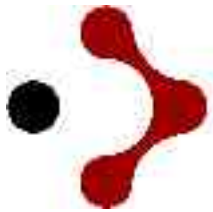

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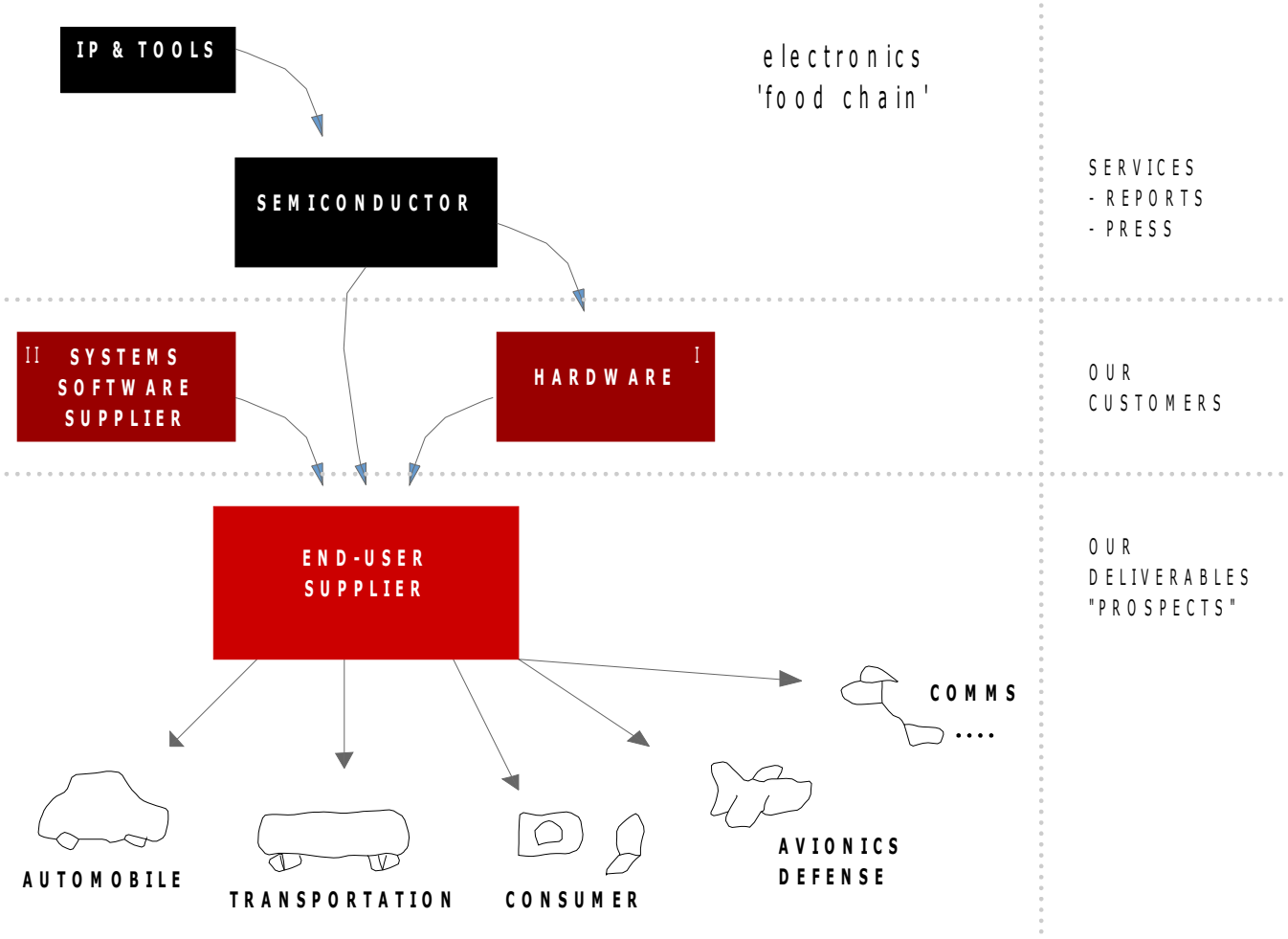
Tour d'horizon du marché de l'embarqué et l'apport de Linux.

