



BLUEPRINT MEDI-CUBE

INCUBATOR'S INNOVATION PLATFORM



MEDI-CUBE (Mediterranean Technology Incubator Co-Operation) is an INTERREG IIIB - ARCHIMED programme that aims to create a fertile environment inside incubators where innovation flourishes among the participant start-up companies. Furthermore, MEDI-CUBE's objectives include the improvement of innovation capacity within ARCHIMED area and the capitalization of its innovative characteristics.

This blueprint displays the Incubator's on-line platform, which has been developed in the framework of MEDI-CUBE project aiming to support and facilitate the incubators to achieve their goals.

BUSINESS INCUBATORS

According to the National Business Incubation Association (NBIA) in the U.S.A., business incubation is a business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by the incubator management and offered both in the business incubator and through its network of contacts. A business incubator's main goal is to produce successful firms that will leave the program financially viable and freestanding. These incubator graduates have the potential to create jobs, revitalize neighbourhoods, commercialize new technologies, and strengthen local and national economies.

Incubators differ from business and science parks and also from industrial estates in their dedication to start-up and early-stage companies. Figure 1, illustrates the relationship between different incubator modalities (multipurpose Business Incubator, BIC, Technology Centre) and other SME promotion structures that include a physical space element.

Multi-purpose Business Incubators are positioned towards the bottom left-hand corner of the matrix since they provide a high degree of business management support, although they don't always cater for technology-based enterprises. Industrial estates in the top left-hand corner generally have a non-selective insertion, provide low or no management support and have no special criteria with regard to business activities and technology content. At the opposite extreme, in the bottom right-hand corner, technology centres have highly selective admission criteria, provide "hands-on" management support, and have a highly specialised technology focus.

Business incubator is a term used to describe the physical, "with-walls" process through which business incubation is delivered. "Without walls" (virtual) incubators also exist, which seek to deliver incubation processes through the virtual and information technology means. Lately, a lot of incubation environments operate with a combination of both "virtual" and "physical" provision.

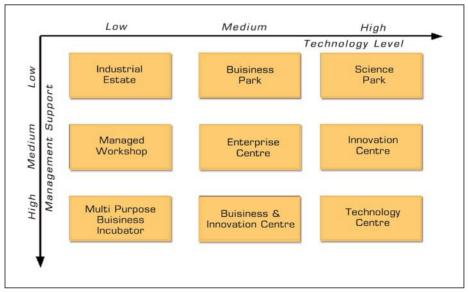


Figure 1: Typology of Business Incubators Source: Centre for Strategy & Evaluation Incubator Activities

Critical to the functioning of an incubator is the provision of management guidance, technical assistance and consulting tailored to young growing companies. Incubators usually also provide clients access to appropriate rental space and flexible leases, shared basic business services and equipment, technology support services and assistance in obtaining the financing necessary for company growth.

The incubator support digital platform that was developed during the MEDI-CUBE project targeted to facilitate the incubators to achieve their goals. The platform is mainly web based and its users are both the incubators and their tenants. It includes four on-line tools that each incubator can adopt, install and customise: Technology and market watch, New product development, Innovation marketing and Incubation management



Figure 2: The platform

2.1. Technology and market watch

The implemented technology and market watch application is available through the World Wide Web on http://www.urenio.org/medicube/watch/ict/. The users (public or administrators) can access the application through a web browser (Firefox, Internet Explorer, Safari, Opera, Mozilla, etc). The visitors (mainly the incubator tenants) can read the posts and comments; comment on the posts; receive newsletters via an intranet, if the incubator wishes to keep the information closed or via the web. The application follows a sector-based approach in collecting intelligence for technological advancement and market information related to each sector. The administrator is defined by the incubator management executives, and manages and edits details through the editor utility, block information, post reports, mail newsletter, and filter results through active search keys.

The watch application incorporates intelligent features to find, filter and develop information on technological advancements, competition, and market environments. The proposed categories cover most of the sections that the tenants of an incubator are interested in. The tool is not static, therefore, the administrator can easily add or remove categories according to incubates requirements. The removal of a category does not imply the deletion of the posts.

