Ubiquitous Computing Security

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Why Security ?

Security is PAIN...

- Privacy (confidentiality)

- Authentication

- Integrity

- Non-repudiation

(No Pain, no Gain...)

Security is Needed for...

Privacy Reasons:

- **People want to hide certain (culturally specific) things**

Economic Reasons:

- **People (and enterprises) want to protect their property**

Pervasive e-commerce

1 **Business to Consumer**
**B2C Transactions are high in
volume, but very** cost sensitive.

2 **Business to Employee**
**B2E Transactions are low in
volume, but transaction** cost
is less of an issue.

Enabling
Technology

3 **Business to Business
(e.g. machine-to-machine transactions)
The next wave…**

Mobile Security

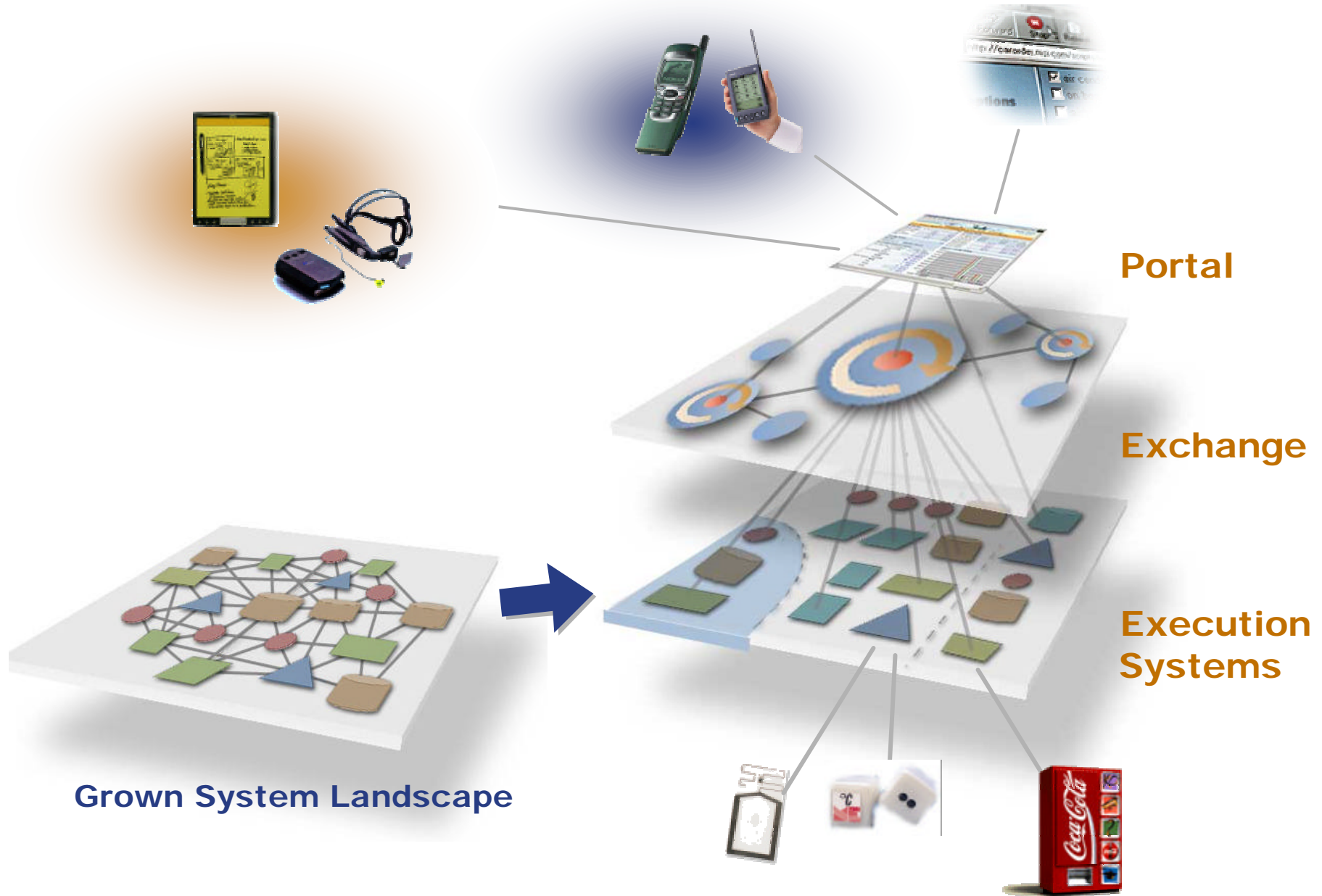## Mobile Security Specifics:

- **Dynamic connections over multiple access networks (partly untrusted)**

- **Restrictions in communication protocols (bandwidth, latency,…)**

- **Restrictions in devices (power, performance)**

State of affairs:

- **Client-side technology is still very immature**

- **Security management of wirless networks and devices is inherantly complicated**

- **But: Enterprise borders dissapear, protection against intruders, espionage,... is a must**

Flexibility

Manage Sustainability - Reduce Complexity

Portal

Exchange

Execution Systems

Grown System Landscape

Manage Sustainability - Reduce Complexity

Security?

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Ubiquitous Computing Security

There is no such thing as Ubiquitous Computing Security *per se*.

Since...

- **digital artefacts**
- **tags/labels/sensors**
- **"Things that Think", etc.**

...do not have any security requirements.

Security comes in iff something is carried out on behalf of a someone

Thesis: *Ubiquitous Computing Security is a Story About Applications and Users of Applications*

Security for Ubiquitous Computing...

Security is today largely centered around networks and devices

- **Ubiquitous computing needs *application-oriented security:*
  it matters *what* you do, not *how* or *where* you do it**

Resarch Questions:

- **Security primitives matching the specifics of UbiComp**

- **Security Management at large**

- **Transfer of Credentials/Policies/... to UbiComp devices**

- **„Spontaneous Security Federations": minimizing the burden for
  users (e.g. expressing and reasoning about policies)**

- **„Macro-security" vs. Micro-insecurity**

- **How does a „UbiComp Identity Module" and a Security
  Infrastructure look like?**

UbiComp simply won't happen without security....