



SFN Offer

Preserve your Single Frequency Network

1) Introduction and Solution Overview

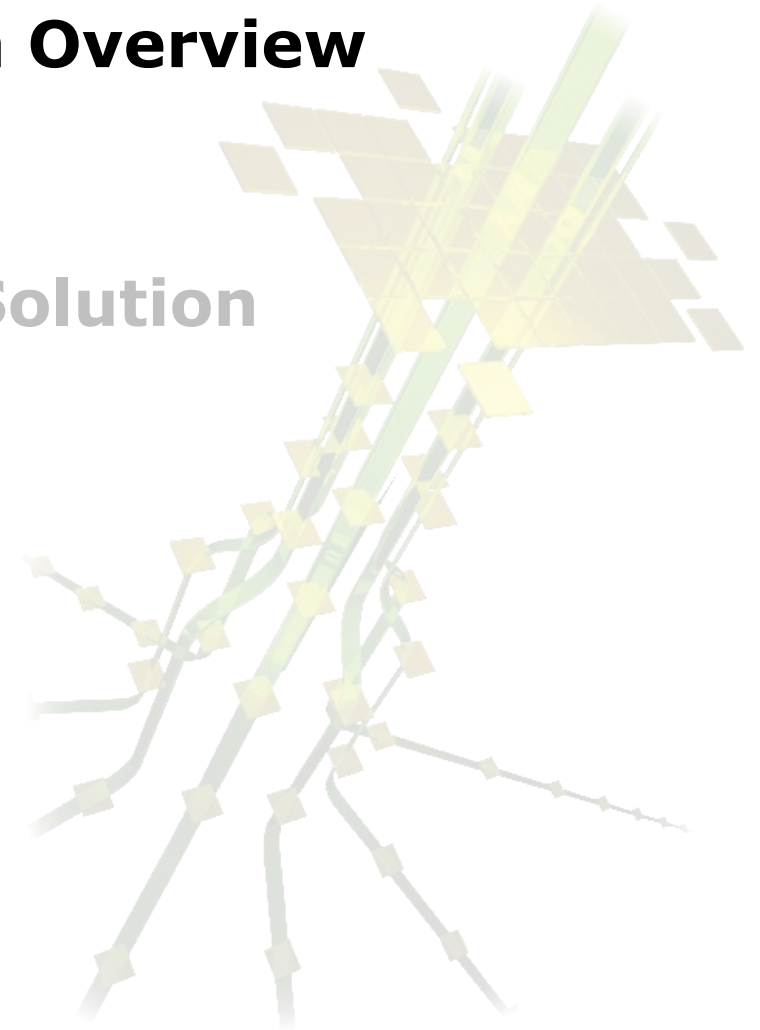
1) Customers

2) Description of the global Solution

3) DTTV & MobileTV Market

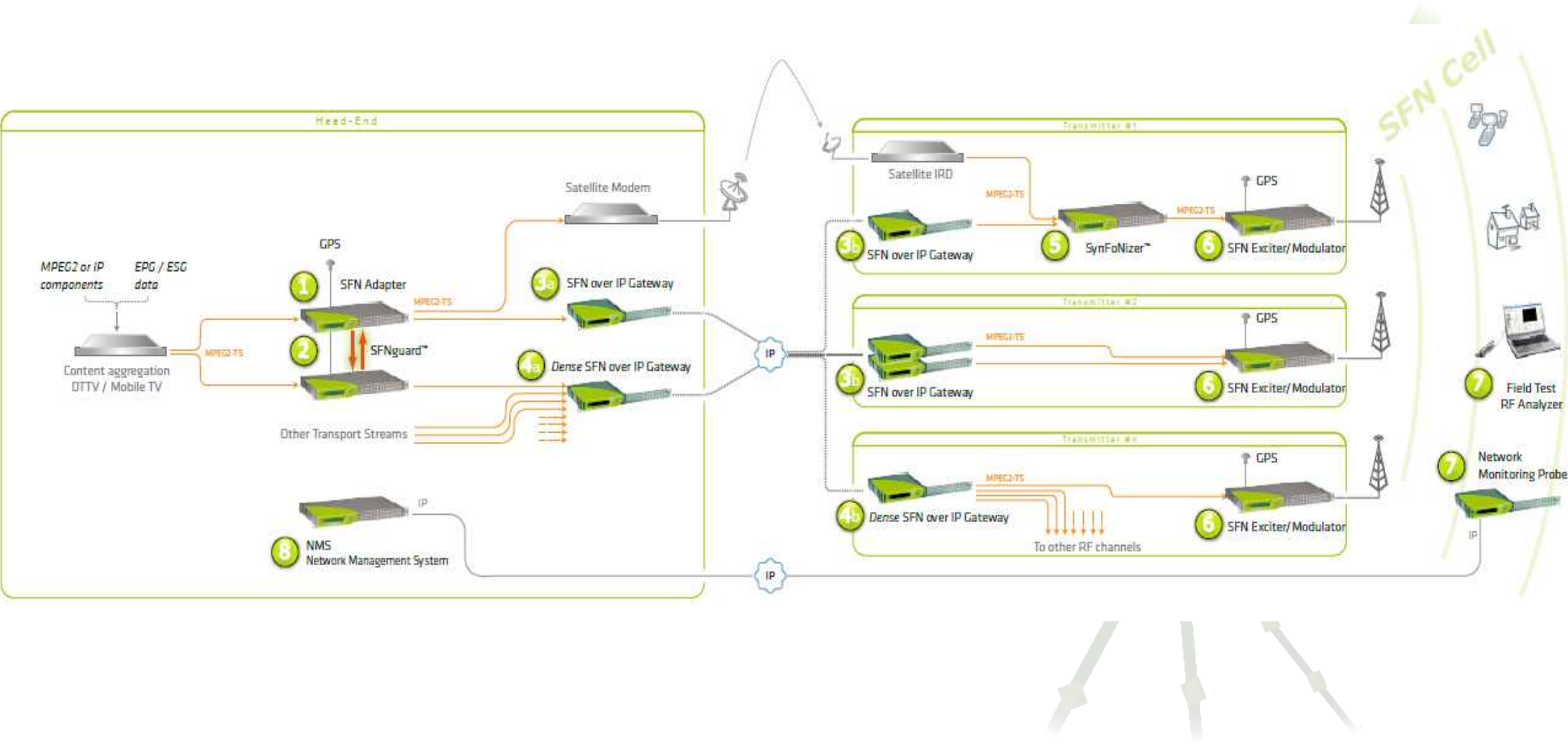
4) Competition Overview

5) Documents available



- ENENSYS offers a unique SFN expertise
- Seamless SFN switch over...
- ... from head-end to transmitters
- Every system interconnection becomes a point of strength of your SFN

