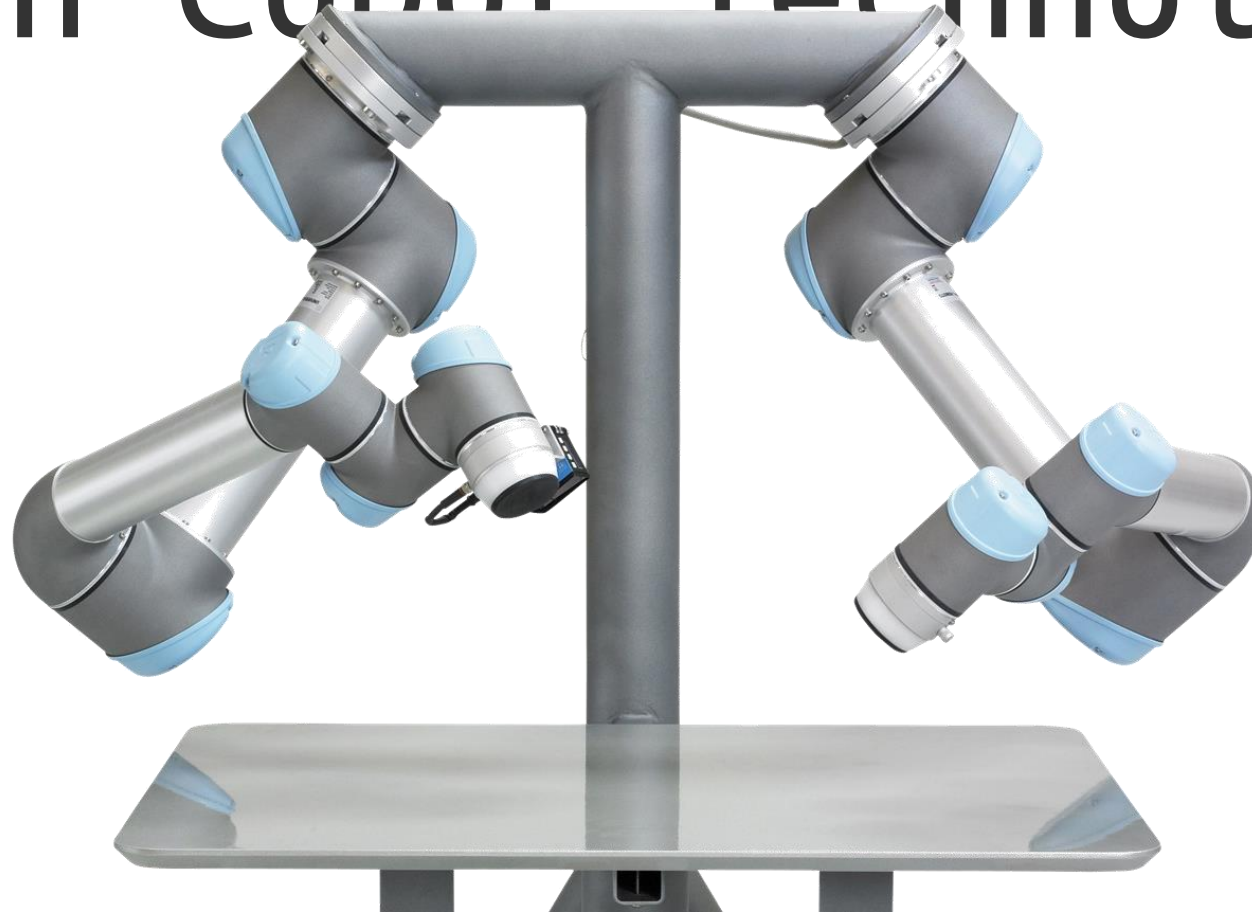


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# Collaborative Working with Cobot Technology



# Collaborative Working in a Shifting Economy





**1920**

The word "robot" is invented by the Czech writer Karel Capek and used in his science fiction stage play "Rossum's Universal Robots"

**1954**

The first industrial robot arm called a "Programmed Article Transfer device" is patented by George Devol, who partners with Joseph Engelberger and launches it as the Unimate in 1959 with a first installation at General Motors

**1960-2000**

Caged industrial robots requiring significant investments and programming expertise become widespread in the automotive industry and other manufacturing sectors



# A Brief History of Cobot Technology

**2008**

UR5, the world's first collaborative robot able to operate safely alongside people enters the market

**2005**

Universal Robots A/S is founded by 3 members of the research team at the University of Southern Denmark; Esben Østergaard, Kristian Kassow and Kasper Støj. Their goal is to develop a flexible, collaborative and user-friendly lightweight robot with a rapid ROI.

**2001-2005**

A research team at the University of Southern Denmark compares existing automation solutions to market needs and discovers an opportunity to reinvent the industrial robot



**2012**

The new UR 10 collaborative robot with a longer reach and greater payload is launched globally.

**2012-2016**

"Collaborative Robotics" is recognized as a viable new class of robots; larger robot manufacturers such as KUKA, ABB and Fanuc as well as smaller startups like Rethink Robotics start launching and developing cobots.

**2014**

TÜV Nord (a German organization that works to validate the safety of products) certifies the safety-system of the 3rd generation of UR cobots.



**2016**

ISO publishes the long awaited specification ISO/TS 15066, containing guidelines on how to ensure the safety of human workers in collaborative robotic systems

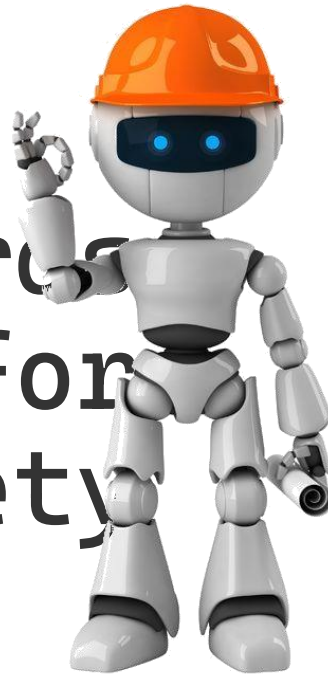
**2015**

Universal Robots launches UR3, the world's first collaborative table top robot



Four • Coexistence  
Levels • Sequential Collaboration  
of • Cooperation  
Collaboration • Responsive Collaboration

# Standards for Safety



Thanks  
for  
Attention

