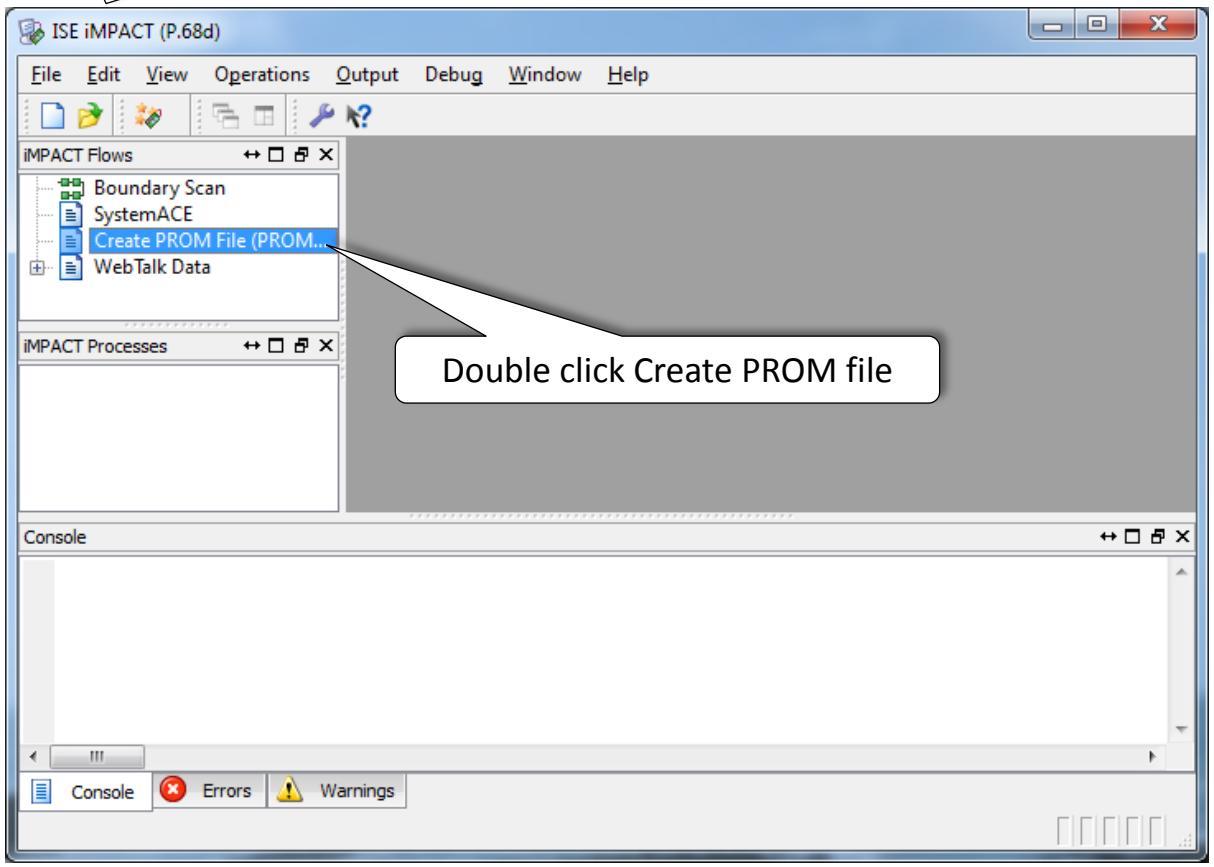
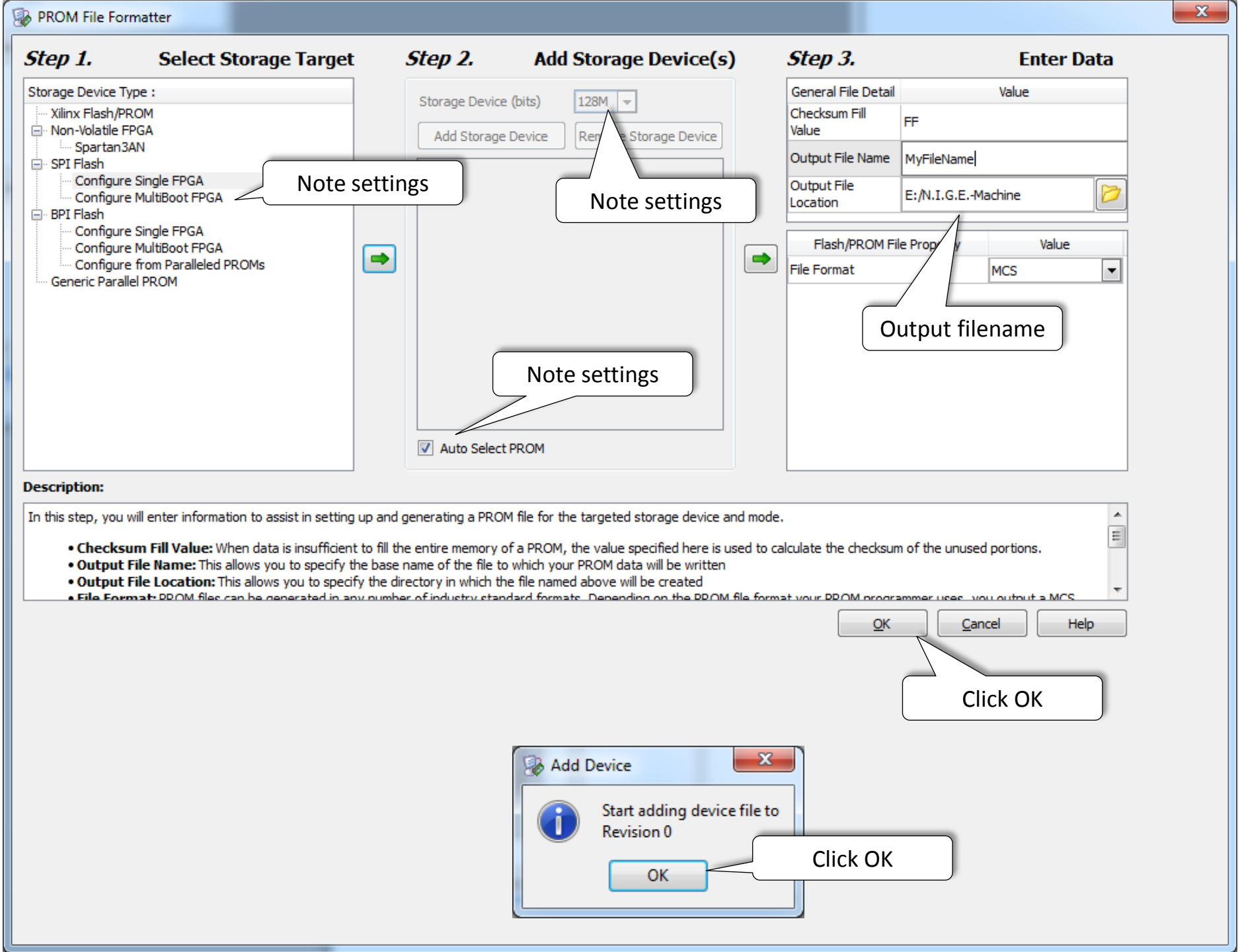
# Instructions for programming the Digilent Nexys4 SPI Flash with an FPGA configuration file using Xilinx ISE 14.6

