JWebPresenter: A Universal Web Presenting Tool

Liang Zhao and Hideo Yamamoto

Utsunomiya University

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(For later question/comment, note the slide number please)

1. Contents

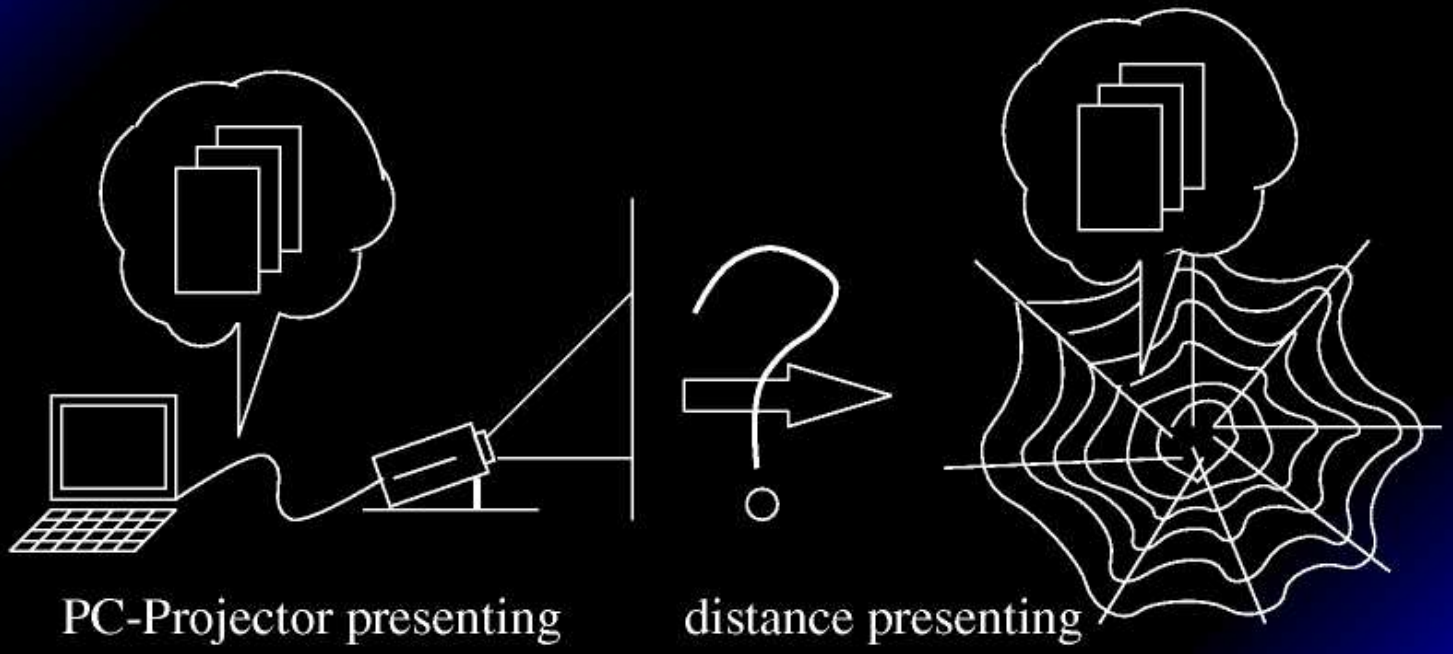
Contents

- Introduction (problem, application, related work)
- Basic Idea (bitmap image + Web server + Java)
- Cache/Proxy Problem and Solution
- Performance (data amount, comparison)
- Conclusion and More