En effet, un ensemble de marchés

reachout

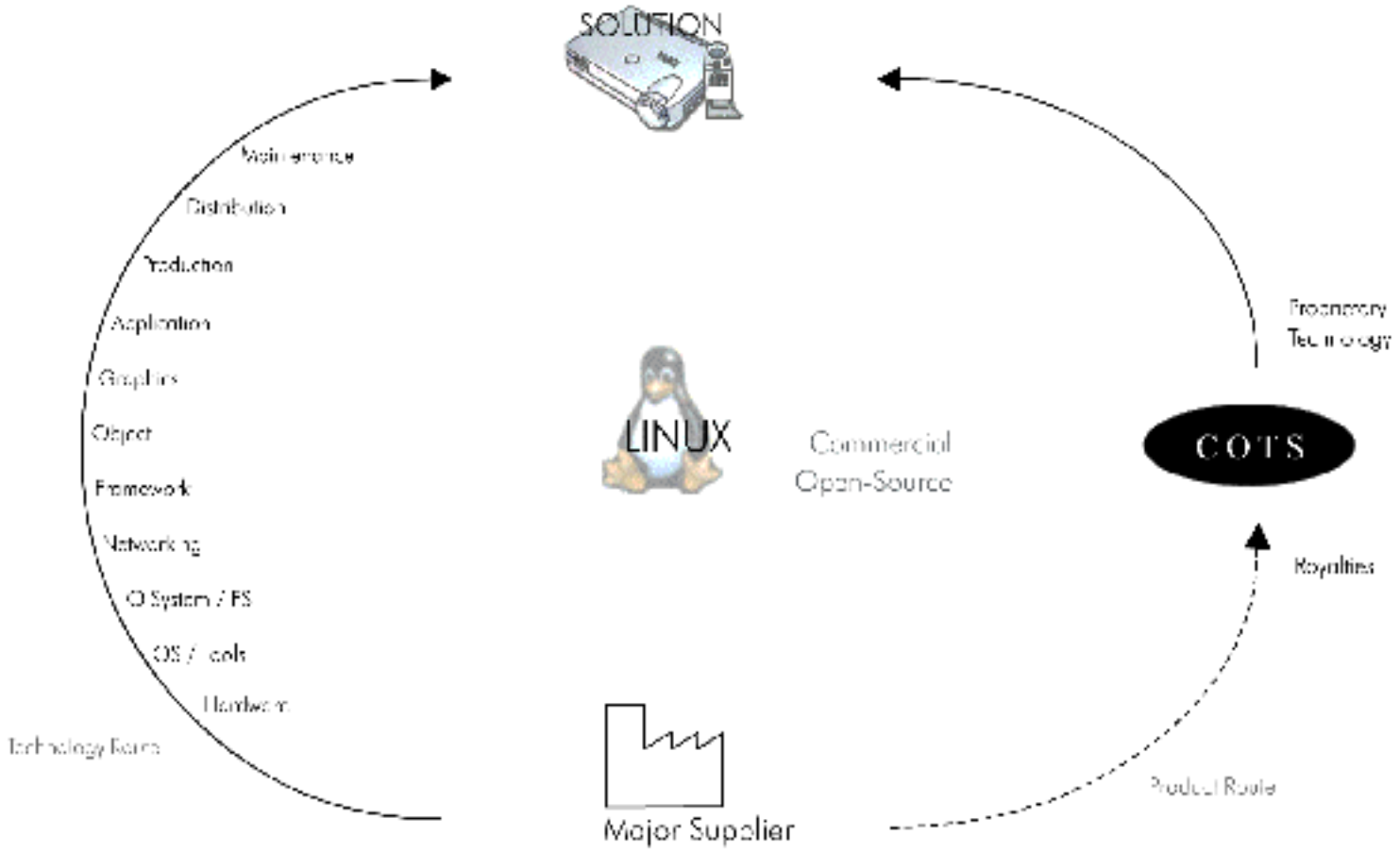
La Chaîne Alimentaire

reachout



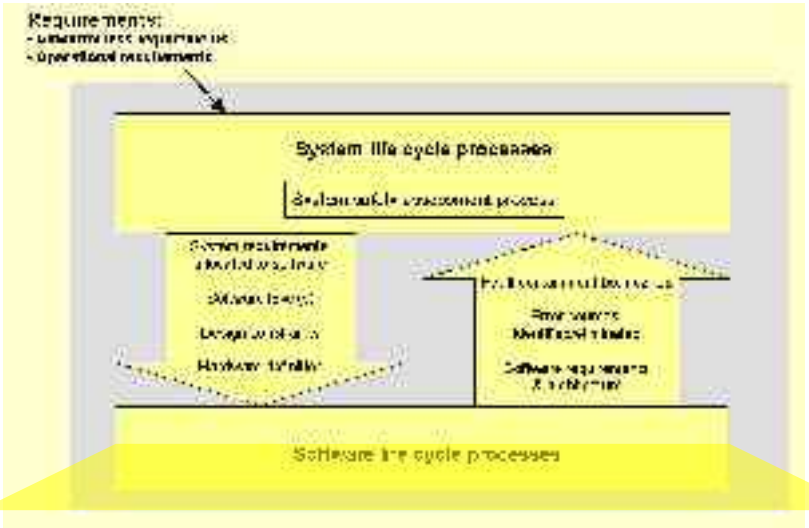
Différentes routes

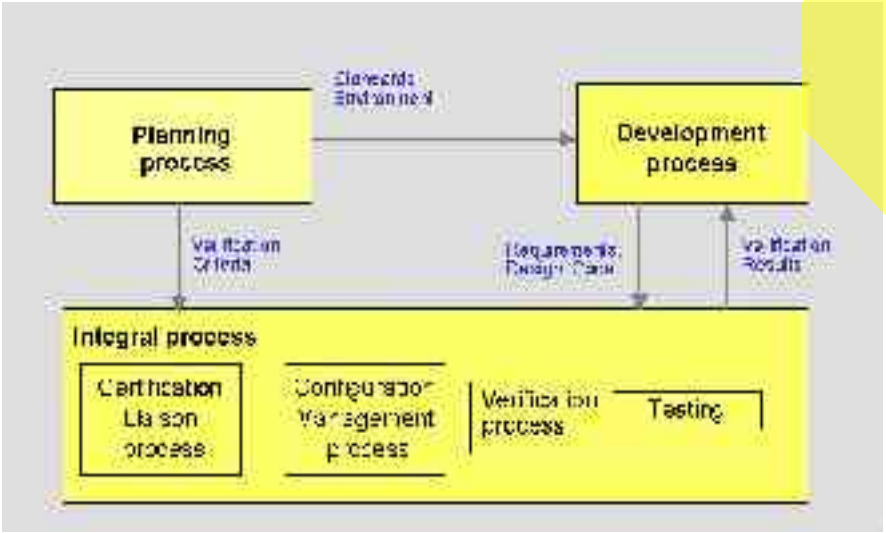
reachout

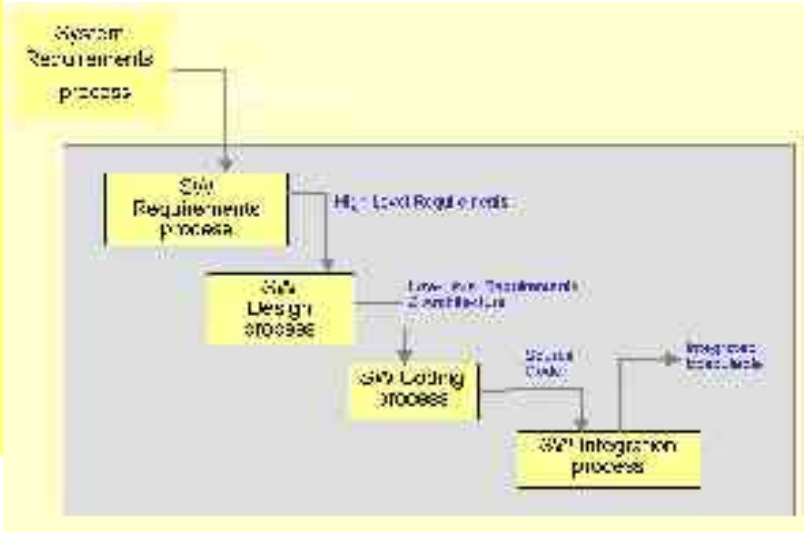


Formal processes

reachout

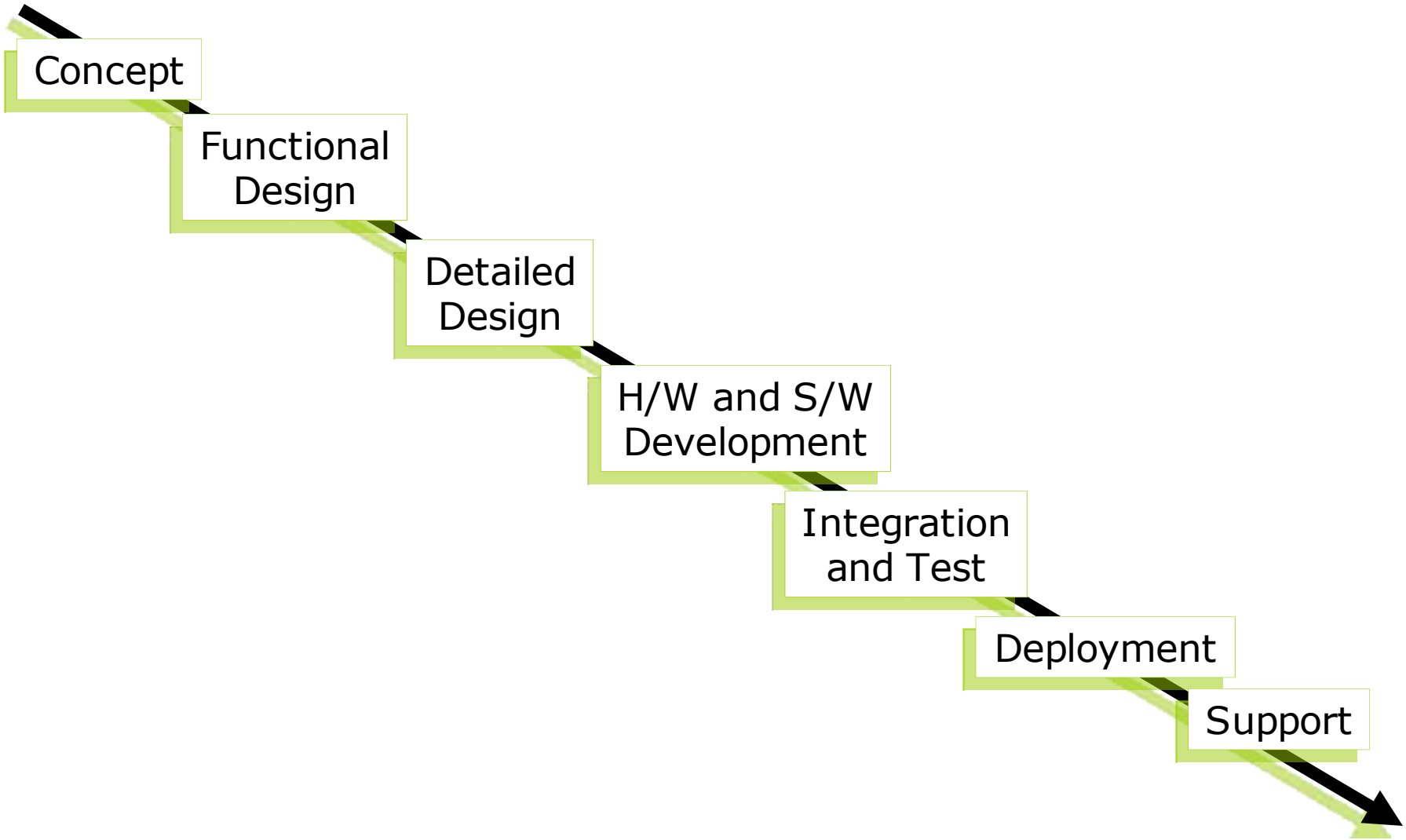






Projet traditionnel

reachout



La méthode de développement propriétaire

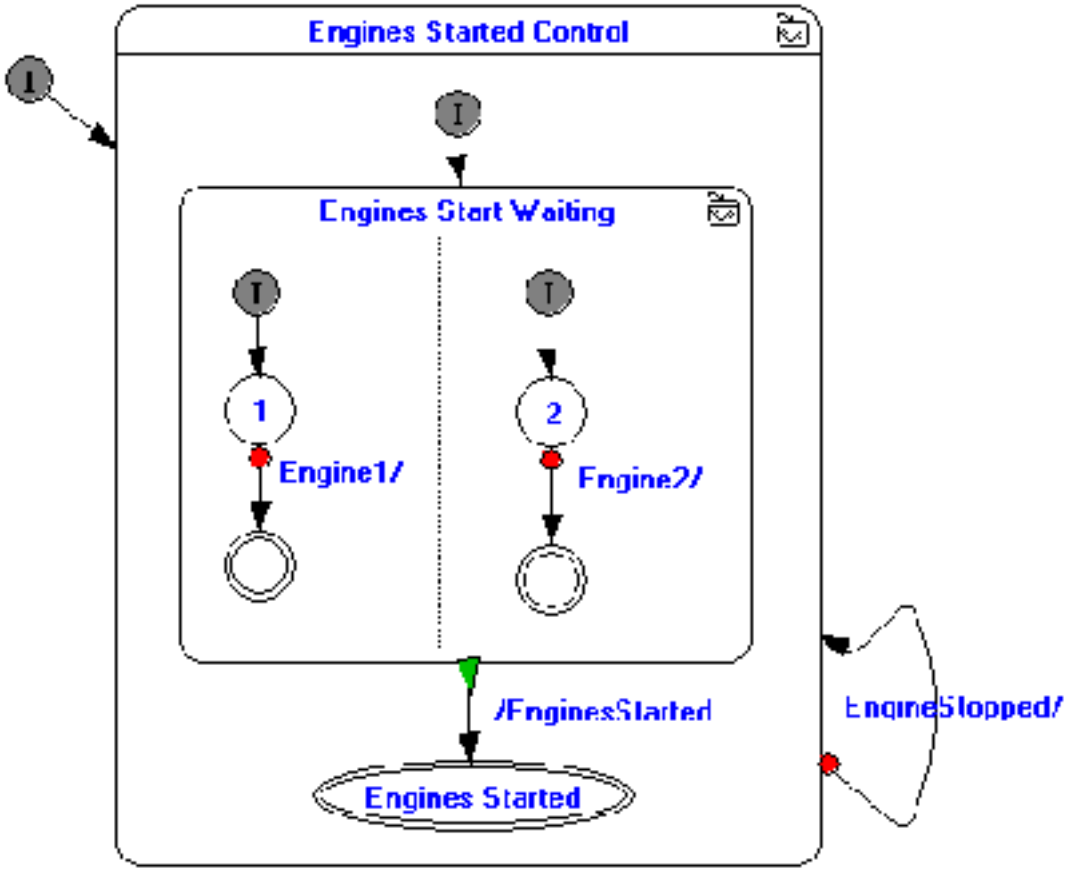
reachout

- 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

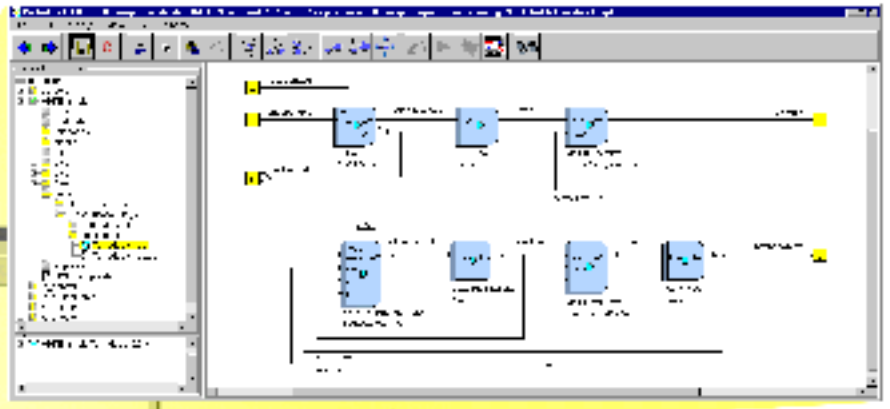
reachout



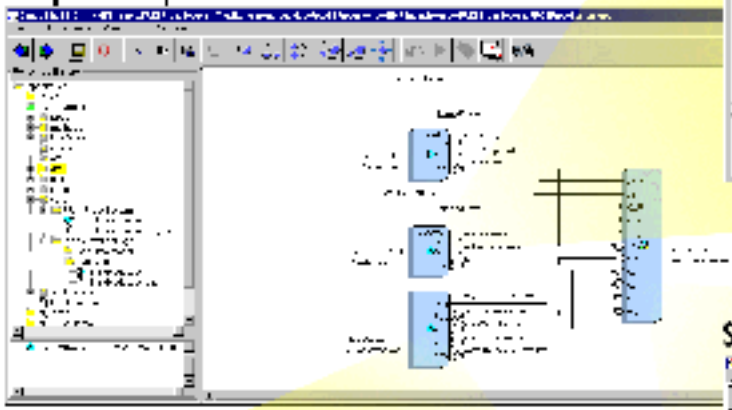
Des outils..dév

reachout

