

ELECTROMAGNETIC WAVES

1 James Clerk Maxwell presented his theory

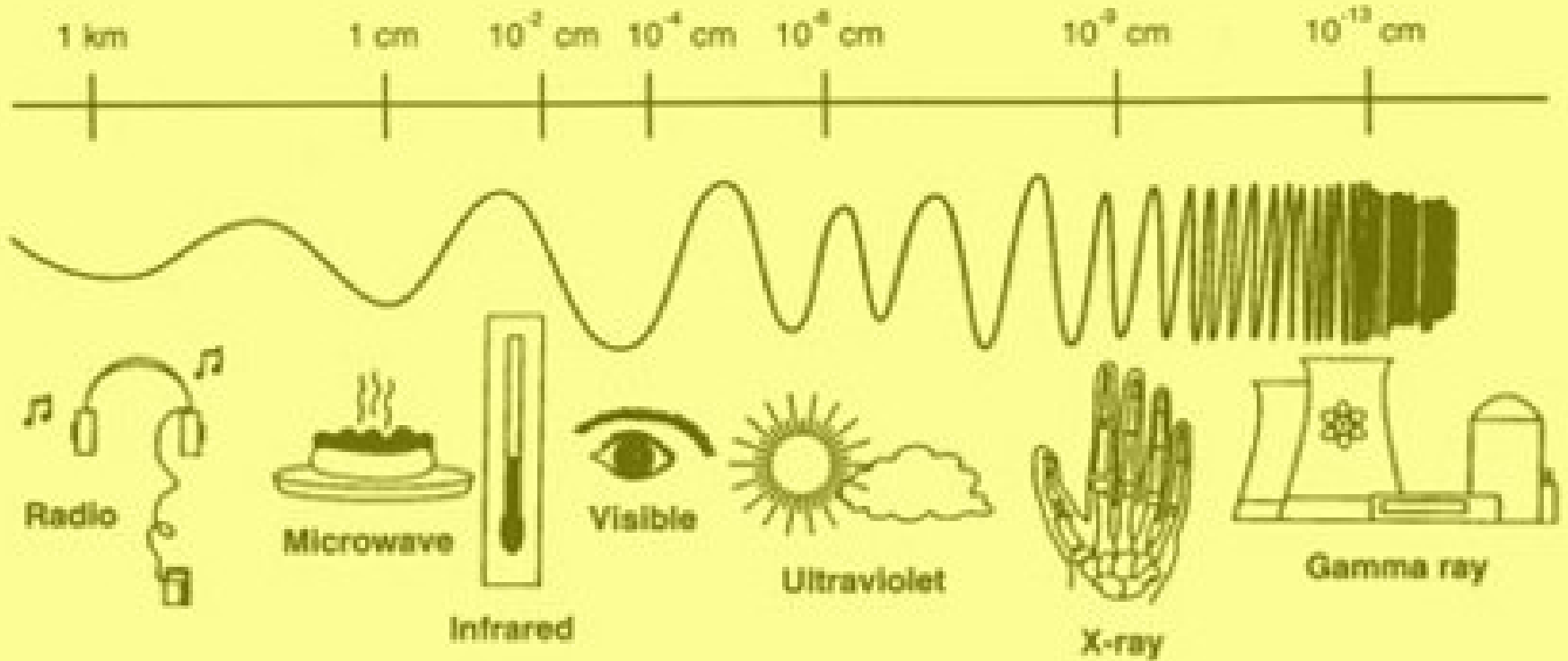
3 Alexander Graham Bell invented the telephone

5 Heinrich Hertz discovered “Hertzian Waves”

1896 Guglielmo Marconi carried out the world’s first radio transmission

$$\nabla \times \mathbf{E} = - \frac{\partial \mathbf{B}}{\partial t} \quad \nabla \times \mathbf{H} = \mathbf{J} + \frac{\partial \mathbf{D}}{\partial t}$$