2. Introduction -- Problem

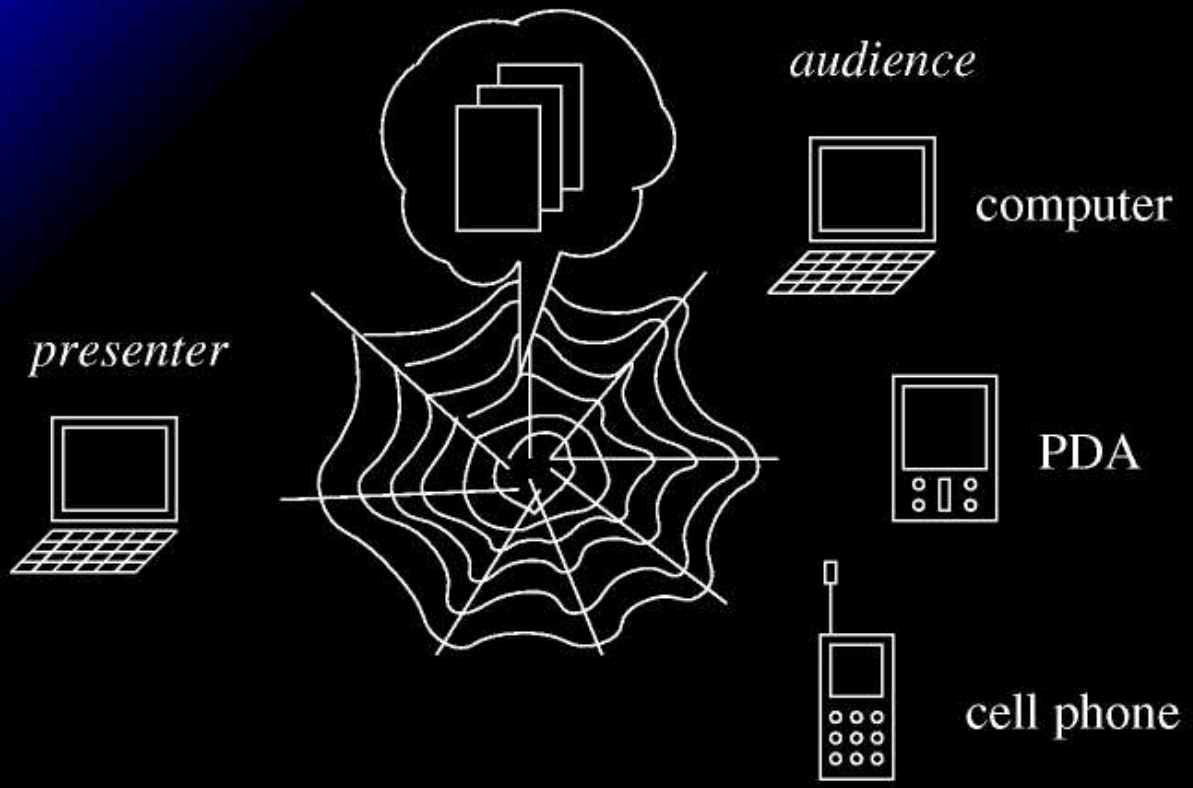
presentation = slide + presenting

How can we efficiently do presenting over a heterogeneous computing environment?



