# Technisches Englisch

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## Robot to Work in Harmony with Humans

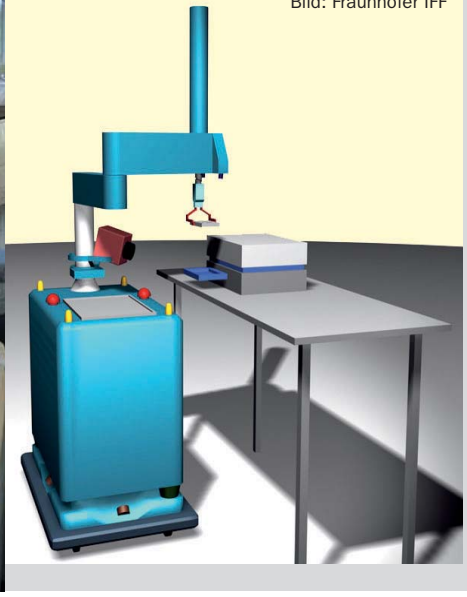
Assistant robots **suitable** for everyday **burdensome** or monotonous **tasks** alongside humans are still **virtually unavailable** commercially. Such systems are usually either **insufficiently** safe or not cost-effective. However, **researchers** at the Fraunhofer Institute have developed a laboratory robot, known as LISA, which could change that. Within **approximately** one year, a prototype of LISA (life science assistant) will be operating **in concert** with human **colleagues** in biotechnology labs, loading **incubators** and **measuring equipment** with **sample trays**, and accurately navigating from one lab instrument to the next. The developers from the Fraunhofer Institute for Factory Operation and Automation (IFF) in Magdeburg, Germany, have made sure that their **silent** assistant is safe. Only then will the German **institutions for statutory accident insurance and prevention** and TÜV **give** it **their blessing** for everyday use.

LISA is **equipped with** a **sensing gripper arm** designed to hold plastic **dishes** but not **injure** human beings. Its **artificial skin consists of conductive foam** and textiles, with intelligent **signal processing** electronics. This skin **immediately** senses and **cushions** any **inadvertent** contact. A thermographic camera additionally registers body heat and indicates, for instance, if a human colleague's hand is in the way. The developers at the IFF and their seven project partners from industry and research **aim to** construct a robot for everyday routines that can already be cost-effectively **deployed** shortly after the pilot phase – and around the clock **at that**. **Hence** LISA is not overloaded with **sophisticated** functions. It has a **laser-aided** navigation system it uses to orient itself in **familiar spaces** and goes through doorways on its own. It safely navigates around **obstacles** and people. That **suffices** for everyday laboratory work.

To communicate, LISA uses language and, thanks to its large vocabulary, understands **entire** sentences such as "Get me dish A4 from incubator 8." If something is unclear, it asks for **clarification**. Additionally, simple work commands can be entered through a touchscreen. LISA was **conceived** to be able to learn new actions easily. This is **particularly** important for life science laboratories in which new types of measuring stations are **frequently** installed or varied work steps are **executed**. Dr *Norbert Elkmann*, the IFF project co-ordinator, states: "LISA was **tailored precisely** to its **niche** for use. This is the only way its everyday use will soon be possible – we could be that far in about one to two years."

*By courtesy of Engineer Live*





**Assistant robot LISA has a sensing gripper arm that senses and cushions jostling and protects humans from injuring themselves on the robot**

Bild: Fraunhofer IFF

**aim to** bemüht, bestrebt sein, planen
**approximately** ungefähr
**artificial skin** Kunsthaut
**at that** noch dazu
**burdensome** lästig, beschwerlich
**clarification** Klärung
**colleague** Kollege, Kollegin
**conceive** konzipieren, ersinnen
**conductive foam** leitfähiger Schaumstoff
**consist of** bestehen aus
**cushion** (vb) abfedern, abdämpfen
**deploy** einsetzen, anwenden
**dish** Schüssel, Schälchen
**entire** ganz, vollständig
**equip with** ausstatten, ausrüsten mit
**execute** ausführen
**familiar space** bekannter, vertrauter Raum
**frequent/ly** häufig
**give one's blessing** seinen Segen erteilen
**hence** daher, deshalb, demzufolge
**immediately** sofort
**in concert** gemeinsam, zusammen
**inadvertent** versehentlich, unbeabsichtigt
**incubator** Brutschrank
**indicate** anzeigen, andeuten, hinweisen
**injure** verletzen
**institutions for statutory accident insurance and prevention** Berufsgenossenschaften
**insufficient/ly** ungenügend, nicht ausreichend
**laser-aided** lasergestützt
**measuring equipment** Messgeräte
**niche** Nische
**obstacle** Hindernis
**particular/ly** besonders
**precise/ly** genau, präzis
**researcher** Forscher
**sample tray** Probeschälchen
**sensing gripper arm** fühlender Greifarm
**signal processing** Signalverarbeitungs-
**silent** still, ruhig, stumm
**sophisticated** hoch entwickelt
**suffice** ausreichen, genügen
**suitable** passend, geeignet
**tailor** (vb) zuschneiden, konfektionieren
**task** Aufgabe, Arbeit
**unavailable** nicht verfügbar, nicht erhältlich
**virtual/ly** praktisch

*P. Zillmer*