

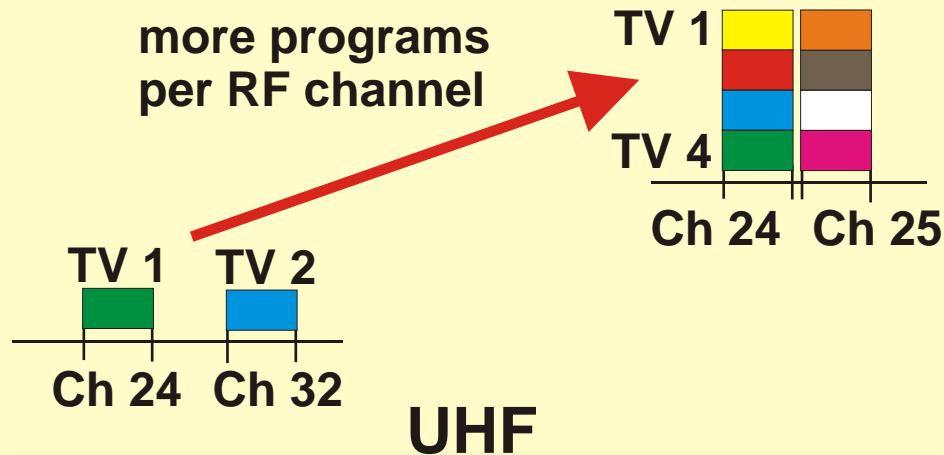
# **The Basics of Digital TV**

**T. Jaekel, January 2001**

- 1. Why do we need Digital TV ?**
- 2. How do we make TV digital ?**
- 3. What do the different MPEG variants mean?**
- 4. How about digital modulation ?**
- 5. Summary**

