



NAGRA
KUDELSKI

Swiss Testing Night 2011

Test Management challenges in Digital TV solutions

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Content

- Nagravision (Kudelski Group)
- Digital TV end-to-end scenario and challenges for testing
- Integrated process to master Digital TV end-to-end testing
 - CMMI
 - Test Manager role in the organization
 - ISTQB

Kudelski Group at-a-glance

Growing solution footprint in DTV

STRATEGIC AXES

- Comprehensive digital TV security
- Converged content protection
- Cross-network and cross-media
- Applications & Interactivity
- Logical & physical access

THE GROUP

- 3000+ employees
- 2009 revenues of 1bnM CHF
- Global presence
- 1BCHF invested in R&D over 5Y
- Accelerating investment in IPTV, OTT, Hybrid & mobile TV

BUSINESS LINES



DIGITAL TV SOLUTIONS

NAGRA
KUDELSKI

open tv

SMART TV



SMART CARD TECHNOLOGY

nagra ID



PHYSICAL ACCESS SOLUTIONS

SKIDATA
access unlimited

polyright
Kudelski Group

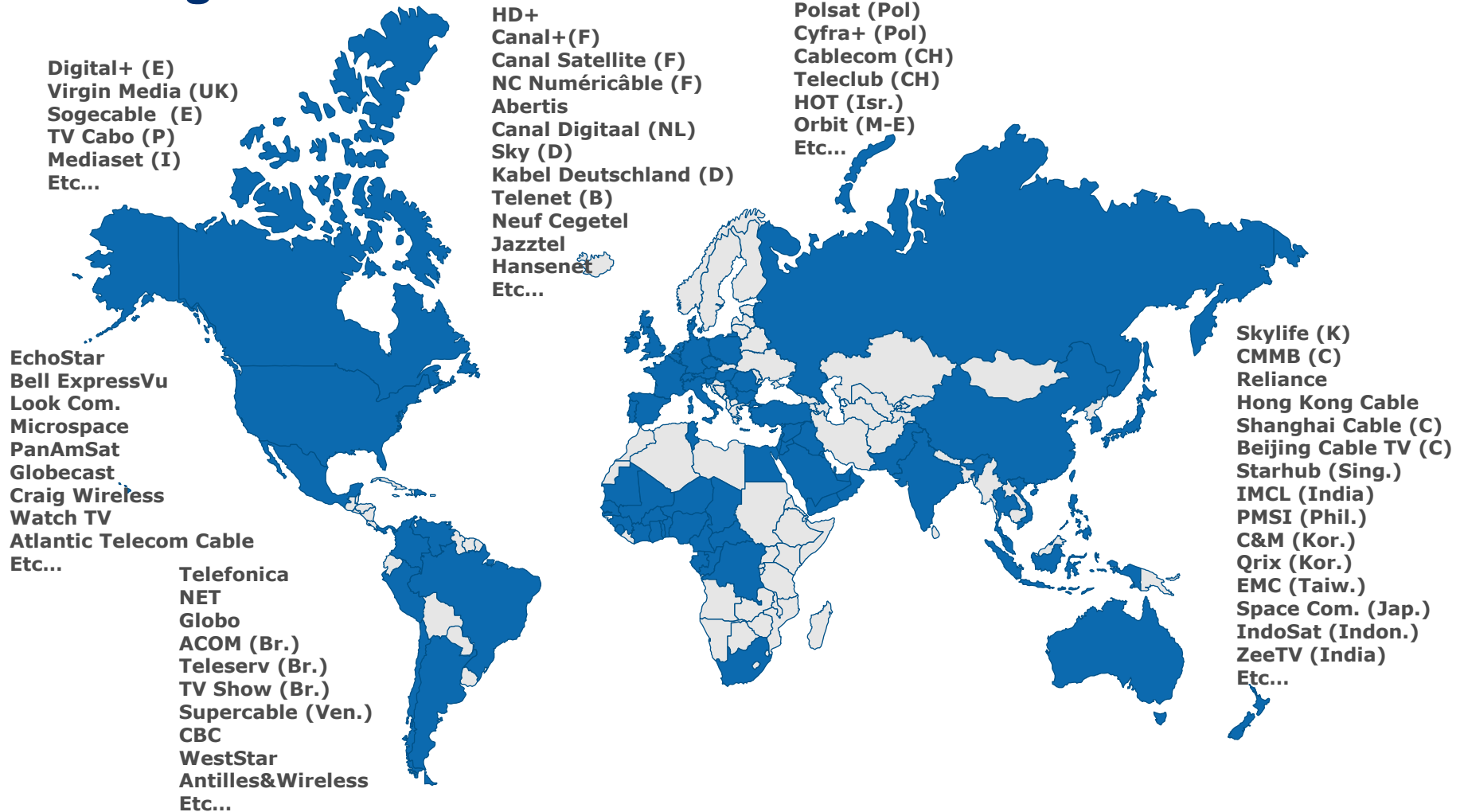


PROFESSIONAL AUDIO & HI-FI

NAGRA

140M+ Active Devices – 120+ Customers

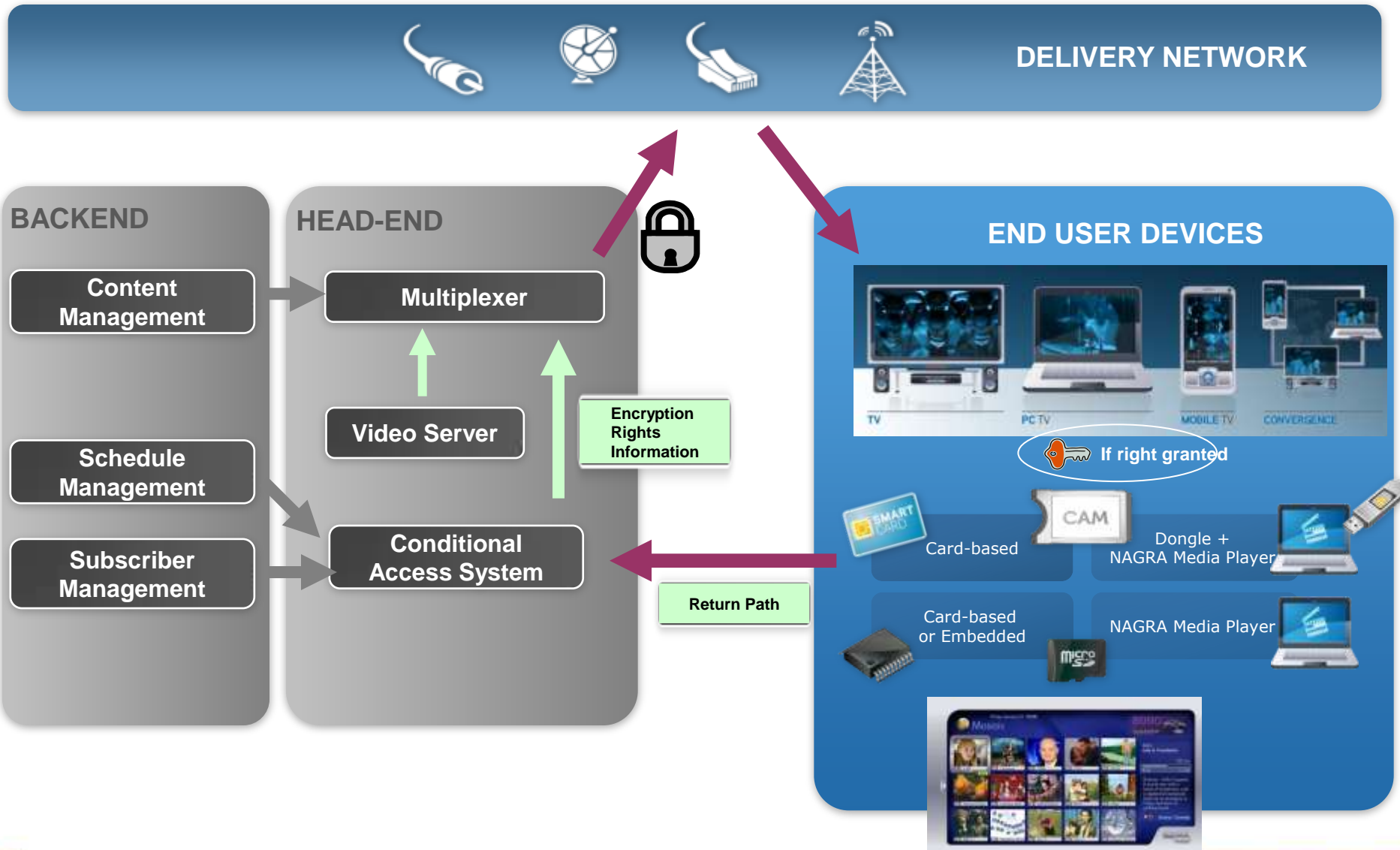
Securing >50B\$ of annual content revenues



