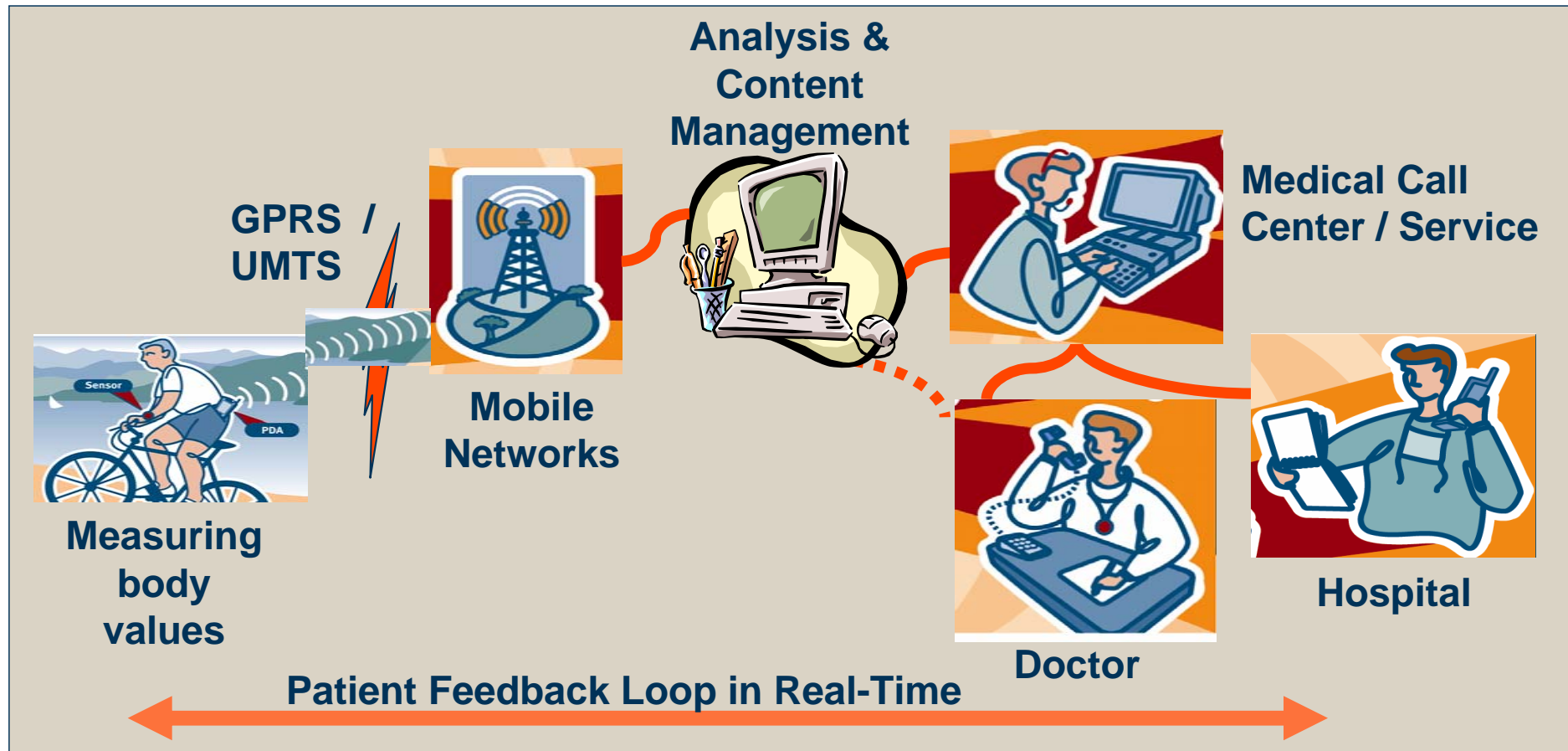# Mobile Patient Monitoring – Applications & Value Propositions for Personal Health
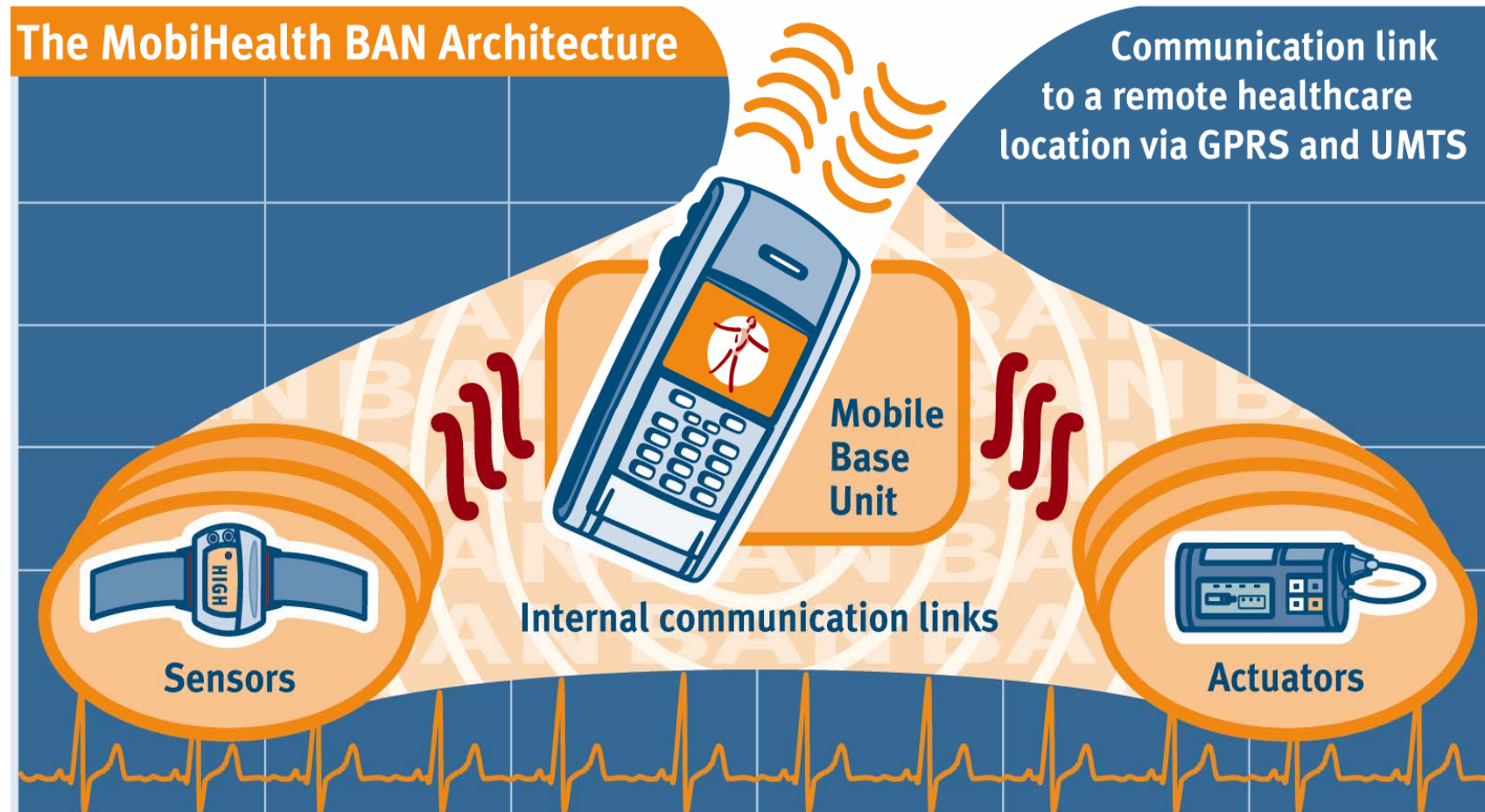
phealth, Luzern, January 31, 2006

