Spam Fighting at CERN

What is Spam ?

- Spam is the friendly name given to unsolicited mail everyone receives in the mailbox.
- Comes from a Monty Python sketch, where in a café everything on the menu includes SPAM™ luncheon meat.

- Estimated cost for companies:
  - 1 spam = 1$ cost per company (investment in spam fighting, helpdesk handling user complaints, time spent cleaning email folders…)
- Cost for spammers:
  - 39$ for 1 million French email addresses.

Email stealing

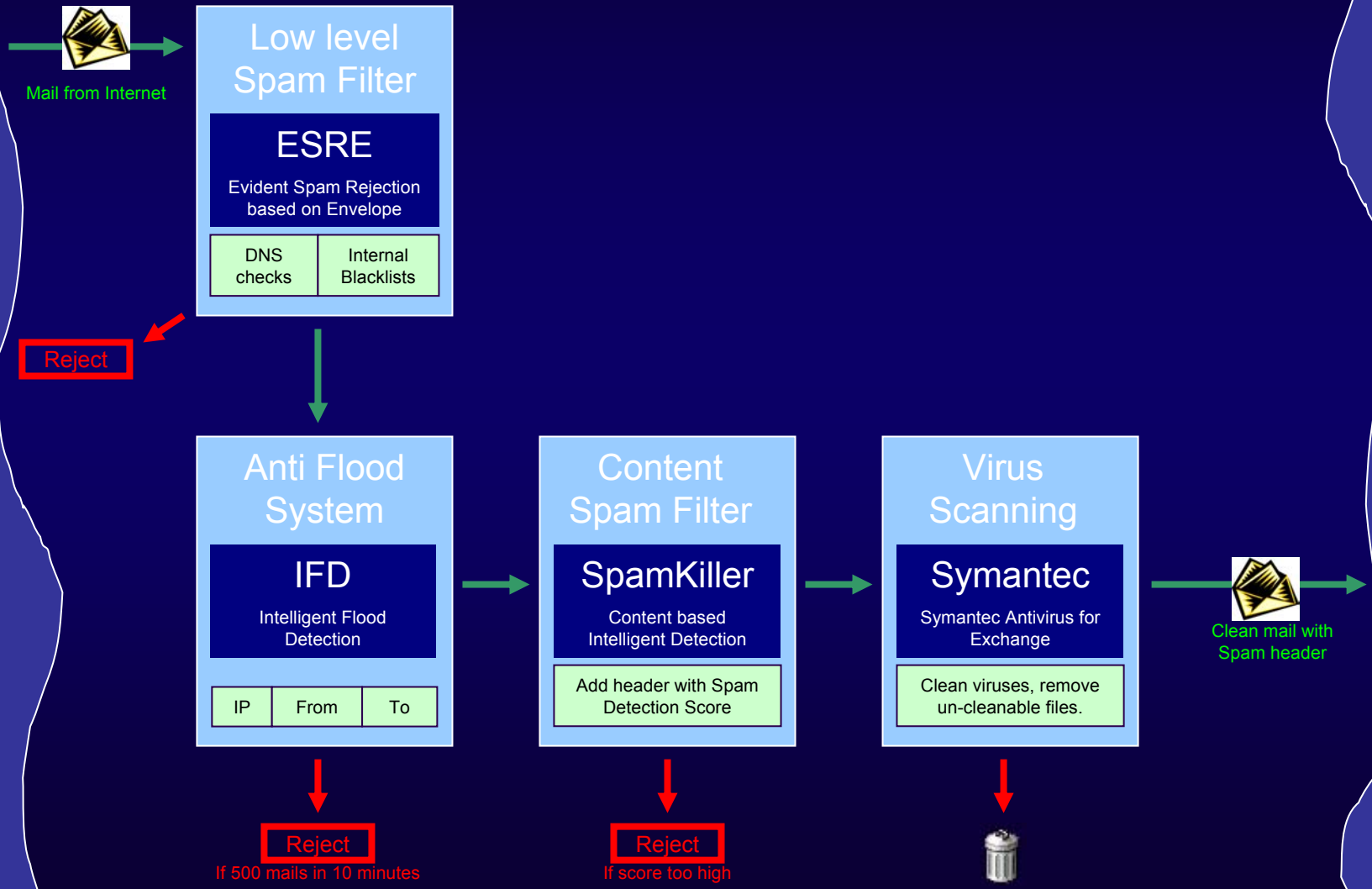
- Test at CERN: an email address was published on the Mail Service Website, 37 days after the first Spam was received.
- 6 Weeks study: 275 email addresses published on 175 different supports.
  (source Federal Trade Commission, November 2002)
- In 6 weeks: 3349 Spams were received by the 275 addresses.
- Speed record: First Spam was received 9 minutes after publishing an email in a Chat room.

