

# Robot Ready Smart Buildings

**Dr Matthew Marson**

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# Dr Matthew Marson

Managing Director

*Technology Consulting, EMEA & APAC*



BBC

Royal Academy of Engineering

ELSEVIER

- Smart Buildings PhD
- MEng Structural Engineering + Architecture
- Head of Smart Places, WSP
- Connected Spaces Lead, Accenture
- Board & Fellow at the Institution of Mechanical Engineers
- Royal Academy of Engineers Young Engineer of the Year
- IMechE Young Visionary
- Fellow of the RSA
- Co-author, Encyclopaedia of Sustainable Technologies

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# Agenda


01 Are Buildings Ready?

02 The Three Spheres

03 Example Scorecard

04 The Smart Building Advantage

05 Digital Twins

06 Real-world Robot Workflows

07 How to start






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# The 5 humanoid robots defining 2026

01



**Optimus Gen 2**

Tesla

Height: 1.73 m

Industrial + home

02



**NEO**

1X Technologies

Height: 1.67 m

Household assistance

03



**Electric Atlas**

Boston Dynamics

Height: 1.90 m

Industrial + R&D

04



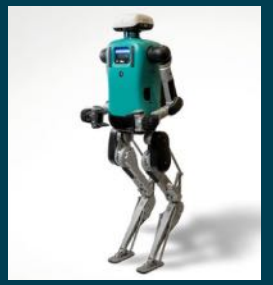
**G1**

Unitree Robotics

Height: 1.40 m

Logistics + service

05



**Digit**

Agility Robotics

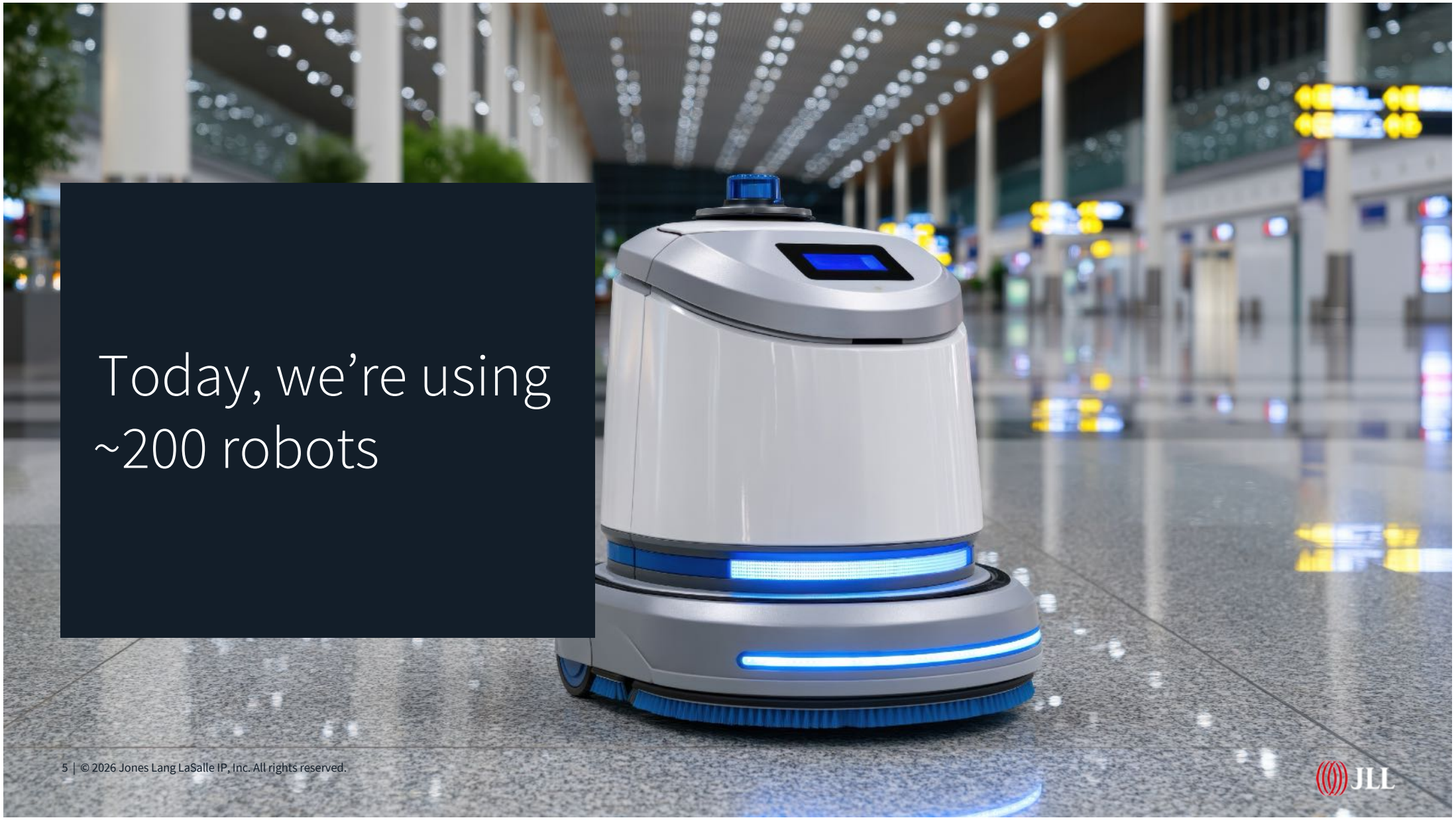
Height: 1.20 m

Urban logistics

Source: Humanoid Robotics Technology, “Top 12 Humanoid Robots of 2026”

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# Are Buildings Ready?



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# Robots are already here. The buildings around them aren’t ready.

**1**

Large corporate occupiers have bought the hardware. Far fewer have made it work.