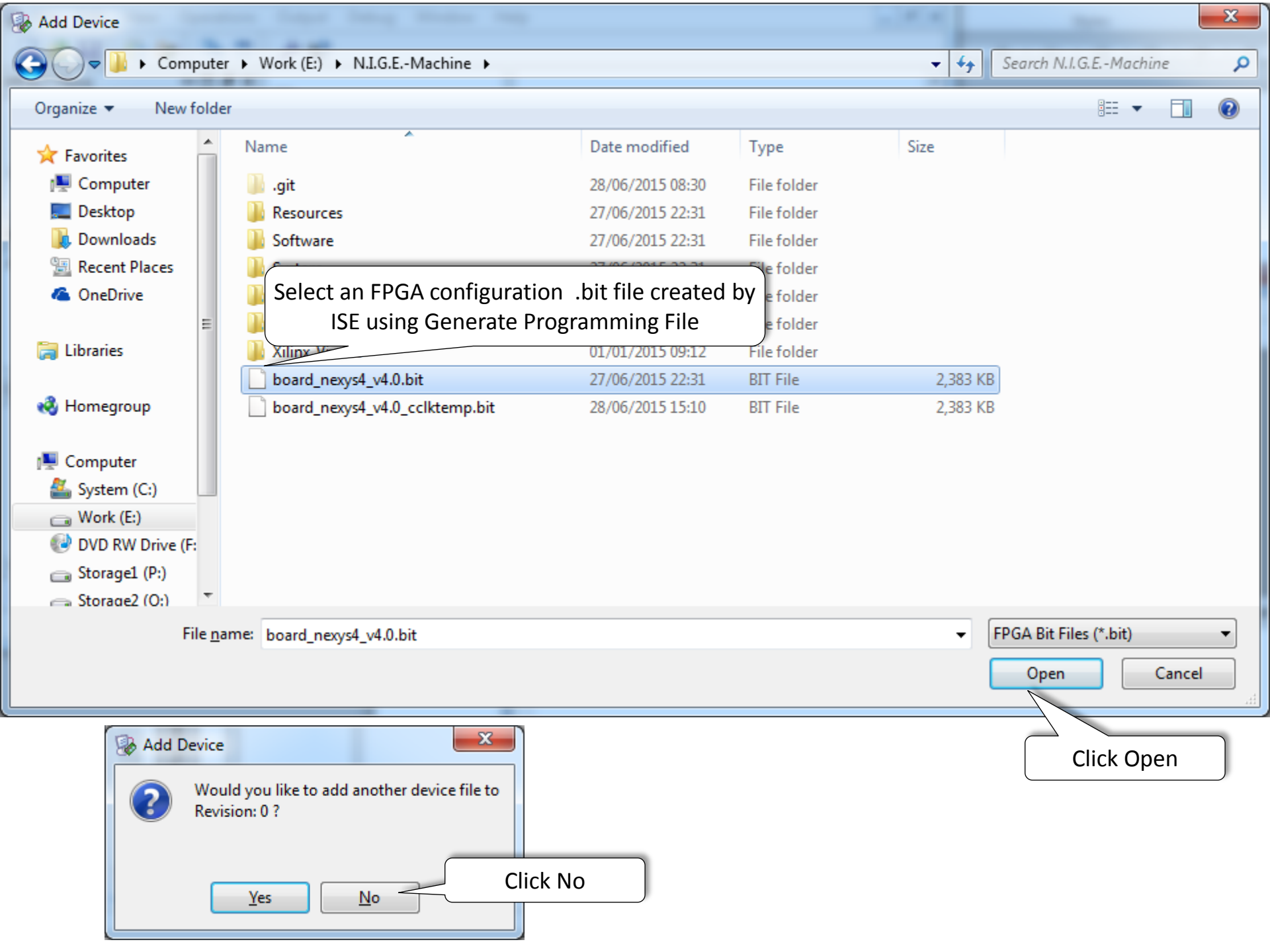
Andrew Read

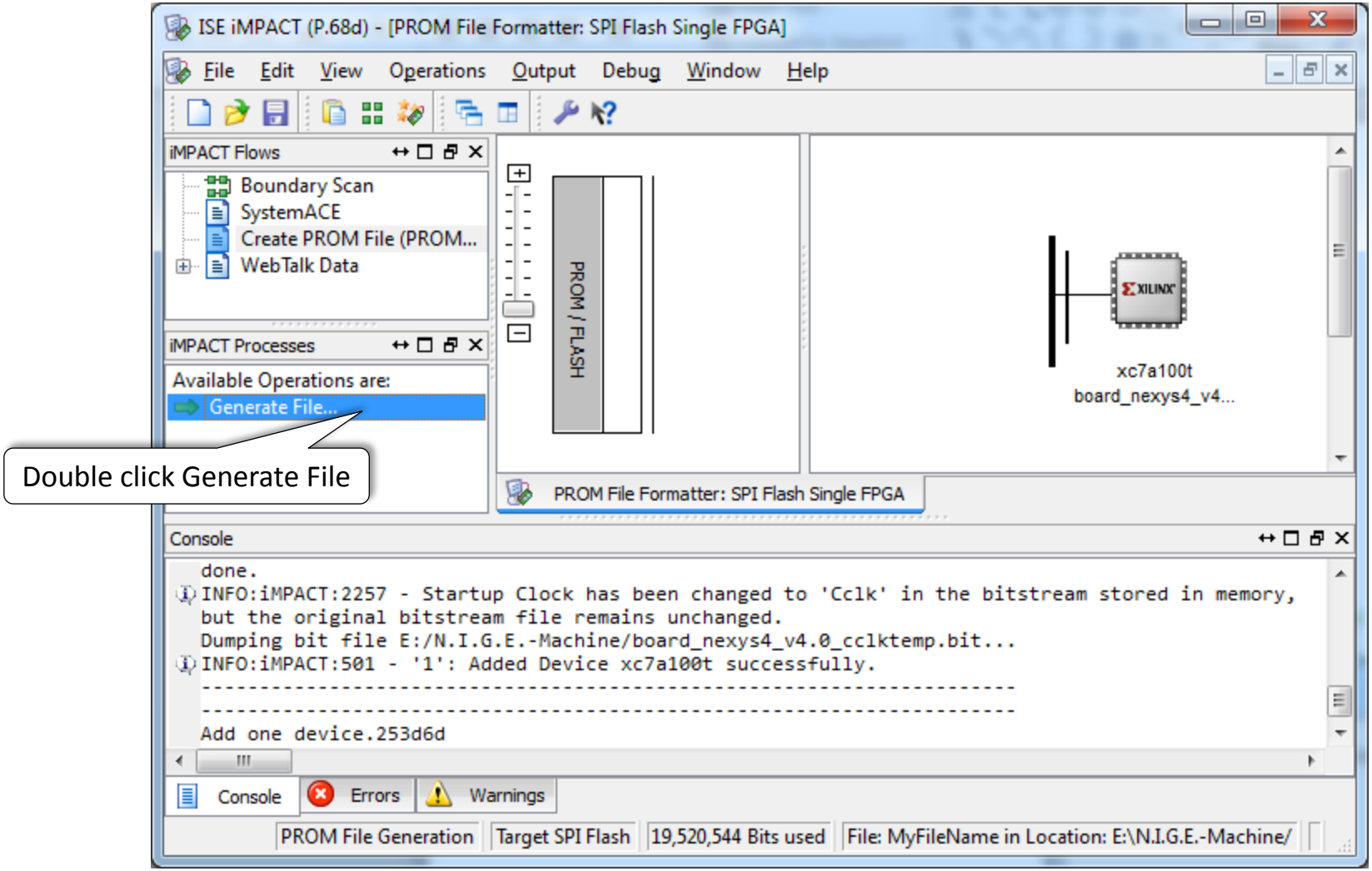
June 2015

Open iMPACT from the Tools menu within ISE

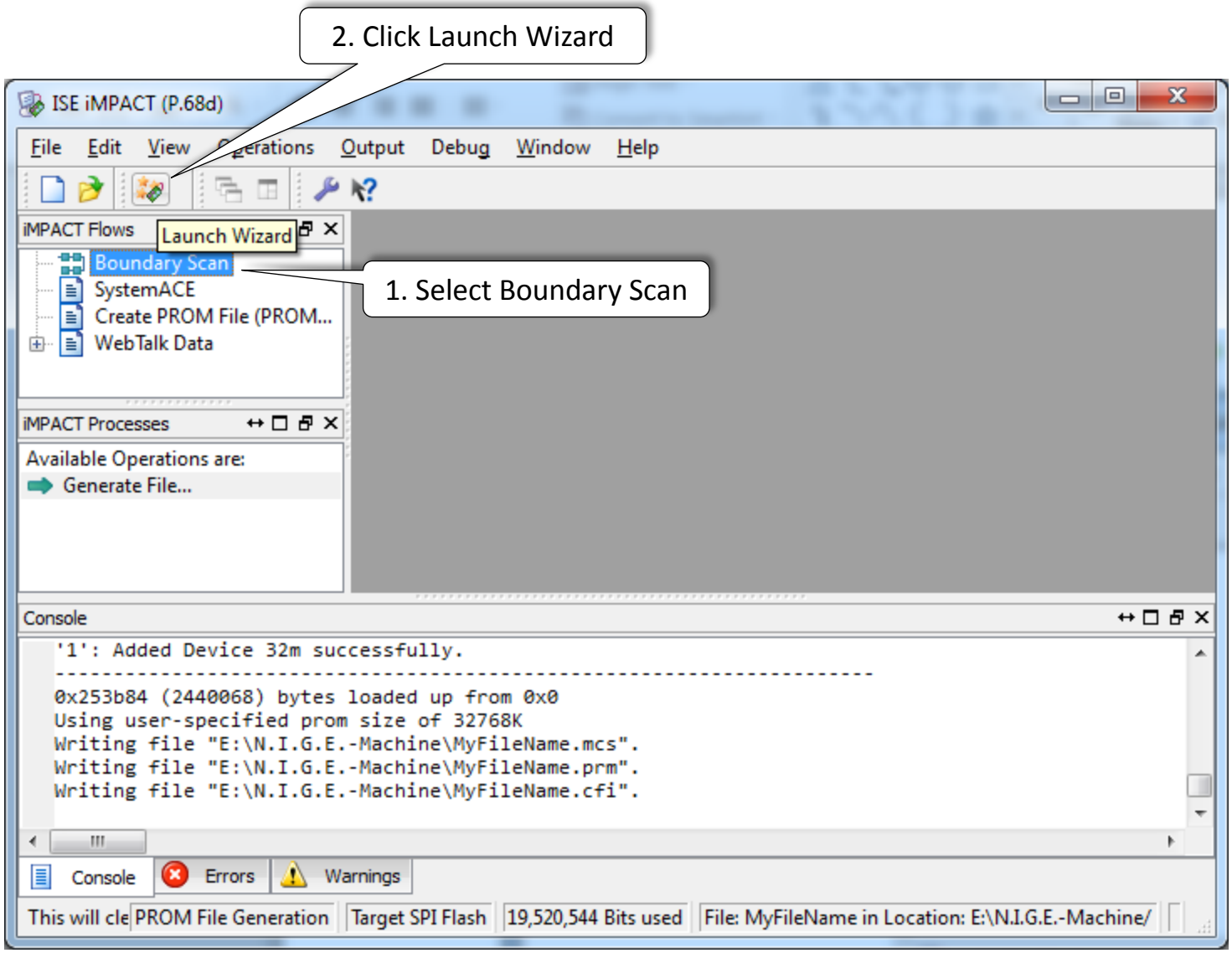


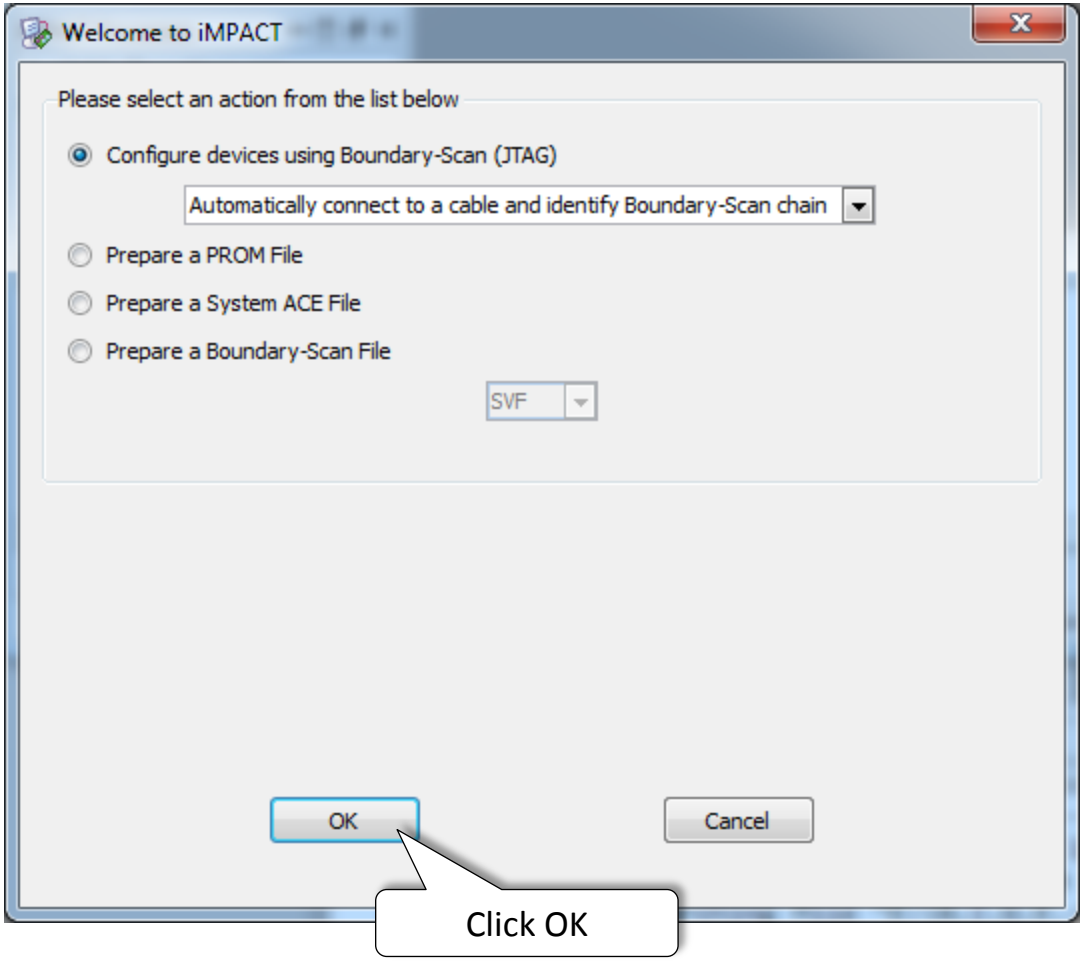

PROM File Formatter
Step 1.
Select Storage Target
Storage Device Type :
Xilinx Flash/PROM
Non-Volatile FPGA
Spartan3AN
SPI Flash
Configure Single FPGA
Configure MultiBoot FPGA
BPI Flash
Configure Single FPGA
Configure MultiBoot FPGA
Configure from Paralleled PROMs
Generic Parallel PROM
Note settings
Step 2.
Add Storage Device(s)
Storage Device (bits)
128M
Add Storage Device
Storage Device
Note settings
Note settings
Auto Select PROM
Step 3.
Enter Data
General File Detail
Value
Checksum Fill Value
FF
Output File Name
MyFileName
Output File Location
E:/N.I.G.E.-Machine
Value
File Format
MCS
Output filename
Description:
In this step, you will enter information to assist in setting up and generating a PROM file for the targeted storage device and mode.
• Checksum Fill Value: When data is insufficient to fill the entire memory of a PROM, the value specified here is used to calculate the checksum of the unused portions.
• Output File Name: This allows you to specify the base name of the file to which your PROM data will be written
• Output File Location: This allows you to specify the directory in which the file named above will be created
OK
Cancel
Help
Click OK
Add Device
Start adding device file to Revision 0
OK
Click OK

