

# Integrated Upgrades of Control System for TROS

Li Xin, Guo Tangyong, Zou Tong, Wang Peiyuan, Tan Yechun, Xia Jiening, Zhou Yunyao, Du Ruilin

Institute of Seismology,  
China Earthquake Administration

[lxcomcn@yahoo.com.cn](mailto:lxcomcn@yahoo.com.cn)



# Outline

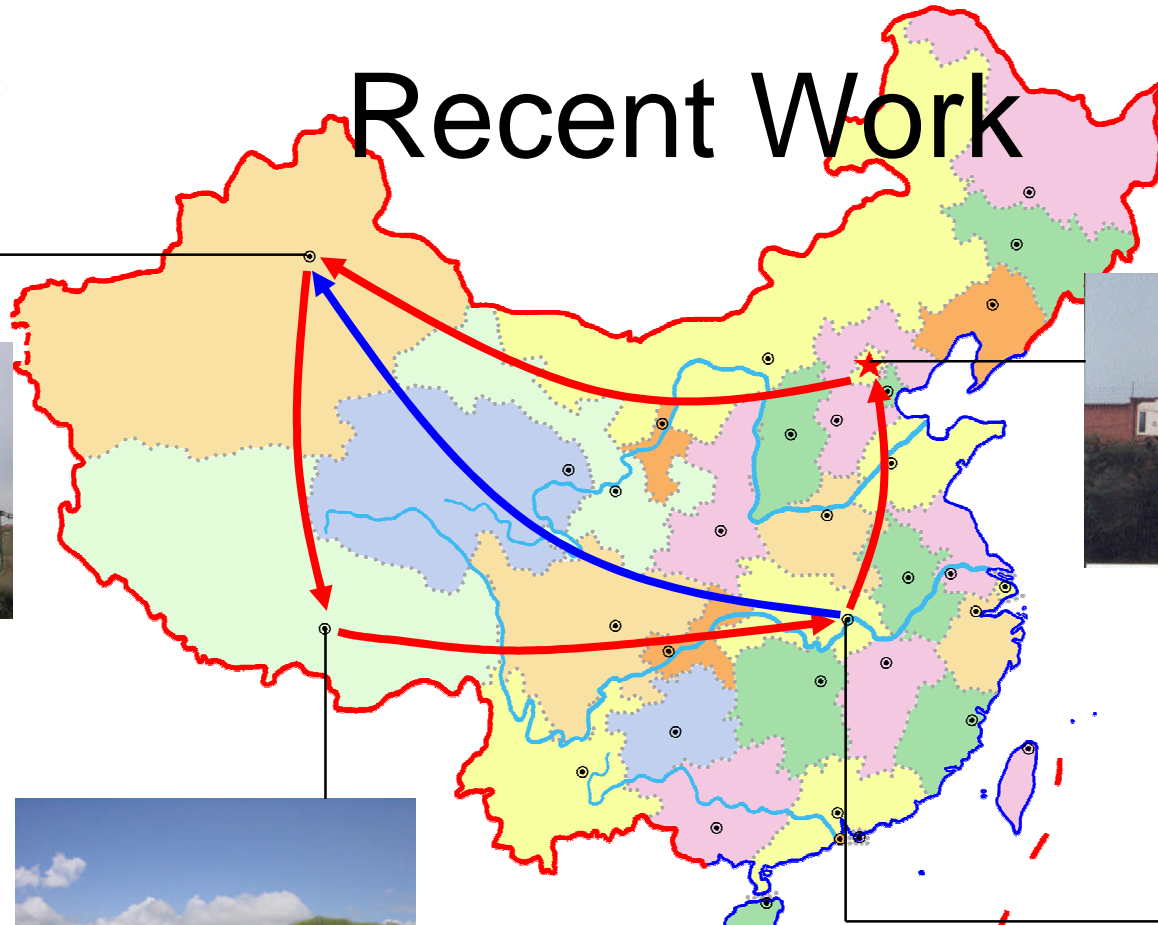
- Recent work
- What does integrated upgrade mean?
- Control system
- Servo system
- Event timer





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# Recent Work



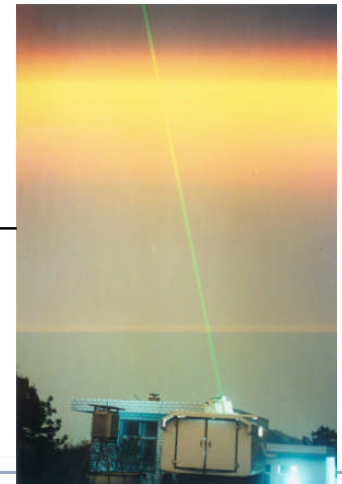
Urumqi (7355)



