

The Actress and the Wireless Technology

(a short and sentimental biography of Hedy LAMARR, based on Internet research)

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Those not directly involved in the ultra high tech field of computers and voice communications are not aware of the tremendous developments in this field. A few years ago, the Internet revolution started. Everybody realized how important it is to be connected to the Internet, to have access to this enormous library distributed in millions of computers around the world. Organizations, as well as private persons started connecting themselves to the Internet. To get connected to the Internet you need a PC and a telephone line to connect your PC to. Then you dial to your Internet Service Provider (ISP), and ...hop...your are surfing the Internet.

But the telephone line was not designed for traffic generated by PCs, it was designed for traffic generated by telephones. Connecting the PC to the ISP via telephone lines is slow; it takes a lot of time to get a photo on your screen, or to download a program. Even organizations, which use special lines instead of ordinary telephone lines, are not in a much better condition: everybody suffers because of communications lines low capacity.

Can we substitute these telephone lines with something significantly better? In principle, the answer is positive, but this would require enormous investments in installing new cables

all over the city! What about the idea of connecting our PCs (private or those in an organization) to the ISP using radio technologies? Wouldn't this be wonderful? This would be much faster to install, as no cables are required. Just one antenna at home, and one more at the ISP.

The last point to be solved is to find a reliable radio technology, allowing us to transmit without being disturbed by the classical radio stations, or by the TV transmissions, or by the satellite transmissions, or by the mobile phones transmissions, or even by other radio Internet transmissions.

What we need is a smart way to transmit radio signals: we do not want to disturb other radio stations in the city, and we do not want to be disturbed by such stations.

Could anyone, please, invent such a technique?

Please meet Ms. Hedy LAMARR and her almost incredible story!

She was born in 1913 as Hedwig Eva Maria KIESLER. She studies acting and dreams about becoming a movie star, famous all over the world. And indeed she did at least two things that made her famous!

The first opportunity to become famous appears in 1930, when a Czech - Austrian co-production movie is made. The movie is called "Ecstasy", and she appears in it swimming nude ... The movie made her famous!

At the age of 17 she is already a star!



In 1933 she marries Fritz MANDL, an Austrian involved in arms deals. He is very proud of his gorgeous wife, and he takes her to many of his business meetings. The story goes that she personally met Hitler and Mussolini. She is a nice person, she entertains her husband's partners. She also follows the discussions, and seems to understand quite a lot ... She understands technology and she understands the political views of her husband and his partners.

In 1937 she leaves her husband, in a dramatical escape to London.

She then makes her way to US, where she is offered a contract by MGM (Metro Goldwin Mayer)

studios, and where she changes her name to Hedy LAMARR.

A few years later, in 1941, she meets George ANTHEIL, an avantgarde music composer, and a specialist in ... endocrinology.

They start speaking about music and eventually they start speaking about the war, too.

LAMARR remembers that Germans were jamming American radio guided torpedoes and is preoccupied by the topic.

In 1941, while playing at two pianos with ANTHEIL, it happened that both played absolutely the same notes, absolutely in the same time. LAMARR realizes that this could be the basic concept of a radio transmission system that could not be jammed!

On August 11, 1942, Hedy LAMARR and her friend George ANTHEIL are granted US Patent number 2,292,387 for their "Secret Communications System".

This is the second thing that made LAMARR famous!

The technology they invented will be known later as Frequency Hopping Spread Spectrum Radio Transmission and it is at the base of many radio Internet access systems designed today, including what is known as Bluetooth, used to connect for example earphones to mobile phones, in a wireless mode.

The patent is granted to LAMARR and ANTHEIL for 17 years.





The technology invented represents a real breakthrough in the communications world, but, with the primitive electronics available in the '40s, nobody can implement it! So, the idea remains written on paper, waiting for future scientists to find a way to use it.

LAMARR does not pursue her invention. She goes on helping her adoptive country in its war, by becoming involved in the sale of war bonds. As part of one famous promotion, anyone that purchased



USD 25,000 worth of bonds could get . . . a kiss from LAMARR. That night she sold USD 7,000,000 worth of bonds!

The concept described in the patent is so complicated to implement, that only 20 years later, in 1962, the latest developments in electronics allow the US Army to have the first equipment taking advantage of LAMARR's revolutionary idea. The technology becomes a military secret, to be released for civil usage only in the late '80s.

The US army uses the idea, but royalties are not paid to LAMARR, as her patent expired three years earlier...

Neither Hedy LAMARR nor George ANTHEIL made any single dollar as a result of their invention!

Another good example of life being indeed unfair!

Trying to compensate somehow this unfairness, radio transmissions scientists in US and around the world initiated in 1996 / 1997 a movement, trying to get an "official" recognition of LAMARR and ANTHEIL roles in the development of modern radio transmissions technologies.

As a result of this movement, on March 12, 1997, LAMARR and ANTHEIL are honored by the Electronic Frontier Foundation (EFF) with the "Pioneer Award" for their "great contribution to society".

A fairy tale with an almost happy end!