



# IIAS Conference Expert Forum on Wireless Radiation & Environmental Health

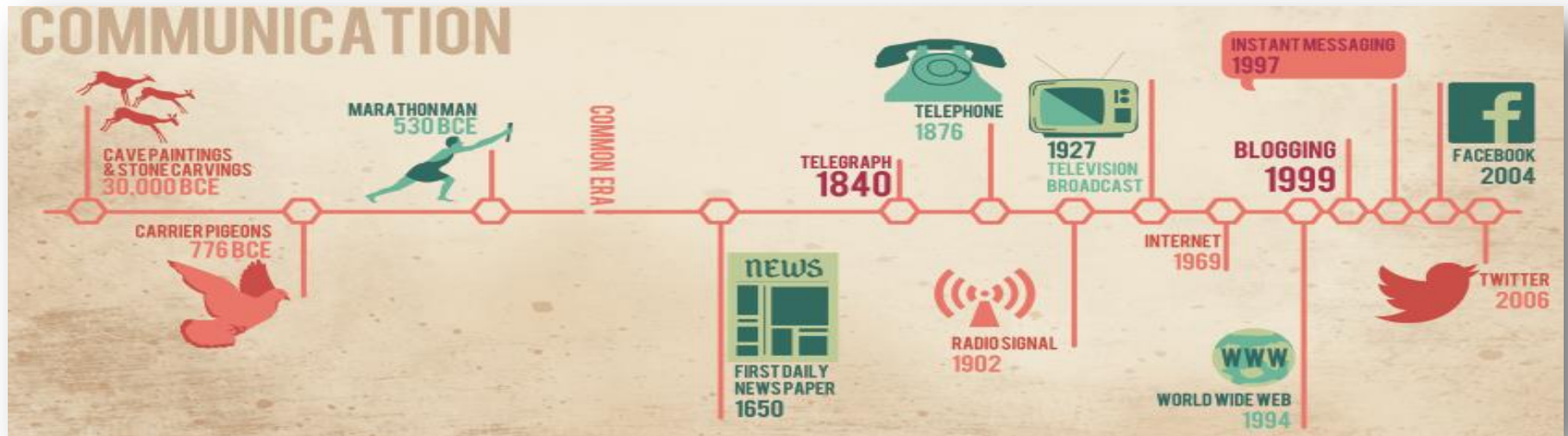
Jerusalem; January 24, 2016

## **TNUDA - A bridge between science, information, policy & health**

- **Background & the establishment of TNUDA**
- **Vision & goals**
- **Center's activities**
- **Future goals**



