

VNR new features:

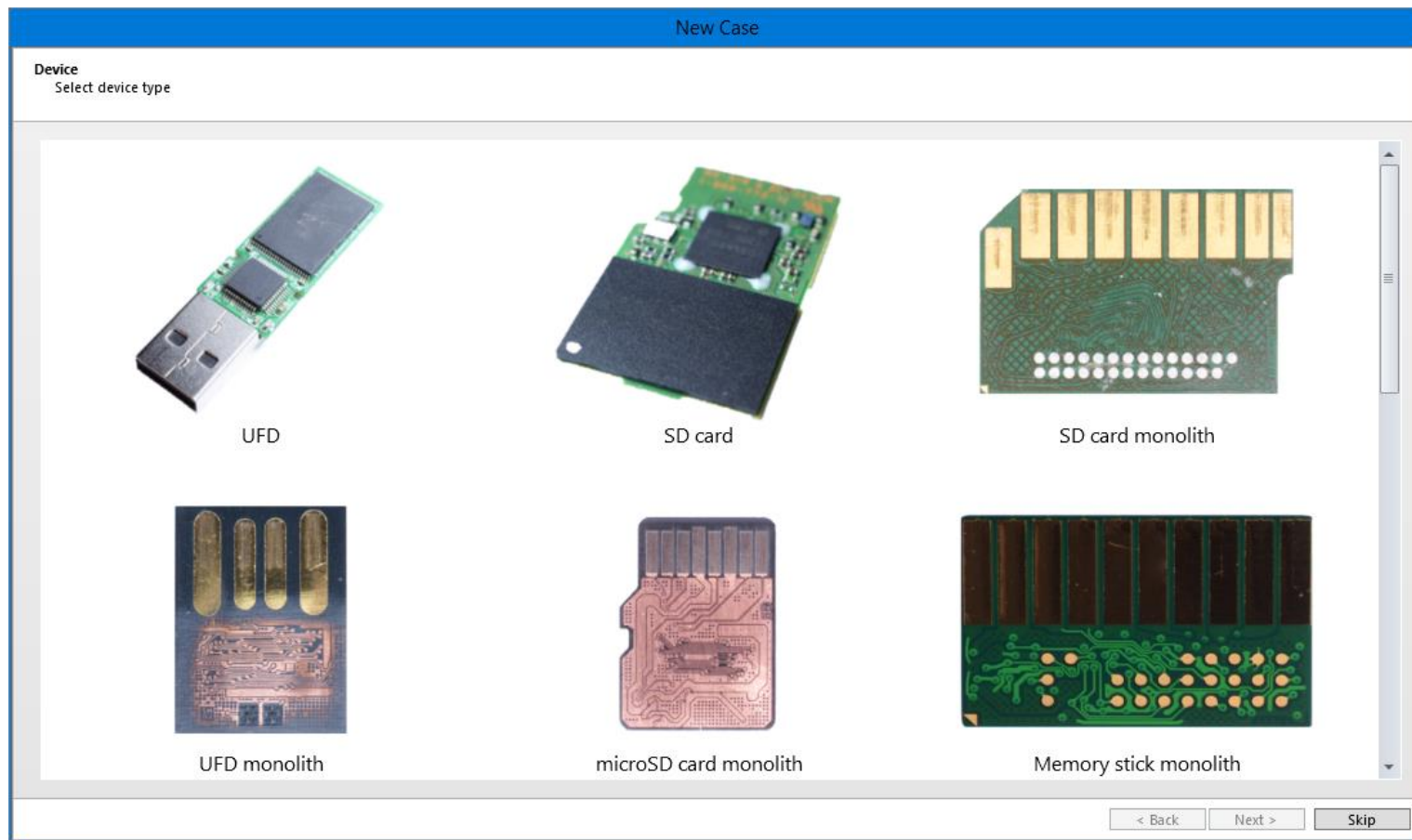
Integrated Online Solution Base

VNR File assembler

AI XOR key synthesis tools

Igor Loskutov, Rusolut

Database of Solutions



- Integrated into VNR
- Dynamically updated
- Local, with Cloud sync
- Automatically adjustable solutions

