

# Joint and co-verification roadmaps – practical tools for global ETV cooperation



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2<sup>nd</sup> AdvanceETV conference

Helping eco-innovations to reach the market –  
European and international perspectives on  
Environmental Technology Verification (ETV)

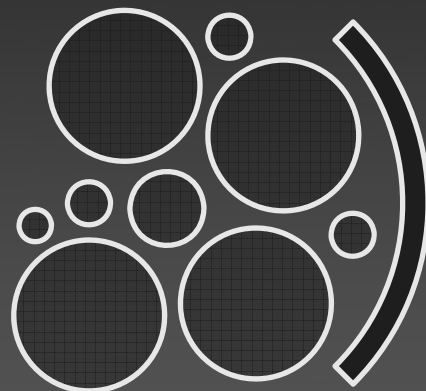
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# Presentation outline

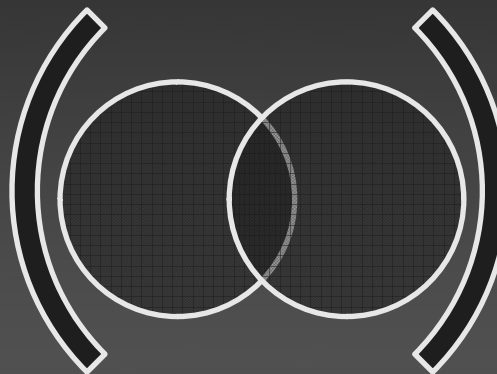


- The context
- The approach
- The details
- The road ahead – for the roadmaps

# Towards a truly global technology market place



National and regional tests and verifications

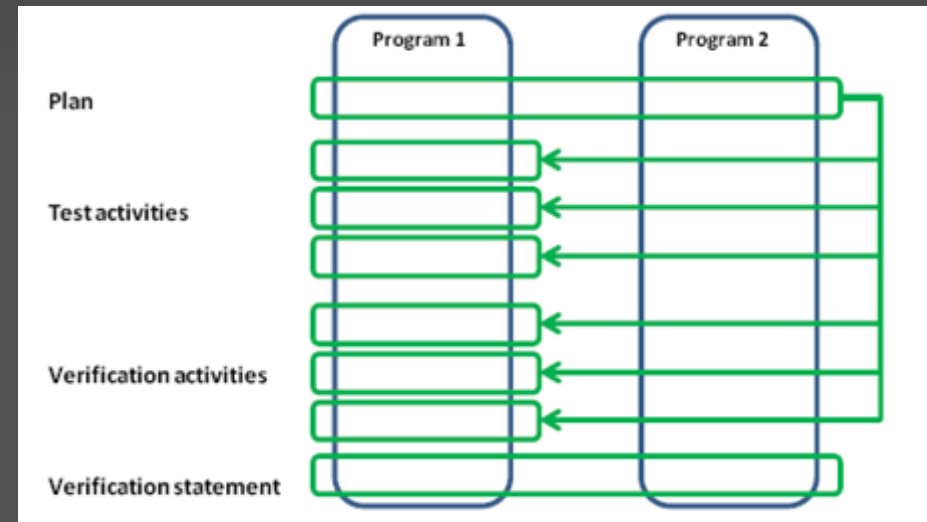
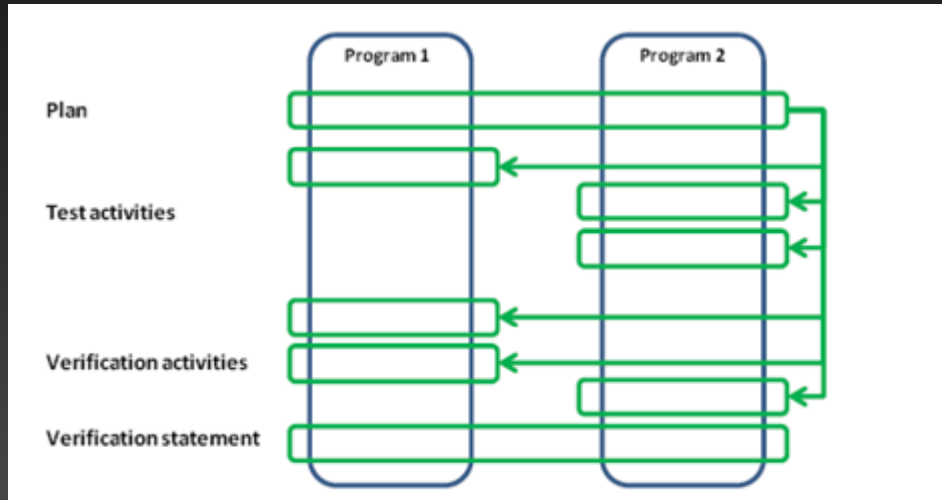