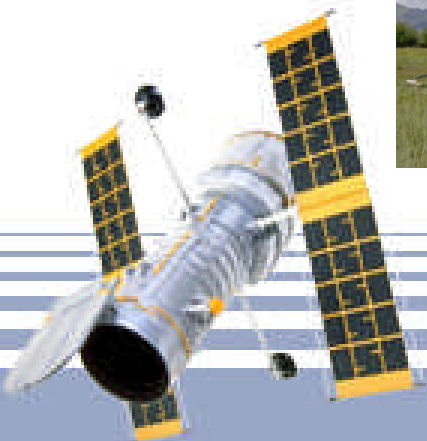
Beijing (7343)



Lhasa (7356)



Wuhan



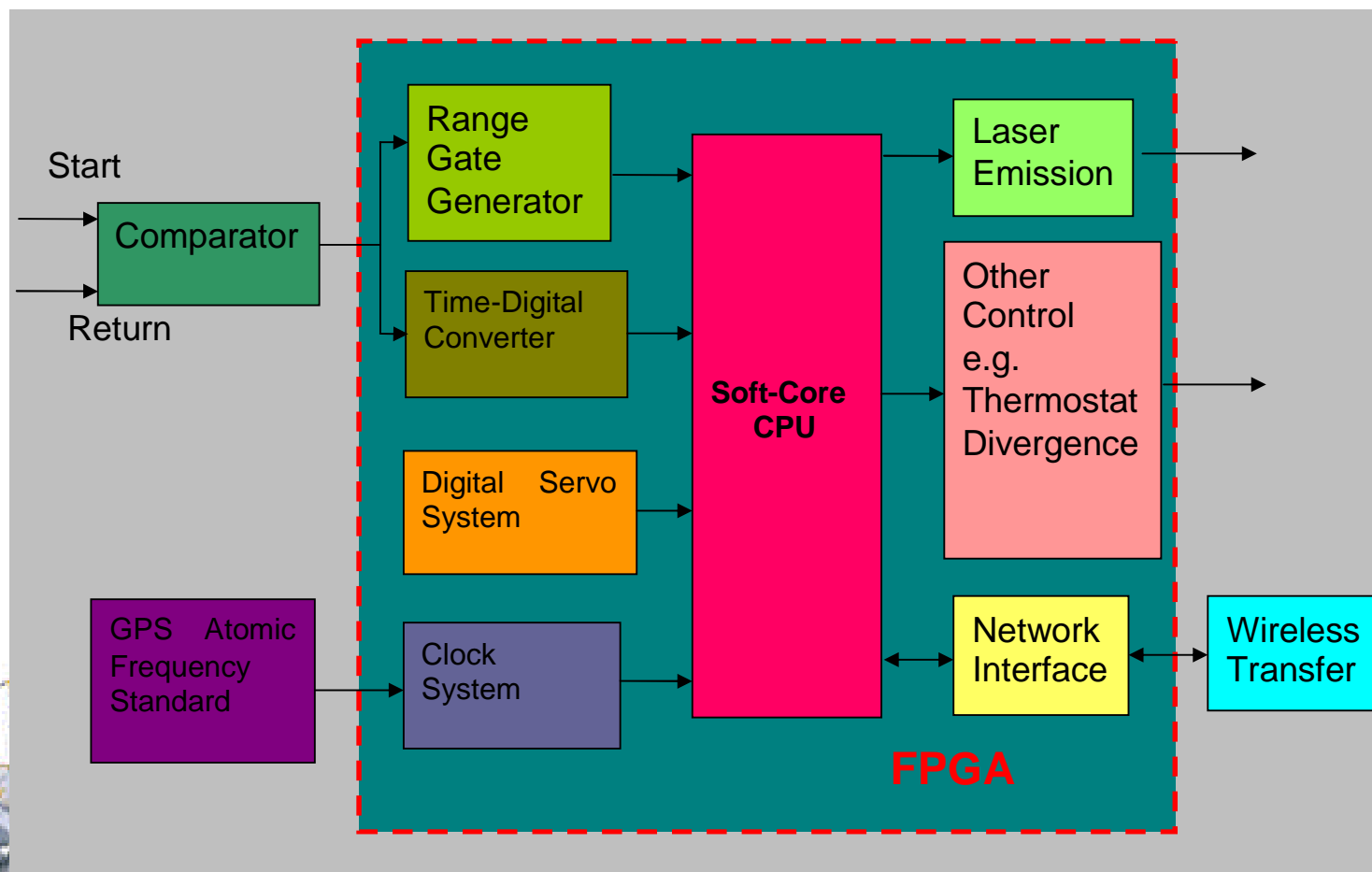
→ Oct, 2000-Jan, 2002  
→ Apr, 2003-Sep, 2005

