Cross-boundary Research Collaborations

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Division of Software Engineering

HOSE Lab (Human-fOcused SE)

MIND THE GAP

3 examples:

1. SWELL Research School
2. Industry-Academia Research
3. Nerds and Psychologists

SWELL

MdH, Västerås

ITUniv & CTH,
Göteborg

BTH, Ronneby

LTH, Lund

ITUniv & CTH,
Göteborg

MdH, Västerås

BTH, Ronneby

LTH, Lund

ITUniv & CTH,
Göteborg

Robustness

MdH, Västerås

BTH, Ronneby

LTH, Lund

ITUniv & CTH,
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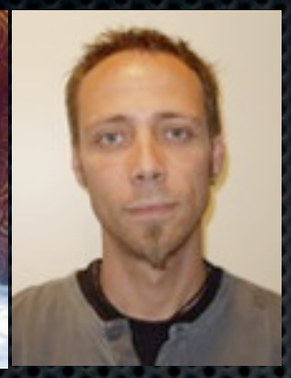
Robustness



Active
Safety

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LTH, Lund

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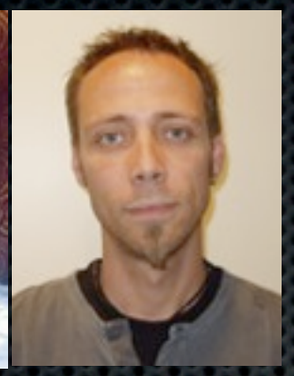
Robustness



Active Safety

Automated Acc.Testing

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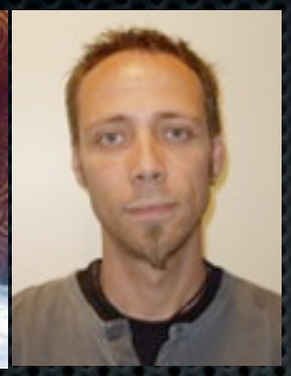
Robustness



Active Safety

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LTH, Lund

Regression

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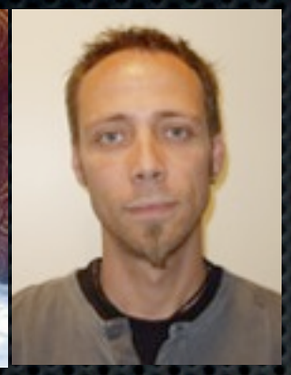
Göteborg

Robustness



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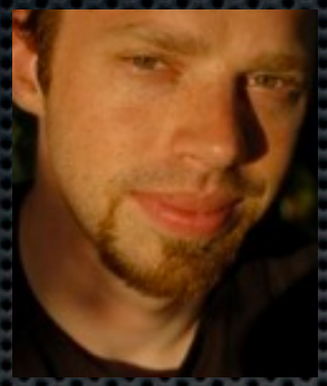

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Acc.Testing

MdH, Västerås

Regression Req<->Test

ABB

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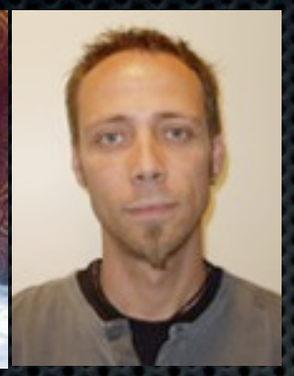
BTH, Ronneby

ITUniv & CTH,
Göteborg

Robustness



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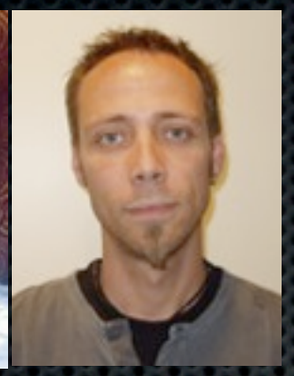
Robustness



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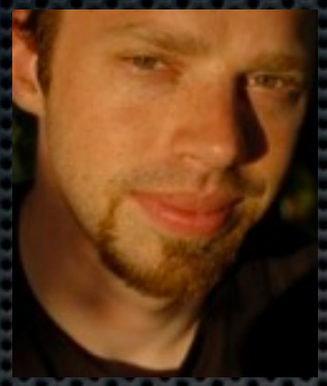

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Acc.Testing

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Component
-based

Regression Req<->Test

ABB

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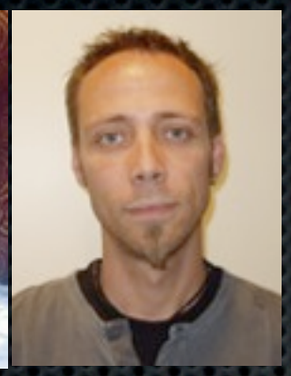
Göteborg

