

## Robot Locomotion

# Call for Proposals: TA1 Integrated Robot Bodies and TA2 Foundational Technologies

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## [SECTION 1: Programme Thesis and Overview](#)

ARIA wants to revolutionise how robots move and the environments they operate in. Much of the work we need robots to do is in places they can't yet get to, at least not while carrying useful equipment, coping with changing conditions, and operating for long enough to make the trip worthwhile. Robots can now do remarkable things in controlled settings, but none is yet trusted to carry essential supplies across a flooded, debris-strewn street. Most current robots rely on body designs and components that assume limited contact with the environment. Few are built to absorb repeated impacts or hold on without burning energy, and fewer still keep working in the field for long enough to be worth deploying.

We believe these limitations reflect fundamental inadequacies of the physical body, and as such can't be overcome with compute or AI alone. The Robot Locomotion programme is a four-year effort to change that. We are not seeking incremental refinement of existing designs. We are seeking radically new approaches to robot hardware that can unlock order-of-magnitude improvements in metrics such as efficiency, robustness and power density. Equally ambitious proposals could enable valuable capabilities beyond the reach of existing approaches, or combine improvements that make a previously impractical task viable. These gains must hold under realistic operating conditions, without unacceptable sacrifices in other essential capabilities. Our ambition is to change what robots can practically and economically do.

The programme is open to any mode of locomotion: walking, running, jumping, crawling, burrowing, flying, swimming, climbing, rolling and more, as well as hybrid modes that combine any of these. We are looking for advances that enable valuable work in environments where existing robots, vehicles or manual methods are inadequate, unsafe, unreliable or uneconomic.

This solicitation offers two routes: **TA1 Integrated Robot Bodies** and **TA2 Foundational Technologies**. Across both routes, the fundamental advance must lie in physical technology or body architecture. [Section 3](#) sets out the evidence and demonstration requirements; [Section 4](#) defines eligible work and scope boundaries.

TA1 will make larger awards to a small number of teams to build integrated robot bodies for valuable use cases. Teams will work towards a Target Robot Profile (TRP): a quantitative specification of the capabilities, operating conditions and practical and economic requirements a robot must meet to deliver a compelling advantage over the strongest credible alternative in a defined use case. At the end of their four-year project, they will demonstrate a field-testable prototype in an independently assessed real-world challenge, with strong supporting evidence that its enabling physical capabilities will deliver an overwhelming, commercially relevant advantage at deployment.

TA2 will make smaller awards to develop and test foundational physical technologies or body architectures with the potential to transform locomotion. Projects must resolve a critical scientific or engineering uncertainty, but need not deliver an integrated robot during the award.

A solicitation for a third technical area, TA3, will be announced separately. TA3 will examine how robot locomotion technologies can be developed and deployed so that their benefits are broadly shared, including the effects on the work currently done by people, how robots and people operate alongside one another, and which deployment models maximise widespread benefit.

## SECTION 2: Programme Objectives

The programme aims to expand where robots can go and what they can accomplish. Success means robot bodies that do valuable work no machine can do economically today, together with the technologies and companies to carry them beyond the programme. Its objectives are to:

- **Open new domains and applications:** enable valuable work in places not designed for machines, from climbing inspection of structures and delivery over rough ground to long-endurance offshore operations and quieter, higher-payload aerial logistics.
- **Deliver a step change in locomotion capability:** physical capabilities demonstrated in independently assessed real-world challenges, enabling a decisive,

commercially relevant advantage over the strongest credible alternative at deployment.

- **Design for the field over the full operating life:** durability, robustness, maintainability and cost, not only peak performance.
- **Build a foundational technology base:** physical technologies that many current and future robot bodies can use.
- **Create lasting value:** credible adoption pathways and follow-on investment, leading to investable companies, lasting benefit to the UK, and benefits that are broadly shared.

We think these objectives can be achieved through robot bodies whose natural dynamics are better matched to the demands of their intended tasks: bodies that absorb disturbances, manage contact, store and return energy, survive repeated shocks, have physical properties that encourage stability, and operate for useful durations and with payloads that make their use worthwhile.

Illustrative examples of potentially relevant technical directions include:

1. **Generating and transmitting force.** New forms of actuation and transmission, including artificial muscles, variable-stiffness mechanisms, electromagnetic transmissions, compliant transmissions, and alternatives to conventional high-ratio geared electric drives.

2. **Managing energy and heat.** Elastic energy storage and return; resonant mechanisms that recover energy during movement; power or thermal architectures that improve endurance; harvesting energy from the environment (e.g. wind, thermals, waves or flow); holding position without power through clutches, brakes or latching.

3. **Managing contact, impact and flow.** Combinations of compliant and rigid structures; impact-tolerant designs; and body forms adapted to the terrain, fluid flow or contact conditions of the intended task. This includes wings, fins and morphing surfaces for flying and swimming bodies, and designs that are quiet, low-downwash and intrinsically safe near people.

4. **Combining structure and sensing.** Load-bearing components, feet, skins and body-integrated sensors that reduce mass, improve contact, or provide local information about the robot's interaction with its environment.
5. **Adapting technologies from adjacent sectors.** Repurposing components, materials or manufacturing approaches developed outside robotics where, with appropriate adaptation, they could overcome a constraint in robot locomotion.
6. **Hybrid systems.** Systems that combine or transition between modes of movement (for example, rolling and climbing, flying and perching, or swimming, and crawling) where this produces a meaningful operational advantage.
7. **Designing for field use over the full operating life.** Body architectures and materials that make maintenance, repair, deployment, recovery or operation in harsh environments substantially easier or cheaper, rather than optimising only peak technical performance. This includes self-healing, damage-tolerant or easily replaceable structures, sealing against water, dust and temperature extremes, and graceful degradation after partial failure.
8. **Adhesion and attachment.** Claws, microspines, electrostatic, gecko-like or magnetic adhesion and perching mechanisms for climbing structures and holding position.
9. **Difficult media and shape changing.** Bodies that move through sand, mud, soil or debris, including burrowing, and bodies that change shape or stiffness to suit the terrain.
10. **Co-design and rapid manufacture.** Morphology optimisation, co-design of body and control, and rapid manufacture of compliant bodies, with the test methods needed to measure their performance.

The above list is not exhaustive, and does not indicate favoured directions.

## **SECTION 3: Technical Evidence, Metrics and Validation**

This section sets out the evidence required at application and during the award, and how ARIA will assess progress and locomotion advantage. Applicants should provide evidence and a credible plan proportionate to their starting point. We expect more evidence from more mature technologies, while earlier-stage proposals may rely more on modelling, early experiments and a clear de-risking plan.

### **3.1 TA1 Integrated Robot Bodies**

TA1 seeks a step change in physical locomotion capability that enables valuable tasks in places or conditions that current robots cannot reliably access. Teams should identify a primary use case and prospective first customers, with evidence of substantive engagement with the relevant sector, end-users and economic buyers. Explain both the proposed physical advance and why customers would adopt the resulting system.

TA1 proposals should normally target at least a tenfold improvement over the projected state of the art at the likely deployment date in a headline figure of merit, such as cost per useful task or area inspected per deployment, along with aggressive cost and reliability targets specified below.

TA1 teams should demonstrate both technical and commercial expertise along with deep experience of the proposed use-case and its challenges.

