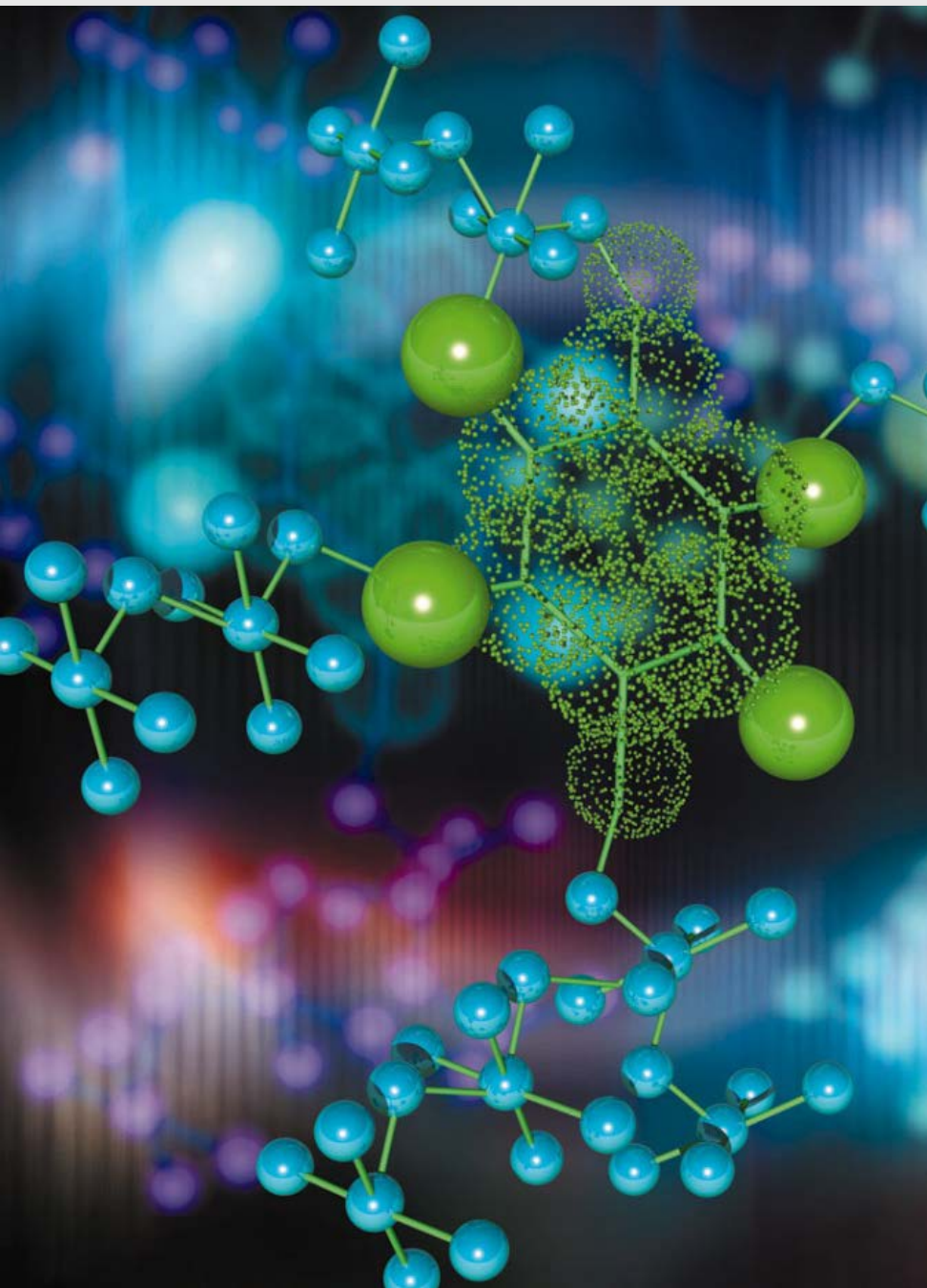


ENABLING INNOVATION IN SCIENCE EDUCATION LOGICAMENTE

Anne-Marie Bruyas
Città della Scienza, Naples, Italy

NAMES General Assembly, 7-9 November 2014, Bursa, Turkey



The prime mover that pulls the development of our civilization is the **scientific knowledge and the technological innovation.**

There can't be equitable development neither full democracy, as long as this great intangible resource will not belong to all the peoples, and to all the citizens of each country.