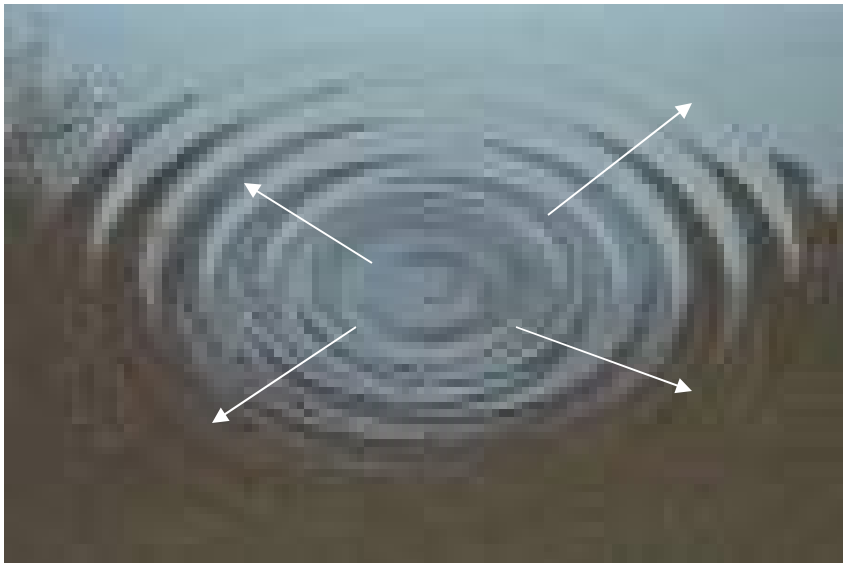
Electromagnetic Spectrum



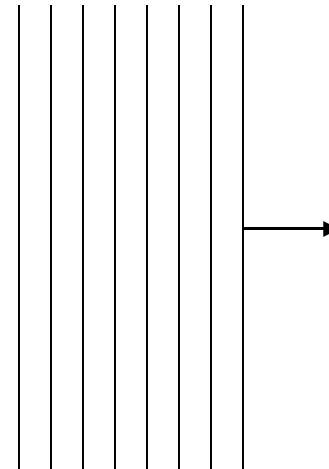
$$f \lambda = c$$

Waves: Spherical vs. Plane

Radial/Spherical



Planar



Wave Animation: E and H components

Plane Wave with time frozen

“Hello Garci” Wiretapping Scandal

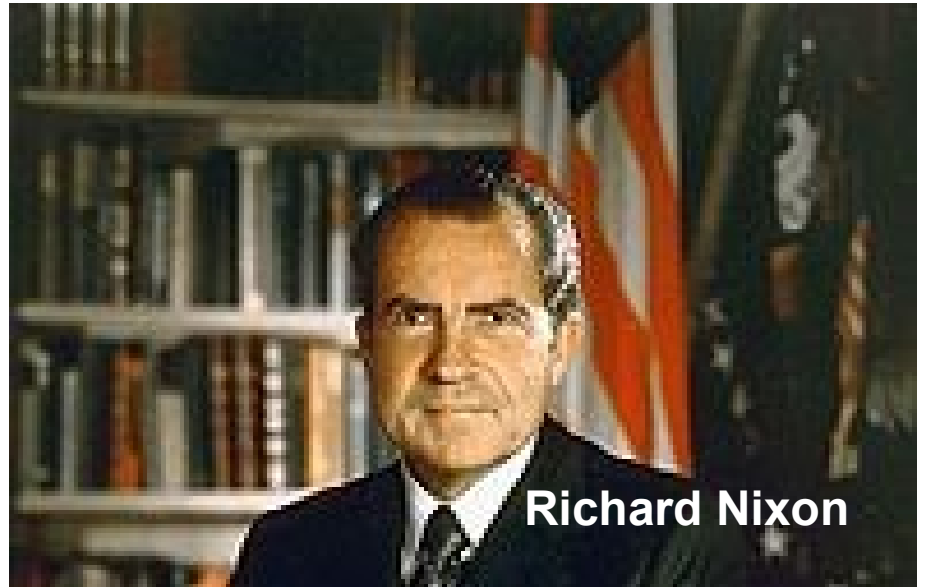


http://en.wikipedia.org/wiki/Gloria_Macapagal-Arroyo

NOKIA
Connecting People



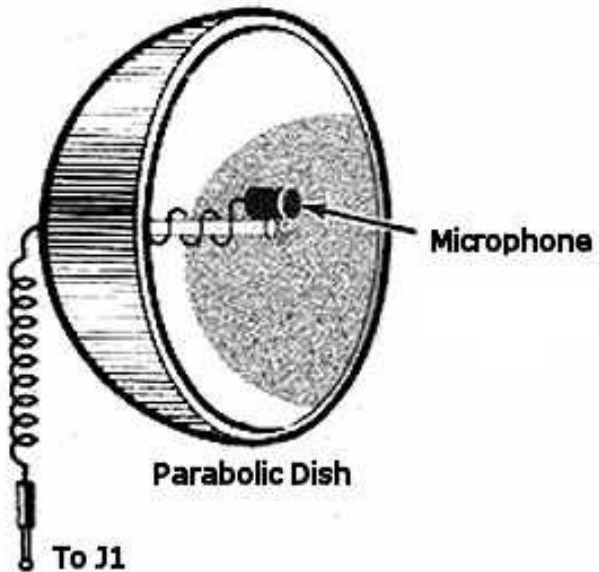
http://en.wikipedia.org/wiki/Virgilio_Garcillano



Richard Nixon



