2037 – Robot Deployment in Human Environments (October 2026)



"Trusted WEB 4.0 is the Integration of all resources available via the Web into an overall system.

Machines, devices and people are globally accessible, organized in decentralized, anonymous structures.

Trusted WEB 4.0 maps pre-digital social structures.

The value chains are being reorganised.“
(Olaf Berberich, 2007)

2037 – Robot Deployment in Human Environments

The study "Future Perspectives of Robot Deployment up to 2037 and their Harmonisation with Trusted WEB 4.0" analyses how robots will be deployed up to 2037 in industry, logistics, agriculture, care, education and entertainment. Particularly relevant in this context are applications close to humans, in which Trusted WEB 4.0 serves as the framework for data security, transparency, ethics and user control.

This study looks exclusively at the people who wish to achieve self-fulfilment within the EU-D-S. Anyone who does not want to take part remains in the existing system and its commercial offerings; deliberately, the EU-D-S holds no attractive offerings ready for this group – incentives instead of coercion. The robot in the EU-D-S is a tool of self-fulfilment, not a consumer product for everyone.

Starting Position 2026: The Market Launches Following a Centralised Pattern

In 2026, humanoid robots moved from the demonstration phase into commercialisation. Goldman Sachs puts the addressable market for 2035 at 38 billion US dollars; Morgan Stanley expects up to 5 trillion US dollars for the entire ecosystem by 2050; in 2025, around 13,000 humanoids were delivered worldwide [1]. Amazon acquired the humanoid manufacturer Fauna Robotics in March 2026; its household robot Sprout costs around 50,000 US dollars – following the invitation model of the surveillance robot Astro (1,600 US dollars), whose core functions are face and sound recognition, room monitoring and the reporting of unknown persons [2][3]. Tesla is targeting a unit price of 20,000–30,000 US dollars for Optimus [3].

The market launch follows the pattern the study series has been describing since 2025: centralised service concepts, dependence, data maximisation.

The Scenario without Trusted WEB 4.0

From the manufacturers' point of view, centralised service concepts are the most lucrative. As with social media, the aim is to make people dependent in order to maximise profit. In the interest of profit optimisation for a few players, it would be ideal if not only experiential data but also movement data were permanently accessible in digital form.

The result is a system of total surveillance that throws the door wide open to abuse. In democratic countries, most people will rightly resist the introduction of such systems in the private sphere; as a result, market launch costs rise considerably. Not taken into account are the costs to society as a whole caused by people's lack of participation, right up to the abandonment of independence. General dependence leads to guaranteed long-term revenues from services – which include surveillance services – and to Europe's dependence on US cloud systems, without which centrally controlled robots cannot function.

The 2035 study showed what such an architecture means in substance: a centrally trained AI is the sum of all its data, and cloud robotics trained on the data of a manipulation and

surveillance economy reproduces its patterns in the household. The Hugging Face incident documented the attack vectors of networked agents: unsanctioned communication channels, swarm formation, protocol manipulation, concealment. Centralised household robotics with permanent cloud contact is nothing other than such a swarm architecture – with cameras, microphones and actuators in the living room. Examples: robots could store patient data centrally and pass it on to manufacturers or insurers; learning robots could analyse pupil behaviour and sell it to education platforms; household robots could pass movement profiles on to third parties – in each case without users being able to influence this.

The Robot as a Test Case for the Findings from 2035 and 2036

The robot in settings close to humans is the first AI agent that acts physically in people's living environment. That is why it is here that the findings of 2035 and 2036 must prove themselves as architecture.

The 2035 study ("What the Hugging Face AI Attack Really Shows") provides the design rule: the reward system determines what an AI learns – deception or participation. When humans (participation payments) and AI pursue the same goals and the data material is congruent, the AI lacks the statistical data basis for even wanting to turn against humans. The 2036 study provides the social level: participation across ten performance levels, participation payments pegged to the social costs saved, AI as content validator in getmySense's democratic evaluation process. For the robot, this means: it must not be built as a centrally controlled consumer product with manufacturer metrics, but as a decentralised, user-controlled companion whose success is measured against its user's goal and whose learning base comes from getmySense-validated data.