*69% / 23%*

**Deployed, against fully integrated with efficient operations. A further 28% call theirs functional but not delivering expected results. JLL 2025 Global Real Estate Technology Survey, 1,500+ decision-makers across 16 markets.**

**2**

The labour these machines would cover is already leaving the market.

*2.1m*

**US skilled trades posts that could go unfilled by 2030, with two entrants for every five who retire. JLL workforce research, April 2026; US Department of Education.**

**3**

Most of the stock that will host robots is already standing, designed for people only.

*75%*

**US commercial buildings built before 2000, holding 71% of floorspace. US Energy Information Administration, CBECS 2018.**

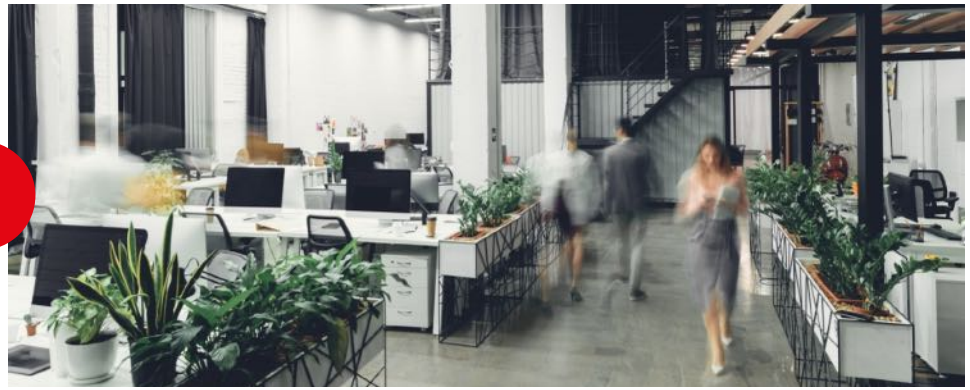
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The constraint

# The robot is buyable. A building that can host it isn’t.



VS



THE ROBOT

## Buyable by anyone

Same hardware, same lead time as the competitor

THE BUILDING

## Not buyable. It has to be prepared.

The advantage is what sits underneath the robot

**WHAT IT MUST SUPPLY**

- Floors
- Network
- Credentials
- Lift protocol
- Contract
- Operating model

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# Three Sphere of Preparedness












# The Three Spheres

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# The building is slowest to change, so buy readiness on cycles you already fund

**Physical accessibility**



**Power and charging**



**Safety systems**



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# Robots stall on digital and data, the cheapest layer to fix



