VNR new features:

Integrated Online Solution Base
VNR File assembler
AI XOR key synthesis tools

Igor Loskutov, Rusolut

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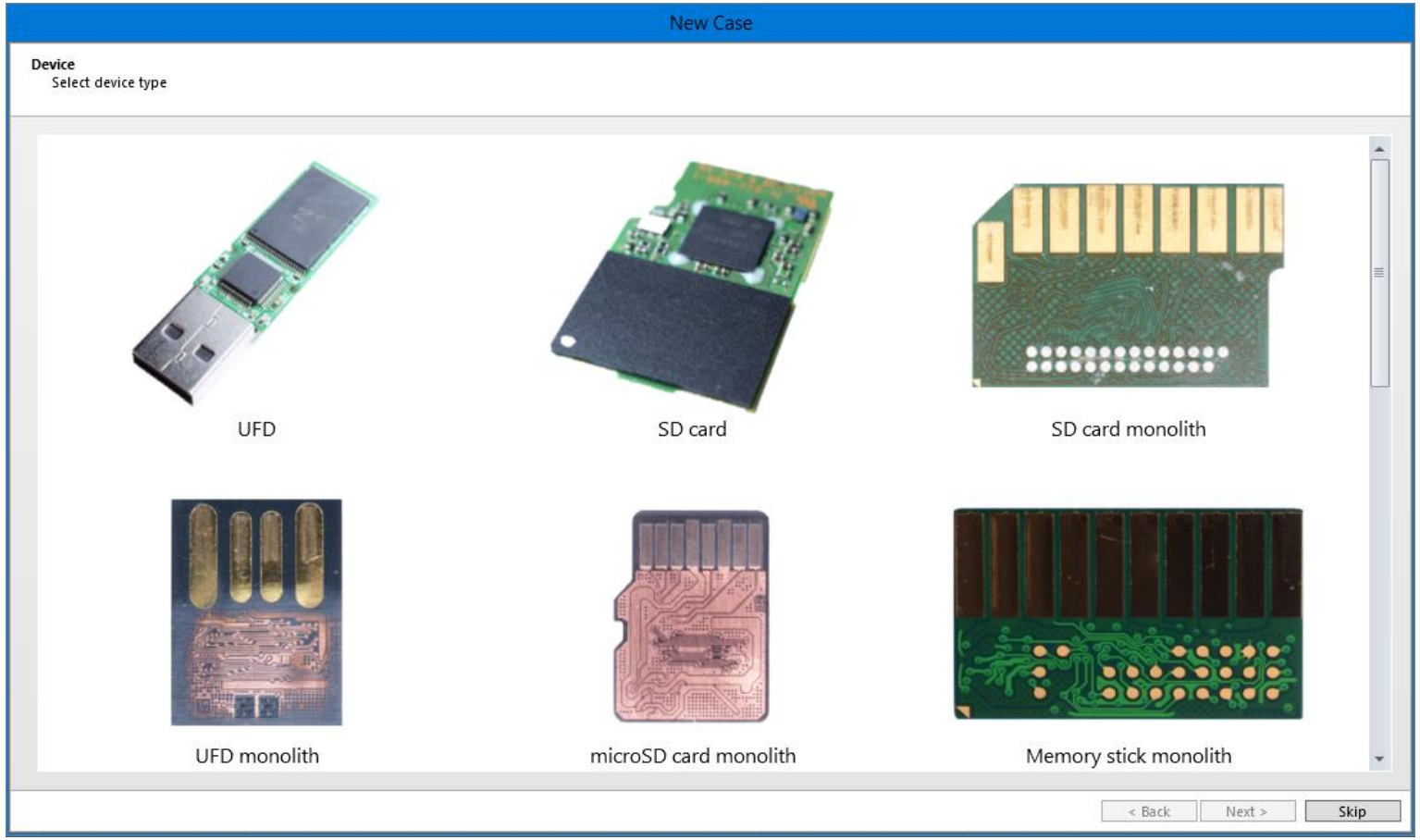
Database of Solutions



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

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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

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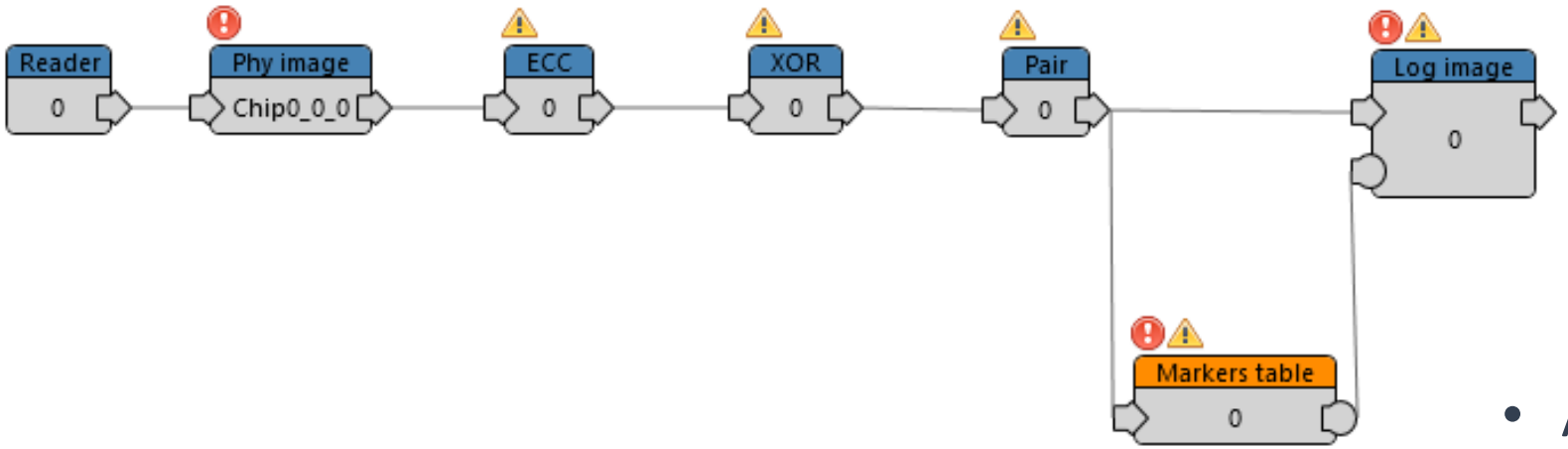
The FULL solution



- 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

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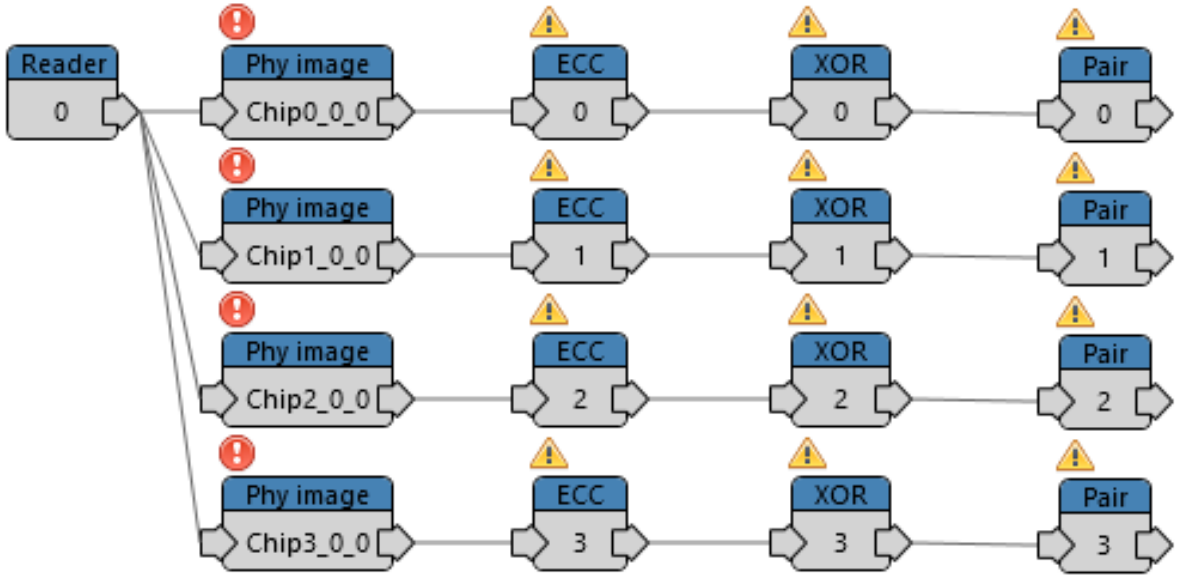
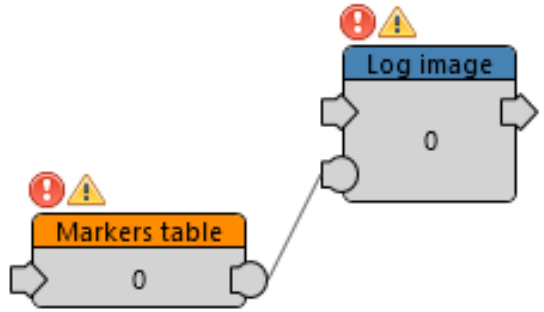
The PARTIAL solution





- 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.

