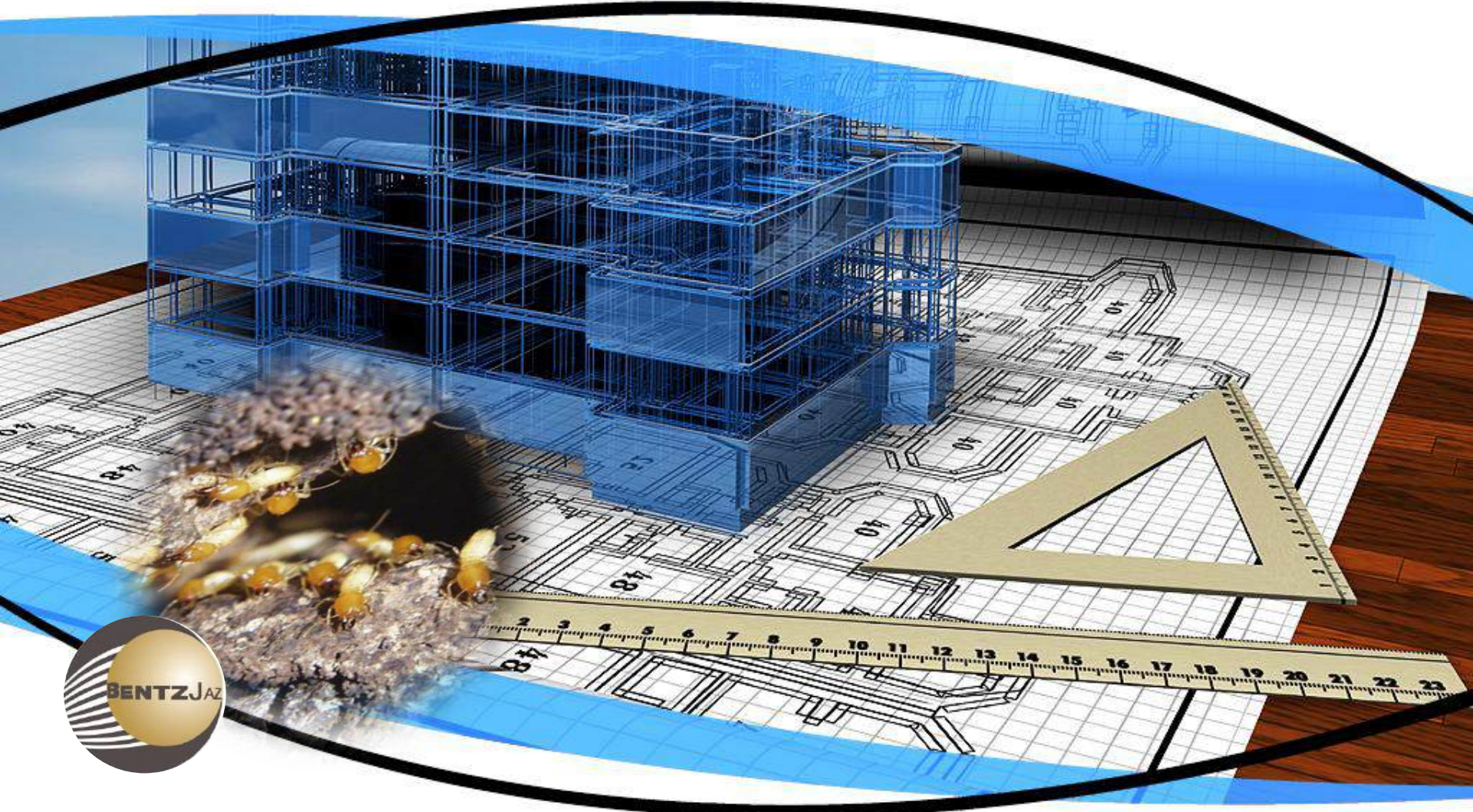


Integrated Termite Solution Seminar 2026



The Latest Termite Management Innovations Sharing

Presented by Dr. How

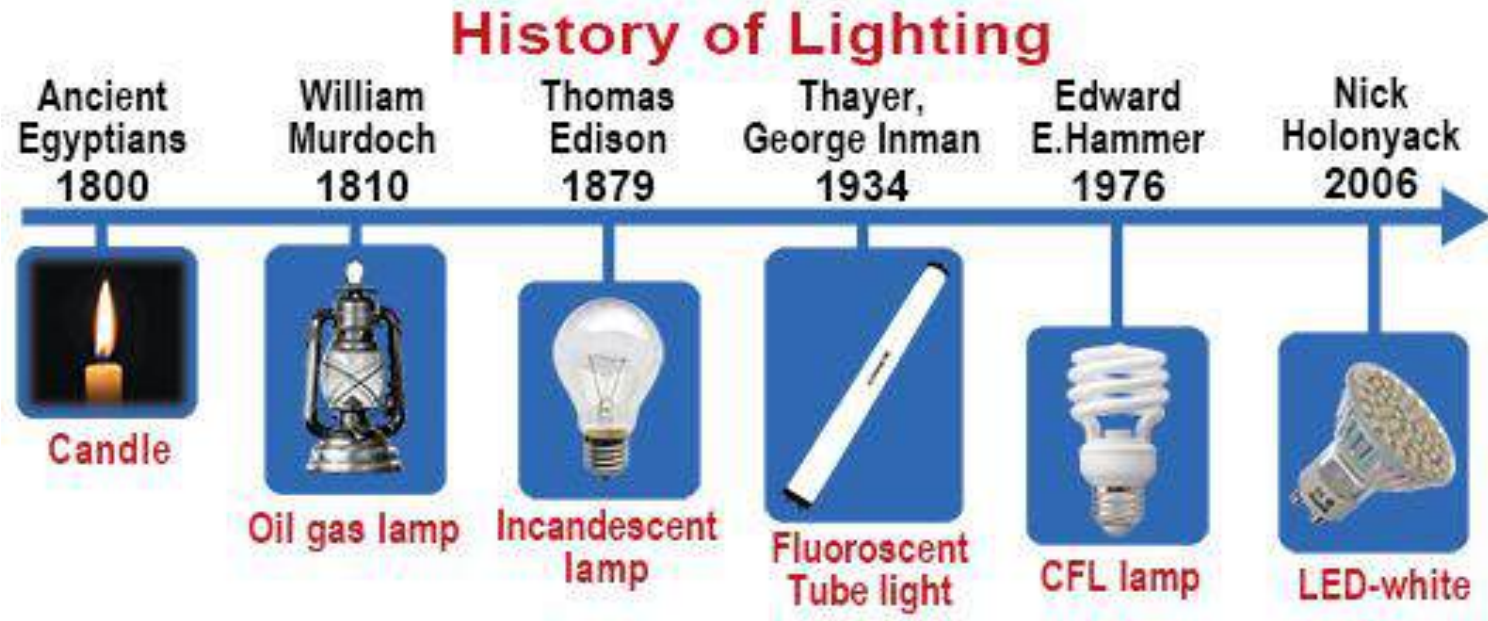
Product Improve across years...

- Evolution of mobile phone...