# ***The Communication Era: from a Carrier Pigeon to Twitter***

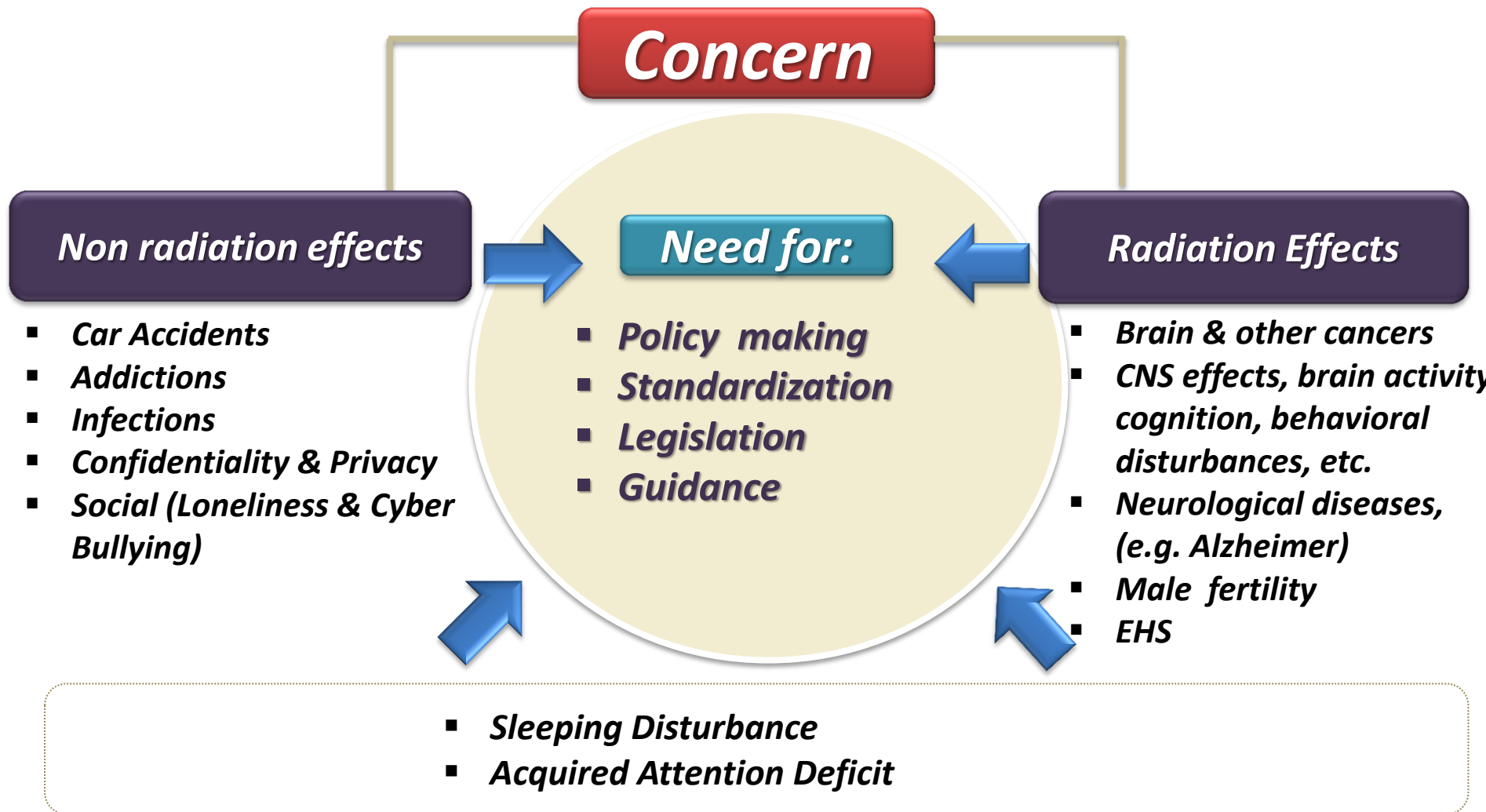


***In the 21<sup>st</sup> century more & more technologies involve emitted non-ionizing radiation***



# The Communications Revolution in the 21<sup>st</sup> Century

**Benefits:** Social communication , emergencies, Accessibility to data, New uses (e.g., medical diagnosis & follow-up, especially in developing countries)



# THE ABSENCE OF EVIDENCE



# IS NOT THE EVIDENCE OF ABSENCE

***All studies concluded that:***

***These studies are not sufficient for assessing risk among the “heavy users”, and after a relatively long time***



# IARC cancer classifications



International Agency for Research on Cancer  
Centre International de Recherche sur le Cancer

PRESS RELEASE  
N° 136

27 June 2001

IARC has now concluded that ELF magnetic fields are possibly carcinogenic to humans, based on consistent statistical associations of high level residential magnetic fields with a doubling of risk of childhood leukaemia.

## Non-Thermal Effects:



PRESS RELEASE  
N° 208

31 May 2011

### IARC CLASSIFIES RADIOFREQUENCY ELECTROMAGNETIC FIELDS AS POSSIBLY CARCINOGENIC TO HUMANS

Lyon, France, May 31, 2011 -- The WHO/International Agency for Research on Cancer (IARC) has classified radiofrequency electromagnetic fields as possibly carcinogenic to humans (Group 2B), based on an increased risk for glioma, a malignant type of brain cancer<sup>1</sup>, associated with wireless phone use.

## Known Thermal Effects (Heating)

In 2011 a multidisciplinary IARC Working Group classified radiofrequency (RF) radiation emitted by mobile phones as "possibly carcinogenic to humans"

**2B – POSSIBLY  
CARCINOGENIC TO HUMANS**

IARC uses 5 different levels of evidence in classifying potential carcinogens:

- **Group 1:** human carcinogens;
- **Group 2B:** possible carcinogens;
- **Group 4:** not a carcinogen
- **Group 2A:** probable carcinogens
- **Group 3:** inconclusive carcinogens

***High & Changing  
Exposure to NIR***



- ***Scientific facts in dispute***
- ***Indication for a positive association***
- ***IARC classification as possible carcinogen***



***What should we do  
in order to maintain  
public health?***





# ***Non Ionizing Radiation & The Precautionary Principle***

***Reasonable precautionary measures should be taken to minimize the 'risk', even in the absence of sufficient scientific evidence of harmful health effects***

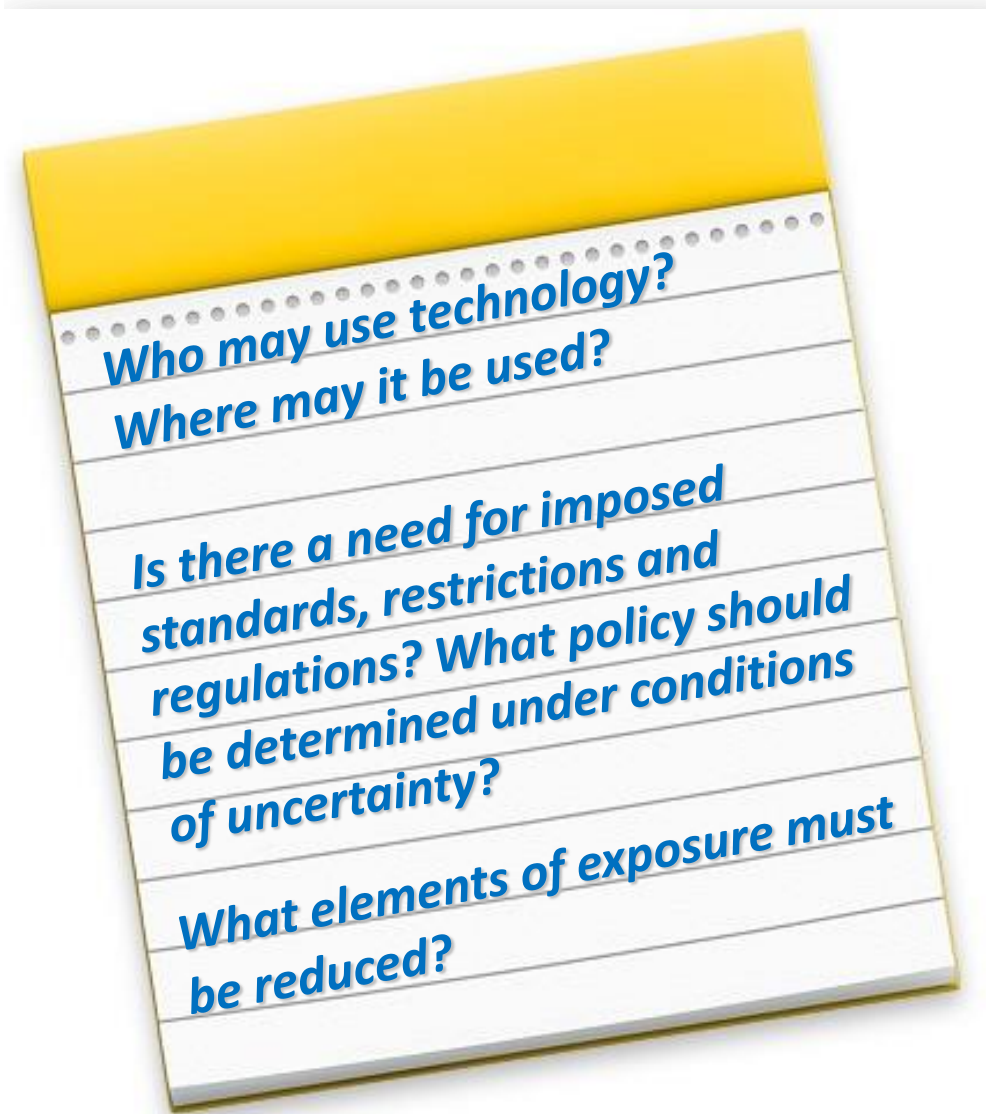
***The most important rule for reducing NIR exposure is distancing the radiation source from the body; based on the fact that radiation is significantly reduced when increasing the distance away from the source***

