

STAR.ORG

The Core Philosophy

Information Utilization as the Measure of Civilization

Humanity already measures the height of a civilization by its energy.
We want to establish how much of the universe we *understand* as a measure in its own right,
and we believe the marks on this scale should be made by every ordinary person, together.

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Abstract

This paper sets out a framework for thinking about civilization and the development of space, in five core ideas:

1. **A civilization’s level should be defined by its “information utilization,”** not only by its “energy utilization.” Measured this way, Earth has **not yet reached “Information Civilization, Level One”**: the threshold for Level One is **complete participation on the observation side** (all of humanity in an ongoing relationship with at least one real celestial body), and the team estimate for today is about **0.7** (an estimate, not a measurement); the threshold for Level Two is **closure of the observation–action loop** (see 1.3–1.4).
2. The universe contains three fundamentally different resources: **information ore, energy ore, and matter ore**. Energy ore and matter ore demand enormous industrial and space-faring capacity; information ore demands only observation and attention. Star.org focuses on developing **information ore**.
3. To mobilize all of humanity to develop space, each person must first forge a real bond with the sky; and the key to that bond is **the right to name**.
4. Whoever observes or attends to a star’s information is developing that star’s information ore, and therefore holds a certain **information right** over it.
5. Our bodies cannot reach the distant stars, but our **information and imagination** can. Science fiction, film, and games are likewise a mode of mining information ore.

The five ideas are not parallel slogans but a single chain of reasoning that joins end to end: from the yardstick, to the resource, to the participants, to the rights, and finally to another way of reaching the cosmos.

The height of a civilization is decided not only by how much energy it can harness, but also by how much of the universe it can see clearly.

Revised in v1.2: “Level One” moves from a **statement about the present** to a **threshold to be crossed** — Level One = complete participation on the observation side, which Earth has not yet reached (team estimate about 0.7); Level Two = closure of the observation–action loop. Sections 1.3–1.4 were rewritten accordingly, and now carry the warning against the circularity of defining Level One as one’s own product penetration; the four-axis self-assessment added in v1.1 (section 1.5) is retained.

1 Civilization Level: from Energy Utilization to Information Utilization

1.1 The Reference Frame: Existing Scales Are Defined by Energy

The most commonly cited yardstick for civilization is **energy utilization** —how much energy a civilization can harness determines its place on the cosmic ladder. This treats a civilization as “a machine of ever-greater power”: from burning wood and coal, to nuclear fission, to the hypothetical Dyson sphere that wraps a star. The scale is **a magnitude of energy**.

This yardstick carries a hidden premise: **it measures what a civilization can *do*, not what it *knows*.**

1.2 Star.org’s Yardstick: Information Utilization

Star.org proposes another scale that is equally fundamental yet often overlooked —**information utilization**:

A civilization’s information utilization = the degree to which it grasps true information about the universe, and its capacity to turn that information into understanding and action.

In plain terms: **how much of the universe we have cognitively covered, and how deeply we have dug into it.** It measures a civilization’s cognitive frontier, not its power ceiling.

The two scales are not mutually exclusive but complementary: energy determines whether a civilization can move; information determines whether it can see. Star.org chooses to center on the information side —because it is closer to “people,” and closer to the part that every ordinary person can take part in.

1.3 Earth Is Not Yet at Level One

Measured against this scale, Star.org gives Earth’s present stage a designation:

Earth has not yet reached “Information Civilization, Level One.” Team estimate: about Level 0.7 (an estimate, not a measurement).

Why place the threshold for Level One on **participation** rather than on “how much we know”? Three reasons:

1. **The word “utilization” already contains “use.”** Information held by a few and never used is not being highly utilized. Putting Level One on participation is more faithful to the term than putting it on stock.
2. **It removes a contradiction.** Humanity’s **depth** is not low (see 1.5). If Level One described “knowing little,” then “depth is moderate to high” and “only Level One” would both be true and would fight each other. Placed on participation, they stop conflicting: our depth can be high while our participation is low.
3. **It points the level at a goal that can actually be reached.** Level One is not a grade but a threshold line, and crossing it requires all of humanity to take part rather than waiting for a technical breakthrough.

On the 0.7: this is a team estimate, not a measurement. Turning the level into a measurement requires first making the threshold for Level One observable — for instance, “the share of the population that has formed and maintains a relationship with at least one real star” — and then counting it. On a strict reading (“can point out and name at least one real star”), that share is probably only one or two in ten worldwide; on a stricter one (“is actively observing a particular star right now”), it may be under 1%. Until the criterion is fixed, any specific number is an estimate. We label it as such rather than dressing an estimate up as a measurement.

