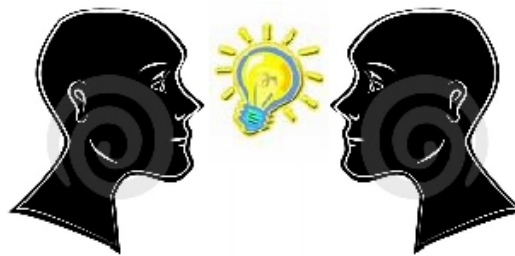# SSPNet
Social Signal Processing Network

Social Signal Processing Network

A.Vinciarelli, M.Pantic, R.Cowie, E.Hendriks,
D.Heylen, M.Mehu, C.Pelachaud, I.Poggi,
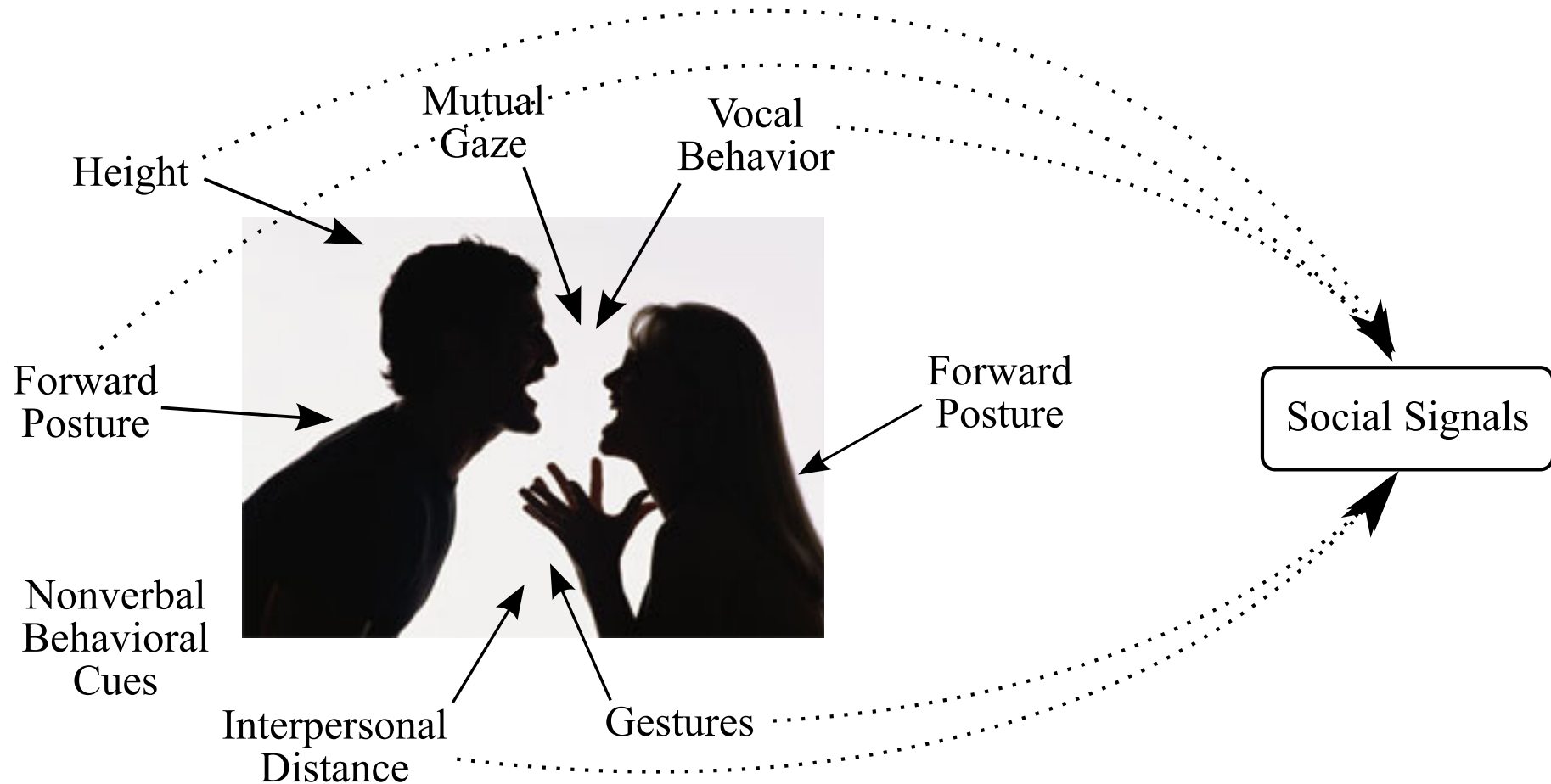S.Renals, M.Schröder, F.Valente

SSPNet NoE

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Outline

- Part I - The SSPNet

    - Goals and research foci

- Part II – Activities and Results

    - "Spreading excellence"

    - Access to SSP resources

    - Development of multidisciplinary expertise

- Part III - Future Plans

    - Conflict and negotiation

    - Social stances

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Part I
The SSPNet

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Social Signal Processing (I)

