



ITEA 2

INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

HD4U « High Definition for Europe » The future is now!

ITEA 2 Symposium 2007 - Berlin, Germany
Patrick Schwartz, Thomson Grass Valley



Σ13674



Contents

- High Definition: why ?
- 2004 State-of-the-art & HD4U motivation
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INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

High Definition – The big picture



European leadership in Software-intensive Systems and Services. The Future of Embedded and Distributed Software.

HDTV Format

Expand the vision, improve the resolution

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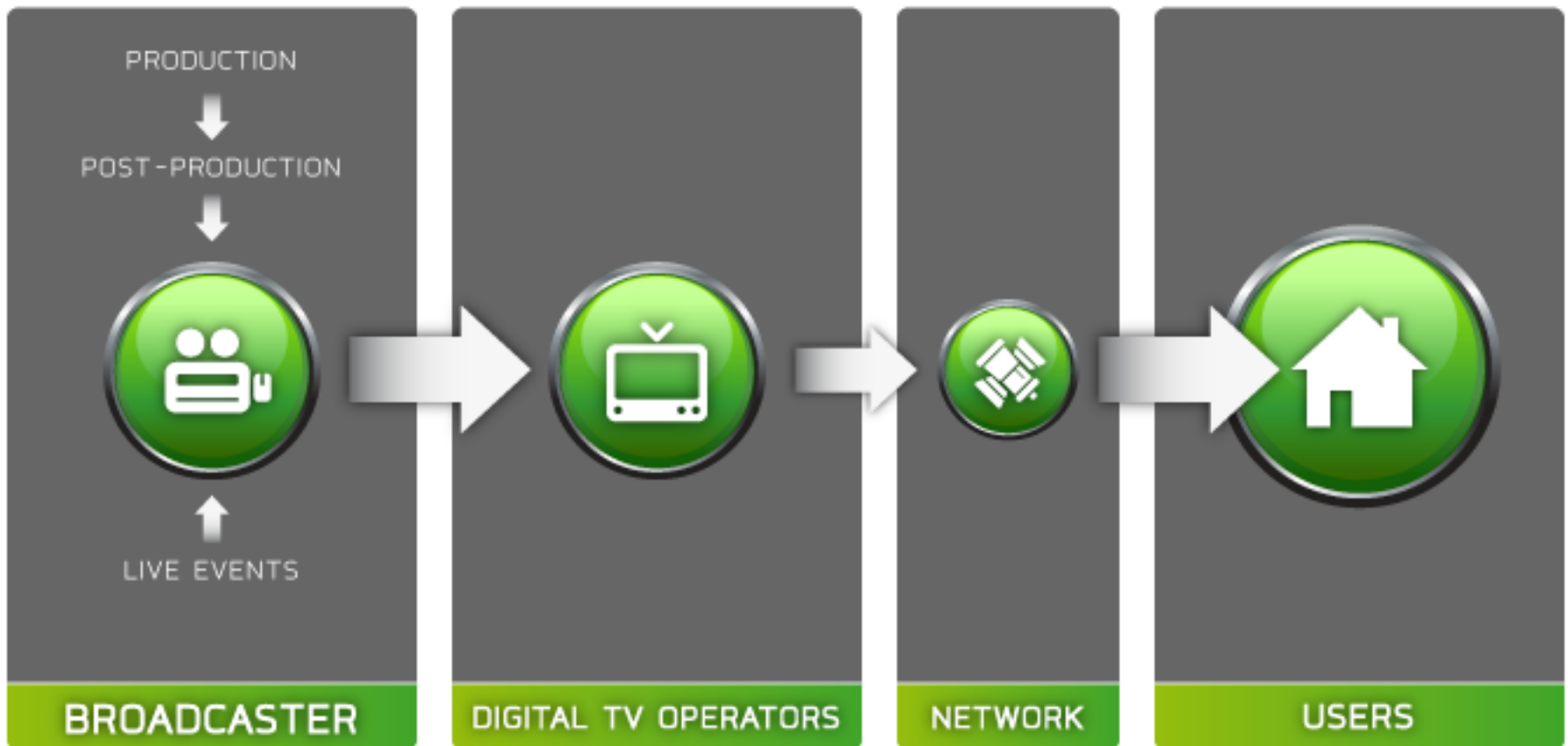


6 Times more pixels, a new Viewpoint for HD coverage

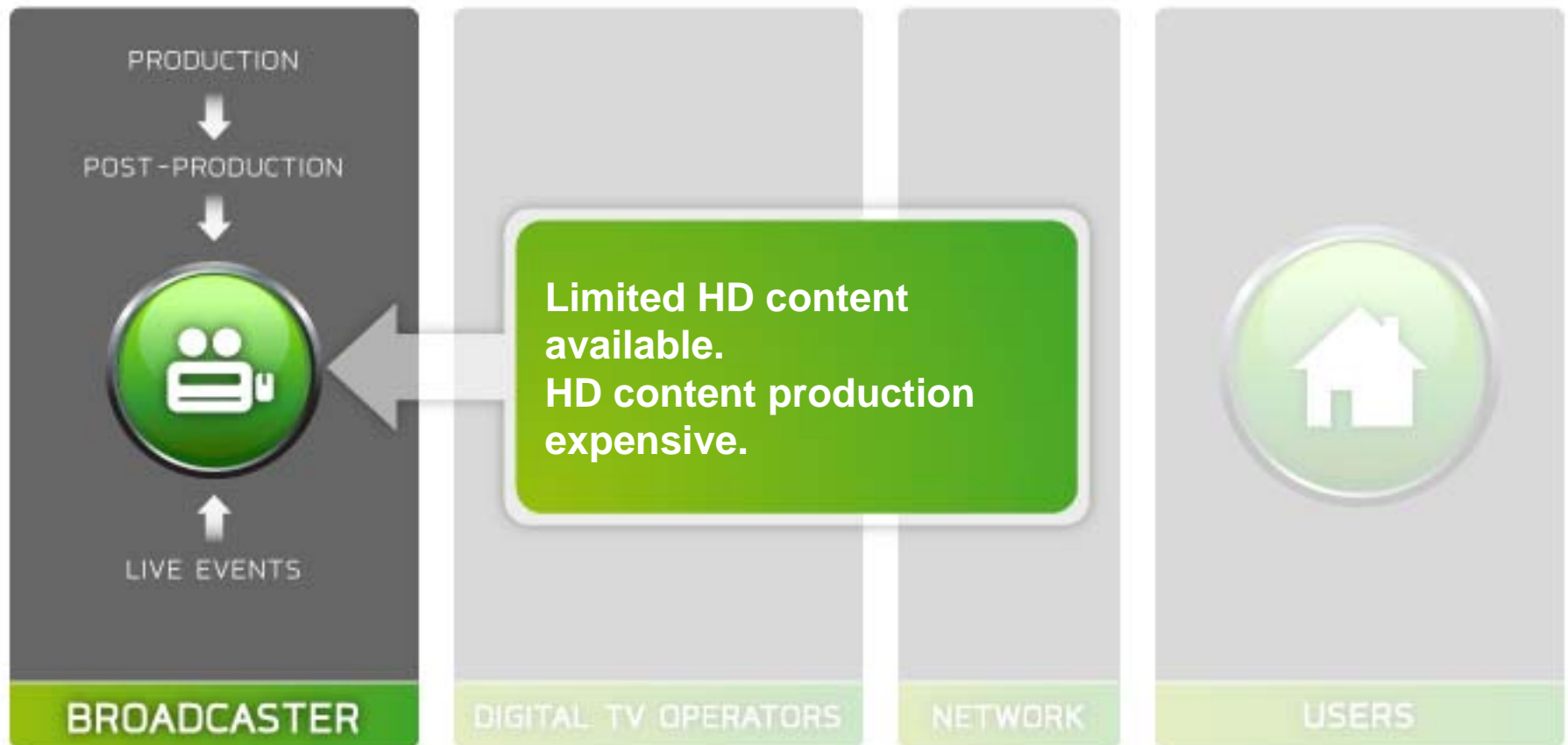
HD ► 2 Million Pixels (1920x1080 lines)

SD ► 350 K Pixels (600x576 lines)