SFN solution overview



1) Introduction and Solution Overview

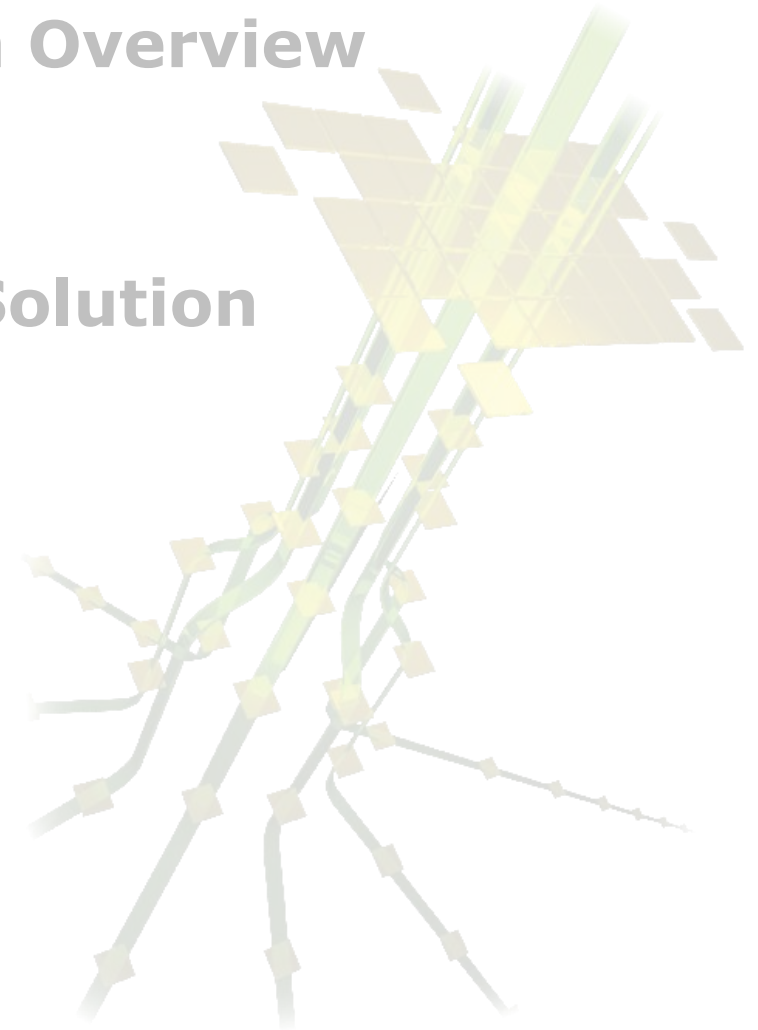
1) Customers

1) Description of the global Solution

2) DTTV & MobileTV Market

3) Competition Overview

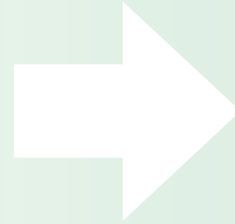
4) Documents available



Broadcasters/Network operators

Their expectations

**I want a
broadcast
grade solution**



Our answers

NN6-MIP Inserter is designed to cope with broadcaster requirements. Robust and interoperable with main transmitters, NN6-MIP inserter can be easily integrated into any broadcast network

- + 100%-FPGA core
- + Full SNMP v2 support
Web-based GUI

Broadcasters/Network operators

Their expectations

**I want a high-
available solution
that guarantees
my SFN**



Our answers

NN6-MIP Inserter is world-class solution to insure synchronization and configuration of broadcast SFN.

NN6-MIP Inserter prevents broadcaster from dealing with black-out in case of failure through its seamless switch-over solution, SFNguard.

- + Redundant ASI inputs
Mirrored ASI outputs**
- + Patent Technology based**

1) Introduction and Solution Overview

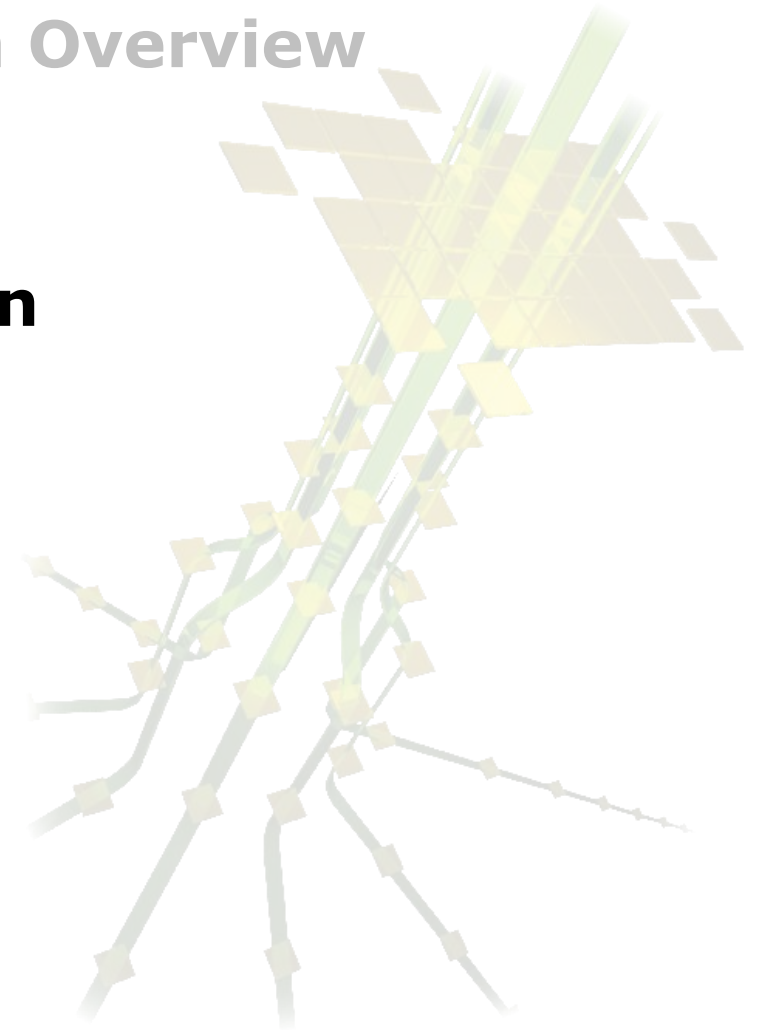
2) Customers

1) Description of the Solution

1) DTTV & MobileTV Market

2) Competition Overview

3) Documents available

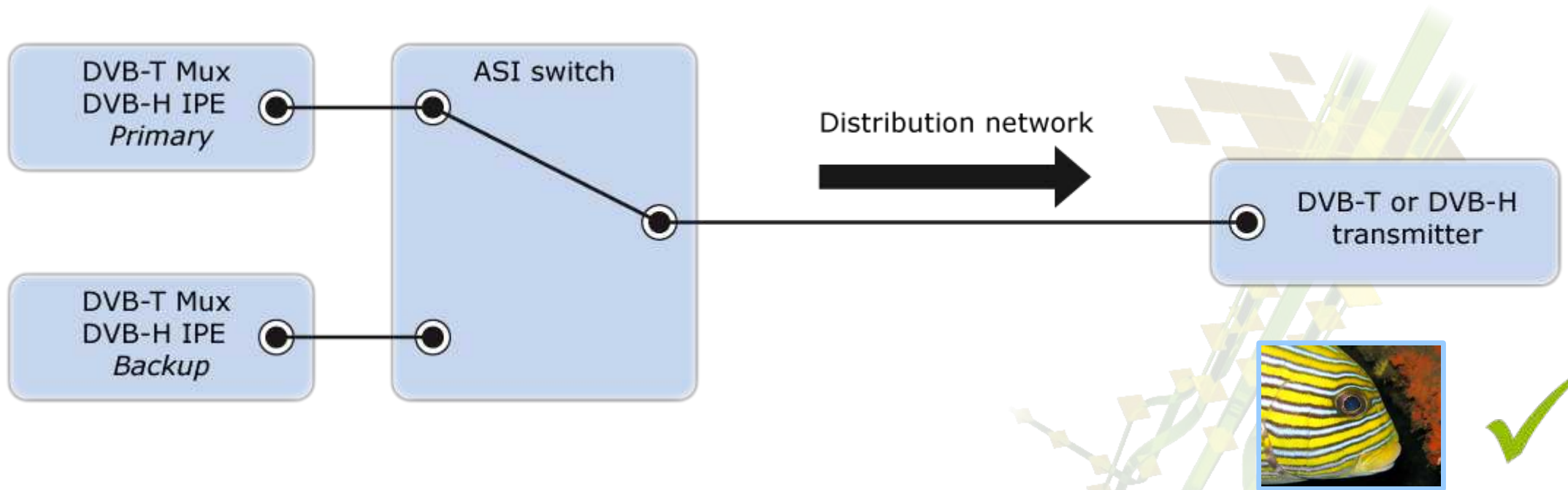


Description of the SFN Solution

- **Background: Redundancy in MFN**
- Redundant SFN Adapters
 - Not synchronized
 - Synchronized « SFN Guard »
- SFN over IP
- Redundant path for SFN distribution
 - Desynchronized streams
 - Re-synchronized streams « SynFoNizer »