Height

Mutual Gaze

Vocal Behavior

Forward Posture

Forward Posture

Social Signals

Nonverbal Behavioral Cues

Interpersonal Distance

Gestures

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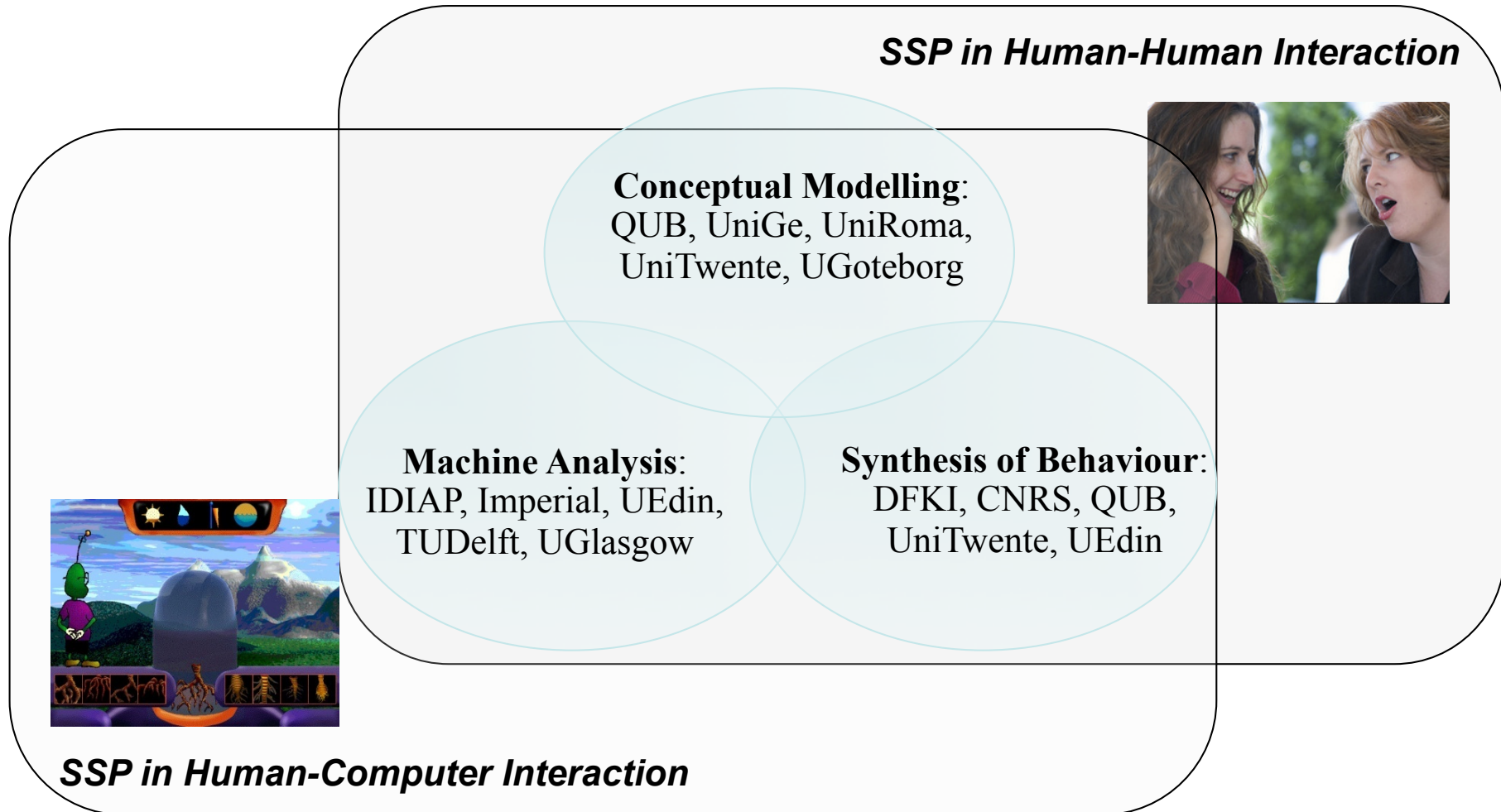
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Social Signal Processing

SSP studies signals that:

- are produced during social interactions;

- that either play a part in the formation and adjustment of relationships and interactions between agents (human and artificial);

- or provide information about the agents;

- and that can be addressed by technologies of signal processing and synthesis.