The Mobile Healthcare Solution

- **Core for a variety of new doctor – patient dialogues: mobile monitoring, patient messenger, patient diary**

Analysis & Content Management

GPRS / UMTS

Mobile Networks

Medical Call Center / Service

Measuring body values

Doctor

Hospital

Patient Feedback Loop in Real-Time

Body Area Network (BAN)

The MobiHealth BAN Architecture

Communication link to a remote healthcare location via GPRS and UMTS

Mobile Base Unit

Internal communication links

Sensors

Actuators

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Support from 2 EU projects

MobiHealth

IST-2001-36006

HealthService24
Continuous Mobile Services for Healthcare
eTEN-C517352

m-health target groups

Hospitals: mobile patient monitoring of early discharged patients in complete safety to reduce costs and comply with cost cutting

Homecare / Elderly Care: mobile and in-home patient monitoring to increase patients' quality-of-life and piece-of-mind. Reduction of care costs and formal operational burdens for care companies

Mobile Discharged Patients Solution

Homecare / Elderly Care

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Mobile Health Solution

Mobile Trial & Marketing Solution

Mobile Chronic Disease Solution

Pharmaceutical industry: mobile clinical trials (fast and high-quality clinical data for shorter time-to-market and safer medicine) and direct-to-patient communication

Public Healthcare: mobile disease management (e.g. less disease related costs and better quality-of-life for chronic disease patients)
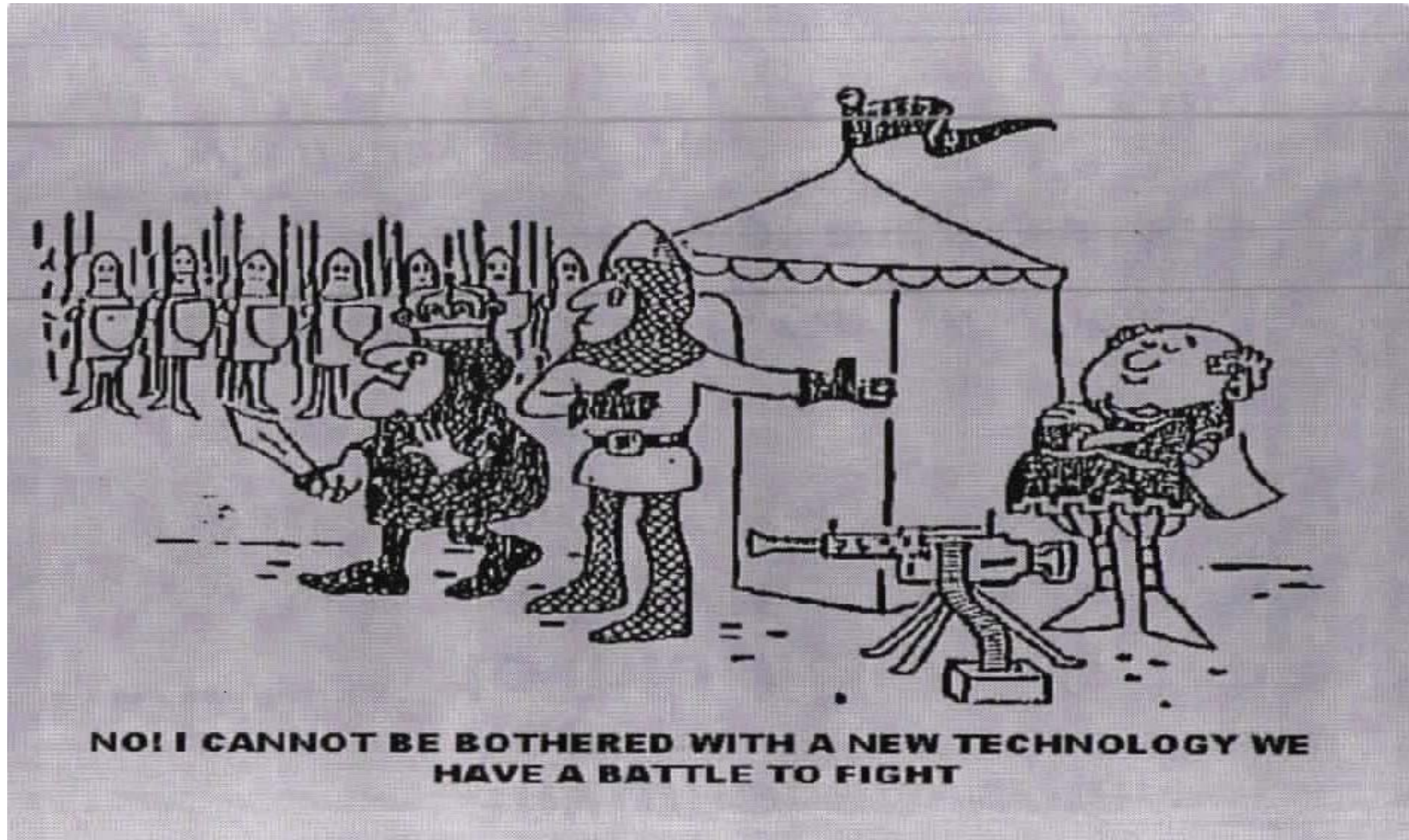
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Mobile healthcare: high potentials