### **Programme timeline and structure**

TA1 projects run for four years across three phases, with down-selection at the end of Years 1 and 2 ([Table 1](#); funding and progression are described in [Section 5](#)).

The programme endpoint is an integrated, field-testable prototype. Given the novelty sought, we do not expect a deployable product within the available timeline and budget. Our ambition is a prototype with sufficiently compelling performance to change the

conversation around robot capabilities, and attract major follow-on investment for further development and commercialisation.

ARIA will down-select TA1 teams at two gates, at the end of Year 1 and the end of Year 2, against the criteria set out below. Only teams that meet the quality threshold will be eligible to continue, and meeting it does not guarantee continuation: at each gate we will select as many qualifying teams as the available budget allows. If more teams qualify than the planned budget can support, the programme team will seek additional ARIA funding before deciding how many can continue, but additional funding cannot be guaranteed. Where the available budget remains insufficient to support all qualifying teams, we will select the most competitive against the criteria below.

Gate 1 (end of Year 1): ARIA will assess whether:

- The highest-risk technical and commercial assumptions behind the body-level thesis have been tested, and the results justify building a prototype around that thesis.
- The Target Robot Profile has been refined with end-users and economic buyers, with a substantiated comparator baseline and target metrics, and the case that locomotion hardware is on the critical path still holds.
- There is a credible plan for the remaining phases, especially Phase 2: e.g. the basis or metrics used to select final components and interfaces has been established; dependencies identified; partners confirmed.
- The team and commercial foundations are in place with key hires made, and a plausible strategy for development and commercialisation beyond the ARIA award.

Gate 2 (end of Year 2): ARIA will assess whether:

- An early prototype demonstrates the core locomotion advantage in a representative environment designed to reflect the intended use case, although it may be in a test rig or prepared site rather than the field, with performance measured against the target metrics and relevant comparators.
- Remaining components and the body as a whole have a credible path to a field-testable prototype within Phase 3.

- A near-final challenge design and comparator have been proposed and agreed with ARIA, at least in principle.
- There is an updated, costed Phase 3 plan through field trials to the challenge, with a manufacturing plan and a strategy for financing subsequent development and commercialisation.

| Phase / Gate | Duration / timepoint | What happens                                                                                                                                                                                                       | No. of teams | Est. budget per team | Estimated Budget |
|--------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------|------------------|
| Phase 1      | Year 1               | TA1 teams de-risk their highest-risk technical and commercial assumptions, refine their commercialisation strategy, Target Robot Profile and target metrics, and may test multiple competing component approaches. | 6–8          | £1-2m                | £8m              |
| Gate 1       | End Y1               | ARIA assesses whether evidence supports the central technical and commercial proposition and a credible integration plan, then selects Phase 2 teams. Teams may down-select components.                            | —            | -                    | —                |
| Phase 2      | Year 2               | Build early prototype; incorporate initial versions of selected components; continue to develop the customer, adoption and field-trial case.                                                                       | 4–5          | £2-3m                | £10m             |
| Gate 2       | End Y2               | ARIA assesses whether prototype evidence and the adoption case justify full integration and field trials, then selects Phase 3 teams.                                                                              | —            | -                    | —                |
| Phase 3      | Years 3-4            | Develop more advanced prototypes; conduct pilots and field trials; finalise end-of-programme challenges with ARIA.                                                                                                 | 1–3          | £8-12m               | £24m             |
| <b>Total</b> | <b>~4 years</b>      |                                                                                                                                                                                                                    |              |                      | <b>~£42m</b>     |

Table 1. Timeline for TA1 Integrated Robot Bodies, with phases and gates. Budgets are indicative only. TA1 teams may request a maximum of £15m across all phases. Contracts will be signed for 4 years and the total budget, with go/no-go milestones at the gates. ARIA may sign contracts totalling more than £42m in the expectation that some teams will be down-selected.

## Target Robot Profile

TA1 teams should specify the metrics of their Target Robot Profile (summarised in [Table 2](#)). Each team must address the programme-level requirements concerning access, cost, and reliability, and should normally target at least a tenfold improvement in a headline figure of merit.

That said, we recognise the difficulty of coming up with requirements that apply in all possible situations, and exceptions will be considered where applicants make a compelling case that the targets below should not apply.

At full proposal, the Target Robot Profile should be submitted in as much detail as possible. Applications with a more detailed and informed initial estimate are likely to be more competitive. Target metrics may be adjusted during contract negotiations depending on feedback from external experts, and will then be refined over Phases 1 and 2. They will be fixed by Gate 2.

### Programme-level requirements

#### *Access*

The programme seeks robots that can access places beyond the abilities of current robots. TA1 teams should specify the places the robot will be able to access while meeting the other conditions specified below, and explain why this is not possible currently. “Beyond the abilities of current robots” is assessed while holding current robots to these same conditions. If current robots can theoretically access the place but only at huge expense or with an unacceptable risk of failure, this counts.

#### *Cost*

For an equivalent useful outcome, teams should target a projected total cost to the customer of at most one tenth that of the strongest credible alternative at the likely deployment date. This does not need to imply the robot itself is cheaper than current robots; the cost benefit could be realised through improving human productivity. State the manufacturing volume, utilisation, system lifetime and other assumptions underpinning the estimate. Where no

credible alternative can perform the task, substantiate the economic viability and value of the new capability as the basis for adoption. We accept considerable uncertainty at the point of application but want to see that realistic assumptions support a potential path to this figure.

### *Reliability*

TA1 systems should normally target fewer than one unplanned robot body failure per 10,000 robot operating hours, under a defined mission profile and maintenance schedule. By body failure, we mean a physical problem, such as breakage or loss of a component, that compromises the mission or requires unplanned operator intervention. The “once per 10,000 hours” target does not require an individual robot to have a 10,000-hour service life. For example, a robot may be designed to be destroyed (in a safe and environmentally acceptable fashion) in the course of completing its mission, and this would not count as an unplanned failure.

Since it will rarely be feasible for teams to demonstrate achievement of this target through whole-robot testing within the project lifetime, applicants should explain what is needed to achieve this target and how they will substantiate that.

*Example: operating assumptions require a quadruped to operate for 5000 hours without limb failure. The team estimates the number and severity of impact shocks each limb would encounter during deployment, then applies those shocks to an isolated limb in the lab over a short timescale to test their effect.*

### *Headline figure of merit*

Teams should summarise the advantages of their robot as a single, customer-focused headline figure of merit, for example cost per useful task or area inspected per deployment, depending on the use-case they are targeting. Use the strongest credible alternative for the customer outcome; individual body-level metrics may use different, technically relevant comparators.

Teams should normally target at least a tenfold improvement in this headline metric over the projected state of the art at the likely deployment date. We recognise that transformative advances cannot always be expressed as a tenfold improvement. Exceptions will be considered where a project enables a valuable capability unavailable through other credible

approaches, or where smaller improvements cross a decisive operational or economic threshold.

## Body-level metrics

The headline figure of merit states what the customer gains. The body-level metrics quantify the physical advances that enable the headline gain. These body-level targets must be demonstrated by programme end, with technically relevant comparators projected to that date. Advantages in one metric must not be bought with unacceptable losses elsewhere.

