



VISION

“INTERACTION DESIGN TALKABOUT”



INSIDE
—
ESSAYS ON INTERACTION
—
CASE HISTORIES
—
BEAUTIFUL MAPS

PUBLISHED BY

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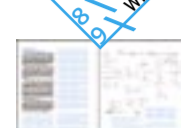






























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I have been around computers all of my adult life and I belong to that generation that has seen it happen, too old to use it as well as today's digital kids, but old enough to put them in the perspective of a world that existed and was working quite well even before personal computers, cellular phones and the internet existed. ↪

I have been exposed to something called "Interaction Design" for the last 15 years, since when David Kelley, founder of IDEO, explained what was the step beyond interface design in his office in Palo Alto. ↪

I have been involved with Interaction Design Institute Ivrea since before it started, when Franco Debenedetti and Barbara Ghella floated the initial idea. ↪

After all these years, I am still honestly shocked about how little people (in general) know and understand about these tools, why they are so totally underused when their potential is so big and positive for Mankind and Society. ↪

Part of the problem with Interaction Design is a lack of a definition, of a description of what it is, what it does, where it's going. ↪

The Short Story is that we have much more technology available that we know how to use and that the bottleneck is in our (Human) capacity to take advantage and put it to work as individuals/entrepreneurs/society. It is in the lack of "design" between people and machines/systems. ↪

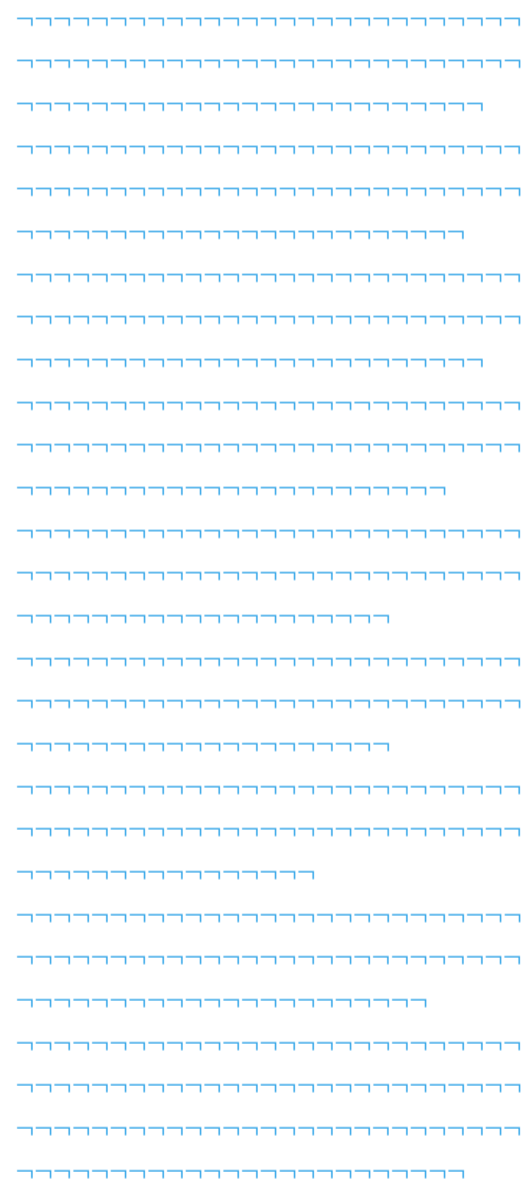
"Interaction Design" is still a new discipline, born, like the Internet, in a pretty anarchic way, quite undefined in traditional academic terms. But it permeates society more everyday and has an incredible potential to satisfy the needs/desires/opportunities of the third millennium: eliminate bureaucracies, increase democracy, close the north-south gap, move to a knowledge society, heal the environment. ↪

"Interaction design" is, in our view, the discipline that will allow to, slowly, close the gap between what is available and society's capacity to use it. ↪

I travel all the time and it saddens me to see that today the minimum salary in Brazil is \$88 a month, and a "Bulgari" breakfast a la carte in a Hotel in Milano is 150 euros, I see people struggling everywhere while the tools for a better life are here today, our governments waste billions on dollars on bureaucracies that are, in the best cases, a version of the Napoleonic French Republic, the government equivalent of Alitalia, while finally Eritrean cleaning ladies can travel from Milan to London on a low cost airline for 20 euros. ↪

Telemedicine would allow a specialist in Seattle to perform a complicated procedure in Kenya, but it does not happen and the guy loses his vision, which is and should be the priceless right of everybody. ↪

The world is and will keep being a mess. It is in the nature of things. Obviously the real power resides in politics, not Interaction Design, but that is hopeless as we can see from the sorry state of things everywhere. But all of us should do our little work wherever it happens that we operate. Our team effort at Interaction Ivrea has been to establish an international centre of excellence, where people of all the world come and work to study/understand/promote this discipline. This publication and its website are part of the effort to promote and distribute the knowledge available on this subject. ↪



EDITOR'S NOTE

MARCO ZANINI, OCTOBER 2004

WHAT IS INTERACTION DESIGN?

“IN THE SAME WAY THAT INDUSTRIAL DESIGNERS HAVE SHAPED OUR EVERYDAY LIFE THROUGH OBJECTS THAT THEY DESIGN FOR OUR OFFICES AND FOR OUR HOMES, INTERACTION DESIGN IS SHAPING OUR LIFE WITH INTERACTIVE TECHNOLOGIES, THAT IS COMPUTERS, TELECOMMUNICATIONS, MOBILE PHONES AND SO ON. IF I WERE TO SUM UP INTERACTION DESIGN IN A SENTENCE, I WOULD SAY THAT IT’S ABOUT SHAPING OUR EVERYDAY LIFE THROUGH DIGITAL ARTEFACTS, FOR WORK, FOR PLAY AND FOR ENTERTAINMENT”

GILLIAN CRAMPTON SMITH, JANUARY 2002



THIS IS INTERACTION DESIGN

Twenty years ago computers were expensive work tools for professionals or games machines for enthusiasts. But today they're turning up in all aspects of our daily life—from mobile phones to microwave ovens, exercise bikes to sewing machines—and there are already many more computer chips than humans on the planet. Increasingly, the quality of our life is shaped by digital artefacts. ↪

When machines were mechanical there was a direct, physical way to interact with them: you could make a mixer go slower or faster, turn a knob to choose a washing programme, flick a switch to sew in reverse. But a machine controlled by a computer chip is a rather different thing. ↪



It responds to us in different ways depending on what we do; the same controls do different things according to the mode we are in; it can be programmed to do things over time. The way it behaves is no longer fixed and predictable. In many cases it's downright mysterious. ↪

When we design a computer-based machine, we design how it behaves as well as how it looks. And we are designing the "quality" of our interaction with it—how we use it, programme it—as well as what it looks and feels like. This is interaction design. An object which is awkward to use, hard to understand, or difficult to remember how to use is not a successful design. Good interaction design makes sure the machines in our lives are graceful to use as well as beautiful to look at. It involves the "aesthetics of use" as well as the aesthetics of form. ↪

But interaction design does not just involve the interaction with complex machines. Our life is increasingly connected through telecommunications networks and filled with immaterial things: music, films, TV, information. These technologies make the services that companies provide as important as the machines they sell. And the experience of a service comes both from the design of the service itself and the way we interact with the machine—phone, pager, pda, set-top box. We use to access it. So interaction design involves the design of immaterial things as well as material ones: services and software as well as hardware. ↪



Sketches by Bill Verplank. ↪

Just as industrial designers developed and refined mechanical technology for home and work, so that mechanical artefacts could play both a practical and graceful part in homes and offices, interaction design shapes the way information and communications technologies fit into our everyday life and culture. ↪

USER-FRIENDLY IS NOT ENOUGH

There is a tendency to think of an interactive system in terms of the technology that makes it possible: the hardware and software, or input device, processor and display. But an essential part of an interactive system is the person or people who are interacting with it—no people, no interaction.

MODELS

USER CONCEPTUAL
"DESKTOP" MODEL



REPRESENTATION



So whether you are designing a fighter cockpit or an art installation, messy, unpredictable, capricious people are part of your system.

The birth of "human factors"—psychology and ergonomics—in the design of interactive systems was during the second world war, in the design of fighter cockpits. In the case of pilots you had an unusually homogenous and trainable group of users: male nineteen-year-olds with 20-20 vision and fast reflexes.

Today, however, computer-based systems are part of everybody's lives and the kinds of people who will use them are not all the same, don't necessarily want to be trained, and will use them in all kinds of different situations that their designers cannot possibly foresee. Moreover as computer-based systems are becoming a part of everyday life and culture, designers need to take into account not just people's physical and cognitive needs but also their social and cultural desires. Today the problem is not just to design something that will do a job but also to design something people will like and want to buy—it is a matter of style, fashion, culture, identity, as well as efficiency.



OBSERVATION



SCENARIO

Sketches by Bill Verplank.

DIGITAL ARTEFACTS: THE ARCHITECTURE OF THE FUTURE

All societies have a symbolic world, a world of myths (significant stories) and values—a world of meaning—which is the implicit backdrop of everyday life. This world is reflected in the things, the artefacts which people make and exchange. As designers, designing artefacts for the society of which we are part, we not only contribute to the practical convenience of life but also have the power to enrich—or impoverish—our culture, the symbolic life of society. ↵

The environment we make for ourselves, in which we live our lives, shapes our physical and our mental life—the life of the body and of the spirit. Take the example of architecture. A building is both a practical artefact—it protects us from the weather—and a symbolic artefact, having meaning for us beyond its immediate practical use, reflecting and reinforcing the shared norms and values of our culture. ↵

It is not enough for a building to stand up and keep out the rain—we expect more of it. It needs to resonate with our shared social, cultural and aesthetic ideas so we can interpret its meaning, we can ‘read’ it. For instance, a building speaks to us about its place in our culture—by its form we can tell if it is a church or a shopping mall. It speaks to us about social norms: which are the private rooms, which are the public. It speaks to us about how we use it: where we go in, how we orient ourselves within. And it speaks to us aesthetically: we may find it beautiful or calming, playful or exciting, we may be awed by its grandeur or amused by its wit. ↵

Digital technology is changing material culture: the tools we use, the way we live in our homes, the way we connect with family and friends. Digital artefacts are becoming the architecture of the future, shaping the life we live in practical, social and aesthetic terms. We need to start to think about designing them in terms of architecture as well as building, culture as well as engineering. ↵


ETHICS = THE HISTORY OF INTERACTION (DESIGN)

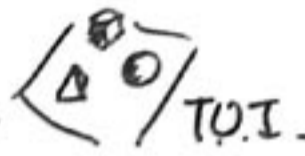
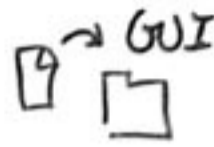
ANTHROPOLOGY

SOCIOLOGY

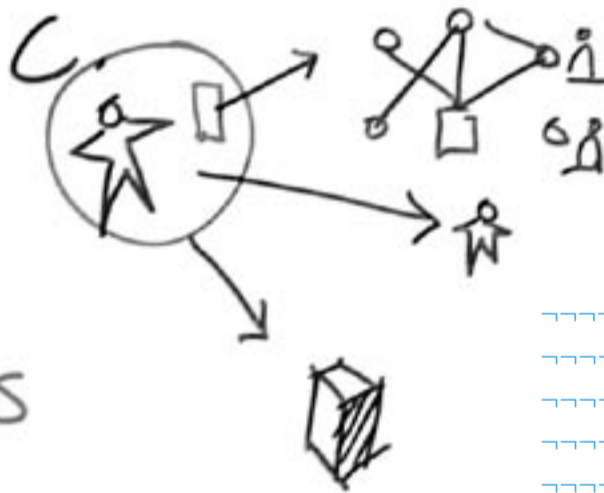
PSYCHOL ← SOCIAL
EMOTIONAL

PSYCHO-PHYSICS $\frac{\Delta I}{I} = k$

PHYSICS 



time ↓



Cognitive development ↑

ARTIFICIAL LINGUISTICS COG. SC.

AUGMENTED REALITY TASK-BASED

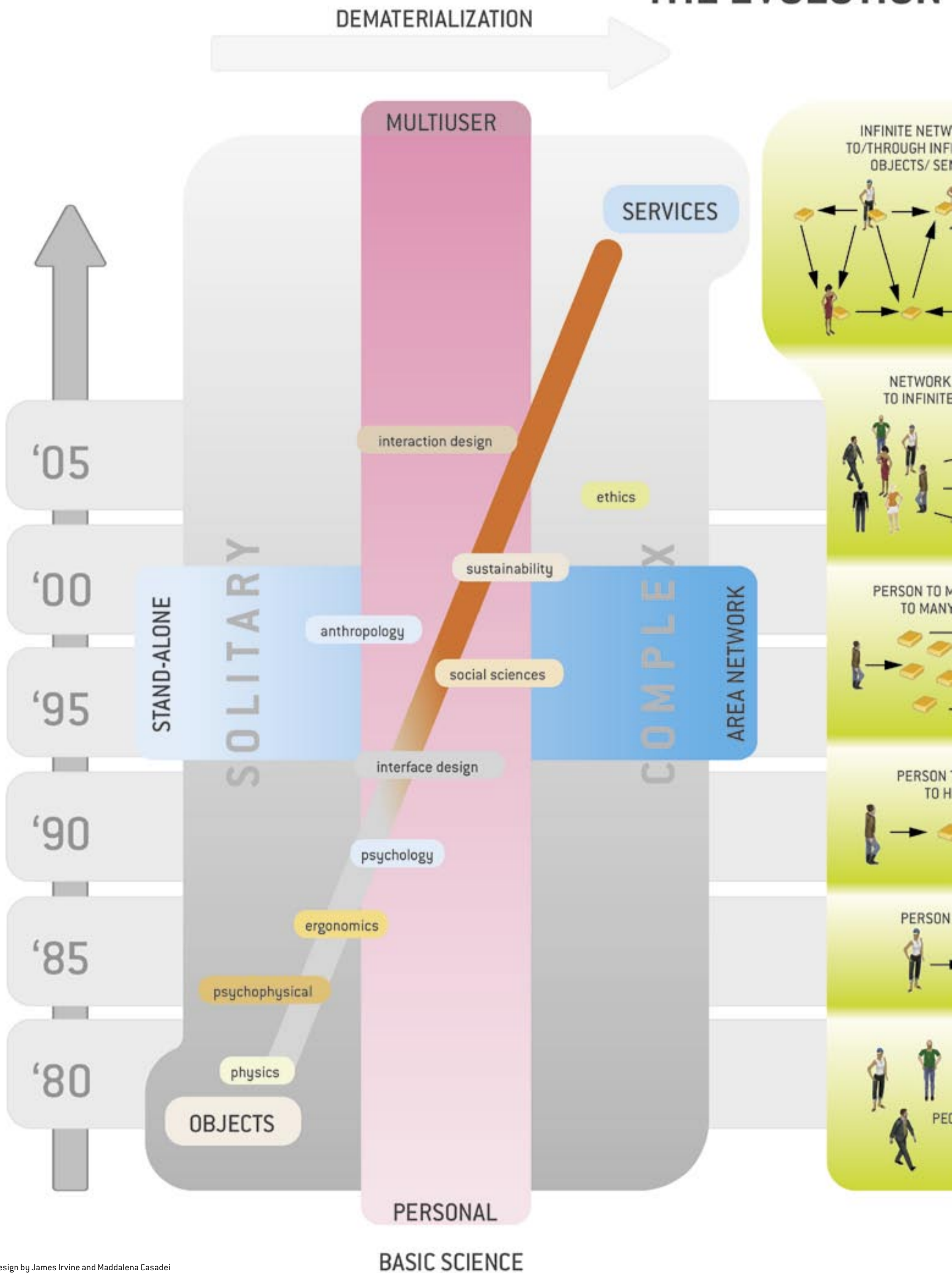
MEDIA COMMUNICATIONS FASHIONS

ALL!  BEHAVIORAL SETTINGS



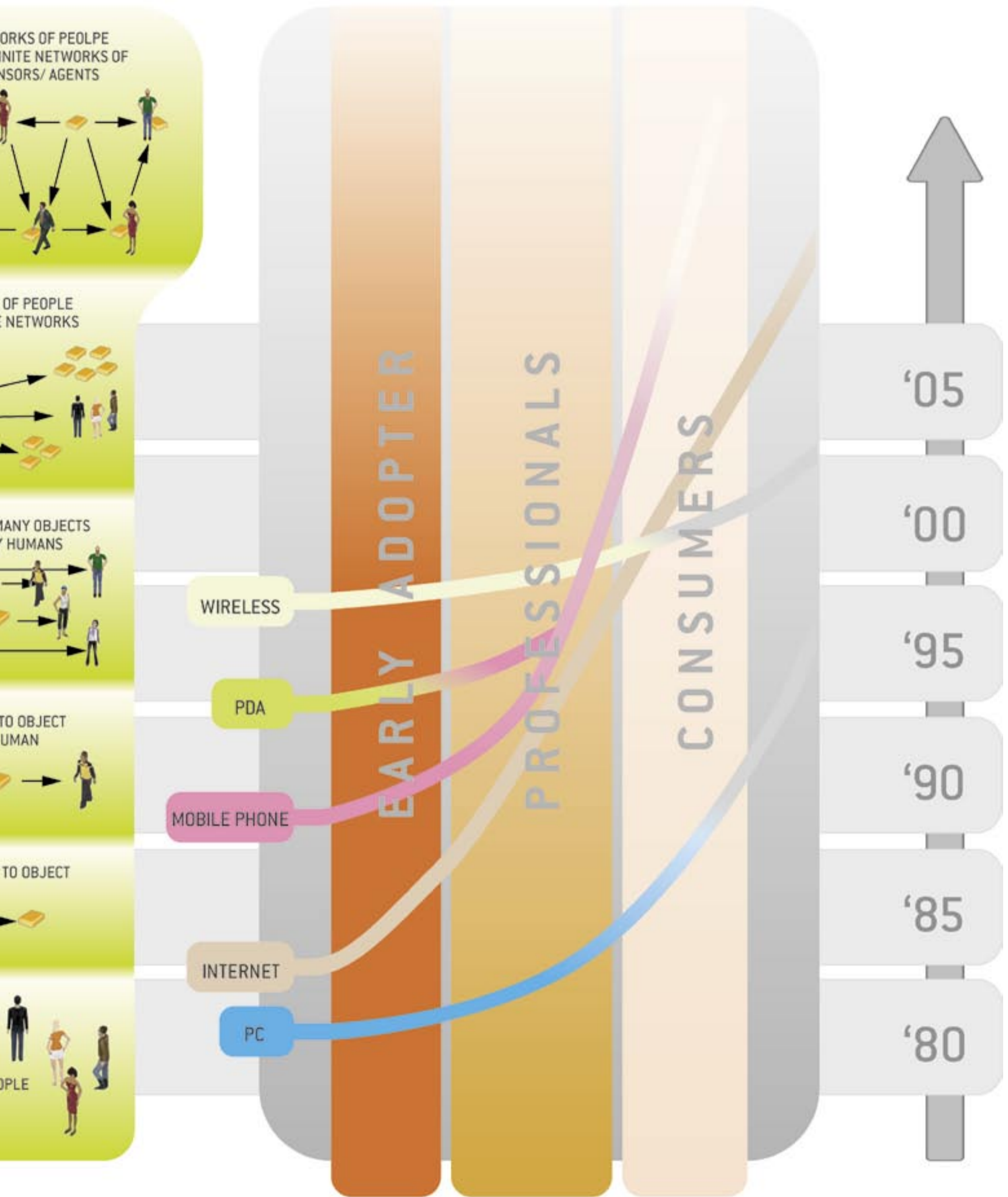
Sketch by Bill Verplank.

THE EVOLUTION



OF INTERACTION

LEVEL OF ADOPTION



PENETRATION & TECHNOLOGY
PENETRATION

AGENZIA DI PUBBLICITÀ

Corriere della Sera

Corriere della Sera



TELECOM
ITALIA
COMUNICARE E VIVERE

SE AVESSE POTUTO COMUNICARE COSÌ, OGGI CHE MONDO SAREBBE?