## What does integrated upgrade mean?

- Higher tracking and ranging precision
- More reliable system stability
- Replace manual intervention by hardware and software



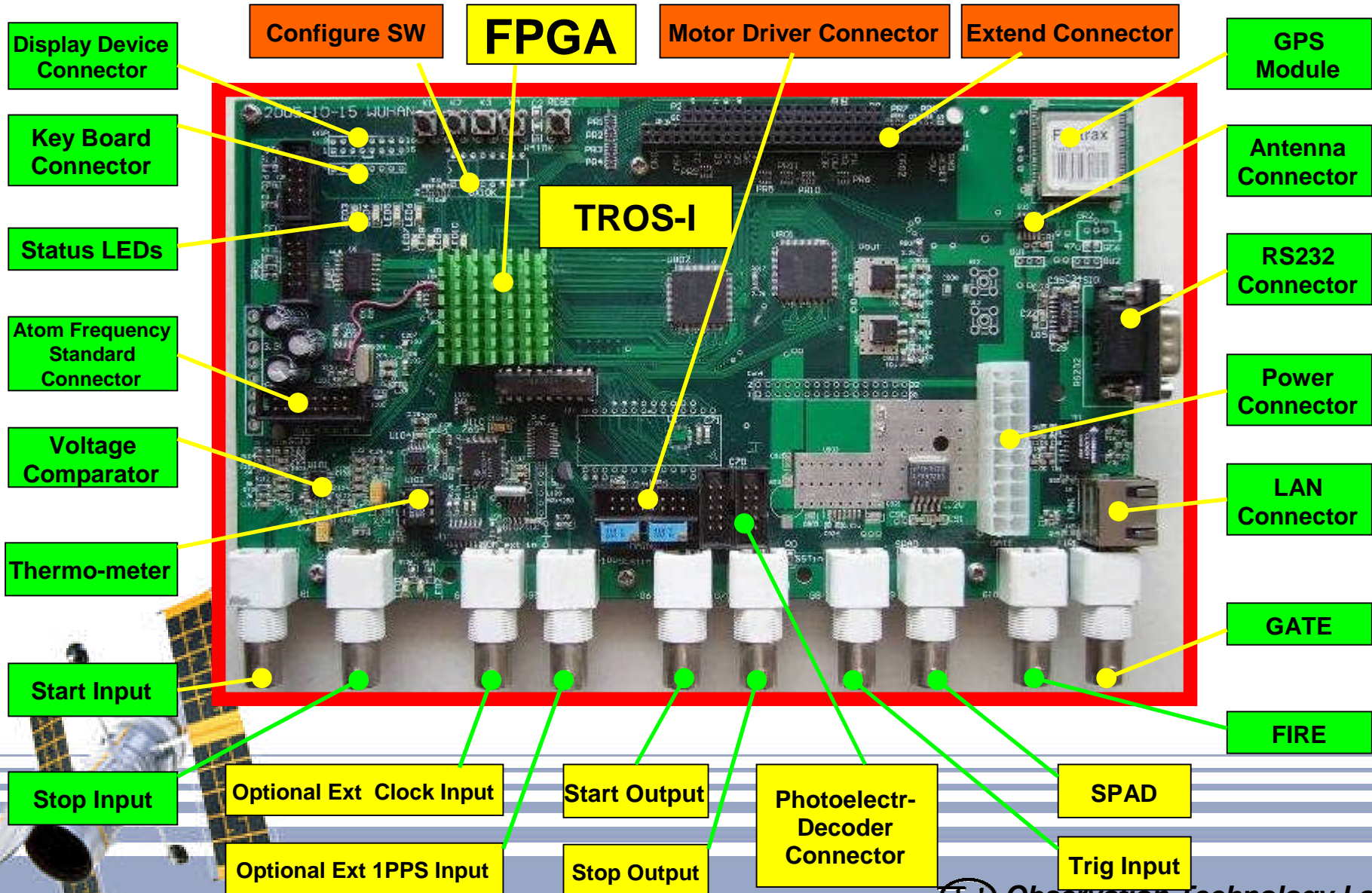