***The Public***

***The Individual User***



***Issues that  
require decision-  
making in the  
field of non-  
ionizing radiation***







# ***Interest groups that require protection against radiation exposure in public spaces***



- ***Some groups demand protection from exposure to radiation. For example:***
  - ***Parents Organizations (Supreme court on Wi-Fi)***
  - ***Neighborhood committees: Struggle against placing antennas***
  - ***Electromagnetic Hypersensitivity (EHS)***

***How much weight should be given to these subgroups in the population?***



## ***Israeli Governmental Resolution No. 473816 2006***

***" There is a need to establish a national center for information on non-ionizing radiation and its effects on public health, which will collect and compile the accumulated knowledge on non-ionizing radiation, analyze it, and make it available to the general public and to the decision makers".***

# ***Establishment of the Information Center***

**2005: Directors general committee:** Recommendation to establish a knowledge center to examine the effects of non-ionizing radiation on public health

**2006: Government resolution:** To adopt the Director general's committee's recommendation ; to publish a call for proposals ; to establish a steering committee for the center

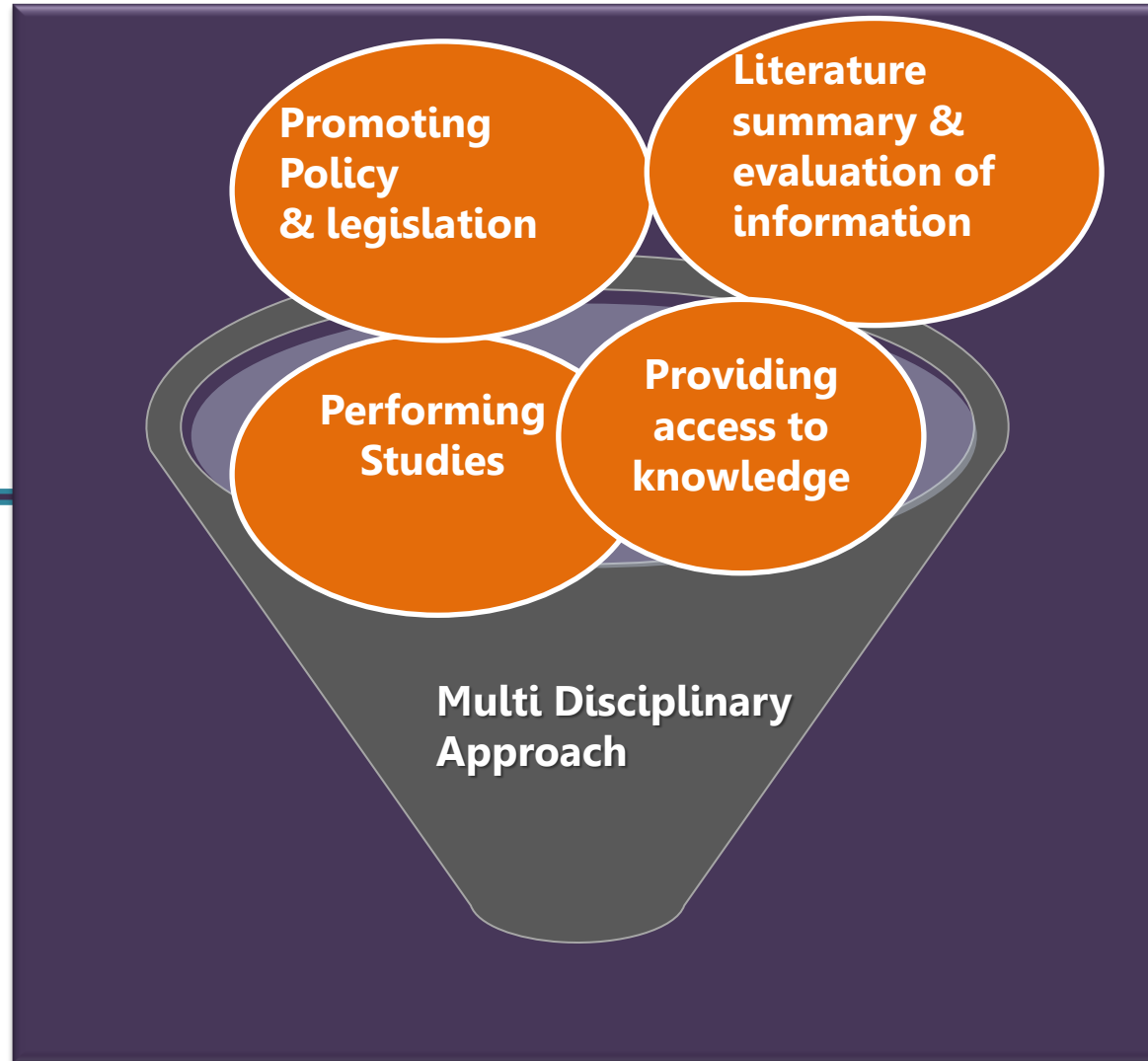
**9/ 2012: Call for proposals** (issued by the Ministry of Science, Technology & Space)

