

# Otvoreno računarstvo

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## 2. Norme

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# Otvoreno računarstvo

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## 2. Norme

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- **Uvod i primjeri**
- Razvoj norme

# „Otkad je svijeta i vijeka...”

- Noževi su u upotrebi od kamenog doba
- Za lakše rezanje u uporabi su dva noža
- U srednjem vijeku se umjesto jednog noža pojavljuje vilica
  - u Europu je vjerojatno došla s Bliskog istoka
- Norme se razlikuju od skupine do skupine
- **Ne postoji ispravna norma, samo prihvaćena**
- Za prihvaćanje norme moraju postojati:
  - Potreba
  - Dogovor



# Norme...

- nôrma ž  $\langle G\ mn\ -\bar{a}/-\bar{i} \rangle$ 
  - pravilo, propis, obrazac,
  - kriterij prema kojem se određuje kako bi nešto trebalo biti
- lat.: drvodjelski kvadar, pravilo, predložak
- Norme na FER-u
  - Predmet *Upravljanje kakvoćom*
    - općenito o normama, uloga norma u poslovnom procesu
  - Predmet *Otvoreno računarstvo*
    - norme u računarstvu i njihova primjena

## ▪ Norme u Hrvatskoj:

- Hrvatski zavod za norme
  - <https://www.hzn.hr/>
- Pristup normama za akademske građane
  - <https://hrn4you.hzn.hr/>
    - Čini se da ne radi :-O

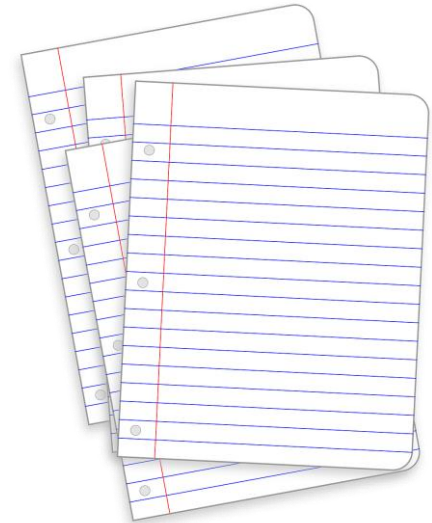
### **Pandemijske norme:**

- Privremeno besplatno preuzimanje norma za osobnu zaštitnu opremu i medicinske proizvode
  - <https://www.hzn.hr/default.aspx?id=1875>
- Besplatni dokument CWA 17553:2020, Zaštitne maske za lice za građanstvo
  - <https://www.hzn.hr/default.aspx?id=1892>

**Objašnjenje na predavanju –  
zgodan primjer za predmet**

# Norme - definicije

- Standard - a document, established by **consensus** and approved by a **recognized body**, which provides, for **common** and **repeated** use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the **optimum degree of order** in a given context.
  - ISO/IEC Guide 2: 2004
- Standard - a **technical** specification, adopted by a **recognized standardization body**, for **repeated** or continuous application, with which compliance is **not compulsory**
  - *European regulation on standardization (1025/2012)*



# Otvoreni sustavi i norme

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- Skup definiranih norma
  - Olakšavaju suradnju
  - Olakšavaju povezivanje
  - Omogućuju konkurentnost
  - Omogućuju neovisnost o proizvođaču
- Govorimo o stvarnim sustavima i stvarnom životu, ne o apstraktnim pojmovima:
  - SAD - ANSI/IEEE
  - Europa - ISO
  - Hrvatska - ISO (Zavod za norme)
- Neki više vole udruge financirane od proizvođača
- Postojanje okvira norma potiskuje inovacije



# Standards@work

"Whether for cranes, luminaires, slicers, mixers, telephones, alarm systems, sprinklers and water sprayers, there is a wide variety of electrical, electronic, mechanical, and metallic products used at the work place for which European Standards are available. When applied, European Standards facilitate product design as they embed the best engineering practices for e.g. measurement, interoperability and performance. Often, they also grant manufacturers the presumption of conformity to the complex European safety legislation. This is why our member associations make all efforts to promote their voluntary use among their company members, especially SMEs."