Personal healthcare, prevention, fitness and wellness is one of the most dynamically expanding markets concerning consumption of media and information systems – including mobile solutions [1]
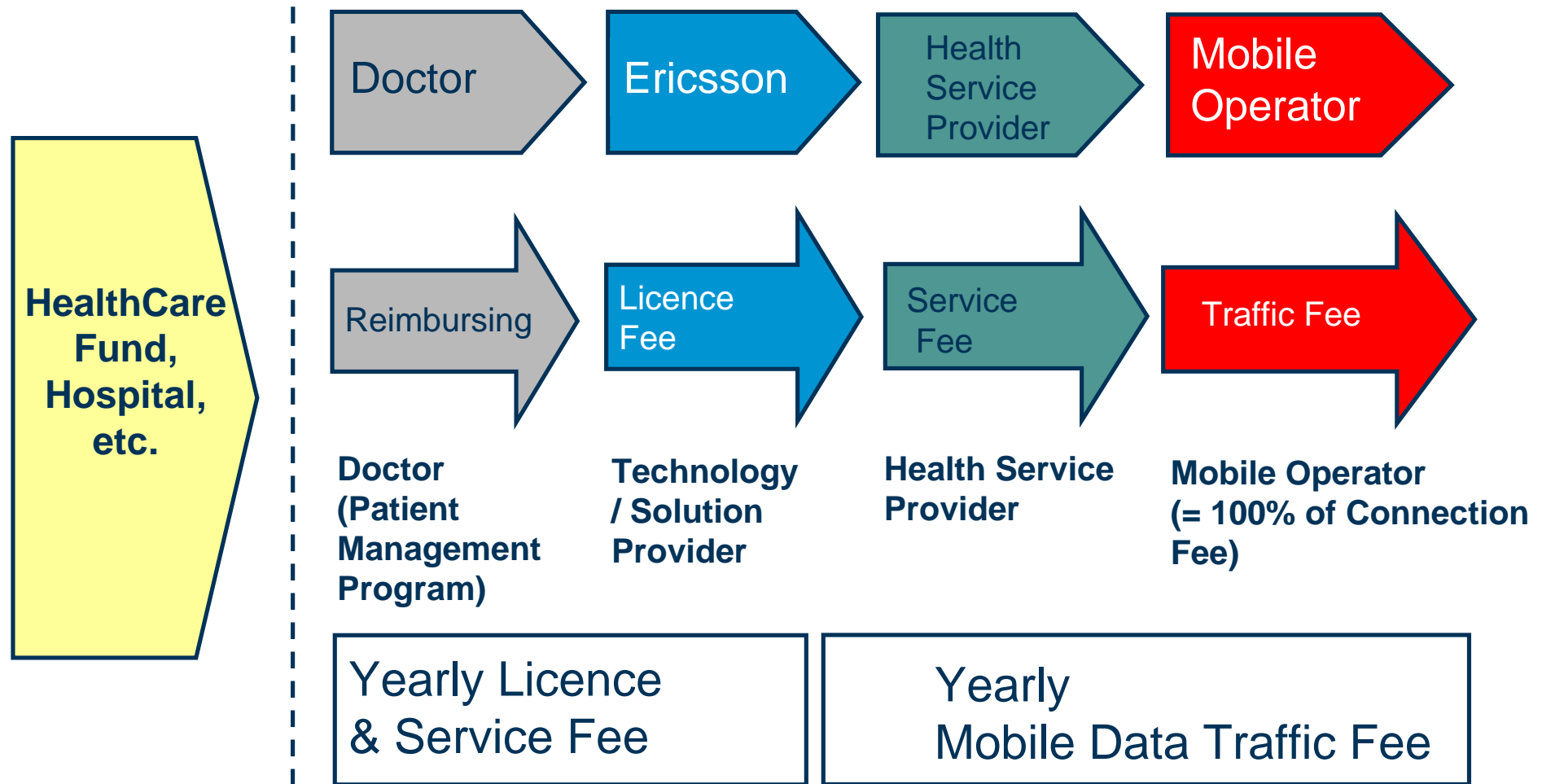
Mobile Healthcare will be one of the most rapdily growing segments in the area of mobile enterprise solutions [2]