Three types of solution

The FULL solution

Full match of the controller, NAND ID and the number of chips/ crystals

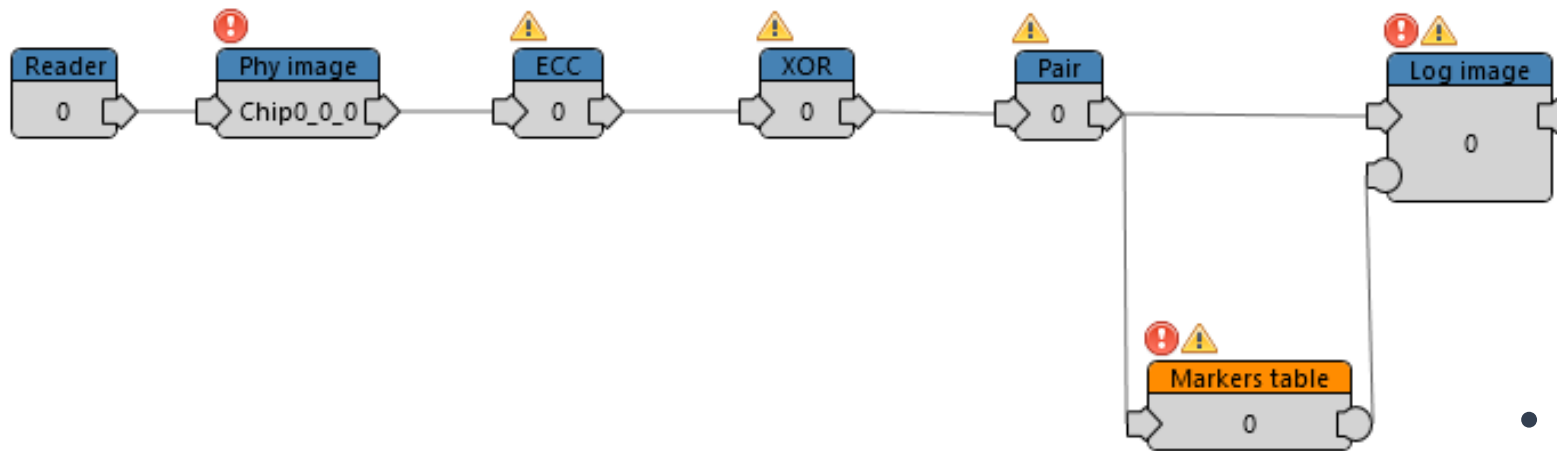
The PARTIAL solution

Match of the controller and NAND ID

The controller template

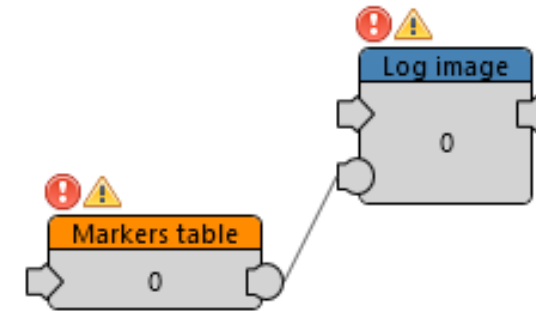
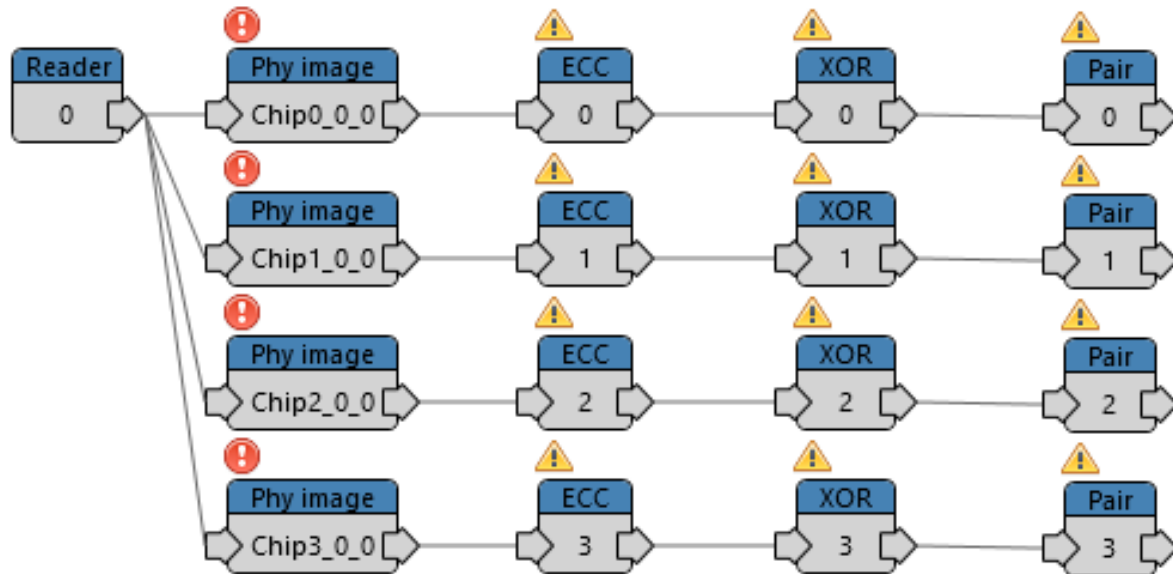
Match of the controller

The FULL solution



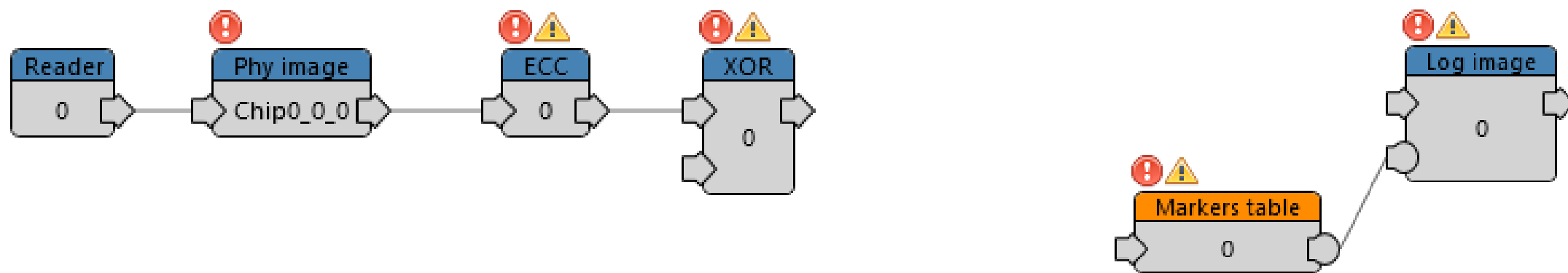
- All parameters are defined
- Markers table is fully set up
- It is necessary just to read a chip and run the reread to fix bit errors

The PARTIAL solution



- Most parameters are defined
- Markers table is mostly set up
- It is necessary to read chips, run the reread to fix bit errors and UNITE the dumps at the end.

The controller template




This is a “skeleton” solution that suggests the transformations that should be used for the selected controller.


Database of Solutions

New Case

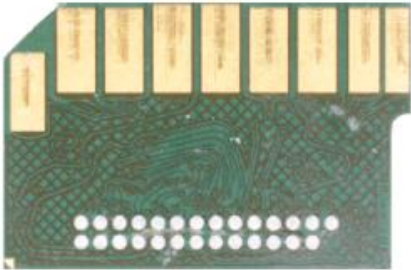
Device
Select device type



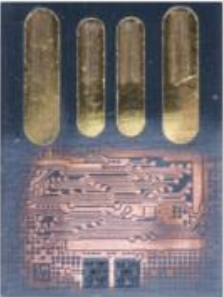
UFD



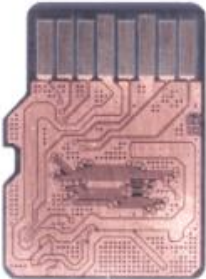
SD card



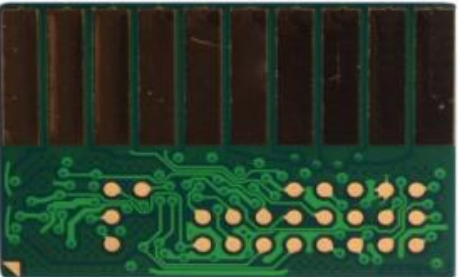
SD card monolith



UFD monolith



microSD card monolith



Memory stick monolith

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Database of Solutions

New Case

Controller
Select controller model

Find controller

Filter controllers by vendor

- AlcorMicro(AU)
- Black blob
- Chipsbank(CBM)
- FirstChip(FC)
- Indilinx(IDX)
- Innostor(IS)
- Intel
- ITEtech(IT)
- JMicron(JM)
- Marvell(88SS)
- Other
- Phison(PS)
- Samsung
- SanDisk
- SiliconMotion(SM)
- Skymedi(SK)
- SolidStateSystem(SSS)
- Toshiba(TC)

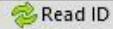
AU_universal	AU6986	AU6987	AU6989ANHL
AU6989SN	AU6989SNCS	AU6989SNHL	AU6990
AU6998SN	AU69xx	Black blob 1	Black blob 2
Black blob 3	Black blob 4	Black blob 5	Black blob 6
Black blob 7	Black blob 8	Black blob 9	CBM_universal
CBM2098E	CBM2099	CBM2199	FC_universal
FC1178	FC1179	FC1250-TC-AL	FC1610-TC-AL
FC8708-C	IDX_universal	IS_universal	IS817
IS902	IS903	IS916	IS916EN

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Database of Solutions


New Case

Monolithic device
Select monolithic device

Filter monolithic device by memory chip ID
 

Filter monolithic device by vendor

- Apacer
- CENTON
- Freecom
- Generic
- GoodRAM
- Hama
- HEMA
- Integral
- Intenso
- Kingston
- Lexar
- no name
- Other
- Panasonic
- Platinum
- pqi
- Pretec
- Samsung
- Sandisk