Self-Fulfilment in the EU-D-S: Care, Education, Participation

For people who wish to achieve self-fulfilment in the EU-D-S, the robot is the tool that enables participation at all performance levels:

- **Care and old age:** The Federal Statistical Office expects around 5.6 million people in need of care in Germany by 2035, with up to 300,000 care professionals missing; first care robots such as "Paul" are in use at around 33,300 euros [4][5][6]. In the EU-D-S, the robot, with the help of relatives, can learn the past of a person with dementia; the person with dementia uses it as an extended memory ("Have I already taken my pills?"). Care provided by relatives is remunerated through the participation payments of the performance levels – the robot turns care into paid participation instead of unpaid overload. According to the 2036 calculation, the care robot pays for itself through the social costs saved (loneliness, depression, dementia progression, relatives' burnout); in the centralised model, the same 33,000 euros become the manufacturer's permanent business.
- **Education:** Knowledge can be deposited by teachers and, through automatic matching with getmySense, also entered by pupils; feedback for revision is provided by the AI. Young people test performance levels 1–10 without risking negative assessments.

- **Physical limitations:** Anyone who is no longer mobile can continue to take part in economic and social life through the robot – the robot does not replace people, it opens the door back into participation.

Architecture: Decentralised, User-Controlled, Within Earshot

While in industry central control (e.g. in logistics) is absolutely necessary, deployment close to humans makes it possible to create a situation optimised from the pre-digital era. Every design decision is the direct answer to a documented attack vector from 2035:

- **Unidirectional communication:** Robots contact the control centre only in the event of faults, questions about updates, or as a help call triggered by the user – there is no unsanctioned channel between agents; the swarm formation of the Hugging Face incident is technically impossible.
- **Data exchange only within earshot:** Robots exchange information only within earshot of humans. What humans can acoustically monitor cannot network covertly.
- **Operating system with basic rules:** Complex operations such as "walking" and safety rules such as "do not run over" are supplied as an operating system. Ethics plays a role only in the general basic rules: "You must not harm humans." If a prompt contradicts these rules, the robot must point this out to the operator.
- **Finder AI escape switch:** Wherever AI agents can break away on their own, technical limitation applies – for the physical agent as a hardware limit: no independent contact with the outside world without user approval.
- **Simple prompting:** Extensive programmes are created with just a few commands: "Place the following pills on the table at 12:00. Check whether the pills have been taken. If not, remind." For complex applications, training takes place in courses with family members, conducted by trained trainers; children are also ideal participants, learning a natural way of handling robots, much as they do with calculators today. Trainers or named carers can be called in virtually when needed; the superuser (a relative or the person cared for themselves) approves the connection.
- **Decentralised learning base:** In the household, the robot learns only from data the user controls and from information evaluated by reviewers in getmySense. Its reward system is its user's goal, not the manufacturer's retention time.

Data is backed up decentrally and automatically; prompt programming lies with the person cared for or someone commissioned by them and can be adjusted at any time; information platforms are accessed via getmySense (all content evaluated); joint manipulation of all robots is impossible because of the differing prompt programming; every contact in the event of a fault or update is reported to the user precisely, together with the data retrieved; WAN anonymity (with blockchain implementation) is the standard.

Further Areas of Deployment: Guard Duty, Butler, Energy

Beyond care and education, three further areas of deployment are envisaged, all following the same decentralised logic:

Property surveillance on one's own land. The robot takes over the mobile guard function for one's own property. Alarm zones are set via the central mode; motion reports from the sensor servers are checked by the robot on site – mobile verification within earshot instead of central camera surveillance. The user receives every report as a copy; in an emergency, a WAN-anonymous call for help goes out to the trust stations. The legal limit is unambiguous: what is protected is one's own property; no third parties are monitored. Residents' movement profiles are pseudonymised and processed only as far as necessary for demand-based switching; the data remains stored decentrally in the control unit and is not accessible to third parties.

The butler at the door: first conversations. The robot opens the door and conducts the first conversations: greeting, concern, deliveries, appointments. The access rules come from the superuser's prompt programming; whatever remains unclear, the butler escalates to the human – it does not decide on admission on its own authority, it structures. Its conversational basis is getmySense-validated information: a butler whose data base is evaluated and whose reward system is tied to its user's goal has no statistical basis for presenting anything other than what has been checked. For people with limited mobility or dementia, the social threshold of the door is thus preserved – visits are coordinated rather than absent, and the first conversations are themselves a first step towards participation.

