

PNT: THE BATTLEFIELD COMPASS

POSITIONING, NAVIGATION & TIMING

Chanakya understood the enduring importance of **Time**, **Place** and **Strength**.

Today, in the multi-domain battlespace,

PNT is the foundation that delivers awareness, advantage and assurance.



POSITIONING

Know where we are



NAVIGATION

Know how to get there



TIMING

Know when to act



AWARENESS

Enables situational awareness and domain understanding.



DIRECTION

Enables mission execution and precise maneuver.



SYNCHRONIZATION

Enables coordination, timing and operational effectiveness.

“ कः कालः कानि मित्राणि को देशः को व्यागमौ ।
कश्याहं का च मे शक्तिरिति चिन्त्यं मुहुर्मुहुः ॥
— चाणक्य नीति ”

One should constantly reflect upon:

- What is the right time?
- Who are my allies?
- What is the nature of the place?
- What are my resources and expenditures?
- Who am I, and what is my strength?

IF DATA IS THE NEW AMMUNITION, PNT IS THE BATTLEFIELD COMPASS.

The force that can sense first, navigate first, decide first, and act first will dominate the battlefield. In future conflicts, victory will belong not merely to those with superior firepower, but to those with superior positioning, timing, and situational awareness.



• CONTROL PNT.



• CONTROL THE BATTLEFIELD.

• SHAPE THE OUTCOME.

GLOBAL NAVIGATION WARFARE

HOW GNSS JAMMING & SPOOFING HAVE BECOME THE OPENING MOVE OF MODERN CONFLICT

“ The first shot may not destroy a platform — it may deny its ability to know where it is. ”

WHAT IS NAVIGATION WARFARE?



JAMMING

Overpowers GNSS signals with noise. Causes loss of position and lock.



SPOOFING

Broadcasts false signals to deceive receivers. Victim navigates to the wrong location.

EFFECT ON THE BATTLEFIELD



Precision collapses



Networks fragment



Decision superiority evaporates

THE BEIDOU COUNTER-MOVE



China's **BeiDou** provides military-grade PNT resilience and reduces dependence on vulnerable systems.

KEY NUMBERS



123,000

GPS interference incidents in Baltic (first 4 months)



1,100+

Vessels lost position in Persian Gulf within 1 day



1,500

Peak daily flights affected, India-Pakistan border



01 UKRAINE & BALTIC

- Near-daily disruption since Feb 2022
- Russian jamming in Kaliningrad & Baltic airspace
- 123,000 GPS interference incidents (first 4 months)
- Hybrid warfare increasingly targets PNT

02 ISRAEL · GAZA · LEBANON



- Extensive GNSS spoofing in the region
- Aircraft repositioned hundreds of miles from actual location
- Navigation & precision weapons affected
- Airspace access & strike coordination impacted

03 PERSIAN GULF & IRAN



- 1,100+ vessels affected on Day 1
- AIS & positional integrity compromised
- Ships spoofed near UAE waters
- Iran uses spoofing & jamming for missile guidance & GPS denial

THE DEDUCTIONS



Precision collapses when navigation is denied



Networks fragment when timing is disrupted



Decision superiority evaporates when location data cannot be trusted



A military alliance that cannot trust where it is, cannot fight where it must. Sovereign, resilient PNT across the Alliance is not a procurement preference — it is the **precondition for every capability we field.**

THE VERDICT



Sources: Defense News | AP News | NPR | CNBC | The Space Review | CyCon 2025 | EU Hybrid Warfare Report | University of Texas Research

BUILDING A RESILIENT PNT ECOSYSTEM

TECHNOLOGY SOVEREIGNTY

• TRUSTED TIMING

• ASSURED AUTONOMY

• NATIONAL CONVERGENCE

01 SOVEREIGN NAVIGATION CAPABILITY

- Strengthen indigenous navigation infrastructure
- Enhance secure military services
- Ensure assured access to trusted signals
- Strategic autonomy begins with navigational autonomy



03 COUNTER JAMMING & SPOOFING

- Anti-jam technologies & authenticated signals
- AI-enabled anomaly detection
- Electronic protection & resilient receivers
- Trusted navigation is as important as accurate navigation

02 ALTERNATE NAVIGATION TECHNOLOGIES

- Advanced Inertial Navigation
- Terrain-Referenced Navigation
- Celestial Navigation
- Vision-Based Navigation
- Signals-of-Opportunity
- Quantum Navigation

Navigate Anywhere.
Operate Anytime.
Fight Under Any
Conditions.

WHY RESILIENT PNT MATTERS

- Assured Operations in GPS-Denied Environments
- Operational Continuity & Mission Assurance
- Decision Superiority with Trusted Information
- Force Multiplier across the Spectrum of Conflict
- Strengthens National Security & Sovereign Resilience



THE LESSON IS CLEAR: RESILIENCE IS THE NEW PRECISION. | SOVEREIGNTY IS THE NEW DETERRENCE. | ASSURED PNT IS THE FOUNDATION OF FUTURE MILITARY POWER.

