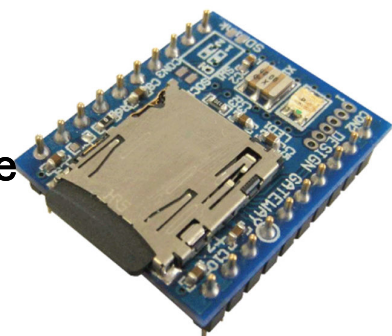That's Definitive Configuration ROM
for ultra large scale FPGA!!

What is SDLink?

- Epochal FPGA configuration module which stores data in <u>microSD</u>

- <u>Ultra large capacity.</u> Unlimited ROM capacity for existing FPGA

- <u>High-speed configuration.</u> Configure the largest FPGA within 1sec

- Able to adjust configuration speed and delay time by software

Background of SDLink development

- For updating FPGA circuit data more speedy
  - Popular to use FPGA for mass production
  - Circuit data modification after release
  - Preparation of programming environment

    (Actual board/Power supply/Parallel port/download cable etc..)

- Request from large scale FPGA
  - Large capacity and cheaper configuration ROM
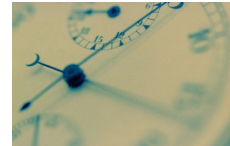 - Large scale effects to programming speed and configuration speed

Merit of SDLink

- Use microSD

- Easy to use

- Multi channel

- High-speed configuration

New!! Hot Swap Configuration (HSC)

- Adjustment function

Merit of SDLink ① Use microSD

- **High availability**
  - microSD is cheap, easy to buy.
- **High capacity data area**
  - Max. 2GB microSD = 16Gbit data area
- **High-speed programming, max.25MB/s**
  - Able to get ultra high-speed microSD from market
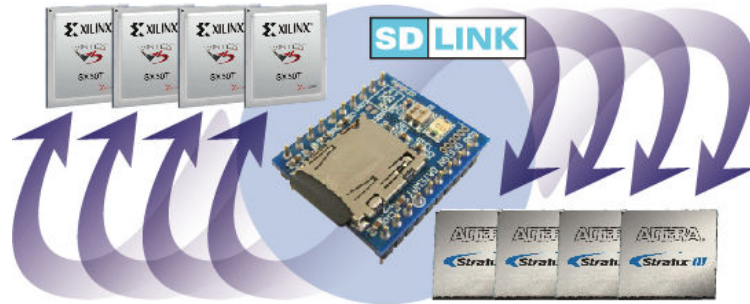- **Attach 1GB (or more) microSD**
  - Just able to use!!

Merit of SDLink ② Easy to use

- **Easy to update the circuit by swapping microSD**
  - Easy to evaluate several circuit pattern by using several microSD
  - No need to prepare programming environment for field updating
  - Prompt update for mass production
- **Programming with standard SD card reader/writer**
  - No need to use parallel port and download cable any more
- **Record file information**
  - Able to check and compare with programmed file in microSD with preparing file by software

- Configuration up to 8FPGAs simultaneously
  - Altera： Passive-Serial mode
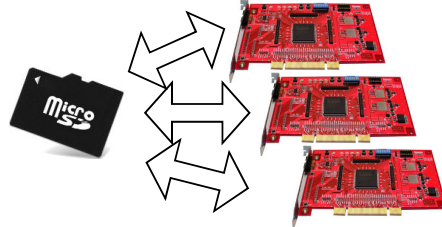 - Xilinx： Slave-Serial mode

- Max.160Mbit/sec at parallel configuration mode
  - Altera： Fast Passive-Parallel mode
  - Xilinx： Slave-SelectMAP mode

- Max.40Mbit/sec at serial configuration mode

Slide 1

Merit of SDLink ⑤Hot Swap Configuration

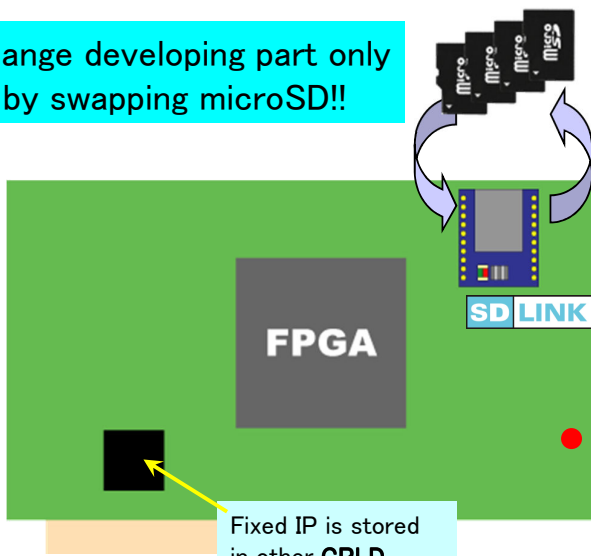- Able to remove microSD after configuration
  - Only 1 microSD can configures multi systems

- Configuration start by inserting microSD to SDLink even after power up
  - System restart is not necessary for re-configuration

Design Gateway   Page 9

Slide 2

microSD "HSC" application example

Change developing part only by swapping microSD!!