The "Belfast Declaration" (http://www.sspnet.eu/about)

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SSPNet: Research Foci

SSP in Human-Human Interaction

Conceptual Modelling:
QUB, UniGe, UniRoma,
UniTwente, UGoteborg

Machine Analysis:
IDIAP, Imperial, UEdin,
TUDelft, UGlasgow

Synthesis of Behaviour:
DFKI, CNRS, QUB,
UniTwente, UEdin

SSP in Human-Computer Interaction

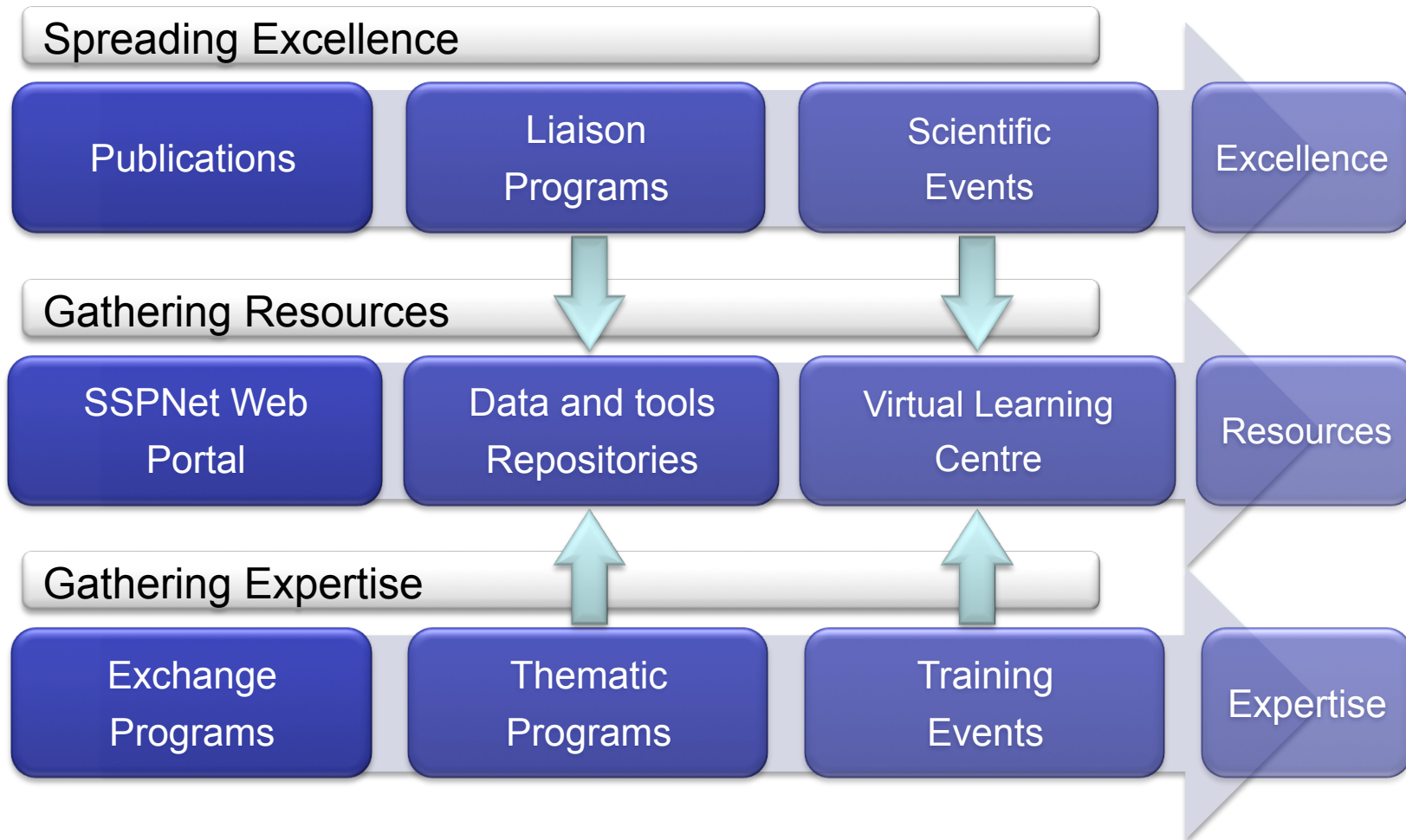# Networks of Excellence: the Goals

The SSPNet is a Network of Excellence, its goal is to "*strengthen scientific and technological excellence on a particular research topic through the durable integration of the research capacities of the participants*"

1. "[spreading] *excellence* beyond the boundaries of its partnership"
2. "gathering the critical mass of *resources*"
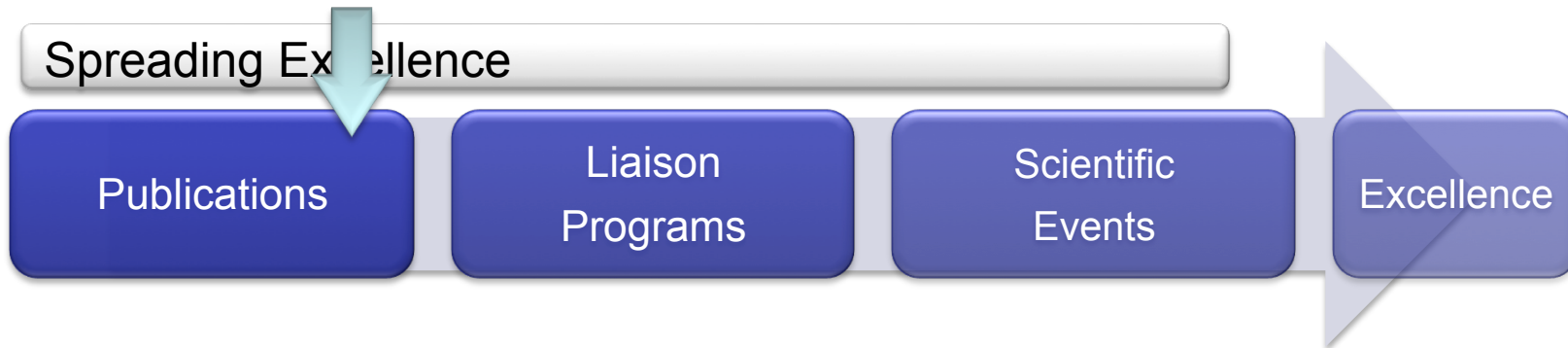3. "gathering the *expertise* needed to provide European leadership"

