



S.A.L.T KEMBARA

PRODUCT BRIEF · S.A.L.T CI

S.A.L.T Kembara

Sovereign group navigation and intercom for riders, drivers and their passengers. Everyone sees each other, talks to each other and arrives together, from the moment they agree to meet until the last one is home.

Titik Temu · rendezvous mode

Konvoi · convoy navigation

Harmoni · open-mic intercom

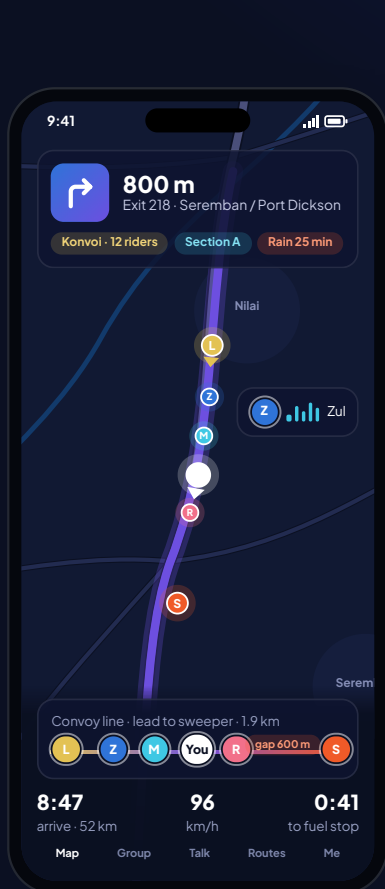
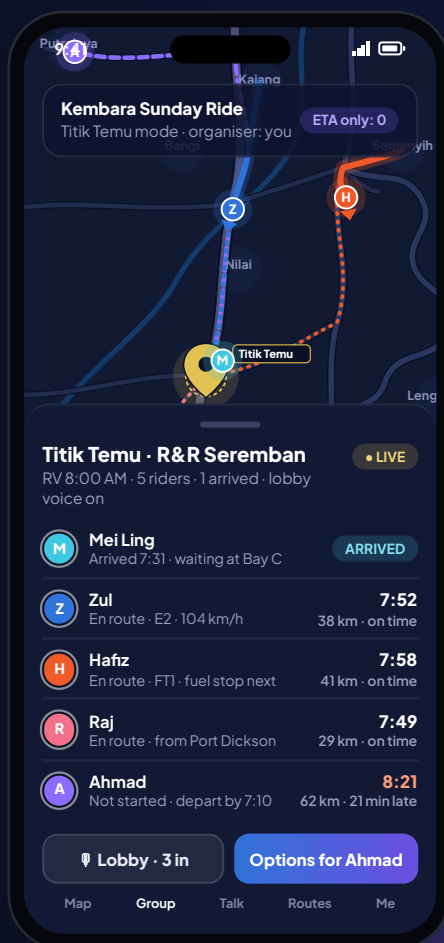
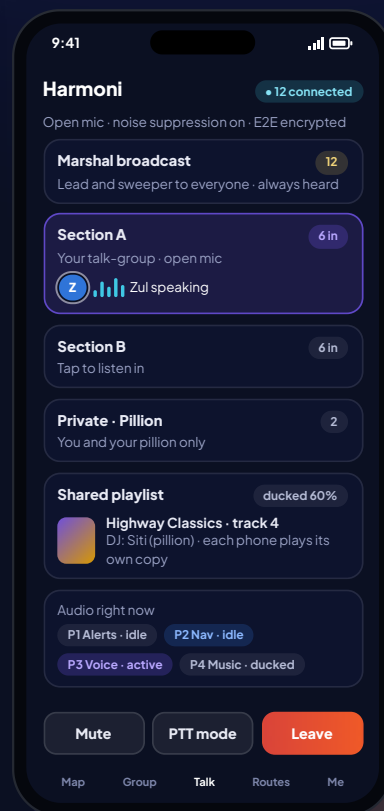
Laluan Santai & Easy Route

Pillion & passenger co-pilot

CarPlay & Android Auto

SOS & OMBAK weather

Self-hosted, air-gap ready



01 · THE PROBLEM

Group travel still runs on **four apps** and a lot of shouting

A Sunday ride or a balik kampung convoy of cars today: a WhatsApp group to agree the meeting point, live location shared in the chat, Waze on each phone, a Sena or Cardo intercom that pairs with only half the club, and phone calls when someone is lost. None of it knows the others exist. For an agency moving a VIP, the same picture also sends everyone's coordinates to foreign servers.



Navigation for one

Waze and Google Maps route a single driver to a single point. They know nothing about the six people you are meeting or the convoy you are leading.



Meeting up is guesswork

"Where are you?" messages, people leaving too early or too late, the last 200 m lost in a crowded R&R car park.



Intercoms that do not mix

Hardware intercoms pair by brand and by range. A mixed club spends the first stop pairing, and loses people at the first hill.



Data leaves the country

Commercial apps keep movement history of officials, VIPs and fleets on servers the agency does not control.



The ride is not the point

Fastest-route engines avoid exactly the curvy, scenic and quiet roads that riders and travellers actually want.



No safety net

A rider down on a rural road at night depends on someone noticing they are missing.

WHAT S.A.L.T KEMBARA CHANGES

TODAY	WITH S.A.L.T KEMBARA
WhatsApp to set a meeting point	Titik Temu: a fair meeting point, a personal depart-by time for each person, and a live board of who is where.
Live location in a chat	One group session that carries positions, ETAs and status from the first invite to the last arrival home, then expires.
Brand-locked intercoms	Harmoni: open-mic intercom on any phone and any headset, with talk-groups for big convoys.
One driver, one route	Konvoi: lead, sweeper and sections, gap alerts and regrouping on the same map.
Fastest route only	Laluan Santai, Easy Route, prayer-aware and weather-aware stops.
Data on foreign clouds	Self-hosted on S.A.L.T CI, or inside the agency's own network, with nothing leaving it.

