OPEN MODELING METHODS

Greater complexity and wicked problems
Integration of social and technical systems
Growing importance of collaboration in interagency and business unit collaboration

Non-functional requirements
Open modeling methods
Identifying open modeling concepts

Research Projects
Improving cognition through different perspectives
Modeling Collaboration
Agile Development Processes

The Need for Open Modeling Methods for Complex Environments

MelCa addresses trends from single independent processes

INCREASING COMPLEXITY

Continual product improvement

NOT complicated
BUT complex (unpredicatable)

IMPACT OF COMPLEXITY

Emergence of new ideas

Importance of process integration

Self organization

Unexpected events

INCREASING NETWORKING

Getting expertise
Getting special products

When one process changes other processes are effected.

More and more wicked problems with non functional requirements

Every wicked problem is **unique**.

Wicked problems **cannot be precisely defined**.
The problem of poverty in Texas is grossly similar
but discretely different from poverty in Nairobi,
so no practical characteristics describe "poverty."

Making a city safe
Improving health
Better access to drinking water
Securing a food supply

It's **hard, maybe impossible, to measure or claim success** with wicked problems.

Solutions to wicked problems **can be only good or bad, not true or false**

There is **no template to follow when tackling a wicked problem**, although history may provide a guide. Teams that approach wicked problems must literally make things up as they go along.

There is always **more than one explanation for a wicked problem**, with the appropriateness of the explanation depending greatly on the individual perspective of the designer.

No mitigation strategy for a wicked problem has a definitive scientific test because humans invented wicked problems and science exists to understand natural phenomena.

Offering a "solution" to a wicked problem **frequently is a "one shot" design**.

Examples

SMART CITIES

Better transportation
Easy access to health care
Flexible education (Connected Campuses)
Public safety
A variety of activities

Building management – monitoring
Waste management
City administration

Internet of Things

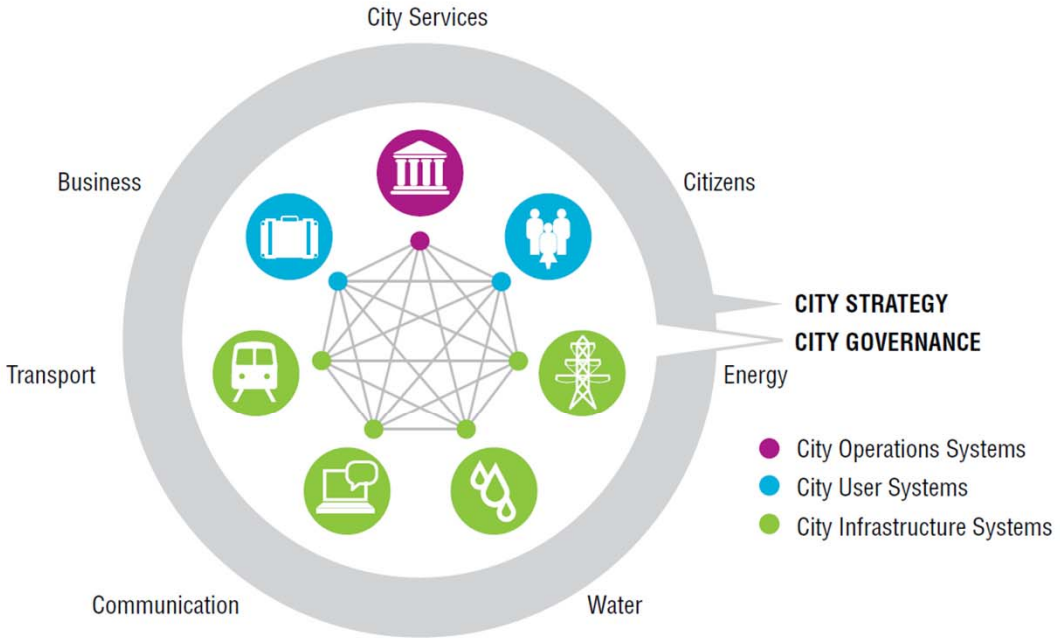
Sensors of activities
Intelligent support
Improving processes through better context awareness

