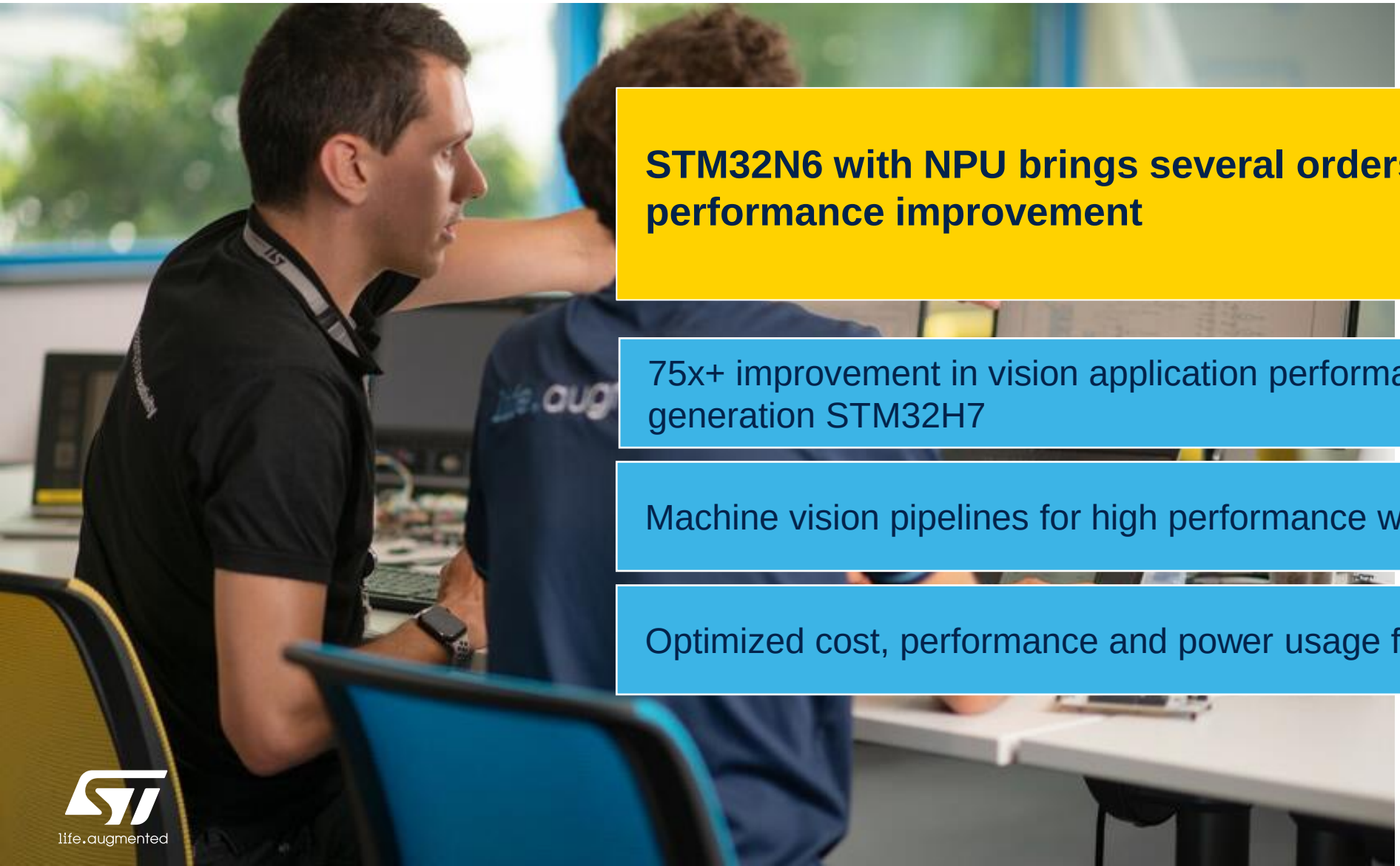
Edge AI on STM32

STM32N6 vs STM32H7

People tracking

Smart city

STM32N6: A new generation of MCU



STM32N6 with NPU brings several orders of magnitude in performance improvement

- 75x+ improvement in vision application performance from the best current generation STM32H7
- Machine vision pipelines for high performance with CPU offload
- Optimized cost, performance and power usage for an edge AI device

