Non-Digital Data Repository A New Dimension for Cyber Security

Exploiting Nanotechnology for Storing data off the digital grid, outside the reach of hackers and intruders



Packing molecules in a particular configuration is one way to express information without reduction to a string of bits. Using chemical language instead of bitwise storage, keeps the full body of that data accessible only to a reader who has access to this "Rock of Randomness". Upon demand the chemical language is translated to binary strings for computer consumption.

For at least nine long months, a foreign agent was secretly reading top secret US government information. It could happen because stored bitwise data can be stealthily read without leaving a trace, while the custodian of the data is falsely assured by his cyber defense. The data captured in the Rock of Randomness is expressed via the spatial configuration of macromolecules, and measured through a complex conductivity reading via a large variety of measuring ports.

Modern nanotechnology manufactures a set of Rock duplicates, used by communication parties for top secret information exchange. Especially useful for quick recovery from a major breach as sustained by the US government in 2020.

Using the "Rock of Randomness" as a source for cryptographic keys will upgrade the security posture of any modern cyber security setup.

The "Rock of Randomness" may be used to mint very high denomination coins, which cannot be counterfeited because the manufacturing of the Rock is a one-way operation. Given a Rock, it is infeasible to duplicate it. Only the original manufacturing input can build duplicates.

The "Rock of Randomness" built on a large scale is deemed to serve as a 'grounding' for the many coming national digital currencies -- ensuring the integrity of the monetary system.

The "Rock of Randomness" built on a small scale will be fitted into every phone and personal communication device, providing un-hackable unilateral randomness for a growing list of applications.

Patents granted, Peer-Reviewed Published (Cambridge University Press: 04 February 2019), further developed at Case Western Reserve University (Macromolecules and Computer Science), Sponsored by Oak-Ridge National Laboratories.

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