



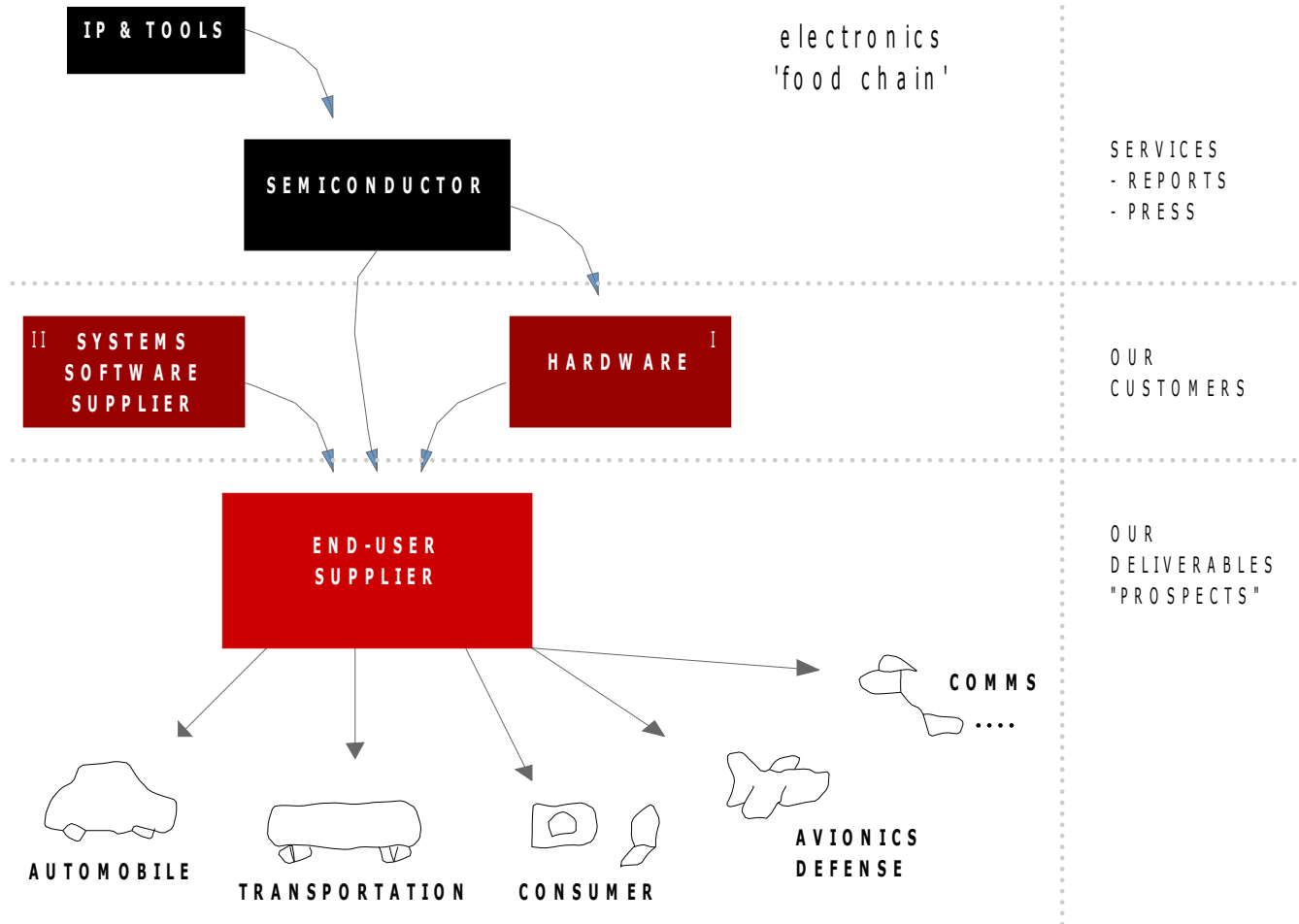
reachout

Tour d'horizon du
marché de l'embarqué et
l'apport de Linux.