Robustness



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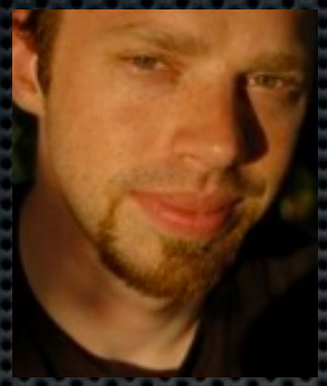

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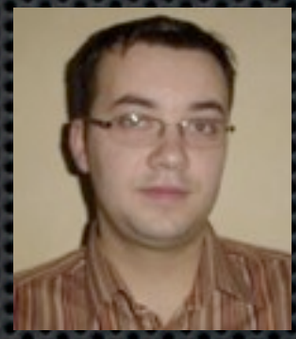


Agile

Regression Req<->Test

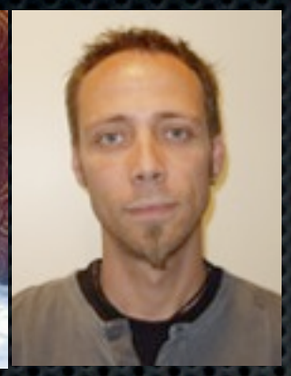
ABB

LTH, Lund

BTH, Ronneby

ITUniv & CTH,
Göteborg

Robustness



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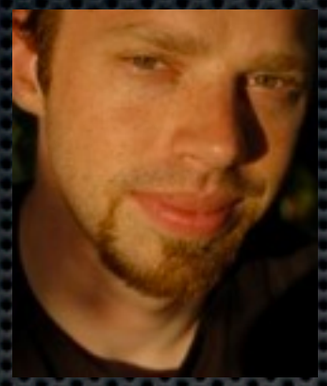

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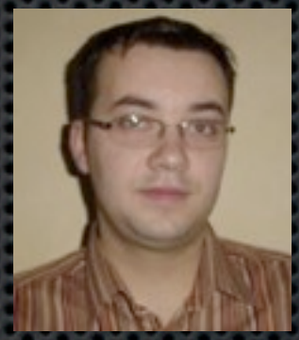

Agile

Security

Regression Req<->Test

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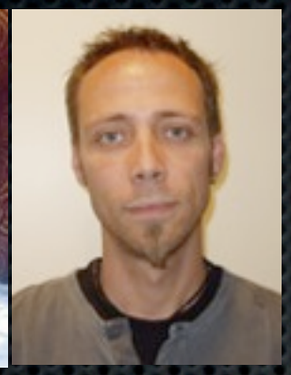
Robustness



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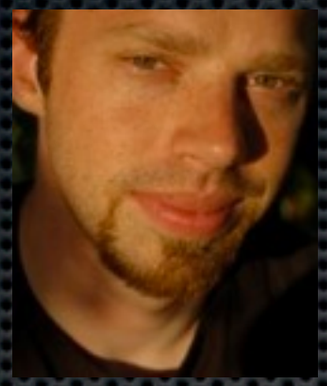

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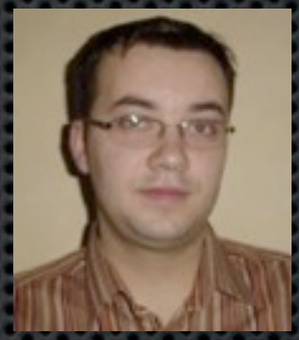

Agile

Regression Req<->Test

Security

Search-
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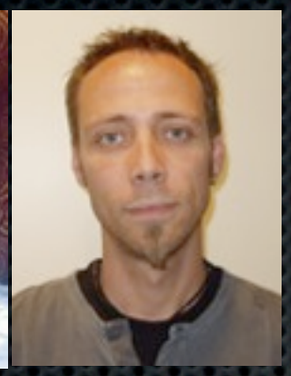
Robustness



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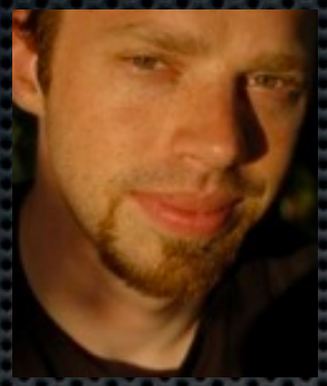
Safety



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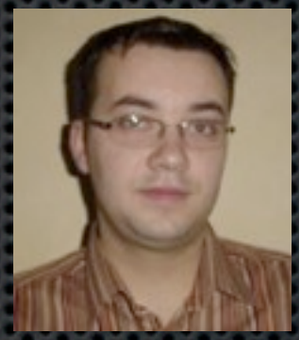