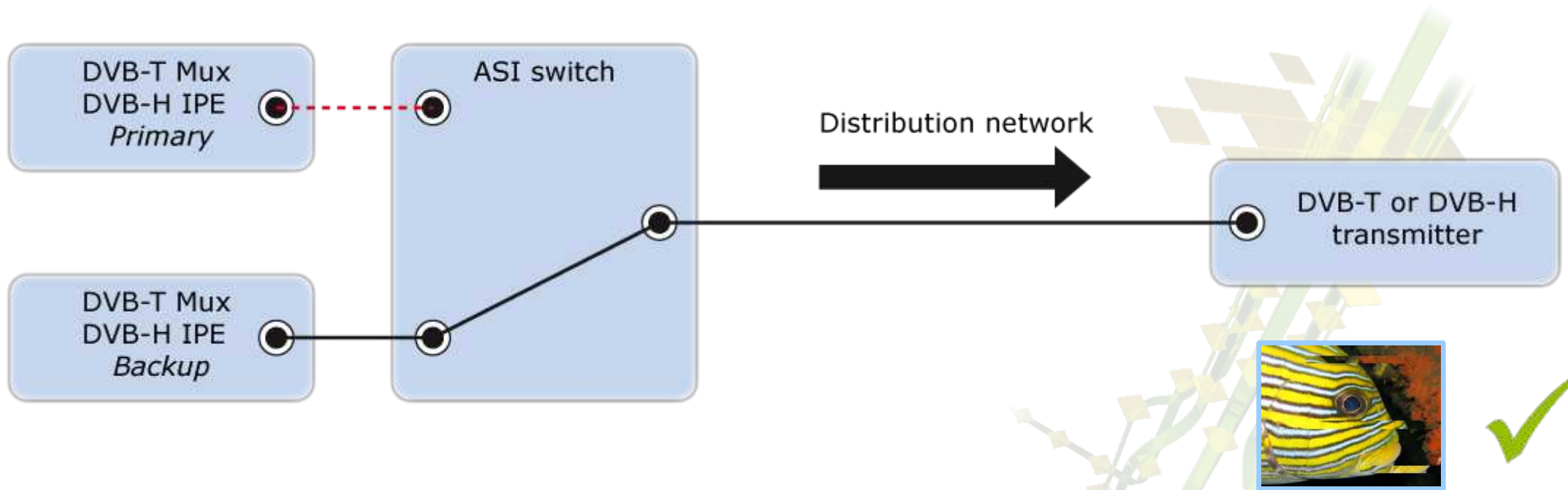


Background: Redundancy in MFN



- In MFN, transmitters are not synchronized
- Redundancy is handled with an ASI switch
- If primary source fails, backup source is used

Background: Redundancy in MFN



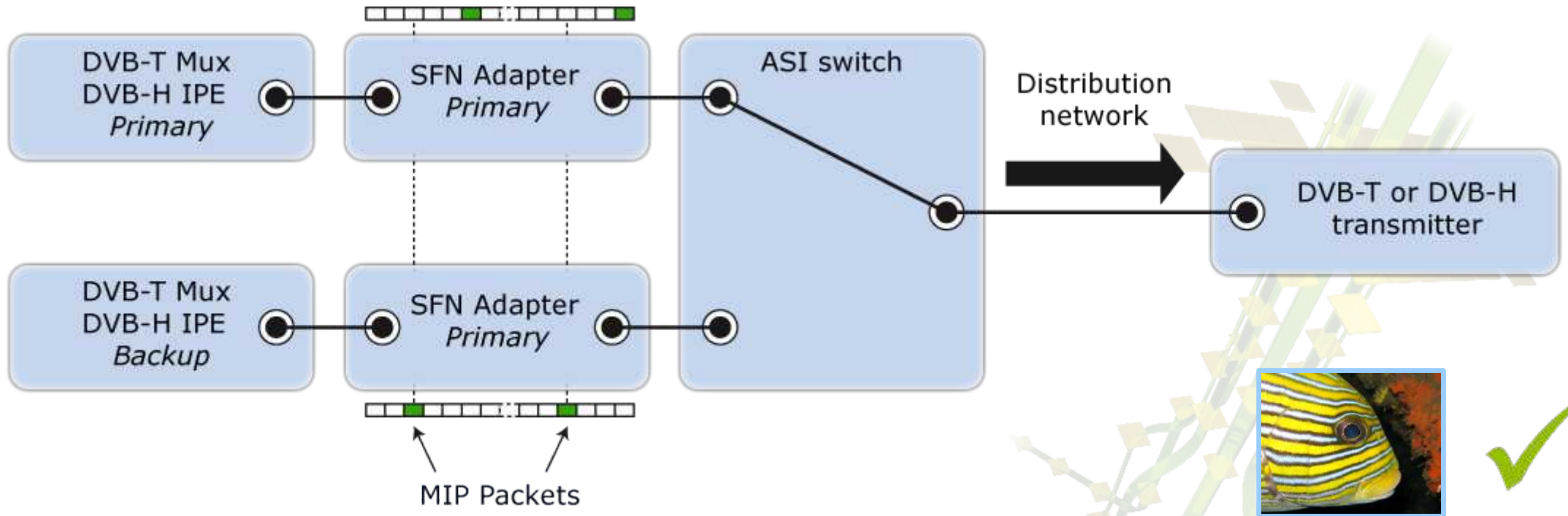
- Transmission resumes without interruption
- Only a few video/audio glitches might be observed
- No TV blackout

Description of the SFN Solution

- Redundancy in MFN
- Redundant SFN Adapters
 - Not synchronized
 - Synchronized « SFN Guard »
- SFN over IP
- Redundant path for SFN distribution
 - Desynchronized streams
 - Re-synchronized streams « SynFoNizer »

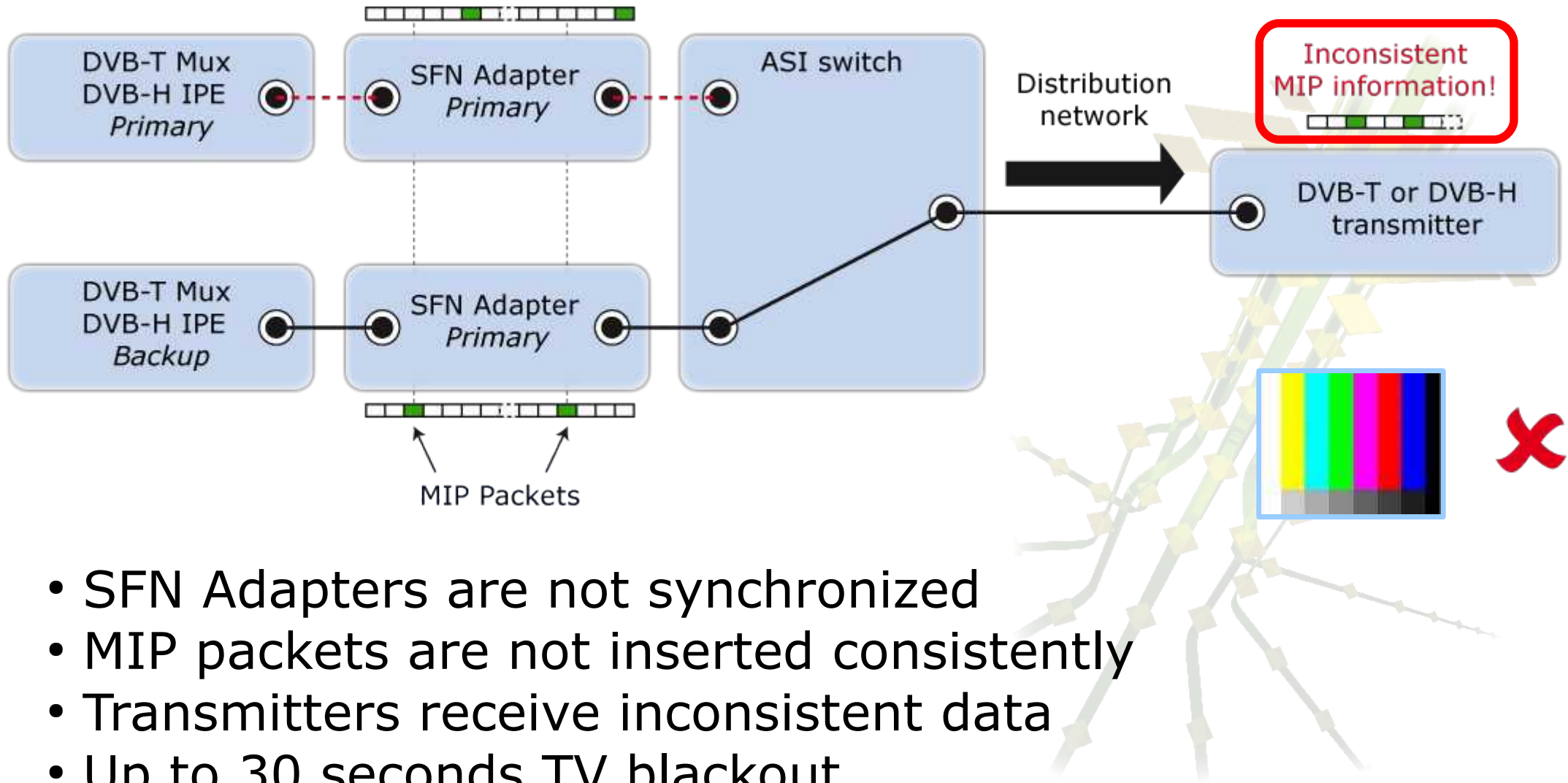


Redundant SFN Adapters – No synchronization



- In SFN, transmitters synchronization is achieved by SFN Adapters
- SFN Adapters insert synchronization information (MIP)
- If primary source fails, backup source is used