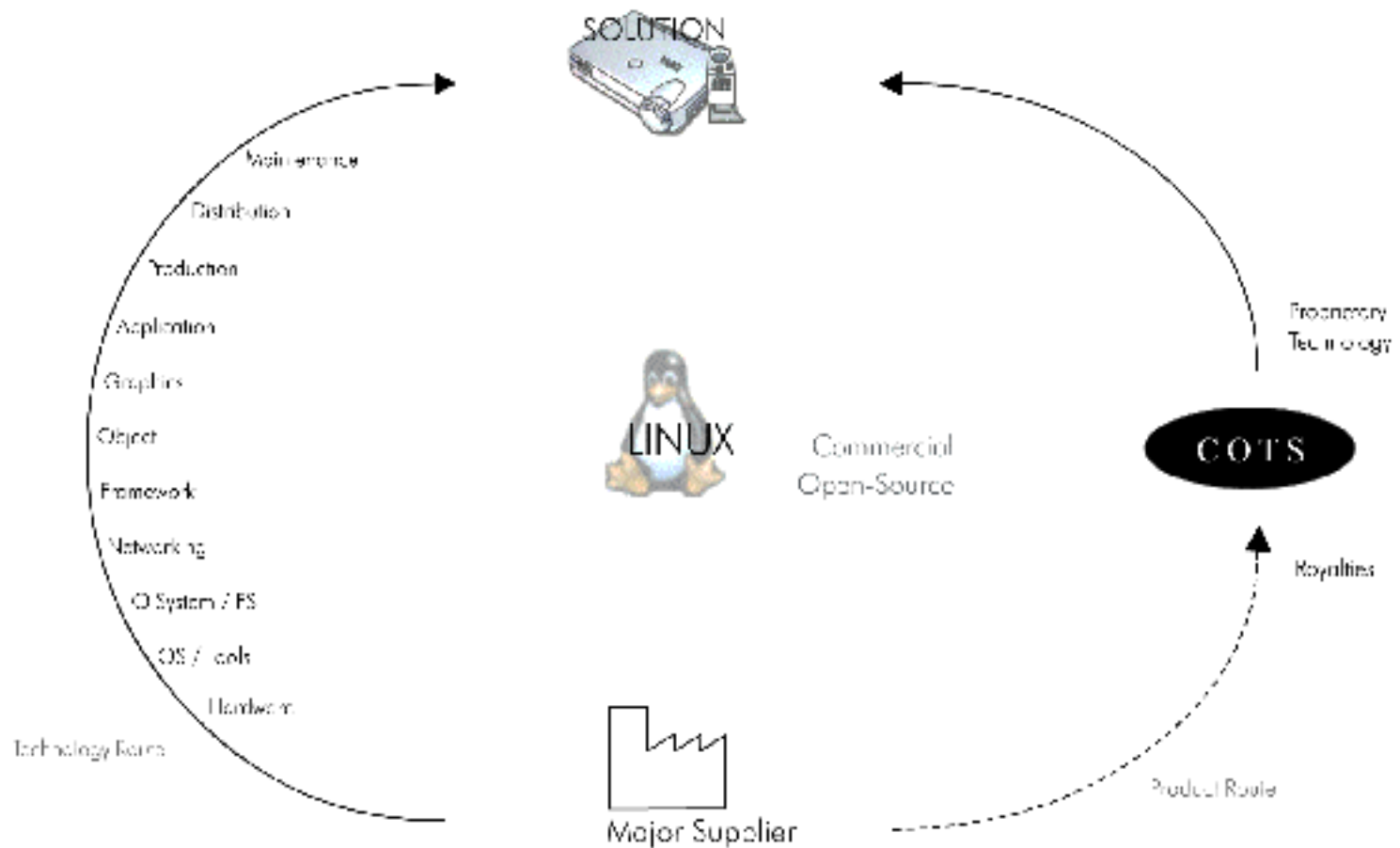
En effet, un ensemble de marchés



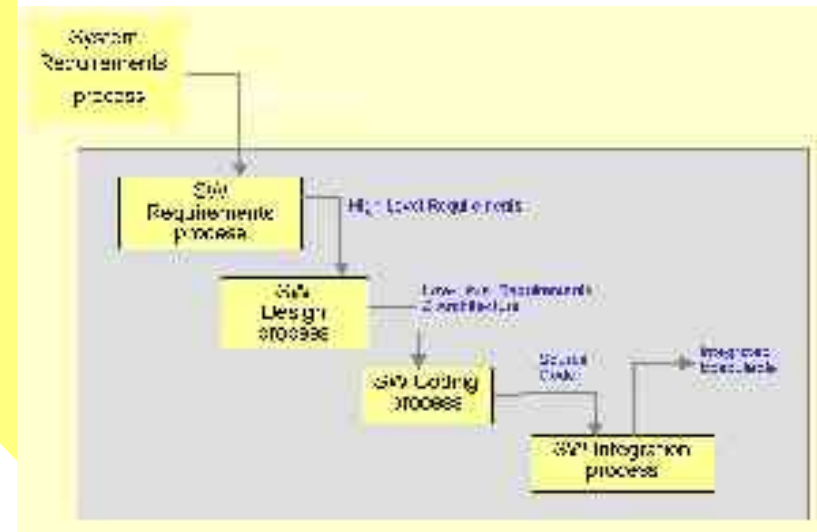
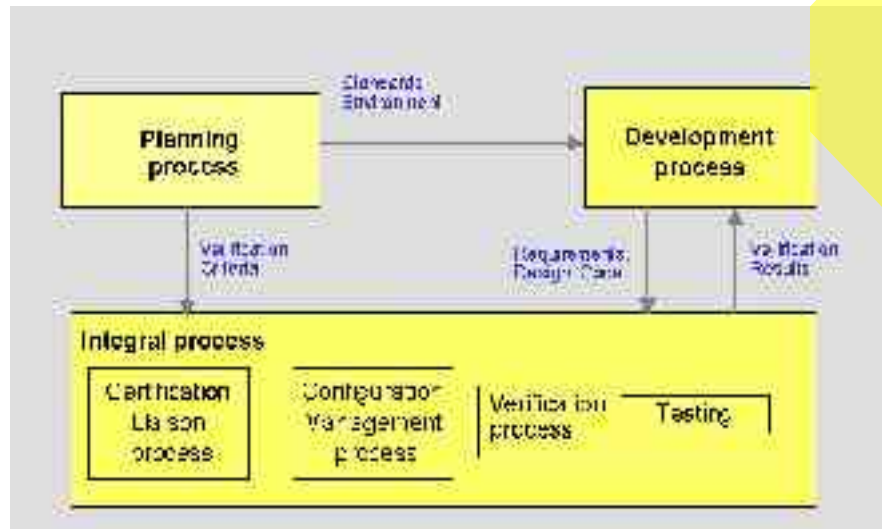
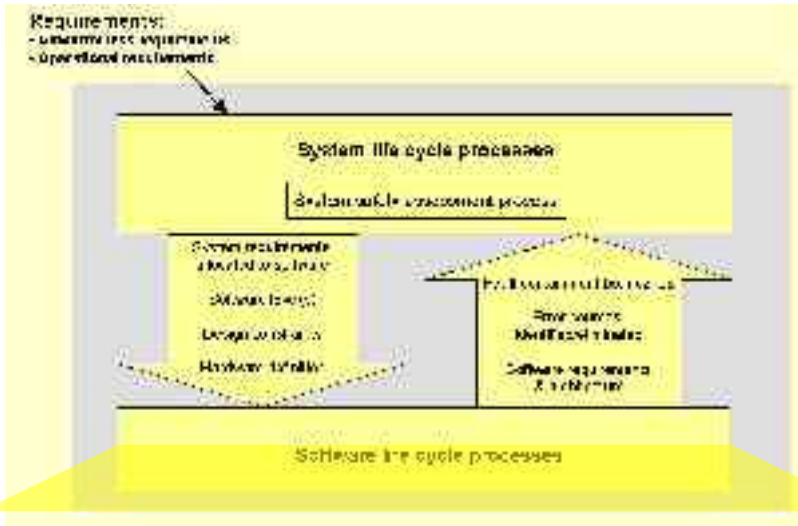
La Chaîne Alimentaire



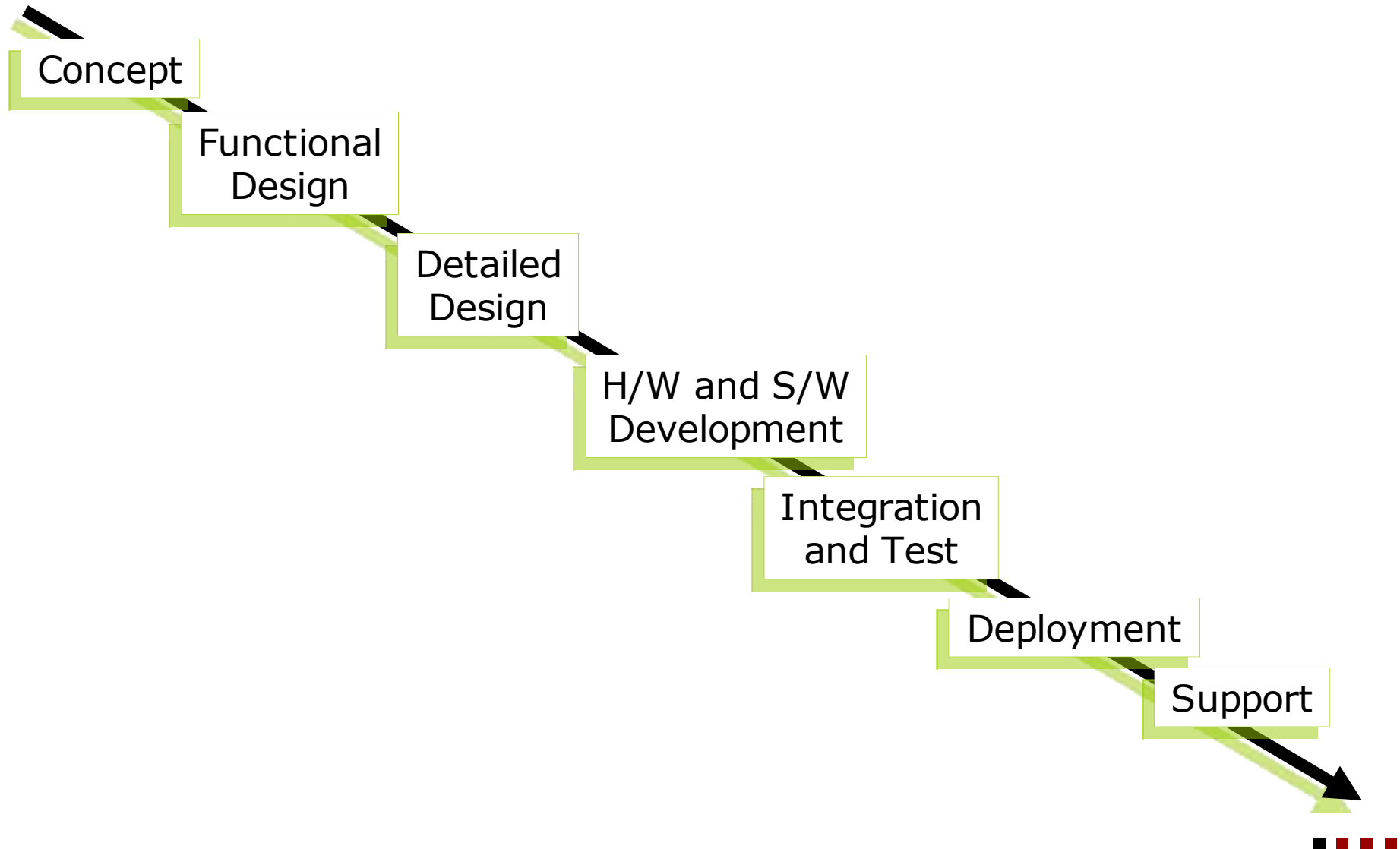
Différentes routes



Formal processes



Projet traditionnel



La méthode de développement propriétaire

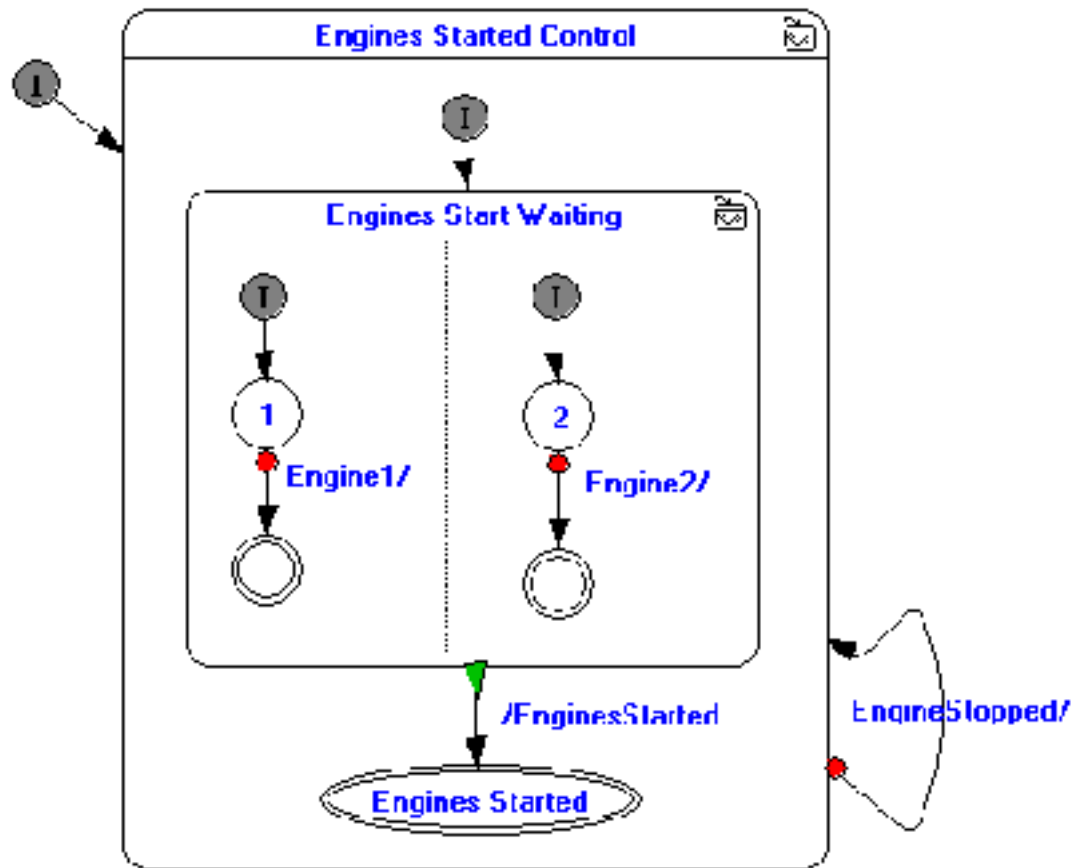


- Les cycles de révision de code internes
- La confidentialité corporate
- Limitations au niveau de nombre de staff

L'objectif est de créer une solution d'haute qualité sans dépasser le budget, et être en temps et à l'heure

