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Data Visualization on Istat's Web site

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Value of Data Visualization

Latest web technologies and the expectations they create amongst the user community are changing the way Statistical organizations communicate statistics.
When planning statistical communication strategy, it's necessary to pay attention to trends in online media.

The **Web is changing**: the message has to be presented in an even more interesting way to capture the interest of a larger audience.

To make the best use of the Internet, we must use the most appropriate language and presentation tools.
In this way, **systems for dynamic graphics** make statistics alive and easier to understand even for non-experts: data visualization is key to extracting instant meaning from large amounts of information.

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Presenting statistics

To reach large audiences, the information should be presented in a structured and well organized way.
• Providing metadata to help users understand the statistics
• Providing data in a range of formats, including new devices such as mobile phones or others

Ensuring **accessibility** to information for everybody, in compliance with legal requirements. Equal access to basic statistical information is a fundamental principle even though it requires extra work and extra resources.

With the growth of Web 2.0 technologies, users can interact with data and create their own visualizations. Many statistical institutions provide access to their databases through their websites, allowing users to query and download statistical information by themselves. This functionality is even more complemented by visualization tools that allow users to create charts or maps online.
Giving this level of control to users imply some risks; indeed, problems can be minimized by providing metadata, offering support and **monitoring any misuse** (1).

(1). cfr Making Data Meanigful: a guide to presenting statistics. Unece, 2009

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To better communicate statistics

Graphical representations, useful to better communicate statistics, may have a dual function: describing the results and allowing a synthetic presentation of the observed phenomena and trends.

Visual approach to statistics involves a **graphical** component (encoding information in digital images) and a **perceptual** component that decodes the information included in the graph(2).
Preparation of charts have to take statistical issues into account, but also those related to perceptual and cognitive psychology and its communicative value.

The communicative effectiveness of a graph depends on the clarity of the message conveyed. Data may contain several messages we may want to highlight using a chart.
The effectiveness of data visualization is the result of a collaborative effort of three expertises: communication, statistical know-how and software solutions.

(2). cfr. Presentare e comunicare le statistiche: principi, componenti e valutazione della loro qualità. Maggino/Trapani, SIS Magazine, 2009

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Common data models

To communicate the key-aspects of a complex data set in a more intuitive way, graphic form and functionality need to go hand in hand.

Evolution of statistical graphs depends on the interaction of specific factors:
•new study on human perception of quantitative information presentation
•software for complex graphics applications.

The development of sophisticated websites allowing data extraction through visualisation tools is fundamental not only to ensure the understanding of statistical information and its widest dissemination, but also to allow **reusability** of our information.

The use of common data models, such as SDMX, provide effective support for users to combine data from multiple sources (mashup) and to access them with clever visualisation tools. A good example of an SDMX-based visualisation tool is the ECB Inflation Dashboard.

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An aggregator

We are developing the next Istat's web site as an **aggregator** able to pick up contents from other systems and adapt them, creating added-value information.

A site for Everybody

The aggregator provide a **"public" access** to communicate a standard set of information and metainformation: Economic data, population in Italian municipalities, migration charts, etc.

Search, link to DW, News, Press Releases, Events, Tools, selected Widgets with syntetic data, special Areas (Educational, Gender, Regions, ...)

A site for Everybody

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A site for Everyone

… and a "**custom-made**" access for authenticated users: a "content aggregator" where user can build his own site selecting data from a list of widgets

Economic data, population in italian municipalities, migration charts, etc.

A site for Everyone

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Visual component

Selected contents of the site come from:
• Datawarehouse I.Stat (for figures)
• Wiki Publishing System (statistics explained)
• Other **sources**
by RSS feed and webservices

The **visual component** of the web site will consider two kind of visualization tools:

• access to a **complex tool** for expert users (like Istat eXplore), thanks to the interaction with the dwh I.Stat

• thematical **widgets** that respond to specific communication issues (a good example is the *interactive room* on CBS website).

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Widgets

What's a Widget and Why do we Need it?

A widget is a portable chunk of code that can be installed and executed within any separate HTML-based web page by an end user without requiring additional compilation

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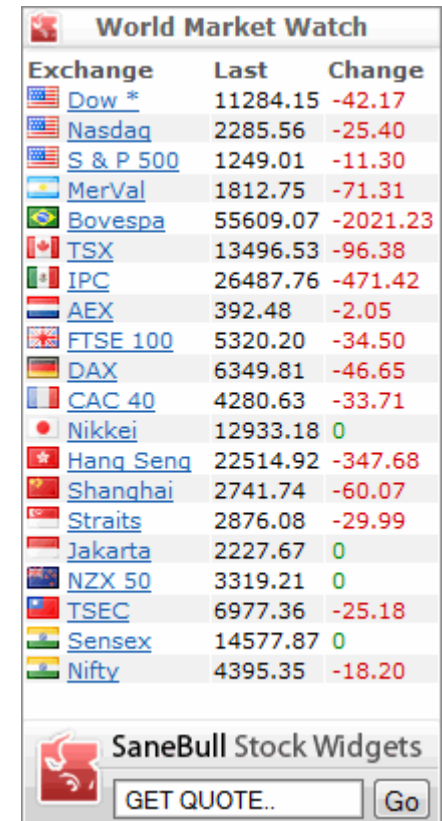
Widgets

