

Guidelines for setting up national STIO

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Why implementing a monitoring and evaluation system (MES) ?

- Innovation: a complex system
 - Multiplicity of actors and interactions
 - Decisions require adequate quantitative and qualitative information
- > ***Need for basic tools for STI policy***
- Forecasting analyses
 - Production of indicators
 - Studies, etc.
 - Institutionalization of these activities: MES

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Functions of the MES

- Provide information on basic NIS indicators (including OECD indicators)
- Produce indicators and statistics tailored for the specific needs
- Facilitate the flow of information among NIS actors
- Produce studies and research for decision making
- Predict opportunities, needs and problems (forecasting and strategic vigilance)

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MES: a system of distributed intelligence

- Conceived in the national and international contexts
- With the participation of NIS actors
- One of the essential dimensions: Observatory for science, technology and innovation (STIO)

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What is a STIO ?

1. Basic concepts

- **STIO: the main instrument of the MES**
specialized in strategic intelligence for decision makers and stakeholders
 - **Two guiding principles:**
 - Participation of actors and stakeholders
 - Objectification : provision of adequate indicators, analysis and data processing mechanisms
- > ***Help for decision making, adoption and implementation of measures***

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What is a STIO ?

2. General objectives

- Production of indicators on STI
- Contribution to the development of national system information system in S&T through technical assistance and training
- Promotion of methodologies in the production of STI indicators
- Promotion of their use in strategic and forecasting studies
- Cooperation with international agencies in its field of competences

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Production of indicators

1. General concepts

- **Indicators # Statistics and primary data**
 - Bridge the gap between detailed data and interpreted information
 - A process rather than a product
 - Lead to better decisions by implying, clarifying and making aggregated information available for policy makers
- **Should be:**
 - Reproducible and comparable (over time and across space)
 - Easy to interpret and understand
 - Dependant on data available, documented, of known quality and updated
 - Policy relevant
 - Robust: scientifically built, conceptually well -founded

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Production of indicators

2. Four major categories

- 1. Input indicators**
 - Measurement of R&D resources : expenditures and personnel
 - Built using international standards (Frascati manual) for international comparisons
 - And/or tailored to local needs
 - **Primary data: surveys**
- 2. Output indicators**
 - Measurement of tangible results of R&D activities (e.g. scientific publications and patents)
 - Allow comparison of the S&T production at different levels: national, local, institutions
 - **Primary data: existing databases, or surveys**
- 3. Innovation indicators**
 - Technological product and process innovation
 - Built using international guidelines (Oslo manual)
 - **Primary data: surveys**
- 4. Outcome indicators**
 - Measurement of non academic impact of R&D
 - Difficult construction
 - Alternative methods

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Socio-economic impacts of STIOs

- **For policy makers:**
 - Regular review of the NIS
 - Measurement of the effectiveness of public sector efforts and then readjustment of the policy
 - Knowledge on the industrial sector
 - International and regional comparisons
- **For public research actors:**
 - Identification of strengths and weaknesses
 - Comparison between institution and competition
 - Development of the cooperation with the companies
- **For the industrial sector:**
 - Development of cooperation with the public sector
 - Element of competition
 - Identification of the strategic sectors
- **For the society:**
 - Transparency of national policies

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Different models of STIOs in the world

1. Functions

STIO	Production of data	Production or systematization of indicators	R&D activities (e.g. development of new methods)	Forecasting analysis and macro-evaluation
Australia		X		
Canada		X	X	
Colombia	X	X	X	X
France		X	X	X
Netherlands		X		
Norway	X	X	X	X
Portugal	X	X		

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Different models of STIOs in the world

2. Institutional positioning

STIO	Dependent on the national administration	Independent from the national administration
Australia	X	
Canada		X
Colombia		X
France		X
Netherlands		X
Norway		X
Portugal	X	

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Different models of STIOs in the world

3. Funding models

STIO	Public funding	Cooperative funding
Australia	x	
Canada		x
Colombia		x
France		x
Netherlands	x	
Norway	x	
Portugal	x	

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Different models of STIOs in the world

4. Production

STIO	National indicator report	Access to STIO products on the Web	Studies on specific area
Australia	x	x	
Canada			x
Colombia	x	x	x
France	x	x	x
Netherlands	x		
Norway	x	x	x
Portugal	x	x	

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Elements of comparison

- **As a part of the national MES embedded in the NIS:**
 - > Modalities and functions varied significantly depending of
 - The history of the MES
 - The general form of the State organization
 - The roles they play
- **Common features:**
 - Production of indicators constitutes an adding value to available statistical information
 - The majority are independent from the national administration, with a significant degree of autonomy
 - The public sector is the main funder
 - The main product is a national indicator report

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Common design conditions

1. Sound political support, tied to a clearly defined mission and work programme
2. A balance between representative governance of the STIO and management autonomy for the director
3. A funding model compatible with the STIO mission and work programme
4. A portfolio of products which represents the STIO work, guaranteeing its quality and usefulness
5. A generation of learning capacities in the STIO
6. A network of cooperation with institutions, groups and individuals at national and international levels

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Guidelines for setting up a STIO

- Political initiative: To benefit from strong political support
- Previous analysis: To review existing resources relating to the STIO
- Definition: STIO roles and objectives, organizational design
- Planning: Inventory of the necessary resources
- Formal constitution and planning of the implementation stages

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Necessary resources

- Salaries of the STIO team:
 - Executive director
 - Technical team specialized in STI indicators
 - A specialist and an assistant for database management
 - Administrative staff
- Goods and services
- Publications and dissemination
- Subcontracting studies and training, technical assistance, research and consultancy
- Databases and IT services

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Conclusion

- Creation of an STIO: an important political decision requiring the consent of the stakeholders
- Complex conditions for setting up
- Gradual process which takes time and resources
- Eventual need for outside support

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