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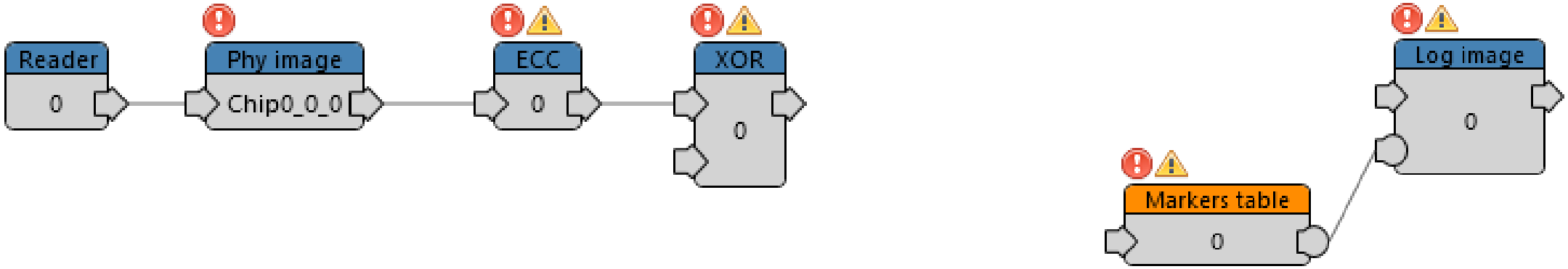
The controller template



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

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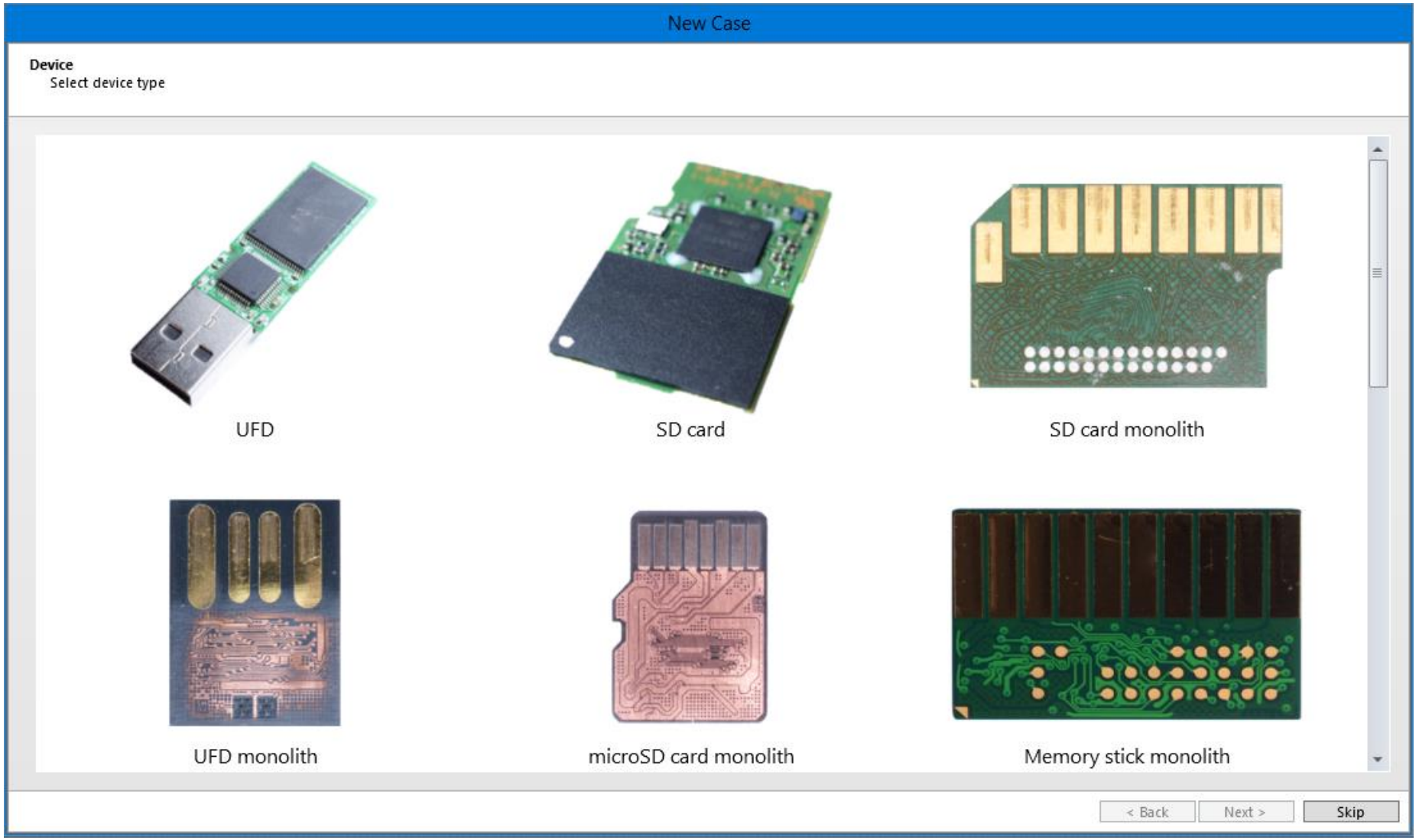
Database of Solutions



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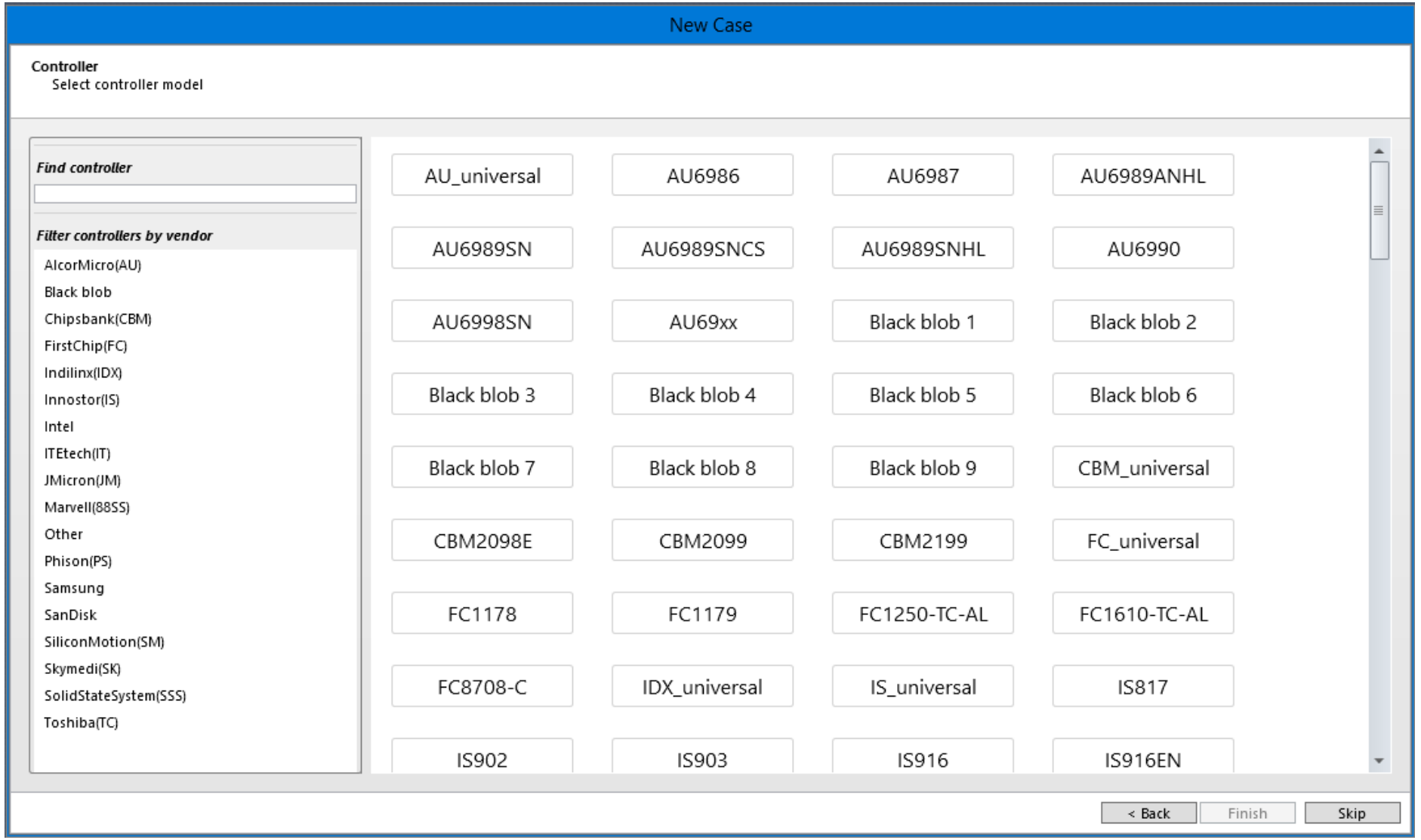
Database of Solutions



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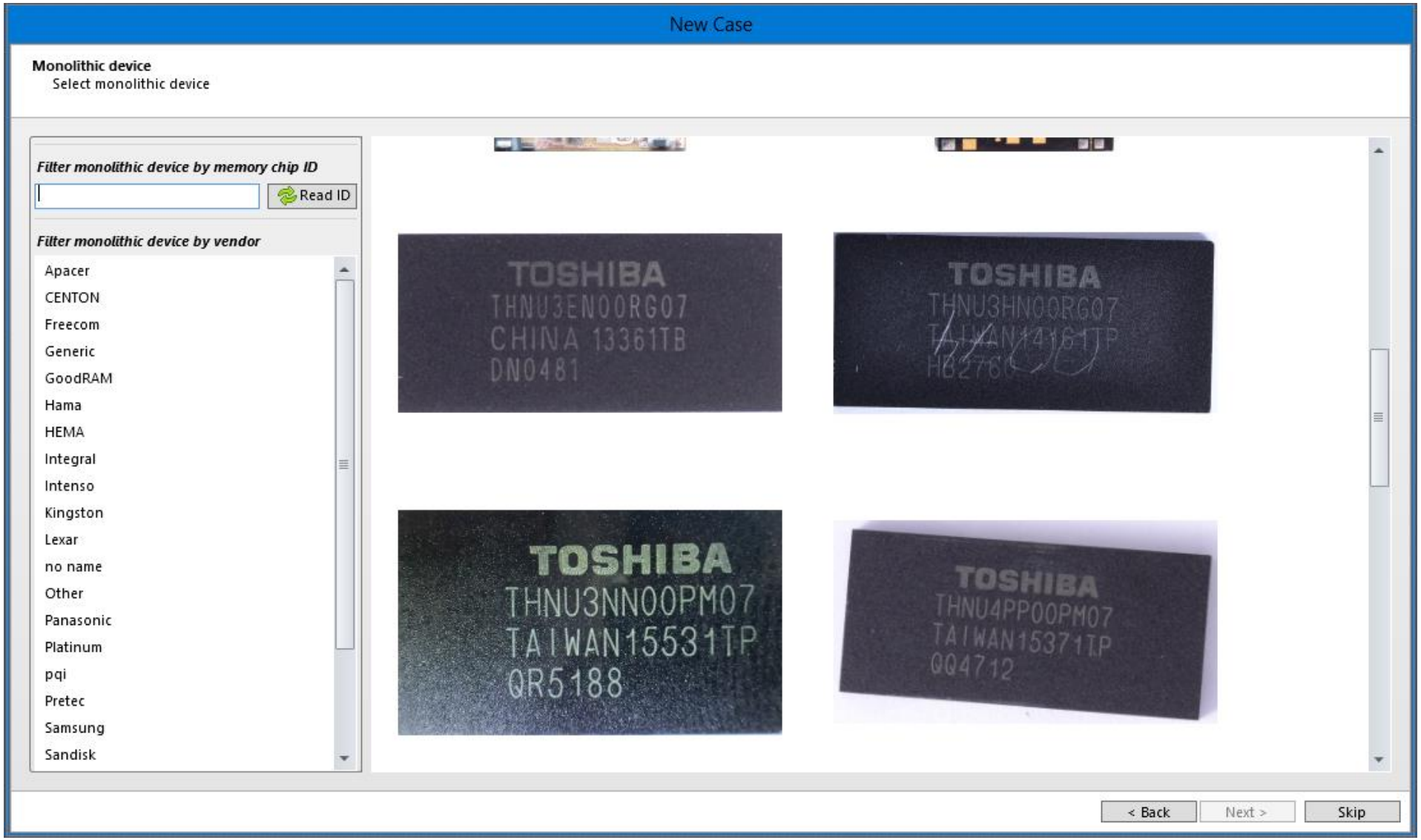
Database of Solutions