Redundant SFN Adapters – No synchronization

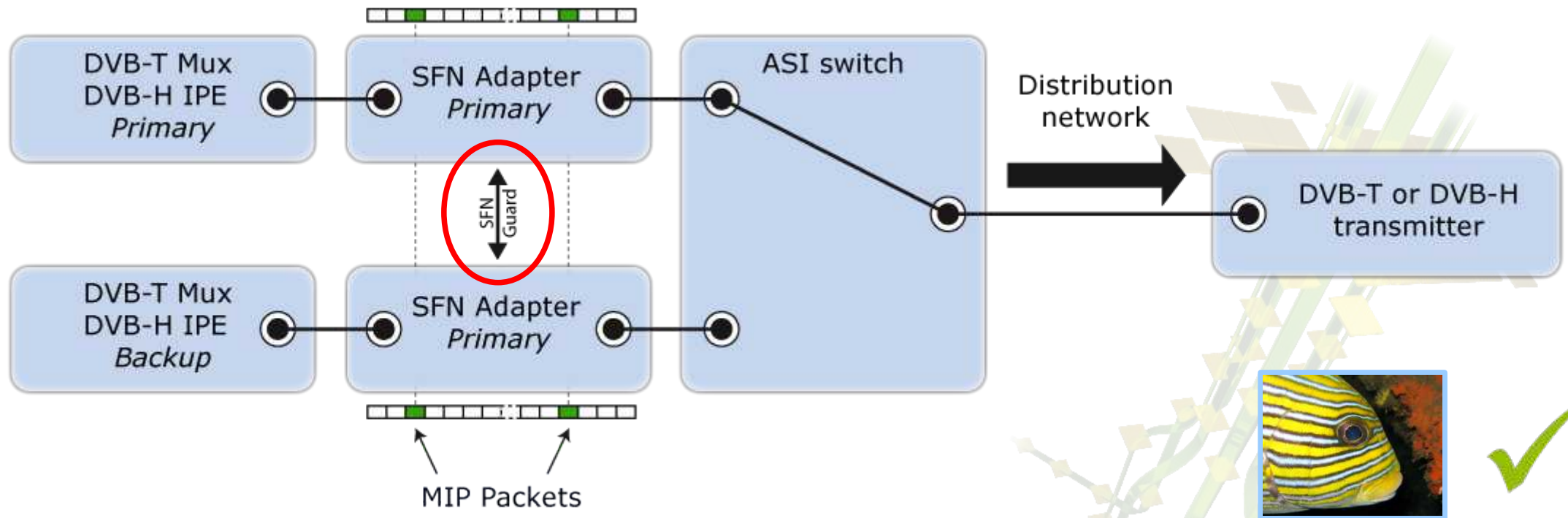


Description of the SFN Solution

- Redundancy in MFN
- Redundant SFN Adapters
 - Not synchronized
 - Synchronized « **SFN Guard** »
- SFN over IP
- Redundant path for SFN distribution
 - Desynchronized streams
 - Re-synchronized streams « SynFoNizer »

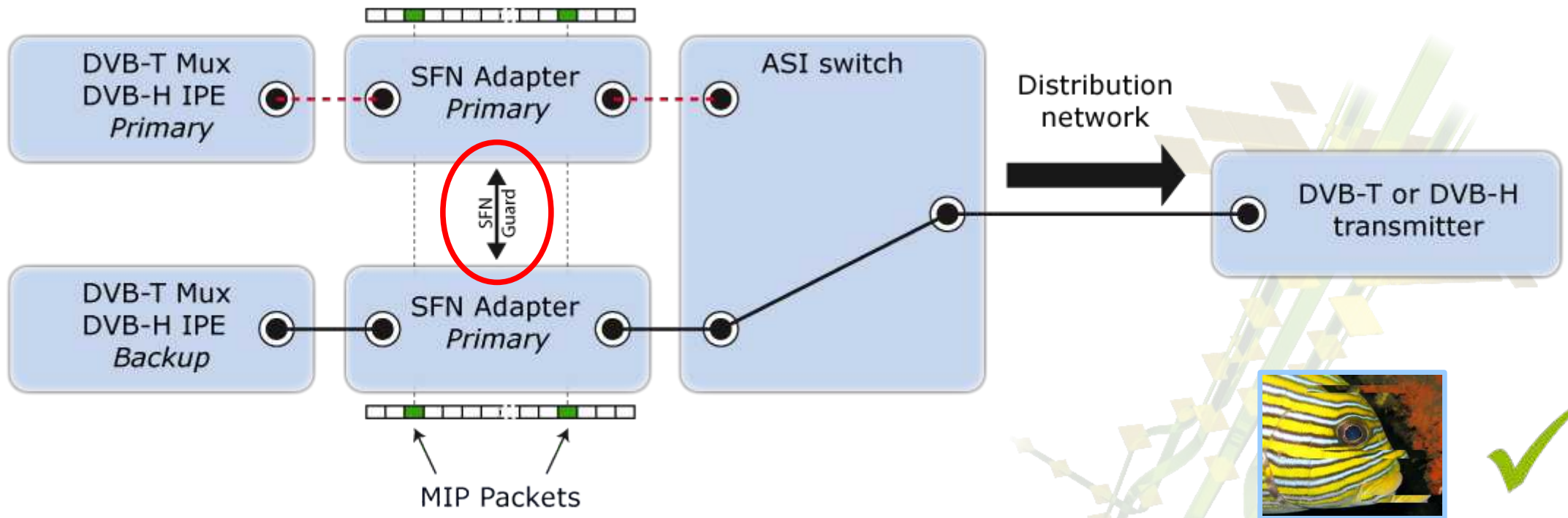


Redundant & synchronized SFN Adapters



- SFN Guard synchronizes SFN Adapters
- MIP packets are inserted consistently
- If primary source fails, ASI switch selects backup source

Redundant & synchronized SFN Adapters

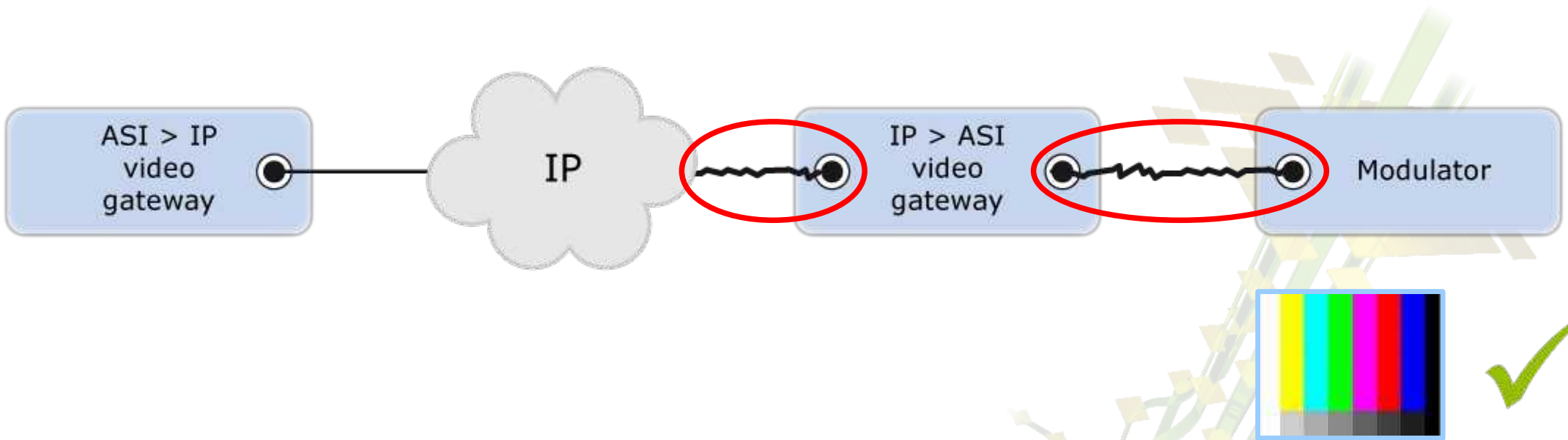


- SFN Adapters have the same output
- Transmitters keep receiving consistent information
- Switch is SFN seamless
- No TV blackout