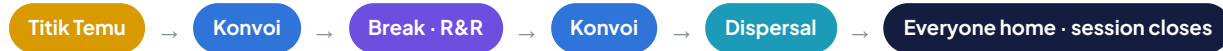
One group, one map, one voice, from "jom jumpa" to "dah sampai".

Kembara treats the group, not the single driver, as the thing being navigated.

02 · THE PLATFORM

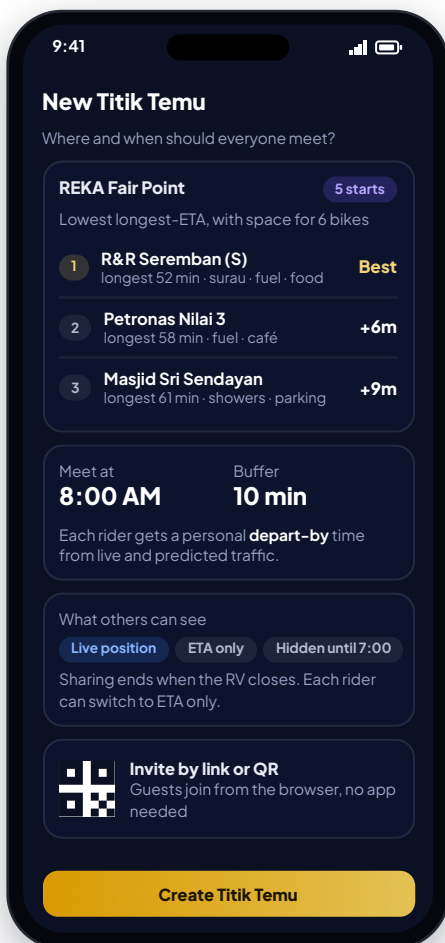
One group session, many ways to travel together

Every Kembara journey is a group session. It moves through modes as the day goes on, and everything rides on it: positions, ETAs, voice, music, stops and alerts. Nothing has to be set up twice.



Bikes and cars ride in the same session. Co-pilot is a role a pillion's or passenger's device takes; PANTAU is a browser view of many sessions at once.

Titik Temu Meet from many places: fair point, depart-by times, live board, link-up, catch-up RV.	Konvoi Ride as one: lead, sweeper, sections, gap and regroup alerts, shared stops.	Harmoni Talk as one: open mic, talk-groups, priority ducking, synced playlist.	Routes Laluan Santai, Easy Route, offline packs, OMBAK weather, toll and fuel.
Journeys Kembara Masjid, Rintis Alam and Hikayat, the stories of the road.	Co-pilot & car Pillion or car passenger as co-pilot; the driver on CarPlay, Android Auto and car Bluetooth.	Safety Crash detection and SOS, hazard whispers, kepala air warnings.	PANTAU The command view for fleets and agencies, on their own servers.



HOW IT FEELS

- Create and invite**
Pick a point or let REKA suggest a fair one. Share a link or QR; guests join from the browser.
- Talk before anyone moves**
The lobby voice room is open as soon as people join, muted by default until they ride.
- Leave on your own time**
Each person gets their own depart-by from live and predicted traffic.
- Converge**
Live board of positions, ETAs and distances; riders on the same road link up on the way.
- Arrive and roll on**
Roll call at the point. When everyone is in, the session becomes a convoy with the next leg loaded.
- Close cleanly**
When the last person is home, live sharing stops and the trip summary is kept, only if the group chose to.

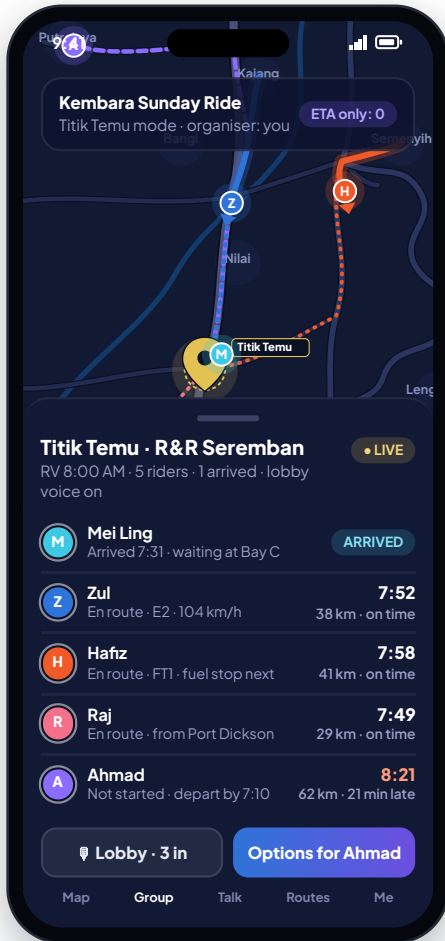
Hardware-agnostic by design

Any Android or iPhone, any Bluetooth or wired headset, any car or bike mount. No pairing by brand, no extra device to buy.

03 · TITIK TEMU · RENDEZVOUS MODE

Meet from anywhere, arrive together

Some are already at the R&R, some still at home, one an hour away. From the moment they join, everyone can talk and sees each other live, with distances to the point and to each other.



The live board

- Status for each person: not started, getting ready, en route, fuel stop, arrived, delayed, not coming
- **Road** ETA and distance to the point, from the routing engine, not a straight line
- Distance between any two people on tap (straight-line, road on request)
- Predicted lateness as soon as the ETA passes the meeting time



Depart-by, personally

Each person gets their own depart-by time and a reminder: "Leave in 15 min to make the 8:00 RV."