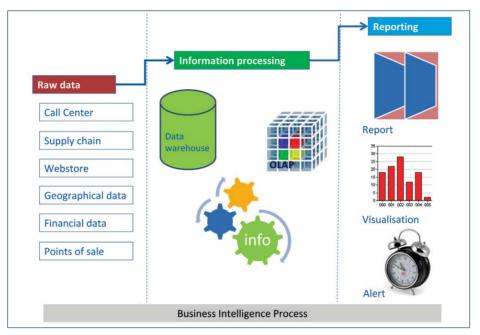


Figure 3: Buisiness intelligence Process

The web tool is based on the platform WordPress, which is for developing blogs on the web. It is a widely used open source platform, which uses the most modern technologies in the area of Internet. Its main characteristics are the following:

- * It supports many writers while it gives the opportunity to the registered users to make comments on the news articles. The administrator can determine different rights for each writer.
- * It supports a draft version for each post, allowing the writers to edit the final article in time before it is finally published on the web.
- * It supports code-protected posts and articles. This code should be entered before the user reads the article.
- * It supports the automatic updating of search engines when a new article is published.
- * Supports many categories, and each one can have many subcategories. Each article can be related to one or more of these categories.
- * It supports XML feeds in all modern models (RSS, RDF, and Atom). Supports also feeds per writer and category and for the comments as well
- * It provides the creation of informative bulletins (newsletters) and their dissemination to registered recipients.
- * It supports the easy import of pictures, files, contacts, videos and sounds.

- * It creates web pages that are fully compatible with the XHTML and CSS international technical standards, and the standards for the dissemination of content via the Internet to special groups of people. The links that are created are readable and friendly to be explored by the search engines.
- * It uses a rich in characteristics (What you see is what you get) WYSI-WYG word processor, so the writer does not need to know HTML to create nice looking posts articles.

The tool uses the following technologies:

- * Relational Database system: MySQL publication 5.0 or newer
- * Development Language: PHP 4.2 publication or newer
- * Web server that support its operation: Apache publication 2.0 or newer

It can serve adequately thousands of users for which it can maintain statistical data for their visits. By analysing these statistical data, the evaluation of the content and the strengths, the weaknesses and opportunities can be identified.

2.2. New product development

The rapid development of new technologies, the shift change in customer needs and attributes, and the gradual increase of the competition has forced all enterprises to adopt New Product Development (NPD) as a necessary and unavoidable business practice. NPD is a complex and time-consuming process, which cannot be taken lightly, since it holds more perils than first meets the eye. To avoid the development of a new product failure and minimize all the related costs, it is proposed that the tenants, with the assistance and supervision of the incubator, should use the NPD roadmap application. This roadmap is a tool that can help the tenant companies to successfully develop new products or upgrade existing ones through a series of logical steps, starting from the process of idea generation until the launch of the product into a market. The incubator can monitor the whole process by recording statistical data regarding the rate of success and costs for each stage.

The proposed NPD roadmap contains a series of activities called "Levels" and control points, called "Assessments". Each Level contains information and well-defined series of activities concerned with the particular Level of the development and each Assessment is a decision point where senior management can continue or stop funding the process. In more detail, a Level contains all the information and tools that are needed to successfully complete the particular Level and an Assessment contains the required questions or specifications or mandates to which the results of the previous Level are compared to so that a go / kill or hold decision can be made.

The online tool can be used not only as an informative tool but also as a complete guide for the NPD process. The tool is a complete online tool that supports incubating firms during their new product development process, which is a major process in their start-up steps.





Figure 4: New product development application

The tool is a step by step NPD process featuring related information, case studies and a specific tool to be used in each of the main steps of the process: 1) ideas generation, 2) ideas screening, 3) concept development, 4) business analysis, 5) Product testing, 6) technical implementation and 7) commercialization.

The scope of the first stage is the tenant companies to produce as many ideas, for potential new products, as possible. The online tool provides details and guidance on how to organize successful brainstorming events and to evaluate them. The deliverable of the first stage is a list of ideas that will be forwarded to the management team for selecting the most appropriate.

The second stage supports the documented choice of the most appropriate idea to be further explored in the next stages of the roadmap. The method for idea screening, in the tool, is a plus-minus analysis (PMI). The proposed PMI analysis can be further improved by applying a weighting technique on the pros and cons of each idea. When a course of action (or an idea in the case of the NPD roadmap) is taken, PMI is a method of evaluating this course. The method can be used in any case when decision-making plays a great role in the success of a project. In the case of NPD, it is used at any Level but it is considered helpful mainly during Level 2, where screening and evaluating new product ideas take place and a decision for the best one must be made.

The tenant company has chosen the most appropriate idea and this has to be developed into a product concept. The proposed method for this task in the online tool is a weighting and rating technique. The outcomes of the third stage are the new products' specifications.