**12/ 2012: Announcement of award recipients :**  
Gertner Institute & HIT (Head of center: Prof. Siegal Sadetzki )

**2013-2015: Establishment & operation of TNUDA center**

**2016: The TNUDA activities continues at the Cancer & Radiation Epidemiology Unit at the Gertner Institute.**

# TNUDA Center

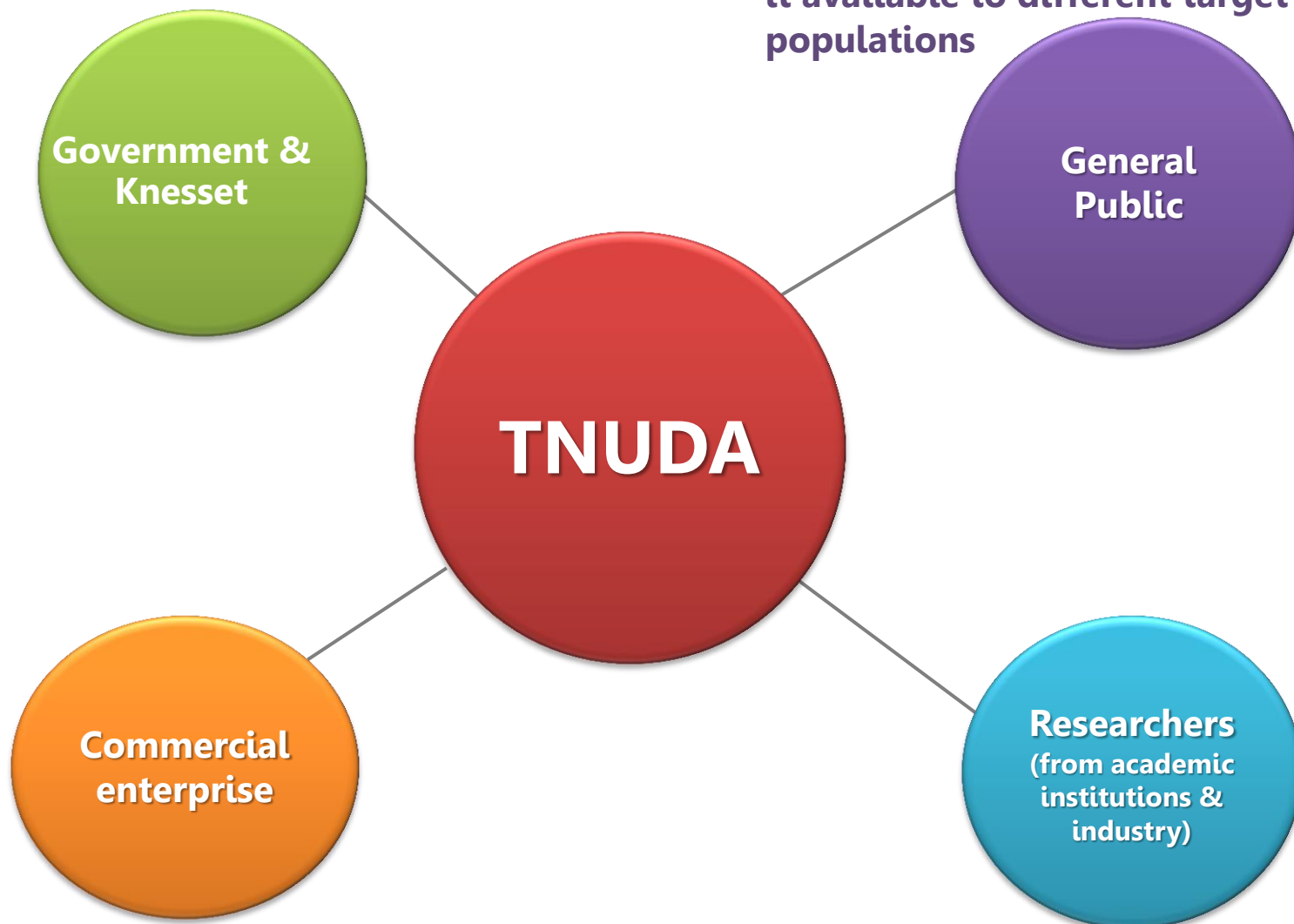




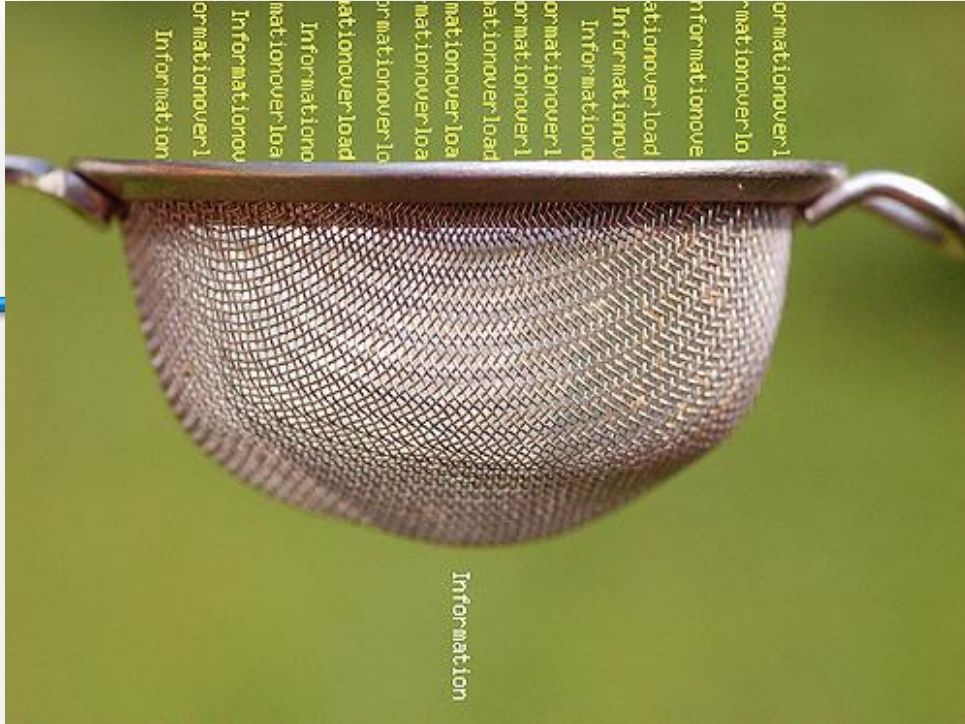
# Target Audiences

The center provides information required for decision-making & legislation & recommends measures to reduce potential health hazards

The center acts to expand knowledge in the field and make it available to different target populations



# The TNUDA Center



**Providing  
access to  
knowledge**

# Launching the "TNUDA" website

[www.tnuda.org.il](http://www.tnuda.org.il) / September 2014

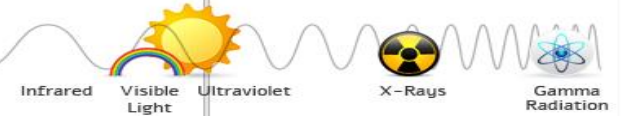


*To date, more than 200 articles & other items have been published on the website on a variety of topics such as health, dosimetry, legislation, policy & physics*

### Non-Ionizing Radiation



### Ionizing Radiation



### News & Events

Launching of the TNUDA Information Center Website

26/10/15

Activity Report on Non-Ionizing Radiation in Israel for 2015-2016

05/06/16

Supreme Court Rejects Petition on the Use of Wireless Networks in Schools

16/07/16

### In the Spotlight



**Public Debate on the use of the wireless network (Wi-Fi) in schools**

...

[Read More >](#)

### FAQ

Do underfloor heating systems cause exposure to non-ionizing...

