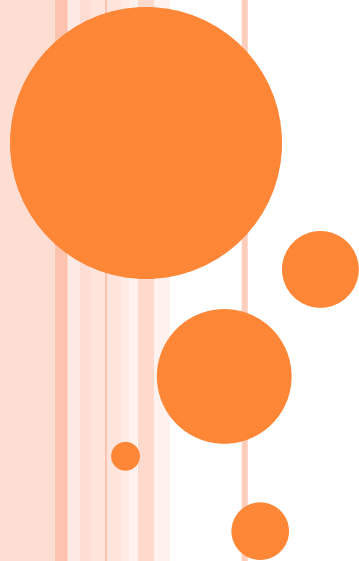


BIG DATA ANALYTICS FOR TOURISM DESTINATION MANAGEMENT

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MOTIVATION

- **Travel behavior** refer to the actual **travel activity of people during their trips** such as spatial and temporal *movement patterns* of tourists.
- For examples:
 - *Where do tourists like to visit?*
 - *When do tourists visit?*
 - *What do tourists like or dislike at each of the visited locations?*
 - *How do tourists travel between places?*
 - *What routes do they usually take?*
 - *What activities and events do tourists like to participate in?*



MOTIVATION

- Such knowledge is valuable for:
 - **Policy Maker, Government Departments, Business Managers:**
 - Destination management
 - Product development
 - Attraction Development and Marketing
 - Tourism Impact management
 - **Transportation Planners:**
 - Traffic management
 - Transportation Development.



MOTIVATION

- Popular methods for capturing travel behavior:
Survey and *opinion polls*
- **Disadvantages:**
 - Time consuming
 - Limited in terms of the number of responses
 - Limited in scale of the information captured.

Unable to provide comprehensive understanding about the locations, time, interests, movement, etc.



PROPOSED TECHNOLOGIES

- Many photo-capturing devices now have built-in **global positioning systems** (GPS) technology



- Geotagged photos**, with embedded **time** and **geographical information**, are shared on social networking websites such as (*but not limited to*):



Instagram



facebook

twitter

Google
Panoramio

tripadvisor

PROPOSED TECHNOLOGIES

- The geotagged photos have:
 - **GPS tag** (*latitude, longitude*)
 - **Taken Time Stamp** (*Date, Month, Year, Hours, Minutes, Second*)
 - **Textual Metadata** (*tags, description, title, comments*), reflecting what people are interested in.
 - The **Actual Photos**, provide insight into tourist's own experience about the entities of interest.
 - **People's Profile** (*Where they come from?*)

Allow for *comprehensive understanding* about tourist behavior without the need of actual engagement.