Up to this point of the NPD roadmap the tenant company has an adequate number of information to work further on the analysis of the business concept. The preliminary business plan and cost benefit analysis of the new product are the tools that are proposed and examined for the fourth stage of the NPD roadmap.

After a GO from the fourth stage, the tenant company should develop a prototype that will be tested against the product specifications and user requirements. Regardless of the level or phase of the NPD process, the product testing process consists of two components: the creation of a testing strategy (which often includes the creation of test cases), the creation

of a test plan (which includes test cases and test procedures and the execution of the tests. The tool for the prototype implementation proposes rapid prototyping using the "Materialize software suite"

The sixth and the last stage of the NPD roadmap concerns product commercialization. In this stage, the company will have to build or rent a large full-scale manufacture facility (if it hasn't got one) or outsource the manufacturing process. It will have to spend a bundle on promotion and advertising and will also have to decide upon renting or contracting a large distribution and delivery system. Furthermore, it will have to take some very difficult and important decisions about the commercialisation process in general. The online NPD tool focuses, at this stage, mainly, on how the marketing plan can be conducted by offering the use of another available online tool for free.

2.3. Online innovation marketing

The platform helps incubated firms to build their websites upon predesigned templates. It also provides a marketplace where they can promote and sell their innovative products and services. The platform is based on open source CMS and e-Commerce solution.

The widely used CMS and e-Commerce selected platforms (namely Joomla and VirtueMart) have been enriched and enhanced to meet the needs of MEDI-CUBE Incubator. All additions and updates are implemented in a modular way in the form of Joomla Components and Joomla Modules. The design of the platform allows easier adaptation, installation and manipulation through the Joomla administration panel.



Figure 5: Innovation marketing application http://www.urenio.org/medicube/incubator/

The incubator can provide the tenants with an easy way to promote their products and services to the world. The overall solution offers added value to incubator guest companies since the creation of the whole company's portal site is a fully automatic procedure. The look and feel of each company's portal can easily be changed using Joomla's site templates (there are thousands of templates available in the web).

The tool utilizes all the functions and utilities of Joomla and VirtueMart. It can automatically create new sub-sites for each of the Incubator's companies. The enrolment or un-enrolment of registered users for all or selected sub-sites, is an easy process. Because all the content is stored in a common RDBMS, the visitor of the incubators' website can search content and products from all sub-sites through the main gateway.

VirtueMart is the selected Shopping Cart Application for the e-Commerce functionality of the MEDI-CUBE incubator site, which in turn is based on the Content Management System called Joomla. It can be installed fairly easy using the automatic Component and Module installer. It's intended for use in small / mid-sized online businesses / online shops.

So every incubator tenant who wants to build up an Online Store can use this component for selling something to customers. The integration of the VirtueMart e-Shop is done automatically for each of the MEDI-CUBE incubator's company.

With the embedded VirtueMart shopping cart, the incubator's technical unit can manage an unlimited Number of Products and Categories. The tenants can use it as a virtual shop or just as an Online-Catalog.

2.4. Incubation management application (IMA)

Specialized software is considered critical for the successful innovation management in incubators. The enhancement of innovation capabilities of each incubating company is important, but also important is its competitiveness as a business structure. During the implementation of the MEDI-CUBE project four key incubator service areas have been identified as the most important: entrepreneur training, business support, financing, and technology support. The proposed virtual environment that is supported by the Incubation management can create substantial value to both the incubators and their tenants.

The application is open to customization. Each incubator has to customize the platform so that it simulates all the entities i.e. the incubator, the start-up companies and the running processes as best as it can.

The tool developed assists the incubator's management unit to monitor and assess the innovation progress of the incubating firms from the entry until the ending of the incubating process. The platform is a typical process management tool with workflow features and goals and evaluation capabilities.

The first task that has to be accomplished is to set up the incubator in the digital application. The main founding partners, the target group, the services and the entry and exit criteria have to be defined. In this task, the framework of the operations of each incubator is defined.



Figure 6: Incubation management application

The start-up companies remain candidates until they are accepted in the incubator. The IMA provides the tools to define candidates. Details such as candidates' application date, evaluation result and date are part of the info regarding the candidate. The next step is to convert the candidate to resident or tenant. Similar information defines the residents of each incubator. By defining in details the above entities and the processes described below the IMA can report to the incubator management useful innovation results. The IMA is mainly a process management tool; therefore all the incubator processes have to be entered in the application. The platform supports separate tasks, workflow, inspectors and relevant documents for each process. Each process can have distinct goals and the platform calculates the effec-

The Running Process Preview/Management sub component of the application is a very powerful tool that can aid the incubator to acquire useful information about all running processes. Although there is specific information concerning the time boundaries of the specific process, there

tiveness or rate of success for each process.