The following examples give hypothetical headlines, robot morphology and body-level metrics. They are included purely for illustration and do not indicate preferred areas.

- *Example: 100x increase in area surveyed per person-hour worked.*

*A subsea robot conducting ecological surveys around complex reef habitats targets a 30 dB reduction in radiated noise over a specified frequency band relative to a comparable thruster-driven vehicle performing the same manoeuvres. It must follow reef contours and hold position for acoustic observations under specified current conditions, enabling extended surveys without accompanying divers while limiting disturbance to marine life. The robot must cover a 10 km survey route between recharges, carrying and powering a 10 kg sensor and data-logging payload. A transit speed of 0.5 knots is sufficient.*

- *Example: 50x reduction in person-hours spent at height*

*A hybrid flying/climbing wind-turbine inspection robot can fly between blades and turbines, then crawl over blades to perform contact ultrasonic inspection where rope-access technicians would otherwise be needed. Modest flight speed and operation within a specified low-wind envelope are acceptable.*

- *Example: 10x reduction in cost per inspection.*

*A shape-changing pipe inspection robot specifies passage through 30 mm constrictions—five times narrower than those accessible to the strongest credible alternative carrying an equivalent sensor payload, enabling damage to be located from existing access points and*

*avoiding the need for excavation. Average speed can be slow, but the robot must complete the specified route and return for recovery without becoming stuck, shedding components or requiring unplanned intervention in any trial of a defined repeated-test programme.*

## Mission conditions

One reason it is hard to compare robots is that performance (range, power consumption, etc) depends critically on the conditions under which performance was tested. The Target Robot Profile must therefore specify how results are measured, so that the comparator, the prototype and the end-of-programme challenge are assessed on the same basis. By the end of the programme, this specification will have to be rigorous and detailed, but at application stage we only expect a high-level summary.

| Target Robot Profile         |             |                                                                                                                                                                  |                                                                                                                                      |
|------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Tier                         | What it is  | Target                                                                                                                                                           | Evidence                                                                                                                             |
| Programme-level requirements | Access      | Robot can access places <b>beyond the abilities of current robots</b>                                                                                            | Explain why current robots cannot access these places, at least not while also meeting the cost, reliability and mission conditions. |
|                              | Cost        | Projected total cost to the customer for an equivalent useful outcome at most one tenth that of the strongest credible alternative at the likely deployment date | An argument for how the proposed robot could reduce total cost to the customer at least tenfold, accepting considerable uncertainty  |
|                              | Reliability | Fewer than one unplanned failure <b>per 10,000 robot operating hours</b>                                                                                         | Identify the key body attributes needed and explain how you propose to test these.                                                   |

|                                 |                                                                                                                                                  |                                                                                                                                                                                                                               |                                                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Headline figure of merit</b> | The adoption-critical outcome for the use case, e.g. cost per inspection, kilometres of pipe inspected per deployment, area inspected per charge | Normally tenfold better than the projected performance of the strongest credible alternative at the likely deployment date. Where no credible alternative exists, the target should exceed the threshold needed for adoption. | Evidence the current performance of the strongest credible alternative and the projection to the relevant comparison date. Evidence of the adoption threshold. |
| <b>Body-level metrics</b>       | The physical robot body metrics that produce the headline gain                                                                                   | As many as needed: e.g. endurance at rated payload, minimum passage diameter, holding power while perched                                                                                                                     | State the metric, unit and targeted value. Explain how these robot body metrics will produce the headline gain.                                                |
| <b>Mission conditions</b>       | Conditions under which the above are to be measured                                                                                              | As needed: e.g. payload; mass, power and energy required for autonomy; operating environment (e.g. terrain, weather, flow)                                                                                                    | Justify why these conditions are appropriate for the intended use-case.                                                                                        |

Table 2. Metrics to be addressed for TA1 proposals.

## End-of-programme challenge

TA1 teams should propose an initial challenge at application and refine it during the programme. It must demonstrate the agreed body-level metrics under operationally relevant conditions. By programme end, the field trial, supporting evidence and analysis must provide strong evidence that the headline metric and cost and reliability requirements can be met at the likely deployment date. Where these outcomes depend on autonomy, dexterity or other capabilities outside the programme, identify those dependencies and substantiate the assumptions about them. ARIA-appointed independent assessors will validate the challenge, comparator and ambition of the targets, and run the field trial. Direct competition with the incumbent may be used where practical.

The demonstration must establish that the robot can reach and move through the intended environment under operationally relevant conditions while carrying a realistic payload for the proposed use case. It need not perform the useful task itself or be fitted with the final

task-specific equipment. Representative payloads must reflect the relevant mass, dimensions and distribution of that equipment, and the demonstration must account for its power and energy requirements where these affect locomotion performance or mission duration. Where the useful task imposes significant mechanical loads on the robot body, the demonstration should also represent those loads.

Teleoperation is acceptable for the demonstration, even where eventual deployment would require autonomy. In that case, the robot must demonstrate realistic payload, power and energy capacity for the sensing and onboard computation needed for future autonomous operation over the required mission duration.

Tethers and external power are acceptable only where they would be acceptable in the intended deployment. Where deployment requires untethered operation, the demonstration should not depend on a tether. The Target Robot Profile and challenge must specify the mode of operation, supporting equipment, payload and power assumptions, and distinguish what the prototype demonstrates from capabilities to be added subsequently.

*Example: a drone could demonstrate flight out into the North Sea and access onto offshore wind turbines in operationally relevant conditions while carrying a payload representative of the sensors and dexterous manipulators needed for inspection and maintenance. It would not need to actually carry out those tasks or be equipped with working manipulators, and it could be operated remotely even if the eventual product would be autonomous.*

## 3.2 TA2 Foundational Technologies

TA2 projects may address single components or explore new body designs. We are looking for projects that could enable a new capability, cross a decisive practical threshold, or otherwise make a compelling contribution to future locomotion systems. The full performance ambition does not need to be realised over the 30-month project lifetime, but the project must produce decisive evidence about whether and how it can be achieved.

TA2 projects should aim for a step change in physical technology, normally (a) targeting at least a tenfold (10x) improvement in a relevant measure, such as durability or power density, over the projected state of the art at the relevant comparison date, or (b) enabling capabilities current robots do not have at all. Applicants should identify and justify the comparison date, explain why their targets are ambitious in light of emerging technologies and how the improvement could translate into a substantial locomotion advantage after accounting for relevant trade-offs.

A strong TA2 proposal will thus set out:

- A technically credible hypothesis for a physical (hardware) technology advance.
- How the proposed technology changes system-level capabilities so as to overcome specific limitations in current or plausible future locomotion systems.
- Quantitative targets under defined conditions, compared with current and projected state of the art, and the evidence the award will produce to establish progress towards them.
- The decisive uncertainty, likely failure modes and a work plan that attacks the most important uncertainty first.
- A pathway to future use, translation or commercialisation, proportionate to the maturity of the technology.

