



# Challenges and Opportunities for Digital TV

**Rainer Hoffmann**

**President & General Manager**

**Micronas Semiconductor Inc., San Jose**

# Agenda

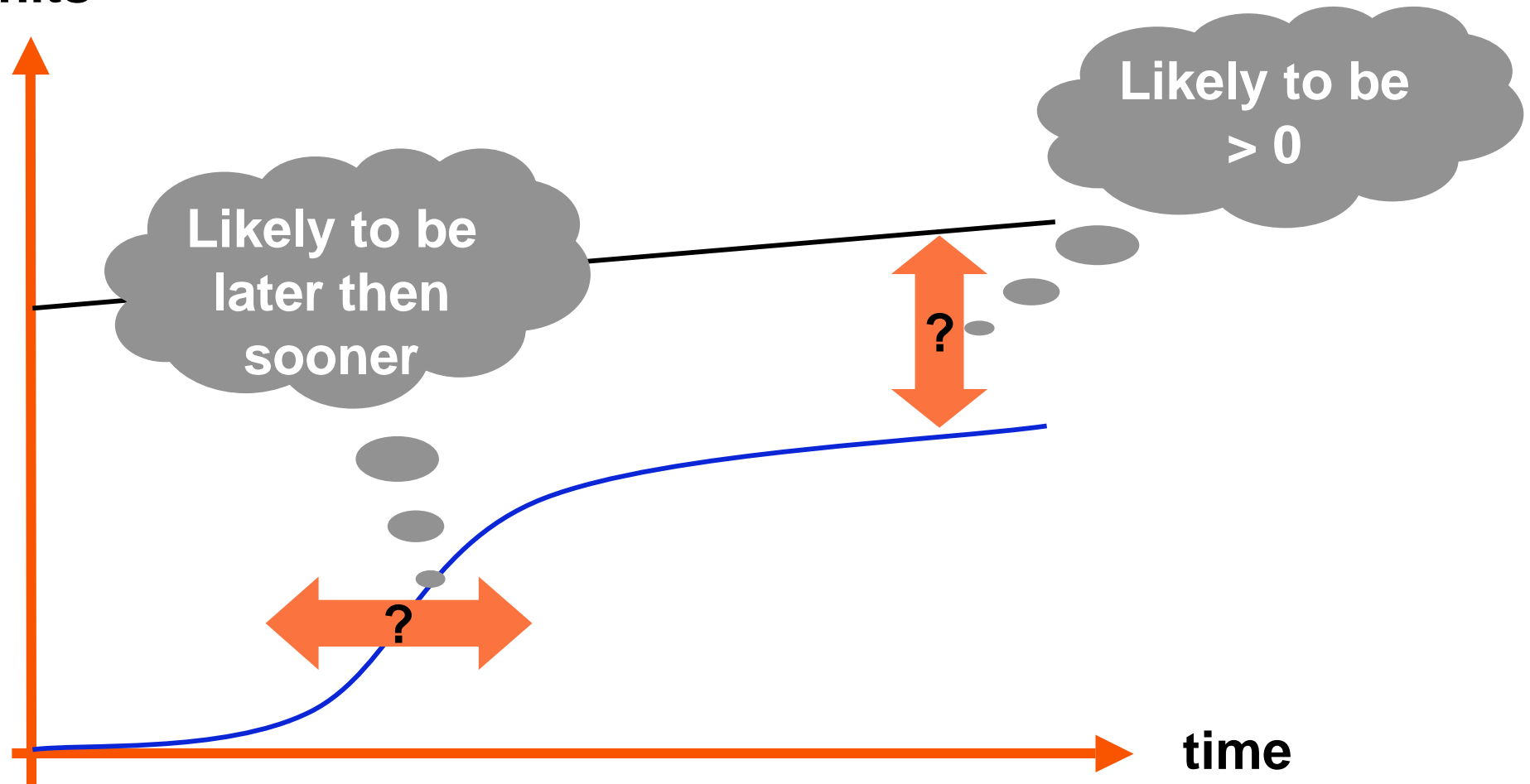
- u **Market in Transition**
- u **R&D in Distress**
- u **Complete TV System Solutions**