# Control System



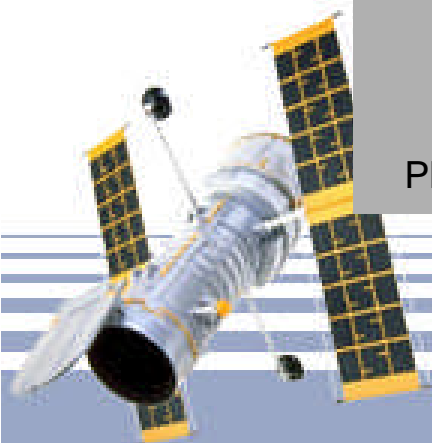
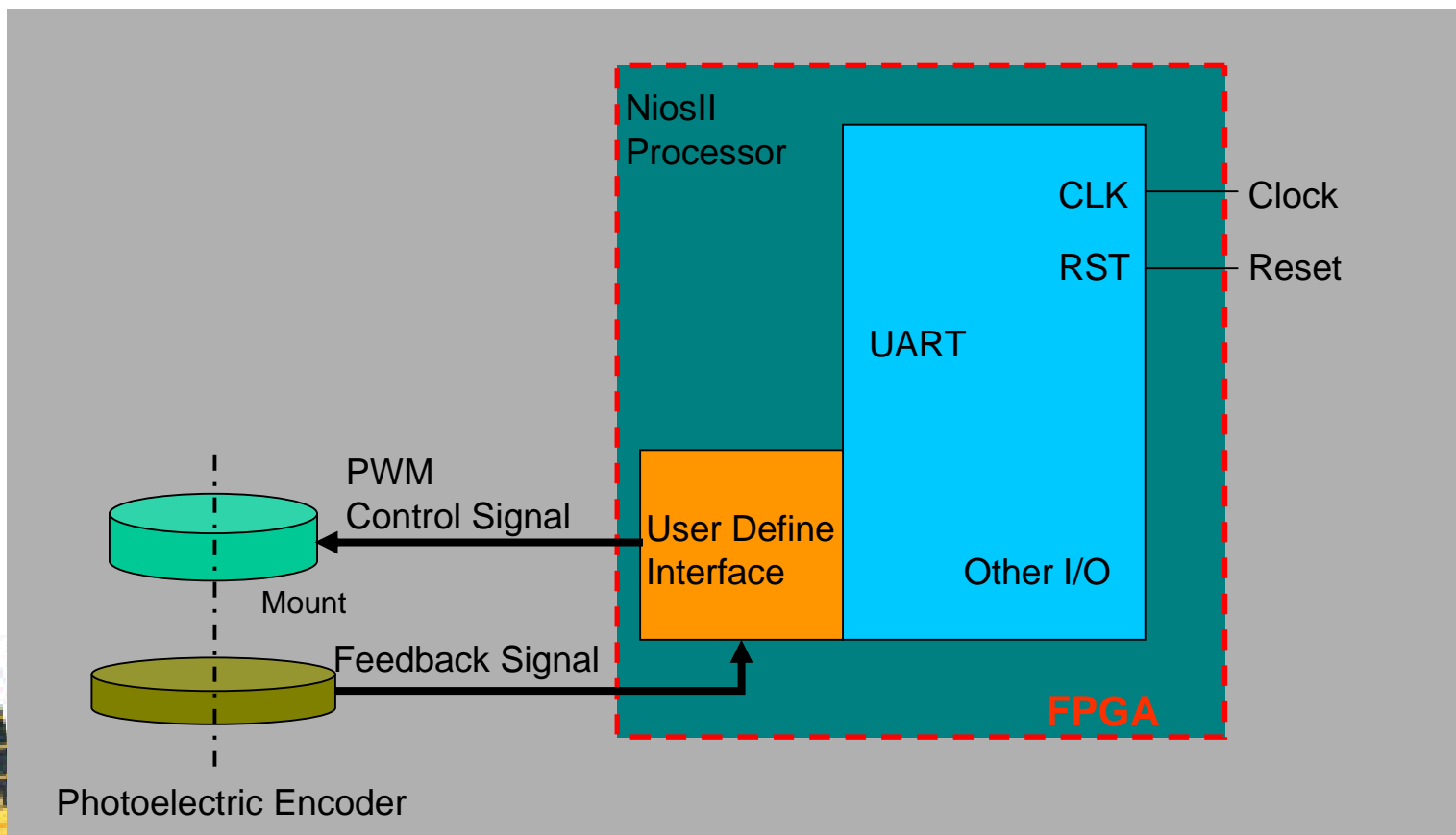


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# TROS-I all-in-one Mainboard



