

# **FTA – mp3 Player**

Seminar work :  
**COMPUTER RELIABILITY  
AND DIAGNOSTICS**

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## ***Abstract***

This document describe Fault Tree Analysis (FTA) about a record/playback device for use with a removable, interchangeable, flash memory recording medium which enables noise dampened recording of voice data and CD quality stereo recording of music data. The device includes a port for receiving a flash memory module which can record data according to industry standard formats to enable the transfer of data to and from personal computers through swapping of flash memory media. Alternative forms of data input and output also include implementation of a barcode reader and an infra-red transceiver for the transfer of data to and from the device

# MEMORY FAILURE

## *Failure in ROM (memory program)*

- Failure in programme code (Software)

- *Data corruption*

Data corruption is one indicator of a failing memory module. Common symptoms include lost, missing or scrambled data; frequent crashes; spontaneous reboots; registry errors; missing system files; and other intermittent or bizarre behaviour.

- *State of hardware storage value in registers*

Storage means to store the pixel address at which there is a failure of the digital intensity signal to meet a threshold, also said storage means comprises two buffers and write pixel addresses of failures of one line of intensity values into one of said buffers as pixel addresses of failures in a preceding line of values is read out of the other said buffer.

- *Inefficient Algorithm*

Generalising, the typical code with which any mp3 player should be implemented can be summarised with the following files:  
(Any kind of exception doesn't catch in any of this codes will provoke failures, low performance, etc.)

- a program which will display a string on a parallel-port attached .
- a fragment which reads an ID3 tag from a song.
- a fragment which opens COM1, sets it to 1200bps, and also a 'check for user input' function.
- a fragment which launches xaudio, and has code to send and receive messages to/from it.

- *Firmware Update*

Most MP3 players available today are firmware upgradable, meaning as it becomes available, new software that runs your player can be loaded onto it to improve its feature set or performance.

Bad consequences that that can take itself are described as follow:

- *Updating fixes bugs or any playback or navigation issues*

In most cases, a firmware update will fix bugs or any playback or navigation issues, though it can

sometimes also mean improved battery management, compatibility with new audio formats, and the addition of useful features such as album art support. In a few cases, a firmware update can completely change a player's looks and abilities.

A firmware upgrade for your MP3 player will nonetheless make your unit the best it can be.

- ***Firmware was not correctly installed***

Without taking in account any problem regarding the latest version of Firmware; the typical cause by which our firmware was not correctly installed will be do to pulling out the USB from computer before a complete installing or simply do not follow correctly each one of step that the wizard provides us for suitable installation.

- Electronic component crash (Hardware)

If we focus on possible hardware failures the common list of reasons which used to be the most representative when we talk about breakdowns of a simple device as the mp3 player is, we can elaborate the following list:

- ***Manufacturing defect***

As memory chip capacities increase and the size of features used to form the memory cells decrease, defects in manufacturing become more of an impediment to produce memory chips with high yield. This is especially true for PROM memory chips, such as those that contain anti-fuse memory cells, which cannot be fully tested at manufacturing.

The most Defects are the following ones:

- bad rows of cells
- bad columns of cells
- bad individual cells

Many memory circuits include redundancy circuitry having special address decoding circuits that replace a row or column of memory cells when a defective cell is detected in initial testing of the chip

- ***High temperature***

Dust, humidity and extreme heat can limit the life of your system by literally burning your system components or causing parts to warp and corrode. Power fluctuations and surges can also damage your systems.

The power supply especially needed the chips bolting to something metal to remove the heat) needed something metal, so that it could be used as a heat sink.

## ***Failure in Flash Memory (memory storage files)***

The term "flash memory" is used herein to describe a type of non-volatile memory in which is an electrically erasable and programmable read-only memory (EEPROM) having a programmable operation which allows for the erasure of blocks of memory.

Possible problems that could appear in this kind of devices can be summarised as follow:

- **Slowdown**

- ***Manufacturing limitations***

Normally, a method of manufacturing a flash memory is a self-aligned process is utilised to fabricate a floating gate so that a slow down of the operating speed resulting from a non-symmetrical programming of memory cell in the presence of channels with unequal lengths are prevented. Hence, overall performance of the memory cells is improved.

For preventing problems caused by unequal channel lengths another method of manufacturing a flash memory that is utilised is a self-aligned process to form an L-shaped floating gate.

- ***Flash Firmware respect to options Operating System***

Sometime a slowdown at reading or writing in this kinds of memories can be given because of some options that our operating systems (Unix systems) has configured by default like for example a "sync" option at mount. It causes extreme bad performance and raising R/W cycles for flash devices.

A technical description would be that sync write sends data to the medium as soon as possible. Writing one sector to a typical flash memory requires erasing and reflashing of 64kiB region. Sync writing of 64kiB with 512B sectors could requires 128 reflashing (depends on flash firmware).

- **Security disadvantages**

- ***No accessible because of incompatible encryption software***

Some flash drives feature encryption of the data stored on them, generally using full disk encryption below the file system. This prevents an unauthorised person from accessing the data stored on it. The disadvantage is that the drive is accessible only in the minority of



computers which have compatible encryption software, for which no portable standard is widely deployed

- Too many accesses (old memory)

- *Limited number of write and erase cycles before failure*

Like all flash memory devices, flash drives can sustain only a limited number of write and erase cycles before failure.

The life of flash memory storage is largely dictated by the number of accesses that occur to flash memory when updating flash memory. Any writes to a flash location are preceded by a corresponding erase. Erasing flash memory is a slow and time consuming process.

- Overcapacity

Of course the memory has a limited capacity, which surpassed, will indicate that it will be time to deleting some of the files that it contain. Al it was said in the last point, erasing flash memory will be a slow and time consuming process.

## OUTPUT SOUND

*Not quality sound or simply does not emit any sound*

- Playback problems

- *Audio coded failure (conversion failure)*

The most common cause of troubled MP3 playback with a pocket player is that the MP3 in question is encoded at too high a bitrate. The bitrate is, in this case, the number of kilobits per second an audio file is made up of. To put it another way, it's how much data is required to represent a song per second. The same song can be encoded at different qualities, and each quality changes its bitrate.

The solution in this case is simply to change the software you are using to playback the MP3 audio files.

*Other causes of MP3 playback problem are less frequent, but certainly possible. They include:*

- *Mp3 file damage during the transfer process*

The file may be corrupted when it was converted from the CD or when it was copied over to the player during the transfer process. We have to be sure that the complete song (file) is copied to the player before disconnecting the USB cable. When copying is complete, Click on the “SafelyRemove Hardware” icon in the tray on the bottom right hand side of your desktop and wait for the window that will state you can safely remove the drive. This needs to be completed prior to removing the device from the USB cable or removing the USB cable.

- ***Song copy protected (DRM) not have right to play it***

The song may be copy protected (DRM) and we do not have the right to play it. You can place your mouse pointer over a MP3 or WMA icon or song title for the file on your PC and a window will open with information on the file (or you can right-click on the song file and select “Properties”).

If the problem persists, delete the file from the player or format the card and re-copy the new songs to it following the procedures in the manual.

- ***mp3 player come up the dying and jumping songs***

The phenomenon of jumping song is very common, mostly is caused by the compressing format or the wrong hits, leading to the player recognise rightly, finally jump over or out of work.

- ***Continuous pause when being played***

It is caused by the USB's bad contact when download files from the computer suggest to re- plug in or change another USB, or change USB extension cable or change a computer to download.