# 1. Why do we need Digital TV ?

## Bandwidth Efficiency

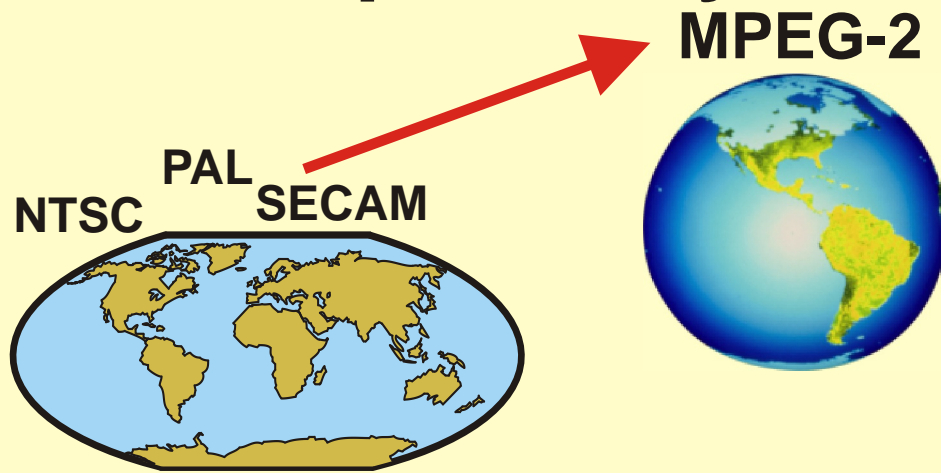


## Quality, Reliability

signal level independent  
noise free



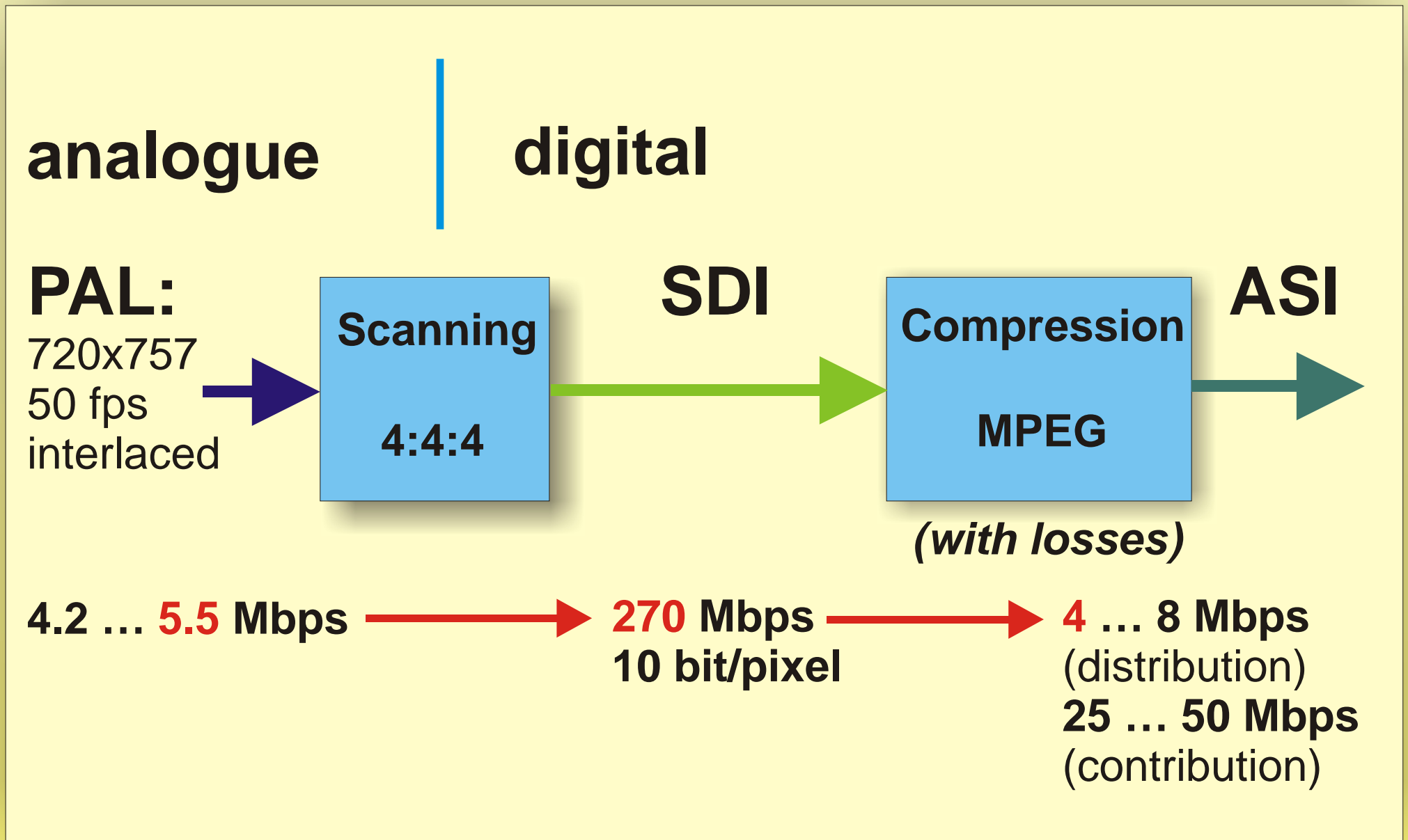
## Compatibility



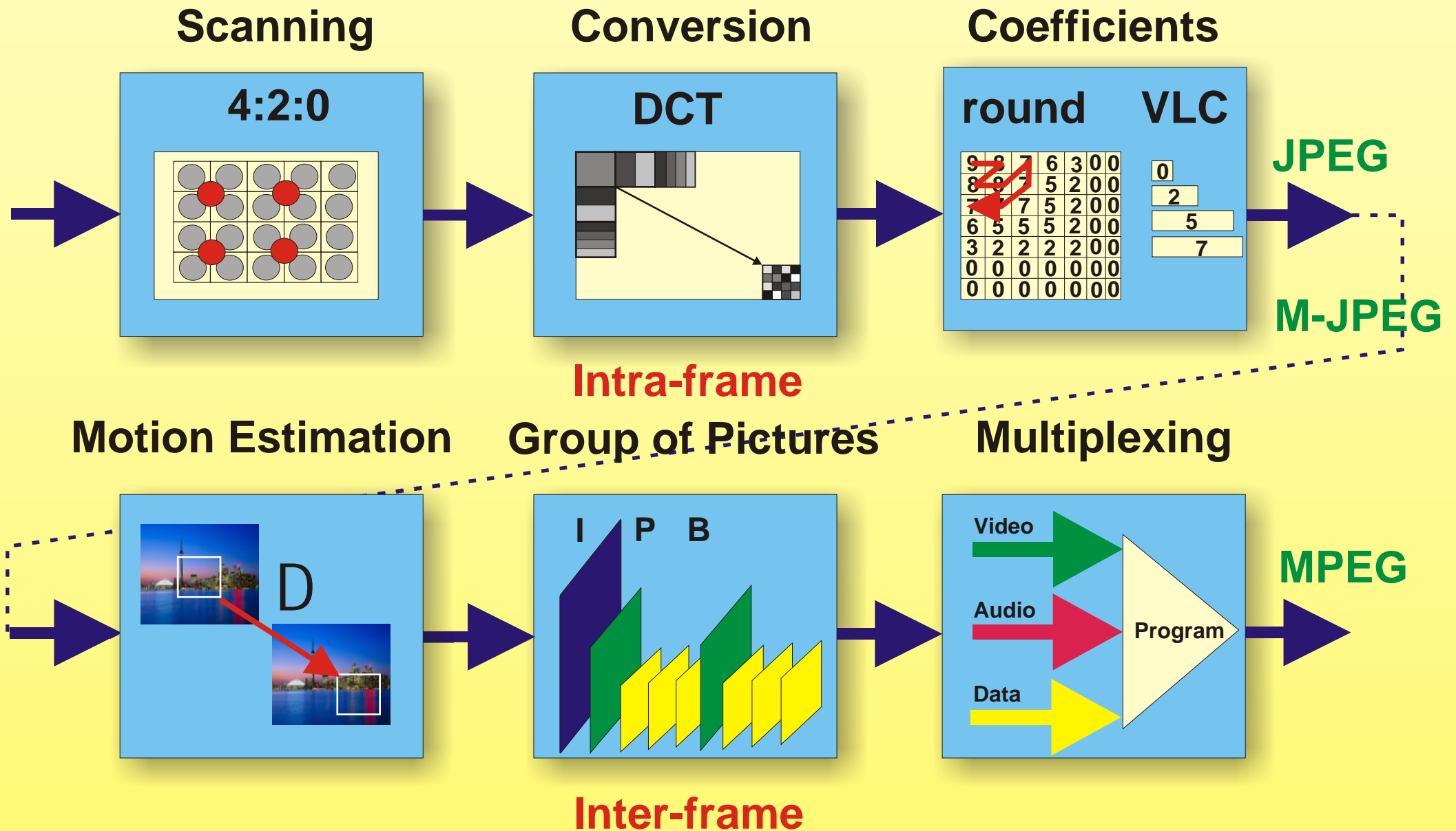
## Scalability



# 2. How do we make TV digital ? - I



# 2. How do we make TV digital ? - II

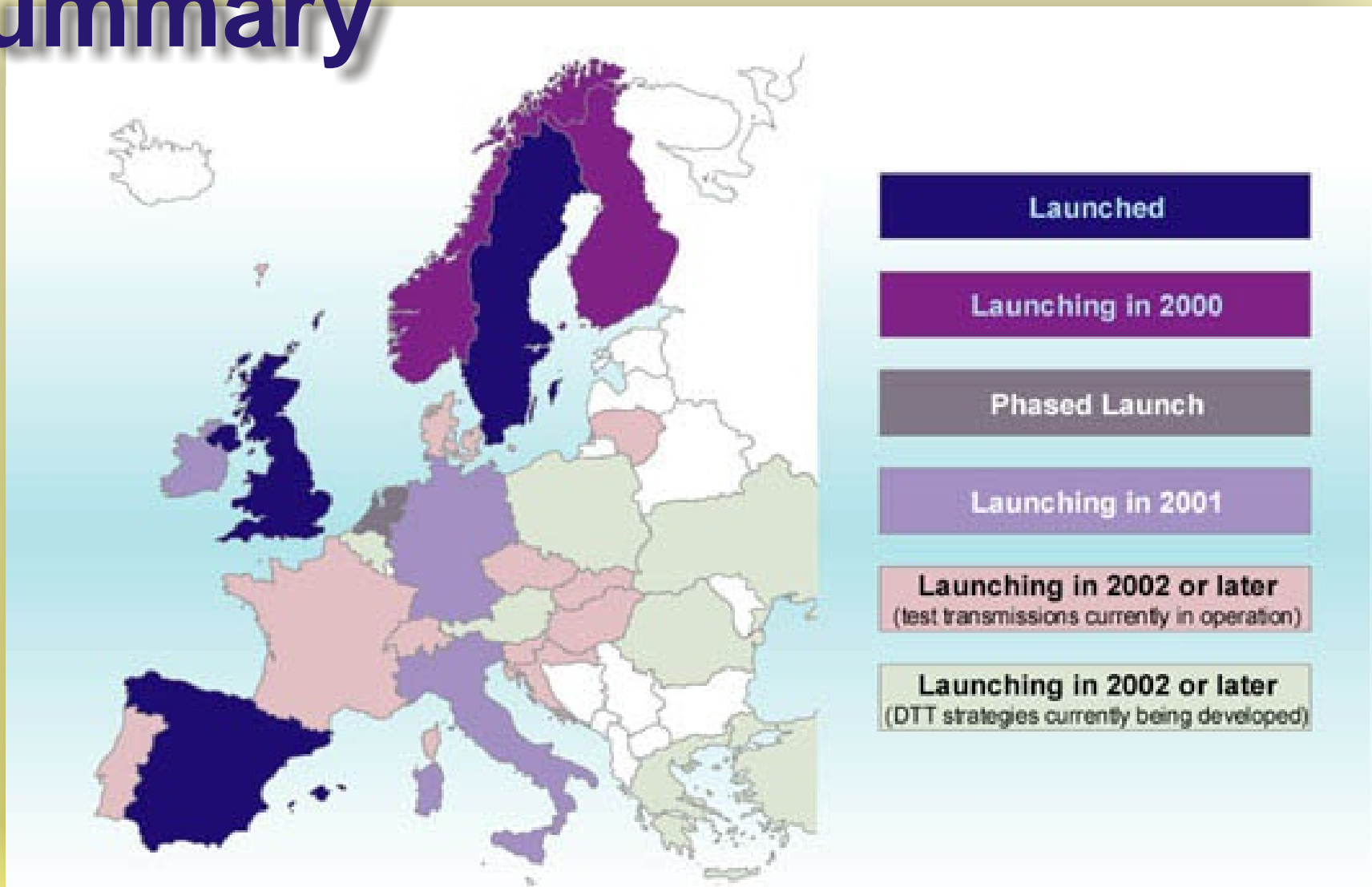


# 3. What do the different MPEG variants mean?

	type	parameters	used for	examples
<b>DCT based</b>	<b>MPEG-1</b>	< 1,5 Mbps	<b>CDs, Video-CD</b> Internet	Audio: <b>MP2</b> ( <b>MUSICAM, DAB</b> ) Audio: <b>MP3</b> (Internet)
	<b>MPEG-2</b>	1 ... 100 Mbps scalable	<b>DVD</b> Digital TV ( <b>DVB, ATSC</b> )	4:2:2 HP@ML