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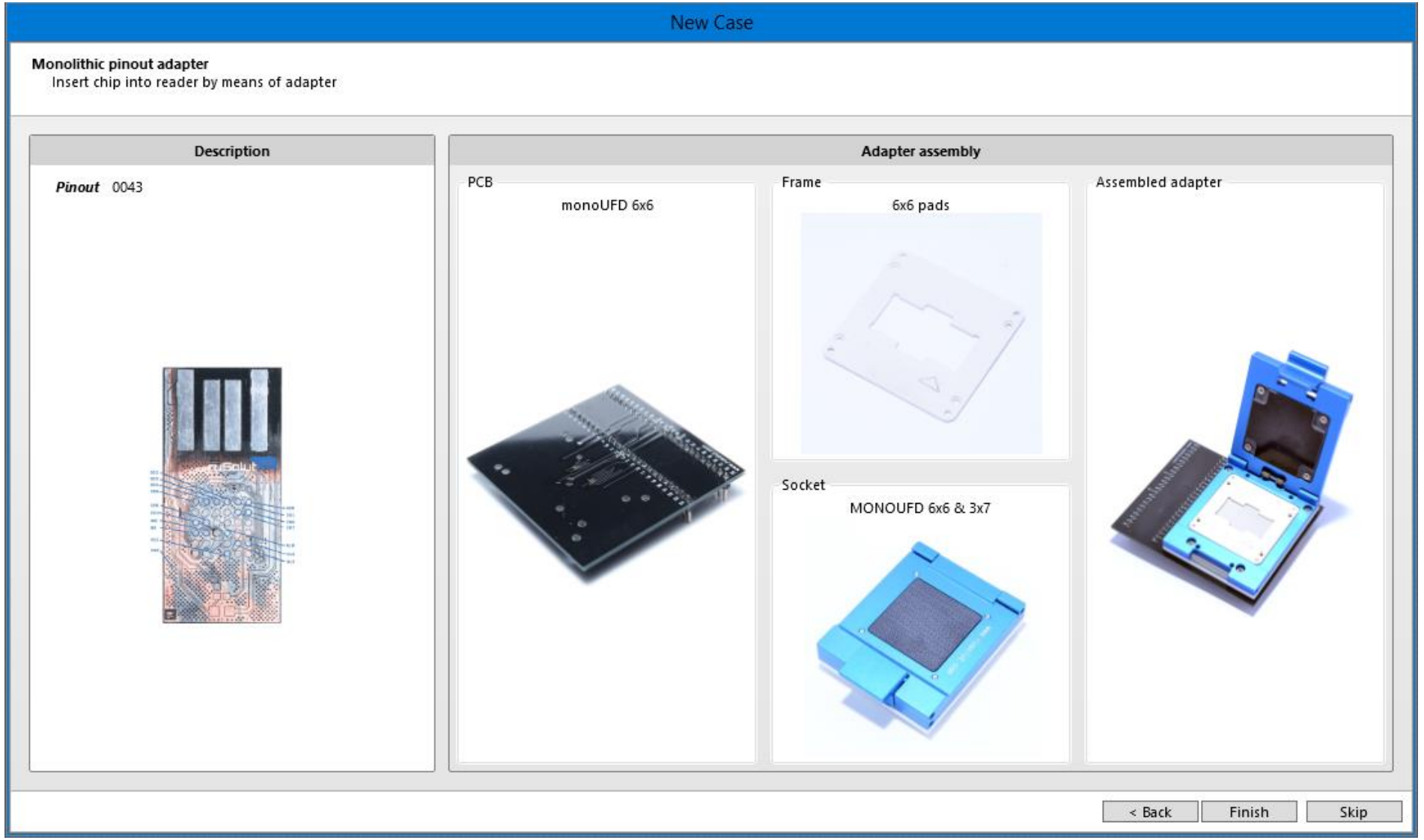
Database of Solutions



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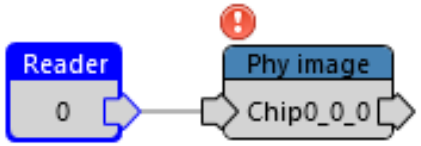
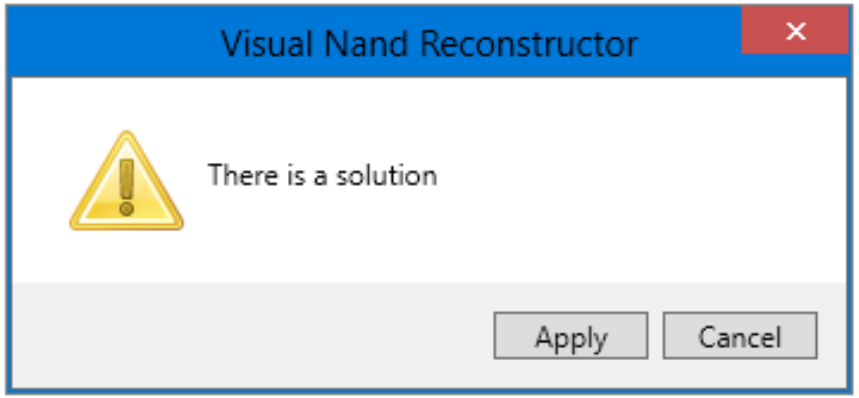
Database of Solutions





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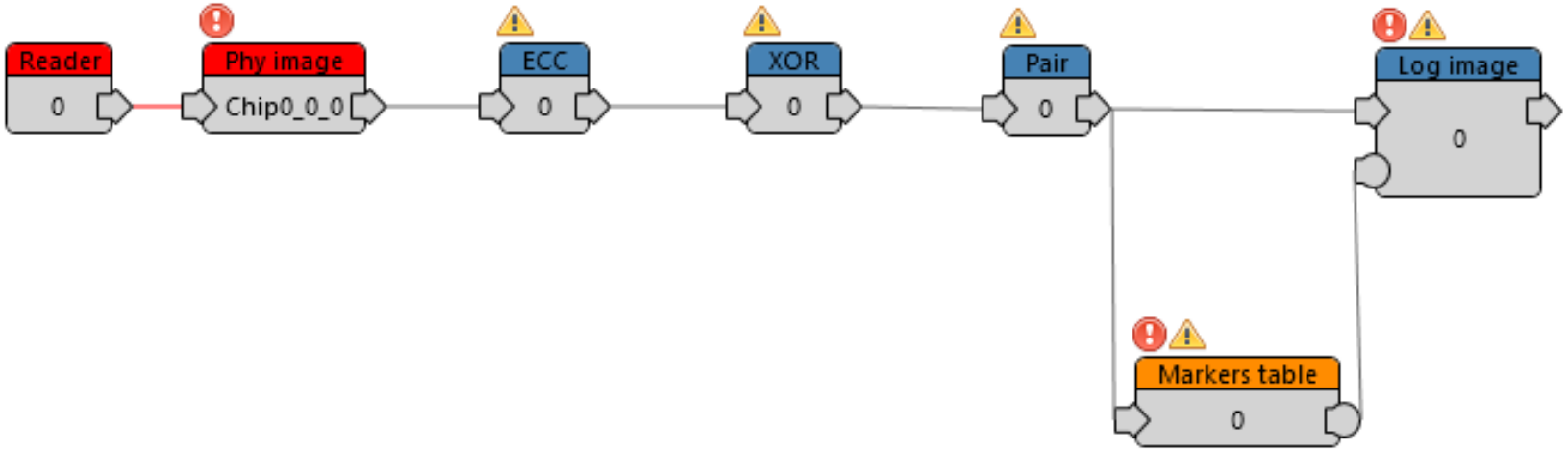
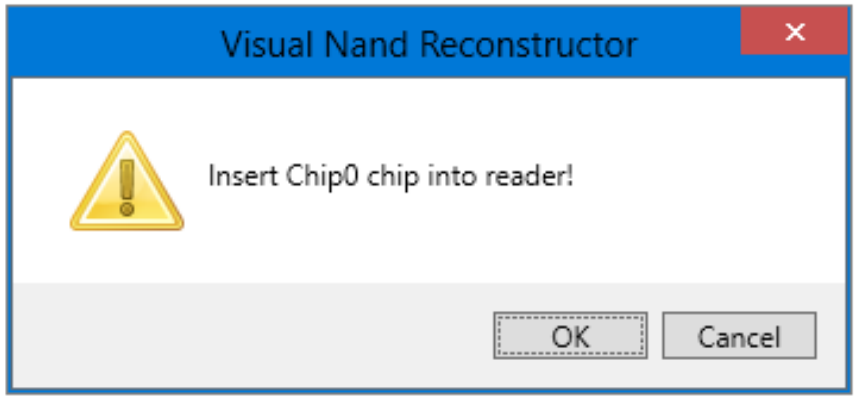
Database of Solutions





