Societal **Challenges**

Citizen's Needs

Public Sector Needs

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SONNETS Final Event
During 23rd ICE/IEEE ITMC Conference
- Roadmap development -
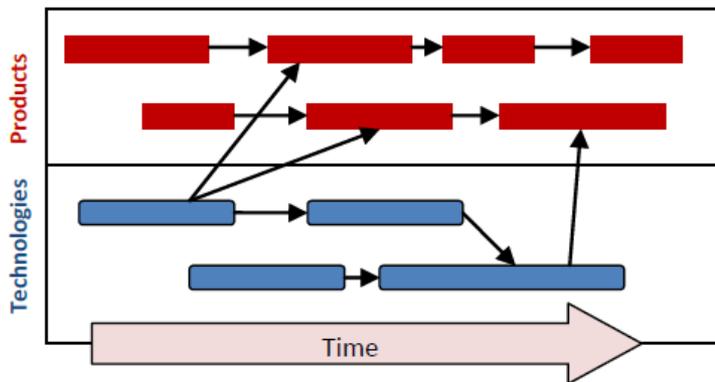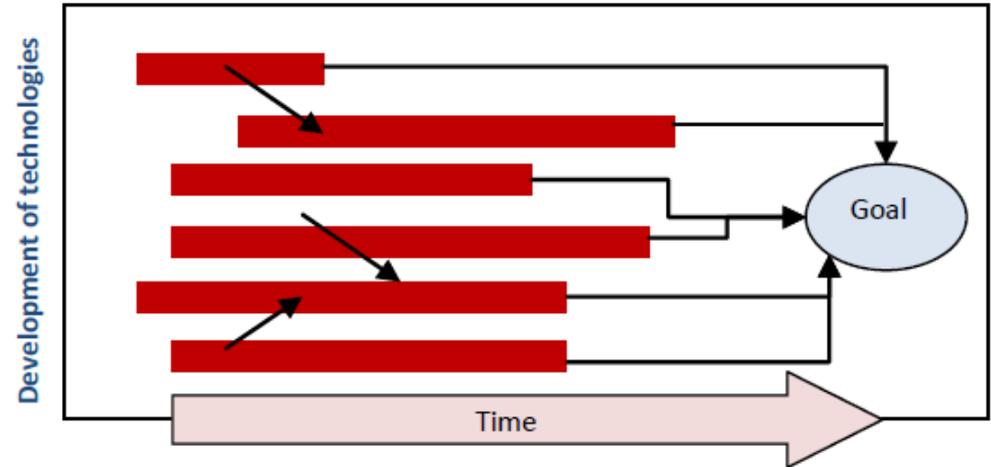
Sonja Grigoleit,
Fraunhofer INT
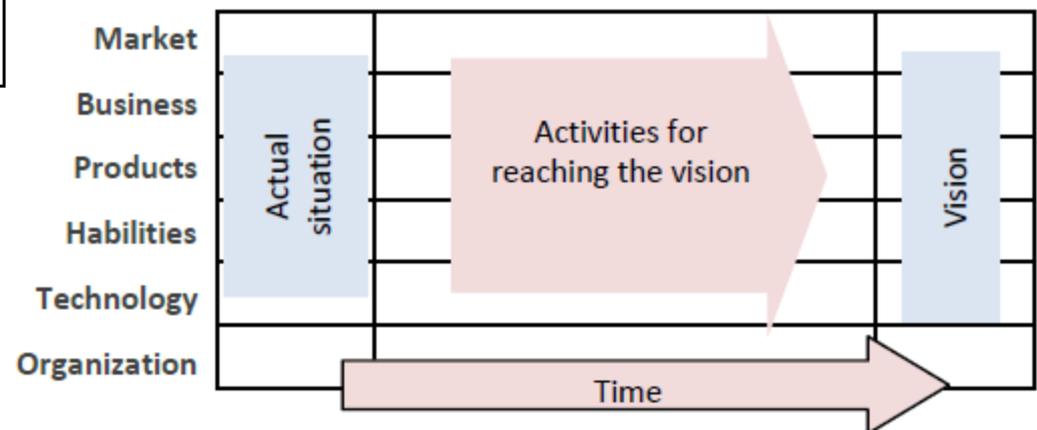
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Technology roadmapping

■ There are many different types and applications of technology roadmaps

Planning of products

Long run planning

Strategic planning

© Sept program, 2009

Technology roadmapping

Market Information → Product-Market analysis → Product-Technology Options Evaluation

Technology Assessment → Product-Technology Options Evaluation

Identification of Technology Available / Feasible / Possible → Technology Assessment