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Part II
Activities and Results

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Synopsis of Goals and Activities

Spreading Excellence

| Publications | Liaison Programs | Scientific Events | Excellence |

Gathering Resources

| SSPNet Web Portal | Data and tools Repositories | Virtual Learning Centre | Resources |

Gathering Expertise

| Exchange Programs | Thematic Programs | Training Events | Expertise |

Part II.1
Spreading Excellence

Publications

Spreading Excellence

| Publications | Liaison Programs | Scientific Events | Excellence |

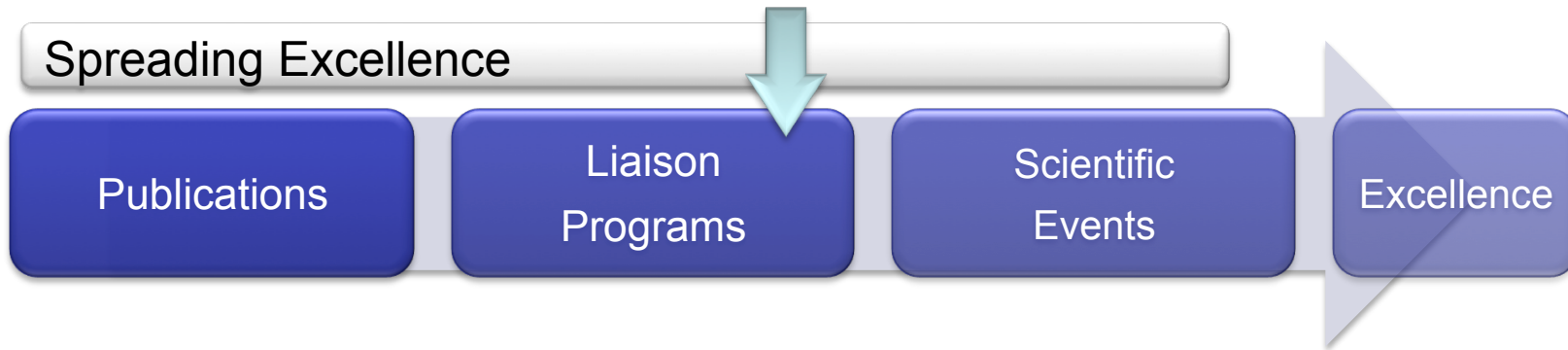|	**Journal**	**Conference**	**Chapter**	**Book (ed.)**
Total	13	52	6	1
Collaborative	5	20	2	1

- The counts include only publications that explicitly acknowledges SSPNet funding
- The fraction of collaborative publications is 39%

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Ongoing Initiatives

Special Issue on "*Social Signals: From Theory to Application*", Cognitive Processing (I.Poggi, F.D'Errico and A.Vinciarelli, eds.)

Special Issue on "*Conceptual frameworks for Multimodal Social Signal Processing*", Journal on Multimodal User Interfaces, (P.Brunet, R.Cowie, D.Heylen, A.Nijholt and M.Schröder, eds.)

Liaison Programs

Spreading Excellence

Publications | Liaison Programs | Scientific Events | Excellence

- Partnership with 8 National and International Programs (IM2, eNTERFACE, NSF RDECOM, Swiss Centre for Affective Sciences, Air Force Office or Scientific Research, TEKES, COST2102).
- 3 extra funded projects (total budget 415 kEuros)
- 4 scientific events