Coordinated tests and verifications



Verify once – accept everywhere

# Models for global ETV cooperation

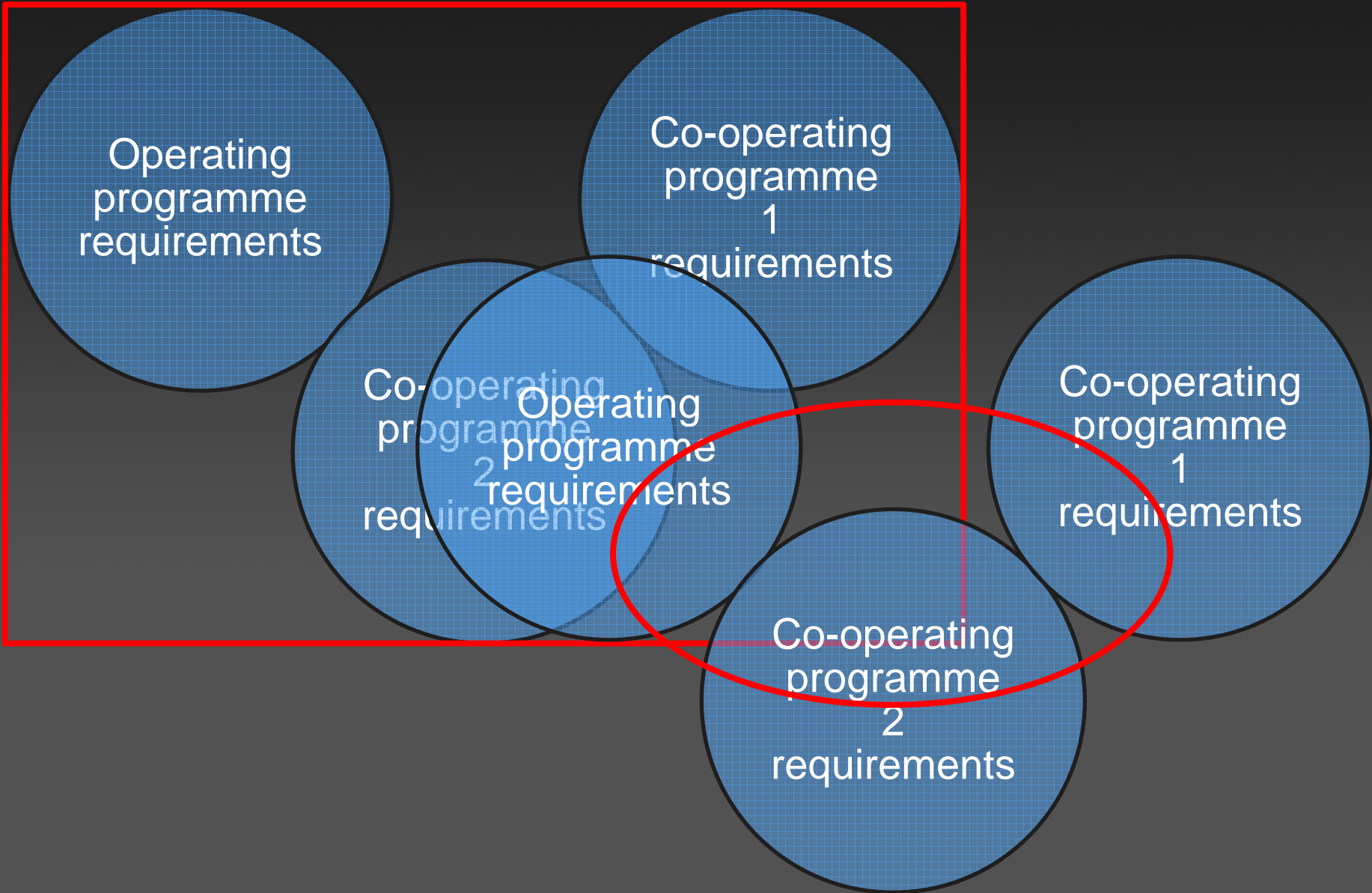


# The duplication trap – a laboratory example



- ETV programme 1
  - Quality management
    - Implemented system required
    - Controlled through accreditation
  - Quality assurance
    - Plan for quality control required
    - Controlled by the programme operator
  - Quality control
    - Certified reference material analysis and proficiency test participation required
    - Controlled through accreditation
- ETV programme 2
  - Quality management
    - Implemented system required
    - Controlled through programme owner audit
  - Quality assurance
    - Plan for quality control required
    - Controlled by the programme owner
  - Quality control
    - Dedicated control sample analysis required
    - Controlled by the programme owner

# Balancing efficiency and trust



# I can be done!



Vendor	Application	Type of collaborative verification	Involved ETV programmes
Sorbisense	Measurement of volatile organic contaminants in groundwater	Joint verification	NOWATECH, US EPA ETV
HACH-LANGE	Toxicity testing of effluent wastewater	Joint verification	DANETV, US EPA ETV, ETV Canada
Colifast	Automatic detection of total coliform bacteria or <i>Escherichia coli</i> in drinking water	Co-verification	DANETV, US EPA ETV, ETV Canada
Synodon	Airborne detection of ethane/methane leaks from pipelines	Joint verification	US EPA ETV, ETV Canada
Veeder-Root and Franklin Fueling Systems	Leak detection for underground storage tanks for ethanol-blended fuels	Co-verification	US EPA ETV, ETV Canada

# Freedom of method choice – achieving the objectives



Programme Responsibility		
Objectives		
Optional methods to be selected from		

- Minimum requirements given for each phase
- Different options and requirements for **joint** and **co**-verification

Programme entry

Responsible Programme	COP	OP
<b>Objectives</b>	Ensure confidence in the quality of work of operating programme	Provide control of the work done
<b>Optional Methods to be Selected from</b>	Review of documents	Quality management systems internal audit
		Performance evaluation audit
		Analytical laboratory and test organization accreditation
		Internal review of documents
		External review of documents
		Technical systems (internal) audit (test)