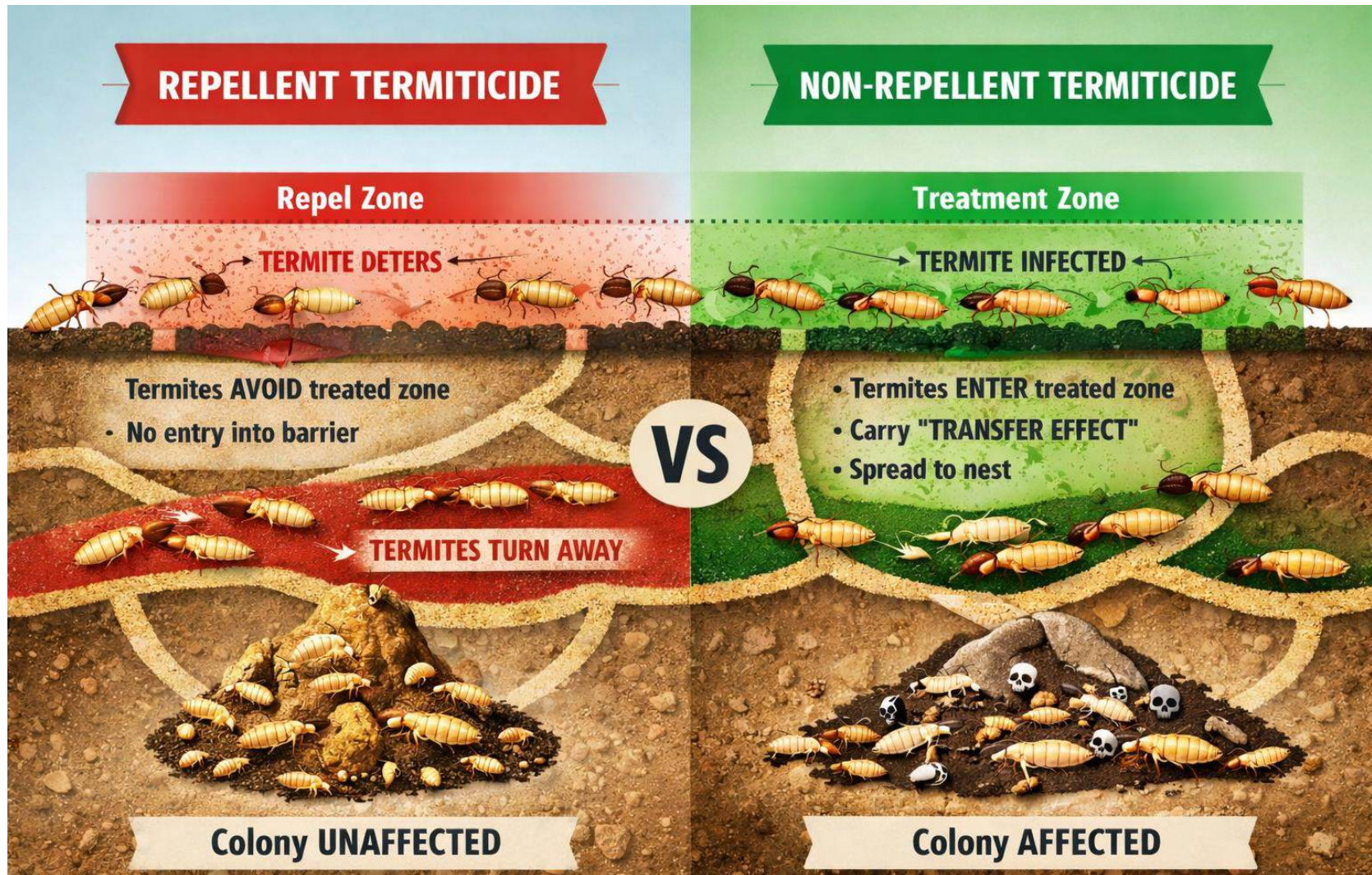


Product Improvise across years...

- Evolution of lamp...



Introduction of Liquid Termiticide



Introduction of Liquid Termiticide

- Within it, **Fipronil & Imidacloprid** are the 2 most common **non-repellent termiticide active ingredient** which estimated 80-90% market share...

Asia Pacific (APAC) is one of the **fastest-growing and largest regional markets** for termite control products, driven by rapid urbanization and growing construction activity in countries like **China, Singapore, Thailand, India, Japan, South Korea and ASEAN markets**. The APAC termite control market accounts for a **significant portion (~25%–30%) of the global liquid termiticide market**.



Introduction of Liquid Termiticide

- When take a microscopic view focus in Singapore (SG) termite management industry, it synchronize with the APAC trend as widely refer to non-repellent termiticide.
- Several common non-repellent termiticide, inclusive of HDB pre-construction standard specification reference:
 - Fipronil, Imidacloprid, thiamethoxam, etc ...

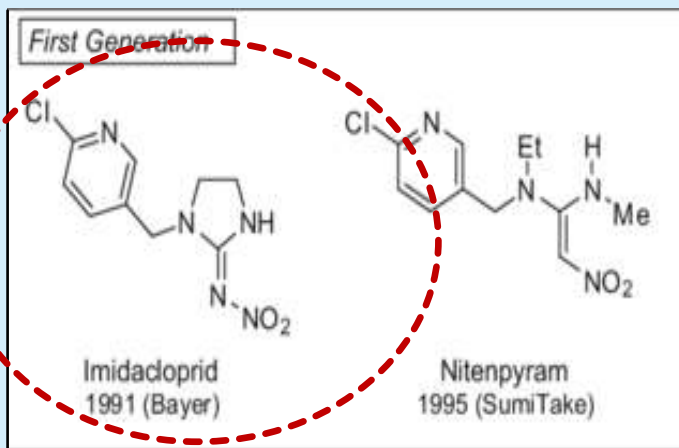


- *Which, Fipronil and Imidacloprid termiticide are introduced in SG at early 2000s, which been used >20+ years...*
- *In general, based on volume of application up to date
Fipronil: Imidacloprid
(equal share)*

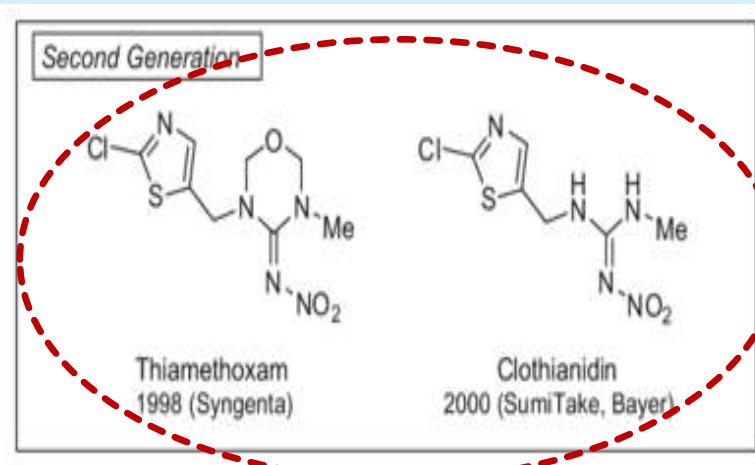
Introduction of Neonicotinoid

- Among the 3 common termiticide, 2 active ingredients (**Imidacloprid** and **thiamethoxam**) are classified in the group of **NEONICOTINOID**.
- **GANTNER 20SC** with active ingredient **Clothianidin** as the latest termiticide introduced in SG.

1ST GENERATION

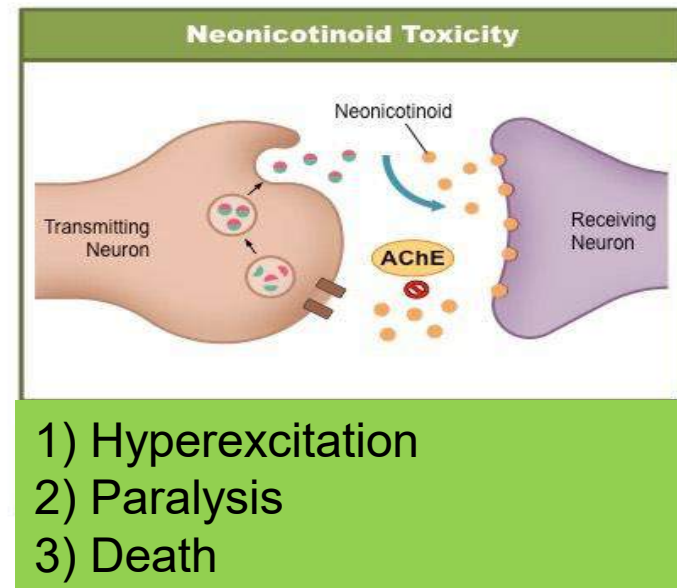
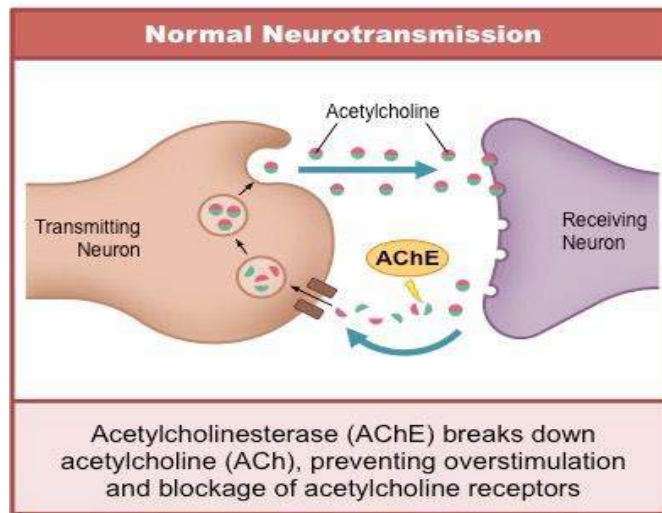