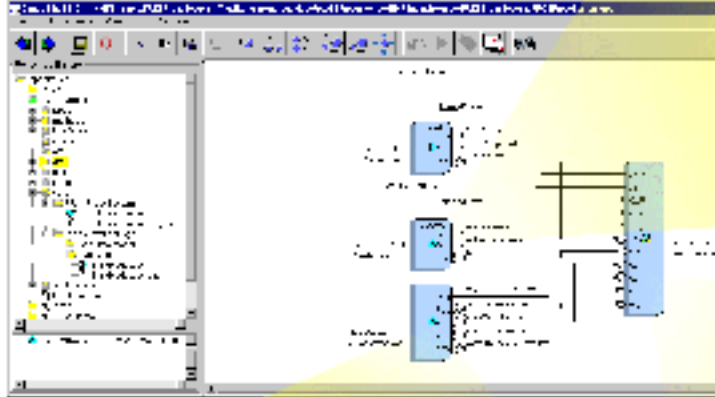


Des outils bien implanté

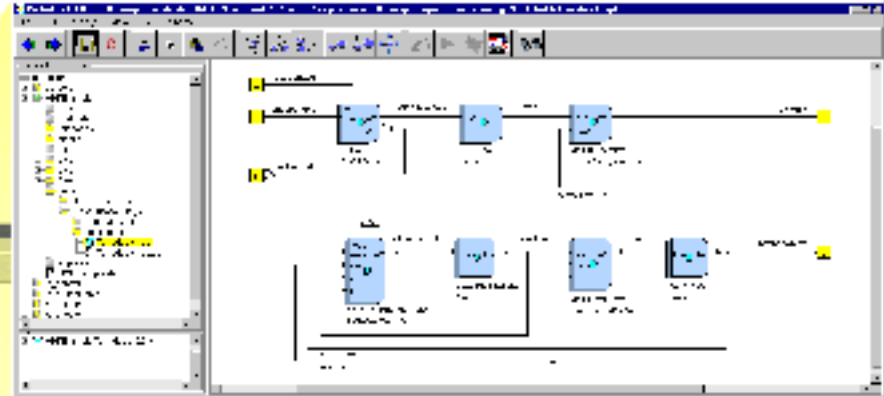


Des outils..dév

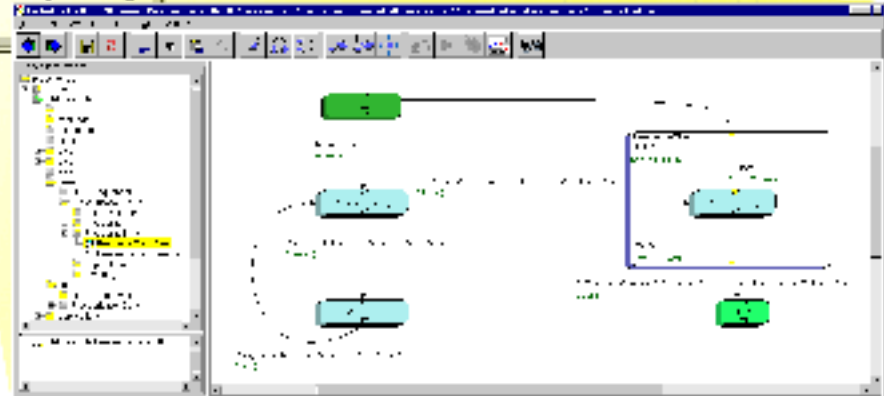
Composite Object



Data Flow



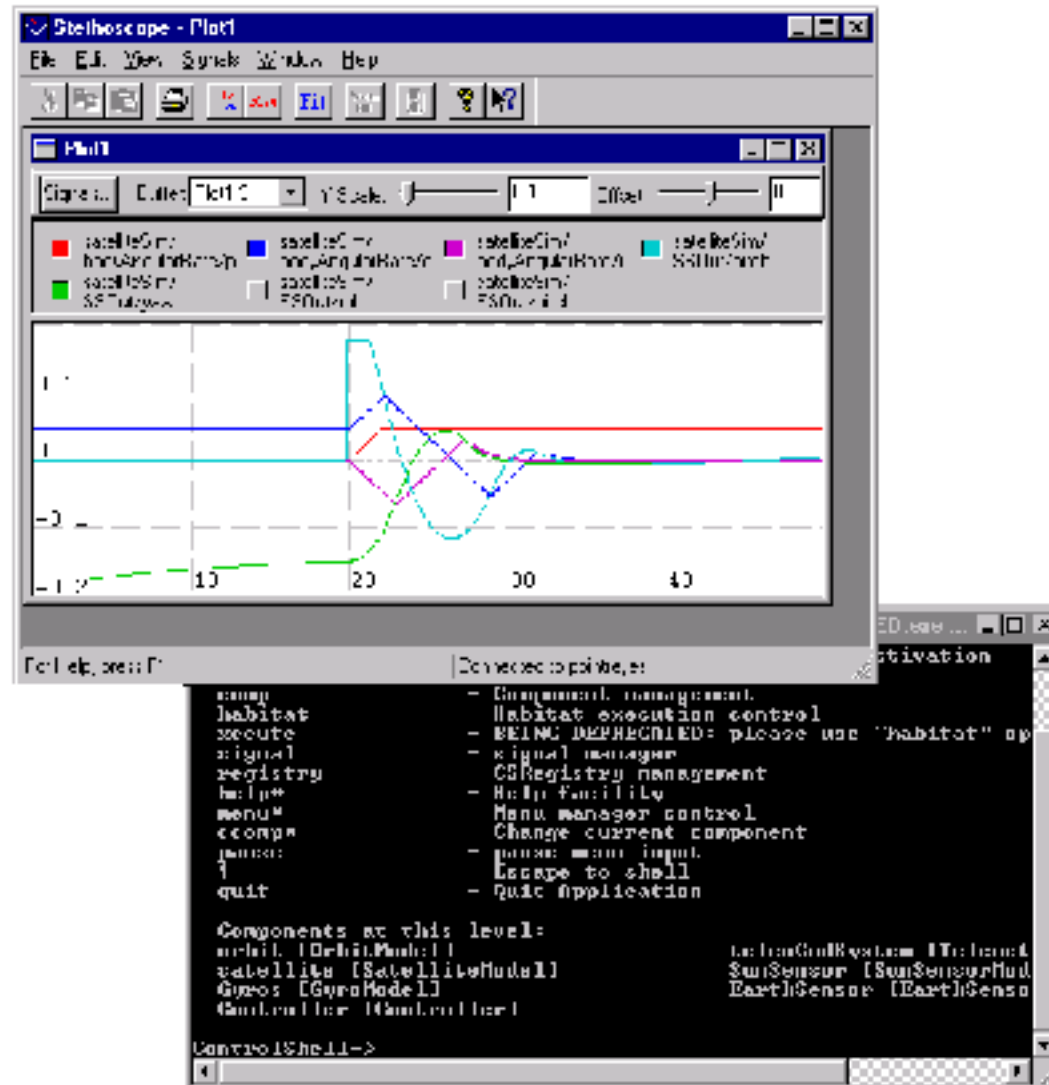
Sequencing



Simulink



Des outils..run-time



L'arrivée de Linux



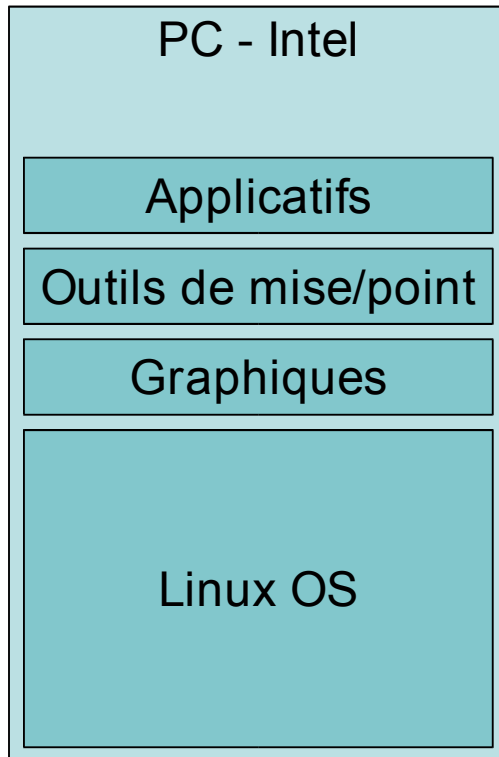
emacs	gcc	X11 graphics	shells
make	LINUX		tar
gar			gzip

LINUX Distribution

Linus et son équipe ont créé le noyau et le monde du logiciel libre



- Un changement de paradigme en ce qui concerne les projets de développement de logiciel traditionnel.
- Une qualité de logiciel supérieure que ceux venant d'autres modèles.
- Une rapidité de développement impossible d'imaginer dans un cycle traditionnel.
 - "release early, release often"
- Une approche populaire parmi les fabricants de semi-conducteur au Japon