		Technical systems (internal) audit (analysis)
		Analytical quality control
	Data quality internal audit	

Contractual agreement

Integrity and cooperation

Application definition

Performance parameters

Test data requirements

Existing data

Plan documents

Test and analysis

Reporting and verification

Verification notification

Post verification

- Quality requirements (**objectives**) of participating programmes met
- Methods pursuing same objective should not be applied
- Document and record management in the quality management systems
- Plan and report review by COP

Quality management

Programme entry

Responsible Programme	OP + COP	OP	OP	OP + COP
<b>Objectives</b>	Inform vendor on verification process and exchange technology information with the vendor	Define application initially	Assess and communicate verification readiness	Ensure technology compliance with programme priorities
<b>Optional methods to be selected from</b>	Vendor application form	Vendor and operator dialogue	Assessment of technology information against application definition	Assessment of technology information against programme priorities
	Screening check form	Stakeholder input	Screening check	Stakeholder concurrence
		Expert input		

Test data requirements

Existing data

Plan documents

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Verification notification

Post verification

- Written information from the vendor on the technology
- Assessment of technology readiness and compliance with programme priorities
- Publication discussion

Quality management

Programme entry

Contractual agreement

Integrity and cooperation

Application definition

Performance parameters

Responsible Programme	OP	OP + COP
<b>Objectives</b>	Ensure contractual agreement on verification	Ensure contractual agreement on verification cooperation
<b>Optional methods to be selected from</b>	Contract on verification between operating programme and vendor	One or more contracts on verification cooperation between cooperating programme(s) and vendor, between operating programme and vendor and between cooperating programme(s)
	Contract on verification and verification cooperation between vendor, operating programme and cooperating programme(s)	Contract on verification and verification cooperation between vendor, operating programme and cooperating programme(s)