1.4 The Thresholds for Level One and Level Two

The levels only mean something once both are written down:

Level	Definition	Criterion
One	participation on the observation side is complete	nearly all of the population can, and does, form and maintain an ongoing relationship with at least one real celestial body. Claiming and naming is one observable proxy for this, not the criterion itself
Two	observation and action have closed the loop	information reach $\approx$ action reach; understanding of the universe converts into capability, or forms a self-correcting, systematic cognitive loop

There is one circularity that must be avoided here: **if Level One were defined as “all of humanity has claimed a star” while the claiming is provided by a single organisation, the yardstick would collapse into that organisation’s product penetration.** So the criterion belongs on a **product-neutral** observation axis — “the share of the population maintaining an ongoing cognitive relationship with at least one specific celestial body” — and claiming is only one observable form of it.

So how far off is Level Two? Look at the gap between the two kinds of “reach”:

Direction		Farthest reach
Information	(the light we receive)	The oldest light comes from about 13.8 billion years ago; the observable universe has a comoving radius of about 46 billion light-years
Matter	(the things we send out)	Voyager 1 is about 172 AU (roughly 0.0027 light-years), about 0.06% of the way to the nearest star (Proxima Centauri, about 4.24 light-years)
Their ratio		about 13 orders of magnitude

Our eyes already reach the edge of the universe; our hands are still in our own backyard. Level Two is therefore still far off — and that is not “we know little”; it is that **a loop is still missing between knowing and doing.**

1.5 The level is not a scalar: at least four axes

Compressing “information utilization” into a single number makes it easy to abuse —whichever axis you want to stress, that is the conclusion you get. So it should be split into at least four axes that can be discussed separately:

Axis	Meaning	Earth today (approx.)
Coverage	how much of the universe we have sampled	Very low: Gaia has measured about 1.8 billion stars, while the Milky Way holds hundreds of billions; about 6,400 exoplanets are confirmed against hundreds of billions of stars (about 10^{-8})
Depth	how well we understand what we sampled	Moderate to high: QED’s electron magnetic moment matches experiment to more than ten significant digits, and the universe’s age and main composition are measured to around one percent —yet 95% of the energy density still has only names (dark matter, dark energy)
Participation	how many people actually form and keep a relationship with this information	Low (the Level One threshold sits on this axis — see 1.3): about 6 billion people can go online and query astronomical databases, but very few ever do
Closure	whether observation turns into action	Not formed: see 1.4

Writing it as a vector rather than a number guards against self-deception: **“not yet Level One”** says **“participation is incomplete”**, not **“we know little”**; it is **“Level Two is far off”** that says **“the loop is not closed.”** By depth alone we are not low; by coverage alone we are near zero; by participation we are still far from “all of humanity” —all of these can be true at once, and any single number must hide most of them.

On the figures: Voyager 1’s distance is the 2026 measured value; the observable universe’s comoving radius of about 46.1–46.6 billion light-years follows from Planck cosmological parameters; the exoplanet count is NASA Exoplanet Archive data for September 2026; the internet-user figure is the ITU 2025 estimate. Such numbers are updated as observations improve —readers are welcome to recompute them.

2 Three Kinds of Ore in the Universe: Information, Energy, Matter

If we treat the universe as a treasure to be developed, Star.org holds that it consists of three fundamentally different kinds of resources:

Resource	What it is	Who can develop it	Here
Energy ore	The energy of the universe that can be harnessed (radiation, gravity, fusion, at the scale of total quantities)	Civilizations with engineering and industrial capacity	No
Matter ore	Physical substance in the universe (planets, ore, water, gas —collectable or manufacturable)	Civilizations able to reach and extract	No
Information ore	Information about celestial bodies and phenomena (position, magnitude, distance, spectrum, motion, history, even the stories behind them)	Requires only observation and attention —open to all	Yes

The difference among the three is not “how precious” they are, but **the barrier to entry**:

- Developing energy ore and matter ore both requires a civilization to first build **enormous industrial and spacefaring capacity** before it can get its hands on the stuff. For an individual, that is out of reach.
- **The barrier to information ore is far lower**: what it demands is not a starship but **attention**. An ordinary person need only be willing to look up, to observe, to care about a particular star — and he is already participating in the development of the universe’s information ore.