- ***Some songs have different music quality***

Mp3 song has different music quality, for the difference of the parameter of electricity in the procedure of recording, so it is different to listen.

Another causes as:

- *Little system memory available at time of playback*
- *Handheld-specific hardware or software problems*
- *Flash damage (if audio is stored on flash memory cards)*

make reference to another concrete parts of the device and have been or will be talked about in another points of this document.

- **Physical damage**

- *Speakers crash*

Because of driving them with too much power. This is most often caused by amplifiers being driven into distortion, however the distortion itself is not the culprit. Driving an amplifier into distortion causes signal compression which results in a significantly higher average power level being delivered to the speaker.

- *Connector crash*

Headphone jack problems are also common. Putting the jack on the side of the unit was not the best design decision, particularly if our headphones have a straight plug and we tote our player around with us.

- **Low batteries**

- *Quick discharge*

- **Not assuming extra features**

For instance, if the manufacturer rates their MP3 player a certain number of hours total playing time, this probably means these hours of continuous playing without stopping and starting the player, which uses more power. It probably also assumes that no extra features like screen displays are being used.

Additional things that consume extra power include audio processing such as equalization, high volume levels, photo display and videos. Out of all the MP3 Player facilities, video will reduce the battery charge the most.

- **Audio formats use much more power**

Some of the audio formats use more power than others. For instance, the least processor intensive audio format is MP3 encoded at 128 bits per second. However, if we have a lot of music in WMA format with Digital Rights Management or DRM, they need far more processing power for playback, which in turn means that more battery power is being used.

- **Limited recharged**

Of course, if we are using rechargeable batteries in our MP3 player, some means of charging those batteries in the form of a

battery charger is required. Although some players allow you to charge the battery by plugging it into the USB port of a computer, it is more convenient to have a separate charger with an extra battery pack. This will allow you to keep your MP3 player up and running at all times.

- **Losing connection by radio**

- *Neglect FM function*

- Generally, the automation of searching function neglect the broadcasting station with weak signal, user adopt the manual method to search .In addition, when we search the stereo channel, we had better spread fully the earphone cable in order to heighten the density of receiving signal do not coil the superfluous cables. Because our earphone cable act as the antenna, the expanding earphone is useful to heighten intensity of receive the signals.

- *Interference*

- Sound systems are made up of several pieces of electronic equipment as well as a lot of wiring. Each run of wire is potentially an antenna. The microphone wires tend to be the most sensitive because they are longer than the wiring which interconnects the equipment. The signal level on microphone wires is also much lower than the other wiring. This means that you need more gain on the mixer, which also increases the volume of the radio interference.

- *Whether*

- Abnormal weather conditions can cause adjacent channel interference on television, while FM radio reception can be effected by sizzling noises in the background. This kind of reception problem is usually only apparent during periods of extremely high pressure, when temperatures increase dramatically to produce a much warmer drier atmosphere, usually with few clouds.

# LCD SCREEN FAILURE

- **Not visualize play list, etc**

- *Misuse at cleaning (any kind of physical damage)*

These screens are not perfect. In fact, we have to be very careful when cleaning them up. Too much pressure using the wrong kind of cloth will most likely scratch your display and could even burn some of its pixels.

- *Not enough battery*

Of course, how we will explain in another point of this document, not enough power supplying for batteries or any kind of damage in these will provoke not just failure at the play list but in fact any other function of the device.

- **Visualize rare characters**

- *Firmware updating failure*

Normally, the firmware that controls the display apparatus will be recorded into the memory before the display apparatus is shipped to the market. The display apparatus, therefore, must be sent back to the manufacturer for updating its firmware when the user desires to resolve a malfunction situation of the display apparatus or add new features to the display apparatus by way of a firmware update. This imposes extra burden in terms of cost and time on both the consumers and the manufacturer.

- *Render a inferior image*

The spec is the timing the display device takes before showing the next full frame at 60 frames per second.

Although that spec is a timing of the video engine, not the liquid crystal pixel, the overall performance of the set could be affected by the interaction of both. For example, the response time of each pixel could be

insufficient when it is much slower (taking longer to restore itself) than the speed required by the frame rate of the display. In simple terms, having a slow 20ms pixel response time on a 120Hz display (that would require at least 8ms of pixel speed) would render an inferior image.

In other words, the set intends to display video frames at a speed that the pixels response time cannot catch up with, affecting the pixels readiness for the next frame of video, and show blurriness, lag, etc. which is a common problem on poorly designed LCD panels.

- ***Residue of the previous image displayed***

The timing is the response time in ms that a single liquid crystal pixel of a display device takes to twist and turn itself to change from white to white passing through black first. Manufacturers also declare the spec from grey to grey, from black to black, to express the same thing, and could be shorten with "G-G or g-g".

In other words, the timing for a liquid crystal pixel to restore itself and be ready to display the next image without showing any residue of the previous image displayed by that pixel (otherwise artefacts could occur).

- ***Blurrines***

Even when reducing the pixel response time to shorter intervals, such as 2ms or 4ms, the typical LCD style of operation is still constrained with other limitations that would not allow to profit from the shorter pixel intervals as expected to reduce blurriness.

Typical LCD panels show each frame in a "sample-and-hold" manner, by which all the pixels on each frame are kept lighted for the whole duration of the cycle for that frame rate (16ms for 60fps), and at the very end of that cycle the crystals twist and turn in a rush to be ready and adapt to the next frame, which also brings full light with it. That is done even when the pixel could have restored itself faster at its own independent response time of 2, 4, 6, 8 ms depending on the design.

In other words, the blurriness is not always caused because the liquid crystal pixel response time is slow, but because there might not be a break of light in between frames.

- ***Ghosting***

A problem in LCD screens when tiny pixels creating the image take time to switch on and off and can't do it fast enough. The problem, widely recognized as the main drawback of LCD screens, is apparent in

fast moving objects such as tennis balls, but even slower moving images get fuzzy. This can happen especially when the device is exposed to cold for long periods of time. This problem is usually not apparent on modern LCD screens.

## ▪ **Manufacture failure**

In LCD manufacture, it is common for a display to be manufactured that has a number of sub-pixel defects (each pixel is composed of three primary-colours sub-pixels). The number of faulty pixels tolerated before a screen is rejected is dependent on the *class* that the manufacturer has given the display.

- ***Dead Pixels***

Dead pixels are a common occurrence and few manufacturers replace screens with dead pixels for free.

- ***Stuck pixels***

Stuck pixels are often incorrectly referred to as dead pixels, which have a similar appearance. In a dead pixel, all three sub-pixels are permanently off, producing a permanently black pixel. Dead pixels can result from similar manufacturing anomalies as stuck pixels, but may also occur from a non-functioning transistor resulting in complete lack of power to the pixel. Dead pixels are much less likely to correct themselves over time or repaired through any of several popular methods.

- ***Horizontal and/or vertical banding***

Horizontal and/or vertical banding is a problem in some LCD screens. This flaw occurs as part of the manufacturing process, and cannot be repaired (short of total replacement of the screen). Banding can vary substantially even among LCD screens of the same make and model. The degree is determined by the manufacture's quality control procedures.

# BUTTON FUNCTION FAILURE

**(Does not perform function)**

- **Not shutdown**

- *Shutdown hardware failure*

- Probably, the problem is that if the harddrive of the mp3 player is still spinning, it will not allow you to shut it down.