## **It's a TV!**

- u “old” market: had a long time to become efficient
- u Highly differentiated market segmentation
- u High number of competitors
- u High sophistication in optimizing product ranges and feature-price points
- u Preset end-customer expectations

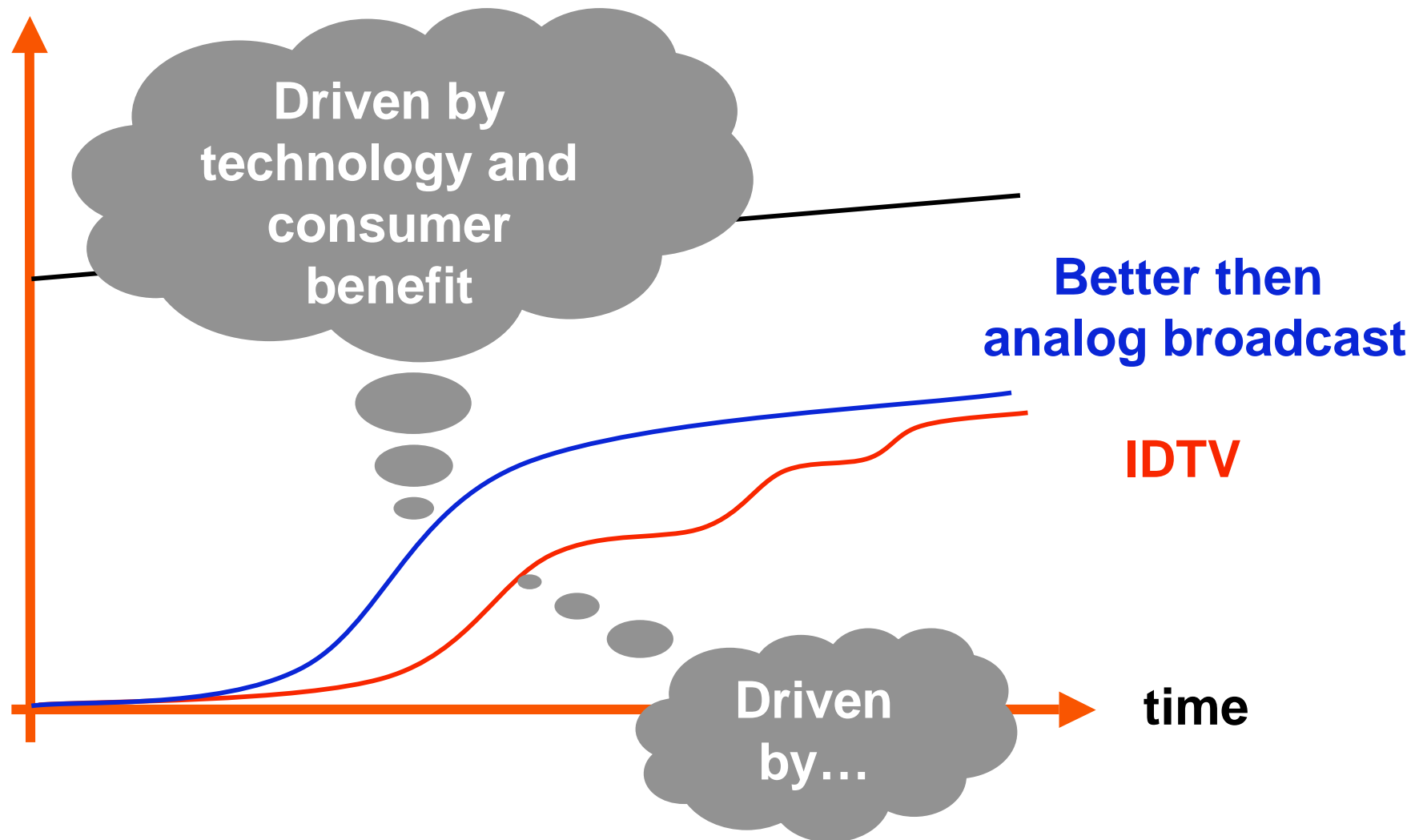
## A Typical Transition

units



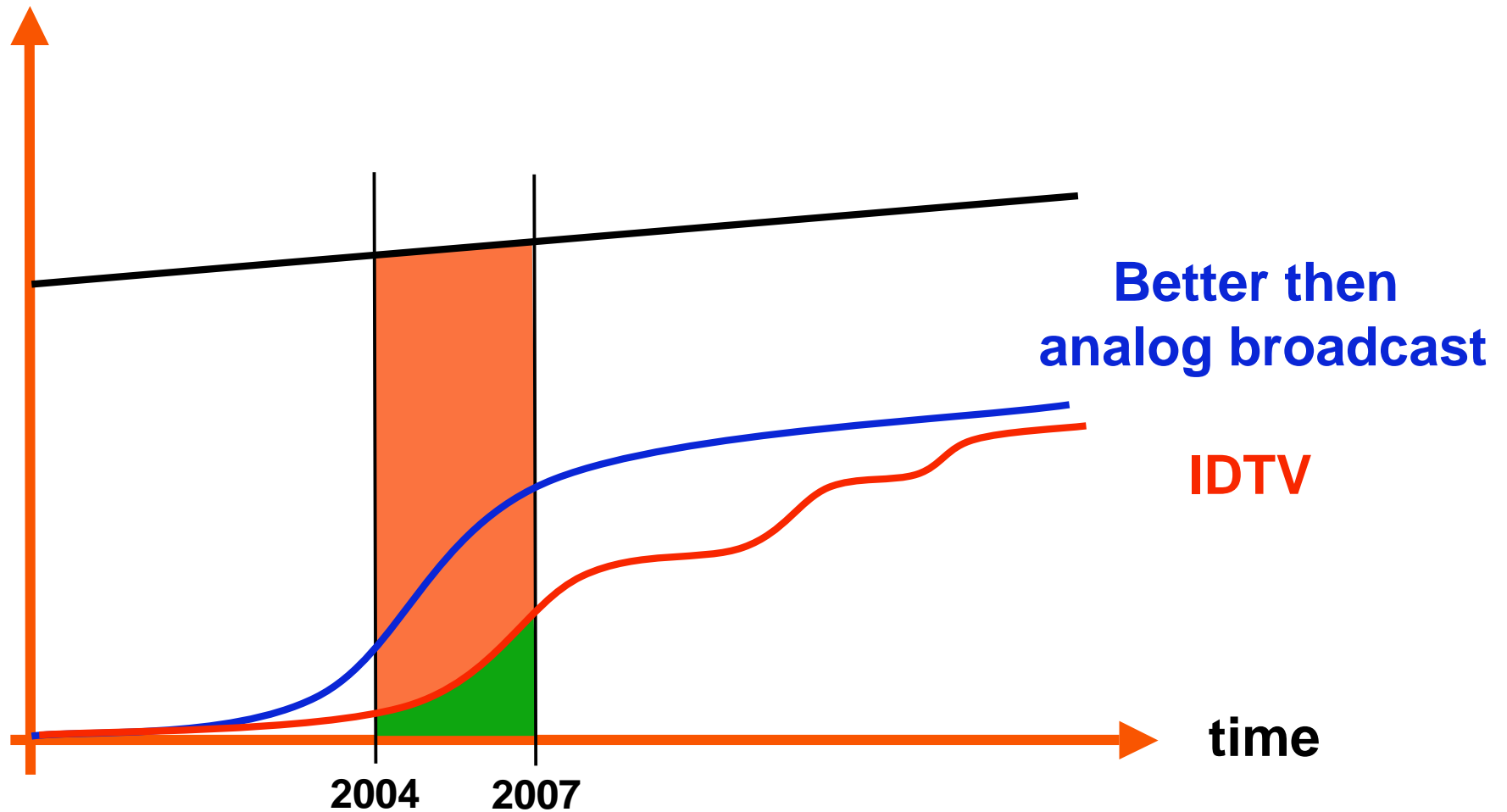
## Multiple Transitions

units



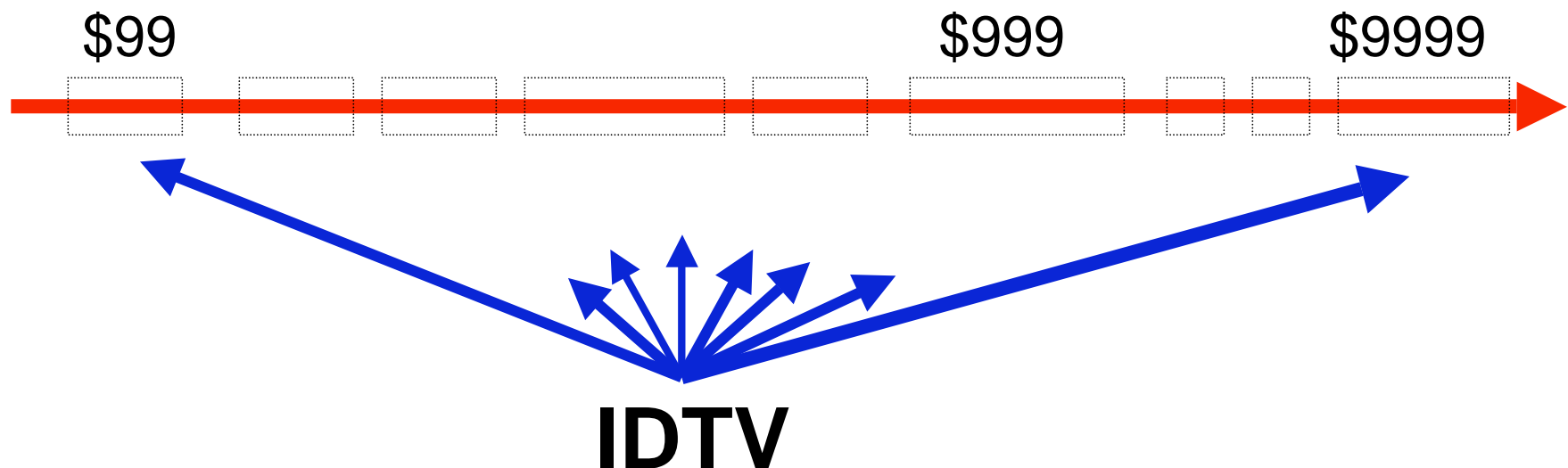
## Multiple Transitions

units



## Instant Commodity and Extreme High End

- u IDTV's are TV's
  - ▶ Share and target same shelf space at Best Buy etc.
  - ▶ Inherit a very differentiated market segmentation
  - ▶ FCC mandate: Need to cover the full spectrum
    - ▶ Low end: price is everything to
    - ▶ High end: give me those features



