Delivering best quality receiver to the market.

Stakeholders perspective

March 7, 2018

ITU Workshop on Digital Broadcasting Technologies
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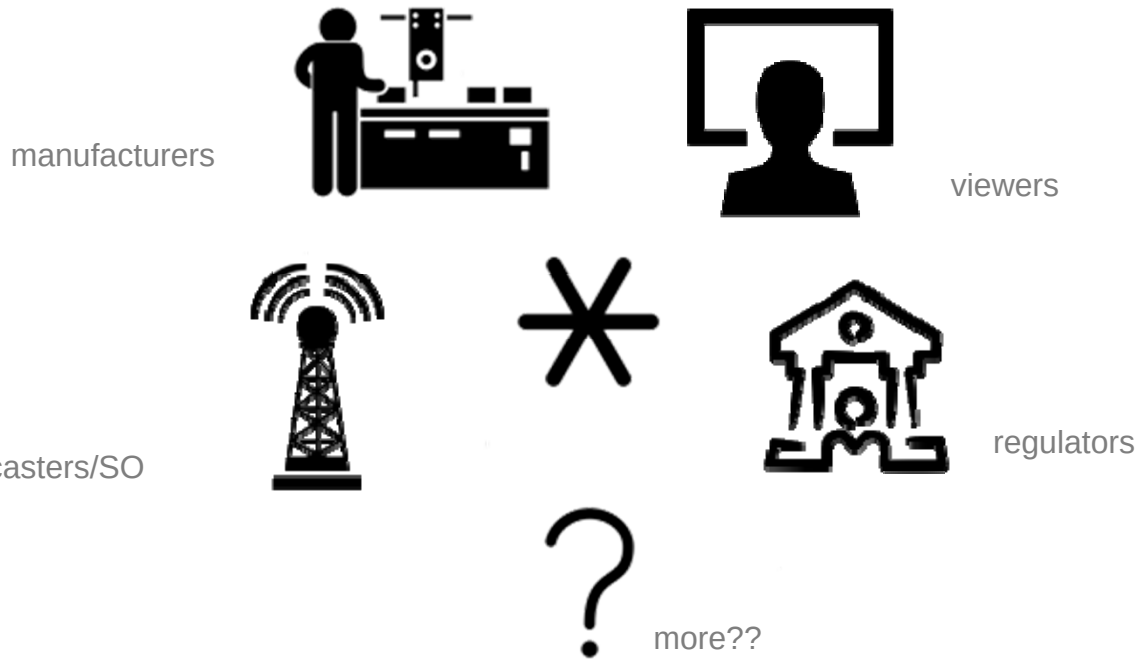
Short on presenter

- work on delivering better 
- in 
- in the following geographical areas 

*** Opinions in this presentations have its origin in experiences in product development (TV) in above markets**

Identified stakeholders

- in digital migration process and those influenced by min. receiver specifiation



Delivering best quality receiver to the market

Stakeholders experiences

Stakeholders experiences during digital migation process and attitude towards min. receiver spec.

As it is

manufacturers

- rollout plan is not published
- ASO postponed/changed
- sometimes spec is feature list. How to implement and test?
- mostly only stb specification
- no open public comment period
- illegal import of receivers disrupt market

broadcasters/SO

- long tenders for multiplex
- expensive licences
- lack of local content
- how I will finance new capex expenses
- tech expertise needed to set-up transmission and signaling PSI/SI, LCNs, EPG, HEVC, free CA mode, parental settings

regulator/gov

- lack of political will for digital migration
- lack of government acts mandating digital rollout plan, and specifying requirments
- lack of funds
- how to acquire tech expertise
- how to maintain and develop DTT platform
- how to control quality of receivers and maintain it year over year

viewers

- weak public information campaign before ASO
- partial knowledge about DM: HD = digital TV
- have to purchase new receiver for few channels more
- cope with low end not tested receiver in the market,
- how to distinguish approved receiver
- feeling to be left alone