- *Shutdown logic fail (software failure)*

- If mp3 player still does not turn on or appears to be "frozen" you may need to reset it. When you reset the device all your songs and files are saved. Some customized settings may be lost.

- *Not wait enough time*

- We must pressed the play/pause button for several seconds if we want to shut off the device. Pressed it during less than this time will provoke that the device does not complete the shut off.

- **Not turn on**

- Perhaps the most frustrating problem is when the player appears to be "dead". The firmware will always transmit messages to the serial port, regardless of what is connected to the board. The first step is to connect the serial port to a PC and attempt to view the messages the MP3 player sends. Disconnect everything from the board, except for power and the serial cable, so you can concentrate on receiving the serial port messages without interference from possible sources of trouble.

- When there is no response, the problem is generally one of these four scenarios (listed in order of likelyhood):



- ***Power Inadequate***

The vast majority of trouble with the mp3 player is related to an inadequate source for power. There are three requirements for the input source:

- ***DC Voltage - The power source must have a proper DC voltage***

DC Voltage may be applied to either power input on the board. The lower voltage input is primarily intended for battery, but lower voltage power supplies may also be used. DC Voltage - The power source must have a proper DC voltage.

- ***Current Capacity***

Power sources with low voltage or insufficient current capability are usually noticed when using a laptop drive. Typically, the laptop drive will make a click as its motor attempts to spin, and then the player will reboot, repeating the click/reboot over and over. In some extreme cases, the player's power supply will experience trouble.

- ***Serial port setup***

Problems on the PC are common, such as selecting the wrong com port. Hyperterminal can also show the "scroll buffer" and not "live" data if you've clicked on the scroll bars inadvertently, and of course it can be ignoring all incoming data if flow control is selected.

- **Dust/dirt clogs internal**

Any kind of dust/dirt clogs could obstruct the buttons, making that our pressure over the button does not send the appropriate signal for executing the function.

- **Activated Hold**

Before trying to push any kind of button in our device we will Check to make sure that we do not have the Hold switch in the locked position. If the Hold switch is in the locked position, we will probably see a lock symbol on the screen. Slide the Hold switch to the unlocked position and check the screen.

If our player is frozen or won't turn on, it may be because the device is paused or the Hold switch is in the locked position. If so, a lock symbol

appears on the screen. Slide the Hold switch to the unlocked position and check the screen.

## MICROPHONE FAILURE (INPUT SOUND)

### ▪ Not quality sound

#### ○ *Noise*

Sound is a very delicate thing. Each step of the process of making a sound recording can introduce noise and distortion that reduces its appeal or usefulness.

The largest problem is with the noise level of the cards. Although most sound cards report a respectable "signal to noise ratio" (the measure of noise added by the card), in reality, the noise level is higher than the specifications. This causes the recording to have more background noise, especially when recording using the built-in microphone input

#### ○ *Set the recording level*

Recording with the highest level is not necessary to providing the best results. With digital recording in general, this is not true. We want to make sure that the sound level is in a medium range on the level meters for most of the recording. If the clipping indicators turn on, it may indicate that an overload of the digital signal has occurred. This can cause a buzzing-like distortion to be added to the recording. Although the recording software may have a feature to remove some of this distortion, we will have better results when clipping does not occur.

#### ○ *Pick the right microphone depending usage*

The microphone we use should be "unidirectional" (picks up sound in a single direction). "Omnidirectional" microphones pick up sounds from all directions, resulting in all noise in the room being recorded along with the voice. Use the best microphone that meets our budget requirements. The microphone will be the single largest determinant of sound quality for our recordings.

- ***Bad position of microphone***

Position the microphone close to the person speaking. The exact distance will depend on how loudly the person speaks, the type of microphone, and the desired type of sound. Also experiment with having the microphone in different positions relative to the mouth.

Most microphones will increase the level of bass frequencies when they are placed closer to the mouth. Close positioning will also increase the amount of detailed vocal sounds that are recorded. This can be a problem for such sounds as wind noises from the popping of "p" sounds and the sibilance of "s" sounds. Changing to a better microphone, or moving the microphone to a different location can help control these problems.

- ***Poor quality microphone***

The microphones supplied with sound cards are generally of very poor quality. There are a limited number of options for recording to the microphone input of sound cards. This requires a microphone that was specifically designed for sound card use.

Using a microphone stand is a good idea. This will eliminate the problem of microphone handling noise being added to the recording. It will also make it possible to position the microphone in the best location for the person speaking.

- **Not record any sound**

- ***Too much files, not enough space***

If the storage memory is almost full, the system will not allow the start of any kind of recording.

- ***Bad configuration in sound card settings***

To use your sound device, we will need to load the proper device driver. Choose an inadequate option could provoke the impossibility of any kind of recording.

# BATTERY FAILURE

- **Battery does not supply energy**

- *Connectors*

- *Polarities of battery do not correct*

- If the polarity is not correct, the mp3 player cannot work, but it will not be destroyed, what we need to do is just swap the battery pack polarity.

- *Dust/dirt clogs connectors*

- Any kind of non-conductor material between the connectors and the batteries will provoke the impossibility of supplying energy.

- *Broken connectors*

- Like in the above point, it will depend of the healthy of the connectors if we are talking of supplying energy in a correct way.

- *Voltage problems*

- *mp3 can work with the AA battery, but the refresh AA battery can not work or can not be open at all*

- The strand voltage of the refresh battery is 1.2V, but the general alkaline battery voltage is the 1.5 V, it is no problems to general refresh battery, you can try others refresh battery to check your mp3 player whether support refresh battery or not. As usual mp3 can use the 1.2v refresh battery, but the display of the electricity is not exact

- ***Battery crash***

- ***Draining below the recommended voltage***

If we drain our battery below the recommended voltage, we will permanently damage your battery. The battery needs to maintain a minimum voltage at any given time to make sure the chemical reaction in the battery is always reversible (that means 'rechargeable'). If the voltage is too low, the chemical inside that battery will be deactivated (die).

- ***Battery freeze***

If it is in a state of discharge. It is very important to make sure your battery stays fully charged in extreme cold weather. If a battery freezes, it can damage the plates and container.

- ***Hot weather***

In general, hot weather will shorten battery life and cold weather does the opposite. However, in extreme case, too hot or too cold both will shorten battery life. This can cause many unpredictable problems, both electrical and, within our system.

- ***Corrosion***

Sound equipment should always be kept in a dry place. Damp surroundings and consistently high humidity cause electric contact surfaces to get a film of corrosion, and the more moisture in the air, the faster this film builds up, to the point where it causes poor contact.

- ***Blow***

If batteries blow up, it can drench sulphuric acid. We should use safety goggles in any case. Sulphuric Acid eats up clothing and you may want to select Polyester clothing to wear, as it is naturally acid resistant.

## ▪ **Battery not full charged after charging**

### ○ *Battery meter showing empty (Software failure)*

The mp3 player is probably fine, fully charged, ready to play for many hours. The battery meter is really only useful for one thing, it is an approximate reminder of when to recharge. After using it for a while it fills in the black bar and reads more like what's really in the battery.

### ○ *Shutting down too soon*

The meter can believe the battery is dead and its circuitry can shut down your mp3 player after a relatively short playing time. Lithium ion/polymer batteries do not like to run all the way down, so the device is smart enough to shut off. The mp3 player displays the battery warning symbol before this happens. But if there's really plenty of juice left, this can be very frustrating shutting down too soon.