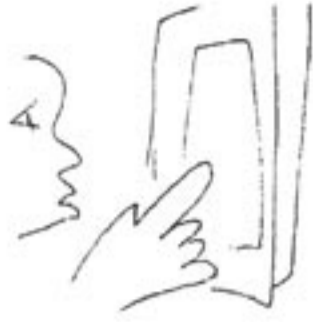
DESIGNING INTERACTIONS

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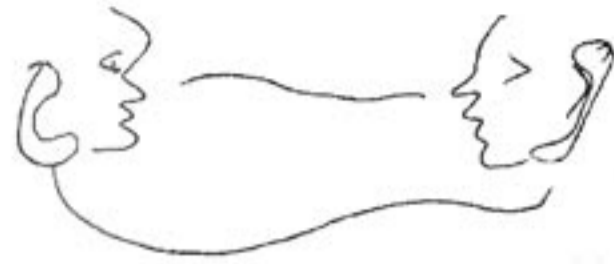
- 1. WHAT IS INTERACTION DESIGN?
- 2. ADOPTION OF TECHNOLOGY

BILL MOGGRIDGE, JUNE 2004





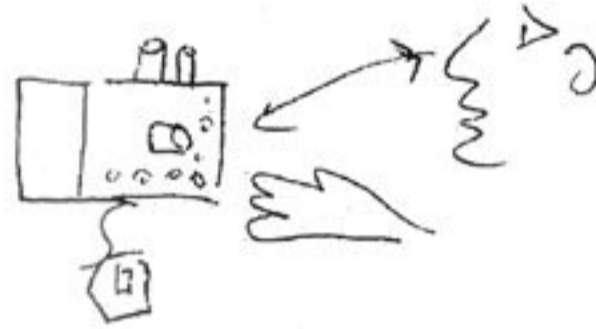
Ⓐ HCI / HUMAN FACTORS



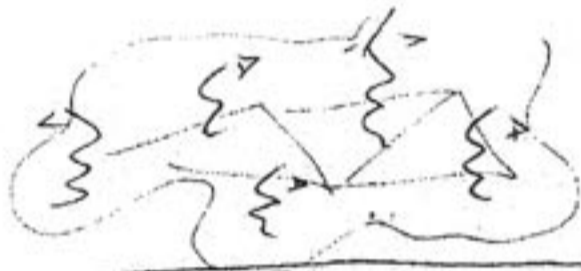
Ⓑ (TELE) COMM



Ⓑ MASS MEDIA



Ⓐ INTERFACE / PRODUCT DESIGN



Ⓑ SOCIAL STUDIES



Ⓒ INFO & DOC MANAGEMENT

Any aspects of product design where:

- └ objects are quasi-subjects
- └ interaction is heavier
- └ information exchange is high

1. WHAT IS INTERACTION DESIGN?

“BROADLY, INTERACTION DESIGN IS THE DESIGN OF EVERYTHING THAT IS BOTH DIGITAL AND INTERACTIVE”

Design has always been concerned with interactivity. When you design a simple object like a wine glass, the interaction between the person who uses the glass and the object itself is at the forefront of your mind. You think about creating a beautiful shape for the glass, but you also think about what it looks like as you pour the wine into it, what it is like to feel the shape of the stem in your finger tips, to lift it to your lips, to smell the bouquet, and to feel the rim of the glass as you take a sip. You think about all the interactions with the object, from the point of view of everyone who will interact with it, from manufacture, through purchase, the cycle of use, and finally recycling or disposal. The designer aims to make those interactions as enjoyable and satisfying as possible. →

The new discipline called “Interaction Design” has emerged to design interactions enabled by digital technology. The traditional approach to designing interactions, like that for the wine glass, does not help the designer to navigate in the artificial context of bits, pixels, input devices, users’ conceptual models and organizing metaphors. A new discipline is necessary to equip designers with the knowledge and tools that allow them to “create or contrive for a particular purpose or effect”¹ in this digital context. →

Here is Nicholas Negroponte’s 1998 description of the emerging digital age: “The decades ahead will be a period of comprehending biotech, mastering nature, and realizing extraterrestrial travel, with DNA computers, microrobots, and nano-technologies the main characters on the technological stage. Computers as we know them today will a) be boring, and b) disappear into things that are first and foremost something else: smart nails, self-cleaning shirts, driverless cars, therapeutic Barbie dolls, intelligent doorknobs that let the Federal Express man in and Fido out, but not 10 other dogs back in. Computers will be a sweeping yet invisible part of our everyday lives: We’ll live in them, wear them, even eat them... Yes, we are now in a digital age, to whatever degree our culture, infrastructure, and economy (in that order) allow us”. (Nicholas Negroponte, a founder of MIT’s Media Lab, 1998)² →

We seem to be well on the way towards fulfilling these predictions, although the “dot com madness” has faded and the invasion of technology was temporarily slowed by the economic downturn. Even if you doubt that we are already in a digital age, it is clear that we are marching relentlessly

towards a condition where everything that can be digital will be digital.³ →

It is also true, even if not always recognized, that everything is designed, whether it is digital or physical. Don Norman makes an eloquent case that we are all designers⁴, in that we manipulate our environment, selecting, building, buying and arranging everything around us for our own purposes, and to our own satisfaction. Before we get to do that as individuals, professionals have already designed most of the items that we can choose and manipulate. →

There is a long tradition of design of the physical artefacts that we surround ourselves with, from architecture and civil engineering for spatial structures, through mechanical engineering and industrial design for everyday products, to haute couture for fashion. The infrastructure of education and disciplines for these skills is well established and understood. The challenge for Interaction Design is to develop similar skills and education for the design of everything that is both interactive and digital. →

“EVERYTHING THAT IS BOTH INTERACTIVE AND DIGITAL INCLUDES OBJECTS, SERVICES AND EXPERIENCES”

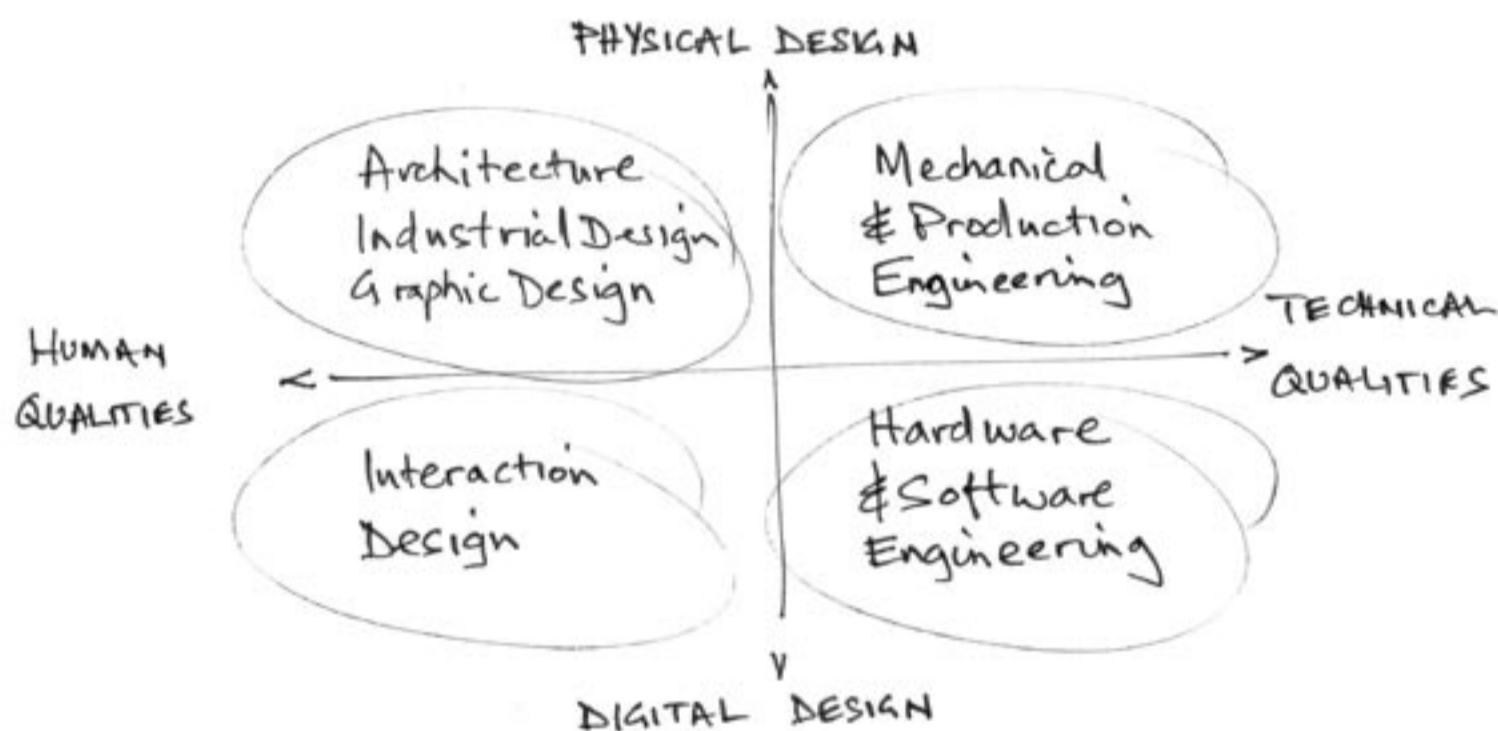
“Interactive Digital Objects” encompasses all of the things that include electronic technology, or are enabled by electronic technology. We usually think of technology as expressed in the design of the personal computer, with keyboards, mice and screens, but digital objects are much more pervasive. Think of interactive toys, greeting cards with verbal messages generated by chips, or toasters equipped with fuzzy logic. In cars the value of electronic technology continues to grow, and was already more than a third of the total cost of a typical vehicle by the 1990s. Computer systems control instrumentation, fuel economy, emissions, and emergency behaviors like airbags and antilock braking. Most people are unaware how much of their driving experience has been subtly altered by this technology, which has invaded the vehicle transparently, so that we don’t see it. →

“Interactive Digital Services” includes all the aspects of services that you use that are enabled or enhanced by electronics, including everything that makes use of the internet, as well as parts of simple everyday experiences. Think of telephone calls, banking, and online transactions. An airline has digital booking systems, information services, and control systems of all types from ordering food supplies to flying the planes. When designing services, one tries to think about designing the whole experience, and it is surprising how often the digital context occurs. →

“Interactive Digital Experiences” is useful as a catch-all for the design contexts that do not fall neatly into the object and service categories. In the computer realm, software for operating systems and applications is included, and this can apply to personal computers, laptops, palmtops and increasingly telephones, as internet access and messaging gain in popularity. It can apply to computer and video games, as well as other forms of interactive media and entertainment where digital technology is present. It can also apply to environments that are mediated in some way by digital technology; think of museum spaces, exhibits, hospitals, libraries, trade shows and art installations. It applies to the web sites and navigational structures on the internet that are focused on information and communication, rather than services. Think of everything that is more than an object or a service, where digital technology might help.

“A NARROW DEFINITION OF INTERACTION DESIGN IS THE DESIGN OF THE SUBJECTIVE AND QUALITATIVE ASPECTS OF EVERYTHING THAT IS BOTH DIGITAL AND INTERACTIVE, CREATING DESIGNS THAT ARE USEFUL, DESIRABLE AND ACCESSIBLE”

One can also think of Interaction Design in a narrower way as a discipline that is related to the experience and background of other design disciplines that deal in aesthetics and qualitative values, like Architecture, Industrial Design and Graphic Design. It is the equivalent of these disciplines in that the first concern of the designer is the values of the people who will use the design; the aesthetics, subjective and qualitative values, and human factors: the designer creates a solution to give pleasure and lasting satisfaction, and hence to fit the market, business and social requirements.



The broad view of Interaction Design includes the work of HCI (Human Computer Interaction) professionals, computer scientists, software engineers, sociologists, cognitive psychologists, cultural anthropologists and designers. It is natural for people outside the design and development disciplines to see this broad view, as they react to the resulting designs in terms of the experiences they have as users of interactive software, devices and services. If they think about the design at all, they are likely to do so as a holistic overall result, as they don't understand the individual roles of particular disciplines.

The diagram shows the positioning of Interaction Design as similar to Architecture, Industrial or Graphic Design, except that the context is digital rather than physical, and the designer operates in the technological domain of hardware and software, rather than the two-dimensional domain of print, or the three-dimensional domain of objects and spaces.

The curriculum of the Interaction Design Institute Ivrea (IDII) focusses on educating designers within this narrower definition of the discipline, drawing in students

with a broad range of experience from both subjective and objective design disciplines, and teaching them how to design fluently in the digital realm. The website www.interaction-ivrea.it says, “Interactive technologies need a new kind of design, a fusion of sound, graphic and product design, and time-based narrative. Developing this new kind of design will lead to a new aesthetic: one of use and experience as well as of form. Function and information (and perhaps entertainment) converge”.

2. ADOPTION OF TECHNOLOGY

This new kind of Interaction Design is most important when digital technologies are mature enough to be used for everyday life outside the workplace. David Liddle was project leader for the design of the Xerox Star, the founder of Metaphor Computer, and head of Interval Research. He has a simple explanation of the development phases that a technology can be expected to go through, a process that has profound implications for designing interactions, as the nature of the design process changes as each phase is reached. Here is his explanation of the enthusiast phase, the professional phase and the consumer phase:

“In the twentieth century at least, the adoption of a fresh technology, ordinarily passed through three stages, and seems to continue to do so now. Sometimes one of the stages may be very small.

The normal progression is first to enthusiast users, who actually love and appreciate the technology in an aesthetic way, who enjoy exploiting it. The fact that it may be difficult to use actually adds to the fun, and it's certainly the case that competing variants of it will always be operated very differently. This was clearly true of automobiles, clearly true of cameras and all photographic equipment, true really of all the things like that that we might think of. The enthusiast phase is important because the enthusiasts take the technology far beyond what the inventors and designers imagined could be done with it; they show the extremes of its potential. During this period there's always a great deal of ferment, quickly produced competing approaches. The controls for such a technology always vary a lot, because for a while at least, people try to use them as the basis for competition. If you're an enthusiast you're somewhat

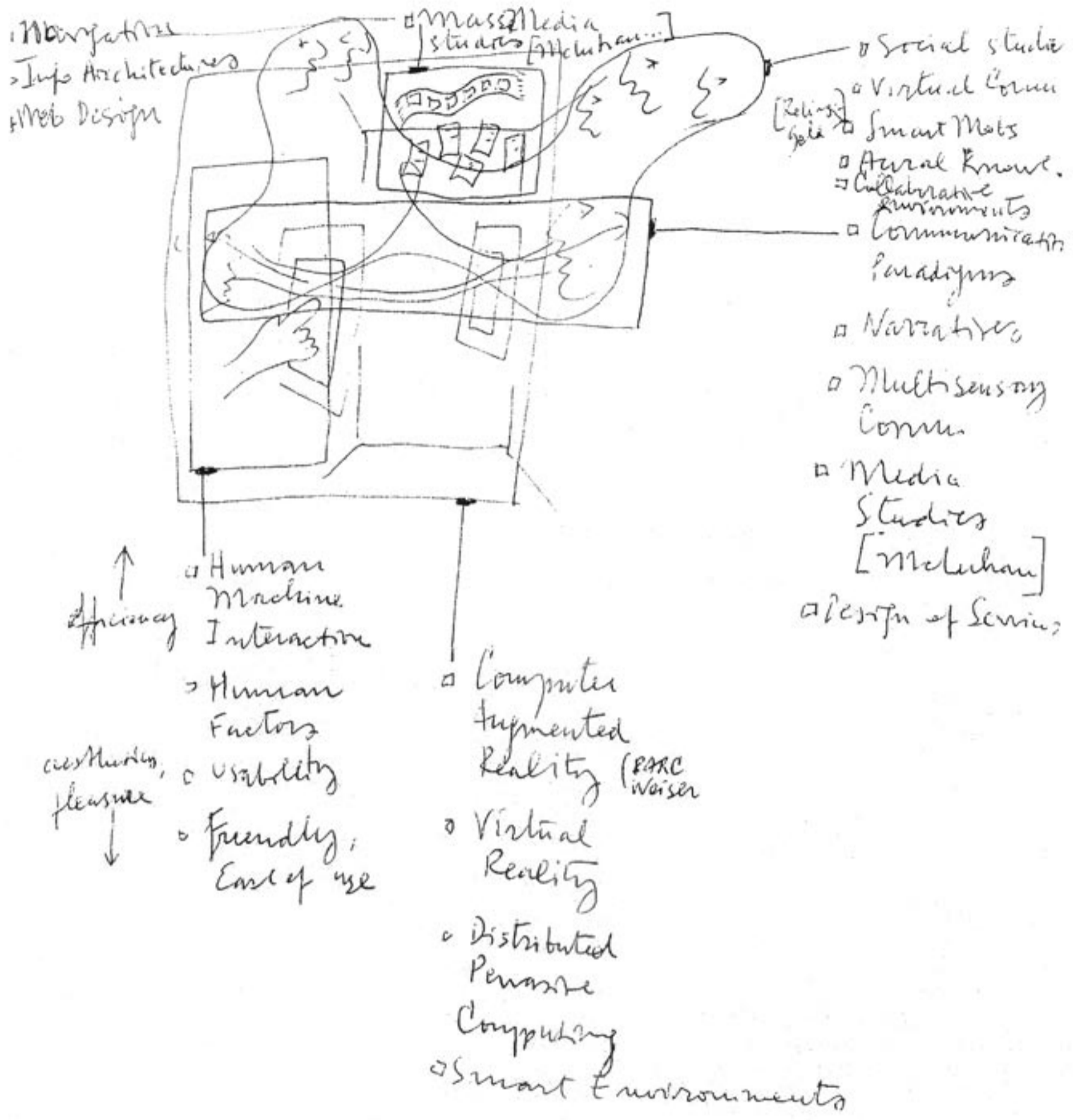
proud of your ability to manage all of the complexities and difficulties. Early automobiles broke down every four or five miles, and you had to stop and pump up the tires, or re-crank the starter or something, but that was a good part of the fun. It was after all just a Sunday afternoon thing that you did.

Once enough enthusiasts have their hands on a technology, sooner or later one of them will say, “I can use this in my work!” They get a clever idea about how they're going to do something really practical with it. Notwithstanding that they enjoy its use, they decide to find a way to fit it into some practical part of their life, either literally their livelihood, or at least their home life in a practical way. As this begins to happen, there is a great change in the priorities of the developers of the technology. For one thing, they become more focused on costs and prices, not because it's going to become inexpensive, but because it will now be judged to some extent by how practical or useful it's going to be. The people who buy it, whether business people or consumers, are now saying, “Well, is that worth it for what I'm going to do?” There becomes a much more stabilized view about how much things are permitted to cost, and reliability and so on becomes important, but particularly we see the standardization of controls.

After a product has built up big enough volumes through this business phase, that's when suddenly one begins to reach a price point where it's practical for consumers to buy it. It goes from being the buy based on the aesthetic property for enthusiasts, to a practical return on investment kind of purchase by a professional, and now it becomes a very easy discriminatory purchase for a consumer, who feels it's practical and within their price range.

The enthusiast wants that product to say, “Exploit me! Look at my capabilities”. The business user wants the product to say, “Look at the productivity I can give you; here's how I'll change your activities”. The consumer wants the product to say, “Look at how I fit in with your style! Here's who you are. Use me and enjoy my capabilities”.

In this consumer stage the priorities for the product have dramatically changed, and one thing that we always see is that most of the important controls become automatic; for example, automobiles have automated safety functions, and cameras are automated to allow you to point and click. In this third stage we see prices that allow easy consumer decisions, the automation of the most subtle and important of the controls, and a great emphasis on the compatibility of the lifestyle of the purchaser with the image of the product”.



- Inhabited Spaces of Knowledge
- the third space

Sketch by Marco Susani.

These three phases need different design skills and processes to achieve success. Inventors are often good at coming up with the first version of a technology, and can find the “enthusiasts” to adopt the technology by creating nothing more than an innovative solution. A design team of one person is sometimes enough, although great inventors like Thomas Edison employed a team of experts to increase their output. ↪

The inventor, even when supported by a band of technicians, is no longer able to develop the technology once it enters the “professional” phase. New values apply to the design when people adopt the technology for practical purposes in their work. Now it must be reliable, it must perform consistently, it must be priced to offer reasonable value, and above all it must be both useful and usable. This is a much more demanding set of requirements than the invention of the version of a technology that will appeal to the enthusiast. Large and complex organizations for development of new products and services in companies have evolved in response to this set of needs. Teams of developers must include people with scientific, technical and engineering skills to provide performance and reliability, business and value engineering skills to create solutions with the right balance between price and value, and marketing and human factors expertise to ensure the combination of usefulness and usability. ↪

A design for the professional phase does not need to be easy to use, as people take pride in acquiring skill in their work; their learned skill separates them from the unskilled and allows them to feel expert. It does not have to be enjoyable either, as people tend to take their work seriously, and be willing to try hard to be productive, even if the experience is not always enjoyable. Education for human factors professionals has evolved around this need for professional productivity, with methods that focus on evaluation of the way people use technologies in their work life, both civilian and military. The version of this contribution in digital technologies is called Human Computer Interaction (HCI). ↪

The makeup of a design team needs to change once again when a technology enters the “consumer” phase. Ordinary people will not buy products and services unless they like them, and find them easy enough to use to be valuable. There are plenty of examples where things are not so easy to use, and cause frustration, but the basic value proposition must be there. The VCR is a good example of this, as the basic function of playing a tape is an excellent piece of interaction design; you push the tape cassette into a slot that is easy to see, the mechanism grabs it and automatically starts the tape. Press the eject button and the cassette is

presented to you. By contrast, the functions needed for recording were badly designed for many years after the VCR was cheap enough to be accessible to consumers, with incomprehensible remote controllers, cryptic feedback, and little use of helpful automation. This classic example of bad interaction design persisted, resulting in all those examples of un-programmed VCR displays flashing “12:00”, until the interactions eventually made use of the TV screen for output. Here the value proposition of playing the tape was enough to justify the purchase, but most people never used the device as a tape recorder because it was too hard to use. ↪

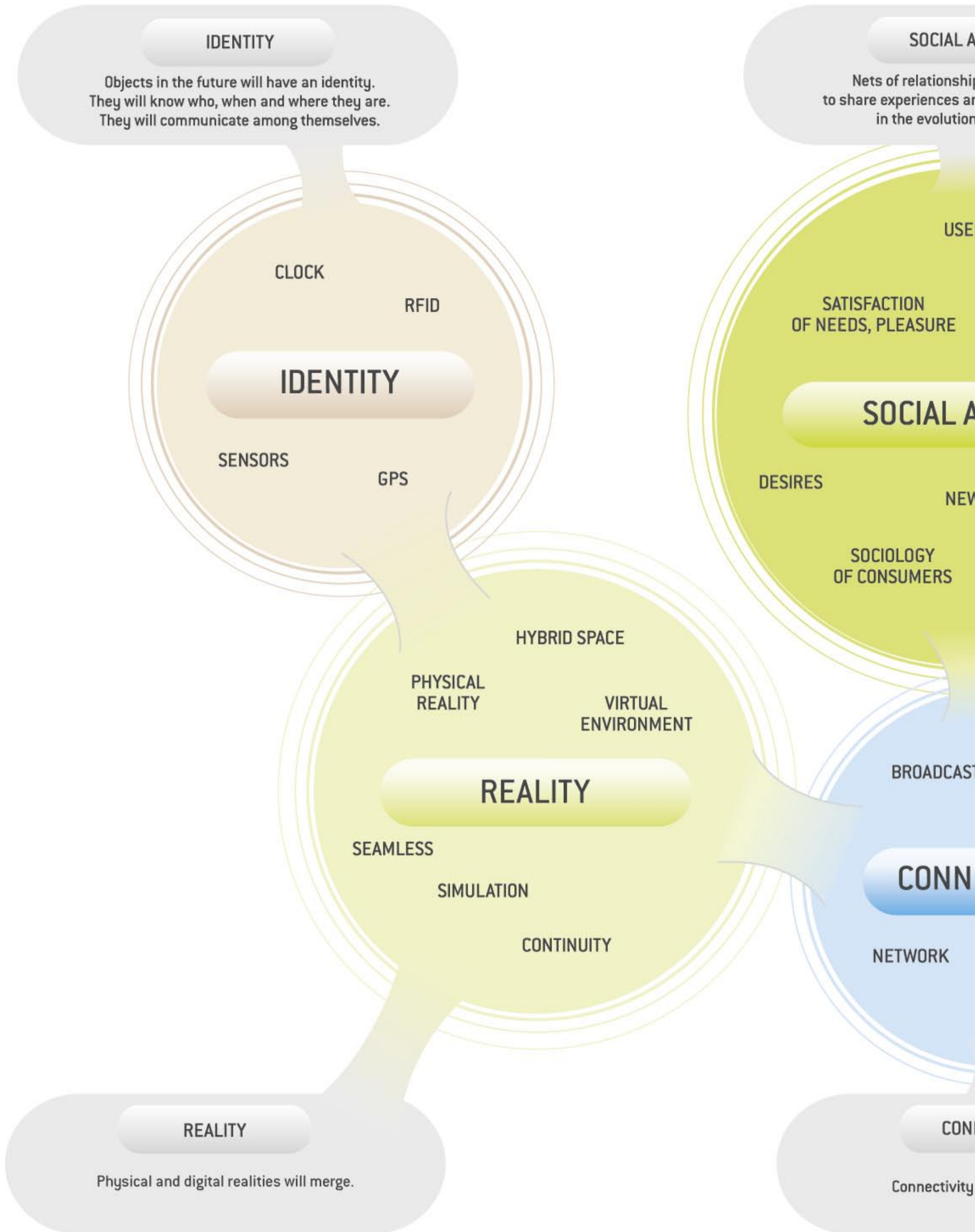
During the “consumer” phase the design team has to be structured to create solutions that are both easy to use and enjoyable. The same skills that were needed for the professional phase are still in demand, at an even more critical level, as the balance between price and performance is harder to achieve. Now it is also necessary to bring designers into the team who are capable of creating interaction design solutions that people want, that they find easy to use, that they enjoy, and that will give lasting satisfaction. In this situation Interaction Design fills the equivalent role for digital technologies that Architecture has filled for buildings, Industrial Design has filled for physical objects, and Graphic Design has filled for print. Designs must work at every level, but should be beautiful and delightful as well; success will depend on qualities of behavioral and aesthetically enjoyment. This is where the designers who emerge from IDII will come into their own.



