, Sparket.ai is building a future where sports and live event intelligence is accessible, transparent, and fundamentally smarter for everyone.