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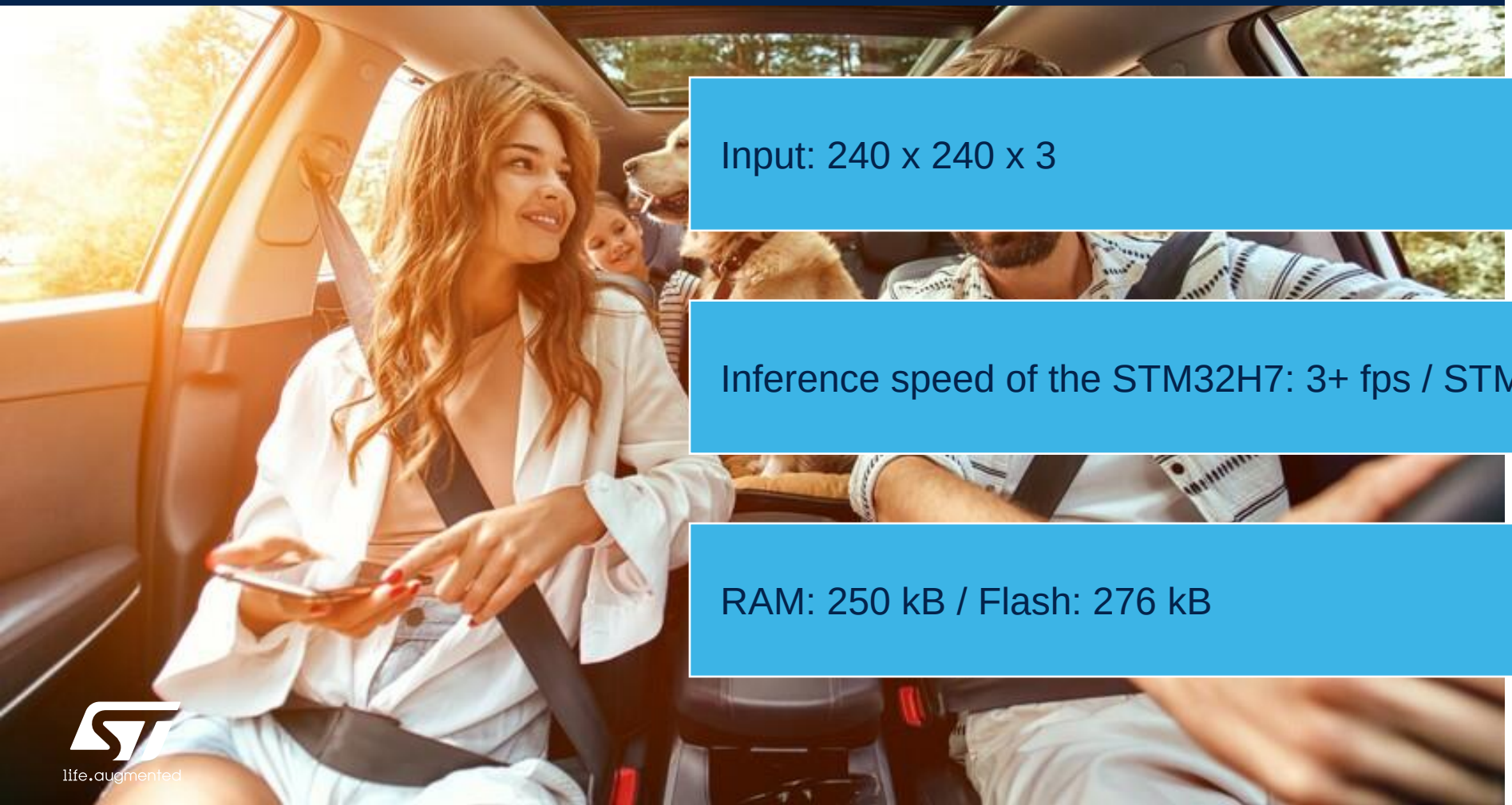
STM32N6 vs STM32H7
Vision processing comparison

Model used: ST YoloLC



Input: 240 x 240 x 3

Inference speed of the STM32H7: 3+ fps / STM32N6: **300+** fps

RAM: 250 kB / Flash: 276 kB

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People tracking on STM32N6

Efficient use of the NPU and machine vision ISP for people detection (multiple object detection / single Class) and tracking

TinyYoloV2 NN for people detection (fully offloaded to NPU)