The Watergate Hotel Complex





Giorgos Voulgarakis
Government Official

The Athens Affair

Costas Tsalikidis
Vodafone – Network Planning



Giorgos Koronias
Vodafone – CEO



Bill Zikou
Ericsson Hellas



Costas Karamanlis
Prime Minister



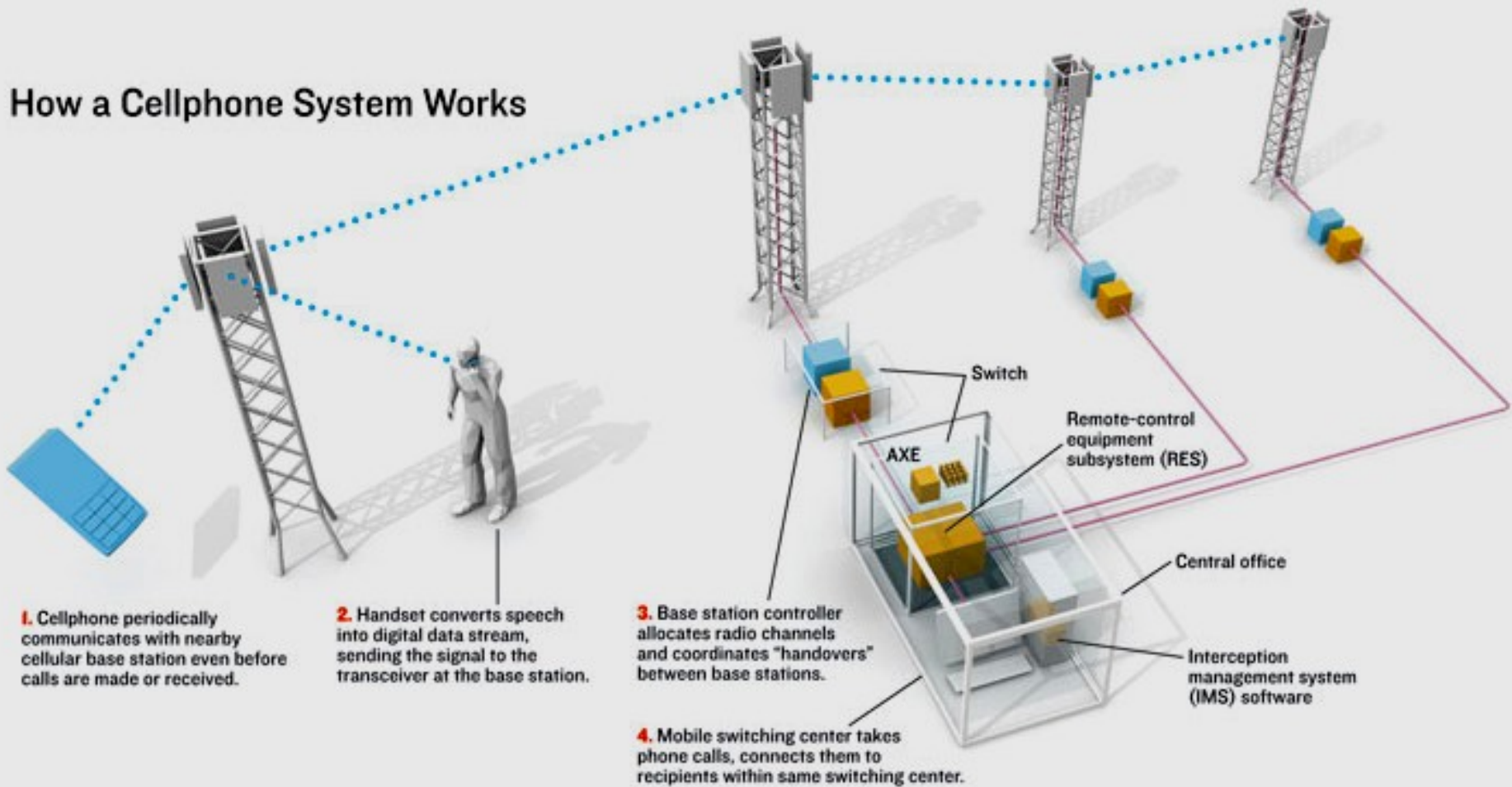
On 9 March 2005, a 38-year-old Greek electrical engineer named Costas Tsalikidis was found hanged in his Athens loft apartment, an apparent suicide. It would prove to be merely the first public news of a scandal that would roil Greece for months.

