STSPIN32F0 for Motor Control

Advanced BLDC Motor Controller with embedded STM32 MCU

Power Transistors

Motor Driver

Microcontroller

Specifically designed for
Smart Industry & **High-End Consumer**

- Highly integrated System-in-Package 7x7mm
- Complete ST Ecosystem with tools and firmware including motor control algorithms

High integration

Embedded 32-bit STM32F0
ARM® Cortex®-M0

High performance

45 V, 600 mA
3-phase gate Driver

Versatile control

Cost-effective sensorless
or accurate Hall sensors

Maximum efficiency

On-chip supplies for MCU,
Driver and external circuitry

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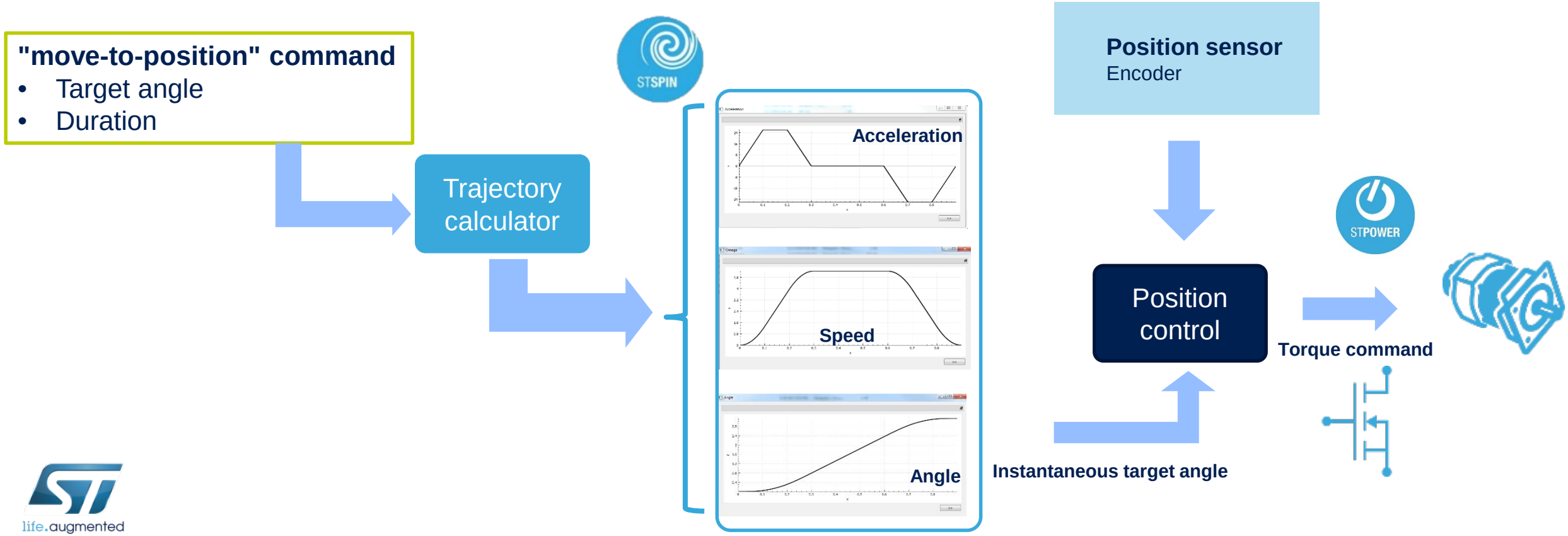
Full Featured Position Control

- A dedicated **trajectory** (as a sequence of target positions) is calculated starting from a
- "move-to-position" command.
- The trajectory is computed applying a constant angular **Jerk** approach.
- The Jerk is the rate of change of acceleration; that is, the time derivative of acceleration.



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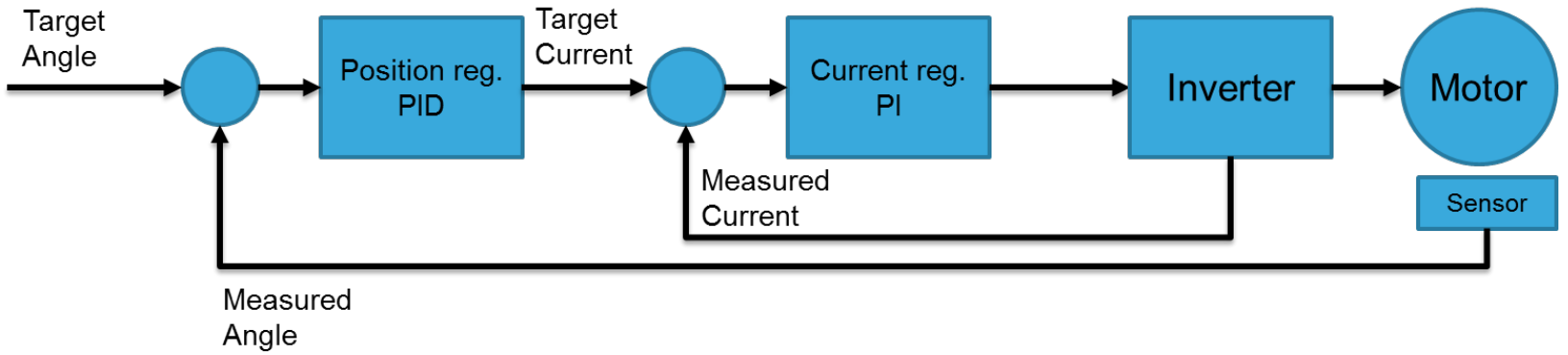
The Demo



- Two small motors are precisely synchronized allowing the intersection of two disks , performing accurate **position control** and so avoiding collision, playing at different speeds and accelerations.

- With **STSPIN32F0** as main core, the demo show the capabilities of a **servo drive.**

Hardware Platform

STEVAL-SPIN3201

- Input voltage from 8 V to 45 V
- Output current up to 15 Arms
- Power stage based on STD140N6F7 MOSFETs
- 3-shunt current sensing
- Digital Hall sensors and encoder input
- Overcurrent comparator
- Bus voltage sensing
- Fully supporting STM32 PMSM FOC Software Development Kit
- Embedded ST-LINK/V2-1

STSPIN32F0

- Three-phase gate drivers
  - 600 mA sink/source
  - Integrated bootstrap diodes
  - Cross-conduction prevention
- 32-bit ARM® Cortex®-M0 core:
  - Up to 48 MHz clock frequency
  - 4-kByte SRAM
  - 32-kByte Flash memory
- 16 GPIO
- 5 general-purpose timers
- 12-bit ADC converter (up to 9 channels)
- I2C, USART and SPI interfaces
- 4 rail-to-rail operation amplifiers
- Extended temperature range: -40 to +125 °C