People tracking frame to frame: Kalman filter based (CM55)

30 fps achieved with 10% CPU Load

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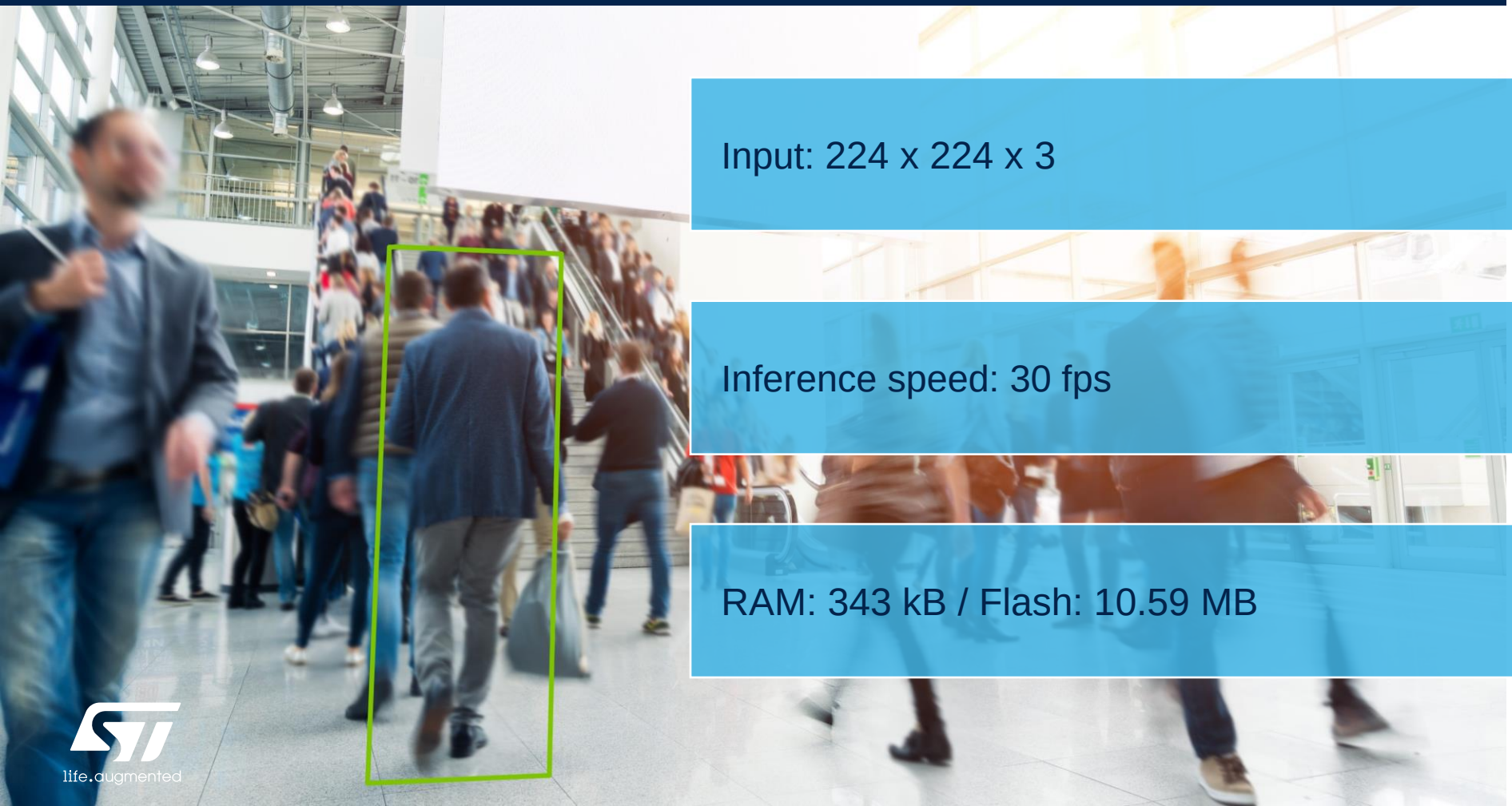
Model and performance

Model used: TinyYoloV2 + Kalman filter based Tracking



Input: 224 x 224 x 3

Inference speed: 30 fps

RAM: 343 kB / Flash: 10.59 MB

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Smart city

Cost effective solution for multiple object detection (multiple object detection / multiple classes) and tracking