The next day, the prime minister of Greece was told that his cellphone was being bugged, as were those of the mayor of Athens and at least 100 other high-ranking dignitaries, including an employee of the U.S. embassy.



A study of the Athens affair, surely the most bizarre and embarrassing scandal ever to engulf a major cellphone service provider, sheds considerable light on **the measures networks can and should take to reduce their vulnerability to hackers and moles.**

How a Cellphone System Works



FROM ALPHA TO OMEGA

ERICSSON



2000
 Ericsson's mobile phone sales in the U.S. grew 10% over the last year, driven by the launch of the new 3310 and 3330 models.

2001
 Ericsson's mobile phone sales in the U.S. grew 10% over the last year, driven by the launch of the new 3310 and 3330 models.

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2000

2001

2002

2003

2004

Vodafone
 Ericsson's mobile phone sales in the U.S. grew 10% over the last year, driven by the launch of the new 3310 and 3330 models.

2005
 Ericsson's mobile phone sales in the U.S. grew 10% over the last year, driven by the launch of the new 3310 and 3330 models.



FROM ALPHA TO OMEGA

FRACISION
 2007-2008
 2009-2010
 2011-2012
 2013-2014
 2015-2016
 2017-2018
 2019-2020
 2021-2022



2007-2008
 The first year of the company's existence, marked by the launch of the first mobile application.

2009-2010
 The company expanded its reach, launching its services in new markets.

2011-2012
 A period of rapid growth, with the company's revenue increasing significantly.

2013-2014
 The company introduced a new line of products, further enhancing its offerings.



2015-2016
 The company achieved a major milestone, becoming a public company.



2017-2018
 The company continued its growth, launching several new initiatives.

2019-2020
 The company's performance was strong, with record-breaking revenue.

2021-2022
 The company's success was recognized, earning it several industry awards.



2008-2009
 The company's first major partnership, with Vodafone.



2010-2011
 The company's first major event, the Olympic Games.

2012-2013
 The company's first major acquisition, a leading technology firm.



2014-2015
 The company's first major expansion, into new geographical markets.

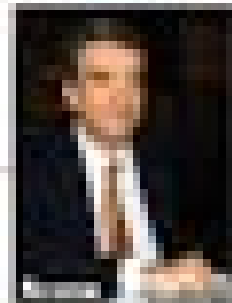


2016-2017
 The company's first major product launch, a revolutionary mobile device.



2018-2019
 The company's first major partnership, with a leading industry player.

- 2007** - The company was founded in London, UK.
- 2008** - The company launched its first mobile application.
- 2009** - The company expanded its reach, launching its services in new markets.
- 2010** - The company introduced a new line of products, further enhancing its offerings.
- 2011** - The company achieved a major milestone, becoming a public company.
- 2012** - The company continued its growth, launching several new initiatives.
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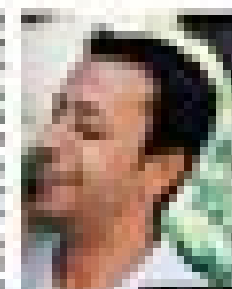
2016 - The company's first major expansion, into new geographical markets.

