

# Kiana Final Presentation

**Los Angeles Consulting Group (LACG)**

# Agenda

# Security Values

# Data Exploration

## Optimizing Security

## Maintenance Issue

## Conclusion



# Turning Alarming Statistics into Action: Building an Optimized Security Solution to Protect Your Business from Data Breaches.

From Thales Data Threat Report,

In 2022, **45% of US companies**  
have experienced **a data breach**

Storage Giant, **Western Digital,**

**Suffers a Security Breach**, Denying  
Cloud Customers Access to Their Data

**GoDaddy** Reveals

**Multi-Year Cybersecurity Campaign**

by Sophisticated Threat Actor,  
Including Malware Installation and Source Code Breach.

# Security Strategy Can Benefit Your Business **Beyond Protection**



## Security Optimization



## Maintenance



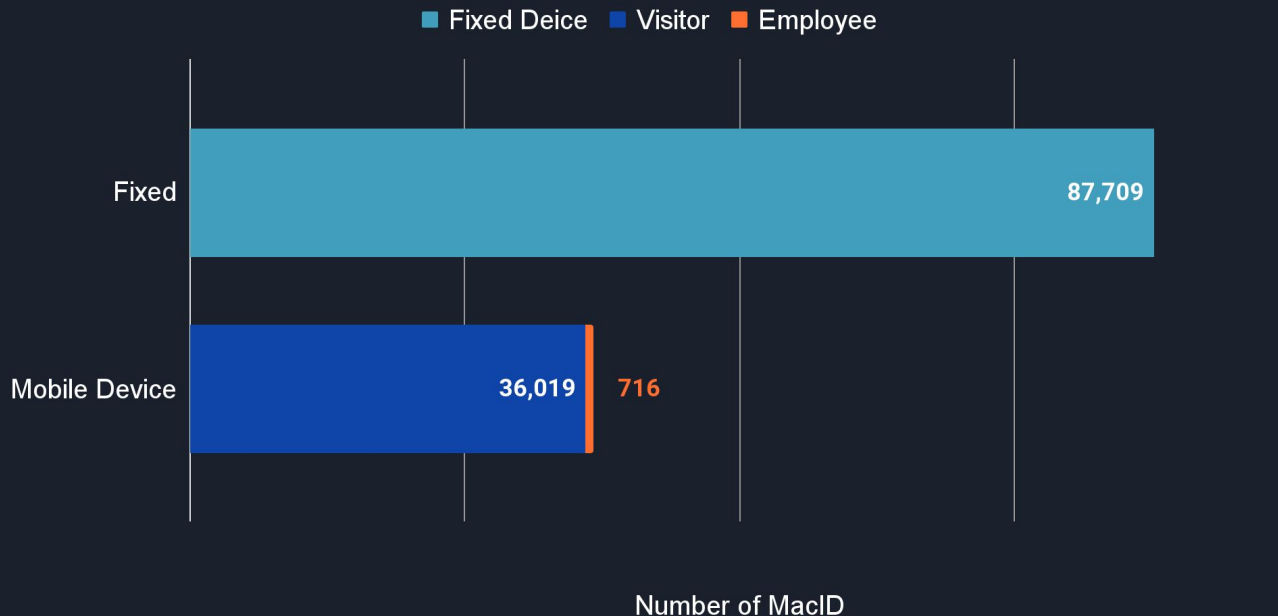
## Energy Saving



# Data Preparation Reveals the Distribution of Device Types for Improved Decision Making.

## Device type distribution based on **standard deviation distance**

The 124,444 unique Mac ID presenting From 2019-08-12 UTC to 2020-09-01 UTC



# Achieving Optimal Security Zones through Effective Planning

## Area

Determine the security zone to **5 levels**

Draw area on map

Retrieve coordinate

Loading file

Divide area to grid

Select the grid

Display setting

Get selected area

```
{
  "Lab_5": {
    "Area_Security_Level": "3",
    "Area_Ranges": [
      {
        "name": "Ground Floor A48",
        "latitude_range": [
          51.4605338,
          51.460618999999994
        ],
        "longitude_range": [
          -0.9325607,
          -0.9324418
        ]
      },
      {
        "name": "Ground Floor A49",
        "latitude_range": [
          51.4605338,
          51.460618999999994
        ],
        "longitude_range": [
          -0.9324418,
          -0.9323229000000001
        ]
      },
      {
        "name": "Ground Floor A50",
        "latitude_range": [
          51.4605338,
          51.460618999999994
        ],
        "longitude_range": [
          -0.9323229000000001,
          -0.932204
        ]
      }
    ]
  }
}
```

# Achieving Optimal Security Zones through Effective Planning

Area

People

Alert!

```
{'name': 'Ground Floor A1',  
'latitude_range': (51.460296, 51.4603612),  
}
```

```
{'CEO Office': {'Area_Security_Level': 5,  
'Area_Ranges': [{'name': '3rd Floor A68',  
'latitude_range': (51.4606872, 51.460752400000004),  
}]}
```

