



ELDERLY & DISABILITY PERSONAL CARE

Special Needs Cobot with Bionic Hand

Care with Dignity

A collaborative robot with a bionic hand, on-device computer vision and voice control — for dignified daily care at home or in your facility.



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THE PROBLEM

Care is failing where it matters most.

Personal hygiene is the most intimate, time-consuming and dignity-sensitive part of daily care in eldercare and disability care. It is also the first task to be cut when carers are in short supply — with real consequences for physical and mental health.

1 in 6

of the world's population will be 60+ by 2030.

[WHO, 2023]

13.5 M

global care-worker shortage projected by 2030.

[WHO / ILO]

72 %

of adults name dignity in personal care as their #1 concern.

[AARP survey, 2024]

60 %

of care-home admissions are triggered by inability to manage hygiene.

[NIH, 2022]

3.2 hrs

average carer time per day per resident spent on personal hygiene.

[HK Hosp. Authority]

42 %

of family caregivers report burnout within 18 months.

[AARP]

A cobot, not a replacement.

Our answer: automate the dignified skills — bathing, toileting, oral care, medication hand-off — so human carers can focus on the parts that only humans can do.

THE SOLUTION

One cobot, eight skills, one bionic hand — more skills anytime.

The SMERT Special Needs Cobot with Bionic Hand combines three technologies that, until 2026, did not exist in a single home-deployable unit:

- A SMERT collaborative arm (E05, E12 or S30) — force-limited, ISO 10218-certified.
- The LinkerHand L20 dexterous hand (21 DoF, tactile sensing) — human-like manipulation of soft objects.
- SMERT on-device computer vision — patient state detection with no cloud video.
- Voice control in any language — 100+ supported, including every major European, Asian, Middle-Eastern and African language plus regional dialects. Configured to the user's native tongue at install.
- A family / care-team app with real-time logs and alerts.



Shipped and installed worldwide.

Every unit is assembled and QA'd in Hong Kong, then delivered anywhere in the world with a SMERT technician who travels with it for on-site install and training.

END-EFFECTOR

The LinkerHand dexterous hand.



	LinkerHand L20	LinkerHand L30
Fingers	5	5 + opposable thumb
Degrees of freedom	21 (16 active)	22 (18 active)
Tactile sensing	Piezoresistive	High-density array
Rated payload	20 kg	30 kg
Open / close	0.4 s	0.2 s
Interface	RS-485 Modbus RTU	RS-485 / CAN
Hygiene use	Dry use + sleeve	Dry use + sleeve
Ships in	Essential pkg	Advanced & Clinical

Authorised LinkerBot channel partner. Lead-time 30–45 days from order confirmation.



ENVELOPE

One footprint, three mounting options.

Each package includes the mounting hardware appropriate for the setting — wall bracket, mobile base or overhead rail. Reach is measured from the shoulder joint of the cobot arm.

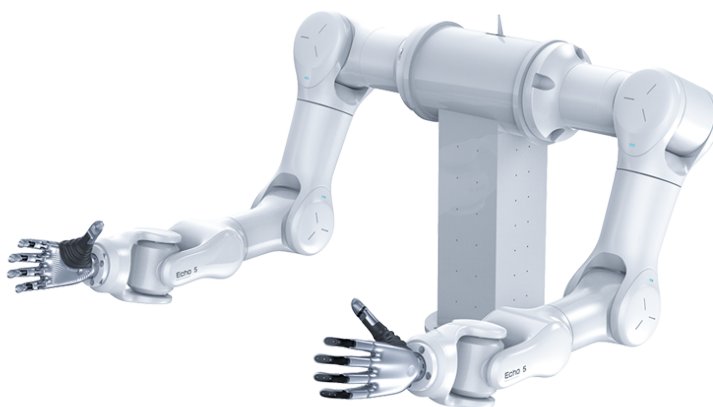
850 mm reach — E05 (Essential package)	1,300 mm reach — E12 (Advanced package)	1,800 mm reach — S30 (Clinical package)
±360° base rotation — full circular workspace	5 / 12 / 30 kg payload by arm variant	< 200 ms collision-stop response

Wall bracket For fixed bathroom install. Ideal for private homes.	Mobile base Wheeled base with docking — moves between bedroom and bathroom.	Overhead rail For care homes — a single cobot serves 4–6 patient rooms.
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OPTIONAL UPGRADE

For skills that need two hands: dressing, transfers, repositioning.

