



# Intelligent Supply Chain

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**INDUSI MAZE**  
INTELLIGENT SUPPLY CHAIN SERVICES

# Mark Singh: Profile

*25+ years experience: Transformation; Advisory and Interim Management*

## Clients



## Programs of Work

1990s

Business Process Reengineering

2001-2007

Operations Excellence

2008-2015

Supply Chain Transformation

2016 onwards

Digital Transformation

## Countries/Geographies

India, Singapore, Taiwan, Hong Kong, China, UAE, Qatar, Egypt, UK, Australia, New Zealand, Japan, South Korea, Indonesia, Malaysia, Vietnam, Sri Lanka, Bangladesh

## What I 'like' doing NOW?

### Educate

Supply Chain Productivity

### Evangelise

Intelligent Supply Chain

### Advise

Digital Transformation

### Deploy

Industry4.0 Platforms

# July 2019

## Industry policy

The Government has launched a new approach to industry policy, aimed at growing more innovative industries in New Zealand and lifting the productivity of our key sectors.



New Zealand has a strong economic foundation but our productivity has continued to fall behind our main competitors. To take advantage of the opportunities of the technological revolution the Government has announced Industry Transformation Plans will be developed for key sectors.

Figure 2: Multifactor productivity growth comparison



Source: OECD

**Key Messages : Innovative Industries Growth and Focus on Productivity Improvement**



Improving productivity

Where to start?

As per Gartner

- **VISIBILITY** is a key enabler of supply chain productivity

# Key Questions for supply chain leaders..

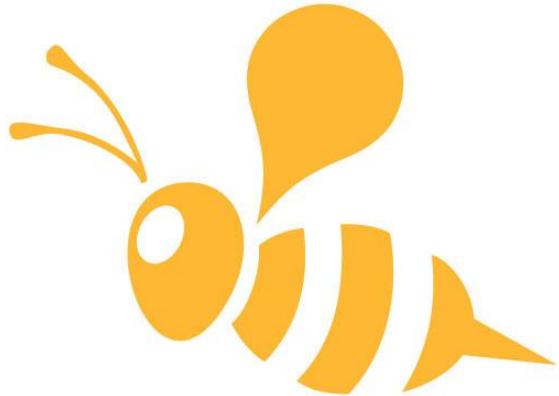
**Question:** *Where do I invest to drive productivity improvement?*

**Answer:** *Invest on Supply Chain Visibility*

...with - so many opportunities; so many technologies; so many vendor promises...

**Question:** *Where do I start the 'supply chain visibility' journey?*

**Answer:** *Start with 'IoT-is-ing' your supply chain with Industry4.0 platforms*



**roambee**



# About Roambee



Roambee provides **real-time global monitoring** and **visibility** for indoors, outdoors, and in-transit goods and assets.



**On-demand** business model with no up front investment, **flexible and scalable** to your needs.

Founded in 2014, a team with **decades of distribution & logistics domain experience** including multi-code barcode, RFID, Wi-Fi, Bluetooth, GPS, GSM, Enterprise Application integration, and cloud application development experience in multi-national corporations and successful start-ups.

200+ global customers



## Roambee Offices

Santa Clara (USA), Mumbai (India), Mexico City (Mexico), Düsseldorf (Germany), Durban (South Africa), São Paulo (Brazil), Dubai (UAE), Kuala Lumpur (Malaysia)



## Investors



# Customers



## 3PL, LOGISTICS, & POSTAL SERVICES



## ELECTRICAL/ELECTRONIC MANUFACTURING



## BUILDING MATERIALS & FINANCE



## CONSUMER GOODS



## GOVERNMENT



## AUTOMOTIVE



## CHEMICALS



## PHARMA & MEDICAL DEVICES



## FOOD & BEVERAGES



# Answers for Limited Visibility



Enterprises lack **real-time visibility and insights** for the location, inventory and condition of their goods & assets indoors, outdoors, and in-transit

*....leading to greater operational risks and higher levels of business disruption*

Using **sensors**, we provide real-time location, inventory and condition monitoring of goods & assets indoors, outdoors, and in-transit. Using **data**, we provide meaningful insights and foresights