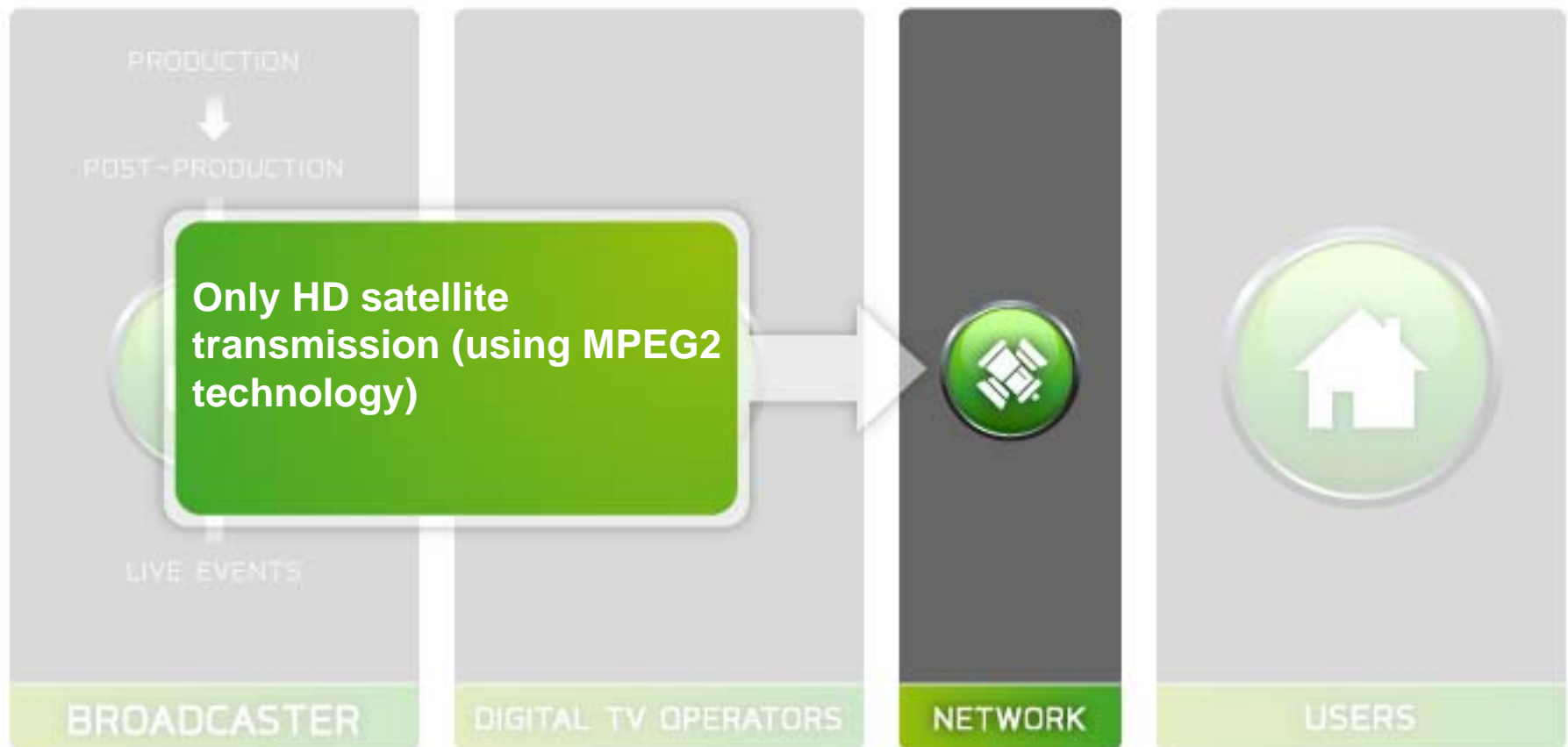
2004 HDTV State-of-the-art



2004 HDTV State-of-the-art



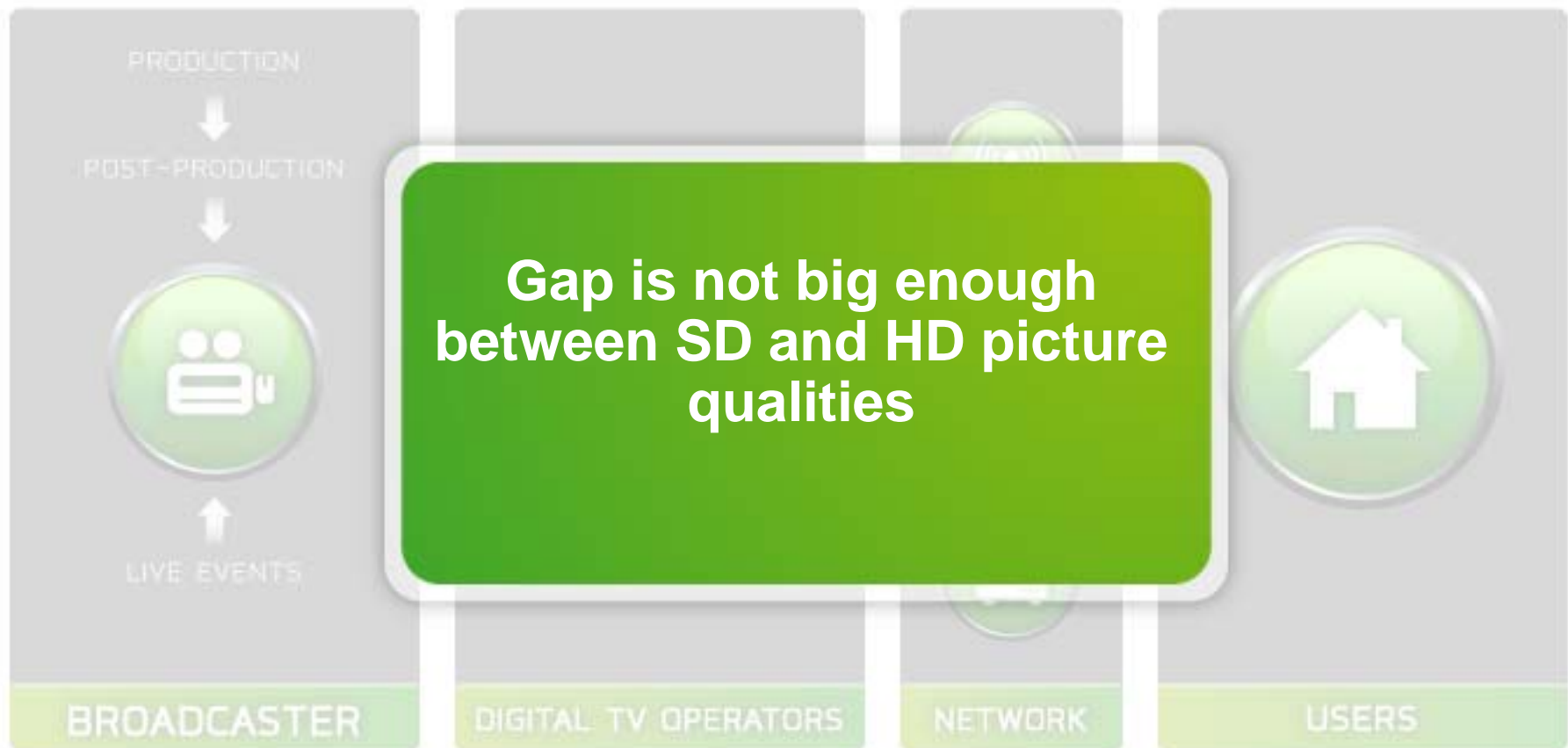
2004 HDTV State-of-the-art



2004 HDTV State-of-the-art

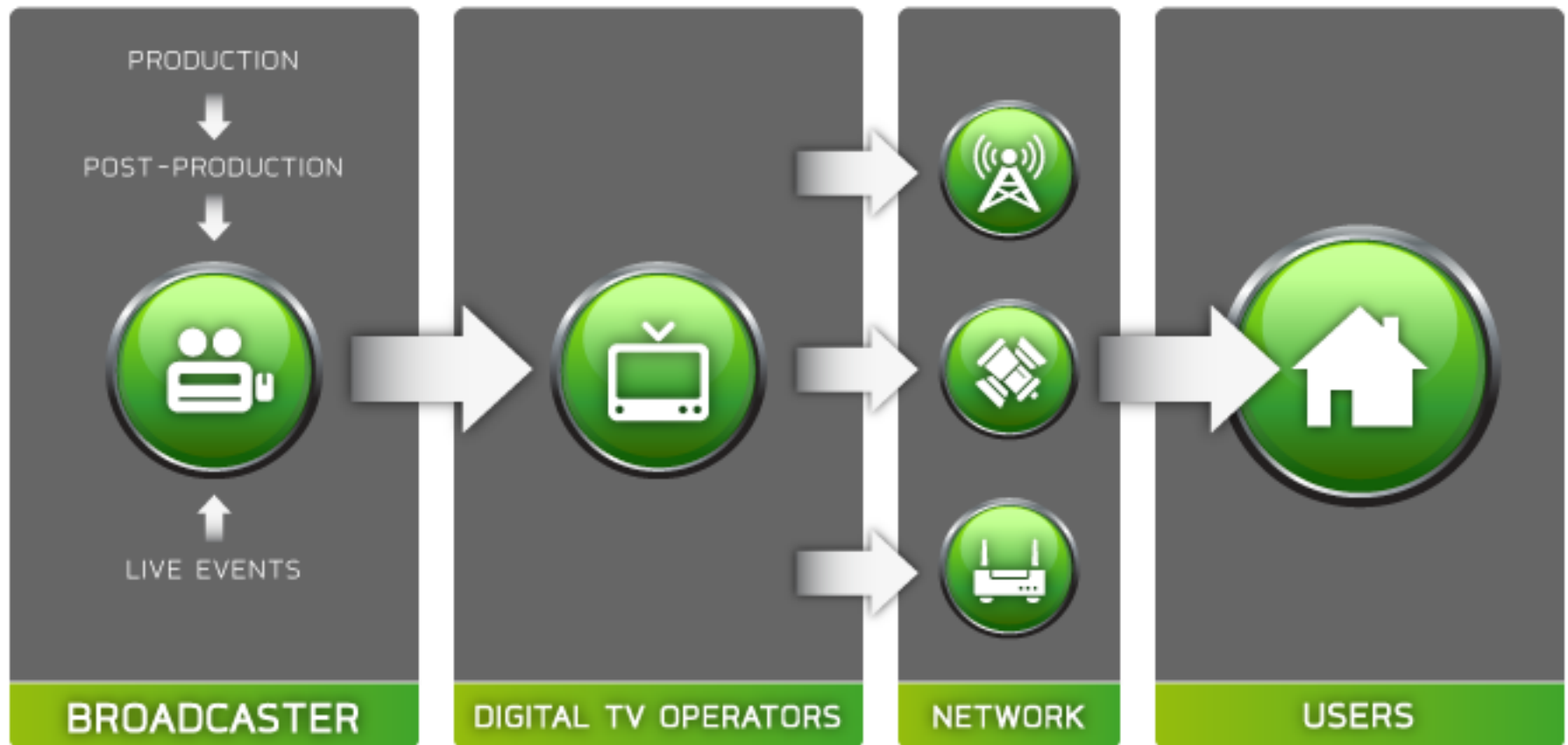


2004 HDTV State-of-the-art



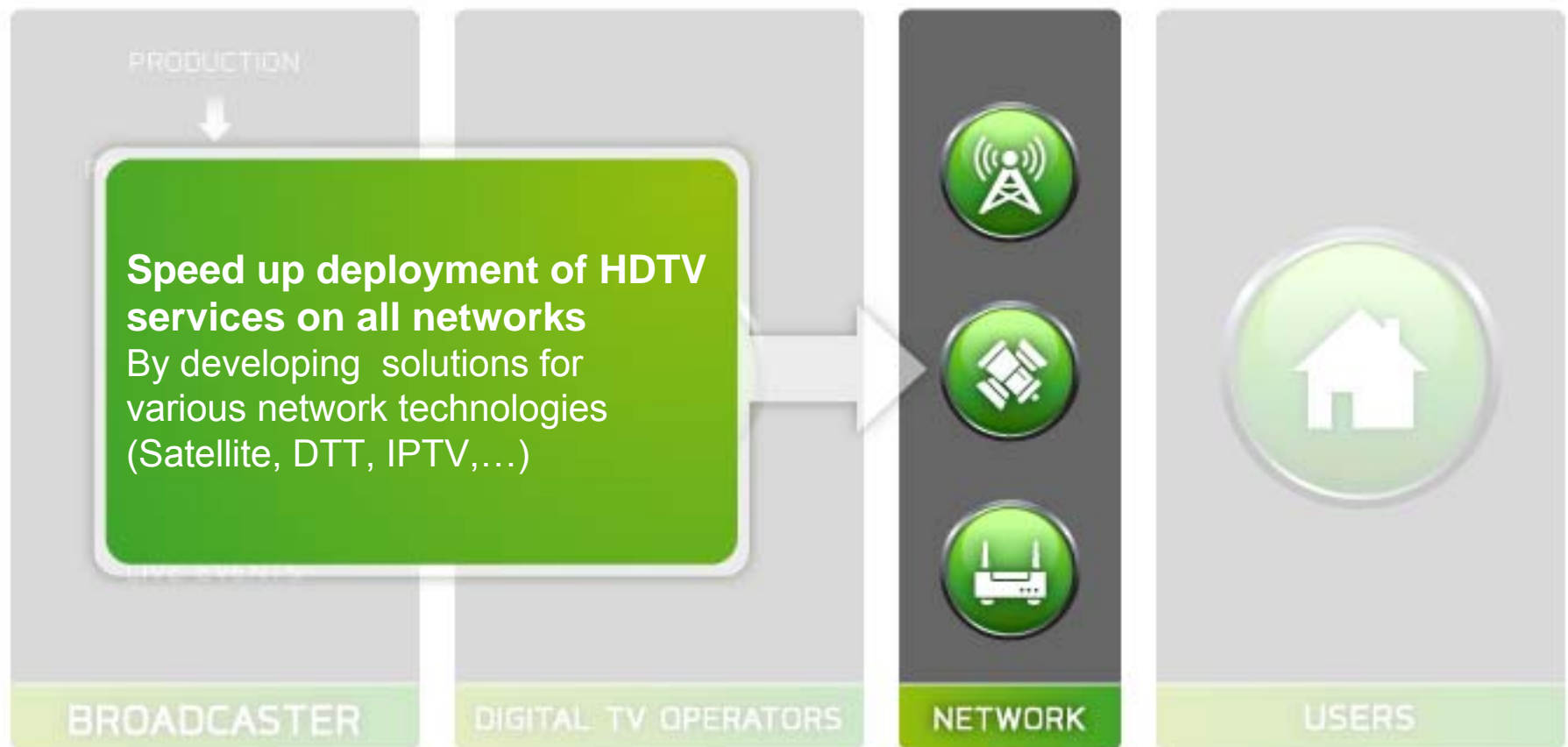
HD4U

Motivation



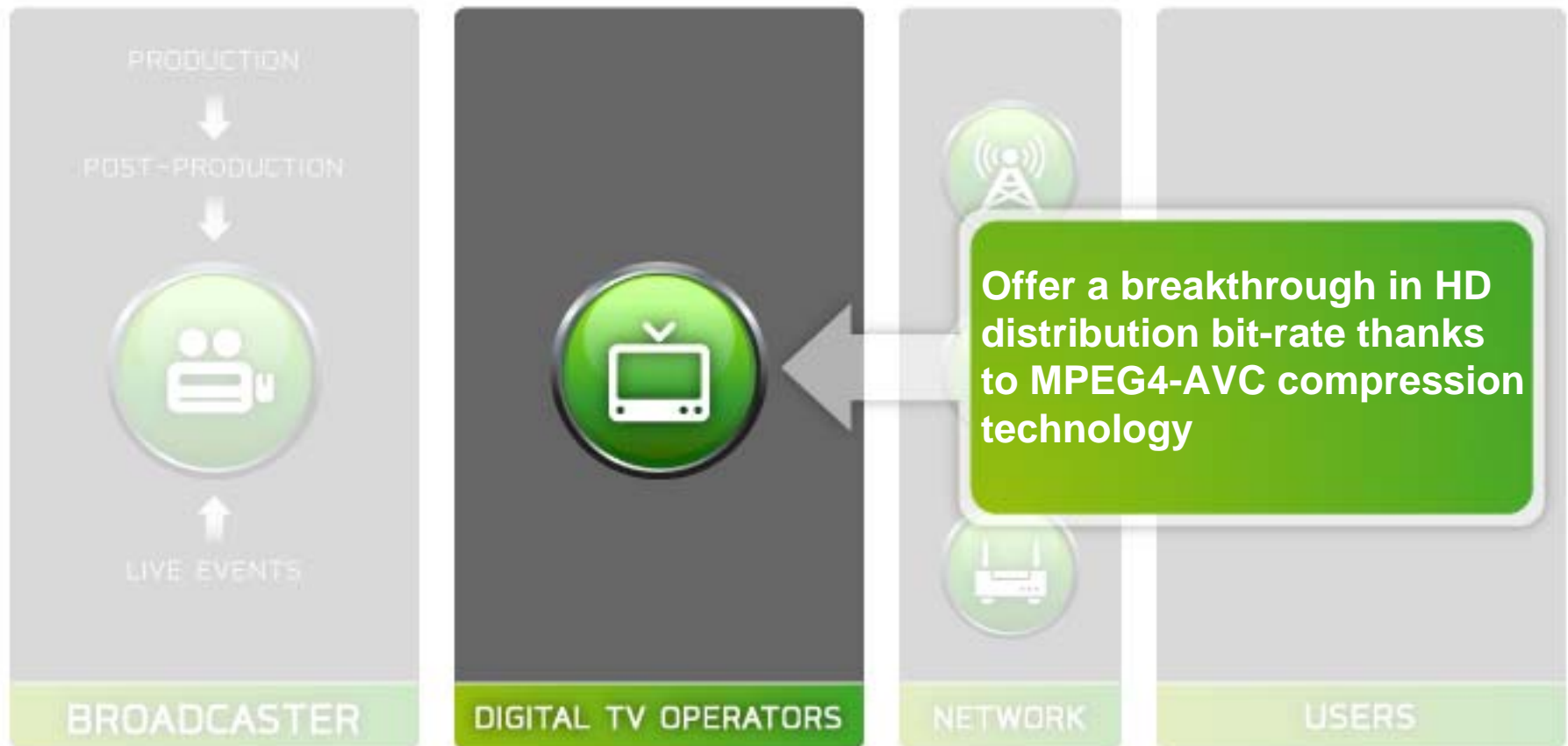
HD4U