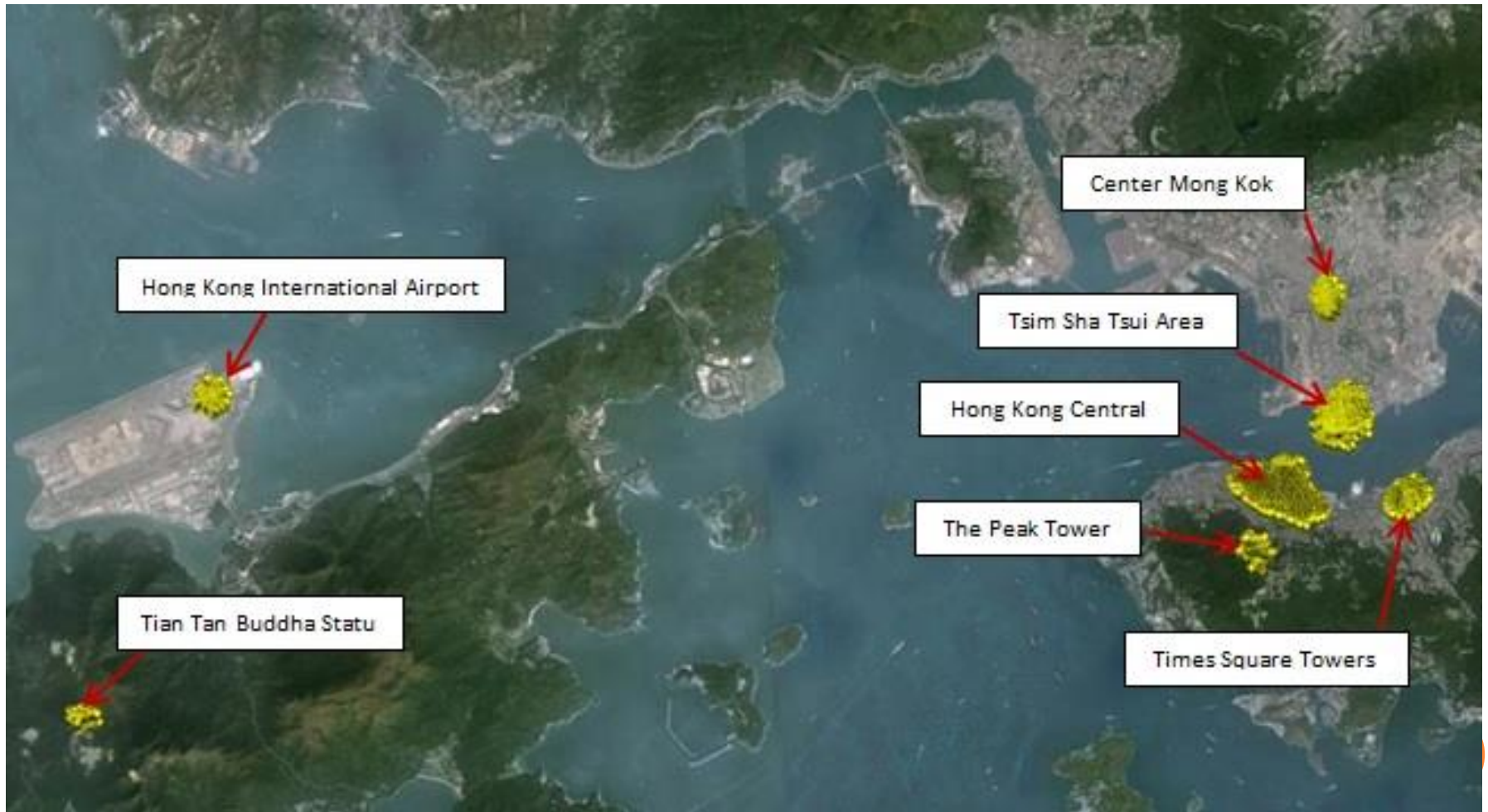
DEMONSTRATION – USING FLICKR DATA LARGE SCALE STUDY OF HONG KONG

- Photo GPS information viewed on Google Earth.
(approximately 29,443 photos from 2,100 user)