Wi**d**gets

Data producer

Data consumer

Widgets

A widget is an application that can be embedded into third party sites by any user on a page where they have rights of authorship (eg. a webpage, blog, or profile on a social media site)

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Widgets

Widgets and API

Municipality of Roma

	2007	2008
Population	2718768	2724347
Males	1281482	1283145
Females	1437286	1441202
Live births	24645	27603
Deaths	25258	25914
Net migration	13778	3890

Source: ISTAT

Embed code

```
<script type="text/javascript"
src="http://www.vincenzopatruno.org/dir/bilancio.js">
</script>
```

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Widgets and API

Embed code

```
<script type="text/javascript"
src="http://www.vincenzopatruno.org/dir/net_migration.js">
</script>
```

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Widgets and API

Persons aged 14 and over by level of satisfaction for some aspects of their daily life - Percentage

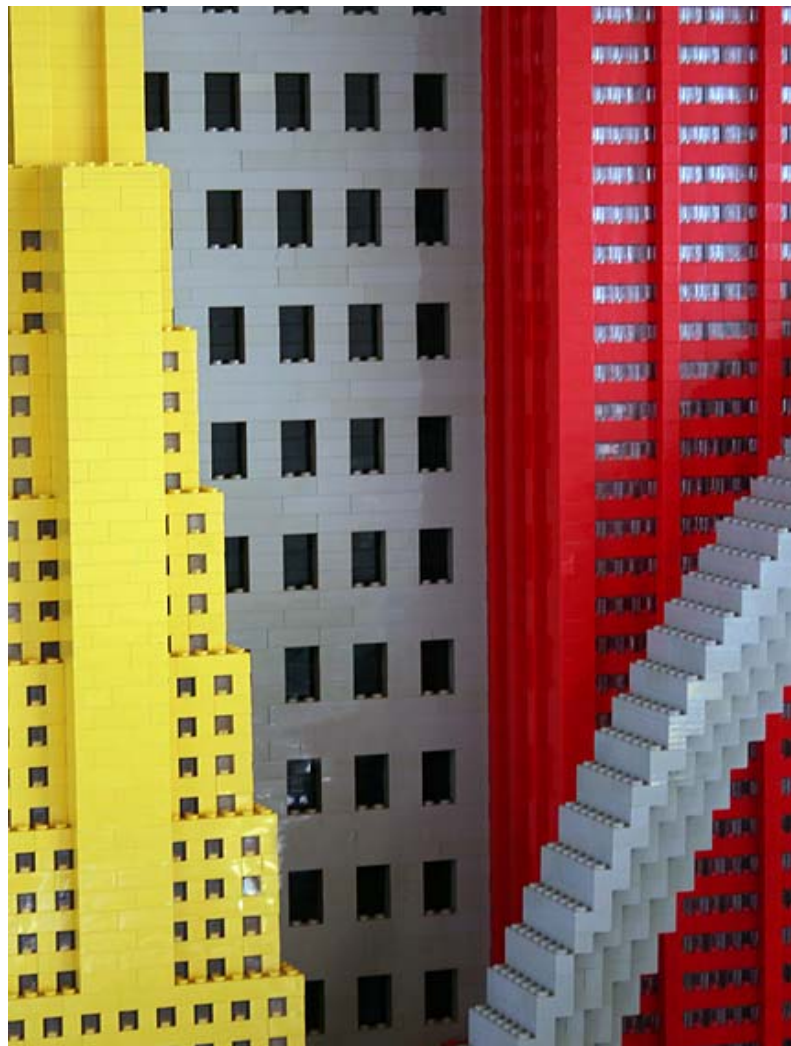|	2001	2002	2003	2005	2006	2007	2008	2009
financial position	5.1	3.4	4	3.1	3.2	3.3	2.4	2.5
health	17.2	16.2	20.4	16.1	16	17.5	16.3	16.5
family relations	35.7	36.4	34.5	33.1	33.6	33.4	34.8	36.3
friend relations	26.7	27	23.4	25.7	23.8	23.5	26.1	26.8
free time	16.3	15.6	14.9	15	14.7	13.9	15	15.9