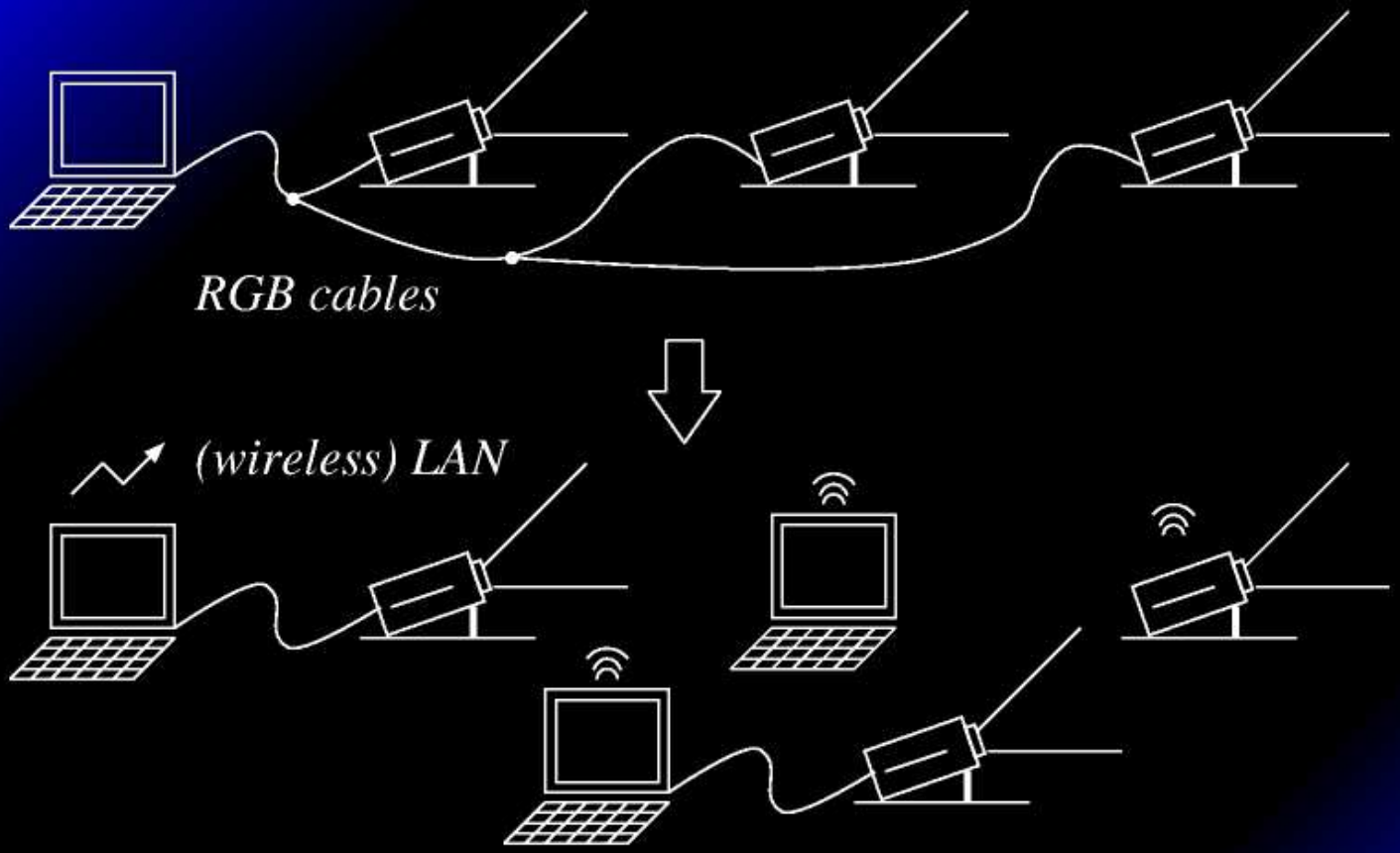
3. Introduction -- Application (1)

Distance lecturing, distance meeting, etc



4. Introduction -- Application (2)

Big presentation (our original motivation)



5. Introduction -- Requirement

Requirement

- Presenter-lead (this is not for self-training)
- Compatibility (multi-platform: OS, CPU, bandwidth...)
- Scalability (perform good even for many audiences)
- Thin client (the less installation, the better)
- Simple (presenting oriented function)

6. Introduction -- Existing method (1)

PowerPoint, MagicPoint, Impress etc
(so-called "presentation tool")

- Presenter-lead: YES
- Compatibility: POOR
- Scalability: NOT SUPPORTED
- Client: N/A (no feature)
- Simple: YES (intuitive)

7. Introduction -- Existing method (2)

Use HTML (and Macromedia Flash etc)
(sometimes also called "presentation")

- Presenter-lead: NO (client-select, for self-training)
- Compatibility: AVERAGE (have rendering problem)
- Scalability: GOOD (there are many good HTTP servers)
- Client: Web browser or player
- Simple: YES? NO?