	Level	ClientMacAddr	lat	lng	localtime	Fixed	Mobile	Status	EntersBuilding	Area_Name	Zone_Name	Area_Security_Level
0	Ground Floor	00:26:c6:6d:02:3e	51.460551	-0.932369	2020-09-01 00:00:03.718 UTC	0	223	Mobile	YES	Ground Floor A39	Common Area	2.0
1	Ground Floor	5c:5f:67:8b:fd:30	51.460537	-0.932351	2020-09-01 00:00:03.718 UTC	1	11	Mobile	YES	Ground Floor A39	Common Area	2.0
2	Ground Floor	fc:03:9f:07:af:f4	51.460806	-0.932302	2020-09-01 00:00:04.473 UTC	74	310	Mobile	YES	Ground Floor A80	Common Area	2.0
3	Ground Floor	00:c2:c6:f9:2f:9f	51.460368	-0.932716	2020-09-01 00:00:05.782 UTC	31	351	Mobile	YES	Ground Floor A16	Front Desk	1.0
4	Ground Floor	ec:ad:b8:7d:23:e8	51.460367	-0.932547	2020-09-01 00:00:06.134 UTC	99	268	Mobile	YES	Ground Floor A18	Front Desk	1.0

```
'longitude_range': (-0.9325667999999999, -0.9324542)},  
{'name': 'Ground Floor A8',  
'latitude_range': (51.460296, 51.4603612),  
'longitude_range': (-0.9325667999999999, -0.9324542)},
```

```
{'name': 'Ground Floor A18',  
'latitude_range': (51.4603612, 51.4604264),  
'longitude_range': (-0.9325667999999999, -0.9324542)}}}]}
```

# Achieving Optimal Security Zones through Effective Planning

Area

People

Alert!

Assign job responsibilities to each security zone level

Level	Personnel_Security_Level	ClientMacAddr	Fixed	Mobile	Status	EntersBuilding	lat	lng	Role	localtime	PhoneNumber	Email	
0	2nd Floor	2	MacID_1	7	230	Mobile	YES	51.460464	-0.933087	IT Technician	2020-09-01 00:00:00 UTC	+16263818373	juiliche@usc.edu
1	2nd Floor	2	MacID_1	7	230	Mobile	YES	51.460795	-0.932425	IT Technician	2020-09-01 00:01:00 UTC	+16263818373	juiliche@usc.edu
2	2nd Floor	2	MacID_1	7	230	Mobile	YES	51.460395	-0.932585	IT Technician	2020-09-01 00:02:00 UTC	+16263818373	juiliche@usc.edu
3	2nd Floor	2	MacID_1	7	230	Mobile	YES	51.460406	-0.933207	IT Technician	2020-09-01 00:03:00 UTC	+16263818373	juiliche@usc.edu
4	2nd Floor	2	MacID_1	7	230	Mobile	YES	51.460325	-0.932717	IT Technician	2020-09-01 00:04:00 UTC	+16263818373	juiliche@usc.edu



# Achieving Optimal Security Zones through Effective Planning

Area

People

Alert!

Event Information

	Violation_Time	Level	Area_Name
0	2020-09-01 00:00:00 UTC	3rd Floor	3rd Floor A32
1	2020-09-01 00:03:00 UTC	3rd Floor	3rd Floor A58
2	2020-09-01 00:04:00 UTC	3rd Floor	3rd Floor A78

Personal Information

Nearest_Security	Person_Level	Person_Area_Name	Suspect_MacID
Security_1	Ground Floor	Ground Floor A32	MacID_2
Security_4	Ground Floor	Ground Floor A59	MacID_3
Security_3	1st Floor	1st Floor A16	MacID_2

Calculation

Person_lat	Person_lng	Distance	Time_to_Arrive
51.460523	-0.933152	3.5 meters	3m 4s
51.460647	-0.932355	12.2 meters	3m 14s
51.460386	-0.932716	44.5 meters	2m 53s

3	2nd Floor	Common Area	2.0
4	Ground Floor	Front Desk	1.0
# Update Area_Security_Level			
test_df.loc[indicator]			
test_df.loc[indicator]			
test_df			

Zone_Name	Area_Security_Level	Personnel_Phone	Personnel_Email	Personnel_Time
Chemical Lab	5.0	+12135515320	sachen@usc.edu	2020-09-01 00:01:00 UTC
CEO Office	5.0	+16263818373	juiliche@usc.edu	2020-09-01 00:04:00 UTC
CEO Office	5.0	+12135191593	yujouchu@usc.edu	2020-09-01 00:05:00 UTC