- **information gap for every stakeholder**
- **poor content available in FTA DTT**
- **DM - a slow process**
- **receivers with illegal import without guarantee or not supporting local market requirements**
- **high level of piracy in some markets**

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Stakeholder expectations

Expectations towards digital migration process and minumum receiver specification

To be - ideal

- **clear roadmap of digitalisation and fixed ASO date**
- **interesting content delivered with proper robustness and quality with full information, so that it can be programmed, marked and recorded or reminded**
- **range low to high end receivers meeting fully minimum receiver specification**
- **protection:**
  - **security of content across the delivery chain**
  - **youngsters against inproper age content**
  - **against illegal import or export**

manufacturers

- clear rollout plan for digital migration and ASO date
- technical requirements that allow to prepare HW and SW
- best if spec distinguish stb and TV
- should take into account all (s-m-l) manufacturers needs (open public discussion)
- base for other integrations (pay TV)

broadcasters/SO

- tender process is clear and licences are low
- min spec gives a guideline for proper service delivery (transport and signaling layers)
- min spec states which broadcast profile use; how to: sequence channels, signal parental rating; EPG; signal interactive services and finally which codec/resolutions to use

regulator/gov

- policies, acts, white papers, roadmap is published by government
- state budget assign funds for DM
- network is planned
- content security is provisioned
- ‘certification’ process is estabilished
- affordable receivers are meeting min spec
- adult content is restricted according to age

viewers

- are protected from fake products or products that does not meet min receiver requirements
- expect to have a choice of receivers on market
- expect receiver support local language
- expect it delivers EPG information for every multiplex
- allow to access all available channels also with interactive services
- receiver will deliver desired audio and quality picture
- is responsive and zapping time in acceptable (3 sec for HD)
- support new services and adjust to network changes

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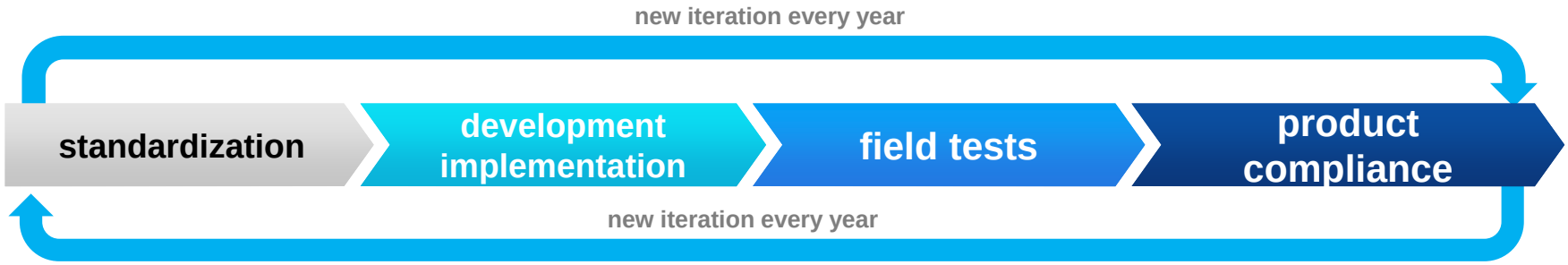
Product development lifecycle

Receiver development lifecycle



- check local digital migration process papers
- check minimum receiver specification
- if specifiation is in a state of update process, Samsung communicate comments via public comment period
- if requirments cannot be met this year, waiver is asked for agreed period of time

- mapping requirements to SW
- matching appriopriate tuner
- SQE testing
- communication with regulator/broadcater continue to confirm frequency plan; or to clarifi mismatch between live signal and requirements

- on site TV platform testing (most expensive)
- test materials (TS) sent by operator/broadcaster
- usage of capture servers at local markets