A country who want grow needs to invest in school and education.



To stimulate among young people the interest in mathematical and scientific subjects and for technical-scientific careers



Matematica Punteggio medio in PISA 2012

media OCSE	494	media OCSE	494
Shanghai-Cina	613	Federazione Russa	482
Singapore	573	Repubblica Slovacca	482
Hong Kong-Cina	561	Stati Uniti	481
Taipei-Taiwan	560	Lituania	479
Corea	554	Svezia	478
Macao-Cina	538	Ungheria	477
Giappone	536	Croazia	471
Liechtenstein	535	Israele	466
Svizzera	531	Grecia	453
Paesi Bassi	523	Serbia	449
Estonia	521	Turchia	448
Finlandia	519	Romania	445
Canada	518	Cipro ^{1, 2}	440
Polonia	518	Bulgaria	439
Belgio	515	Emirati Arabi Uniti	434
Germania	514	Kazakistan	432
Vietnam	511	Tailandia	427
Austria	506	Cile	423
Australia	504	Malesia	421
Irlanda	501	Messico	413
Slovenia	501	Montenegro	410
Danimarca	500	Uruguay	409
Nuova Zelanda	500	Costa Rica	407
Repubblica Ceca	499	Albania	394
Francia	495	Brasile	391
Regno Unito	494	Argentina	388
Islanda	493	Tunisia	388
Lettonia	491	Giordania	386
Lussemburgo	490	Colombia	376
Norvegia	489	Qatar	376
Portogallo	487	Indonesia	375
Italia ●	485 ●	Perù	368
Spagna	484		

Italian students are placed below the average OCSE scores in mathematics and science.

Mathematics results:

Average OCSE score: 494

Italian students score 485

This means: **32° position** on 65 countries

Maximum score: 613 (Shanghai-Cina)

Minimum score: 368 (Perù)

Source:

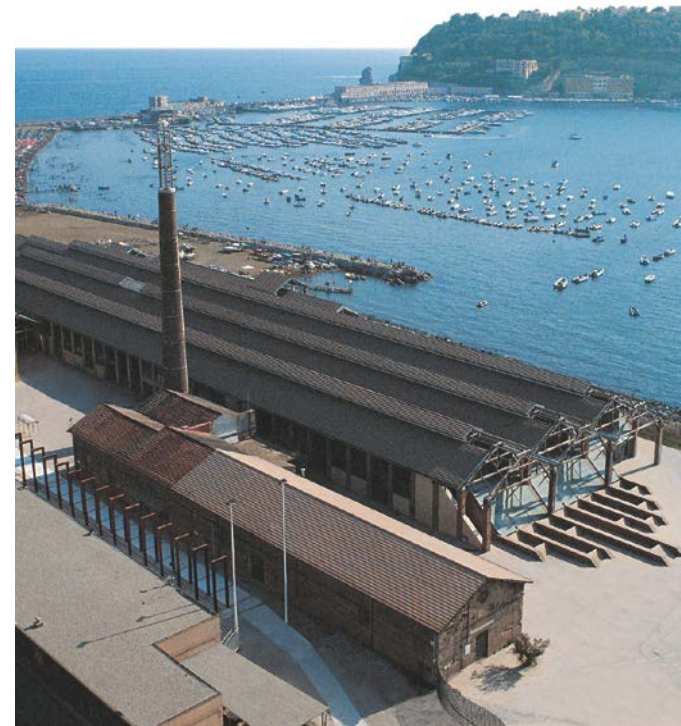
Programme for International Students Assessment

Pisa Results (2012)

AFTER THE FACTORIES' DISMISSION (1991), THE CONVERSION BEGINS!

