

Zespół aplikacji mobilnych i wbudowanych (MEAG)  
Instytut Telekomunikacji, Politechnika Warszawska

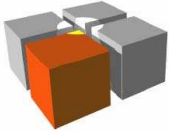
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# **Zespół Aplikacji Mobilnych i Wbudowanych**

**Mobile and Embedded Applications Group (MEAG)**

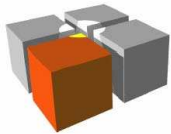
**<http://meag.tele.pw.edu.pl>**

**Instytut Telekomunikacji  
Politechnika Warszawska**



## **Dziedziny badań/projektów/prac dyplomowych**

- **Inteligencja otoczenia**  
*(ubiquitous/pervasive computing, ambient intelligence)*
- **Bezprzewodowe sieci sensorów i elementów wykonawczych**  
*(wireless sensor /actuator networks)*
- **Usługi mobilne**
- **Architektury warstw pośrednich (*middleware*)**



Zespół aplikacji mobilnych i wbudowa  
Instytut Telekomunikacji, Politechnika

## Inteligencja otoczenia

*Ubiquitous computing*

*Pervasive computing*

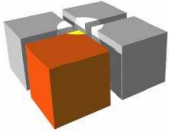
*Ambient intelligence*

*Internet of Things*

*Cyber-physical systems*

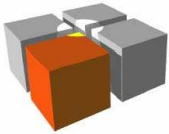
Źródło: The Economist, April, 2007





***Today's wireless device is the sleek mobile phone nestling in your pocket. In coming years wireless will vanish entirely from view, as communications chips are embedded in a host of everyday objects.***

Źródło: The Economist, April, 2007



## Inteligencja otoczenia

### Technology Breakthroughs<sup>a</sup> by 2025

#### What Is the Technology?

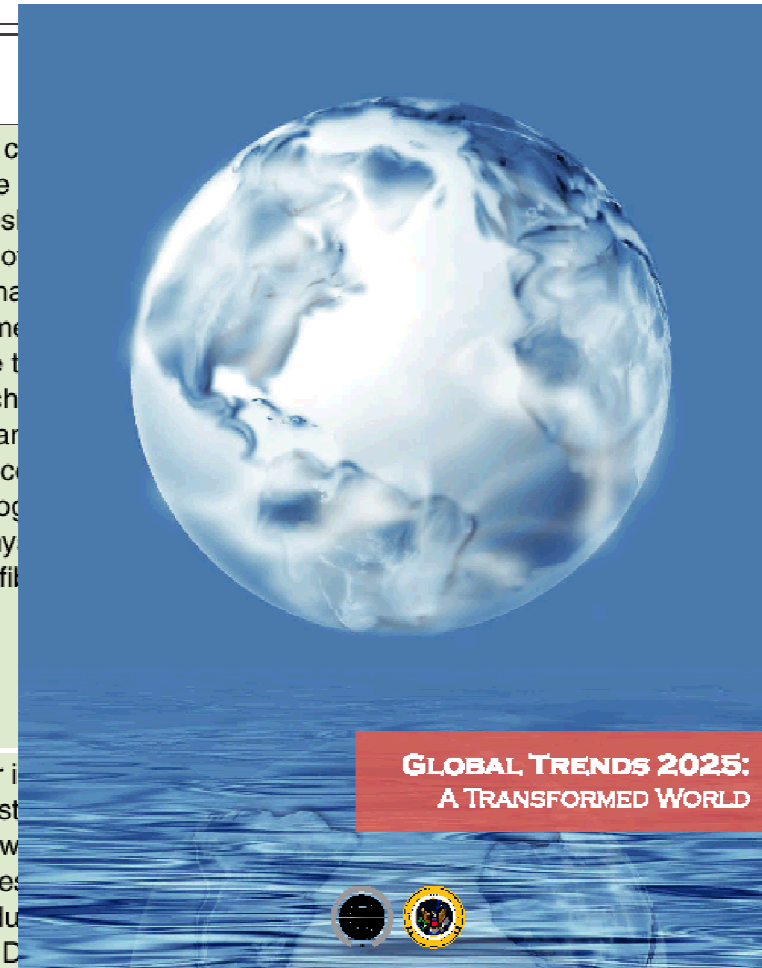
**Ubiquitous computing** will be enabled by widespread tagging and networking of mundane objects (the Internet of Things) such as food packages, furniture, room sensors, and paper documents. Such items will be located and identified, monitored, and remotely controlled through enabling technologies—including Radio Frequency Identifications, sensor networks, tiny embedded servers, and energy harvesters—connected via the next-generation Internet using abundant, low cost, and high-power computing.

