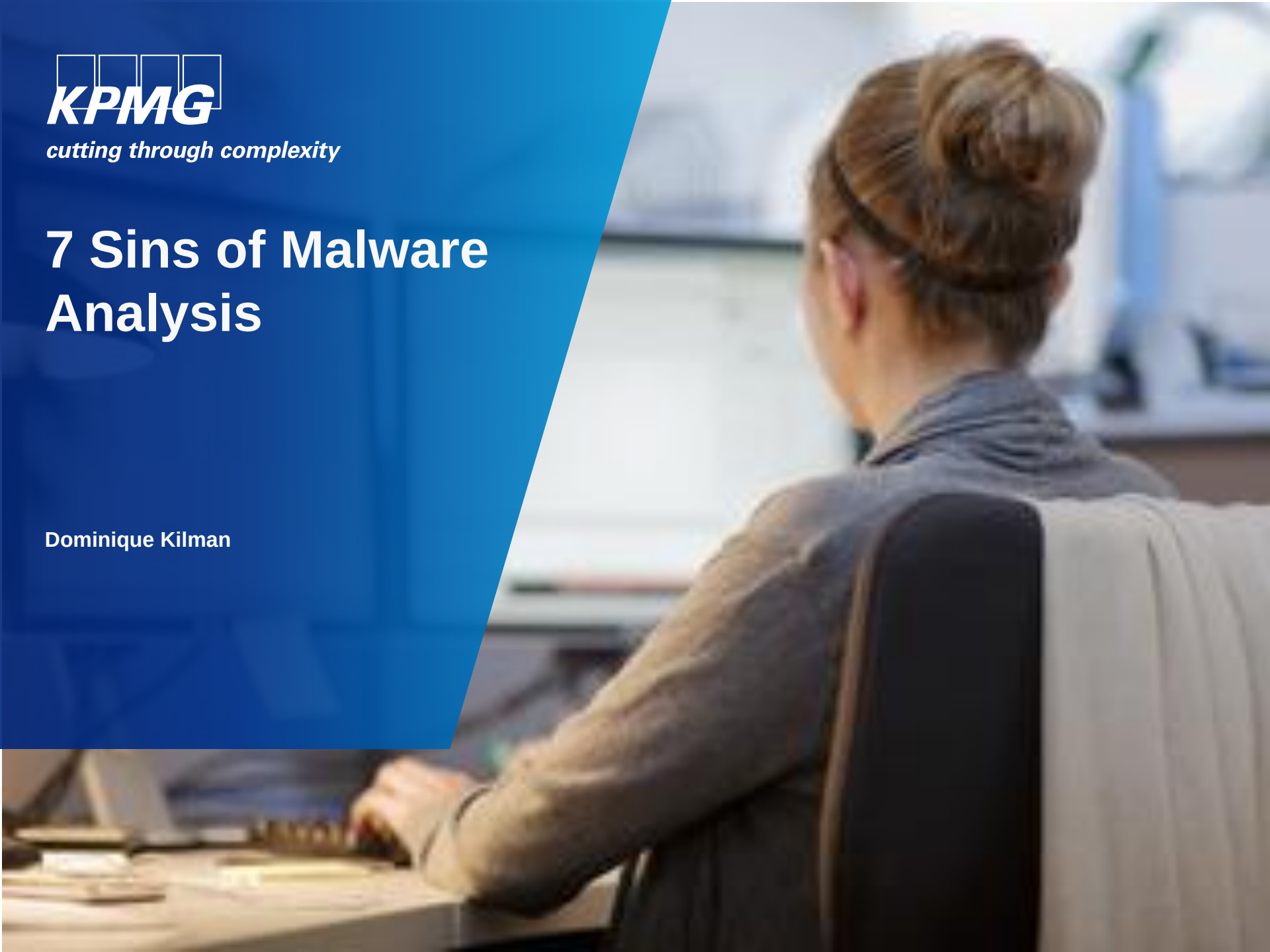
KPMG

cutting through complexity

7 Sins of Malware Analysis

Dominique Kilman



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Programmer and software tester

