




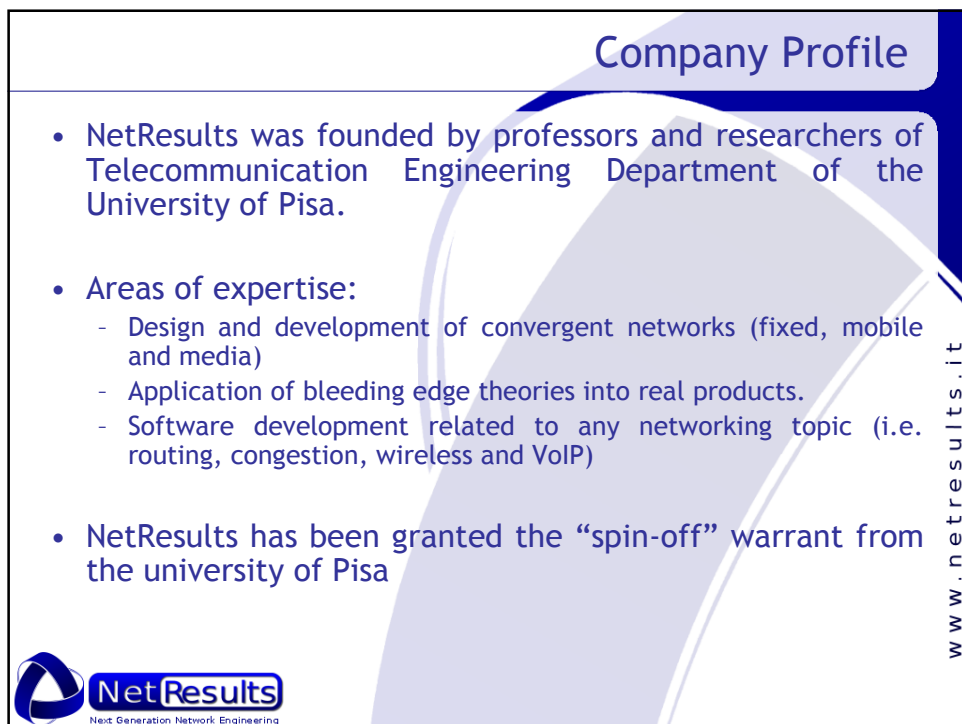
Next Generation VoIP

Hannover, 4th March 2009
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www.netresults.it

 **NetResults**
Next Generation Network Engineering


 **AZIENDA SPINOFF
DELL'UNIVERSITÀ DI PISA**



Company Profile

- NetResults was founded by professors and researchers of Telecommunication Engineering Department of the University of Pisa.
- Areas of expertise:
 - Design and development of convergent networks (fixed, mobile and media)
 - Application of bleeding edge theories into real products.
 - Software development related to any networking topic (i.e. routing, congestion, wireless and VoIP)
- NetResults has been granted the “spin-off” warrant from the university of Pisa

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 **NetResults**
Next Generation Network Engineering

Company Profile - 2

- Our motto is “Communication Made Easy”

- Make the technology invisible to the customers
- Merge new functionalities with customers current workflows
- Deliver tailor-made solutions to enhance end-users experience



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Intro - VoIP

- What is VoIP?
 - VoIP has been known for over 25 years
 - Born as military application
 - Since 20 years used in PC-to-PC communications
 - Since a few years used in enterprises as a business model like the traditional one
- Why is it important?
 - Cost reduction
 - New features



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Savings & New Services

VoIP 1.0

Increase savings on
phone bills!



VoIP 2.0

- Unified Communications
- Convergency
- Nomadic users
- Presence



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Where are we now?

- There should be a huge number of different VoIP application by now
- The vast majority of VoIP applications are softphones
- Why is that?



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Problems

- VoIP is difficult
 - Technological aspects of a **good quality** VoIP application are daunting.
 - Inter-operability with third party solutions is not easily achieved
- Solutions for rapid development are lacking at best
- Difficulty to re-use existing solutions in different projects

Solutions

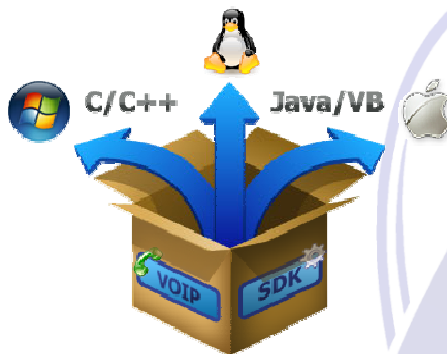
- Need for a tool to easily develop VoIP application
- A tool that must be flexible enough to satisfy developers imagination for new products
- A tool usable by as many developers as possible

VoIP Development Kit



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VoIPDevKit



- Multi-platform (runs on Windows Vista/XP, Linux and MacOSX)
- Can be used by a variety of languages including:
 - C/C++
 - Java
 - Visual Basic
 - C#



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VoIPDevKit - 2

- Features:

- High-level API that allow an easy implementation of application logic
- All protocol handling details are hidden from end-users
- Fully supports the SIP standard (RFC 3261)
- Crystal clear audio quality