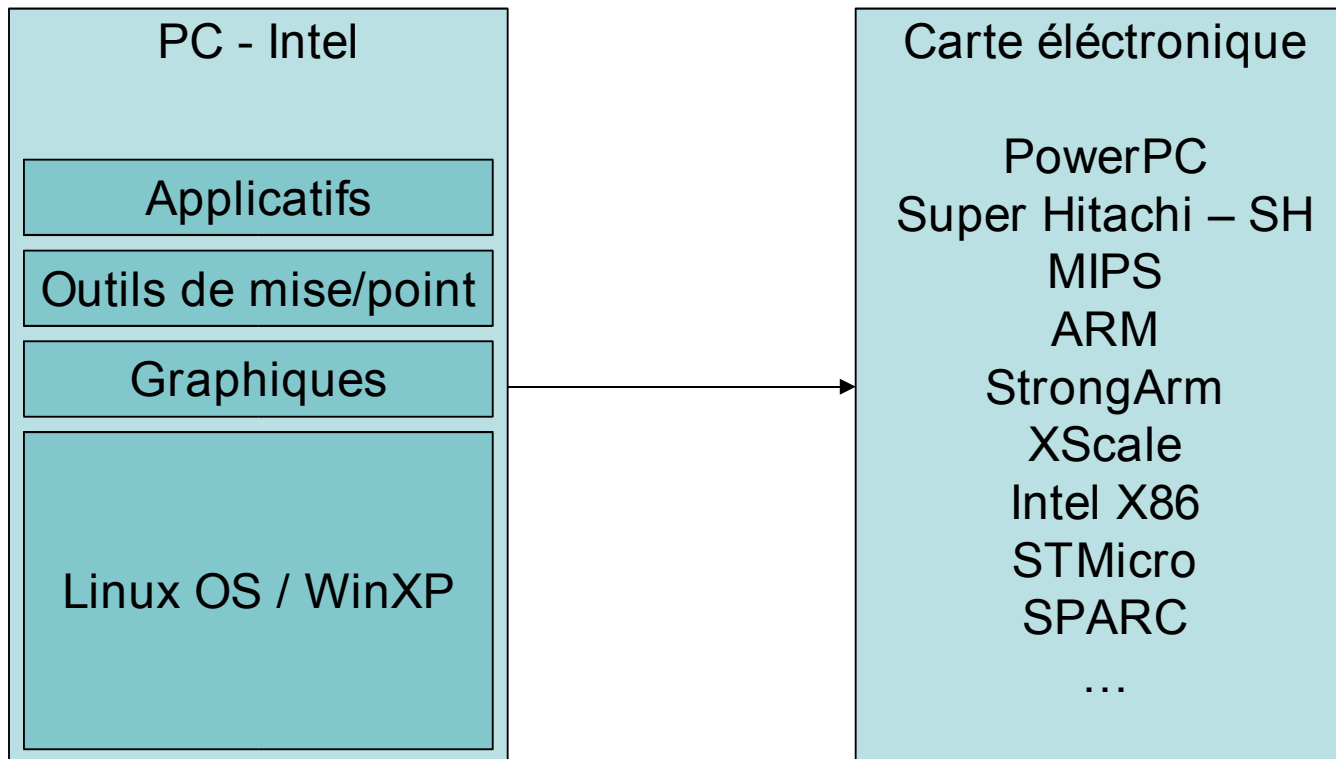
L'architecture de base pour Linux – Intel Pentium

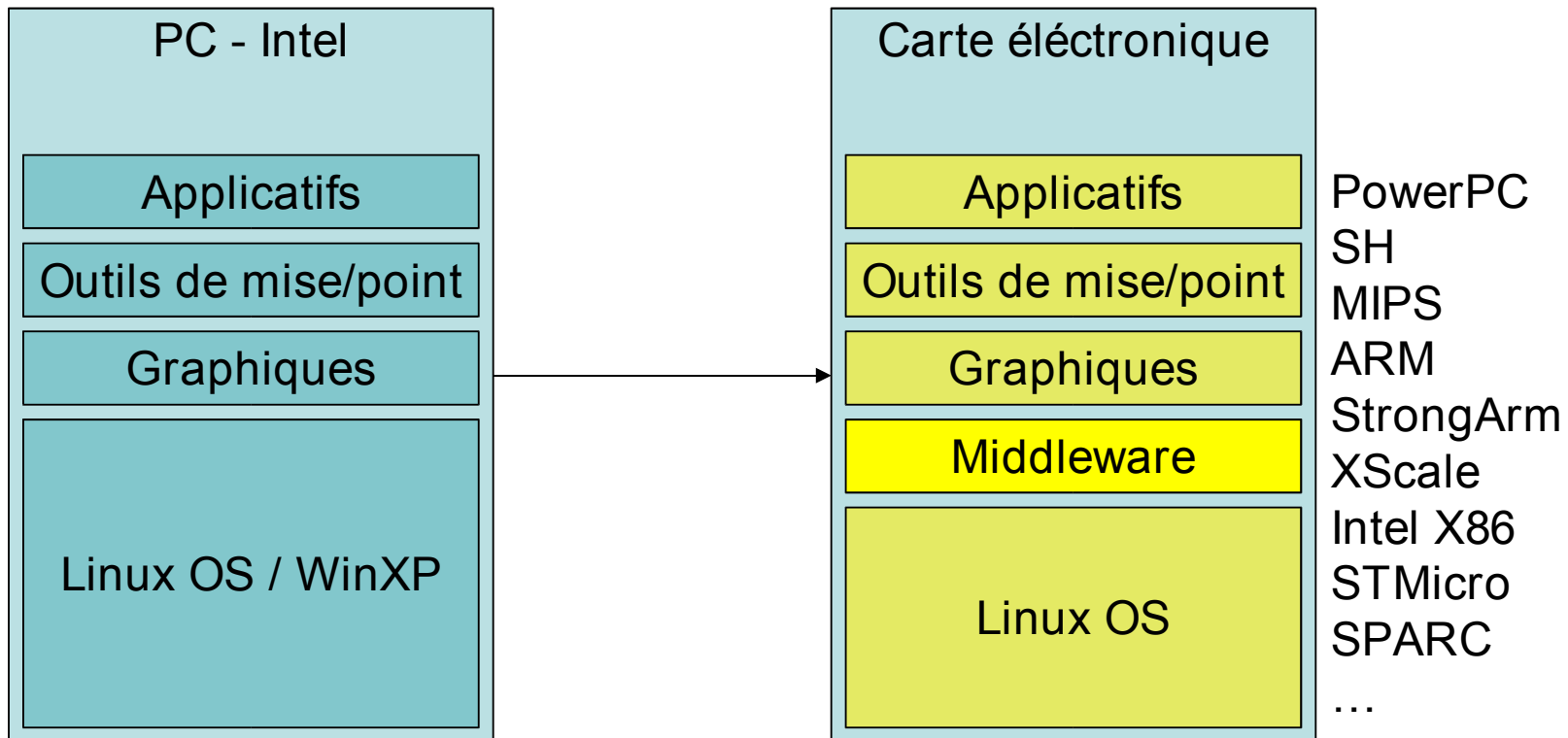
Les applicatifs fait pour l'architecture 'Intel'

Les outils de mise au point fait pour 'Intel'

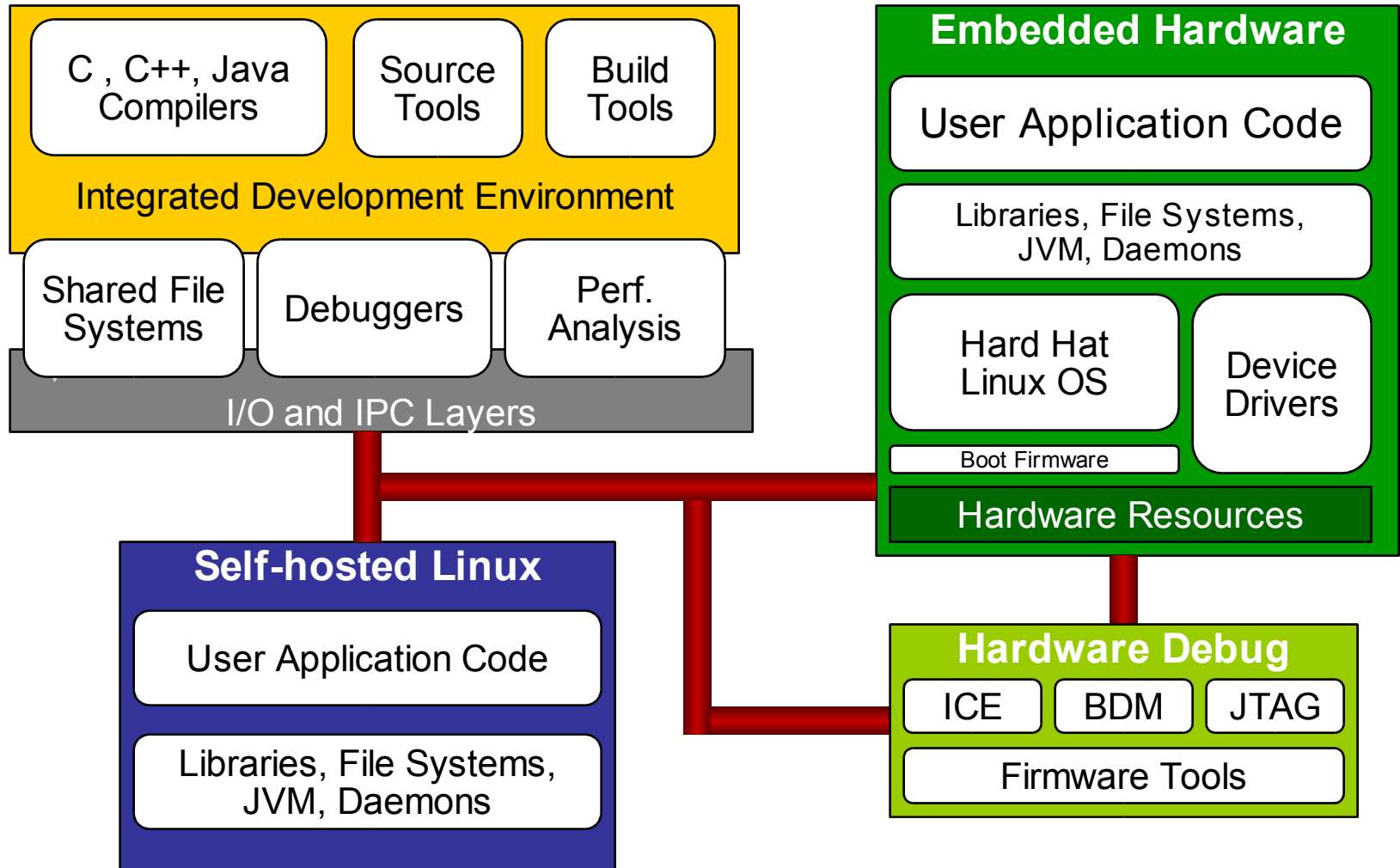
Les interfaces graphiques développ  pour le PC

...