FPGA

SD LINK

Fixed IP is stored in other **CPLD**

- When circuit data is updated, no need <u>Shut down / Reboot</u> the system!

- Able to change the function <u>without system restart!</u>

No need turn OFF!!

Design Gateway   Page 10
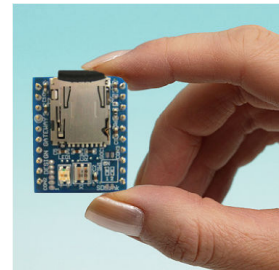
Merit of SDLink ⑥Adjustment function

- 4 steps configuration speed adjustment

- Configuration additional delay time adjustment
  - Effective for large scale system which takes long time until power supply stability
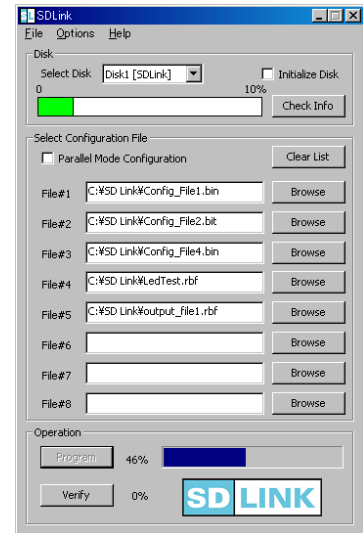 - Adjust by software and set the value at programming to microSD

Merit of SDLink ⑥Other

- Very small/Light
  - L28mm x W23mm x H8mm, stamp size
- Pb free
  - RoHS compliance

Programming Software

- Free download from Website
  - www.dgway.com/products/SDLink/
- Simple & easy GUI
- Support English/Japanese

Comparison with general ROM

- Capacity
- Programming speed
- Configuration speed
- Programming method
- Price

How do you manage such case?

- Case：Bug fix after releaseFPGA product

Director W: Oh! There is a defect in the product
which sent to company A. Solve the
problem as soon as possible!

Mr.Jack: I found bug in the logic. We must modify
circuit data in FPGA.

Must modify circuit data of FPGA after delivery!

Mr.Jack：（calling）Very sorry, we must recall
products 100pcs which we have shipped
because they have defect in FPGA.

Corp A：（calling）We cannot send back to you
because they were already installed in final
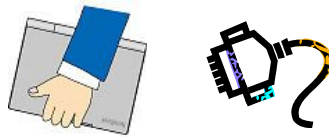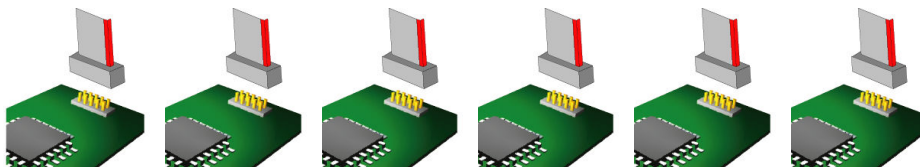product. Can you correct them at here?

On site work…

Mr.Jack: I have to prepare...

- NotebookPC with FPGA programming environment
- Download cable

At customer Corp A??

Mr.Jack: ...Board No.67 is finished...Very trouble to re-program to 100 boards!!

In case of SDLink

Mr.Jack:（calling）We found defect in FPGA of the product which we shipped 100pcs. So <u>we will send microSD 100pcs which have new circuit data</u>. Could you please swap them?

Corp A:（calling）OK, we <u>just swap microSD card,</u> right?

製造元　　　　　　　　　　　　　　　　顧客

microSDに
データ書き込み　　　microSDを送付　　　microSDを
　　　　　　　　　　　　　　　　　　　　　　差し替えるだけ!!

Solved quickly!!

Conclusions：Benefit for user

· **Save and reduce development time and support time**
  - Verify circuit data of several pattern at short time
  - Prompt support for frequent update
  - Release from physical limitation between actual board and programming environment

· **Increase development efficiency**
  - Stock of configuration ROM is unifiable because it support both Altera/Xilinx devices
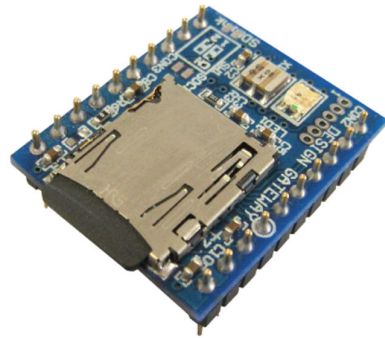 - Easy to check file information and easy version management

Products lineup

· Standard type (SL001)

Inquiry

- Design Gateway Co., Ltd.
- E-mail : info@dgway.com (Japan)
  sales@design-gateway.com
- URL: http://www.dgway.com (Japan)
  http://www.design-gateway.com

History

Rev.	日時	履歴
1.2	2012/05/10	Delete SL001-FL, inprove PDF quality