How can a microwave oven be used safely?

Is there a risk of exposure to radiation from the home desktop...

What is the minimal distance allowed between electrical installations...

[More Questions >](#)



**I Have a Question**



### Mobile Phones



**Addiction to Mobile Phones**

Frequent reading of e-mails, automatic logging on to...

[Read More >](#)

**For Children & Adolescents:**

What you should know, and what you should let others know





# Writing articles for the website

## How can a microwave oven be used safely?

## FAQ =



Microwave ovens heat and cook food by microwave radiation that causes food molecules, and especially water molecules, to rotate thereby generating heat. When the microwave oven's door is closed, the oven's chamber becomes a Faraday cage (a closed chamber that is impenetrable to electric fields, named after the physicist Michael Faraday). The microwave oven door is made of glass but is shielded by an iron screen, preventing radiation from escaping the closed chamber.

As long as the microwave oven is undamaged, that is, the microwave oven door is sealed, closes correctly and there are no holes in the door's screen, it is safe to use the oven and remain in its vicinity.

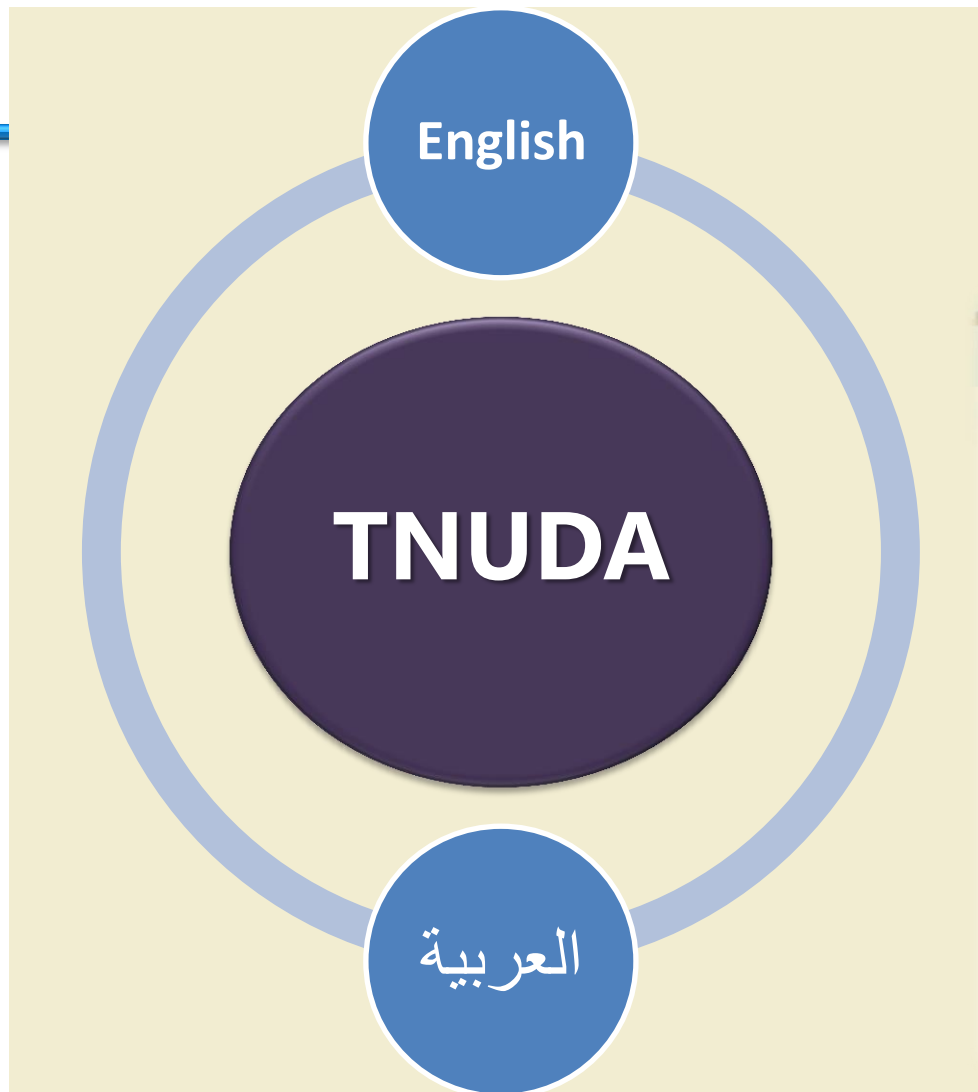
If there is concern that the microwave oven is faulty. For example, if the door is not sealed, there is a hole in the door's iron screen or in the oven's chamber, it is recommended not to use it.

