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# Analytic Challenges from Active-Passive Integration

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## Define shaping, please?



- Working definition: Active implant copies traffic and directs a copy past a passive collector
  - Issues arise when collector is also processing passive traffic simultaneously
- Current: Implants on network infrastructure devices, not user endpoints
- Two types:
  - Physical/link layer:
    - an implant copies and shapes an entire link (E1, STM1) without selection; passive midpoint does selection
  - Network layer:
    - an implant performs *targeted* copying based on IP or application parameters and exfiltrates only the targeted traffic; passive collector may or may not do further selection.



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## Examples



- Link layer: BRAVENICKEL project (optical Muxes)
  - Copied link is not disguised, just routed on an unused layer 2 path that a passive collector can monitor
  - Selection happens in the passive collector
- Network layer: APEX for HAMMERMILL (routers)
  - Router is tasked to select and exfil targeted traffic (perhaps all of a particular protocol)
  - Exfil is disguised (“munged”, encrypted) to avoid detection
  - Passive collector looks for IP source/destination address in order to detect the traffic
  - If further selection/processing is to be done in collector, the exfil must be “unwrapped” (unmunged, decrypted)
  - *Exfil can be directed to passive or to TAO by changing the destination address*



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## So Why does Jane the Analyst care?

- TAO implants have collection parameters that are put on exfil received thru TAO backend
  - case notation, SIGAD, PDDG, classification/legal authority
- The passive collector has another set of these:
  - Site has a SIGAD, collector has a PDDG, the link it sees the traffic on has a case notation, and the access has a classification floor/legal authority
- Current backend repositories and presenters weren't designed to expect TWO of these!!!
- Which gets put on the data??? And where?
- And (drum roll) ... how do we solve this problem CONSISTENTLY across the enterprise?