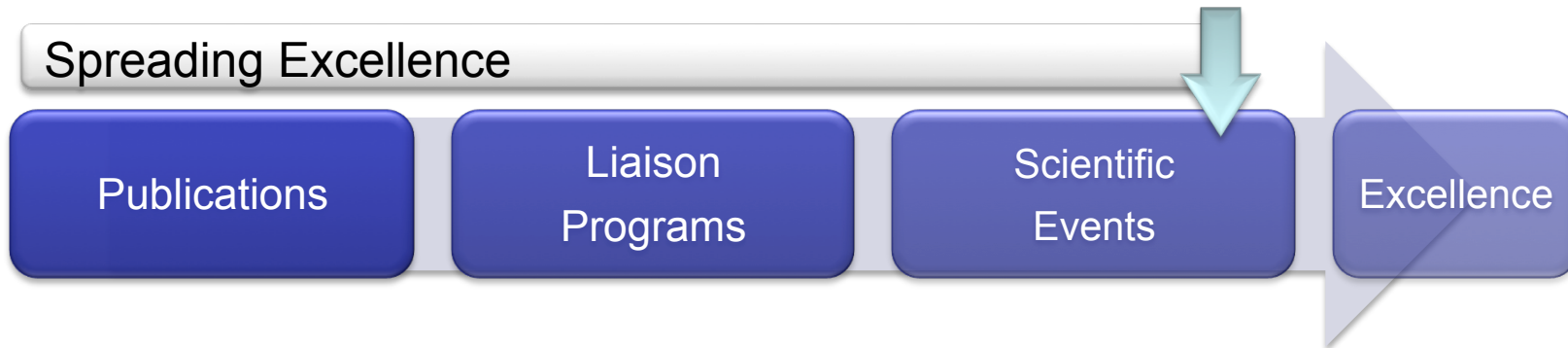Social Signal Processing Network

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Targeted Collaborations

Training: Several SSPNet researchers involved in eNTERFACE with PhD students and young researchers active in SSP relevant communities.

Research: SSPNet Coordinators invited at the Workshop on Predictive Models of Human Communication Dynamics (funded by NSF and US DoD).

Industry: University of Glasgow and Nokia collaborate towards analysis and transmission of social signals via cellular phones (funded by Finnish Agency for Technology and Innovation).
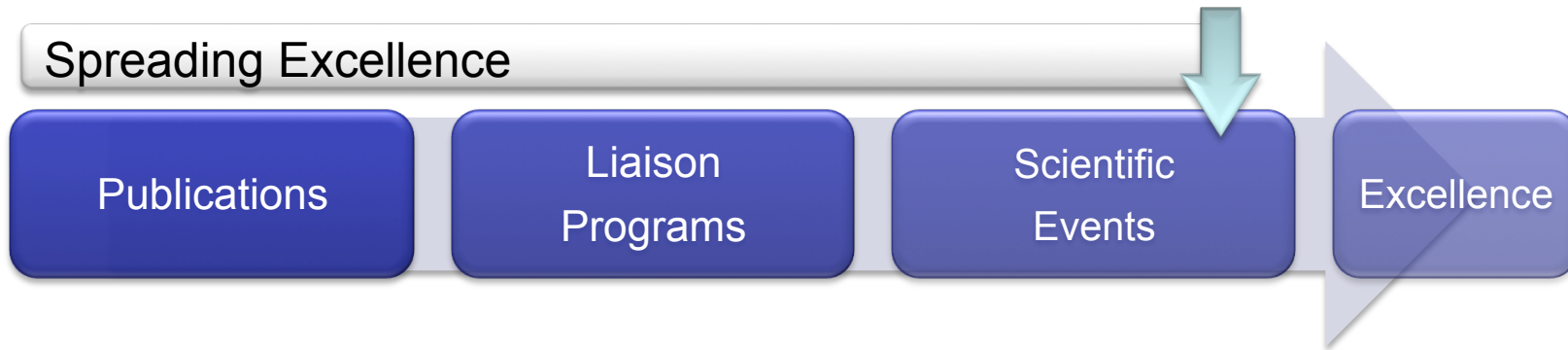
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Interaction

	2009	2010	Total
Events	3	10	13
Participants	100	500	600

The scientific events ensure visibility to high quality works produced both inside and outside the SSPNet
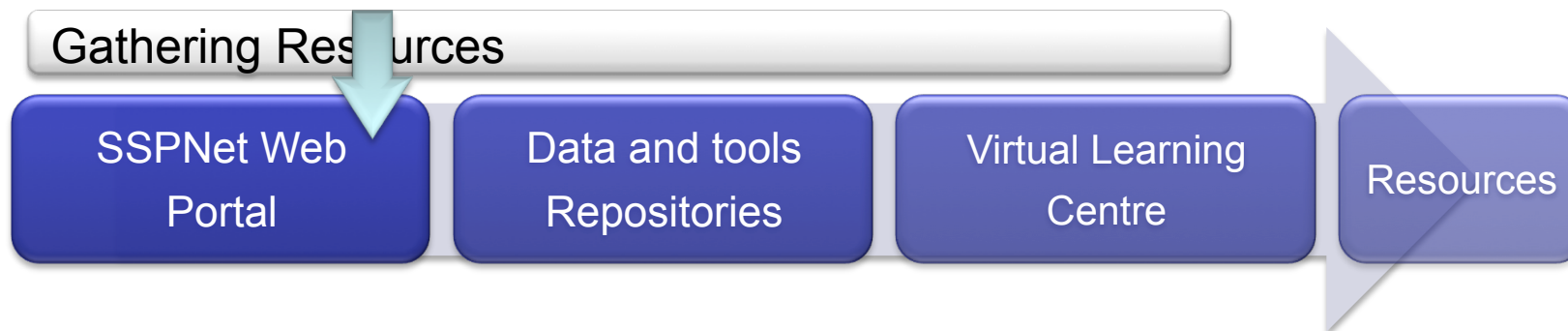
Ongoing Initiatives