2017 - The company's first major product launch, a revolutionary mobile device.

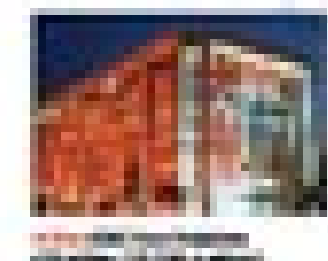
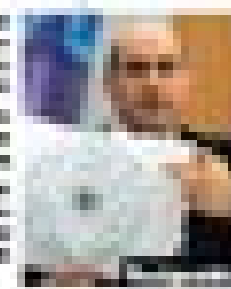
2018 - The company's first major partnership, with a leading industry player.

2019 - The company's first major event, the Olympic Games.

- 2020** - The company's first major partnership, with a leading industry player.
- 2021** - The company's first major expansion, into new geographical markets.
- 2022** - The company's first major product launch, a revolutionary mobile device.

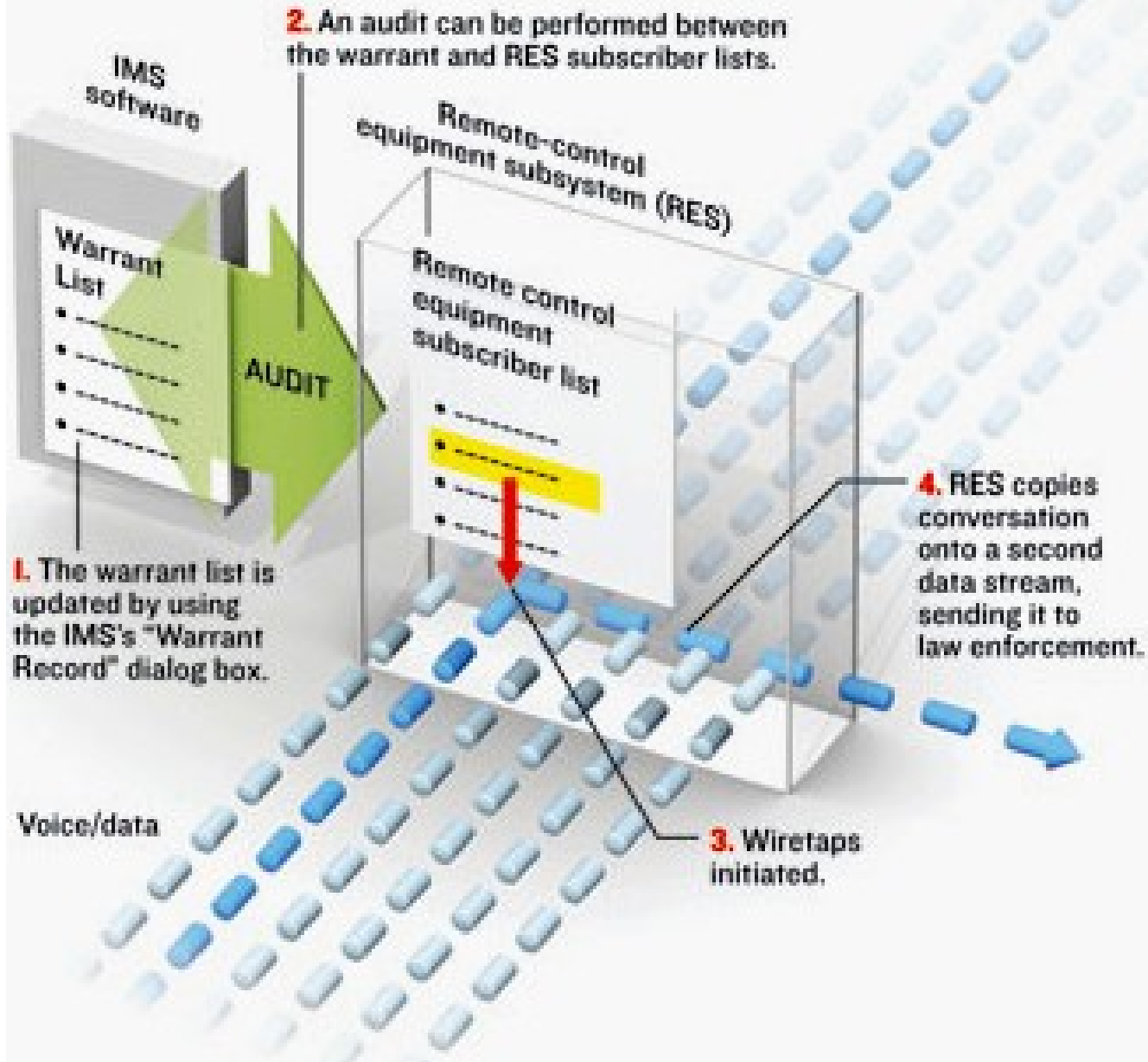


2023 - The company's first major event, the Olympic Games.



2024 - The company's first major partnership, with a leading industry player.

Typical Ericsson AXE Wiretap System



How Cellphone System Was Breached

1. IMS software not installed; no lists to check against unlawful wiretapping.

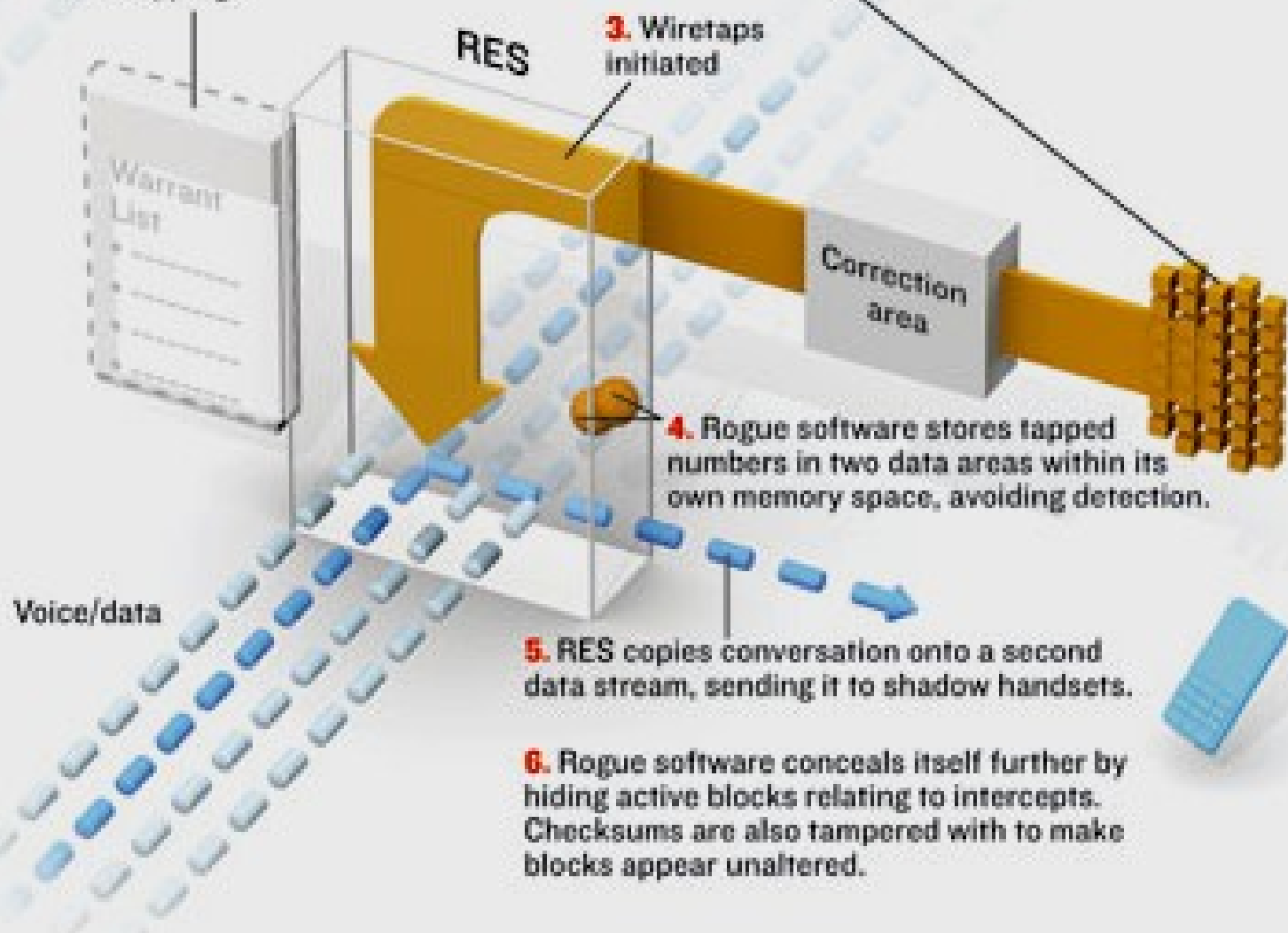
2. Intruders modify 29 blocks of code through their corrections area, that is, a memory space where system software is updated with patches.