BUILDING A RESILIENT PNT ECOSYSTEM

● TECHNOLOGY SOVEREIGNTY

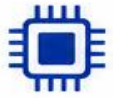
● TRUSTED TIMING

● WHOLE-OF-NATION APPROACH

04



TECHNOLOGY SOVEREIGNTY



- Control critical technologies



- Semiconductors, sensors, MEMS, secure processors



- Atomic clocks & advanced electronics



- Reduce supply-chain risks and strategic coercion



- Indigenous capability is a strategic national mission



A nation that imports critical technologies imports strategic vulnerabilities.

05



RESILIENT TIMING ARCHITECTURE



Timing is the invisible heartbeat of operations



Enables secure comms, C2, cyber defence, precision weapons



Networks lose cohesion without trusted timing



Direction comes from navigation; cohesion comes from timing



Future battlefield demands accurate timing at scale



If navigation provides direction, timing provides cohesion.

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WHOLE-OF-NATION APPROACH



Armed Forces define needs & validate tech



Industry builds scalable products & capabilities



Academia drives innovation & develops talent



Start-ups bring agility & disruption



Government provides policy, direction & investment



Innovation wins battles. Ecosystems win wars.

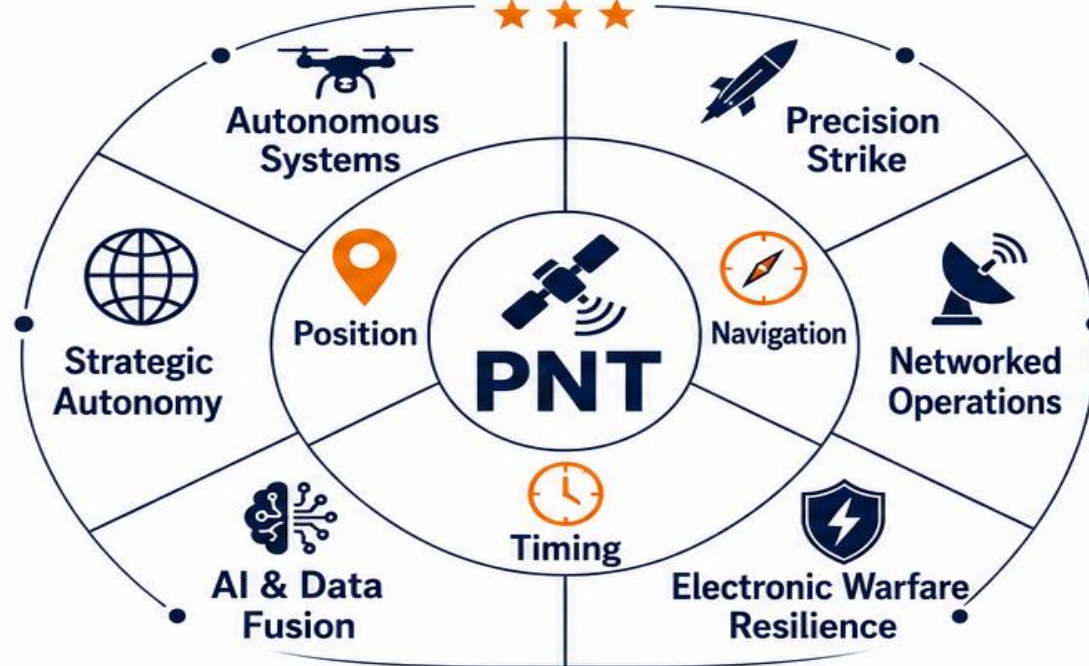
RESILIENT PNT

FOUNDATION OF FUTURE



WHY IT MATTERS

- ✓ Assured Operations
- ✓ Decision Superiority
- ✓ Freedom of Manoeuvre
- ✓ Mission Assurance



FUTURE BATTLEFIELD

- ✓ GPS-Denied Environment
- ✓ Autonomous Warfare
- ✓ Multi-Domain Operations
- ✓ Contested Electromagnetic Spectrum

CONTROL POSITION

CONTROL NAVIGATION

CONTROL TIME

CONTROL THE TEMPO OF OPERATIONS



SOVEREIGNTY



INNOVATION



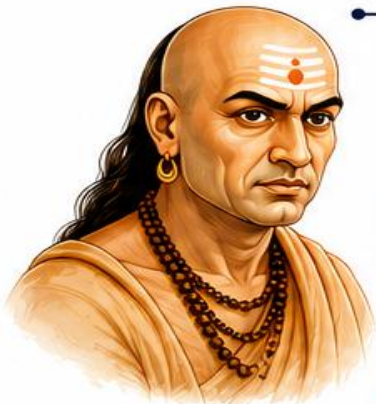
NATIONAL CONVERGENCE

कालं ज्ञात्वा च देशं च पात्रं च बलमेव च ।
ततो निबध्येत कायाणि सिद्धिर्भवति न संशयः ॥

— चाणक्य (अर्थशास्त्र)

“ Having known the time, the place, the resources and one's strength, one should then undertake the task; success is certain, without doubt. ”

— Chanakya





आमरुत उदयमान
महोदय श्री गणेशाय नमः
सर्वेभ्यो हि हिंसिताय नमः
सर्वेभ्यो हि हिंसिताय नमः