Spreading Excellence

Publications | Liaison Programs | Scientific Events | Excellence

	Completed	Planned	Total
Events	4	4	8

- Third ACM International Workshop on SSP (November 2011)
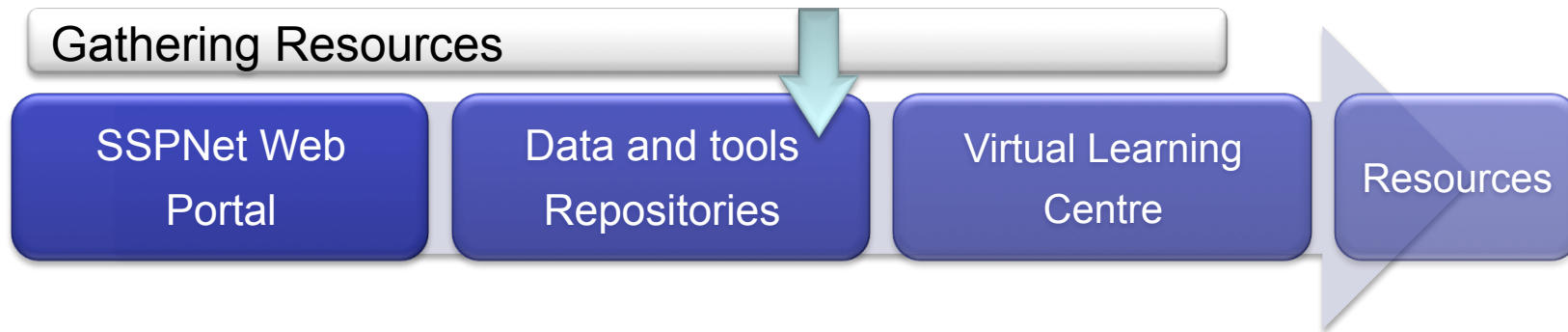- Third IEEE Conference on Social Computing (October 2011)

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Part II.2
Gathering Resources

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SSPNet Web Portal

Gathering Resources			
SSPNet Web Portal	Data and tools Repositories	Virtual Learning Centre	Resources

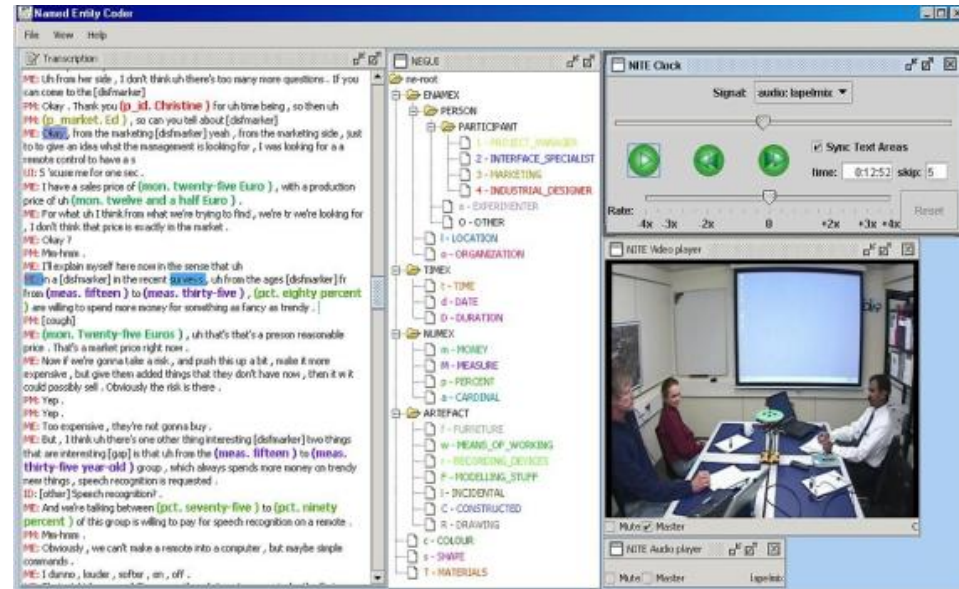|	Aug. 2009 to Apr. 2010	May 2010 to Jan. 2011
Visits	6,079 (28%)	21,861 (11%)
Visitors	3,071	10,614
Pageviews	22,928	62,597

Featured in the "*Best of Web Column*" of the IEEE Signal Processing Magazine (July 2010)

Data and Tools Repositories

Gathering Resources

| SSPNet Web Portal | Data and tools Repositories | Virtual Learning Centre | Resources |

- The Data Repository: 15 corpora including data, annotations and experimental setup, roughly 258 hours of material.