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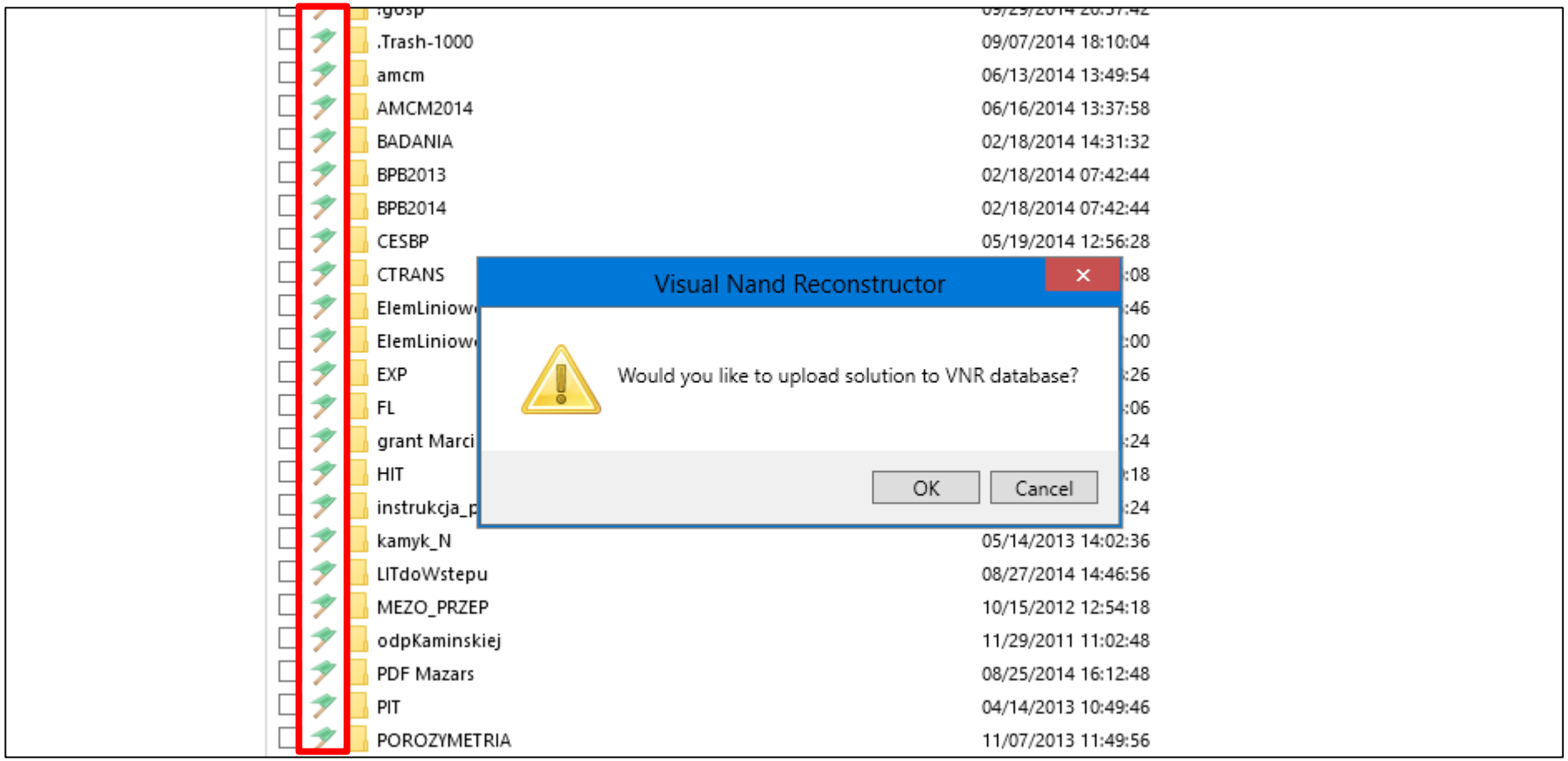
Solution adding by users



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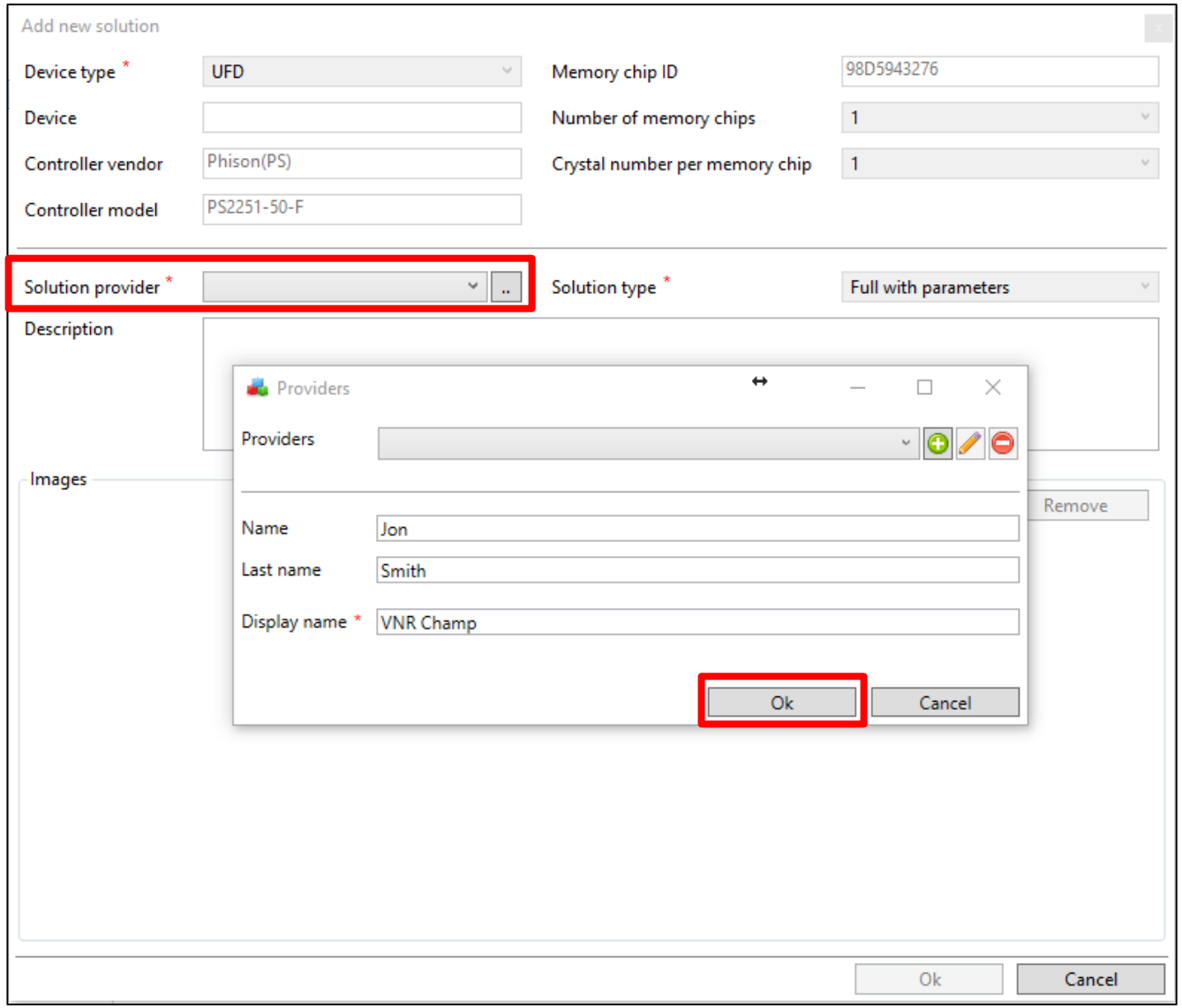
Solution adding by users



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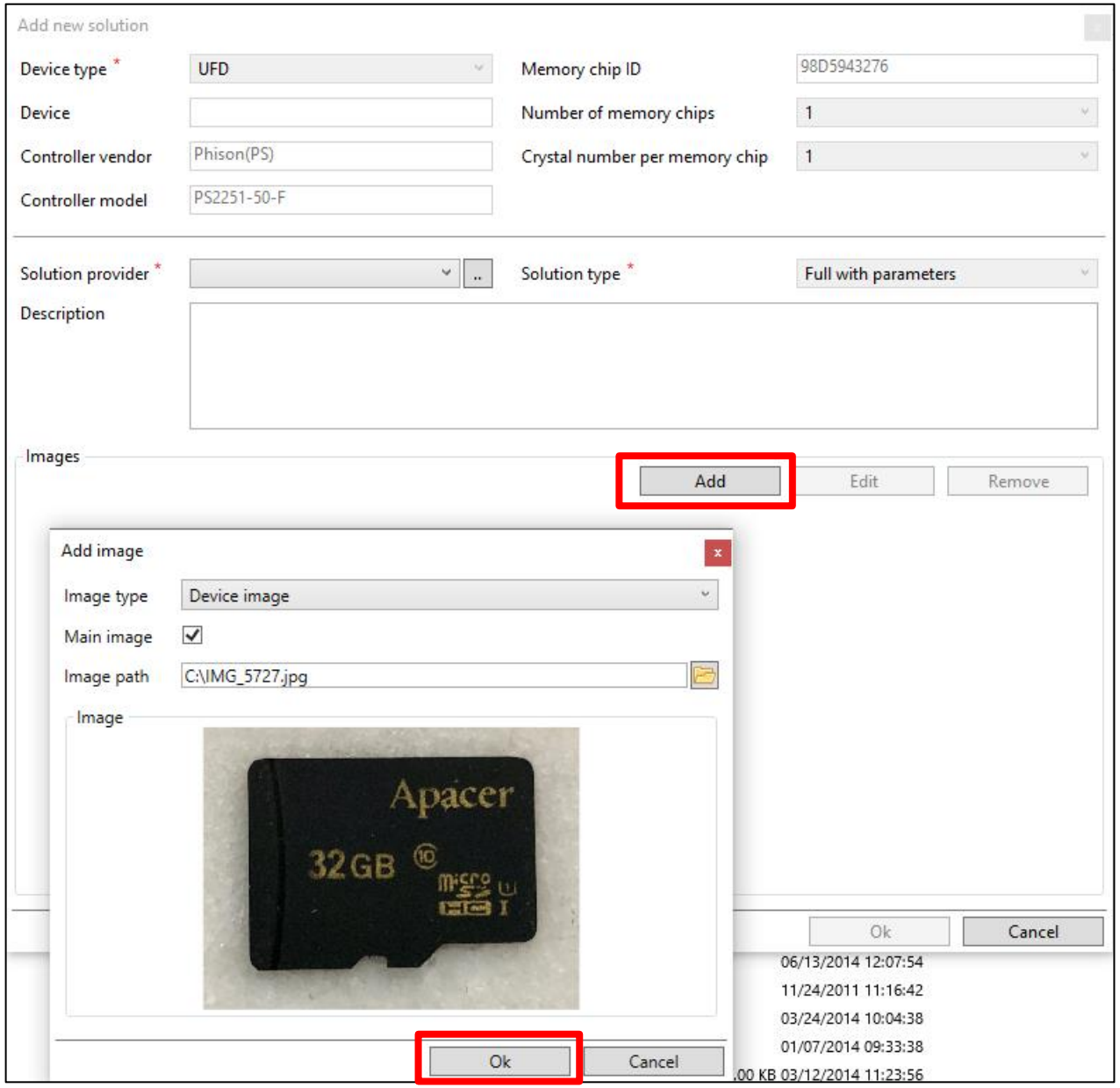
Solution adding by users



