

Abstract template for the conference “A century of national forest inventories – informing past, present and future decisions”

Abstract title:		A flexible technology solution for multiple NFI programmes
Take-home message:		Specific requirements of practical NFIs lead to development of an efficient flexible technology solution. This is currently shared across a variety of inventory projects in different countries worldwide.
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General topic, see website: (please double click on the check box and activate the relevant one)	<input checked="" type="checkbox"/>	Improving future NFIs by learning from the past
	<input type="checkbox"/>	NFIs today and in the future
	<input type="checkbox"/>	Cutting edge and futuristic inventory techniques and technologies
Preferred presentation form:	<input type="checkbox"/>	Oral presentation
	<input checked="" type="checkbox"/>	Poster
<p><i>Abstracts will be reviewed by members of our scientific committee and you will be given information on decisions in due time after the submission deadline has passed.</i></p>		

A flexible technology solution for multiple NFI programmes

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Introduction: The workflow of any NFI programme is supported by various software and hardware components. Technology is crucial for field data collection but also for preparatory phases, data processing and reporting phases. At the same time it is important to use technology which complements the sampling scheme, field data collection and data processing methods. Technology should fulfil and align to methodological requirements, not vice versa.

Materials, methods and results: NFI programmes have a lot of common features but also a lot of variations related to project aims, natural conditions, scope of the inventories, periodicity, etc. Together with the political importance of NFIs, these are the reasons why the most common approach has been to develop a specific technical solution for given NFI. However it is challenging to develop an efficient and sustainable solution considering *i)* the complexity of developing such solution, *ii)* the challenging maintenance determined by NFI periodicity and *iii)* the limited number of users.

This contribution presents another approach, a flexible technological solution capable of encompassing the various requirements of various NFIs. The software component must handle a broad variations of the following aspects: natural conditions, scope of inventory (landscape, forest land or timberland), sampling schemes (simple or stratified sampling, randomized, clustered plot distribution), periodicity (length of inventory period, continuous inventory; repeated measurement on permanent plots), plot design (segmented plots, stratified subplots, variable sized plots), field methodologies, direct support of measurement devices, extent of NFI (number of teams), logistics (summer, winter, whole year season; team communication, etc.), database engines, database structures, language localizations and customization, map projections, integrated models (e.g. volume and biomass calculation), statistical data processing including repeated inventory survey.

The idea behind the presented approach is a naturally developed collaboration between a small team of software developers at IFER and NFI experts from multiple countries. The role of software developers is to continuously develop a software platform that can be used to readily create and maintain the particular applications of respective NFIs. This platform, called Field-Map, provides all functionality for practical implementation of NFI programmes that meets the needs of various countries.

Applications are developed and maintained by NFI teams within the countries, who retain full copyright on the bespoke system that has been developed for their country. This requires knowledge of forest inventory survey methods and database management but not necessarily the ability to program software. As a result, Field-Map has removed barriers to the implementation of NFI programmes through the provision of software functionality that enables countries to proceed in a fast and efficient manner. This includes possible integration with other software tools (GIS, statistical packages, etc.).

The poster presents technology-relevant features of NFIs of the cooperating countries: Ireland, Belgium, Czechia, Slovakia, Hungary, Iceland, Russia, Cape Verde and the Ukraine. It demonstrates an approach based on shared experience that has been functional for 15 years.

Conclusion: Specific requirements of NFIs programmes has led to the development of an efficient, flexible and practical technology solution that is currently in use across a variety of inventory projects in different countries worldwide.

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