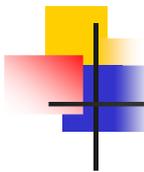




Indicador de **diversidad**

Aplicaciones cibernéticas

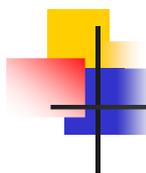
Isidro F. Aguillo
CINDOC-CSIC
isidro@cindoc.csic.es



Objetivos

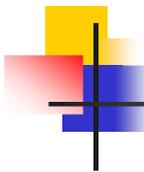
Cibernetría

- Análisis cuantitativo de la actividad I+D a través del WWW:
 - World-wide (global)
 - Web (interconectado)
- Un punto de vista integrado:
 - Sistemas Ciencia-Tecnología-Economía
 - Triple Hélice: Academia-Gobierno-Industria
- Desarrollar indicadores para los nuevos escenarios globales



Métodos

- Nuevas unidades **Instituciones ("sedes")**
- Nuevos métodos **Agentes**
- Nuevos indicadores **Cibermétricos**
 - Locales
 - Globales
- Desarrollo de nuevos sistemas de visualización
 - Geográficos
 - *Estáticos*
 - *Interactivos (dinámicos)*
 - Conceptuales (relaciones)
 - *Disciplinares (temáticos, verticales)*
 - *Institucionales (horizontales)*



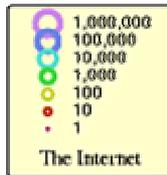
Dos unidades documentales

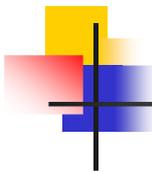
- Unidades en el Webspacio
 - Sede (criterio institucional)
 - Documento (criterio tradicional)
- Múltiples niveles de trabajo
 - Macroanálisis: Europa (UE), Iberoamérica
 - Mesoanálisis
 - Vertical (temático)
 - Horizontal: género (mujer), universidad, empresa, etc.
 - Microanálisis (departamentos, grupos)

Cibergeografía

The Internet Jul 1999

World

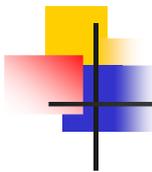




Tamaño del webespacio

- ~11 MM servidores: 30-45 millones "sedes"
- 1.500 MM páginas Web (01/00)

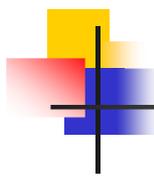
| PAIS | DOM | Páginas | SUB | Páginas | % |
|---------------|-----------|------------|---------------|-----------|-------|
| JAPON | <i>jp</i> | 16,276.009 | <i>ac.jp</i> | 3,065.568 | 18.83 |
| REINO UNIDO | <i>uk</i> | 8,696.572 | <i>ac.uk</i> | 2,264.384 | 26.04 |
| AUSTRALIA | <i>au</i> | 4,766.177 | <i>edu.au</i> | 1,411.770 | 29.62 |
| COREA DEL SUR | <i>kr</i> | 3,915.505 | <i>ac.kr</i> | 1,188.885 | 30.36 |
| TAIWAN | <i>tw</i> | 3,131.568 | <i>edu.tw</i> | 1,345.589 | 42.97 |
| POLONIA | <i>pl</i> | 1,967.533 | <i>edu.pl</i> | 163.527 | 8.31 |
| AUSTRIA | <i>at</i> | 1,840.582 | <i>ac.at</i> | 540.371 | 29.36 |
| BELGICA | <i>be</i> | 1,151.946 | <i>ac.be</i> | 264.385 | 22.95 |
| CHINA | <i>cn</i> | 3,039.371 | <i>edu.cn</i> | 338.111 | 11.12 |
| SUDAFRICA | <i>za</i> | 861.079 | <i>ac.za</i> | 106.016 | 12.31 |
| NUEVA ZELANDA | <i>nz</i> | 731.494 | <i>ac.nz</i> | 132.134 | 18.06 |
| ISRAEL | <i>il</i> | 557.137 | <i>ac.il</i> | 167.098 | 29.99 |
| ARGENTINA | <i>ar</i> | 738.083 | <i>edu.ar</i> | 64.334 | 8.72 |