**Clean water technologies** will be enabled by technologies that enable efficient treatment of freshwater, and desalination of seawater, to provide sustainable water sources useable for domestic and industrial purposes. The technologies include advances in existing technologies such as membrane bioreactors and nanofiltration, as well as substitutions and advances in desalination and purification technologies, including unique chemical and physical processes, nanoparticles, and nanofiltration.

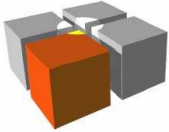
#### What Are Drivers and Barriers?

**Key Drivers:** Demand for greater efficiency in a wide variety of applications from food safety to more efficient supply chains and logistics. Corporations, governments, and individuals will benefit in areas such as

**Key Drivers:** Clean water is the world's scarcest but most important resource because of new technologies. Population increases and climate changes will reduce water resources in some areas. D



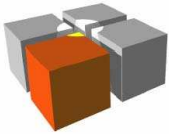
Źródło: THE NATIONAL INTELLIGENCE COUNCIL'S 2025 PROJECT, November 2008



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## Projekty MEAGa – programy ramowe





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## Nasi partnerzy w projektach 6.FP i 7.FP



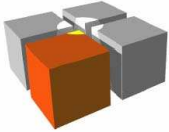
CERETETH - Center for  
Research and Technology  
Thessaly



accenture







## Projekt MEAGa – MIDAS 6. FP (usługi mobilne)

### Middleware Platform for Developing and Deploying Advanced Mobile Services

#### Main Objectives

The main objective of the project is to define and implement a platform to simplify and speed up the task of developing and deploying mobile services, making it commercially feasible for the wider IT industry (not just telecom companies) to provide such services.



The project will focus in particular on making it feasible to provide mobile services in situations where the following apply:

- The number of users may be very large;
- The network may need to be set up at short notice, or for limited duration;
- Infrastructure is limited and some users may have to use ad-hoc communications.

Today, it is technically difficult and time-consuming to provide customized services for such events. Existing approaches to service creation involve a great deal of re-

#### At A Glance:

##### Project Coordinator

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[www.ist-midas.org](http://www.ist-midas.org)

**Partners:** *SINTEF (N), Capgemini (NL),  
Appear Networks (S), 51pegasi (F),  
University of Oslo (N), Warsaw  
University of Technology (PL),  
Telefónica (E), Régie Autonome des  
Transports Parisiens (F)*

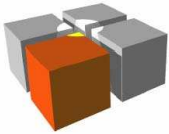
**Duration:** *January 2006 - June 2008*

**Total Cost:** *€ 4.9M*

**EC Contribution:** *€2.9M*

invention for each new service, and there are no standard approaches to key issues such as the need to combine infrastructure-based and infrastructure-less communications.