Lobby voice

Harmoni is live from the first join: muted at home, push-to-talk on the walk to the bike, open mic once riding.



Privacy you choose

Live position, ETA only, or hidden until a set time; sharing ends when the RV closes.

Invite

Link, QR or TETAMU event



Fair Point

Minimise the longest ETA



Depart-by

Per person, live traffic



Converge

Board · link-up · late options



Roll call

Geofence arrivals → Konvoi



Events become meet-ups

A TETAMU event or itinerary item turns into a Titik Temu: guests converge on the venue, and the organiser sees who is close.



Battery-aware

Update rate follows speed and distance to the point. Someone parked at the R&R is not running GPS once a second.



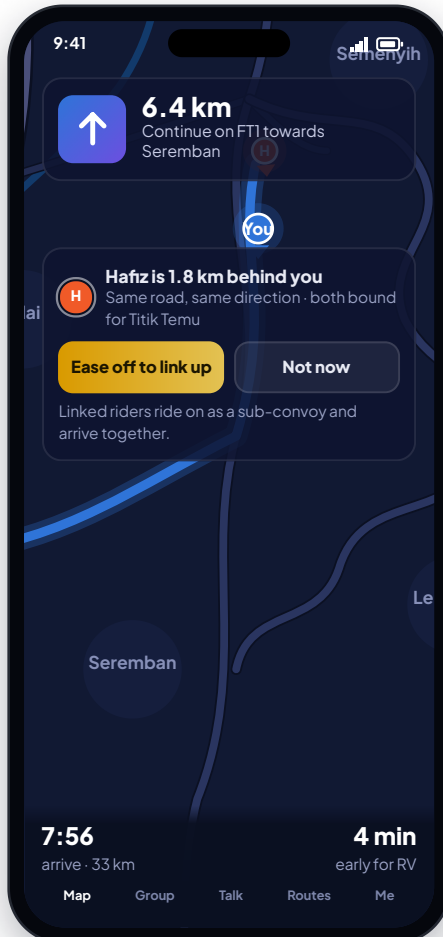
Tactical variant

Several teams on one staging point, staggered arrivals and a point kept hidden until a set time, in PANTAU.

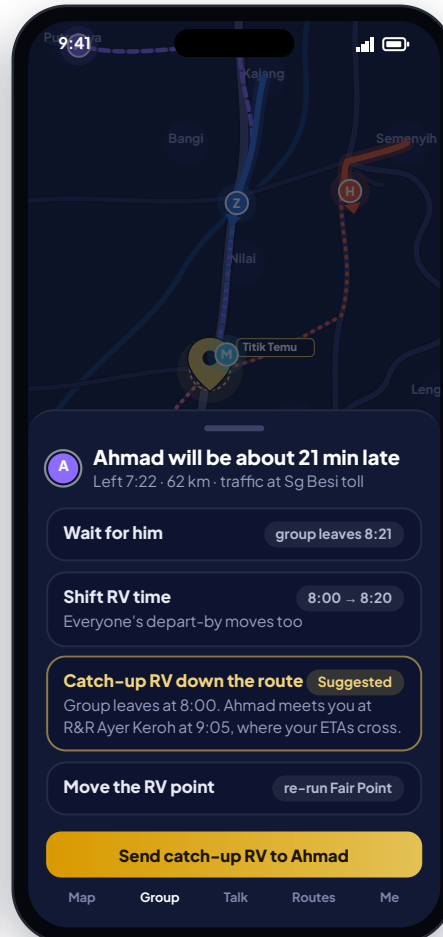
04 · TITIK TEMU · THE CLEVER PARTS

It handles the people **who are late**, and the ones **who are lost**

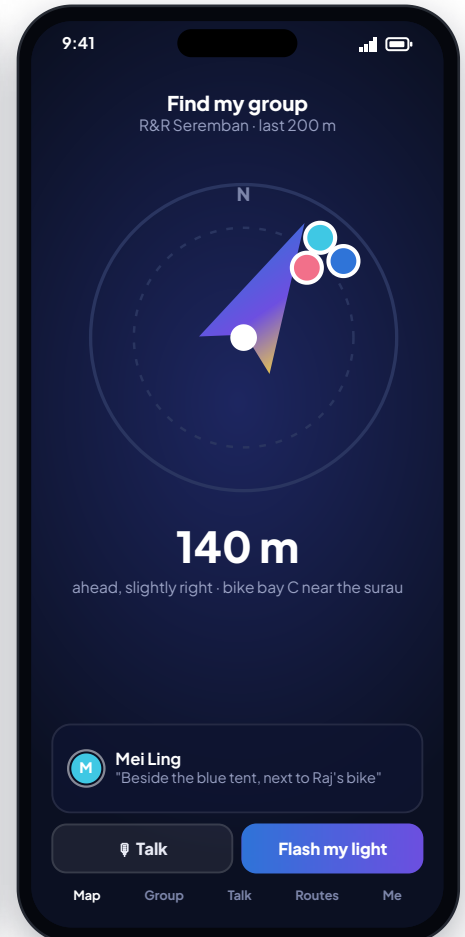
Meet-ups go wrong in the same few ways. Titik Temu answers each with one tap instead of ten messages.



En-route link-up. Two riders on the same road bound for the same point are told so, and ride on together.



Late-joiner options. Wait, shift the time, move the point, or set a catch-up RV down the route.



Find my group. A pointer and distance for the last 200 m of a crowded car park.



REKA Fair Point

Given everyone's start, REKA suggests points that minimise the **longest** trip, not the average, filtered for what the group needs: bike parking, surau, fuel, food.