Once again, it's not the battery at fault. The first thing to try is recalibrating the meter

If recalibrating does not solve your problem, try resetting your mp3 player (method varies by model) and/or restoring it (be sure you have all of your data or music on your computer before doing this). Then repeat the full cycle of discharge and recharge.

### ○ *Limited recharges*

A "cycle" is defined as one full charge to maximum battery capacity followed by discharge to the automatic shutdown point, spread over as many uses as you like. Lithium batteries of this size and rating tend to retain their ability to hold a full charge for about 500 of these cycles, on average. If we use half the battery capacity, and then charge the device back up to full, we have used one-half of one cycle. If we did precisely that every single day, it would take you 1000 days to reach the end of the predicted service life of the battery.

That is not the same as saying we have reached the end of the battery life. It means that most batteries after a number of cycles will no longer hold a full charge. Some keep on holding enough charge that there is no reason to replace them for many more cycles; normal capacity loss at this point is about 20%. Others give out a bit sooner, and a tiny percentage crap out very early in their life and get replaced for free under warranty

- ***Runs down overnight***

If the problem is that the batteries run only for a very short time before shutting down in a very quick and unexpected way. The prime reason will be that the battery is probably worn out. This problem is very similar or simply the same to Limited recharges, which we explain at the last point.

- ***Store a battery during a lot of time***

A battery will self-discharge slowly over time. Allowing a battery to sit in a discharged state will ultimately lead to severe positive grid corrosion and battery failure. An un-used battery should never be allowed to sit over 6 months without a recharge.

- ***Partial lockup***

If we use the device until the battery has completely drained, it may lock up and appear to be "dead." Many times, locked units can be reset without being sent out for repair. If this occurs, let the unit charge overnight and the next time, put a fully charged battery in its place.

- ***Charging battery without waiting low***

If we hold off on charging until the battery is pretty low, that will save cycles and prolong battery life. It is not how many times we charge; it's how many charge/discharge cycles we complete that determines battery life. It makes no difference whether you fully charge a half-used battery twice, or a fully rundown battery once; both count as one cycle in the estimated useful life of 500 cycles. Waiting to charge merely postpones battery use; it does not prolong it. So charge when convenient.

- ***Leaving uncharged batteries for a lot of time.***

If we leave the devices uncharged for days and days, it could shorten battery life or make the voltage in the battery so low that it will not revive.

- ***Problem for using USB to recharge.***

USB is especially sensitive to how many devices are on it and what the resulting bus voltage is. It may even display the charging icon but not be adding much to the battery.

Some PCs use 4-pin Firewire cables (all Macs are 6-pin) which carry no charging voltage, so they won't work at all for recharging and can allow your mp3 player to run down and cause serious problems while updating firmware, restoring, or loading songs. And if the computer

sleeps or is turned off, the battery won't charge either device and in some cases will actually drain through the port circuits.

## USB FAILURE

### ▪ **USB ports do not work**

#### ○ *USB ports disabled at BIOS*

We have to check the BIOS to see if USB connections are enabled there. If not, enable them and we should be set. If we have problems getting into BIOS.

#### ○ *Bus powering defects*

In some cases, USB failure can be the result of manufactures' inability to use bus power correctly per design specs. Poor bridge design can overload or short the USB port, rendering it unusable for data transfer, but still viable for powering devices.

#### ○ *Static electricity*

Static electricity may be the culprit behind USB failures for ports that disallow data transfer, but can still power devices. If the USB ports stopped working with the mp3, although it still provides power to the device. Probably, it is because of a poor design and static electricity. The contact on the USB port is virtually flush with the outside of the case. Static electricity is the bane of internal computer technicians' work. Without proper grounding and static-immune gloves, entire sections of the motherboard and various other delicate components can be destroyed.



## ▪ Operating System does not auto-detects

- *Driver disk does not installed*

Although sometimes MP3 players do not require a driver to be installed in a system, if the firmware update reportedly could not detect or recognize your player connected to our PC after we have installed the latest update and media update, and tried a different USB cable and USB port, it is recommended that we try the player in a different PC to rule out any hardware or software conflicts between your PC and the MP3 player.

## ▪ Slow transfer speeds

- *Async or sync opened at UDEV (device manager for the Linux kernel series)*

The reason of a USB transfer slow can come given because of the UDEV, which the system used, has the async or sync opened. In Mandriva, through long time discussion, they almost disable this "async"/"sync".

UDEV is the device manager for the Linux 2.6 kernel series. Its primary function is managing device nodes in `/dev`. It is the successor of `devfs` and `hotplug`, which means that it handles the `/dev` directory and all user space actions when adding/removing devices, including firmware load.

- *No updating drivers for new operating system*

To find and download the MP3 Player drivers, we have to choose the appropriate manufacturer and find your device model driver. Any other driver could not be appropriate for recognising all the possible features of our device.

▪ **Misuse**

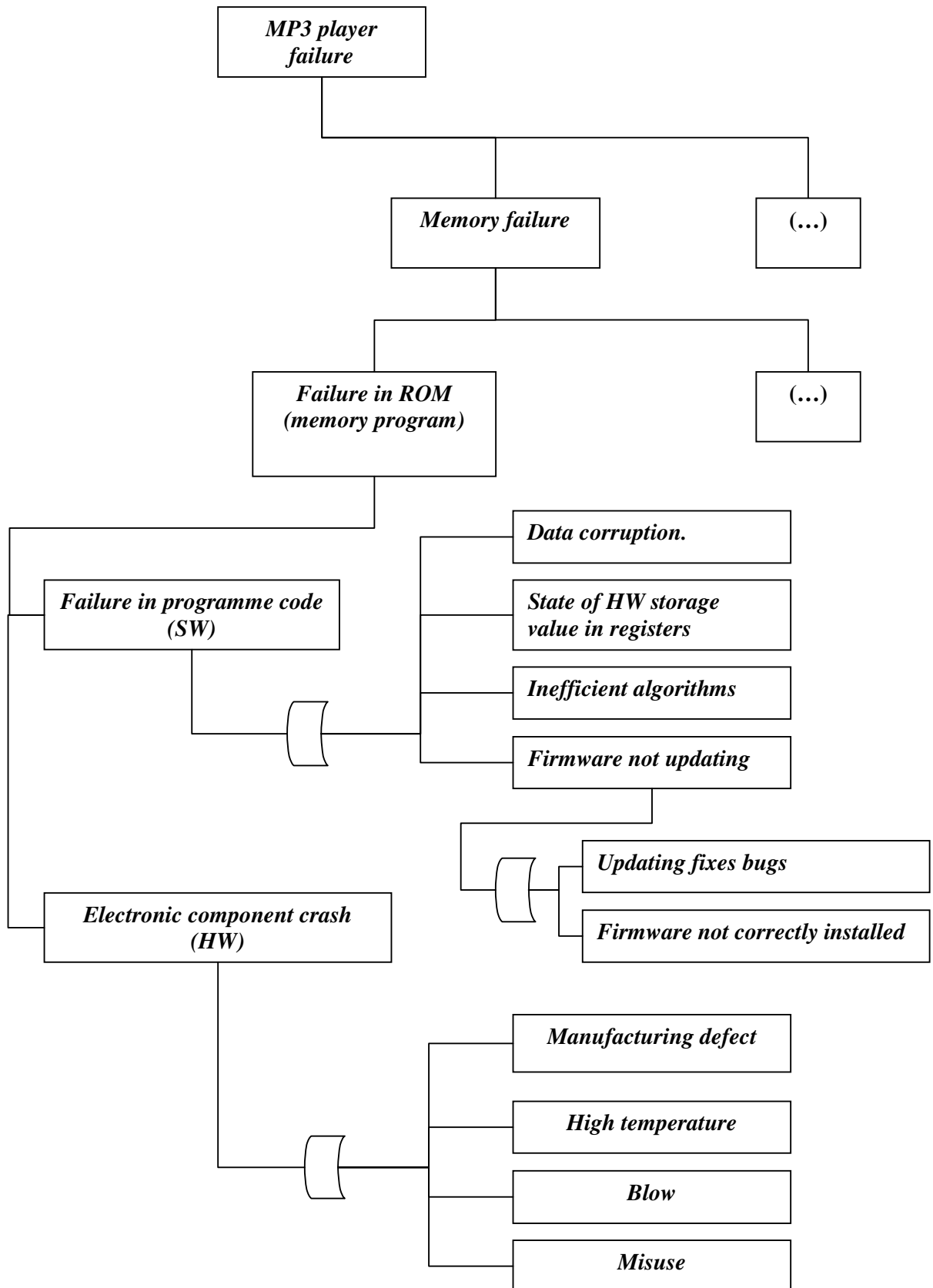
○ *Pulling out from PC while it is transmitting*