Source: ISTAT

Embed code

```
<script type="text/javascript"
src="http://www.vincenzopatruno.org/dir/dailylife.js">
</script>
```
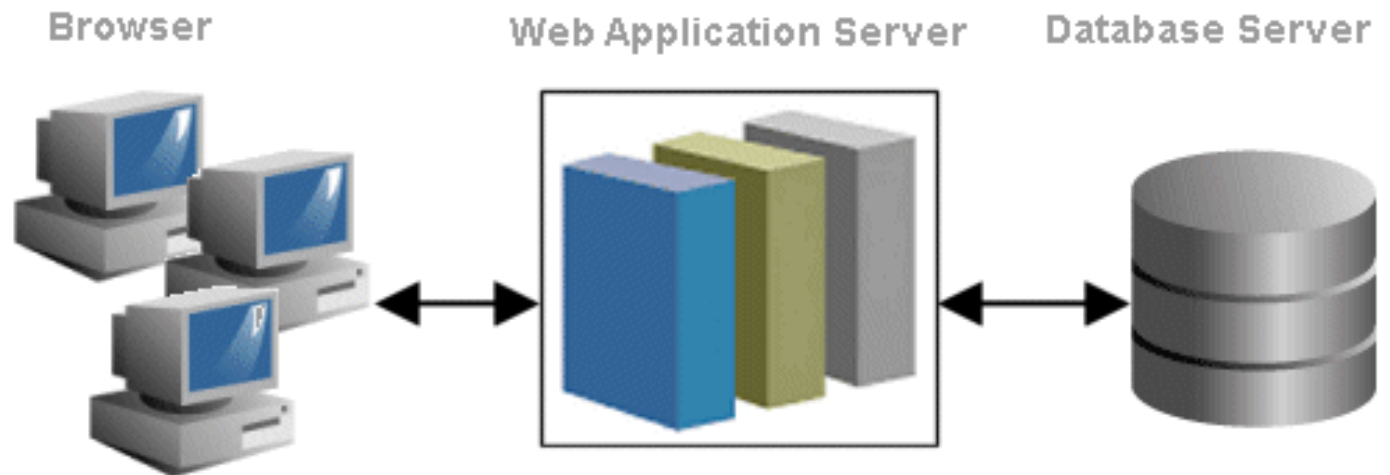
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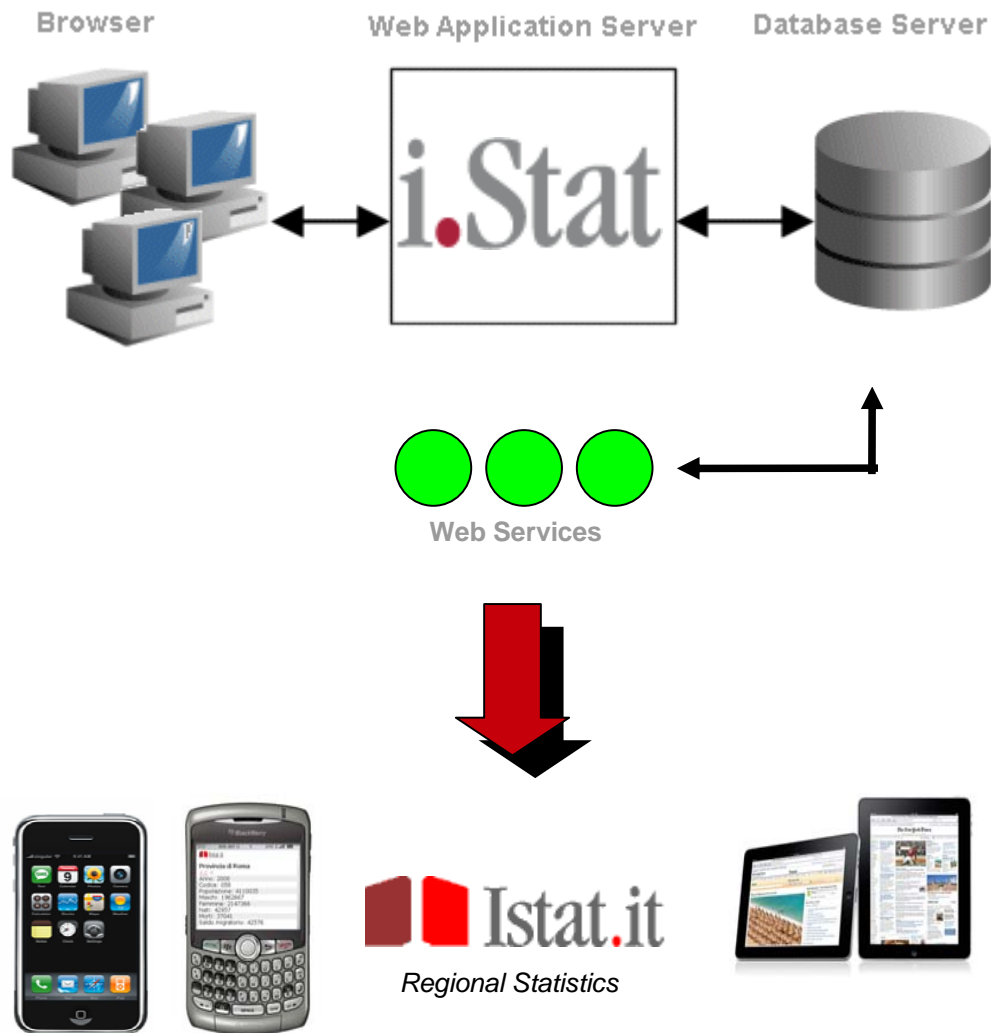# Widgets