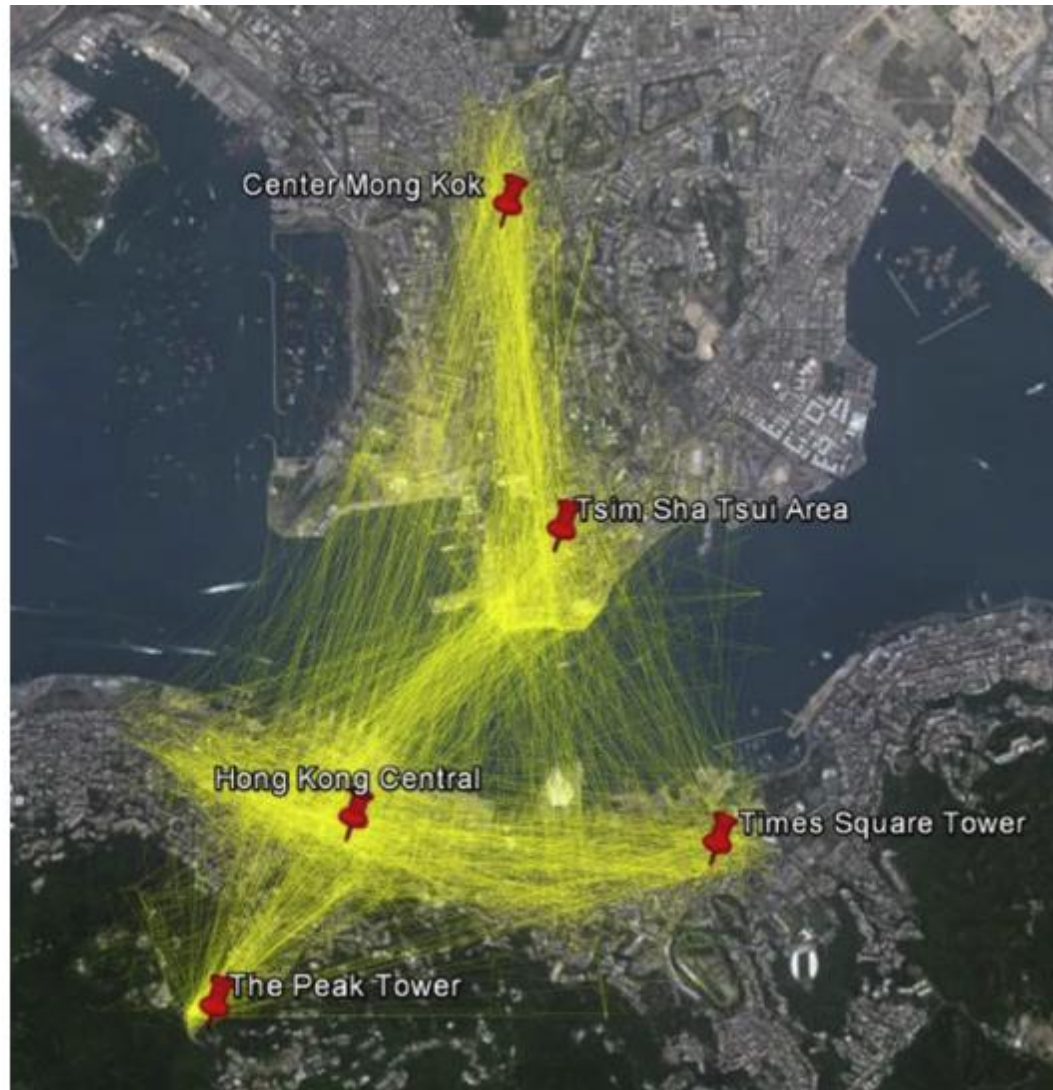
DEMONSTRATION

○ Area Of Interest Identifications using Clustering



DEMONSTRATION

- **Movement Trajectory** generated from geotagged photos.



DATA DRIVEN APPROACH

○ Data Collection:

- Big data sets from Social Network such as:



Instagram



○ Data Analysis:

- Develop processing techniques for textual data (*review comments*), visual data (*travel photos*), temporal data (*travel date and time*), location data (*GPS coordinates*), ect....
- Discover Patterns using **quantitative data analysis** (*statistics, data mining*)