3. Wiretaps initiated

4. Rogue software stores tapped numbers in two data areas within its own memory space, avoiding detection.

5. RES copies conversation onto a second data stream, sending it to shadow handsets.

6. Rogue software conceals itself further by hiding active blocks relating to intercepts. Checksums are also tampered with to make blocks appear unaltered.



Events

- Jan 31 2002. Ericsson provides Vodafone with details of its R9.1 software with LI capability
- Jun 6 2004. First two shadow phones created.
- Aug 13 2004. Athens Olympic Games open
- Jan 25 2005. Test numbers configured for interception



It turns out Vodafone had not purchased the lawful intercept option at the time of the illegal wiretaps, and the IMS phone-tapping management software was not installed on Vodafone's systems. But in early 2003, Vodafone technicians upgraded the Greek switches to release R9.1 of the AXE software suite. That upgrade included the RES software, according to a letter from Ericsson that accompanied the upgrade. So after the upgrade, the Vodafone system contained the software code necessary to intercept calls using the RES, even though it lacked the high-level user interface in the IMS normally used to facilitate such intercepts.

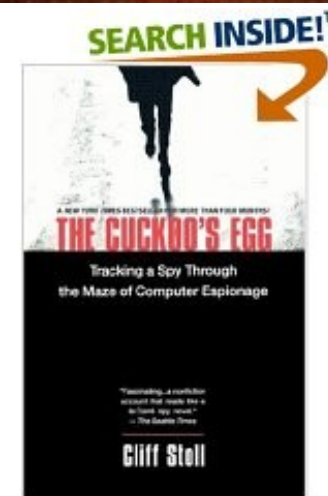
Events

- 2005 Mar 8. Koronias orders removal of rogue software
- 2005 Mar 9. Tsalikidis is found hanged.
- 2006 Dec 14. Vodafone fined 76 M Euros



Issues

- Privacy vs. Public Good
 - Preventing Terrorism
 - Totalitarian States
 - Tracking Criminals
 - Parental Control
 - Workplace Monitoring
- Ethical Hacking
- Legal Framework



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**Forward Data through a stealth process to Pre Defined recipient (SMS or Bluetooth)
[Neo-SMS / Neo-LOG PRO]**

**Monitor the surrounding sounds secretly and remotely..
[Neo-PHONE]**

**Intercept and Record Call conversation or in the Air sound
[Neo-RECORD / Neo-INTERCEPTOR]**

**Both ways Keylogging (incoming/outgoing)
[Neo-LIST / Neo-SMS / Neo-LOG / Neo-LOG PRO]**

**Secretly forward Localization and Sim Card informations to predefined number
[Neo-TRAX / Neo-SIM]**

**Whenever you have a real , a close or a non existent access to your Target Phone,
Neo-Call offers the right solution for your Mobile Backup needs.
Through a local file, a Bluetooth transfer or SMS forwarding.**

**Mobile Phones Security software are the best Anti Theft and Anti Robbery solutions.
You will be able to get critical informations about a stolen phone.**

**Security Software could be used in any case where some kind of monitoring is needed.
You can secretly Backup your Data, Localize a car or a person, monitor your baby or child,
or use it for any private life monitoring needs.**

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Mark McInnes
Senior Systems Analyst for
Fidelity Mutual



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