# Servo System



# Event Timer

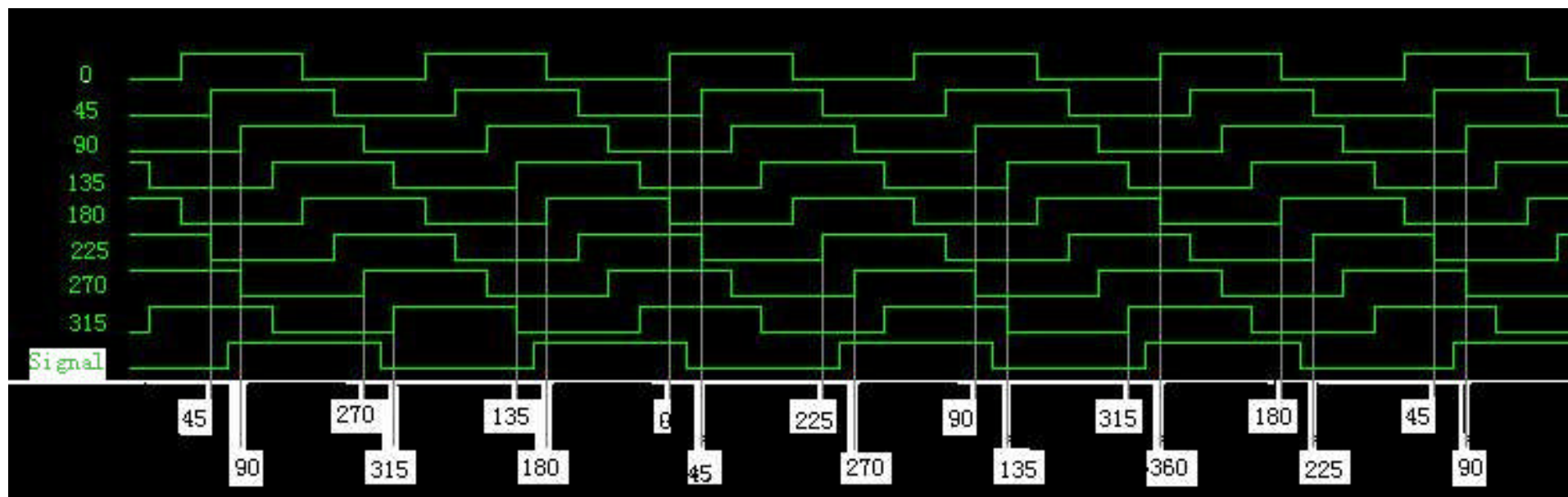
- FPGA
- Dedicated TDC chip





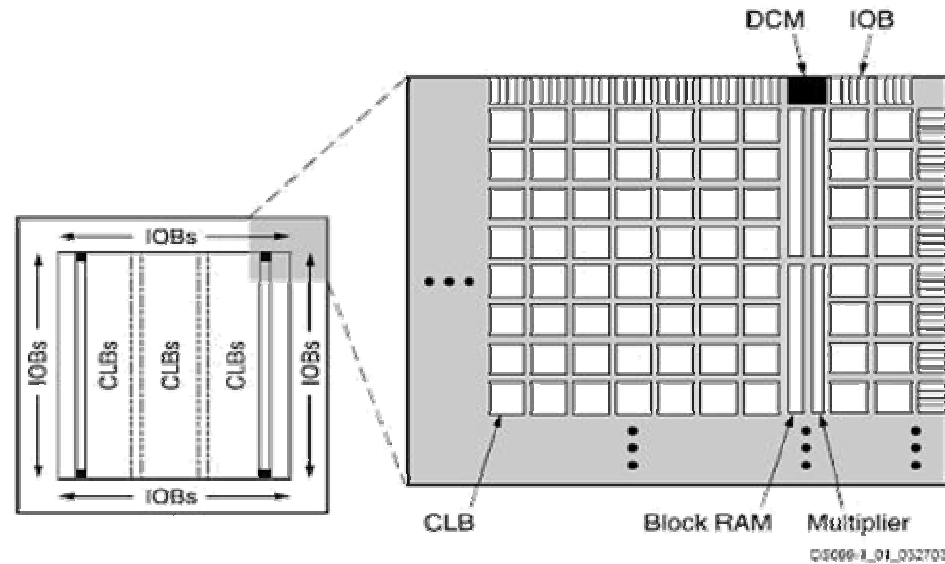
# TDC Principle

- Use phase shift to measure interval



# FPGA

- High resolution measure by DCM in Xilinx Spartan3



# Conclusions

- Enhance hitting rate, tracking precision and system reliability
- Provide the convenient operation conditions for mobile observation
- Relieve the labor intensity of the staff for operation and maintenance



**Thank you**