Motivation



HD4U

Motivation

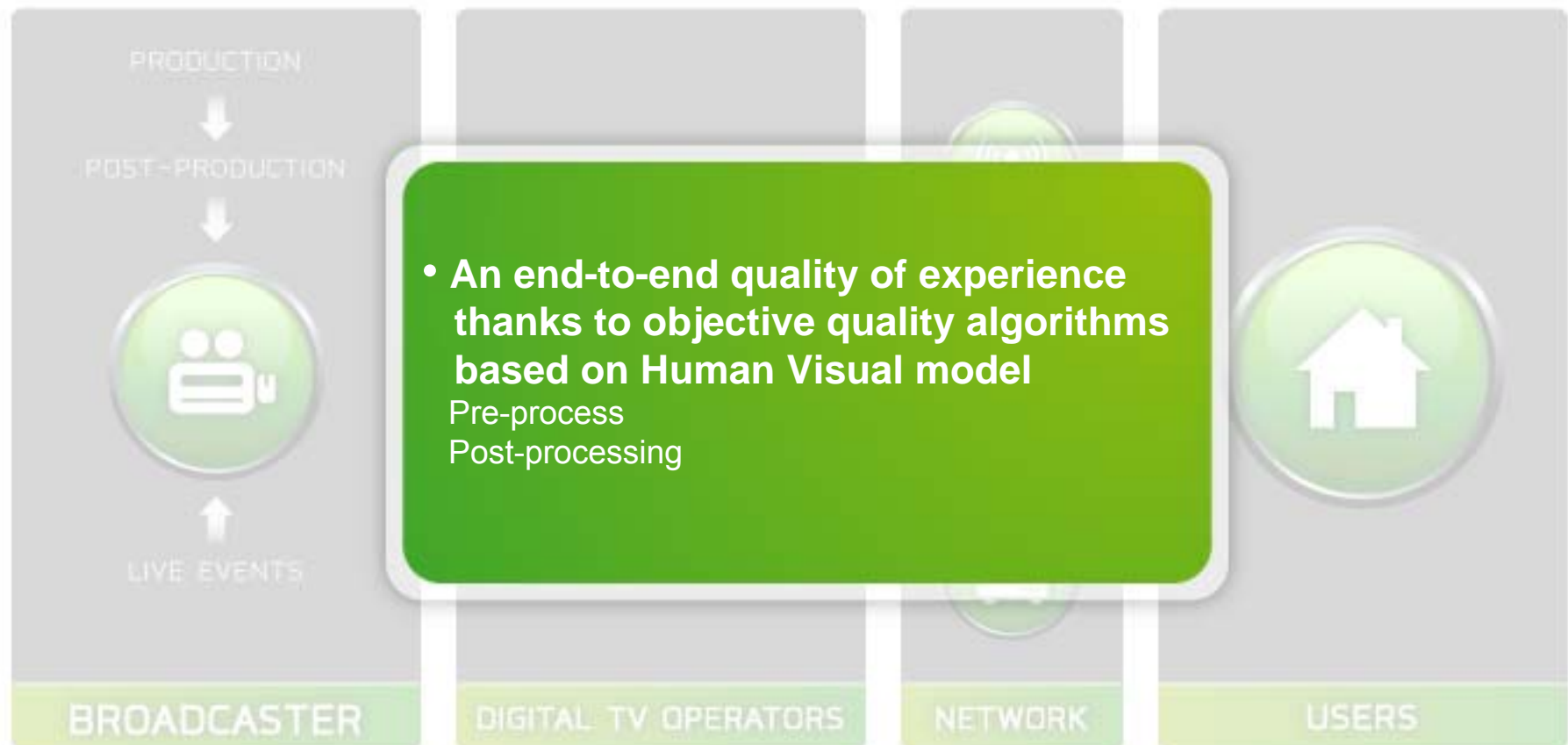


HD4U Motivation

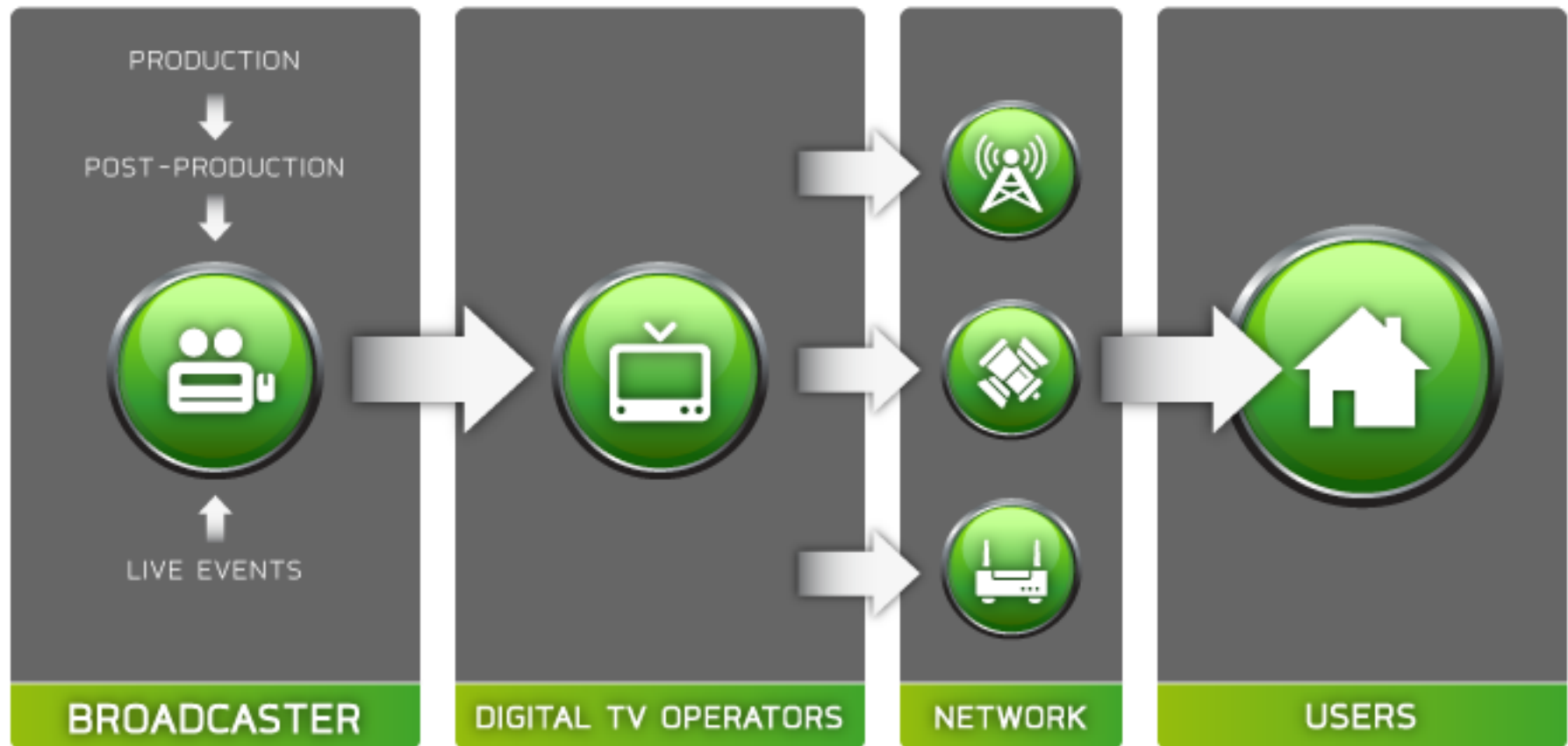


HD4U

Motivation

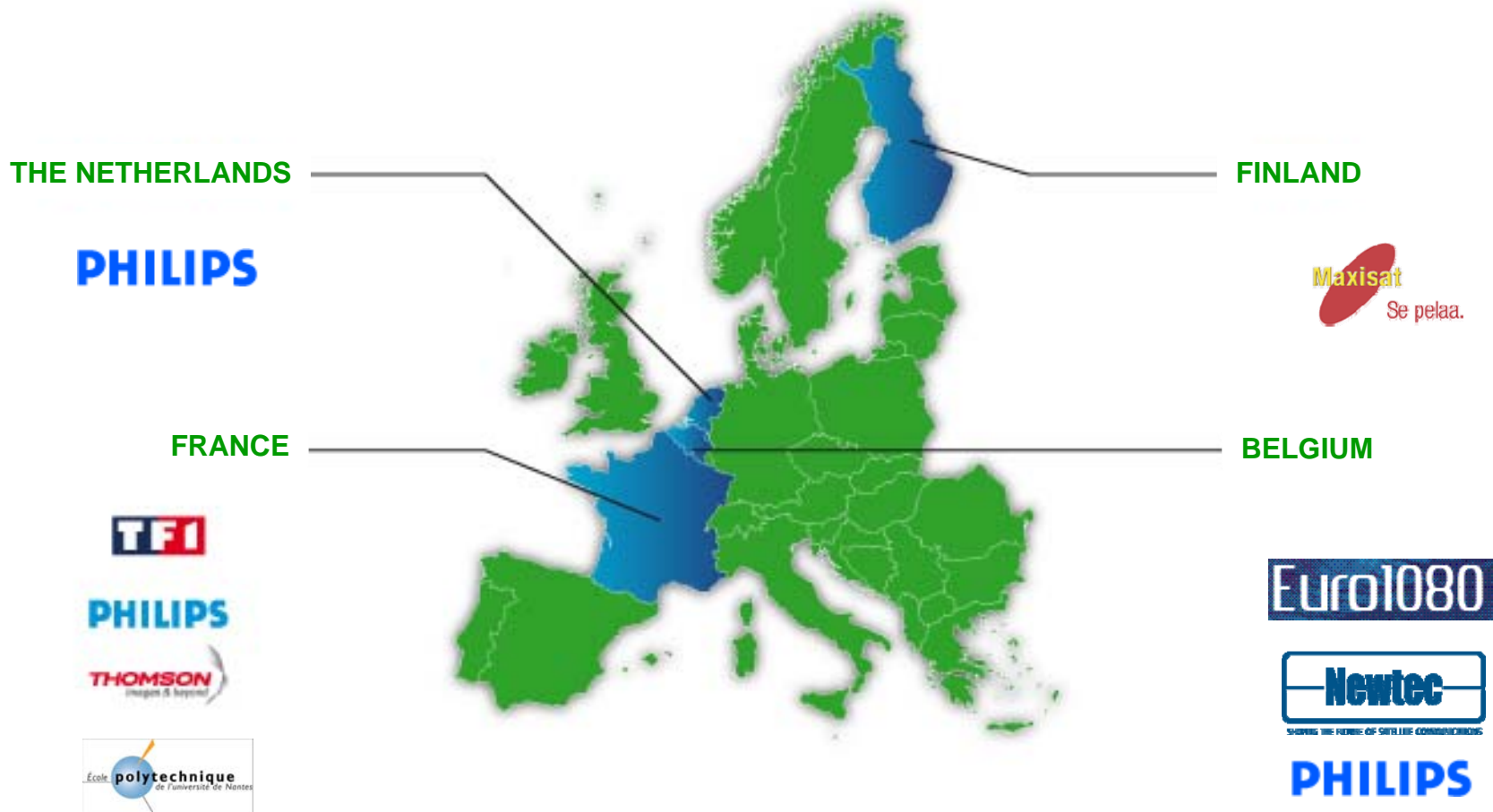


HD4U: deploy an end-to-end system to catalyse HDTV advent in Europe



← DEMONSTRATE INTEROPERABILITY OF ALL ELEMENTS OF THE CHAIN →

HD4U Consortium





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HD4U – User's benefits





HD4U

Production

- High picture quality is considered as the biggest driver for Content production
- High Definition can now be considered as a potential alternative to 35mm film; HD movies
- HD4U proof of concept will ease larger HDTV broadcasting coverage that will boost HD content production; fictions, sports, concerts, entertainments,...