Support	Spammed emails
Chat room	100%
Newsgroup	86%
Standard Web site	86%
Personal Web Site	50%
Forum	27%
WebMail	9%

Products review

- Existing market products were reviewed:
  - Technology too young
  - Results are not accurate
  - Missing a per user basis configuration
- While the market consolidates …
  - CERN/IT developed its own Anti-Spam filter.
  - Less effort than running after immature commercial technology.
  - Now running for 1.5 year.
  - Easy to modify and update detection techniques.
  - CERN specific user level configuration / customization.

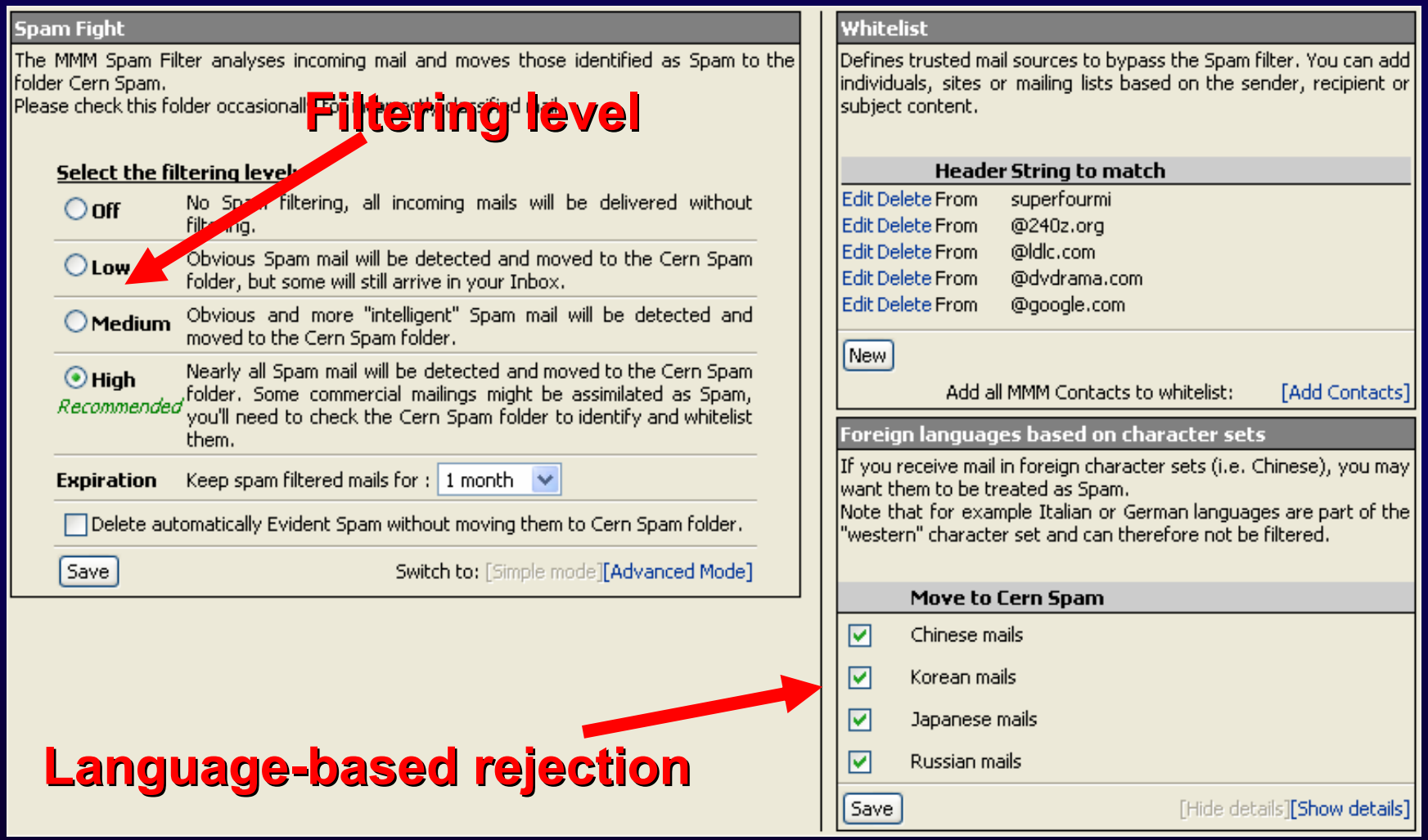
Mail filtering overview



Content Spam Filtering

- CERN SpamKiller is NOT McAfee Spamkiller.
- SpamKiller calculates the probability for a message to be spam