Catch-up RV

The main group leaves on time; the latecomer meets them further along at the place where their ETAs cross. Touring clubs already do this by phone; Kembara does it with one tap.



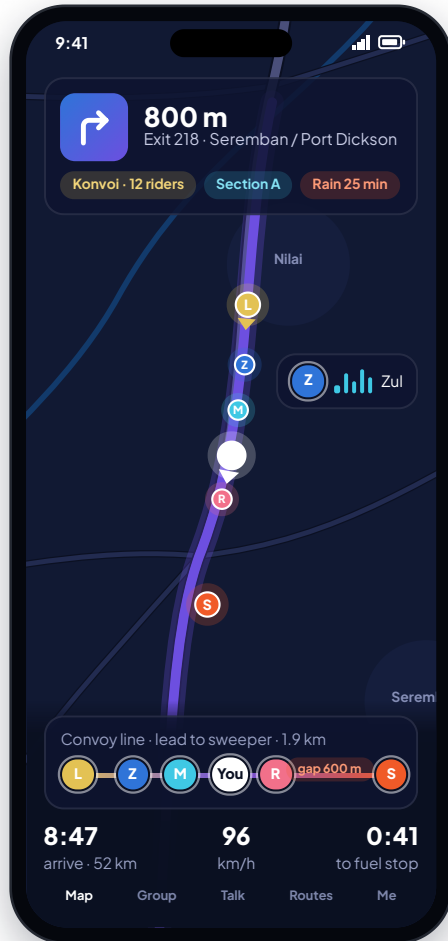
Arrival and hand-over

A geofence marks each arrival. When everyone is in, or the organiser taps Move out, the session becomes a convoy with the next leg loaded.

05 · KONVOI · CONVOY NAVIGATION

Ride as **one group**, not twelve separate trips

Everyone follows the same route on the same map. The lead and sweeper see the whole line, sections keep their own voice channel, and the system notices gaps before anyone has to shout.



Roles that mean something

- **Lead** sets the pace and the route; reroutes go to everyone
- **Sweeper** rides last and sees every gap
- **Marshals** broadcast to all; sections ride and talk together



Gap and regroup

When a rider drops back past the group's gap rule: "Raj is 600 m back." If the gap keeps growing, the lead gets a suggested regroup point just ahead.



Shared stops

Fuel and prayer stops are planned for the group, by the bike with the smallest tank range and the group's prayer times.



Turn-by-turn, voice-first

Lane guidance, exits and speed limits read out at motorcycle pace; spatial cues where the headset allows stereo.



Regroup points

Planned or suggested on the fly: the next safe lay-by, R&R or petrol station where the whole line can gather.



Riders who join late

A rider can join a convoy already on the road; Kembara routes them to the line and tells the sweeper.



Ride report

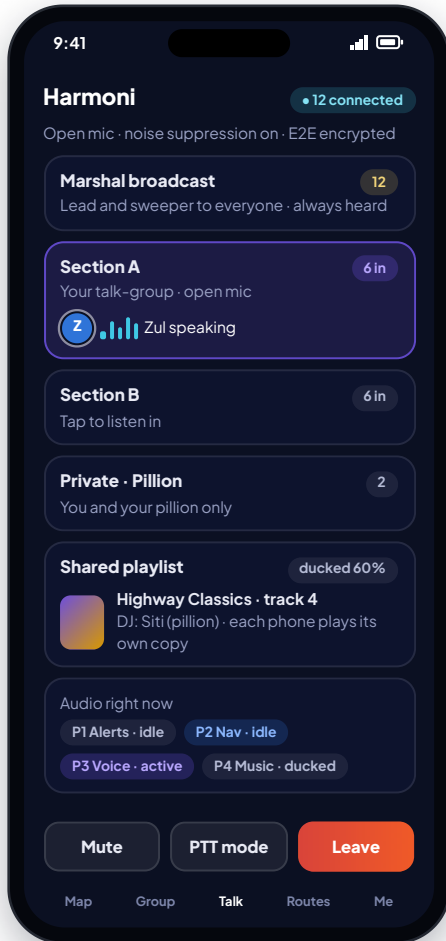
Route, distance, stops, photos and who rode, kept for the club if the group chooses.

Big clubs welcome. Location and navigation scale to large convoys. Bikes and cars can ride in one convoy. Voice is organised into a marshal channel everyone hears and section channels of five to eight, so a 60-vehicle ride stays clear on air.

06 · S.A.L.T HARMONI · INTERCOM

An intercom in every phone, for every headset

Harmoni is a full-duplex, open-mic intercom that works with any phone and any headset. It runs through S.A.L.T CI's own media servers, survives patchy coverage, and keeps voice clear over wind and engine noise.



Talk-groups

Marshal broadcast, section channels and private pillion channels. Listen in on another section with a tap; marshals are always heard.



Clear over the wind

On-device noise suppression and voice detection, so an open mic sends speech, not wind; push-to-talk available for anyone who prefers it.



Rejoins by itself

When coverage drops on a mountain pass, Harmoni reconnects in seconds once signal returns, with no buttons to press.



Shared playlist, honestly

The group shares a playlist and its timing; each phone plays its own copy from the member's own service or library, in tight sync.