The leading and only truly independent content protection provider

Offices in USA (Atlanta, LA, Denver, San Francisco), Brazil, Spain, UK, France, Germany, Italy, Switzerland, Singapore, Beijing, Hong Kong

Digital TV end to end



Digital TV end to end

- All components contain software
 - Developed by different teams
 - Developed in different locations
- Mixed environments are the rule
 - Legacy 3rd party
 - Nagravision components
- Large variety of end user devices in use at the same time
- Large user base, many use cases

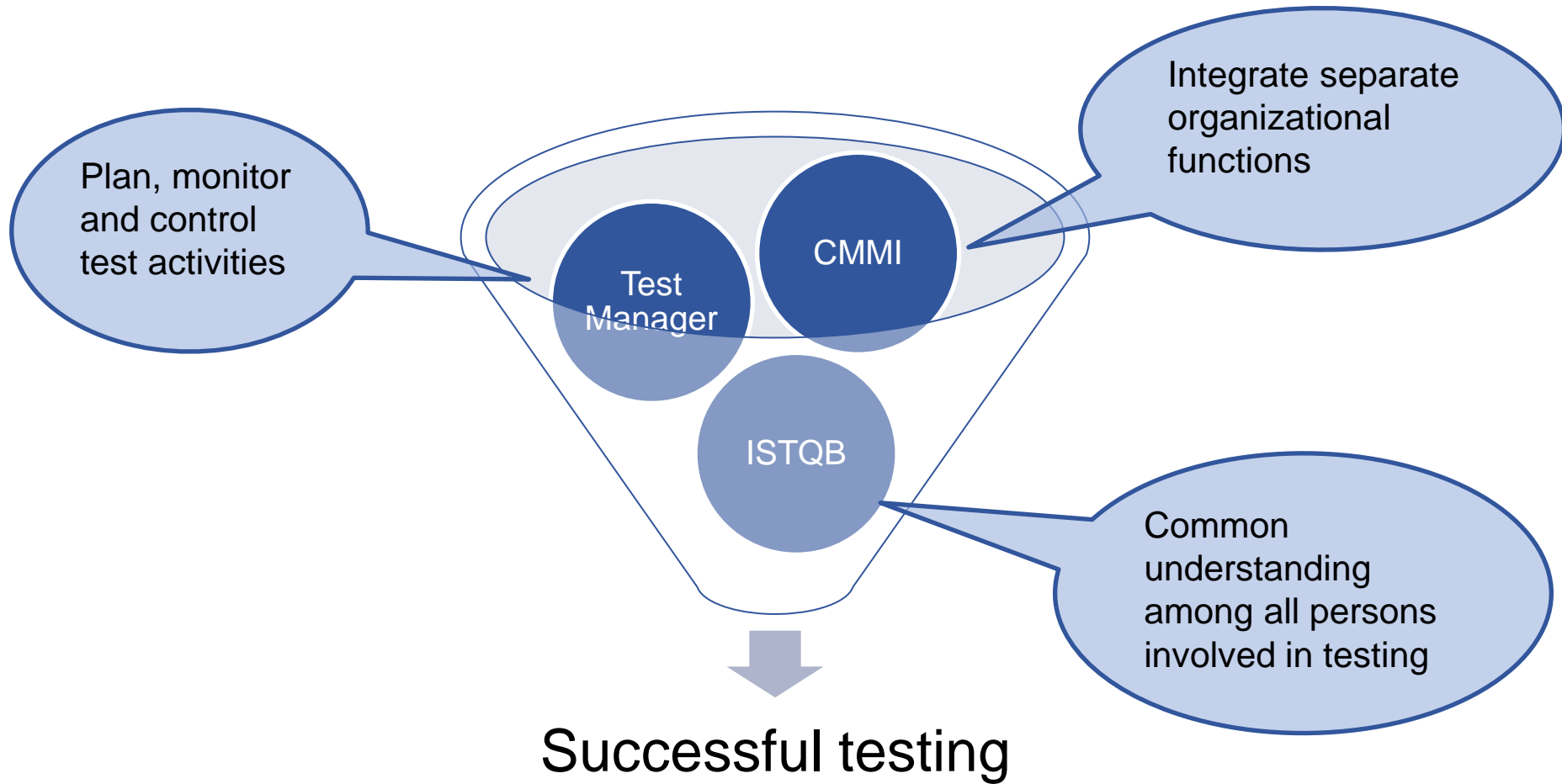
End to end integration and testing is a challenge

- Ensure all components are available on time
- Knowledge to integrate the end to end solution
 - Put all the pieces together and make them work
 - This is a lot of effort – better get it right the first time
- Client use cases understood
- Requirements defined and corresponding test cases written