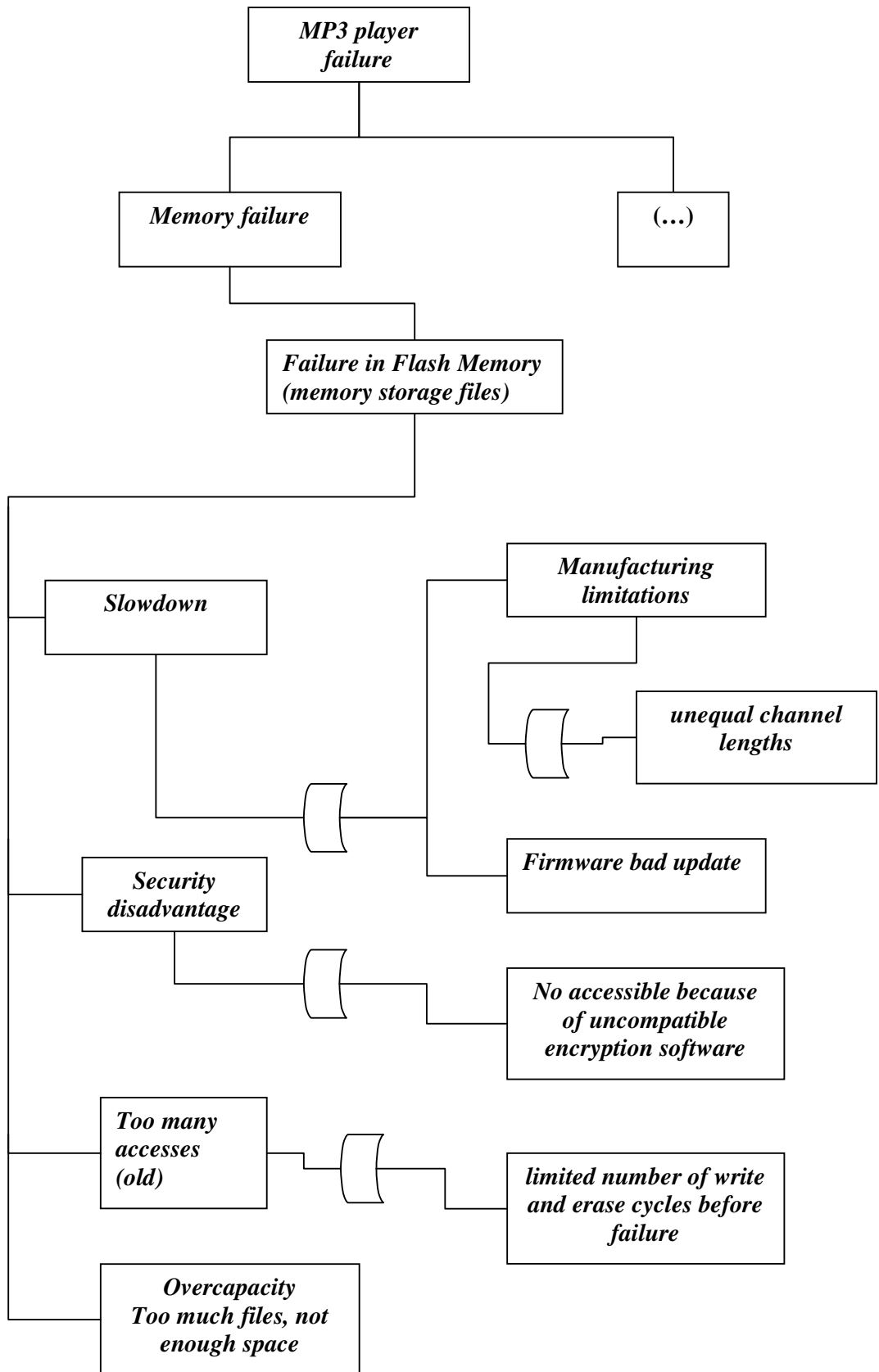
When MP3 player is well connected with PC, the operations of download and upload data is the same with hard disc.

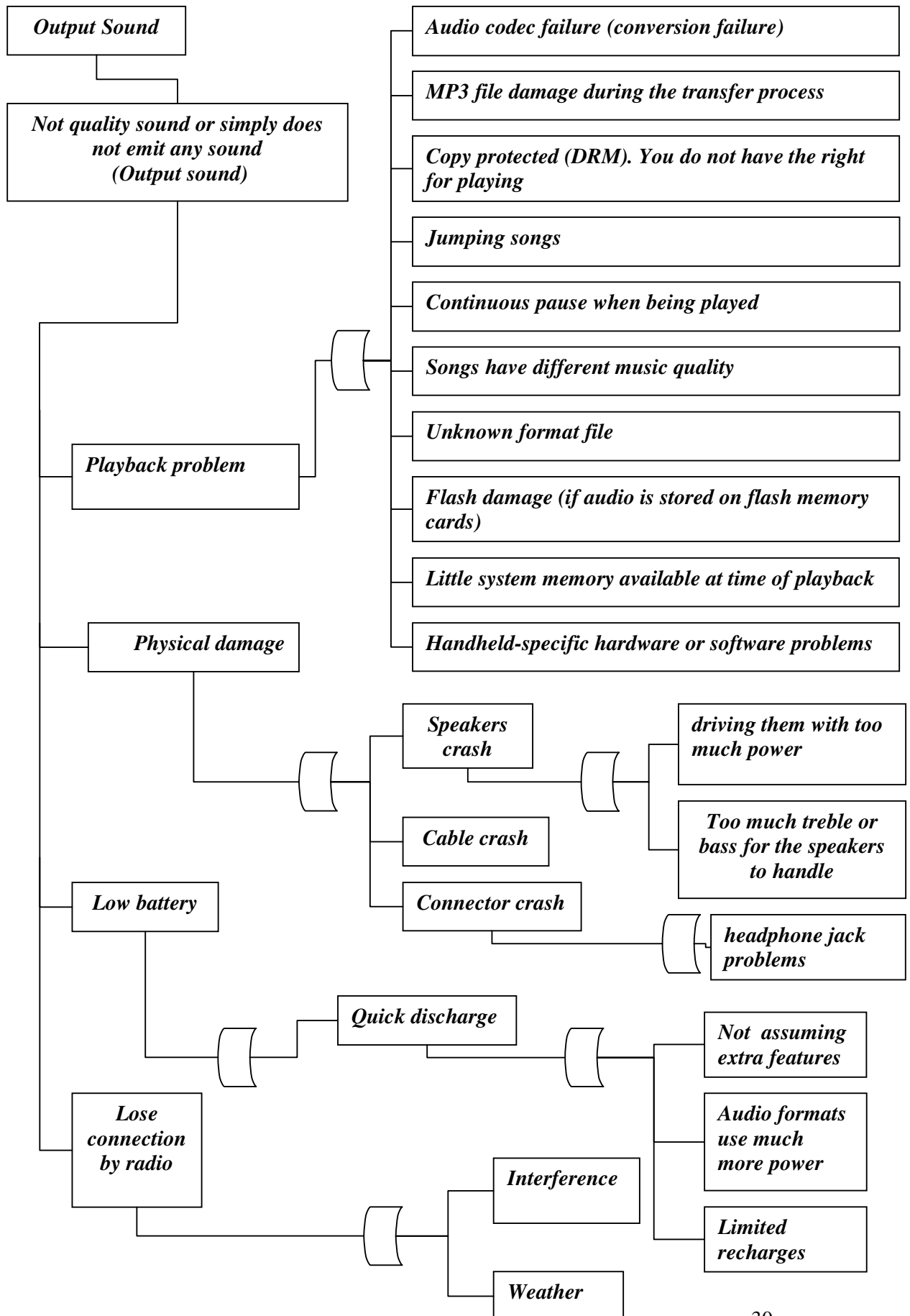
We don't have to pull out MP3 player from PC while it is transmitting, which may cause the player damaged the USB have to be uninstalled from PC in the correct method, or else it will cause data damaged or lost.