## Projekt MEAGa – SIMS 6. FP (usługi mobilne)

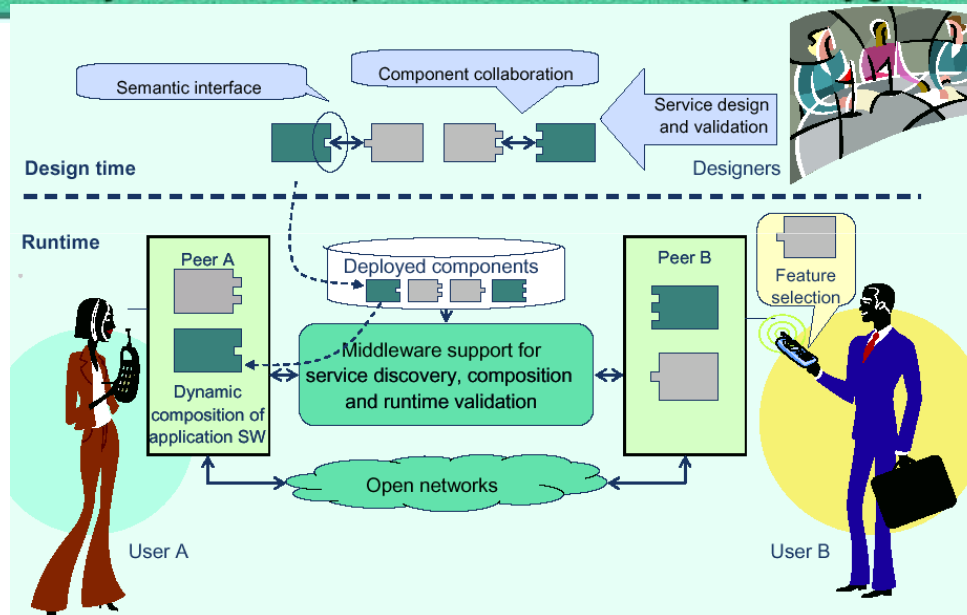
### Semantic Interfaces for Mobile Services

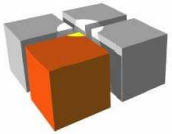


SIMS is about a novel technology, dubbed semantic interfaces, enabling rapid development, dynamic discovery, and composition of mobile services. Compared to the well known static interfaces currently in use, semantic interfaces enable definition of dynamic behaviour and the goals of the collaboration across an interface. This enables safety and liveness properties to be checked effectively and to support service discovery and service composition at runtime with compatibility guarantees.

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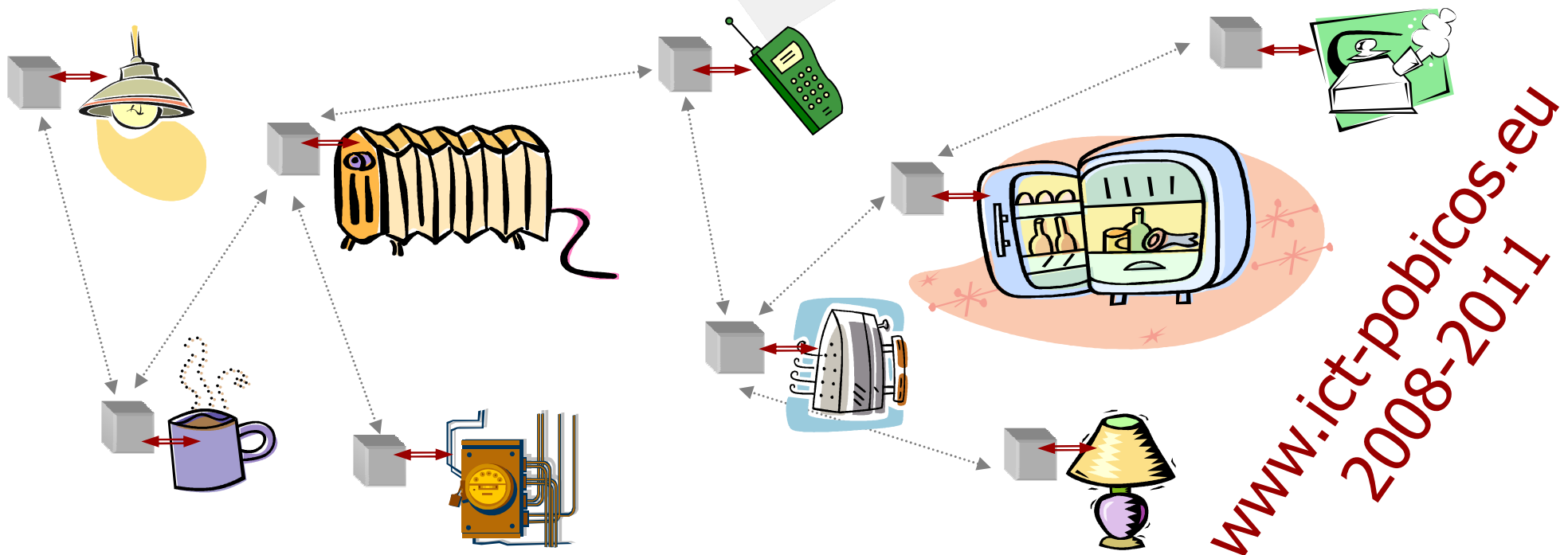
**Partners:**  
SINTEF (Norway), Amena (Spain),  
Appear Networks (Sweden),  
Genteware (Germany), Gintel  
(Norway), Norwegian University of  
Science and Technology (Norway),  
Warszawa University of Technology  
(Poland)