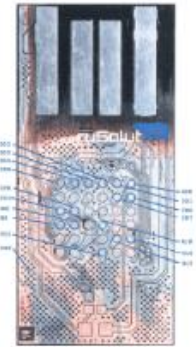
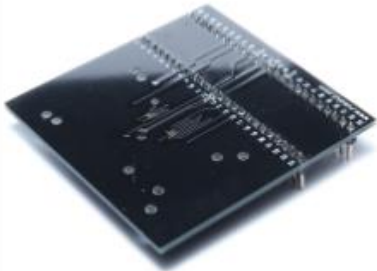
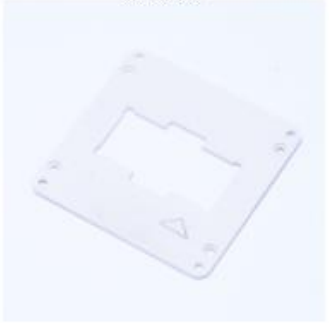
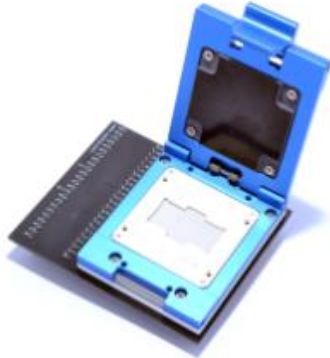
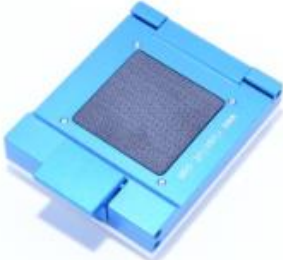


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Database of Solutions

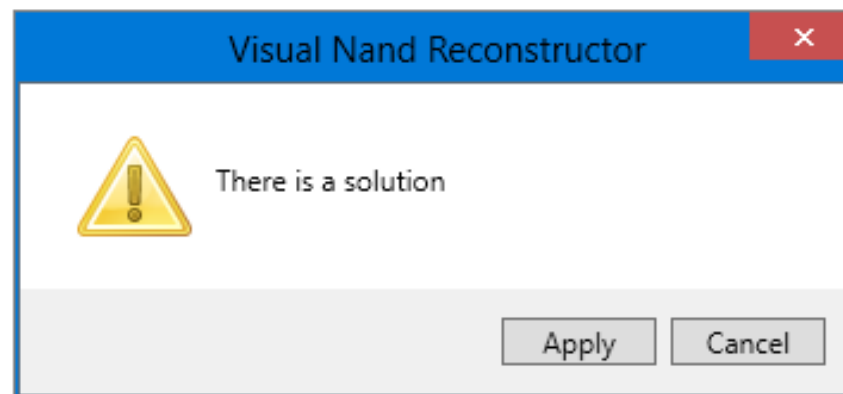
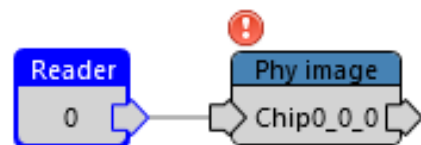
New Case

Monolithic pinout adapter
Insert chip into reader by means of adapter

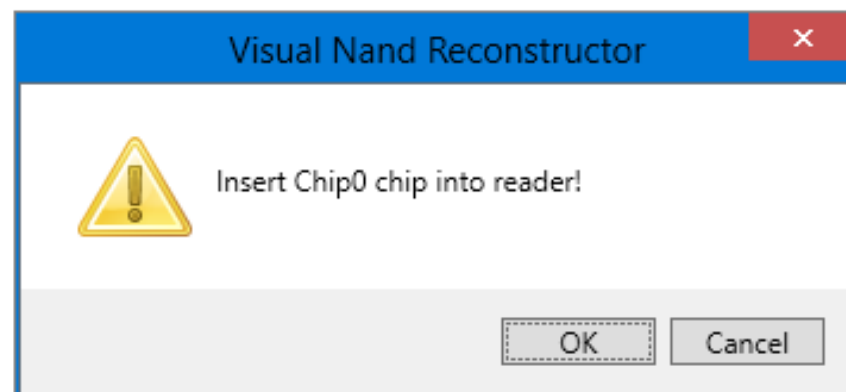
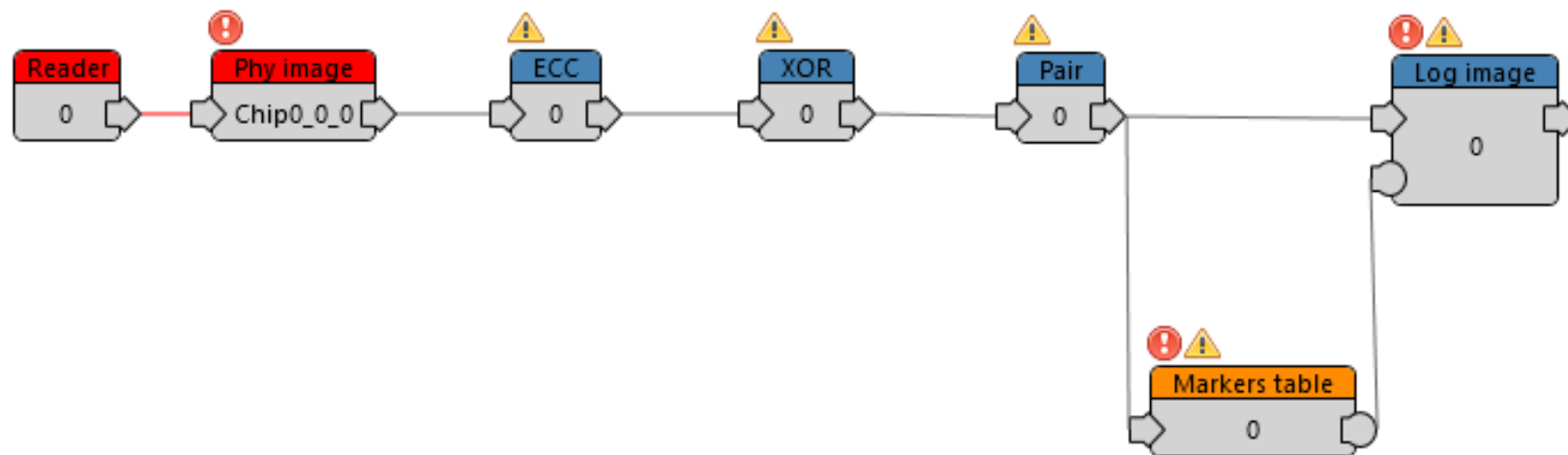
Description	Adapter assembly		
<p><i>Pinout</i> 0043</p> 	<p>PCB</p> <p>monoUFD 6x6</p> 	<p>Frame</p> <p>6x6 pads</p> 	<p>Assembled adapter</p> 
		<p>Socket</p> <p>MONOUFD 6x6 & 3x7</p> 	

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Database of Solutions



Database of Solutions



Solution adding by users

The screenshot shows a file explorer window with a list of folders. A red box highlights the first column of the list. A dialog box titled "Visual Nand Reconstructor" is overlaid on the list, asking "Would you like to upload solution to VNR database?". The dialog box has a yellow warning icon and "OK" and "Cancel" buttons.

