MEMORANDUM

TO: CSCE 315 – ALL TEAMS
FROM: NESSAROSE THROPP
SUBJECT: STEGANOGRAPHIC SYSTEM REQUIREMENTS
DATE: APRIL 20, 2015
CC: W. DAUGHERITY, P. RITCHEY, Y. QU, D. XIAO

According to a recent article in The National Enquirer[1], information hiding systems based on manipulation of the least significant bits of images are vulnerable to certain attacks which may not only reveal *that* an image contains hidden data, but also determine *what* that information is. At Munchkin Incorporated, the security and privacy of our clients is and remains our highest priority. For this reason, I have decided to change the requirements of the information hiding system being developed by your team for use by Munchkin Incorporated.

We now require an information hiding system which **does not** hide secret information in the least significant bits of images. Your team may use any media besides images to hide secret data in any way you like. However, if your system uses images, the embedding must be done other than in the least significant bits. Other acceptable media to exploit for information hiding include (but are not limited to): text, audio. video/animation, time series, games. We at Munchkin encourage you to **be creative**!

We anticipate that Elphaba International will not be far behind in their efforts to copycat our technology. However, we do not expect them to learn of this change for some time. Therefore, any software you develop for analyzing images to detect information hidden by least significant bit manipulation is still useful. Eventually, Elphaba will manage to learn the information hiding system which your team will implement, so we will need new methods for analyzing Elphaba's published materials in order to detect information hidden by that system.

On the next page you will find an amended rubric for your team's compensation for this project. We trust that your team's adherence to Agile software development methodologies and Test-Driven Development will allow your team to respond to this change, and even welcome it!

Dancing through life,

Nessarose

Nessarose Thropp
President and CEO
Munchkin Incorporated

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[1] http://www.nationalenquirer.com/true-crime/critical-vulnerability-found-in-popular-information-hiding-system
The article has been removed from the website due to national security concerns.

AMENDED RUBRIC (JUST WHAT CHANGED)

- Dummy LSB image stegosystem: ~~15 pts~~ 5 pts
  - Correct embedding of bits in the 1-LSB plane
  - Correct extraction of bits from the 1-LSB plane
  - ~~Correct embedding of bits in the 2-LSB plane~~
  - ~~Correct extraction of bits from the 2-LSB plane~~
  - Colors: Grayscale ~~and RGB~~
  - ~~Correct PSNR reported~~

- Attacks on LSB image stego: ~~15 pts~~ 10 pts
  - At least ~~3~~ 2 working attacks on LSB image stego

- A New Stegosystem (ANS): 10pts
  - Does not use LSBs of images
  - Correct embedding of bits
  - Correct extraction of bits

- Attacks on ANS Stegosystem: 10pts
  - At least 1 attack which can detect objects created by ANS
  - At least 1 attack which can disrupt/destroy information hidden by ANS