8. Introduction -- Existing method (3)

mgpnet (included in MagicPoint)
(screenshot+builtin HTTP server+static URL)

- Presenter-lead: YES
- Compatibility: AVERAGE (server installation problem)
- Scalability: POOR (no consideration)
- Client: Web browser
- Simple: YES (no fullscreen, require working MagicPoint)

9. Introduction -- Existing method (4)

VNC tool, TightVNC as example
(designed for remote desktop management)

- Presenter-lead: YES
- Compatibility: AVERAGE (see the next slide)
- Scalability: SOMEWHAT GOOD
- Client: SMALL (100 KB or so)
- Simple: YES (require locally-working presenting tool)

10. Introduction -- Existing method (5)

Problems of VNC tool for presenting purpose

- Not-good compatibility (fixed screen, original protocol)
- Rather poor scalability (basically the same as mgpnet)
- Require a presenting tool to work locally
- No consideration on cache, late audience etc
- Problem may happen due to compression method
  - zlib: poor compression ratio
  - JPEG: poor quality

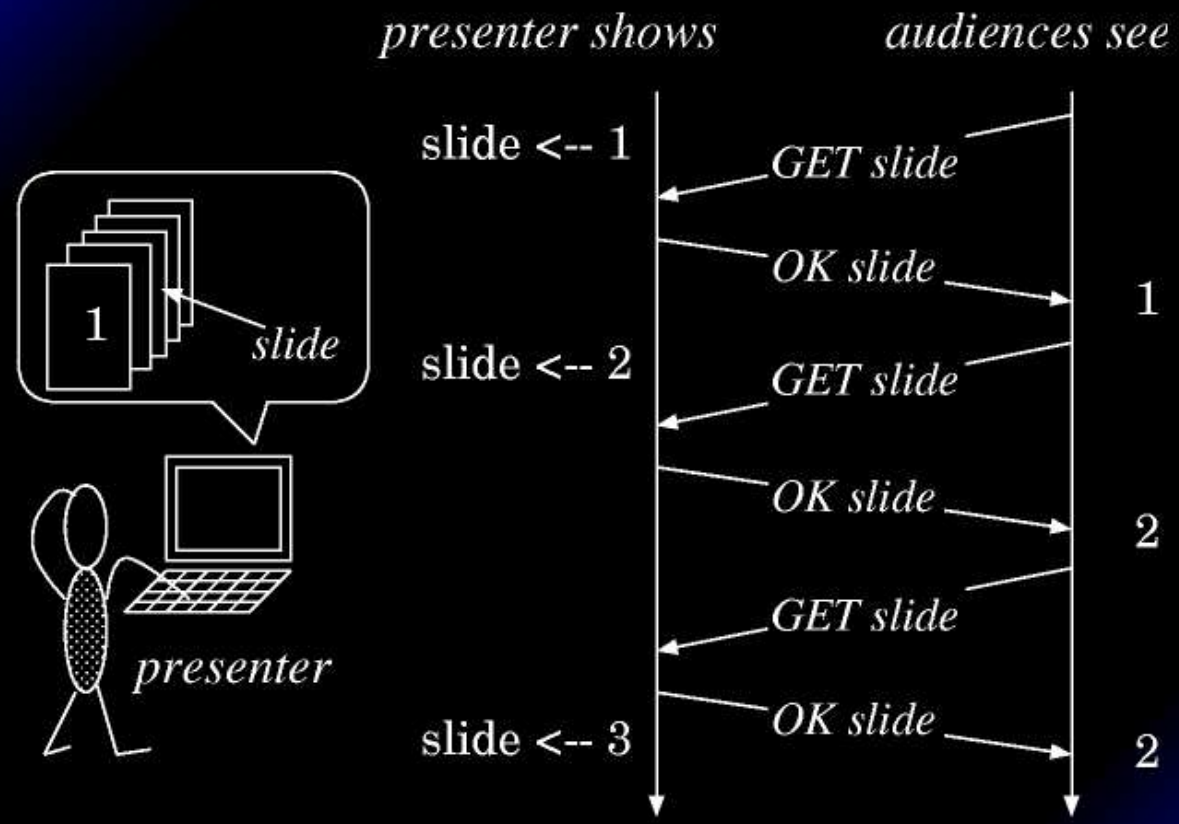
11. Introduction -- JWebPresenter (1)