Webespacio Iberoamericano

| PAIS | Páginas Web* (2/00) | PAIS | Páginas Web* (2/00) |
|-------------|--------------------------------|-------------|--------------------------------|
| Brasil | 3.684.883 | Uruguay | 81.696 |
| España | 2.226.141 | Costa Rica | 70.948 |
| México | 942.776 | Ecuador | 43.008 |
| Argentina | 738.083 | Paraguay | 39.786 |
| Portugal | 704.837 | Nicaragua | 37.243 |
| Chile | 333.510 | Cuba | 31.672 |
| Colombia | 206.044 | Bolivia | 13.830 |
| Perú | 161.944 | Panamá | 13.736 |
| Venezuela | 104.916 | Guatemala | 10.896 |

* FAST (www.alltheweb.com)



Indicadores cibernmétricos

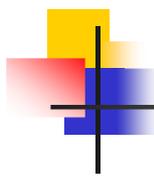
Locales

| INSTITUCION - INDICADORES | | CINDOC-CSIC ¹ (España) | INIST-CNRS ² (Francia) | IBICT ³ (Brasil) |
|---------------------------------|---------|--------------------------------------|--------------------------------------|--------------------------------|
| Tamaño | Páginas | 894 | 3047 | 554 |
| | Enlaces | 16.588 | 69.676 | 5.049 |
| Densidad | | 18,55 | 22,88 | 9,11 |
| Endogamia | | 80,34% | 75,27% | 77,38% |

¹ www.cindoc.csic.es

² www.inist.fr

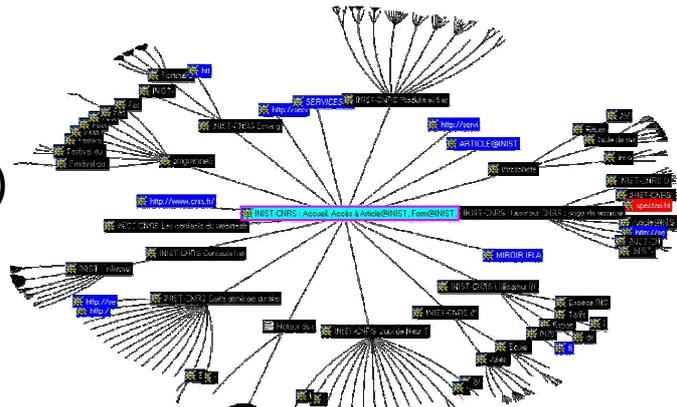
³ www.ibict.br



Indicadores cibernéticos

Globales

- Visibilidad
 - WebIF
 - Visibilidad
- Endogamia (%)
- Diversidad
 - Geográfica
 - Institucional
 - Disciplinar
 - Otras (lingüística, tipológica, etc.)





Muestreo

FAST (www.alltheweb.com)



Advanced Search

"All the Web, All the Time™"

| | | | | | | |
|---|--|--|---|---|---|---------------------------------------|
| FAST SEARCH <i>300M Pages</i> | FTP SEARCH <i>100M Files</i> | MP3 SEARCH <i>1,000,000 MP3s</i> | PICTURE SEARCH <i>17M Pics & Sounds</i> | LISTENING ROOM <i>Hot New Band Site</i> | FA PREMIER <i>Largest Soccer Site</i> | CONTACT US <i>FAST Info</i> |
|---|--|--|---|---|---|---------------------------------------|

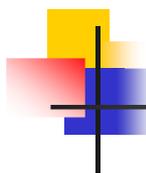
Search for

LANGUAGE [Help](#) Filter results for any of our 25 supported languages

WORD FILTERS [Help](#) Add filter words you wish to include / exclude from your results. One phrase per entry box.
Must include
Must not include
Should include
[more / fewer terms](#)

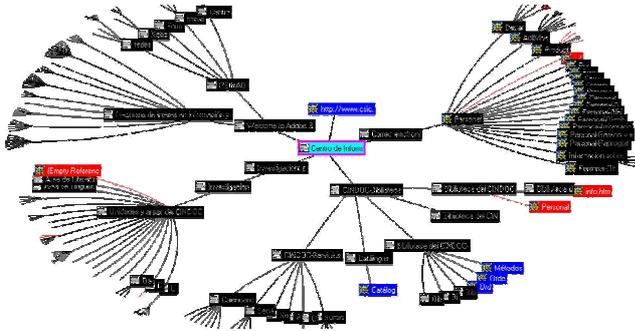
DOMAIN FILTERS [Help](#) Filter results by including / excluding domains e.g. com, gov, dell.com, etc
Only Include Exclude

results per page



Diversidad

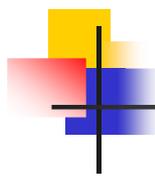
- Contenido de información del sistema
 - $H' = -\sum p_i \ln(p_i)$ Shannon-Weaver
 - $D = 1/(\sum p_i^2)$ Simpson
 - $D = (S-1)/\ln(N)$ Margalef
- Diversidad=Riqueza (S)+Equitabilidad (E)
 - $E = H'/\ln(S)$ (equitabilidad)