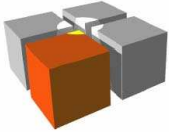




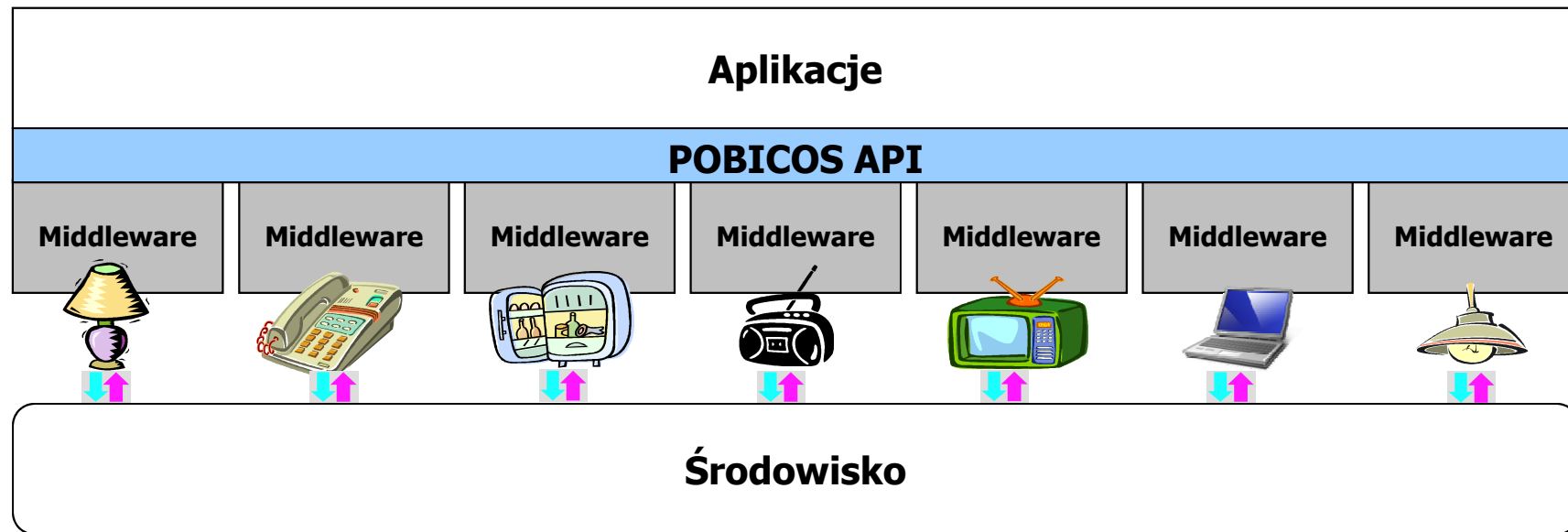
## Projekt MEAGa - POBICOS 7. FP (inteligencja otoczenia)