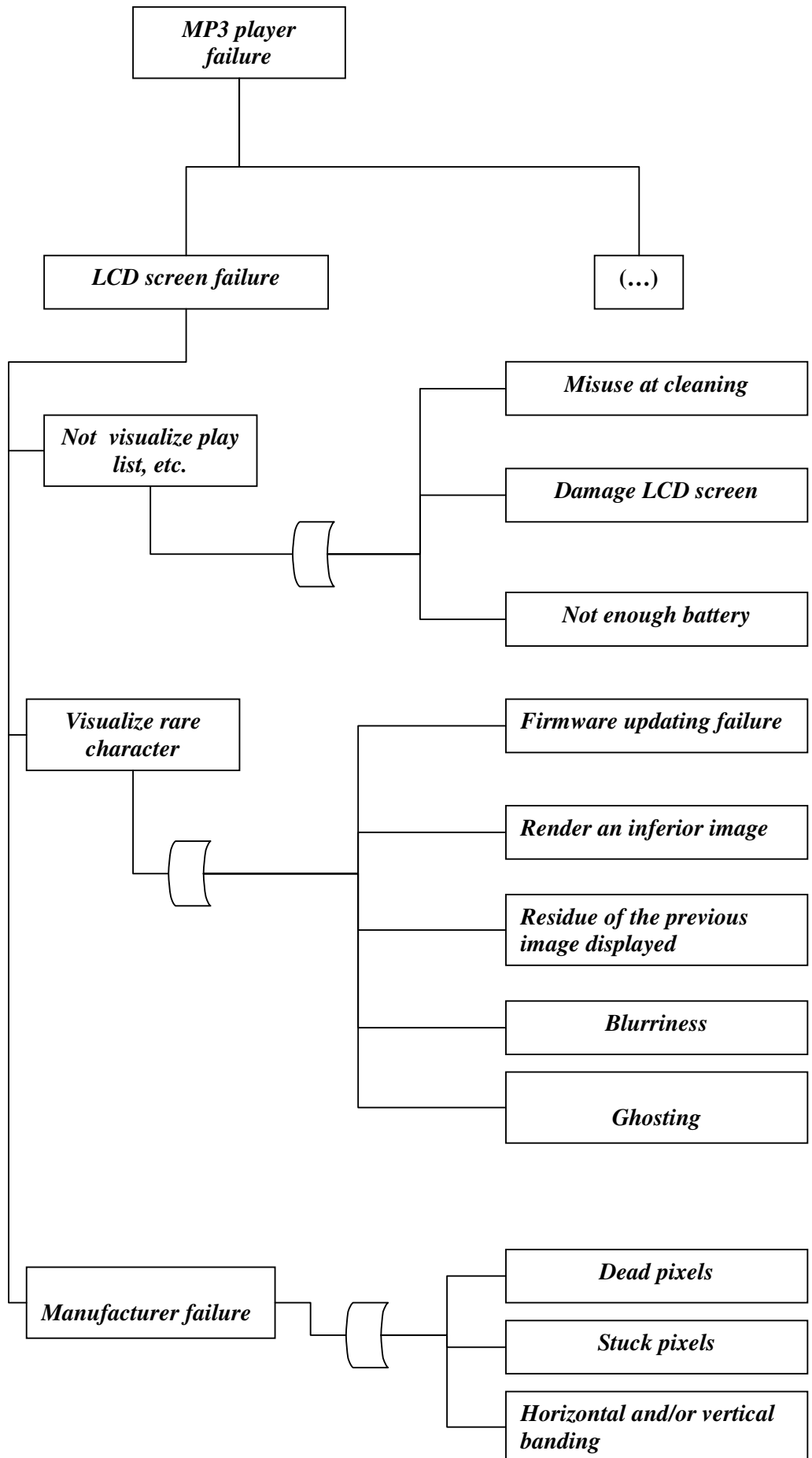
## ***Fault Tree***

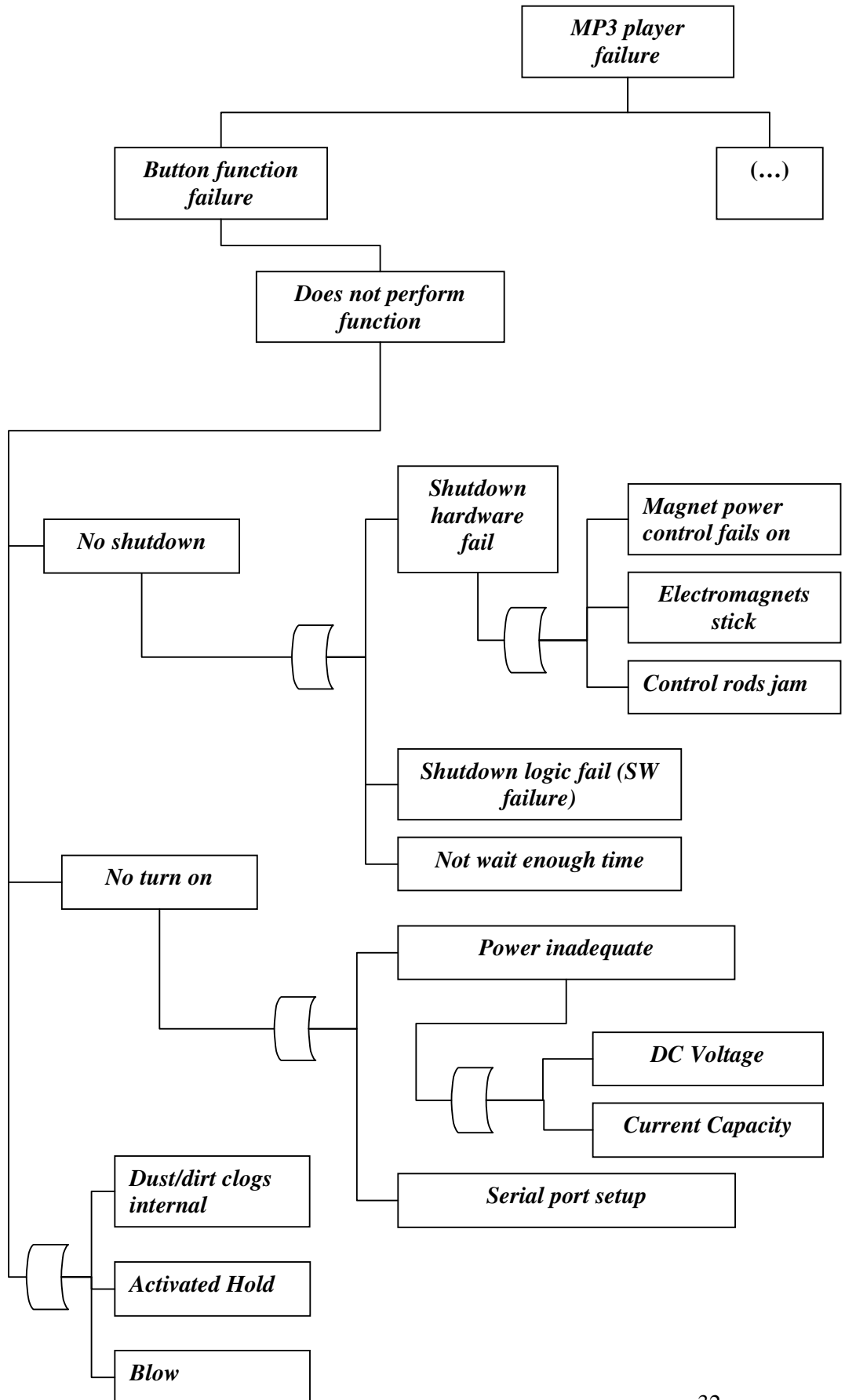
Next, it is showed the fault tree of the device, which we are talking about by means of sort descriptions of its possible failures, representing that in a more visual way.