AUDIO PRIORITY MATRIX

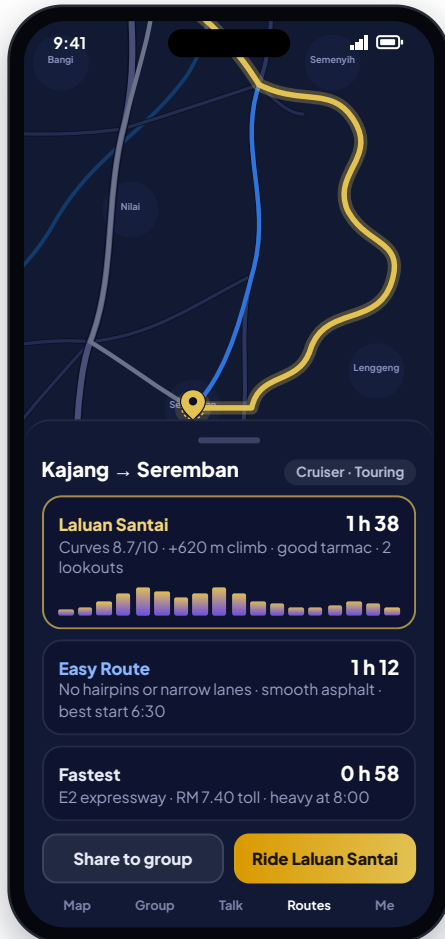
LEVEL	SOURCE	WHAT HAPPENS
P0	Personal phone call	Intercom and music muted for that person only; their icon shows "On a call"; restored when the call ends
P1	Emergency alerts	Accident ahead, flood risk, convoy separation, SOS: intercom ducked 90%, music muted
P2	Navigation	Turn-by-turn prompts: intercom ducked 70%, music 80%
P3	Intercom speech	Someone speaks: music ducked 60% across the talk-group
P4	Shared music	Full volume when nothing above is active

Bridge an outside call into the convoy, or pass it to the sweeper with "REKA, transfer this call to Zul", through the S.A.L.T Call Bridge (SIP gateway).

07 · ROUTES · THE JOURNEY IS THE DESTINATION

Routes chosen for how you want to ride

Kembara offers the fastest route like everyone else. It also offers the routes other apps avoid on purpose: curvy and scenic, smooth and easy, timed for empty roads and the weather.



Laluan Santai

Scores roads for curves and climb from the road geometry, and prefers coastal roads, mountain passes and good-tarmac kampung roads over industrial corridors. Cruiser/Touring or Adventure (light gravel) styles.



Easy Route

For heavy tourers and luxury cars: avoids narrow lanes, tight hairpins on steep climbs, poor surfaces and unpaved short cuts, and suggests the empty-road departure window.



OMBAK weather routing

Rain cells along the route and at the time you will be there, with shelter stops at R&Rs and petrol stations, never under flyovers.



Offline packs

Download a state or a route corridor; maps, search and routing keep working with no signal at all.



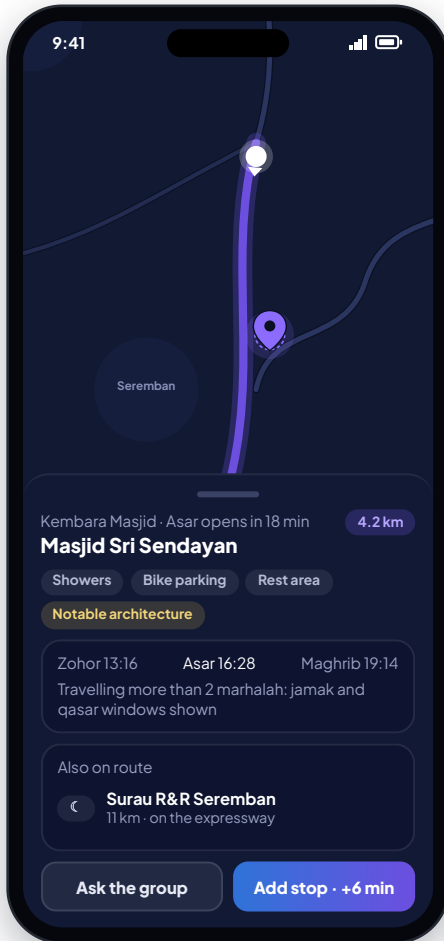
Fuel range and tolls

Enter tank range per bike; Kembara plans fuel stops before the long empty stretches, and shows toll costs per route.

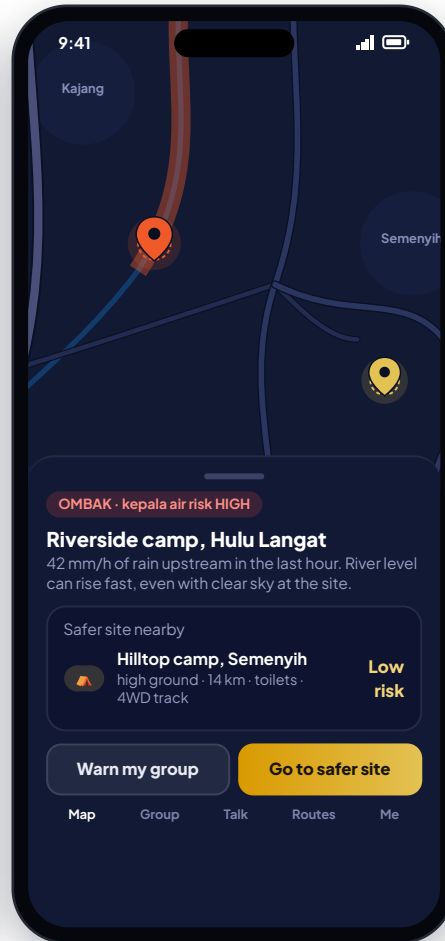
08 · JOURNEYS WITH MEANING

Prayer stops, safe camps and the story of the road

Kembara knows what Malaysian travellers stop for. Prayer times along the route, campsites checked against the rain upstream, and a storyteller who knows the history of the towns you ride through.



Kembara Masjid. Mosques and surau ahead as each prayer window opens, filtered for showers, parking and architecture.



Rintis Alam. Campsites and river spots, warned for kepala air when rain falls upstream.