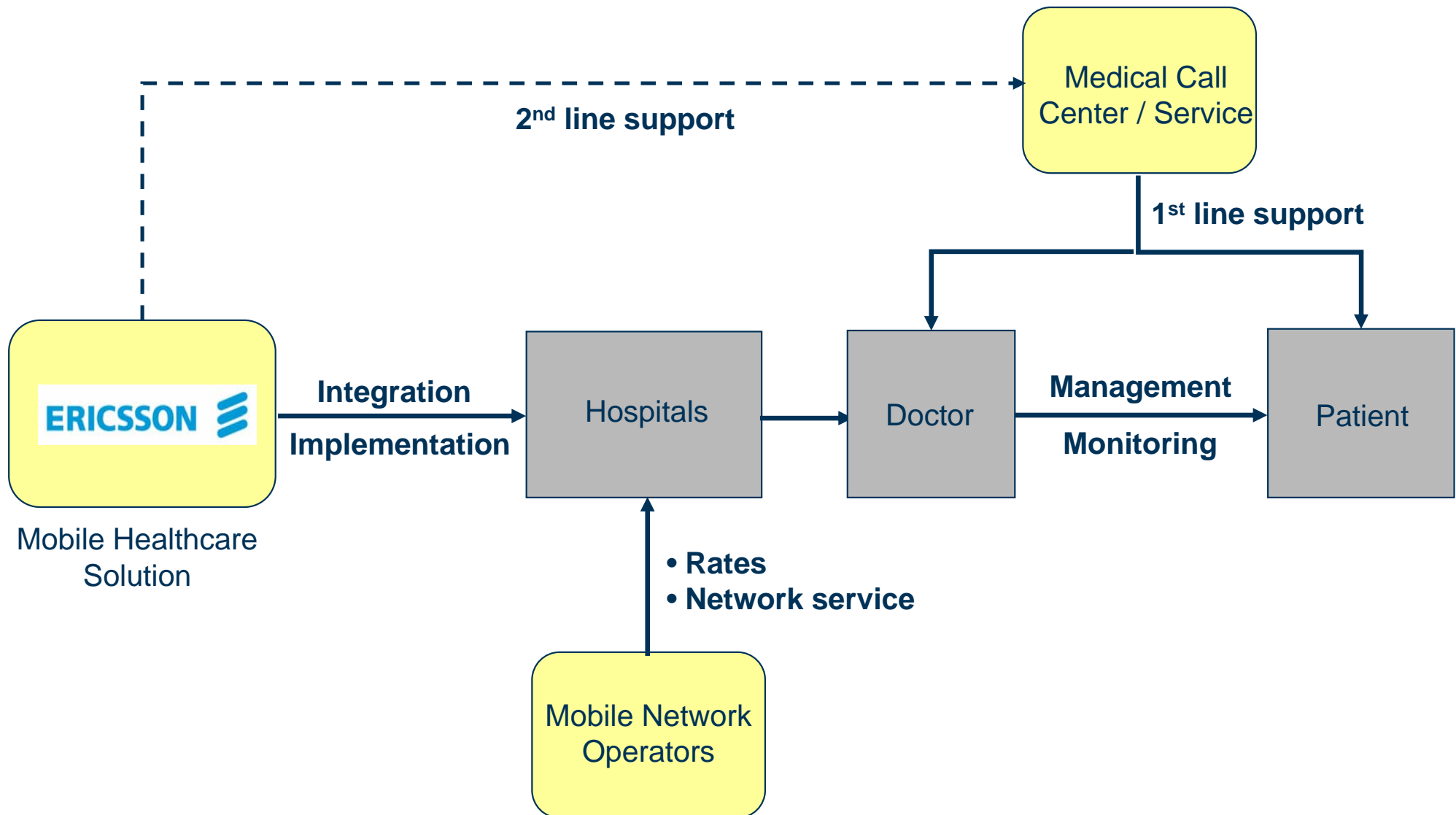
1) Durlacher
2) Gartner Group

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Value proposition: technology is not enough!

NO! I CANNOT BE BOTHERED WITH A NEW TECHNOLOGY WE HAVE A BATTLE TO FIGHT

Lucrative business models for the whole value chain

HealthCare Fund, Hospital, etc.