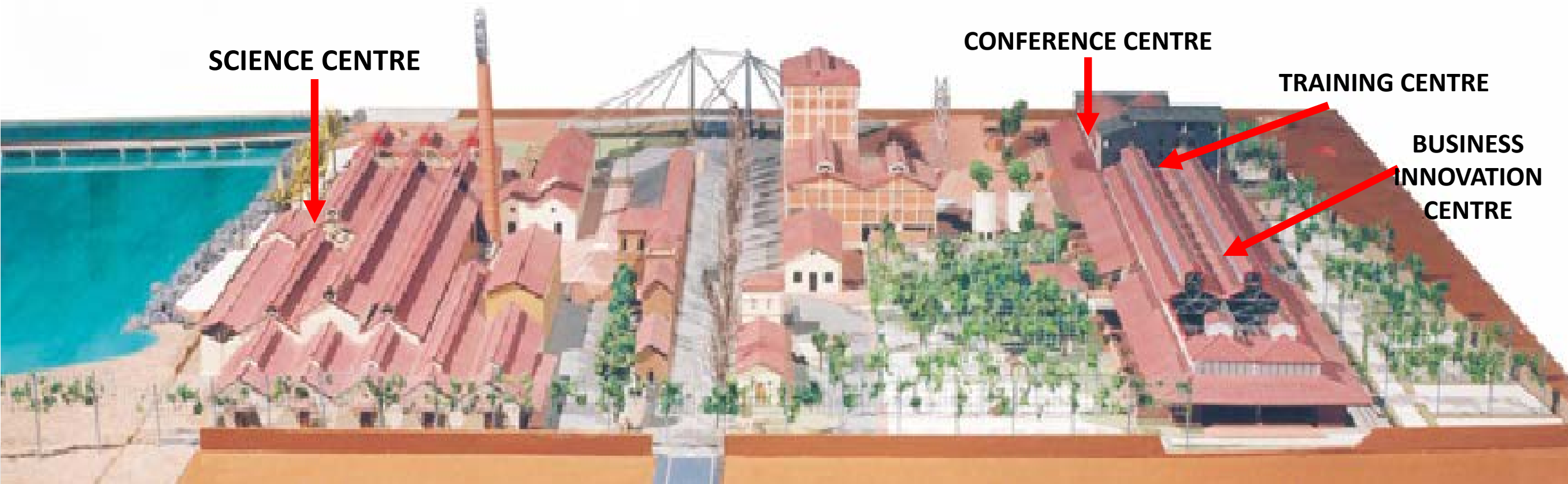
Città della Scienza takes up 7 hectares

Città della Scienza was born with the aim of contributing to the setting-up of a new model of development for the area based on science, technology and innovation!



OUR MISSION

“Dissemination and promotion of science and technology in society, supporting the capability of turning knowledge in **know-how, working opportunities, business, and a better quality of life**”





BUSINESS INNOVATION CENTRE

The Incubator is the main tool for promoting a **new entrepreneurship** and supporting processes of **innovation** and **development** in Naples and in the regional context

35 spaces for hosting **innovative startups** in the field of **ICT** and **environment**

- ❖ March 4, 2013: Città della Scienza was involved in a fire
- ❖ Active role of schools (teachers and students) in solidarity and mobilization activities after the fire event
- ❖ **involvement of teachers reinforced in the governance of the science centre**
 - Active participation in the development in programs and project activities



- ❑ Schools represent one of our main target groups (60% of our public)
- ❑ Not only hands-on exhibitions but also laboratories to experiment innovative didactics (LES).
- ❑ Italian Ministry of Research and Education gave a mandate to **Città della Scienza** to renew science education through the **promotion of informal and experimental methodologies**





Framework Agreement with MIUR



From March 2012: agreement between **Città della Scienza** and **MIUR** for the reinforcement of science education based on informal methodologies and inquiry-based approaches.