JWebPresenter feature (detail goes later)
(designed solely for presenting)

- Presenter-lead: YES
- Compatibility: GOOD (PC/PDA/cellphone, HTTP/FTP...)
- Scalability: GOOD (hundred clients OK)
- Client: ULTRA SMALL (15 KB, require JRE)
- Simple: YES (resizable screen, tracked slideshow)

12. Introduction -- JWebPresenter (2)

Basic JWebPresenter presenting style (advanced features will be shown later)



13. Basic Idea (1)

Bitmap image based presenting

- Use bitmap image to avoid compatibility problem (THIS is the same as mgpnet and VNC)
- Differ from mgpnet and VNC tools:
  - pre-generated image (any tool OK, none provided)
  - format independent coding: any is OK if supported by Java VM (e.g., PNG, JPEG, GIF), mixed OK
  - multiple sources support (client selectable)

14. Basic Idea (2)

Web server (presenter side)

- Similar to mgpnet (but not VNC tool)
- Differ from mgpnet:
  - external server (for simplicity and performance)
  - protocol independent coding: any is OK if supported by Java VM (e.g., HTTP, FTP), mixed OK

15. Basic Idea (3)

Java programming (client)

- Multi-platform (computer, PDA, cell phone...)
- Run as application or applet
- Format/Protocol independent coding

Shell or perl script (server)

- Support multiple sources, mixed image format, tracked slideshow (see next), auto-demo