Working with widgets is similar to work with LEGO stones

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Widgets

Three Tier Architecture

Browser   Web Application Server   Database Server

API

Browser   Web Application Server   Database Server

Web Services
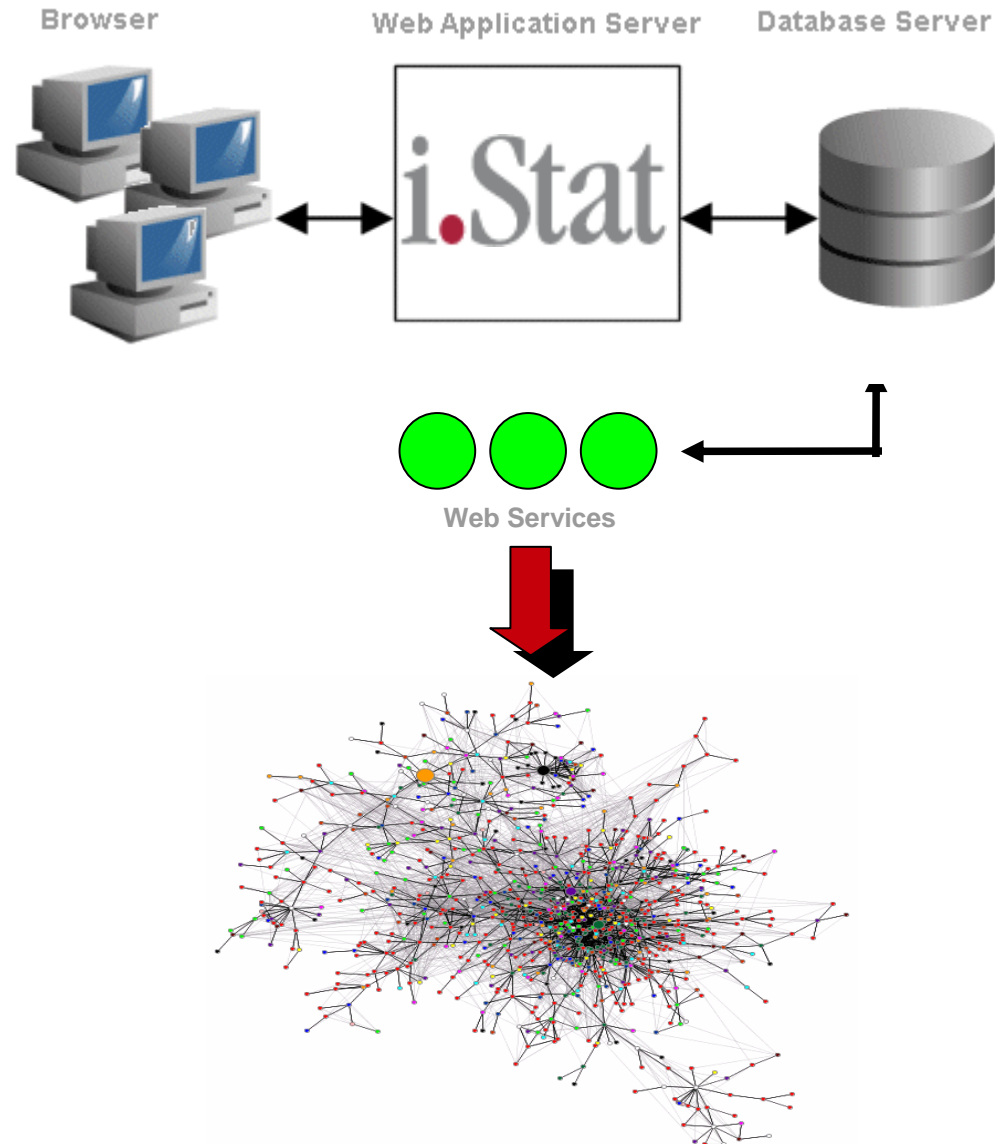
Regional Statistics

mobile.istat.it

Mobile

Future is Mobile

The Blogosphere

The New Web User

The user isn't a "reader" of the Web. The New Web User is now a **protagonist of the Web**.

The **New Web User** plays an active role to disseminate, to share, to discuss, to promote and to improve information.

Data Sharing