### 3.3 Overview of TA1 and TA2

[Table 3](#) summarises the two routes and their expected award outcomes, not capabilities that must already be demonstrated at application.

| Question              | TA1 Integrated Robot Bodies                                                                                                    | TA2 Foundational Technologies                                                     |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>Desired output</b> | Integrated, field-testable robot-body prototype demonstrating a step change in locomotion capability in a real-world challenge | Decisive evidence of a foundational technology linked to future system capability |

| Question                         | TA1 Integrated Robot Bodies                                                                                                                          | TA2 Foundational Technologies                                                            |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>Use case and customer</b>     | Validated use case and Target Robot Profile, supported by customer evidence and a credible adoption pathway                                          | Clear system-level locomotion case; no specific customer or current TA1 partner required |
| <b>Integration</b>               | All locomotion-critical components integrated into a field-testable prototype within four years ( <a href="#">TRL 7</a> for the locomotion platform) | Body-level integration not required; no prescribed end <a href="#">TRL</a>               |
| <b>Starting maturity</b>         | Credible route to a field-testable robot body within four years                                                                                      | Any <a href="#">TRL</a> , judged against available evidence and potential impact         |
| <b>Typical award</b>             | Up to £15m over 4 years                                                                                                                              | Normally £1–2m per project, max £4m, for up to 30 months.                                |
| <b>Indicative total budget</b>   | ~£42m                                                                                                                                                | ~£10m                                                                                    |
| <b>Expected number of awards</b> | 6–8 in Phase 1, narrowing to 4–5 in Phase 2 and 1–3 in Phase 3 ( <a href="#">Table 1</a> )                                                           | 5–10                                                                                     |

Table 3. Comparing TA1 and TA2.

## [SECTION 4: What are we looking for/what are we not looking for](#)

### 4.1 Work likely to be in scope

#### In scope across both TA1 and TA2

- Novel physical technologies and body architectures, including bio-inspired approaches, that offer a compelling locomotion advantage. Novelty may lie in a critical component, the architecture or their integration: applicants need not reinvent every component. A familiar body design with a transformative physical advance, or a novel architecture using established components, may qualify if a sufficiently high improvement in performance can be demonstrated.

- Co-design of the body with its actuation, energy storage, compliance, sensing and control.
- Technology targeting any locomotion modality, including hybrid and multi-medium locomotion (e.g. walking/climbing, air/water); any scale of robot; and any morphology.
- Multi-robot or swarm systems where these enable a transformational advance in locomotion.
- Experiments, modelling and simulation needed to develop or validate the physical technology.
- Control or other software specific to the proposed physical technology and necessary to develop, exploit or demonstrate its capabilities.
- Adoption and adaptation of existing AI and autonomy tools—including perception, navigation, planning, cognition, foundation models or world models—where needed to operate or test the proposed hardware.
- Projects where the lead entity collaborates with or subcontracts other teams.

## In scope specifically for TA1 Integrated Robot Bodies

- Development, integration and testing of a robot body against its Target Robot Profile and the demonstration requirements in [Section 3.1](#).
- Component development in-house or through collaborators or subcontractors, including defined work packages and collaborative R&D. Teams may explore competing approaches and, as evidence develops, drop, add or replace partners, subject to ARIA approval of material changes. The TA1 lead remains responsible for integration; every component it continues to fund must have a credible route into the physical demonstration at the end of the programme.
- Theoretical or computational work packages needed to develop, control or validate the robot body, including advanced modelling or simulation techniques delivered by collaborators or subcontractors.

- Purchase or licensing of components, materials and software needed to create, operate or demonstrate the robot body. General-purpose products are eligible; they need not themselves be novel.
- Field-site engagement, representative testing and preparation for the independently assessed end-of-programme challenge.
- Customer discovery, design for manufacture, commercial planning and work on regulation, certification or insurance, as relevant to the project's maturity.
- Applications may include, but are not limited, to civil, commercial, public-sector and security uses, subject to ARIA's assessment of relevant [responsible-innovation](#), [national-security](#) and misuse considerations.

## In scope specifically for TA2 Foundational Technologies

- Basic science and technology development at any maturity addressing a critical uncertainty in a physical principle, material, mechanism, component or body architecture. A TA1 partner, defined customer use case or robot-level integration during the award is not required.
- Exploratory morphologies and whole-body concepts not yet ready for application-led development.
- Purchase or licensing of components, materials and software needed to develop or test the technology.

## Collaboration and relationship between TAs

Creator teams in both TAs may use collaborators and subcontractors to supply products, services or defined work packages. The lead holds the contract with ARIA and is responsible for passing on its relevant terms to funded collaborators and subcontractors, as well as for coordinating the work and delivering the project's evidence plan.

We do not normally expect the same team to apply to both TAs: component work needed for a TA1 robot body belongs within that project. Different teams within one organisation may apply to either or both.

TA2 technologies may serve any current or future locomotion system. Where integration into TA1 is promising, ARIA will facilitate introductions and technical exchange; a TA1 team may contract a TA2 recipient, provided no activity is funded twice.

## 4.2 Work not in scope

The following types of work are not in scope:

### Out of scope across both TA1 and TA2

- Work without a credible path to improving the capabilities or economics of robot locomotion (for TA2, the path can be longer and less clear).
- Open-ended exploration without a decisive research outcome.
- Incremental improvement which does not offer a compelling system-level advantage. Foundational technology will usually be expected to unlock at least 10x performance gain on a relevant metric.
- Projects researching software, AI, world models, autonomy, simulation or general-purpose control without a substantive physical advance. Such work is in scope only where it supports hardware.
- Development of task-specific payloads unrelated to locomotion, such as chemical sensors or dexterous manipulators. Existing or externally funded payloads may be integrated, and limited interface work is eligible where needed to define the body, operating conditions or use case. Representative payloads may be used in the demonstration ([Section 3.1](#)).
- Journal publication charges.

## Out of scope, specifically for TA1 Integrated Robot Bodies

- Use cases where the proposed physical advance would make little difference to deployment because other barriers dominate. Locomotion hardware must be a substantial, independently necessary barrier, and applicants must show that a credible route exists to addressing other essential dependencies (although addressing these other dependencies is out of scope for this programme).

## [SECTION 5: Programme Duration, Funding, and Project Management](#)

### 5.1 Duration and timeline

TA1 projects will run for four years subject to passing the stage gates. Contracts will be signed for the full four years and total estimated budget, with go/no-go milestones at Gates 1 and 2 as described in [Section 3.1](#) (see [Table 1](#)).

TA2 projects may run for up to 30 months. They will be managed against a project-specific evidence plan that reflects the maturity of the technology, the uncertainty to be resolved and the proposed future use.

Under ARIA's standard terms, ARIA may terminate any project if it no longer serves the programme's objectives.

### 5.2 Budget

ARIA expects to spend £52m across TA1 and TA2. We expect to spend roughly £42m for TA1 ([Table 1](#)) and £10m for TA2, but the precise breakdown will reflect the number and size of individual awards in response to the quality and cost of the applications received under each TA. The maximum amount that can be requested for each project is £15m for TA1 and £4m for TA2. Applicants should request the funding needed to reach decisive technical and, where relevant, commercial inflection points. Value for money will be assessed alongside ambition.

## Specifically for TA1 Integrated Robot Bodies

We expect to sign contracts totalling in excess of £42m, on the expectation that some TA1 contracts may be terminated at Gates 1 and 2.