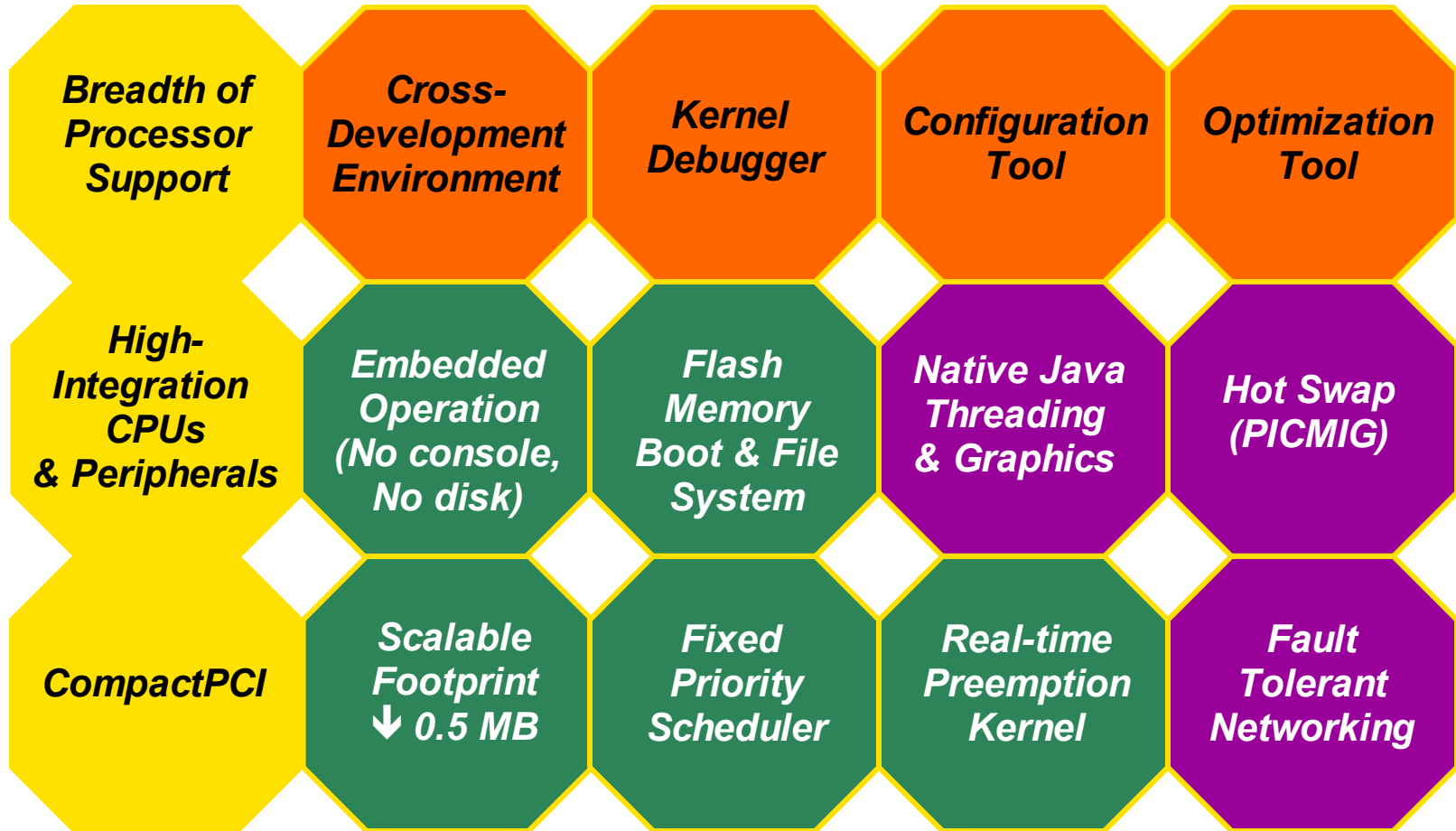




Le développement croisé et Linux



Linux aujourd'hui



Commercial Linux[®] Current Software Release

Continuous Software Updates

Unlimited Support (via named contacts)

Access to Client Zone

Training

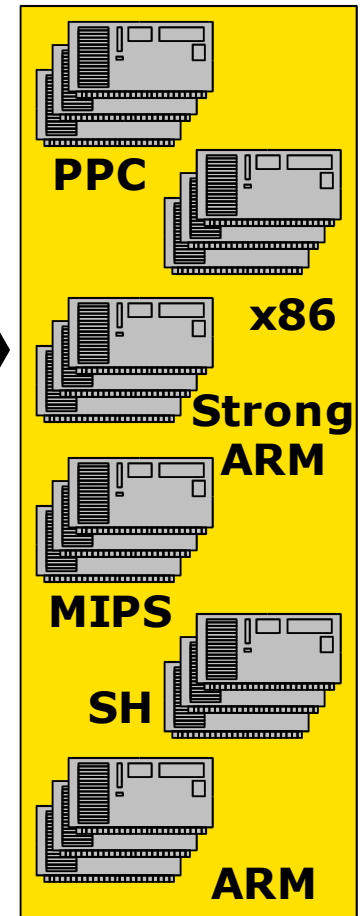
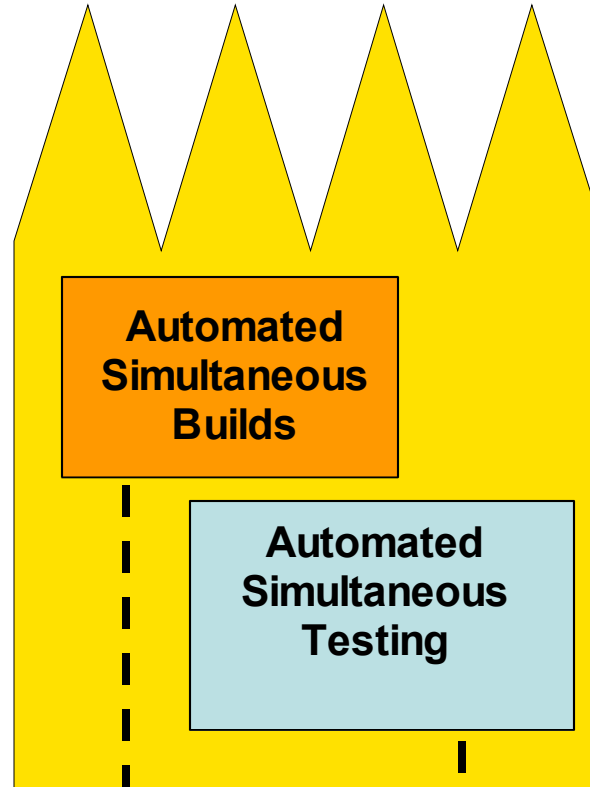
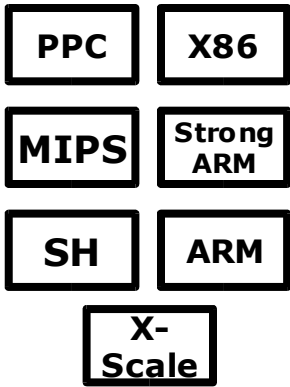
Approche commerciale