*....helping enterprises mitigate risk, improve operations, and be more profitable*

Data & insights using machine learning platform for better immediate and future performance



On-Time Delivery Risk



Spoilage Risk



Damage Risk



Theft Risk

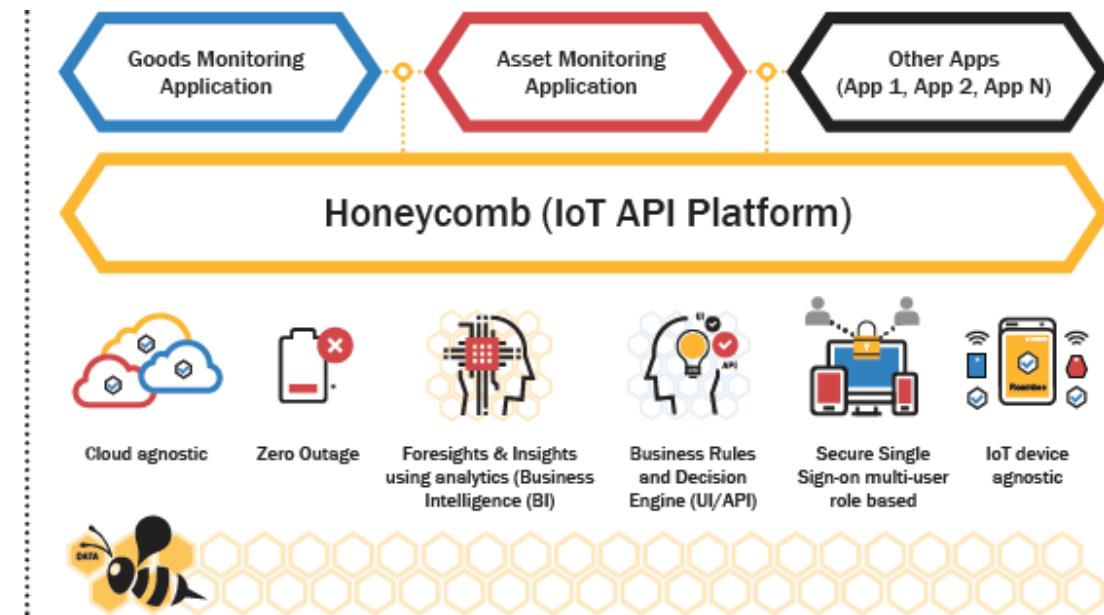
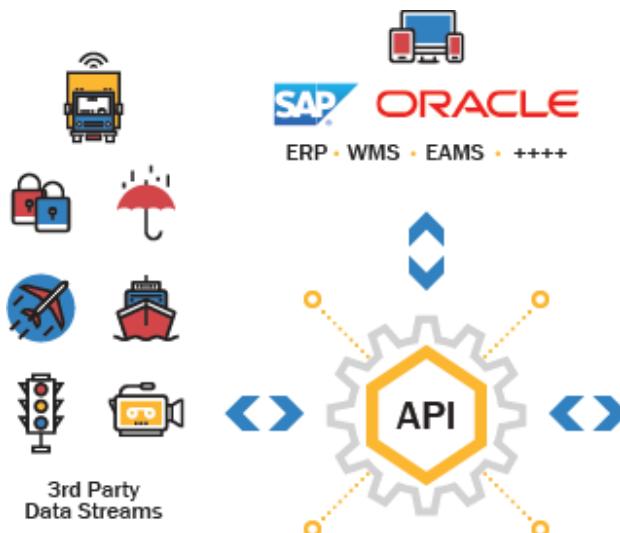


Financial Risk



Quality of Service Risk

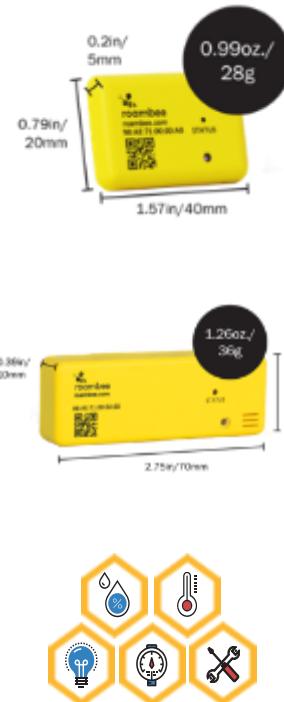
# Honeycomb 3.0 – IoT API Platform



# The Configurable IoT HW Platform



- The industry's **first** in-transit, battery operated BLE/Wi-Fi/GSM hotspot
- Always-on Rugged, cellular-Wi-Fi device
- 90-1000 day battery life
- Full array of sensors
- Multi-modal transport, Global data roaming
- GPS + Cellular triangulation



