FlightSense™

Low Power Detection

Ranging & Proximity

Applications

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Low-Power Detection

- **FlightSense allows low-power detection**
  - All-in-one solution
  - Immune to color, texture, and material
  - Detection to distances of 120cm
  - Down to 175uW at 1Hz

  ➔ **Unlocking battery-operated, high-performance applications!**

Complete Product Range

• **VL6180X**	up to 10cm proximity & ALS	Mass Production
• **VL53K0**	15cm ranging with cover-glass	Development
• **VL53L0**	30fps, up to 200cm	Mass Production
• **VL53L1**	60fps, up to 400cm	Sampling

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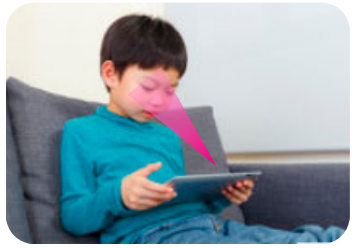
Ranging & Proximity



- **FlightSense enables outstanding performance**
  - Full range of products up to 400cm !
  - Works behind many types of cover-glass materials
  - Performance proven even for challenging industrial design
  - ➔ **Unlocking multiple applications & use-cases !**

Complete Product Range

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Android 7 Nougat ready

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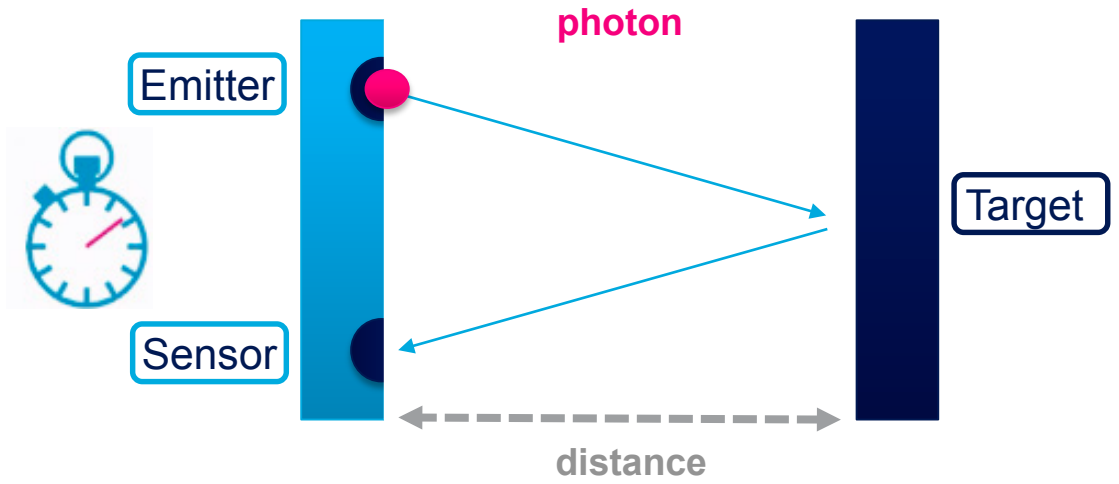
FlightSense Breakthrough Technology

FlightSense Principle



Measured distance = Photon travel time / 2 x Speed of light

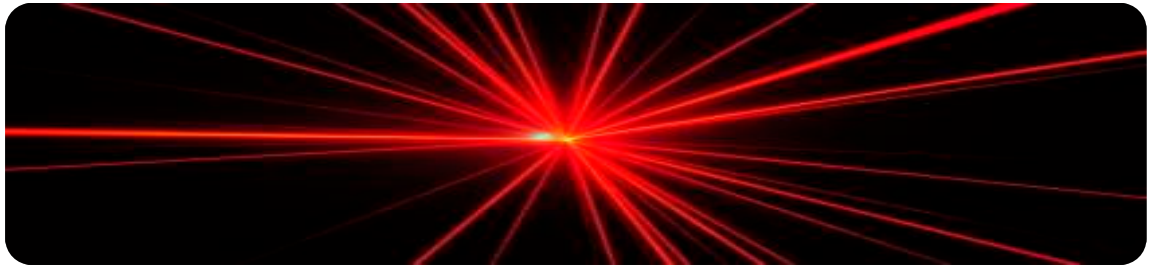
Fully Integrated Time of Flight Module

True distance measurement

Independent of target size, color & reflectance

Very fast (few ms)

Low power



Measurement at the speed of light ! 1cm round-trip in 67ps

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FlightSense Highlights

ST is World Wide #1 Time-of-Flight supplier

Over 4 years of proven track record in manufacturing
>> 150M products shipped
> 300% AAGR