Commercial Linux®

Hosts
MontaVista Linux,
Red Hat, Jaluna-EL
Solaris, Mandrake,
Yellow Dog, VMWare

Target Source Trees



480+ Host/Target Environments

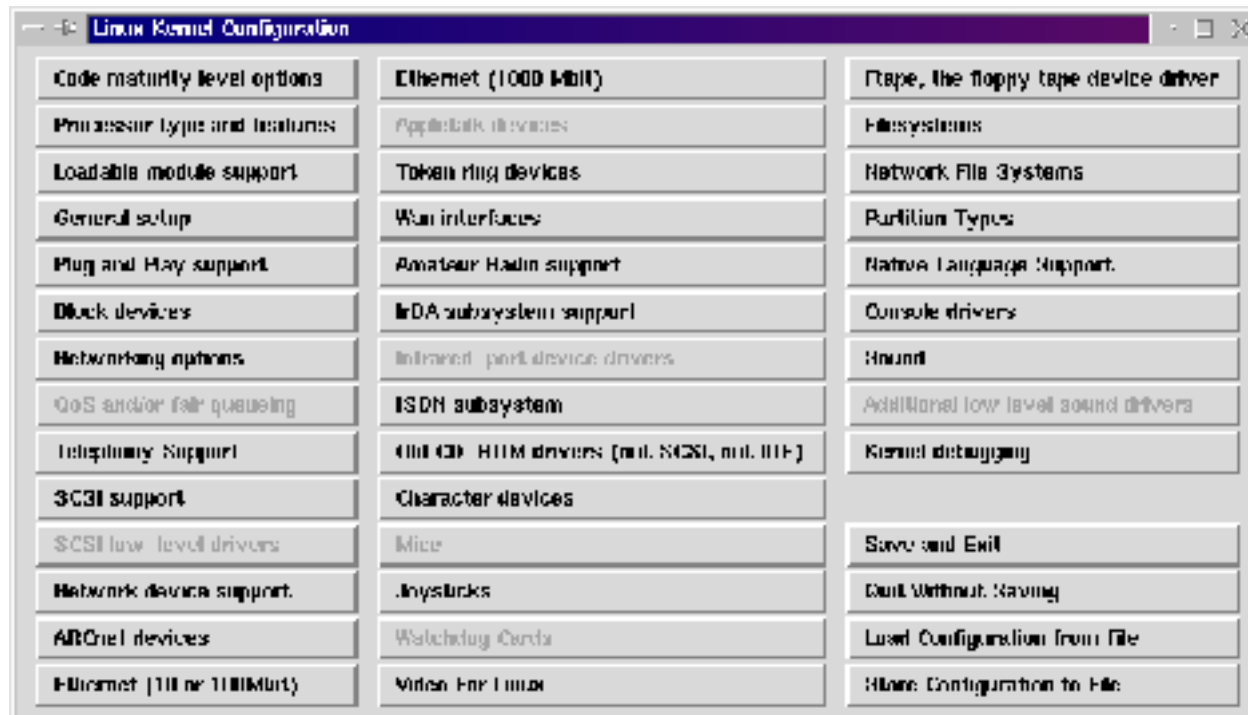


Open Source Development: Rules of Engagement

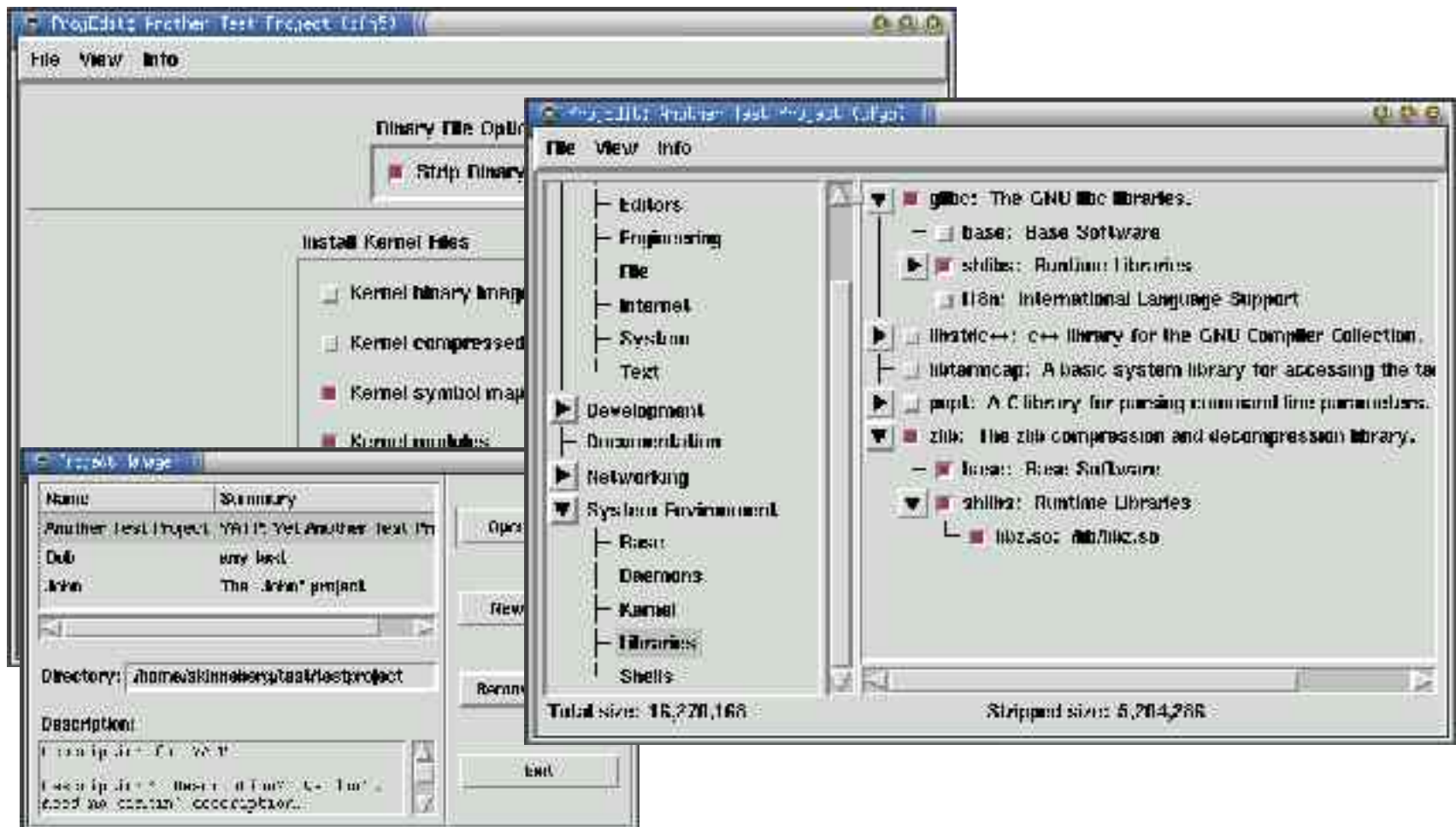


1. We develop our products based on the appropriate community **leading edge tree**.
2. As we develop, we **keep our product current** with that tree (on a daily or very frequent basis) as it moves.
3. We **submit to that tree early** in our process and in **small increments**. In general, community leaders prefer small patches and submitting early invites others in the community to comment/help.
4. We have **experts within our company assigned** to all of the relevant community trees so they coordinate work in similar areas and guarantee a high level of quality for submittals.
5. We deliver **early snapshots** to customers to accelerate their development of products. Our goal is fast time-to-market for our customers' products.
6. We base product deliveries on qualified **stable baselines**.
7. We **package all deliveries** (eg: board ports as LSPs) to make installation easier and more fault tolerant and to help track versions of deliveries.

Les outils de configuration - noyau



TCT Screen Shots



The screenshot displays the NoMachine interface with several windows open. The main window shows a file tree with categories like Editors, Programming, File, Internet, System, Text, Development, Documentation, Networking, and System Environment. The 'System Environment' section is expanded, showing sub-categories like Base, Daemons, Kernel, Libraries, and Shells. The 'Libraries' category is selected, displaying a list of libraries including glibc, base, shlibs, libc, libatomic, libtarmcap, getopt, zlib, base, and shlibs. The total size of the selected libraries is 15,270,168 bytes, and the stripped size is 5,204,288 bytes.

Binary File Options

- Strip binaries

Install Kernel Files

- Kernel binary image
- Kernel compressed
- Kernel symbol map
- Kernel modules

Name	Summary
Another Test Project	Yet It Yet Another Test Pr
Dub	any test
John	The "John" project

Directory: /home/skinners/ata4/testproject

Description:

Test project for testing of the...
good we contain 'acceptation...

Trace Toolkit

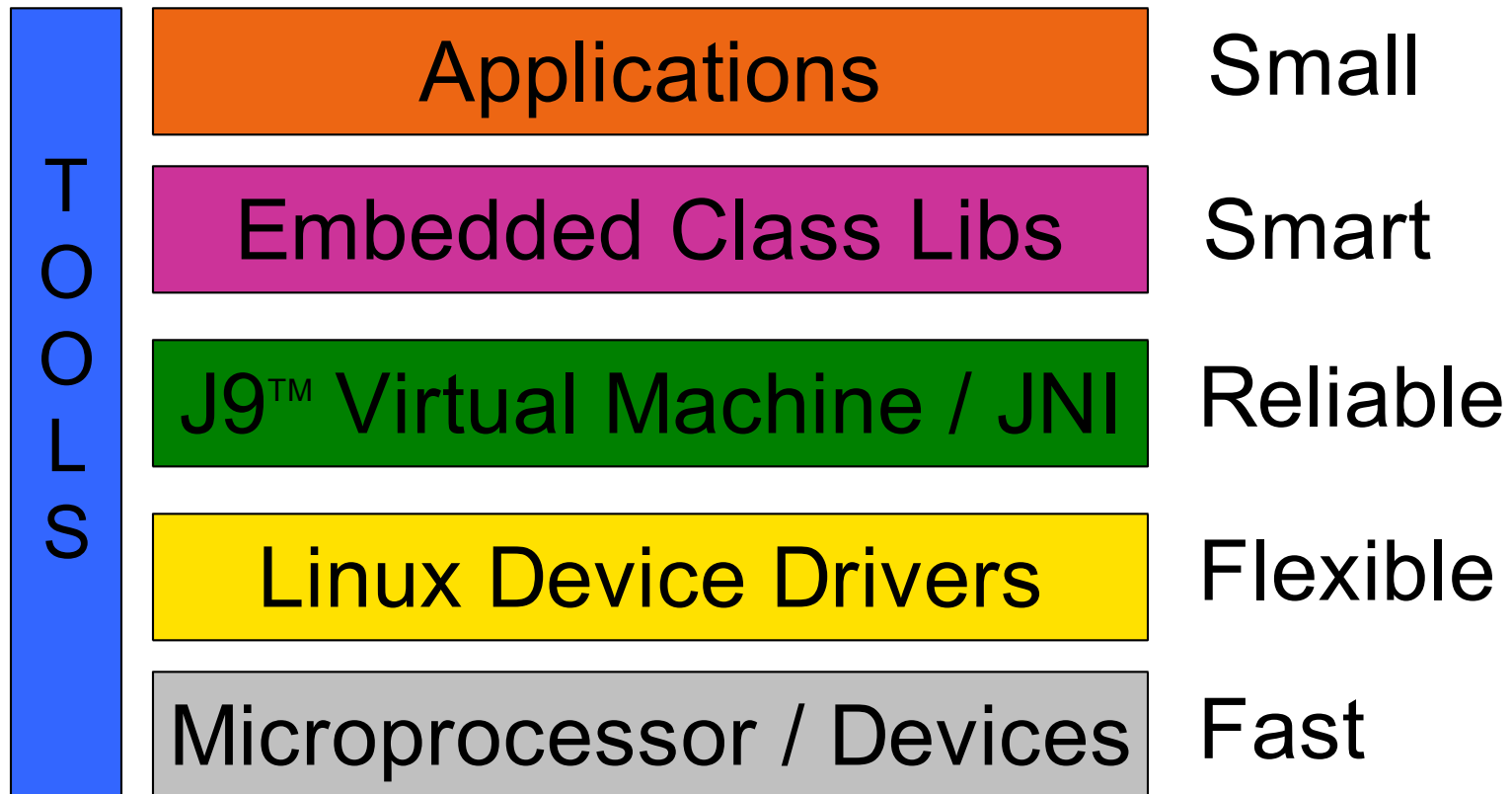


The screenshot displays the Linux Trace Toolkit interface, which is used for monitoring and analyzing system activity. It consists of several overlapping windows:

- Main Window (Linux Trace Toolkit - uid175.trace):**
 - Process List (Left Panel):** A list of running processes with columns for PID, Name, PPID, and State. The process `cat (175)` is selected.
 - Trace Visualization (Center):** A graphical representation of system events over time, showing vertical bars for process execution and red circular markers for specific events.
 - System Information (Right Panel):** A window titled "System Information" showing various system parameters such as OS version, kernel version, and hardware details.
 - System Call Log (Bottom Window):** A table listing system calls made by the selected process. The table has columns for PID, Name, Arguments, Return, and Error.

PID	Name	Arguments	Return	Error
175	fork	0	176	0
176	fork	0	177	0
177	fork	0	178	0
178	fork	0	179	0
179	fork	0	180	0
180	fork	0	181	0
181	fork	0	182	0
182	fork	0	183	0
183	fork	0	184	0
184	fork	0	185	0
185	fork	0	186	0
186	fork	0	187	0
187	fork	0	188	0
188	fork	0	189	0
189	fork	0	190	0
190	fork	0	191	0
191	fork	0	192	0
192	fork	0	193	0
193	fork	0	194	0
194	fork	0	195	0
195	fork	0	196	0
196	fork	0	197	0
197	fork	0	198	0
198	fork	0	199	0
199	fork	0	200	0

Environnement Java sur Linux



Why use Linux?



- **Faster time to market**

- Access to source code improves debugging and maintenance of applications
- Ability to gain quick access to leading-edge technology and applications through open source
- Enhances the software development process

- **Reduced cost of use**

- Often no run-time / deployment costs
- Lower development costs
- Standardize on a single OS across multiple projects

Why use Linux?



- **Flexibility** and **quality**
 - Open source innovation offers multiple choices
 - Vast open source / Linux community enhances software quality, security, and functionality
- Based on **open interfaces** and **mainstream** IT technology
 - Non Proprietary multi-vendor / vendor neutral
- Integrated, **high performance** TCP/IP
- Unparalleled network **security**

- MontaVista Linux
- Metrowerks
- LynuxWorks BlueCat...
- *Partenaires + distribution eg. Openwide*

- Inversion de priorité
- Allocation dynamique de mémoire
- Les temps de latence aux interruptions
 - RTLinux (deux OS sur la même machine)
- Les temps de latence à la préemption ...



reachout

Le marché de l'embarqué

Quelques chiffres...

Propriétaire

- Interne
- Commercial
 - QNX, OSE, WindRiver, Symbian

Logiciels libres

- Phénomène Linux
 - MontaVista
- Autre UNIX
 - FreeBSD,
- Traditionnel/accès limité
 - Mentor ATI, Chorus, GHS,

Le marché de l'embarqué 2002

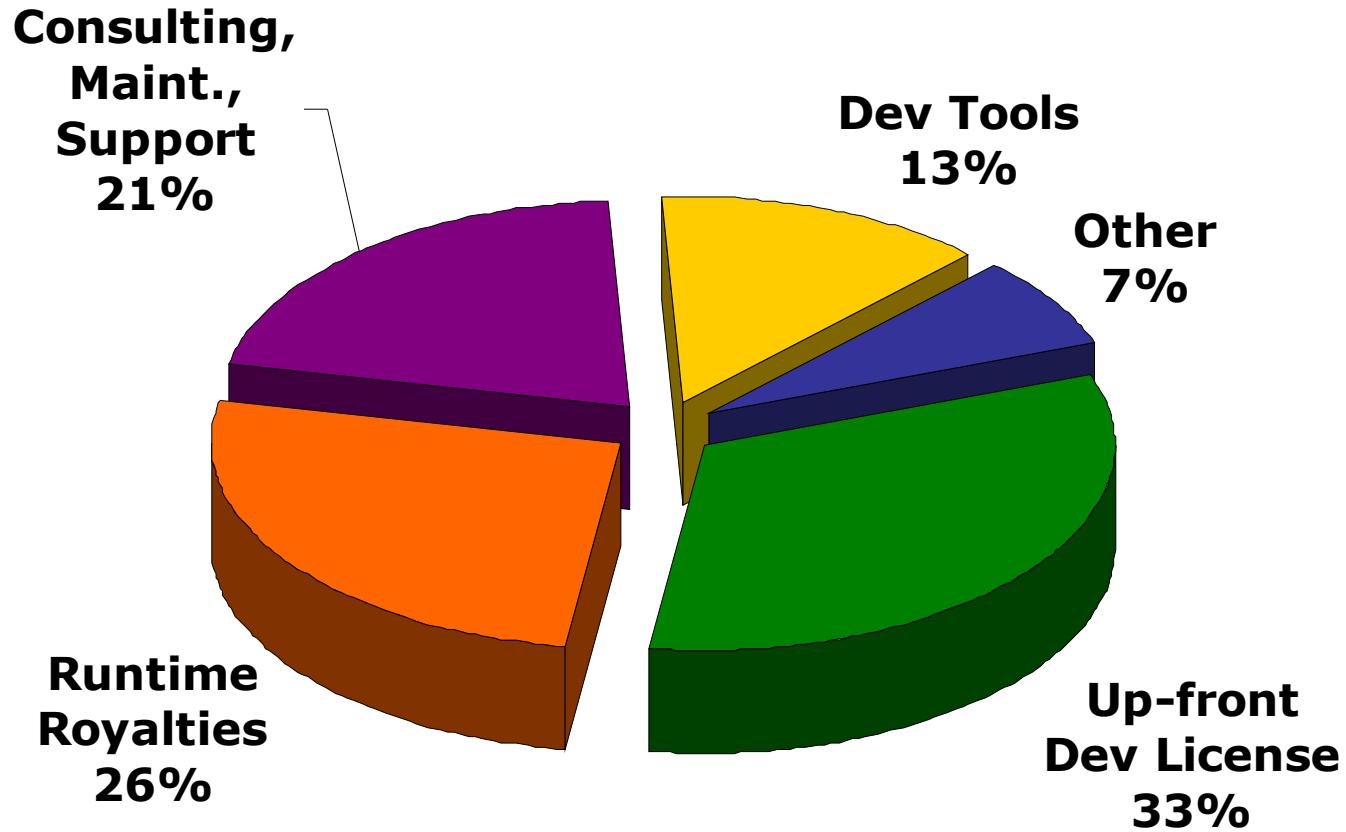
VDC



- Bundled OS, tools & services (Linux 7%) **600M€**
- Unbundled development tools **330M€**
 - Mainly Integrated development environnements
- EDA – Design automation tools **363M€**
 - Dynamic system design 43%
 - Software modeling 16%
 - Services/consulting 41%
- ETA – Test automation tools **69M€**
 - Safety critical ie. DO-178B, MOD 00-55, IEC 61508
- Database management tools **40M€**

Processor shipments: PowerPC, 68k, x86 (ARM growing)

Les revenus



- **Wind River** – VxWorks (lic. + royalties)
- **Enea Data** – OSE (lic. + royalties)
- **QNX** (lic. + royalties)
- **Accelerated Technologies Inc.**
 - nucleus (lic., royalties pour les éléments additionnelles.)
- **Microware** – OS9 (lic. + royalties)
- **Mentor Graphics** – VRTX (lic. + royalties)
- **Microsoft** – WinCE, WinXPE... (lic. + royalties)
- ...

Le 'TOP TEN' de VDC €600M



1. Microsoft
2. Wind River Systems
3. Symbian
4. Palm
5. QNX
6. Enea Data
7. Green Hills Software
8. LynuxWorks
9. MontaVista Software
10. Accelerated Technology

Linux is the fastest growing embedded OS.