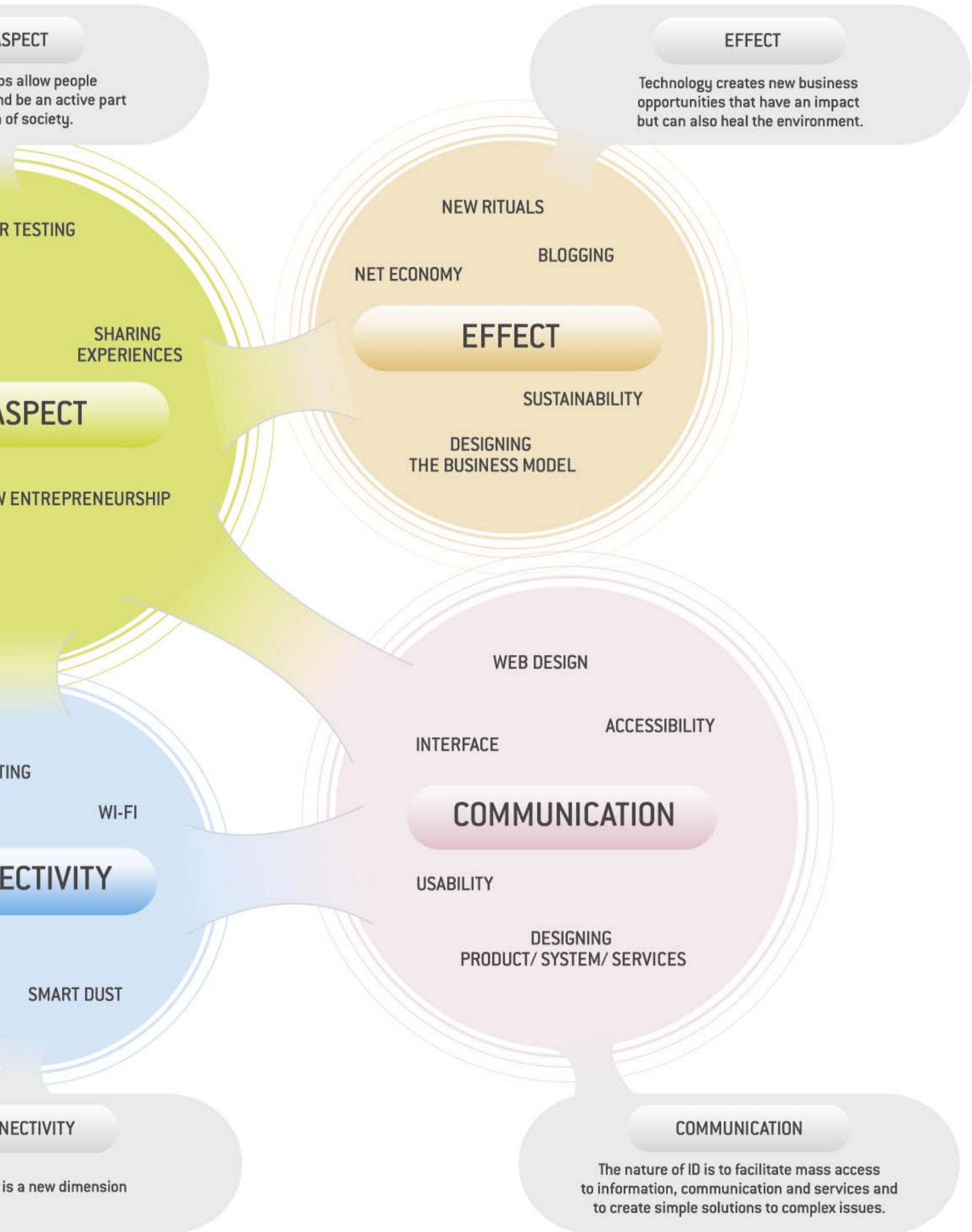
END NOTES

- 1 Definition of Design; The American Heritage Dictionary, Third Edition, Houghton Mifflin Co.
- 2 WIRED Column 6.12, “Beyond Digital”, December 1998, by Nicholas Negroponte, a founder of MIT’s Media Lab.
- 3 “Everything that can be digital will be digital”, a tag line coined (or at least adopted) by Razorfish.
- 4 Don Norman, “Emotional Design”, Epilogue (published by Basic Books, a Member of the Perseus Book Group, 2004).
- 5 David Liddle is currently a General Partner in U.S. Venture Partners, and an Explorer for IDII.
- 6 This quote taken from an interview for “Designing Interactions” by Bill Moggridge, to be published by MIT Press in 2005.

THE PHENOMENA



OF INTERACTION





INTERACTION DESIGN

ABOUT THE INSTITUTE

Interaction Design Institute Ivrea (Interaction-Ivrea) is an independent non-profit organisation, founded by Telecom Italia and Olivetti, and now part of the Progetto Italia initiative of Telecom Italia. ↪

The Interaction Design Institute Ivrea acts—through its two-year Masters Programme and the innovation projects that are carried out independently or in partnership with Italian and international businesses—as a cultural centre for extending and disseminating interaction design knowledge and know-how. It aims to develop the culture of interaction design, which originally emerged in Silicon Valley, in a European context, building particularly on Italy's heritage and present strengths in design, innovation and lifestyle. In doing this, it is forging a distinctively Italian fusion of culture, technology, service models, and design for products and services. ↪

Interaction-Ivrea originated from the desire to merge creativity with the new cultural impulses coming from all over the world. It is an international network where professional skills and entrepreneurship merge to create new communication services. ↪

External businesses and organisations can support the activities of the Association in the following ways:

[Participation in ongoing thematic projects](#) ↪

Partner companies can establish mixed work teams (company/Institute) aimed at developing integrated design activities with groups of interaction designers and students on projects relevant to the academic programme of the Institute. In this way they can use these new methodologies experimentally and eventually contribute to the further



INSTITUTE IVREA

development of possible applications of products and services developed during the teaching activity. →

[Pilot project sponsorship](#) →

External organisations can commission from the Institute in-depth international research on new interaction design pilot products/services relating to areas of mutual interest. →

[Post-graduate bursaries](#) →

Partner companies can support the Institute's activities by promoting competitions for stipends, aimed at specific categories of students. →

[Project analysis and design clinics](#) →

Companies intending to develop a new product or service that has specific relevance to interaction design can obtain the support of work teams guided by teachers and experts. →

[Prospecting visits and meetings](#) →

Many companies possess technologies and expertise which

have untapped potential in different applications or markets. Designers are good at making these lateral connections. Companies can request that the Institute provides a special team of designers who explore at the requesting company's premises the technological or market potential of developing these products or services. →

[Annual end-of-year gathering](#) →

Each year companies and financial partners are invited to a two-day encounter with students and researchers. This gives them the chance to visit the Institute and have direct contacts with students and teachers. →

[Specialised research services](#) →

The Association can, on request, arrange meetings on specific themes, documentary research, and the planning and implementation of brief courses for external companies and institutions on various subjects. →

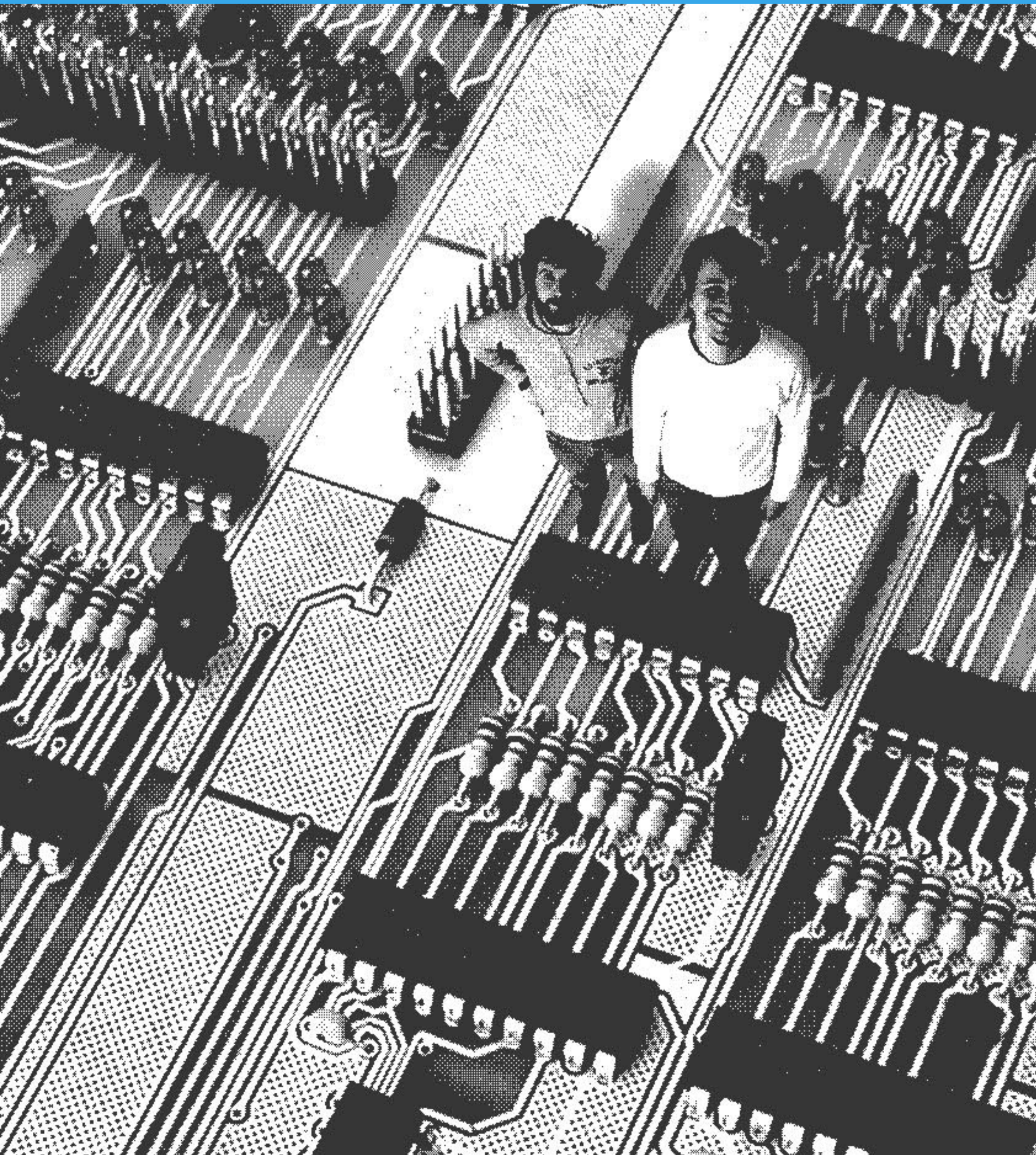
networks shaping cities
networks shaping events
networks shaping deals
one network connects them all

However complex your business life might be, Orange keeps all your worlds connected.
Successfully taking care of 3 million business people worldwide, Orange is a network
you can rely on. www.orange.com/network
Future's bright, the future's Orange

orange

CASE HISTORIES

“A COLLECTION OF SUCCESSFUL AND INTERESTING EXPERIENCES IN THE INTERACTION DESIGN FIELD...”





Since the beginning of time, humans have always had this fascination for the market. Sell, buy, barter all kinds of possible trade and businesses: i give you money, you give me camel, etc. The market shaped the ancient cities, in Greece and Rome, in the Western part of the world as well as in the East. The Japanese ideogram for city comes from “market”; short circuits between different civilizations happened because of this desire and need of commerce. Marco Polo was a trader, Samarkand, Hong Kong and San Francisco were all born as trading posts. The market shapes our cities, our culture, our life. If to this universe you add the Internet and fun part of an auction, then you get 34,100,000.

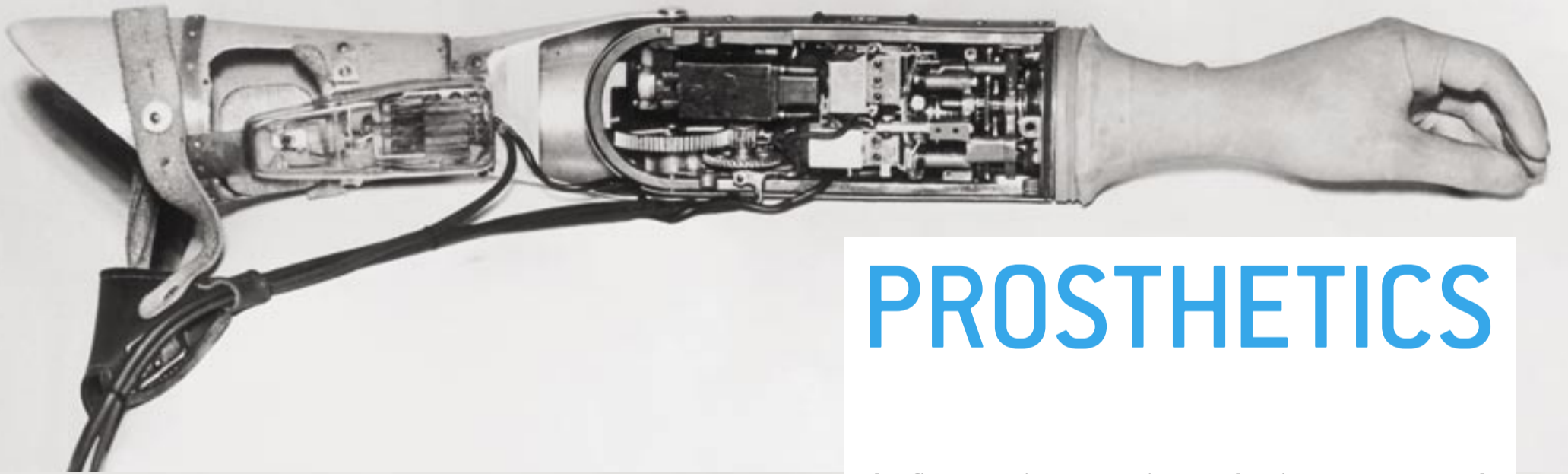
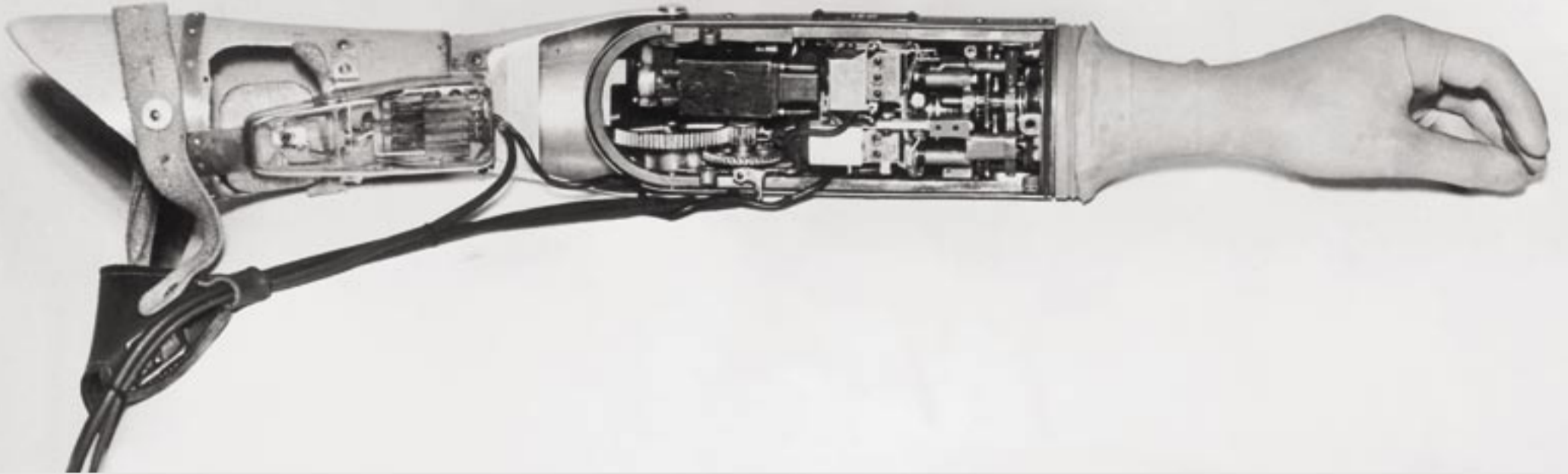
What is this number? The amount of active users on the ebay platform who bid, bought, or listed over the year 2003.

In the image: Jamal El Fnaa, Marrakesh, Morocco.