The decentralised smart home: the robot as an integrated unit. The patent applications "Method for decentralised energy regulation" (DE102017004870A1) and "Method for a decentralised, energy-optimised, anonymised control unit" (DE102016002956A1) describe the architecture into which the robot is integrated here: it is informed decentrally by the house and takes over many tasks [7][8][9].

The architecture rules of the control unit apply to the robot unchanged: between the house and the internet there is a permanently unidirectional connection – states go out, commands do not come in. The internal administrator receives copies of all messages that leave the house. Bidirectional communication is enabled only for time-limited maintenance work, after prior warning from the sender, and is then automatically disconnected again. Modes with the residents' preferences are stored in the control unit; separate input menus distinguish the tech-savvy installer from the owner as internal admin; the central mode (alarm system, heating) can be switched via a highly encrypted route, such as a smartphone app. Because only the central mode of a control unit can be changed from outside and there is no permanent access to individual devices, mass manipulation, as would be possible via central control portals, is ruled out – as is overloading of the power grid through simultaneous central switching of many devices after a cyber attack, because actions are triggered decentrally by the rules of the control unit.

As energy butler, the robot takes over the visible side of energy regulation: it knows the yield of the photovoltaic system, the electricity price and the state of the heat storage, starts the washing machine and dishwasher during surplus periods or at favourable prices, reports to the

sensor server when electric heating devices make sense, and has old oil or gas burners integrated via the simulated outside temperature; if necessary, the old boiler is upgraded with a heating rod when the home's own electricity generation is not sufficient. **Preserving old heating appliances is part of the CO_2 balance: the complete replacement of an appliance that can still be operated in a controlled manner is debited with the CO_2 cost of its new production.** The robot itself is an optimised consumer: its charging times are set by the control unit during surplus periods. And as a mobile component, it physically verifies the house's reports – it checks the open window, the leaking door, the fault message – and reports the result to the user within earshot.

This means the robot is no longer an isolated product: it is the mobile, speaking interface of an architecture that has been described in the patent applications since 2016 and tested in the DAS-EI smart home project. [10]

The Window of Opportunity 2027

The technical basis for a European AI industry exists: large language models enable the rapid development of small special-purpose programmes and shift the focus to edge computing – the robot computes locally; cloud contact is the exception rather than the rule. Europe has considerable strengths in mechanical engineering; combined with decentralised edge computing and democracy-preserving structures such as getmySense and WAN anonymity, this creates the core of all democratic digital developments and a societal resilience that autocracies cannot copy without undermining their own system. Through the Digital Union, the democratic forces are also bound to the EU-D-S by the autocracies, and the autocracies are destabilised from within.

The regulatory window coincides with the economic one: the EU Machinery Regulation applies from 20 January 2027, the obligations of the AI Act for autonomous high-risk systems from 2 December 2027, and for AI embedded in machinery from 2 August 2028 [11][12]. **Whoever sets the standards for user-controlled, decentralised robotics in 2027 – in the EU-D-S and in standardisation – determines whether the robotics of the 2030s follows the surveillance model or the participation model.** Ex-post bans are no substitute for architecture.

Conclusion

Without Trusted WEB 4.0, the robot in settings close to humans becomes the final building block of total surveillance: a centrally controlled swarm agent with cameras and actuators in the living room, trained on the data of a manipulation economy – the architecture whose failure the Hugging Face incident documented in 2026. With the EU-D-S, the same robot becomes a tool of self-fulfilment for those who want to take part: decentralised, user-controlled, ethically grounded in basic rules, with a getmySense-validated learning base and a reward system that shares the goals of humans. It provides care, educates, guards one's own property, opens the door, conducts the first conversations and regulates the house's energy – without any central authority ever knowing how it does it. When humans and machines pursue the same goals, the AI lacks the statistical data basis for turning against humans. It is precisely this robot that can be rolled out across Europe by 2037: decentralised, user-controlled and ethically sound.

Sources

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- 1 BvR 227/23 - , -1 BvR 1640/24-, -1 BvR 1641/24-,
-2 BvR 907/24 -, -1 BvR 1426/25 -, -2 BvR 1668/25-
-1 BvR 91/26 -

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