## So many Models and So Little R&D

R&D is second biggest cost factor for global TV brands

Global brands need to cover a very wide spectrum

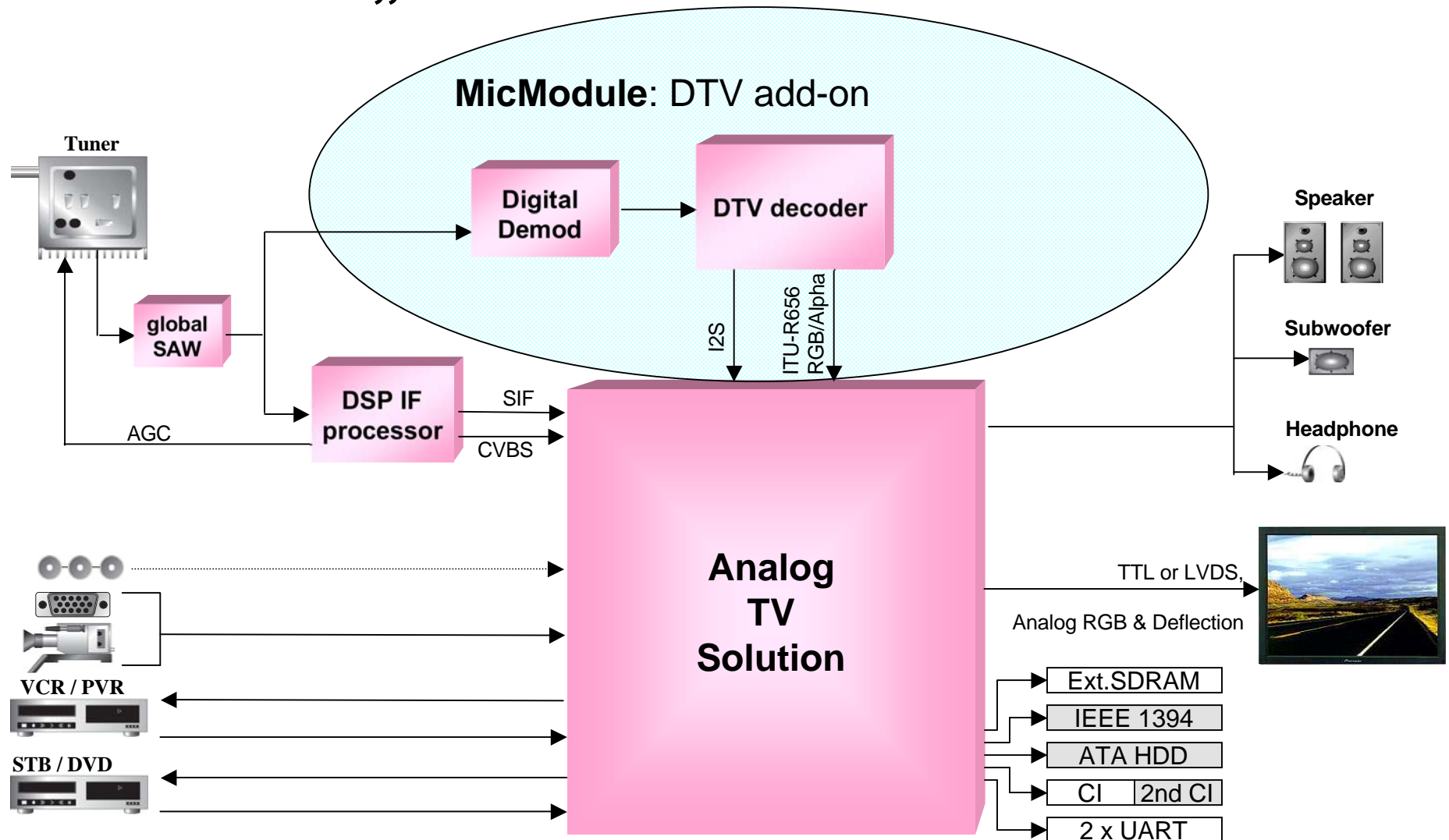
- u 5 Territories
- u 3 - 6 performance levels
- u 4 display technologies (CRT, LCD, Plasma, RPTV,...)
- u multiple form factors
- u Dozens of languages / regional data broadcast standards ....

Digital is an additional burden on already very busy R&D teams

- u 4 digital major broadcast standards (ATSC, DVB, ISDB, China)

**Need to unify architectures / platforms**

# Modular IDTV „MicModule“



## Benefit of Modularization

- u One module can cover many feature set
- u No need to reinvent the display pipe for different regions
- u Re-use of digital module in new display types, platforms
- u One team can focus on broadcast complexity
- u Open towards high-end requirements and new display processing technologies
- u Avoids active cooling and 4digit pin designs

## Drawbacks of Module Approach

- u Redundancies
  - ▶ System CPU
  - ▶ memory
- u Eventually software will be the module