Detects, tracks and counts vehicles categories and pedestrians

Ubiquitous deployment of cameras for intelligent traffic management, enhancing safety and city coverage

18 fps using TinyYoloV2

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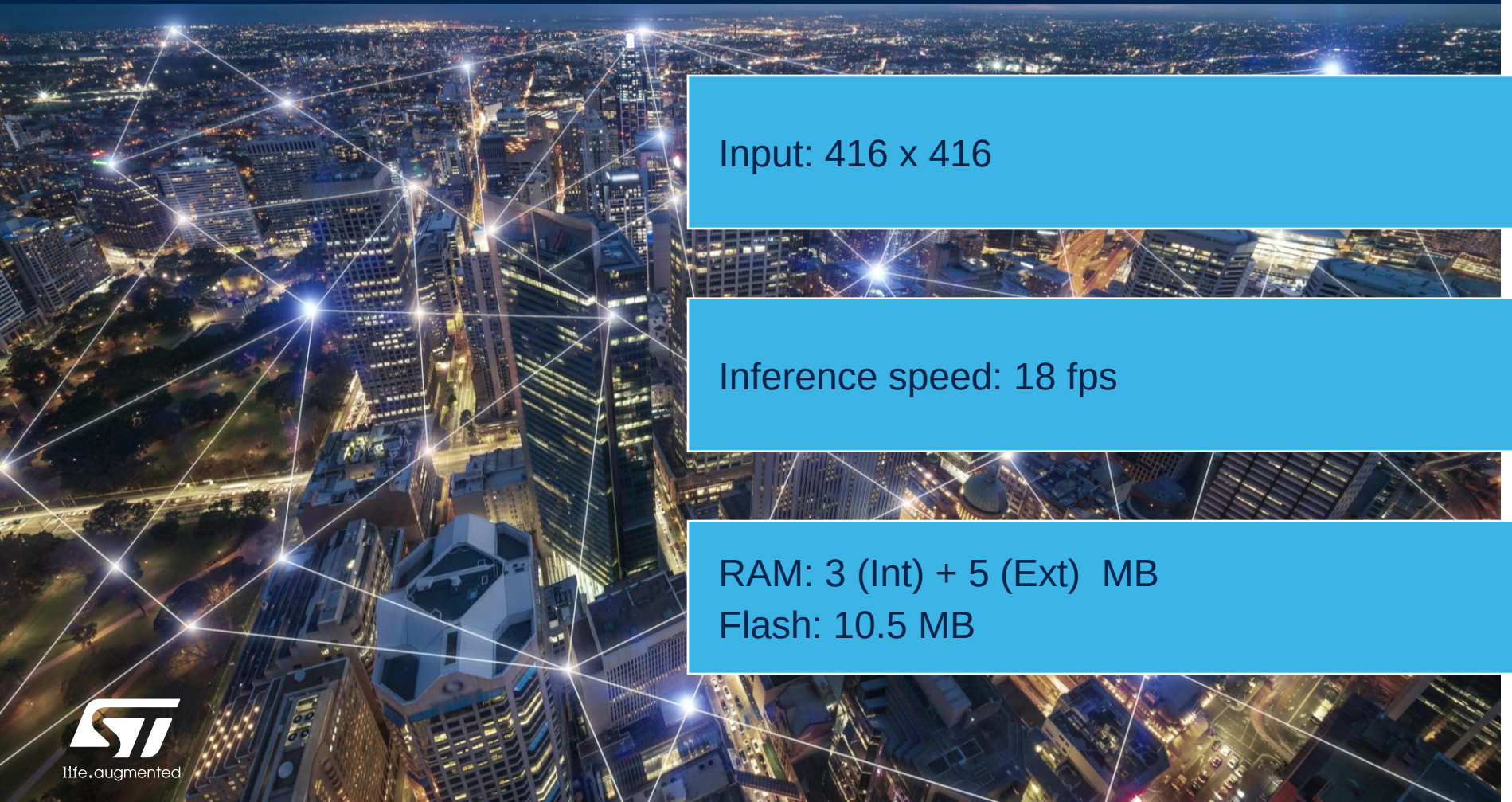
Model and performance

Model used: TinyYoloV2



Input: 416 x 416

Inference speed: 18 fps

RAM: 3 (Int) + 5 (Ext) MB
Flash: 10.5 MB

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