Star.org focuses on developing information ore —because among the three, it is the only resource that lets all of humanity get started immediately, without first colonizing the cosmos.

3 How to Mobilize All of Humanity: a Bond with the Stars, and the Right to Name

3.1 The Biggest Bottleneck Is That Space Feels Unrelated to Everyone

The grand narrative of humanity developing the cosmos tends to make ordinary people feel that “this is a matter for astronauts, scientists, and billionaires.” When something has no concrete connection to an individual, it generates no real drive to participate. Star.org believes:

To get all of humanity to develop space, the first thing is to give “the universe” and “each person” a real, tangible bond —rather than letting the universe remain a distant background that has nothing to do with them.

3.2 The Key to That Bond: the Right to Name

Among all the ways of forging a bond, Star.org holds that the most fundamental and most moving is —

the right to name.

To name a star is humanity’s oldest and most instinctive act of cognition. From ancient mariners navigating by the constellations, to astronomers numbering celestial bodies, **“what you call it” has always been the earliest bond forged between people and the stars.** Once a name is given, that star is no longer a point of light on a backdrop; it becomes “my star” —a concrete, identifiable, callable sense of belonging.

Star.org treats this “right to name” as the **key** connecting people to the universe: when a person names and claims a real, existing star, an **irreplaceable, personal bond** comes into being between them and that patch of sky. Developing space is no longer only a grand slogan; it becomes something concrete — “the star I claimed is being recorded, being watched, being seen by others.”

3.3 An Important Clarification: This Is Not Official Astronomical Naming

Star.org fully respects the authority of the astronomical community and the legitimate systems of astronomical naming. “Naming/claiming” here is a **personal bond of emotion and cognition** —an **observation and memorial marker** that a namer establishes for a real celestial body. It **does not constitute, and does not claim to be,** a naming right granted by the International Astronomical Union (IAU) or any other official body.

This clarification matches the site: every page must carry the “not official IAU naming” statement.

3.4 From This, Everyone’s Effort Gathers

When everyone can forge a bond with the universe through naming, developing space ceases to be the enterprise of a few and becomes instead:

- each person **paying attention** to a patch of sky and recording what they observe;
- each person **sharing** that bond, so that more people are willing to look up;
- the **attention** of countless individuals converging —which is itself the broadest and most sustainable development of the information ore.

Mobilizing all of humanity to develop space does not rely on commands. It relies on giving every person a star of their own.

4 Information Rights: Whoever Attends, Develops —and Therefore Holds

4.1 The Core Claim

Building on the definition of developing information ore, Star.org puts forward a claim about **information rights**:

Whoever observes or pays attention to a star’s information is developing that star’s information ore; and this act of development gives that person a certain kind of right over that information.

Unpacked, the logic runs in three steps:

- 1. **Attention = development**: for a star’s information ore, development does not mean digging it open but **observing, recording, understanding, and telling** it. Every act of attention is an act of extraction from that star’s information ore.
- 2. **Development = contribution**: this information is not anyone’s private possession, but the **attention, observation, stories, and memory** a person invests in it are real and indelible contributions.
- 3. **Investment = right**: since “whoever develops it holds it” is the general principle of resource development, then **whoever pays attention to a star holds a certain right over its information** — a right that can be marked, recorded, preserved long-term, and continued for as long as that person exists.

4.2 What This Right Is, and Is Not

It is	It is not
A bond of attention that is identifiable, recordable, and preservable	Physical belonging of the star itself
A record of development over this star’s information ore	Exclusive possession of all astronomical data about a star (the real data belongs to the scientific commons and to all humanity)
A memorial and emotional belonging that belongs to the namer	A transferable, appreciable financial instrument or an exchange-listed object

The site sells no ownership, makes nothing into a financial instrument, and points to no investment or appreciation —this is the compliance red line, enforced automatically by `scripts/check-compliance.mjs`.

4.3 Publicly Verifiable: Making the Right Visible and Checkable

Star.org holds that a right is meaningful only if **others can independently verify it**. Therefore every claimed star corresponds to:

- a **public claim record** (containing the star’s real astronomical data);
- a **permanent link** that anyone can visit and verify at any time;
- a **certificate** that can be preserved long-term.