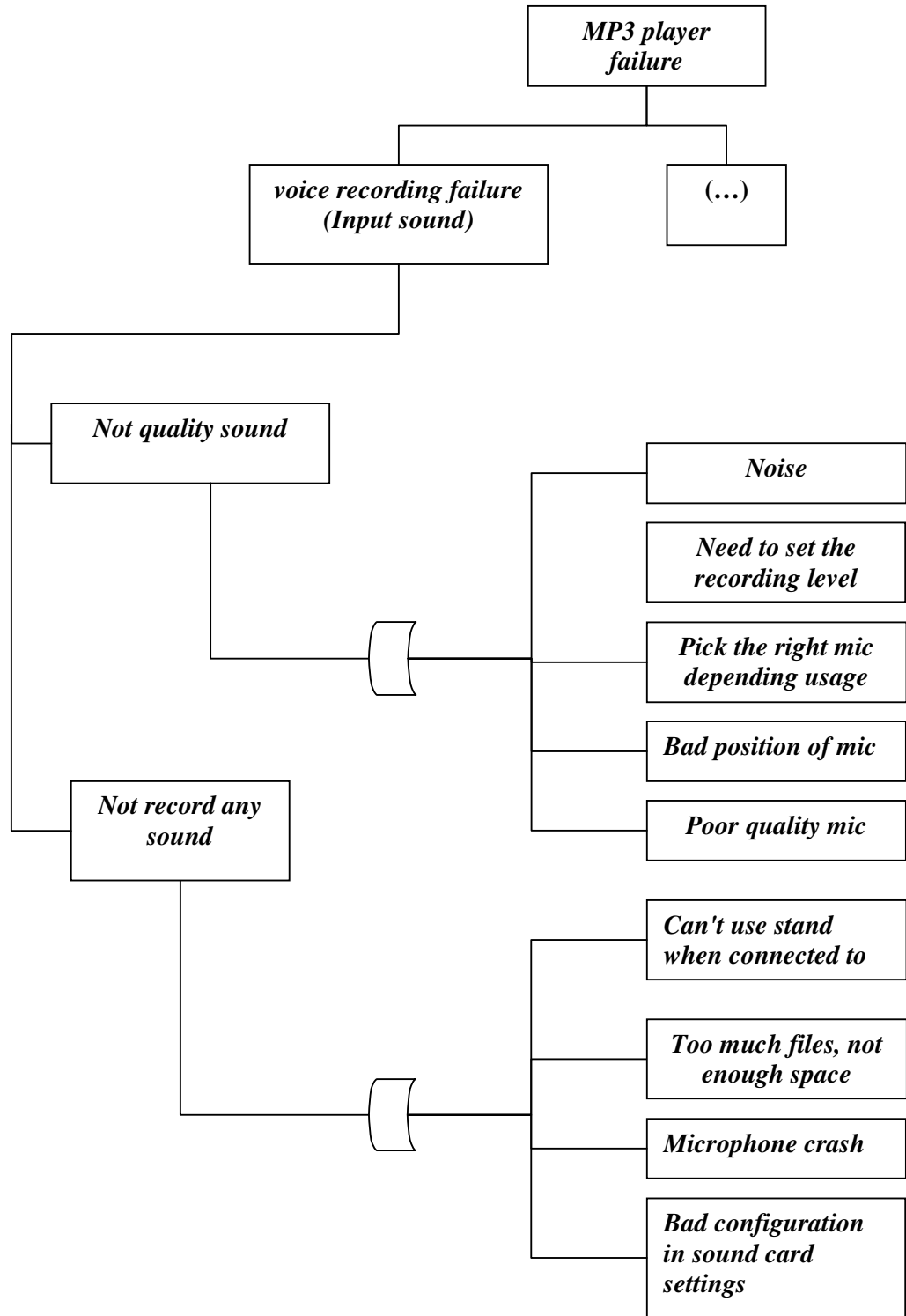


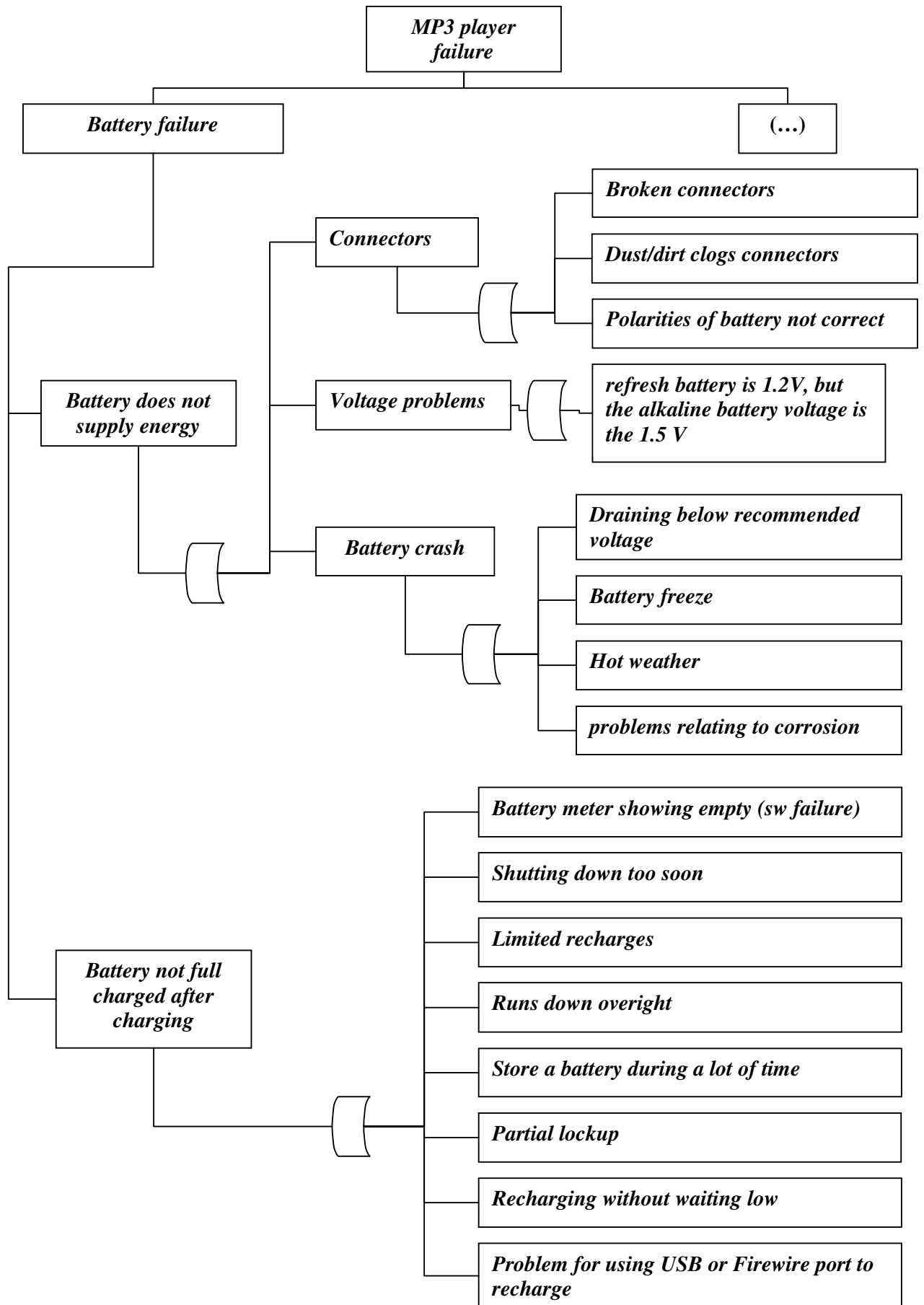


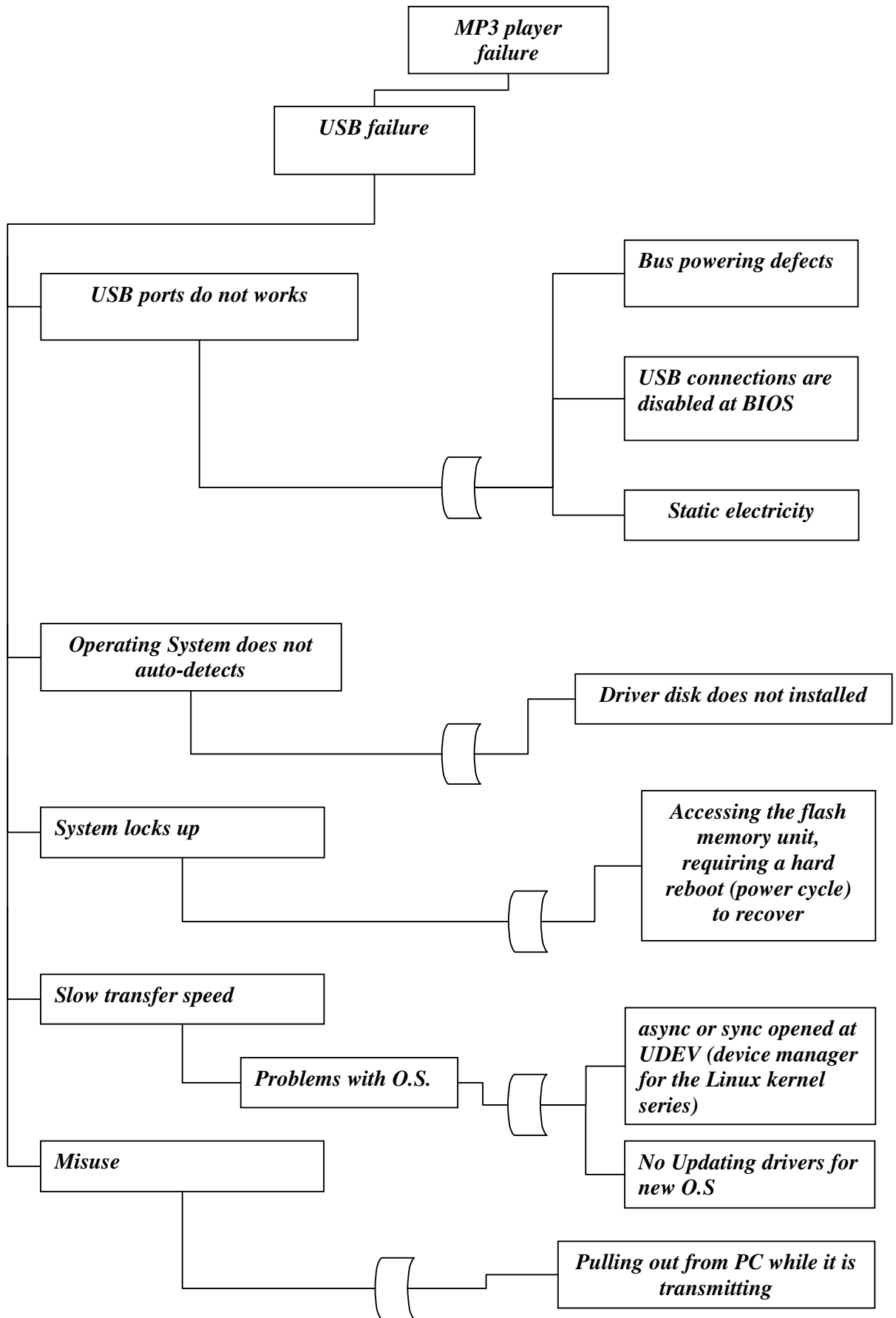












## ***Webgraphy***

### ***Overheating***

<http://www.helium.com>

### ***Manufacturing defects***

<http://www.patentstorm.us>

### ***Storing failure***

<http://www.freepatentsonline.com>

### ***MP3 Player Circuit Board***

<http://www.pjrc.com>

<http://utter.chaos.org.uk>

### ***Firmware***

<http://www.cnet.com.au>

<http://hotjobs.yahoo.com>

### ***Flash memory***

<http://electronics.howstuffworks.com>

<http://www.freepatentsonline.com>

[http://www.linkgrinder.com/Patents/Method\\_of\\_manufacturing](http://www.linkgrinder.com/Patents/Method_of_manufacturing)

### ***Playback Problems***

<http://pocketpccentral.net/>

### ***low batteries***

<http://www.hometechanswers.com/mp3/mp3-player-battery.html>

### ***lcd***

<http://www.hdtvmagazine.com/articles/>

<http://www.pjrc.com/mp3/>

*batteries*

<http://www.vsa.cape.com>

<http://forums.blagblagblag.org/>

<http://www.clixhere.net/>