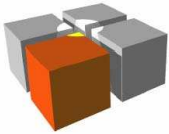
CPU (mikrokontroler), pamięć,  
sensory, elementy wykonawcze



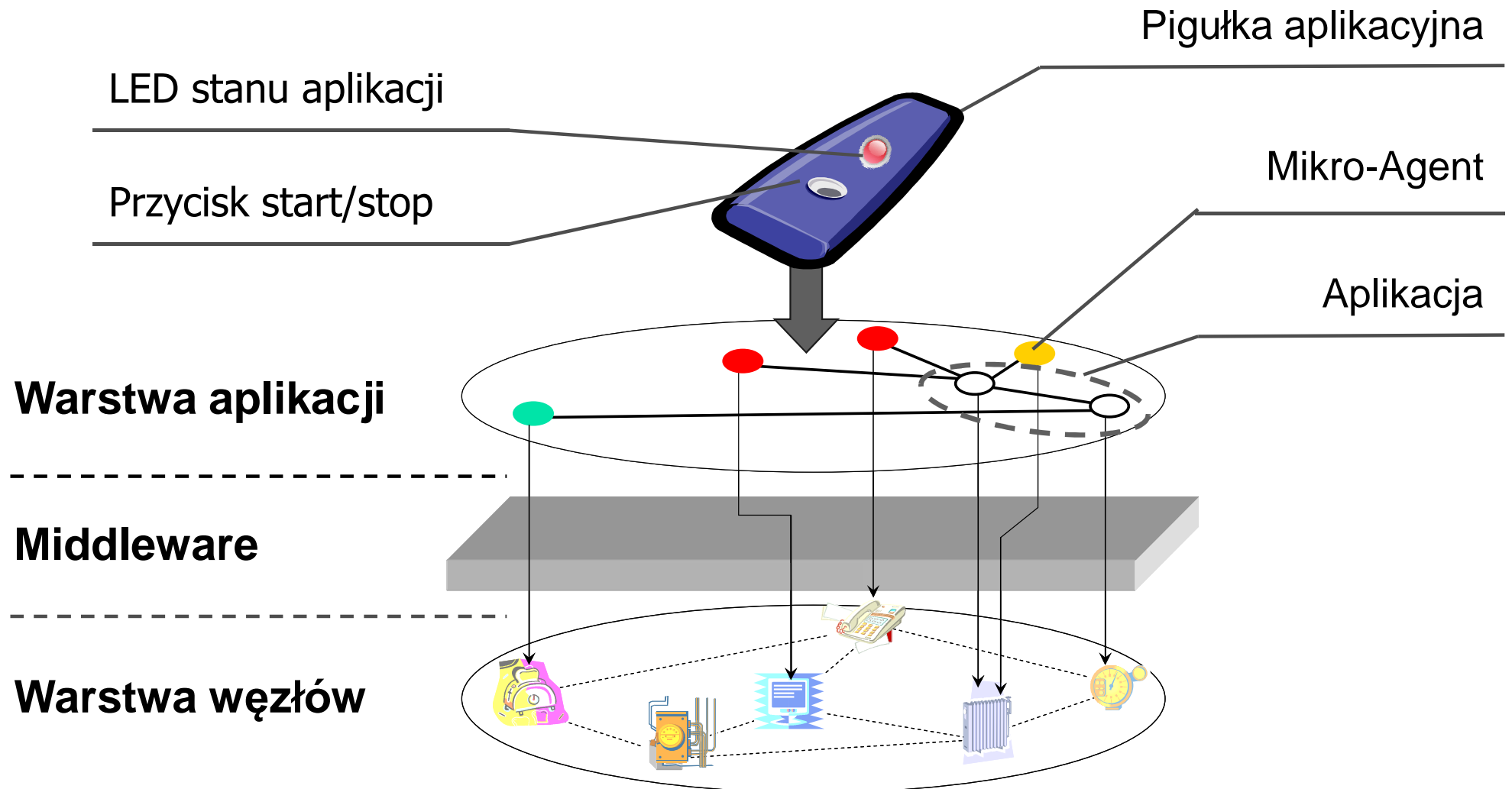


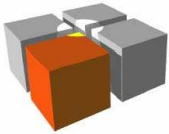
# POBICOS



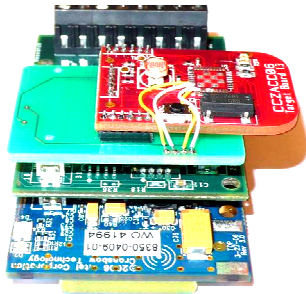


## POBICOS





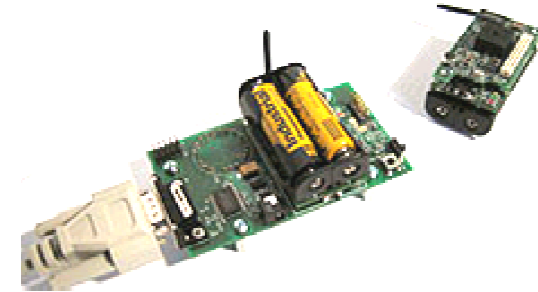
## Przykładowe platformy (nasze laboratorium)



**IntelMote2**  
(łączość ZigBee,  
sensory oświetlenia i temperatury)



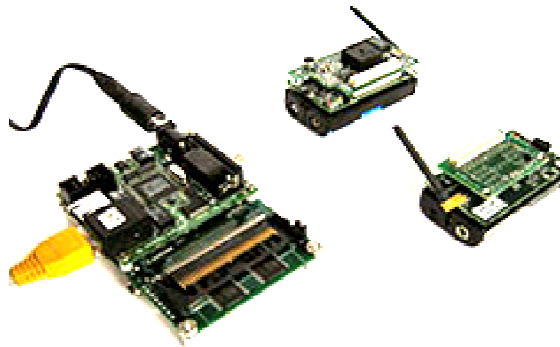
**Nokia 90**  
(łączość GSM,  
ekran LCD)



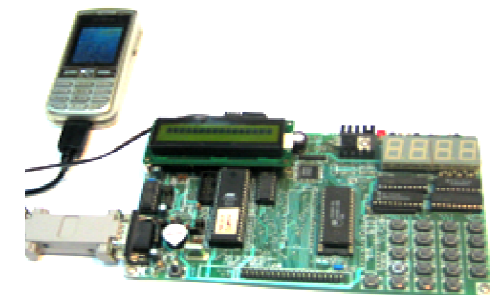
**MicaZ**  
(łączość 802.15.4,  
sensory oświetlenia i temperatury)



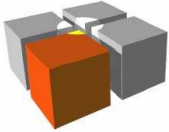
**Ethernut + GSM**  
(łączość GSM i Ethernet,  
małe zasoby CPU)



**StarGate + MicaZ**  
(łączość 802.15.4 i ethernet,  
sensory)



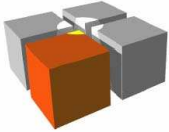
**StrC51 + GSM**  
(łączość GSM, sensory,  
małe zasoby CPU)



## **Dlaczego warto do nas przyjść**

- **„Gorąca” tematyka.**
- **Problematyka prac dyplomowych wynika z międzynarodowych projektów badawczo-rozwojowych.**
- **Wynikiem wielu prac są działające prototypy.**
- **Niektórzy studenci współpracują bezpośrednio z partnerami zagranicznymi.**





## Zapraszamy

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**Pobierz tę prezentację z:**

**[http://meag.tele.pw.edu.pl/meag\\_prace\\_dyplomowe.pdf](http://meag.tele.pw.edu.pl/meag_prace_dyplomowe.pdf)**