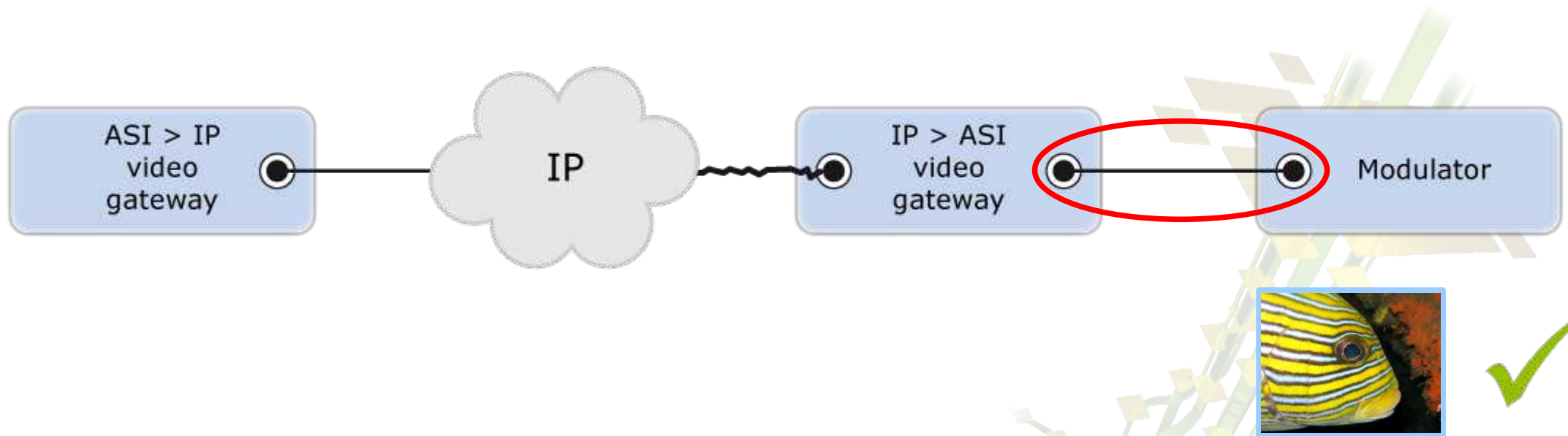
Description of the SFN Solution

- Redundancy in MFN
- Redundant SFN Adapters
 - Not synchronized
 - Synchronized « SFN Guard »
- **SFN over IP**
- Redundant path for SFN distribution
 - Desynchronized streams
 - Re-synchronized streams « SynFoNizer »





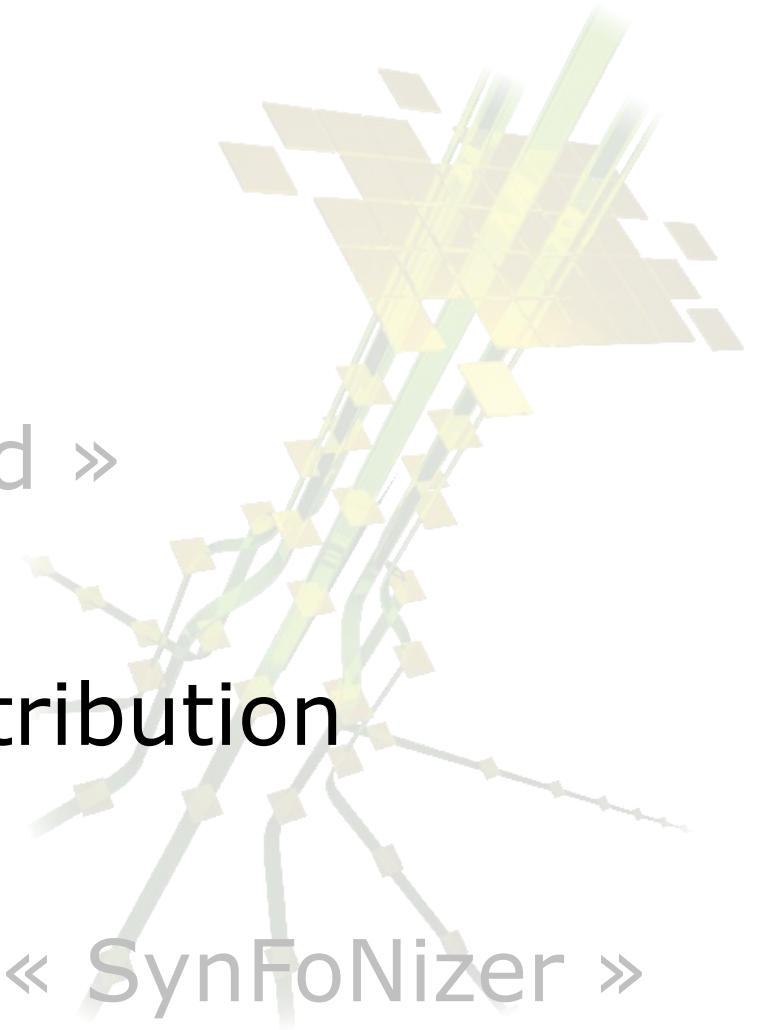
- SFN distribution over IP
 - IP distribution: network jitter, lost packets, etc.
 - Transmitters require constant bitrate
- If those issues are not coped with: TV blackout



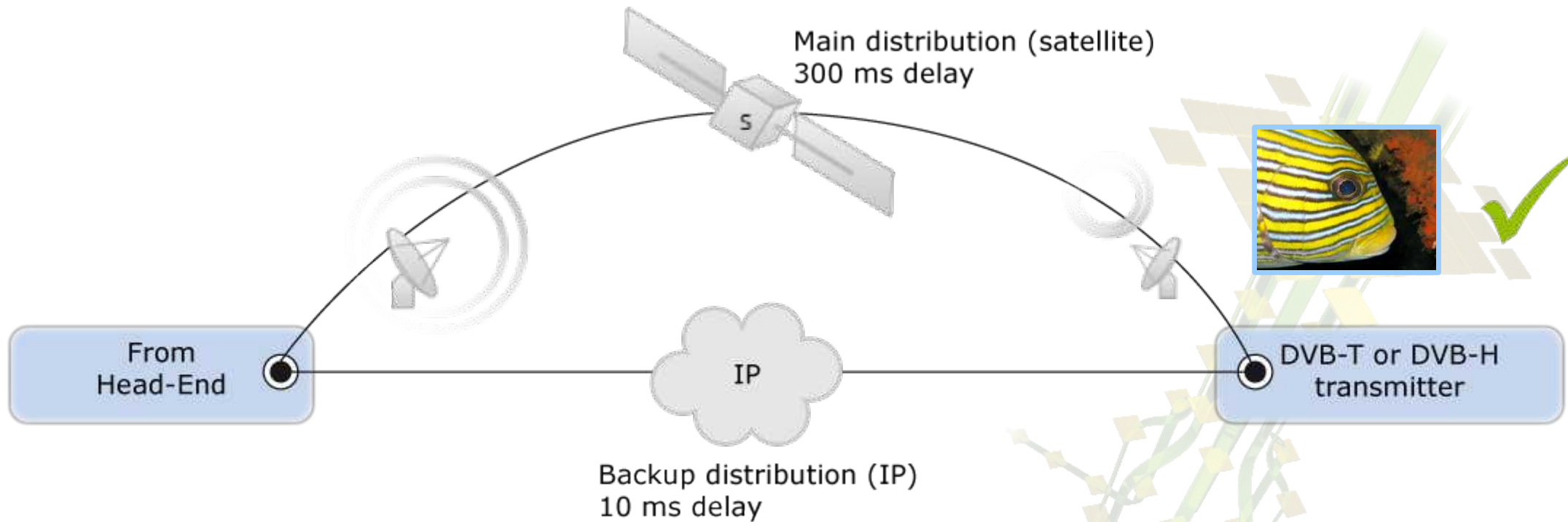
- ENENSYS IP video gateways provide:
 - SMPTE 2022: Interoperability & FEC
 - Network jitter removal
 - Constant output bitrate (MIP packets parsing)
 - Clock drift compensation
- No TV blackout

