



Location Analytics for Targeted Marketing

Location Based Information critical in TM.

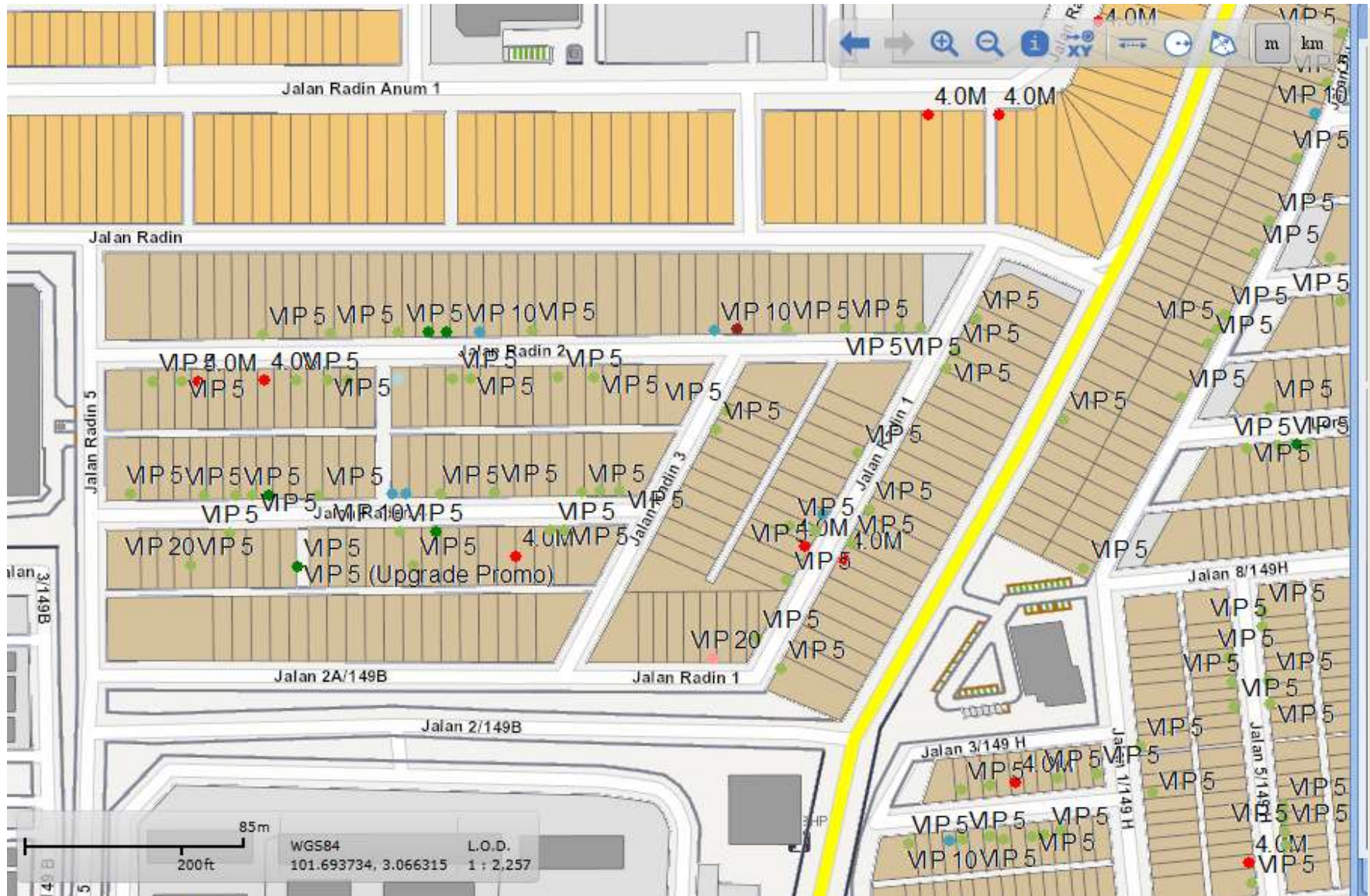
- **Sales & Marketing**
 - Upsell activities
 - Sales forecast
- **Operation**
 - Reduce waiting time
 - Avoid cable cut
- **Planning**
 - TM Point outlet
 - Webe tower planning