Adrian Harris, Director General of Orgalime – the European Engineering Industries Association.

"Management consultancy services is a professional activity for which standards need to be considered, in order to help client organisations identify their needs, specify their demands, ask for the relevant information and make effective decisions in front of a complex set of offers."

ICMCI, the International Council of Management Consulting Institutes, is playing a major role in this process, especially by being the initiator of the creation of CEN Technical Committee 381 on Management Consultancy Services and by providing expertise and best practices in this Technical Body.

Having a standard for 'Management Consultancy Services' is considered to be a tremendous advancement for ICMCI, and a positive contribution to the success of the management consultancy profession."

Dr. Ilse Ennsfellner, Secretary General ICMCI – International Council of Management Consulting Institutes

"ETSA, the 'European Textile Services Association' benefits from its liaison status with CEN/TC 162 - Protective clothing including hand and arm protection and lifejackets. Our liaison was very helpful in the coordination of the views of the textile rental and industrial laundry sector regarding the creation of new standards and the amendment of existing standards. It helped us to raise awareness of the importance of suitable professional care and maintenance for protective clothing to ensure functionality over the full lifetime of garments."

Robert Long, Secretary General ETSA – European Textile Services Association



CEN-CENELEC  
www.cen.eu – www.cenelec.eu  
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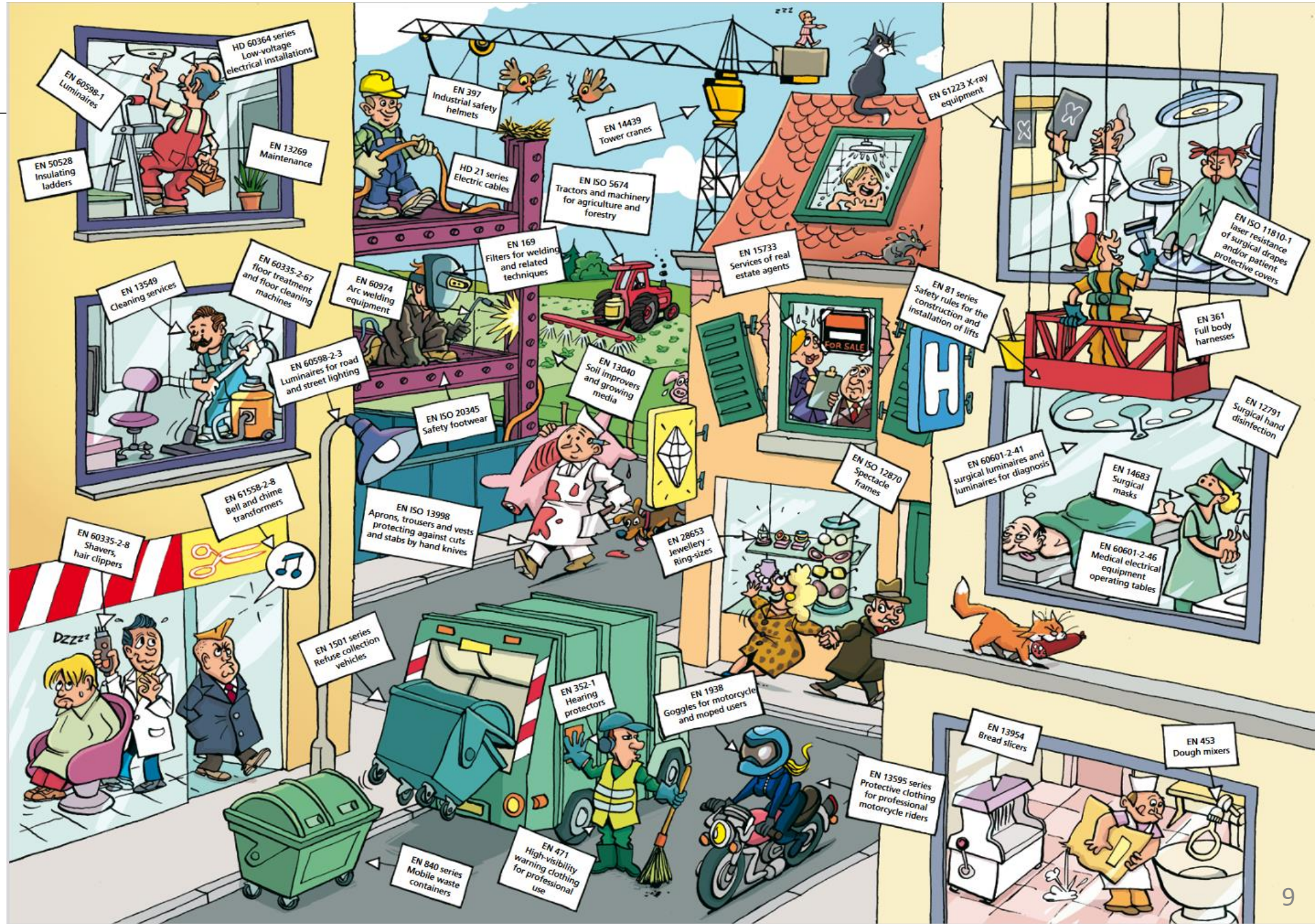
**cen** CENELEC