1

## Digital connectivity

**WHAT BREAKS**

Wi-Fi handoffs drop in corridors

**THE FIX**

**RF-survey routes, give robots their own VLAN**

**WHEN** This quarter



2

## Autonomous access

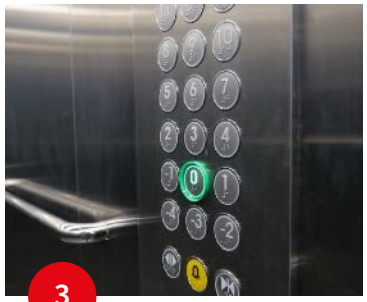
**WHAT BREAKS**

Every secured door is a full stop

**THE FIX**

**Machine credentials and a door API**

**WHEN** This year



3

## Vertical transportation

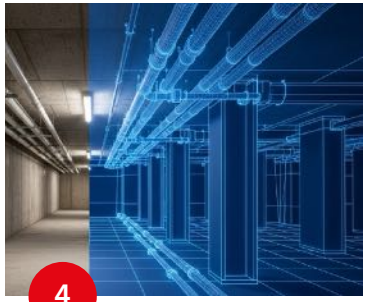
**WHAT BREAKS**

Lifts called by finger cap robots at one floor

**THE FIX**

**Robot API at the lift service renewal**

**WHEN** Next lift renewal



4

## Digital twins

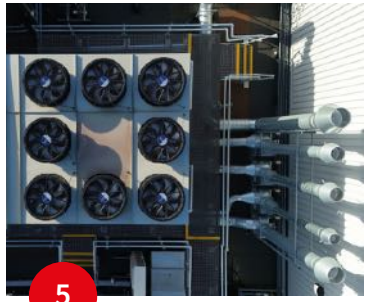
**WHAT BREAKS**

As-built drawings are years old

**THE FIX**

**Point-cloud scan the robot routes**

**WHEN** Next survey



5

## Building systems integration

**WHAT BREAKS**

Each system names machines differently

**THE FIX**

**Tagged point list as a contract deliverable**

**WHEN** Next head-end upgrade

*Source: JLL technology consulting analysis and practitioner interviews, 2026; enterprise networking interview, JLL FM 2035 series, August 2026; Security Industry Association; KONE; UCL Bartlett B-made robotics laboratory, reviewed 19 June 2026; ASHRAE.*

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# Free to fix today. Expensive the day after a deployment exists.



## Human and robot interaction

Occupants chase it, block it or photograph it. Staff read it as a redundancy notice on wheels.

**$90K** saved in one season by two robot mowers once staff were reassured

THE MOVE

**Deploy back-of-house and out of hours first. Publish where robots won't go.**

WHEN **This quarter**



## FM operating model

Nobody owns the fleet, and contracts price labour hours, so every hour a robot saves cuts supplier revenue.

**5%** of occupiers achieve all their AI goals, though 92% are piloting

THE MOVE

**Fix the contract before the hardware. Name one owner for autonomy on site.**

WHEN **Next FM contract renewal**

*Source: The Washington Post, 16 September 2026 (Brooklyn cemetery robot mowers); JLL 2026 Global Real Estate Technology Survey.*

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# Example Scorecard



Case study

# Index in action – corporate client

| Sphere | Dimension | Readiness score | Reasoning | Next step |
|---|---|---|---|---|
| Hardware & fabric | Physical accessibility | ■ ■ ■ | Corridors and thresholds are clear on both trial routes. The lobby's polished stone scatters laser, and two lift sills trap caster wheels. | Matte finish on the next covering run and ramp the two sills. Next fit-out cycle. |
| | Power & charging – on-site energy | ■ | A spare way is free on the basement board. The obvious dock position is a janitorial store already at capacity. | Site the dock in the loading bay alcove, and size conductors above nameplate draw. |
| | Safety systems – space requirements | ■ ■ | The permit to work covers people doing defined tasks. Nothing describes shutdown behavior when the alarm sounds. | Add a one-page permit to operate at the next induction refresh. |
| Digital & data | Connectivity | | Coverage was designed for laptops. Handoff drops in the service corridor and loading bay, exactly where the work is. | RF-survey the two trial routes this quarter, then fix roaming before adding hardware. |
| | Autonomous access – doors, entrance, stairs | ■ | The access system has no machine credential type, so a robot can only tailgate or wait for a propped door. | Ask the access vendor for a credential type and an API. Head-end change, not re-cabling. |
| | Vertical transportation | | The 1998 lift controllers expose no service-robot API, so nothing can call a lift unaccompanied. | Keep the trial single-floor and raise the API question at the lift service renewal. |
| | Digital twins | ■ | As-built CAD dates from the 2015 refurbishment. No route-level scan exists, and no vision data has been collected. | Point-cloud the two trial routes during the dilapidations survey already scheduled. |
| | Building systems integration | ■ | The BMS, the security system and the CAFM name the same plant room three different ways, so finished work can't be billed back. | Make a tagged point list a contract deliverable at the next head-end upgrade. |
| Process & people | Human and robot interaction design | | No operating map has been published. Reception is off-limits on brand grounds, which nobody has written down. | Publish where robots will and won't operate before the first machine arrives. |
| | Facilities management operating model | ■ | The contract prices labor hours, so removing hours cuts the supplier's revenue. Data rights are unaddressed. | Put service-level objectives and data rights into the next MSA renewal. |