TM Geomatics Introduction

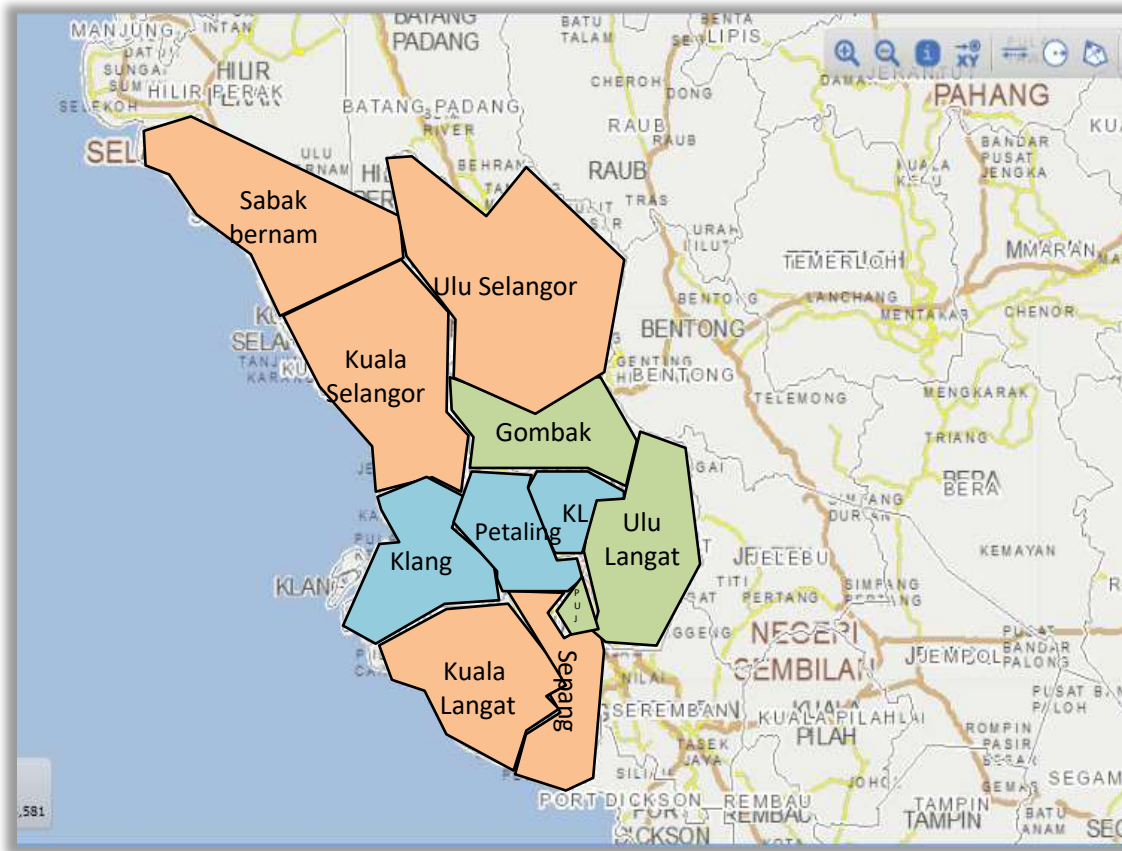


- Established since 1992
- Responsible for TM GIS Map for **TM internal and external use**
- Manpower: 80 persons

TM Marketing Campaign



Sales Target / Forecast



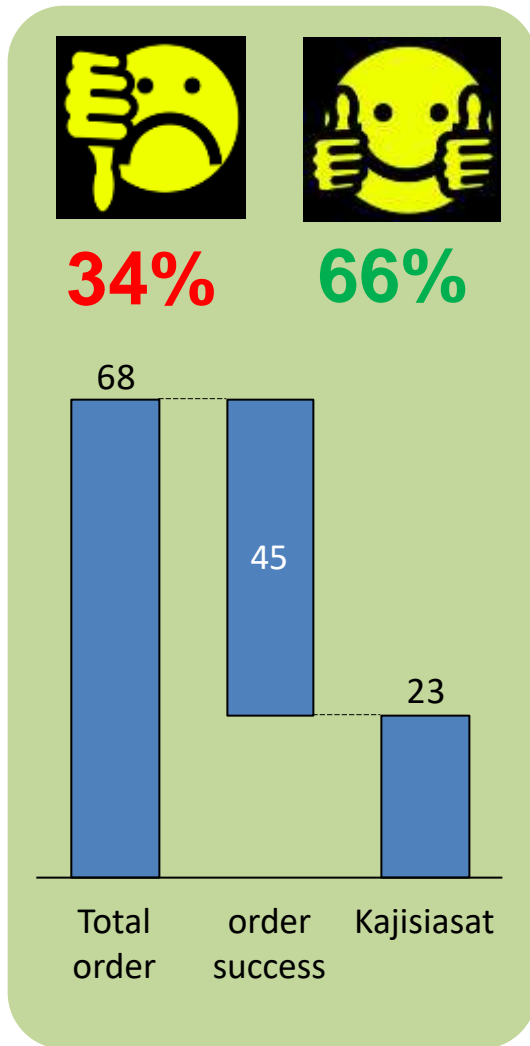
Daerah	Property density	No of exchanges
Ampang	1594	
Kuala Lumpur	773	
Petaling	593	
Klang	362	
Ulu Langat	191	
Gombak	179	
Putrajaya	116	
Selangor	65	
Kuala Langat	56	
Hulu Selangor	41	
Kuala Selangor	37	
Sabak Bernam	18	

Faster Service Order

- Ease the front liner to **identify infra** availability & capability
- To **response** customer **immediately** on infra status