Security geek for over 10 years

- Incident response
- Red teaming
- Modeling and simulation of security protocols
- Forensics

CISSP, CISM, GCIH, GREM, GAWN … a few more ☺

Why we are here…

- Discuss the common mistakes that analysts make when performing malware analysis
- Give new analysts some of the “gotchas” to avoid
- Provide tips for experienced analysts to help them get better

Complacency

- Not keeping up with new developments and tools in the field
- Focusing on a single tool to get answers
  - Olly may be your go-to for reversing, but don’t forget that Immunity or IDA may have features that will speed up your process (depends on the goal)

Sampling of malware analysis tools released/updated in last 6 months:

Procdot

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HookAnalyser 2.4

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PeStudio added VirusTotal support

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REMnux v4: added ~ 15 new tools including:

- OfficeMalScanner
- ProcDot
- ExifTool

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CrowdInspect

Isolation

- Working inside a bubble may help you focus and get tasks done, but learning from others and asking for help can make you a better analyst
- Everyone can use a different perspective when they hit a wall

Connection

- Running malware on a live network can lead to infections of the network
- Your now-infected analysis machine may start attacking others and spreading more malware
- You do not want to be the reason your company (or ISP) gets a call from the authorities!

Browsing

Clicking on links in phishing e-mails or connecting directly to IPs or URLs embedded in malware could infect your machine

- And the rest of the network depending on the nature of the malware

Malware sites may be monitoring their C2 sites

- They may be monitoring to see if their tool has been detected
- They may try to identify researchers
- They may provide different results for connections coming from unknown IP, domain or user agents

Infecting

Sending malware to other analysts or coworkers may be necessary - but infecting those people is a sin

- Use password-protected compressed files (this will also prevent mail systems from quarantining your messages)
- Make sure the recipient knows that the file may be malicious
- Changing the extension (eee vs. exe) can prevent accidental infections

Malware stored in regular compressed files or as executables can and does get cleaned as AV signatures update

- Getting the malware back from the AV company often does not work
- If the exe was in e-mail, likely the e-mail system has also removed the file

Exposure

Online sites that allow you to upload malware sample for quick analysis are nice, however:

- Attackers may be monitoring for just such information
- Organization may not want to disclose publicly that they have a specific infection (or any infection)

Always get permission before uploading samples to online scanning sites

Automation

Automated tools are a fast way to get results, but they may miss things.

It never hurts to manually analyze specimens, especially when automated tools give conflicting answers:

- One tool identifies a file as suspicious
- Another finds no suspicious indicators
- The third will not execute the file at all

Keep in mind

… many of the behaviors here are not BAD in and of themselves…

- The problem comes in when you stop planning what you are doing or do not think before you act
- Everything in moderation

The goal here is to get you to think before you do you analysis…

- Set up your analysis environment correctly
- Make sure you have an understanding of the goal (yours and the organization's)
- Most of all keep learning!

Are there any virtues?

of course!

Experiment

- Try out new tools
- Try new methods of analysis
  - New automation options (in moderation of course!)
  - New sites that provide information
- Attend conferences and training to learn new methods

Contribute

Be involved in the community

- Blog
- Tweet
- Develop tools

Try to make the state of the art better

Critique

- When you try out those new tools and methods - give **constructive** criticism
- Help developers make the tools better
- For those getting the critique - be receptive to the comments and try not to take them as a personal attack

Verify

- Just because you are paranoid…
- Checking that your environment is configured correctly before you start analysis
- Double check before you send files to others to make sure they are shared safely

Mentor

- Help others develop their skills
- The more knowledgeable, capable people out there - the better chance of winning

Share

When you can:

- Share indicators
- Share methodologies
- Share knowledge

This is the flip-side of exposure - sharing when appropriate and with permission

Final thoughts

- The theme of the virtues is about making the state of the art of malware analysis better
- The more we help each other, develop and enhance our TTP, the more we can focus on the “hard problems” (or as I call this, the fun stuff)
- We should think as a community where we are here to help, not as competitors who need to “beat” the other analyst

Questions?

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