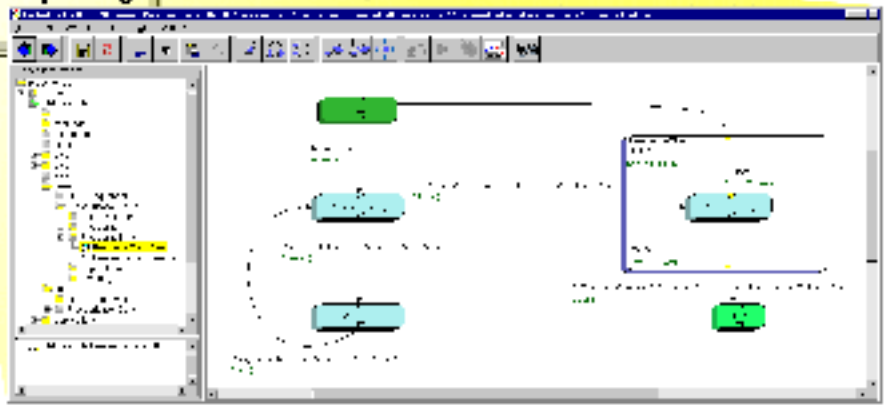
Data Flow



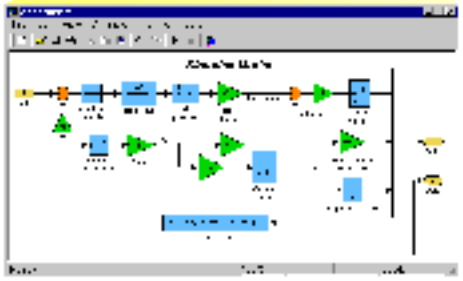
Composite Object



Sequencing

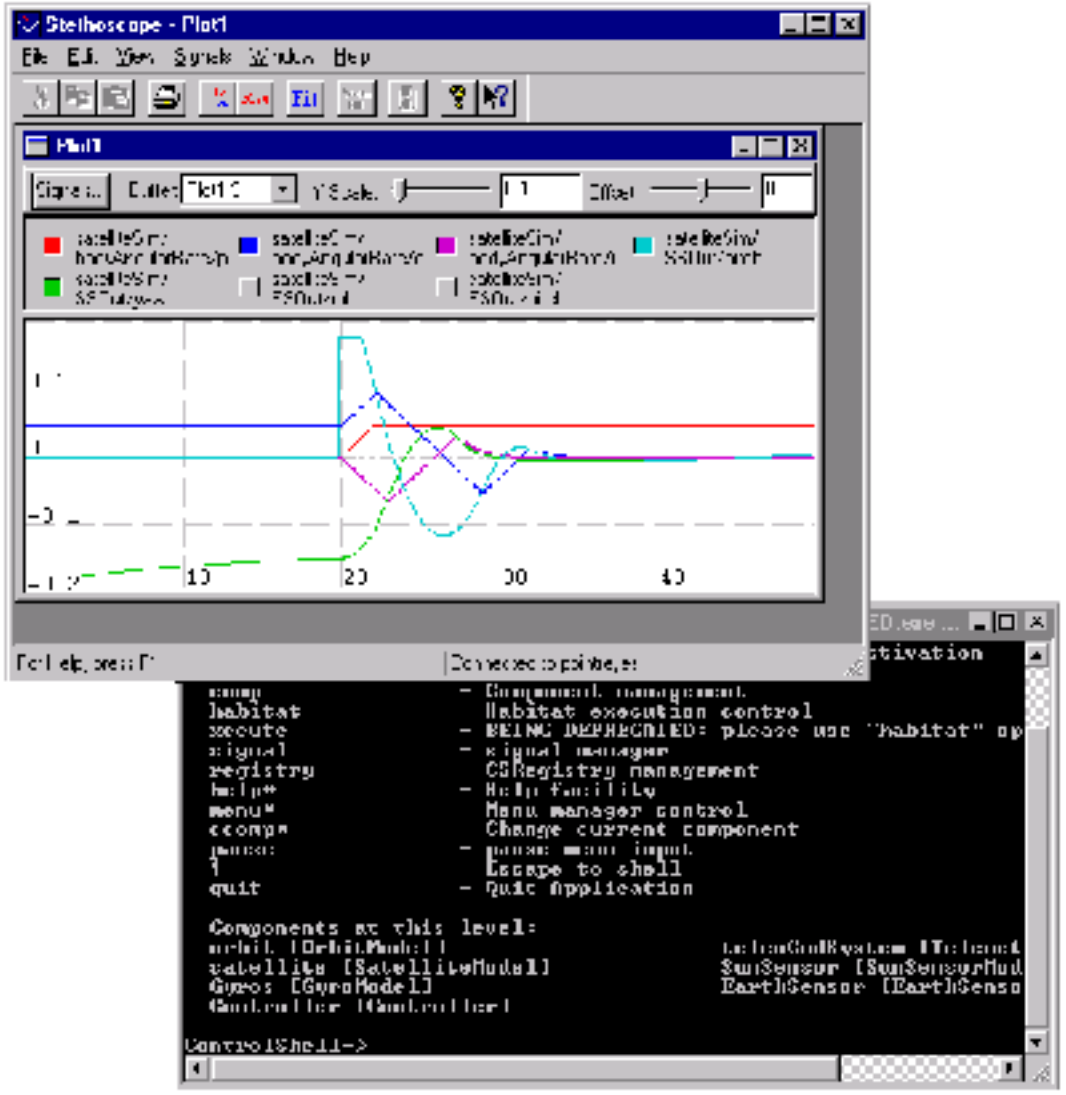


Simulink



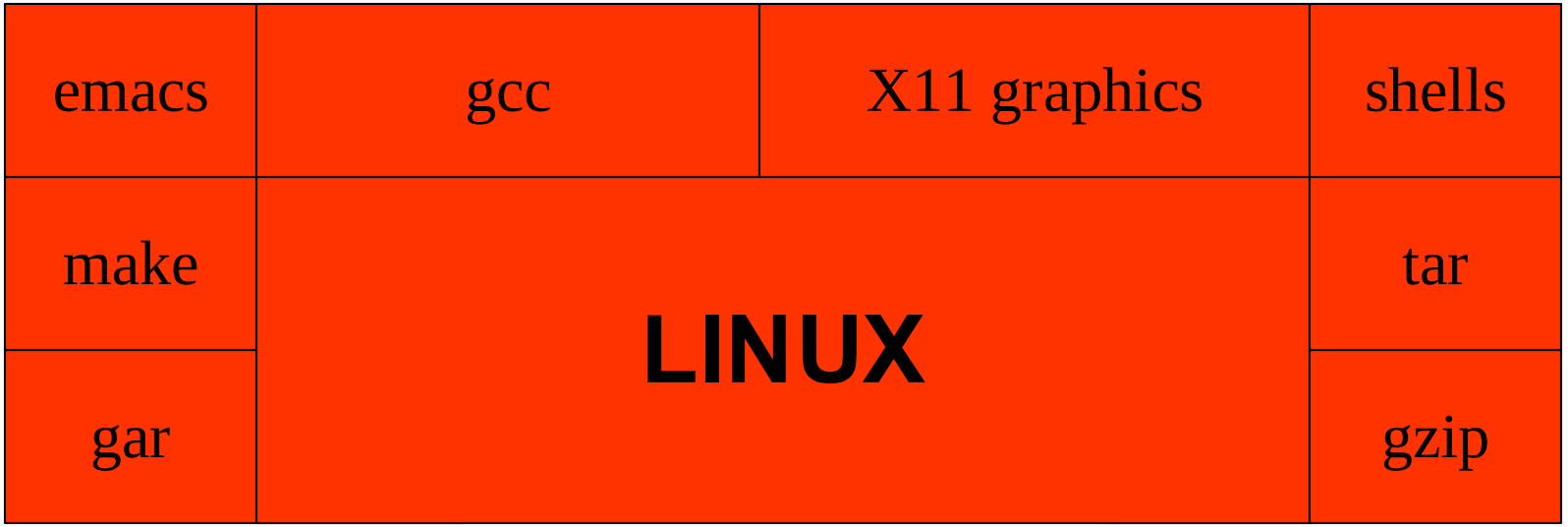
Des outils..run-time

reachout



L’arrivée de Linux

reachout



L’environnement GNU/Linux

reachout

LINUX Distribution

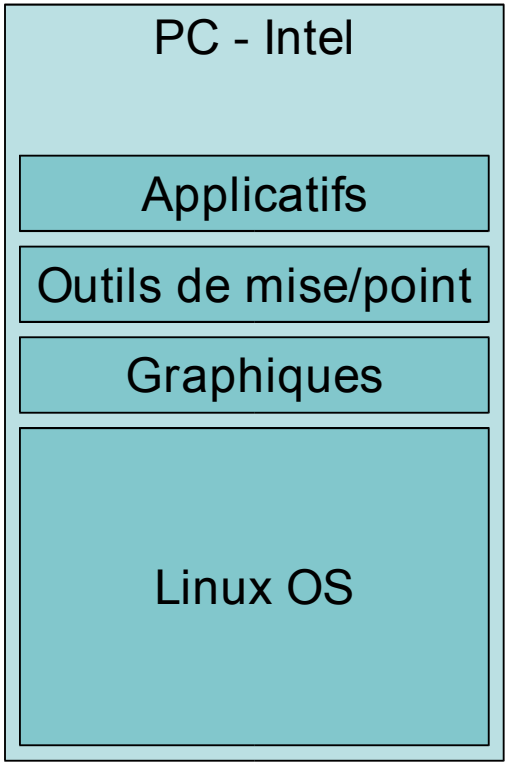
Linus et son équipe ont créée le noyau *et* le monde du logiciel libre

reachout

- Un changement de paradigm en ce qui concerne les projet de développement de logiciel traditionnel.
- Une qualité de logiciel supérieur 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

