IIPRS

INTELLECTUAL PROPERTY
VALUATION REPORT

Technology / Invention:
[TECHNOLOGY / INVENTION NAME]

Prepared for:
[CLIENT ORGANIZATION]

Intended Recipients:
Client Organisation • Prospective Investors • Funding Agencies • Authorised Representatives

Report Date:
[REPORT DATE]

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Prepared by *[VALUATION FIRM NAME]* | *[VALUATION FIRM CONTACT EMAIL]*

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⚠ **TEMPLATE USAGE INSTRUCTIONS**

All fields highlighted in **[GOLD BRACKETS]** are template placeholders. Replace each one with the relevant client-specific information before sharing this report.

Patent-Specific Data: *Patent numbers, filing dates, grant dates, PCT application numbers, and inventor names have been removed. While removing a patent number prevents direct name-linking, note that patent databases are publicly searchable by technology description and filing date. It is recommended that this template be shared only with recipients already party to the engagement, and that the completed report be marked 'Privileged & Confidential'.*

Background

IP Subject to Valuation Exercise

This valuation report has been requested by

[CLIENT ORGANIZATION] in respect of a patented technology, specifically, an unmanned ground robotic platform featuring a distributed drive-wheel architecture and multi-terrain mobility system ("IP") developed by the Inventor. The IP has been granted a patent in India, and is further supported by a PCT publication for potential foreign expansion, and is positioned within the growing defence, robotics, and hazardous-environment operations market.

The brief details of the patent protection available to the IP are as follows:

Particulars	Details
Type of IP	Patent: Mechanical & electromechanical system for UGVs

Jurisdiction	India (Patent Granted) US, EU & Asia (PCT Application filed for international potential)
Patent No.	*[PATENT NUMBER]*
Filing Date	*[FILING DATE]*
Grant Date	*[GRANT DATE]*
PCT Application No.	*[PCT APPLICATION NUMBER]*
Inventor / Applicant	*[INVENTOR NAME]*
Status	IN: Granted PCT: Filed

Background of the IP

The present IP for the chassis-less unmanned ground vehicle (UGV) emerges from clear operational gaps in hazardous environment mobility and situational assessment.

Many critical scenarios such as collapsed structures, mined or contaminated zones, confined industrial tunnels, and conflict environments pose unacceptable risks for human entry, yet require reliable ground-level inspection and data gathering. Aerial drones, while useful for broad visual coverage, cannot navigate obstructed or narrow pathways and offer limited insight into terrain-level hazards. Conventional UGVs, most of which rely on a rigid central chassis and centralised drive components, face constraints in manoeuvrability, adaptability, and redundancy when operating across irregular, rubble-filled, or steep environments.

The patented system under the IP seeks to address these challenges by replacing the conventional chassis with a distributed architecture in which each wheel independently houses its motor, power supply, and control electronics, supported by resilient joints and terrain-assisting flippers. This approach is designed to enable a lightweight, modular, and terrain-responsive platform capable of navigating environments where existing human or robotic methods are limited.

The need for such systems is reinforced by the steady rise in demand for UGVs across defence forces, surveillance and perimeter-security operations, search-and-rescue agencies, industrial inspection in hazardous facilities, and high-risk sectors such as mining and energy. These fields increasingly depend on unmanned systems

to reduce personnel exposure, improve real-time situational awareness, and support mission continuity in environments unsuitable for human presence. As a result, technologies that enhance UGV mobility and adaptability, such as the one covered under the IP, align with growing operational requirements in both public and private sectors.

Key Elements of the IP

A. Distributed Wheel Architecture

- At least two pairs of wheels, each containing a hollow shaft with wheels mounted at both ends.
- Each wheel houses its own motor, motor-driving unit, batteries, and microcontroller, forming what the inventor terms an "agile wheel".

B. Resilient Joint Coupling

- Wheel pairs are movably coupled using resilient / spring-loaded joints, enabling articulation and adaptability over uneven terrain.

C. Flippers for Terrain Navigation

- At least one flipper is positioned at each end of the hollow shaft.
- Flippers assist in lifting, dragging, and stair climbing, addressing mobility challenges in rubble, mud, and obstructed environments.

D. Embedded Communication & Sensor Suite

Communication system includes:

- Antenna to send / receive signals;
- Image-capturing devices (thermal, infrared, 360° capable);
- GPS / Positioning module.
- Multiple AI-assisted terrain sensors deployed on the hollow shaft and near each wheel for real-time decision-making.

E. Additional Structural Features

- Elastic wheel coating for improved traction.
- Brackets for tools and water pipes to enable field functional extensions (e.g., carrying payloads, supplying resources).