Folder Name	Date/Time
.Trash-1000	09/07/2014 18:10:04
amcm	06/13/2014 13:49:54
AMCM2014	06/16/2014 13:37:58
BADANIA	02/18/2014 14:31:32
BPB2013	02/18/2014 07:42:44
BPB2014	02/18/2014 07:42:44
CESBP	05/19/2014 12:56:28
CTTRANS	:08
ElemLiniow	:46
ElemLiniow	:00
EXP	:26
FL	:06
grant Marci	:24
HIT	:18
instrukcja_p	:24
kamyk_N	05/14/2013 14:02:36
LITdoWstepu	08/27/2014 14:46:56
MEZO_PRZEP	10/15/2012 12:54:18
odpKaminskiej	11/29/2011 11:02:48
PDF Mazars	08/25/2014 16:12:48
PIT	04/14/2013 10:49:46
POROZYMETRIA	11/07/2013 11:49:56

Solution adding by users

Add new solution

Device type *	UFD	Memory chip ID	98D5943276
Device		Number of memory chips	1
Controller vendor	Phison(PS)	Crystal number per memory chip	1
Controller model	PS2251-50-F		

Solution provider * .. Solution type * Full with parameters

Description

Images

Remove

Providers

Name Jon

Last name Smith

Display name * VNR Champ

Ok Cancel

Ok Cancel

Solution adding by users

Add new solution

Device type *	UFD	Memory chip ID	98D5943276
Device		Number of memory chips	1
Controller vendor	Phison(PS)	Crystal number per memory chip	1
Controller model	PS2251-50-F		

Solution provider *	..	Solution type *	Full with parameters
---------------------	----	-----------------	----------------------

Description

Images

Add Edit Remove


Add image

Image type: Device image

Main image:

Image path: C:\IMG_5727.jpg

Image



Ok Cancel

06/13/2014 12:07:54
11/24/2011 11:16:42
03/24/2014 10:04:38
01/07/2014 09:33:38
.00 KB 03/12/2014 11:23:56

Solution adding by users

Add new solution x


Device type *	UFD	Memory chip ID	98D5943276
Device		Number of memory chips	1
Controller vendor	Phison(PS)	Crystal number per memory chip	1
Controller model	PS2251-50-F		


Solution provider *	VNR Champ	..	Solution type *	Full with parameters
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Description