FlightSense Laser AF camera assist in >60 phones

Endless applications on the market: Robots, Drones, Smart-home sensors, Faucets…

New Generation Ready: Unique Direct ToF features
Multi targets detection, Multi zones ranging
…and a complete roadmap under development

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Key Target Applications

FlightSense

LiDAR & Depth-map
High resolution CMOS SPAD sensor
Detection up-to 200m

Gesture
Power, size and performance
New ways to interact

Presence: User Detection
Security
Power saving

Ranging & Proximity
True distance
Ranging up-to 4m

Camera Assist
Instant focus
Scene understanding

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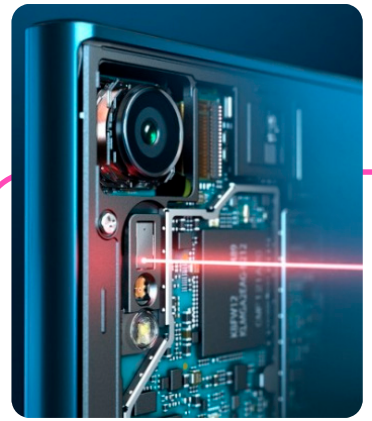
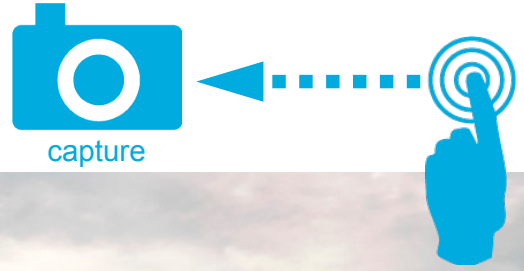
Camera Assist





- **Autofocus Camera Assist (front or rear camera)**
  - Instant Focus over entire camera focal range
  - Fast & Robust solution for low light & low contrast
- **New innovative use cases**
  - Multi-zone scanning + multi-object detection
  - Dual-camera depth-map assist
  - Flash-power adaptation versus distance to object

Complete Product Range

• **VL6180S**	15fps, 40cm + ALS	Mass Production
• **VL53L0**	30fps, up-to 200cm	Mass Production
• **VL53L1**	60fps, up-to 400cm	Sampling
• **VL53L5**	120fps, up-to 400cm/zone	Development

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Presence

Immediate detection of user

Accurate distance measurement

Security

Fast screen -lock / un-lock when user detected

Power saving

Very fast power-on / off

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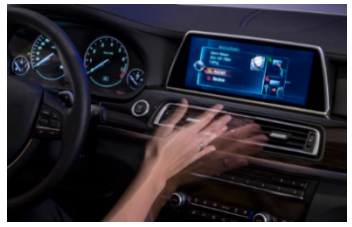
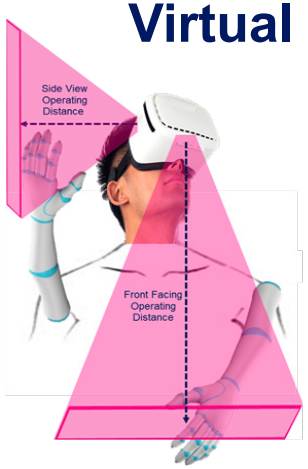
Gesture

Augmented Touchscreen



- ✓ **Dynamic UI**
- ✓ **Contextual menu**
- ✓ **Slider control**
- ✓ **Dynamic swipe**

Virtual Touch Control

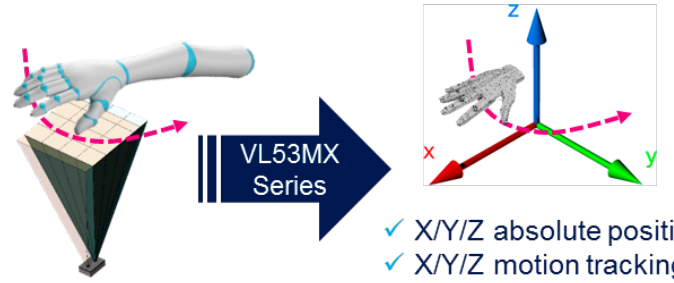


Front view
- ✓ Hand tracking
- ✓ Hand posture recognition

Side view:
- ✓ UI control (Virtual button, pointer…)
- ✓ Low res. hand tracking

- **Fully integrated miniature optical module**
- **Cost, size, & power breakthrough**
  Vs depth-map camera
- **Delivering an improved user-experience**
  Vs conventional IR-based solutions

Gesture Product Range in Development



- ✓ X/Y/Z absolute positioning
- ✓ X/Y/Z motion tracking

- **VL53M1** 3D hand/finger tracking device, Consumer grade
- **VL53M2** 3D hand/finger tracking device, Automotive grade

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