HD4U

and digital TV operators



- High Definition Content could be considered as high added value content that paves the way for new business models: premium offers, advertisements,...
- DTV operators will benefit from this technological breakthrough in terms of:
 - cost reduction (OPEX / CAPEX)
 - wider content offer
 - larger user audience



HD4U: an unique visual experience for the end-user at home

- Larger Home Cinema screens with High Quality
- HD Surround Sound (5:1 & 7:1)
- Home Cinema feeling





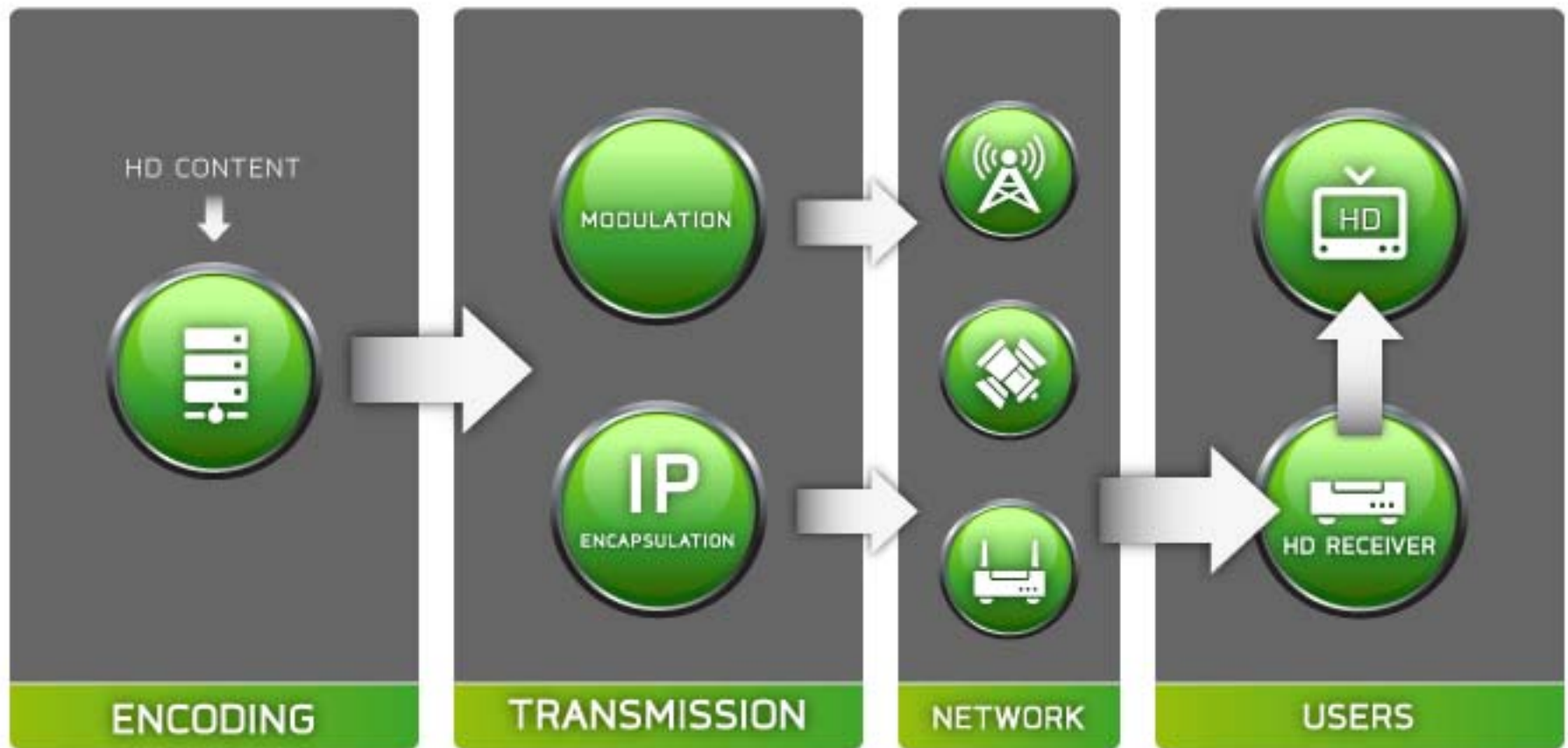
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What are the HD4U innovations?