Linux pour le PC

reachout

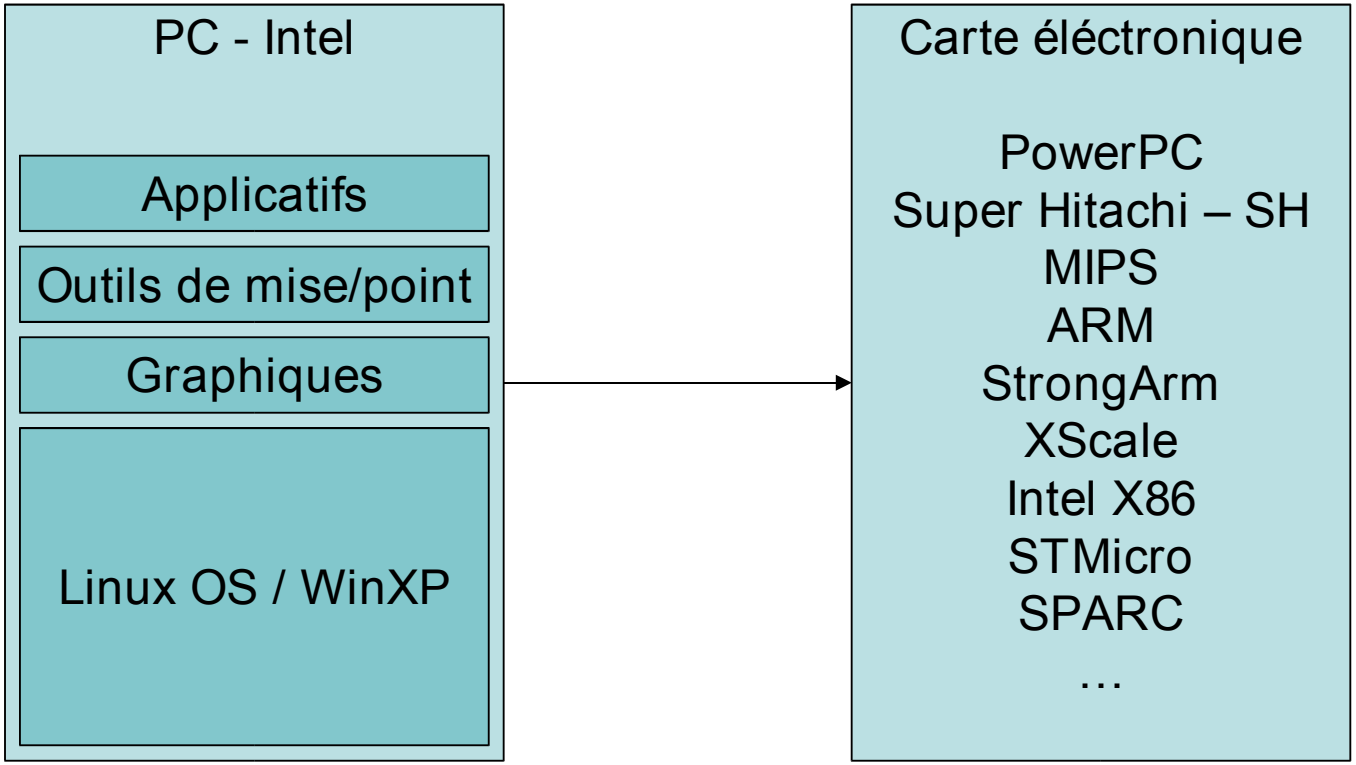


L'architecture de base pour Linux – Intel Pentium

Les applicatifs fait pour l'architecture 'Intel'
Les outils de mise au point fait pour 'Intel
Les interfaces graphiques développé pour le PC
…