When the microwave oven is operating it is recommended, as a safety precaution, to be at a distance of 50-100 cm from it.

A Ministry of Environmental Protection-authorized radiofrequency inspector can check the intactness of the microwave oven. For your convenience a list of approved inspectors for conducting measurements of non-ionizing radiation may be found in the following link:

<http://www.sviva.gov.il/subjectsEnv/Radiation/measurements/Pages/default.aspx>





# TNUDA in Israel & abroad



77 תב"ש 2013 « ערבי » السياسة والتشريع » سياسة وزارة التربية والتعليم في موضوع استخدام WI FI في المدارس

**سياسة وزارة التربية والتعليم في موضوع استخدام WI FI في المدارس**

في مجال العرض للأشعة غير المؤينة بنيت وزارة التربية والتعليم سياسة وزارة الصحة ومركز توداع لاستيعاب مبدأ الحد الأدنى. بناء على هذه السياسة، يجب التقليل بحد الأقصى من تعرض التلاميذ لهذه الأشعة، من خلال الموازنة بين المحافظة على صحة الأطفال واستخدام التقنيات المتقدمة.

وزارة التربية والتعليم، التي تنشر توجيهات وإجراءات في مناسبات المدير العام في مواضيع مختلفة، بلورت رأياً أيضاً في موضوع الـ WIFI ونشرت إجراءاتها في مناسبات المدير العام.

مستور مدير عام وزارة التربية والتعليم، 8.7.13 2013/10

تُشر في 8.7.13 مستور المدير العام الأخير في موضوع "رفع معدلات اتصالات وأجهزة طرفية في المدارس - نداعات صحة" (3.6-11، 2013/10)، الذي ينطبق على موضوع الوصول إلى الإنترنت في المدرسة. سرى مفقود، مستور المدير العام في 27.8.13 واستند، مناسبات المدير العام السابقة في هذا الموضوع. في هذا المستور، حددت وزارة التربية والتعليم أنه عند الحاجة (كما ورد في المستور)، يمكن تركيب شبكة لاسلكية رهبا بغير خاصة كما سيتمثل فيما يلي.

**فيما يلي التوجيهات الرئيسية في المستور:**

استند المستور على توصيات تلورت في مستند أعده طاقم أقيم بين الوزارات وشغل وزارة التربية والتعليم، الوزارة لحماية البيئة ووزارة الصحة. **هدف التوجيهات كما جاء في المستور، هي التقليل للتعرض للأشعة والأدنى والتقليل قدر الإمكان من تعرض التلاميذ والهيئات التدريسية للأشعة غير المؤينة الناتجة عن استخدام أجهزة اتصالات، أجهزة طرفية أو أجهزة أخرى.** كذلك بناء على المستور، المحافظة على الإجراءات وتضمينها على زوار المدرسة، يساعد في الموازنة بين الاحتياجات التكنولوجية المتطورة وبين المحافظة على صحة التلاميذ وطاقم المدرسة.

توجيهات في موضوع الأشعة من أجهزة WLAN WIFI وأجهزة طرفية في استخدام المعلمين والتلاميذ.