DEMONSTRATION

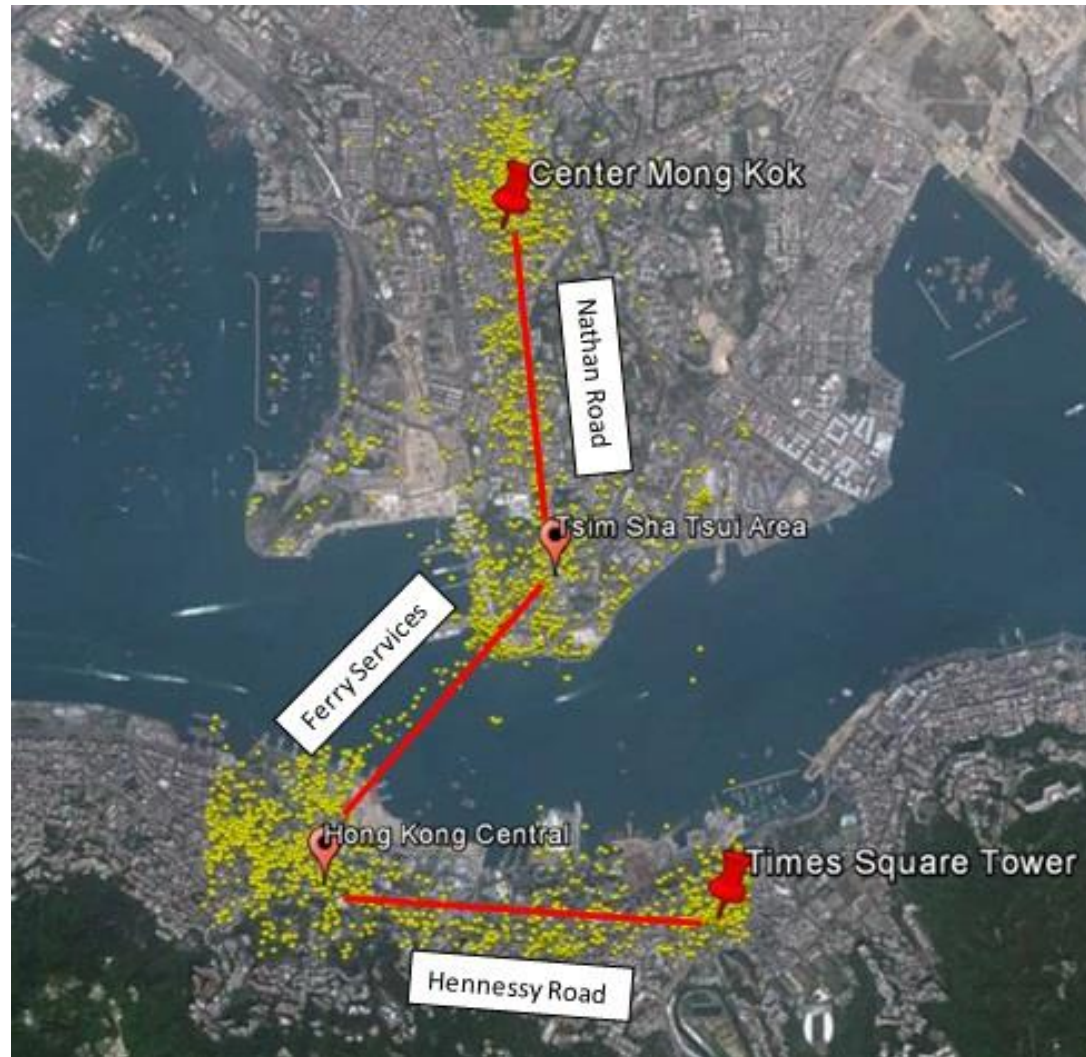
○ Tourist traffic flow Analysis



DEMONSTRATION

Actual Route Taken Analysis:

From *Center Mong Kok* to *Time Square Tower*



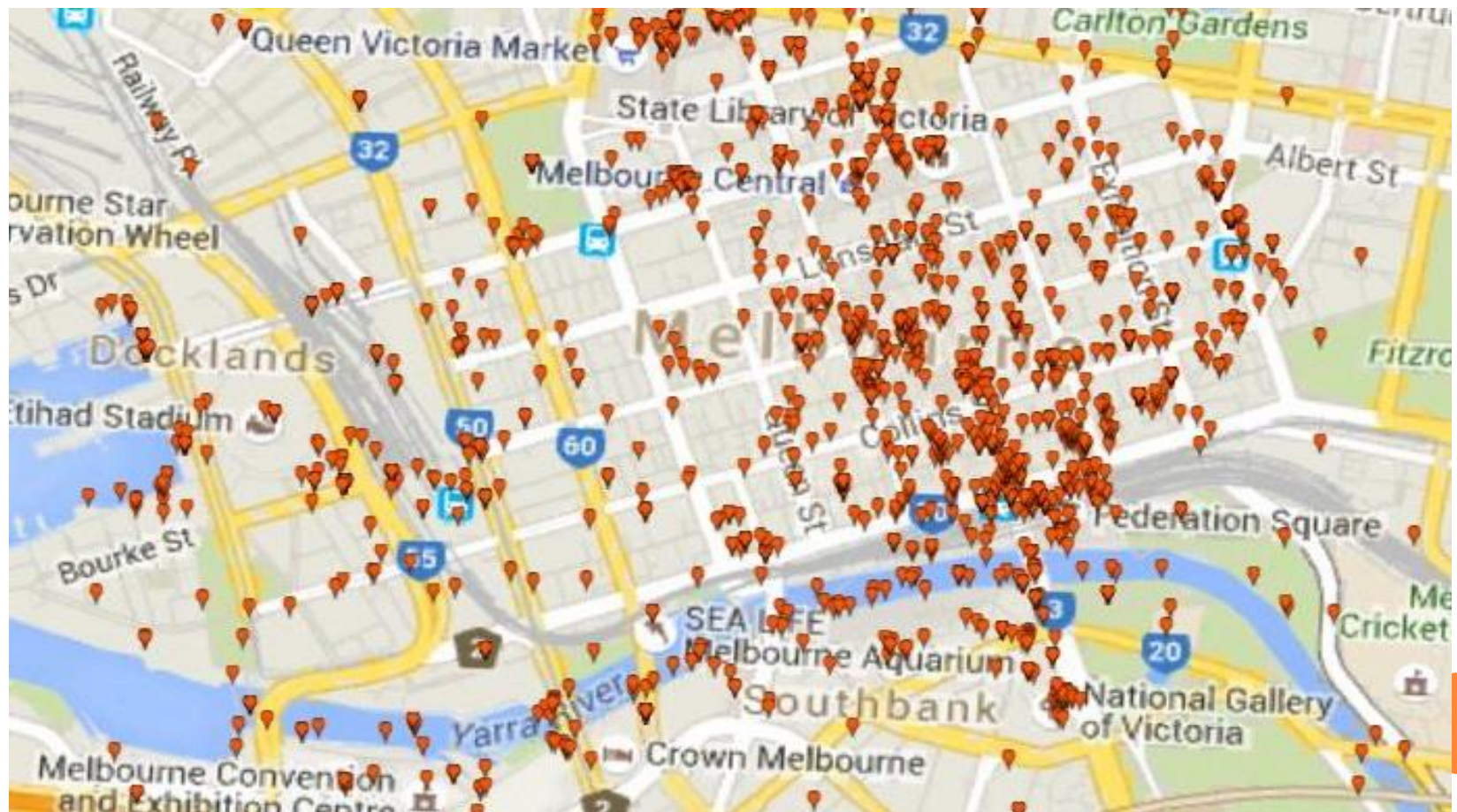
DEMONSTRATION

○ Time Analysis of Tourist Activity



DEMONSTRATION: LOCATION PREFERENCE USING GEOTAGGED PHOTOS FROM FLICKR

Photo Taken by Tourist in Melbourne CBD in July 2015



DEMONSTRATION: LOCATION PREFERENCE USING GEOTAGGED PHOTOS FROM FLICKR