- uncotrolled market
- self test
- external lab model

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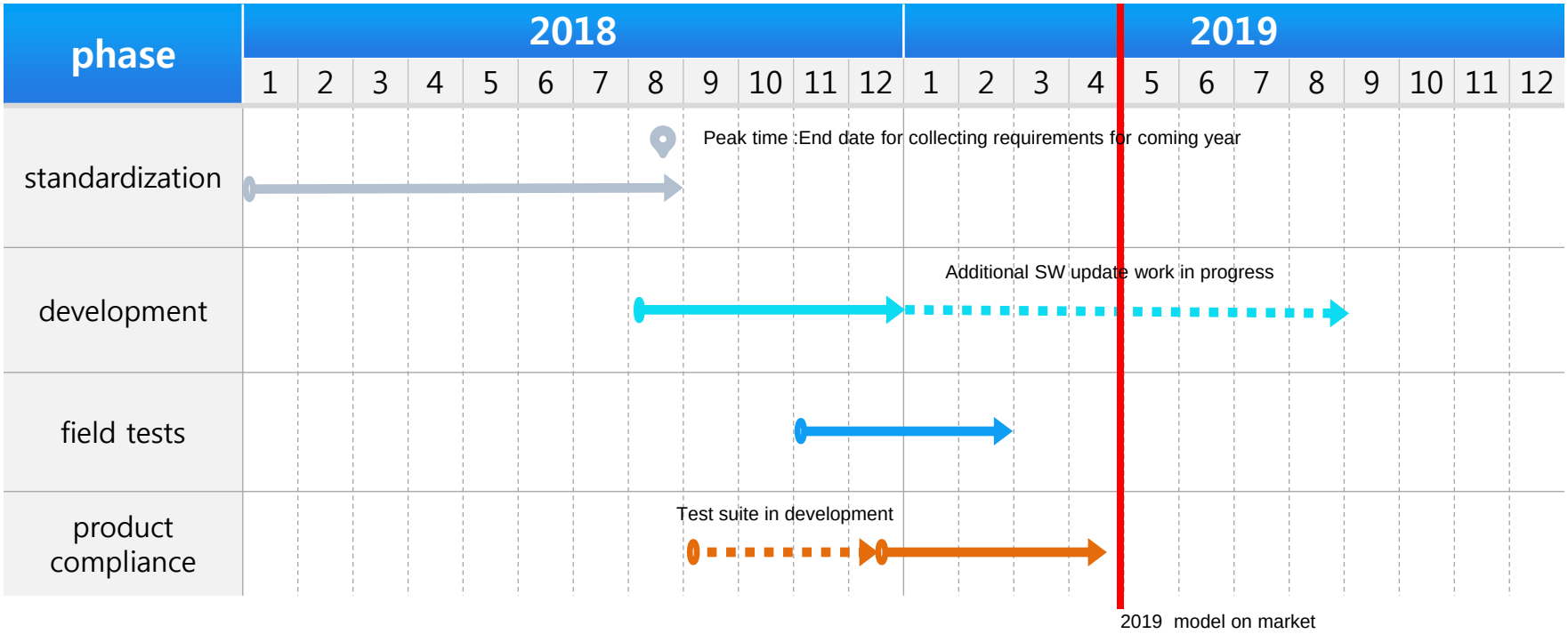
Product development lifecycle

1-year repeatable cycle



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Product compliance

Product compliance - types

uncontrolled market	• platform brand damage • unability to add new services • impossible to write interactive applications • lots of receivers
self certification	• manufacturers prepare own test suite based on specification (agreed with requirement owner) or use test suite from regulator or mix approach • with tight production schedule manufacturers can met set commercial milestones with own test suite as prefered model • Samsung UKAS accredited ISO cert lab cover all fields
external lab model	• requires tenders for lab, test suite and process managements • lab – huge investment and maintanance cost (amortisation) • ensured quality • good user experience • fewer receivers on the market

Product compliance – self test advantage for large manufacturer

type of conformance testing	factor	manufacturer	viewer	regulator/gov
uncontrolled market	quality			
	time			
	cost	$	$	$ $ $
self test	quality			
	time			
	cost	$ $	$ $	$
external lab	quality			
	time			
	cost	$ $ $	$ $ $	$ $ $

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Product compliance – self test ISO LAB best model

What ISO/IEC 17025:2005 is?