**عربي**

ما هي الأشعة؟

نداعات صحة

السياسة والتشريع

مبدأ الحد الأدنى

قانون الأشعة غير المؤينة

توصيات وزارة الصحة لاستخدام دكي للهواتف الخلوية

**سياسة وزارة التربية والتعليم في موضوع استخدام WI FI في المدارس**

الأشعة تردد منخفض جداً وشبكة الكهراء

أسئلة شائعة

**Visit us on the website:**  
**[www.tnuda.org.il](http://www.tnuda.org.il)**

## ***Balancing between two principles***



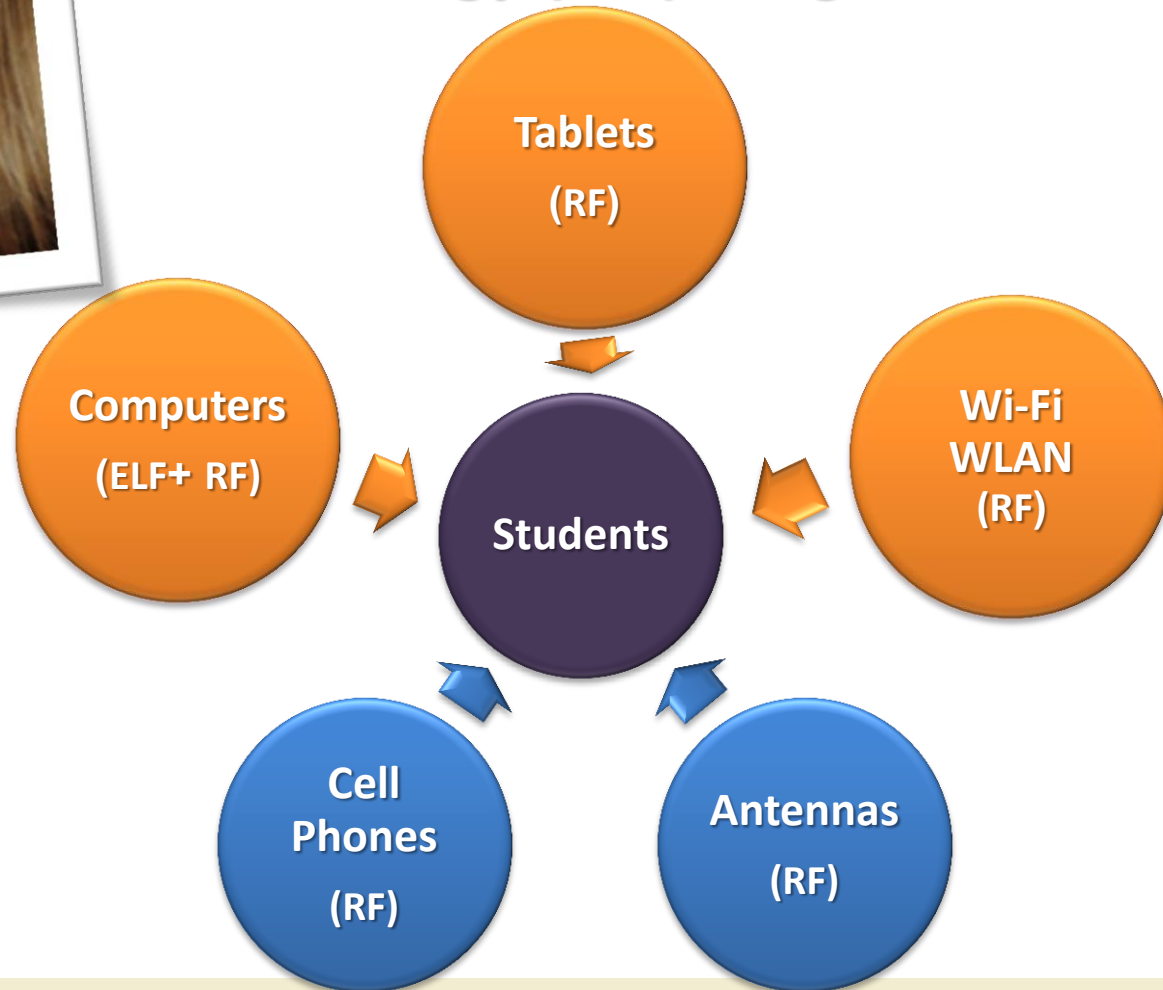
***Advanced  
technology***

***Protecting  
children's health***

**Promoting Policy  
& legislation**

***A case study in health  
policy in Israel***

# ***The National Information and Communication Technology (ICT) Program***



- *In 2003, the International Communication Union (ITU) stated as its goal the introduction of access to knowledge through rapid communication technologies in all schools*
- *Israel decided to join this mission and introduce information technology to the teaching environment*



# Should schools be NIR free environment?

The guiding principle:  
There is a moral and legal  
duty of the educational  
system and the state to  
protect student's health by  
implementing the  
precautionary principle



# A Case study in health policy in Israel: NIR in schools

## Position paper 2010

- Following a discussion at the Knesset a position paper on “Electromagnetic radiation in the student environment” was issued.
- Identification of sources of NIR’S in the school environment:

### **Cell phones**

Personal exposure  
Parents’ decisions

### **Wi-Fi**

Low radiation but  
continuous exposure

### **ELF**

- Lead to a comprehensive discussion on the steps to be taken to reduce this exposure and protect student health.

## Director General Statement 2011\*

- “Educated Use of Mobile Phones”

## Supreme Court Petition 2012 (Verdict on 2015)\*

- Against the Ministry of Education by the National Parents' Association & others, demanding not to allow installation or operation of wireless internet connections in schools
- Supreme Court dismisses the petition

# A Case study in health policy in Israel: NIR in schools

Updated Director  
General  
Statement 2013\*

- Wireless network could be installed, with certain restrictions



Director General  
Statement 2015

- "Promotion of optimal educational atmosphere and contending with events of violence and danger in educational institutions":
  - Schools must **determine** network behavior policies
  - The school management is **entitled to prohibit the use of mobile phones at school**, or restrict their use, in accordance with staff directives
  - It is recommended to **refrain from bringing** mobile phones to school
  - Using personal technology during the lesson is **permitted only for the purpose of learning activities**









Director General  
Statement 2016

- "The use of end-user-devices of students for learning":
  - A balance between the use of "E-Learning" and use of physical learning materials
  - Ensuring equality & availability of end-user- devices for "E-Learning" for all of the students
  - Determined the amount of time needed for "E-Learning" in the class & for homework
  - Determined that pedagogical activities will be using a computer or tablet only.