Agile

Regression Req<->Test

LTH, Lund

BTH, Ronneby

Security

Search-
based

Req<->Test

SWELL Scale for Industry Involvement

#	Type	Description
7	Collaboration	Employed by company
6		Office at company
5		Recurrent visits
4		Several visits
3	Exchange	Data collection
2	Visit	(One) Visit & discussions
1		Presentation
0	Contact	Initial

Modifiers: **P** Co-published **A** Co-applicant **?** Planned collab

Collaboration with Industry

#									9	10
7										
6										
5										
4										
3										
2										
1										
0										

Collaboration with Industry

#									9	10
7			ERICSSON							
6		VOLVO				VOLVO				SAAB
5										
4										
3										
2										
1										
0										

Collaboration with Industry

#									9	10
7			ERICSSON							
6		VOLVO				VOLVO				SAAB TECHNOLOGY
5		WirelessCar								
		ERICSSON	SAAB TECHNOLOGY						ABB	
4										
3										
2										
1										
0										

Collaboration with Industry

#									9	10
7			ERICSSON							
6		VOLVO				VOLVO				SAAB TECHNOLOGY
5		WirelessCar			? VOLVO		? ABB			ABB
4		ERICSSON	SAAB TECHNOLOGY		ERICSSON	? SAAB TECHNOLOGY	?	ABB		
3				RUAG ABB				BEKK TEMA		
2										
1										
0										

Collaboration with Industry

#	1	2	3	4	5	6	7	8	9	10
7							A ERICSSON			
6						A VOLVO			A VOLVO	A SAAB
5	A				WirelessCar ERICSSON SAAB				? VOLVO	? ABB
4				A	ERICSSON				? SAAB	?
3				RUAG ABB						A ABB BEKK ? TEMA
2										
1										
0										

Collaboration with Industry

#									9	10
7			A P ERICSSON							
6		A P VOLVO				A P VOLVO				A SAAB TECHNOLOGY
5	A P	WirelessCar ERICSSON	SAAB TECHNOLOGY		? VOLVO		? ABB		A	ABB
4			A	ERICSSON	? SAAB TECHNOLOGY		?		A ABB	
3			RUAG ABB						BEKK ? TEMA	
2										
1										
0										