2ND GENERATION



Introduction of Neonicotinoid

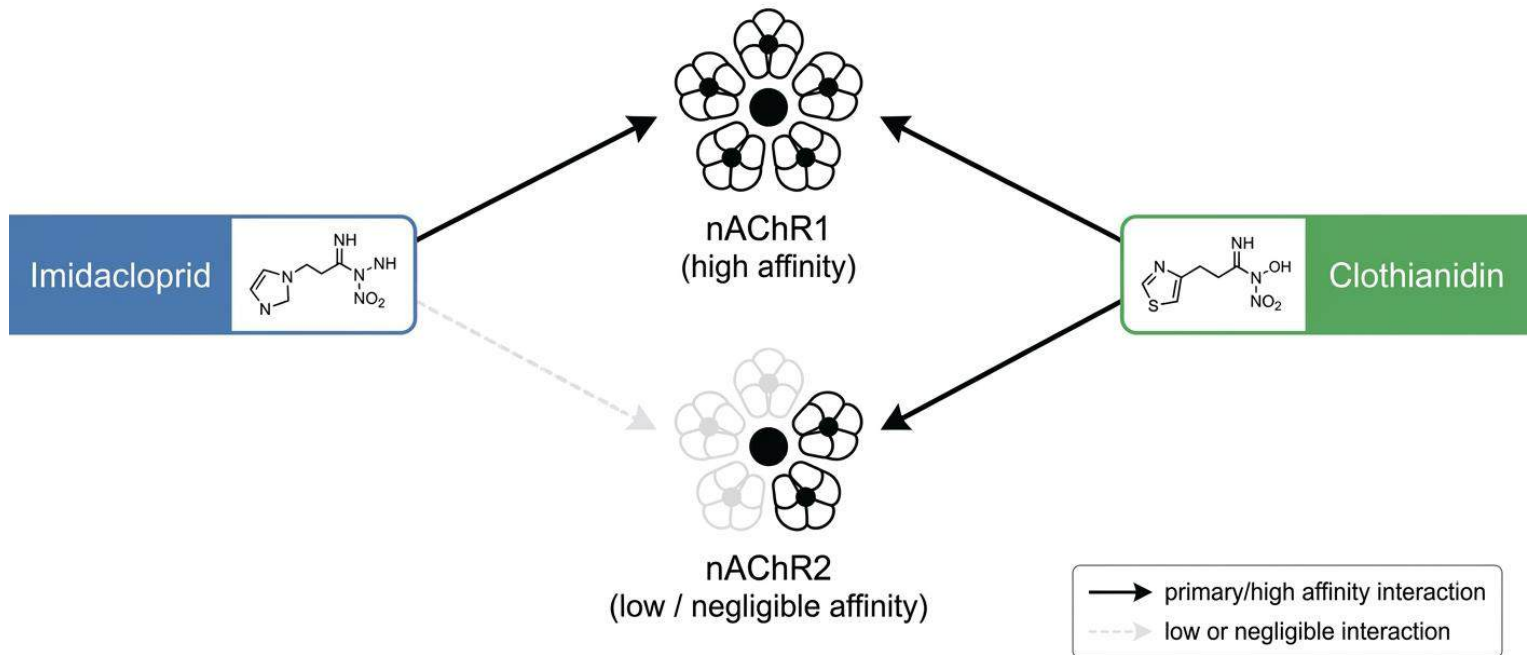
- According to the **Insecticide Resistance Action Committee (IRAC)**, neonicotinoids are classified under **Group 4A** within their Mode of Action (MoA) Classification Scheme. They are defined as **nicotinic acetylcholine receptor (nAChR) agonists**, which disrupt the nervous system of insects



GANTNER compared to IMIDACLOPRID

- **GANTNER 20SC** with **clothianidin** as the **second generation** as the **latest replacement** to current **imidacloprid** termiticide

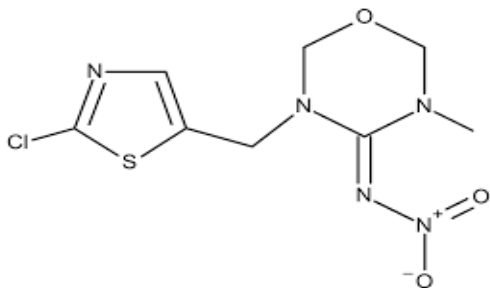
Differential Binding of Imidacloprid and Clothianidin to nAChR Subtypes




GANTNER compared to THIAMETHOXAM

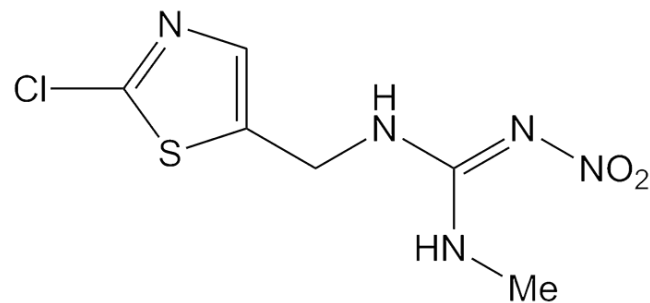
- **GANTNER 20SC** with **clothianidin** identified as “**the brilliant kids**” from **thiamethoxam**
- Clothianidin is the **primary active metabolite** and degradation product of the thiamethoxam, formed in soils, plants, and insects.
- Simply said, it is the **more active** derived compound with **higher insecticidal activity and stability** than Thiamethoxam..

THIAMETHOXAM
(Precursor/ Parent Compound)




generate

CLOTHIANIDIN
(Active Metabolite)



Why **GANTNER 20SC**?

- Thus, **GANTNER 20SC** served as the **latest and new termiticide introduced in SG**
- **GANTNER 20SC** is **NOT hazardous substances (HS)** list under the Environmental Protection and Management Act (EPMA), compared to other termiticide (Fipronil, Imidacloprid etc)
- With application & physiochemical aspect:
 1. **Capability as Longest Persistence Soil Termiticide Treated Zone**
(how long can the termiticide last?)
 2. **Stability in different soil condition**
(how stable when applied into the soil, referring to pH, photolysis, hydrolysis, organic matter, clay mineral etc)

1. How Long can the Termiticide Last?

	Unit	Clothianidin (GANTNER)	Imidacloprid	Thiamethoxam
Hydrolysis half-life	Day	Stable	Stable	Stable
Aerobic soil metabolism half-life	Day	2709	254	236
Field dissipation half-life	Day	841*	64.8*	91*

* Data is from DPR's internal Pest Chem database based on DPR-approved studies. Other data without an asterisk (*) is from the USEPA reports

- **GANTNER with highest half-life** in common topsoil (10-30cm layer) structure (aerobic soil): **10X more persistent** than imidacloprid which allow its **potential longer protection performance** than others
- **GANTNER with first order dissipation: stable & consistent degradation** across the years

1. How Long can the Termiticide Last?



Colony Control with Gantner 20SC

The Latest & Greatest Termiticide Designed For A Green Future

7 Years

**PROTECTION
AGAINST TERMITES**

Treatment area	Pests	Protection period (years)	Dilution rate	Treatment method
			GANTNER 20SC: Water	
<u>Pre-construction</u> Floor/ground surface	Termites (<i>Coptotermes gestroi</i> , <i>Globitermes sulphureus</i> , <i>Microtermes obesi</i>)	7	1:400	Apply 5L solution/m ²
<u>Post-construction</u> Building foundation and floor		7	1:400	Drill a hole 50-60cm deep at a distance of every 30cm. Apply 5L of the solution to each hole by using soil injector and seal the holes with cement.

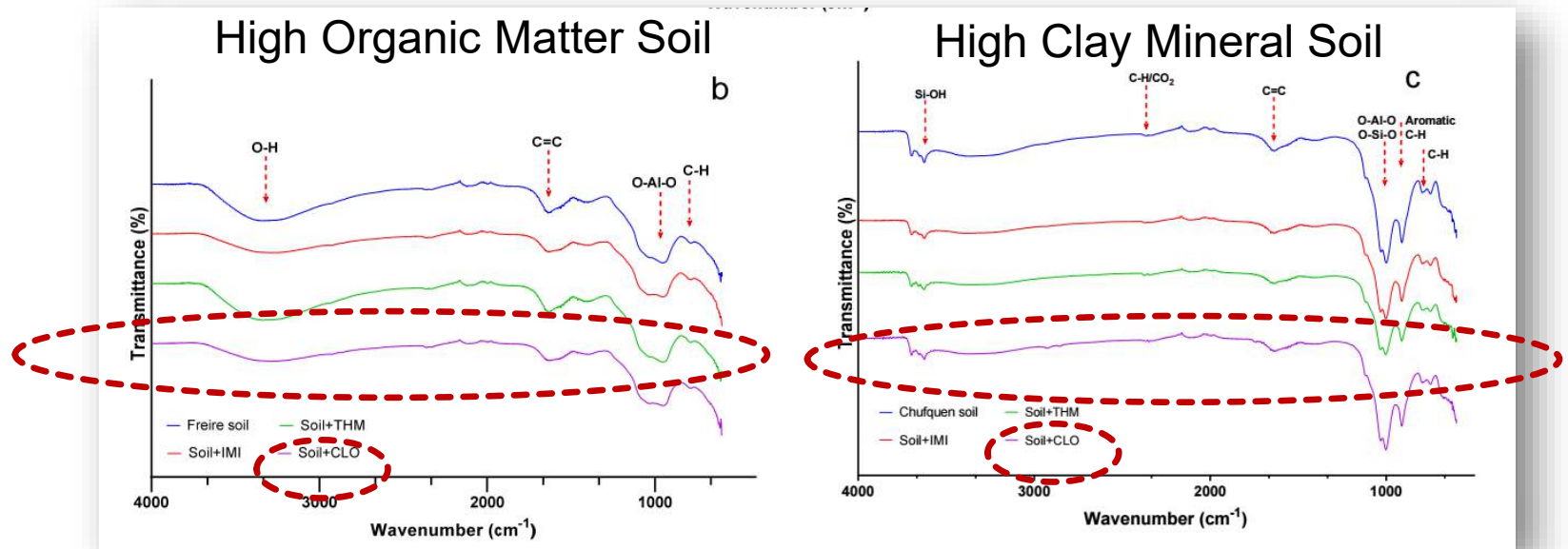
Notes: The above table presents recommended dosage and protection periods for soil treatment against subterranean termites, based on field test results conducted by the Royal Forest Department, Bangkok, Thailand. A 7-year protection period applies to the 1:400, as approved by the local authority in Thailand.