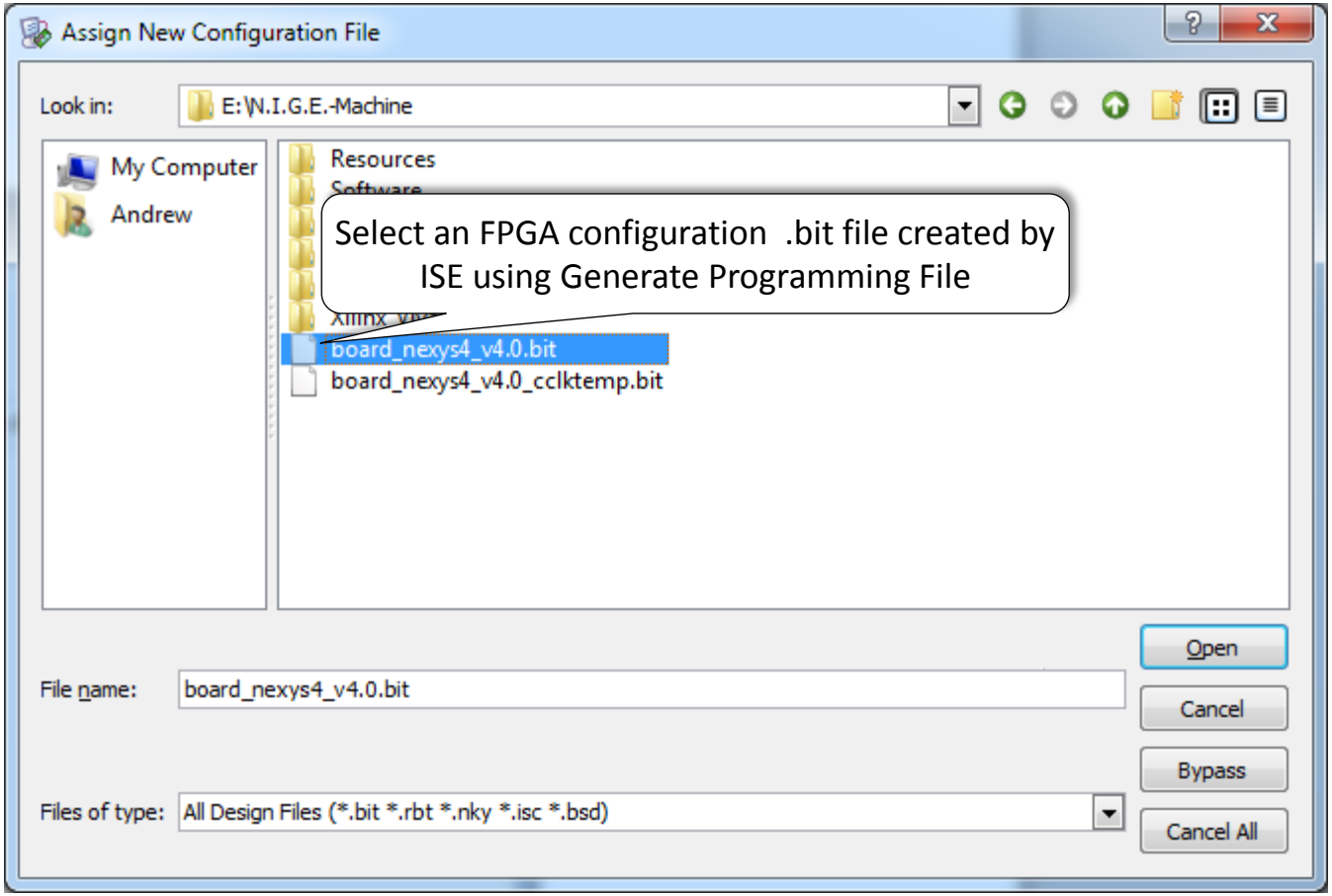

Add Device
Computer ▸ Work (E:) ▸ N.I.G.E.-Machine ▸
Search N.I.G.E.-Machine
Organize
New folder
Favorites
Computer
Desktop
Downloads
Recent Places
OneDrive
Libraries
Homegroup
Computer
System (C:)
Work (E:)
DVD RW Drive (F:
Storage1 (P:)
Storage2 (O:)
Name
Date modified
Type
Size
.git 28/06/2015 08:30 File folder
Resources 27/06/2015 22:31 File folder
Software 27/06/2015 22:31 File folder
Xilinx 01/01/2015 09:12 File folder
board_nexys4_v4.0.bit 27/06/2015 22:31 BIT File 2,383 KB
board_nexys4_v4.0_cclktemp.bit 28/06/2015 15:10 BIT File 2,383 KB
Select an FPGA configuration .bit file created by ISE using Generate Programming File
File name: board_nexys4_v4.0.bit
FPGA Bit Files (*.bit)
Open
Cancel
Click Open
Add Device
Would you like to add another device file to Revision: 0 ?
Yes
No
Click No