-- Evans Data Corporation 2002

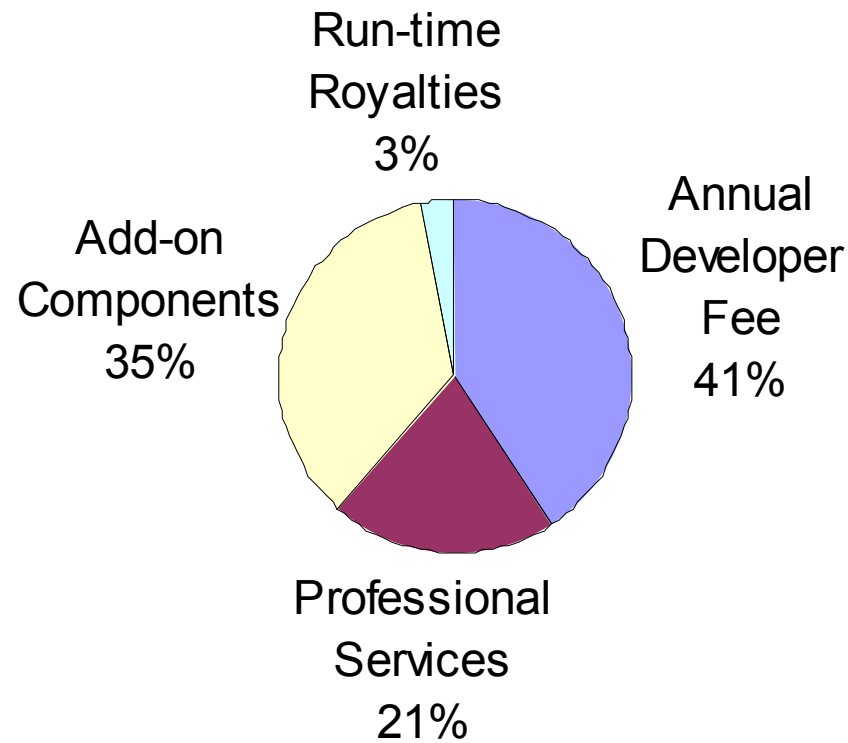
US Consumer Electronics sales to exceed \$100B in 2003.

-- Consumer Electronics Association 2003

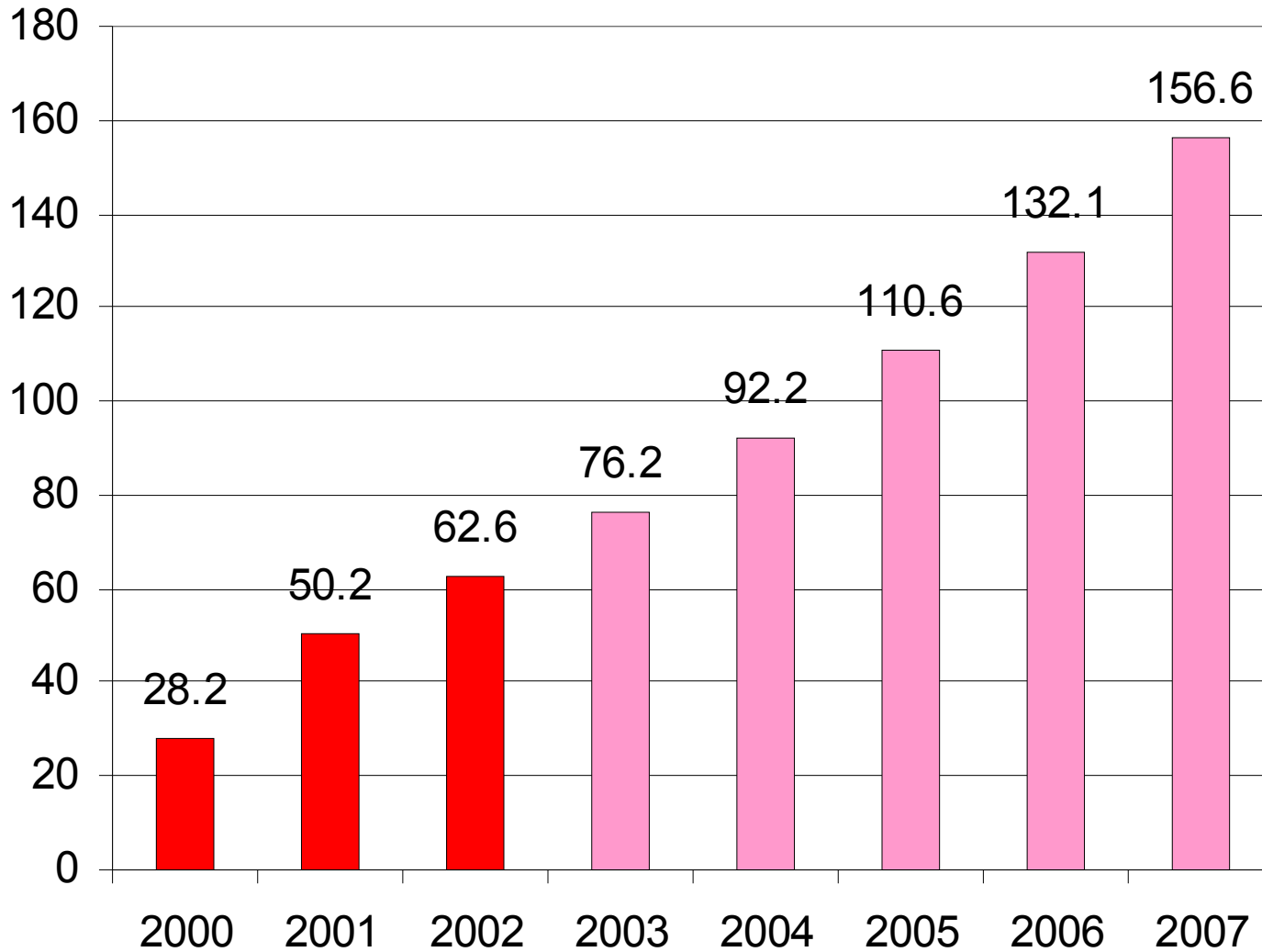
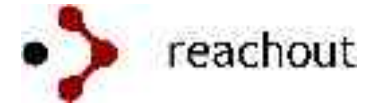
Consumer Electronics is projected to be the fastest growing market for embedded Linux.

-- Venture Development Corporation 2002

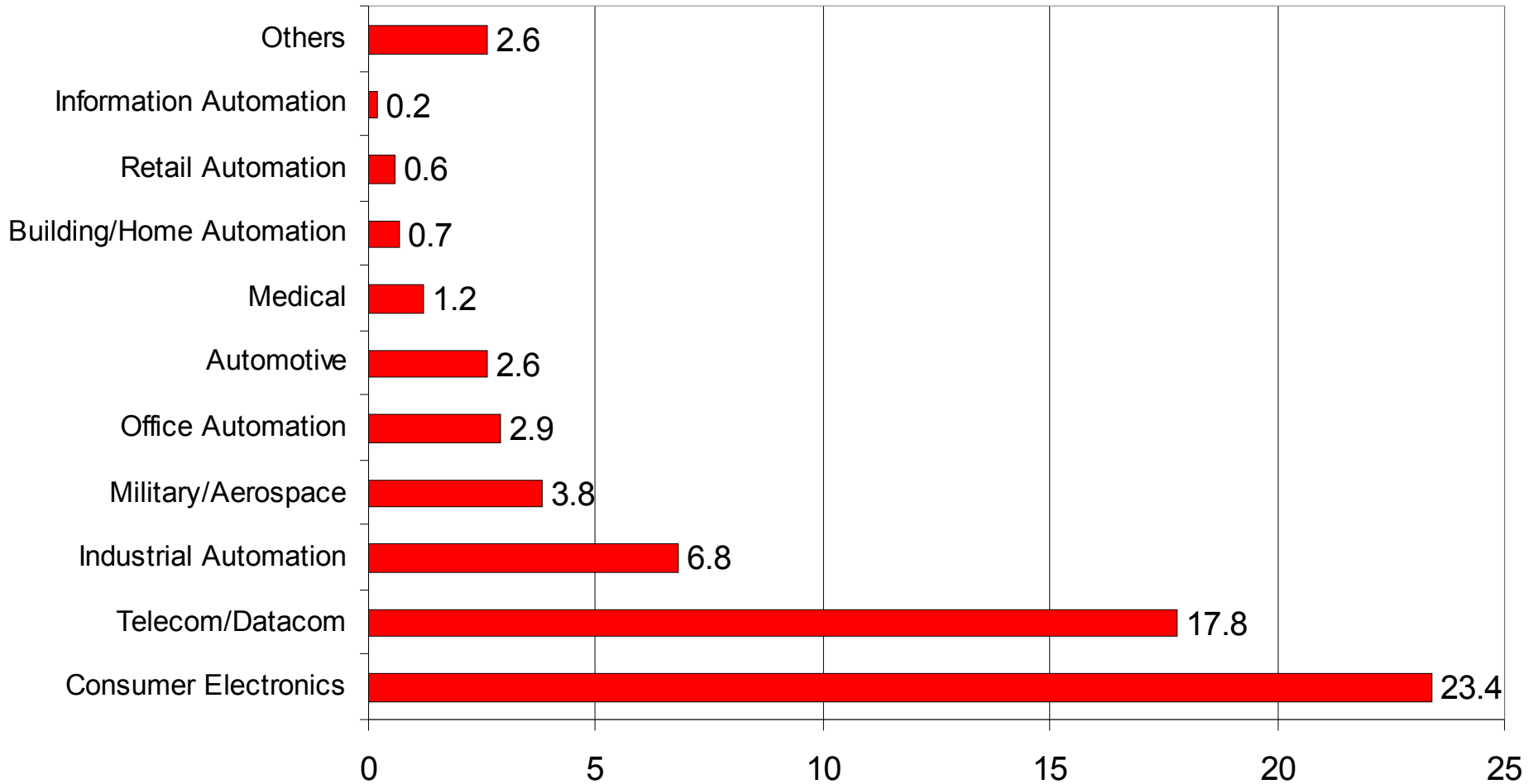
Les revenus de 'Linux'



Projections VDC

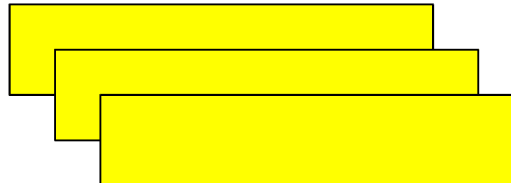


Chiffres d'affaires par marché



Leaders take a **Platform Approach**

Appeals to senior managers
Easier to communicate
Financial logic



Challengers focus on product sales by *module*.

Appeals to engineers
Easier to measure
Technical logic