The single-arm cobot handles most assistive skills. For care scenarios where two hands work together — sit-to-stand transfers, dressing an upper body, repositioning a bed-bound patient, or two-hand bathing — we offer the SMERT HDUO: two 7-DoF arms on a shared torso, coordinated by one controller and paired with the same LinkerHand dexterous hand end-effectors.



HDUO-H3

Coplanar wrist · 3 kg / arm

from \$45,900

+ \$180/mo · SMERT Care (both arms)

Same day-to-day assistive skills, now with two hands. Best value for private homes and small facilities upgrading from single-arm.

HDUO-HX3

Spatial wrist · 3 kg / arm

from \$91,800

+ \$180/mo · SMERT Care (both arms)

Wider bimanual reach envelope — hands can approach the patient from independent angles. Best for care homes with complex transfer skills.

Same bionic hand, same brain

HDUO uses the identical LinkerHand L20 / L30 dexterous hands and the same on-device computer vision stack as the single-arm cobots. Voice control, safety envelope, privacy model and 24/7 NOC coverage are unchanged. Lead time and deployment plan match the single-arm packages.



APPLICATIONS

Skills are modular. Activate at install; add or cancel any skill any time on a monthly subscription.

Bathing & shower assist

Adaptive grip on sponges and shower heads, water temperature control, dignity-first choreography.

Requires: bathroom access · floor-bolted base · water & drain

Toileting support

Discreet cleansing skill with soft-touch mode. Camera view stays on device — never uploaded.

Requires: floor-bolted base near WC · privacy screen

Oral & skin hygiene

Tooth brushing, denture care, face wash and moisturizing with 0.3 mm precision.

Any deployment · mobile base OK

Grooming

Hair combing, shaving assistance, nail file — adapted to the person's rhythm.

Any deployment · mobile base OK

Medication hand-off

Correct dose, correct time, verified by computer vision before hand-off. Full log for family and clinicians.

Requires: locked medication cabinet nearby

Hydration & feeding

Cup and spoon handling with tremor-safe motion. Pauses on cough or head-turn detection.

Any deployment · bedside or table mount

Exercise & gymnastics therapy

Assisted range-of-motion, light-resistance sessions and physio-guided gymnastics — keep the body active with

Gaming, learning & companionship

Chess, cards, memory games, storytelling, music and language practice — the bionic hand moves the pieces

Add or remove skills anytime — monthly subscription.

Skills are modular. Every skill is available on a monthly subscription — activate or cancel any skill any time from your dashboard, pushed OTA to the cobot with no engineer visit. New skills are released regularly. Coming soon: Physio coach, Sleep companion, Language practice, Reminiscence therapy.



AI VISION

Sees what matters. Reports what counts.

SMERT computer vision runs entirely on the cobot itself — no cloud video, no third-party AI. Only structured events reach the family app or care-home dashboard.

What the cobot sees

- Patient state — awake / asleep / distressed
- Fall detection with < 3-second alert to phone
- Skin condition trend detection (redness, dryness)
- Cough, choke, aspiration pre-alerts during feeding
- Hygiene skill completeness score
- Inactivity alerts (no movement for X minutes)

What you receive

- Daily summary PDF, auto-emailed to family
- Multi-patient view for care-home shifts
- Handover notes generated between shifts
- Anomaly log with time-stamped events
- Family-app messaging: text + emoji only, no video
- Weekly clinical report for GP or geriatrician

Privacy-by-design.

The cobot never uploads video. Vision runs on an on-board NVIDIA Jetson module. Only structured events (skill completed, alert, fall) leave the device — encrypted end-to-end.

STANDARDS

Built to the standards that matter.

ISO 10218-1/2

Industrial robot safety — mandatory for collaborative operation.

ISO/TS 15066

Collaborative-robot force and pressure limits for human contact.

CE-MD (EU)

Machinery Directive conformity for European markets.

IEC 60601-1

Medical electrical equipment safety alignment (Clinical package).

EN ISO 13482

Personal-care robot safety requirements.

FCC Part 15

Electromagnetic compatibility for US deployment.

Every SMERT cobot ships with a wall-mounted panic button and a voice-triggered stop phrase ('SMERT stop'). Force limits are enforced in firmware and audited monthly by SMERT Care.



DATA

Your data. Your rules.

Personal hygiene is the most private part of daily life. Every architectural decision in the SMERT cobot is aligned to that reality.