The MEDI-CUBE platform was tested in incubators located in the regions participating in the project, namely the regions of Central Macedonia and Calabria, and the provinces of Matera and Brindisi. All the components of the platform were implemented in these territories and each e-tool was tested in different innovation environments.

The scope of these pilot applications was to (1) examine the effectiveness of the platform and its tools in managing key innovation processes within incubators, (2) assess the results obtained and their usefulness to incubators and incubated companies and (3) identify problems during the installation and application. The organisations involved in the pilot applications are presented on the following Table.

Table 1: MEDICUBE Pilot applications per region

Region of Central Macedonia	Market and technology watch	Technopolis Incubator
	Innovation marketing	i4G Incubator
	Incubation management	Thermi Incubator
	New product development	CITE and i4G
Region of Calabria	Market and technology watch	Anastasi Srl
	Innovation marketing	ISO Kalor
	Incubation management	Caldaie
	New product development	Termocamini
	New product development	CTC Geophysics
	Innovation marketing	CTC Geophysics
	Market and technology watch	University of Basilicata.
	New product development	Astero S.R.L.
	New product development	Contoenergia
Province of	Innovation marketing	Contoenergia
Matera	Innovation marketing	Astero S.R.L.
	Incubation management	SVILUPPO ITALIA, Potenza
	New product development	Environmental technologies (ET&M snc)
	Innovation marketing	Environmental technologies (ET&M snc)
Province of Brindisi		Salentec
	New product development	Antheus
	Innovation marketing	Antheus
	New product development	Nitens s.r.l.
	Innovation marketing	Nitens s.r.l.
	New product development	Tecnosea
	Innovation marketing	Tecnosea
	Market and technology watch	Cittadella della Ricerca and Technology
	Incubation management	Cittadella della Ricerca – Science and Technology

3.1. Technology and market watch (TMW)

The pilot application of TMW is a classic case of cluster intelligence: a distributed form of intelligence gathering and dissemination organized by a network of cooperating organizations.



Figure 7: Technology and market watch pilot application http://www.urenio.org/medicube/watch/ict/

TMW focuses on the external business and technological environment of the cluster of companies located in an incubator. Thus,

- * The application is applied at the level of the selected incubator;
- * The network is made by the incubator companies;
- * The members of the network define areas of interest (information categories) and the recipients of information;
- * Data collection and entry are made by the network members;
- * A web 2.0 application facilitates the process of information collection, storage, and dissemination.

The overall administration is assured by the incubation management team, which assigns a person responsible to animate the network, customize the web 2.0 tool, and validate /edit the information stored into the system.

With this application a collective information system is installed into the incubator. Tenant companies feed-in and receive information. The web 2.0 tool was customized to serve ICT companies and the information categories.

Table 2: Information categories for an ICT cluster

Innovation	Competition / competitors Sector studies and reports Main companies in the sector Competitors' practices Contract announcements Competitors' financial performance The stock market watch	
 R&D news New product / technology announcements Patents Conferences Expos Regulation / standards Technical files 		
 Funding opportunities Funding news VCs - Business angels Interest rate watch 	Market opportunities Market news Offers / calls of tender Market trends / Futures Consumer preferences / societal trends Price watch	

The information material stored in the web tool is the prime material for further elaboration, trends analysis, conclusions, and customisation of the information on the individual need of each tenant company. A newsletter is delivered via email once a month. It includes information about new articles that have been published on the portal.

Depending on the level of the incubator's tenant companies' cooperation, further information analysis is performed, in terms of:

Benchmarking and comparison of companies' performance

- Foresight sessions on future / emerging trends,
- Focus groups on specific markets and technologies
- Company strategic intelligence.

3.2. New product development

The pilot application on New Product Development concerned the identification of a business opportunity for companies specialising in digital services for boats hosted in marinas. The product developed is called "Digital Marina Services" (DMS). It was developed by CITE, a tenant company of the i4G Incubator.

Actually, most marinas in the Mediterranean Sea offer a wide variety of services related to supply of water, power and gas for boats and in some cases maintenance of boats hosted in the marina. Services targeted to passengers of the boats are not very common. The concept of DMS contains two novel elements:

- * Marketing and management support of existing services of the marina through a new digital environment.
- * Development of new services supported by information technologies.