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# The Smart Building Advantage



# Smart buildings let owners leapfrog: robots arrive ready to work

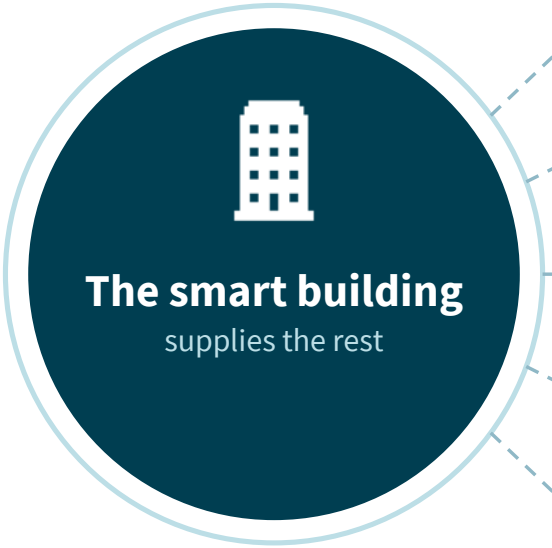
**THE ROBOT BRINGS**



### Its skill at the task

Cleaning, delivery, patrol and inspection, out of the box

+




### Wayfinding

Live maps, and lifts and doors that open on request

### Collision avoidance

Sensors warn of people and other robots ahead

### Smart charging

Charging balanced against the grid and the rest of the fleet

### Digital twin check

Routes and tasks rehearsed on the twin before going live

### Permit to work

The robot applies to the building before each task

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# Digital Twins



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# Digital twins let robots train on a building before they arrive

**THE TWIN COMES FIRST**



1

### Build the twin

Model the space and its assets before any robot is bought



2

### Train virtually

Robots rehearse routes and tasks in the twin, not on the floor



3

### Deploy on day one

Robots arrive already trained on the site and start working

**WHY IT MATTERS**



### New contexts

Robots learn a site they have never seen: layouts, lifts, busy times and no-go zones