ARIA will fund the independent organisation and assessment of the final challenge. TA1 applicants should budget for preparing their robot and participating in the final challenge. The £15m cap applies to the sum of all phases. Per-phase budget ranges in [Table 1](#) are indicative and cannot all be requested at their upper limits. Phase allocations and team numbers may change following down-selection.

## Other funding sources

Matched funding is not required, but applicants are free to combine ARIA funding with their own investment or with awards from other funders, such as UKRI, SPRIN-D or venture capital. These other funds may support complementary work that is necessary for eventual deployment but outside the scope of this solicitation.

*Example: a TA1 team might use ARIA funding to develop a robot body able to travel kilometres through a live sewer, while other funding supports the defect-classification sensing payload it carries.*

Applicants must disclose all relevant current and pending funding. They must clearly separate the scope, costs, deliverables and reporting associated with each funding source. The same activity or cost must not be funded twice.

## 5.3 Project management

### Contractual Milestones and Tasks

ARIA distinguishes between contractual milestones and the task plan used to manage delivery.

Contractual milestones describe stable, high-level outcomes for which a team is accountable.

They are not expected to change as the team learns. Any material change to a contractual milestone requires a contract variation agreed with ARIA. Accordingly, contractual milestones should not normally specify detailed tasks or quantitative performance metrics that may need to evolve as evidence emerges. The end-of-project milestone should instead define the project's "north star": its principal intended outcome. Each project north star should contribute to one or more of the programme objectives in [Section 2](#).

For TA1, ARIA will include contractual go/no-go milestones at the end of Years 1 and 2, aligned with the programme gates, and may require a milestone during Phase 3. For TA2, we usually expect only an end-of-project milestone, although an earlier go/no-go milestone may be appropriate where resolving a critical uncertainty is a prerequisite for proceeding with the rest of the project. Whether to include one will be agreed during contract negotiation.

Alongside these contractual milestones, each team will maintain a detailed rolling task plan. In the full proposal, the Year 1 task plan must be sufficiently detailed for ARIA to understand what the team plans to do if funded. The task plans for later years are expected to be less detailed at application. They should identify the major decisions, dependencies and evidence required. For TA1, Target Robot Profile will evolve through Phases 1 and 2 and be fixed at Gate 2; the rolling task plan will continue to evolve thereafter.

### Quarterly reporting

ARIA practises active project and portfolio management. During the lifetime of each project, teams will upload a report each quarter, detailing the progress made towards the project north star under each of the currently active tasks. As part of these reports, teams will also refresh the proposed task plan so that at any given time the next six months or so are described in detail. This allows the tasks, sequencing and methods to change as evidence accumulates, without requiring a contract variation for each change.

ARIA will review these reports and then meet with the project team, either in person or online, to discuss progress and finalise updates to the task plan.

## Programme-level participation

Alongside their own project, funded teams will take part in a small number of programme-level activities, such as an annual programme workshop with other funded teams. We also expect teams to engage constructively with TA3 work on societal benefit. For example, ARIA may ask TA1 and TA2 teams to take part in TA3-linked studies, interviews, workshops or data collection. Any such request will be proportionate to the size and stage of the project and will respect commercial confidentiality. ARIA will give reasonable notice and will agree the scope of any programme-level activity with the team in advance. Teams should allow modest time for this within their project management costs.

## [SECTION 6: Eligibility & Application process](#)

### 6.1 Eligibility

Applications are eligible from any type of organisation and from any location. Eligibility does not guarantee competitiveness: proposals must meet the route-specific requirements in [Section 3](#) and [Section 4](#), as well as make a credible case for UK benefit.

TA1 has a strong commercial focus. We therefore expect that most competitive TA1 applicants will either be companies, or intend to form a company if funded. TA1 applicants must also make a UK benefit case commensurate with the scale of the award. In most cases, this is likely to require that the majority of TA1 funded work is carried out in the UK by a UK-registered company. Exceptions will be considered case by case.

### Finding potential collaborators and teaming

Applicants seeking additional technical, commercial, or end-user delivery specific expertise to support their proposal may use ARIA's teaming request form to facilitate finding potential team members who have registered their interest in this programme. By following [this link to the sign-up form](#), you can register, submit your details and gain access to a list of others seeking or offering relevant expertise. Requests will be screened by ARIA before access is

granted; participants will then be able to contact potential collaborators directly on the basis of expertise and interest.

## 6.2 Application Process

The application process for TA1 and TA2 consists of two stages.

### Stage 1 - Concept paper

Concept papers are optional but strongly encouraged. We do not require your organisation's consent prior to submission of a concept paper. Concept papers should be brief and follow the page limits in [Section 9](#); no annexes are permitted.

Following review of concept papers, ARIA will encourage or discourage applicants from submitting a full proposal, based on our early view on whether a proposal appears likely to be competitive. Where possible, we may also indicate how a full proposal could be strengthened. This feedback is advisory only:

- Applicants may submit a full proposal even if they did not submit a concept paper.
- Applicants may submit a full proposal even if ARIA discourages them from doing so.
- Encouragement to submit a full proposal does not indicate that ARIA will make an award.

You can find guidance on what to include in a concept paper [here](#).

### Stage 2 - Full proposals

Full proposals include:

- **Project and technical information** sufficient for ARIA to assess the proposal in detail.
- **Information about the team**, including who will be doing the research, their expertise, and why you/the team are motivated to solve the problem.
- **Administrative information** needed for responsible R&D funding, including budget, intellectual-property, other-funding and potential-conflict-of-interest information.

Further guidance on what to include in a full proposal is available [here](#).

For more details on the evaluation criteria, see [Section 8](#).

## 6.3 UK benefit

ARIA exists to benefit the UK. We do not restrict applicants by location, but UK benefit is one of the six criteria against which every proposal is evaluated ([Section 8](#)). This section explains how we will assess UK benefit for work conducted outside the UK and/or by non-UK entities, so that applicants can judge how competitive their proposal is likely to be. Note that our standard contract requires royalties if ARIA-funded IP is commercialised overseas, even if the original award was to a UK entity.

**How we will assess UK benefit.** ARIA will assess UK benefit in the context of the portfolio it is building and the available alternatives, including the next best proposal from a UK organisation. Applicants outside the UK should therefore set out their proposed UK commitments precisely and with a timeline to define when those commitments will be delivered. General statements of willingness to collaborate are unlikely to be persuasive. Any commitments made will form part of contract negotiation. Further guidance, including visa options for those relocating, is in our [FAQs](#).

**TA1 Integrated Robot Bodies.** TA1 awards are large, staged over four years, and intended to create companies developing integrated robot bodies that capture commercial value. For this reason we expect funded TA1 teams to make a particularly strong case for UK benefit. We therefore anticipate most TA1 contracts will be signed with companies incorporated in the UK. Overseas organisations are eligible to lead TA1 proposals, but a successful overseas lead will normally be expected, before contract signature, to establish a UK-incorporated entity as the contracting lead that ensures the benefits and long-term value our funding helps create, including intellectual property, accrues in the UK. We will consider alternative arrangements where they provide an equally credible route to substantial UK benefit.

Overseas organisations are welcome to participate in TA1 teams as subcontractors or collaborators, and retain the IP arising from ARIA-funded work.