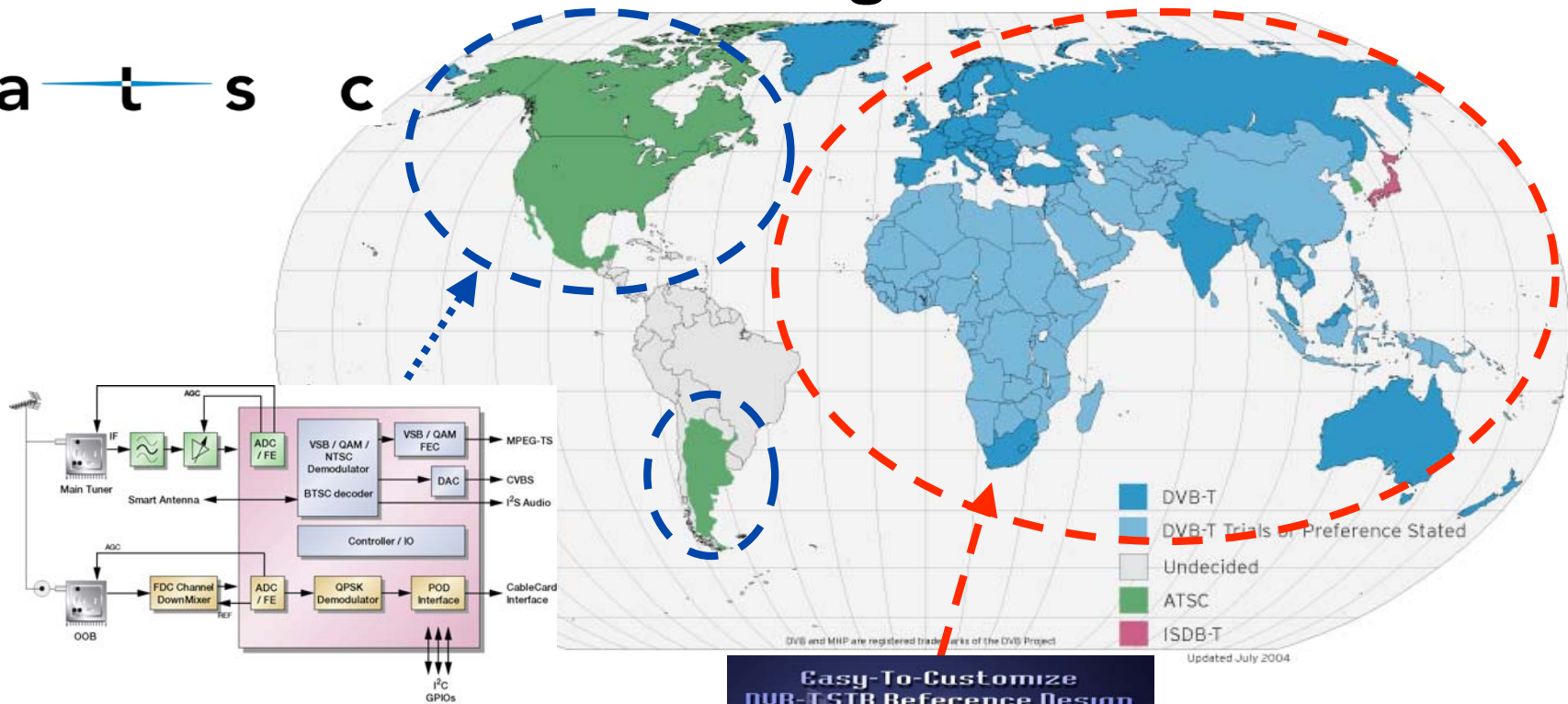
# Complete Solution Required

- u Complete coverage of features and price points
  - ▶ Becoming more difficult as 'free knowledge' has been used up
- u Across all display technologies
  - ▶ Don't ignore CRT's
- u Across all broadcast technologies
- u Ready to go reference designs focused on reducing R&D work at customers

## **Shameless Commerce Department**

# DTV Receiver technologies from Micronas

a — t — s — c



**Single-Chip  
ATSC/DCR Frontend IC**



**DVB-T  
turn-key Solution**



## u Sharp, judder-free Picture for DVD/TV Movies

Film Mode Video – DVD content & increasing share in broadcast.

Recorded in 24 full images every second, and being trans-coded to 50Hz 2-2 or 60Hz 3-2 pull down for broadcast or DVD records.

The refresh rate of TV displays is much higher than the recording rate of movies, usually 50/60/75/100 interlaced fields / sec (CRT) and 50/60 frames / sec (FPD). This mismatch causes a distinct juddering effect, as the eye/brain tries to follow the movement.



# Thank you for your Attention!

- u Questions?
- u Please visit our Booth 35628  
in South Hall 4

[www.micronas.com](http://www.micronas.com)