Description of the SFN Solution

- Redundancy in MFN
- Redundant SFN Adapters
 - Not synchronized
 - Synchronized « SFN Guard »
- SFN over IP
- Redundant path for SFN distribution
 - Desynchronized streams
 - Re-synchronized streams « SynFoNizer »

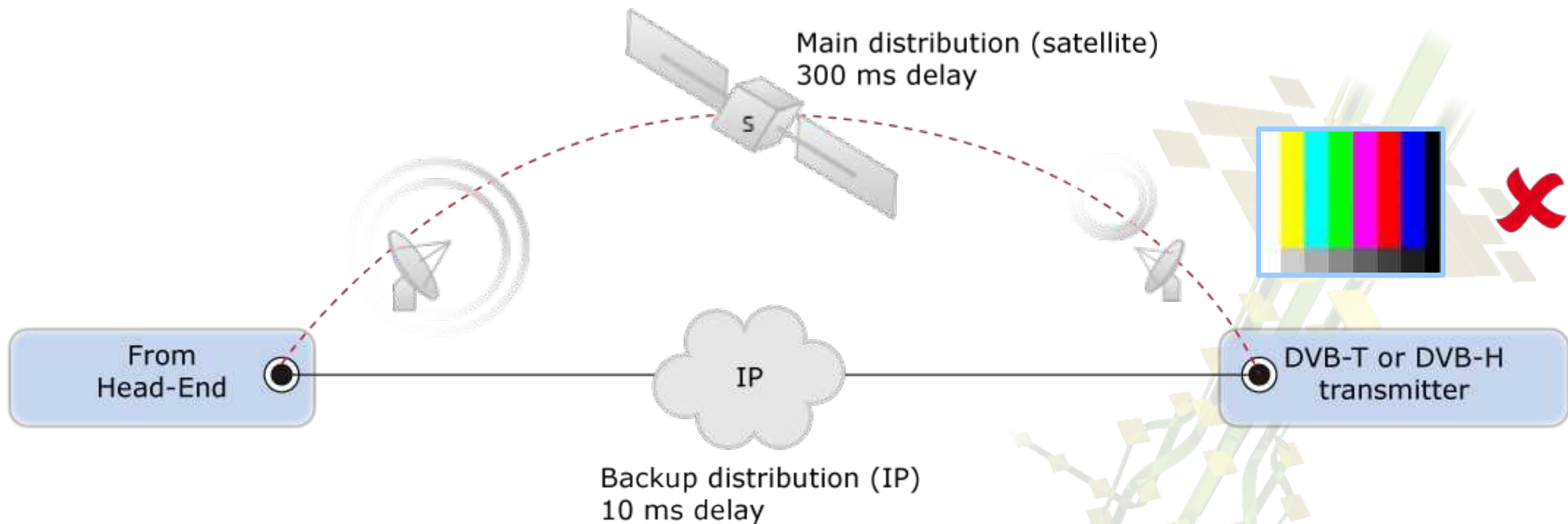


Redundant distribution paths – No re-synchronization



- Main distribution: Satellite
- Backup distribution: IP network
- Delay between IP (<10ms) and satellite (>300ms)

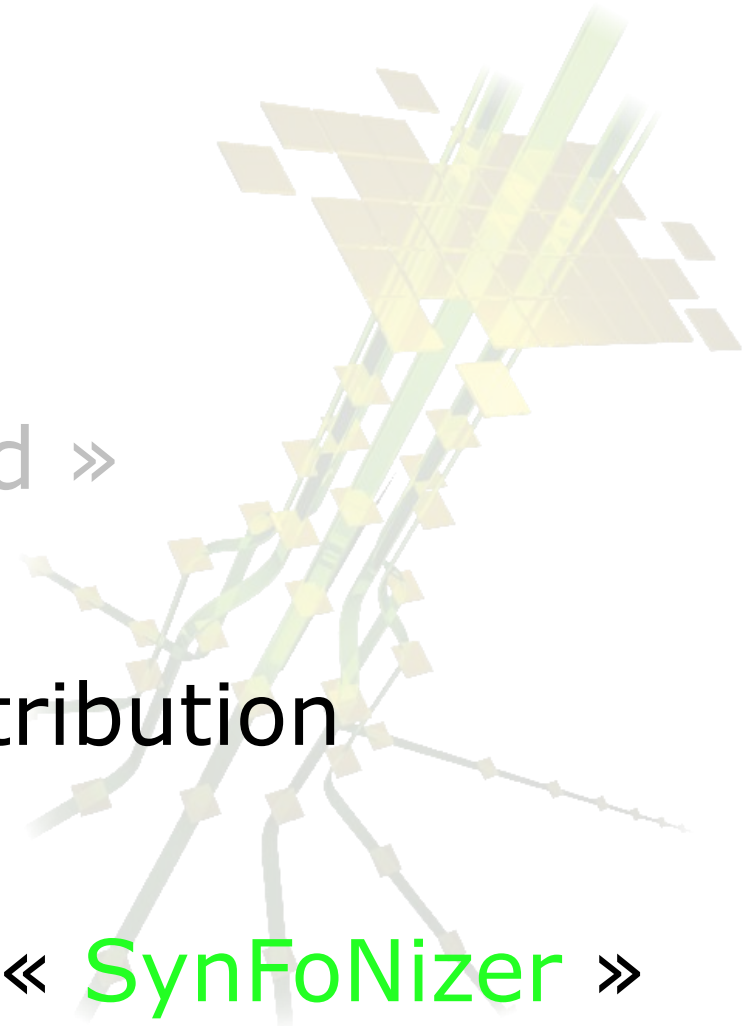
Redundant distribution paths – No re-synchronization



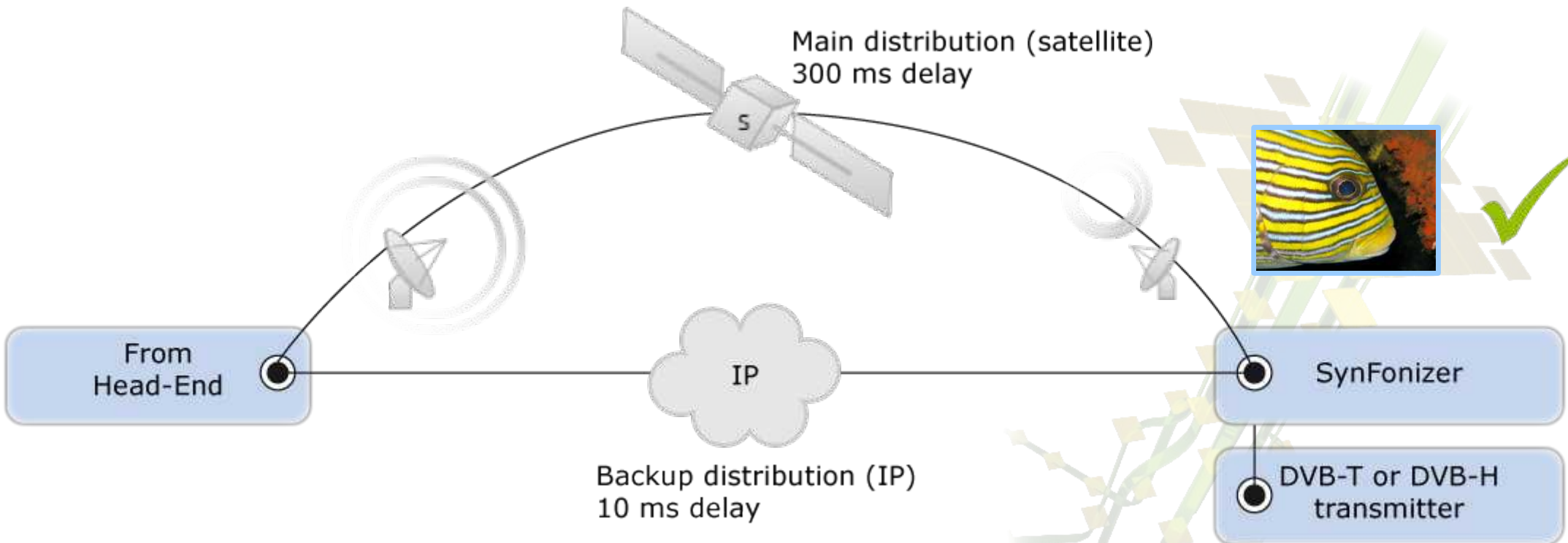
- If main source fails, transmitter switches to backup
- As both sources are not synchronized, SFN is lost
- Up to 30 seconds TV blackout