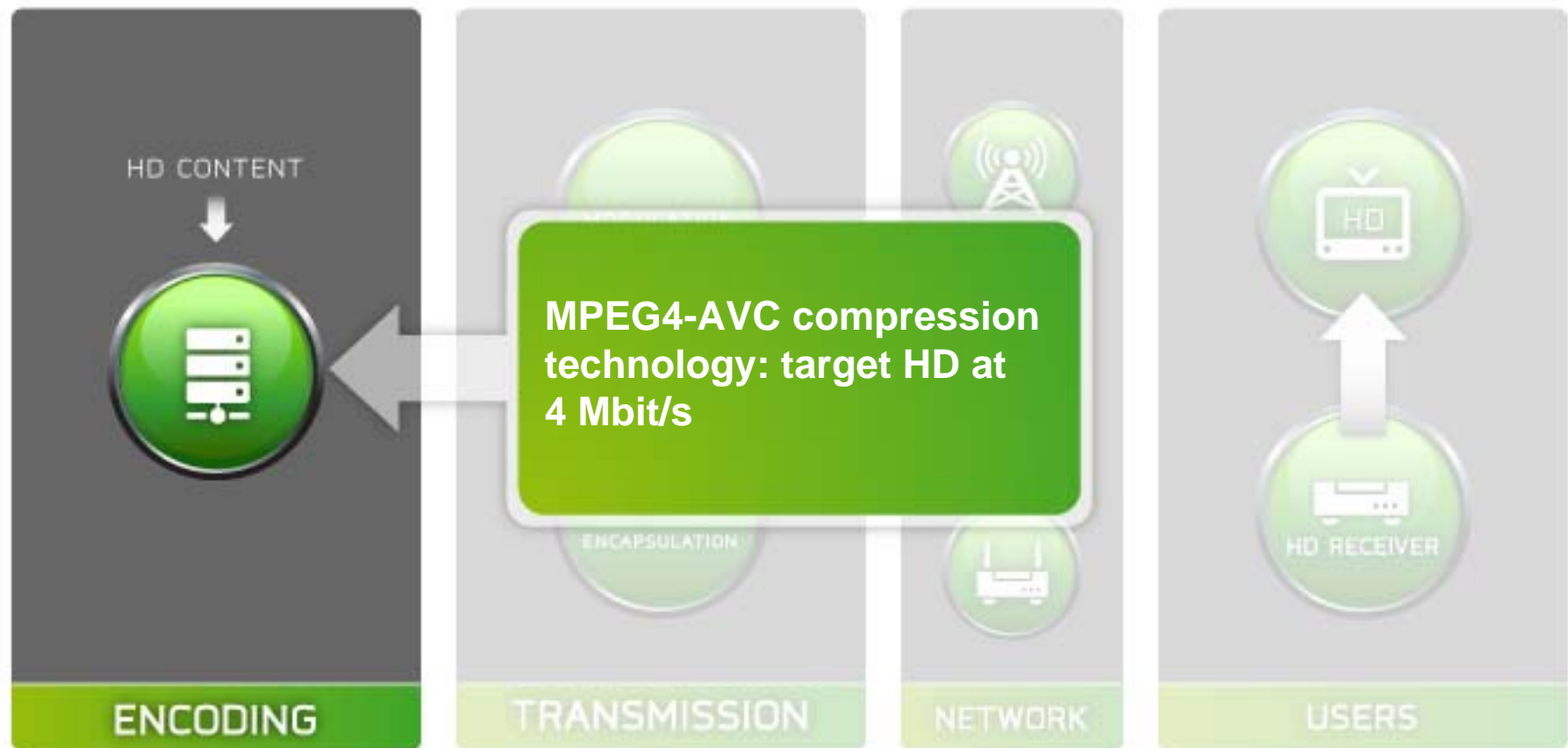


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HD4U Innovations



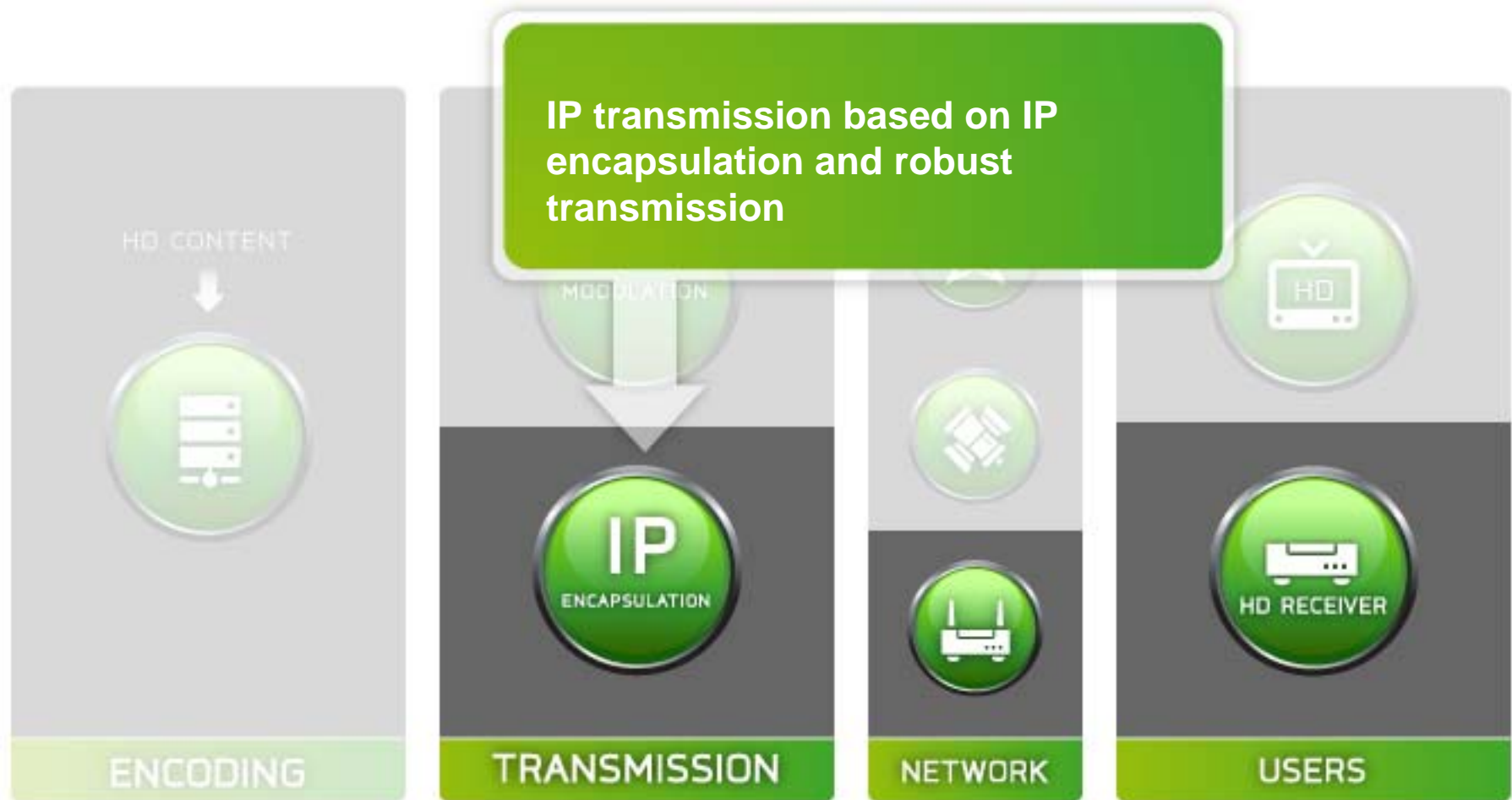
HD4U Innovations



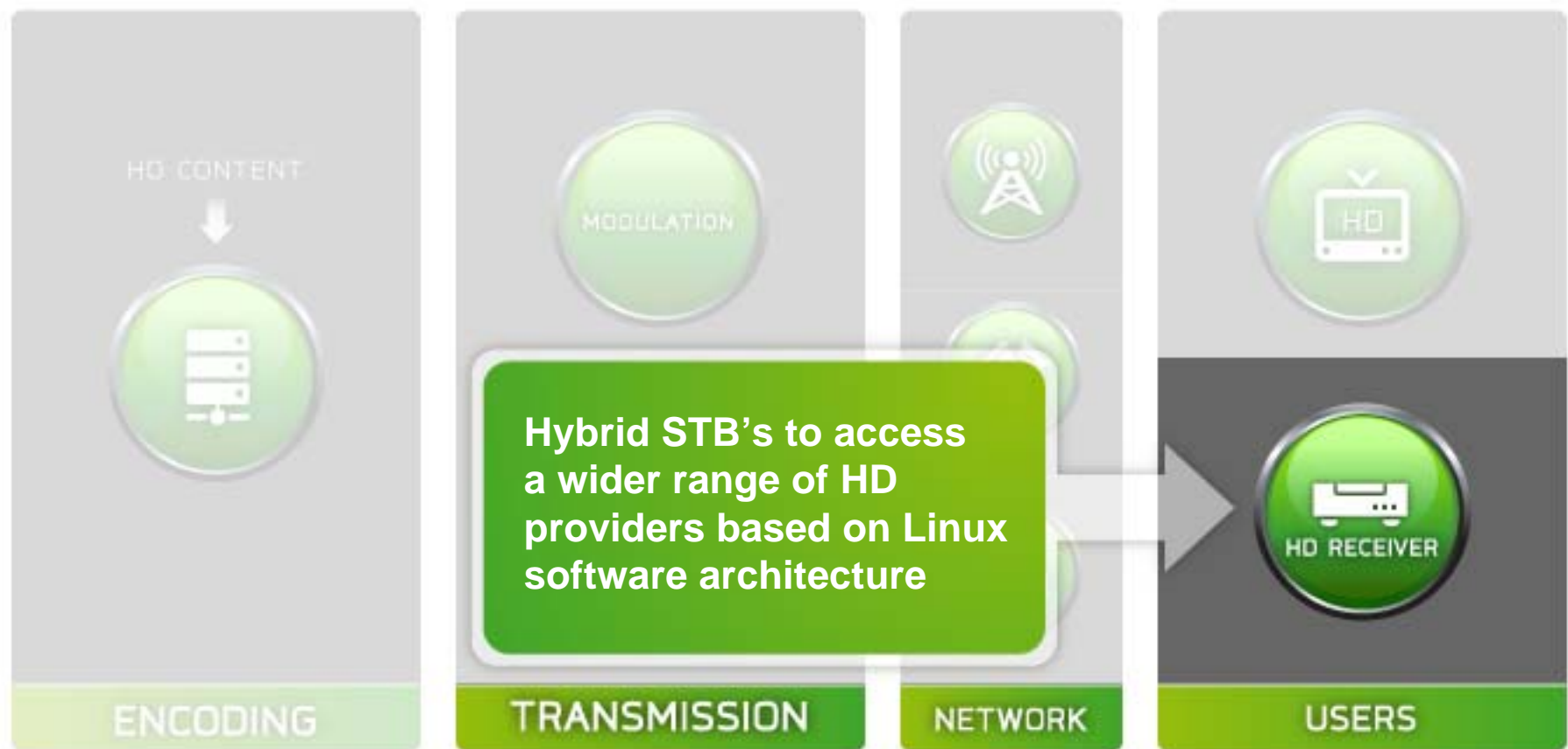