Anyone who wants to verify “whether this star has been claimed, and by whom” can check for themselves in the public claim registry. This **openness, transparency, and traceability** is precisely the foundation on which information rights can stand —it turns a private act of attention into a **public record** that others can see and acknowledge.

5 We Cannot Reach the Stars in Body, but We Can in Information and Imagination

5.1 A Fundamental Constraint: We Cannot Reach the Stars

Physically, the human body is confined to Earth. We cannot stand beside another planet or another nebula and mine it in person —at least for any foreseeable future, **energy ore and matter ore are beyond the reach of the vast majority of people**. This is the coldest fact about developing space.

5.2 But “We” Are More Than a Body

Star.org holds that what defines a person, or a civilization, is not only where its body resides, but **how far its information has reached and how far its imagination extends**.

We cannot reach the distant stars in body, but we can in our information and our imagination.

These two things —**information and imagination** —reach deep into the cosmos without a starship. They are the true extension of humanity’s territory: through imagination and storytelling, humanity has long since moved into the stars in spirit.

5.3 Therefore, the Production of Imagination Is Itself a Form of Development

Since the development of information ore depends on attention and cognition rather than physical arrival, then every **work that directs human attention and imagination toward the cosmos** is mining information ore:

- **Science fiction:** *The Three-Body Problem* directs human imagination toward the dark forest of the cosmos, interstellar civilizations, and questions of scale;
- **Science-fiction film and television:** *Star Trek* made “to explore the unknown” a conviction for generations;
- **Games:** letting players sail, colonize, and encounter civilizations in virtual starfields;
- **Popular astronomy, documentaries, and art:** translating real celestial information into stories ordinary people can feel.

None of these are escapes from reality; they are a special mode of mining the universe’s **information ore** —they extract not a gram of matter and not a wisp of energy, yet they mine the most precious thing of all: **humanity’s understanding and imagination of who we are and where in the universe we stand.**

5.4 The Mining of Imagination and the Mining of Real Data Complete Each Other

Imagination is not fabricated from nothing; it needs **real celestial information** as its soil. And real celestial information needs imagination to give it meaning and draw more people to attend to it.

- Science fiction inspires ordinary people to **attend to real stars**;
- Those who attend to real stars supply **new imaginative material** for science fiction and for science.

Thus **the sky of *The Three-Body Problem*, the interstellar federation of *Star Trek*, and the star charts of a game, together with the coordinates, distances, and spectra of real celestial bodies, form one superimposed information ore** —all of it mined by human attention and imagination, and all of it expanding humanity’s information utilization.

5.5 What This Means for Star.org

This explains why Star.org both handles the claiming and recording of real celestial bodies and can accommodate sky narratives at the level of fantasy:

- A person claiming a **real** star is mining that star’s information ore;
- A person stirred toward the sky by science fiction, a game, or a story is likewise **mining humanity’s collective information ore.**

The two are not opposed; they are different veins of the same information ore.

Star.org’s standpoint is that every vein should point in the same direction: **to turn more people’s attention and imagination toward that real sky overhead —traceable, verifiable, and above them all.**

6 How the Five Ideas Form One Line

Yardstick	Energy utilization → information utilization (Star.org's measure)
Resource	The universe has three ores: information / energy / matter
Choice	Star.org focuses on information ore —the only one open to all
Participation	Developing information ore requires all of humanity
Key	The key to bonding each person with a star = the right to name
Rights	Whoever attends = whoever develops = whoever holds its information right
Extension	Not in body, but in information and imagination: <i>The Three-Body Problem</i> / <i>Star Trek</i> / games

Every act of attention plus every act of imagination converges into humanity's shared advance in understanding the universe.

7 Conclusion

The height of a civilization is decided not only by how much energy it can harness, but also by how much of the universe it can see clearly.

There are three ores in the universe; Star.org mines the information ore —and the mining of information ore belongs to everyone willing to look up, to name a star, and to attend to it for a long time.

Whoever attends, develops; whoever develops, holds —this information right, we make public, verifiable, and belonging to every person.

We cannot reach the distant stars in body, but we can in our information and imagination —The Three-Body Problem, Star Trek, and every starfield of every game are mining the information ore for humanity.

Claim a star, then keep observing it —together we raise humanity's information civilization level in the universe.

Star.org provides a commemorative, publicly verifiable star claiming service. It does not constitute official naming by the International Astronomical Union (IAU), and does not represent any celestial naming right. The astronomical data cited in this whitepaper comes from public star catalogues.