The main objective for an investment in advanced services to boat passengers is to transform a marina from a boat parking and/or maintenance establishment to a tourist destination for many days where the tourists deliberately select to stay on boat instead of staying in a hotel. In that sense, apart from upgrading the existing typical marina services, DMS business concept proposes to focus more on services, which improve the stay in the marina and, therefore, encourage prolongation of the stay, obviously to increase the profits of the marina administration.

The NPD process, using the MEDICUBE platform was organised in three stages:

- Description of the market, including a description of marinas in Greece and of the countries bordering the Mediterranean Sea. The description includes their location, size and - when information is available - the status regarding Internet based services.
- 2. Product specification and requirements: Description of the options for the administration of services, the necessary hardware infrastructure requirements and the specification of software and online services.
- Cost-benefit analysis: Analysis of operation cost for different scenarios services according to individual service units selected. The estimation of break-even point for cost and benefits as regards to the number of clients using services.



Figure 8: Overview of a marina in the MED area

Since very limited similar services are offered or even exist in southern Europe and such services could encounter some hesitance from the marina administrations as well as clients, adaptation of these new services could be accomplished through a gradual and/or modular approach. It is modular in the sense that we define different service elements, which could be established and operated independently without necessarily establishing the entire service portfolio (i.e. a marina could only establish and operate satellite TV or radio to clients without necessarily establishing the fully automated ERP system). It is gradual, since for most of the potential clients the investment for digital services would be considered as being risky, they could gradually establish services 'module' by 'module' with a progress according to the financial results as well as customer satisfaction levels.

The designed new product of DMS is based on digital services, network communication and service management. Thus, the offering of this new product is based on a consortium of three independent companies with distinct roles in the establishment and operation of services:

- 1. The DMS management company responsible for the marketing and management of the full business. This company could be a consulting and business communication company which will run the full business.
- 2. The Wi-Fi internet communication provider which is a hardware and network support company
- 3. The information and entertainment services manager which is a company experienced in Pay-TV services.

The product DMS provides an extremely wide range of services, which are from boat cleaning and repair to information services, booking, weather forecast, cruising support, cruise offers, entertainment services, video on demand, and others.

3.3. Marketing of innovation

Cornerstone for the successful utilisation of the innovation marketing application is the selection of a suitable Incubator for its implementation. The incubatees' web sites are expected to be created and interconnected with the portal of the Incubator within which they are established. Incubator portal and incubatees' web sites are synchronized using the Joomla add-ons developed.

The Incubator personnel should understand from the beginning the benefits of the digital platform developed. Specifically:

- * The creation of an open, modular, scalable and easy expandable platform for hosting the main incubator portal
- * A robust mechanism to allow new companies to create their portals under a common incubator gateway
- * To support e-commerce solution without complicated installations and setups
- * To update on-the-fly the Main Incubator Portal with content and products from companies' portals
- * To allow users synchronization, single sign-on and unified search to all Incubator companies content and products
- * To keep common functionality in the background but different and independent look-and-feel in the front-end (for each company).

The benefits of the e-commerce component of the platform should also be appreciated:

- * Costs O euros and licensed under GNU/GPL
- * Fully integrated in Joomla Platform
- * Manage an unlimited number of products and categories
- * Use it as a Shop or just as an Online-Catalog (you can even turn off Price Display)
- * Product Import & Export using CSV files
- * Add Attributes (like Size or Color) to products
- * Shop Statistics / Control Panel with a Summary of new Customers, new Orders.



Figure 9: Marketing of innovation pilot application

In this pilot application, the Incubator i4G portal was redesigned and implemented using the Joomla digital platform utilizing the synchronizing add-ons developed and the e-commerce capabilities. A prototype web site was also developed to be used for each incubating firm. This feature is useful for the companies not present in the Web or for new incubated companies in the future able to establish Internet presence with minimum effort.

The basic menu of the portal includes typical sections: Home - The Incubator -Services provided - Getting affiliated - Frequently asked questions - Search. Further, a dynamic tool line complements the menu and defines the overview of the functionality: Virtual Tour - Products & services - Forum - Benefits - News & announcements - Navigation - Contact.

For the assessment of results, a suitable questionnaire was created to evaluate the new Joomla version of the i4G Incubator web portal and its circulation among the i4G incubatees. The primary objective of the questionnaires' circulation was to investigate the appeal and the effect of the new portal to the directly interested parties, the incubated companies.