- Bluetooth Low Energy (BLE) based discreet, package/item monitoring device
- Location reporting through the Roambee Bee or Smartphone
- Sensor data logging (11,000 readings)
- NIST traceable and 3-point calibration certificate
- Non Lithium Ion AAA battery for shipment compliance
- IP 66 Rated, Disposable, reusable, or returnable



# Use Case





# End-to-End Cold Chain Monitoring

## Warehouse, In-Transit, Stores



### Current Scenario

- No real-time temperature data from data-loggers: Spoilage is known but not preventable
- Dependence on vehicle based sensors for real-time info: Prone to outage or tamper
- Not end to end: Warehouse, truck, store
- No reliable method for tracking temperature in multi-modal situations
- Loss and wastage of goods due to spoilage

### Roambee Scenario

- Prevent spoilage through real-time temperature, Mean Kinetic Temperature (MKT), humidity and pressure spikes
- Multi-modal in-transit, in-warehouse, and at point-of-sale cold chain integrity
- Ensure top product quality standards throughout the supply chain
- Item/package level condition data

# From Data Loggers To Roambee



Enterprises around the globe are moving away from data loggers. Here's why!

### Data Loggers

- Post-mortem temperature graph
- Only temperature
- Need manual plugging to pull data
- Software installation required
- User manages logistics of device
- Capex model
- Package level granularity is not possible (Hot & cold spot influence)

### Roambee

- Real-time location and condition
- Location, temperature, humidity, pressure
- Data on cloud at anytime
- Data on cloud; platform is cloud-agnostic
- Reverse logistics managed by Roambee
- Pay-as-you-go
- BeeBeacons with the Bee can be used to monitor condition at a package level

# End-to-End Cold Chain Monitoring Approach



Place BeeBeacons on the items and use a Bee to create virtual Beezones or use the Mobile as a Bee as mobile gateways. You can also use a Bee as a standalone device to monitor real-time temperature



