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The Hidden Advantage Among Digital Natives within Bug Bounty Programs

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Introduction

- **Bug Bounty Program:**
 - Service provided by companies, organizations, and websites that incentivize white hat hackers to disclose any bugs, vulnerabilities, and security exploits identified within their system or product
- **Digital Natives:**
 - People born *after* 1996 who have *grown up* in the digital age
- **Digital Immigrants:**
 - People who were born *before* 1996 who had to *adapt to* the new immersion of technology

Background

- Marc Prensky's 2001 proposition in the Article, *On the Horizon*
- Dr. Tully's Research Experiment
 - Population of 4,500 Young People (Ages 15-26)
 - 80 Additional Qualitative Interviews
 - Initial questions identified participant's interest in technology
 - Later questions determined participant's outlook on society in many aspects of life
- **Technology I:** Determined by spatial, factual, and social terms
- **Technology II:** "Hardware is not designed for specific tasks, and it is consequently, suited for nearly any task"

Research Question: Focusing on the younger generations' ability to utilize technologies in unanticipated ways, how could their relatively different way of thinking provide security insights or innovations that tend to be overlooked by more experienced security professionals?

Hypothesis: Today's younger generation, born into a fully digitized world, offers unique insight into how commercial products are used, and by extension, provide often overlooked perspectives into the vulnerabilities of those applications.

Research Question & Hypothesis



Survey Components:

Minimal Effort Required: Instinctive Responses

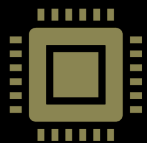
Fill In Response Format:
Encourages Creativity

Unambiguous Questions: Technical
& Non-Technical Participation



Unique Way of Thinking = Insightful Perceptions?

*Find an additional use for this
product that is as far off as
possible from its intended one*



Insightful Perceptions = More Effective Vulnerability Identification?

*Identify a realistic yet
extraordinary vulnerability that
an attacker could exploit within
this product*

Survey

Participation & Groups

- Participation
 - Desired Sample Size of 100 Participants
- Groups
 - Technical & Non-Technical Category Per Generation

Generation	Age Range
Generation Z	5-25 Years
Millennial/Generation Y	26-40 Years
Generation X	41-55 Years
Baby Boomer	56-76 Years

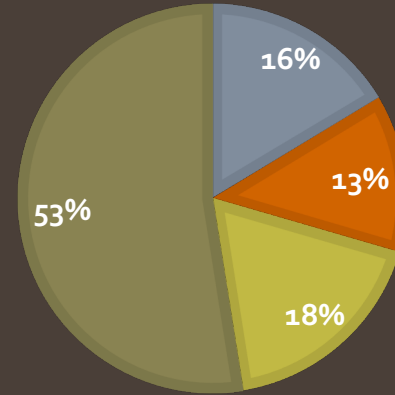
Classification

Classification Number	Use Basis	Vulnerability Basis
1	Same as the intended use or not attempted.	Low Severity Level (Limited adverse effect on organizational operations/assets).
2	Contains part of the intended use.	Can use information to find other vulnerabilities
3	Similar to the intended use.	Can use information to exploit known vulnerabilities
4	Non-primary (additional but evident use)	Moderate Severity Level (Serious adverse effect on organizational operations/assets).
5	Non-primary (additional but not evident use)	Can use information to gain access to security settings.
6	Unnoticeable	Takes control of the device.
7	Inconspicuous (very unnoticeable)	High Severity Level: (Catastrophic adverse effect on organizational operations/assets).
8	Innovative (Hard to produce)	Leakage of highly sensitive information.
9	Unique (Difficult to produce and first-time hearing)	Significant data loss or downtime.
10	Extraordinary (Eye opening)	Zero-Day Exploit if made public

Results

GENERATION REPRESENTATION

■ Baby Boom ■ Gen X ■ Millennial ■ Gen Z



- Participant Technical Background:
 - 39% Cyber Security Background
 - 54% Programming Experience
- Participant Exposure to Technology
 - ~97% use Technology on Daily Basis
 - Participant Qualifications:
 - 82% had completed some college

Findings & Analysis

Generation	Technical	Non-Technical
Baby Boomer	UC: 2.539, V: 2.995	UC: 1.732, V: 3.527
Generation X	UC: 4.330 , V: 4.208	UC: 1.25, V: 2.208
Millennial/Generation Y	UC: 4.066, V: 4.885	UC: 3.299, V: 4.365
Generation Z	UC: 2.493, V: 4.269	UC: 3.520, V: 4.043

Vulnerability Identification:

1. Technical Millennials
2. Non-Technical Millennials

Use Case Invention:

1. Technical Generation X
2. Technical Millennials

Future Scope



Proposition of New
Entry Level Cyber
Opportunities



Collaboration with
Bug Bounty
Programs

Questions