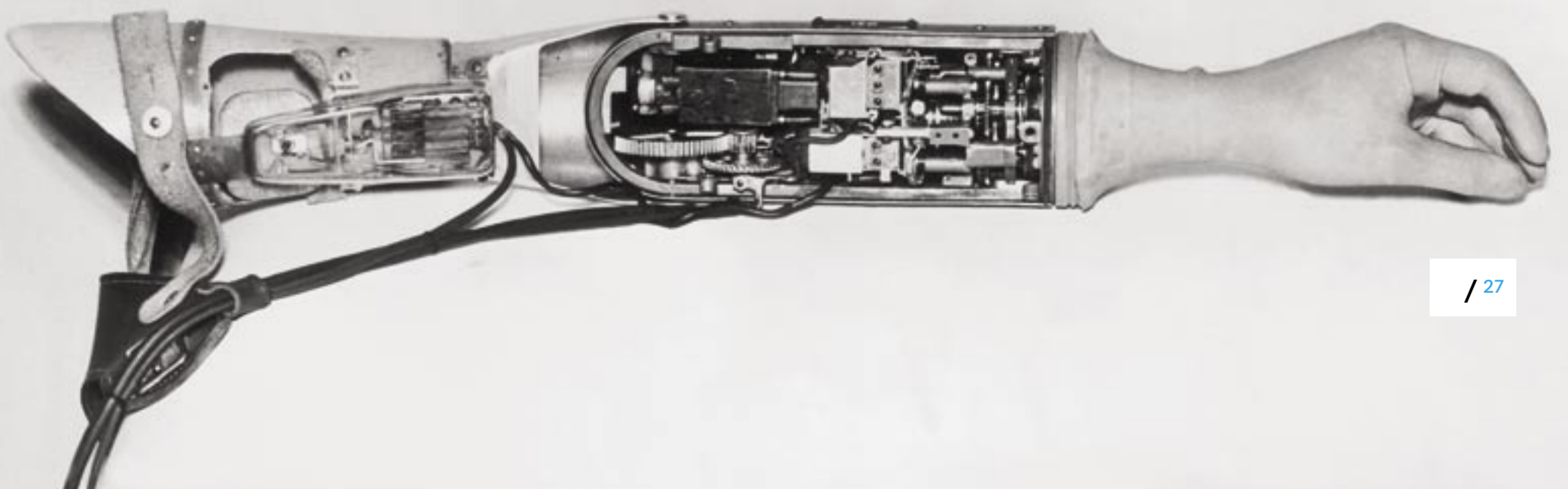
EBAY.COM





PROSTHETICS

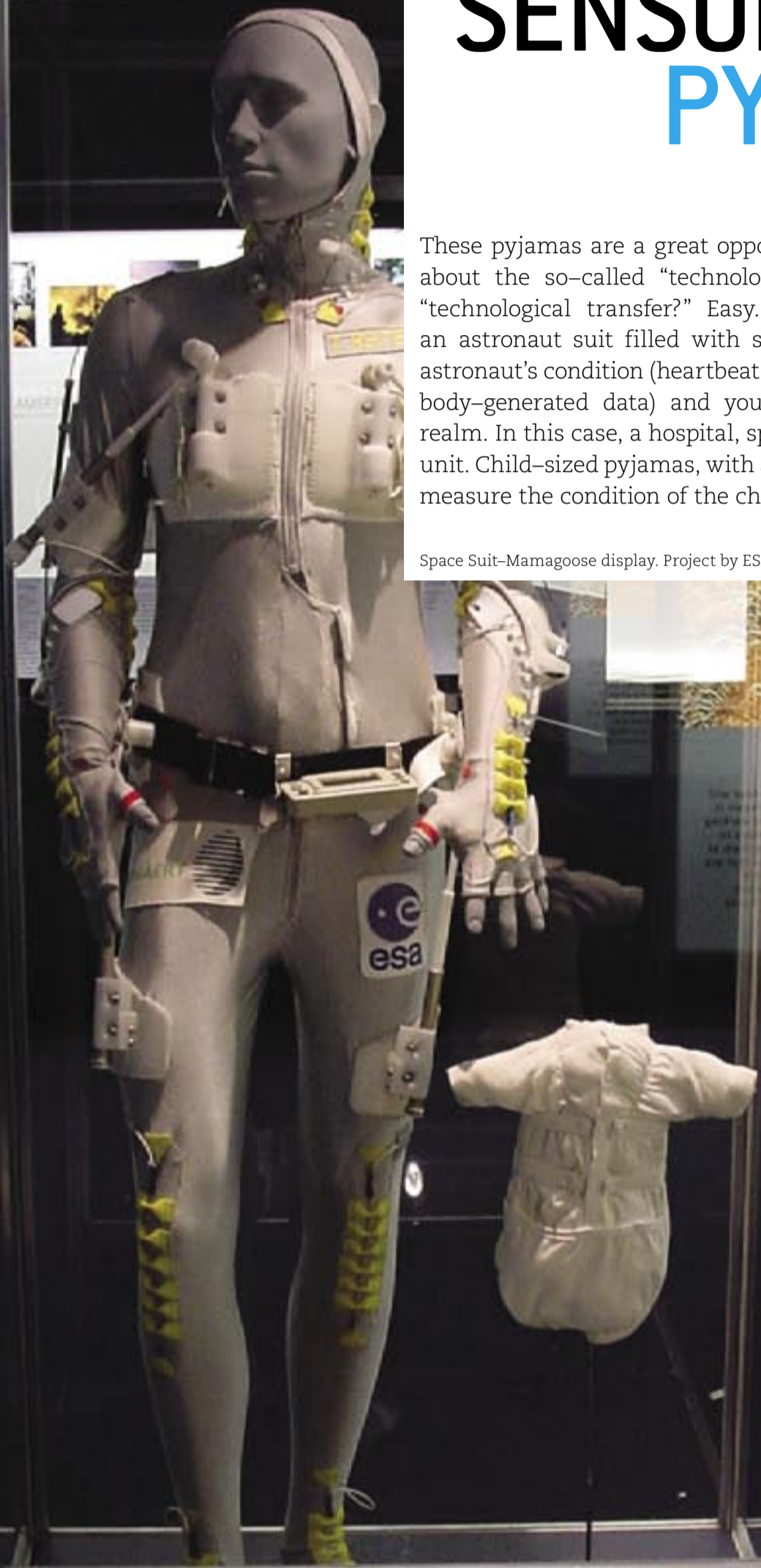
The first Terminator movie was shot in 1984. It was only 20 years ago but it looks a millennium ago. Although we thought that Arnold Schwarzenegger was a science-fiction character, we now understand he was not. Not because he became the Governor of California, but because he was making a documentary on possible applications of contemporary prosthetics. ▸



SENSORIZED PYJAMA

These pyjamas are a great opportunity to talk (finally) about the so-called “technology transfer”. What’s a “technological transfer?” Easy. It is when you have an astronaut suit filled with sensors to measure the astronaut’s condition (heartbeat, blood pressure, various body-generated data) and you move it into another realm. In this case, a hospital, specifically the pediatric unit. Child-sized pyjamas, with all these sensors, let you measure the condition of the child patient right away. →

Space Suit-Mamagoose display. Project by ESA. →



OBJECT | SMART SUITS

SPACE FUNCTION

It is important to know how the human body moves in the space environment. Traditional methods have used bulky photogrammetry techniques while in orbit, or virtual simulation scenarios during training on Earth. This ANRS suit now allows the astronaut's movements to be monitored accurately and easily while in space. The suit contains specialized sensors that can measure the changes in angles between the astronaut's limbs and body as he or she moves around the spacecraft. This particular suit was worn by ESA astronaut Thomas Bauer during the European Mission to the Mir space station.

EARTH APPLICATION

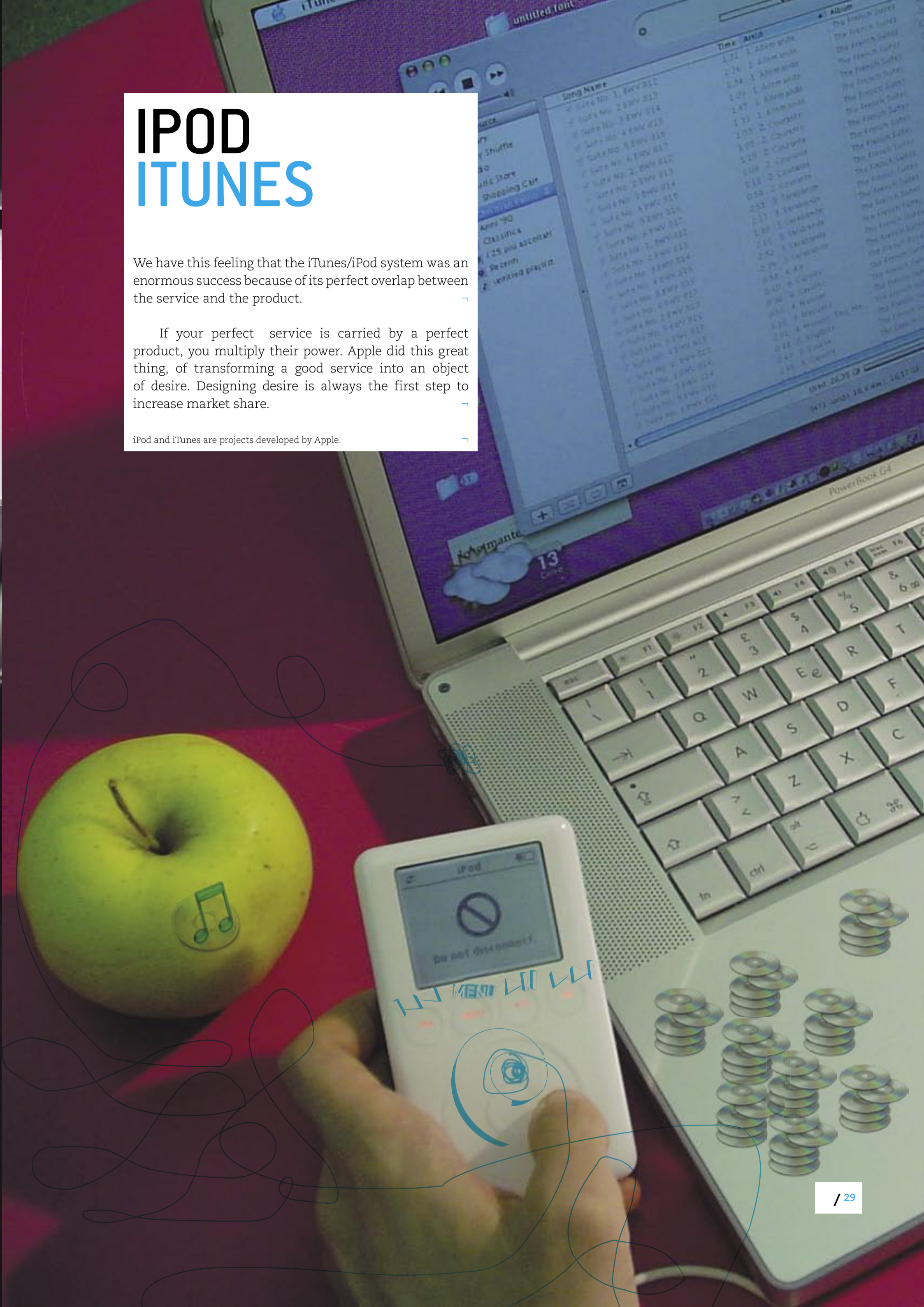
The ANRS pyjama is now being used to improve the design of postural spaces such as aircraft cockpits and car interiors. It might also be used to track the body movements of accident-prone workers so that safety and efficiency can be enhanced. A similar version of the ANRS pyjama is being used to monitor the movements of babies in intensive care units.

IPOD ITUNES

We have this feeling that the iTunes/iPod system was an enormous success because of its perfect overlap between the service and the product. —

If your perfect service is carried by a perfect product, you multiply their power. Apple did this great thing, of transforming a good service into an object of desire. Designing desire is always the first step to increase market share. —

iPod and iTunes are projects developed by Apple. —



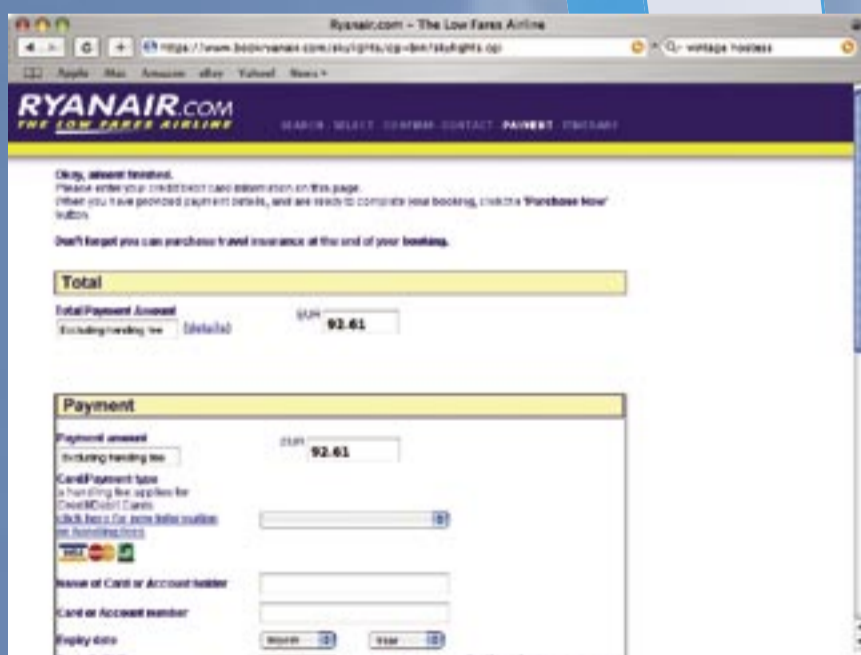
1 SEARCH



2 BUY



3 FLY



We should talk about how easy the interface is, how simple it is to buy a ticket. The simplest way to understand this is for you to go to the Ryanair website and buy yourself a ticket. But we'd like to mention is something different: the map of Europe changed because of Ryanair and other low-cost airlines. Some distances grew, others shrank. From Ivrea, near Torino—Italy, it is faster and cheaper to go to London than to go to Firenze. The European map is not the same anymore. The easiness of the process had a relevant part in the overall recipe. Nice!

RYANAIR



Alexandria, The Name of the Rose, Borges, the inaccessible libraries in the Vatican City... →

A whole world shaped as a library. A whole library shaped as a world. A library that is more of a concept than a physical place. At first precious collections belonging to kings and emperors. Then to monks in the monasteries of the European Middle Ages. The concept remained, changing shape and its physical manifestation

over the following centuries. The library became public, the library became synonym of collective memory. In the digital age, paradoxically enough, the finest public library is a private enterprise. For an author, to achieve recognition is no longer to be published, but rather to be in Amazon's web-based catalogue. It started with books, tapes, and little by little it is wrapping itself into an enormous collection of goods and services. →

AMAZON.COM





Your wallpaper is boring. ↵
No, wait: you do not have wallpaper in your house, not any more, precisely because it is boring. On the other hand, your house is full of large boxes that deliver exciting information when they are on, and simply take up space when they are off. What if wallpaper turned into a medium, a kind of large quiet display, quietly presenting the information of your choice? ↵

Computer-controlled thermal plates activate a color transition in specially-treated wallpaper, turning on and off credit card-sized pixels. A greyscale image or short fragments of text can be appreciated from a distance; the same plates can also operate as touch sensors, turning the wall into an input device. This device gives you information only when you want it. And when you want to be quiet, it literally disappears into the wall. ↵

Interaction Design Institute Ivrea 2004. ↵
Project by Dario Buzzini and Massimo Banzi. ↵
<http://www.nsww.org> ↵

NOT SO WHITE WALLS

INSTANT SOUP

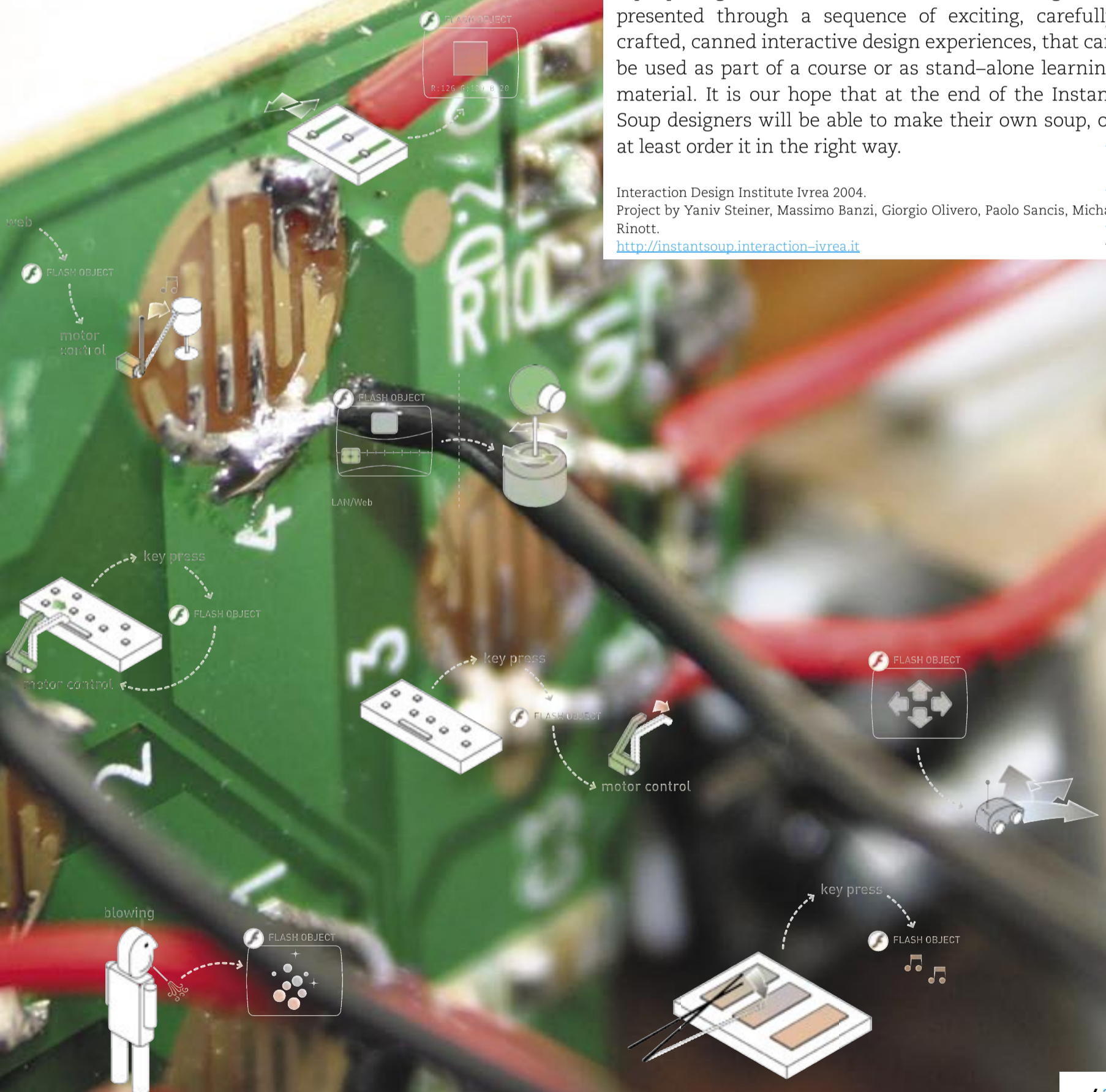
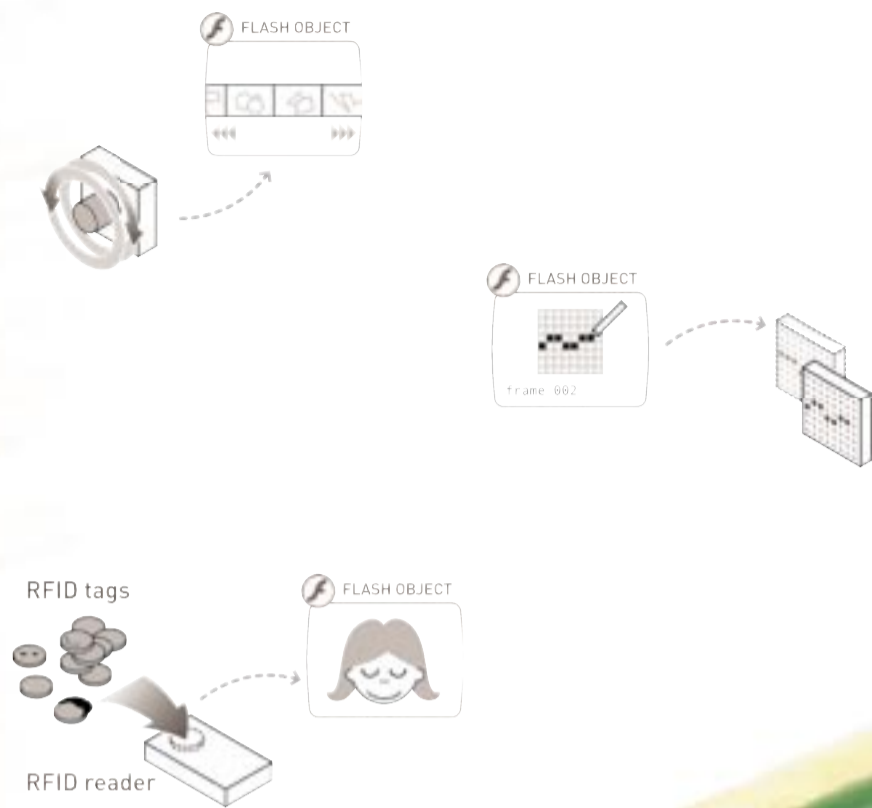
Making physical prototypes that can talk to a computer is tricky. Even a designer who knows how to code will rarely be familiar with the highly specific and temperamental tools that run on small, single-chip systems. Plus, the language of electronics is a combination of complex physics, engineering approximation, commercial practices and cryptic part numbers: not something that can be acquired rapidly—or pleasantly. The Instant Soup project proposes a set of friendly tools and instructions that enable interactive designers to make physical prototypes that move, blink and make noise.

The basics of electronics, programming and repurposing commercial hardware—“hacking”—are presented through a sequence of exciting, carefully crafted, canned interactive design experiences, that can be used as part of a course or as stand-alone learning material. It is our hope that at the end of the Instant Soup designers will be able to make their own soup, or at least order it in the right way.

Interaction Design Institute Ivrea 2004.

Project by Yaniv Steiner, Massimo Banzi, Giorgio Olivero, Paolo Sancis, Michal Rinott.