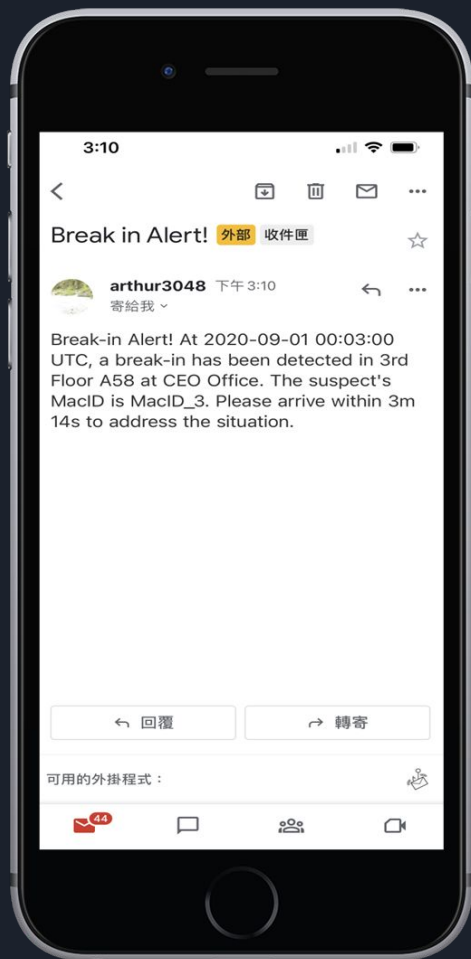
5.0	Security_1	Security_1	+16263818373
5.0	Security_4	Security_4	+16263818373

**Demo time!**

Experience the Power of **Optimal Security**



# Demo time!



# Achieving Extra Value of **Maintenance** through Effective Planning of Your Security Strategy

## Area

Achieving area from **Optimize Security** zone

## Device Vs People

Assign job responsibilities to Device and maintenance tasks

```
devices_data = [
{
  'Level': '3rd Floor',
  'Zone_Name': 'CEO Office',
  'Area_Security_Level': 5,
  'Area_Name': '3rd Floor A68',
  'Device_Name': 'Printer',
  'lat': 51.4607048006814,
  'lng': -0.9325123868854769,
  'Fixed': 267,
  'Mobile': 7,
  'Status': 'Fixed',
  'EntersBuilding': 'YES',
  'Device_Power': ['Power On', 'Power Off'],
  'Device_Condition': {
    'Working': {'priority_level': 0, 'fixer': None},
    'Need Ink': {'priority_level': 2, 'fixer': ['Secretary']},
    'Need Paper': {'priority_level': 2, 'fixer': ['Secretary']},
    'WiFi Signal Abnormal': {'priority_level': 3, 'fixer': ['IT Technician', 'Network Engineer']}
  }
},
```

```
{
  'Level': '2nd Floor',
  'Zone_Name': 'Chemical Lab',
  'Area_Security_Level': 5,
  'Area_Name': '2nd Floor A23',
  'Device_Name': 'Gas Chromatograph',
  'lat': 51.4604392,
  'lng': -0.933100,
  'Fixed': 150,
  'Mobile': 10,
  'Status': 'Fixed',
  'EntersBuilding': 'YES',
  'Device_Power': ['Power On', 'Power Off'],
  'Device_Condition': {
    'Working': {'priority_level': 0, 'fixer': None},
    'pipeline malfunction': {'priority_level': 5, 'fixer': ['Lab Technician', 'Scientist']},
    'Gas Leaking': {'priority_level': 5, 'fixer': ['Lab Technician', 'Scientist', 'Safety Officer']}
  }
},
```

# Maintenance Results Can Increase Overall Operational Efficiency

Area

Device Vs People

Alert!

Event Information

Device Information

Personnel Information

Zone_Name	Area_Security_Level	Fixed	Mobile	Status	EntersBuilding	Device_Power	Device_Condition	Device_lat	Device_lng	Glitch_Time	Personnel_Time	Personnel_Email	Personnel_Phone
Front Desk	1	60	3	Fixed	YES	Power On	Software Issue	51.460301	-0.932726	2020-09-01 00:00:23 UTC	2020-09-01 00:05:00 UTC	shoumianchen@gmail.com	+17473089398
Chemical Lab	5	150	10	Fixed	YES	Power On	Gas Leaking	51.460471	-0.933079	2020-09-01 00:16:52 UTC	2020-09-01 00:20:00 UTC	juiliche@usc.edu	+16263818373
CEO Office	5	267	7	Fixed	YES	Power On	Need Paper	51.460723	-0.932467	2020-09-01 00:25:05 UTC	2020-09-01 00:30:00 UTC	t108ab8012@ntut.org.tw	+12135191593

Calculation

	Device_Name	Area_Name	Nearest_Person	Personnel_Area_Name	Personnel_lat	Personnel_lng	Distance	Time_to_Arrive
0	Reception Computer	Ground Floor A6	IT Technician	Ground Floor A8	51.460311	-0.932485	16.798423	0m 20s
1	Gas Chromatograph	2nd Floor A23	Scientist	1st Floor A22	51.460489	-0.933159	5.962340	3m 7s
2	Printer	3rd Floor A68	Secretary	3rd Floor A39	51.460506	-0.932433	24.241910	0m 29s

**Demo time!**

Experience the Power of **Managing Maintenance**



# Demo time!



# The Power of Optimized Security Strategies and Effective Maintenance Planning for Maximum Protection and Efficiency.



## Security Optimization



## Maintenance





Thank You  
Q&A