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**cen** CENELEC







# Ključni pojmovi:

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- Donositelji norma moraju biti **neovisni o proizvođaču**
- Otvoreni sustavi znače **funkcionalne produkte**, ne apstraktne pojmove
- **Suradnja** između različitih sklopovskih platforma
- **Prenosivost** aplikacija na razne platforme
- **Lakoća prelaska** sa starih sustava na nove
- **Zaštita investicija** u sadašnje sustave
- Umrežavanje i komunikacija bez obzira na **fizičku lokaciju**

# Kako do otvorene norme?

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- Norme neovisne o proizvođaču donose:
  - prenosivost
  - povezivost
  - suradnju
  - zamjenjivost (dobavljača, starih sustava s novim)
  - zaštitu investicija
  - smanjenje troškova
- Inovativnost?
  - Potisnuta (u drugim smjerovima), ali ne i ugušena!

# Normirano? Otvoreno?

- Sklopovlje
  - Procesori? (x86, ARM)
- Memorije (DDRx, flash)
  - Komunikacijsko sklopovlje (RS-232, Ethernet, ATM)
- Programski jezici
  - ISO C, C11, ISO/IEC C++ 14, Java, Fortran 95, ...
- Drugi jezici
  - Talijanski, španjolski, njemački, norveški, ...
  - HTML5, HTML 4.0, CSS 2, CSS 3, ...
- Mrežni protokoli
  - Ethernet, TCP/IP, HTTP, FTP, IMAP, ...
- Usluge
  - WWW, CORBA, ...
- Alati
  - GDB, Eclipse, Java, .Net, ...
- Oblici zapisa
  - JPEG, PNG, PDF, ODF, ...
- Algoritmi...

# Razvoj otvorenih standarda

- OpenStand

- Inicijativa razvoja **moderne** paradigme za razvoj otvorenih normi
- Prvotni potpisnici: IEEE, ISOC, IETF, IAB, W3C

- 5 principa

- <https://open-stand.org/about-us/principles/>

[https://open-stand.org/wp-content/uploads/2014/08/OpenStand\\_5Principles\\_v4b.png](https://open-stand.org/wp-content/uploads/2014/08/OpenStand_5Principles_v4b.png)