Kembara Masjid

JAKIM prayer times on the route; tags for history, architecture and facilities; surau at R&Rs; jamak and qasar windows.



Rintis Alam

Campsites and river spots checked against OMBAK rainfall upstream, with safer high-ground options.



S.A.L.T Hikayat

REKA tells the history and folklore of the towns you pass: rich at a slow cruise, short at highway speed. Malay or English.



Food the group can eat

Halal-certified stops, local favourites and places with room for a group, ranked by how far they take you off the route.



Heritage routes

Curated rides through royal towns, old mosques and historic bridges, with Hikayat stories queued for each stop.



Asked by voice

"REKA, find a masjid with showers before Asar" or "REKA, where can six bikes stop for lunch?" while riding.

The journey is the destination

Kembara plans around what the group cares about on the way: prayer, food, safety and the stories of the places they pass.

09 · PILLION & PASSENGER CO-PILOT

The passenger becomes the co-pilot

The pillion on a touring bike and the passenger in a car have the same job: navigator. Co-pilot mode turns their phone into a lightweight dashboard that mirrors the rider's or driver's navigation without running a second map.



Battery and data saver

The 3D map, tile downloads and high-rate GPS are switched off on the passenger's phone. It shows mirrored data only, using a fraction of the battery.



Mirrored telemetry

Speed, ETA, distance, next turn and OMBAK weather, received over a local Bluetooth or Wi-Fi link, or low-rate updates from the server.



Push a stop to the driver

The passenger searches for fuel, food or a masjid and pushes it; the rider or driver accepts with a handlebar or steering-wheel button, or by voice.



Group DJ

The passenger runs the shared playlist, volume and intercom status, so the driver never touches the phone.



No echo, no feedback

If the driver's phone is already on the car or helmet audio, the passenger listens through it and stays off the intercom, or joins privately on their own headset.



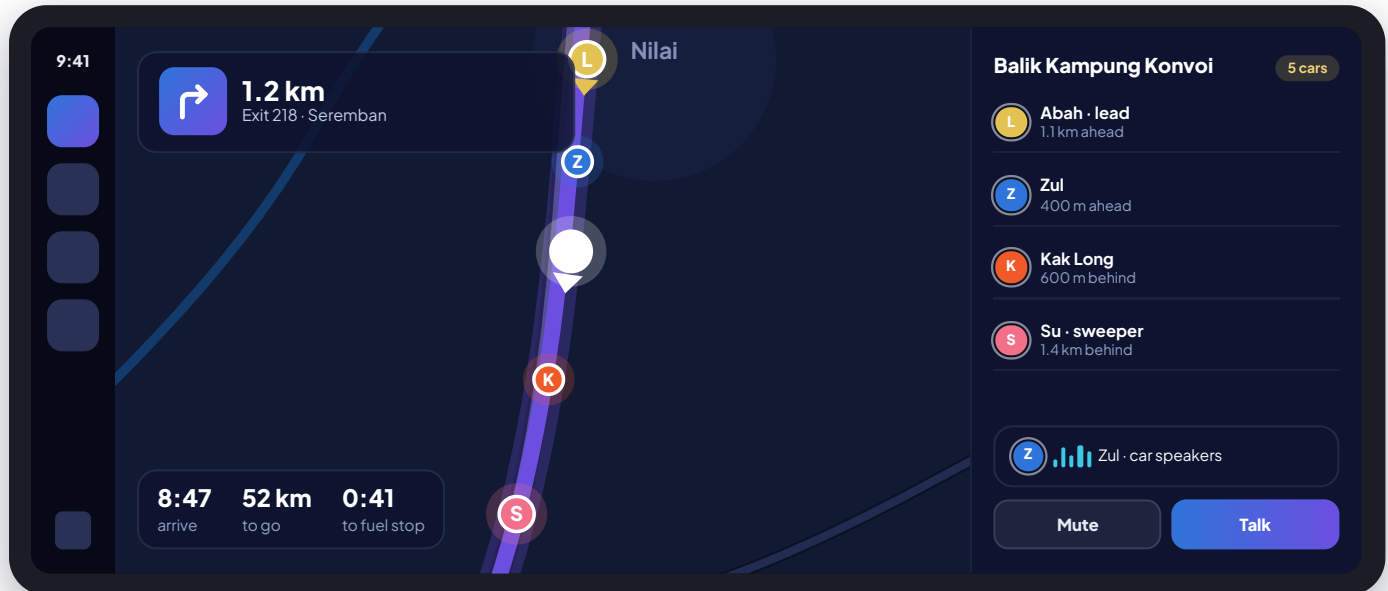
Take over in one tap

Switch to the full map instantly if the passenger needs to navigate for real.

10 · KEMBARA IN THE CAR

Drivers join the group on the car's own screen

Four-wheelers are first-class members. The driver joins the same session as the bikes, hears the group through the car's speakers and microphone, and sees Kembara on the dashboard through Apple CarPlay or Android Auto. The passenger takes the co-pilot role on their own phone.



Kembara on the car display. A balik kampung convoy of five family cars: turn guidance, the convoy line with lead and sweeper, and who is talking, on CarPlay or Android Auto. Names are illustrative.



CarPlay & Android Auto

Kembara projects to the head unit with large, glanceable screens made for driving: map and turns, the convoy line, the meet-up board and the talk-group.



Car Bluetooth audio

Harmoni runs through the car's hands-free system: the group comes out of the car speakers and the driver talks on the car's own microphone. No headset needed.



Steering-wheel and voice

The voice button and "REKA, talk to the group", "REKA, push the next R&R" or "REKA, how far is Zul?" keep both hands on the wheel.