16. Cache/Proxy Problem and Solution (1)

Cache/Proxy problem

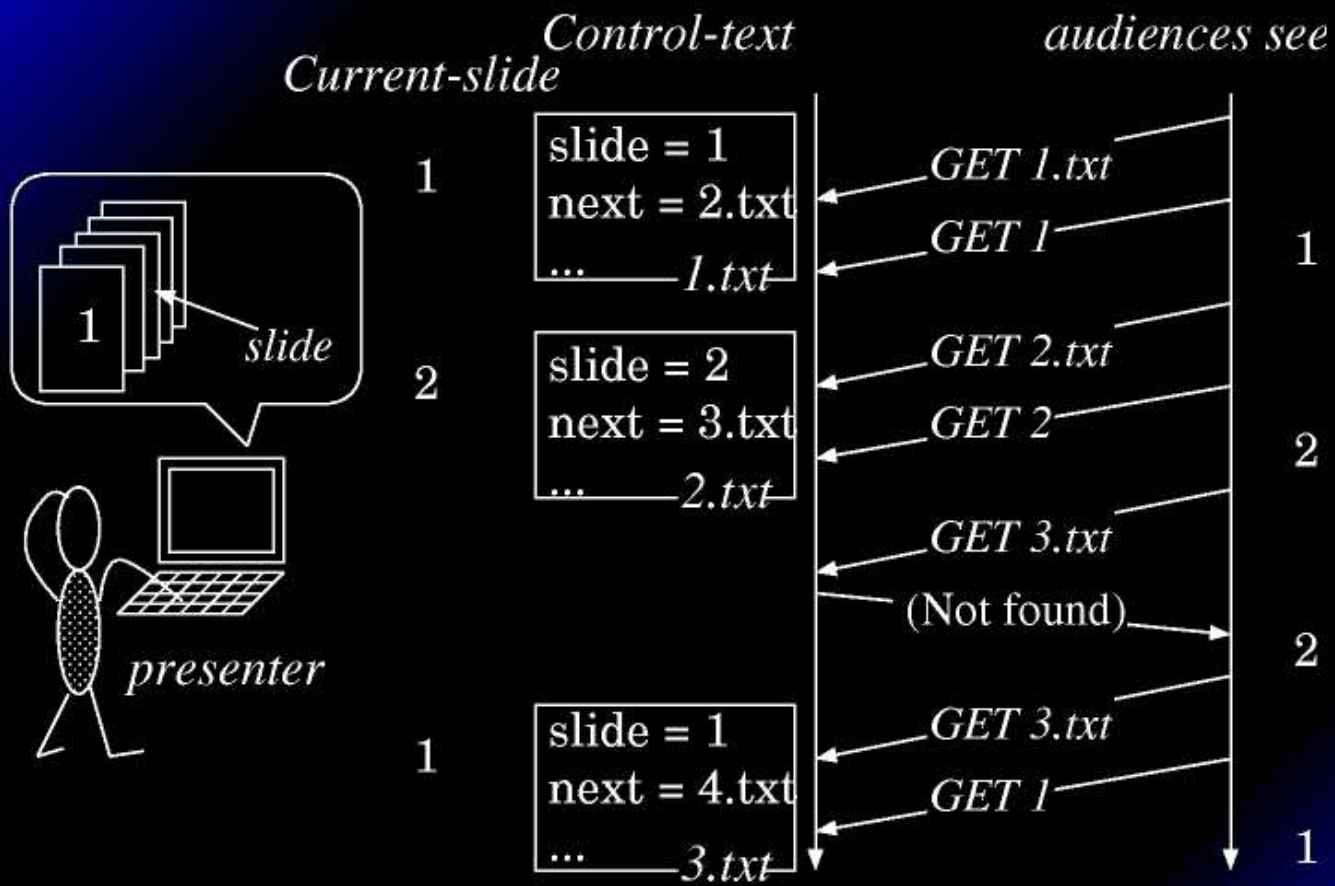
- Static URL may have cache/proxy problem

Solution (see also the next two slides)

- Introduce sequence number for slides
- Use a combination of static and dynamic URLs
- Track the presenting URLs for late audience