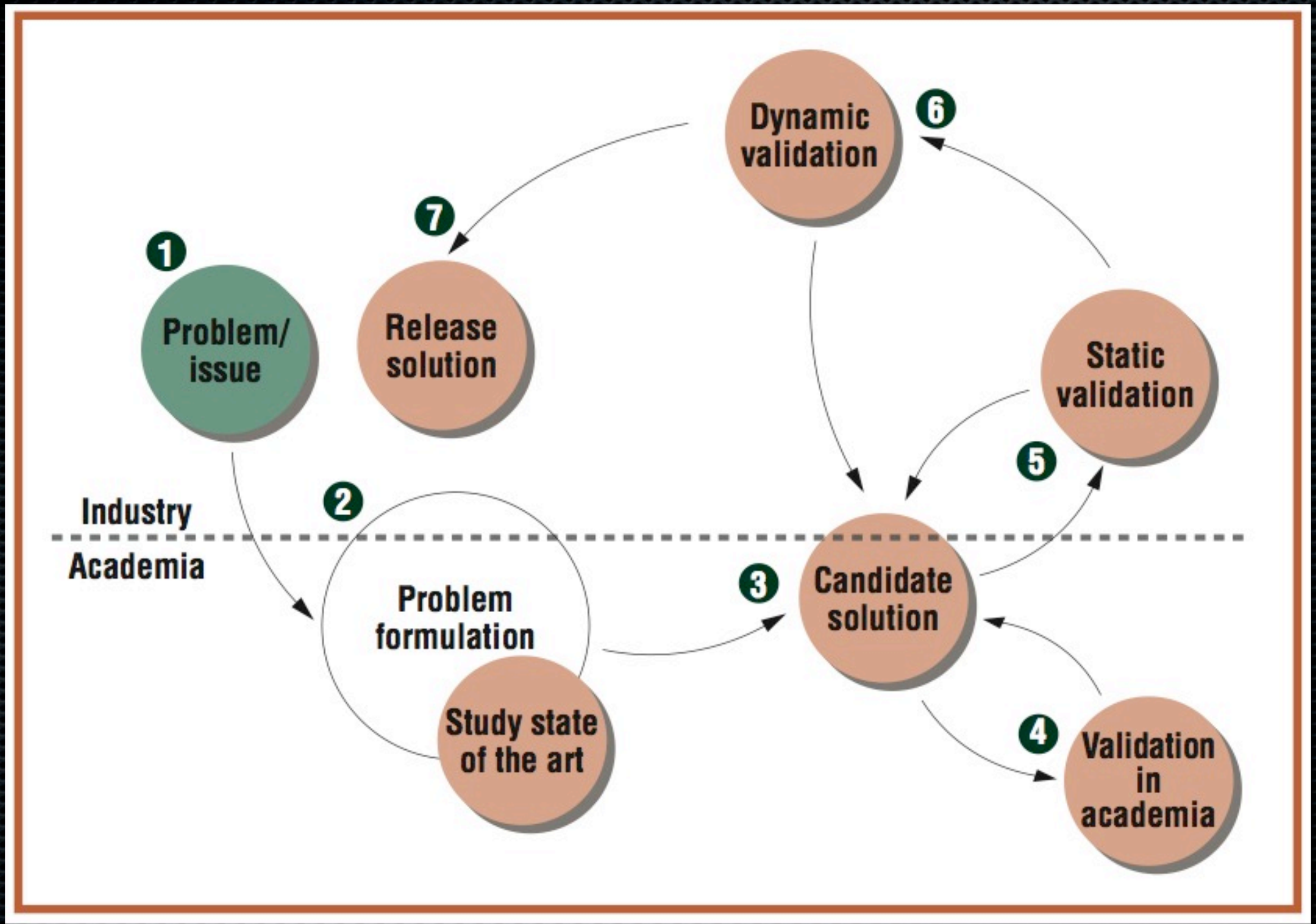
Swell's effects: Academic

- Created lots more contact with industry
  - Companies are more positive than expected and contributes
  - Most PhD students have clear company connection
- A national approach is unique within our area
- Promoted more collaboration among research groups
- Startup phase taken longer than planned
- Lack of flexibility in budget
- Not enough that there are money and ideas - students must want to take part and fit their projects