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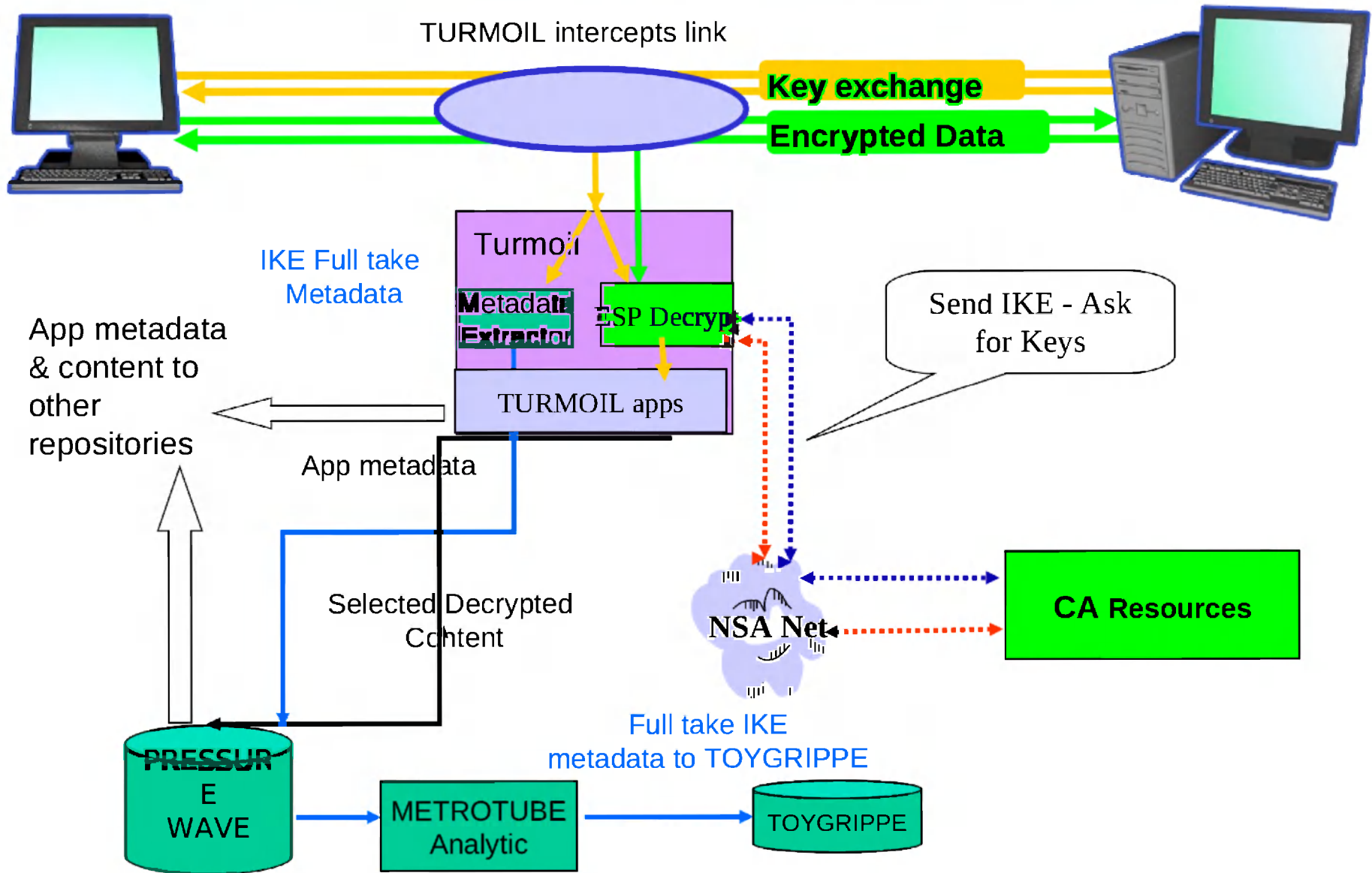
