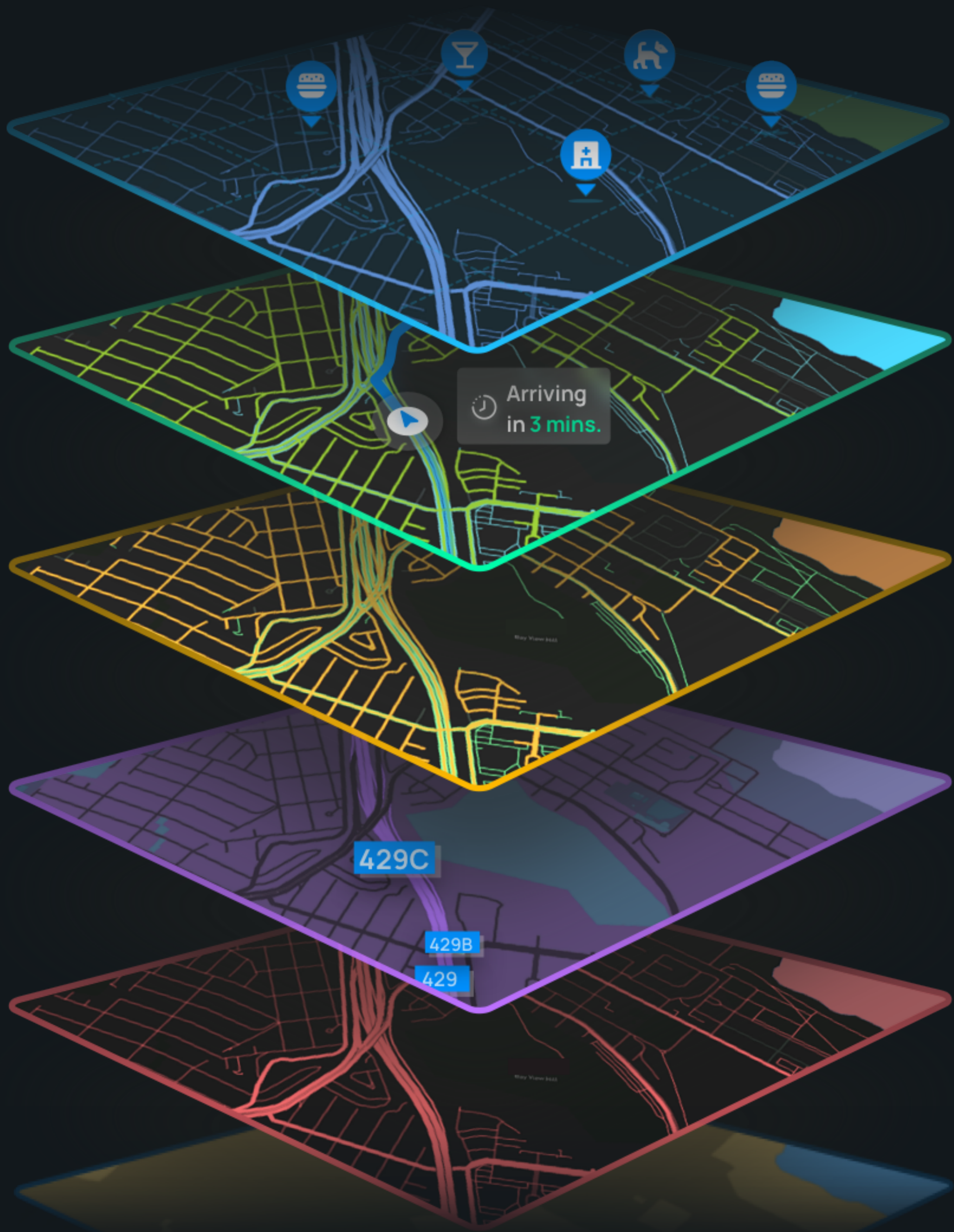# nextbillion ai

Why do you need a custom map stack?