Configure safe conditions thresholds – Temperature, Humidity, Pressure



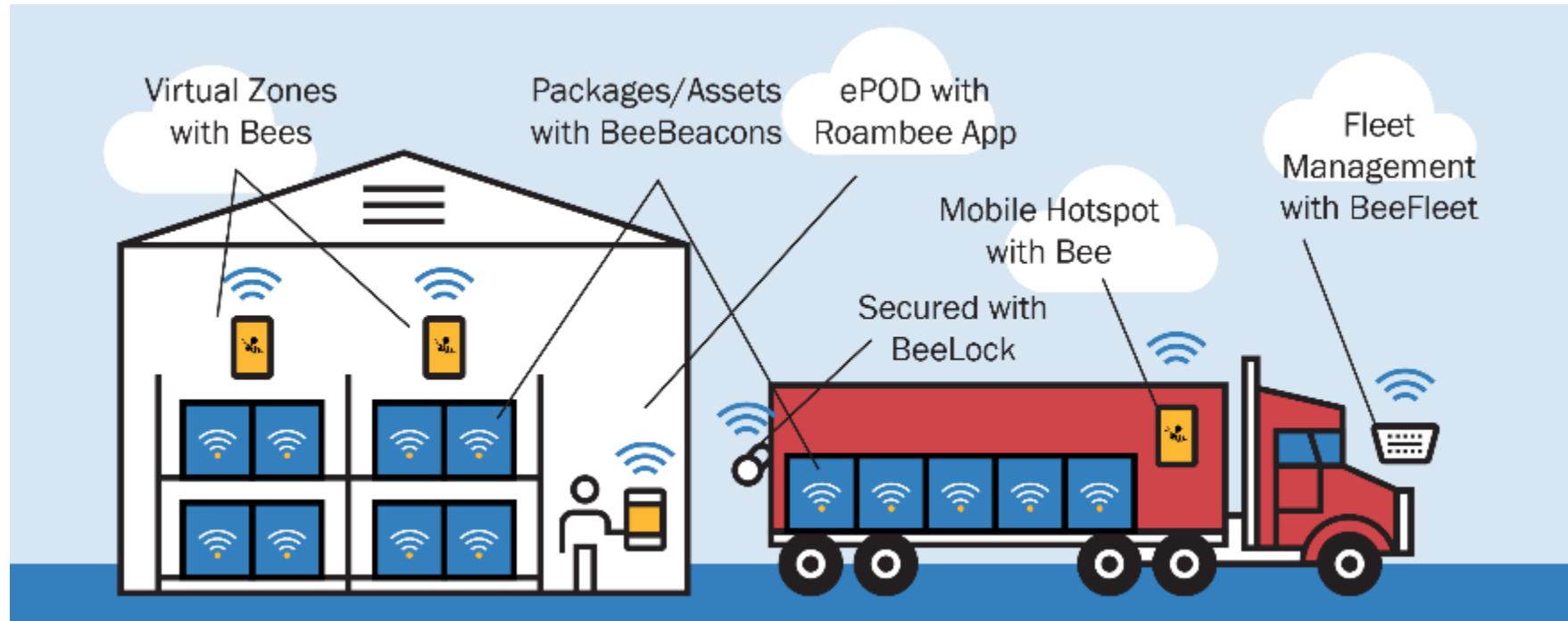
Get real-time foresights into location, time, cause and extent of excursions, along with Mean Kinetic Temperature (MKT)



Use BeeCentral to action on condition excursions by contacting the person handling the goods at that point to prevent spoilage



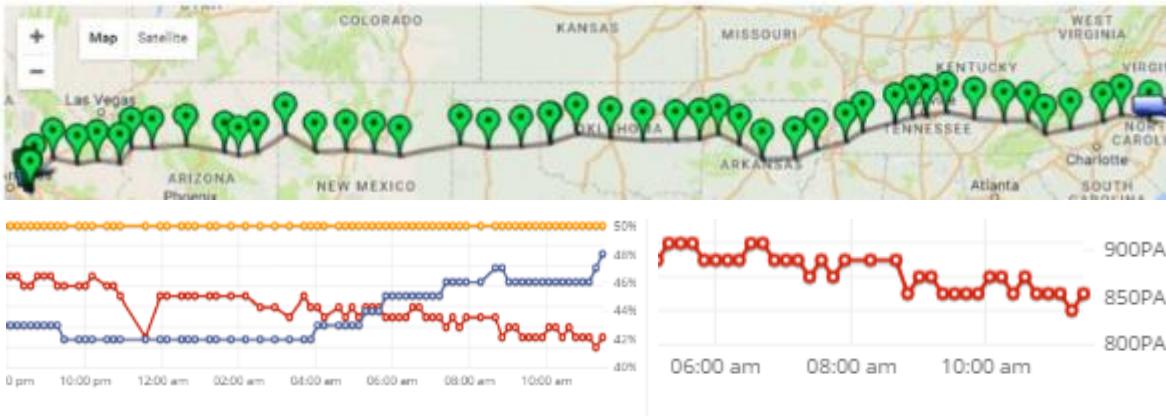
# Integrated Load or Item-Level Visibility



# End-to-End Cold Chain Monitoring Tools



## Dashboard



## Reports

- Temperature with accuracy of  $\pm 0.1$  °C
- Humidity with accuracy <2%
- Pressure with accuracy  $\pm 0.25\%$  (1m in 400m)
- Package-wise reports

## Alerts

- Temperature excursion (including MKT)
- Humidity excursion
- Pressure excursion
- Door open sensing (Using light sensor)
- Package-level excursion alerts

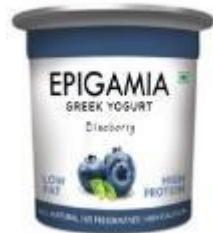
# How is Alere Improving Product Quality?