## 5 CORE PRINCIPLES

FOR OPEN STANDARDS DEVELOPMENT

[www.open-stand.org/principles](http://www.open-stand.org/principles)



open  stand

BECOME AN ADVOCATE FOR OPEN DEVELOPMENT AT [WWW.OPEN-STAND.ORG](http://WWW.OPEN-STAND.ORG)

# Razvoj otvorenih standarda

- OpenStand
  - Inicijativa razvoja **moderne** paradigme za razvoj otvorenih normi
  - Prvotni potpisnici: IEEE, ISOC, IETF, IAB, W3C
- 5 principa
  - <https://open-stand.org/about-us/principles/>
- 10 prednosti

## 10 BENEFITS OF OPEN STANDARDS

OpenStand Principles encourage the open, inclusive and collaborative development of standards that:



open  stand

BECOME AN ADVOCATE FOR OPEN DEVELOPMENT AT [WWW.OPEN-STAND.ORG](http://WWW.OPEN-STAND.ORG)



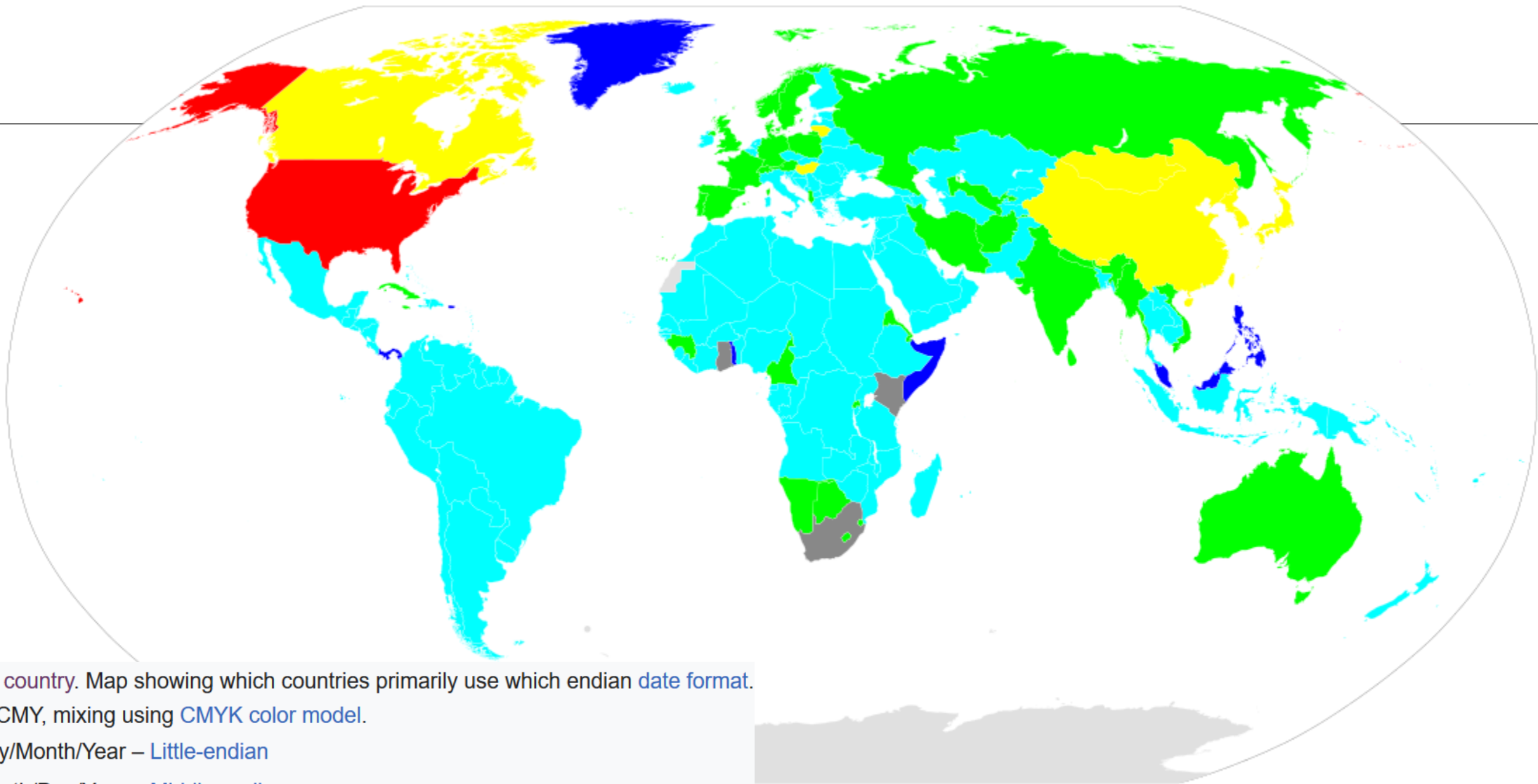
# POSIX

- **P**ortable **O**perating **S**ystem **I**nterface
- Potreba za usklađivanjem sučelja operacijskih sustava (*system calls*)
  - Programskih
  - Korisničkih
  - Mrežnih
  - Odnosi se na grupu norma IEEE 1003.n i dijelove ISO/IEC 9945
  - IEEE 1003.1-1998  $\equiv$  POSIX.1
- Primjer: *fork()* - IEEE 1003.1-2004
  - The `fork()` function **shall** create a new process.
  - The new process (child process) **shall** be an exact copy of the calling process (parent process) except as detailed below:
    - The child process **shall** have a unique process ID.
    - The child process ID also **shall not** match any active process group ID.
    - ...

```
#include <unistd.h>
pid_t fork(void);
```







# Pisanje datuma i vremena

- ISO 8601:2004 - Data elements and interchange formats; Information interchange; Representation of dates and times
  - Međunarodna – ISO norma
    - Hrvatski zavod za norme preuzeo i tu normu – nema druge hrvatske norme
  - Jezično neovisan
  - Čitljiv strojno i ljudima