Doctor → Ericsson → Health Service Provider → Mobile Operator

Reimbursing → Licence Fee → Service Fee → Traffic Fee

Doctor (Patient Management Program) — **Technology / Solution Provider** — **Health Service Provider** — **Mobile Operator (= 100% of Connection Fee)**

Yearly Licence & Service Fee

Yearly Mobile Data Traffic Fee

Possible product and service supply chain for m-health

Medical Call Center / Service

2nd line support

1st line support

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Mobile Healthcare Solution

Integration

Implementation

Hospitals

Doctor

Management

Monitoring

Patient

• Rates
• Network service

Mobile Network Operators

Savings through disease management (I)

- **The Asthma case: potential yearly <u>net</u> savings/patient in Germany amount to €600 - €1800 (10-30%)**

Example :
Percentage of yearly treatment costs per patient for Asthma, (100 = €6,000)

Cost Basis for Insurers	100
Savings in Treatment Costs	30 - 40
New claims due to PM	5 - 10
Costs of PM Program	5 - 10
Total Costs	70 - 90
Net Savings for Insurers	10 - 30

Source: McKinsey

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Savings through disease management (II)

- **The Asthma case: potential yearly <u>net</u> savings of €24-72 mil for the German healthcare system (based on 1% acceptance)**

Disease	Preval...		Acceptance*
			1%
Diabetes	5.000.0...		50.000
Stroke	1.500.000	45...	15.000
Asthma	4.000.000	120.000	40.000
Hypertension	17.600.000	528.000	176.000
CAD	1.500.000	45.000	15.000
Total potential users		888.000	296.000

Potential savings:

€24 – 72 mil

* Estimated acceptance rates for mobile patient management programs

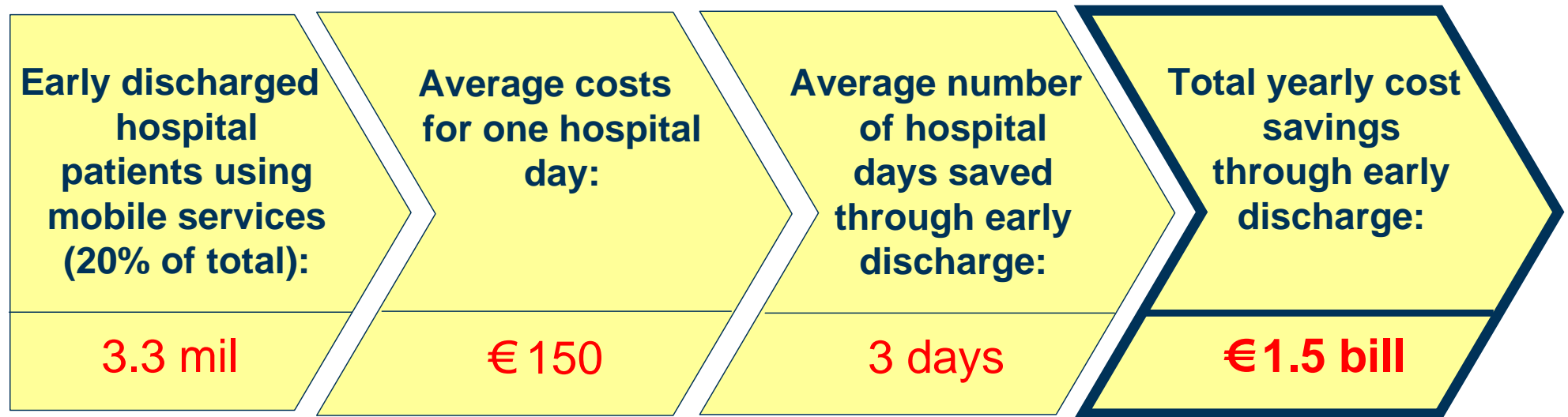ERICSSON

Cost savings in patient care

- **Discharging patients earlier from hospitals to their homes can result in savings of 85% in weekly care costs**

Average cost of care per week and person in a hospital:

GBP 805

Average cost of care per week and person in a nursing home:

GBP 337

Average cost of care per week and person in own home:

GBP 120

Source: Wireless Healthcare 2004

Mobile applications help hospitals to lower treatment and care costs

- **Hospitals in Germany can save up to €1.5 bill per year through early discharge of patients made possible by mobile monitoring services**

Early discharged hospital patients using mobile services (20% of total):	Average costs for one hospital day:	Average number of hospital days saved through early discharge:	Total yearly cost savings through early discharge:
3.3 mil	€ 150	3 days	€1.5 bill

Source: GesundheitScout 24 GmbH and
        Bayerisches Rotes Kreuz

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Mobile applications shorten clinical trial time in the pharma industry