One map doesn't fit all; build a mapping approach that works for your unique use cases.

Introduction

For businesses where location accuracy is paramount, a "one-map-fits-all' approach can be a huge limitation to your performance and scalability.

Even seasoned PMs may find this surprising, but there's a lot more to mapping than simply plugging in the popular 'you-know-which' maps API. At scale, consumer-focused mapping solutions simply can't cater to the robust needs of a business in the long run.

Consumer mapping solutions follow a generalized approach that compromises on accuracy, leaves little room for customization and comes at a much higher cost. These errors become more pronounced as your operations scale and your teams struggle to optimize your platform's performance.

For these reasons, having a custom map stack can significantly improve your key performance metrics. As a bespoke solution that's curated to your business's singular use case, a properly configured map stack should be uniquely equipped to handle your business challenges, which a consumer-centric solution simply can't tackle.

A custom map stack can also open your horizons to the many possibilities of leveraging maps - often in ways that you've never considered, and ones that we'll discuss ahead in the whitepaper. This, in turn, has strong implications for your business, especially customer experience, platform efficiency, and bottom line.

Clearly, there's a lot more at stake when it comes to maps. In this whitepaper, we'll take a look at the limitations of the generally followed approaches, and alternatives that can show much better results.

Why the 'one-map-fits-all' approach doesn't fit all

1. Inability to support your organization's unique use case

Consumer-centric maps are built to cater to a wider audience and are rarely a good fit for businesses with specific requirements. This gives rise to a variety of challenges, including:

A. Compromising on ETA/trip time accuracy

- Mapping solutions for businesses need to give highly accurate predictions before the trip starts. However, since consumer solutions aren't business-critical and simply update the ETA dynamically throughout the journey, they have a higher threshold of error.

- While this might slightly inconvenience a regular consumer, the implications for a business are far more serious - causing the inaccuracy to spread across ride allocation - and impact CX, platform efficiency, and revenue.

- These solutions also do not account for the complete journey. For instance, food delivery ETAs need to be calculated from the counter to couch instead of just the on-road travel times, while accounting for aspects like:

  - High start times: When it comes to ride-hailing, the driver might take a few extra minutes before starting their journey to the customer. Trucks, on the other hand, might take hours to start.

  - High wait times: In logistics, truck drivers on a long-distance trip will take breaks for eating and sleeping, which isn't accounted for by standard maps.

- Walking times: For food delivery, the delivery agent needs additional time to walk to the restaurant or while waiting at the consumer's house.

B. Inability to customize/overlay proprietary POIs

- Generic maps don't allow you to add custom POIs without a lot of coding jugglery, giving rise to challenges like:

  - Missing POIs: Important or new POIs are absent, and mapping providers take months to add them.

  - Lack of contextual POIs: POIs that are relevant for a specific use case, such as suggested parking locations for restaurant or pickup location for an apartment complex, can't be easily overlaid.

  - Utilization of rooftop POIs: Rooftop POIs do not help guide your driver efficiently in the last mile of the trip or differentiate correct entry/exit points as per the vehicle. For example, two-wheelers, cars, and trucks may have different entrances at a mall.