  - Jednostavno se sortira i uspoređuje
    - Veće jedinice prije manjih
  - Dozvoljeno je izostaviti pojedine komponente
    - nije potrebna tolika preciznost
    - potrebno je uštedjeti na zapisu
    - pravila za interpretaciju
- Zapis datuma, vremena i vremenskih intervala
  - yyyy-mm-dd
  - hh:mm:ss
  - yyyy-mm-ddThh:mm:ss



**English: Date format by country.** Map showing which countries primarily use which endian date format.

Colors for base formats CMY, mixing using [CMYK color model](#).

	#0ff	DMY – Day/Month/Year – <a href="#">Little-endian</a>
	#f0f	MDY – Month/Day/Year – <a href="#">Middle-endian</a>
	#ff0	YMD – Year/Month/Day – <a href="#">Big-endian</a> (used internationally as ISO 8601)
	#00f	DMY + MDY
	#0f0	DMY + YMD
	#f00	MDY + YMD
	#888	DMY + MDY + YMD

# Otvoreno računarstvo

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## 2. Norme

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- Uvod i primjeri
- **Razvoj norme**

# Razvoj norme

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1. Skupina
    - ima:
  2. Potreba
    - skupina ili netko drugi daje:
  3. Prijedlog rješenja
    - te se dolazi do:
  4. Dogovor (konsenzus) o prihvatanju
  5. Izrada i objavljivanje norme
  6. Osvremenjivanje norme
- 
- Lijepo opisani primjer: [proces nastanka algoritma AES](#)

# Razvoj norme – primjer algoritma AES

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- Skupina

- Američka vlada (NIST)

- Potreba

- Zaštita podataka kriptoomom nove generacije umjesto algoritma DES

- Prijedlog rješenja

- Debata o postupku izbora algoritma – siječanj-rujan 1997.
  - Kandidati: CAST-256, CRYPTON, DEAL, DFC, E2, FROG, HPC, LOKI97, MAGENTA, MARS, RC6, Rijndael, SAFER+, Serpent, Twofish – kolovoz 1998.