Alere's vaccines need an environment of 2-8 °C. During excursions, their ground operations team coordinates with the logistics provider to fix the air-conditioning on the road or have the goods re-routed to the nearest warehouse. In rare cases where goods are not salvageable, re-shipments are planned on-time to ensure customer satisfaction.



# Drums Food Improving Brand Promise?



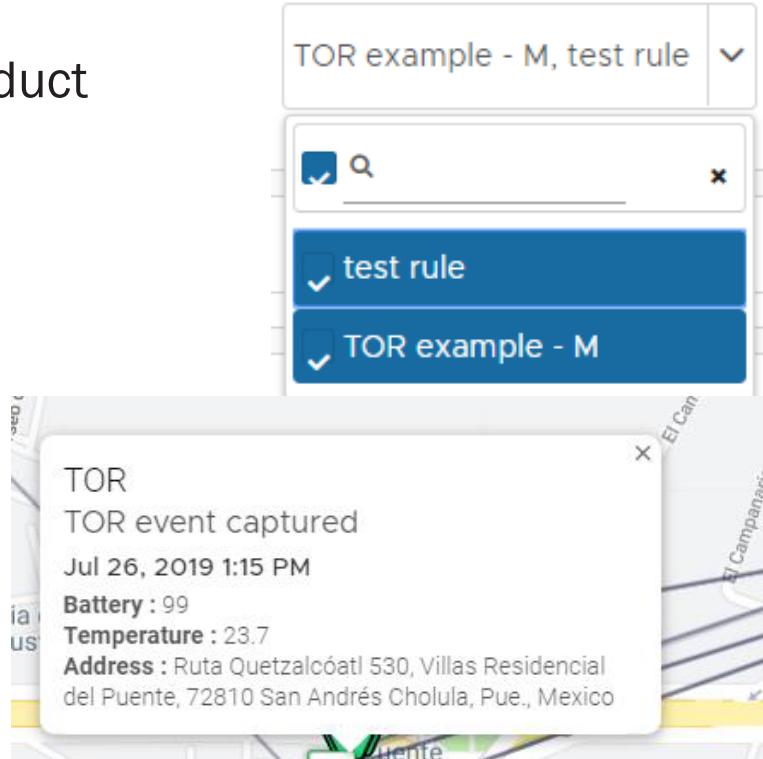
Hokey Pokey & Epigamia, popular brands of Drums Food International leverage Roambee to ensure top quality of their ice-creams and healthy yogurts which have shelf-lives of less than 15 days. By reacting promptly to temperature fluctuations in-transit or at stores, they prevent ice-crystal formation from deteriorating the quality of their products.



# Time out of Refrigeration

Total amount of time that a product is outside of its specified temperature range.