17. Cache/Proxy Problem and Solution (2)

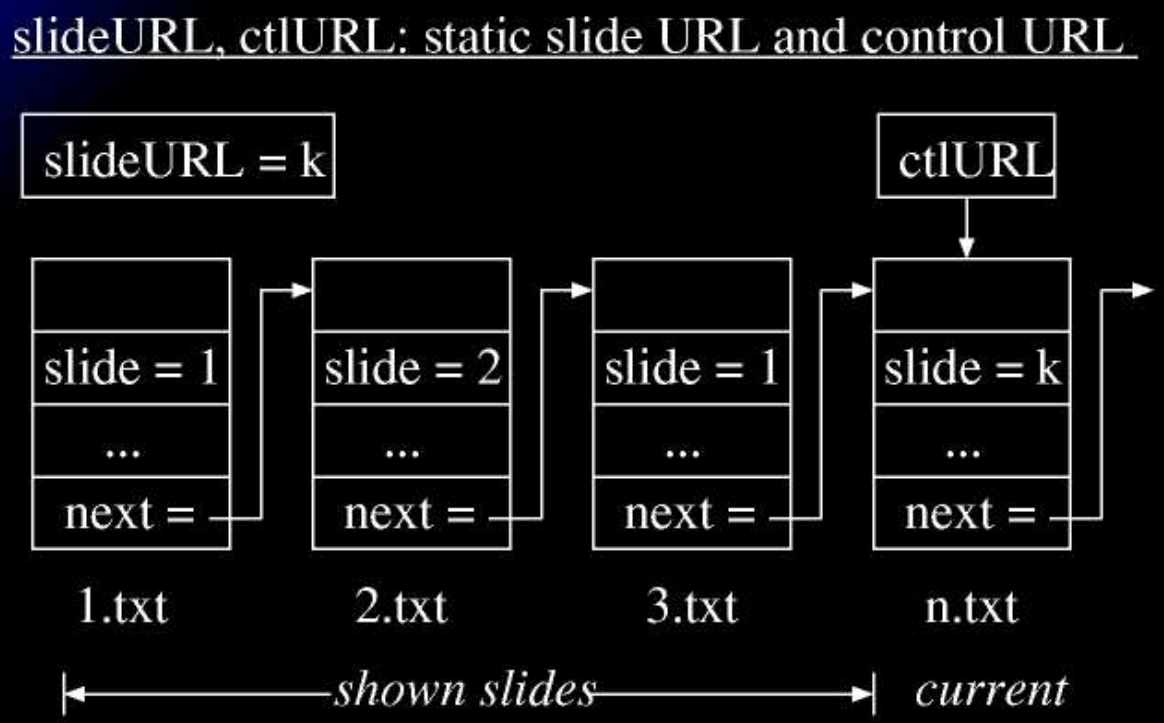
Combine static and dynamic URLs



Omitted: static URL, sequence number, normal response etc

18. Cache/Proxy Problem and Solution (3)

Track the presenting URLs
(late audience can read/skip shown slides)



19. Performance and Comparison (1)

A rough study on data amount (with 20 PowerPoint files, 478 slides)

- Randomly picked from the Internet (by Google)
- Image format: JPEG/PNG, 1023x768 resolution
- Raw data amount (see details in paper)
  - average < 43 KB / slide (PowerPoint: 47 KB)
  - vary by presentation, resolution, etc

20. Performance and Comparison (2)

A rough study on data amount (with 20 PowerPoint files, 478 slides)

- Image format: JPEG/PNG, 1023x768 resolution
- Packed data amount (see details in paper)
  - average < 49 KB / slide (about 2kbps overhead)
  - TightVNC (view-only mode): 207 KB (default), 69 KB (max-compression) with notable JPEG noise

21. Performance and Comparison (3)

Comparison with MagicPoint and TightVNC

Feature	*MagicPoint*	*TightVNC*	*JWebPresenter*
platform	UNIX-like (may fail)	Windows UNIX-like	independent
protocol	http	VNC	independent
image generating	on the fly	on the fly	offline
cache/proxy consideration	none	none	yes
scalability	n/a	poor	good
non-presenting function	slide creating	desktop management	none
main requirement	netpbm, perl browser	none	JRE, perl web server

22. Conclusion and More (1)

JWebPresenter: a presenting only tool

- Bitmap image to get the maximum compatibility
- External Web server to get the maximum scalability
- Java based format/protocol independent coding
- Cache/Proxy consideration
- Ultra small (35KB tar.gz package, including source, binary, 18KB license, manual, sample)

23. Conclusion and More (2)

Tested on (different client implements)

- Linux/Windows PC with JRE v1.4.2 (from Sun)
- Sharp Zaurus SL-C760 with built-in JRE v1.3
- cell phone emulator from J2ME Wireless Kit 2.1

24. Conclusion and More (3)

Future plan

- Implement background/foreground separation feature (which can reduce the data amount by about 30%)
- PNG optimization (which can reduce by about 10%)
- Have a consider on vector image format such as SVG?

25. Conclusion and More (4)

Release (lifespan: Feb. 29 -- May 31, 2004)

- License: GPL
- Homepage: http://zhao.sourceforge.net/

Statistics on sourceforge.net

- Rank: 8941 (total 81,961)
- Page Views: 2,555; download: 110

26. Conclusion and More (5)

Statistics on freshmeat.net

- Rating: not rated :-(
- Vitality: 0.03% (rank 3617, total 33257)
- Popularity: 0.60% (rank 7384)
- Record hits: 3,110
- URL hits: 1,593
- Subscribers: 13

27. Finally the end!

Demonstration

This should be a demo :-)