**TA2 Foundational Technologies.** TA2 awards are smaller and support a wider range of technologies, applicants and locations. For TA2, spending more than 50% of the award value in the UK will be considered sufficient, though not necessary, for demonstrating UK benefit. Where this is not possible, TA2 applicants should justify how their project boosts the net UK impact of the programme: for example by supplying a capability for which there is no comparably capable UK alternative, by partnering with UK robot-body teams or manufacturers, or by committing to UK exploitation proportionate to the award.

## SECTION 7: Timelines

The application timetable is set out in [Table 4](#) (we may update timelines based on the volume of responses we receive):

|                                                                                                                                                                                                                                                                                                                                                                                    |                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| <b>Applications open</b>                                                                                                                                                                                                                                                                                                                                                           | <b>22 October 2026</b>                 |
| <b>Optional teaming workshop in London</b>                                                                                                                                                                                                                                                                                                                                         | <b>2 November 2026</b>                 |
| <b>Concept paper submission deadline</b>                                                                                                                                                                                                                                                                                                                                           | <b>4 December 2026<br/>(14:00 GMT)</b> |
| <b>Notification of encouraged/not encouraged to submit full proposal</b>                                                                                                                                                                                                                                                                                                           | <b>14 December 2026</b>                |
| See <a href="#">Section 6.2</a> for how concept-paper feedback should be interpreted.                                                                                                                                                                                                                                                                                              |                                        |
| <b>Full proposal submission deadline</b>                                                                                                                                                                                                                                                                                                                                           | <b>01 February 2027 (14:00 GMT)</b>    |
| <b>Full proposal review</b> <p>As part of our review we may seek clarification on certain aspects of proposals via email, and/or may invite applicants to meet (online or in person) with the Programme team to discuss any critical questions/concerns prior to final selection. Please try to ensure key team members have some availability during February and March 2027.</p> |                                        |
| <b>Successful/Unsuccessful applicants notified</b>                                                                                                                                                                                                                                                                                                                                 | <b>15 March 2027</b>                   |
| At this stage applicants will be notified if they have or have not been selected for an award subject to due diligence and negotiation. Following selection (subject to negotiations), we expect a 1 hour initial call to take place between ARIA and the lead applicant within 10 working days of being notified.                                                                 |                                        |
| <b>Contract signature</b>                                                                                                                                                                                                                                                                                                                                                          | <b>By 26 April 2027</b>                |
| We expect contracts to be signed no later than 6 weeks from notification of selection.                                                                                                                                                                                                                                                                                             |                                        |

During this period the following activity will take place:

- Due diligence will be carried out
- The programme team and applicant will discuss, negotiate and agree the project tasks, milestones and budget details
- Agreement to the set Terms and Conditions of the Grant/Contract. Please note ARIA does not negotiate these terms. You can find a copy of our funding agreements [here](#)

Please note, for those applicants not selected for shortlisting or award we will not routinely provide feedback.

**Funded projects begin**

**As soon as possible; no  
later than 31 May 2027**

*Table 4*

## [SECTION 8: Evaluation Criteria](#)

### **Concept Paper and Proposal Evaluation Principles**

To build a programme at ARIA, each Programme Director directs the review, selection, and funding of a portfolio of projects, whose collective aim is to unlock breakthroughs that impact society. As such, we empower Programme Directors to make robust selection decisions in service of their programme's objectives ensuring they justify their selection recommendations internally for consistency of process and fairness prior to final selection.

We take a criteria-led approach to evaluation; all proposals are evaluated against the criteria outlined below. We expect proposals to spike against our criteria and have different strengths and weaknesses. Expert technical reviewers, both internal and external to ARIA, evaluate proposals to provide independent views, stimulate discussion and inform decision-making. Final selection will be based on an assessment of the programme portfolio as a whole, its alignment with the overall programme goals and objectives and the diversity of applicants across the programme.

Further information on ARIA's proposal review process can be found [here](#).

## Proposal evaluation process and criteria

Proposals will pass through an initial screening and compliance review to ensure proposals conform to the format guidance and they are within the scope of the solicitation. At this stage we will also carry out some checks to verify applicant identity, review any national security risks and check for any conflicts of interest. Prior to review of applications Programme Directors and all other reviewers are required to recuse themselves from decision making related to any party that represents a real or perceived conflict.

Where it is clear that a proposal is not compliant, outside the scope and/or does not pass a quality assurance review, these proposals will be rejected prior to a full review on the basis they are not compliant or non-eligible.

Proposals that pass through the initial screening and compliance review will then proceed to full review by the Programme Director and expert technical reviewers.

In conducting a full review of the proposal we will consider ARIA's standard criteria, listed below. These will be applied in light of the route-specific evidence requirements in [Section 3](#).

### 1. **Worth Shooting For:**

- a. The proposed project uniquely contributes to the overall portfolio of approaches needed to advance the programme goals and objectives.
- b. It has the potential to be transformative and/or address critical challenges within and/or meaningfully contribute to the programme thesis, metrics or measures.

### 2. **Differentiated** – The proposed approach is innovative and differentiated from commercial or emerging technologies being funded or developed elsewhere.

### 3. **Well defined** – The proposed project clearly identifies what R&D will be done to advance the programme thesis, metrics or measures, is feasible and supported by data and/or strong scientific rationale. The composition and planned coordination and management of the team is clearly defined and reasonable. The work plan provides sufficient detail for the first year and identifies the principal outcomes,

decisions and dependencies for later years, consistent with [Section 5.3](#). The costs and timelines proposed are reasonable/realistic.

4. **Responsible** – The proposal identifies major ethical, legal or regulatory risks; planned mitigation efforts are clearly defined and feasible.
5. **Intrinsic motivation** – The team demonstrates deep problem knowledge, advanced skills in the proposed area and intrinsic motivation to work on the project; key individuals are dedicating sufficient time to the project.
6. **Benefit to the UK** – There is a clear case for how the project will benefit the UK. See [section 6.3](#) above for details of how this will be assessed.

## [SECTION 9: How to apply](#)

Before submitting an application we strongly encourage you to read this call in full, as well as the [general ARIA funding FAQs](#).

If you have any questions, please use the chat function on the funding call page for the quickest response. It can guide you to the right information or connect you with the ARIA team if needed.

Any questions or responses containing information relevant to all applicants will be provided to everyone that has started a submission within the application portal. We'll also periodically publish questions and answers at the end of this solicitation document.

Please read the portal instructions below and create your account before the application deadline.

If you are disabled or have a long-term health condition, we can offer support to help you engage with ARIA, navigate our funding application process, or carry out your project, you can find more information [here](#).

Application [Portal instructions](#)

APPLY [HERE](#)

## Concept paper guidelines

Submit your concept paper through the Good Grants portal for the TA you are applying to. Concept papers are optional but strongly encouraged. Their purpose is to let us assess whether your idea is within scope and appears likely to be competitive, before you have invested the time in preparing a full proposal.

### Information entered in the portal

The portal collects your project title and chosen technical area, applicant and contact details, organisation details, and the names and affiliations of co-investigators and collaborators. Your project title should be a short, distinctive name or acronym followed by a descriptive subtitle.

It also asks for the estimated funding required and a high-level cost breakdown, project duration, proposed funding contributions, subcontracting, project location and UK delivery or benefit, conflicts of interest, relevant restrictions and, where applicable, details on animal use in accordance with [ARIA policy](#). Follow the duration and funding limits specified for your chosen TA in [Section 5](#).