  - Regular expressions.
  - “Intelligent” content parsing.
  - Statistical heuristics (Bayesian Filters).
  - Charset detection algorithm.
- The user sets the threshold at which he wants spam to be rejected
  - Rejected message can be seen by the user (CERN Spam folder)
  - Per user configuration
  - Rejection of foreign languages mail on a per user basis (Chinese, Korean, Russian, Japanese, Arabic, etc …)

User configuration



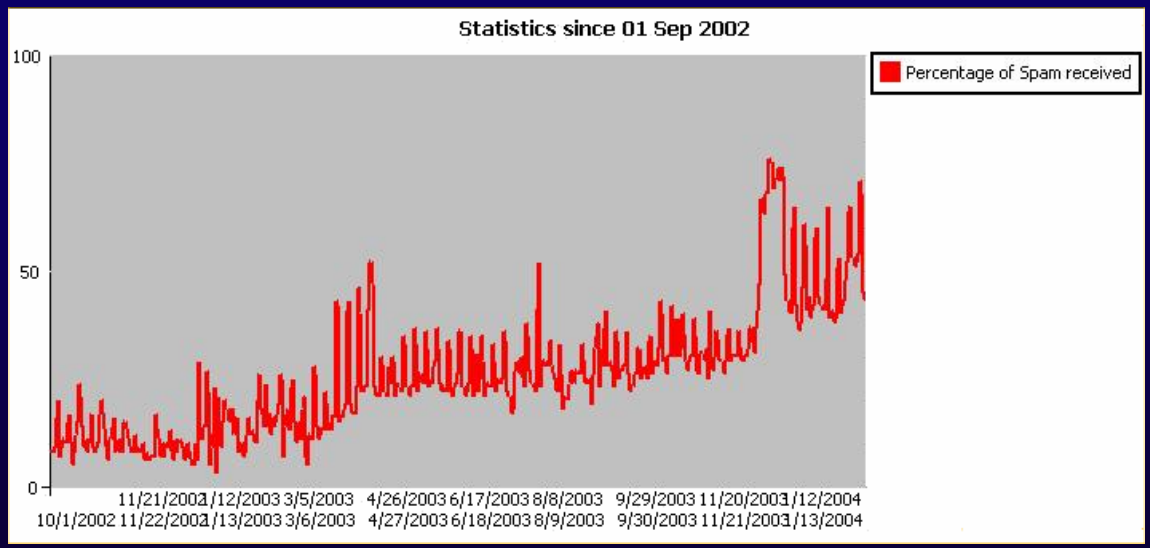
Efficiency

Smtp Traffic (yesterday):		[Details]
Reject	In	Out
120259	98820	14259
Spam:	59020	
Spam: 179279 (81%)		

1 day statistics on smtp gateways, all checks enabled:

CERN receives 81% of Spam ! But 67% is rejected.

More than 50% of accepted traffic is detected as spam.