<http://instantsoup.interaction-ivrea.it>





LONDON SCIENCE MUSEUM

One of the natural applications of interaction design is the universe of museums. In almost every western language, 'museum' is a synonym for 'boredom'. ↪

Terrifying displays, lengthy explanatory notes, dusty artefacts. Interaction design proves that this universe is not static and can change. There are a number of institutions where you can see this process happening. The Science Museum in London is one of these. Feel free to explore the Wellcome Wing or spend a nice afternoon in the new 'Energy' section. ↪

Interactive Gaming Tables by Durrel Bishop and Andrew Himiak at the Wellcome Wing. ↪



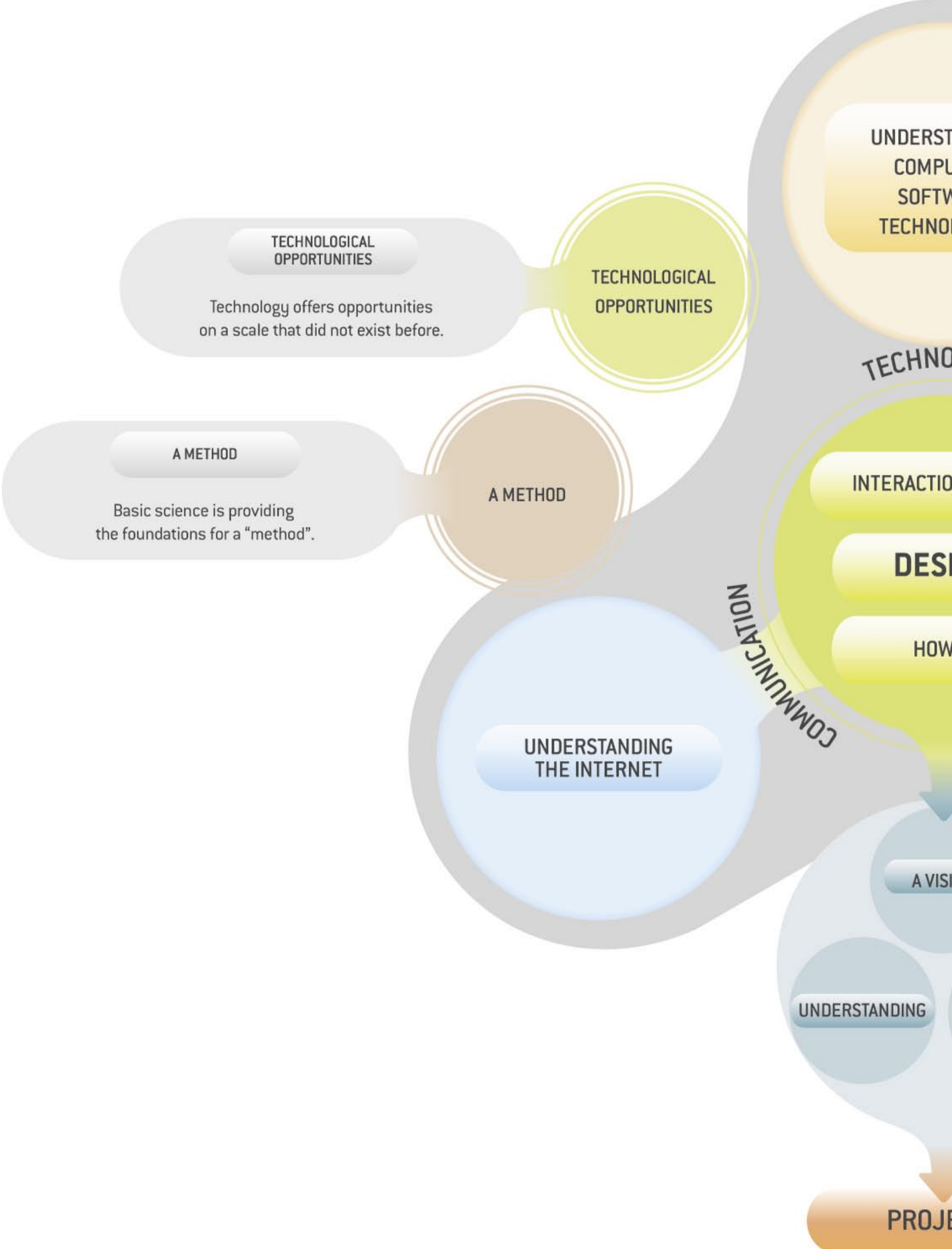
The best selling computer game in history, first released in 2000 and then supplemented with expansion packs. The Sims, in brief, allows you to play God. You build the environment where a group of artificial people live... Happily? Hatefully? Violently? You decide. There is no stated goal in the game, so people play it according to their own characters. ↪

The Sims players really like to be gods of their own pocket universe. So much that, when Maxis launched The Sims Online, a multiplayer environment where humans could interact in a Sims-like world through various themed cities, the project flopped. Not enough customers were interested: game + internet does not equal success necessarily. The Sims 2, by the way, is single-user. ↪

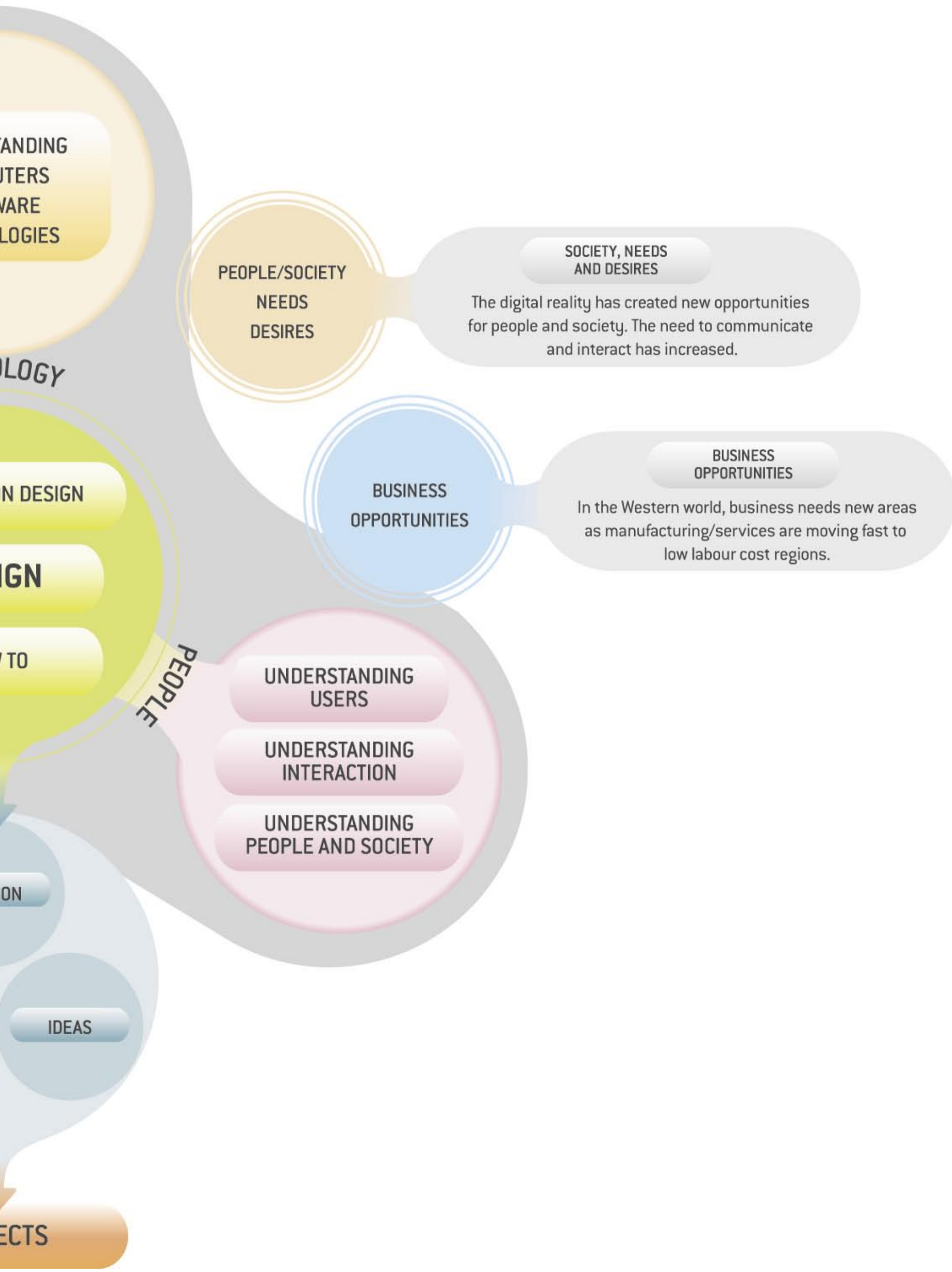
The Sims is designed by Will Wright at Maxis, a division of Electronic Arts. ↪

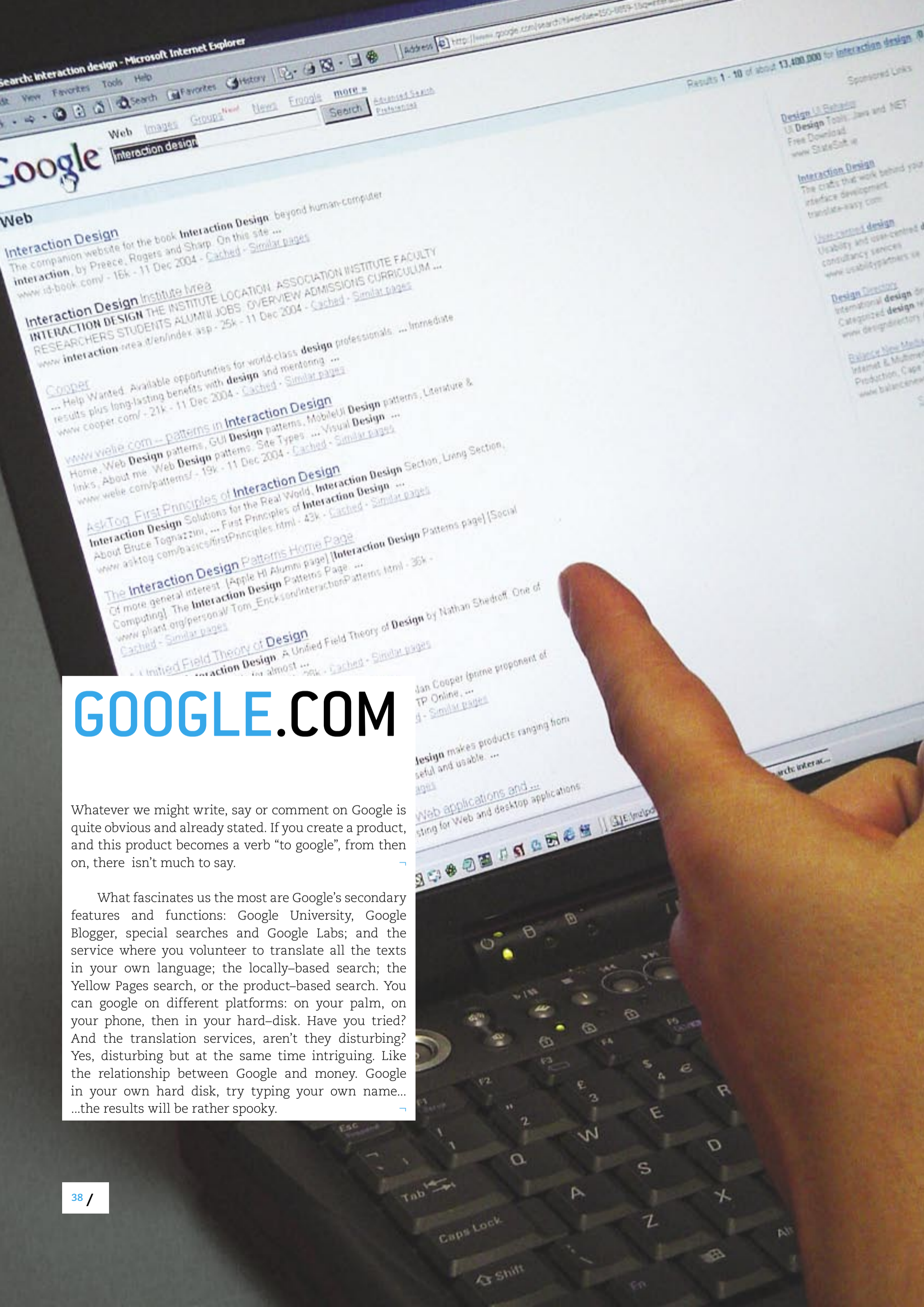
THE SIMS

THE METHOD OF



F INTERACTION





GOOGLE.COM

Whatever we might write, say or comment on Google is quite obvious and already stated. If you create a product, and this product becomes a verb "to google", from then on, there isn't much to say. →

What fascinates us the most are Google's secondary features and functions: Google University, Google Blogger, special searches and Google Labs; and the service where you volunteer to translate all the texts in your own language; the locally-based search; the Yellow Pages search, or the product-based search. You can google on different platforms: on your palm, on your phone, then in your hard-disk. Have you tried? And the translation services, aren't they disturbing? Yes, disturbing but at the same time intriguing. Like the relationship between Google and money. Google in your own hard disk, try typing your own name... ..the results will be rather spooky. →



The relationship between military research and human progress has been fully explained by Manuel De Landa in his book “War in the age of intelligent machines” published in 1992. From the age of the catapult to today, technology moves forward because of military research. It was like this for Carthage, Rome, the Middle Ages

and during WWII. In each case, the real money went to the real need: to fight people who do not belong to your family/clan/city/state. Of course, it is now the same. The real money goes to military research. What is left goes to porn, but that’s another story. —

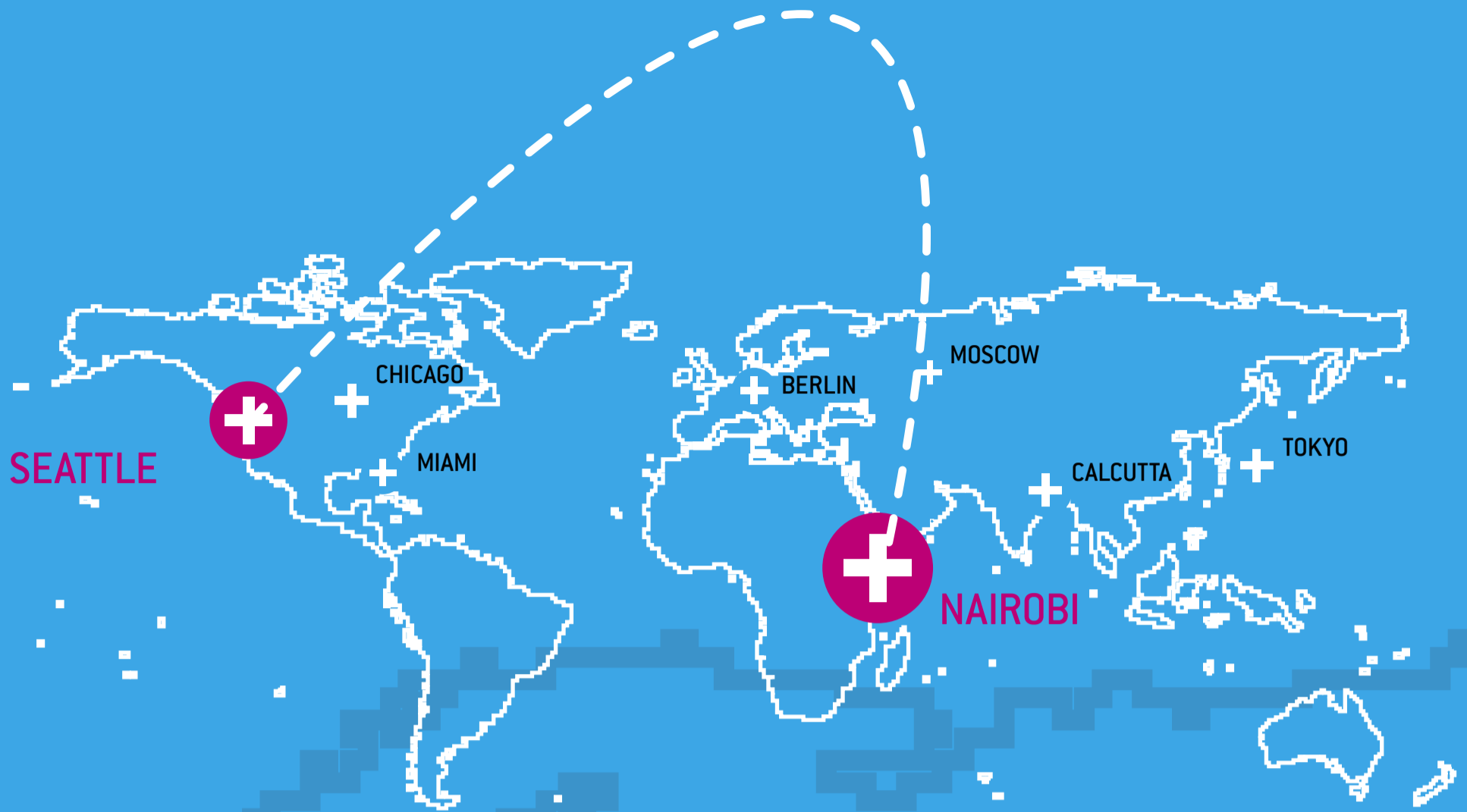
MILITARY RESEARCH



A photograph of a person's head and shoulders in profile, looking down at a city map. The map is spread out on a surface, and a yellow route is highlighted across it. The person's hair is dark and voluminous. The map shows a dense grid of streets with various colored buildings and green spaces. The highlighted route starts from the top left and moves generally towards the bottom right, with several turns. The text 'CAR NAVIGATOR' is overlaid on the left side of the map.

CAR NAVIGATOR

There isn't much to say about the car navigator. What's intriguing from our point of view is to understand why we don't have a human navigator. It would be rather easy and simple. It would be very useful and handy. Still no one has one. When we drive a car it is such a relief to have someone telling you where the next gas station is, or which direction you are supposed to go. This would be even more useful when walking. Still, for some unknown reason, although such a product exists, almost no one uses it. →



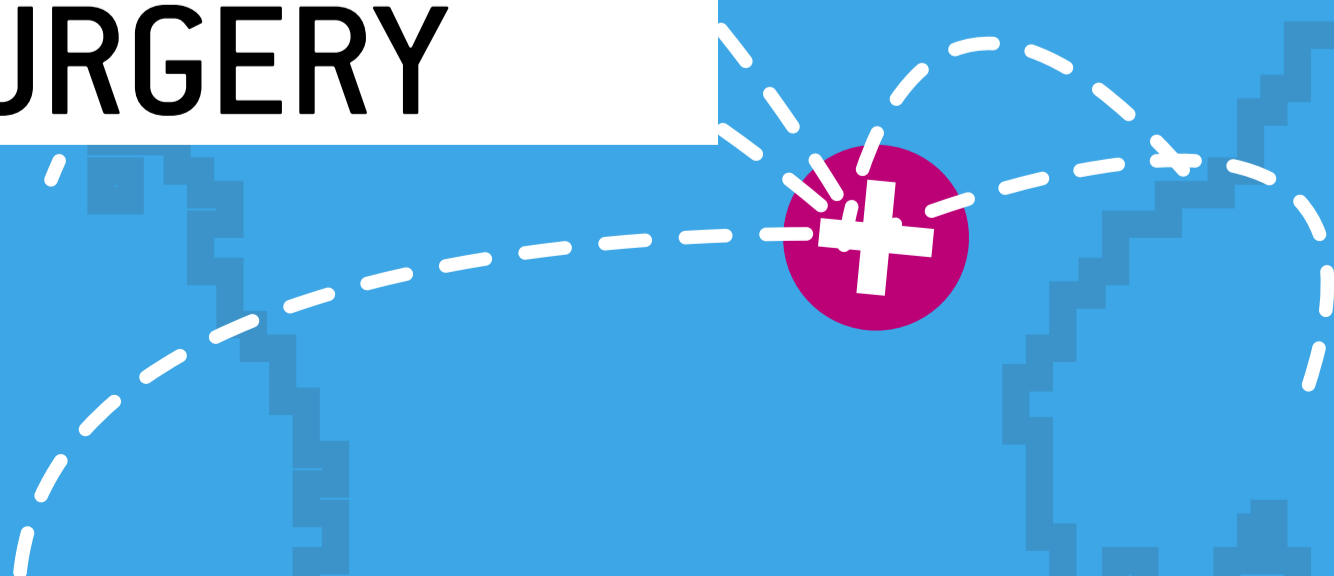
Imagine a super-talented and skilful surgeon. There are only two or three like him in the world. He is based in Seattle and cannot spend all his life travelling. At the same time, it is very difficult and incredibly expensive to move patients. What to do? To invest money in robotic surgery, improving the state of the art until we reach a level where the surgeon moves his hands using

instruments in Seattle, and a second pair of instruments operates on the patient in Nairobi. →

Is this science fiction? →
 No. It's already real. Now. →

The "da Vinci" surgical system by Intuitive Surgical. →

ROBOTIC SURGERY





ATM

The best interaction design is the invisible one. The one that creeps into your life and you don't even notice. When we drink a glass of water, we never think about the enormous achievement of hydraulic engineering. We simply drink a glass of water from the kitchen tap. The same applies to interaction design and ATM machines. Do you remember that we used to live in a world where ATM cards were not there? —

In the image, a curious mobile ATM machine. —

We all love Bernini and Borromini, we all love Baroque architecture. You enter a church and you get numb. The power of architecture is astonishing. Techno-baroque is similar. ↪

We went to New York, we went to L.A. The dream of modern architecture was a positive one, to use modern technology to build fancy chairs for the working class. The chairs are still fancy, the working class became

middle class and still does not sit on (or like) Mies' or Breuer's tubular stuff. Having to choose, we do prefer the decadent approach used by Koolhaas for the Prada stores. He does things for rich people and doesn't even lie about it. ↪

Hail to the rich! ↪

In the image: Delayed Mirror project by IDEO with OMA-AMO. ↪

PRADA DELAYED MIRROR



In the future everybody will have a videophone, we fear. Not only we will be able to sound dull and embarrassed, we will even look dumb—with uniformly oversized noses. The third generation of phones will put us on a stage. One of the traditional solutions to the horrors of live performance on stage is playback. ↪

And this is exactly what Phony Star does: we can be turned, on demand, into videostars, and impress our friends and lovers. Prepare your videophone call, choose an audio track from a library of songs made for seducing, impressing and terrifying your friends. At the right point of the conversation start the music and be a star! ↪

Interaction Design Institute Ivrea 2004. ↪
Project by Søren Pors. ↪

PHONY STAR

Phony
Star
prototype





PROCESSING /WIRING

Designers don't like programming, they like to design, to experiment, to sketch and to try out things. Most programming environments don't lend themselves to exploration: the steep learning curve beginners must laboriously climb makes it hard to get satisfaction from what they do. "Processing", a Java-based programming language that runs under Windows, MacOSX and Linux; and "Wiring", a simple programming language that runs on a small and cheap single board computer; aim to squash that toe. Both languages provide a friendly environment, where programs are entered into an editor, compiled, debugged and executed with great simplicity. ↪