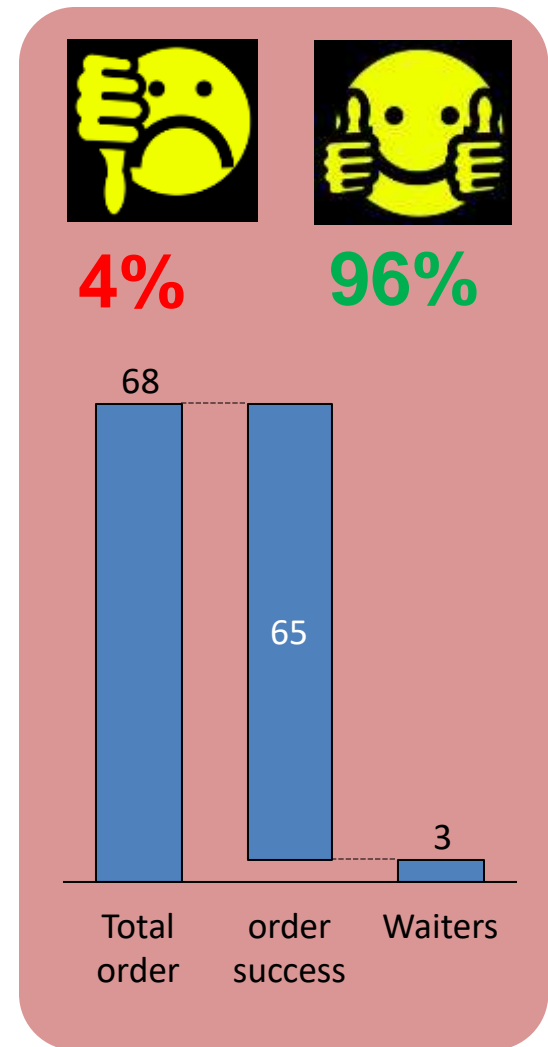
Faster Service Order

BEFORE



30%

AFTER



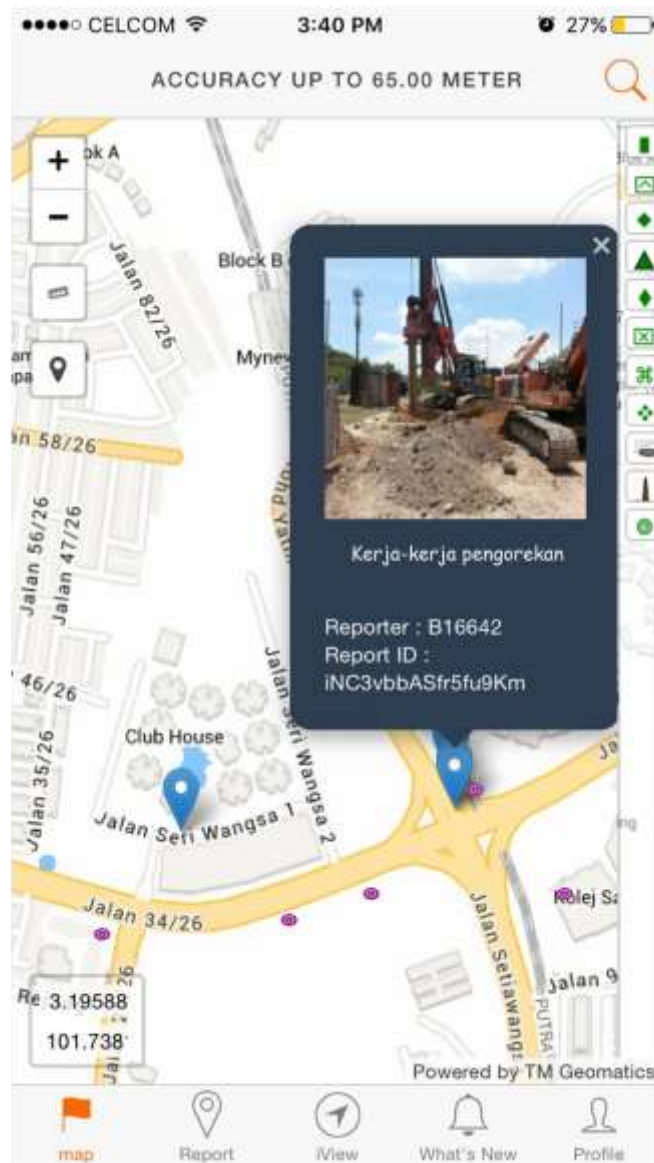
Faster Service Order



Faster Service Order



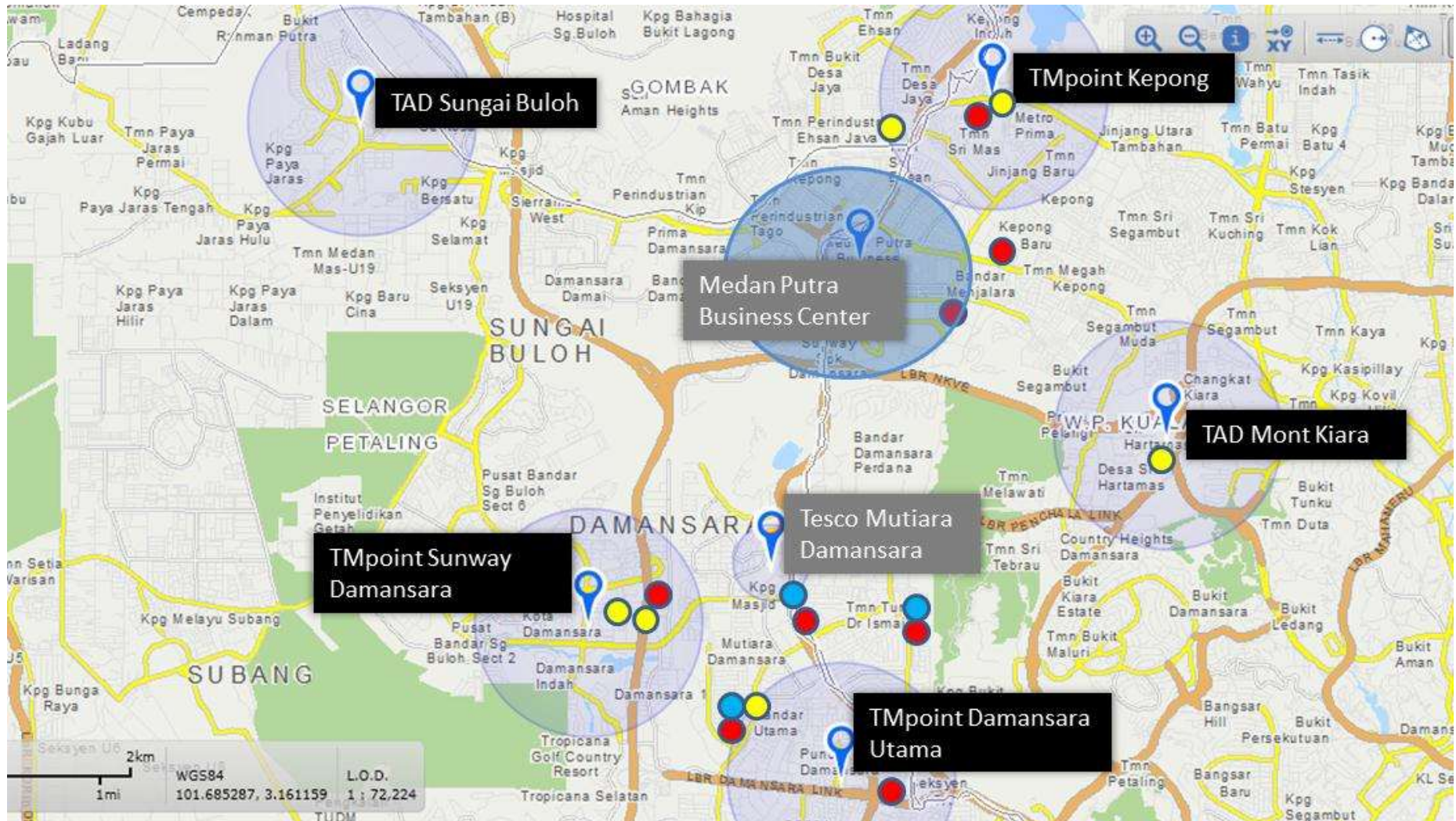
Avoid Cable Cut



TM Point & Authorized Dealers Coverage Planning



TM Point & Authorized Dealers Coverage Planning



Webe Tower Planning



shop plan plan-details

What you get

from webe unlimited plan

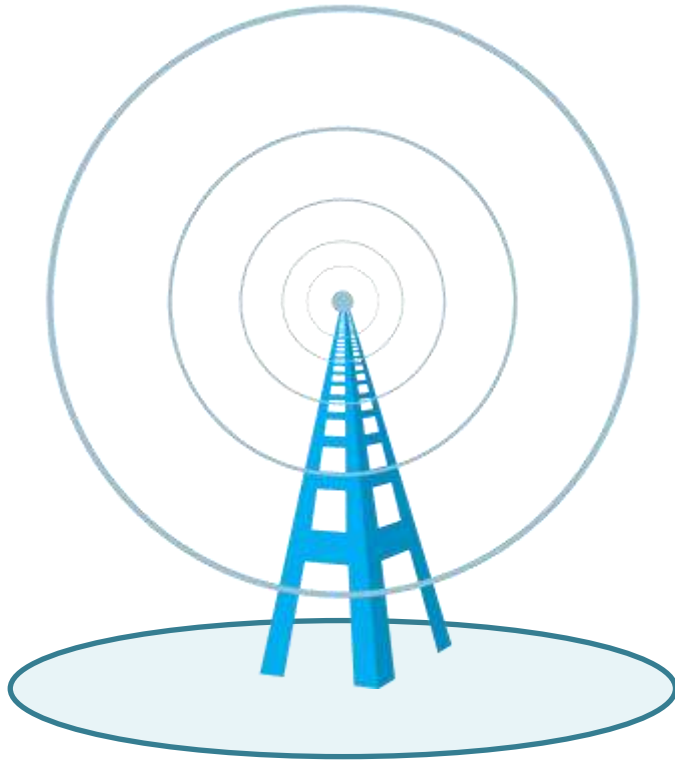
RM **80**
unlimited
4G LTE

Enjoy unlimited everything

Maecenas tempus, tellus eget condimentum rhoncus, sem quam semper libero, sit amet adipiscing sem neque sed ipsum. Nam quam nunc, blandit vel, luctus pulvinar, hendrerit id, lorem. Maecenas nec odio et ante tincidunt tempus. Donec vitae sapien ut libero venenatis faucibus. Nullam quis ante.

			
UNLIMITED 4G Internet	UNLIMITED SMS	UNLIMITED Phone Calls	UNLIMITED Excitement