Test data requirements

Existing data

- Agreement regulating verification
- Agreement regulating cooperation

Plan documents

Test and analysis

Reporting and verification

Verification notification

Post verification

Quality management

Programme entry

Programme Responsibility	OP + COP	OP + COP	OP + COP
<b>Objectives</b>	Protect vendor against verification body requiring too extensive testing	Ensure impartial assessment of test data during verification	Describe task distribution and responsibilities in cooperation
<b>Optional methods to be selected from</b>	Independent verification and testing bodies	Independent verification and testing bodies	Joint or co-verification process document
	Vendor review of planning documents	External review of documents	Joint or co-verification roadmap
	External review of documents	COP review of documents	Section in contractual agreement
	COP review of documents		

Contractual agreement

Integrity and cooperation

Application definition

Performance parameters

Test data requirements

Existing data

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Verification notification

Post verification

- Compliance with the roadmaps
- Detailed agreement upon the procedures, task distribution, timing and requirements
- Agreement upon requirements for COP acceptance of OP verification
- Vendor review of planning documents

Quality management

Programme entry

<b>Programme Responsibility</b>	OP
<b>Objectives</b>	Define the intended use(s) of the product (that is, how is the technology to be applied in a real-world scenario)
<b>Optional methods to be selected from</b>	Application review yielding unambiguous definition such as in terms of matrix, effect, targets, or other parameters depending upon what is relevant to the product being verified

Contractual agreement

Integrity and cooperation

Application definition

Performance parameters

Test data requirements

- Unambiguous application definition

Existing data

Plan documents

Test and analysis

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Post verification

Quality management

Programme entry

Programme Responsibility	OP	COP	OP
<b>Objectives</b>	Define relevant performance parameters	Ensure compliance between defined performance parameters and programme requirements	Ensure vendor concurrence on performance parameters
<b>Optional methods to be selected from</b>	Desk study	Input from cooperating programme to performance parameter definition	Documented vendor review and acceptance of parameters
	Stakeholder process	Review of performance parameters	
	External expert review	Review performance parameter definition method in co-verification process document or section in contractual agreement	
		Control that agreed performance parameter definition method from co-verification process document or section in contractual agreement was used	

Contractual agreement

Integrity and cooperation

Application definition

Performance parameters

Test data requirements

Existing data

Plan documents

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Verification notification

Post verification

- Measurable performance parameters and their relevant ranges defined and documented in the planning documents of the verification
- Performance parameters agreed upon by the OP, COP, and vendor

Quality management

Programme entry

<b>Programme Responsibility</b>	OP + COP
<b>Objectives</b>	Define the test design (test conditions, data extent and data quality) required for the verification
<b>Optional methods to be selected from</b>	Test data requirement description (extent and scale).
	Reference analyses and measurements requirements description
	Operational conditions and measurements description
	Identification of additional verification parameters

Contractual agreement

Integrity and cooperation

Application definition

Performance parameters

Test data requirements

- Precise definition in the planning documents of requirements for test data:
  - Extent, (quality) and scale
  - Reference analyses (measurements) for comparison to conventional techniques (where applicable),
  - Measurements of baseline operational conditions
  - Quality control measurements
- Documented in report documents

Existing data

Plan documents

Test and analysis

Reporting and verification

Verification notification

Post verification

Quality management

Programme entry

<b>Programme Responsibility</b>	OP + COP
<b>Objectives</b>	Justify if existing data fulfills the test data requirements , quality assurance and control requirements and integrity requirements (Chapter 5)
<b>Optional methods to be selected from</b>	Ensure test organization is independent from vendor
	Evaluate the test plan used to generate the existing data
	Evaluate quality of test results and the quality control system employed
	Use of independent, accredited analytical, test and verification organizations
	Audit of test organizations

Contractual agreement

Integrity and cooperation

Application definition

Performance parameters

Test data requirements

Existing data

Plan documents

Test and analysis

Reporting and verification

Verification notification

Post verification

- Compliance with:
  - test data requirements
  - quality assurance and control requirements
  - integrity requirements
- Written assessment identifying which parts of the test data requirements that can be fulfilled by which existing data.