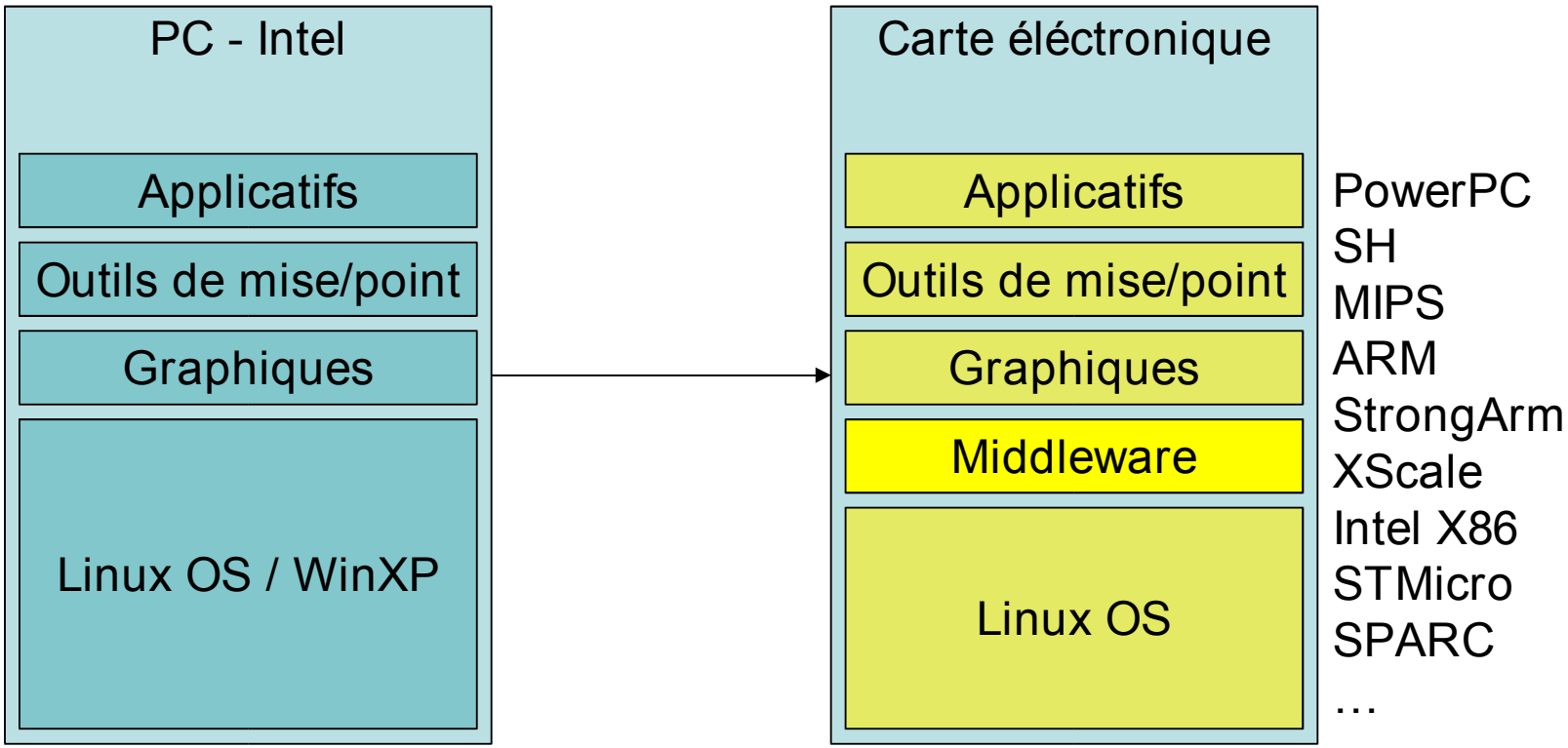
L’embarqué et le développement croisé

reachout



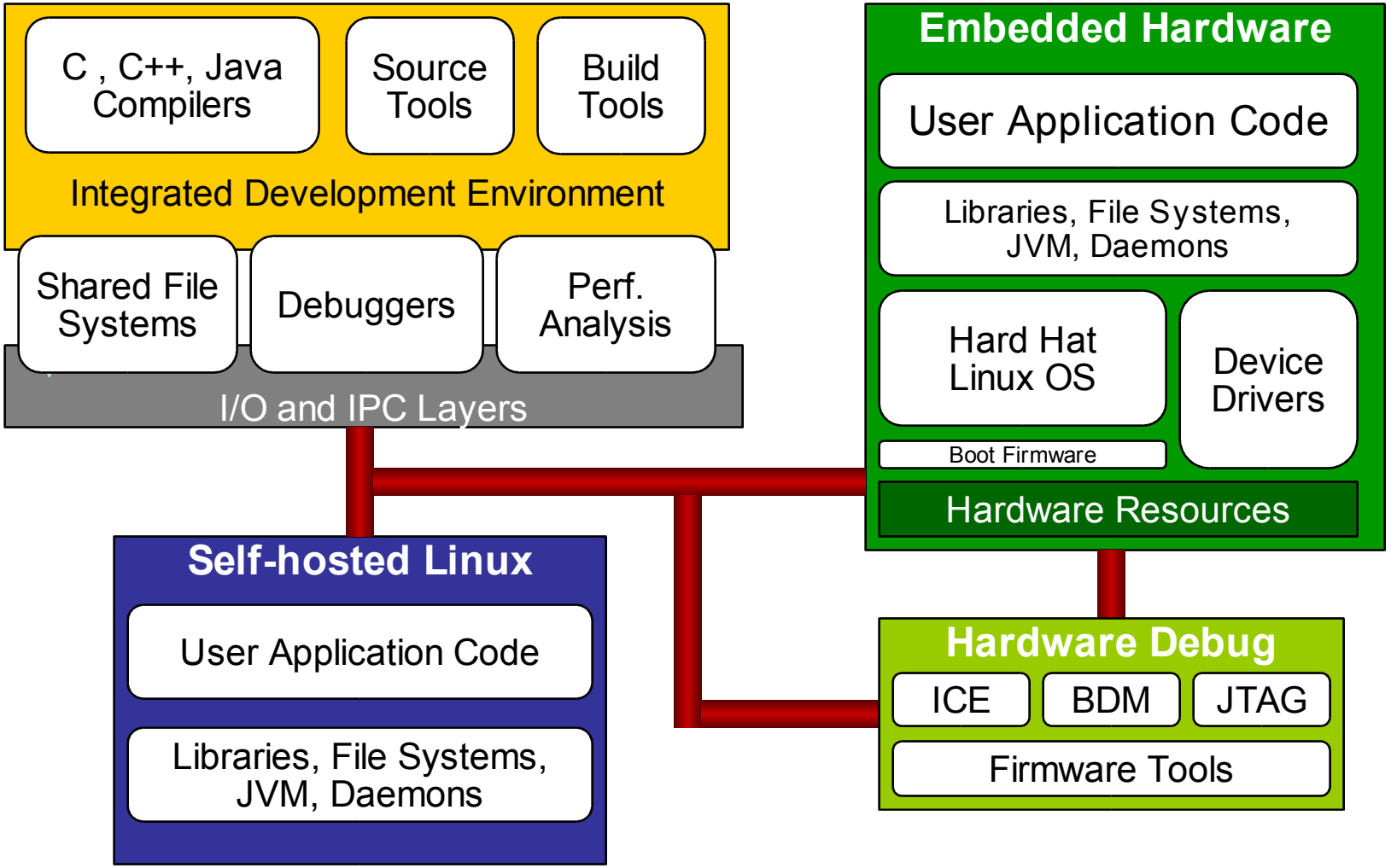
L’embarqué et le développement croisé

reachout



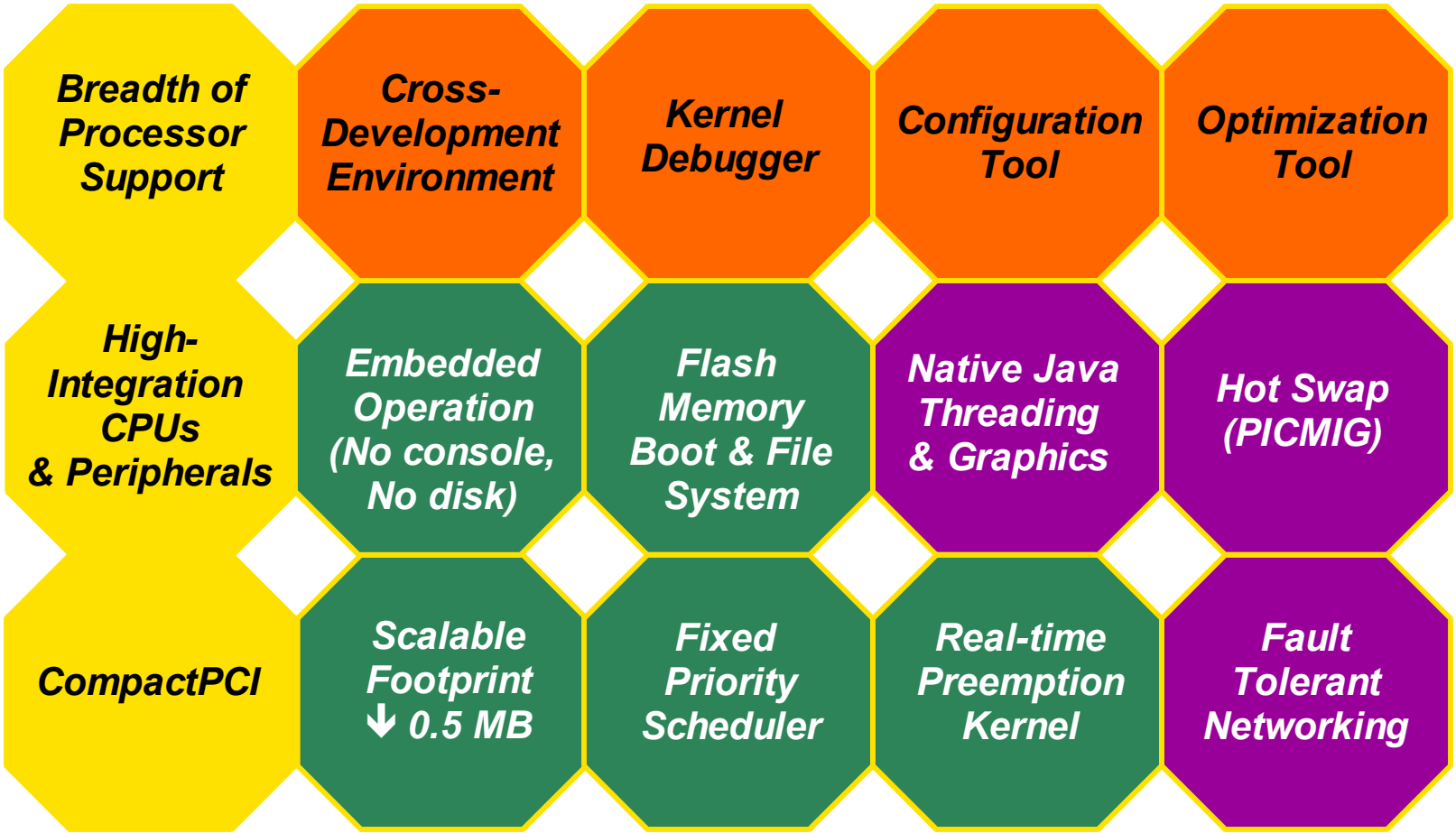
Le développement croisé et Linux

reachout



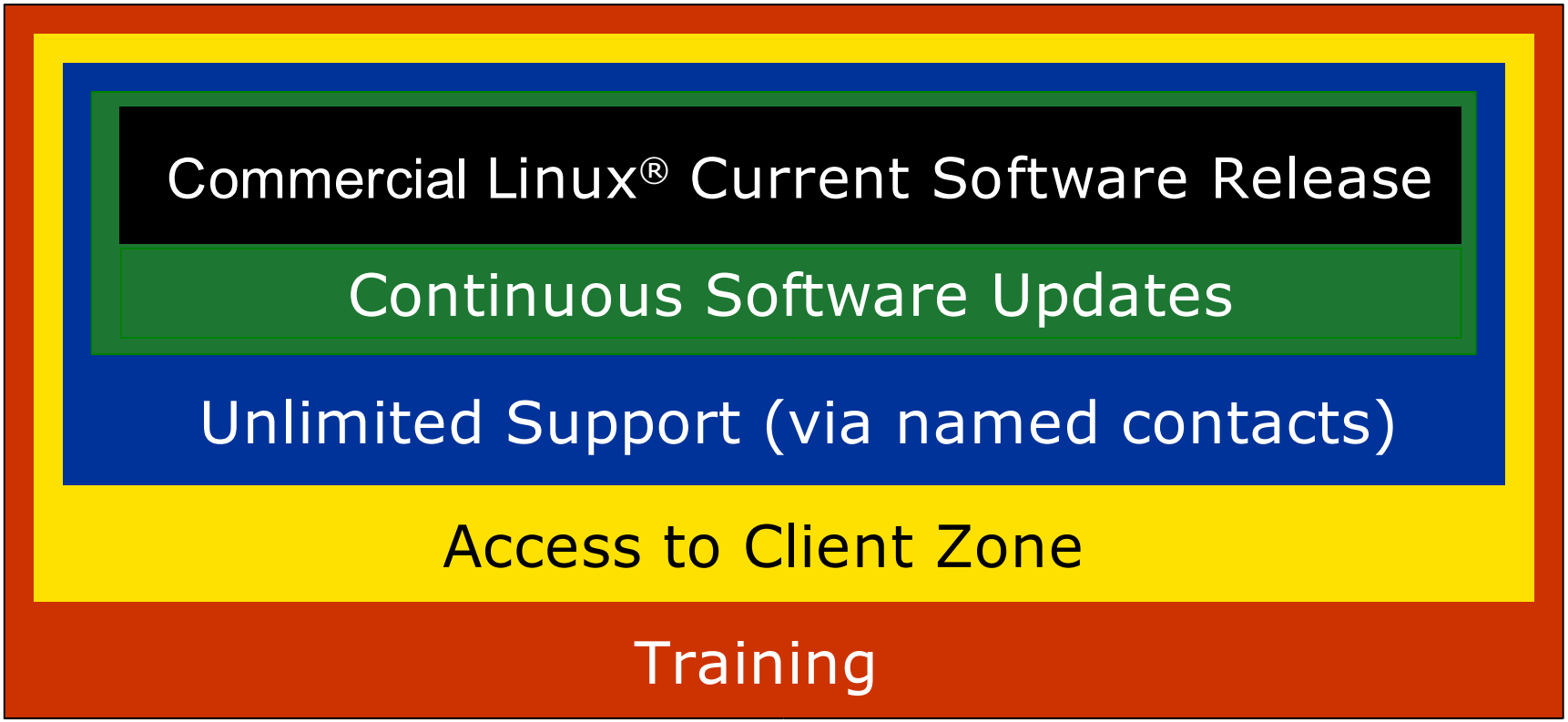