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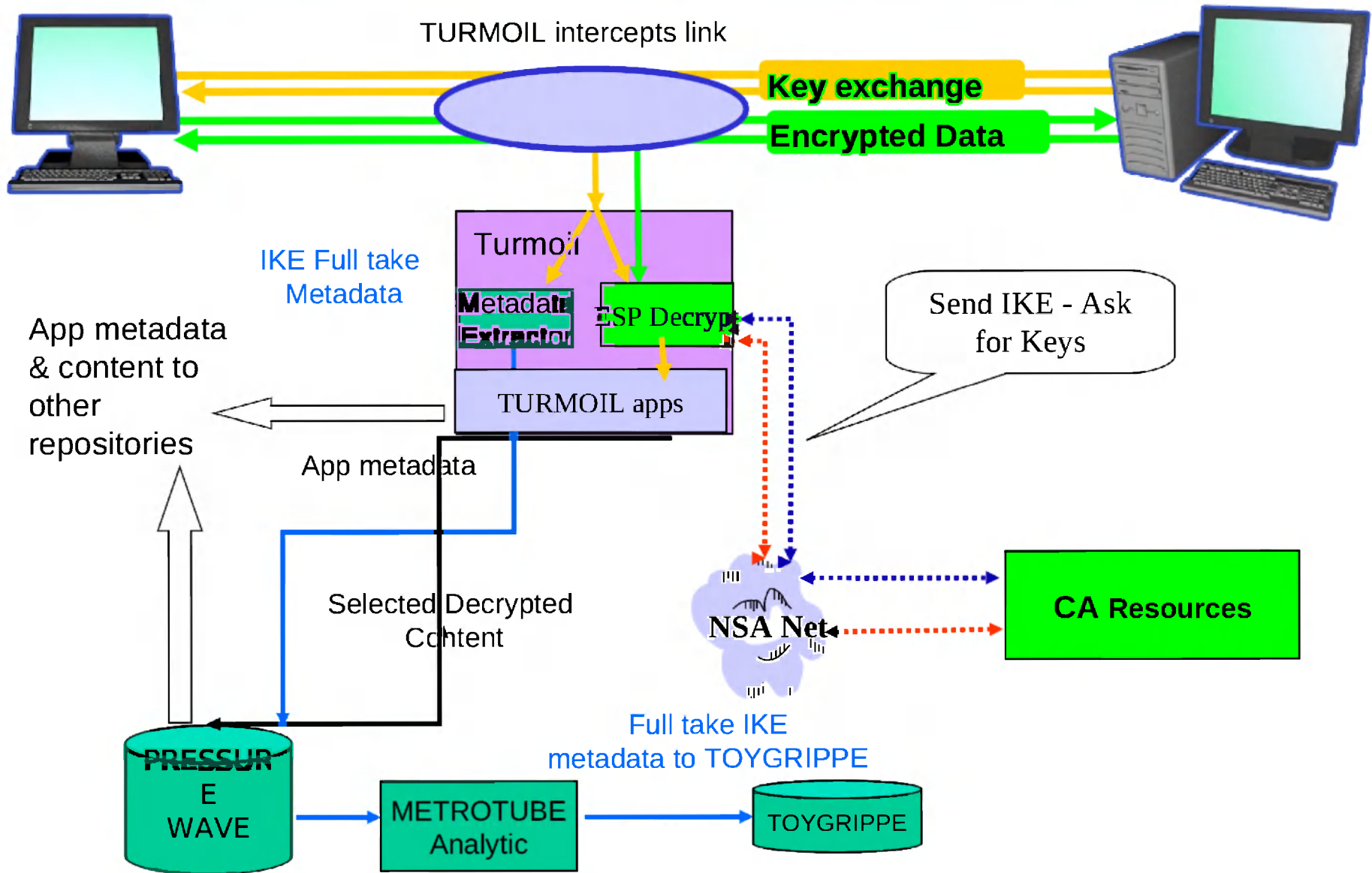