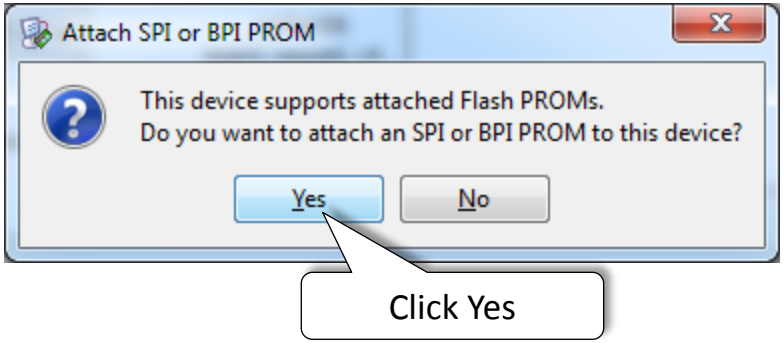


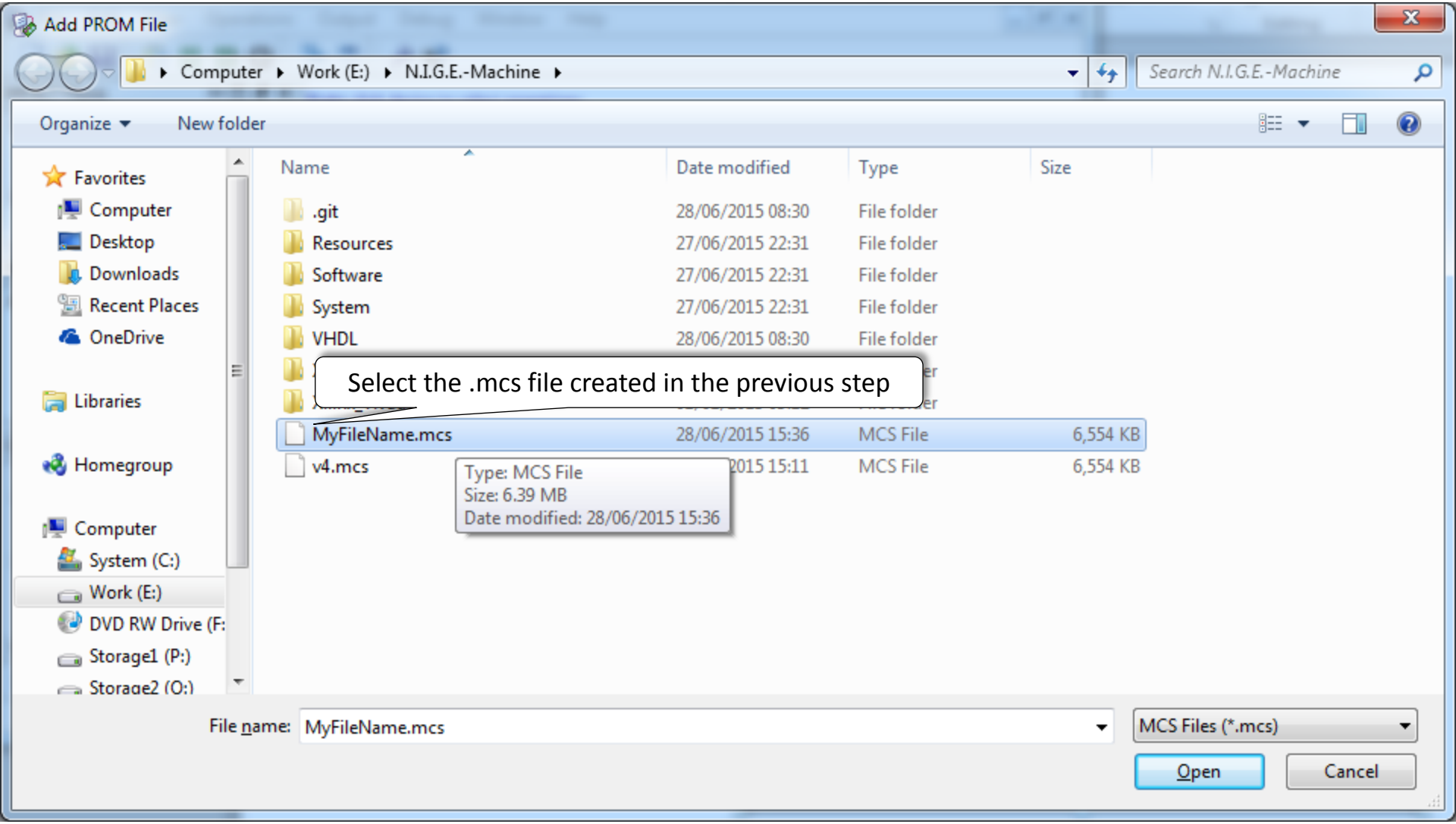

Double click Generate File

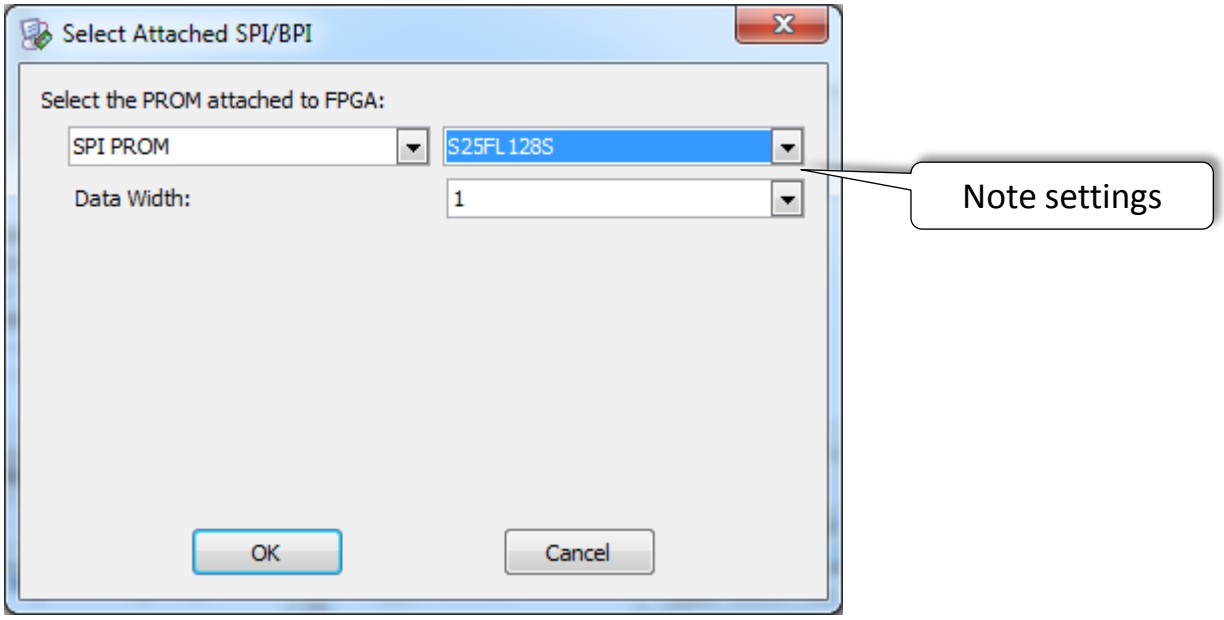

2. Click Launch Wizard
ISE iMPACT (P.68d)
File Edit View Operations Output Debug Window Help
iMPACT Flows
Launch Wizard
Boundary Scan
SystemACE
Create PROM File (PROM...
WebTalk Data
1. Select Boundary Scan
iMPACT Processes
Available Operations are:
Generate File...
Console
'1': Added Device 32m successfully.
0x253b84 (2440068) bytes loaded up from 0x0
Using user-specified prom size of 32768K
Writing file "E:\N.I.G.E.-Machine\MyFileName.mcs".
Writing file "E:\N.I.G.E.-Machine\MyFileName.prm".
Writing file "E:\N.I.G.E.-Machine\MyFileName.cfi".
Console
Errors
Warnings
This will cle
PROM File Generation
Target SPI Flash
19,520,544 Bits used
File: MyFileName in Location: E:\N.I.G.E.-Machine/

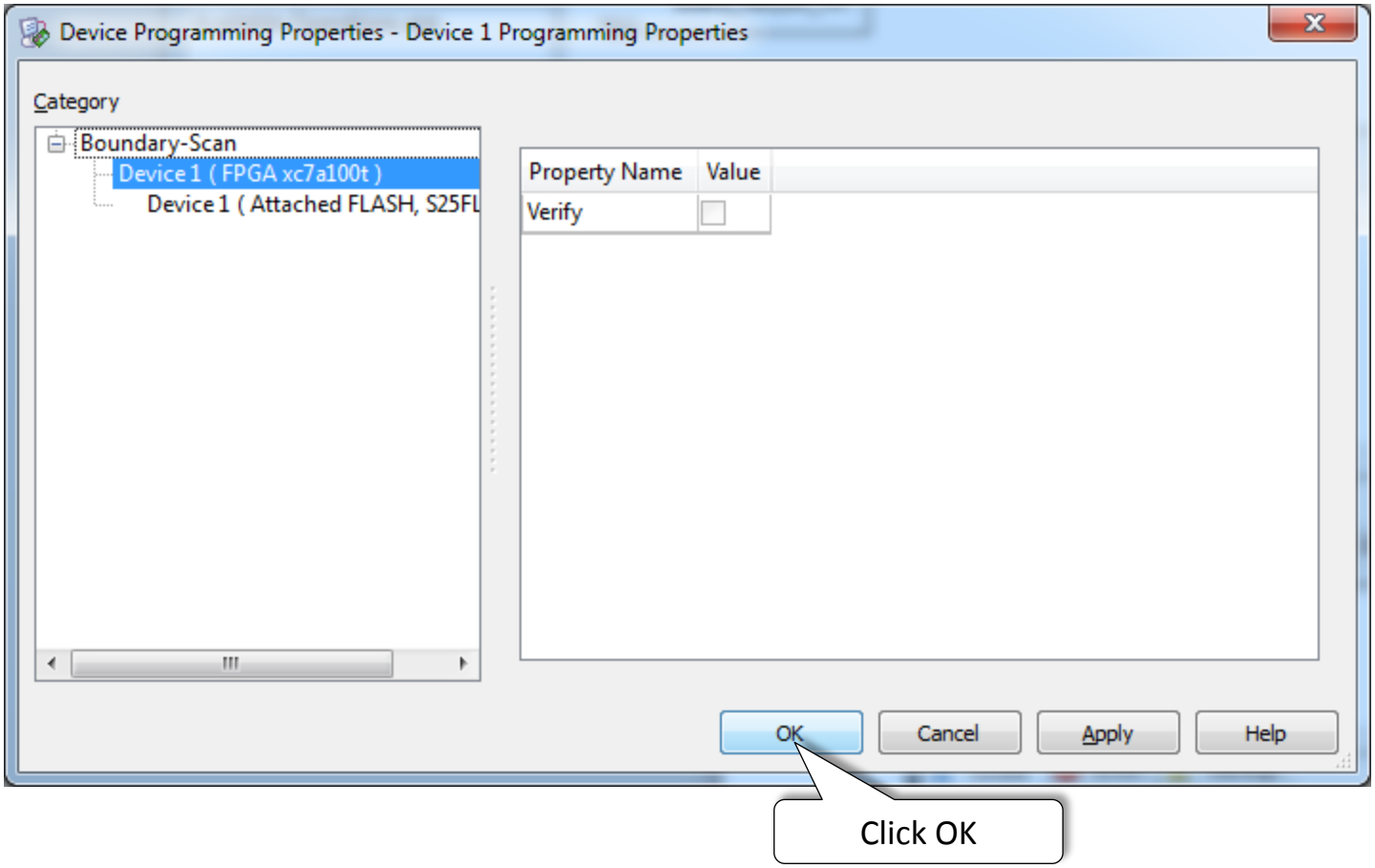

Welcome to iMPACT
Please select an action from the list below
Configure devices using Boundary-Scan (JTAG)
Automatically connect to a cable and identify Boundary-Scan chain
Prepare a PROM File
Prepare a System ACE File
Prepare a Boundary-Scan File
SVF
OK
Cancel
Click OK