Passenger as co-pilot

Same role as a pillion: searches stops and pushes them to the dashboard, runs the playlist and answers the group, on a phone that runs at a fraction of the battery.



One car, one voice

When the car speakers carry the group, everyone else in the car stays off the intercom by default, so there is no echo or feedback loop.



Mixed convoys

Bikes, cars and support vehicles in one session, each with its own routing profile, speed and fuel range, on the same map.

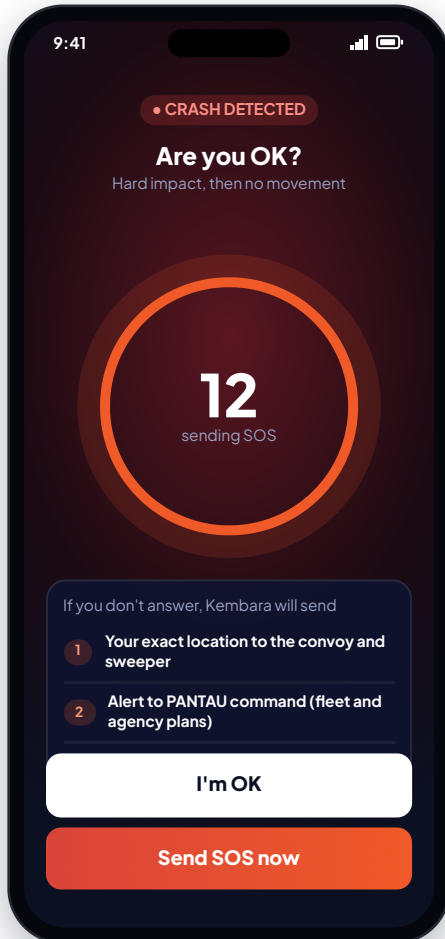
Balik kampung, Hari Raya and family road trips

Five cars, three generations, one route home. Titik Temu at the first R&R, Konvoi to the kampung, prayer stops for everyone, and the whole family talking on the way.

11 · SAFETY

If something happens, the group knows first

On a rural road at night, the worst thing is that nobody notices. Kembara watches for a crash, for a rider who stops answering, and for hazards ahead, and tells the right people at once.



Crash detection and SOS

A hard impact followed by no movement starts a countdown. Unless the rider answers, their exact position goes to the convoy and sweeper, to PANTAU on fleet and agency plans, and by SMS to emergency contacts.



Hazard whispers

Reported potholes, gravel, debris and accidents are spoken on the side of the lane they are on, from S.A.L.T traffic data and the group's own reports.



Kepala air and rain

OMBAK flags heavy rain upstream of a camp or a low road and suggests a safer alternative before the water arrives.



Tunnels and basements

Dead reckoning from the phone's motion sensors keeps the cursor moving through SMART Tunnel and underground roads, so exits are not missed.



Off-grid fallback

With no coverage at all, positions and SOS hop between phones nearby and, for serious off-grid use, over optional LoRa mesh radios paired to the phone.

12 · PANTAU · COMMAND VIEW

Every convoy, every team, on the operations-room screen

Fleets and agencies see all their groups on one map: units converging on a staging point, VIP convoys, incidents and the command channel, with every coordinate kept on their own servers.



Tactical Titik Temu. Four teams converge on one staging point with staggered arrivals; the point can stay hidden from members until a set time. Illustrative.



Live picture

Positions, ETAs, speed and status of every unit and member; replay of any session for debrief.



Command channel

The ops room talks to all team leads, one team, or one vehicle, and can patch an outside caller into a convoy.



Incidents

SOS, separation, geofence and route deviation alerts with acknowledgment and an incident log.



Plans and routes

Plan routes and staging points in PANTAU and push them to the teams' phones.



Reports

Movement and incident reports for a day or an operation, as branded Word or PDF.



Roles

Commanders, dispatchers and viewers; each sees only the groups they are allowed to.

13 · ARCHITECTURE

One group session service **at the heart**

A group session service holds each group's state. Telemetry and voice travel on separate encrypted paths, so location keeps flowing even if the intercom drops. All on S.A.L.T CI's own open-source stack.

PEOPLE & DEVICES

Kembara app

Android and iPhone;
MapLibre maps; on-
device routing for
offline

Car display

Apple CarPlay, Android
Auto; car Bluetooth
audio

Co-pilot device

Pillion or passenger;
mirrors over Bluetooth /
Wi-Fi

Guest web client

Join an RV from the
browser

Headsets & LoRa

Any Bluetooth or wired
headset; optional mesh
radio

PANTAU console

Web, for ops rooms

KEMBARA SERVER · ON S.A.L.T CI TERAS

Group session service

State machine per group: RV,
Konvoi, break, dispersal; roles,
privacy, expiry

Telemetry bus

Light pub/sub for positions,
status and events; adaptive
update rate

ETA & matrix service

Road ETAs, depart-by, late
prediction, link-up and Fair
Point

Harmoni media

WebRTC SFU, talk-groups,
mixing for large groups, SIP call
bridge

Routing & tiles

Valhalla routing, map-matching
and live traffic; vector tiles from
PostGIS

Traffic ingestion

Licensed traffic feeds, highway
and city sources, own probe
data

Intelligence (REKA)

Fair Point, Hikayat narration,
voice commands, trip reports

PERISAI & audit

Keys, encryption, roles, audit
log, retention rules

Data

PostgreSQL + PostGIS: groups, routes, POIs, sessions, incident log;
telemetry kept only as long as the group or agency chooses