Product-Technology Options Evaluation → Roadmap Creation → Defined Targets → Project Proposals
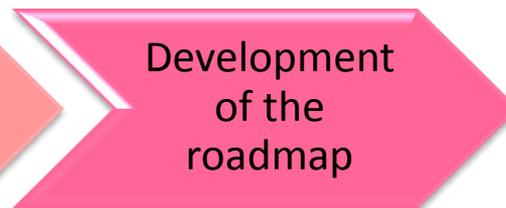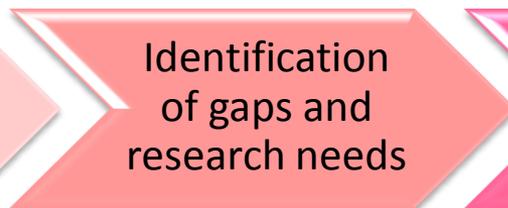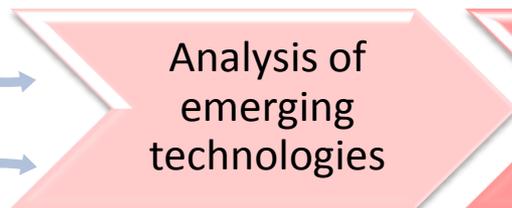
Market-pull
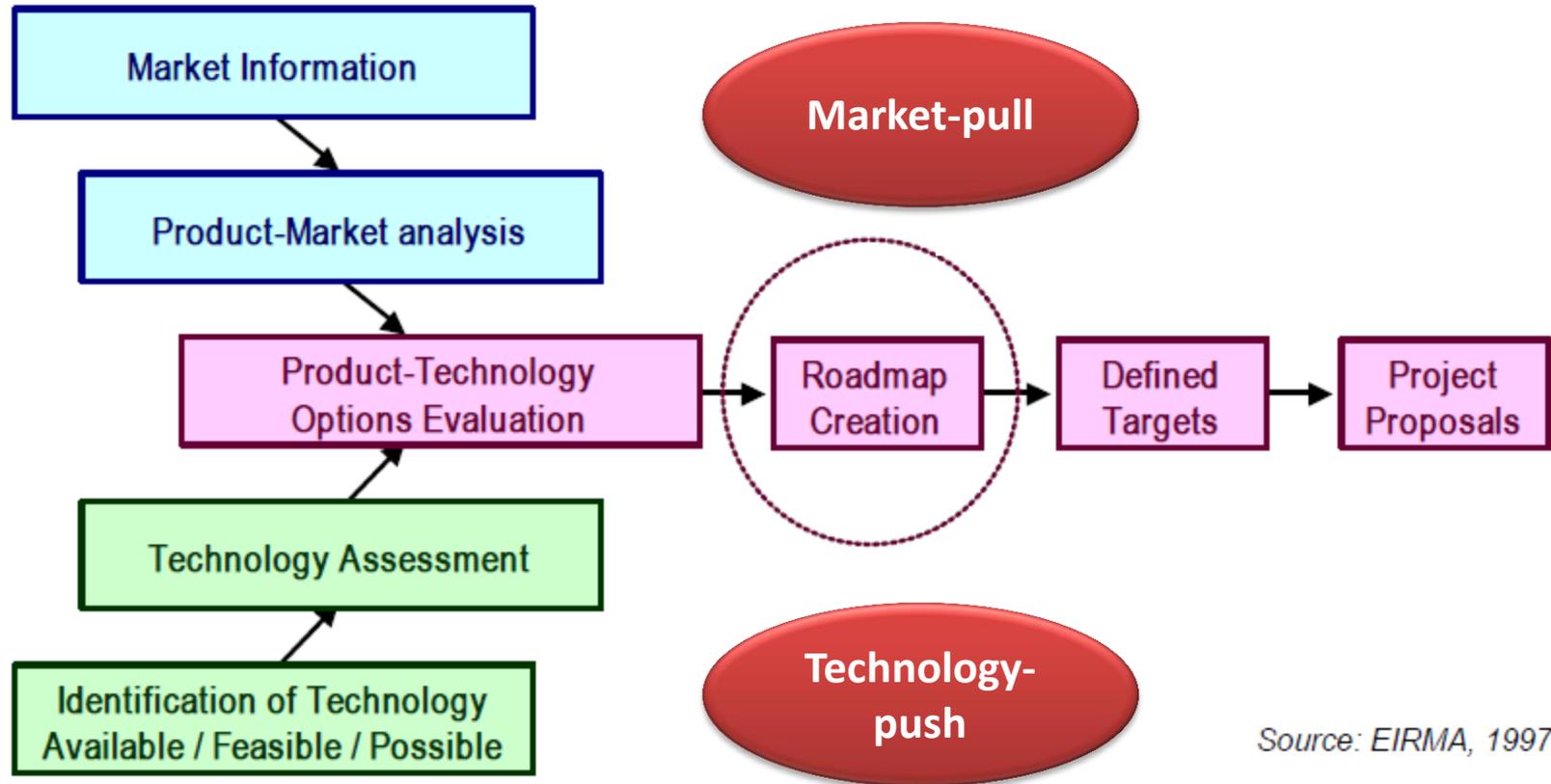
Technology-push