Three main initiatives:

- Smart Education and Technology Days
- National project LogicaMente
- Annual event Futuro Remoto

EXPERIMENTAL PROGRAMS

1. LOGICAMENTE a National project
2. Web Reporteen TV
3. Introduction of Fab Lab in schools
4. National Convention "Smart Education and Technology Days"





National project to support scientific and mathematics didactics (MIUR and Campania Region)

“Innovation Laboratory Network”
with 2 main functions:

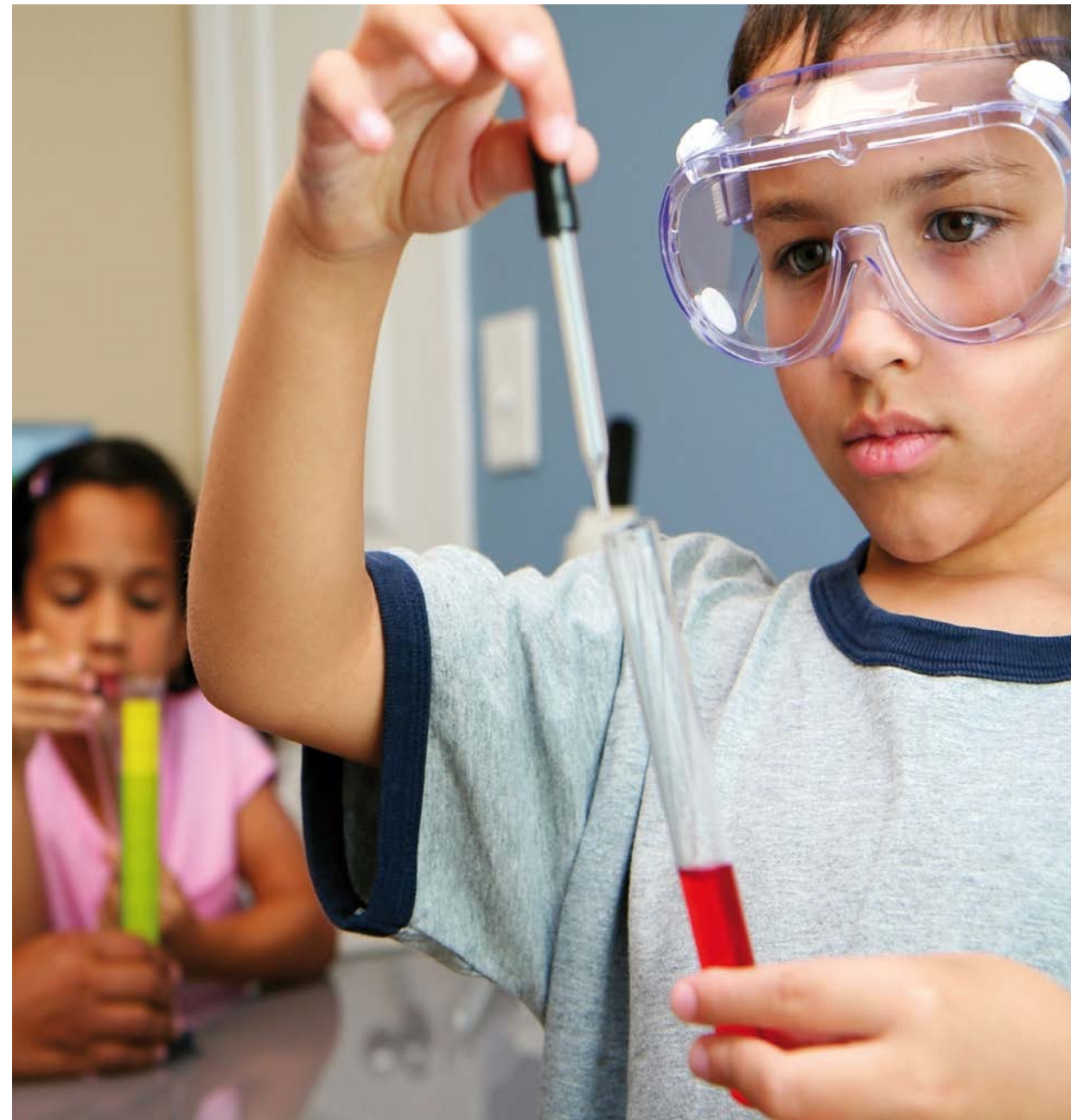
- ❖ research activity for collecting and sharing of experiences
- ❖ planning and developing innovative teaching methods in schools: in order to increase logical-mathematical and scientific skills of Italian students