Interagency collaboration

Sharing knowledge
Defining knowlege flows
Improving decision making
Focusing on emerging requirements

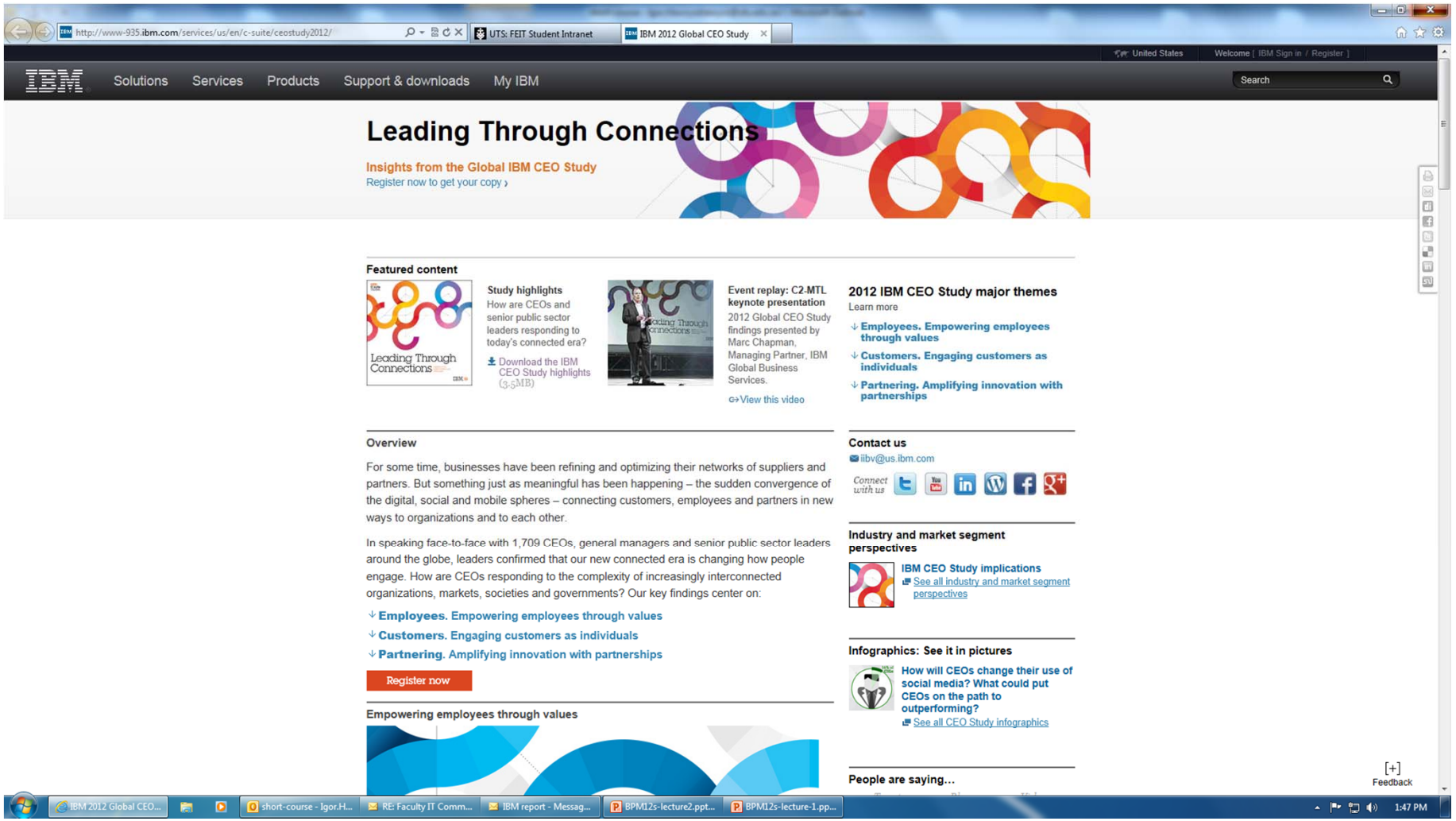
A CITY IS A SYSTEM OF SYSTEMS
http://public.dhe.ibm.com/common/ssi/ecm/en/gbe03227usen/GBE03227USEN.PDF

they have established, cities must look to the systems on which they are basing their aspirations and make them more efficient and effective, i.e., *smarter*.