Linux aujourd'hui

reachout



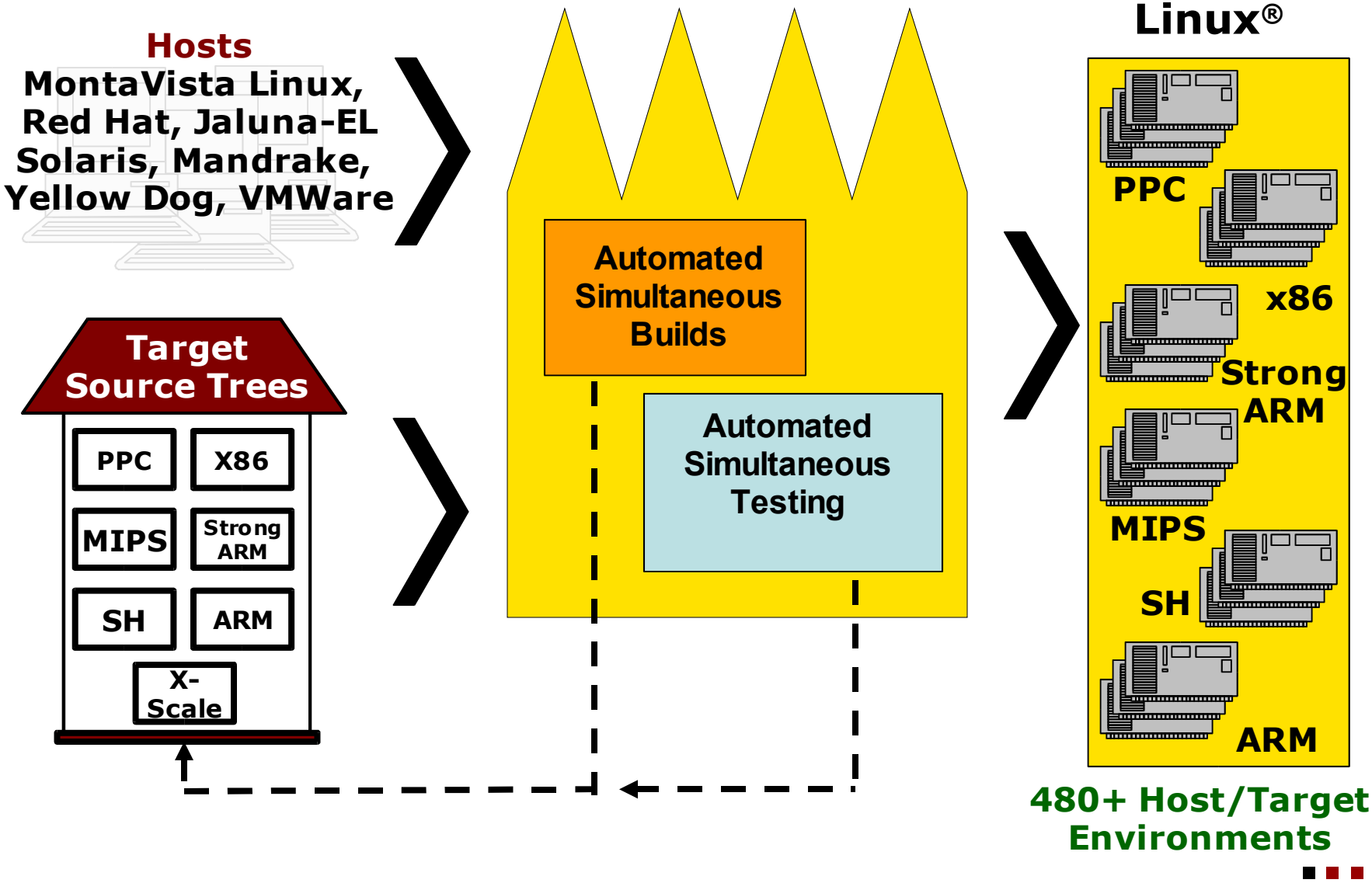
La commercialisation

reachout



Approche commerciale

reachout

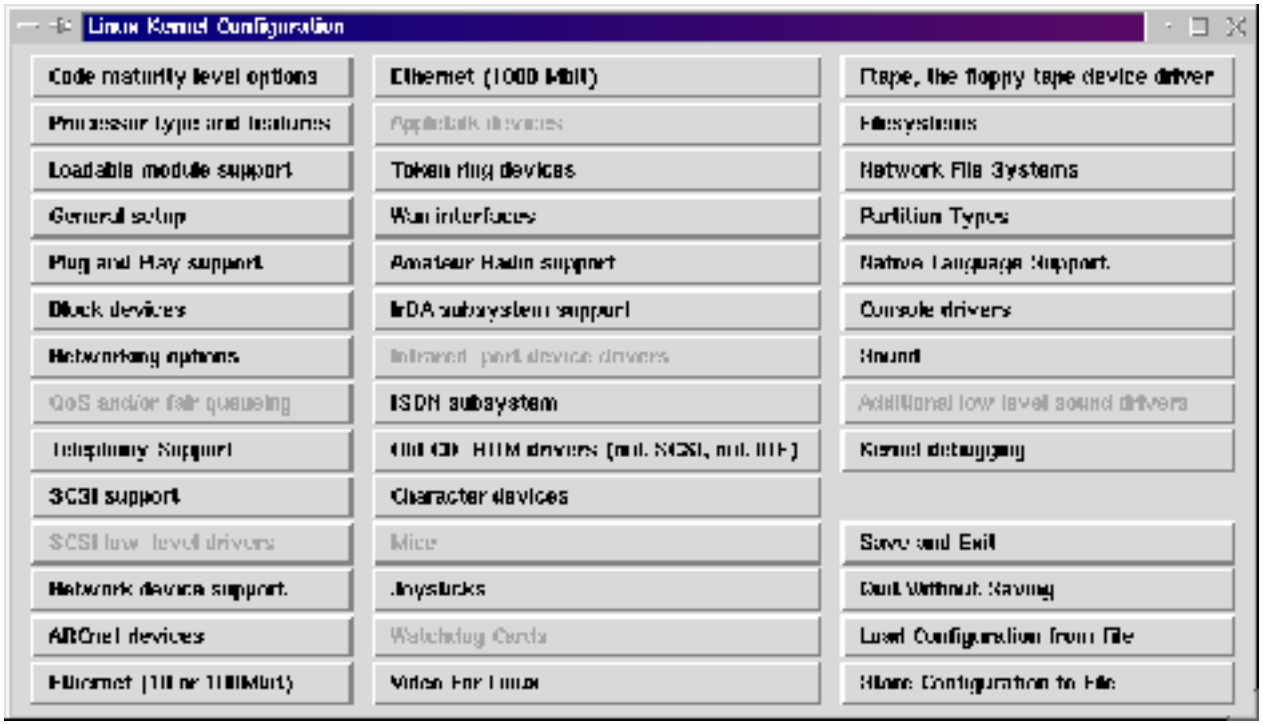


Open Source Development: Rules of Engagement

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.