- The Tool Repository: collection of 16 software packages and tools (8 developed during the first two years of the SSPNet)
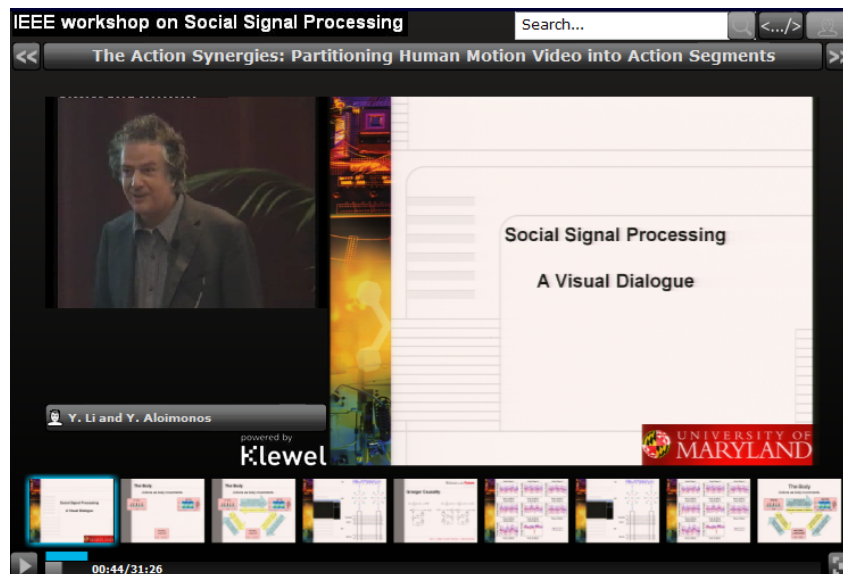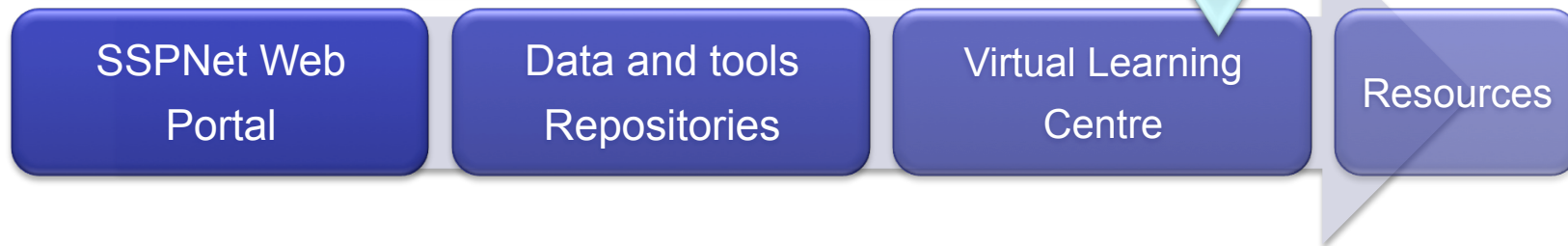
A Mix of New and Established Resources

- Established (AMI meeting corpus) and new (Canal9) benchmarks cover a wide range of social phenomena.
- General (Nite XML) and SSP oriented tools (facial point tracker) cower a wide range of experimental needs.

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The Virtual Learning Centre

Gathering Resources

SSPNet Web Portal — **Data and tools Repositories** — **Virtual Learning Centre** — **Resources**
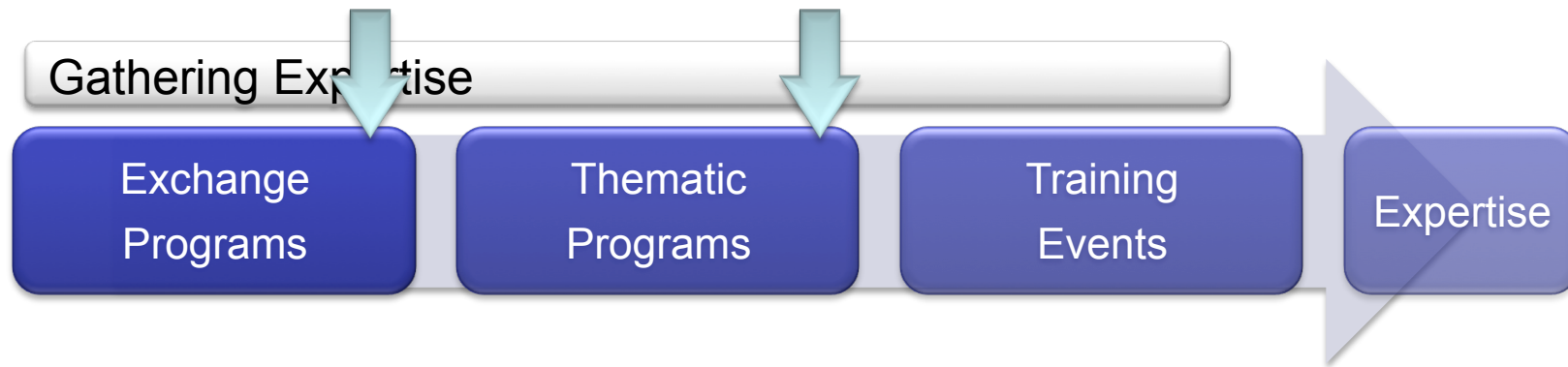

- 132 Presentation Recordings fully browsable and searchable

- 5416 views in 18 months (41 per presentation), most of the material posted in the last six months

Part II.3
Gathering Expertise

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Gathering Expertise in the Project

Fostering the Virtual Centre of Excellence through collaborative activities and training.