$i = 1 \dots S$

$p_i = N_i/N$ (frecuencia)

$N = \sum p_i$ (tamaño)



Indicadores cibernéticos

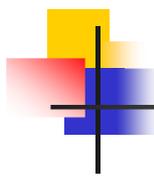
Globales

| INSTITUCION - INDICADORES | | CINDOC-CSIC (España) | INIST-CNRS (Francia) | IBICT (Brasil) |
|---------------------------------|---------------------|-------------------------|-------------------------|-------------------|
| Tamaño | Páginas | 894 | 3.047 | 554 |
| | ¹ Citas* | 663 | 1.429 | 1.252 |
| ² Visibilidad* | | 0,75 | 0,47 | 2,26 |
| Endogamia* | | 18,25% | 10,30% | 4,06% |
| Diversidad* (dominios) | | 2,18 | 2,42 | 1,12 |

* FAST (www.alltheweb.com)

¹ Excluidas autocitas

² WebIF (Ingwerson)



Análisis y significado

Principales dominios

| <i>CINDOC</i> | | |
|---------------|-----|--------|
| es | 328 | 49,47% |
| com | 52 | 7,84% |
| NUM | 42 | 6,33% |
| de | 37 | 5,58% |
| org | 29 | 4,37% |
| edu | 29 | 4,37% |
| fr | 18 | 2,71% |
| uk | 17 | 2,56% |
| co | 11 | 1,66% |
| it | 9 | 1,36% |
| S=42 | | |

| <i>INIST</i> | | |
|--------------|-----|--------|
| fr | 638 | 44,65% |
| com | 97 | 6,79% |
| NUM | 88 | 6,16% |
| es | 75 | 5,25% |
| org | 69 | 4,83% |
| kr | 46 | 3,22% |
| de | 38 | 2,66% |
| net | 36 | 2,52% |
| be | 34 | 2,38% |
| ca | 33 | 2,31% |
| S=88 | | |

| <i>IBICT</i> | | |
|--------------|-----|--------|
| br | 967 | 77,24% |
| NUM | 87 | 6,95% |
| com | 35 | 2,80% |
| org | 32 | 2,56% |
| net | 32 | 2,56% |
| pt | 14 | 1,12% |
| es | 9 | 0,72% |
| ca | 9 | 0,72% |
| edu | 8 | 0,64% |
| de | 5 | 0,40% |
| S=87 | | |



related:www.ibict.br

10 results

Google Search

GoogleScout

GoogleScout is useful for finding web pages that are similar to a search result. For example, GoogleScouting a company's page will often show that company's competitors. Related pages 1-10 of about 28 for www.ibict.br. GoogleScout took 0.51 seconds.

Páginas similar to www.ibict.br:

[Bem-vindo a home page do IBICT](#)

www.ibict.br/ - [Cached](#) - 2k - [GoogleScout](#)

www.ibict.br/antares

[GoogleScout](#)

[Ministério da Ciência e Tecnologia - MCT - C&T Brasil](#)

Simulação de emergência em Angra I e II Sistemas de emergência serão acionados dia 11, para exercício geral de segurança a partir de alarme simulado Mudança do Clima Na V ...

www.mct.gov.br/ - [Cached](#) - 12k - [GoogleScout](#)

www.finep.gov.br/

[GoogleScout](#)

[RNP](#)

RNP - Rede Nacional de Pesquisa: conectando redes de pesquisa e educação em todo o Brasil. ... english MCT . MEC . CNPq . parceiros Rede Nacional de Pesquisa: ...

www.rnp.br/ - [Cached](#) - 16k - [GoogleScout](#)

[Prossiga](#)

www.prossiga.cnpq.br/ - [Cached](#) - 1k - [GoogleScout](#)

[IMPA](#)

Informações Gerais

www.impa.br/ - [Cached](#) - 3k - [GoogleScout](#)

[IBAMA On Line](#)

www.ibama.gov.br/ - [Cached](#) - 1k - [GoogleScout](#)

[Fundação CAPES](#)

Atenção: Para poder acessar corretamente a página da CAPES, é preciso utilizar no mínimo a versão Netscape 3.0 ou Internet Explorer 4.0. É necessário, também, habilitar o ...

