Musical instrument digital interface and music software

Sibelius notation software

anechoic: *privo di eco*
currently:
attualmente
expertise:
competenza
grand piano:
pianoforte a coda
holophonic: *olofonico*
notation: *notazione*
novel: *nuovo, insolito*

MIDI is different from digital audio. MIDI symbolically represents a note (i.e. a symbol on screen), while digital audio represents the sound produced by the note (i.e. the acoustic aspect).

With MIDI, notes played on a keyboard can automatically be transcribed to sheet music.

Thanks to recent advancements in computer technology, the world of music composition is rapidly changing, in fact composers can write and listen to music on the computer. Software designers have created specific software and systems for music compositions which are not only used by professionals, but also for educational purposes.

Musical Instrument Digital Interface (MIDI) is a technical standard that describes a protocol, a digital interface and the connectors that make it possible for a wide variety of electronic instruments, computers and other related devices to connect and communicate with one another. With MIDI it is possible to specify notation (i.e. written music sheets), pitch and velocity, control the volume and clock signals to synchronise the different devices.

The **standard MIDI file (SMF)** is a standardised file format to save music sequences in order to transport and open them in other systems. Lyrics can also be included as metadata and displayed by karaoke machines. However, a MIDI file is not a recording of actual audio, but a set of instructions and can use a thousand times less disk space than the equivalent recorded audio. This makes MIDI a very attractive way to share music, also because the files can easily be converted into mp3 ones.

MIDI works together with notation software and specialised digital audio workstations (DAWs), which are specifically designed to work with MIDI as an integral component.

Notation software refers to a series of programs that allow the user to actually compose music. This type of software, also called **score writer**, is very effective with classical music. It helps in writing musical scores and playing them back. Moreover, it is also possible to synthesise a quite good orchestral piece with the help of an orchestral library which can be bought separately. The most popular programs of this type are *Finale* and *Sibelius*. However, for electronic music it is better to use a **Digital Audio Workstation (DAW)**. DAWS are massive programs with incorporated tools for the entire music creation process, i.e. for recording, editing, writing and producing audio files. Most of them also include a small score writer for classical notation, although they are very limited if compared to Sibelius or Finale. DAWs come in a wide variety of configurations, from a stand-alone computer to many components controlled by a central computer. However, regardless of the configuration, a DAW has a central interface that allows the user to change and mix different recordings to produce a final piece. In the case of an integrated DAW, the system consists of a mixing console, a control surface, an audio converter and data storage in a single device.

1 ✎ **Choose the best option.**

1. Software designers have created **a.** music software for professionals.
b. software and hardware for music composition. **c.** music educational software.

2. MIDI **a.** connects different musical instruments. **b.** is an interface that connects a computer with electronic devices. **c.** makes the communication between a computer and electronic musical instruments possible.

3. A MIDI file includes **a.** music and lyrics. **b.** only music. **c.** only lyrics.

4. Notational software **a.** only works with classical music. **b.** contains a music library.
c. is used for composing music.

5. DAW **a.** is only used with electronic music. **b.** can have a mixing console.
c. contains good notational software.

2 ▤ **Choose the appropriate heading for each paragraph. Then, answer the questions.**

1. Experimental recording studio   **3.** Open space lab
2. HCI Lab   **4.** Rendering room

Sound and Music Computing Lab

The Sound and Music Computing Lab comes from the research experience of Image and Sound Processing Group (ISPG) of the Department of Electronics, Information and Bioengineering of the University of Como. The laboratory collects expertise from the ISPG Lab in the areas of audio and acoustics and focuses on various research projects in these areas. The laboratory also supports some of the didactic activities of the curriculum on "Sound Engineering and Design", of the Computer Science and Engineering Degree program. The SMC laboratory includes the following facilities:

1. ………………………………… – 120 sqm of acoustically-controlled environment that accommodates traditional musical instruments, including a grand piano and a drum set, electronic and virtual musical instruments. The control room is equipped with a digital multichannel recording system that includes a 48-channel digital mixer, a storage system, and a high-performance mainframe that accommodates high-end sound acquisition cards. The studio also includes various multi-effects, MIDI patch bays, and MIDI controllers.

2. ………………………………… – a quiet room, used for experiments of acoustic and audio-visual rendering. The room is lined with heavily absorbing material and its acoustics can be freely modified by properly positioning diffusive panels. The almost anechoic behaviour of the room enables experiments of holophonic rendering based on loudspeaker arrays.

3. ………………………………… – multi-purpose lab equipped with numerous PC workstations, MIDI keyboards and multichannel soundcards. This lab focuses on a wide range of applications that require PC-intensive work. It currently focuses on space-time processing techniques based on arrays of microphones such as source localization, tracking and separation, arrays of speakers, sound synthesis and sound/voice analysis.

4. ………………………………… – the Human-Computer Interaction Lab was set up in collaboration with Como's Conservatory of Music, for research and didactic experiments of HCI in musical applications. In this lab, it is possible to develop novel HCI mechanisms and conduct experiments with them, using specialised sensors and motion tracking systems for multimodal applications.

Adapted from: http://www.polo-como.polimi. it/en/doing-research-in-como/experimental-laboratories/soundandmusiccomputinglab/

1. Which traditional instruments can be found in the music lab?
2. What does the multichannel recording system include?
3. What types of experiments are carried out due to the absence of echo?
4. What type of techniques require PC-intensive work?