

## Emerging Economies:

The Vulnerability Market



- **Bio**
- **Evolution**
- **60-second primer**
- **Key components defined**
- **Markets at a glance**
- **Economic Paradigm**
- **Wrap-up**
- **Questions**

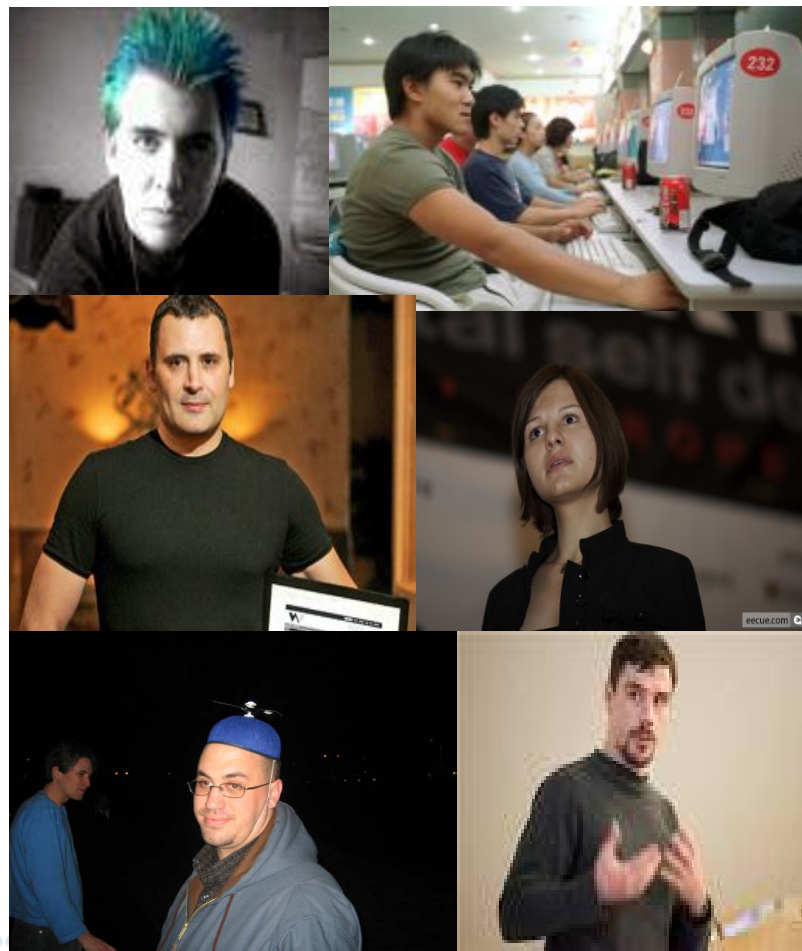


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- **Security Professional 10 years ago:**
  - a nice although unfunded group you joined once no longer considered productive or relevant.
- **Security Researcher 10 years ago:**
  - Hack for fun, Hack for fame.

- **The New Face of Security**
  - Hack for profit



- **Evolution of tools for “hacking” and reverse engineering**
  - Barrier for entry into hacking has been removed
    - Widespread access to drag and drop tools for malware and exploits
    - No more script kiddies
- **Change in focus and goals**
  - defacements → worms → botnets → targeted attacks
- **Evolution of attacks**
  - Migration from widespread and noisy to targeted and malicious
- **A traditional economic structure has evolved**
  - As well as several parasitic micro economies
    - Malware market
    - ID theft rings
    - Organized crime
- **Criminal Organizations have matured**
  - Nearly unlimited money & resources
  - Longer term focus and multi year planning
  - Mature engineering practices
  - Focus on specifics...right down to the individual
  - “cyber espionage”



- **As attacks matured, security as a profession grew with demand for abilities to specialize.**
  - MCSE certifications for security professionals
  - Academic offerings of Information Security degrees
  - Specialized certifications, such as CISSP
- **New industries emerged.**
  - Business dedicated to protecting the enterprise and consumer
  - Specialized companies protecting against ID theft and online fraud
  - Specialized hardware and tools for password protection, data protection
  - Organizations offering training to the enterprise on security practices
  - Insurance companies now offering “ID theft protection” policies
- **Products and strategies were developed to disrupt some of the negative by-products.**
  - Antivirus, IDS/IPS, Vulnerability Scanners
    - Zero Day Initiative



- **Defined:**

- An economy is the realized system of human activities related to the production, distribution, exchange, and consumption of goods and services of a country or other area.