- Too dependent on few persons - how spread and involve

Effects: Industry

- Very good environment & energy
  - The software research V&V elite in Sweden
  - Many companies interested
- Industry day within courses and as workshop(s)
- Feedback on research plans
- More direct cooperation with PhDs and PhD students
- Communication of research results to companies

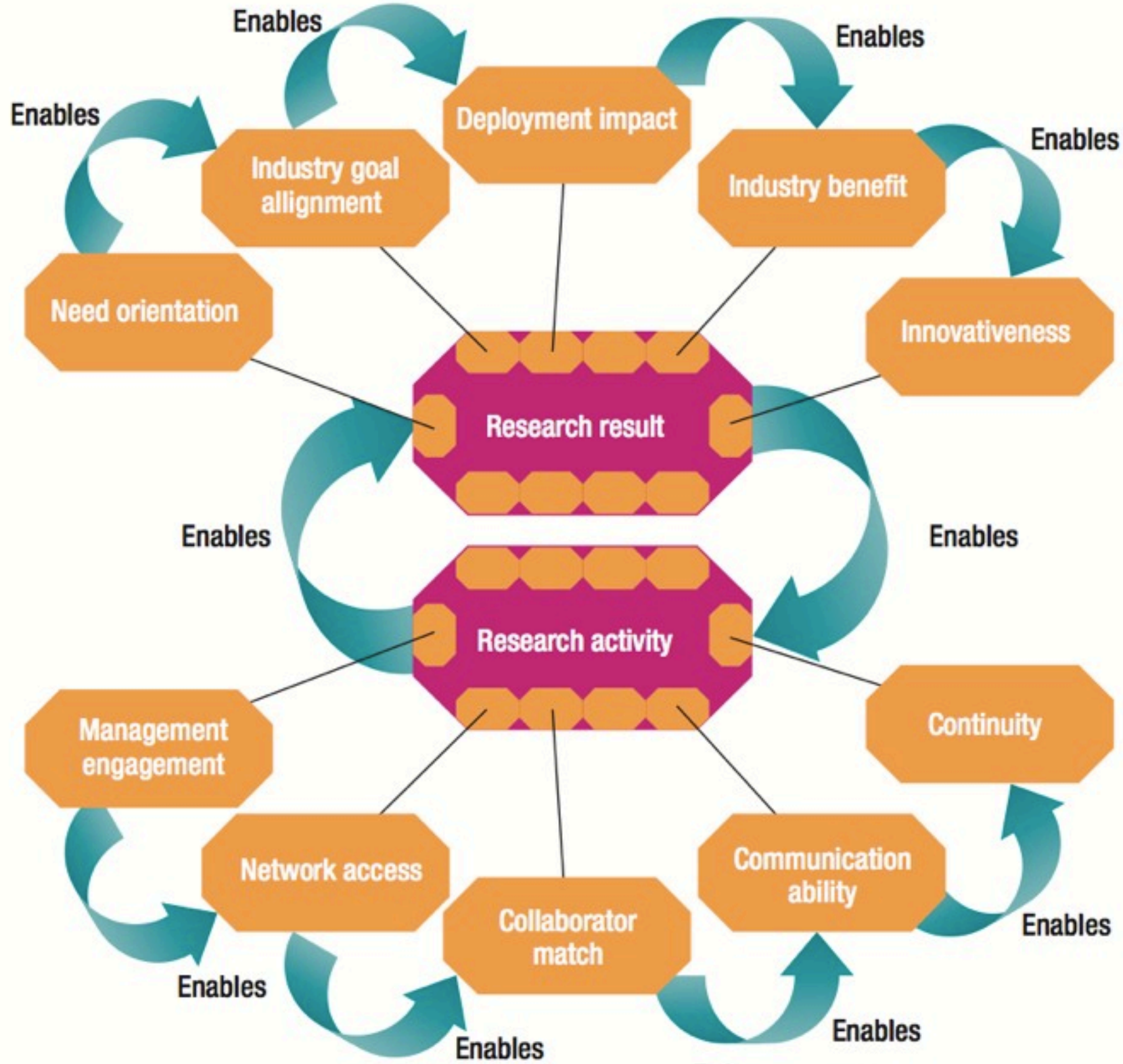
How we often work (or try to work ;))