HD4U Innovations



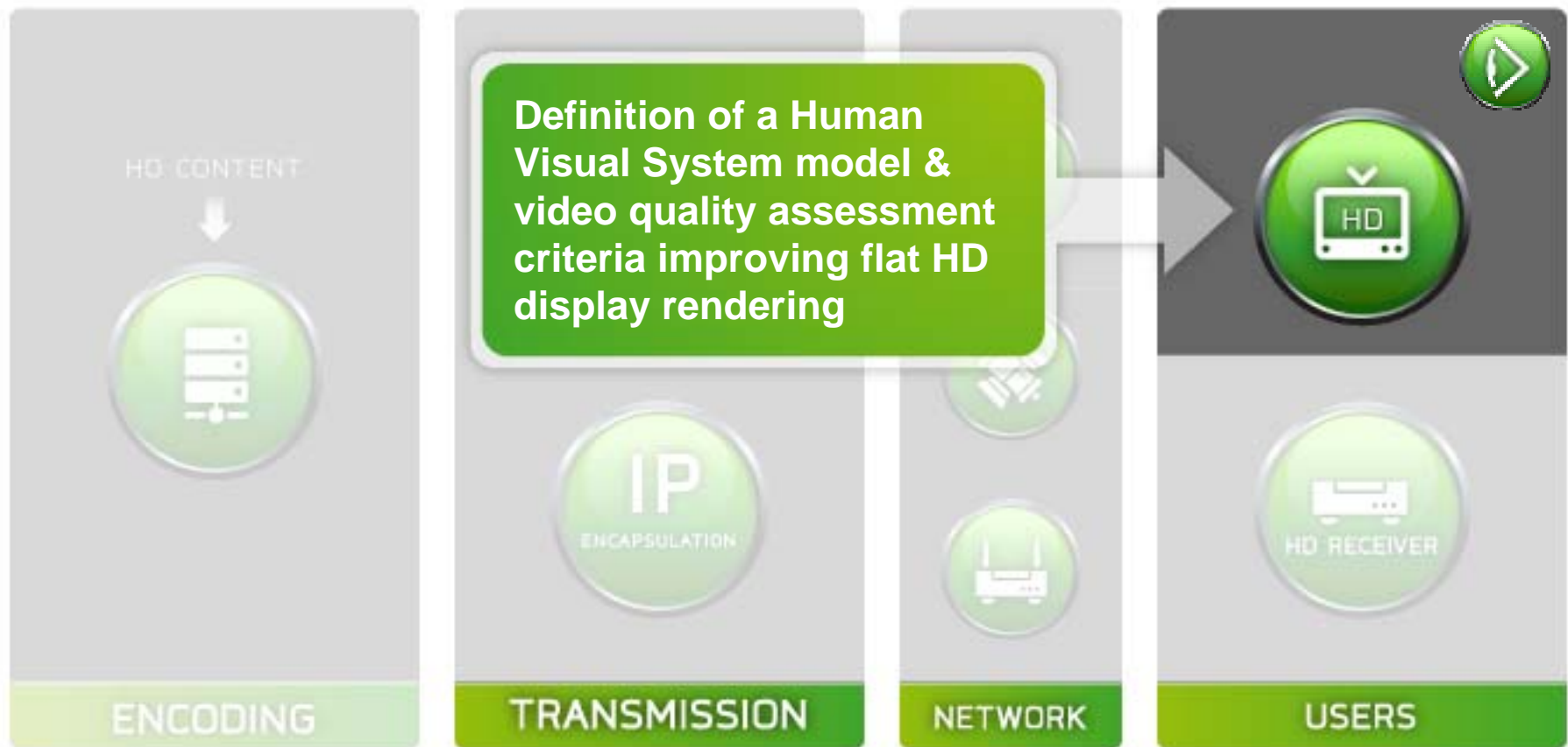
HD4U Innovations



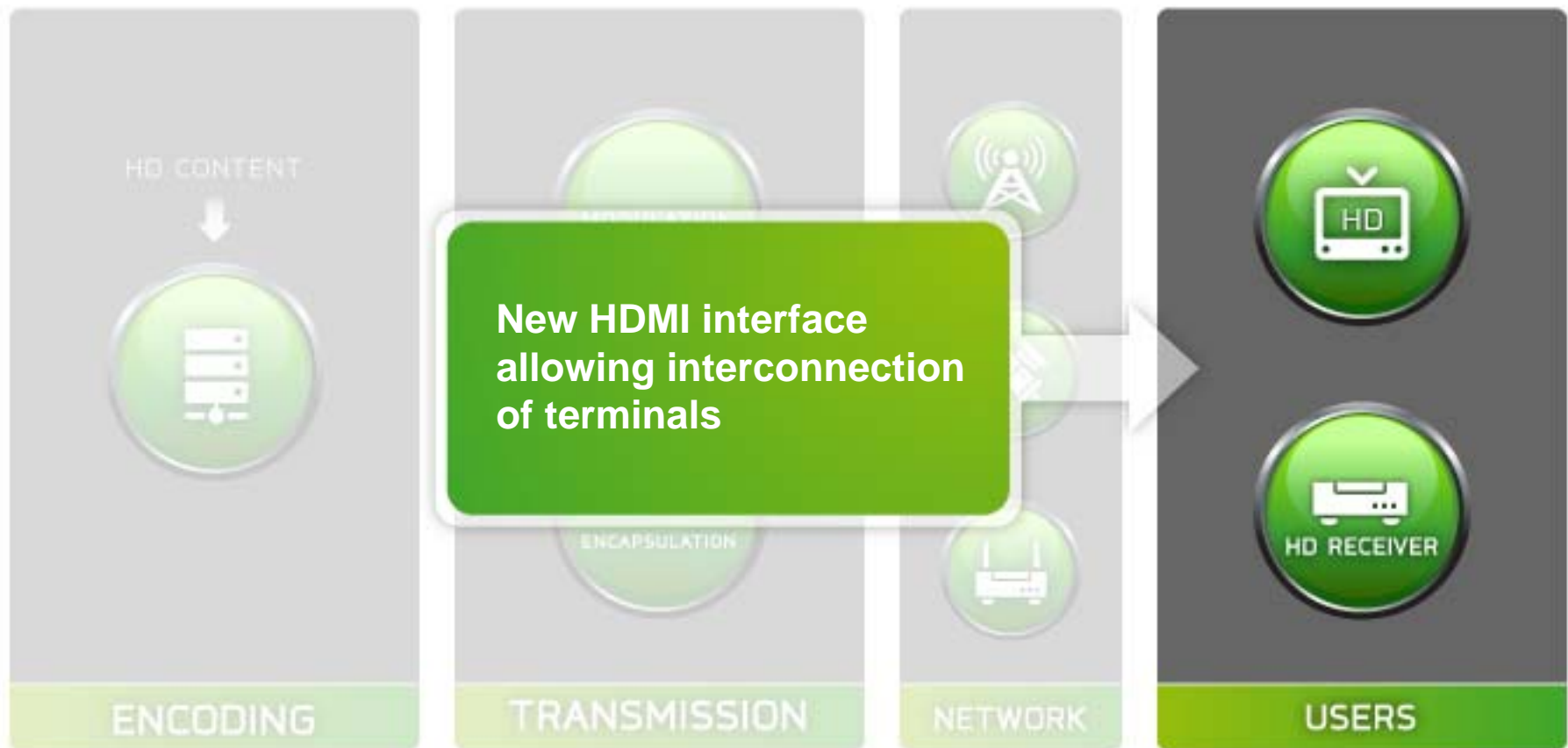
HD4U Innovations



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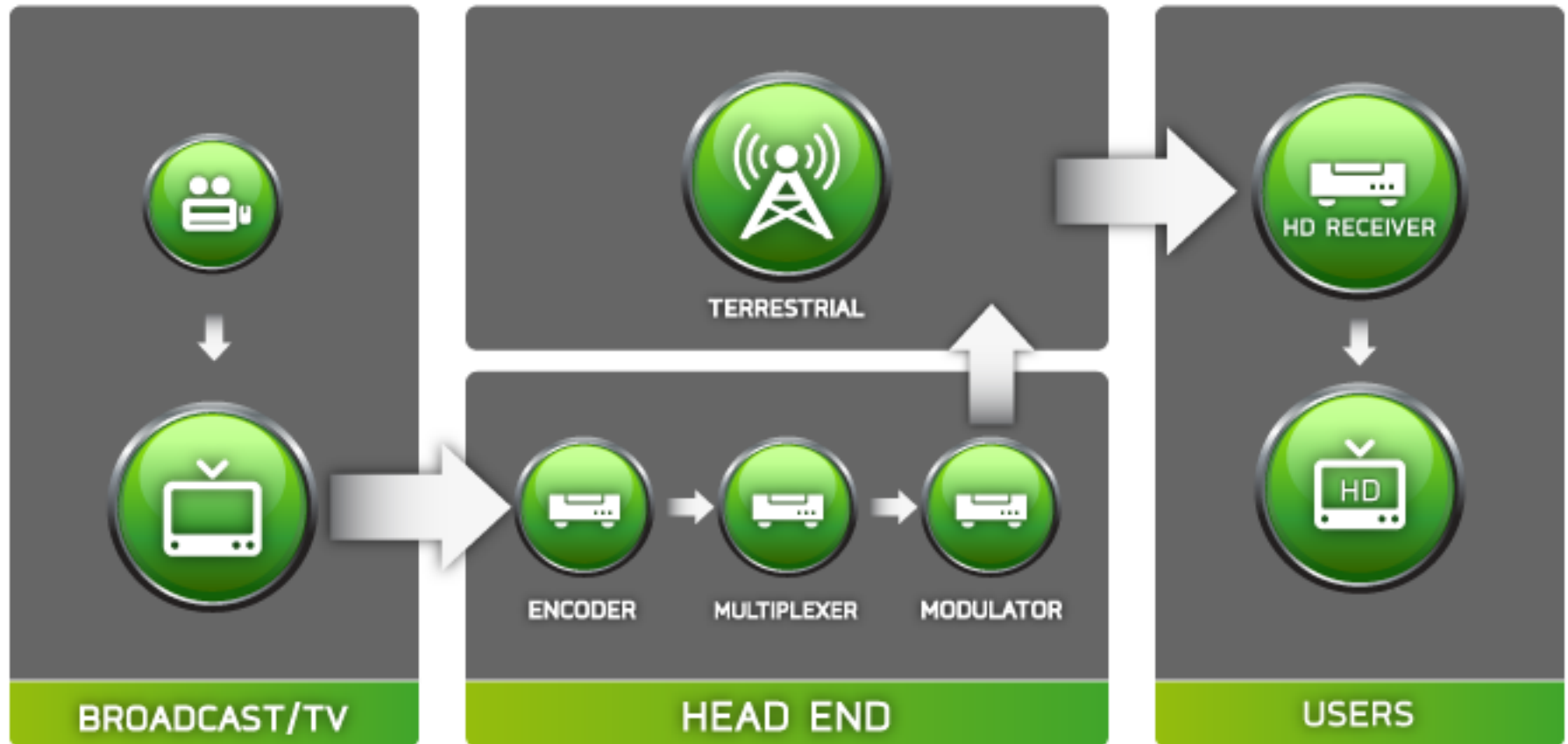


