Create. Compose. Simulate.

Any Robot.

- fast prototyping and verification
- simulation of factory automation systems
- fast algorithm development
- robotics related education
- remote monitoring
- hardware control
- safety monitoring
- product presentation
Main Features:

Dynamics/Physics: Fast and customizable dynamics calculations to simulate real-world physics and object interactions (collision response, grasping, etc.). Two engines are supported: Bullet and ODE

Remote API: More than 100 embeddable V-REP functions: control a simulation or the simulator itself remotely (e.g. from a real robot or another PC). Easy to use, supports sync. or async. operation, is optimized for heavy data transfer and minimizes communication lag. Five languages are supported.

Proximity sensor simulation: Powerful proximity sensor simulation, fully customizable. Performs an exact minimum distance calculation within a custom detection volume (more realistic than discrete detection rays)

Vision sensor simulation: Simulation of vision sensors with built-in image processing, fully customizable (e.g. via plugins)

Path planning: Holonomic path planning in 2-6 dimensions, and non holonomic path planning for car-like vehicles

Collision detection and distance calculation: Fast interference checking and minimum distance calculation between any meshes or collection of meshes

Data recording and visualization: A large variety of recordable data streams can be used to display time-graphs, or can be combined with each other to form x/y-graphs, or 3D curves

Many more features: e.g. Reflexxes Motion Library type IV, dynamic particles, simulation of surface cutting, video recorder, simulation of wireless communications, simulation of paint or welding seams, multilevel undo/redo, exhaustive documentation, etc.

Custom user interfaces: Unlimited number of fully customizable user interface elements, with integrated edit mode. Custom Windows-style dialogs are of course also supported via plugins

Forward/inverse kinematics: Full forward/inverse kinematics calculations module for any type of mechanism (branched, closed, redundant, containing nested loops, etc.)

Embedded Scripts
> 200 API functions

ROS nodes
> 50 publishers
> 30 subscriber types

Remote API clients
> 50 API functions

Plugins
> 300 API functions

Custom solutions
> 260 API functions

Demonstration videos & evaluation / student version download:
www.coppeliarobotics.com

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Displayed CAD models are courtesy of Lyall Randell, HiBot, CubicTek, KUKA and ABB. There is however no link between V-REP and ABB.