Images

Add Edit Remove

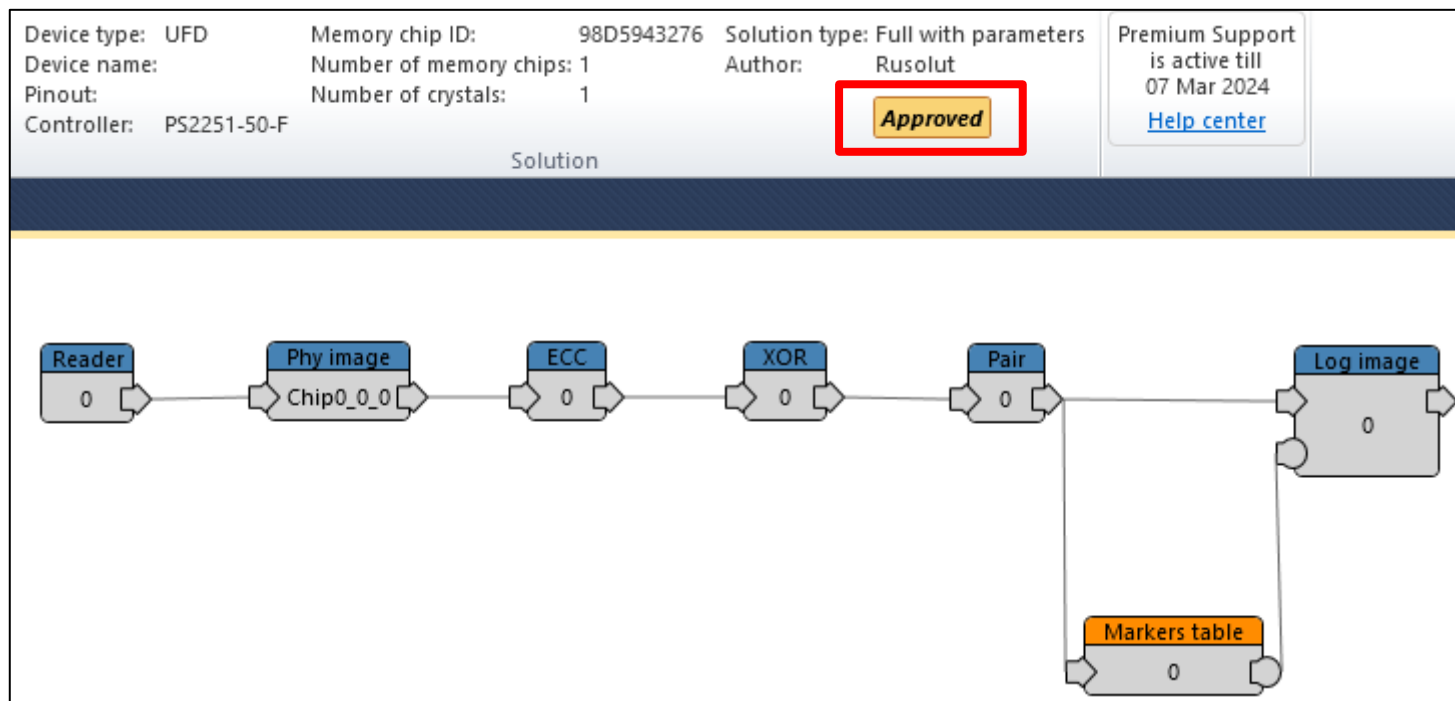

Device image


Device image


Device image

Ok Cancel

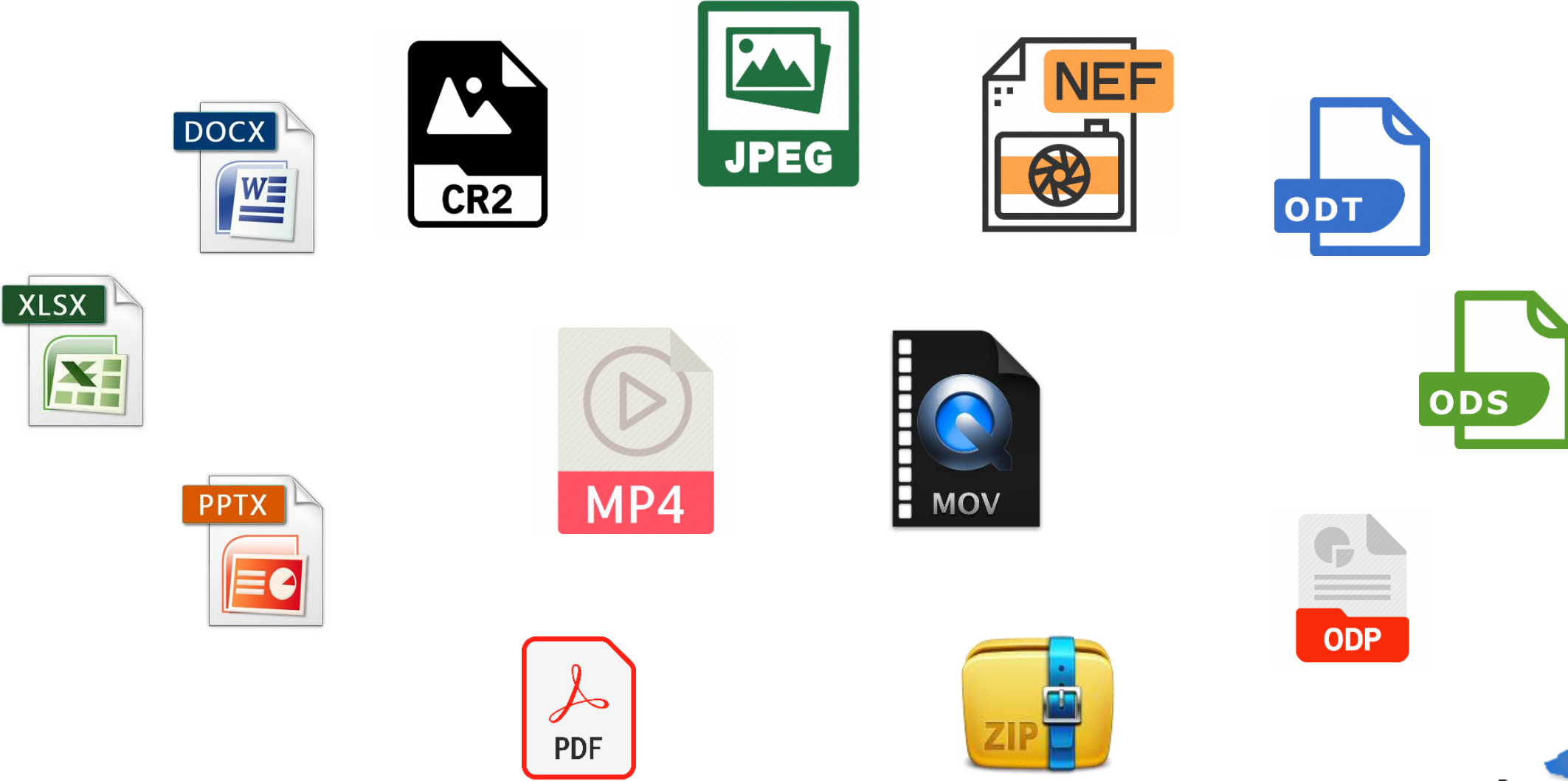
Solution approvement by users



File assembler

The screenshot displays the 'File assembler' software interface. At the top, there is a 'Case' tab and a 'File assembler' sub-tab. Below this, there are several configuration sections: 'Block' with radio buttons for 'Mixed blocks' (selected) and 'Arranged blocks', and input fields for 'Block size w/o SA' (5898240) and 'Block size with SA' (7077888); 'Filesystem' with radio buttons for 'FAT 16/32' (selected), 'Unknown', 'ExFAT', and 'NTFS'; 'Assemble' with checkboxes for 'ZIP by blocks', 'Video by frames', 'Pictures by blocks', and 'Pictures by clusters'; 'Process' with 'Start', 'Pause', and 'Stop' buttons; 'Scan Results' with 'Save' and 'Load' buttons; and 'Settings' with a 'Use cache file' checkbox and a file path 'E:\VNR 6.0 Toshiba - 3\...'. Below the configuration is a 'Workspace' area with 'Progress' and 'Files' tabs. The 'Progress' tab shows five completed tasks, each with a blue progress bar and a 'Skip' button: 'Basic scan - Done', 'ZIP analysis - Done', 'Picture assembly, by blocks - Done', 'Video prescan - Done', and 'Video analysis - Done'.

Supported file formats



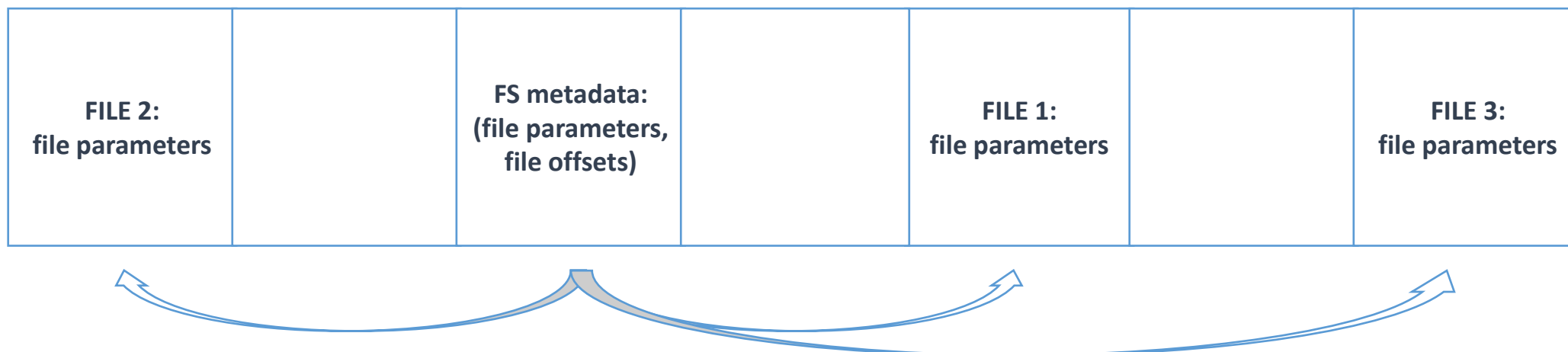
File assembler

It's not yet another Virtual translator, but all new system that assembles files and file systems using three technologies:

1. File system metadata and file parameters advanced analysis
2. ZIP archive elements assembling
3. Intelligent visual content analysis of multimedia files

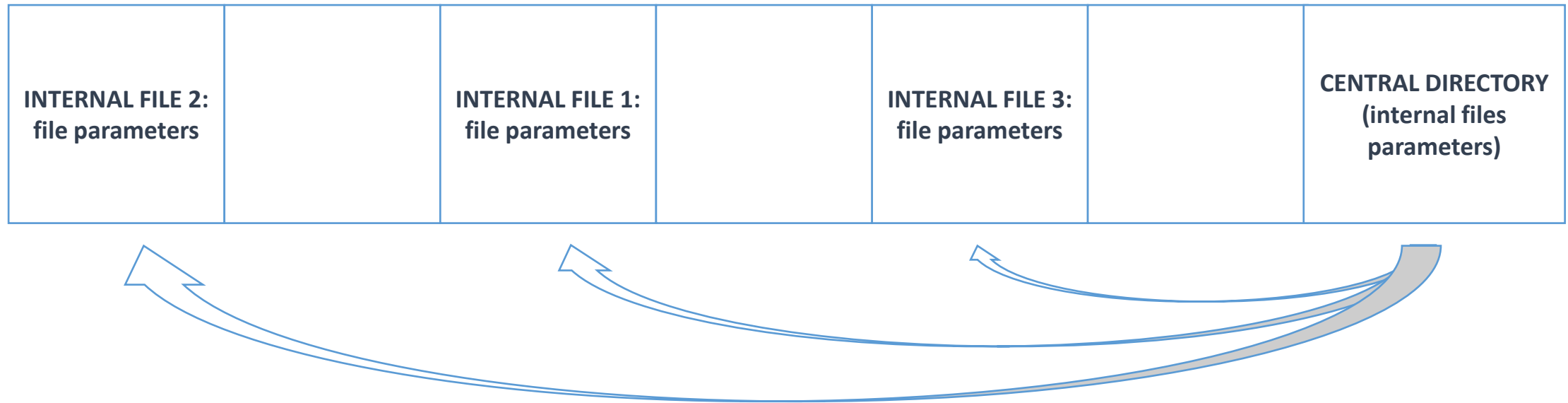
File system Metadata and File parameters analysis

File assembling based on deep analysis of File system metadata remains and found files parameters.