MALL LAYOUT

Gate A

Pedestrian Entrance

Gate B

Back Entrance
Only Service Vehicles
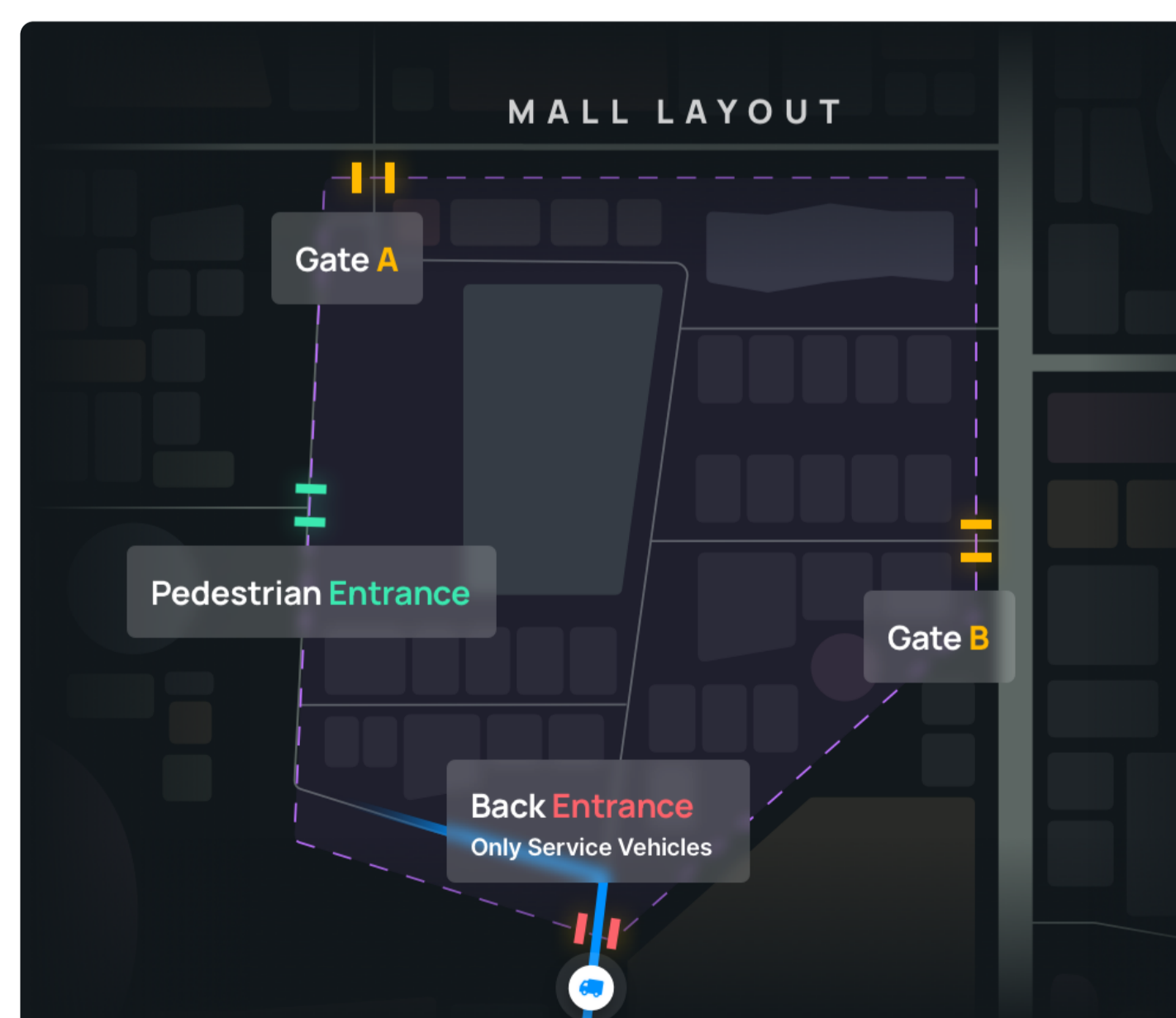
2. No differentiation on vehicle types

- Consumer-centric mapping solutions use personal vehicle data to predict ETAs for all vehicle types, be it 2-wheelers, cars, LCVs, or trucks. This leads to ETA and routing inaccuracies depending on roads and area accessibility conditions.

- Besides this, even different 4-wheelers can have different considerations. For example, a car used for ride-hailing and a pickup used for logistics will have different ETAs for the same journey.

3. Limitations on scalability

A. Balancing a trade-off between API costs and CX

- To provide near real-time agent locatiions and for better user experience, you need to make frequent API calls.

- However, a higher frequency of calls increases API costs, while a lower frequency makes the tracking feel sudden and jerky.

B. Managing higher latencies, API calls, and traffic spikes

- Certain scenarios require far more scalability than consumer-centric solutions can provide.