- **The pharma industry loses on average $ 1 mil for each day a new pharmaceutical product is not yet on the market**
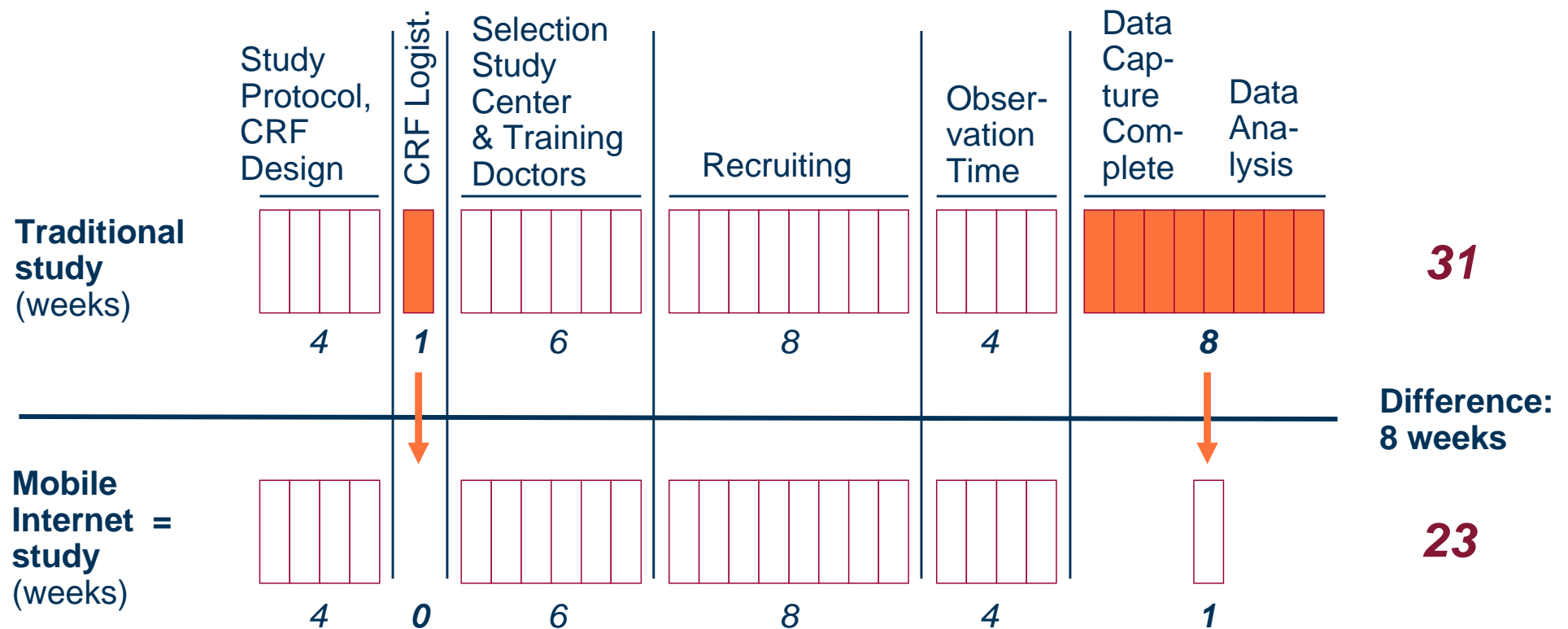
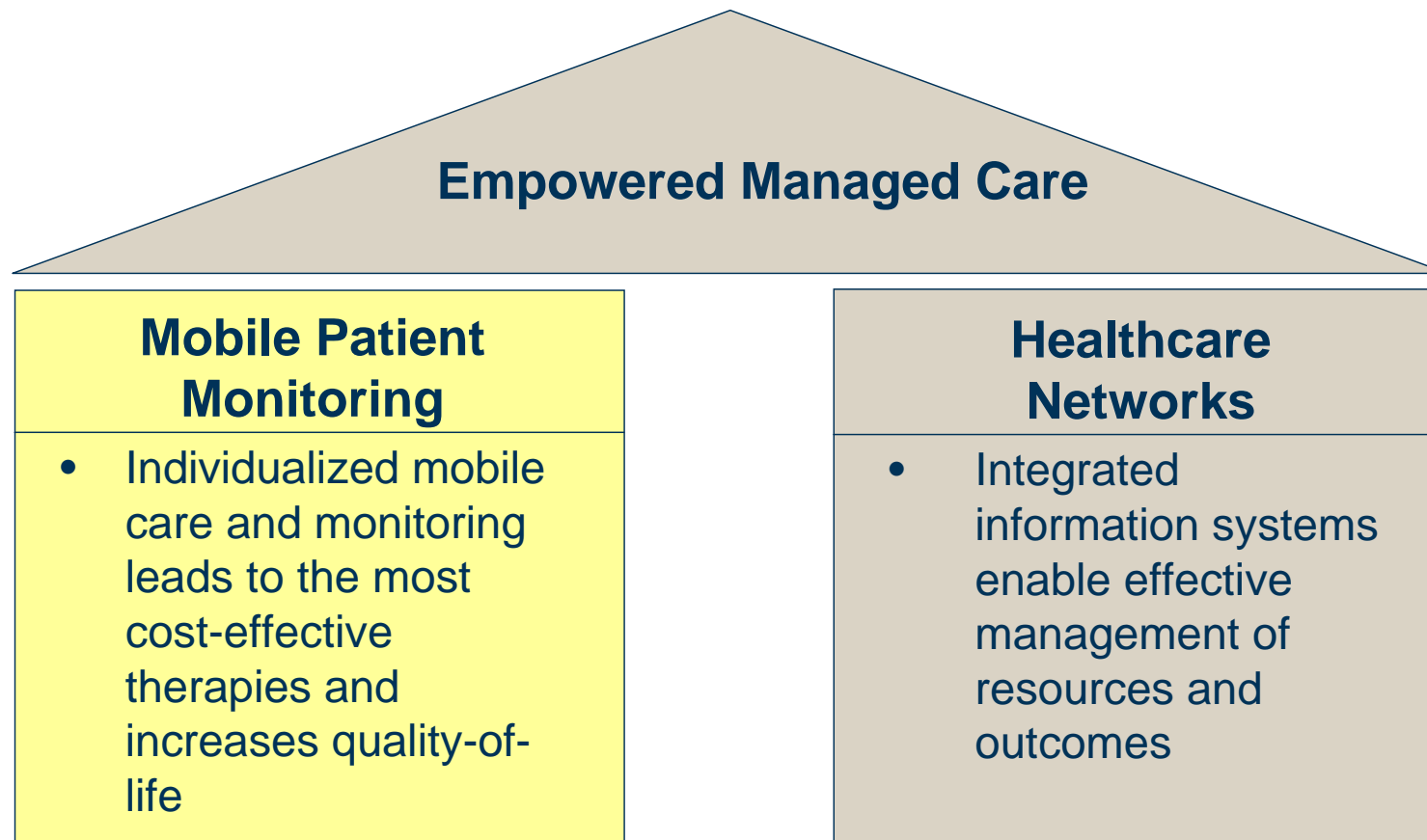