Quality management

Programme entry

Programme Responsibility	OP	OP + COP	OP + COP	OP
<b>Objectives</b>	Ensure agreement on verification and test design and methods with vendor	Define verification, test design and methods	Ensure agreement on verification and test design and methods between ETV programmes	Ensure commitment to time schedule
<b>Optional methods to be selected from</b>	Documented vendor review and acceptance of planning documents	Preparation of planning documents	Agree upon verification and test design and methods requirements in Joint or co-verification process document or section in contractual agreement	COP involvement in schedule preparation and revision
Performance parameters				
Test data requirements			Planning meeting to discuss verification and test design and methods	
Existing data			COP review of planning documents against joint verification process document or section in contractual agreement	
Plan documents				
Test and analysis			Control that agreed verification and test design and methods requirements from co-verification process document or section in contractual agreement were used	
Reporting and verification				

Verification notification

Post verification

- A planning document allowing for assessment and execution of the test and verification
- Consent of the vendor and among operating and cooperating programmes
- Major changes to the planning documents agreed upon between OP and the COP or communicated to the COP

Quality management

Programme entry

Programme Responsibility	OP	OP + COP	OP + COP
<b>Objectives</b>	Ensure vendor confidence in test execution	Produce test data	Ensure tests performed in compliance with planning documents
<b>Optional methods to be selected from</b>	Regular status communication between OP and vendor	Execute and document test as described in planning documents	Start-up meeting with OP technical staff (verification and test organization(s))
	Vendor training of OP staff in technology operation		Start-up meeting with OP and COP.
			Regular status communication between OP, COP and vendor
			Transmission of test data to COP and vendor for review on a regular basis.
			Documentation and approval of plan amendments and deviations

Contractual agreement

Integrity and cooperation

Application definition

Performance parameters

Test data requirements

Existing data

- Test and analysis executed and documented according to the planning document(s)
- Deviations and amendments to the planning document(s) shared with the vendor and the COP real time.

Plan documents

Test and analysis

Reporting and verification

Verification notification

Post verification

Quality management

Programme entry

	Programme Responsibility	OP	OP	OP + COP
Contractual agreement	<b>Objectives</b>	Compile and document verification and test design and methods, data and evaluations	Ensure vendor confidence in verification results and report	Ensure verification and test design and methods, data and evaluations are in agreement with <b>joint</b> or <b>co-</b> verification process document or section in contractual agreement
Integrity and cooperation				
Application definition	<b>Optional methods to be selected from</b>	Report document(s)	Vendor review of report documents and verification statement	COP review of raw data and report document(s) and statement against requirements in <b>Joint</b> or <b>co-</b> verification process document or section in contractual agreement
Performance parameters				
Test data requirements				

Existing data

Plan documents

Test and analysis

Reporting and verification

Verification notification

Post verification

- Report document(s) describing the technology, the application, the verification and test execution and results, the existing data included in the verification and the quality assurance and control
- Assessment of the potential impact of deviations and amendments in the report
- A statement of the verification as **one joint statement** or as **one statement per programme**
- For separate statements the science contents must be aligned

Quality management

Programme entry

Contractual agreement

Integrity and cooperation

Application definition

Performance parameters

Test data requirements

Existing data

Plan documents

Test and analysis

Reporting and verification

Verification notification

Post verification

Programme Responsibility	OP + COP
<b>Objectives</b>	Disseminate verification results and control references to verifications
<b>Optional methods to be selected from</b>	Web publication of planning document(s)
	Web publication of report document(s)
	Web publication of verification statement
	Vendor use of ETV logo and results
	Public register of verifications
	Verification organization outreach

- Publication of joint verification statement or separate verification statements
- Publication of other documents according to program requirements as agreed in the process document or relevant section of contractual agreement

Quality management

Programme entry

Contractual agreement

Integrity and cooperation

Application definition

Performance parameters

Programme Responsibility	OP + COP	OP + COP
<b>Objectives</b>	Ensure proper vendor use of ETV logos and verification statement	Ensure validity of verification results over time if appropriate
<b>Optional methods to be selected from</b>	State terms of use in contractual agreement (see Chapter 4)	Apply limited validity of verification statement with requirement for prolongation
	Provide policy on ETV results use	Require information from vendor if product is changed for assessment of continued validity
	Surveillance and enforcement enabled	Surveillance and enforcement enabled
		Incorporate reporting of process changes in vendors ISO 9001 process, if existing.