### Insurance

Logged simulations and tested routes show insurers the risk is managed

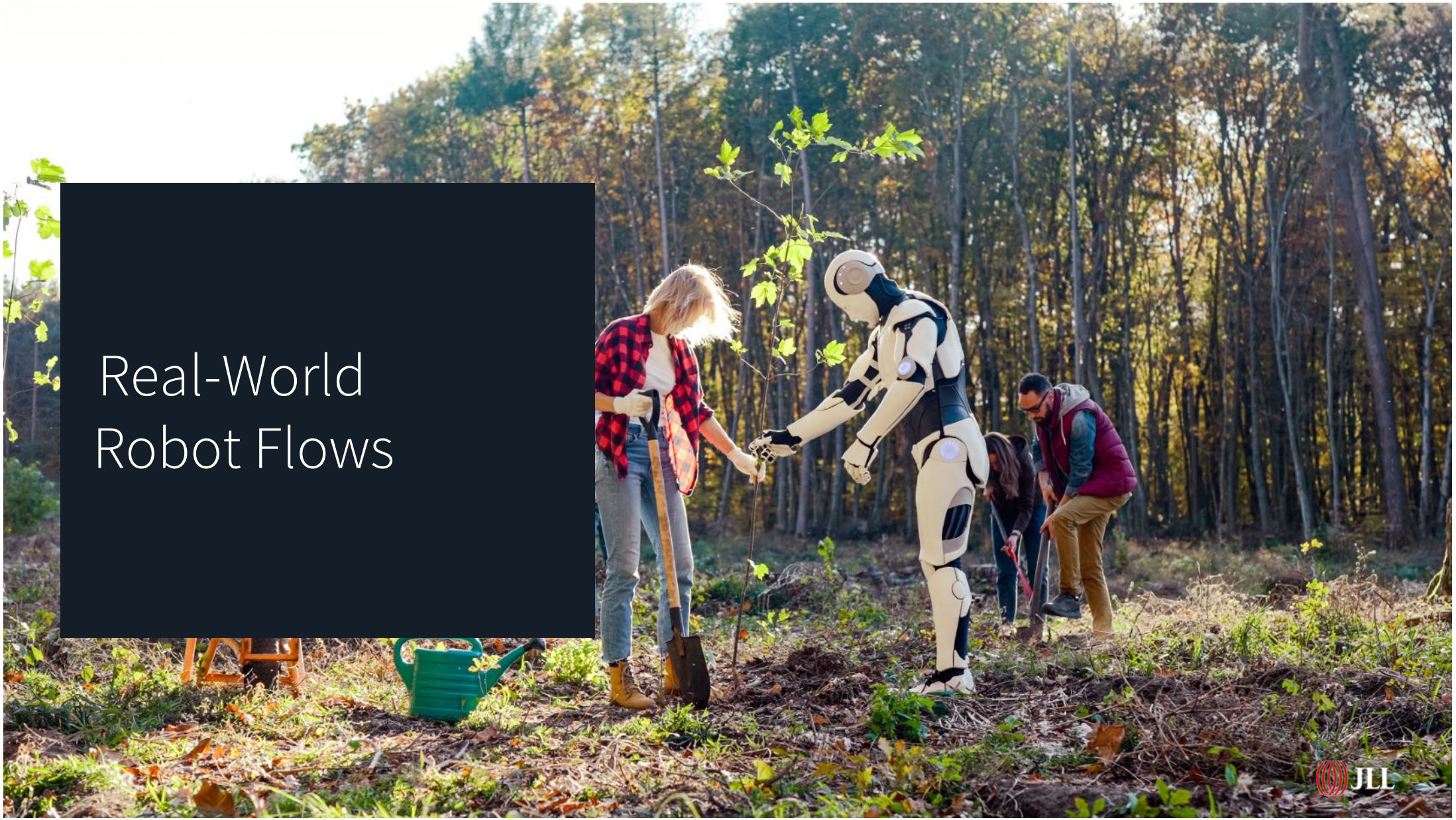


### Machine metadata

Asset data on lifts, doors and plant tells robots what they interface with or maintain

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# Real-World Robot Flows



# You don’t need a new budget line to start

## Attach one question to five areas of CRE work already on the calendar

### 01 Fit out cycle

**Do you have a flagship site where advanced robotics could be trialed?**

For every human per square foot, assume you need thrice that for humanoid or complex AI units.

### 02 Lift service renewal

**How old are your lifts?**

When selecting a site to deploy robotics at, a key barrier could be vertical transportation, namely a unit digital interacting with lifts (stairs are hard to traverse).

### 03 New lease discovery

**Are you waiting too long to look for the right lease?**

“Robot-ready” leases are only going to get more premium and expensive, so locking a property with pre-made features favorable to embodied AI is a strategic move.

### 04 FM planning

**Can your inhouse or outsourced experts handle a robotics trial?**

Skills such as digitizing FM processes for embodied AI to learn, and fleet management, will increasingly be mission critical.

### 05 Energy procurement

**Can your current buildings handle a robotics fleets’ electric needs?**

Buildings with on-site storage, renewable and resilient energy systems are best positioned for robots.

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# How to Start



Start here

# Three moves, none of which needs a robot

*1*



## Write data rights into the next contract

Ownership, training rights and service levels cost nothing to agree now

**WHEN** **Next renewal**

**COST** Drafting time

*2*



## Survey only the robot's routes

Two or three routes, a few days of RF survey, one short fix list

**WHEN** **This quarter**

**COST** Days of survey work

*3*



## Make a tagged point list a deliverable

Ask at the next head-end upgrade, and require open APIs

**WHEN** **Next procurement**

**COST** Paid within the upgrade

*0* **robots needed, and no capital approval.** Each move costs more once a deployment exists.

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# Every department has a first step they can take – however small

## No one domain can own robotics alone

### Facilities & EHS

- **Small step:** Identify areas space for test robotics trial in flagship sites, documenting area features
- **Big step:** Digitise workflows to speed up future embodied AI training – robots will likely follow establish work patterns

### Real estate

- **Small step:** Conduct BI analysis on portfolio to identify most energy resilient sites for robotic fleet operations, e.g. EV charging friendly
- **Big step:** Create framework for selecting robot ready sites in new lease search and due diligence workflows



### IT

- **Small step:** Work with real estate to select candidate sites and map Wi-Fi coverage blind spots that would impede robotic operations
- **Big step:** Begin adding robotics readiness requirements to tech procurement frameworks, such as 5G private networks

### Legal

- **Small step:** Have staff search legal precedent on robotics use in manufacturing industries
- **Big step:** Develop a risk roadmap for hybrid human-robot workforces from multiple perspectives

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# Thank you

**Dr. Matthew Marson**
Managing Director, Technology Consulting
M. +97150 228 6298
matthew.marson@jll.com
EMEA & APAC

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