2. Stability in different soil condition (referring to pH, photolysis, hydrolysis, organic matter, clay mineral etc)

	Unit	Clothianidin (GANTNER)	Imidacloprid	Thiamethoxam
Vapor pressure	torr	2.90×10^{-13}	1.50×10^{-9}	4.95×10^{-11}
Aqueous photolysis half-life	Day	0.6	0.2	4.46

- **GANTNER is 10,000x less likely vaporize**, which compared to imidacloprid, which is **higher safety profile**
- **GANTNER is 3x longer stable** compared to imidacloprid

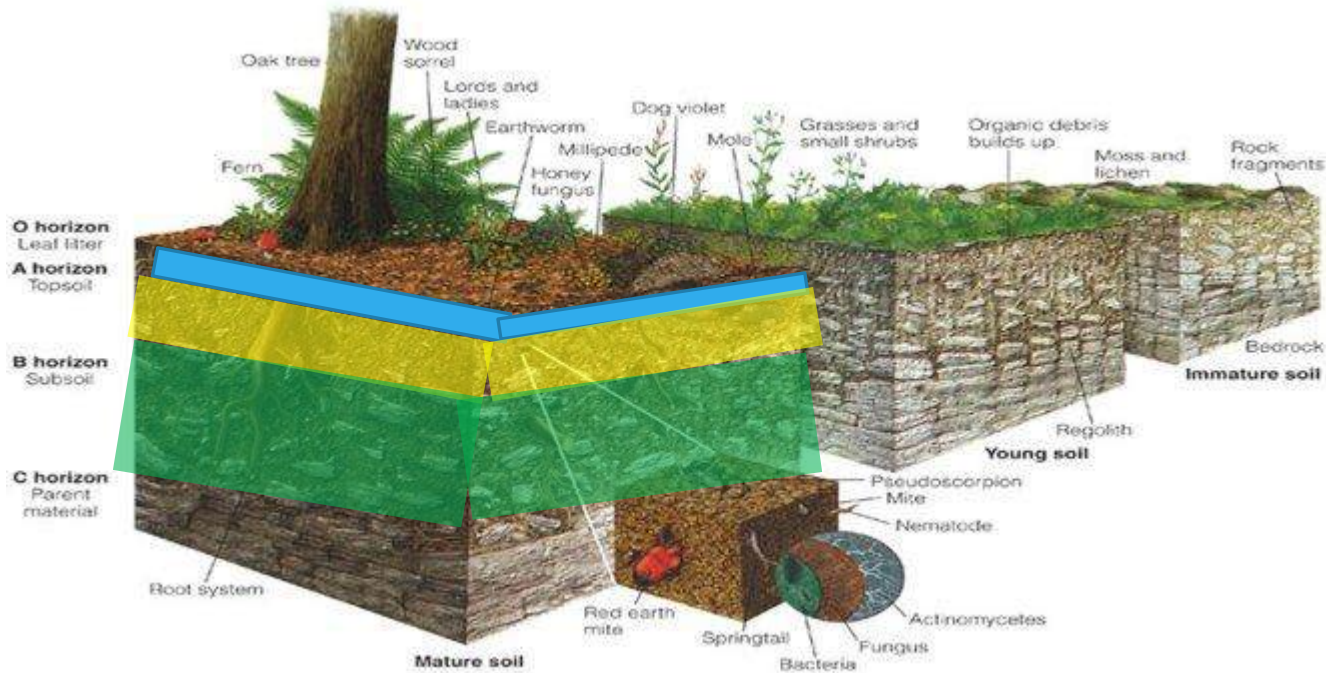
2. Stability in different soil condition? (referring to pH, photolysis, hydrolysis, organic matter etc)



- Using FTIR graphs (Fourier Transform Infrared spectra, based on IR absorption profile), this publication shown **GANTNER (with clothianidin)** as the **most stable & higher soil absorption profile**...

CLOTHIANIDIN > IMIDACLOPRID > THIAMETHOXAM
(GANTNER 20SC is the best persistent termiticide in high organic matter /
clay mineral soil)

2. Stability in different soil condition? (referring to pH, photolysis, hydrolysis, organic matter etc)

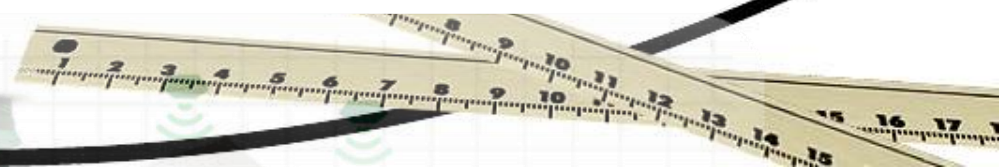


CLOTHIANIDIN > IMIDACLOPRID > THIAMETHOXAM
(GANTNER 20SC is the best persistent termiticide in high organic matter /
clay mineral soil)

Why **GANTNER 20SC**?

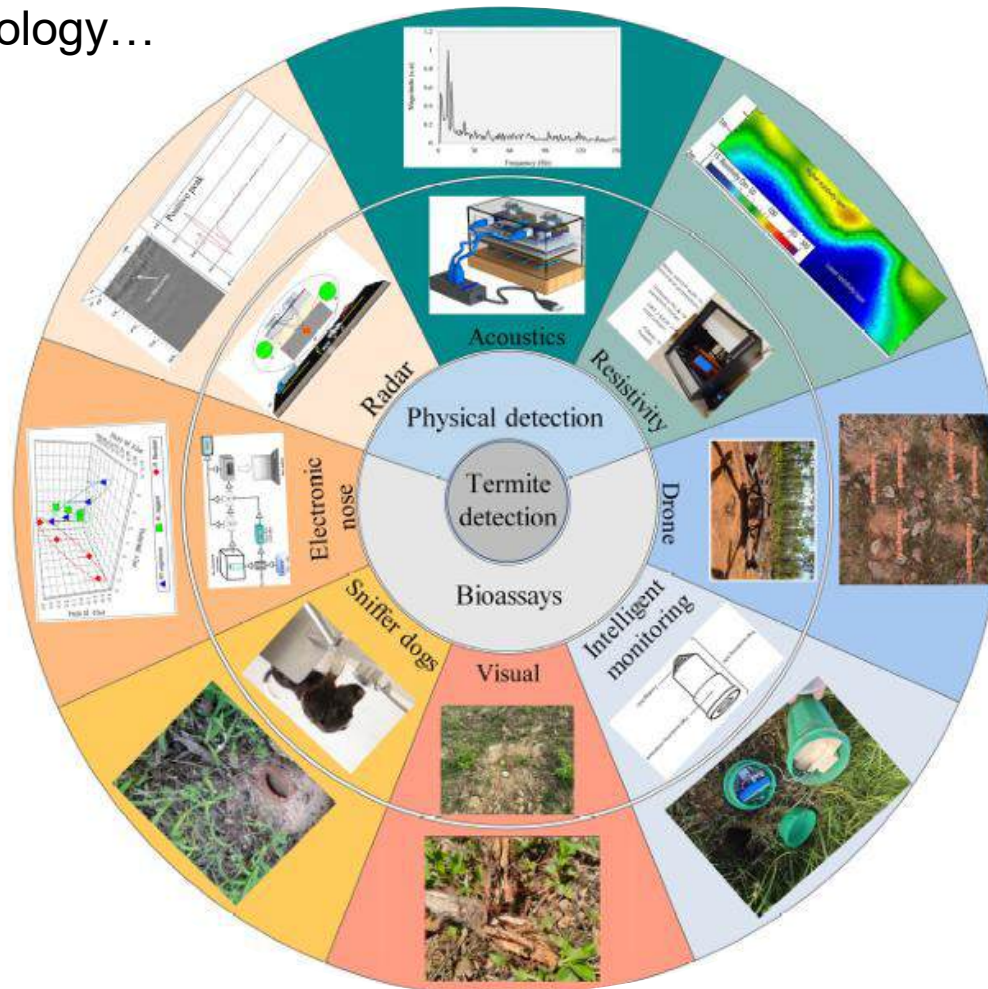
- With application & physiochemical aspect:
 1. **Capability as Longest Persistence Soil Termiticide Treated Zone**
(GANTNER 20SC provide 7 years long-lasting protection)
 2. **Stability in different soil condition**
(GANTNER 20SC most stable in different soil type including high organic matter or clay type)
 3. Proven as the **next generation** new non-repellent **termiticide** in SG
 4. with **higher insecticidal activity and stability** relatively