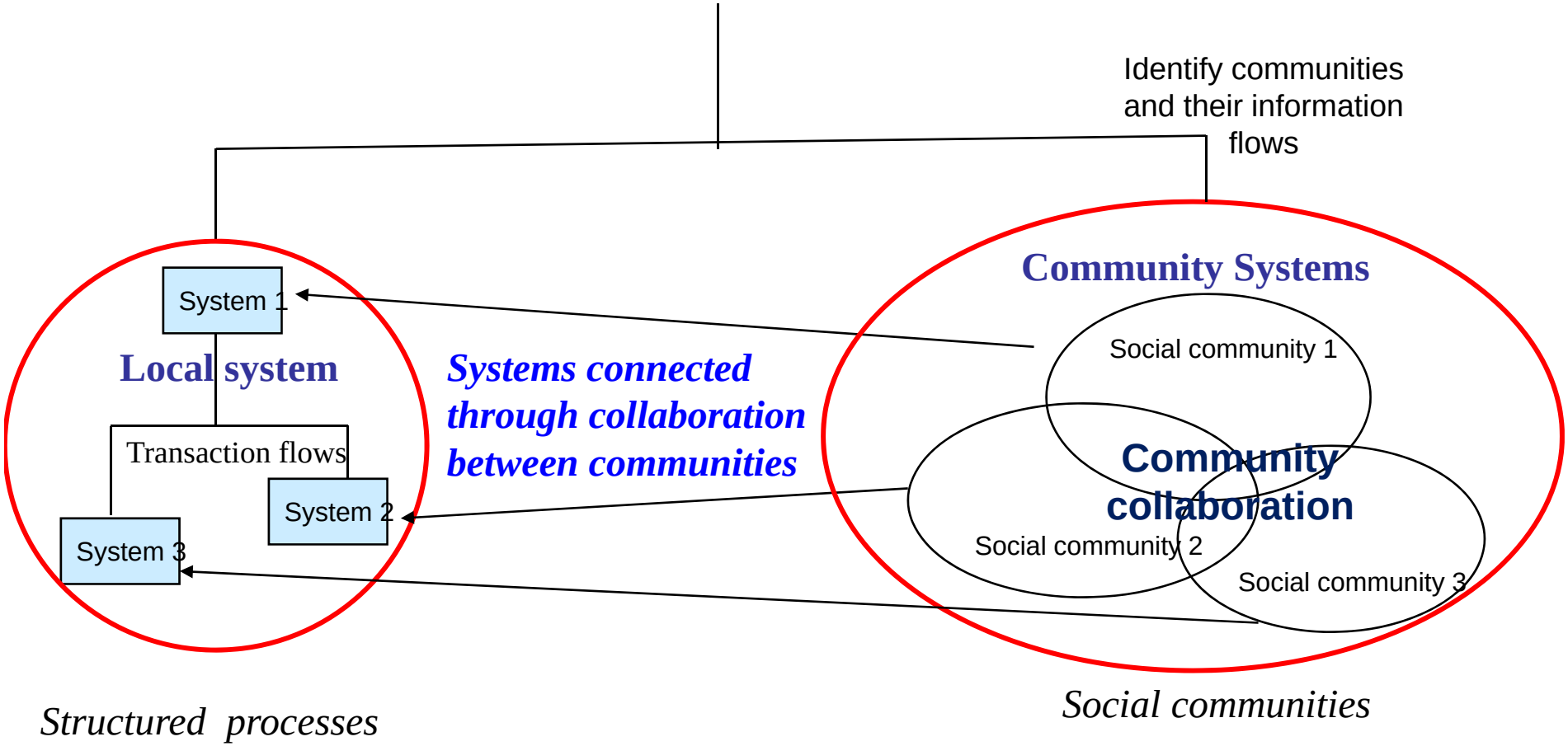
Source: IBM Center for Economic Development analysis.