Test data requirements

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Test and analysis

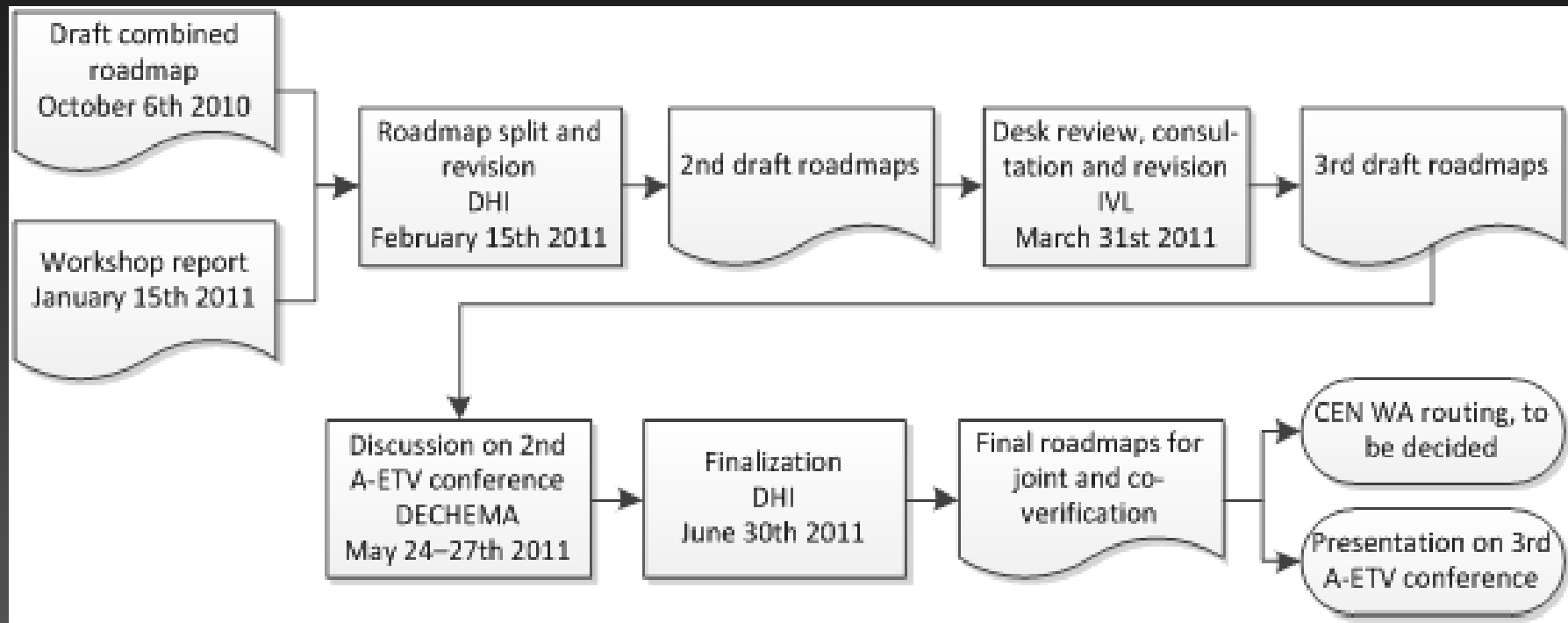
Reporting and verification

Verification notification

Post verification

- Terms of use of ETV logos and results must be clear for the vendor.
- Agreement between OP and COP(s) on handling of changes to verified products (including allowable product updates, if any) and any misuse of logos and statements.
- Ensurance of enforcement of any programme obligations relating to the validity (length of time that the verification statement is valid)

# The road ahead



- General comments from this discussion to be considered
- Final fine tuning to be done – ensuring consistency within and between the two roadmaps
- Possibly presentation a next SABE meeting planned for October 2011

# Thanks to all contributors



<b>ETV programmes</b>	<b>ETV operators</b>	<b>Other organizations</b>
EU ETV pre-programme	DHI (Denmark)	European Com-mittee for Standardiza-tion
DANETV (Denmark)	IVL (Sweden)	Institute for Prospective Technologi-cal Studies (EU)
US EPA ETV	Tecnalia (Spain)	Environment Agency (United Kingdom)
Canadian ETV program	Battelle (United States)	HACH-LANGE (Germany)
ETV Korea	OCETA (ETV Canada)	DECHEMA (Germany)
ETV Japan		Deltares (Nether-lands)
ETV Philippines		Institute for Ecology of Industrial Areas (Poland)
		et environ-ment and technology (Germany)

# Want more information?



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