Beside the Latest **Termiticide Protection**,
Continuous Monitoring/ Early Alert System is
Essential in Integrated Termite Solution as well...



Introduction of Termite Monitoring

- Review with various up-to-date termite detection & monitoring technology...



Introduction of Termite Monitoring

Detection Technology	Advantages	Disadvantages	Application Scenarios	Detection Accuracy	Auto/ Manual
Ground-penetrating radar	Non-invasive, real-time data, high precision.	High cost, susceptible to geological conditions.	Large-area preliminary detection.	96% [29]	Manual
Acoustic detection	Non-destructive, fast detection.	Highly affected by noise environment.	Relatively quiet local detection.	98.316% [65]	Manual
Electrical resistivity method	Capable of estimating nest location and volume.	Limited detection depth.	Areas with relatively stable geological conditions.	-	Manual
Electronic nose	High precision, real-time analysis and processing, remote monitoring.	Easily affected by ambient odors, high cost.	Large areas with minimal interference.	72.7% [78]	Manual
Sniffer dogs	Strong adaptability to complex environments, able to detect trace odors.	High training costs, influenced by the dogs' physical condition.	Complex terrains, high accuracy requirement areas.	95.93% [36]	Manual
Visual inspection	Low cost, more intuitive.	High subjectivity, influenced by season	Routine patrols, preliminary judgment.	-	Manual
Intelligent monitoring	High real-time performance, labor-saving, predictive.	High cost, easily affected by the environment.	Areas with minimal interference.	97.5-98.5% [42]	Auto
Drone image analysis	Wide coverage, high efficiency, monitoring of hazardous areas, capable of dynamic comparison across periods.	Poor performance in early detection, weather-dependent, relies on image processing algorithms and technology.	Large-scale macro monitoring.	81% [97]	Manual

iTAS

Intelligent Termite Alert System

The New Age For Termite Management



- An upgrade version of In-Ground (IG) Termite System from **Conventional (Passive Manual Check)** to **Intelligent (Active & Continuous Self Alert Check)** system

It's a Revolution

Termite monitoring program will never be the same again.



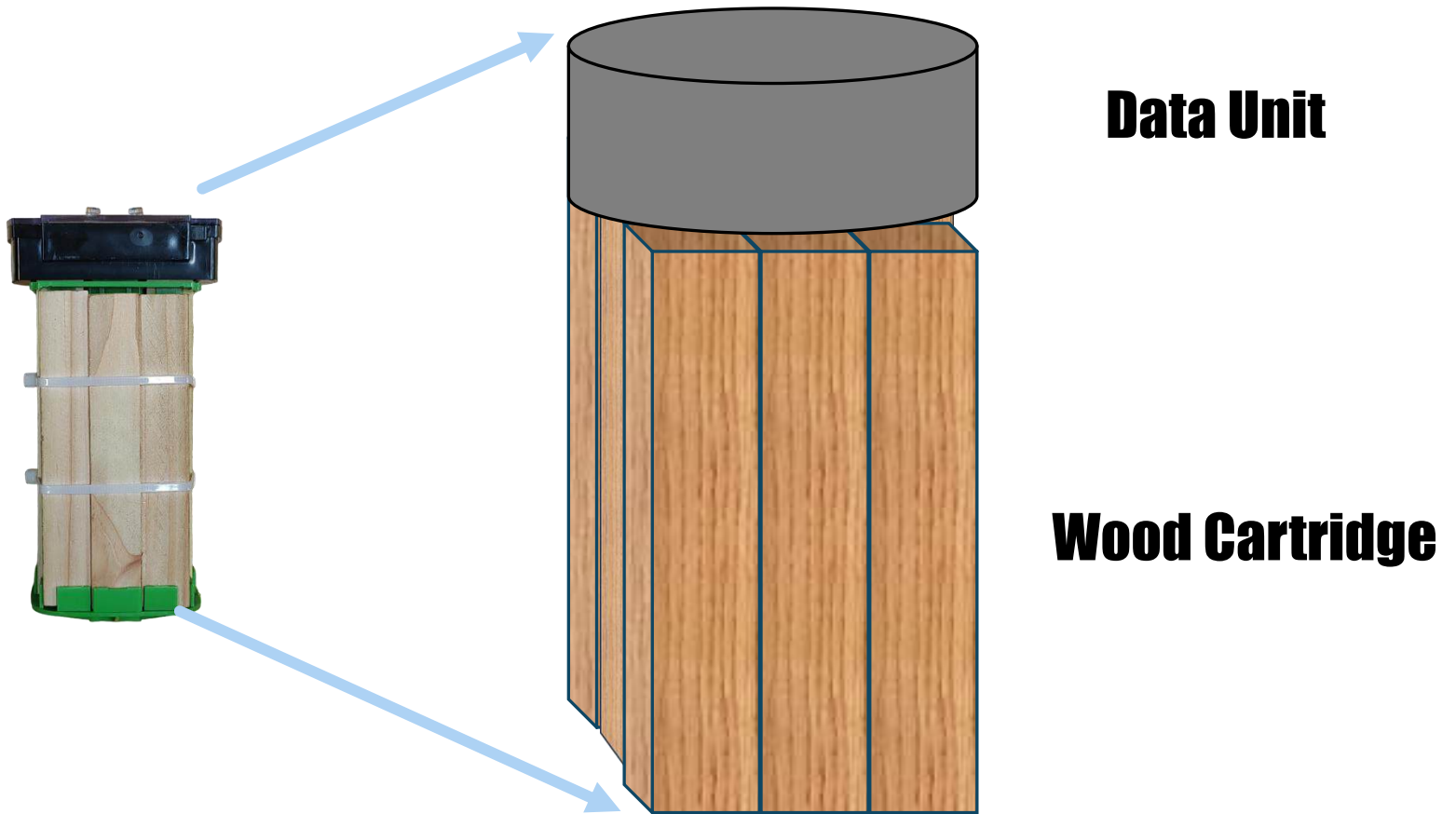
ITAS Overview...

- With patented “termite active feeding triggering mechanism & self-check” ([BBT technology](#))
- The [first ever non-loop electromagnetic induction technology](#) (which the triggering mechanism do not required any power source, purely mechanical)
- [>10 years R&D and field research](#) in various geographical land area



