

# MORA

## Modular Open Radio Frequency Architecture



Developed by U.S. Army  
DEVCOM C5ISR Center



Promotes interoperability  
between RF components



Extension to VICTORY  
standard



Uses MORA Data Messages  
(MDMs) for communication  
across system



7 Types of MDMs:

- Types 2–7 are fixed length  
and simple
- Type 1 extends VITA 49.2  
and is significantly more  
complex



## PACMAN

### Parser Combinator for MORA Networks

1. Secure parser for MORA-compliant systems
2. Parse MDM packets in transport to ensure MORA specification compliance
3. Reduce the need for error handling at the destination
4. No edge cases
5. Defines a grammar by which MDMs must abide
6. Formally ensure that packets are bug-free
7. Use for MDM Types 1–7

# Hammer

## Open-source Parser- combinator library



The Hammer library, developed by  
Dr. Meredith L. Patterson of Special  
Circumstances LLC, is the core of  
PACMAN



Allows for the composition  
of large parsers via smaller parsers



Language-based approach  
to security:

- Stop handling input  
edge cases
- Discard non-conforming  
input at the parser level



Create grammars as inline  
domain-specific languages



Parsers often present themselves as a significant source of vulnerable code.



Security is often overlooked as one of a parser's main goals.



The ubiquity of parsers warrants the need for security.



Insecure parsers, see: Samba Web Administration Tool Base64 exploit (CVE-2004-0600).



LANGSEC requires that a grammar be developed for what should be successfully parsed.



LANGSEC parsers open the opportunity for formal verification.



**PACMAN**

Parser Combinator for  
MORA Networks

Scan to visit our virtual booth  
for papers, demonstrations,  
and our GitHub repository



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*Tackling the  
Science  
of Insecurity  
through  
Formal  
Methods*



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