Source: BMZ (CRO), Munich

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Mobile health services can generate significant data traffic revenues

➔ Data volume **per patient** for a mobile cardiology trial application
(4 channel ECG monitoring):
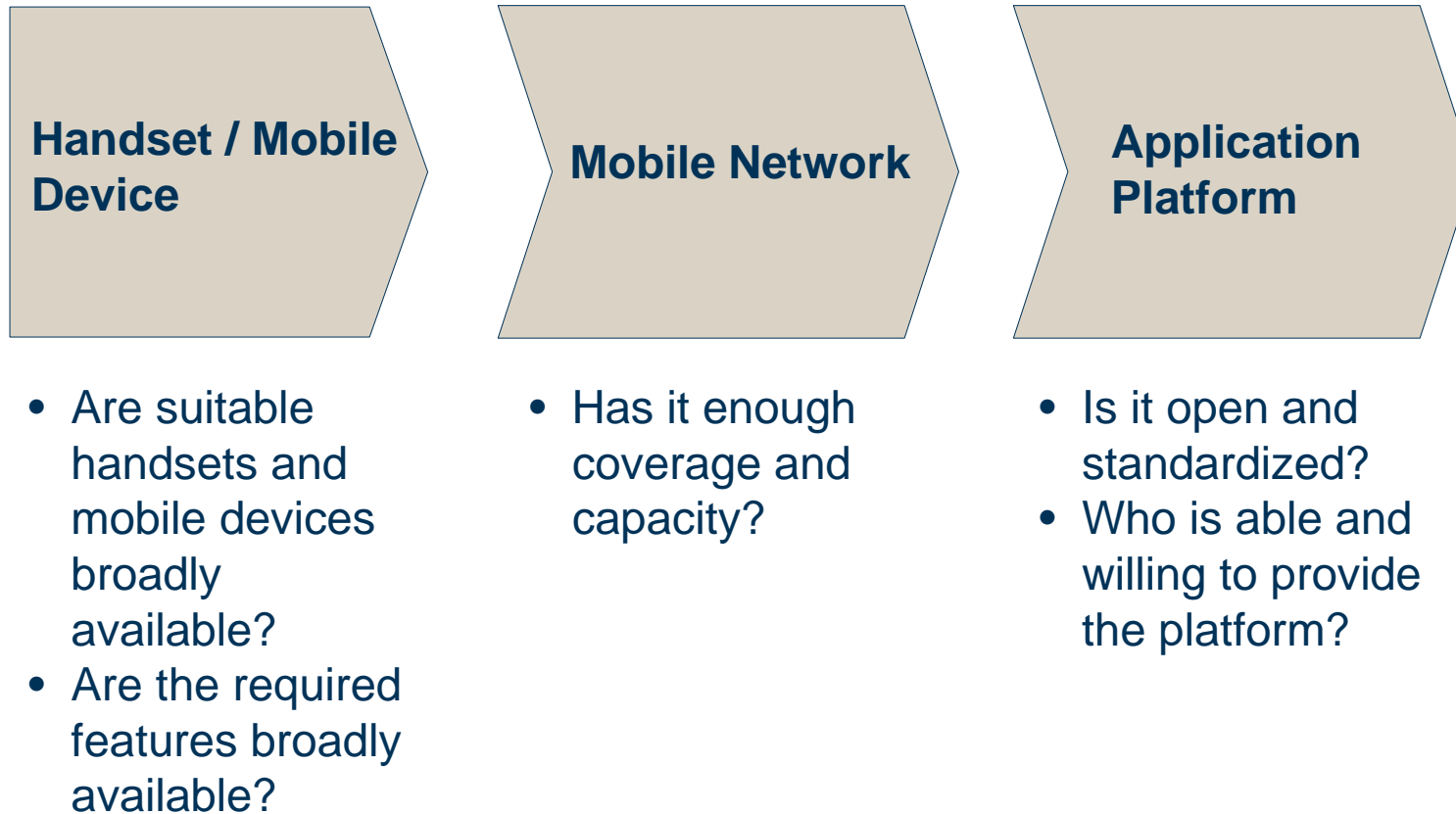
	24h/7d	3h/7d
Data rates / day (MB)	162	20.25
Data rates / month (MB)	4,941	617.6

Some mobile health applications need continuous connection to the mobile network whilst others do not. Both types will generate significant data traffic

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Empowered managed care – an integrated health solution approach

Empowered Managed Care

Mobile Patient Monitoring

- Individualized mobile care and monitoring leads to the most cost-effective therapies and increases quality-of-life

Healthcare Networks

- Integrated information systems enable effective management of resources and outcomes

Telemedicine success factors (I)

Handset / Mobile Device

Mobile Network

Application Platform

- Are suitable handsets and mobile devices broadly available?
- Are the required features broadly available?