- Preferred Location to Take **sunset** photos in Melbourne



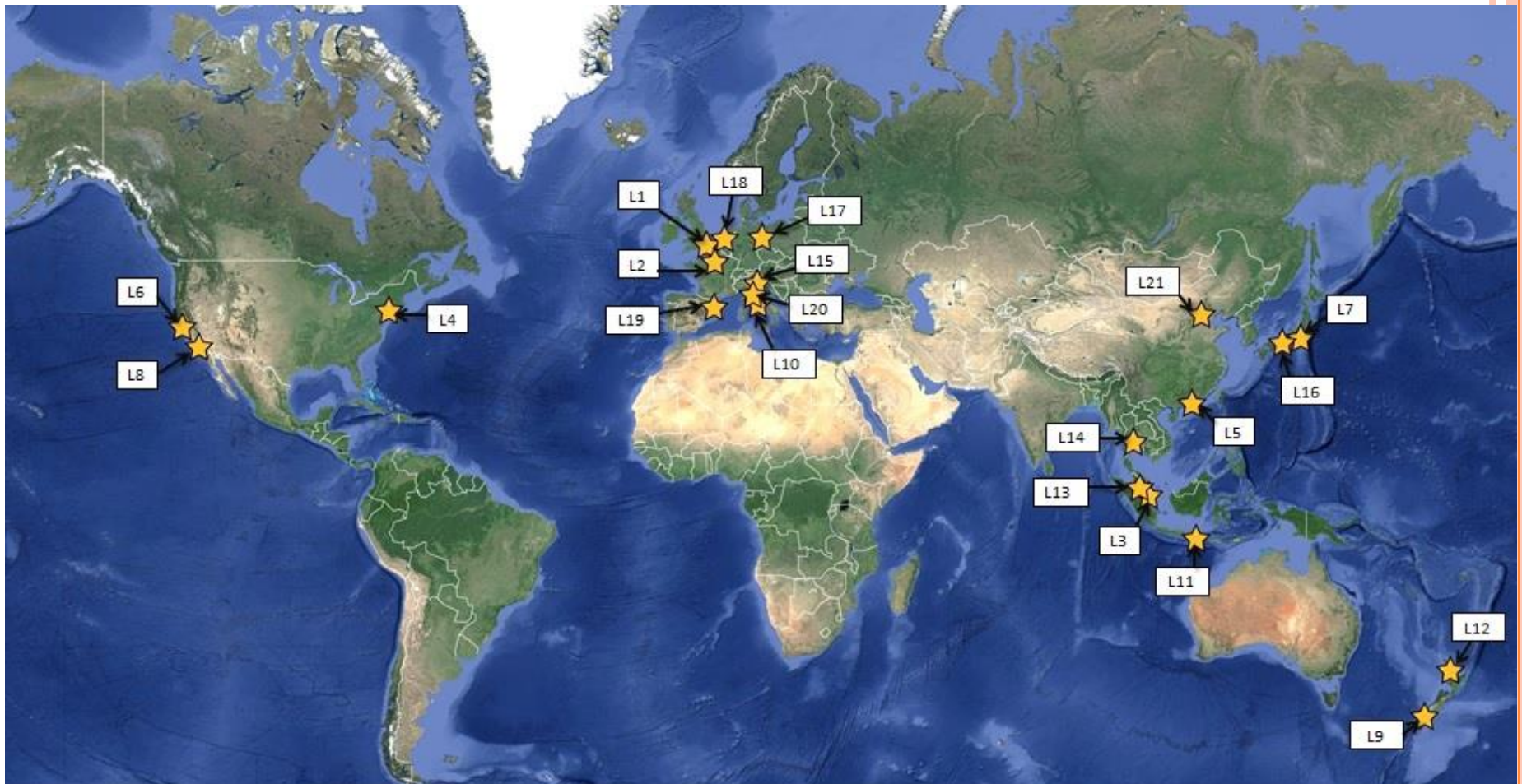
DEMONSTRATION: LOCATION PREFERENCE USING GEOTAGGED PHOTOS FROM FLICKR

- Preferred Location to take **Art** photos in Melbourne CBD



DEMONSTRATION: OUTBOUND LOCATION PREFERENCE

- Top Visited Cities for Australian Travelers.



QUESTIONS