You do not need to reproduce these answers in the concept paper.

### Format and page limits

- TA1 Integrated Robot Bodies: a maximum of five A4 pages.
- TA2 Foundational Technologies: a maximum of three A4 pages.
- These limits include figures, diagrams and tables, but exclude references. All substantive content, including the initial TA1 Target Robot Profile, must fit within the relevant limit. The concept paper PDF is the only upload required at this stage; do not submit annexes or other files.
- Upload a PDF with single line spacing, standard character spacing, black Arial text of at least 11 points, and margins of at least 0.5 inches (12.7 mm) on all sides.

### What to include for both TAs

Give most space to the distinctive technical approach and the evidence or reasoning behind it. You may organise your response as you think best. Address the following points, with detail proportionate to the maturity of your idea.

**Technical approach.** What do you propose to develop, and what scientific or engineering insight makes it promising? Explain the mechanism or architecture clearly, using diagrams where helpful. Show how it differs from existing and emerging approaches, and why that difference could overcome a fundamental limitation in robot locomotion.

**Potential advance and supporting evidence.** What would success make possible, and how large an improvement could it deliver? Give quantitative targets and credible comparators under relevant operating conditions. Summarise the strongest supporting evidence or scientific rationale, distinguishing demonstrated results from predictions and assumptions. Identify trade-offs that could limit the benefit.

**Critical risks and first tests.** Identify the most consequential uncertainties and the work you would do to resolve them early. Explain what the first decisive tests would establish, how the results would guide subsequent work, and what findings would lead you to change direction or stop. State the principal outcome you aim to achieve by the end of the award. A detailed task plan is not required at this stage.

**Team capability.** Explain what the key people and organisations would contribute, their relevant experience and expected involvement, and why they want to do this work. Identify important capability gaps and how you would fill them. There is no need to repeat the portal's list of names and affiliations.

## Additional content for TA1 Integrated Robot Bodies

**Use case and initial Target Robot Profile.** Identify the primary task, intended users and economic buyer, operating environment and essential robot capabilities. Summarise how you will address the access, total customer cost and reliability requirements in [Section 3.1](#), the single headline figure of merit, and the body-level metrics that enable it. Identify the strongest credible alternative and justify any requested exception. Explain why locomotion hardware is a critical barrier. Include this concise initial Target Robot Profile within the five-page paper; it need not be formatted as a table.

**Customer evidence and route to deployment.** Summarise evidence supporting the use case, the performance and cost needed for adoption, and the main commercial assumptions still to be tested. Explain how the technologies would come together in an integrated, field-testable robot body within four years, with an outline of the final challenge. Identify major integration dependencies and the route from the prototype to eventual manufacture and commercial use.

Show how the team will cover component development, robot-body integration, commercial development and practical expertise in the intended industry. Your early tests should address critical commercial assumptions as well as technical uncertainties.

## Additional content for TA2 Foundational Technologies

**Connection to future robot capability.** Explain how the physical technology or body architecture could change the capabilities or economics of future locomotion systems. Give an approximate quantitative argument where possible, identifying the assumptions, trade-offs and eventual integration constraints that could affect the benefit at robot level.

**Decisive research outcome.** Identify the central scientific or engineering uncertainty the award would resolve, the evidence you expect to produce, and why it would justify or rule out further development. Distinguish the evidence achievable during the award from the longer-term performance ambition. Briefly explain the next steps towards eventual use if the project succeeds.

TA2 applicants do not need a defined customer, a TA1 partner or a plan to demonstrate an integrated robot during the award. The pathway to future use should be credible and proportionate to the technology's maturity.

# Full proposal guidelines

Your full proposal should provide the evidence and delivery plan needed to assess your project against Sections 3 to 6 and the evaluation criteria in [Section 8](#). You may submit a full proposal whether or not you submitted a concept paper or were encouraged to proceed.

## Information and separate uploads in the portal

Complete the portal's applicant, organisation and administrative questions, including project location and UK benefit, funding contributions, other current or pending funding, background intellectual property and rights to use it, conflicts of interest and restrictions affecting delivery. Provide the requested information about founders and capabilities if you are establishing a company or applying through a company less than 12 months old. Complete the required organisational approvals and funding-terms declarations.

In addition to the main proposal PDF, upload the following separately:

- For both TAs: the detailed budget using the portal's cost template and the labour table as a spreadsheet using the format in [Table 5](#) below.
- For TA2 only: the commercialisation hypothesis following the portal's guidance.
- For TA1 only: the detailed Target Robot Profile as a separate PDF annex, in place of the commercialisation hypothesis upload. There is no page limit for this annex. Do not upload a separate commercialisation hypothesis; describe your commercialisation plan within the ten-page main proposal.

These separate uploads do not count towards the main proposal page limit. Do not reproduce the budget, labour table or administrative responses in the main paper. Include concise explanations of their implications where needed to assess the technical case, delivery plan, team or adoption pathway. TA2 applicants should summarise their pathway to future use in the main paper and put the detailed commercialisation hypothesis in the separate upload, with detail proportionate to the technology's maturity.

## Format and page limits

- TA1 Integrated Robot Bodies: a maximum of ten A4 pages for the main proposal.
- TA2 Foundational Technologies: a maximum of eight A4 pages for the main proposal.
- These limits include figures, diagrams, tables and the project plan, but exclude references and the separate uploads specified above.

- Upload the main proposal as a PDF with single line spacing, standard character spacing, black Arial text of at least 11 points, and margins of at least 0.5 inches (12.7 mm) on all sides. Use the same formatting for the TA1 Target Robot Profile annex.

## Technical case and work plan for both TAs

**Technical approach and differentiation.** Explain the proposed physical technology or body architecture in sufficient detail for technical assessment. Identify the starting point and what will be new. Compare it with relevant commercial and emerging approaches, including technologies likely to advance during the award. Support the argument with diagrams, data, modelling or a strong scientific rationale, clearly separating demonstrated results from predictions and assumptions.

**Targets and validation.** Define quantitative targets and credible comparator values under stated test and operating conditions, using the comparison dates specified in [Section 3](#). For TA1, distinguish body-level targets to be demonstrated by programme end from the headline, cost and reliability targets projected for the likely deployment date. For TA2, identify and justify the relevant comparison date. Describe the measurements and tests that would establish success, the evidence supporting the targets, and the trade-offs that could undermine the intended locomotion benefit.

**Risks and sequence of work.** Identify the main technical uncertainties, failure modes and dependencies. Explain how the work will test the most consequential assumptions early, what evidence each major test will produce, and how that evidence will inform decisions to proceed, change direction or stop. Explain any dependency on complementary work or funding and how the project can proceed if that dependency is not met.

**Project plan and milestones.** Provide a detailed Year 1 task plan, showing responsibilities, timing, dependencies and expected evidence, and a less detailed plan for the remainder of the project. Distinguish the rolling task plan and evolving performance targets from the stable, high-level contractual outcomes described in [Section 5.3](#). State the project's principal intended outcome. For TA1, include proposed go/no-go milestones at the end of Years 1 and 2, aligned with [Section 3.1](#); Target Robot Profile will evolve through Phases 1 and 2 and be fixed at Gate 2. For TA2, identify the end-of-project milestone and any earlier go/no-go decision justified by a critical uncertainty.