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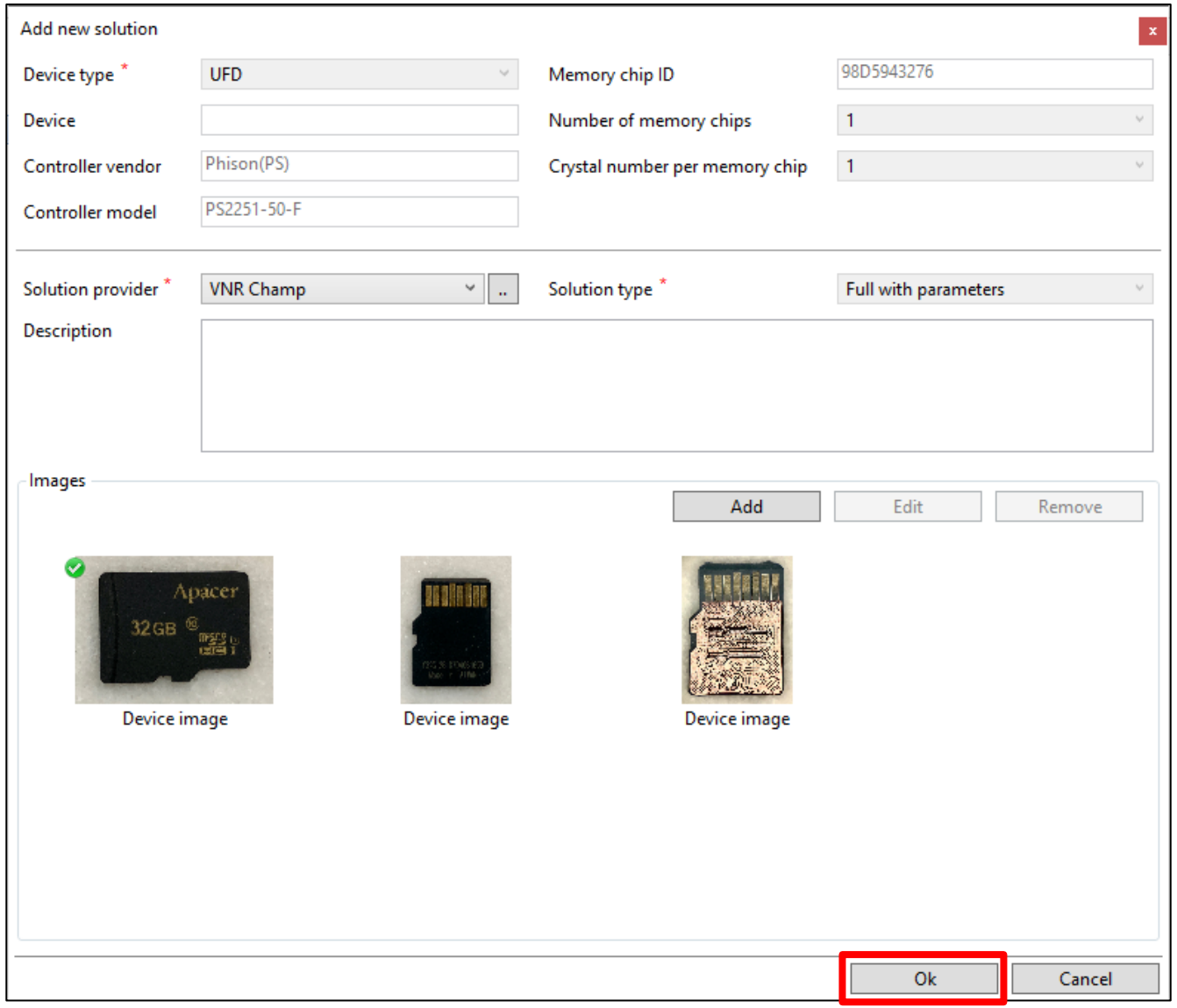
Solution adding by users



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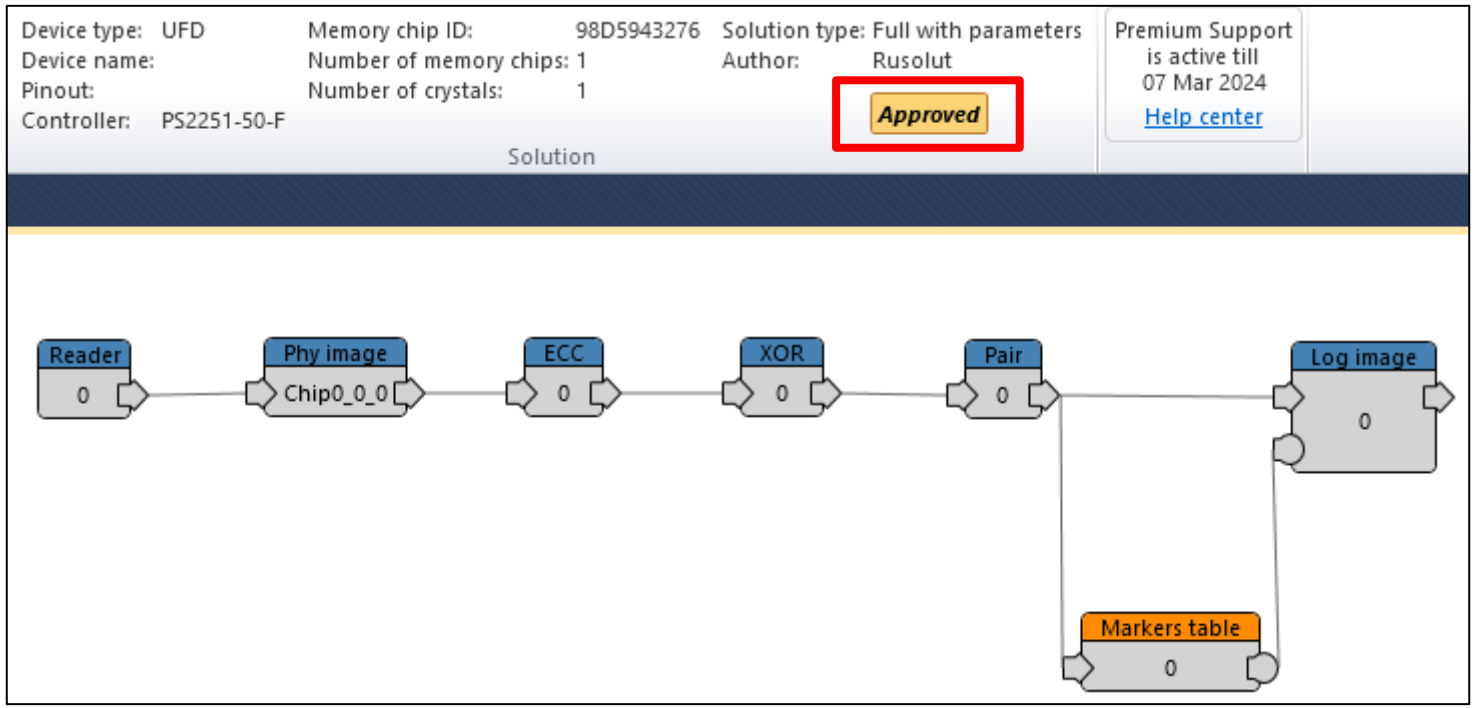
Solution approvement by users