- Use of the same data to foster integration
- Focus on the same problem to foster collaboration
- Tools and data annotations for the portal repositories.
- Progress in modelling, analysis and synthesis of agreement (disagreement), politeness, social roles.

Political Debates

Psychological aspects of political debates:
- Social signals in political debates
- Canal9 and its relevance to SSP

Analysis of social interactions in debates:
- Automatic detection of disagreement
- Extraction of nonverbal behavioural cues

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Politeness

Polite Smiles

Embarrassed Smiles

Towards a framework for describing social signals:
- Application to politeness
- Developing a mark-up language for SSP

Politeness in a Conversational Agent:
- Identifying social factors in floor management
- Speech social signals: voice quality and prosody
- Modelling nonverbal cues: head, eye-blinks, smiles

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Group Interactions
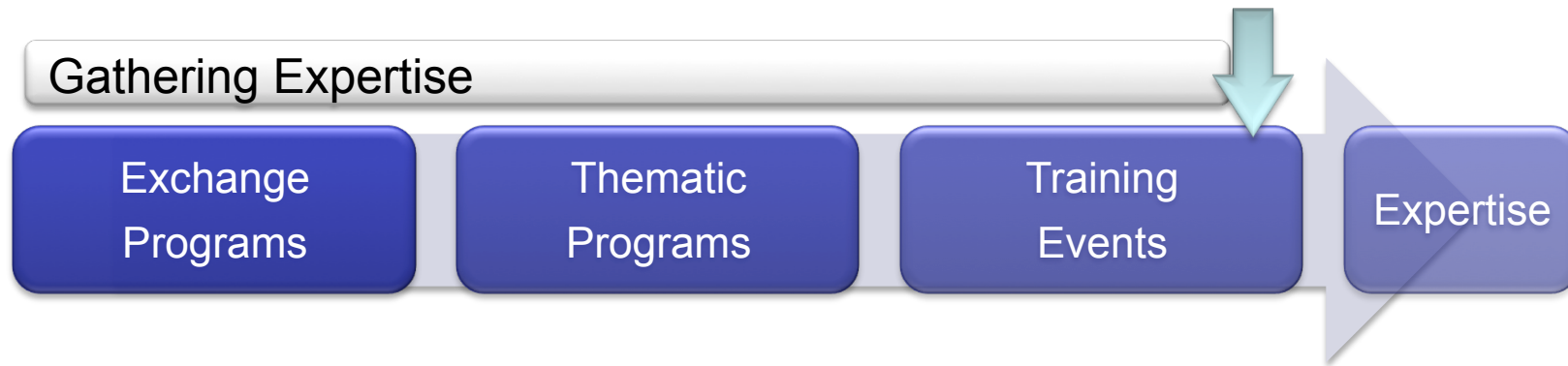

Towards automatic group interaction understanding:
- Recognition of roles
- Analysis of subjectivity and agreement

Towards automatic group interaction synthesis:
- Prosody and floor in meetings
- From meetings to conversational agents

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Gathering Expertise Outside the Project

Gathering Expertise

Exchange Programs | Thematic Programs | Training Events | Expertise

Year	2009	2010
Training Events	2	3
Participants	50	100

SSPNet researchers organize training events and are often invited as teachers in summer schools organized by other research initiatives

Part III
Future Plans

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Conflict and Negotiation: Objectives

- To investigate the social signals / behavioral cues involved in the evolution of conflicts towards escalation or resolution through a peaceful negotiation

- To develop tools for the automatic detection of conflict escalation and potential for negotiation

Conflict and Negotiation: Approach

- Collection and annotation of data

- Conceptual modeling of conflicts, escalation and negotiation

- Psychological experiments on perception of cues/ signals relevant to conflict and negotiation

- Development of tools for the automatic extraction and detection of relevant social signals

- Automatic recognition and prediction of conflict, escalation and negotiation in debates

Social Stances: Objectives

- **Definition**
  - Taking up a position with respect to the form or the content of one's utterances
- **Goals**
  - To establish empirical and conceptual descriptions of key social dispositional stances
  - To establish implementable descriptions for synthesis

Social Stances: Approach

- Literature review

- Analysis of stances in specific SSPNet databases

- Specification of a repertoire and of a computational model of agents able to display a variety of stances

- Experimental studies of these agents interacting with users

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Thank You !

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