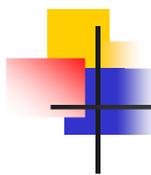
www.capes.gov.br/ - [Cached](#) - 2k - [GoogleScout](#)

[Centro Brasileiro de Pesquisas Físicas/CNPq](#)

English Português O CBPF está organizando o I Workshop do Rio de Janeiro em Redes de Alta Velocidade. Click aqui para saber mais sobre o evento. O CBPF é um dos institutos de...

www.cbpf.br/ - [Cached](#) - 8k - [GoogleScout](#)

| CITA A > ES CITADO POR | CINDOC | INIST | IBICT |
|---------------------------|--------|-------|-------|
| CINDOC | - | 7 | 2 |
| INIST | 0 | - | 0 |
| IBICT | 0 | 0 | - |



Otras medidas de diversidad

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LIMIT SUBJECTS TO

- | | | |
|---|--|--|
| <input type="checkbox"/> Arts | <input type="checkbox"/> Govt, Law & Politics | <input type="checkbox"/> Social sciences |
| <input type="checkbox"/> Business & Investing | <input type="checkbox"/> Health & Medicine | <input type="checkbox"/> Sports & Recreation |
| <input type="checkbox"/> Computing & Internet | <input type="checkbox"/> Humanities | <input type="checkbox"/> Technology |
| <input type="checkbox"/> Contemporary life | <input type="checkbox"/> Products & Services | <input type="checkbox"/> Travel |
| <input type="checkbox"/> Education | <input type="checkbox"/> Reference | |
| <input type="checkbox"/> Entertainment | <input type="checkbox"/> Science & Mathematics | |

LIMIT DOCUMENTS TO

- | | | |
|---|--|--|
| <input type="checkbox"/> Commercial Web sites | <input type="checkbox"/> Personal pages | <input type="checkbox"/> Broadcast news transcripts |
| <input type="checkbox"/> Education Web sites | <input type="checkbox"/> Learning materials | <input type="checkbox"/> City & regional newspapers |
| <input type="checkbox"/> Government Web sites | <input type="checkbox"/> Questions and answers | <input type="checkbox"/> College newspapers |
| <input type="checkbox"/> Military Web sites | <input type="checkbox"/> For sale | <input type="checkbox"/> Newspapers, wires & transcripts |
| <input type="checkbox"/> Non-profit Web sites | <input type="checkbox"/> Job listings | <input type="checkbox"/> Press releases |

Documents written in:

Web sites from:

lingüística

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SELECT DATE RANGE

Fill in one date field or both to narrow your results by date.

Start date: End date: mm/dd/yyyy

SORT RESULTS BY

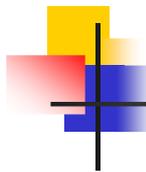
temporal

Relevance Date & Time

[Search](#) [Tips](#)

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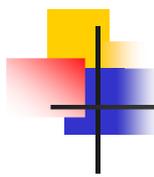
Internet invisible

“Islas de calidad”

| BUSCADOR (28/02/2000) | Número de páginas** | Acrobat (pdf) | Postcript (ps) | Word (doc) | Powerpoint (ppt) |
|----------------------------------|--------------------------------|--------------------------|---------------------------|------------------------|------------------------------|
| FAST | 300 | 942.531 | 359.351 | 574.822 | 101.571 |
| ALTAVISTA | 200 | 645.889 | 249.068 | 334.149 | 53.309 |
| WEBESPACIO* | 1.500 | +5 millones | 1,8 millones | ~3 millones | > 0,5 millones |

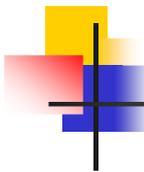
** estimación 01/2000*

*** millones*



Futuros desarrollos

- Representación geográfica
 - Riqueza
 - Frecuencia
 - Diversidad
- Mapas conceptuales interactivos
 - Relaciones



Nuestro turno

Why do not cybermetrics indicators deserve a chapter in future editions of the '**European Report on S&T Indicators**'?

¿Por qué la RICYT no incluye un apartado sobre cibermetría en sus "**Indicadores de Ciencia y Tecnología Iberoamericanos/Interamericanos**"?



Su turno

¿Preguntas.....?