# Razvoj norme – primjer algoritma AES

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- **Dogovor (konsenzus) o prihvaćanju**
  - Diskusija o kandidatima (2 skupa) – kolovoz 1998., ožujak 1999.
  - Finalisti – kolovoz 1999.
  - Rijndael, Serpent, Twofish, RC6, MARS
  - Analiza finalista (3. skup) – travanj 2000.
  - AES = Rijndael algoritam – listopad 2000.
- **Izrada i objavljivanje norme**
  - Odobrena FIPS (Federal Information Processing Standard) norma – veljača-studen 2001.
- **Osuвременjivanje norme**
  - Debata o svojstvima algoritma i primjenjivosti u pojedinim situacijama
  - Stalna kriptanaliza i pronalaženje ograničenja i slabosti algoritma
  - Primjer: evolucija DES u 3DES

# Tko predlaže norme?

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- Proizvođač
- Udruga
  - rezultat dogovora udruženih proizvođača
  - udruga/proizvod (alliance/product)
- Interesna udruga
  - vrijeme pojavljivanja krajnjeg proizvoda nepoznato
  - Udruga (alliance/marketing)
- Norme nemaju vrijednost bez pravne podrške i podrške tržišta

# Tko donosi norme?

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- Formalno, neovisno tijelo

- pravna norma - *de iure*
- slijedi vodeću tehnologiju (dobitak na vremenu)
- Primjeri: protokol TCP/IP, ASCII, Unicode, Wireless 801.11n

- Tržište

- široko prihvaćen proizvod postaje norma
  - **de facto/proizvod** (*product*)
  - Primjer: IBM PC, tipkovnice QWERTY, modemske naredbe "AT", Adobe Postscript
- široko prihvaćen proizvod licenciran drugima
  - **de facto/licenca** (*licensable*)
  - Primjer: AT&T UNIX

# Sloboda i rizik

- Odabir norme uvjetuje
  - Mogućnost izbora krajnjeg proizvoda na tržištu
  - Rizik (kratkoročan i dugoročan)

Tip norme	Mogućnost izbora	Rizik
pravna (de iure)	velika	mali
proizvod (de facto)	mala	mali-velik
licenca (de facto)	srednja	mali-srednji
proizvod/udruga	srednja	srednji
udruga	mala	vrlo velik

# Formalna tijela

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- ISO      International Standards Organization
- ITU-T    International Telecommunication Union  
Telecommunication Standardization Sector
- W3C      World Wide Web Consortium
- IETF      Internet Engineering Task Force
- IEEE      Institute of Electrical and Electronic Engineers
- IEC      International Electrotechnical Commission
- ANSI     American National Standards Institute

# Postupci razvoja normi - IEEE

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- IEEE
  - Postupak: **The Standards Development Lifecycle**
    - <https://standards.ieee.org/develop/index.html>
    - <https://standards.ieee.org/develop/develop-standards/process.html>
  - Primjeri:
    - [https://en.wikipedia.org/wiki/IEEE\\_Standards\\_Association](https://en.wikipedia.org/wiki/IEEE_Standards_Association)



# Postupci razvoja normi – W3C

- W3C – World Wide Web Consortium

- Interoperabilnost Weba
- W3C mission: *To lead the World Wide Web to its full potential by developing protocols and guidelines that ensure long-term growth for the Web*
- Postupak: **W3C Process Document**
  - <https://www.w3.org/Consortium/Process/>
  - Poglavlja:
    - 1. Introduction
    - 6.2. The W3C Recommendation Track - uvod
    - 6.2.1. Maturity Levels on the Recommendation Track
- Primjeri:
  - <https://www.w3.org/standards/>

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