System Test Workplace



Ingredients for testing Digital TV solutions



Process improvement with CMMI

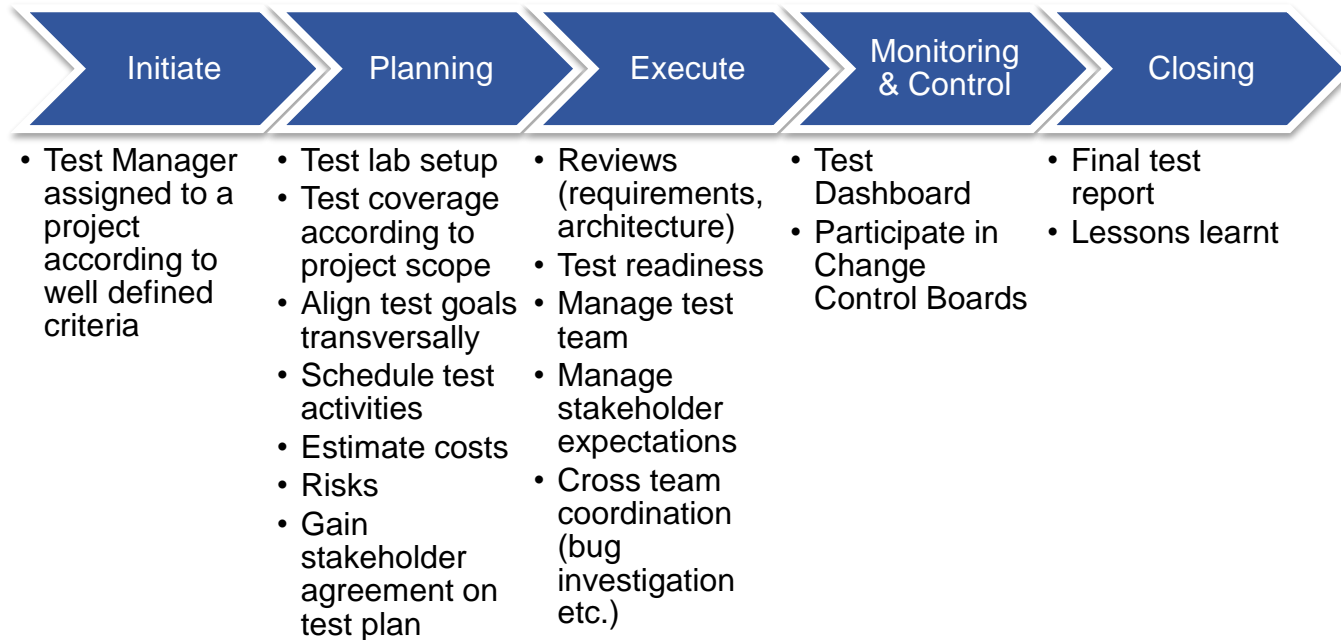
- **Capability Model Integration**
 - Process improvement approach
 - Explains what should be done
 - Measures the maturity of an organization
- **Process areas relevant for testing**
 - Verification
 - Product Integration
 - Validation
- **Specific goals and practices are given for each area**
 - Following these practices helps to avoid problems in the test process

Example: Product Integration

- CMMI Specific Goals and Practices
 - SG 1 Prepare for Product Integration
 - ▷ SP 1.1: Establish an Integration Strategy
 - ▷ SP 1.2: Establish the Product Integration Environment
 - ▷ SP 1.3: Establish Product Integration Procedures
 - SG 2 Ensure Interface Compatibility
 - ▷ SP 2.1 Review Interface Descriptions
 - SG 3 Assemble Product and Deliver the Product
 - ▷ SP 3.1 Confirm Readiness of Components for Integration
 - ▷ SP 3.2 Assemble Product Components
 - ▷ SP 3.3 Evaluate Assembled Components

Test Manager's role

End-to-end integration and validation is being handled like a project



ISTQB

- All Test Engineers are foundation level certified
- Test Managers have the advanced certificate (Test Management)
- Benefits
 - Common vocabulary across teams
 - Solid knowledge of different test approaches
 - Ability to choose the best suited approach

Summary

- Mastering integration and end-to-end testing of a complex product like Digital TV solutions requires an integrated process. Our approach is based on
 - CMMI – to integrate separate organizational functions
 - Test Manager role – to manage test activities in a project like manner
 - ISTQB – ensure common understanding among all persons involved in testing

THE FINAL WORD

Questions

