

**Internet access in the municipality of Rabka-Zdrój based on the network
created by WIKNET**

Dariusz Nogawka

Slide 1



I welcome you warmly. My name is Darek, I represent Studio WIK company. In shorter alternative WIK. It's an honor for me to be able to present you with issues related to broadband Internet technology in the town Rabka-Zdrój. I would like to share with you our experiences related to the implementation of broadband Internet in the municipality Rabka-Zdrój and the surrounding area. We also want to exchange experience and knowledge on the subject with you.

Slide 2



The subject of my presentation will be: Broadband network, and its use in the area covered by the activities of our company. Municipality Rabka-Zdrój is located in the southern part of Malopolska. It is located at an altitude of over 560 meters above sea level. Terrain will be a factor in plus for the development of technology, about I will talk.

Slide 3



The company Studio WIK has its headquarters in Rabka-Zdrój. WIK is present on market since 1998, as industry of internet suppliers since 2004. Our range currently take the place of the four counties: Nowotarski, Limanowski, Suski and Myślenicki.

Slide 4



SIEĆ SZEROKOPASMOWA W GMINIE RABKA-ZDRÓJ

WIKNET
internet provider

- Historia firmy i pomysł na zbudowanie i wdrożenie infrastruktury szerokopasmowej.
- Problem w infrastrukturze telefonicznej
- Technologie dostępu (przewodowe, bezprzewodowe) np. DSL, 3G, LTE
- Wady różnych technologii dostępowej które umożliwiły rozwój firmy
- Dostęp w technologii bezprzewodowej.
- Wykorzystanie ukształtowania terenu w gminie Rabka-Zdrój
- Wykorzystanie budynków użyteczności publicznej

When we started our economic activity Rabka-Zdrój, had very poor broadband infrastructure and limited access to the Internet. The other problem is extensive area of individual buildings. In the 80's, when the telecommunications network was created, no one predicted that the Internet will developed, with the result that the network has not been able to take today's data transfer. Another factor negatively influencing on this phenomenon was the high cost of maintaining the phone line. Also, the technical condition of the infrastructure was not adapted to the constantly increasing number of customers.

Slide 5



STUDIO WIK

WIKNET
internet provider

- Sieci teleinformatyczne, alarmy, CCTV, kontrola dostępu
- Sieci WiFi ponad 150 bezprzewodowych punktów dostępu,
- GPON
- Operator lokalny
- 4000 abonentów
- 11 Pracowników
- Współpraca z urzędem, policją, szkołami, lokalnymi przedsiębiorstwami,

Currently, the company WIK is engaged in telecommunication networks, alarms, CCTV and access control. Network that we built is made up of over 150 wireless access points. For the purpose of data transmission we use pole masts with a point-to-point and sector antennas.

We also practice and train student of local technical college

Slide 6



Currently in Rabka-Zdrój there are two types of Internet access used by nationwide Internet providers: wired eg. DSL (Orange, Netia) and wireless eg. 3G or LTE (mobile operator). They have their minuses. The main disadvantage in a wired internet is its poor quality and the ability of cables, and in wireless: limited data transfer and large disturbances and instability.

Our company Internet access is based on this two types. First one - wireless is based on the 5 GHz wireless technology. On this slide we can see how data transmission is possible. Here we see a diagram of an exemplary access. Wireless Access Point contain a bridge antenna type point to point, which is a source of cumulated data for the next data transmitter or the next access point. From the sector antenna signal is transmitted wirelessly, to the end user: private client, public institutions, etc.

Slide 7



Rabka is situated in a valley and has specific terrain, so thereby the location of transmission points on the surrounding municipality of the hills can easily extend network coverage area. Our transmitters, given the small size and weight can be placed on any building. For the purpose of transmission we received permission to use public facilities, eg. Buildings I and II High School, Elementary School No. 2, the network of buildings belonging to the "Health Resort Rabka Co." whether the pension Forest Hill, or as in this case on the wall of the shopping center "Małgosia", where as you can see, thanks to a conducive configuration of terrain, visibility is up to several kilometers and cover many buildings.

Slide 8



The area of our activity is covered by a network of towers and transmission masts and poles. We have more than 150 these objects. In addition to any such object is placed a container with emergency power supply and equipment for remote reboot and management. Thanks to them it is possible to control the transmitter without requiring physical intervention, but only through remote communications. These devices are highly resistant to atmospheric phenomena and temperature differences - the characteristic features of a local acute mountain climate. They have their own power supply in the event of interruptions or failures in access to electricity.