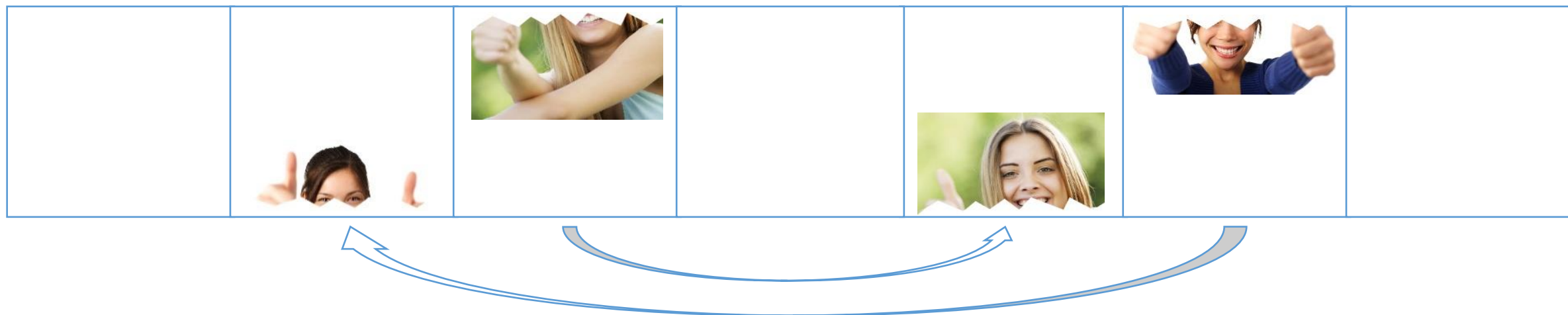
Archive file internal structure analysis

ZIP alike files (DOCx, XLSx, ODT, ODS etc) assembling using internal ZIP file structure scan.



Intelligent Visual content analysis

This technology performs intelligent visual content analysis of pictures and videos and then it assembles files based on the images shown there.



Assembling modes

Mixed blocks

Assembling by BLOCKS fragmented and non-fragmented files on dumps with mixed blocks (Blocks were not arranged by LBN).

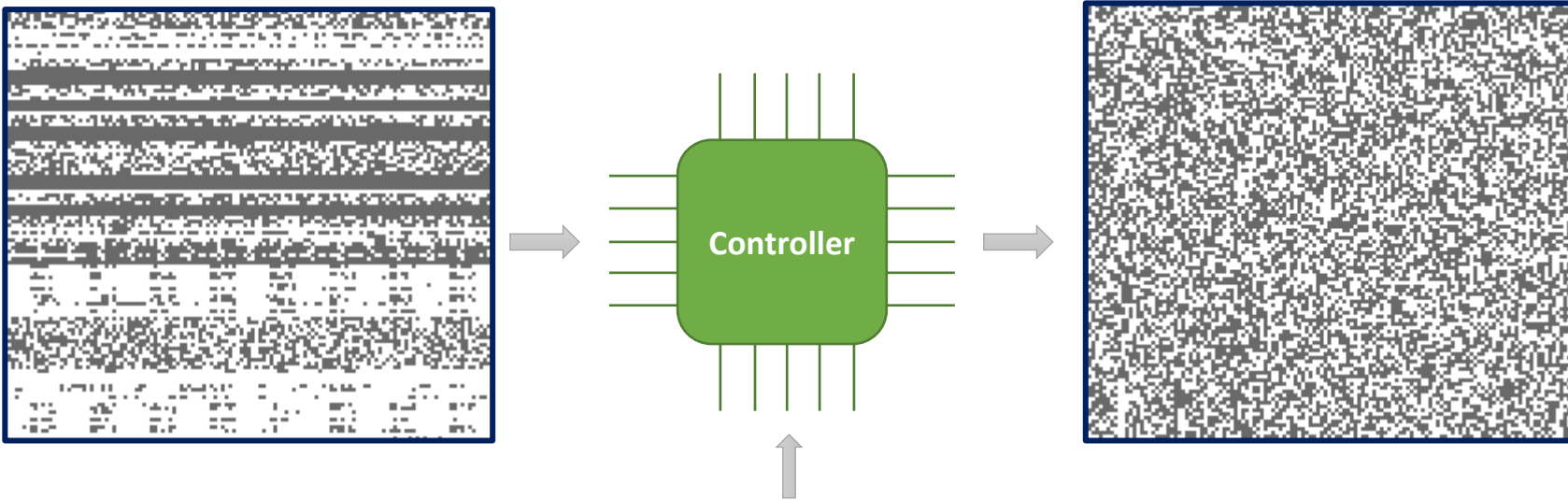
This mode is useful for cases where it is not possible to assemble blocks by LBN (**Toshiba, SSS, etc.**)

Arranged blocks

Assembling fragmented files by CLUSTERS on dumps with arranged by LBN blocks.

This mode is useful when a good logical dump is created, but file system is not available and the dump has big fragmented files. (**Formatted memory cards from video cameras**)

Scrambling (XOR)



XOR key
is standard for a particular controller

Scrambling is used to eliminate data patterns, because TLC chips store data patterns poorly.

User data on TLC chip

```
00000000  
00000000  
01110000  
00001110  
00000000
```

After
some time

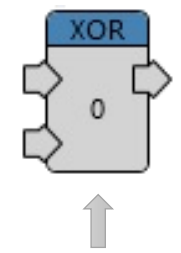
No data on TLC chip

```
00000000  
00000000  
00000000  
00000000  
00000000
```

Descrambling

Scrambled data

```
10101010101
01010101010
10101010101
01010101010
10101010101
```