Description of the SFN Solution

- Redundancy in MFN
- Redundant SFN Adapters
 - Not synchronized
 - Synchronized « SFN Guard »
- SFN over IP
- Redundant path for SFN distribution
 - Desynchronized streams
 - Re-synchronized streams « **SynFoNizer** »

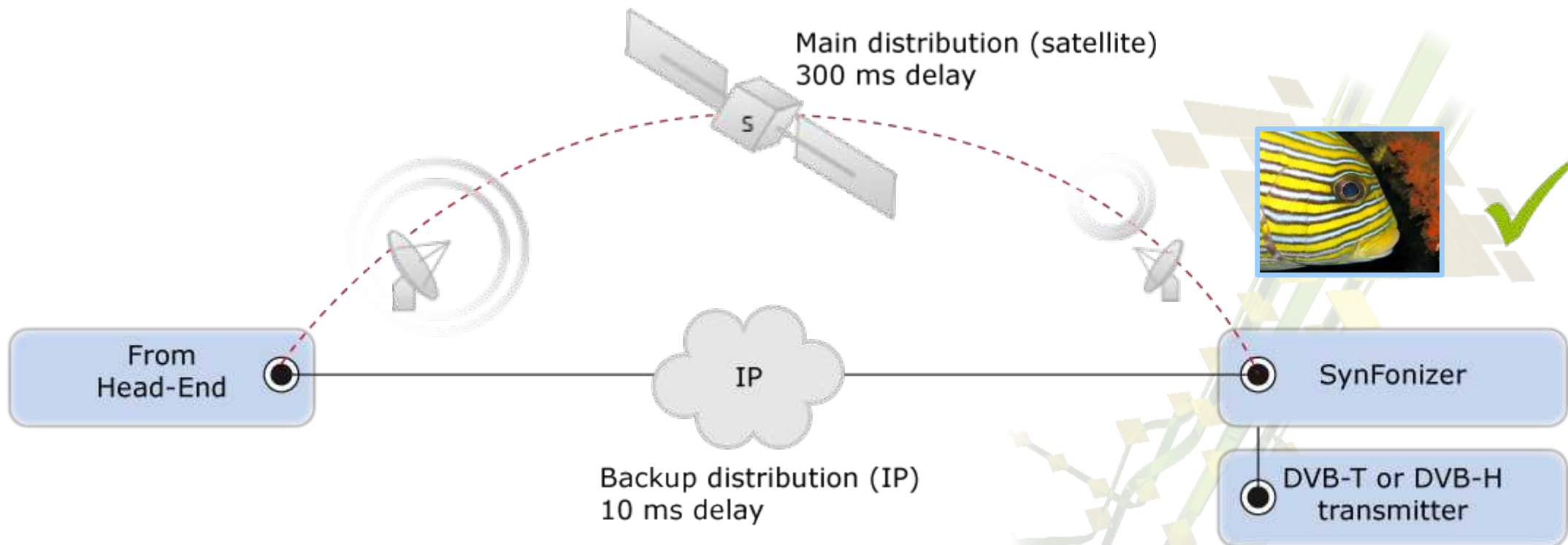


Redundant distribution paths – Re-synchronization



- SynFoNizer synchronizes IP and satellite sources
- Source with lowest delay (IP source) is delayed

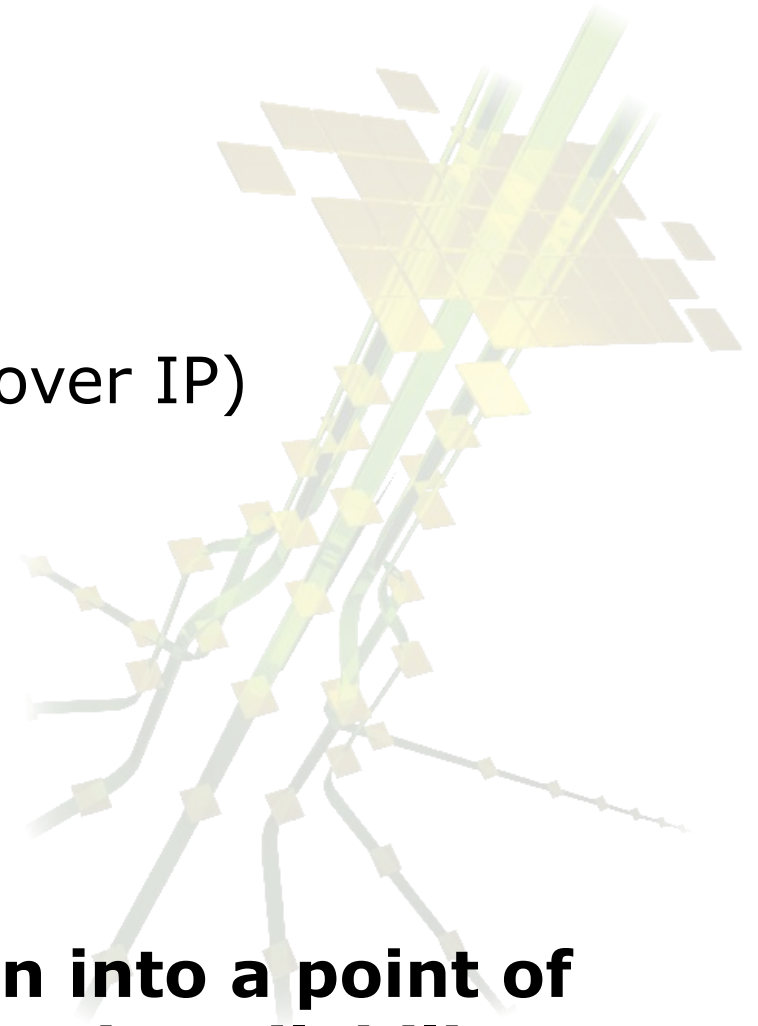
Redundant distribution paths – Re-synchronization