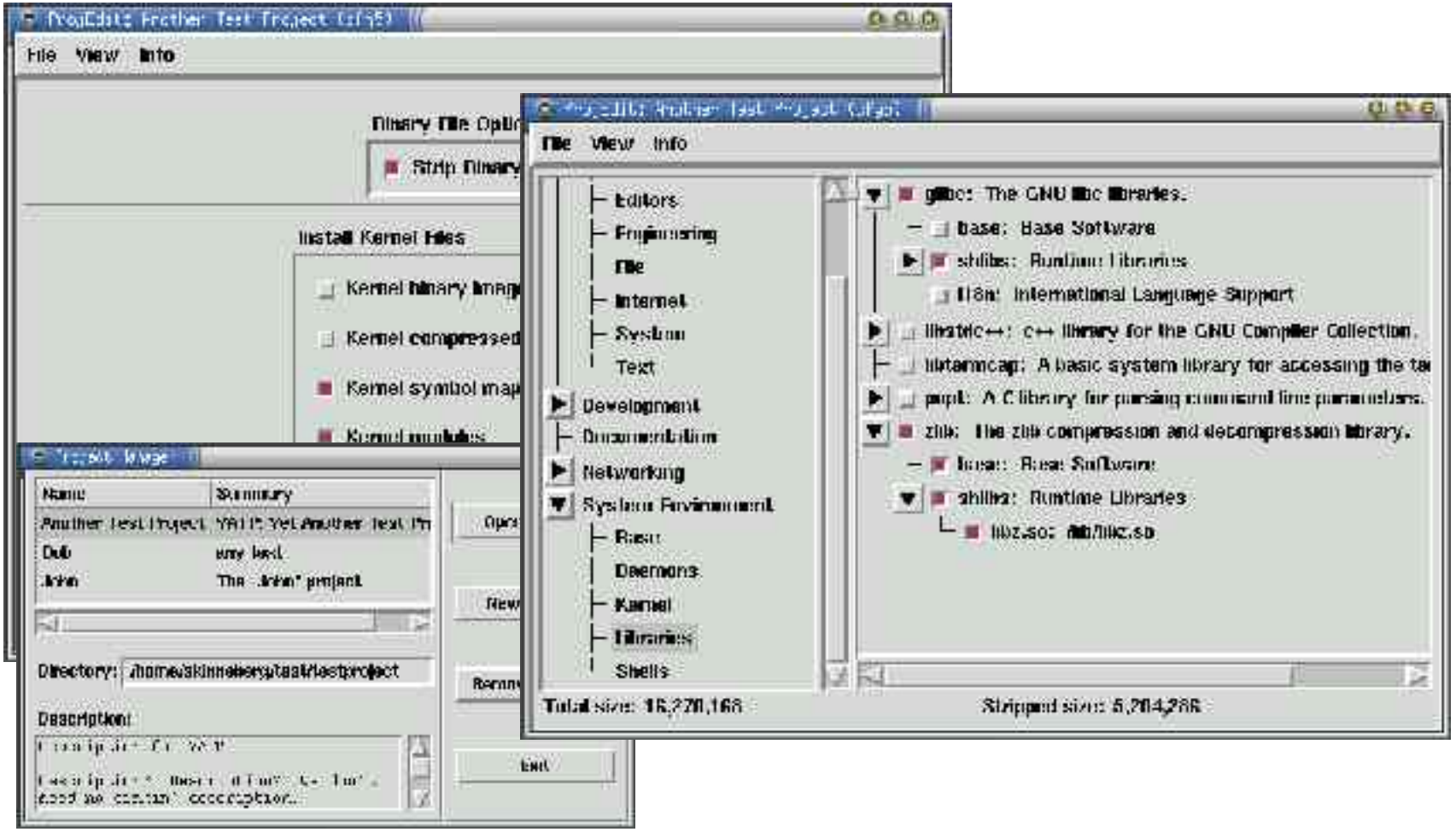
Les outils de configuration - noyau

reachout



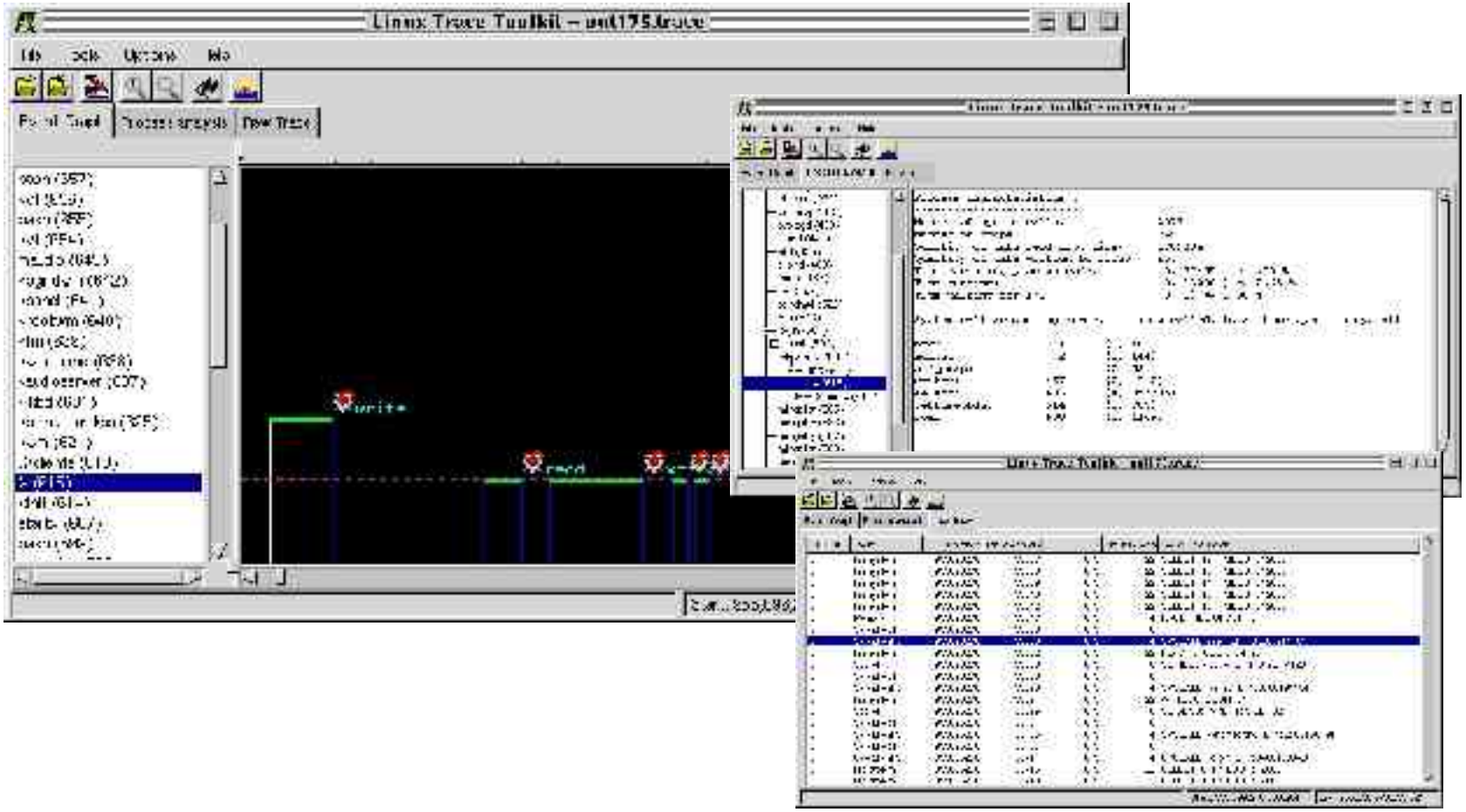
TCT Screen Shots

reachout



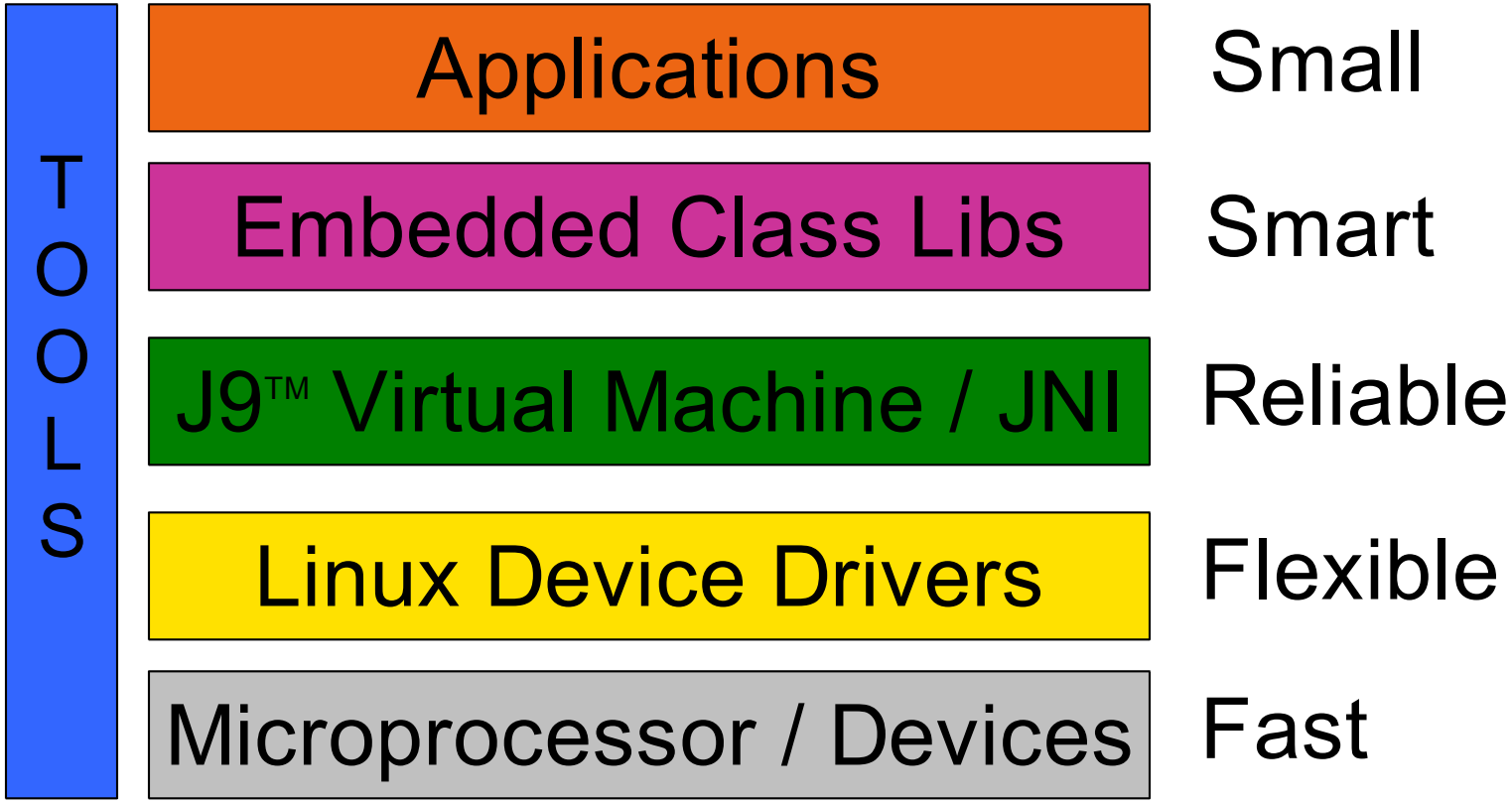
Trace Toolkit

reachout



Environnement Java sur Linux

reachout



Why use Linux?

reachout

- **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?

reachout

- **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**

Les acteurs, solutions *Linux*

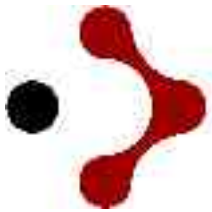
reachout

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

Les systèmes embarquées

reachout

- 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 …



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Le marché de l’embarqué

Quelques chiffres…

Logiciels systèmes

reachout

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

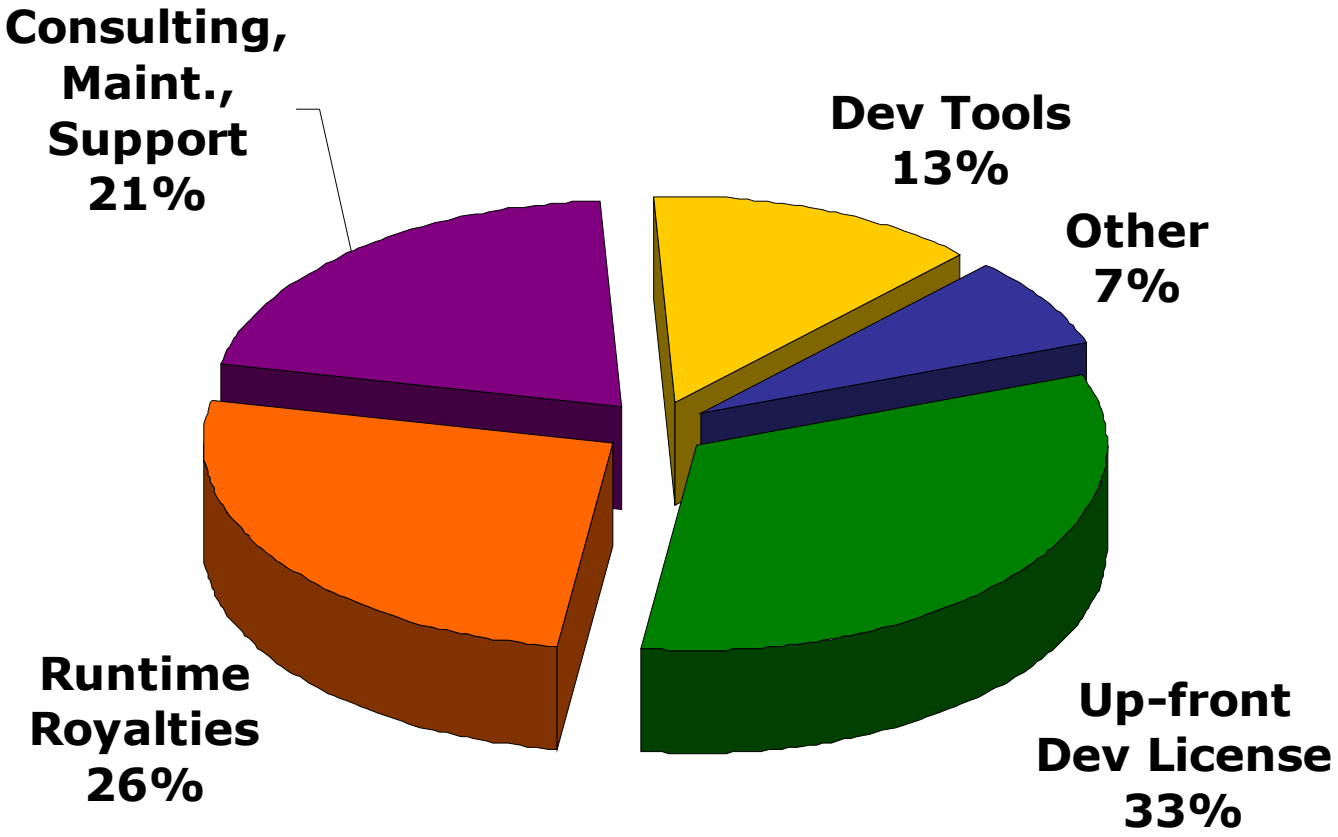
reachout

- Bundled OS, tools & services (Linux 7%) **600M€**
- Unbundled development tools **330M€**
  - Mainly Integrated development environements
- 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 revenues

reachout



Les acteurs, solutions propriétaires

reachout

- **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

reachout

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 trends

reachout

Linux is the fastest growing embedded OS.