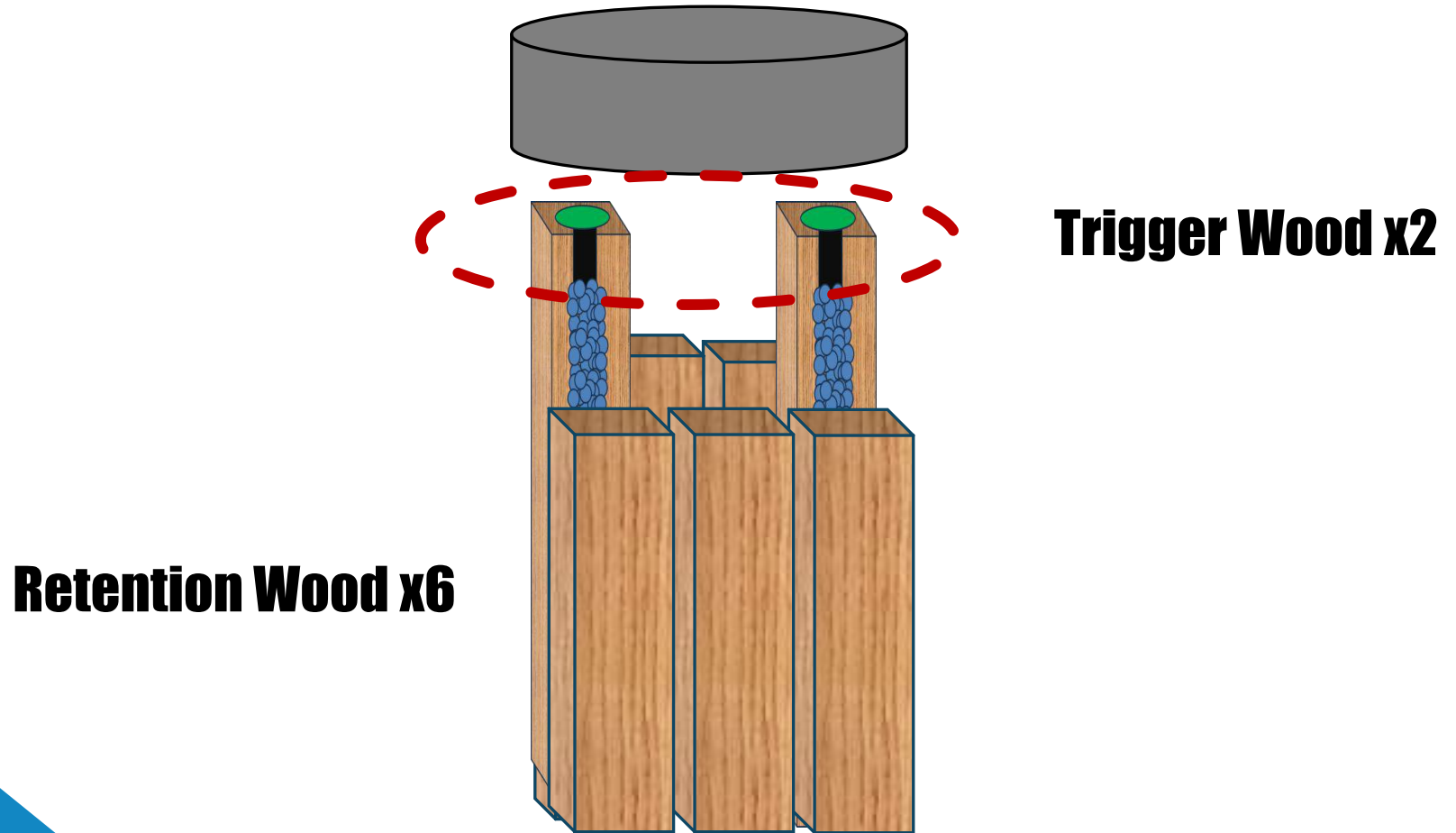
iTAS

B.B.T Trigger Mechanism Discussion



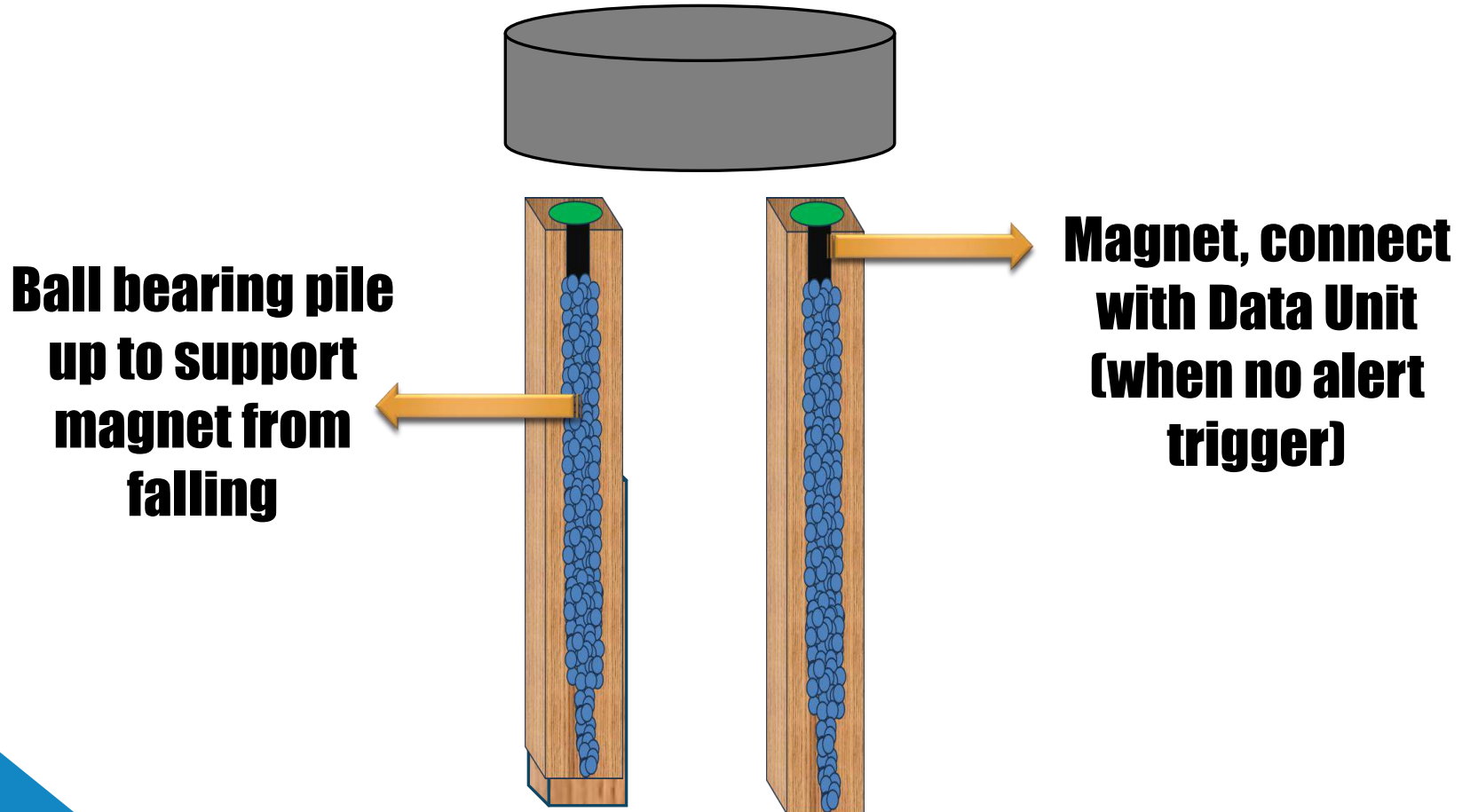
iTAS

B.B.T Trigger Mechanism Discussion



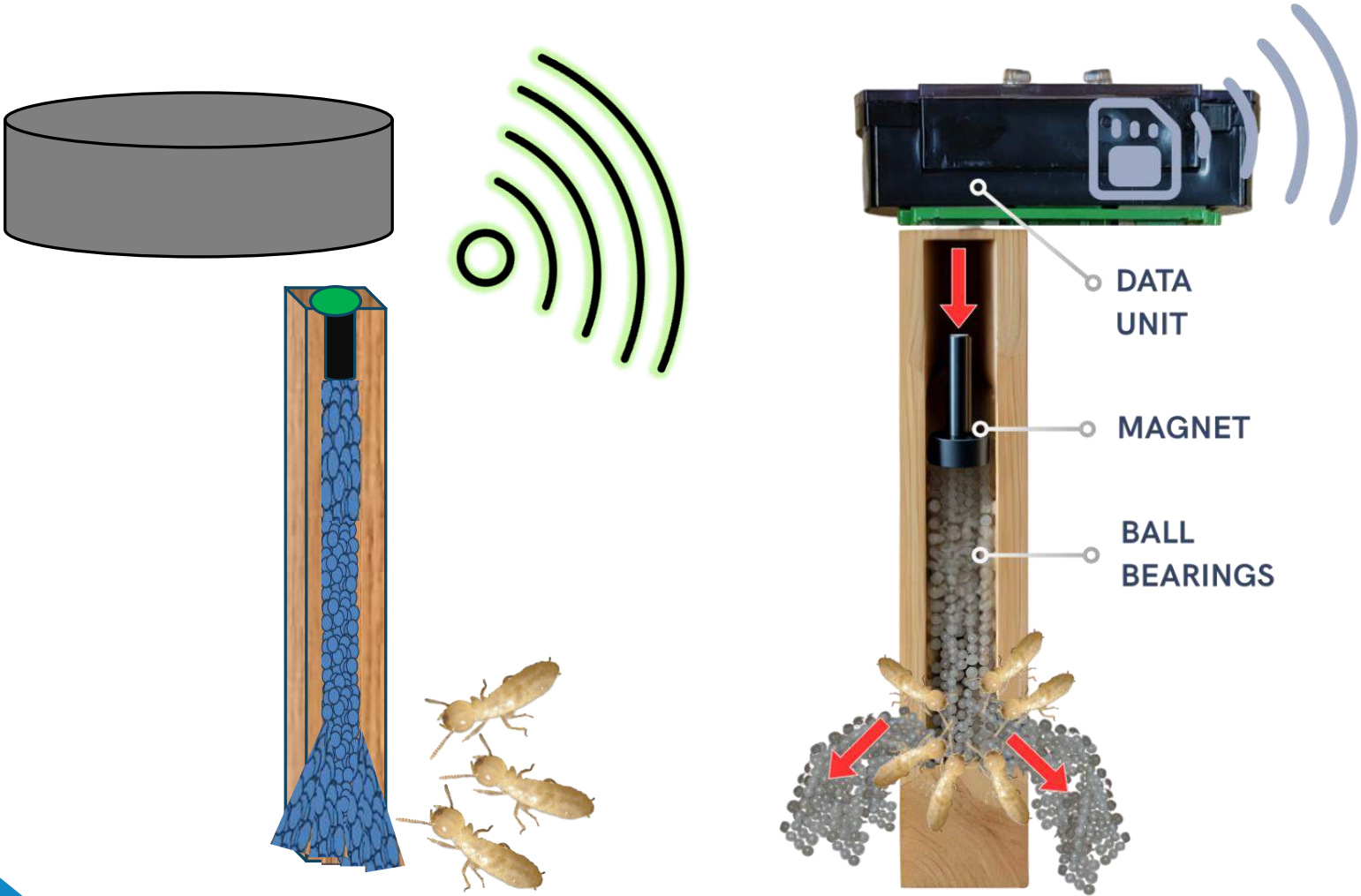
iTAS

B.B.T Trigger Mechanism Discussion



iTAS

B.B.T Trigger Mechanism Discussion



Why iTAS? *Latest Technology*

- A brief historical indicated the development of IG termite baiting system is 65 years (>half-century) while first commercialized in the past 35 years...



1990s

Commercialization Era

- 1994-1995: 1st Commercial Termite baiting system launched (hexaflumuron)
- Success at Statue of Liberty & Independence Hall
- Shift to colony elimination



2000s-2010s

Expansion & Sustainability

- Green recognition compared to termiticide soil treatment
- IPM mainstream adoption



1960s-1980s

Concept Development

- Slow-acting toxicants shared via trophallaxis (termite food sharing)
- Field trials with monitoring stations
- Scientific Research & Initial development



2020s-Present

Intelligent & Connected Systems