Maecenas tempus, tellus eget condimentum rhoncus, sem quam semper libero, sit amet adipiscing sem neque sed ipsum.	Maecenas tempus, tellus eget condimentum rhoncus, sem quam semper libero, sit amet adipiscing sem neque sed ipsum.	Maecenas tempus, tellus eget condimentum rhoncus, sem quam semper libero, sit amet adipiscing sem neque sed ipsum.	Maecenas tempus, tellus eget condimentum rhoncus, sem quam semper libero, sit amet adipiscing sem neque sed ipsum.

Webe Tower Planning



X: numbers of Unifi customers
Y: numbers of Streamyx customers
Z: distance from the tower

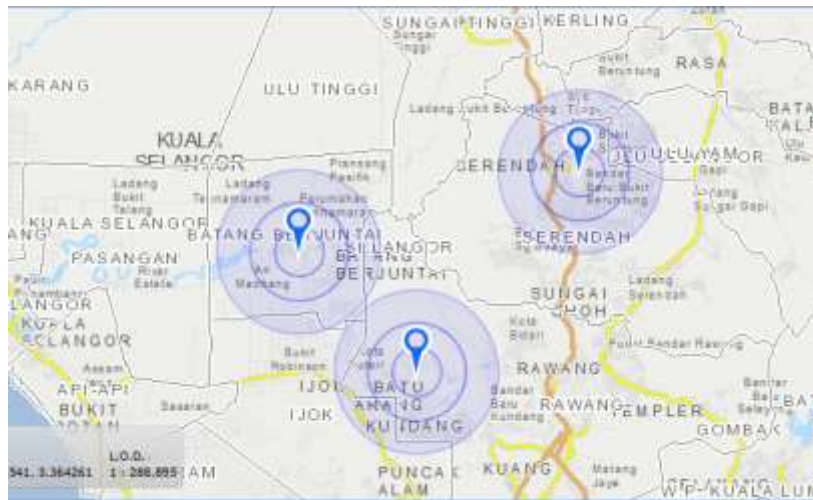
Webe Tower Planning

Low density area

Eg: Kuala Selangor

Density 37 property per sq km

Distance from one exchange to another ~ 8 to 10 km

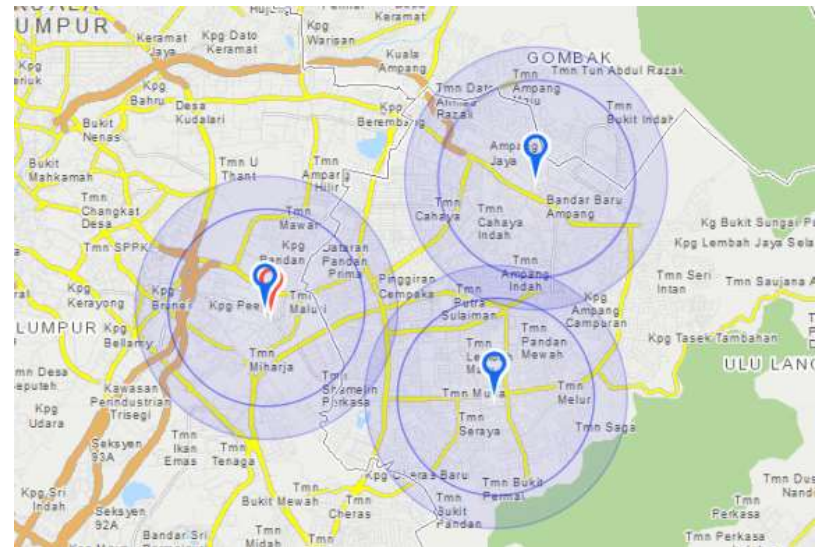


High density area

Eg: Ampang

Density 1594 property per sq km

Distance from one exchange to another ~ 3 to 4 km





Challenges Doing Location Based Analytics

- Customers' addresses are not **clean** and **standardized**
- **Accuracy** of Geocoding
- **Time** to process large amount of data