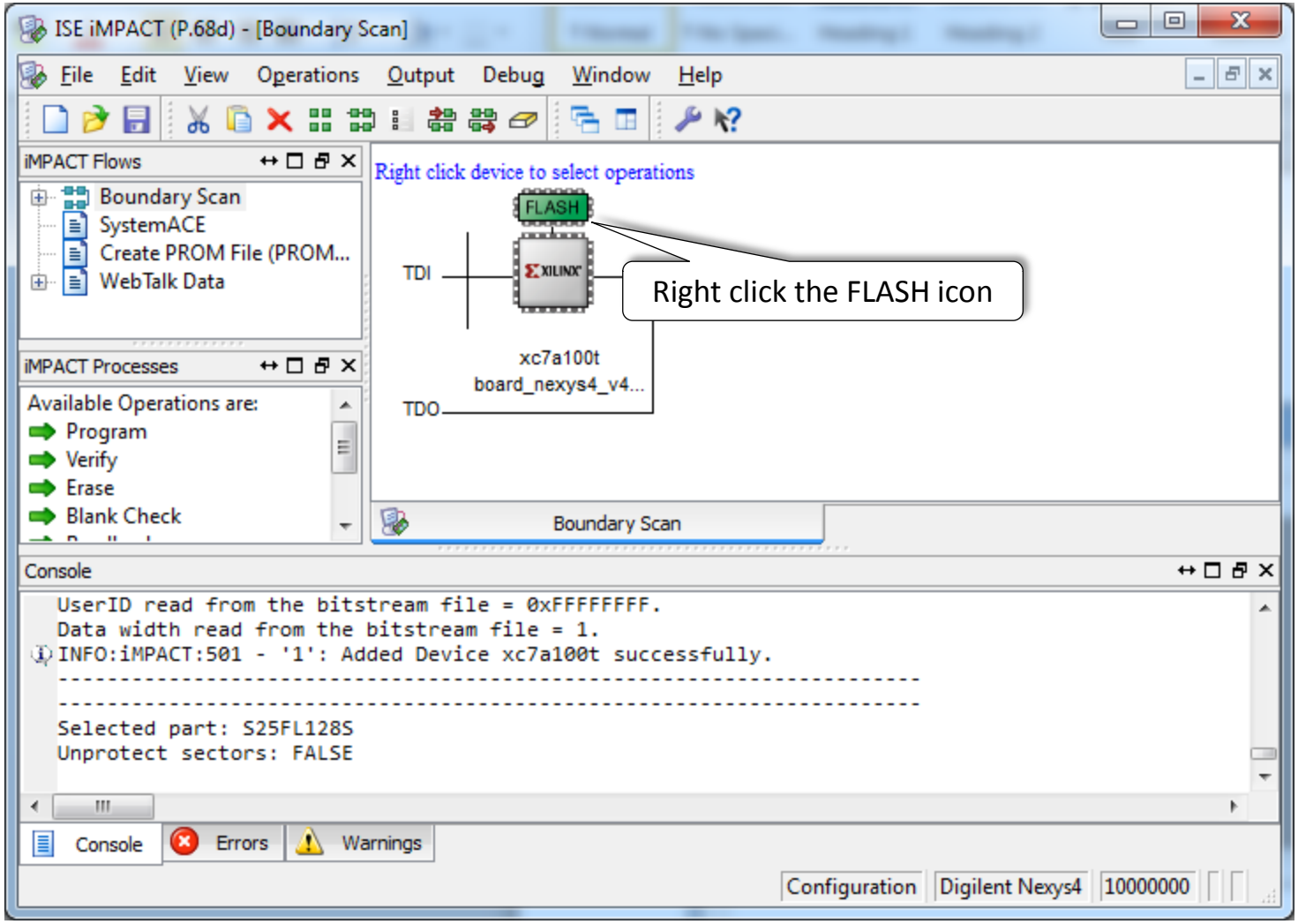

Assign New Configuration File
Look in:
E:\N.I.G.E.-Machine
My Computer
Andrew
Resources
Select an FPGA configuration .bit file created by ISE using Generate Programming File
board_nexys4_v4.0.bit
board_nexys4_v4.0_cclktemp.bit
File name:
board_nexys4_v4.0.bit
Files of type:
All Design Files (*.bit *.rbt *.nky *.isc *.bsd)
Open
Cancel
Bypass
Cancel All

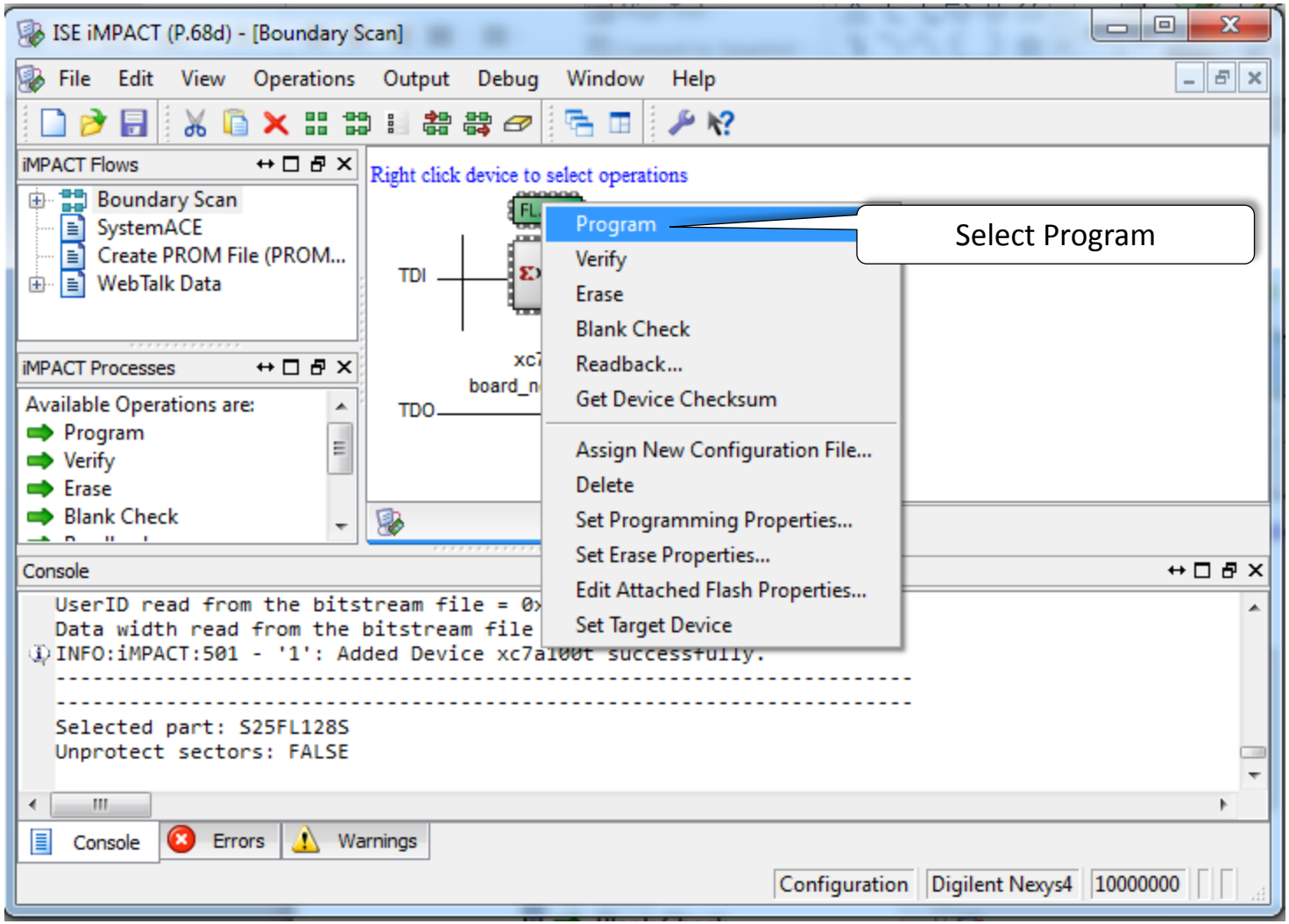

Attach SPI or BPI PROM
This device supports attached Flash PROMs.
Do you want to attach an SPI or BPI PROM to this device?
Yes
No
Click Yes