- Self-triggers & IoT integration
- Real-time data & predictive control
- Eco-efficient termite management

Why iTAS? *Earlier Monitoring & Protection*

- Real-time monitoring – Automatically detects and reports termite activity without waiting for manual inspection...
- Allow on-time treatment & advanced structural protection...



# termite worker	Consumption (g per month)	Consumption (g per year)
1 million	1.2kg	14.4kg
3million	3.6kg	43.2kg

Why ITAS? *Earlier Monitoring & Protection, Proven Result*

- Real-time monitoring – Automatically detects and reports termite activity without waiting for manual inspection...
- Allow on-time treatment & advanced structural protection...



Why iTAS? Proven Result

- Continuous data collection enables better analysis of termite behavior and site risk...



Why iTAS? *ECO-FRIENDLY*

- Greener & safer approach ...
- Less disturbance & silent operation...
- ESG Compliance (lower carbon-footprint)...

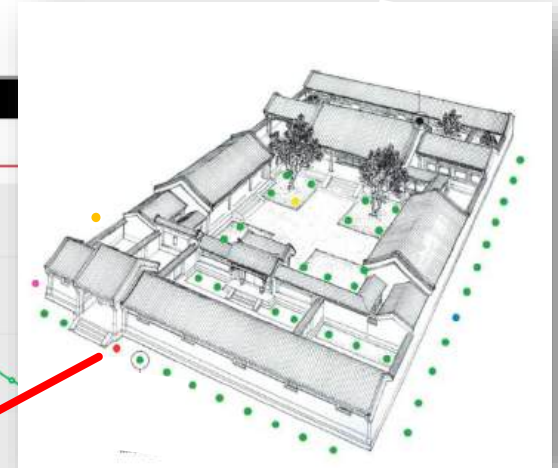
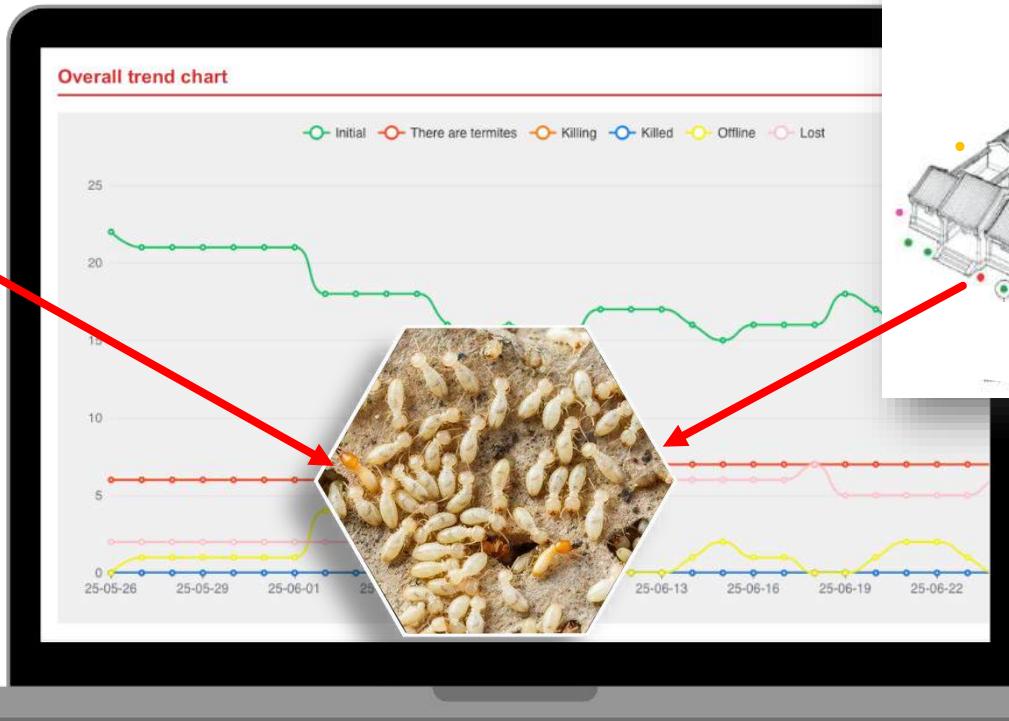
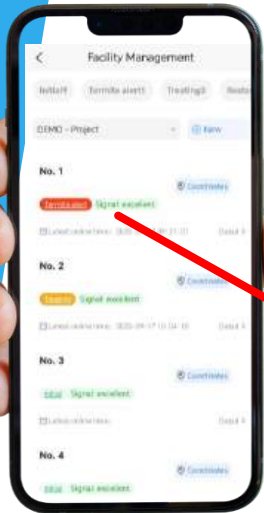