- LEDs on the shaft for low-light operations.

Key Differentiators of the IP

Chassis-less architecture enabling 40–50% weight reduction	Fully self-powered agile wheels	Highly modular design supporting multiple N-wheel configurations	Reduced fabrication and assembly complexity and cost	Inherent suitability for defence, surveillance, and industrial inspection

Key Milestones Related to the IP

A. Field / Military Trials

The Inventor has developed a prototype of the chassis-less UGV and has undertaken the following field trials:

- [Trial Location 1] — 2 occasions, approximately 3 months
- [Trial Location 2] — 15 days
- [Trial Location 3] — 15 days
- [Trial Location 4] — 2 days
- [Trial Location 5] — 1 month
- [Trial Location 6] — 10 days

> **Template Note:** *Replace [Trial Location 1–6] above with the relevant field-trial sites. Avoid including unit-level military designations in documents circulated beyond secure channels; use generic location descriptors where appropriate.*

B. Letter of Intent (LOI): Based on the field trials conducted, the Inventor has received a Letter of Intent for ***[NUMBER OF UNITS]*** units of the chassis-less UGV.

C. Technology Readiness Level: The Inventor has claimed that the chassis-less UGV has reached a TRL between 7 and 8 — i.e., system prototype demonstration in an operational environment — and is close to development of the final product.

D. Proprietary Article Certificate (PAC): The Inventor has claimed to have received a PAC from the relevant procurement authority for specific geographic regions.

Key Risks Associated with the IP

- The IP covers hardware and mechanical systems but not autonomy, navigation, or communication software required for commercial UGV deployment.
- Distributed motors, sensors, and controllers across wheels may increase production complexity and QC requirements, thereby delaying development of a production-ready version of the prototype.
- The patent is granted only in India; foreign filings are not yet secured. Despite a PCT publication, international markets remain unprotected, weakening global commercialisation potential and increasing risk of replication outside India.
- UGVs in defence and high-risk industries require extensive field testing, endurance trials, and agency approvals.
- Established competitors have mature, field-tested systems. Although the patent's distributed drive architecture differs, customers may prefer known, validated platforms unless this system demonstrates substantial performance benefits.
- Defence and public-sector demand, highlighted as major markets, often involves long decision timelines, budget dependency, and stringent compliance requirements. Misalignment with procurement expectations poses commercial uptake risk.
- Robotics and UGV markets evolve rapidly, especially with AI-driven autonomy and SLAM navigation. Without ongoing R&D in software, sensors, and embedded systems, the mechanical innovation alone may be insufficient.
- Defence-related products can be subject to strict export control restrictions, thereby reducing export potential.

Purpose of the Present Valuation Exercise

1. The Inventor is under the process of developing the production-ready version of the chassis-less UGV based on the IP and is exploring various funding opportunities, including from government-backed initiatives specially catering to the development of defence technologies. In this context, the Inventor has approached the Client Organization for obtaining funding and financial assistance.
2. This report has been prepared to serve as a formal IP valuation document for presentation to prospective investors, funding agencies, and other authorised stakeholders. It provides an independent, methodology-driven assessment of the economic value of the IP to support informed investment and funding decisions.

Licensing / Business Strategy

With the size of the global UGV market expected to reach USD 4 Billion and the Indian UGV market expected to grow to USD 800 Million, the Inventor expects to commercialise the IP in the following manner:

3. Production and direct sale of UGVs to defence establishments, public sector undertakings, and private organisations.
4. Licensing the platform design of the UGV to other OEMs.
5. Licensing of derived products of the IP to earn royalties.

Valuation of Invention

Selection of Appropriate Valuation Approach

The Organisation for Economic Co-operation and Development (OECD), the International Valuation Standards Council (IVSC) and various accounting bodies recognise the following three main valuation approaches:

1. Market Approach

In this approach, the appraiser compares the asset with similar items that have been sold or listed for sale in the appropriate primary and secondary markets using the selected premise of value. The market approach shall be adopted only if adequate information is available about comparable intangible assets from a recent transaction and there are instances of orderly transactions that can be compared with the intangible asset to be valued.

2. Income Approach

In this method, value is determined by reference to the present value of income, cash flows, or cost savings generated by the business.

The value of an IP under the Income Approach is the present value of the royalty revenues to be generated by the IP for the business.

The income so determined is adjusted with any related expenses pertaining to the maintenance or enhancement of the intangible asset. The projected net cash flows are then discounted to present value using a risk-adjusted discount rate.