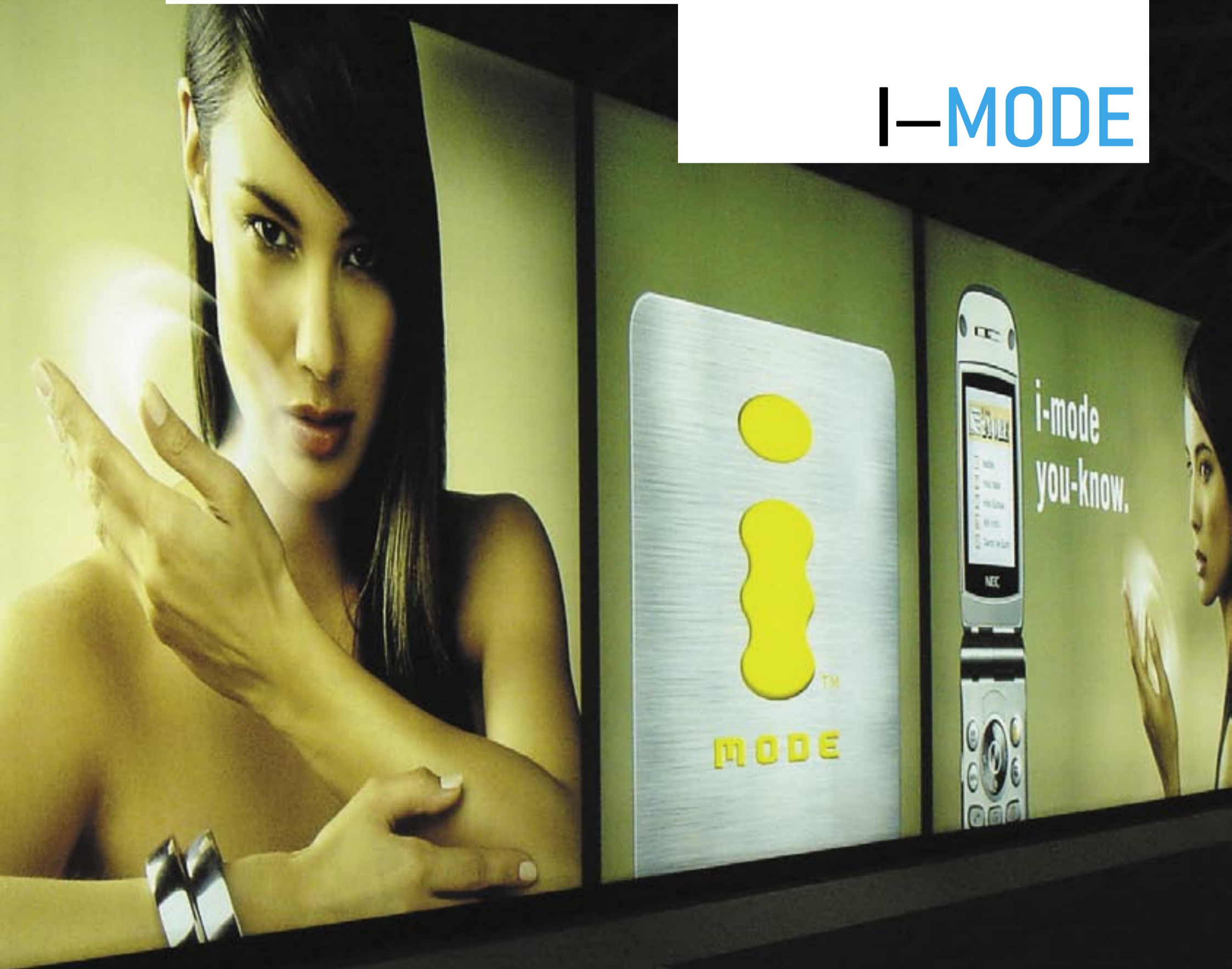
"Processing" and "Wiring" provide both the first step into programming the PC and embedded systems, but also enable a user to engage in higher complexities "Wiring" provides a set of primitives for controlling lamps, motors and data streams based on the input from buttons and sensors. ↪

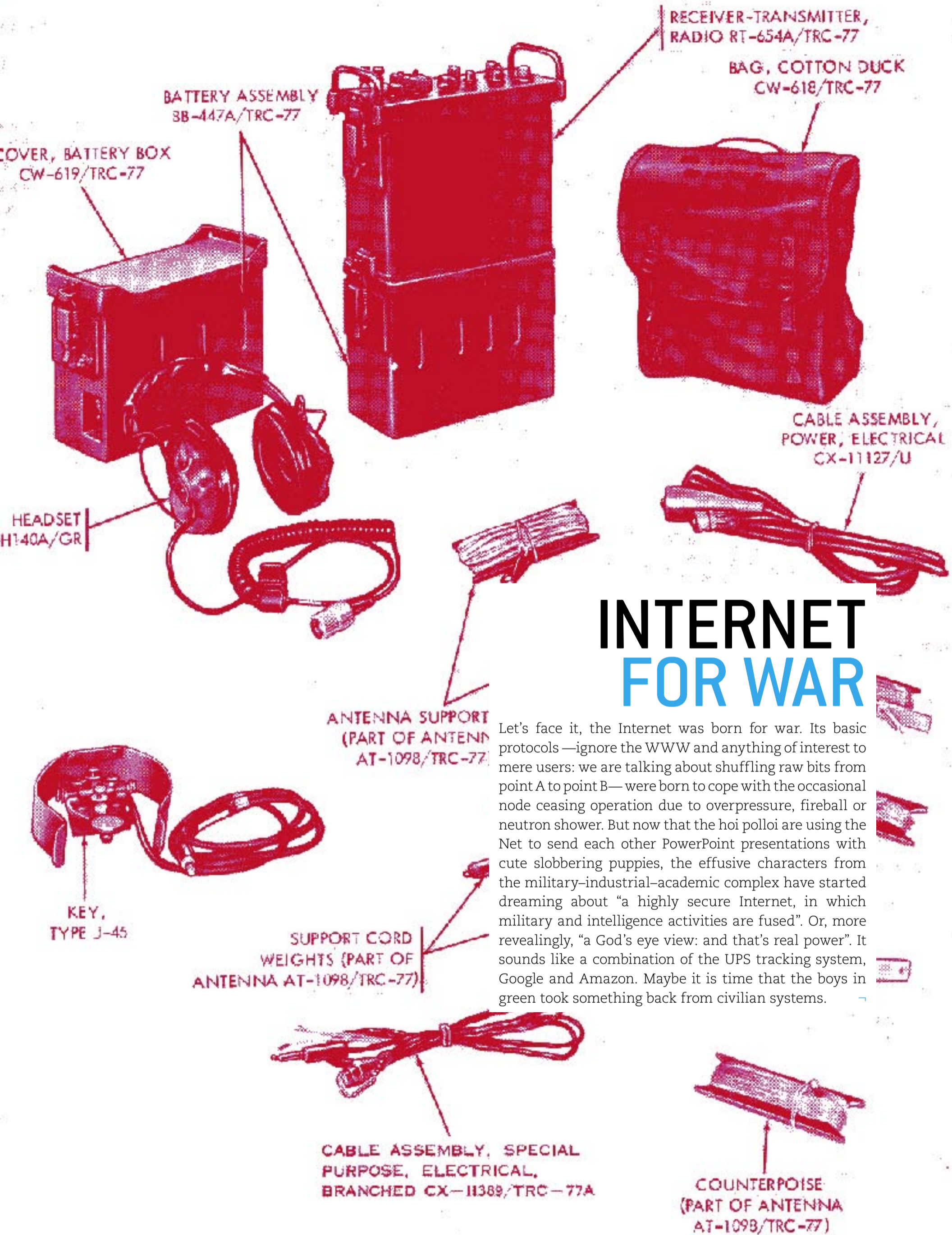
Interaction Design Institute Ivrea 2004. ↪
Processing is a project by Casey Reas and Ben Fry. ↪
Wiring is a project by Hernando Barragán. ↪
<http://processing.org> | <http://wiring.processing.org> ↪

i-mode. In Japan it has been the key phenomenon for a whole generation of consumers. In Europe it really never caught on. Until now. From now on, we don't know. It might develop, it might fail. The original Japanese service was quite simple and easy. You are on a subway, endless time to commute back and forth to and from work, in a social environment where to talk is considered inpolite. Imagine that you have a cellphone through which you can reach a wide selection of services. Chit chatting with your friends,

downloading various kind of content, playing games and using it for practical purposes as well as just for leisure. The i-mode's Japanese success was because the phenomenon started with teenagers. This was the biggest difference from European WAP. While the i-mode was for the teenager, WAP was for the businessman, busy with his endless financial transactions. Teenagers versus businessmen. It looks like a stiff competition but the distance might be not as big as it looks. →

I-MODE





INTERNET FOR WAR

Let's face it, the Internet was born for war. Its basic protocols—ignore the WWW and anything of interest to mere users: we are talking about shuffling raw bits from point A to point B—were born to cope with the occasional node ceasing operation due to overpressure, fireball or neutron shower. But now that the hoi polloi are using the Net to send each other PowerPoint presentations with cute slobbering puppies, the effusive characters from the military-industrial-academic complex have started dreaming about “a highly secure Internet, in which military and intelligence activities are fused”. Or, more revealingly, “a God's eye view: and that's real power”. It sounds like a combination of the UPS tracking system, Google and Amazon. Maybe it is time that the boys in green took something back from civilian systems. →

Figure 1-1. Radio Set AN/TRC-77A.

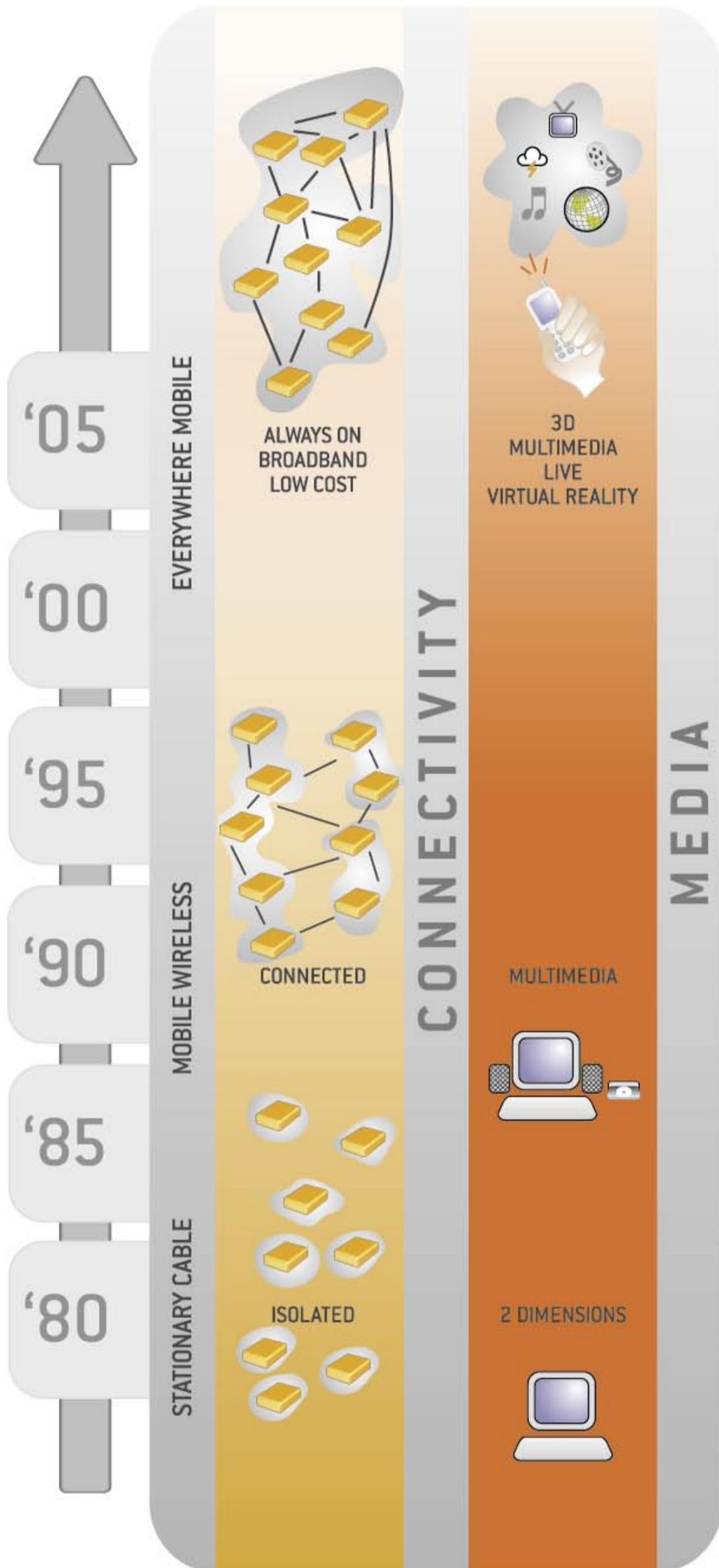


RFID & DRUG BOTTLES

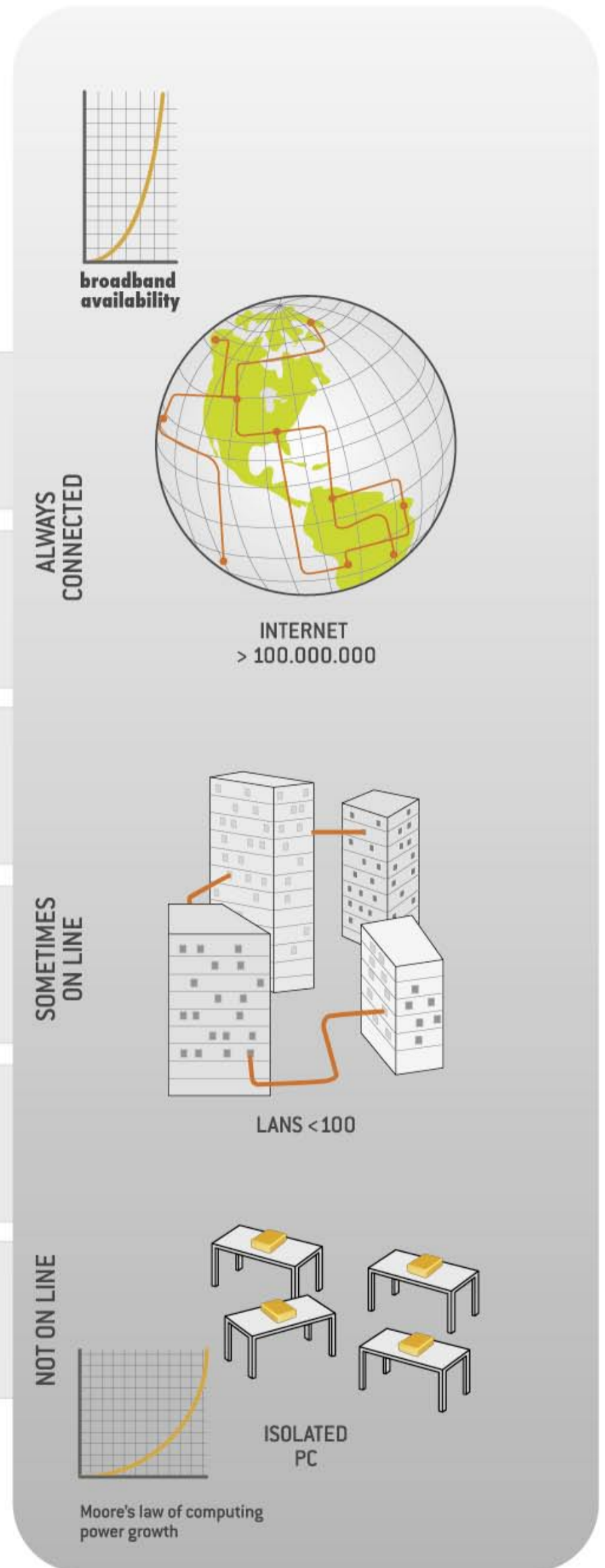
Radio Frequency ID is the new old technology from the '70s that suddenly bleeped onto everybody's radar. Privacy advocates are terrified, Wal-Mart is audibly panting in excitement, MIT has set up a research center about it. Tiny tags, readable and writable from a distance, carry just enough bytes to be useful and dangerous: a product ID, an SSN number, a crypto key. Potential applications range from the ho-hum automated check out in supermarkets, to slightly spooky Benetton scenarios where the store recognizes what sweater you

are wearing and proposes matching socks, different from the ones you bought two weeks ago in Sydney; to seriously scary giant interlocking databases where you, the customer/citizen/culprit/target, are pinpointed and flayed on the anatomical table of perfect identification. What is stopping them? Civil liberties? No. It is just that RFID's price curves are still over the magic red line of one eurocent apiece. Wait till it gets there, and privacy will be simply too cheap to meter. ▸

COMMUNICATION A

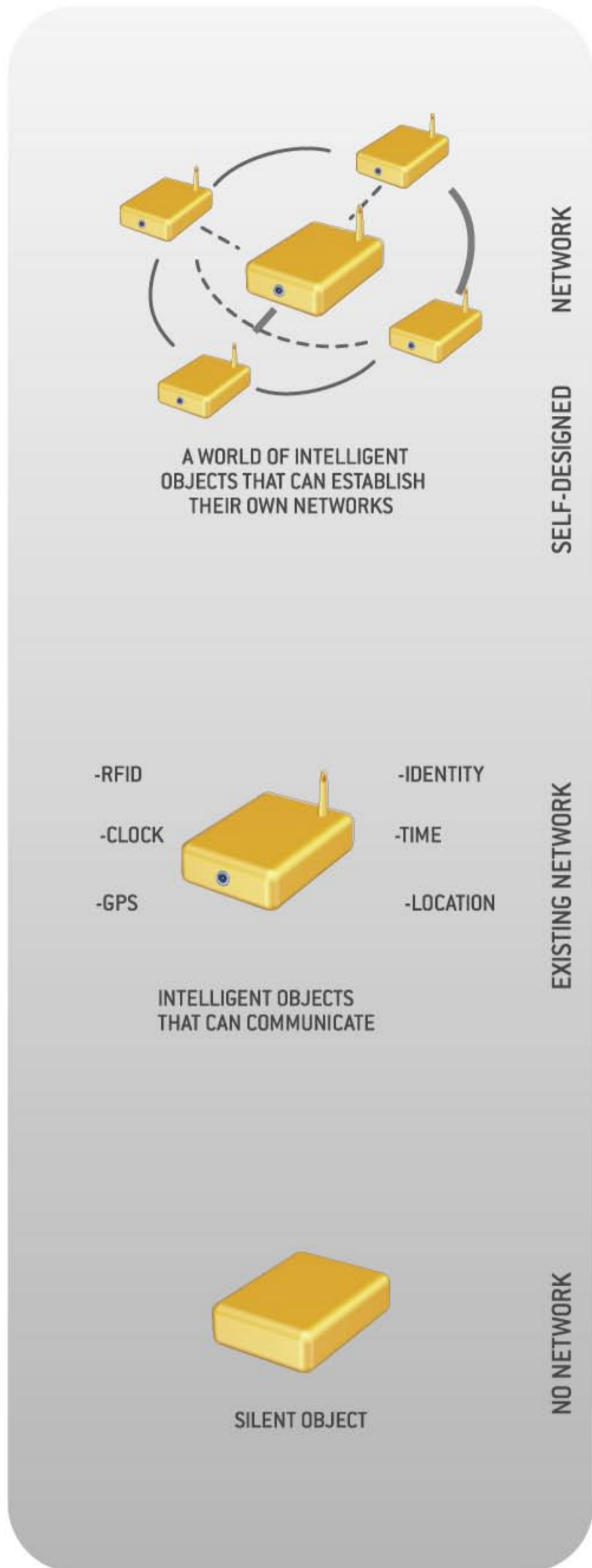


EVOLUTION OF COMMUNICATION

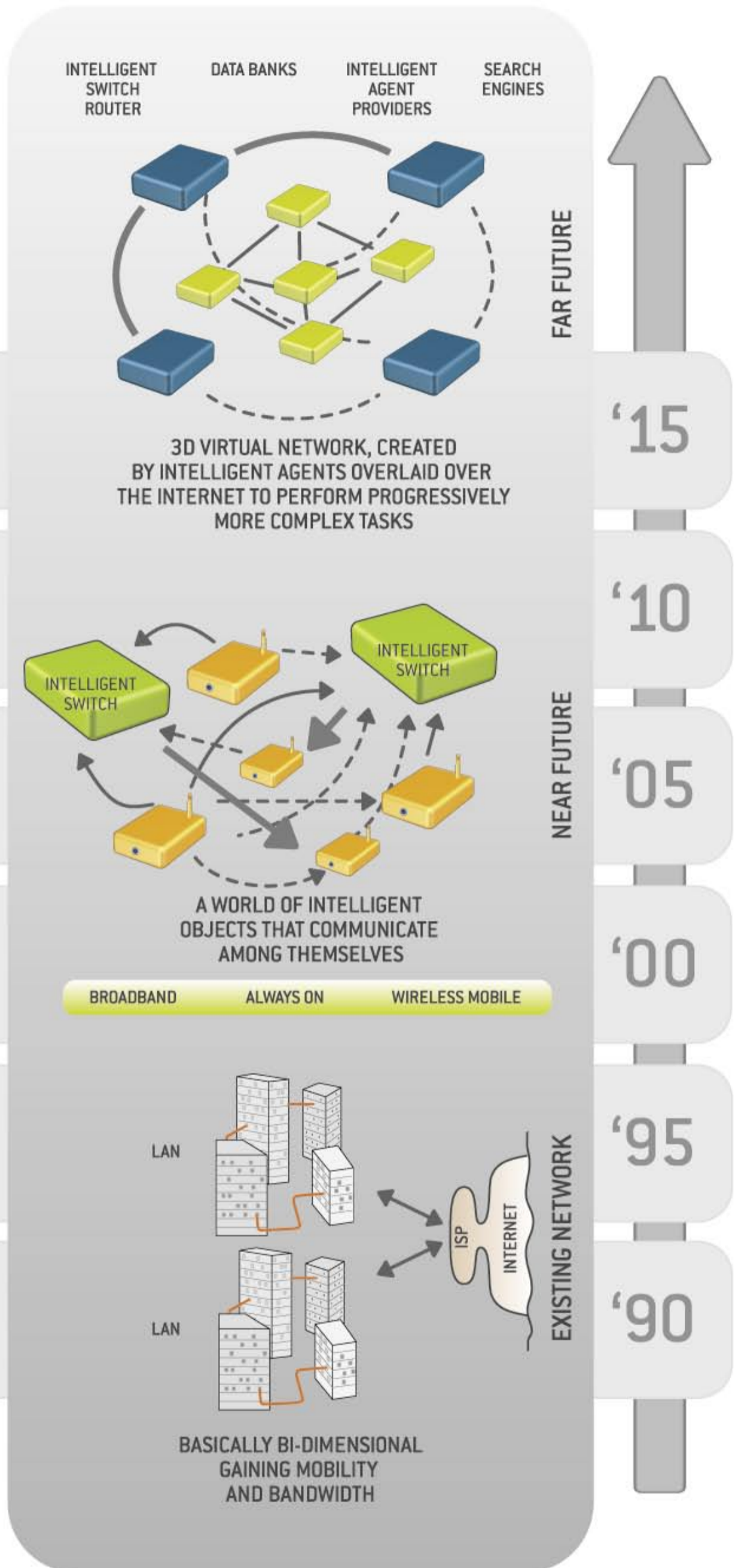


EVOLUTION OF NETWORK

AND INTERACTION



EVOLUTION OF INTELLIGENT OBJECT



NETWORK AND FUTURE



YOUR BUSINESS
IS AS BIG AS
YOUR IMAGINATION

orange™

INTRODUCTION

What is Interaction Design? Why is this discipline so little known and understood when it has become, little awareness notwithstanding, so critical and strategic in today's contemporary and globalized society. —