Slide 9



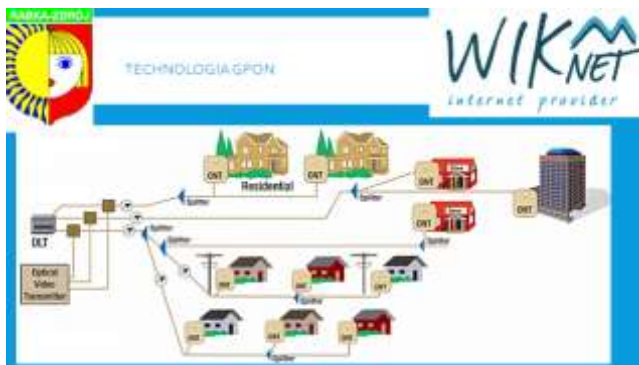
In Rabka demand for fast Internet is constantly increasing. Customers are demanding more and more bandwidth and better transmission quality. Therefore, by our efforts in municipality began to implement GPON fiber-optic technologies. Currently, it is fully available for the four largest residential areas: Nowy Świat, Orkana, Słoneczna and Sadecka. Wik is also involved in the implementation of fiber optic technology for home users, that is extended network to each single houses.

Slide 10



Demand for wide access and high transmission quality is increasing instantly. As you can see the beginning of this phenomenon coincides with the beginning of our business on the Internet provider market. In contrast, long-term forecasts show that it is extremely promising and absorbent market, and the demand for our services will increase, which will allow for the further development of the company.

Slide 11



GPON technology - Gigabit Passive Optical Network, minimizing installation costs and maximize profits. It uses single-mode fiber. The transmission speed is divided by the standards, usually 1: 128; Single port is separated into optical splitter which does not require a power supply, it means the so-called passive devices, and based on point-to-multipoint architecture. The distance between transmitters hub OLT and client ONT, is typically up to 20 km and, most importantly, is not sensitive to interference. GPON installed by our company offers a bandwidth of 2,5 Gbit download per port

Slide 12



GPON is ideal for multi-apartment housing, but also for individual users, As you can see on picture: We install the fiber optic distribution box in the building, and subscriber cables, also main part of GPON already mentioned optical splitter.

Slide 13



We have already started construction of the fiber optic infrastructure for home users living outside large residential areas, in the areas of sizeable dispersion of buildings. To carry fiber cables we are using existing electrical poles. We do this because, costs of drilling and digging underground is too expensive, dense, rocky soil is high resistance. Building on the existing electrical poles is much cheaper solution, In the case where there is no poles or when they are available, we use existing technological channel. We have signed agreements with the local energy provider and owner of energy infrastructure. On poles, less than 1m from cables, we install box with splitters, our cables are very strong, and light weight. We wanted to make that extra wiring does not interrupt the special architecture of the town.

Slide 14



In the municipality Rabka-Zdrój and in all the centers covered by our broadband Internet range, Network is used in many different ways and for many different purposes. Is perfect for the transmission of digital video signal from HDIP cameras, as a relay for the urban CCTV, and the transmission of events, debates and meetings of the authorities. It also provides the basic Internet access for data transmission related to the free public Internet as a HOTSPOT – very useful in tourist towns. Network is also used to maintain the communication between the offices, institutions, public and petitioners eg. E-portal. Internet communication platform between inhabitants and officials . In addition, broadband Internet network is used to centralize services and data exchange through a combination of municipal offices in different buildings.

Slide 15



One of the possible solutions using broadband Internet, is the already mentioned HOTSPOT service. This free solution for private users in the municipality Rabka-Zdrój, covers virtually the entire area of the Spa Park, restored 100-years old railway station building , where the Municipal Library is and the Municipal Amphitheatre area.

Slide 16



We also provide data transmission from IP CCTV cameras located in sensitive parts of the town: the Spa Park, Railway Station area, Cinema "Śnieżka" and the Amphitheatre with surrounding park. Each of these objects has been renovated in the last two years. It was very expensive renovation and there were concerns about the attempts of vandalism. Installed cameras has increased the safety of these facilities. Besides monitoring network installed in the amphitheater, allows the transmission of high quality data, gives possibilities to transmit on live events for example concert. Network monitoring is centralized in the building of the municipal office in guard ward office, where constant supervision is carried out.

Slide 17



With an extended network is possible to seamlessly and without limits transmit data; Users can use a broadband Internet network for their own purposes: conferencing, real-time transmission of events and meetings. In addition, local government departments and institutions have the opportunity to exchange and store data in the cloud and carry out remote servicing of clients and supplicants through e-government portals.

Slide 18



Ladies and Gentlemen, on behalf of WIKNET and my own, thank you very much for your attention and have a nice day.