Important for Pharma and Food  
Cumulative or Continuous



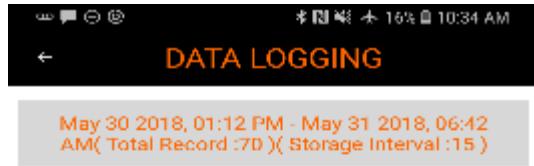
# Cold chain deployments - Pharma



# Cold chain deployments – F&B



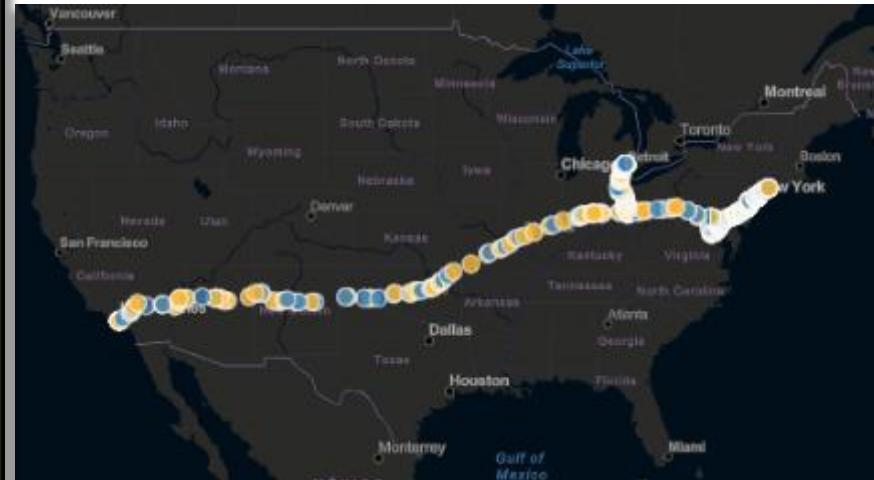
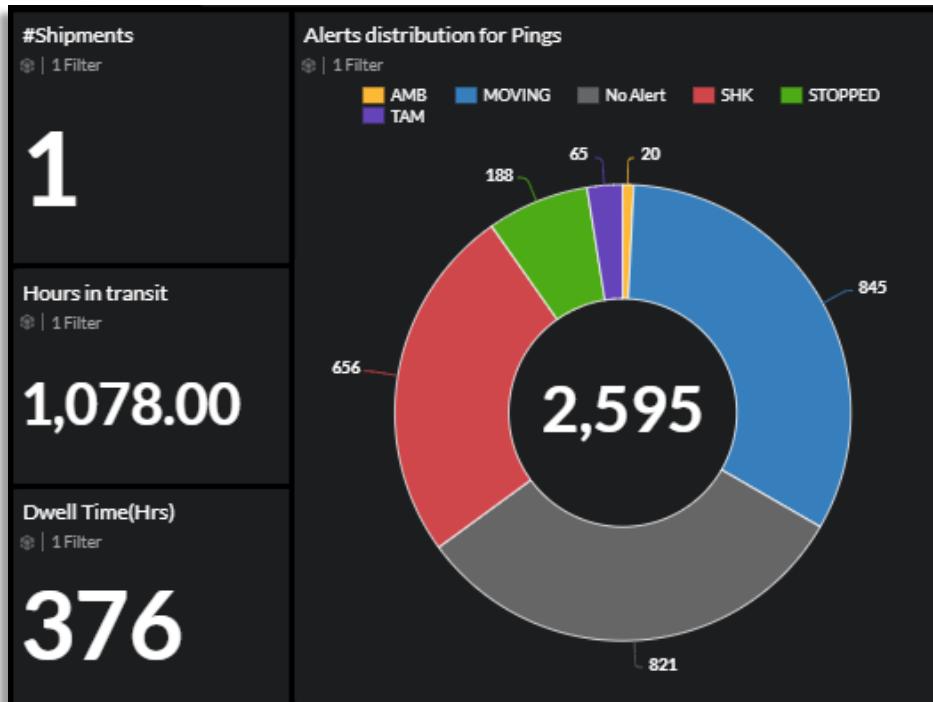
# Palette /Cartons shipment monitoring



Sr. No	Time	Temp (°C)	Light (%)	Tamper (0/1)	Battery (week)	Humidity	Pressure (Pa)
Date							
1	01:12 PM 30/05/18	24.29	53	0	113	42.0	1009
2	01:27 PM 30/05/18	24.17	3	0	113	43.0	1009
3	01:42 PM 30/05/18	24.10	59	0	113	43.0	1000
4	01:57 PM 30/05/18	25.20	0	0	113	45.0	990
5	02:12 PM 30/05/18	20.15	0	1	113	38.0	991
6	02:27 PM 30/05/18	8.11	0	0	113	56.0	990
7	02:42 PM 30/05/18	6.76	0	0	113	56.0	990
8	02:57 PM 30/05/18	5.13	0	0	113	72.0	990
9	03:12 PM 30/05/18	4.22	0	0	113	69.0	989
10	03:27 PM 30/05/18	5.10	0	0	113	78.0	981
11	03:42 PM 30/05/18	4.16	0	0	113	76.0	981



# Kit 1 – Shipment Analysis



Last Known Location: Philadelphia, USA

Departure: Jun 14, 2019 4:43 PM PDT Arrival: Oct 1, 2019 10:00 AM PDT Google ETA: Jul 31, 2019 7:42 PM PDT Roambee ETA: Aug 2, 2019 10:15 PM PDT

# Components



# Thank You

Visit us at [www.roambee.com](http://www.roambee.com)

 @roam\_bee

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