Cleaning & Standardizing Addresses

17EOIZPHASE **2KOTA**
KINABALU INDUSTRIAL
PARK JALAN
SEPANGARMEN **KOTA**
KINABALUSAB

merge street

WISMA TUNE NO19
LORONG DUNGUN
DAMANSARA HEIGHTS
68100 KUALA LUMPUR

No comma

11, JALAN BAKAWALI 69,
TAMAN JOHOR JAYA, 81100
JOHOR BAHRU

With comma

11, JALAN BAKAWALI 69,
TAMAN JOHOR JAYA, 81100
JOHOR **BAHARU**

Different spelling

Cleaning & Standardizing Addresses

11, TAMAN JOHOR JAYA,
81100 JOHOR BAHRU

Missing street name

11, JALAN BAKAWALI 69,
81100 JOHOR BAHARU

Missing section name

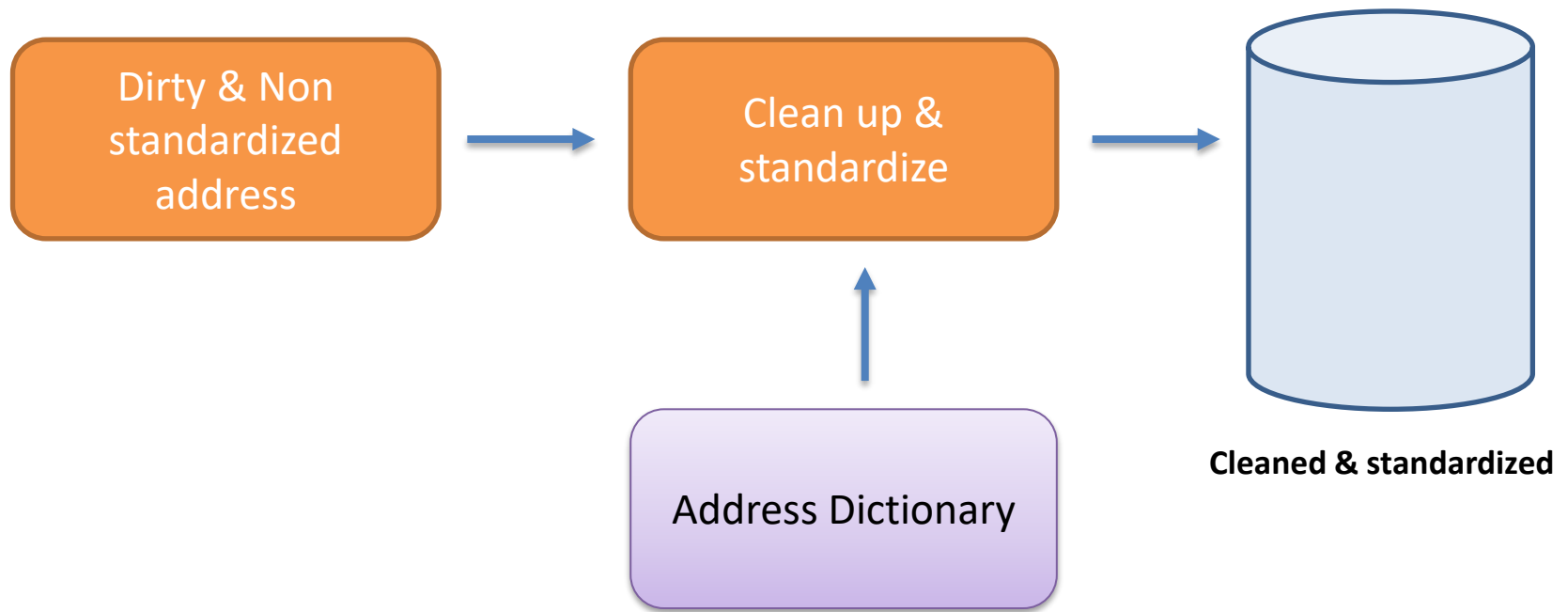
PEJ PENGARAH TANAH
DAN GALIAN JOHOR, ARAS
5 **BGN** SULTAN IBRAHIM,
JLN BKT TIMBALAN, 80000,
JOHOR BAHRU, JOHOR

acronym

LOT PTD 119913 (NO. 23
JALAN NB 2 1/1), TAMAN
NUSA BISTARI 2, 81300,
SKUDAI, JOHOR,

Lot tanah

Cleaning & Standardizing Addresses



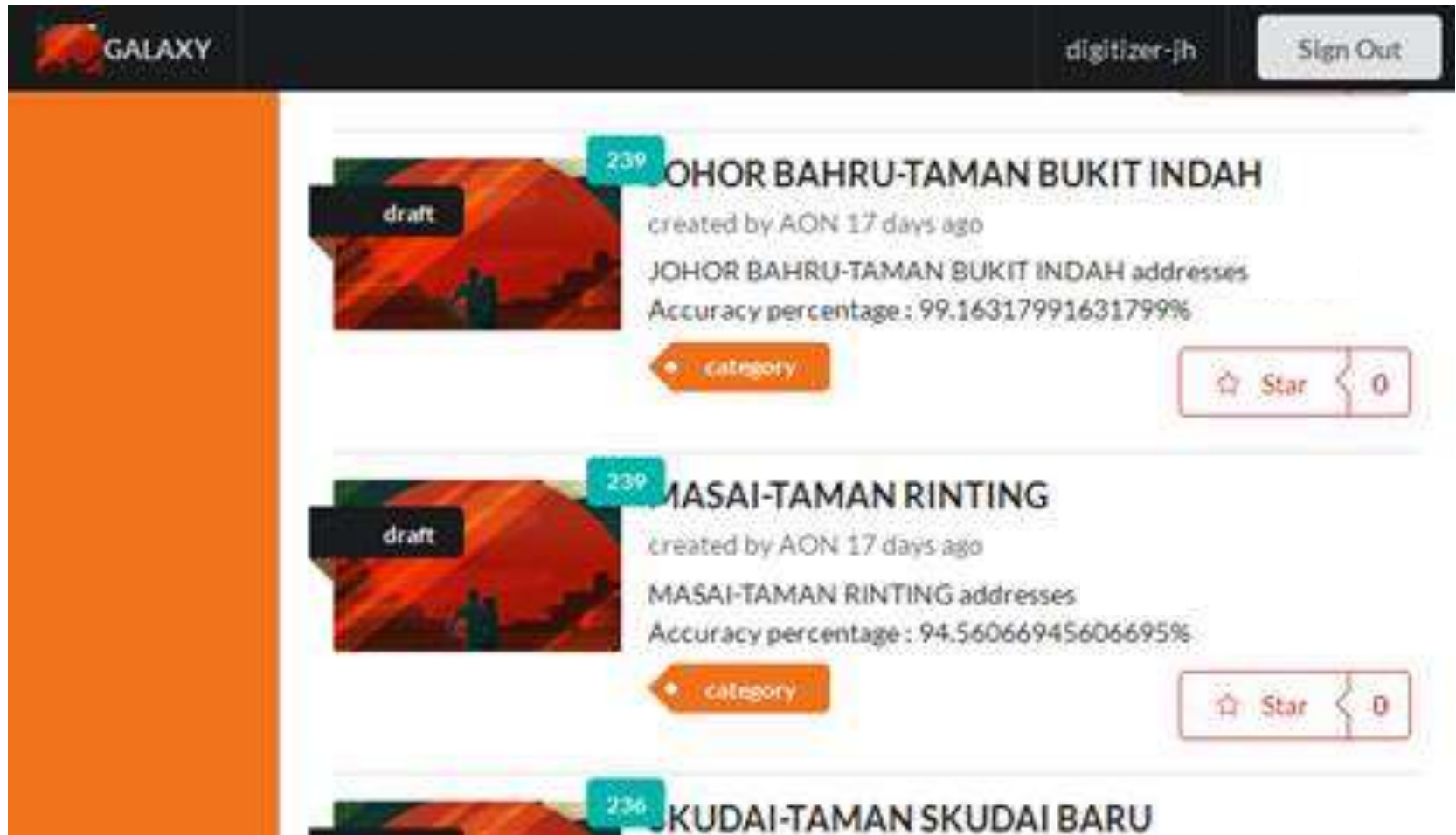
Example:

Jln-> Jalan

Lrg -> Lorong

Lebuhraya Mahameru -> Lebuhraya Sultan Iskandar

Cleaning & Standardizing Addresses

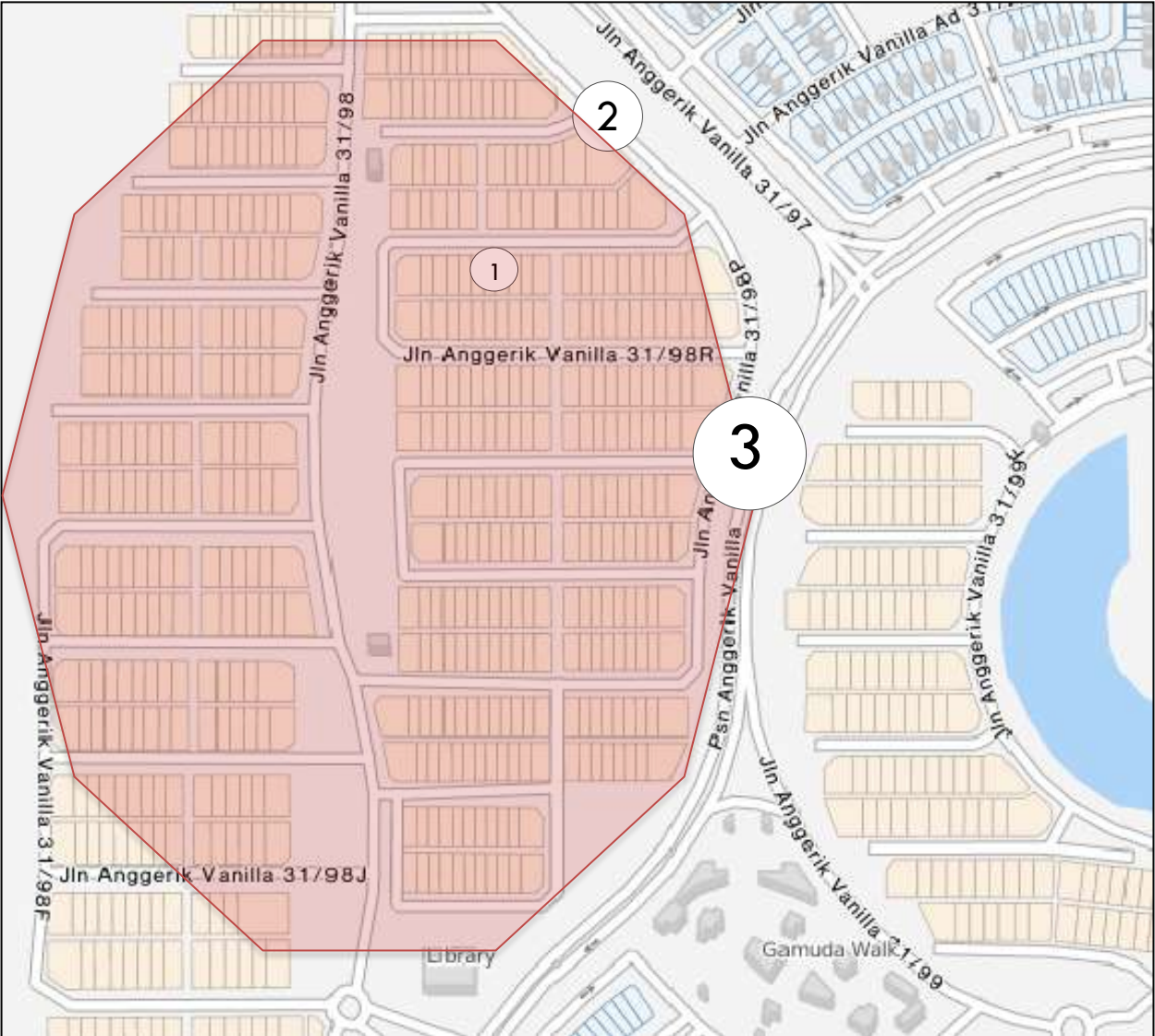


The screenshot shows a web application interface with a dark header. On the left, there is a logo for 'GALAXY' and a user profile for 'digitizer-jh'. On the right, there is a 'Sign Out' button. The main content area displays a list of address groups. Each group has a thumbnail image with a 'draft' label, a count in a teal box, a title, creation info, address count, accuracy percentage, a 'category' button, and a 'Star' button with a count.