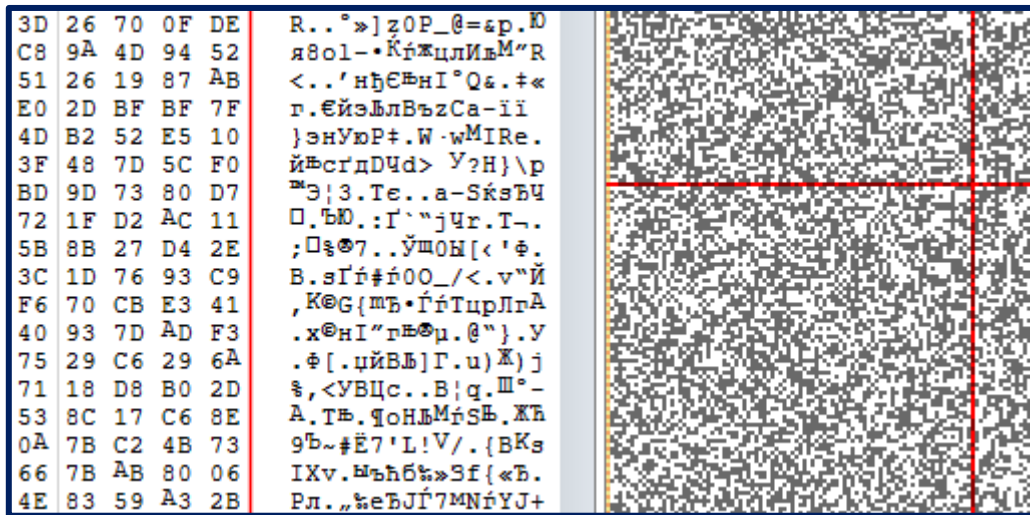


User data

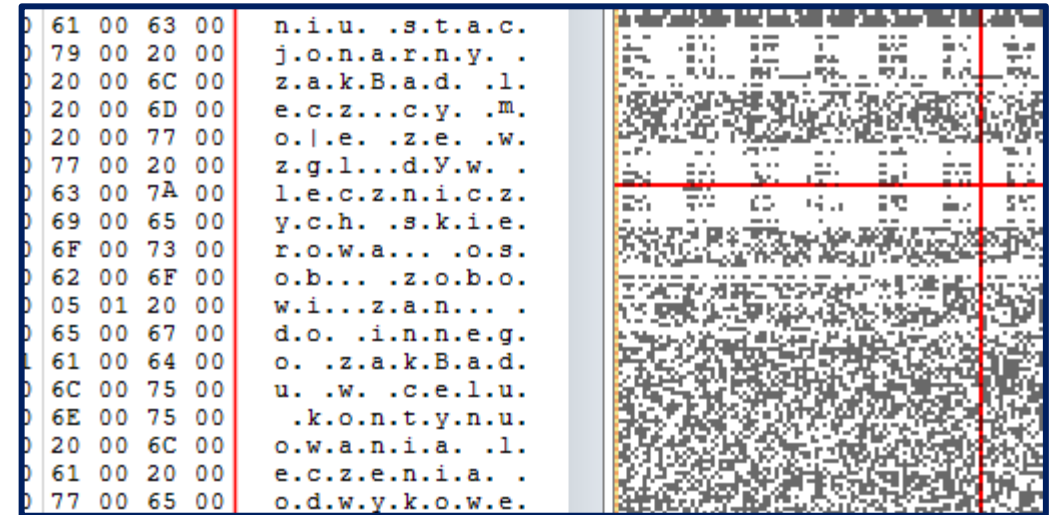
```
00000000000
00000000000
00000011100
00000001110
00000000000
```