Source: EIRMA, 1997

Technology roadmapping in SONNETS

WP2 – Societal and Public sector needs

| Analysis of emerging technologies | Identification of gaps and research needs | Development of the roadmap | **Draft SONNETS Roadmap** |

WP3 – Identification of emerging technologies

Step 1: Analysis of emerging ICT technologies

Technologies
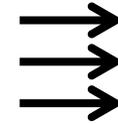
Get a thorough understanding of the identified emerging technologies :
- Technology readiness level
- R&D activities
- actors

Public sector

Input
- **SONNETS WP 3** "Identification of Emerging Technologies"
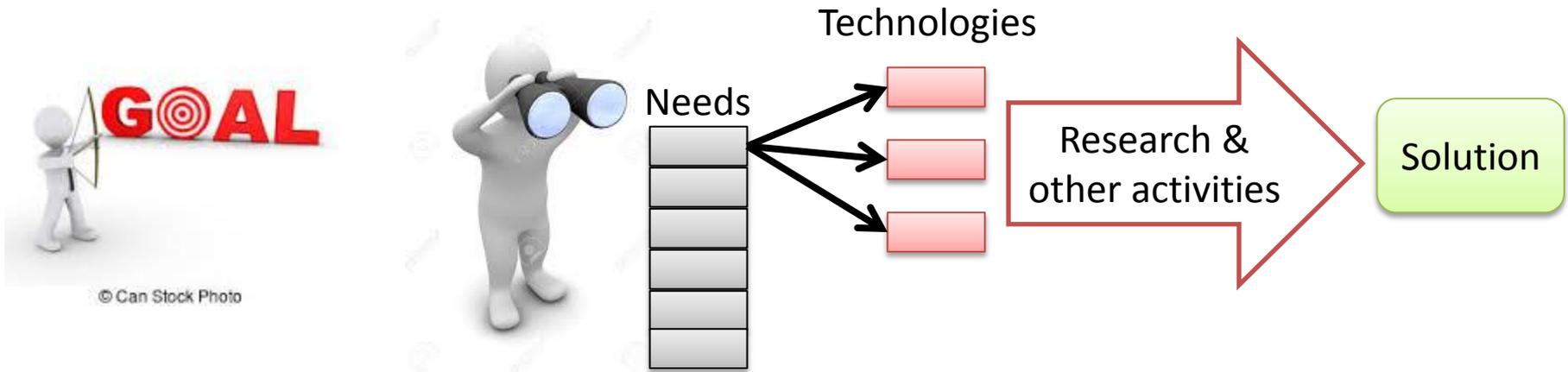- Using results of WP2, WP3 **interviews and workshops**

Method
- **Weighted –Bit Assessment Table (WBAT)**
- Desktop research
- Validation by Experts Committee (WP4 Workshop in May 2017)

The technology is in use in selected public sector organisations, but further modifications/ improvements / eliminations of errors are necessary.

The usage of this technology demands a rather high level of general ICT knowledge.

The technology is likely to encounter problems regarding public acceptance.

The technology is likely to raise legal issues (e.g. freedom infringements, constriction of fundamental rights, data protection issues).

	...pation	Gamification	Mobile Devices	Open Data	Open Government	Personalizatio n	Policy Making 2.0

to modernize the public sector – even if at the moment this technology cannot be related to a

Area 2: Technology research and development

domain (TRL 7 – 9); but a real use case for the public sector has yet to be defined.

Step 2: Gap analysis and identification of research needs

Technologies

Needs

Research & other activities

Solution

Input

- Validated list of needs (**WP2**)
- Validated list of technologies (**WP3**)
- Analysis of technologies (**Step 1**)

Method

- Desktop research
- **Weighted –Bit Assessment Table (WBAT)**
- Validation by Experts Committee (WP4 Workshop in May 2017)

Validation of matching needs with technologies: real-time polling

Artificial Intelligence and bots
Does it help to satisfy societal needs?