Success Factors Powering Industry-Academia Collaboration in Software Research

Table 1: Success factor ranking comparison

Success factor	Sweden	Australia
Buy in and support from company management	Overall: 1 Industry: 1	Overall: 1 Industry: 1 Academia: 2
Champion at company	Overall: 2 Industry: 2 Academia: 1	Overall: 2 Industry: 2 Academia: 1
Attitude and social skills of researcher	Overall: 3 Academia: 2	
Short term results and impact on industry		Overall: 3 Industry: 3
Researcher's commitment to contribute to industry needs	Industry: 3	Academia: 3
Champion's network within the company	Academia: 3	
Buy in and support from industry collaborators	Academia: 3	



[Sandberg2010]

FIGURE 2. A collaboration model for collaborative practice research. Successful research projects must attend to both industry needs and management involvement.

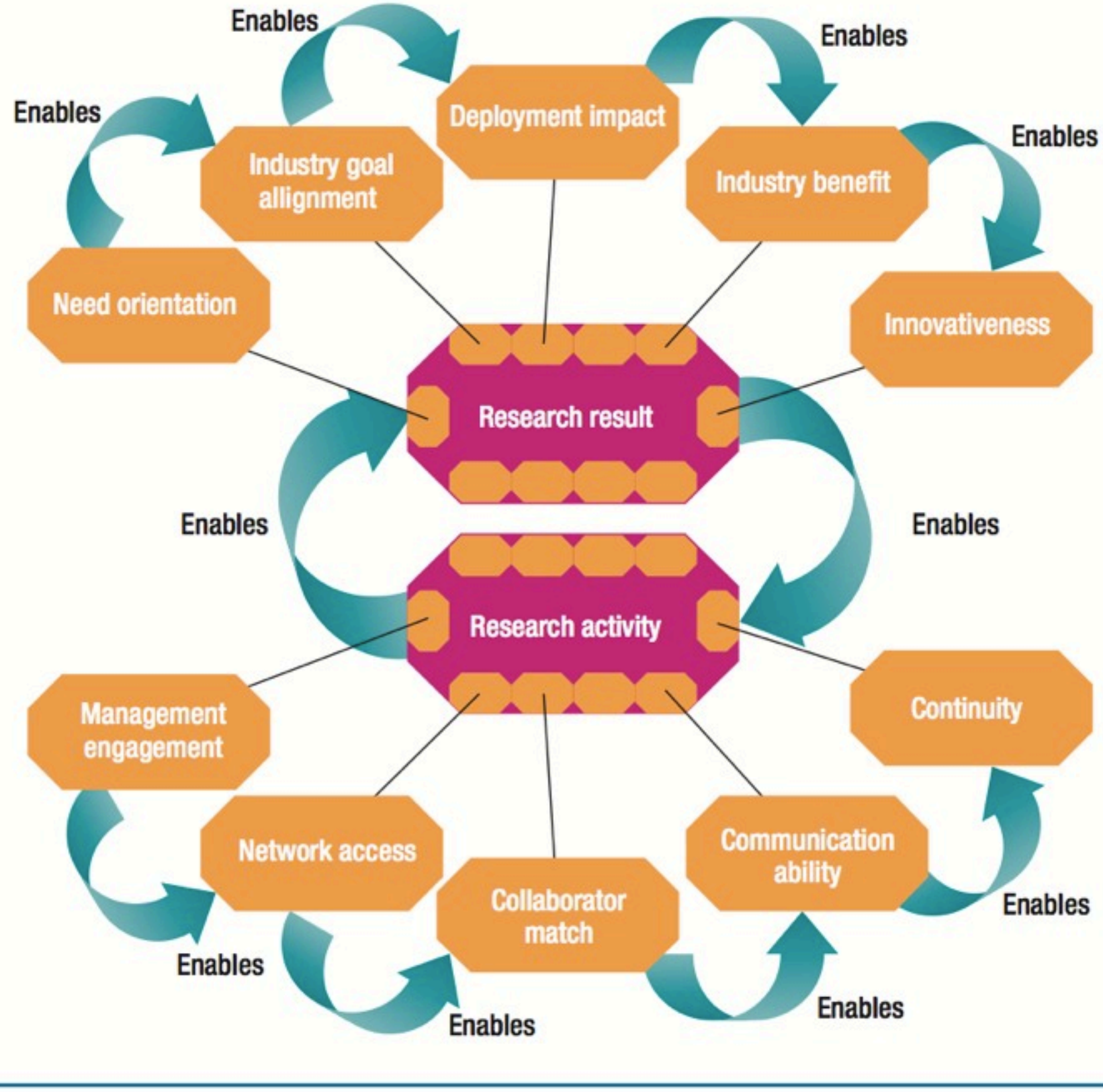


FIGURE 2. A collaboration model for collaborative practice research. Successful research projects must attend to both industry needs and management involvement.