- All computer vision runs on-device — raw video never leaves the cobot.
- Structured events are encrypted end-to-end and stored in an EU or HK region of your choice.
- GDPR right-to-erasure — one click deletes all patient data across every system.
- HIPAA-ready audit trail with role-based access for family and clinical staff.
- No third-party AI provider processes patient data. Not OpenAI, not Google, not anyone.
- Every access to the patient dashboard is logged and visible to the account owner.
- You can revoke any carer's access instantly from the family app.
- Data export in JSON or PDF — you own it, and you can move it out at any time.

Our promise.

SMERT will never sell, share or use patient data to train third-party AI models. This is written into every SMERT Care agreement — and audited annually.

**SMERT NOC**

Watched around the clock — never alone with the machine.

Every SMERT Special Needs Cobot is connected to the SMERT Network Operations Center in Hong Kong with redundant APAC and EU shifts. Live telemetry, real-time malfunction alarms, remote takeover and human escalation are included in every package.

Live remote control

HK operators can take over any joint or the dexterous hand on demand — every intervention audit-logged.

Real-time malfunction alarms

Torque, sensor, vision, network and battery anomalies escalate the moment they cross threshold.

Emergency SOS

One press on the wall panic button or in-app pages the on-call technician and the designated family contact.

Fall & no-response detection

On-device computer vision auto-escalates to the NOC — no raw video ever leaves the room.

Auto-pause & safe-park

On any anomaly the cobot stops in under 200 ms and retracts to its safe home position.

Full session audit log

Every intervention, alarm and remote takeover is timestamped and reviewable by family and carers.

Response SLA.

Median operator response under 60 seconds · redundant HK + APAC + EU shifts · encrypted TLS 1.3 tunnel, SOC 2 aligned · included in Essential, Advanced and Clinical.



TIMELINE

From Hong Kong to your bedroom.

- 1 **Day 0**
Order confirmed — \$5k refundable deposit or full payment. Delivery slot locked.
- 2 **Day 5 – 30**
Assembly and QA in Hong Kong. Cobot arm + LinkerHand hand + CV calibration on the patient profile.
- 3 **Day 25 – 35**
Ship to destination. SMERT technician travels with the unit — travel included in every package.
- 4 **Day 30 – 40**
On-site install: 3 days (Essential), 7 days (Advanced), 14 days (Clinical) — includes staff / family training.
- 5 **Go-live + 14**
Satisfaction check-in. If the fit is wrong within 30 days, we buy back the unit at 90% of price.
- 6 **Every month**
SMERT Care technician visit or remote check-up, OTA software updates, spare parts pool refresh.



ONBOARDING

Included in every package.

The SMERT technician who travels with the cobot is also your trainer. Training is tailored to the audience: family for home deployments, care staff for facilities.

Module 1 — Safety first

Panic button, voice-stop, e-stop, wall-mounted controls, what to do in a fall.

Module 2 — Daily skills

Programming and adjusting the eight hygiene & wellness skills to the patient's needs.

Module 3 — The family app

Reviewing daily reports, receiving alerts, sharing access with other family or clinicians.

Module 4 — Cleaning & care

Weekly cleaning of the hand, sponge and cup accessories, decontamination protocol.

Module 5 — When to call us

Understanding SMERT Care coverage, when to open a ticket, response SLA.

Certification

Written + practical exam. Family / staff receive a signed certificate. Refresher every 12 months (remote, free).



MAINTENANCE

One monthly fee. Everything covered.

Every package includes SMERT Care for the first 1–6 months (see Packages page). After that, Every package includes SMERT Care for the first 1–6 months (see Packages page). After that, you continue on a monthly subscription. The plan covers a semestral (every 6 months) on-site check-up, continuous remote monitoring, OTA software updates, and all spare parts on normal wear. Labor for major repairs is billed at \$140/hr.

	Essential (\$299/mo)	Advanced (\$399/mo)	Clinical (\$549/mo)
On-site check-up	Remote only	Annual	Semestral
OTA software	Standard	Priority	Priority + beta
Spare parts	Normal wear	Normal wear + wet	Everything except abuse
Response SLA	24 hours	8 hours	2 hours
Labor rate (major)	\$140/hr	\$120/hr	Included
Refresher training	Remote annual	Remote biannual	On-site annual

Care plans billed monthly via Stripe. Cancel or upgrade any time; downgrade takes effect at renewal.

VOICE COMPANION

A warm, multilingual AI voice that turns speech into Cobot action.