A. Inclusive well-being and health

B. Faster and transparent access to PS services

C. Participate access to PS services (political participation)

D. Experiential education and training

E. None of the above
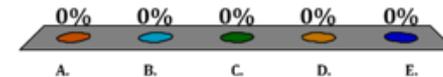
	Technology / trend	Inclusive well-being and health	Faster and transpa-rent access to PS services	Participate access to PS services (political participa-tion)	Experiential education and training	None of the above
1	Artificial Intelligence and bots	68.8%	12.5%	0.0%	6.3%	12.5%
2	Augmented Reality	25.0%	0.0%	0.0%	62.5%	12.5%
3	Big Data and data analytics	66.7%	13.3%	6.7%	0.0%	13.3%
4	Biometrics	18.8%	37.5%	12.5%	0.0%	31.3%
5	Blockchain	6.7%	40.0%	13.3%	6.7%	33.3%
6	Cloud Computing	25.0%	43.8%	0.0%	0.0%	31.3%

Validation of necessary activities: Sticky dot method

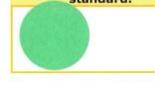SONNETS

Workshop Cologne – May 2017

API Economy

Technological R&D needed?

The technology is at a **development** stage and has neither been used in the public sector nor in any other domain	The technology has been successfully tested as a **prototype**; but a real use case for the public sector has yet to be defined.	The technology is ready for the market in another domain, but **adaptions** to the public sector are necessary.

Other challenges?

The technology is likely to raise **ethical issues** (e.g. discrimination of gender, age, minorities).

The technology is likely to raise **legal issues** (e.g. data protection issues).

The technology is likely to raise **societal issues** (e.g. loss of jobs, side-effects of technologisation).

The technology is likely to encounter problems regarding **public acceptance**.

Other activities needed?

Before using this technology a **specific training** is needed.	For the implementation of this technology an advanced or interoperable **ICT infrastructure** is needed.	The usage of this technology might raise **cyber security** issues.
The implementation or maintenance of this technology is rather **costly**.	The successful usage of this technology is only possible if the relevant stakeholders agree on a common **standard**.	The technology has to be explained and **promoted** among business stakeholders or citizens.
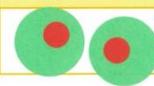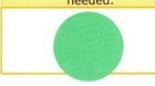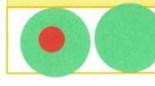
- Sticking a big green (or blue) dot means: "Yes"
- Sticking a red dot means: "No" or "disagreement"
- Sticking no dot at all means: The participants do not agree with the statement.

Step 3: Roadmap development

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Technologies

To-do:
- Technological R&D
- Socialeconomic R&D
- Laws, regulations & standards
- Training
- …

Solution

Needs

Roadmap

Input

- Analysis of technologies (Step 1)
- Identified research needs (Step 2)

Method

- Desktop research
- Workshop in May 2017 with external experts

Content of roadmaps

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Existing solutions	Main R&D actors	Current research	Impact assessment	Potential use case
	Specific training	Advanced ICT infrastructure	Change of processes	Promotion
Technological challenges	Cyber Security issues	Modified legislative framework	Common standard	Economical solution
	Ethical issues	Societal issues	Health issues	Public acceptance

Example of specific findings of SONNETS: e-participation

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Citizen Space

European Citizens' Initiative

Agora Voting

Frankfurt fragt mich

Several e-participation Platforms are up and running!

Example of specific findings of SONNETS: e-participation

- The main challenge regarding the use of e-participation is not a technical one
- **Technical challenges:**

    Dealing with fake profiles; reduction of complexity, user-friendliness & user-experience; simple, attractive and easy to use system

- **Other challenges:**

    Digital divide (due to lack of digital skills or literacy or missing digital infrastructure)

Example of specific findings of SONNETS: e-participation

Necessary non-technological activities:

- **Transparency, accountability**: guarantee that the opinions of the citizens will be taken into consideration

- **Personnel resources**: moderator and user-support

- **Promotion/ Information**: encouraging citizens & offline participatory approaches

- **Cyber security issues**: privacy, data protection, confidentiality, prevent manipulation

- **Development of guidelines**: record-keeping, data-security, privacy

- **E-identification**: harmonized rules on EU level

General findings

The emerging ICTs presented by SONNETS are already on a sufficiently advanced technological level to be able to satisfy current societal and public sector needs:

➢ **The bottleneck of innovating the public sector is not technological research and development** - it is the implementation itself: the adaption to the specific necessities of the public sector and the **consideration of the complex process-oriented, socio-economic and ethical issues**.

General recommendation of action

- Many capitals or other big cities already use emerging ICT applications

  but in most EU municipalities and cities these are unknown or at least not in use

- Thus **we would recommend to set up and promote a user-friendly data base of ICT solutions to meet societal and public sector challenges, including information regarding:**

Costs

Necessary personnel

ICT infrastructure & software

Lessons-learnt from pilot cities

Helpdesk

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