	<b>MPEG-4</b>	Audio Visual Objects ( <b>AVOs</b> ) higher compression ratio	<b>Internet-TV</b>	Media Player Real Player virtual studios
	<b>MPEG-7</b>	Content Management Semantic of Scenes	archives retrieval systems (no compression)	<b>Meta Data</b>
	<b>DVCPPro</b>	25, 50, 100 Mbps (HD)	Panasonic	Electronic News Gathering (ENG)
	<b>H.261</b>	64 ... 368 Kbps	video conferencing	ISDN nx64K mode
<b>non DCT</b>	<b>Wavelets</b>	0 ... 100 Mbps	video surveillance space missions research	<b>JPEG 2000</b>



# 5. Summary



Source: DigiTAG and DVB-Org.

- **Satellite and Cable are already digital.**
- **Germany starts 2001, deadline is 2010 for DTT installation and adoption (DVB-T)**

# Abbreviations

ASI	Asynchronous Serial Interface
ATSC	Advanced Television Standard Committee
AVO	Audio Visual Objects
CD	Compact Disc
Ch	Channel
DCT	Discrete Cosine Transformation
DTT	Digital Terrestrial TV
DVB	Digital Video Broadcasting
DVC	Digital Video Compression
DVD	Digital Versatile Disc
ENG	Electronic News Gathering
HDTV	High Definition TV
HP@ML	High Profile at Main Level
ISDN	Integrated Services Data Network
JPEG	Joint Pictures Expert Group
Mbps	Megabit per seconds
M-JPEG	Motion-JPEG
MPEG	Motion Picture Expert Group
NTSC	National Television Standardization Committee
(C)OFDM	(Coded) Orthogonal Frequency Division Multiplex
PAL	Phase Alternating Line
QAM	Quadrature Amplitude Modulation
QPSK	Quarter Phase Shift Keying
SDI	Serial Digital Interface
SDTV	Standard Definition TV
SECAM	SEquentiel Couleur a Memoire
VLC	Variable Length Coding