HD4U

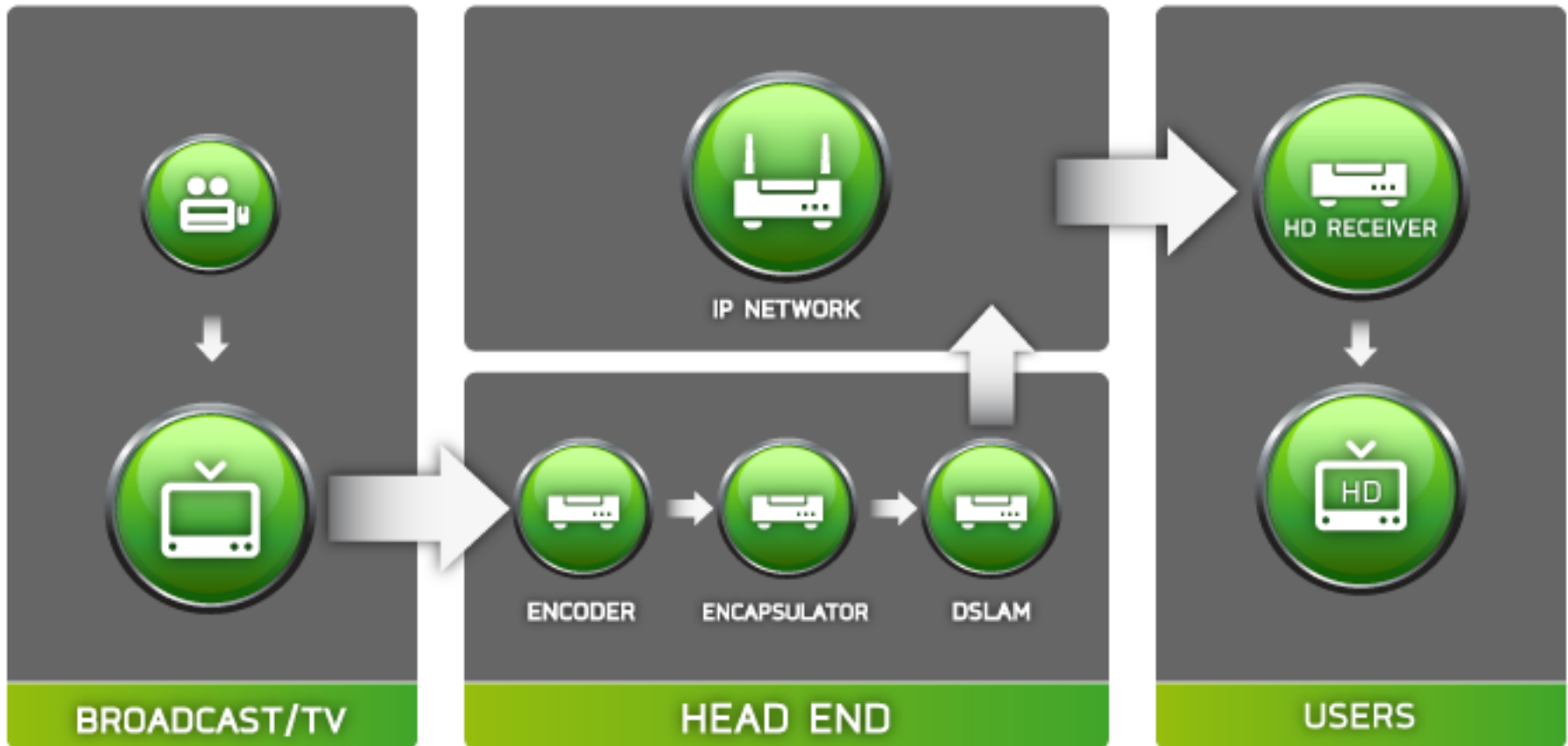
and embedded software

- The HD4U project has focused on all software's necessary along the whole chain:
 - Advanced algorithms developed and tested with software simulations
 - Real Time encoders embedding the software on dedicated CPU architectures (36 DSP Fire Pro, 12 ARM CPUs) able to process 1500 Gop/s
 - IP encapsulation based on MPEG flow processing software platforms
 - New software stack and TV drivers based on Linux kernel for STB's
 - Simulation and development of Post-processing techniques and Image enhancements for LCD displays
 - Software tools for objective quality measurements

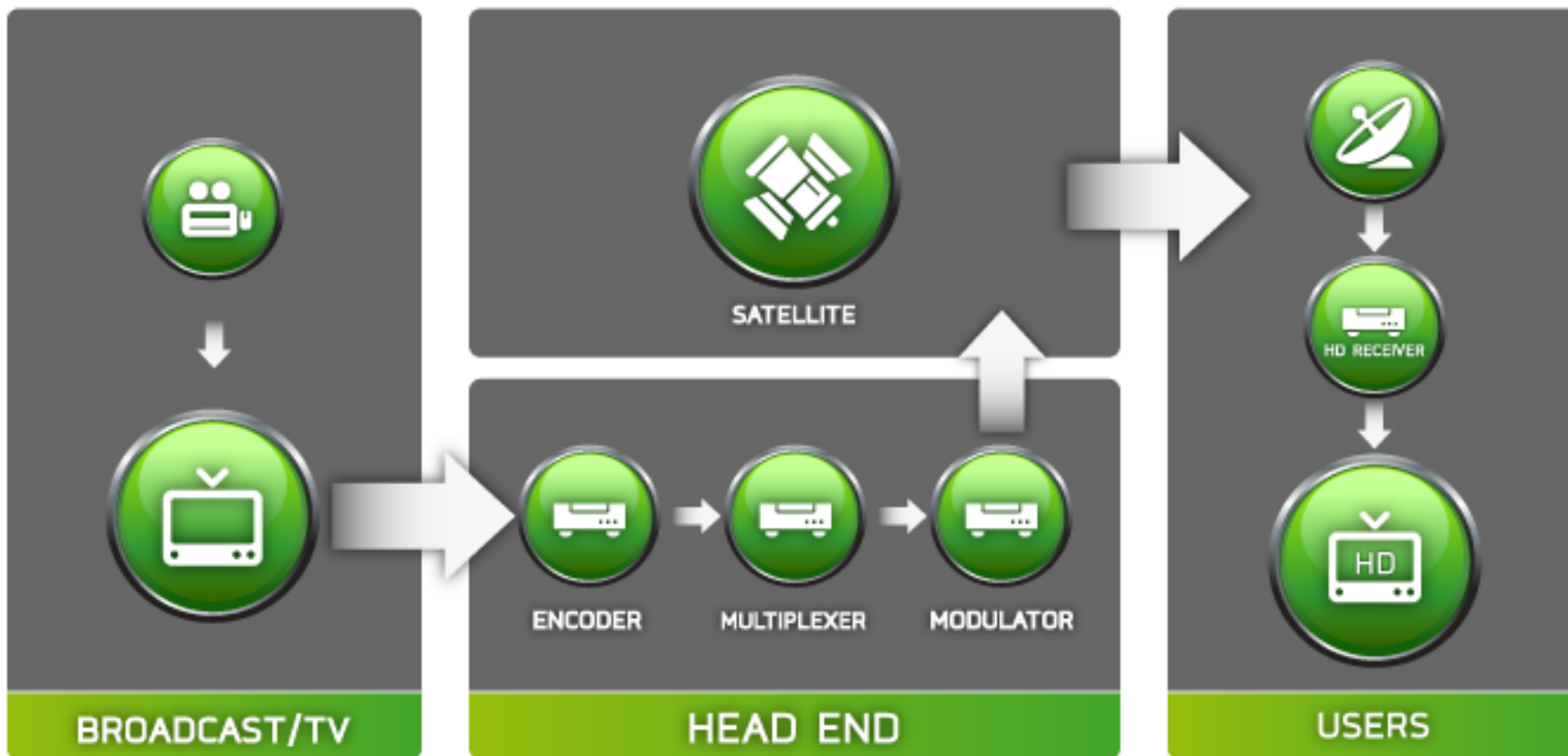
Field trials Terrestrial



Field trials IP Network



Field trials Satellite





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HD4U exploitation and dissemination



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HD4U

Dissemination



- Contribution to standardisation bodies:
 - DVB TM-AVC: HD MPEG4-AVC transport
 - HD Forum: Content protection over HD
 - VQEG: Objective video quality criteria
- Large publications and presence in conferences: more than 30
- Participation to main events: IBC, NAB, Broadband World Forum, « Route du Rhum » sailing race with Brittany Media & Network Cluster
- Strong collaboration with Blaze, Magellan, Passepartout and Planets projects (ITEA & MEDEA+) thanks to common workshops

HD4U

Exploitation



- Market is now mature for deployment of future-proof HDTV broadcasting solutions:
 - Encoders, DVB-S2 modulators, IP encapsulators
 - STB's, LCD displays
 - Objective quality measurement tools
- HD4U project can be considered as proof of concept for HD deployment:
 - All Euro1080 HD services are now MPEG4-AVC encoded allowing to double the satellite capacity
 - TF1 has demonstrated that HDTV over DTT is viable with 3 services on one UHF carrier. Moreover TF1 has broadcasted Rugby world cup in HD
 - Maxisat has proven that delivery of HDTV over ADSL2+ networks is viable for 93% of their consumers



FURTHER STEPS AFTER HDTV

- 1. HDTVNext**
- 2. LivEvents**
- 3. 3D TV**



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Thank you **for your attention**



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