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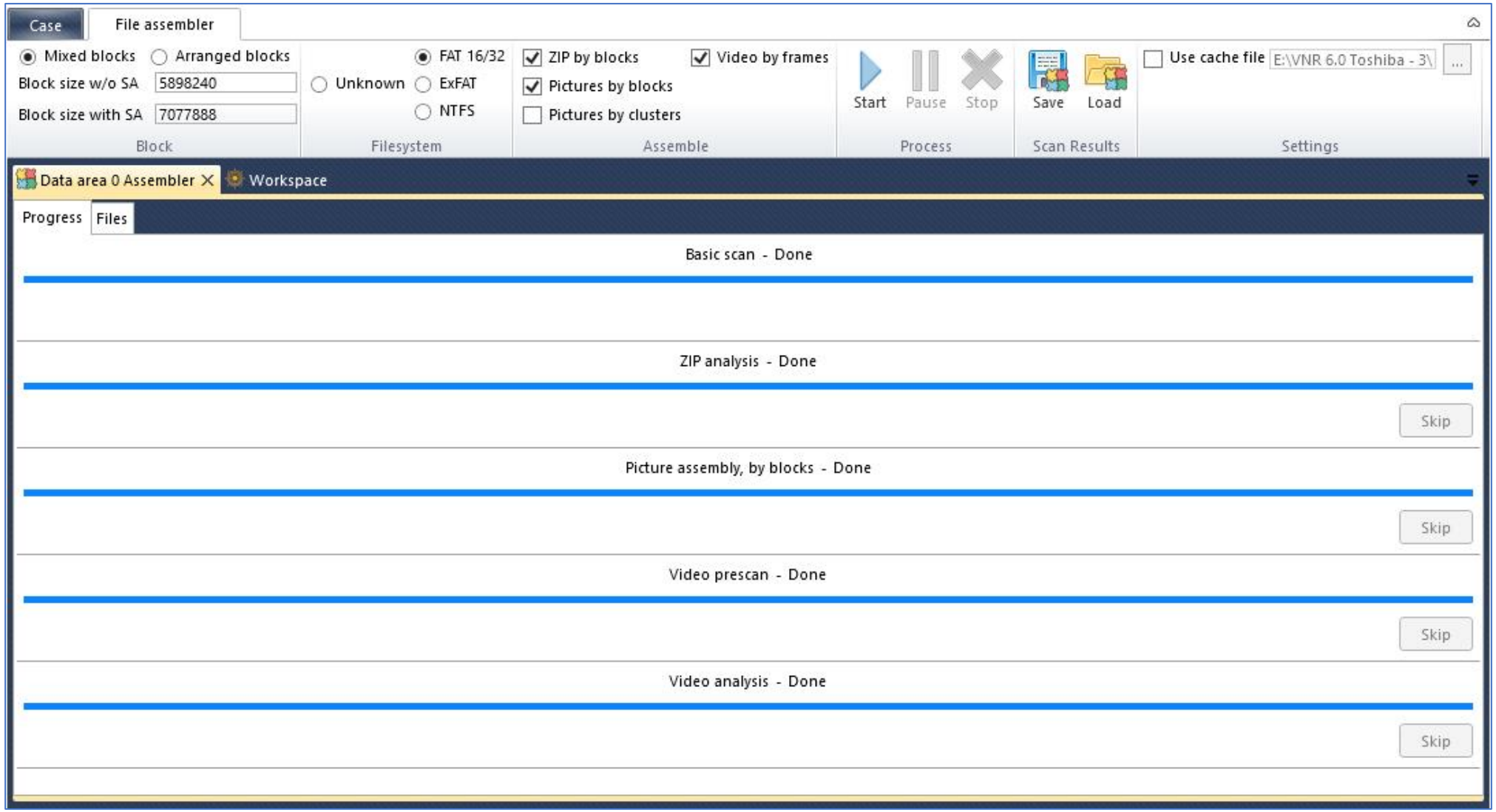
File assembler



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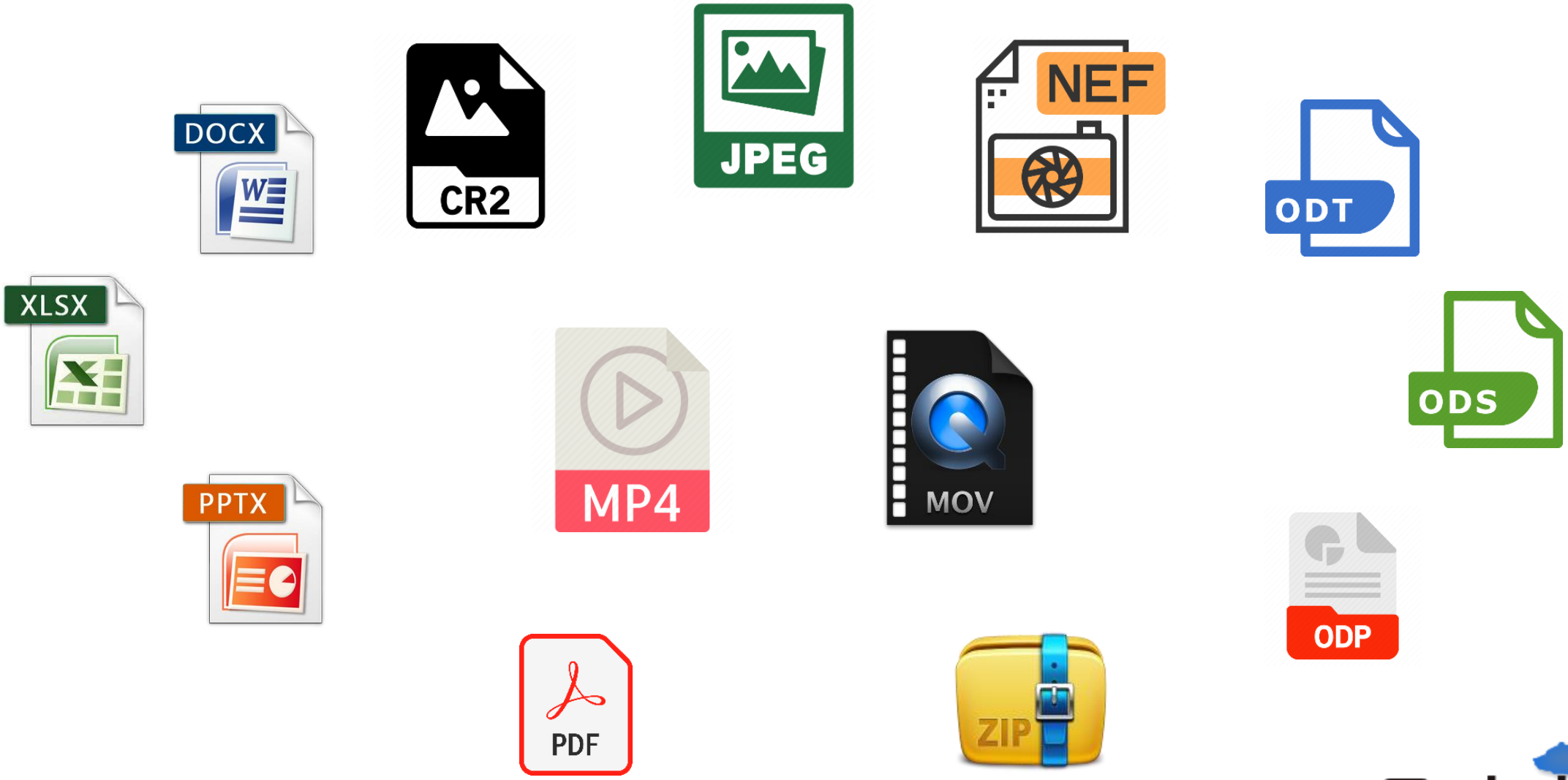
Supported file formats



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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

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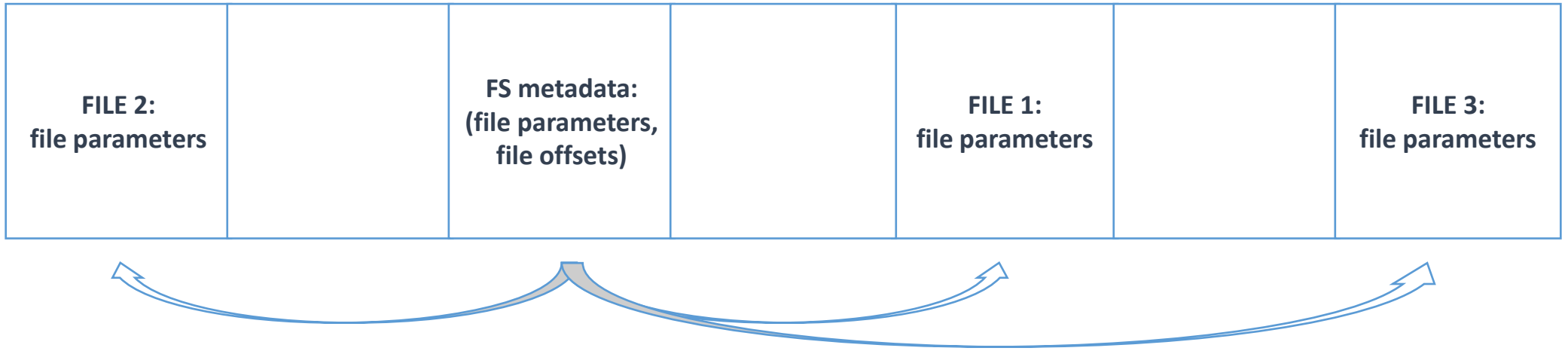
File system Metadata and File parameters analysis

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



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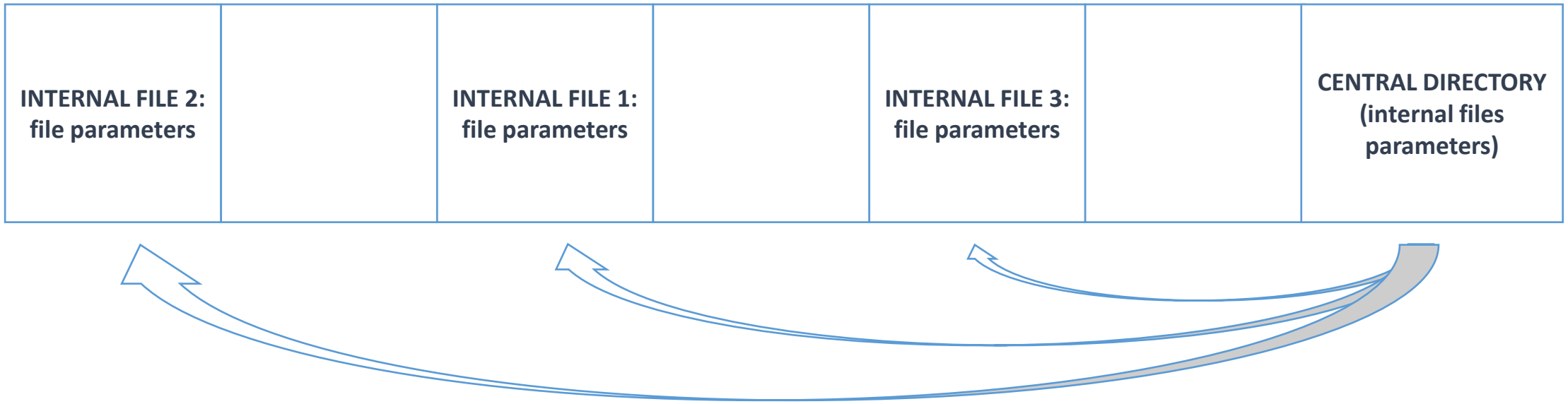
Archive file internal structure analysis