Others institutions involved in the network:

- ☐ Museo Galileo (Firenze)
- ☐ Museo Nazionale della Scienza e della Tecnologia "Leonardo da Vinci" (Milano)

Project main goals:

- ☐ increase scientific competences
- ☐ use of scientific knowledge in real life contexts
- ☐ To enroll new students in science and technology studies



Project innovative methodological elements:

- ❖ **Experimental teaching**: opportunity to be more confident with math and science through the use of new information technologies
- ❖ **Networking at national and interregional level**: promotion of interdisciplinary education and knowledge dissemination, exchange among schools
- ❖ **Development subjects**: logical-mathematical knowledge and competences , problem solving, inquiry-based and collaborative approaches.





FONDAZIONE IDIS
CITTÀ DELLA SCIENZA

2/WEB REPORTEEN SCHOOL

- A school of TV journalism for youngsters with experts and professionals
- Promoted by Città della Scienza and the Regional School Directorate with the telecommunication company WIND
- A network among all schools (200) based on six school hubs
- 6 editorial teams based in schools and a focal point at Città della Scienza for the productions of reports and reportages.
- A lab for TV production with equipment and infrastructures
- one millions of end-users





FONDAZIONE IDIS
CITTÀ DELLA SCIENZA

2/WEB REPORTEEN SCHOOL

www.reporteenschool.it

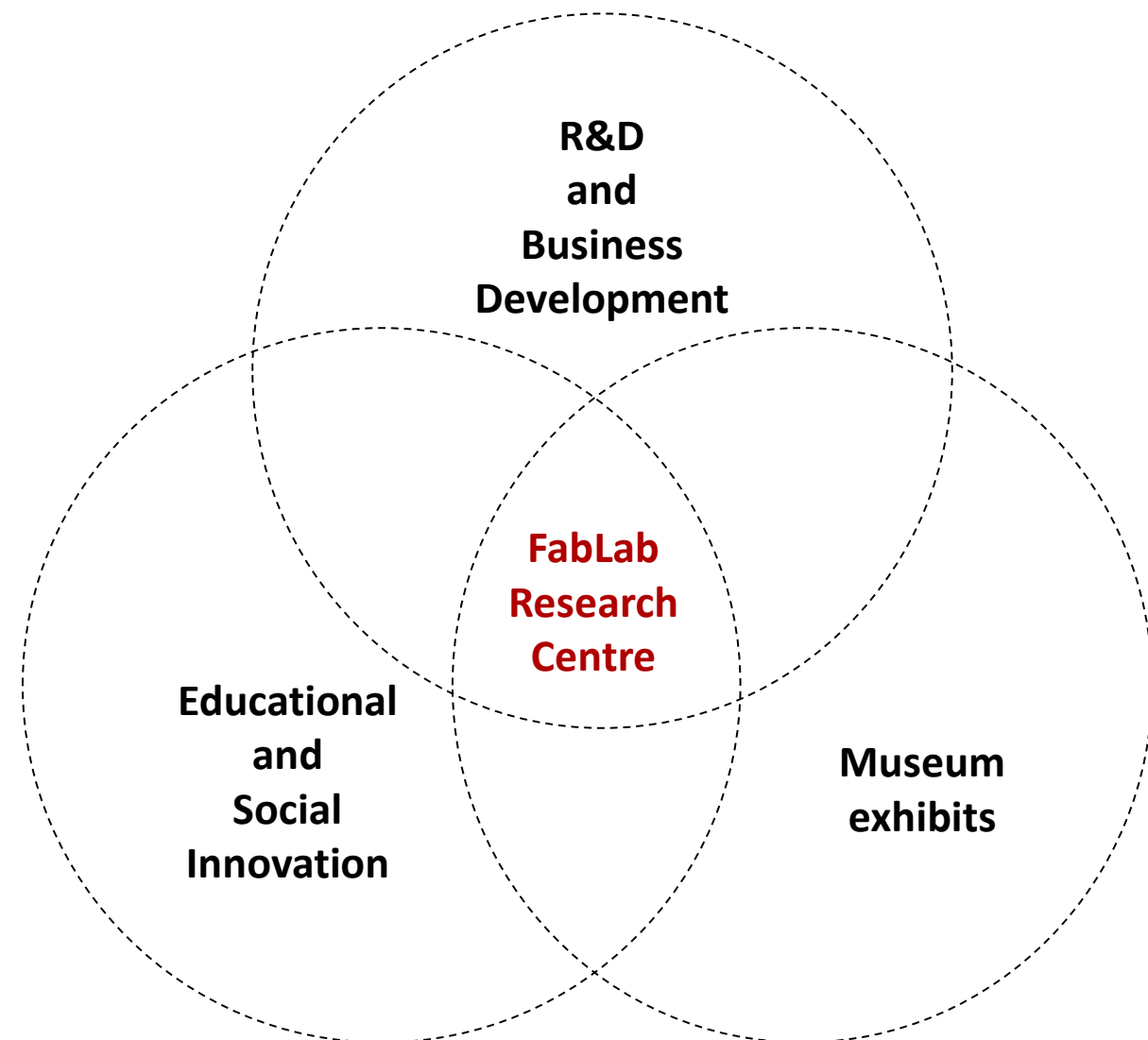
- ❖ A web TV made BY students and FOR students
- ❖ School labs to explore what is behind the television, the job of video makers and TV journalists.
- ❖ Production of reportages, TV news and documentaries by youngsters themselves
