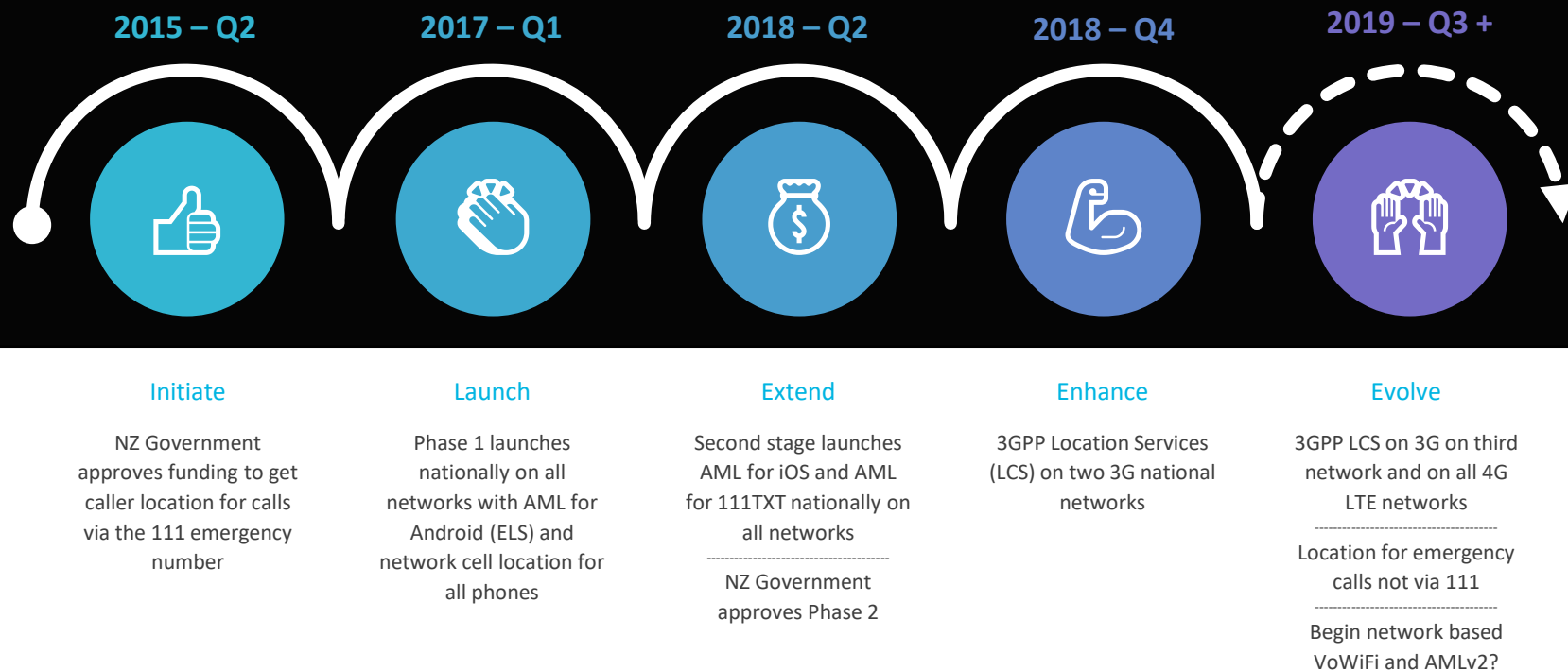**MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT**
HIKINA WHAKATUTUKI

Emergency Location Services
Overview

Ministry of Business, Innovation & Employment

New Zealand's mobile location journey...

2015 – Q2

2017 – Q1

2018 – Q2

2018 – Q4

2019 – Q3 +

Initiate

NZ Government approves funding to get caller location for calls via the 111 emergency number

Launch

Phase 1 launches nationally on all networks with AML for Android (ELS) and network cell location for all phones

Extend

Second stage launches AML for iOS and AML for 111TXT nationally on all networks

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NZ Government approves Phase 2

Enhance

3GPP Location Services (LCS) on two 3G national networks

Evolve

3GPP LCS on 3G on third network and on all 4G LTE networks

Location for emergency calls not via 111

Begin network based VoWiFi and AMLv2?

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Introduction

We solve a common problem:
how to receive and present emergency mobile caller location in real-time in a useable, accessible, and graphical way

- ➢ The virtual Location Aggregation Center (vLAC):
    - ▪ collects, enriches, transforms, and stores location data from multiple sources to assist Public Safety Organisations (PSO) locate people;
    - ▪ comprises containerised apps and configurable service modules supporting a range of functions and features; and
    - ▪ can be implemented to either send location data to an external presentation layer or present location to users via an integrated user interface.