The overall evaluation of the i4G portal presented a positive feedback:

- * Very positive reports vary from 18% to 53%.
- * Negative judgments in general exhibit very low percentages,
- * Percentages of the reports in the "remotely" and "not at all" categories push towards further development of the i4G portal and its further utilization as a business development tool for the incubated companies.
- * Answers given to the questions are independent from the age and size of the incubated companies.

Subjects for further development of the virtual incubator shop were associated with the effectiveness of the premises "virtual tour"; data provided for communication purposes; promotion of products and/or services of the incubated companies; linkages with other pertinent web sites; promotion of entrepreneurial and innovative issues; promotion of "ability to provide employment".



3.4. Incubation management

The pilot application of the incubation management application concerned the installation and customization of the four procedures which are important for the management of an incubator. These are:

- 1. Company entry
- 2. Company exit
- 3. Funding
- 4. New Product Development

The pilot testing of the incubation management component of the application included the following tasks:

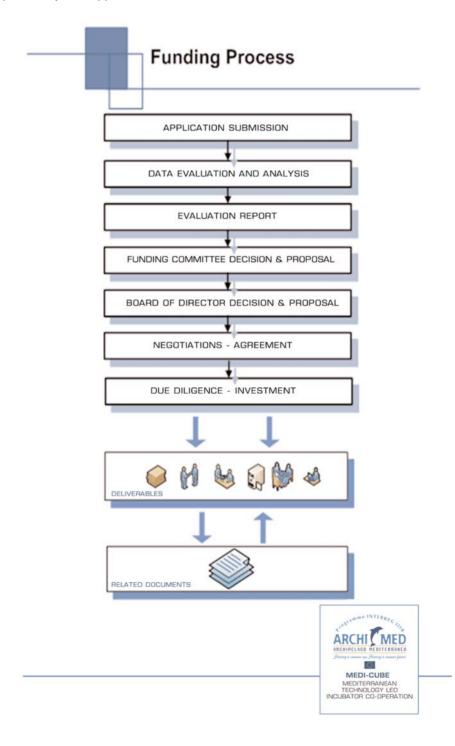
- 1. Configuration of the above mentioned processes: The application is configured to handle the four processes according to the relevant data of each company. At this stage there is a parallel process of recording any feedback on the program's operation. For instance, one particular incubator requested the ability to monitor certain financial indicators through the application. This particular request was granted permission to be developed and enabled the incubator to function more efficiently.
- 2. Communication: Customization creates the necessity for communication so as to solve any potential problems, thus contributing to the successful operation of the system. The constant feedback between the application administrator and the incubator is a prerequisite in order for the application to have maximum impact. For instance, it was noticed that the application system was not storing any information about the enterprises that have fulfilled the incubation process. In another example, there was a problem during the process of modifying the status of an applicant to a resident of the incubator.
- 3. Evaluation of the observations: At the initial stage of application, the administrator accepted a great amount of feedback regarding the application, its functions and its usability. All the observations were evaluated and then it was decided which can and should be implemented.
- 4. Resolution of Technical Problems: When problems of a technical nature arose, a visit to the incubator was necessary to resolve the issue.

For each process the detailed steps are defined and all operations and data concerning the incubated companies are registered and analytically documented.

The incubation processes that are monitored are connected to a relational database, which offers full documentation.

The incubator has comprehensive information about the life cycle of any company / project idea - proposal which has applied to be hosted so that it receives the incubators' services or be funding.

Apart from monitoring, comparative analysis and graphic presentations are supported by the application.



Following the installation and configuration, the training of the employees of the incubator in the usage of the application is conducted. All the involved parties undergo some training sessions in order to become accustomed to the specific functionalities of the application. Training sessions offer a series of advantages: users become accustomed to the particular conventions of the application; productivity is increased; simultaneously, the training will render the users becoming proficient in the use of the system in day-to-day operations.

The implementation was an iterative process, which required continuous feedback from the incubator's employers and constant redesign, in order to accurately comply with the needs of the incubator.



MEDI-CUBE

Mediterranean Technology Led Incubator Co-Operation

PROGRAM PARTNERSHIP















The MEDI-CUBE Incubator's Innovation Platform blueprint is written and illustrated by the Urenio Research Unit research team:

Nicos KOMNINOS Isidoros PASSAS Maria SCHOINA Elena SEFERTZI Paraskevi TARANI

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