- **ISO/IEC 17025:2005** – **international** standard used by testing laboratories
- Main standard areas – **Quality Management** and **Technical Management**
- External auditor – **UKAS (United Kingdom Accreditation Service)**

Samsung ISO Labs

- RF, PSI/SI, EMC/Safety
- best approach for products' quality assurance
- best approach for certification process control
- over 1300 IDTV tested
- recognized and approved by governments
- ideally matched to product development process

Products certification

- products passing performance tests and QA tests
- products meeting requirements stipulated in regulations /specifications
- products follow particular certification regime process

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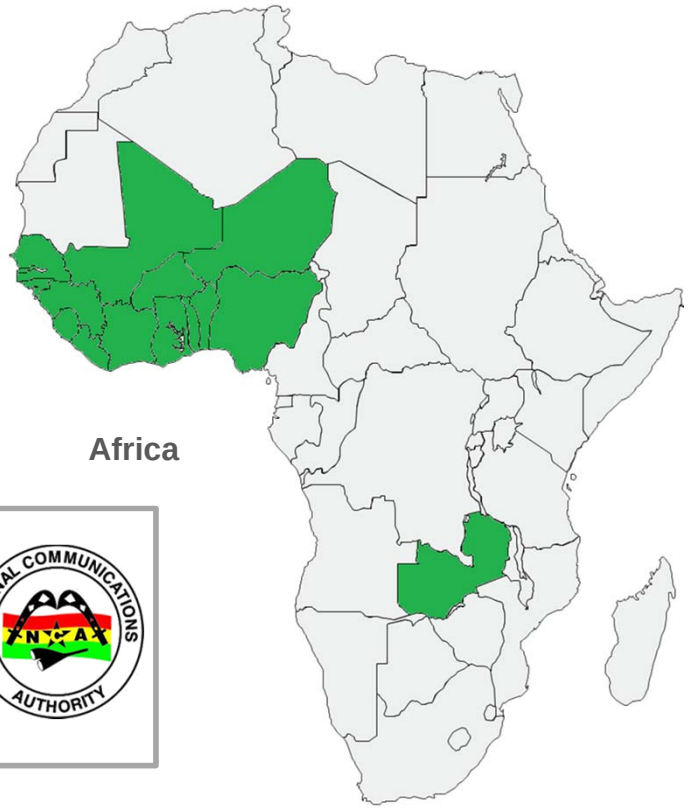
Product compliance – self test ISO LAB best model

Asia / Oceania

Europe



Africa

Official ISO
Operators tests

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Experiences with min. receiver specification

- **public comment period**. Minimum receiver specification shall be subjected to public discussion and public comment period with deadlines to collect small and large manufacturers voice/comments
  - best evaluation of regulations
- **parental rating.** Not only technical requirement, but have its ethic implication
- **RCU.** Virtual keys have same functionality as physical. OSD also better for accessibility
- **OTA.** Image of SW is 1.5Gb OTA 50kbps will download for 72hrs.
- **What is most used function by viewers in digital TV?**

  - **EPG** signalisation (EIT other) delivering guide information for other multiplexes is nice to have feature that deliver from start of the receiver most neccessary information about program names and times
  - in case to save bandwith full EIT information can be accessible from actual mux (long and short description)
  - allow instant programing of reminders and recording without need to tune to other multiplex

Experiences with min. receiver specification

- **character coding**. With many local languages in Africa it is important to add all local ISO 639 language codes
- **interactive services/middleware.** Allow connectivity and can be a middleware (HbbTV)
- **be precise.** To general requirements – for example receiver has to enable control viewing
- **LCN descriptor.** Missing syntax is common
- **stb vs IDTV requirements.** Have to be clearly divided
- **modal verbs.** Verbs ‘shall’, ‘should’, ‘may’ etc should be specified to every requirement
- **testability.** Requirements has to be testable

Thank You

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