- ➢ vLAC Gen3.0 is live and has been providing PSO with life saving location information since early 2017, and is approved by Google, Apple and EENA as an Advanced Mobile Location (AML) Endpoint.

- ➢ PSO have hailed the system as a life-saver, locating people quickly in emergency situations and changing outcomes.

Location source capabilities

➤ AML (or handset based Location) via an approved AML Endpoint:

- Google Emergency Location Services (ELS): Data SMS, SMS, HTTPS versions, and ELS for Text supporting deaf, hearing and speech impaired; and

- Apple AML (using HELO): SMS, or 3GPP.

➤ 3GPP Control Plane LCS:

- Interfaces with Gateway Mobile Location Centers' (GMLC) via standardised Mobile Location Protocol (MLP) messaging, providing high-precision and course location;

- Supports all 3GPP defined geodetic location shapes; and

- Supports automated and manual in-call location updates over 3GPP compliant Le interfaces to GMLCs (for 2G, 3G, and 4G calls), and SMLC, SAS and E-SMLC for high-precision.

➤ Dynamic Location API:

- Ingests third party data sources (for example of known and nearby devices) that enables the vLAC to provide enhanced location and situational awareness data.

Location Methods – in place today

Features	Android	iOS	Other Smartphone	Feature Phone
AML Handset initiated - GNSS	✓	✓	TBC	✗
AML Handset initiated - WiFi	✓	✓	TBC	✗
3GPP A-GNSS	✓	✓	✓	✗
3GPP Enhanced Cell-ID	✓	✓	✓	✓
3GPP Basic Cell-ID	✓	✓	✓	✓
Dynamic Location	✓	✓	✓	✓

vLAC features Gen3.0

AML interface support:

- ➢ Google's Android Emergency Location Service (ELS)
- ➢ Apple's iOS HELO via SMS
- ➢ SMSC integration for direct peering with MNO
- ➢ SMS-GW integration for receiving SMS via a third-party gateway
- ➢ Reverse geolocation API interface for providing address

Location User Interface

Database:

- ➢ Agnostic but available to MS SQL Server, and PostgreSQL
- ➢ PII support – obfuscation and hashing

MLP interface for northbound integration with CAD or other system for geodetic shape presentation.

Security, access, authentication, and privacy models in place.

Alerting and monitoring to external management system.

Feature packaging and deployment mechanism.

Location User Interface
Multiple location methods

Protecting individuals personal data

User Access Controls
Authorised users agree to terms of use, users are vetted, and agencies are accountable

Privacy Controls
Controls built in to the system, are monitored and audited

Emergency Location Data

Personal data
Personal Identifiable Information is held for a defined period of time depending on regulations

Security Controls
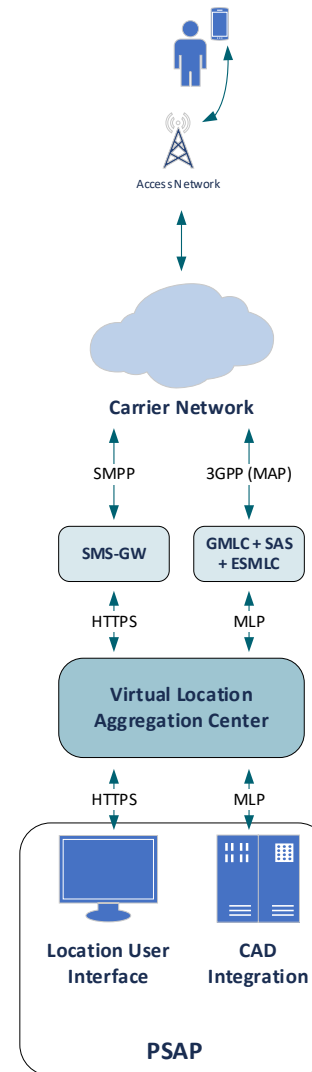SIEM, security testing, and having security embedded in all parts of the programme and development

Why? Because maintaining **public trust and confidence** matters when government is the data collector

Deployment architecture / integration

Single carrier to single vLAC with
integration with one SM-GW
and to one PSAPs.

