DUAL DIFFERENTIAL SEMI-ACTIVE ACTUATOR FIT FOR INTERACTION TASKS AND FAST MOTION

SOCPRA is seeking a company wishing to use or to commercialize a dual rheological differential semi-active actuator. This actuator provides similar performance to direct drive (DD) engines while allowing volume, mass and energy consumption reduction. It can also replace elastic serial actuators for a more compact configuration, with simpler controlling and greater responsiveness. Also, the actuator increases the operator’s safety.

TECHNOLOGY
Actuator adapted for very fast rotative movement, precise and stable force control (torque) and interaction control.

The invention is a semi-active actuator mechanism that allows precise, simple and stable torque controlled very fast output movements, when linked to any external source of speed (e.g. an electromagnetic motor). Exceptionally low output inertia, high bandwidth and ability to control force (or torque) in open loop enable various, stable and safe mechanical interactions.

DEVELOPMENT STATUS
Several prototypes have been made operational and tested. Their performances were demonstrated with a haptic interface application to a degree of freedom. Other prototypes are being developed for potential use in a manipulator arm.

PRINCIPAL INVENTOR
Michel Lauria is a Professor at the Department of Electrical and Computer Engineering of the Faculty of Engineering of the Université de Sherbrooke. He works mainly in robotics, mechatronics, articulated mechanisms, modeling and dynamic system controls.