- **Six necessary components of an economy**

- Product
- Supply
- Demand
- Currency
- Participants
- Marketplace



In the mid-20<sup>th</sup> century two economists noted that a sign of a maturing economy was a transformation from industrial and production jobs to service jobs.

## Three sectors of an economy:

- Primary sector:
  - Involves the extraction and production of raw materials, such as corn, coal, wood and iron.
    - In our Vulnerability Economy, the raw material is the flaw or “Vulnerability” itself
- Secondary sector:
  - Involves the transformation of raw or intermediate materials into goods e.g. manufacturing steel into cars, or textiles into clothing.
    - During this stage, the Vulnerability is transformed into exploit code, malware, viruses and the products which protect, defend against and scan for them.
- Tertiary sector:
  - Involves the provision of services to consumers and businesses
    - Enter the services organizations. Business has boomed in this sector, with entire companies popping up to provide a variety of “information security services”– Penetration Testing, training, etc.

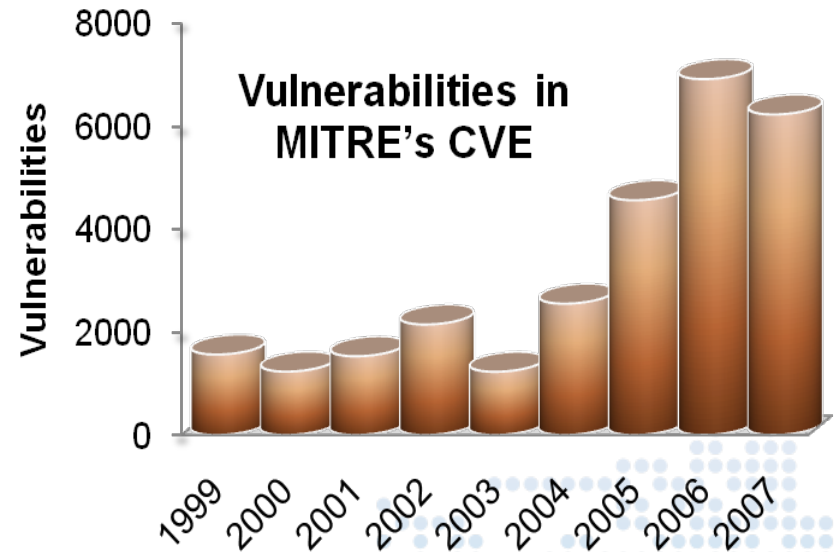
**Increased demand for services is a direct result of economic maturation!**





- **Product**
- **Supply**
- Demand
- Currency
- Participants
- Marketplace

- **100,000+ Software Products**
- **10,000+ Vulnerabilities**
- **>5000 Researchers**



- Product
  - Supply
  - **Demand**
  - Currency
  - Participants
  - Marketplace
- **Vendors**
  - **Solution/Protection providers**
  - **Consultants, Pen Testers, Analysis firms**
  - **Independent Researchers**
  - **Government**
  - **Malware markets**
  - **Organized Crime**
  - **The list could go on...**

- Product
  - Supply
  - Demand
  - **Currency**
  - Participants
  - Marketplace
- **Trade for information, intelligence**
  - **Trade for online useful wares, such as stolen CC numbers, compromised gear, botnets**
  - **Trade for exploit code, tools, help with other research**
  - **Trade for free software from vendor, trips to events**
  - **Trade for favors, or future favors (Party Admission)**
  - **Yes, money.**

- Product
  - Supply
  - Demand
  - Currency
  - **Participants**
  - Marketplace
- **The Software Vendors**
    - Most use a modified currency system of praise for positive behavior, contracting gigs, etc.
  - **Protections Providers**
    - Most have independent research teams to ferret out unknown vulns, some contract with third party companies for information
  - **Services Providers**
    - Most try to discover some 0day themselves for credibility, some purchase from others or hire out research
  - **Independent Researchers-**
    - Generally looking to make a living doing what it is they do well and enjoy. Often this means seeking resume building for employment and often selling directly to third parties.
- 