**Responsible delivery.** Explain how material safety, security, environmental, ethical, misuse or regulatory issues affect the design, testing and delivery of the project, and how you will address them. Refer to the portal disclosures for factual details rather than repeating them.

Explain how you will secure any essential IP rights, permissions, facilities or field access that are not yet in place.

## Additional content for TA1 Integrated Robot Bodies

**Use case and decisive advantage.** Summarise the primary task, users, economic buyer and operating conditions, and the evidence that locomotion hardware is a substantial, independently necessary barrier. Explain why credible alternatives, including improvements in control or changes to the task, would not remove that barrier. Summarise the Target Robot Profile's programme-level requirements, headline figure of merit and enabling body-level metrics, and the projected advantage over the strongest credible comparator at the likely deployment date. Put the detailed requirements, baselines, calculations and supporting evidence in the separate Target Robot Profile annex.

**Robot body and integration.** Describe the body architecture, critical technologies and interfaces, and an initial mass, power and energy budget. Account for realistic task payloads and, where relevant, future autonomy. Identify who owns integration, how components will be selected and tested, and the major dependencies on component partners, collaborators and subcontractors.

**Field-testable prototype and challenge.** Set out the route through integration and representative testing to a field-testable prototype within four years. Propose an end-of-programme challenge that demonstrates the agreed body-level metrics under the conditions in [Section 3.1](#), with supporting evidence and analysis showing how these can enable the projected commercially relevant advantage at deployment. Identify the required field access, supporting equipment and operational arrangements, including teleoperation, tethers or external power where relevant. Distinguish what the prototype will demonstrate from capabilities to be added later.

**Commercialisation plan and risks.** Describe your commercialisation plan within the ten-page main proposal. Set out the customer or industry evidence supporting the use case and Target Robot Profile, the assumptions about adoption and economics, and how you will test them during the award. Explain your route from the field-testable prototype to commercial deployment, including the manufacturing approach, intended scale, exploitation strategy and route to follow-on investment. Identify the main commercial risks and other essential barriers to deployment, and explain how you will address them. The Target Robot Profile annex may contain detailed evidence supporting end-user requirements, but the commercialisation plan itself belongs in the main proposal.

## Additional content for TA2 Foundational Technologies

**Critical uncertainty and evidence package.** Identify the physical principle, material, mechanism, component or body architecture being investigated, its starting maturity and the locomotion limitation it addresses. Define the decisive scientific or engineering uncertainty and the end-of-award evidence package. Explain why the proposed endpoint is decisive even if the technology is not yet ready for robot-body integration or has not achieved its full long-term performance ambition.

**System-level benefit and future use.** Quantify how success at technology level could change robot-level capability or economics, with the assumptions and trade-offs made explicit. Address the main eventual integration constraints, including interfaces, scale, lifetime, manufacture and cost. Summarise the next development steps and refer to the separate commercialisation hypothesis for the proportionate pathway to future use, industry partnership or company formation and follow-on funding. A defined customer, TA1 partner or integrated robot demonstration is not required.

## Team and management for both TAs

Explain why the people doing the work have the necessary expertise and motivation, using brief relevant experience rather than full CVs. Describe their responsibilities, how the team and collaborations will be coordinated, and who will make technical and delivery decisions. Explain why the time commitments recorded in the separate labour table are sufficient, distinguishing confirmed staff and partners from proposed hires or collaborations. Identify capability gaps, recruitment plans and the consequences of delayed appointments.

TA1 teams should show how they will cover component development, robot-body integration, commercial development and practical expertise in the intended use case. TA2 teams should demonstrate the capability to resolve the central uncertainty and produce the proposed evidence.

## TA1 Target Robot Profile annex

Upload the detailed Target Robot Profile as a separate annex in place of the commercialisation hypothesis. The main ten-page proposal must summarise its key features and the decisive advantage sought. There is no page limit for the annex. Set out the requirements below, with evidence explaining why they matter to your intended end-users and as much supporting detail as is available at application.

Address the requirements in [Section 3.1](#): access beyond the abilities of current robots; projected total customer cost of at most one tenth that of the strongest credible alternative

for an equivalent useful outcome at the likely deployment date; and fewer than one unplanned robot body failure per 10,000 operating hours under a defined mission profile and maintenance schedule. State a single customer-focused headline figure of merit, normally targeting at least a tenfold improvement over the projected strongest credible alternative at the likely deployment date. Justify any requested exception under [Section 3.1](#); where no credible alternative can perform the task, substantiate the economic viability and value of the new capability.

Specify the body-level metrics to be demonstrated by programme end and show how they enable the headline gain. Provide a plan to substantiate, by programme end, that the headline, cost and reliability targets can be met at the likely deployment date. Distinguish physical capabilities to be demonstrated from outcomes dependent on later autonomy, dexterity or other development, and substantiate those assumptions. For cost projections, state the manufacturing volume, utilisation, system lifetime and other assumptions; for reliability, explain the testing and analysis that will support the target.

Use a requirements table or another clear structure to give each metric and unit, target, operating conditions, current comparator performance and projected comparator performance at the relevant comparison date. Use programme end for body-level comparisons and the likely deployment date for the headline and cost comparisons. State and justify the likely deployment date. Include sources, calculations and uncertainty. Identify the capabilities that must be achieved together, including realistic payload, power and energy allowances for task equipment and future autonomy. Individual body-level metrics may use different technically relevant comparators; the headline comparison must use the strongest credible way of completing the task, which may be a robot, vehicle, human crew or another method.

Include supporting benchmarking, modelling, test evidence and end-user evidence as needed. Identify important assumptions and unresolved requirements, and explain how you will refine the Target Robot Profile with customers and end-users through Phases 1 and 2, with targets fixed at Gate 2. Use this annex for the Target Robot Profile and its supporting evidence; the technical approach, work plan, team case and commercialisation plan belong in the main proposal.

## Labour table format for both TAs

Upload the labour table as a separate spreadsheet using the columns in [Table 5](#). Include key named individuals in the lead team and, where appropriate, in collaborating organisations, subcontractors and potential customers, including those contributing without ARIA funding. Give each person's name and organisation, role or expertise, and whether their contribution is funded or unfunded. State their expected FTE commitment and total time on the project; for unfunded contributors, describe their expected involvement where FTE and months are not meaningful. Distinguish confirmed participation from proposed involvement. Include key planned roles that are not yet filled, with an expected start date relative to project kickoff. Add rows as needed. The spreadsheet is outside the main proposal page limit.

| Individual /<br>organisation | Role /<br>expertise | Funded /<br>unfunded | Already in place? If<br>not, how long after<br>project kickoff are<br>they likely to start? | FTE | Total time on<br>project (months,<br>rounded) |
|------------------------------|---------------------|----------------------|---------------------------------------------------------------------------------------------|-----|-----------------------------------------------|
|                              |                     |                      |                                                                                             |     |                                               |
|                              |                     |                      |                                                                                             |     |                                               |
|                              |                     |                      |                                                                                             |     |                                               |
|                              |                     |                      |                                                                                             |     |                                               |

*Table 5. Labour table for key individuals and planned roles, including relevant unfunded contributors.*