-- Evans Data Corporation 2002

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

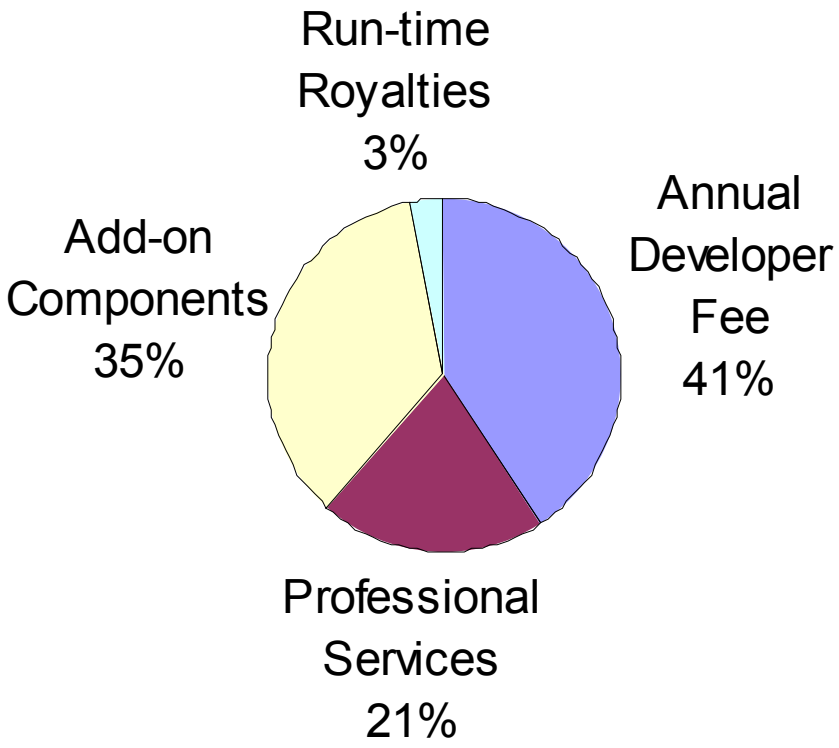
-- Consumer Electronics Association 2003

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

-- Venture Development Corporation 2002

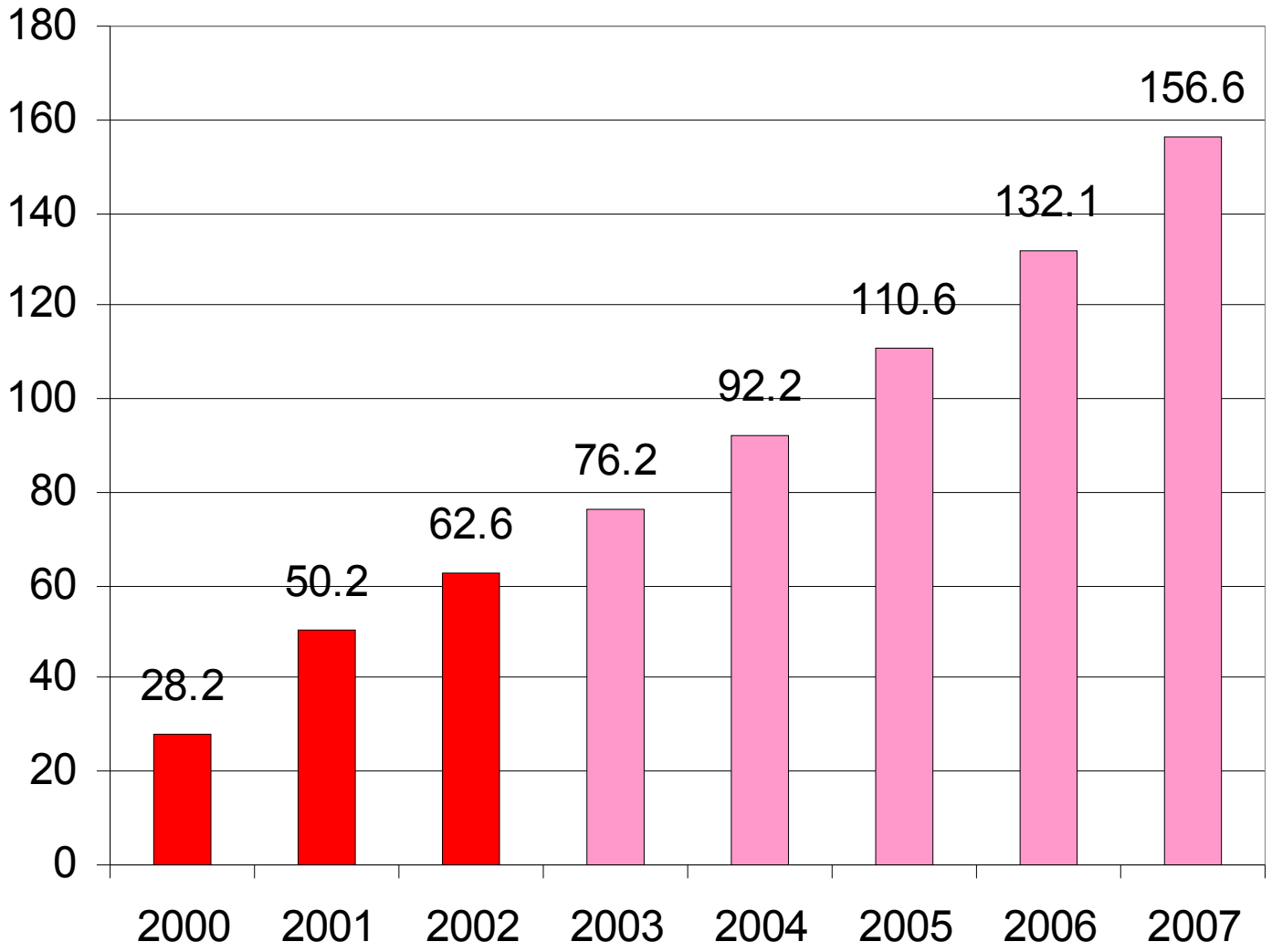
Les revenues de ‘Linux’

reachout



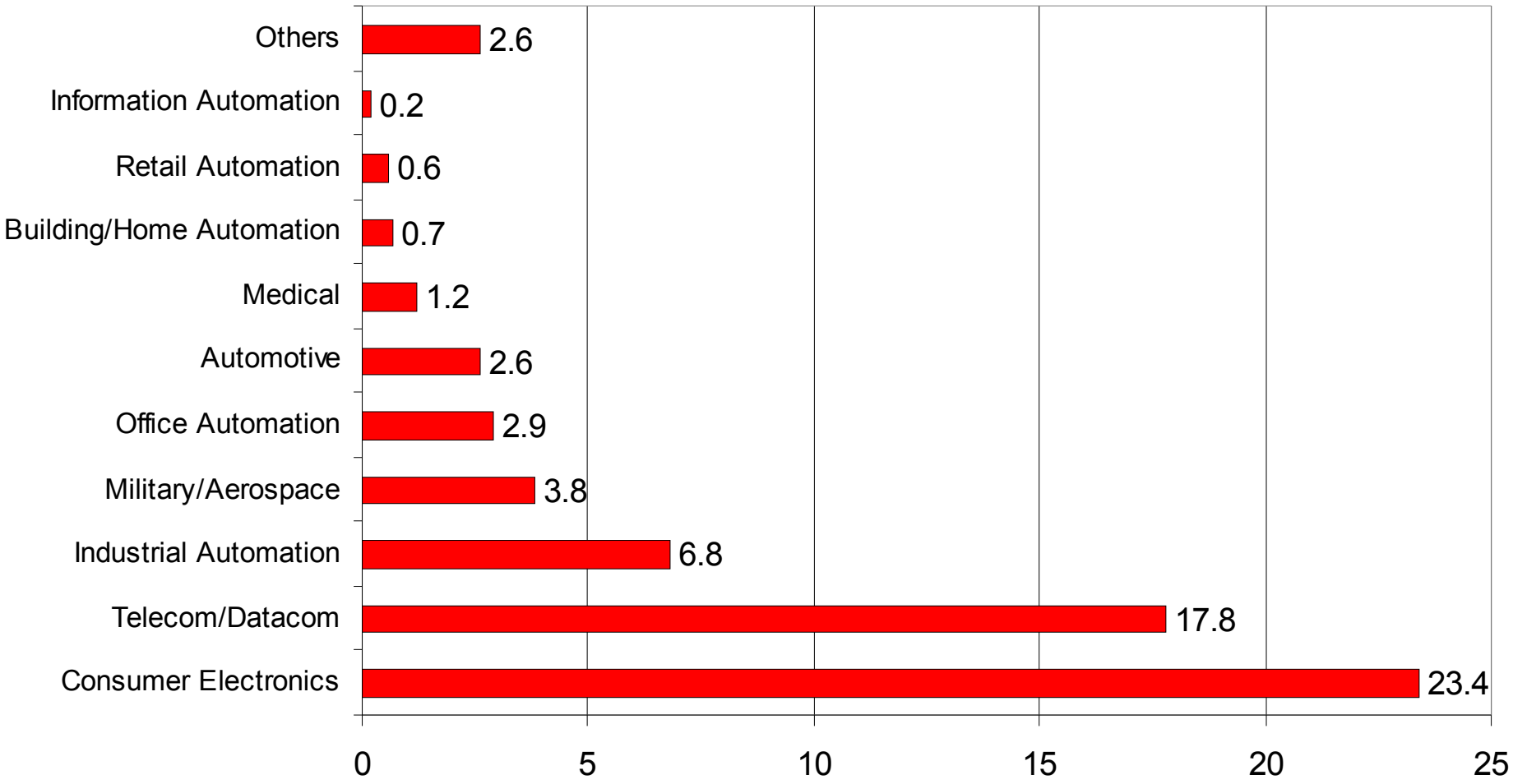
Projections VDC

reachout



Chiffres d'affaires par marché

reachout



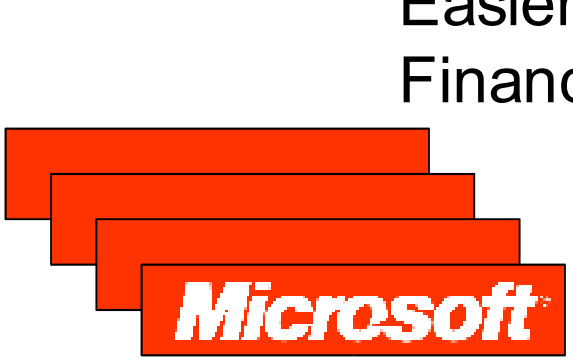
Résumé – les leaders

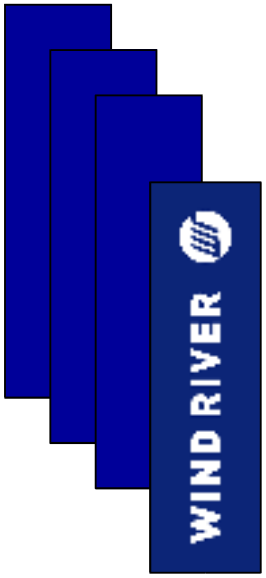
reachout

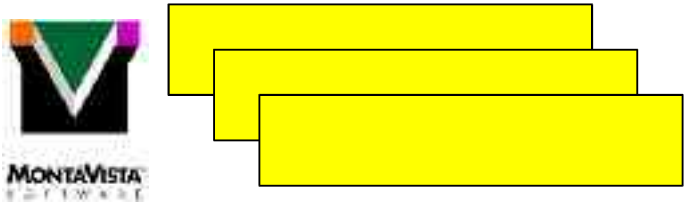
Leaders take a **Platform Approach**

Appeals to senior managers

- Easier to communicate
- Financial logic







Résumé – les challengers

reachout

Challengers focus on product sales by ***module***.

Appeals to engineers
Easier to measure
Technical logic