- ❖ From society topics related to science and culture, to social issues and school life
- ❖ Under the tutorship of professionals from Città della Scienza: journalists and technicians



3/EXHIBIT FABLAB



a program at the hearth of our core activities



BIC 2.0 Target groups

Promoting entrepreneurship in different target groups : schools, universities , society at all:

- ☐ Young adults
- ☐ Hackers, Creators, designers,
- ☐ Researchers
- ☐ Re-startuppers





Oriented to the connections between schools and the makers:

Spreading the makers' practices for objects production, innovative and quality handcraft through the use of design technologies and instant production (3D printers)

School activities in our fablab with the objective to build their own fablab at school.



FONDAZIONE IDIS
CITTA'DELLASCIENZA

4/SMART EDUCATION DAYS

- ❖ National Convention on Smart Education: conferences, market and exhibition place, teachers talks
- ❖ Seminars and debates about school innovation and school policies
- ❖ School labs and teachers' training
- ❖ **Science PicNic**: students as explainers
- ❖ RAI Education as a media partner





FONDAZIONE IDIS
CITTA'DELLASCIENZA

4/SMART EDUCATION DAYS

- **15.000** participants (**10.000** teachers coming from all over Italy)
- **200** speakers (local and national educational and scientific agencies, institutions, universities, schools and companies)
- **2.000** students from every school level
- **200** exhibitors



- ❖ Science PicNic: one day Science Fest done by students and teachers for the public
- ❖ Participation of **50 schools**, which planned scientific demonstrations



Thank you for your kind attention!



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