A more socially oriented enterprise



Social Businesses

Importance of social structures in the system of systems
to include collaboration



Evolution of Design Process

Type 1 – agreement on problem, agreement on solution

Make jeans

Sell at home

Type 2 – agreement on problem, no agreement on solution

Make jeans

Where to sell

Type 3 – no agreement on problem, no agreement on solution

What to make

Where to sell

Decresing precision in requirements

Methodologies to design more complex and adaptive systems

How to design business processes in these environments

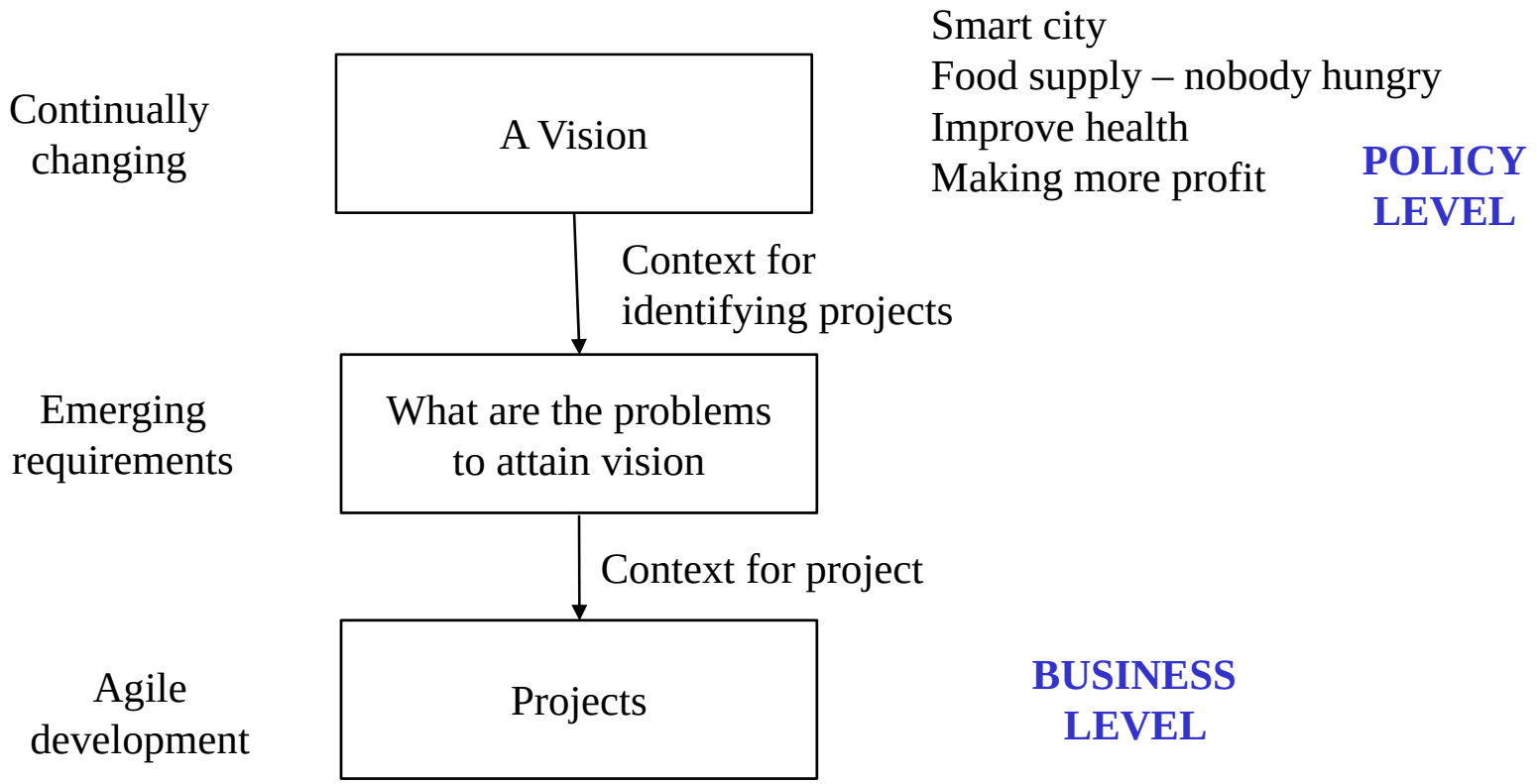
Continuous and incremental development

Need ways to:

Develop a holistic picture – showing all relationships between systems

Be agile and manage change

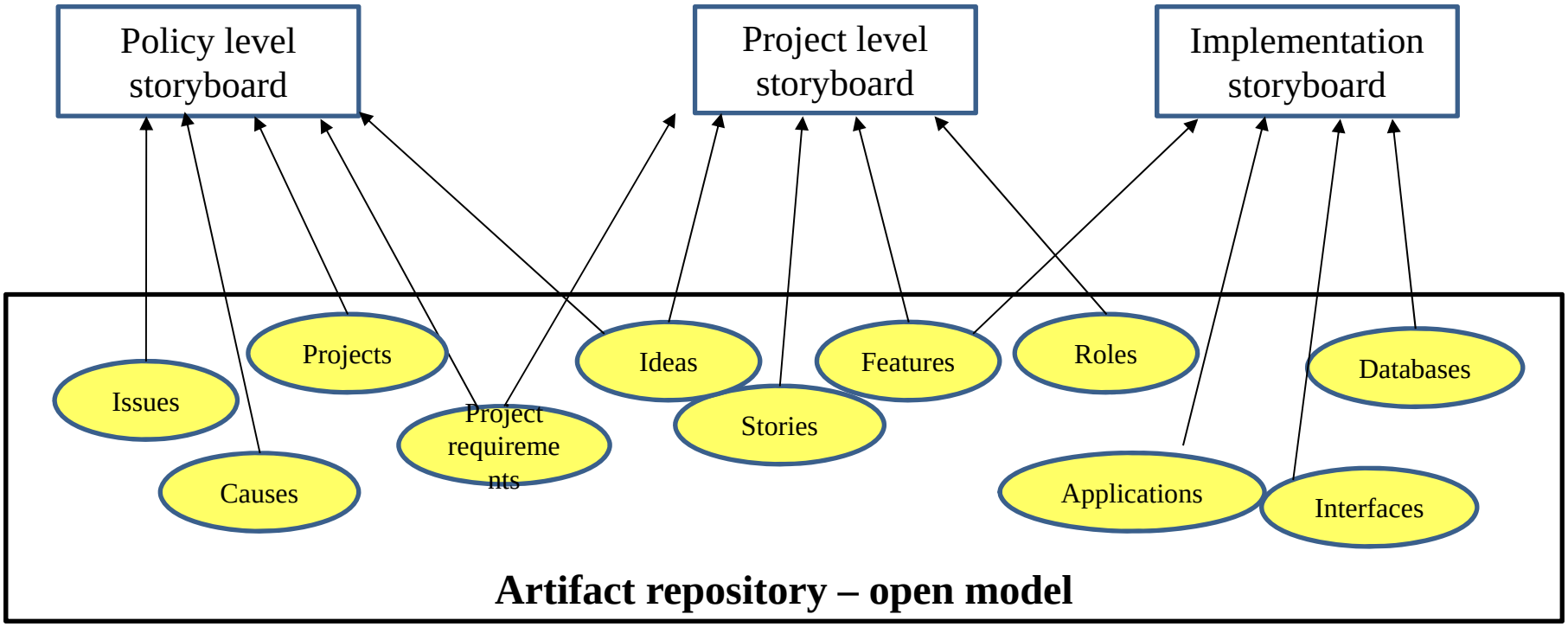
Identifying rather than solving a problem