- Product
  - Supply
  - Demand
  - Currency
  - Participants
  - **Marketplace**
- **Zero Day Initiative**
  - **iDefense**
  - **Wabasabi Labs**
  - **Digital Armaments**
  - **ImmunitySec**
  - **Netragard/SNOSoft**
  - **Government, Nation States**
  - **Black market, organized crime**

# Key Vulnerability Markets at a Glance

## Vendor Partners

- Vulnerabilities Purchased for AV/IDS/IPS protections
- Vulnerabilities reported to affected vendor
- Motivated to protect customers

## Brokers

- Vulnerabilities are commoditized- bought and sold like an MP3
- Knowledge based on a subscription/membership or purchase of product and services
- Not motivated to protect users

## Underground

- \$\$ and information exchanged based on trust relationships
- Organized crime, individuals and .mil
- Not motivated to protect users



## The market for narcotics and medicine include:

- **Legitimate market –**
  - everything from over the counter pain relief, to prescription narcotics
- **Illegitimate market –**
  - Heroin, methamphetamine, marijuana, cocaine, etc



## The market for vulnerabilities include:

- **Legitimate market-**
  - Legitimate vulnerability discovery and research
  - Useful tools to aid in research and development of secure products
- **Illegitimate market-**
  - Malware, exploit code, viruses etc.



- The security economy has evolved during the age of information, and is now a global economic structure- with many interconnected and collaborative micro economies.
- Economic Structure in place for years- created by consumer demand for secure products.
- Demand and participants evolving- economy moving through “phases”.
- The industry may never compare in size to the pharmaceutical industry but it can have just as much impact on society-- chiefly through broad failures in information security.

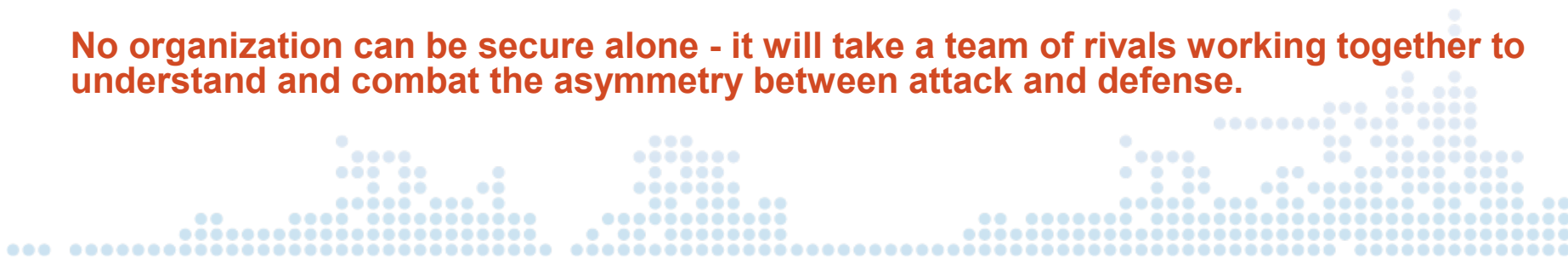




## Where do we go from here?

- **The negative by-products of the InfoSec economy are not going away- we need to increase the ROI for legitimate markets.**
  - Legitimate marketplaces for vulnerabilities can help keep that knowledge in the hands of defenders.
  - There is still little incentive for existing markets to handle the information properly.
  - Value of a vulnerability decreases once it's reported to the affected vendor
- **As surely as security advances are discovered, so will new security attacks. Defenders must adapt and keep pace.**
  - More positive cooperation with vendors
  - Increased collaboration between protections organizations
  - Building of stronger alliance and partnership within the security research community
- **We must continue to invest in disruption of the illegitimate sector.**
  - Increase the cost of doing illegal activities
    - Training, tools, and technical assistance for law enforcement
    - Encouraging appropriate penalties for malicious behavior
  - Provide security researchers access to programs, tools and opportunities that give them a legitimate outlet for their skills.

**No organization can be secure alone - it will take a team of rivals working together to understand and combat the asymmetry between attack and defense.**



# TippingPoint®

Questions?

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