Multiple vLAC can be implemented per
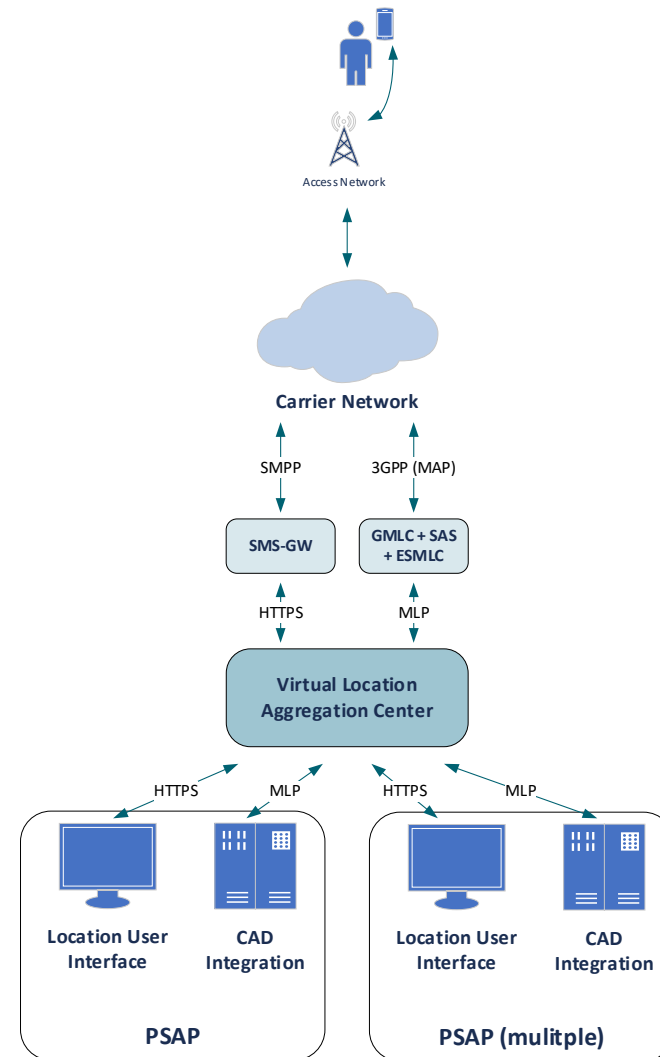country, i.e. one per carrier.

Includes vLAC integration with existing
3GPP Control Plane Location Services
via the MLP interface.

Deployment architecture / integration

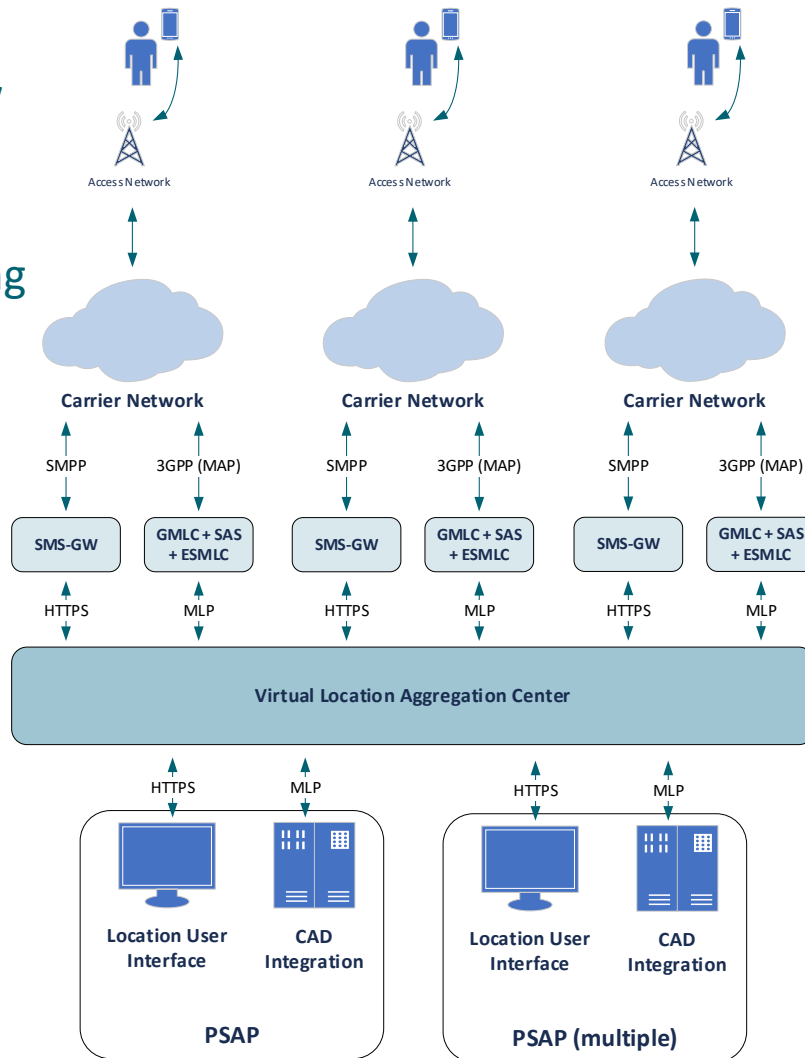Single carrier to single vLAC with integration with one or more SM-GW and to one or more PSAPs.