Interaction Design is, in a short and inevitably simplistic sentence, the discipline that studies, designs, and implements the increasingly complex interaction between people and digital reality. In recent decades these interactions have achieved a dimension, complexity and impact on masses of people which was previously unthinkable and is still little understood. —

Mankind has interacted throughout history with other men, with tools and later machines, with nature and the planet. Architecture has mediated and designed this interaction with buildings and cities; sociology has studied, but seldom designed, the interaction of individuals and groups with society; industrial design has mediated and designed the relationship between man and objects, tools and machines. —

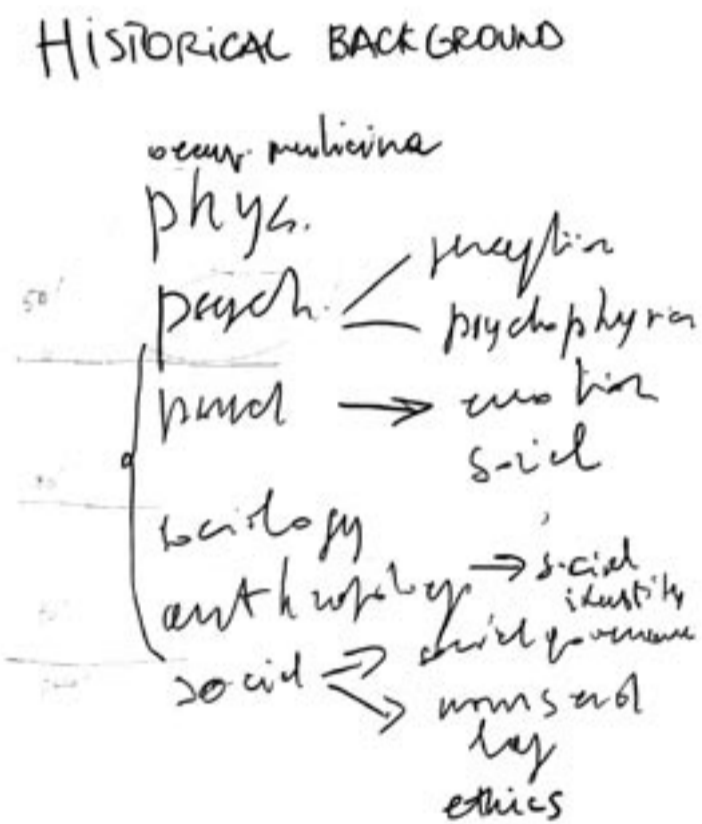
Probably one of the many turning points was the emergence of fighter jets, where speed of maneuvering required that a single pilot manage, in instants, a huge amount of inputs and information from a large array of instruments and communication tools. In a fighter, a single pilot has to fly a plane and complete a mission at the same time, the objective being to liberate him from as much flying as possible, to free his mind and time to also complete the mission. —

Any mistake means almost certain death, providing a powerful incentive to get the thing done right, as well as justifying the cost of plane and investment in training. —

Every new technology goes through a three stage process of adoption. The first people to use the technology are enthusiasts; they don't mind complexity, actually enjoying the challenge and the entry barriers that it poses to others. In the second stage the technology has matured to the level where it can be proved to create value in the work environment, and is adopted by professionals. In this situation, people accept that it is difficult to learn how to use the technology, as they are instructed to do so by their organizations; they take a certain pride in the acquisition of skill, differentiating them as experts. In the third stage, the technology becomes inexpensive enough to offer value to consumers, who are willing to spend their own money to acquire it; in this stage the technologies must be understandable and easy to use, in order to satisfy the needs and desires of the consumer. —

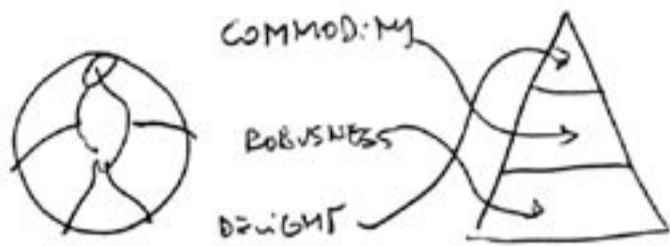
While the methodology of Interaction Design applies to enthusiasts and professionals, it becomes something absolutely special and unique when it touches mass market products and services; there it acquires an amazing dimension in terms of a "force multiplying effect" and its impact on society becomes cataclysmic for the good or for the bad. —

The nature of Interaction Design is to facilitate access of the masses to information, communication and services and to create simple solutions to very complex problems; its mission is to achieve this "progress" by bringing quality to the interaction, and by working on complex and mysterious issues such as "high tech-high touch," or bringing back materialization to an increasingly dematerialized reality. —



It is difficult to define when and how this discipline was actually born. There have been studies on keyboards done by IBM before World War II; it definitely started with early analog electronics, but exploded with the appearance of the transistor and digital electronics. —

During the last two decades, many contemporary digital technologies have reached the mass market in just a few years, notably personal computers, the World Wide Web, wireless communication and networks. This has opened a world of opportunities in the global mass market; technology is used, today, at a fraction of its potential, due to the ever-widening gap between technological capabilities and human ability to use them. Digital technology is today a parallel reality to the real physical one. These are totally new phenomena, and nothing like this has ever happened before in the history of humanity. Interaction Design, a discipline without ancestors, and without history, is struggling to deal with this incredibly complex environment; struggling also to accumulate knowledge, develop educational and professional methods, languages and tools.



In the last twenty years we have seen typewriters replaced by personal computers, which require a Graphical User Interface (GUI). Now we are challenged by a wireless, always on, and often broadband, World Wide Web of digital voice and data communication. This requires new types of interfaces, both physical as well as intellectual. In the terms used in cognitive science, we have moved from psychology and sociology, to anthropology and ethics. We have been used to operating in a world of physics and psychophysics, dealing with simple isolated machines through psychology and sociology. Now we find that anthropology and ethics are needed to deal with mass phenomena that happen when communication becomes instantaneous, worldwide, multimedia and mobile at the same time; when consumers become also producers of content; and when, finally, all the boundaries of a traditional, albeit advanced industrial society, are broken by a new digital reality, which is both virtual and extremely real.

The future promises to be even more complex, with the emergence, over the existing Internet platform, of virtual networks that connect objects as well as people. Through a combination of Global Positioning (GPS), time awareness and Radio Frequency Identification (RFID), the system knows about the nature and location of objects in

real time, and being intelligent, can establish connections. The Internet is being populated by increasingly intelligent agents, which travel and embed themselves in other computers to perform tasks; there are intelligent switchers and routers that create multiple connections, not always planned.

Rules and regulations are needed, but are lagging way behind in implementation, as everything is happening so fast. The prescribed borders of politics and legislation have been left largely behind, as innovation is occurring in a free, enthusiastic and definitely anarchic way.

Society has harnessed and managed many technological revolutions in the past, one of the most potentially dangerous ones being nuclear energy, whose dangers have been, in the past 60 years, reasonably under control; that was a capital intensive, scientifically obscure matter reserved for the elites.

Digital networks are being used regularly by both the WWF and Al Qaeda, the good and the bad, as has always happened in history; what is interesting and merits more attention from the general public is that the digital revolution has a larger potential impact than any technological revolution of the past. Its nature is distributed everywhere, pervasive, in every aspect of day-to-day life, increasingly embedded and invisible. To deal with this requires intelligence, understanding and conscience, which are all things that we cannot expect to come from politics. It demands the human activity of looking ahead of social evolution, rather than living in the development level of the past millennium.



AN OVERVIEW

Interaction Design has gone through many steps in recent decades; a quick overview may help to understand where we are now, and where we may find ourselves faster than we expect.

It started in the stage of interface design by mediating the relationship between people and machines to information. It moved quickly to mediating between people and other people through machines. Now it is mediating between individuals, groups and society at large; from shopping to transportation, from medical progress to entertainment, everything is digital.

In terms of types of “knowledge,” Interaction Design went from symbolic knowledge, to iconic knowledge, to enactive knowledge.

Robotics connected to networks allow today for both tele-transportation and tele-manipulation; the next frontier is digital technology combined with biology, bioengineering and nanotechnologies.

The underlying issue is that there is an excess of available technology but a totally insufficient understanding of its potential, its use, or its effects on individuals and society.

The combination of dematerialization and invisible infrastructures means that nobody really cares to know or understand what goes on, as long as what they want happens, and they can access the services they need or desire.

The ecology of the digital world is based on the fact that the capacity of human nature to absorb and internalize current technological developments is a fraction of the available output itself; people are permanently and constantly late. The amount of resources spent in understanding and learning how to use the technologies is a fraction of those spent in developing them, and the speed at which this phenomenon occurs is constantly accelerating.

For historical reasons Interaction Design has developed in few academic circles, research centers and universities, generally in closed environments with limited contacts with industry and the real world, without much concern for sharing and discussing its effects in a broader context, using a cryptic specialist language and even while its impact on the real life of masses of people all over the world was growing exponentially. Now is the time to come out of the closet and expose this reality.

Design is the critical word; in a casual way the discipline of design, in its broadest sense, has emerged as the best equipped to deal with all the issues described above. Design methodology, with its understanding of the point of view of multiple stakeholders, and its capacity to tackle complex issues, and to productively meld different disciplines, is the best approach available to deal with such a complicated scenario.

THE ANTHROPOLOGICAL BACKGROUND

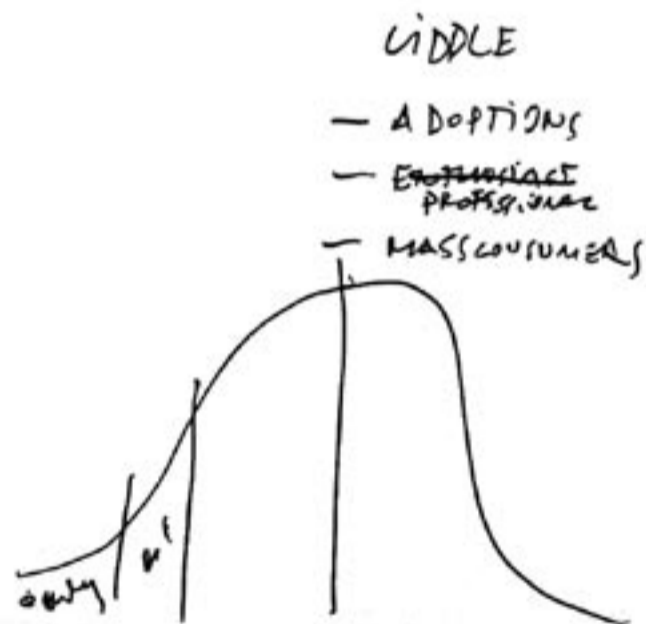
The digital revolution is entirely a global mass event. Many of the technologies are low cost and affordable for huge masses of people.

The digital revolution empowers individuals, without requiring intensive capital or large industry, and can be developed everywhere that the Internet exists.

The digital revolution is a typical “post-industrial” event, based essentially on ideas and know-how.

Interaction design is not a classic discipline like physics or psychology; it is a modern discipline that evolves rapidly as technology and its relationship with society evolves; it has already been through various stages in the past ten years, and will spin off other disciplines over time.

Interaction design is not a scientific discipline. It is a humanistic one because it deals with people and culture, the slowest entities on the planet to accept changes. It is about understanding technology, actually seeing through



it with a “designer” eye, and applying its potential to large audiences through the design of viable interactions. It is also about understanding society and, to a degree, markets. -

Interaction design is the tool to increase the use of technologies from the current 10 or 20% of potential to an 80 or 90% level of potential. -

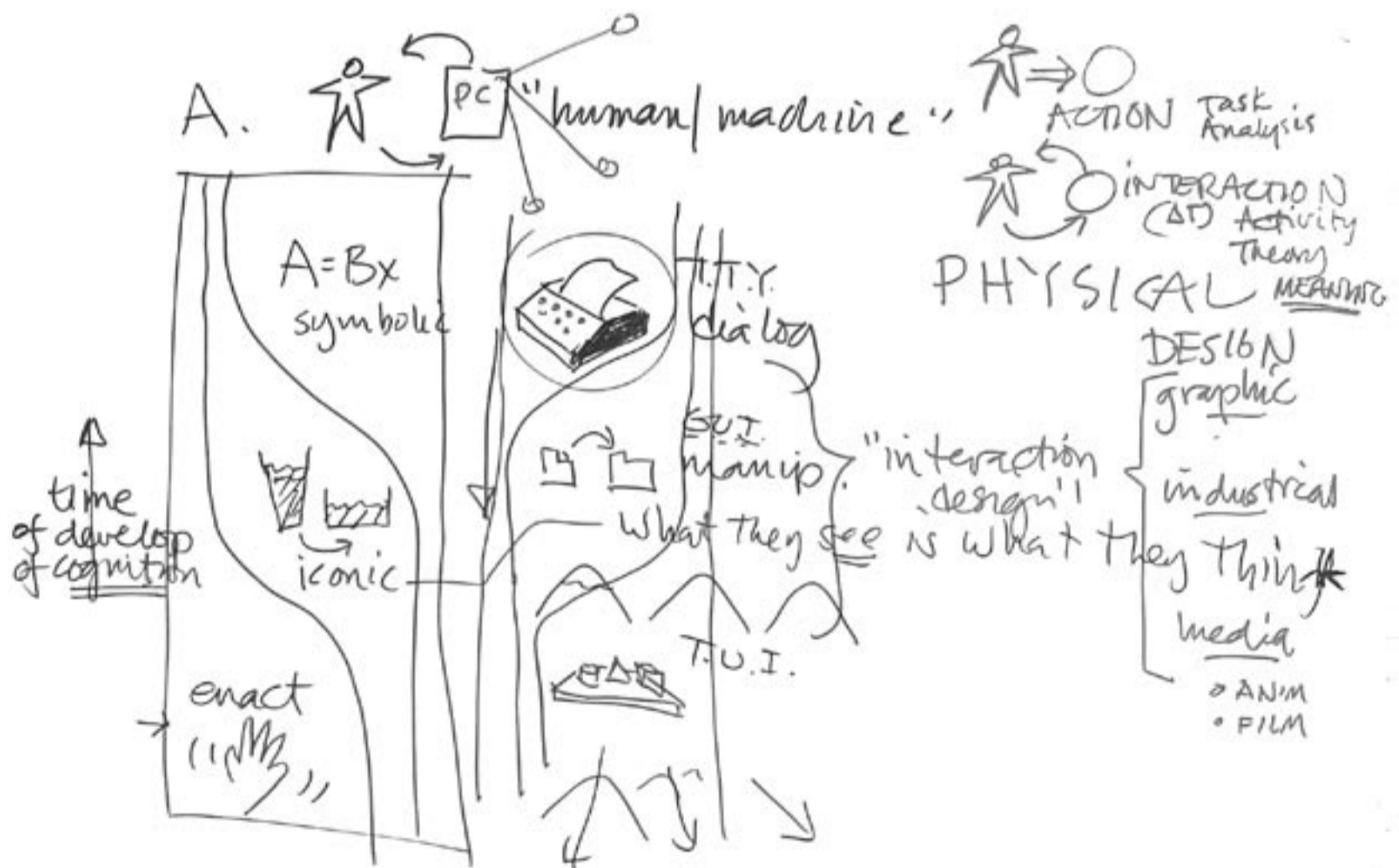
Interaction design bridges the gaps between various technologies in order to make the whole system more efficient and extensive, sometime making visible the need for small technological bridges. -

Interaction design uses the methodologies of design, and the practice of combining different disciplines, to address a task, to hide technology, and to make it transparent, understandable and usable. -

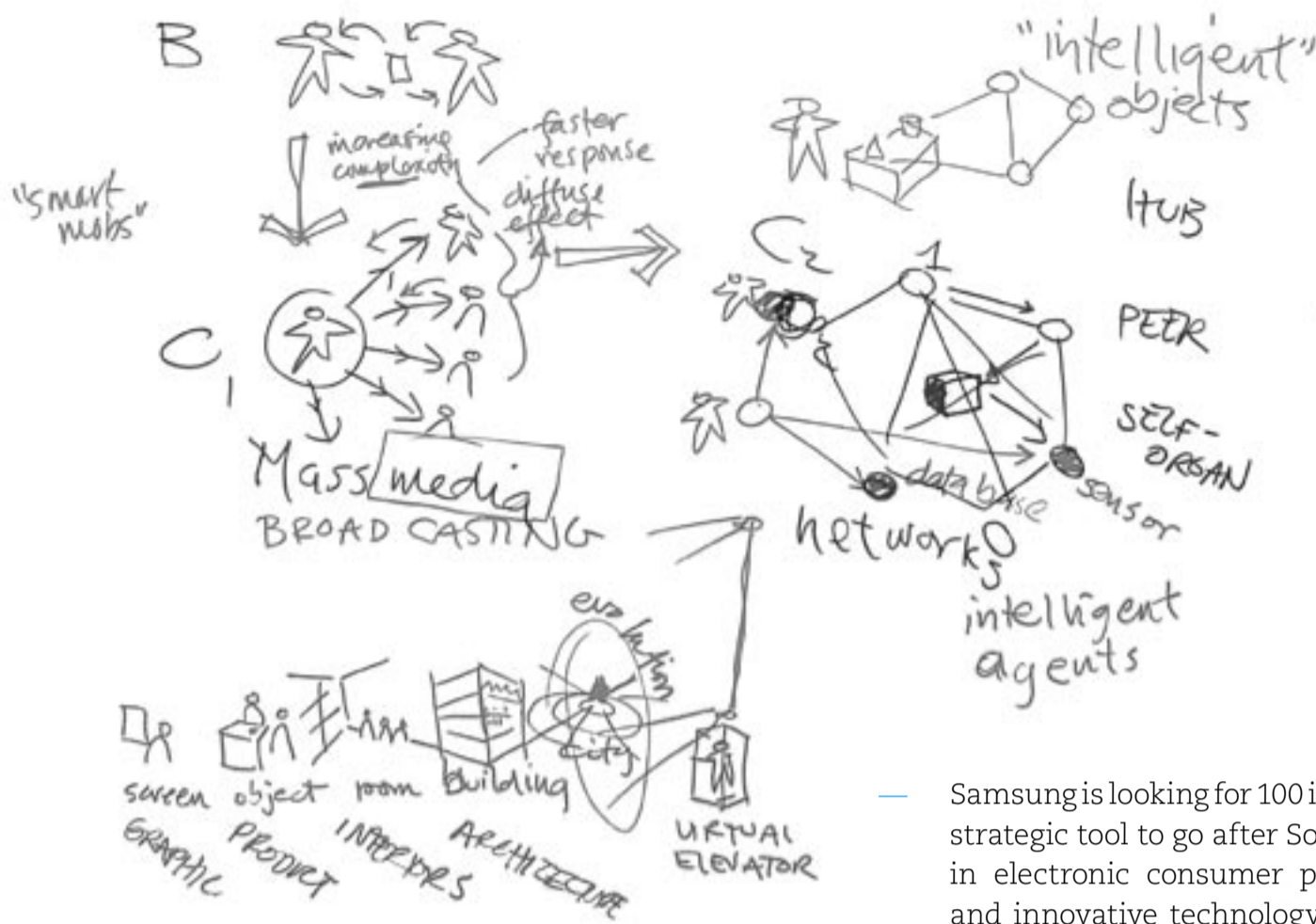
Interaction design is about bringing IT to the masses with better interactions, better access to the huge amount of information already available, and new ways to organize and visualize them. It can enhance better integration of disabled people in society; it can reduce the need for repetitive low-value activities, while opening new possibilities for educated people. It can make some of the unnecessary complications of modern life disappear by the use of transparent technologies, thereby reducing stress. -

Interaction design can rethink, after the .com crash, the huge potential of the net, which is still only marginally used. “Seamless” is a keyword that has been used for years, and is still relevant. Whether we are thinking of an agenda, an appointment, a train ticket, a credit card, accounting records, expense reports, archives of past trips, or statistics; everything should be compatible and connectable, and in the future it will be. -

There is a convergence of technological tools that are becoming more friendly and easy to use, while the new digital generations grow up with a greater than ever capacity to use them, yet the gap between potential and use is still immense. -



Sketch by Bill Verplank.