**Nurse Rose**

AI voice · 13 languages · voice cloning

What she does

- Speaks 13 languages, natural turn-taking, interruptible.
- Personalized name, age band, pronouns, and tone per patient.
- Clone a loved-one's voice (30-sec sample) — familiar and reassuring.
- Emergency phrase escalates to family, on-call staff, or emergency services.
- Never trained on your data. HIPAA-aware. GDPR-aligned. On-device wake word.

Voice → Intent → Cobot arm

She listens, understands intent, and triggers the arm: bring water, medication reminder, hygiene skill, dim the lights, play music, or call the nurse. Every action is logged for family.

Try her in 60 seconds

Open smert.ai/special-needs-cobot/voice-demo. Tap Start, say hello, and hear how she'd talk to your loved one — right from your phone. No signup.

- 1. Tap Start
- 2. Speak naturally
- 3. She replies — and the Cobot acts

KEEP THEM MOVING

Not just hygiene — active, strong, muscularly awake.

Immobility is the silent killer for elderly and disabled patients — muscle mass drops within days of bed rest. The SMERT Cobot runs daily assisted gymnastics right at the bedside: gentle stretches, joint mobilisation and light resistance sessions, personalised to each patient and voice-coached in their own language.



- **Assisted range-of-motion cycles**
Shoulder, elbow, wrist, hip, knee and ankle mobilisation — force-limited joints, ISO/TS 15066 compliant.
- **Muscle activation & light resistance**
Progressive sessions that keep bed-bound patients muscularly awake and prevent contractures.
- **Voice-coached, patient-paced**
Choose any voice — or clone your own. Counts reps, cues breathing, pauses instantly on command.
- **Every session logged**
Duration, range achieved and patient response push to the family app and care-home dashboard.

KEEP THE MIND SHARP

From chess to philosophy — never a dull day.

From chess, cards, Risk and Monopoly to guided conversations on philosophy, physics and literature — the SMERT Cobot adapts difficulty in real time to keep every user challenged, curious and entertained. The bionic hand moves real pieces on real boards; the on-board LLM turns any afternoon into a private tutorial or a game night.



- **Board & card games**
Chess, checkers, Risk, Monopoly, poker, mahjong — the bionic hand moves pieces and adapts to any skill level.
- **Cognitive workouts**
Memory, logic and trivia across 5 difficulty levels — clinically-inspired sessions to slow cognitive decline.
- **Companion learning**
Philosophy, physics, literature or a new language — the on-board LLM turns downtime into private tutoring.
- **Story & music time**
Read-aloud sessions, curated playlists and guided reminiscence for calmer evenings and better sleep.

CHOOSE YOUR PACKAGE

Same worldwide price — pick your level.

Essential Home / single patient	Advanced Multi-patient / small facility	Clinical Care homes & hospitals
\$54,900 one-time · worldwide + \$299/mo · SMERT Care • SMERT E05 (5 kg) + LinkerHand L20 • 3-day on-site setup • 12-month warranty • CV basics, voice control, family app • 1 month SMERT Care free	\$64,900 one-time · worldwide + \$399/mo · SMERT Care • SMERT E12 (12 kg) + LinkerHand L20 • 7-day setup + training • 24-month warranty • Full CV suite, dashboard, 6-patient scheduling • 3 months SMERT Care free	\$79,900 one-time · worldwide + \$549/mo · SMERT Care • SMERT S30 (30 kg) + LinkerHand L30 • 14-day setup + certification • 36-month warranty • Clinical CV, EHR hooks, 12+ patients • 6 months SMERT Care free

Payment options

- Credit card — Visa, Mastercard, Amex (via Stripe).
- \$5,000 refundable deposit → 60% at shipment → 40% on arrival.
- Bank transfer or invoice for facility / hospital procurement.
- 48-month lease from ~\$1,500/month (subject to credit approval).

Bimanual upgrade · see page 07

SMERT HDUO-H3 from \$45,900 · HDUO-HX3 from \$59,700 · same bionic hand, two arms.

All prices in USD, valid worldwide. Import duties depend on destination country and are quoted separately.

FAQ

Answers to what families and facilities ask us most.

Q Is this a medical device?

A collaborative robot for assistive care. CE-MD aligned; Clinical package adds IEC 60601 alignment. Not a substitute for clinical treatment.

Q Who operates it day-to-day?

The person receiving care, a family member, or a carer. Voice control works in the user's native language — 100+ languages and regional dialects supported, so elderly and disabled users never have to speak a second language. A large-button tablet backs up voice for users with reduced mobility.