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



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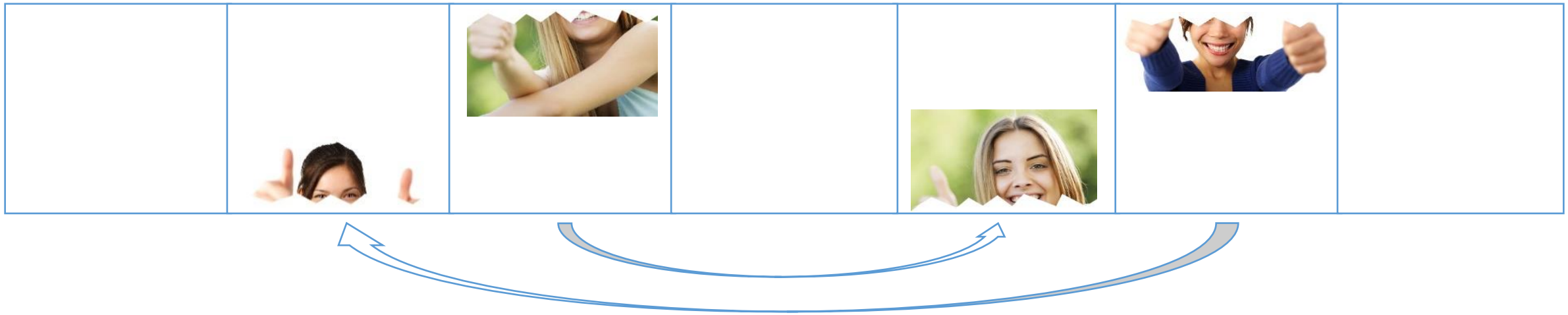
Intelligent Visual content analysis

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



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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**)

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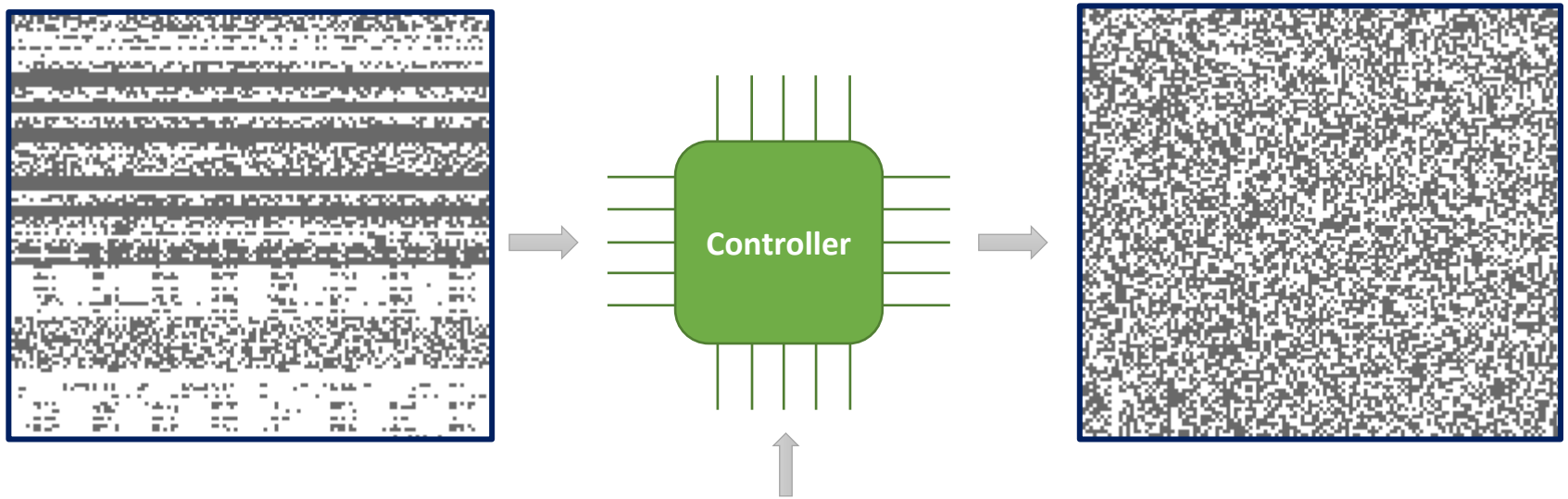
Scrambling (XOR)



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

000000000
000000000
011100000
000011100
000000000

After

some time

No data on TLC chip

000000000
000000000
000000000
000000000
000000000

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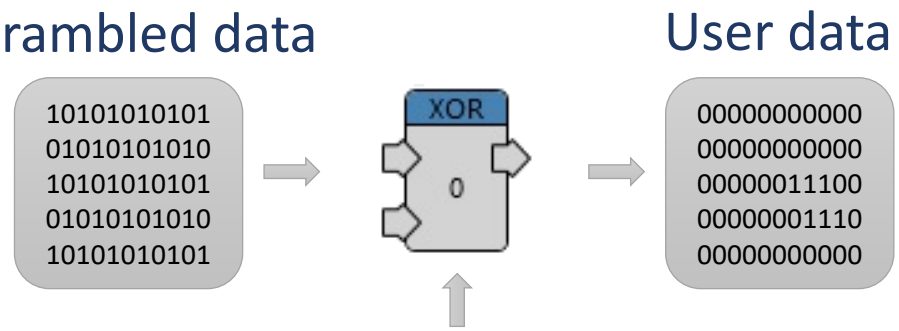
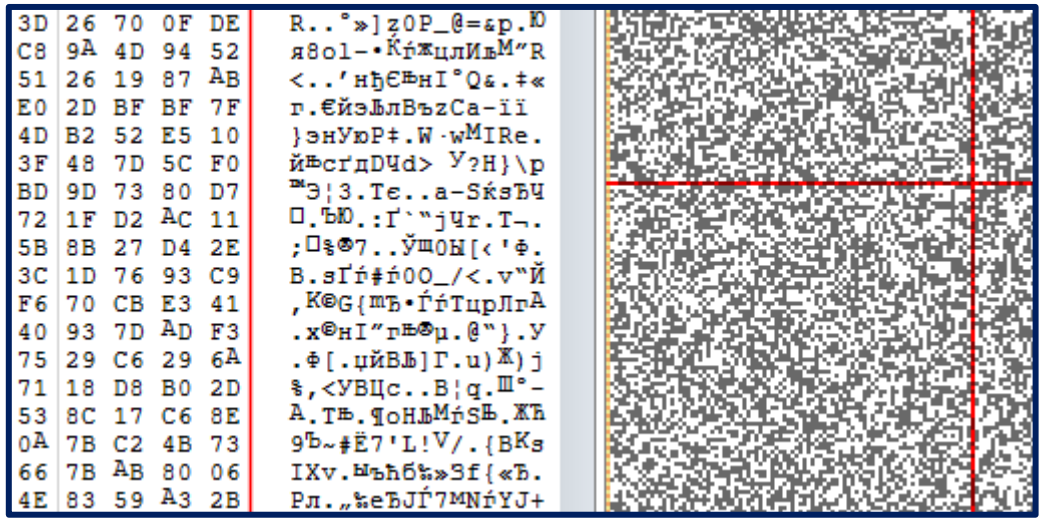
Descrambling



Before



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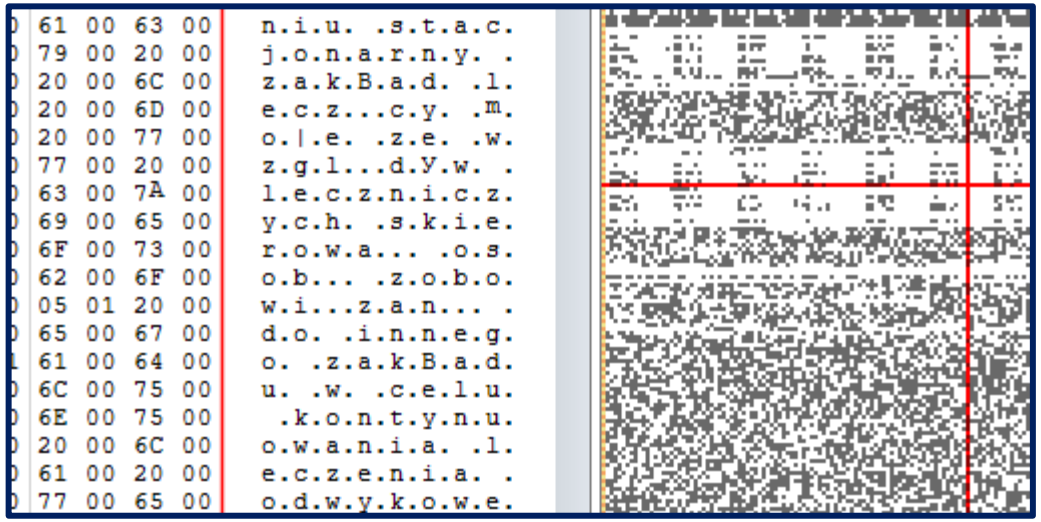