Count	Title	Created by	Created	Addresses	Accuracy	Category	Star
239	JOHOR BAHRU-TAMAN BUKIT INDAH	AON	17 days ago	JOHOR BAHRU-TAMAN BUKIT INDAH addresses	99.16317991631799%	category	0
239	MASAI-TAMAN RINTING	AON	17 days ago	MASAI-TAMAN RINTING addresses	94.56066945606695%	category	0
236	KUDAI-TAMAN SKUDAI BARU						

Clean data by group to reduce manual intervention

Geocoding ~ Location Accuracy



- 1 Property level
- 2 Street level
- 3 Section level

Geocoding ~ Accurately Geocoded?

- TM needs high accuracy in geocoding / text matching
- If it is wrongly geocoded, the analysis results will be wrong as well



Accuracy:

(100 - Levenshtein distance)

x 100%

Number of letters in a word

Geocoding ~ Accurately Geocoded?

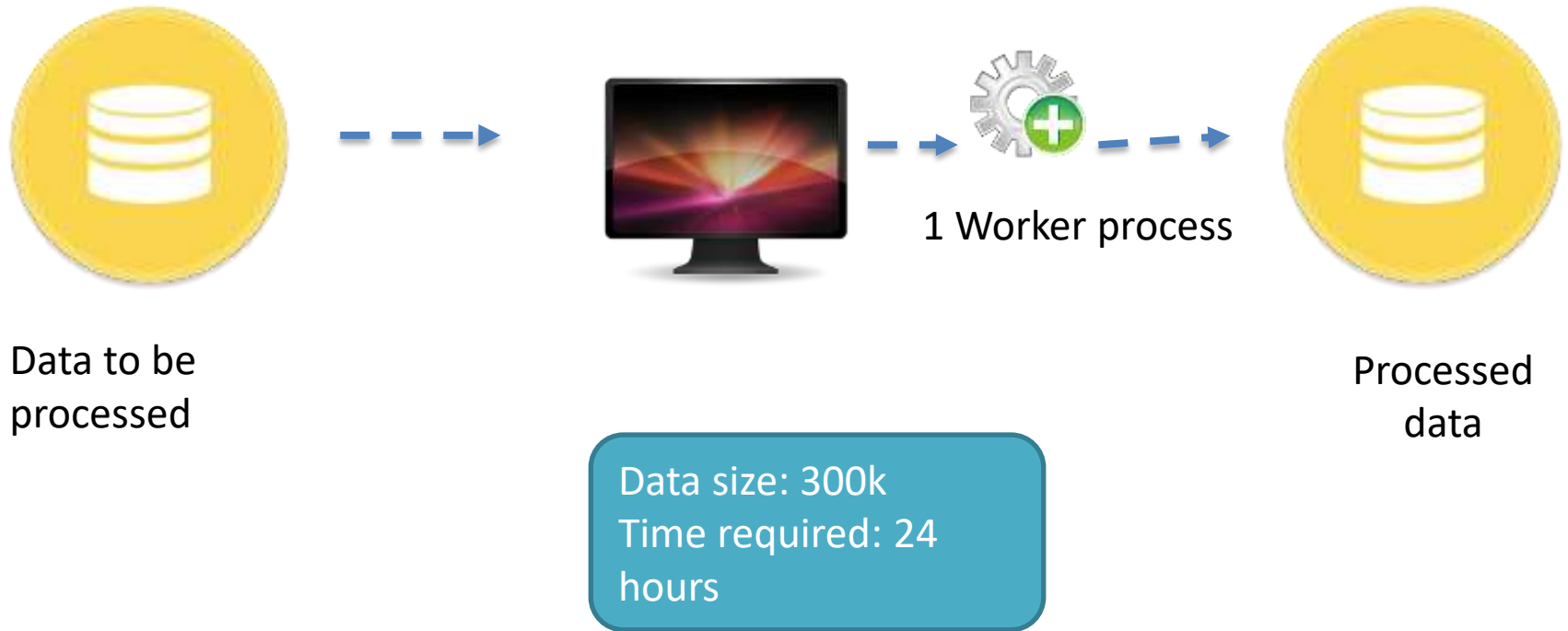
- Levenshtein Distance
- Between two words is the minimum number of single-character edits to change one word into the other.
 - Jalan <> Jln = 2
 - Enterprise <> Entreprise = 2
 - MA Sdn Bhd <> ML Sdn Bhd = 1



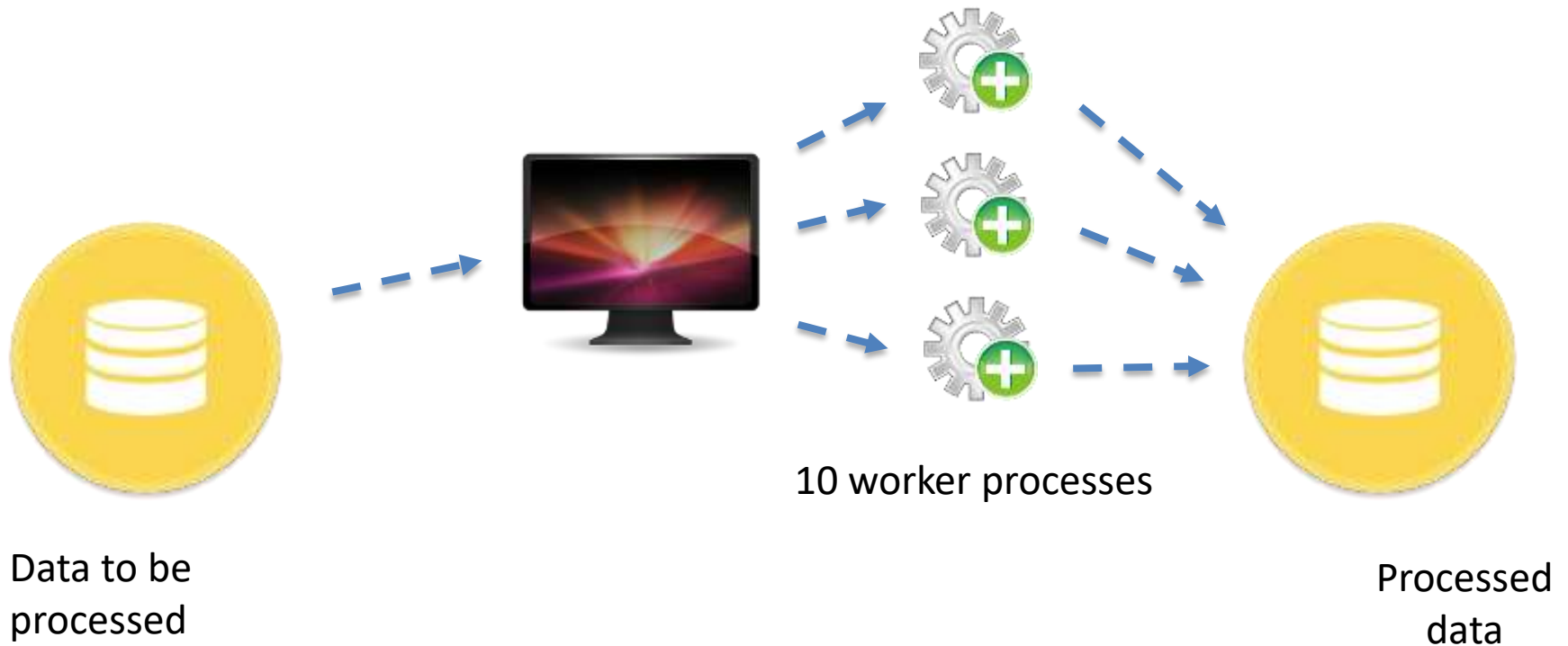
Geocoding ~ Accurately Geocoded?