ROBERT TRANBERG
TRANA
JANNE

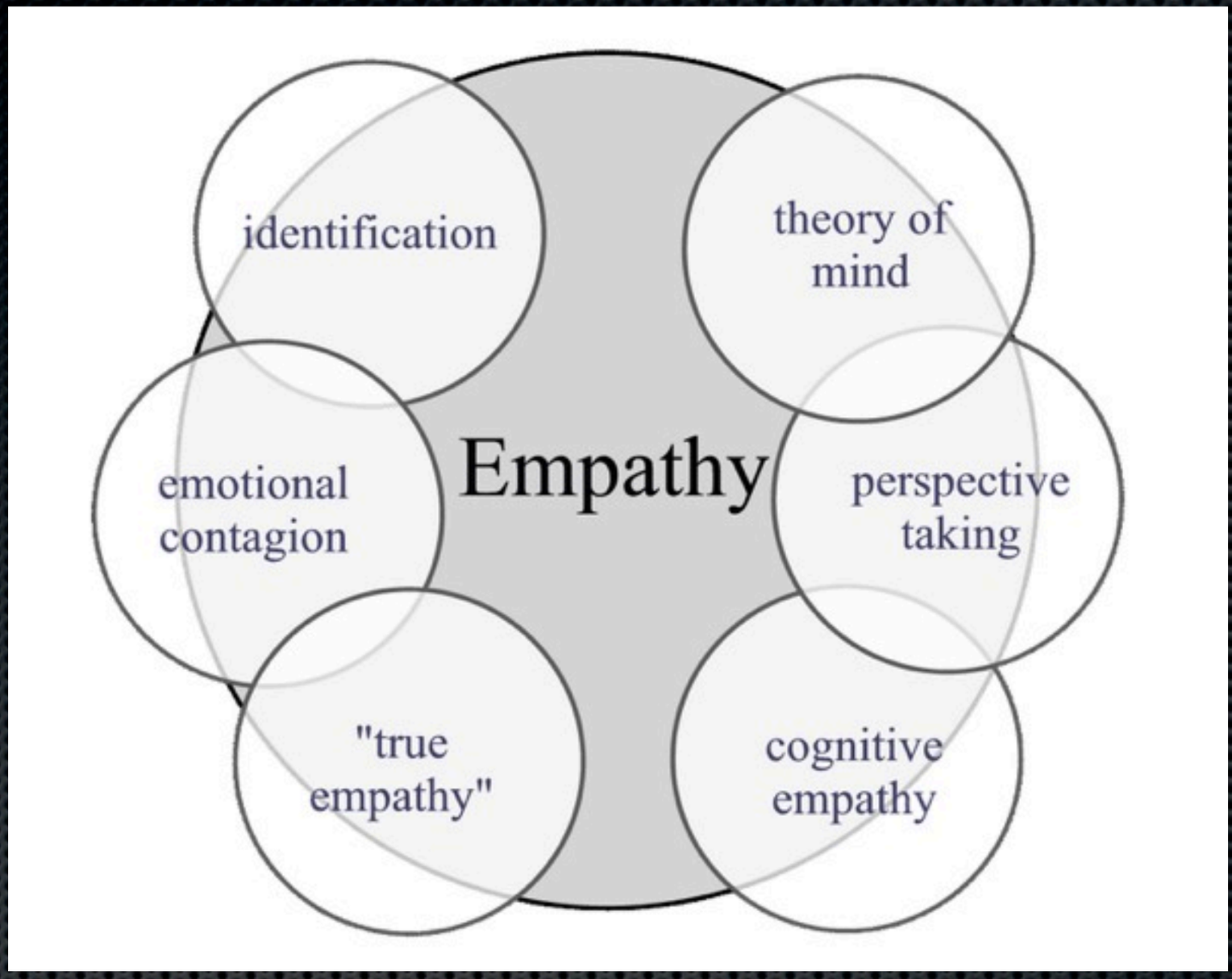
No. 118 April '68

MAD

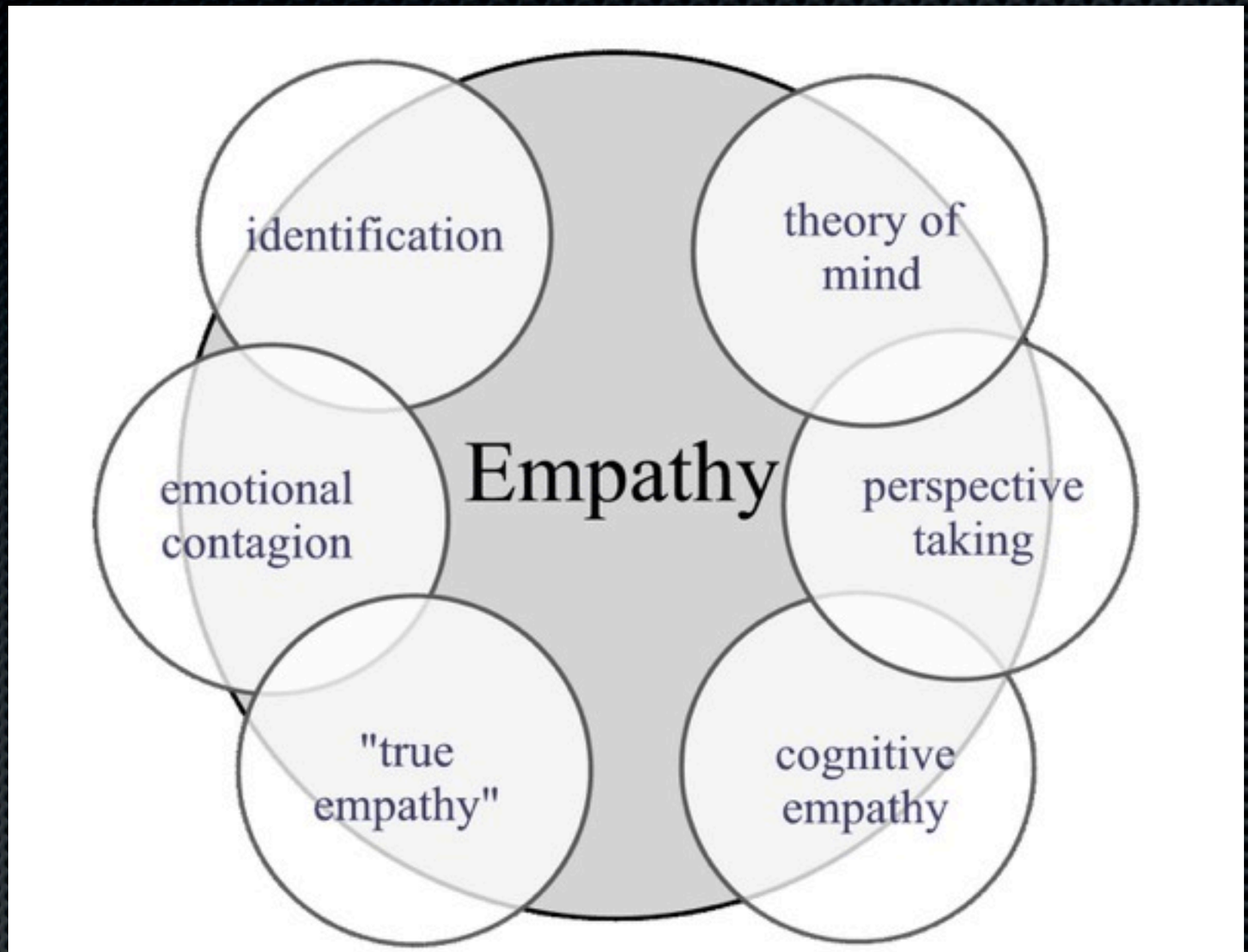
Our Price 30¢ CHEAP

TURN ON TUNE IN DROP DEAD

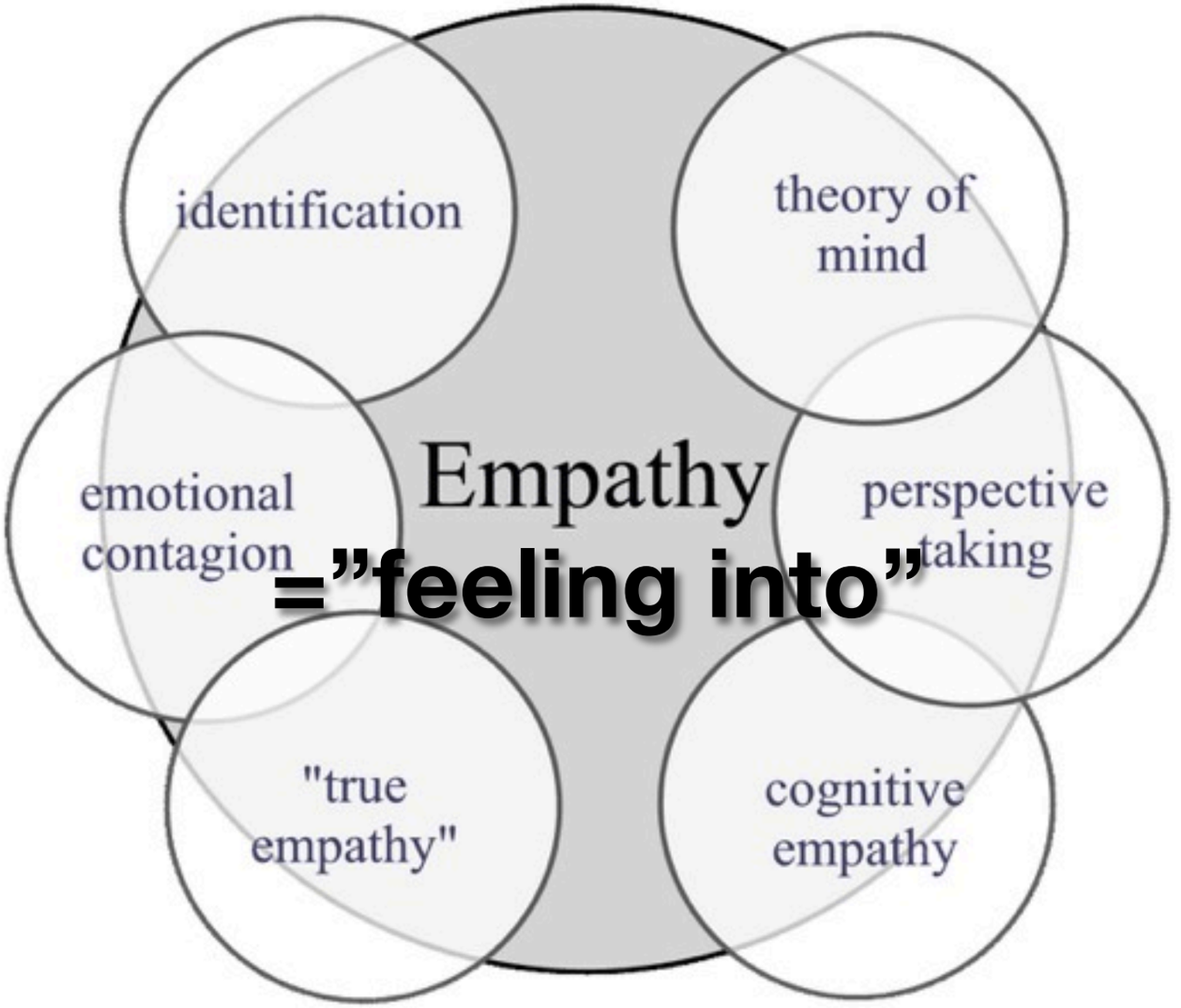
Figure 2: A juvenile chimpanzee comforts a distressed adult.



Preston et al, “Empathy: Its ultimate and proximate bases”, Behavioral and Brain Science, 2002.



"..consider empathy as a broad phenomenon that encompasses identification, emotional contagion, and cognitive empathy. All of these are **processes whereby an individual employs the brain's way of understanding the world to understand the internal states of others**."



=”feeling into”

“..consider empathy as a broad phenomenon that encompasses identification, emotional contagion, and cognitive empathy. All of these are **processes whereby an individual employs the brain's way of understanding the world to understand the internal states of others**.”

Guidelines for crossing boundaries

- **DARE** to step into other person's shoes
  - Care about them. Care about their goals.
  - See their competence. Let go! (Release control. Trust.)
  - Keep interest in multiple disciplines. Read outside yours.
- **CREATE** Personal connection.
  - Eat and drink together. Have fun together.
- **ALLOW** it to take **TIME**
  - Build trust and refine collab in iterations.
  - Takes 1-2 years before success with new collaborator
- Collab must **DELIVER VALUE** to all