XOR key
from VNR database

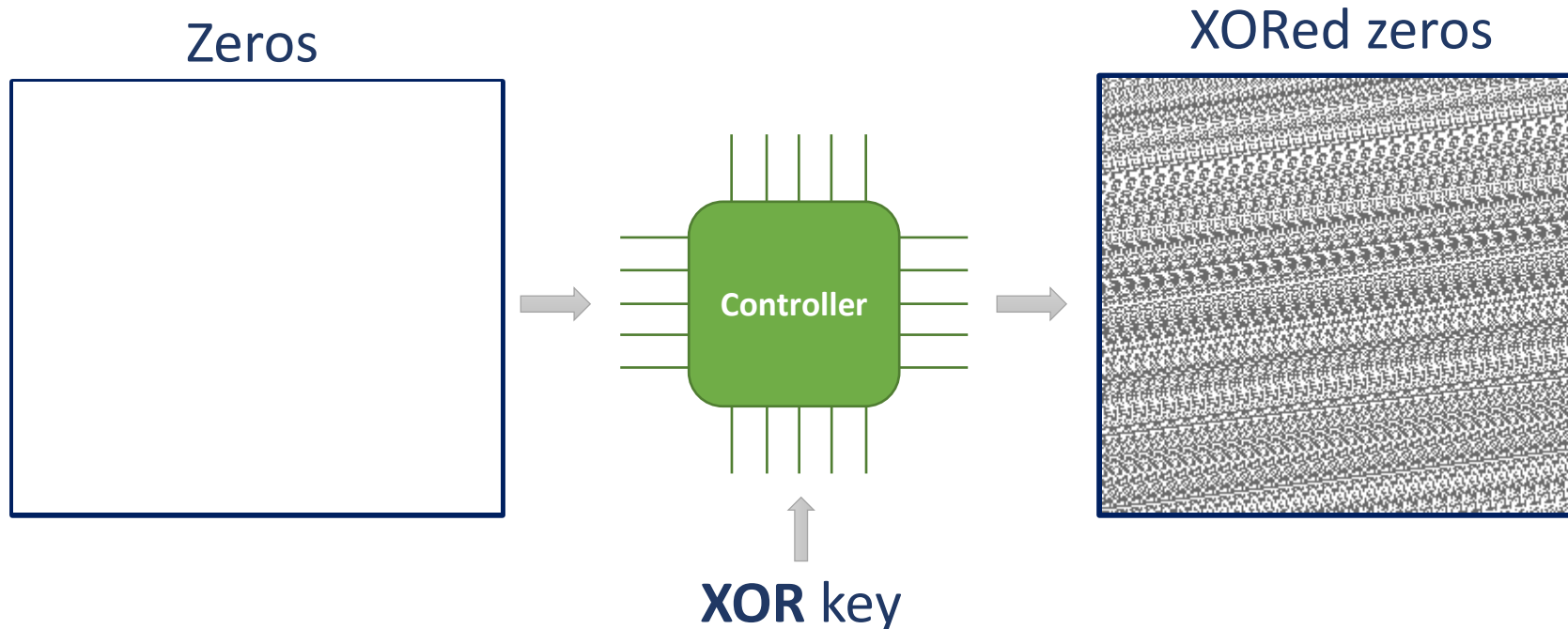
Before



After



Old style XOR key extraction

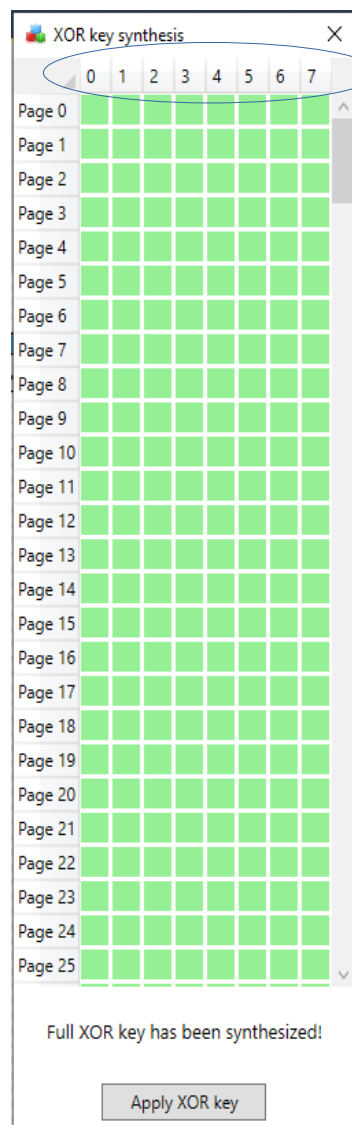


XOR truth table

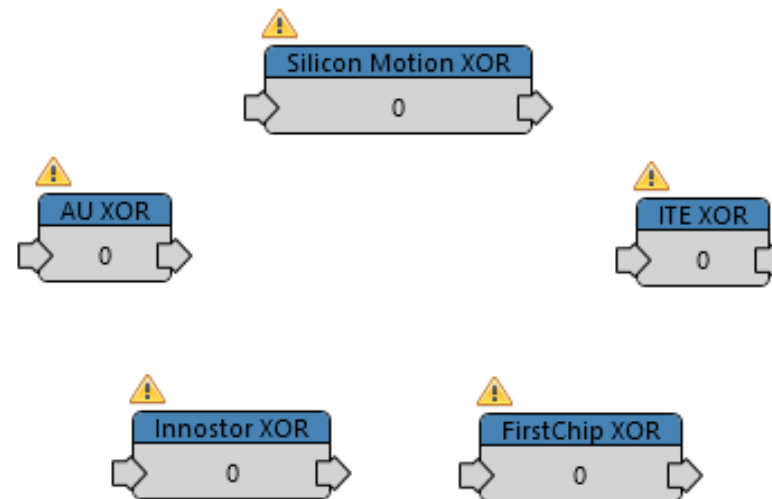
DATA	XOR key	RESULT
0	0	0
0	1	1
1	0	1
1	1	0

New revolutionary AI based XOR key synthesis

NUMBER OF PAGES(EQUAL TO BLOCK SIZE)

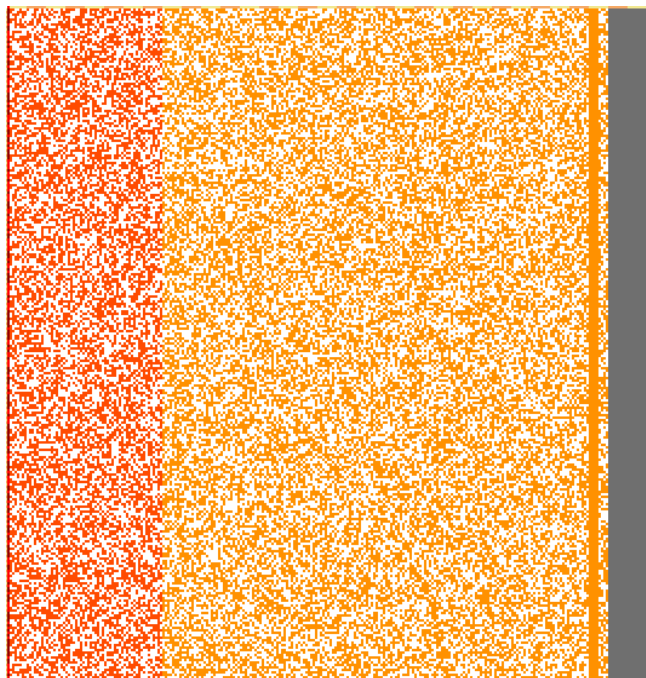


NUMBER OF DATA AREA CHUNKS

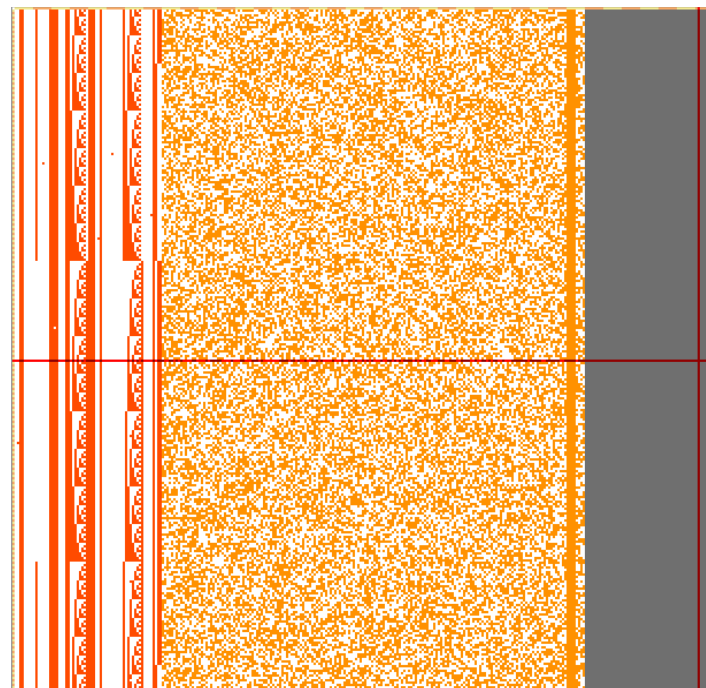


New revolutionary AI based XOR key synthesis

SCRAMBLED SERVICE AREA



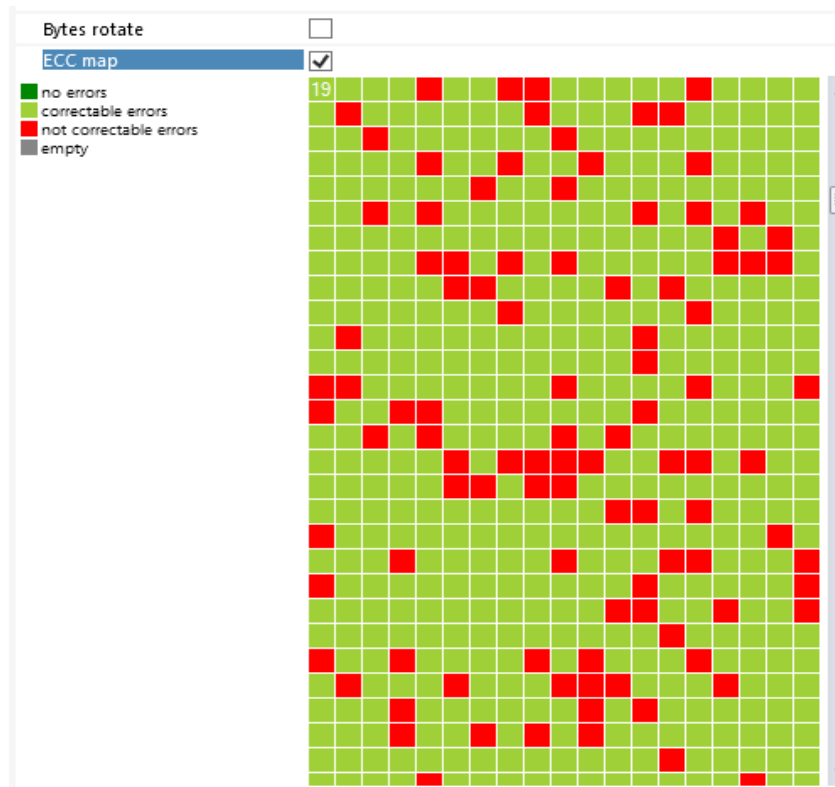
AFTER UNXORING



Could be generated and applied to the Service area too

Skip empty areas	<input type="checkbox"/>
Apply XOR key to SA	<input checked="" type="checkbox"/>
XOR key synthesis	<input type="checkbox"/>

New revolutionary AI based XOR key synthesis



Works on yet uncorrected dumps.

It's important for cases where the Correction should be applied AFTER the UnXORing.