- For example, mapping providers can rarely support large matrix API calls that need to be run during peak hours, while breaking these matrices into smaller units increases costs further.

- Another high density requirement is when your team needs to run new data model simulations - like a new pricing strategy. Here, you once again need to run the API on a large set of older data - sometimes ranging across months - which leads to additional costs.

- Even for fewer calls, high-latency API calls directly impact your customer experience - any interaction that takes over 100ms is user perceivable, which makes the UI appear laggy.

- Finally, challenges like sudden large spikes of traffic can cause downtime in your and your competitor's product. On the other hand, with a more scalable solution, this could be a valuable opportunity.

4. Not accounting for local context & real-time considerations

A. Consumer maps rarely provide local nuances and real-world considerations that are vital for business operations, including:

- Serviceability restrictions - such as where pickups or dropoffs are not allowed to happen, areas that your business doesn't serve.

- Regulatory considerations - such as HOV lanes, odd/even rules and vehicle type.

- Real-world considerations - such as traffic, road closures, and road accidents.

This long list of somewhat daunting challenges can still be overcome - and fairly easily at that. A custom map stack can help you leverage maps in new and exciting ways - and the biggest difference is a mindset shift.

A custom map stack puts you in the driver's seat, giving greater control for solving problems, options for modifying based on feedback and adding customizations based on your unique needs.
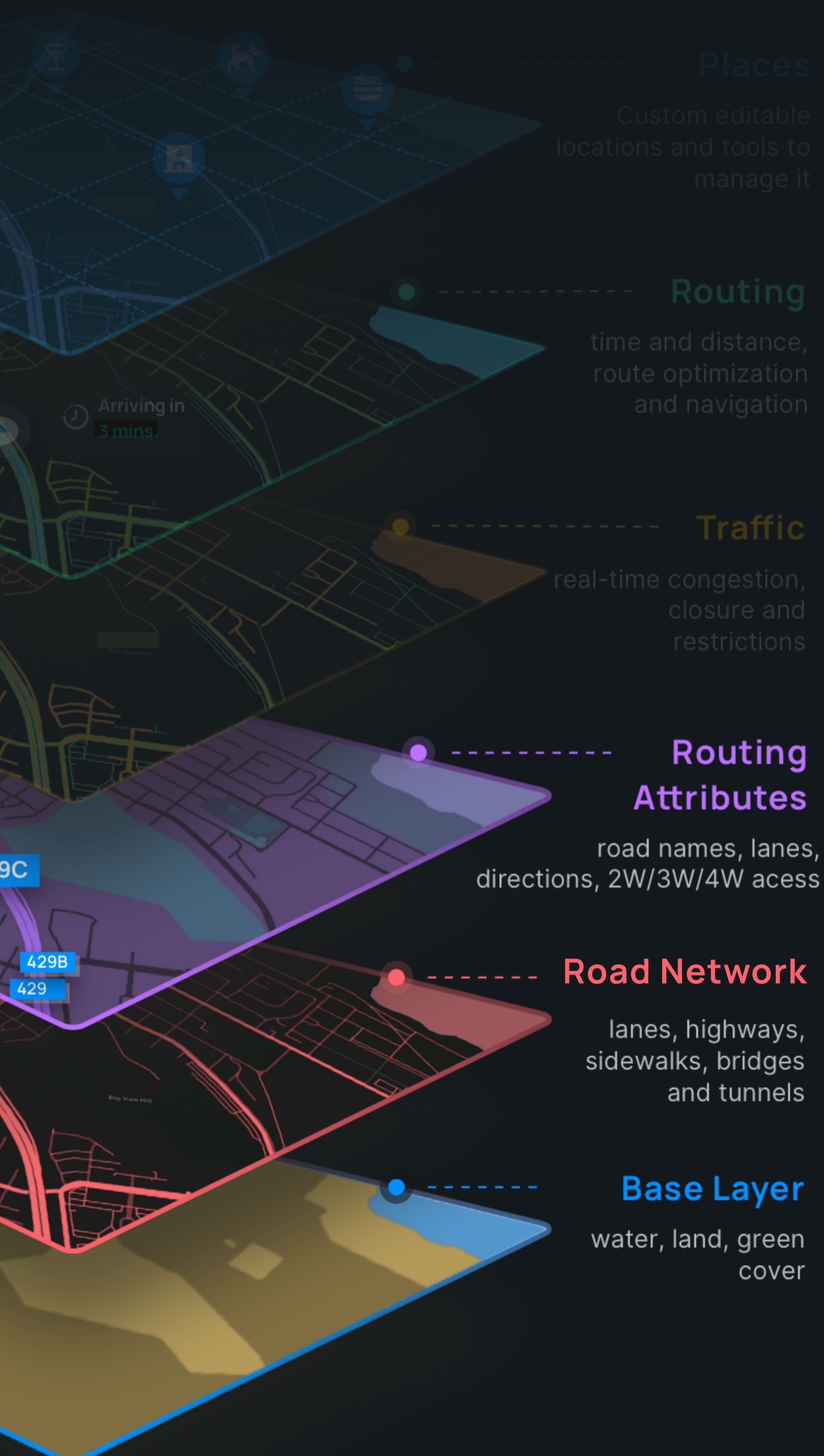
> "
> Businesses frequently look at consumer maps API features and think that "this is it". However, the possibilities offered by bespoke solutions are endless.
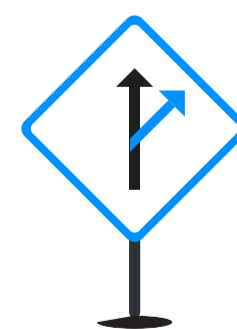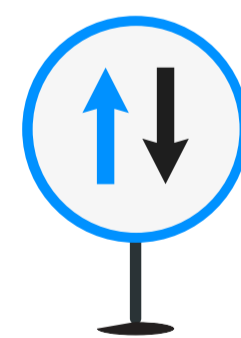
What is a
Custom Map Stack?