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VoIPDevKit - 3

- Features (continued):

- Powerful plugin framework to easily allow third-party codec integration
- Innovative design based on “Virtual Devices”
- So simple and yet so powerful that you can create a fully functional softphone in less than 10 minutes! (a demo video is available as proof)



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VoIPDevKit - Design

- What are these “Virtual Devices”?
- The concept behind our solution is quite simple and yet effective:



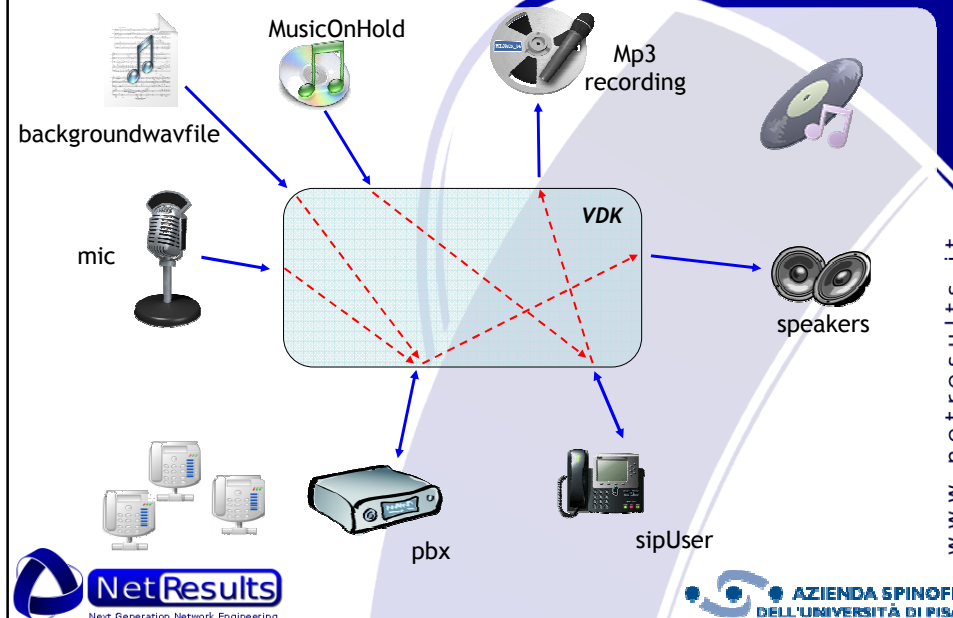
Once upon a time there were analog PBX with “pluggable” lines

Now Virtual Devices replaced these “plugs”

VoIPDevKit - Virtual Devices

- Every media related channel a computer “sees” is a Virtual Device!
 - Physical audio cards
 - Audio files stored on disk
 - Incoming and outgoing VoIP calls
- NetResults VoIPDevKit basically takes the place of the PBX operator
 - With a single API call it's possible to connect & disconnect these devices
 - Once devices are connected the media will automatically flow through them
- **Any** number of Input Devices can be connected to **any** number of Output Devices.

VoIPDevKit - Virtual Devices 2



VoIPDevKit - Lines of Code

- The previous example in terms of LOC

```
placeCall(string PbxSipAddress){
    PbxLine = startAudioCall(PbxSipAddress);
    playAudioFileOnLine(backgroundwavfile, PbxLine);
    connectDeviceToLine(mic, PbxLine);
    connectLineToDevice(PbxLine, speakers);
}

onIncomingCall(lineId_t line){
    answerAudioCall(line);
    playAudioFileOnLine(MOH, line);
    startLineRecording(line);
}
```


VoIPDevKit - Sample apps

- A few apps that we developed with the VDK
 - An interception probe to be used within our VoIP platform
 - A Skype Gateway to interconnect SIP and Skype worlds
 - Enabled some third-party CRM software to VoIP calls
 - A truly cross-platform web-phone

VoIPDevKit - Technical Feature List

- Dynamically loadable codecs (G711, AMR, Speex, G726, G729, iLBC and GSM already provided)
- Advanced PLC algorithms for best audio quality
- Voice Activity Detection
- DTMF
- Adaptive silence detection
- Adaptive jitter buffer
- STUN and ICE support
- Play and Record files in all the major audio formats
- Multiple I/O Device support
- Multiple audio framework support (DirectSound, WinMME, Alsa, OSS, CoreAudio)
- Multi-line conference
- Do-not-disturb
- Volume settings are connection based

VoIPDevKit - Strenghts

- Simplicity and immediacy

- ➔ Very steep learning curve allow an immediate start
- ➔ Dramatically lowers the time-to-market
- ➔ Perfect answer to a market need

- Versatility

- ➔ Library is multi-platform
- ➔ Supports multiple programming languages

- Flexibility

- ➔ Programming model based on virtual device
- ➔ User-defined Codecs used in a plugin framework
- ➔ Specifically designed to create tailor-made applications that are fully customizable and not just simple softphones



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Questions?



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The end

Thanks for your kind attention!

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- Demo Download: <http://www.voipdevkit.com>



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