- Samsung is looking for 100 interaction designers, as the strategic tool to go after Sony for the world leadership in electronic consumer products. Industrial design and innovative technology are considered as givens. Interaction is the new frontier. —
- The last decade of advanced programs for the US Military assume a ubiquitously digital environment; this includes logistics for Iraq fully tracked with RFID, weapons-delivery entirely managed on a network, robotic weapons, knowledge and intelligence management. —
- NASA and the FAA are developing a new airspace management plan. The concept is to free any flying object, many of which anyway in the future will be drones, from the current constraints of air traffic control. This will be enabled by an active interactive network which will continuously supply, distribute, and manage information about weather, traffic separations, routing and so on, automatically providing the on-board data management necessary to assure safe flying. —

THE ECONOMIC BACKGROUND

The plunging cost of internet access and connectivity has commoditized the World Wide Web in less than eight years. The prices of hardware are also continuing to fall, as mass production reaches huge numbers; only the latest generation of devices maintain a higher cost, and this drives continuous innovation and always faster product cycles. The productivity increases are understood by almost everybody; IT and communication have gone to the top of the list of priority investments even for individuals. Interaction design has not yet, but it will. —

Interaction design is happening worldwide as we speak, as evidenced by the following examples: —

- In December 2003 Walmart met in with its hundred largest suppliers to start a process that will require them, starting in December 2005, to have RFID tagged any large shipment, from a container to a pallet of products. This will require from those companies an investment in the range of \$5m to \$10m each, for an aggregate of around \$750m. This is the first step in a plan to install RFID tags on every Walmart product, all the way to the consumer. —

This and many other smaller themes are examples of Interaction Design today; new ones are developed every single day, representing a huge change in the life of most individuals on the planet. This offers immense business opportunities, as broad in scope as the Industrial Revolution. —

Your pianist is in Spain.
Your tuba players are in France.
Your audience is in the foyer.
And you're the conductor.

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PEOPLE, PLACES & SCHOOLS OF INTERACTION DESIGN

THE MAP OF INTERACTION DESIGN

We decided on this strange way to represent the interaction design network in the world—a list of people followed by their email address—because we think it is a perfect representation of a world in constant flux and motion.

There are a number of people: not too little, not too many. Most of them know each other. They travel a lot, they often change their base or the place of their activities because of a new project, a new business, a new teaching opportunity. Some of them work in academia, some in the free market. Some others work across different fields like communication, fashion, marketing and business. The people listed here are generally curious and open to the world (this is the reason we list also their e-mail addresses).

Beware!

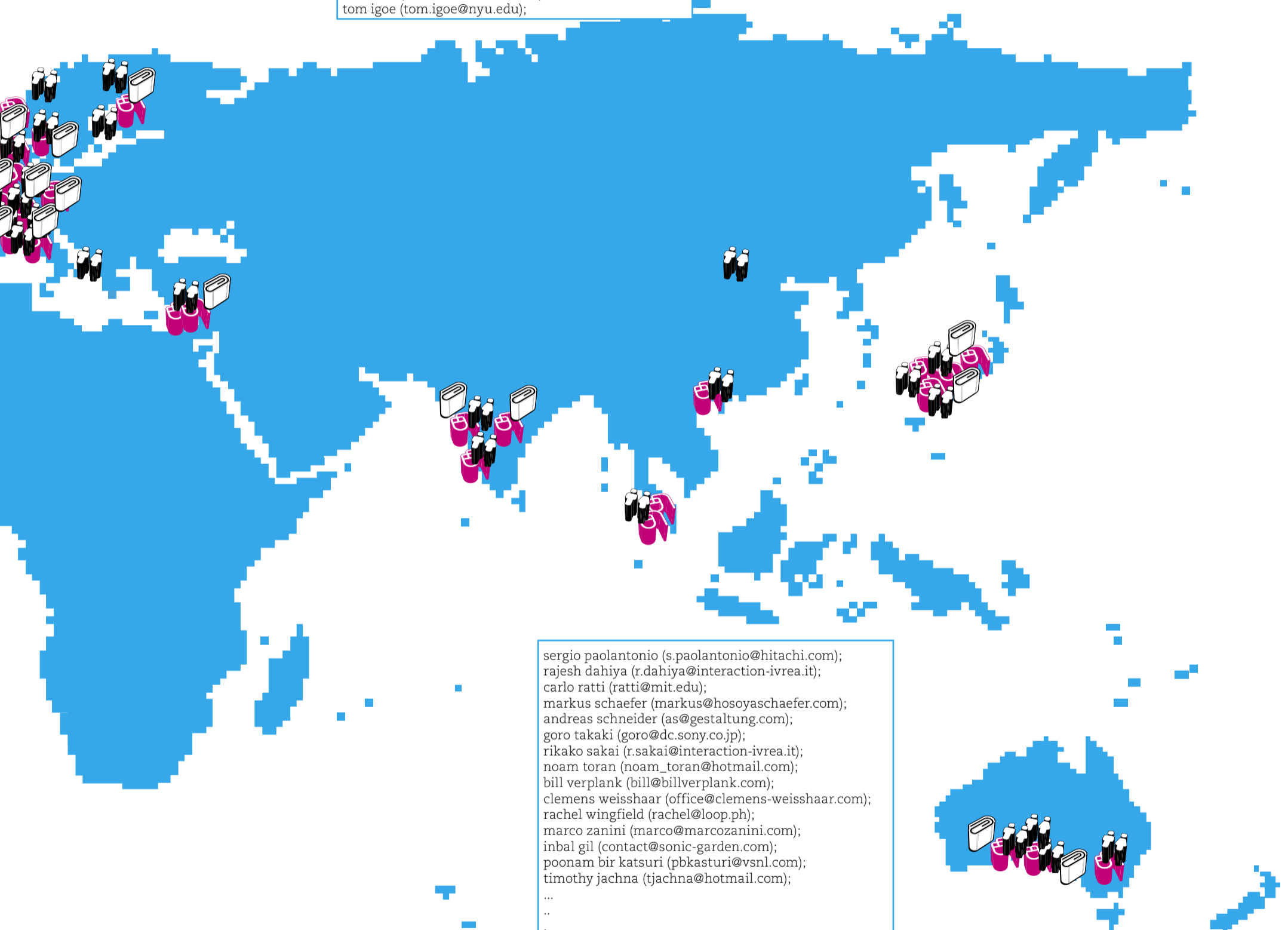
This list does not represent the wholeness of the field; neither it is a ranking of the most important or influential people. In compiling it we tried not to forget any relevant places/institutions/companies.

Once we mention one person from a group, that's enough. The reason behind choosing only one person does not represent a judgement. Sometimes it is like this for a practical reason (we have that address and not another one), sometimes because in the past we have had the chance to meet and/or work with them.

It is a snapshot, taken in January 2005. Again, the network is in constant flux and it changes day after day. New people join, some of the old ones move on to other activities in life. Also notice that there are some holes. In the map there are big areas not completely known. This does not mean that in these places there is not interaction design, simply that we are not so familiar with them. One of the nice things about the discipline is that it is very often done in remote locations, away from rich institutions or internationally-branded companies. One of the reasons to make this fanzine was to communicate who we are, what we do and why we do it. Of course, there is another level: to create new links and expand the number of knots in our network. We are looking forward to a revised version of the map, with new people and new points of coverage.



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Sebastiano Bagnara has a doctoral degree in philosophy from Padua University, and specialised there in psychology. He is currently professor of psychology and cognitive ergonomics at the Milan Polytechnic. Prior to that (1986–2001), he was professor of psychology and lecturer in man-machine interaction at the University of Siena, where he also directed the communication science department until 2001.

In addition, he taught ergonomics at the University of Padua (1989–93) and ergonomics applied to industrial design at the Milan Polytechnic (1994–98 and 2000–01). Sebastiano Bagnara has frequently consulted for large corporations and government agencies, was in charge of many European research projects, and published a large number of books and articles in leading international journals.

He is general secretary of the International Ergonomics Association (2003–).

He also sat on the Steering Committee for Research Evaluation of the Italian Ministry for Education, University and Research and has been President of the European Association of Cognitive Ergonomics (1990–94) and of the Italian Society of Ergonomics (1993–97).

He is a member of the editorial boards of the journals 'Applied Ergonomics', 'Cognition, Technology, and Work', 'Comunicazione Pubblica', 'International Journal of Human Factors and Ergonomics in Manufacturing', 'International Journal of Applied Psychology', 'Sistemi Intelligenti', 'Sistemi Organizzativi', and 'Travail Humain', and is also the Associate Editor of the journal 'Theoretical Issues in Ergonomic Sciences'.

SEBASTIANO BAGNARA

Massimo Bergamasco is currently Associate Professor of Applied Mechanics at the Scuola Superiore Sant'Anna, Pisa, Italy.

He teaches "Mechanics of Robots" at the Faculty of Mechanical Engineering of the University of Pisa, and also "Virtual Environments" at the Faculty of Computer Science at the same university.

He is founder and director of the PERCRO Laboratory of the Scuola Superiore Sant'Anna, where he is now establishing a new Centre for Applied Research CODE (Collaborative Design).

Since the beginning, his research activity has concerned Robotics: from the study of tactile sensors for robots to the design and experimental testing of non-conventional actuators, based on Shape Memory Alloys to be integrated in robotics hands. From 1990 his research interest has turned to the emerging field of the interaction with Virtual Environments. On the basis of several funded EU projects, during this last decade, PERCRO has developed a unified approach to the design of haptic interfaces. Such a topic has been addressed according to a central backbone of research including both force displays and tactile effector systems, integrated to collateral, but coherently identified aspects, such as behavioural modeling and visualisation techniques (research approach). The research on Virtual Environments brought Bergamasco to be fascinated by still unexplored areas such as those of Information Landscape and Dimensional Typography that are now covered for a significant part of his scientific activity. He is now trying to integrate the use of haptic interfaces in the definition of new paradigms of interaction with virtual entities. Since 1993 he has conceived the idea of the "The Museum of Pure Form", which is now under development in the framework of the European project PURE-FORM. He has been co-founder of Scienza Machinale Srl and Emptyspaces Srl. He is the founder of Bolkonski.

MASSIMO BERGAMASCO

GILLIAN CRAMPTON SMITH

Having studied philosophy and history of art at Cambridge University, Gillian Crampton Smith spent the 1970s as a designer – first in book publishing, then on the Sunday Times and Times Literary Supplement.

In 1981, she designed and implemented a page layout program to help her with magazine design, an early desktop publishing application. This experience convinced her that artists and designers have an important role to play in creating information technologies.

She joined St Martin's School of Art in 1983 where she set up a new postgraduate course in graphic design and computers for practising designers. In 1989 she moved to the Royal College of Art (the UK's only purely graduate school of art and design).

At the RCA, she established the Computer Related Design Department, where artists and designers apply their traditional skills to interactive products and systems. Under her guidance, the CRD Research Studio achieved an international reputation as a leading centre for interaction design, supported by a wide range of industrial and government sponsors. She has collaborated in the development of teaching and research programmes with organisations in various countries, and for seven years spent her summers in Silicon Valley working for Interval Research and Apple Computer. In 2001 she moved to Italy to set up Interaction Design Institute Ivrea.

Stewart Brand is a cofounder of Global Business Network. Best known for founding, editing, and publishing the "Whole Earth Catalog" (1968–1985; National Book Award, 1972), he also has a long-standing involvement in computers, education, and the media arts.

In 1968, he was a consultant to Douglas Engelbart's pioneering Augmented Human Intellect program at SRI, which devised now-familiar computer interface tools. In 1972, for Rolling Stone, he wrote the first article about the computer lifestyle, entitled "Fanatic Life and Symbolic Death Among the Computer Bums," chronicling the fringes of computer science at Xerox PARC, the Stanford Artificial Intelligence Laboratory, and MIT. That article became part of his book, "Two Cybernetic Frontiers" (Random House, 1974), which also introduced anthropologist/philosopher Gregory Bateson to a wide audience.

In 1994, eight years of research by Stewart into how buildings change over time (a form of organizational learning) came together in a richly illustrated book, "How Buildings Learn: What Happens After They're Built".

Since co-founding The Long Now Foundation with Danny Hillis in 1996, Stewart has been involved with its growing number of projects. The 10,000-year Clock project aims to build a monumental timepiece inside a mountain in eastern Nevada; the first working prototype went on permanent display at the Science Museum in London. Stewart's book, "The Clock of the Long Now: Time and Responsibility", investigates the advantages of taking the very long term seriously, including some new ways to think about the future.

STEWART BRAND

BARBARA GHELLA

Since 1992, Barbara Ghella has been Chief Executive Officer of MiLàNo Interaction Design. Major interface system projects of this Milan-based company included: nationwide implementation of the interface functions of a data system which handles emergency calls to the police; back office logistics and operations for employees of Toro Assicurazioni and other insurance companies; regional interface system for public psychiatric institutions, day hospitals and other health care facilities; communication study and related implementation for Isvor-Prg, an advanced training centre of Fiat Melfi; and application tests for the introduction of an interface system to allow easy access, consultation and data management of spare parts and other products manufactured by Fiat group companies (Fiat Auto, Lancia, Autobianchi, Alfa Romeo).

Prior to this, she worked as Communications Coordinator for Olivetti Information Services, with responsibility for the implementation of strategies, operational supervision and guidance of all communication activities of the group's companies, as Information Systems Manager at HAUT tour operator in Turin, and as project assistant for aid programmes after the earthquake in the Friuli Venezia Giulia region. She studied medicine at Turin University.

James Irvine was born in London, England, in 1958. Trained as a furniture designer at the Royal College of Art in London, he graduated in 1984. Since then he is based in Milan. He was a member of the Olivetti design studio until 1993 and also a partner of Sottsass Associati until 1997. For the year 1988 he lived in Tokyo and worked in the Toshiba design studio. Today Irvine's studio designs industrial products for companies such as Canon, Artemide, and Whirlpool. In 1999 he designed the new Mercedes Benz city bus fleet for Hannover. In the furniture field his first client was Cappellini. He works today with international companies including B&B Italia and Magis.

JAMES IRVINE

At the age of ten David Liddle saw his first computer; it was two stories tall at the Burroughs Corporation in Detroit, where his father was responding to an emergency request for tubes on a weekend. While he was waiting for his father, the technicians taught him to count to 1023 in binary on his fingers, and explained to him about Boolean logic. On the way home in the car he said, "This software thing is going to be big, really big!" He went on to study electrical engineering at the University of Michigan, followed by a PhD in Toledo Ohio, while working at the same time on the design of a Plasma display that sparked his interest in the potential for designing graphical interactions. He arrived at Xerox PARC in time to help with the POLOS project and design the display controller for the Alto, and went on to become the project leader for the development of the Star, about which he says, "As far as I'm concerned, the Star graphical user interface was a great improvement over all of its successors!" In 1982, he left Xerox to found Metaphor Computer, using the advantages of graphical interaction design for database access and program development applications, building Metaphor into a successful company until IBM acquired it in 1991. In 1992, he was asked to set up and lead a new research laboratory, Interval Research, to stir up some new thinking for commercial possibilities. He assembled a stellar team of researchers, including interaction, graphic and product designers, and media and behavioral people, as well as computer scientists. He is now a venture capitalist.

DAVID LIDDLE

A designer, digital pioneer, software publisher/developer, international author, and design patent holder, Clement Mok founded multiple successful design-related businesses: Studio Archetype, CMCD and NetObjects. Since 1998 till most recently he was the Chief Creative Officer of Sapient, during which tenure, Sapient was named the top interactive agency by Forrester Research and Ad Age and also became the first service firm to be listed in the history of the S&P 500's index. Currently, he heads up a new subscription-based royalty-free stock image business "www.visualsymbols.com" and consults on a variety of product development projects.

"The design of understanding" is perhaps the best way to describe Clement and his work. Creating meaningful connections between people, ideas, art and technology is the focus his design and business consultative projects. Over his twenty plus years career, he is consulted for clients like Adobe, American Express, Apple, Hallmark, IBM, Mayo Clinic, Microsoft, Nagano Winter Olympic Committee, Nintendo, QVC, Sony, United Airlines, UPS and Wells Fargo Bank.

A career shaped by Silicon Valley, Mok's been involved with the launch of numerous new technologies and companies, including Apple's Macintosh, Herman Miller's Aeron chair, the Microsoft Network, interactive television, broadband applications, web cast events, expert publishing systems and major identity programs.

An advocate on design and technology practices, he's been recognized by IDSA, NYArt Directors Club, AIGA, Broadcast Designers Association, American Center for Design, Type Directors Club, Communication Arts, ID, Graphis, Fast Company, Fortune, Business Week, and CEO magazine with major awards and citations. His designs have been exhibited in museums and galleries in Europe and Asia.

He also serves on the advisory boards of numerous technology companies, colleges and non-profit organizations. Recently, Clement was the president of AIGA, the country's largest communication design professional organisation.

CLEMENT MOK

BILL MOGGRIDGE

Co-founder of IDEO, a consulting firm dedicated to the user-centered design of products, services and environments.

Bill founded his design firm in London in 1969, and added a second office in Palo Alto in 1979 in California's Silicon Valley. He designed the first laptop computer, the GRiD Compass, and pioneered Interaction Design as a discipline to be an integral part of product development. In 1991 he merged his company with David Kelley and Mike Nuttall to form IDEO, which now has offices in Palo Alto, San Francisco, Chicago, Boston, London and Munich. He is most interested in the "people" part of the design; who are the users, what do they want from the experience, what will give them satisfaction and enjoyment.

Bill has been active in design education throughout his career, notably as Visiting Professor in Interaction design at the Royal College of Art in London, Lecturer in design at the London Business School, and Lecturer in the Product Design program at Stanford University. He is currently a member of the Steering Committee for the Interaction Design Institute Ivrea. His book "Designing Interactions" is due to be published by MIT Press by the end of 2005.

S.JOY MOUNTFORD

"Never in my wildest dreams in England did I think I'd do anything that had to do with high speed aircraft!" says S. Joy Mountford, as she describes her job designing displays and controls for military aircraft and the space shuttle when she was at Honeywell. It had been flight that had brought her to America in the first place, as she had won a scholarship in aviation psychology, and learned how to use some flight simulators with horribly complicated control systems that pilots had to cope with. Her undergraduate degree was from University College London, and her graduate study was in Engineering Psychology from University of Illinois. "We did a lot of what is now called "task analysis" of man-machine systems. My professor was very methodical; I think it took us a whole semester to do a task analysis of just being able to get into your car and put the key in the ignition." This rigorous training helped her as she gained experience in high technology industries. She found her niche as the creator and manager of the Human Interface Group at Apple Computer, the team that pioneered, among other things, the initial use of QuickTime. From Apple she went on to join Interval Research, leading a series of musical development projects. Now she is founding principal of Idbias, an interaction design partnership, consulting in the development of novel and enjoyable ways for people to interact with the technology that surrounds them. Joy has been designing and managing interface design efforts for over twenty years. She frequently teaches, lectures and presents at conferences—always delivering an inspiring performance.

MARCO SUSANI

Director of the Advanced Concepts Team, Motorola, Cambridge, USA and former Director of Domus Academy Research Centre, Milan

An architect and industrial designer, Marco Susani has developed projects for the likes of Telecom Italia, Olivetti and Mediaset. For the European Union, he has headed research programmes in interaction and media design. He was Director of the Domus Academy Research Centre in Milan for several years, a partner of Sottsass Associati, and a consultant at Olivetti Design Studio. He recently joined Motorola to lead a newly established advanced concepts team.

Bill Verplank has an amazing ability to draw while he talks. If you meet him and ask him a question about Interaction Design, you can sit at the nearest table or desk, and be mesmerized by the fluency of his answer. His words are easy to understand, and as he talks he builds a beautiful diagram that reinforces what he is saying. You can take the drawing with you as a reminder and summary of his ideas about Interaction Design, which have evolved over many years. His PhD was from MIT in man-machine systems, applying information and control theory to measuring human operator workload in manual control tasks. At Xerox from 1978 to 1986 he participated in testing and refining the Xerox Star graphical user interface. From 1986 to 1992, he worked as a design consultant with Bill Moggridge at IDTWO and IDEO to bring graphical user-interfaces into the product design world. At Interval Research from 1992 to 2000, he directed Research & Design for Collaboration. He has helped to establish the Interaction Design Institute in Ivrea, and is now a visiting scholar in haptics in the music department at Stanford University.

BILL VERPLANK

Terry Winograd is Professor of Computer Science at Stanford University, where he has developed an innovative program in software design, with a focus on human-computer interaction design. His BA was in mathematics in 1966, and his PhD in applied mathematics at MIT. He went on to teach and study in the Artificial Intelligence Lab at MIT, before moving to Stanford in 1973. He consulted with Xerox PARC with the goal of getting the computer to understand natural language. Eventually he became frustrated with the slow progress in the field: "A reason to have computers understand natural language is that it is an extremely effective way of communicating. What I realized is that that depends a lot on the assumption of intelligence, real intelligence on the part of the listener, and that there are many other ways of communicating with a computer, which can be more effective given that it doesn't have that intelligence. At that point, I shifted my view away from what would be thought of as artificial intelligence to the broader question of "How do you want to interact with a computer?" Then I got interested in what makes interactions with computers work well or not work well, what makes them fluent, and that's been the direction of my work." In parallel with his teaching at Stanford, he has also consulted with Action Technologies, Interval Research and Google. His most recent book is "Bringing Design to Software", a compilation of contributed chapters and interviews, which he not only edited, but to which he also added a profile of each, with interesting commentary. He is also a founder and Past President of "Computer Professionals for Social Responsibility".

TERRY WINOGRAD

A graduate in architecture from the University of Florence, Marco Zanini spent several years in the United States before returning to Milan to work as the assistant to Ettore Sottsass in 1977, afterwards becoming a partner and Managing Director of Sottsass Associates. In 1981 he was one of the founding members of Memphis; he designed pieces for each of the group's collections.

In addition to exhibiting all over the world with the Memphis group, Marco Zanini also works independently, designing ceramics, jewellery, furniture and objects in blown glass. He has lectured on architecture and design in Japan, the United States, Australia, New Zealand, Colombia, Chile and Spain.

He is also a founding member of the Milan-based cultural group, ABC. With Sottsass Associates, he was design manager for many projects, including office furniture for Knoll International and Esprit sales points, as well as exhibitions, interiors and industrial products for a wide range of international customers.

MARCO ZANINI

MAPS

Maps and graphics on pages 10–11, 20–21, 36–37, 50–51 conceived and realised by James Irvine and Maddalena Casadei.

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