A custom map stack generally picks up from the base map data and adds layers to it - ones that can add contextual data that fit specific use cases. Here's a glimpse of what these layers can look like:

Places
Custom editable locations and tools to manage it

Routing
time and distance, route optimization and navigation

Arriving in 3 mins.

Traffic
real-time congestion, closure and restrictions

Routing Attributes
road names, lanes, directions, 2W/3W/4W acess

9C

429B
429

Road Network
lanes, highways, sidewalks, bridges and tunnels

Base Layer
water, land, green cover

Base Map - This layer contains the foundational map data - such as the land boundaries, water bodies, and the overall look and feel of a geographic area.

- This layer is just the start! While it fits potential needs of government bodies, like setting up smart cities, it needs a lot more context for businesses to utilize.

Road Network - These overlay a geography's road network on the base map and include attributes such as one ways and turn restrictions.
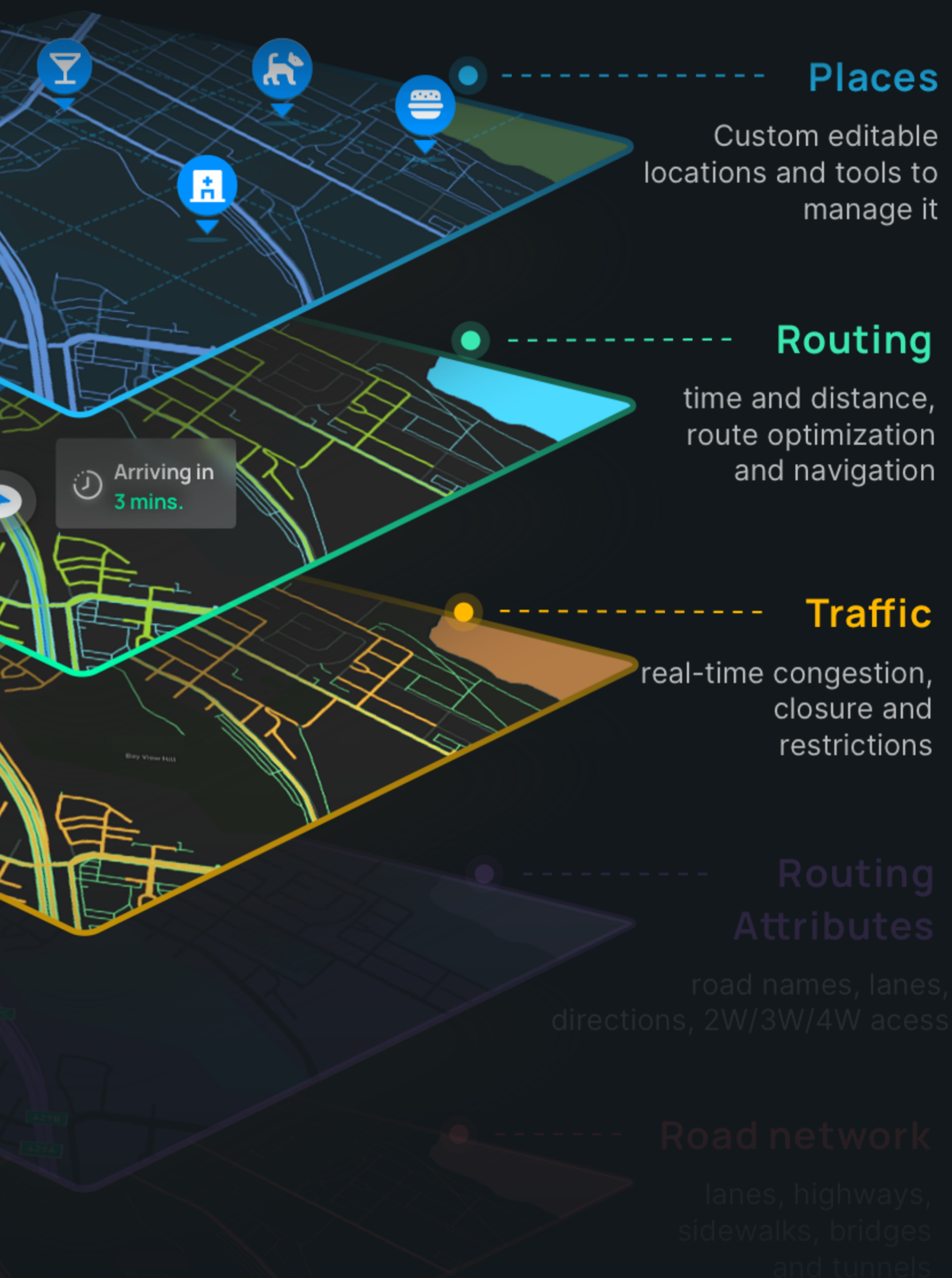
- Due to the dynamic nature of cities, road networks are always evolving and can change by as much as 5% each year. However, these changes often take months to reflect on consumer-centric maps.

- Since your delivery agents and drivers may frequently traverse these new roads, leveraging your growing pool of data to customize this layer can give a significant advantage to your map data.

Routing Attributes - These are the various factors that play a vital role in determining your routes, such as the vehicle type, road conditions, road restrictions, closures, local traffic regulations and more.

- Consumer maps typically don't account for these attributes as they're not important to their key audience. However, for a business, they are a critical aspect of their drivers' journey.

- This layer needs to reflect your local contexts as soon as possible - such as blocking roads during activities like parades or due to events - and thus needs to be easily customizable by your team. This can significantly increase the routing efficiency of your platform.

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Arriving in 3 mins.

Traffic - Traffic is another factor that has a huge bearing on the routes traversed and the travel times. In most cities, the traffic follows a general pattern that can be traced using historical data. For example, key highways will have slow traffic during office hours. Because of this, in over 90% of cases, historical data alone is sufficient to predict more accurate ETAs. In scenarios where real-time traffic considerations are required, it's simpler to use a custom traffic engine.