Common valuation methods under the Income Approach include:

- Relief-from-royalty method
- Multi-period Excess Earnings Method (MEEM)
- Discounted Free Cash Flow Method
- Greenfield method
- Distributor method

3. Cost Approach

Where there exist no identifiable revenue streams, the cost approach estimates the fair value of an asset by approximating its depreciated replacement cost, which would include all costs necessary to construct a similar business of equivalent utility at prices applicable at the time of reconstruction. This method is most commonly applied to internally developed and used products or assembled workforce — i.e., IPs that generally do not generate revenue.

Suitability of Selected Approach

While there is no universally accepted approach to determine the fair value of a business, fair value measurement requires professional judgement to develop assumptions and estimates and depends on the actual facts and circumstances of the transaction.

In the present case, while there are many similar technologies / IPs, information related to a directly comparable transaction is not readily available. Accordingly, the Market Approach cannot be used.

The Cost Approach is generally used where it would be possible for market participants to recreate a business of similar utility to the subject asset, there are no legal protections (e.g., patents, trademarks) or other barriers to entry, and the business could be recreated quickly enough that a market participant would not pay a significant premium for the ability to use the subject asset immediately. These conditions do not apply here.

In the present case, the IP can be commercialised by developing various use cases in sensitive, high-growth sectors. Ownership of the IP which enables development and manufacturing of UGVs is a key element helping the Inventor differentiate itself in the growing UGV market.

Accordingly, the Relief from Royalty Method under the Income Approach has been selected as the most suitable for the present exercise.

Under this approach, the value of the IP is estimated by quantifying the hypothetical royalty savings the Inventor would realise by owning the IP outright, rather than licensing it.

Assumptions

- Average royalty rate which the Inventor can earn by licensing the IP will be 1% of net revenue generated by the licensees. The 1% royalty rate is considered appropriate considering published royalty benchmarks for defence-technology licences to private entities (range: 0%–2%).
- Corporate income is subject to a 25.17% corporate tax rate in India.
- The IP has a useful life of at least 8 years.
- The sales projections shared by the Inventor are assumed to be realistic and feasible.
- 1 USD = INR 90 (exchange rate as at the valuation date).
- Considering the technology is at TRL 7 and will require further time to reach TRL 9, the risk associated with the IP has been assessed at 33%.

Valuation under the Relief from Royalty Method

Valuation Formula

$$FV = PV(r) \times \Sigma [\, Revenue \times Royalty \times (1 - Tax) \,]$$

Where: Revenue = Expected revenue to be generated by the intangible asset being valued; t = remaining useful life; r = discount rate; Royalty = Expected royalty as a % of revenue.

Discount Rate

Cost of Capital	15% (Damodaran, India, Aerospace / Defence)
Risk Premium	10%
Discount Rate	25%

Valuation Model — Annual Projections (INR Crores)

Particulars (INR Crores)	2025	2026	2027	2028	2029	2030	2031	2032
Revenue	30.00	125.00	400.00	600.00	1,000.00	1,500.00	1,750.00	2,000.00
Royalty Payable	0.30	1.25	4.00	6.00	10.00	15.00	17.50	20.00
Tax Adjustment Benefits	0.08	0.31	1.01	1.51	2.52	3.78	4.40	5.03
Post Tax Royalty Savings	0.22	0.94	2.99	4.49	7.48	11.22	13.10	14.97

Summary Valuation

Present Value of Royalty Savings for Next 8 Years (INR Cr.)	14.80
Less: Risk associated with under-development technology	4.88
Less: Cost to be incurred by the Inventor to maintain IP	0.12
VALUATION OF IP (INR CRORES)	**9.80**

Valuation Certificate

In view of the above-stated analysis and due diligence of the IP created by the Inventor, and further based upon the information as made available by the Inventor, we hereby certify that, on a conservative basis, the valuation of the IP as per the Relief from Royalty Method under the Income Approach can be placed at approximately:

INR 9.8 CRORES

(Indian Rupees Nine Crore and Eighty Lakh Only)

For ***[VALUATION FIRM NAME]***

Executed by:
[AUTHORIZED SIGNATORY NAME]
Designation:
[DESIGNATION]

Date:
[DATE]
E-Mail:
[EMAIL ADDRESS]

Disclaimer

1. The information provided in this report is largely based on the information provided by the Inventor.
2. Database and information sources produced by the Inventor are believed to be reliable by the Valuation Firm.
3. The present valuation is based on the claim by the Inventor that the IP under consideration is novel and capable of achieving the projected revenues, and can be scaled further.
4. While the Valuation Firm has used the best resources for the work of business valuation, the Valuation Firm disclaims all warranty as to the accuracy, completeness, or adequacy of such information.
5. The valuation is limited to the present time and does not apply after the lapse of a considerable period; it may change with the passage of time.

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