- Has it enough coverage and capacity?

- Is it open and standardized?
- Who is able and willing to provide the platform?

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Telemedicine success factors (II)

Business Model | **Marketing / Go-to-market** | **Content / Features**

- Are all members of the value chain included?
- Can we generate benefit for all of them?
- Who pays for the service?
- Have we got the right pricing?

- With which partners to enter the market?
- At which point in the value chain?
- Which supportive alliances (e.g. political)?

- Flexibility: can content and features be adapted to user needs?
- Where can I get hold of content quickly and easily?

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Challenges for healthcare

What keeps healthcare managers awake?

We are getting older, chronic diseases are on the increase

Costs, budget deficits rise and can't be controlled

Research for new drugs becomes very expensive

Patient empowerment

Outdated and not-integrated ITC systems
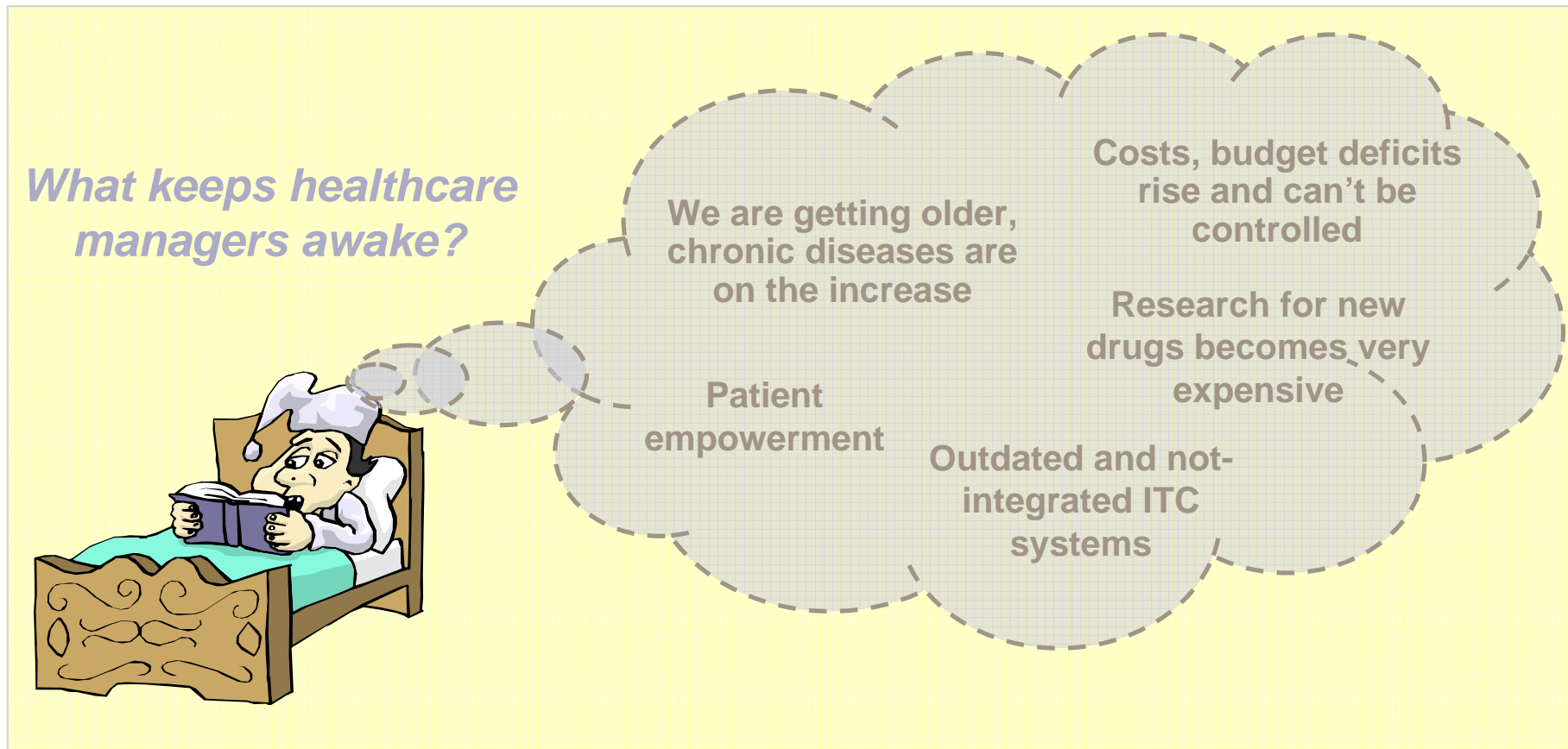
e- and m-health services are suitable to contribute to solving the challenges of the healthcare sector

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Contact

Rainer Herzog
Head of Healthcare

Ericsson Enterprise

Carl-Zeiss-Ring 21
D-85737 Ismaning
Germany
Tel.:   +49 89 255 437 15
Fax: +49 89 255 437 12
Mobile.: +49 178 534 00 67
mailto: rainer.herzog@ericsson.com

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