- Traffic faced by two-wheelers is far different from what a car or truck faces - this is information that your historical travel data will reflect, but consumer maps might not.

- Customizing this layer using your historical data, real-time intelligence and machine learning can help you understand how traffic conditions affect your delivery agents and drivers.

Custom Place Labels - Points of interest (POIs) and place labels are a vital part of a business's map stack. Identifying key entry/exit, pick-up/drop-off, and relevant landmark points has a direct impact on your map quality, product efficiency, and your customers' experience.

- Setting up optimal place labels can significantly reduce cancellations and unexpectedly high arrival times, as these are often a result of poor map data.

- POIs can be enriched using both your historical data as well as user feedback - especially the latter. Users care about their experience on their frequently used delivery and ride-hailing apps and are frequently open to sharing timely and detailed feedback.

Application Layer - This crucial layer pulls heavily from the layers discussed above - it distills the data extracted from the first 5 layers and helps to build out the end business application itself. When tailored to your unique use case, it's the secret sauce that gives you the support and capabilities needed (be it handling large throughput or very low latencies) to drive better experience, greater efficiency and revenue growth.

How does a custom map stack help me?

1. Better customer experience

For an on-demand ride or delivery organization, this means striking a balance between the needs of the end customer and the delivery agent/driver to ensure that both these stakeholders have a satisfying experience with the product. A custom map stack achieves this for different stakeholders in different ways.

A. For end consumers by delivering

- **More on time orders -** More accurate ETAs mean more orders that arrive on time, contributing to the "perfect order" experience for customers.

- **Faster Arrival Times -** With better maps, your orders and drivers take less time to reach your end customers, thus creating more delightful experiences.

B. For delivery agents/drivers by providing

- **Achievable customer promises through ETA accuracy -** As mentioned earlier, the ETA sets a customer promise that needs to be met by a delivery agent/driver. It's vital for this to be accurate because an unachievable estimate can push the delivery agent/driver to deny the request from the customer, or cancel it after accepting.

- **Better routing -** Custom maps can optimize navigation for delivery agents/drivers by predicting routes that account for their driving behavior and preferences. This means better delivery plans and less wasted time for your drivers/agents.

2. Better platform efficiency through

- **Better dispatch and allocation -** By improving ETAs, custom maps help optimize the allocation process as ETAs and routes are a critical part of the process. This smoothens operations across the board to ensure minimum 'wastage' of resources.

- **Better order batching/ride pooling -** Similarly, accurate ETAs mean higher match rates and fewer detours. This helps your team serve a larger number of customers using fewer resources - especially during peak hours.

3. Better bottom line through

- **Better fare estimate accuracy -** As pricing is usually distance / time-based, custom maps lead to more accurate ETAs and routes, ensuring optimal fare estimates, thus helping avoid overpriced and under-priced rides.

- **Improvements in CX and platform efficiency -** The more efficient your platform is, the more effectively you can utilize available resources to serve more customers. In the case of food delivery, better order batching means you can tackle more orders over the same period of time while also reducing fuel costs.

Does a custom mapping solution fit your business needs?

Hi John, where are you going?

| 🔍 Search destination |

🏠 **Home**
1130 Vermont Ave, Los Angeles, CA 90006

💼 **Office**
Automobile Club of Los Angeles, 3739 Crenshaw Blvd Suite E...

🕘 **Children's park**
4200 La Cienega Blvd, Los Angeles, California, United States

As you scale, it becomes essential to have maps that learn from your existing data and give you control over intricate aspects of your map platform - without costing you the time, effort, and expense of building a custom solution by yourself.

To tackle this need, NextBillion.ai has been solving maps for on-demand rides and deliveries, logistics, ecommerce, and similar industries that rely heavily on geospatial data - with superior customization capabilities and a much lower cost than API-based consumer-focused solutions.

Let's get started.

To see how you can power your business with a custom map stack, visit:

www.nextbillion.ai/get-started