•Only when necessary



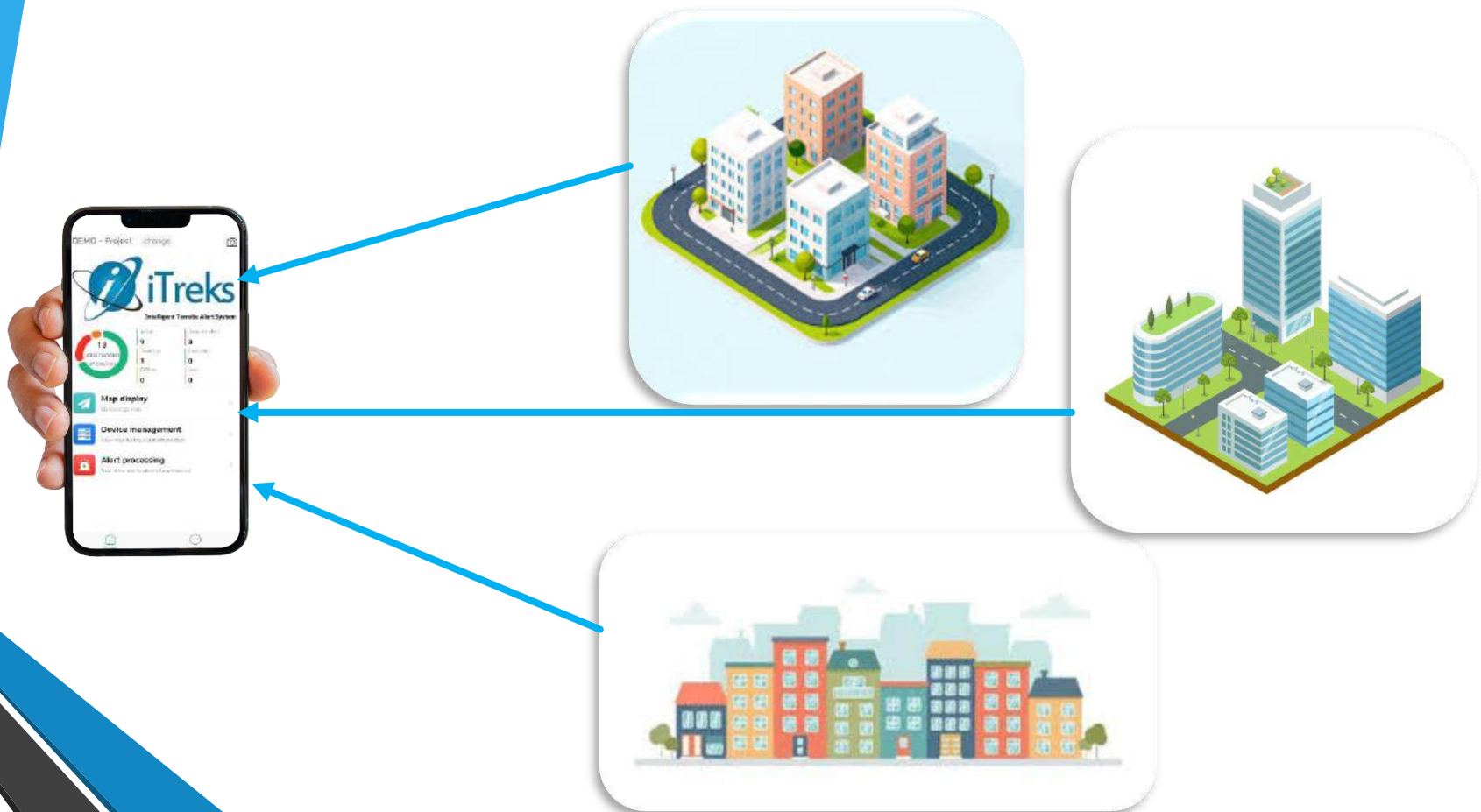
Why iTAS? Remote Access & Centralized Monitoring

- Monitor anytime, anywhere without limit...
- Termite monitoring process & status within digital devices...



Why iTAS? Remote Access & Centralized Monitoring

- Monitor anytime, anywhere without limit...
- Terminate monitoring process & status within digital devices...



Why ITAS? Compliance & Reporting

- Automatic digital logs for termite management documentation and audit trails...
- Demonstrates innovation and commitment to smart building protection & sustainable reporting...
- Daily/Weekly/Monthly status report or Yearly trend report...

The screenshot displays the iTreks ITAS interface. The main content area shows a 'Status Report' for a project named 'DEMO - Project'. The report includes the following details:

- Surveillance Details:**
 - Technician: DEMO - Company
 - Service Date: 2025-09-25
 - Term In: 08092809 @ 00:37:50Z
 - Term Out: 08092805 @ 00:37:50Z
- Account Location:**
 - Site: Singapore
 - Address: Singapore
- Surveillance Findings Summary:**

Project	Inactive stations	Termite attack	Live stations	Total stations
DEMO - Project	9	2	0	11
IC - Demo	0	0	0	0
DEMO Trial Units	8	0	0	8
Bank Jar	2	0	0	2

Below the summary table, there is a 'Finding Details' section with columns for 'Photo' and 'Remarks'.



Integrated Termite Solution



1 PROTECTION

Establishing robust chemical zones in the soil before construction begins, to protect against termite colonies effectively for 7 years.

GANTNER 20SC



2 ALERT & MONITORING

Deploying intelligent sensors for 24/7 real-time alert & detection of termite activity without routine manual checks.

intelligent Termite Alert System (iTAS)



4 ELIMINATION

Active elimination of colonies or corrective soil treatment to effectively treat termite infestations via powerful domino effect.

Gantner 20SC

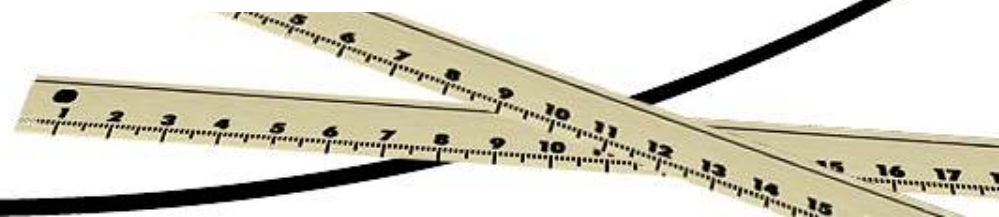
Xterm

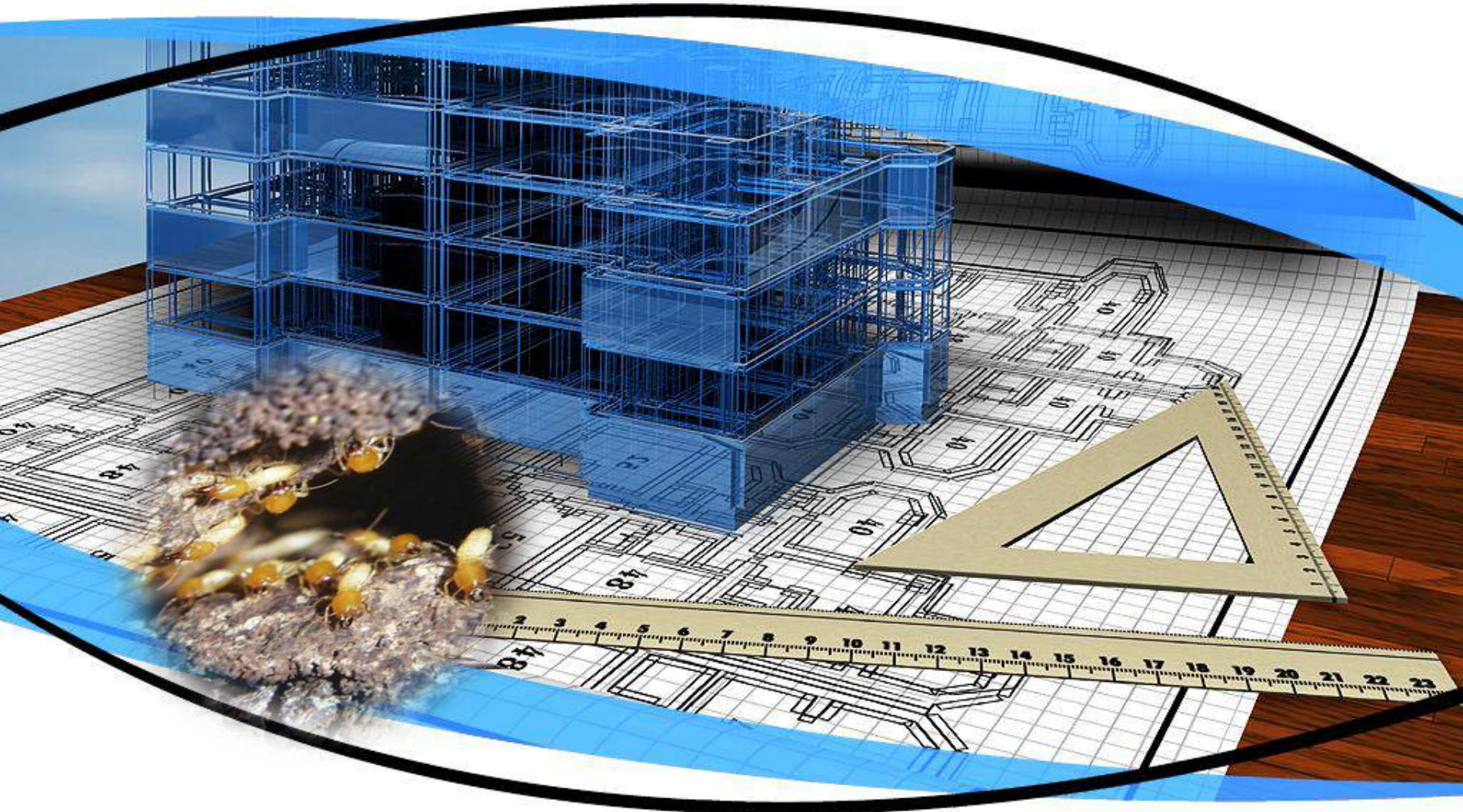


3 INSPECTION

Utilizing non-invasive radar and thermal imaging technology to precisely locate and assess termite infestations.

iTraker Pro





Thank You

Q & A