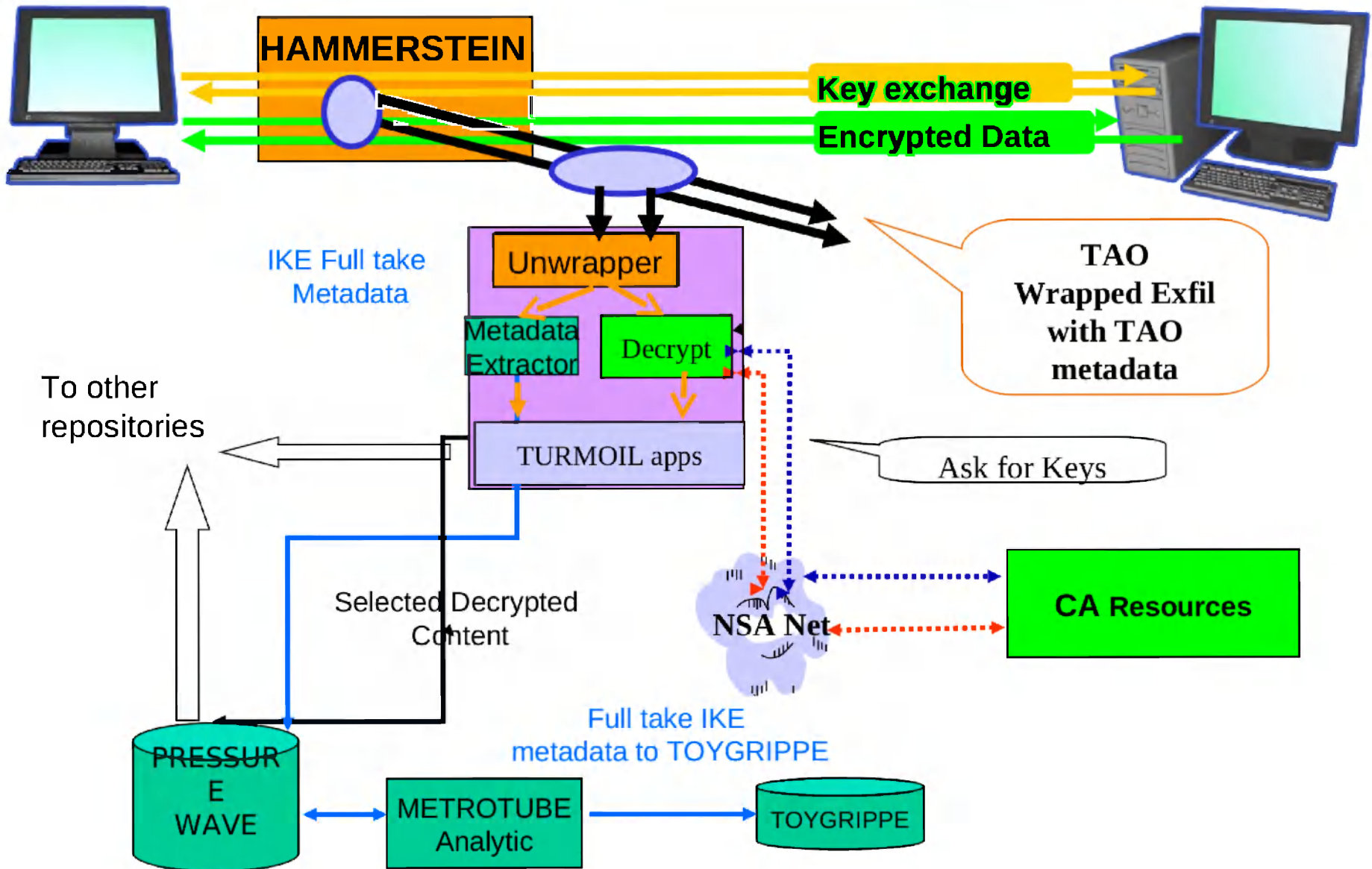
## Example: APEX IPSEC VPN collection

- IPSEC VPN:
  - First packets between the devices establish the parameters and encryption keys (IKE)
  - Following this setup, “content” packets are encrypted and transmitted packet by packet (ESP)
  - CES wants the IKE exchange and maybe the ESP (content)
- TURMOIL passive capability:
  - Passive capability to detect IKE and ESP
  - Metadata record produced for every IKE exchange
  - IKE for *targeted* VPN forwarded directly to CES database
  - For *targeted* VPN, real-time decryption is performed IF CES can provide a key in time
  - Decrypted IP traffic is processed by TURMOIL apps for normal selection (VoIP, webmail, etc, etc)

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**Sounds great, but...**



- Now app streams (VoIP, webmail, etc) extracted from the tunnel carry two case notations
- Which gets put into metadata records?
- Both can be carried to PWV – but what happens after that?
- Not to mention...
  - Metadata records about VPN being stored in TOYGRIPPE
  - CES database storing IKE exchange