Includes vLAC integration with existing 3GPP Control Plane Location Services via the MLP interface.

Access Network

Carrier Network

SMPP

3GPP (MAP)

SMS-GW

GMLC + SAS + ESMLC

HTTPS

MLP

Virtual Location Aggregation Center

HTTPS

MLP

HTTPS

MLP

Location User Interface

CAD Integration

Location User Interface

CAD Integration

PSAP

PSAP (mulitple)

Deployment architecture / integration

Multiple carriers to single vLAC with integration with one or more SM-GW and to one or more PSAPs.

Includes vLAC integration with existing 3GPP Control Plane Location Services via the MLP interface.

Deployment architecture / integration

Multiple carriers to single vLAC with integration with a shared SM-GW and utilising a direct connection to a carriers SMSC.

Multiple PSAPs can connect to the vLAC.

Includes vLAC integration with existing 3GPP Control Plane Location Services via the MLP interface.

Note, the vLAC can integrate with a single GMLC that integrates with multiple carrier networks, however GMLC are provided by third parties.
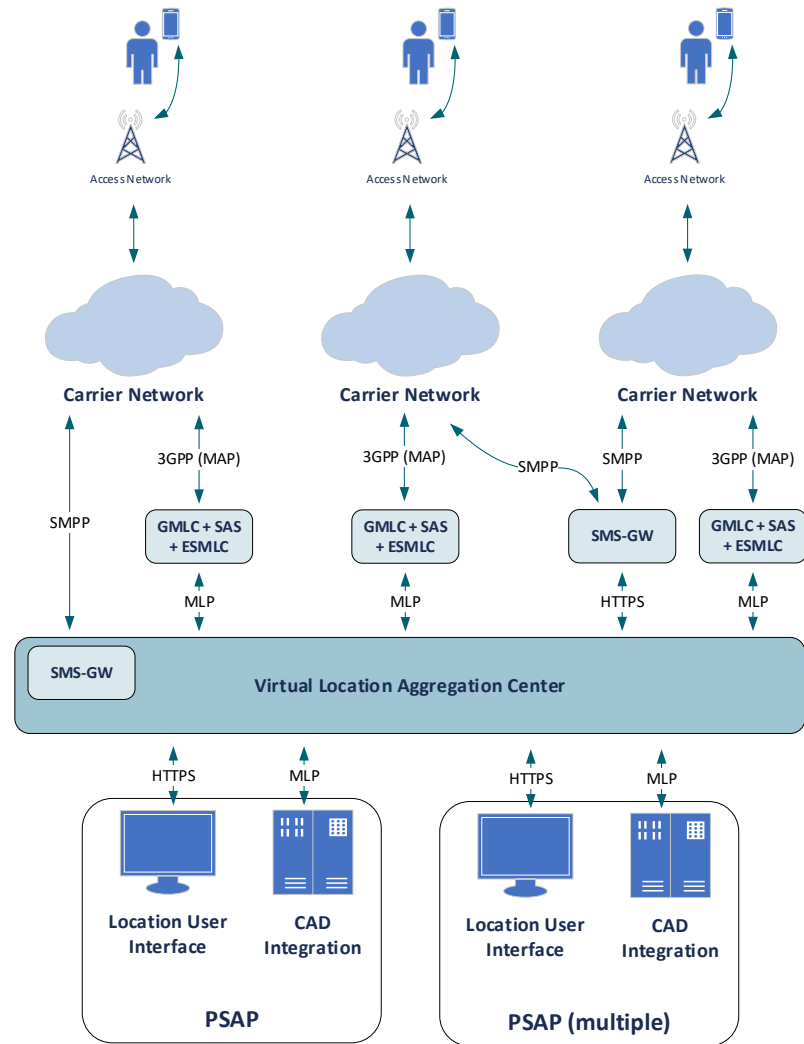
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Questions?