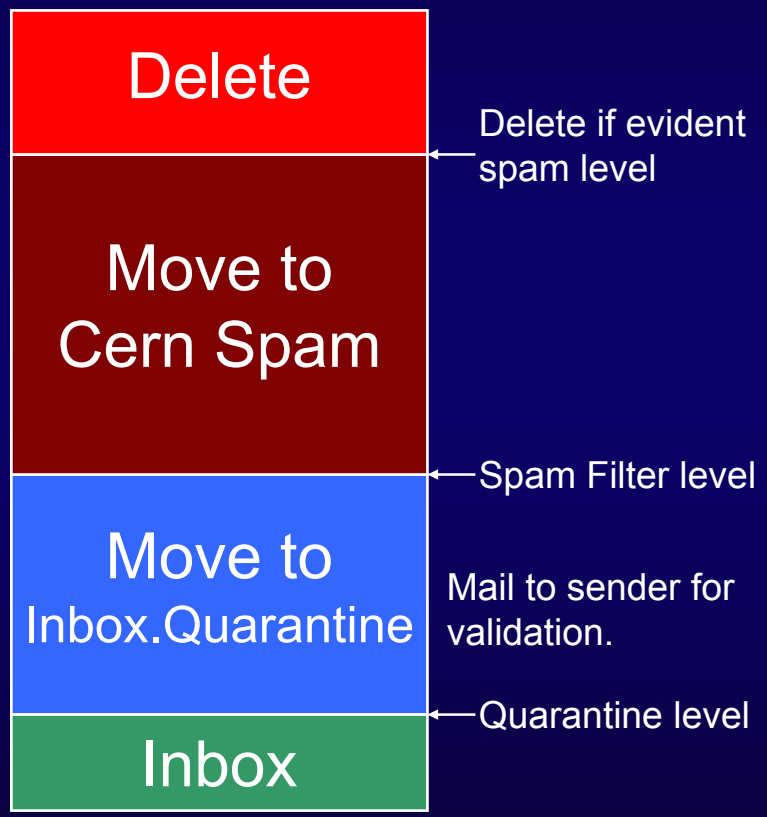
Efficiency

- False positives are quite low
  - Except for commercial lists (spam that you want).
  - White lists at user level can be configured to prevent this.
- Good spam detection
  - My mailbox filtering is standard:
    - 30 to 40 Spams filtered per day.
    - 3 or 4 Spams still go to the INBOX per week.
  - Can be improved, but new algorithms must be found.
- Not enough for some users with “public” email address
  - Old email address or published email address are more targeted for Spam.

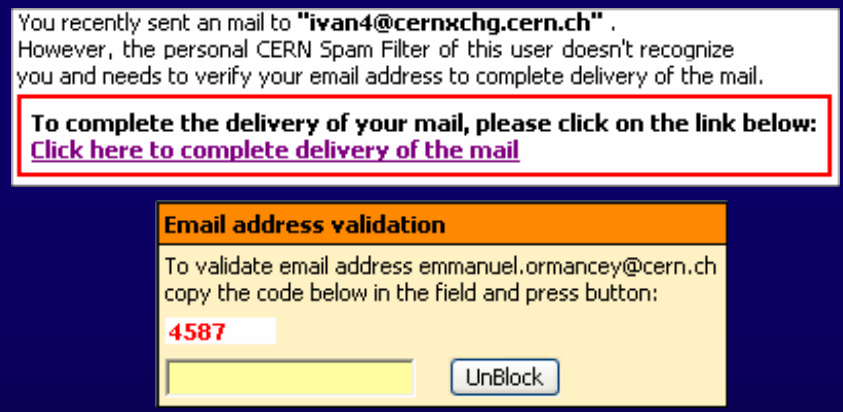
Future evolution

- Spammer techniques always follow anti-spam techniques.
- New detection mechanisms work only for a few months.
- Needs a full time work to have a constantly "up-to-date" filter.
- Only viable long term solution is to accept only mails from people you know:
  - ICQ (and other messenger systems) already have this feature.
  - Accept only messages from people in my contact list.
  - Adding someone to the contact list requires validation.

New feature (in test)



- **Good Mails not matching the user's whitelist are quarantined.**
- **Mail is send to sender requiring action to validate himself.**



- **Once validated, sender is added to whitelist, mails are moved back to Inbox.**

Next…

- Current situation:
  - Think, test and add new techniques.
  - Improve a fully customizable solution at user level.
- Improvements
  - Automatic whitelist currently in test.
- Future is to join forces against Spam:
  - Share rules, regular expressions patterns and Bayesian statistics dictionary with other organizations.
  - Central Antispam configuration with Live Update like antivirus definitions will be the solution. Therefore …
- Long term goal: use a commercial product.
  - Like for antivirus products, only a full time working team will provide up-to-date filters.

Questions ?

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