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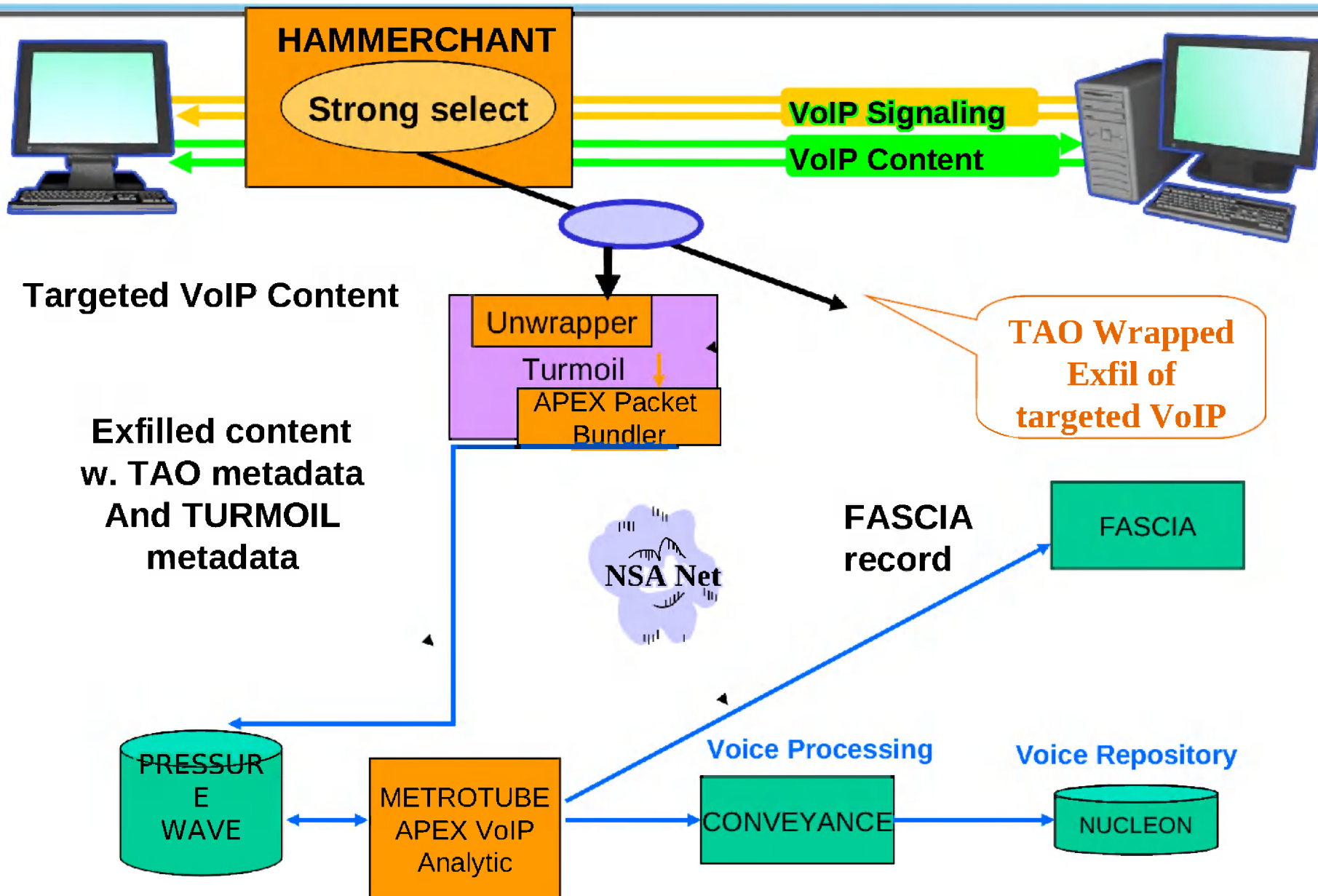
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## Example: TOYGRIPPE metadata record

- Current fields:
  - caseNotation – searchable field
  - sourceID – “The SIGAD of the site that provided the data”
- APEX proposed extension: add
  - Agent CaseNotation
  - Agent ID (UUID)
  - Passive CaseNotation
- Which caseNotation goes into searchable field?
  - Passive records won't have the APEX block
  - TAO-collected records (returned via TAO, not passive) won't have the APEX block





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**Shaping is happening now**



- Operational (or coming soon) shaping:
  - HAMMERSTONE - TCP traffic to FORNSAT, soon SSO
    - No TURMOIL involvement
  - BRAVENICKEL – one operational flow – past SSO site
  - APEX – VPN metadata by end of June
- *Independent* decisions being made about how to stuff the double metadata into legacy databases



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## So what is your job here?

- How do you want to identify the source of your data?
  - Does CaseNotation still make sense in this new world?
- You need to drive processes, systems, & databases toward a CONSISTENT answer
- Transformed systems and tools (METAWAVE, Marina, etc.) need to be designed to do more than accommodate
  - do “the right thing” (whatever you the analysts think that is)
  - Let me guess – you want everything, don’t you?



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# Questions?



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