Q Does video leave the room?

No. Vision runs on the cobot. Only structured events reach the family or care-home app — never raw video.

Q What if something goes wrong mid-skill?

Voice ('SMERT stop'), gesture, or wall panic button — the cobot stops in under 200 ms and returns to a safe home position.

Q Do you ship worldwide?

Yes. From Hong Kong, with a SMERT technician traveling on-site for install and training. Shipping + tech travel are included.

Q How long from order to go-live?

30 – 45 days from order confirmation. The LinkerHand hand lead-time is the bottleneck.

Q Can I add more skills later?

Yes. Every skill is available on a monthly subscription — activate or cancel from your dashboard, pushed OTA with no engineer visit. New skills are released regularly.

Q What if it's not the right fit?

14-day satisfaction check-in. If it doesn't work out within 30 days, we buy back the unit at 90% of price. Deposit fully refundable.

Q Can I finance it?

Yes — 48-month lease from ~\$1,500/month, subject to credit approval. Talk to us on the form and we'll match a lender.

One technology chain. Every status visible.

The stack below distinguishes equipment ordered for the Hong Kong lab, deployable interfaces, simulation work and research still behind a gate.

Huayan E15 Pro + LinkerHand L20

Two upright arms and one left/right dexterous-hand pair for the Tsim Sha Tsui lab.

ORDERED · AWAITING LAB COMMISSIONING

Industrial edge AI

One enclosed fanless Plink NVIDIA Jetson Orin NX 16 GB / 256 GB node per bimanual unit; USB 3 cameras, no GMSL.

ORDERED · AWAITING LAB COMMISSIONING

Local 3D perception

RealSense D435i mast camera plus two D405 wrist cameras are specified for the lab. The E15 Pro camera is 2D + AR-marker only.

DESIGN TARGET · RESEARCH ROADMAP

Voice to guarded action

Nurse Rose confirms intent; only named skills pass to local safety controls, execution, evidence and caregiver hand-back.

CUSTOMER DEPLOYMENT OPTION

Simulation-first task validation

Browser digital twin, ROS 2 / MoveIt 2 interfaces and complete-or-nothing task contracts before physical commissioning.

SIMULATION / MANIKIN VALIDATION

Force and thermal research

Bota SensONE USB RFQ sent; FLIR Lepton 3.5 + PureThermal 3 is a draft lab line. Neither is installed or ordered.

DESIGN TARGET · RESEARCH ROADMAP

Safety design targets remain local and unvalidated: ≤ 250 mm/s near-person speed, 10 N yield threshold, E-stop target < 200 ms, defined safe park and human sign-off.

Research shapes the method. It does not validate the product.

01

SimToolReal · MIT licence · 2026

Goal-conditioned tool use, primitive-object training and random-force perturbations inform the planned sim-to-real recipe. GPU training has not started.

02

FoundationPose + Segment Anything

Open-source pose tracking and segmentation are the planned human-video-to-goal-trajectory capture path described by SimToolReal; not a commissioned SMERT workflow.

03

MIT · T-RO · 2026

Diffusion-based impedance learning from therapist demonstrations and force sensing is external research on different hardware. SMERT does not offer force-adaptive rehabilitation.

04

Stanford-line manipulation research

Memory, large-scale simulation and language-conditioned planning support simulation-first evaluation; they do not validate SMERT performance.

05

Boundary, simulation and manikin validation only for healthcare. LinkerHand L20 has no published IP rating; dry use only. Wet-care remains sleeved/tool-mediated R&D. No clinical, diagnostic or therapeutic claim.

MediaPipe and EfficientDet-Lite support consent-first observation prototypes. UnifoLM-ER-1-4B is a planned Orin NX evaluation; Isaac Lab-Arena and world-action models remain watch-only.



READY WHEN YOU ARE

Reserve your cobot.

Lock your delivery slot with a \$5,000 refundable deposit — or request an invoice for full payment. We'll come back within 24 hours with a formal quote and deployment plan.

→ smert.ai/special-needs-cobot

Reserve online with credit card or request invoice for facilities.

Talk to us directly

Email hello@smertai.com
Phone +1 (650) 564-3040 (Alex Birn)
Web smert.ai · smertai.com · smertrobotics.com
Address Hong Kong · Wilmington DE (US HQ)

For facilities & care groups

From 3 units we open a wholesale line with 10–25% off list depending on volume. Ask us about our care-home master agreement and multi-site rollout.