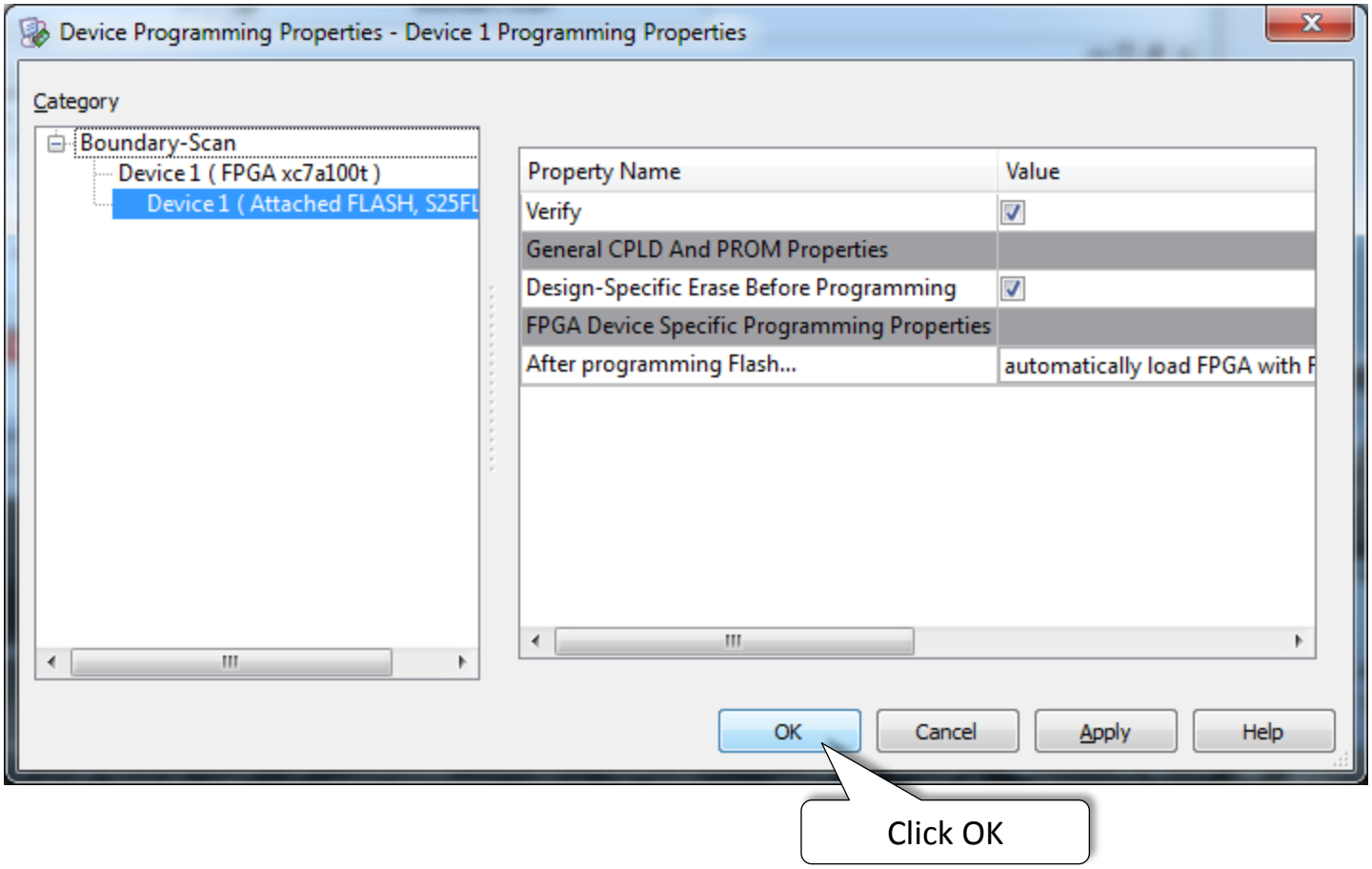

Add PROM File
Computer ▸ Work (E:) ▸ N.I.G.E.-Machine ▸
Search N.I.G.E.-Machine
Organize
New folder
Favorites
Computer
Desktop
Downloads
Recent Places
OneDrive
Libraries
Homegroup
Computer
System (C:)
Work (E:)
DVD RW Drive (F:
Storage1 (P:)
Storage2 (O:)
Name
Date modified
Type
Size
.git 28/06/2015 08:30 File folder
Resources 27/06/2015 22:31 File folder
Software 27/06/2015 22:31 File folder
System 27/06/2015 22:31 File folder
VHDL 28/06/2015 08:30 File folder
Select the .mcs file created in the previous step
MyFileName.mcs 28/06/2015 15:36 MCS File 6,554 KB
v4.mcs 2015 15:11 MCS File 6,554 KB
Type: MCS File
Size: 6.39 MB
Date modified: 28/06/2015 15:36
File name: MyFileName.mcs
MCS Files (*.mcs)
Open
Cancel

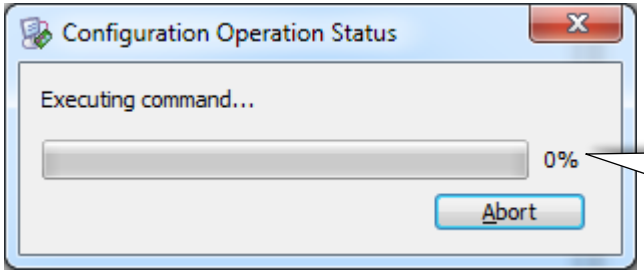

Select Attached SPI/BPI
Select the PROM attached to FPGA:
SPI PROM
S25FL128S
Data Width:
1
OK
Cancel
Note settings


Device Programming Properties - Device 1 Programming Properties
Category
Boundary-Scan
Device 1 ( FPGA xc7a100t )
Device 1 ( Attached FLASH, S25FL
Property Name
Value
Verify
OK
Cancel
Apply
Help
Click OK