- TM only accepts if **accuracy > 88%**.
- Manage to geocode **70% - 80%** of addresses.
- With less **manual intervention**.

Time to Process Huge Amount of Data



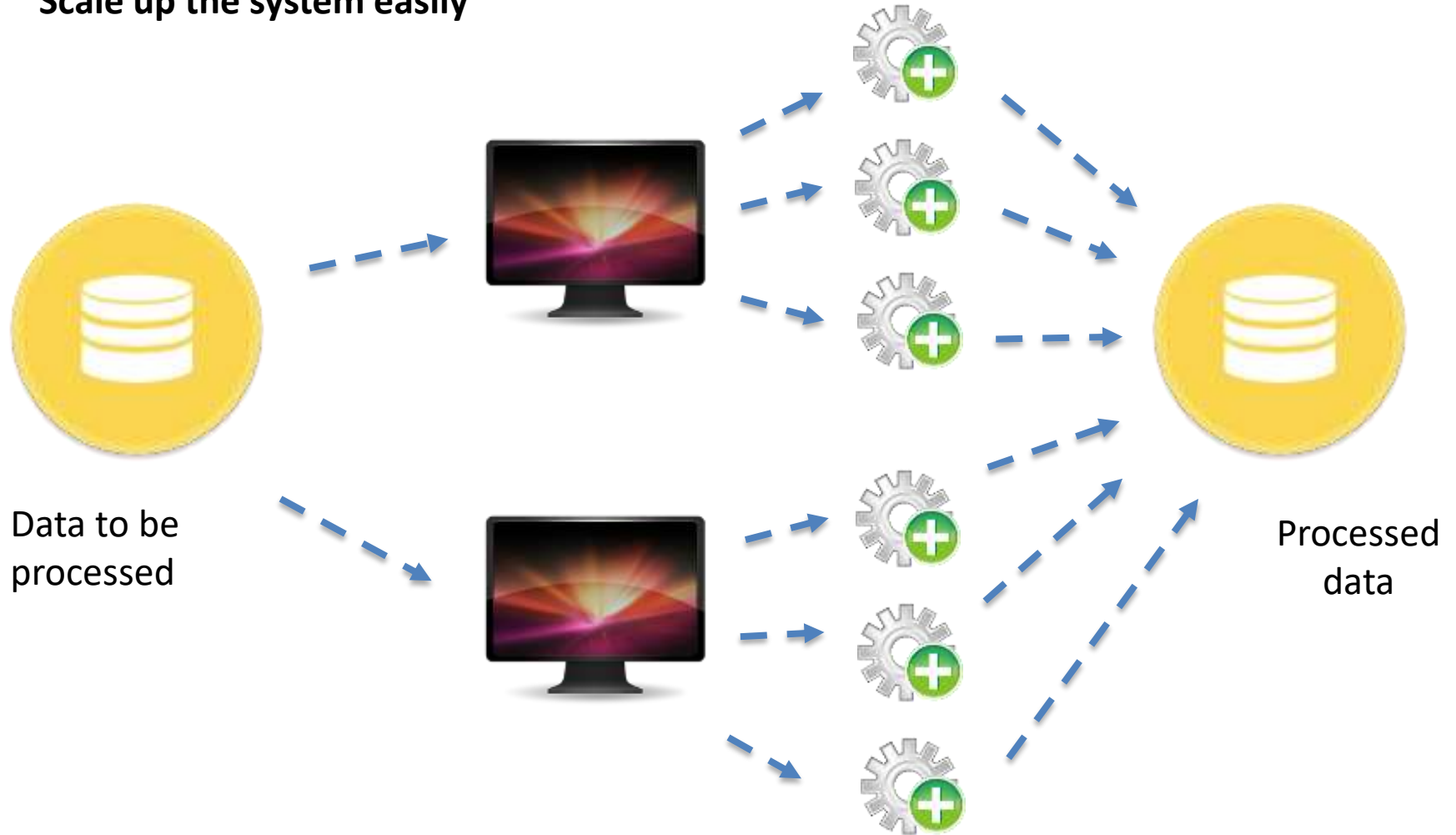
Time to Process Huge Amount of Data



Data size: 300k
Time required: 4
hours

Time to Process Huge Amount of Data

Scale up the system easily





Benefits

- Increase **Revenue**
 - accurate planning analysis
 - better customers coverage
- Increase **Customers Satisfaction**
 - less waiting time
- Save **Costs**
 - cable cut

A decorative header at the top of the slide featuring a light blue map background with various street names and building footprints. Visible text includes "Jalan", "Berlingka", and "Damel".

Thank You