ECOSYSTEM

OMBAK

Weather and rain
forecasts

PANTAU

Command and fleet view

TETAMU & Itinerary

Events become RVs

JAKIM

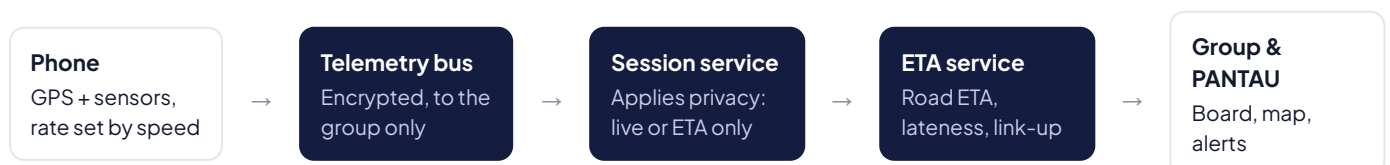
Prayer times

TERAS

S.A.L.T CI's AI core

LAYER	TECHNOLOGY
Mobile	React Native with MapLibre Native; on-device Valhalla and PMTiles offline packs; on-device noise suppression; Bluetooth LE for co-pilot and LoRa radios; CarPlay and Android Auto (Car App Library) templates
Maps	OpenStreetMap in PostGIS; Martin vector tiles; Valhalla routing with dynamic costing for Laluan Santai and Easy Route; Meili map-matching
Realtime	WebSocket telemetry bus (NATS); LiveKit WebRTC SFU with end-to-end encryption; SIP gateway for call bridging
Server	Containerised services on any Docker or Kubernetes host; scales out per service

HOW ONE POSITION UPDATE TRAVELS



14 · SOVEREIGNTY, SECURITY & PRIVACY

Where everyone is, **stays with you**

Movement data is the most sensitive data a person has. Kembara is built so it stays in the country, on servers the client controls, and only for as long as it is needed.



Sovereign hosting

S.A.L.T CI's local cloud for public plans; the agency's own servers for government and defence, fully air-gapped if required.



Encrypted end to end

TLS for every connection, SRTP for voice, end-to-end encryption for intercom rooms, AES-256 for stored data through PERISAI.



Sharing that expires

Location is shared only inside a session and stops when it closes. ETA-only and hidden-until modes for each person.



PDPA-minded

Clear consent on join, minimal retention by default, export and delete on request, and no selling of movement data, ever.



Roles and audit

Organisers, leads, marshals and viewers; agency roles in PANTAU; every access to a person's location is in the audit log.



No foreign dependency

Air-gapped sites run on historic and predicted traffic plus their own fleet data; nothing calls out of the network.

TWO TRAFFIC TIERS, ONE HONEST STATEMENT

TIER	TRAFFIC DATA	WHO IT SUITS
Connected	Licensed commercial floating-car data, highway and city feeds, plus consented Kembara probe data, refreshed every few minutes	Public plans, clubs, fleets
Air-gapped	Historic and predicted speeds plus the agency's own vehicles as probes; no outside calls	Defence, police, VIP protection

Same app, same experience

The rider does not see the difference. The agency does: its people's movements never leave its building.

15 · PLANS & DEPLOYMENT

From a weekend ride to a national agency

Location and navigation are light, so groups can be big on every plan. Plans differ by the number of voice seats, the talk-groups and the hosting, because live voice is what uses the server.

Trio

Families and riding pairs. Up to 3 voice seats, Titik Temu, Konvoi, routes, co-pilot, car display.

Squad

Touring groups and small teams. Up to 5 voice seats, shared playlist, catch-up RV.

Club

Riding clubs. Up to 10 voice seats in talk-groups, marshal channel, larger convoys for location.

Konvoi Plus

Big club rides and events. Dedicated media capacity, many sections, mixing for large groups.



Fleet & enterprise

- Dedicated media and server capacity on S.A.L.T CI's local cloud
- PANTAU command view, roles and reports
- Integration with TETAMU, itinerary and the client's systems



Government & defence (on premises)

- Installed on the agency's own servers or private cloud, any hardware
- Fully air-gapped operation, with offline map and traffic updates
- Sold and supported through PEMANGKIN TEKNOLOGI's authorised partners

WHAT AN INSTALLATION NEEDS

Servers	Any machines that run containers; map, routing and media services scale independently
Map data	OpenStreetMap for Malaysia and the region, refreshed on a schedule; offline packs built from the same data
Network	HTTPS and WebRTC (UDP preferred, TCP fallback) from phones to the server; nothing else inbound
Devices	Android 10+ and iOS 16+ phones; Apple CarPlay and Android Auto head units; any headset or car Bluetooth; optional LoRa mesh radios
Licence	Per organisation: plan, voice seats, PANTAU seats; offline licence for air-gapped sites

16 · WHY S.A.L.T KEMBARA

What travelling groups patch together today, in one app

Typical capabilities by tool category; individual products vary.

CAPABILITY	CONSUMER NAVIGATION	CHAT LIVE LOCATION	HARDWARE INTERCOM	S.A.L.T KEMBARA
Turn-by-turn with live traffic	✓	—	—	✓
Meet-up: fair point, depart-by, live board	—	positions only	—	✓
Convoy roles, gaps and regrouping	—	—	—	✓
Group voice on any headset	—	calls only	same brand	✓
Scenic, easy and weather-aware routes	limited	—	—	✓
Prayer-time and camp-safety stops	—	—	—	✓
Crash detection to the group	varies	—	some	✓
Group view on the car display	one driver	—	—	✓
Data kept in Malaysia, air-gap ready	—	—	✓	✓

Part of the S.A.L.T CI platform

S.A.L.T Kembara runs on TERAS, S.A.L.T CI's AI core, alongside OMBAK, PANTAU, TETAMU, PERISAI, REKA and S.A.L.T NEXUS.

Target product

This brief describes the complete S.A.L.T Kembara 1.0 that the build programme delivers. The concept paper v9 sets out the phases.



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