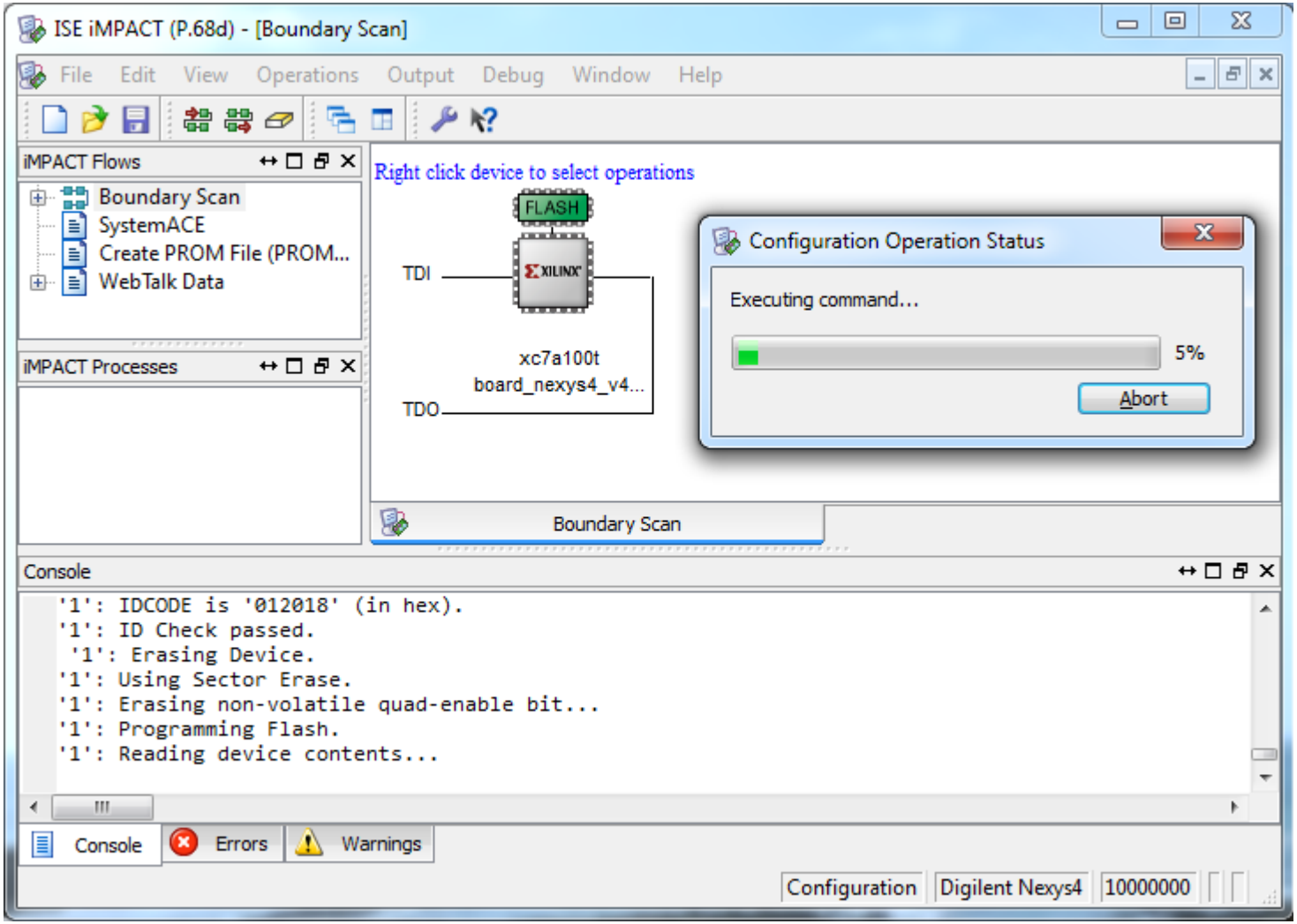

ISE iMPACT (P.68d) - [Boundary Scan]
File Edit View Operations Output Debug Window Help
iMPACT Flows
Boundary Scan
SystemACE
Create PROM File (PROM...
WebTalk Data
iMPACT Processes
Available Operations are:
Program
Verify
Erase
Blank Check
Right click device to select operations
FLASH
TDI
TDO
xc7a100t
board_nexys4_v4...
Right click the FLASH icon
Boundary Scan
Console
UserID read from the bitstream file = 0xFFFFFFFF.
Data width read from the bitstream file = 1.
INFO:iMPACT:501 - '1': Added Device xc7a100t successfully.
Selected part: S25FL128S
Unprotect sectors: FALSE
Console
Errors
Warnings
Configuration
Digilent Nexys4
10000000

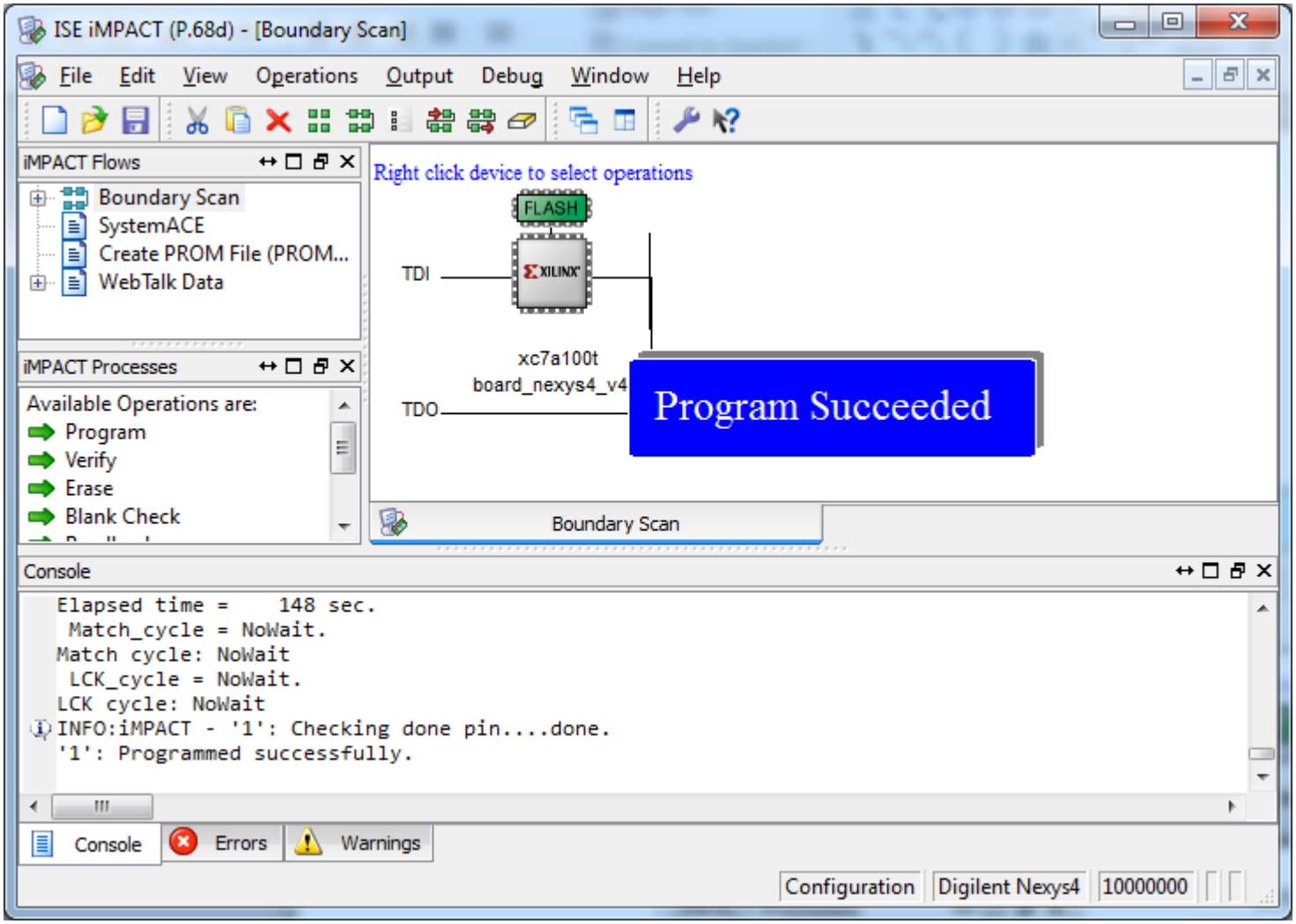

ISE iMPACT (P.68d) - [Boundary Scan]
File Edit View Operations Output Debug Window Help
iMPACT Flows
Boundary Scan
SystemACE
Create PROM File (PROM...
WebTalk Data
iMPACT Processes
Available Operations are:
Program
Verify
Erase
Blank Check
Right click device to select operations
TDI
TDO
Program
Verify
Erase
Blank Check
Readback...
Get Device Checksum
Assign New Configuration File...
Delete
Set Programming Properties...
Set Erase Properties...
Edit Attached Flash Properties...
Set Target Device
Select Program
Console
UserID read from the bitstream file = 0x
Data width read from the bitstream file
INFO:iMPACT:501 - '1': Added Device xc7a100t successfully.
Selected part: S25FL128S
Unprotect sectors: FALSE
Console
Errors
Warnings
Configuration
Digilent Nexys4
10000000

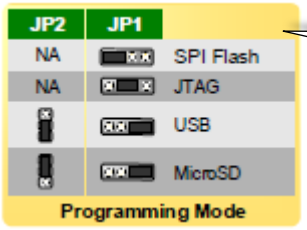

Device Programming Properties - Device 1 Programming Properties
Category
Boundary-Scan
Device 1 ( FPGA xc7a100t )
Device 1 ( Attached FLASH, S25FL
Property Name
Value
Verify
General CPLD And PROM Properties
Design-Specific Erase Before Programming
FPGA Device Specific Programming Properties
After programming Flash...
automatically load FPGA with F
OK
Cancel
Apply
Help
Click OK




Don’t worry! The progress bar remains on 0% for several minutes initially






Switch off the Nexys4 board, configure the jumpers for MicroSD, and switch on!