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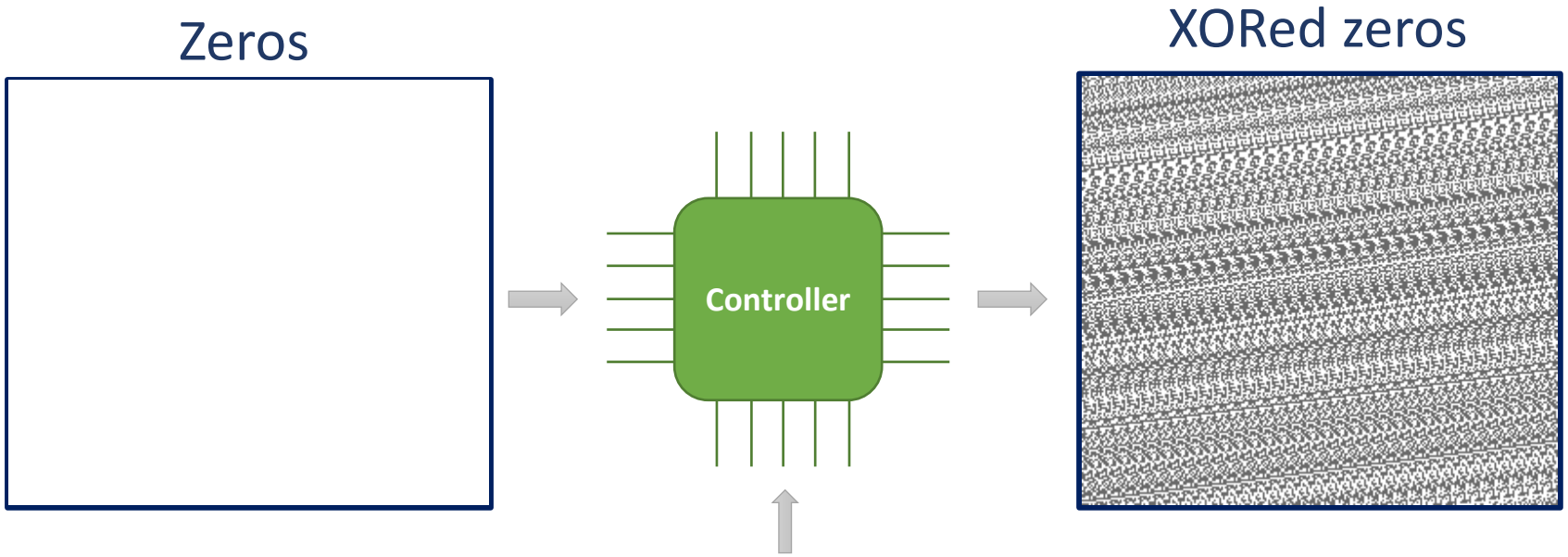
Old style XOR key extraction



XOR truth table

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

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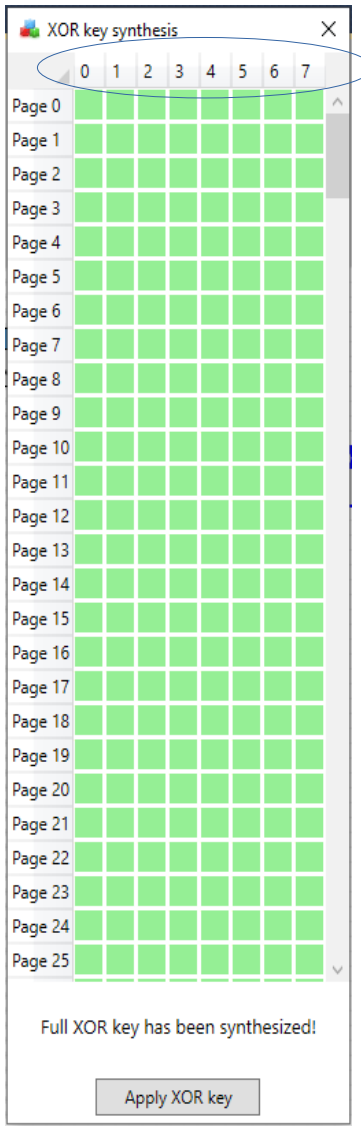
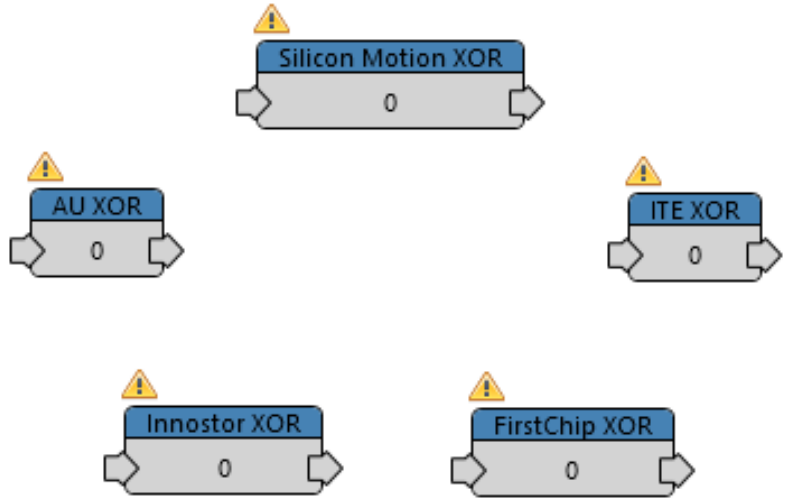
New revolutionary AI based XOR key synthesis



NUMBER OF DATA AREA CHUNKS

NUMBER OF PAGES(EQUAL TO BLOCK SIZE)



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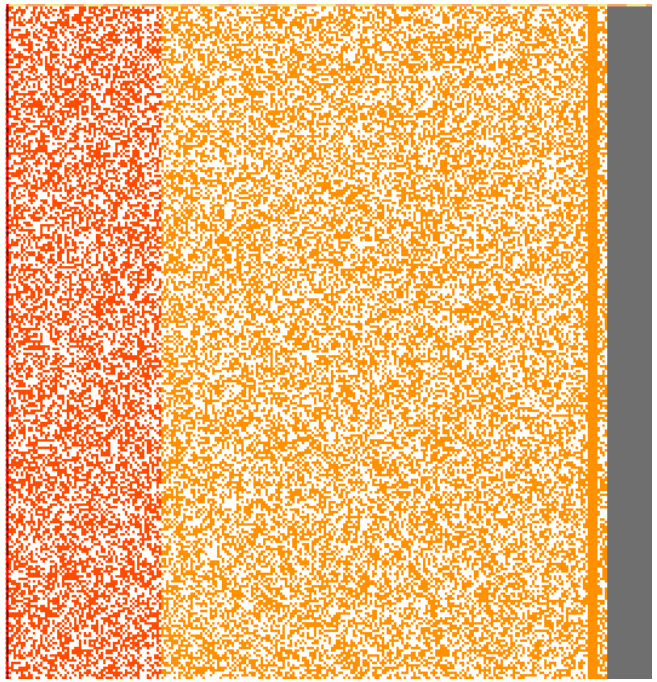
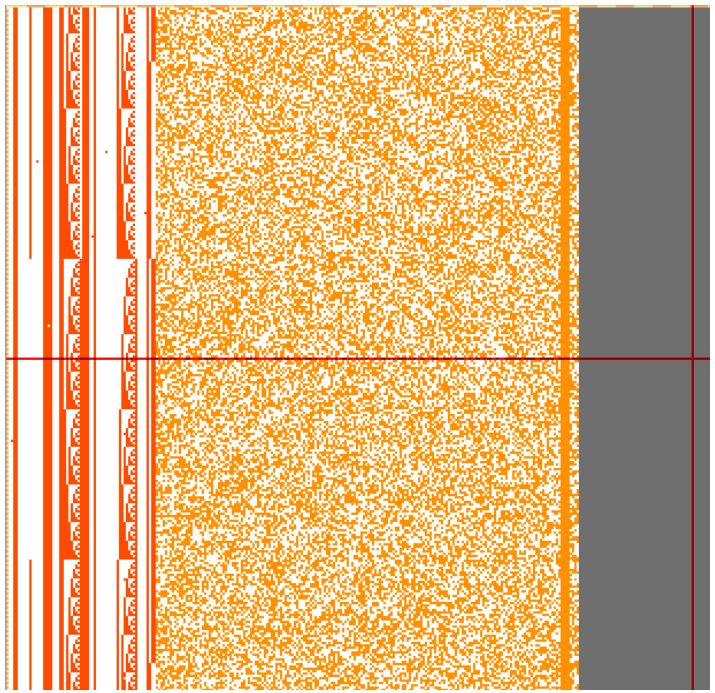
New revolutionary AI based XOR key synthesis

SCRAMBLED SERVICE AREA



AFTER UNXORING



Could be generated and applied to the Service area too

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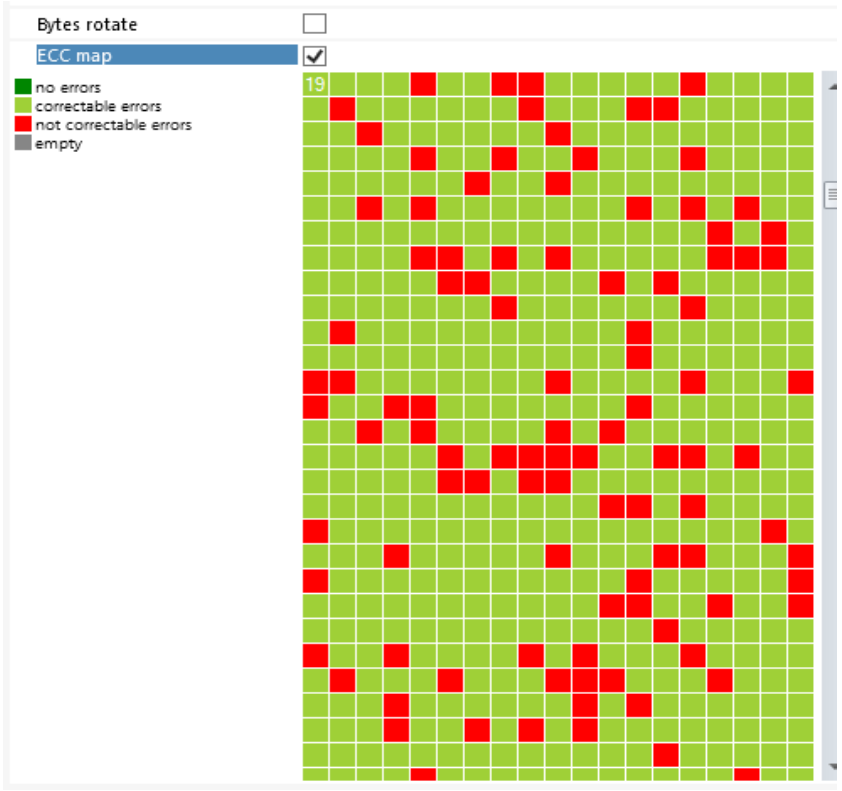
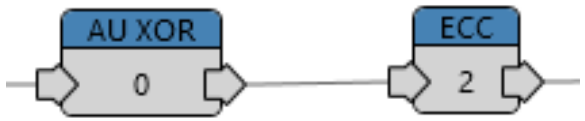


Works on yet uncorrected dumps.

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



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