# **Director General Statement: “Educated Use of Mobile Phones” (2011)**

## ***Recommendations for educated use of cell phones***

	<b><i>Reduction of call duration &amp; total number of calls</i></b>
	<b><i>Preferring texting rather than calling</i></b>
	<b><i>Use of corded earphones</i></b>
	<b><i>Holding the device away from the body</i></b>
	<b><i>Designation of mobile phone "calling areas"</i></b>
	<b><i>Introduction of public telephones in schools</i></b>
	<b><i>Avoidance of use of mobile phones at night</i></b>
	<b><i>Avoidance of mobile phone use in areas with poor reception (e.g. in elevators)</i></b>



# ***Supreme Court's verdict***



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The court stated that the use of wireless networks in schools is clearly an **issue for professional expertise**, and that it could not declare that the policy outlined in the CEO Circular of 2013 was unreasonable to an extent justifying intervention of the court





# ***Director General Statement: "Introduction of Communications Equipment & end-user-devices at schools – Health and Safety Considerations " (2013)***

## **Based on recommendations of an inter-ministerial team**

**Where installation of a wired network alone is not feasible, a wireless network could be installed, under the following limitations:**

- **Age limitation** - for grade 1 upwards but not in kindergartens. For grades 1-3, duration of use per day is limited:
  - For grades 1-2: 1 hour/day and no more than 3 d/w (Total: 3 h/w)
  - For grade 3: up to 2 h/d and no more than 4 d/w (Total 8 h/w)
- In each class, **a wired access point** at the teacher's post should be installed.
- wireless network should be **disconnected** when not in use for teaching purposes.
- **Radiation measurements** (RF and ELF) must be made before and after installation, to ensure that the radiation levels are in accordance with the requirement of the Ministry of Environmental Protection.
- Each school must apply an **age-adapted program** to provide **information on electromagnetic and radiofrequency radiation**.

# Exposure of multiple sources in classrooms

**Professional dispute among experts** regarding the exposure assessment of multiple radiation sources while surfing the web (tablets, laptops & cell phones) in a class of 30 students:

By using many devices in the same space the exposure of the students is “**environmental**” and is “**accumulated**” in the classroom

Moreover, it is not adequate to evaluate the exposures by addressing the INCRIP guidelines (as they do not consider non thermal long term effects)



By using many devices in the same space the exposure of the students is **personal** and **is not accumulated** in the classroom  
Moreover, the level of exposure to Wi-Fi is very low in relation to ICNRIP guidelines

(Thomas Mann, C-K. Chou).



**Stakeholders  
participation in  
decision-making**





## “מחוברים ומשפיעים - טכנולוגיה בראי בעלי העניין” סדנא לקביעת מדיניות בתחום הקרינה הבלתי מייננת

### Goals and targets:

- Brainstorming to define and evaluate the most important issues in the field of NIR that require health policy
- Collection & summary of the various stakeholders opinions
- Create a forum that includes stakeholders who are relevant to the issue in Israel



Industry

Academic

Local  
Authority

Government  
Offices

Press

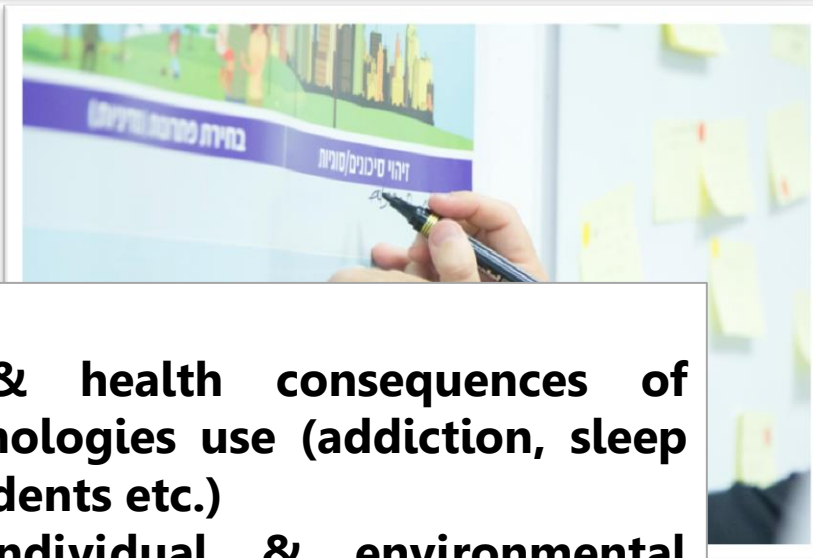
General Public

NGO'S (social / environmental  
/ health)



# "מחוזרים ומשפיעים - טכנולוגיה בראי בעלי העניין"

סדנא לקביעת מדיניות בתחום הקרינה הבלתי מייננת



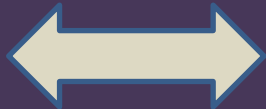
## The conference sessions:

- Broad behavioral & health consequences of communication technologies use (addiction, sleep disturbances, car accidents etc.)
- Tension between individual & environmental exposure.
- Dealing with ever-changing technologies.
- Utilization of communication technologies in the school environment.



# ***TNUDA Center - Facing the future***

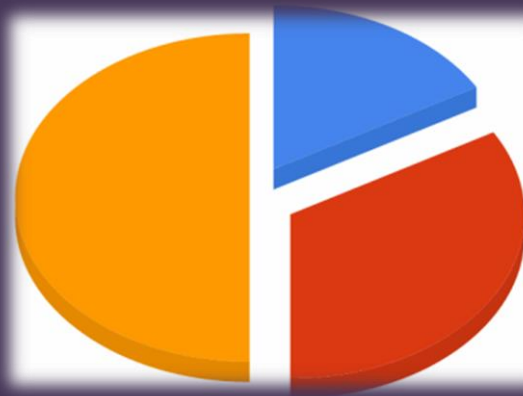
## **Studies**



## **Setting policy**

## **Public service**

- To be in the forefront of international research (content and partnership)
- To explore issues that are unique to Israel
- To conduct multidisciplinary research
- Specific new topics:
  - To examine the possible effects of in-utero exposure to MRI on neurobehavioral & hearing outcomes
  - To assess the possible association between childhood exposure to MRI and cancer



**Provide information required for decision-making & Recommends measures to reduce potential health hazards**



- Access to reliable & accurate information
- Answering all audiences

# THANK YOU FOR YOUR ATTENTION