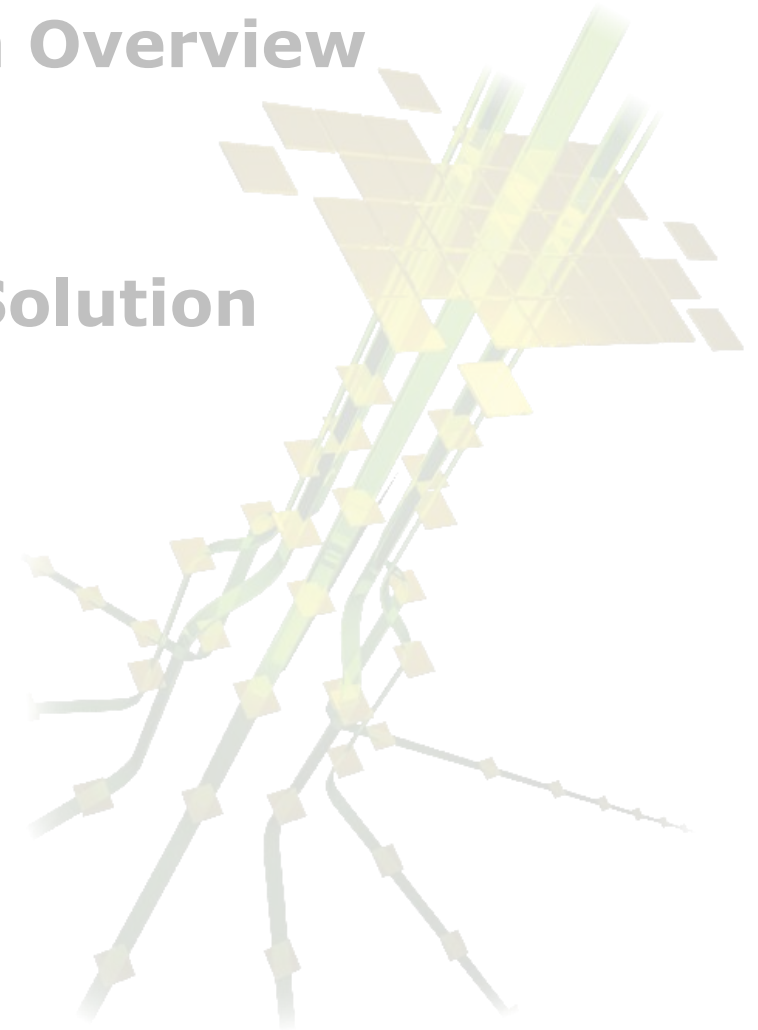
- Upon failure, SynFoNizer switches to backup source
- Backup source is synchronized with main source
- SFN is preserved
- No TV blackout

Description of the SFN Solution: Summary

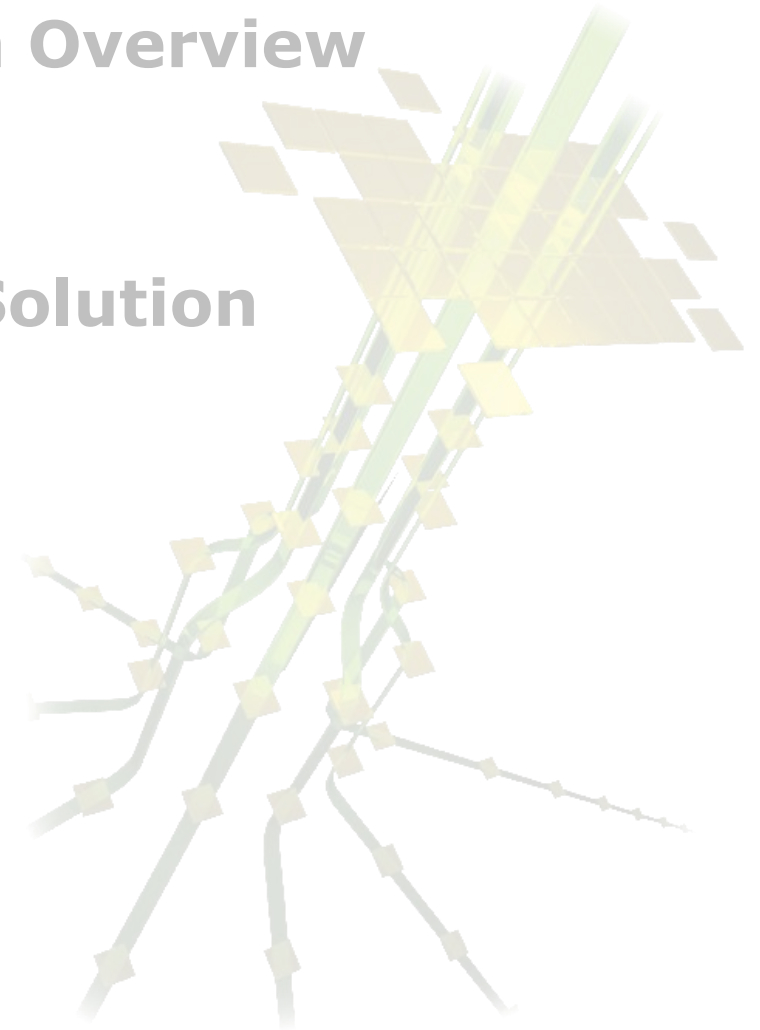
- SFN Adapter
 - MIP Inserter
- Synchronized SFN Adapters
 - « SFN Guard »
- Dedicated IP gateways for SFN (SFN over IP)
 - FastCaster & GigaCaster
- Distribution paths re-synchronization
 - SynFoNizer
- SFN Modulation
 - LabMod & NetMod
- **Turn every system interconnection into a point of strength of your SFN's reliability and availability**



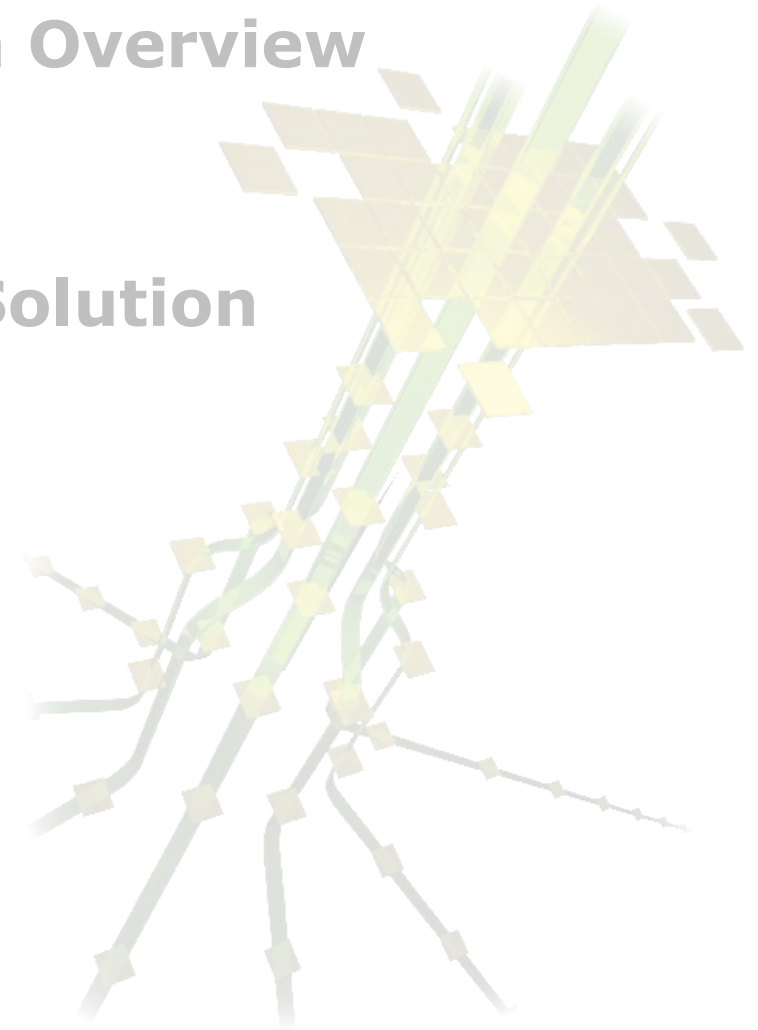
- 1) Introduction and Solution Overview
- 2) Customers
- 3) Description of the global Solution
- 4) **DTTV & Mobile TV Market**
- 5) Competition Overview
- 6) Documents available



- 1) Introduction and Solution Overview
- 2) Customers
- 3) Description of the global Solution
- 4) DTTV & MobileTV Market
- 5) **Competition Overview**
- 6) Documents available



- 1) Introduction and Solution Overview
- 2) Customers
- 3) Description of the global Solution
- 4) DTTV & MobileTV Market
- 5) Competition Overview
- 6) **Documents available**



Documents and information available



- **SFN Solution Datasheet**
- **For each products**
 - Datasheet
 - Product Presentation
 - Product Technical Description

Your contacts at **ENENSYS**

Sales team

sales@enensys.com

Support team

support@enensys.com

**and
Product Managers**