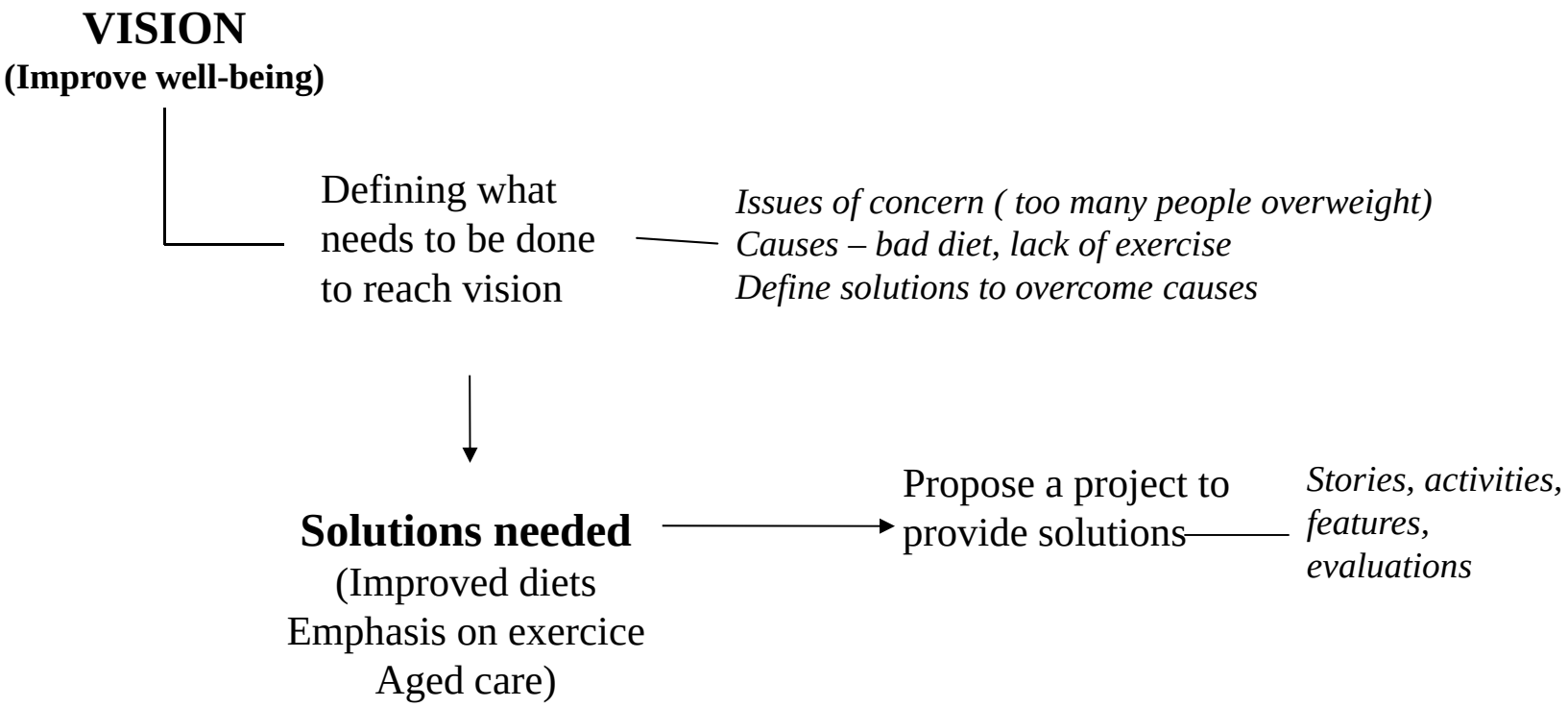
Type 1 – problems and solution agreed on
Type 2 – problem agreed on but solution not clear
Type 3 – there is no agreement on problem or solution

Requirements by Storyboards

Story boards to link different levels



Vision and problem storyboard



Focusing on different perspectives at Project Level

Knowledge flow
Social networking
Process
Technology

Need a language to define the structure and the operations

Integrate social and system structure

Multi disciplinary and holistic

MeLCa
for
Complex Organisation

In multi stakeholder collaboration

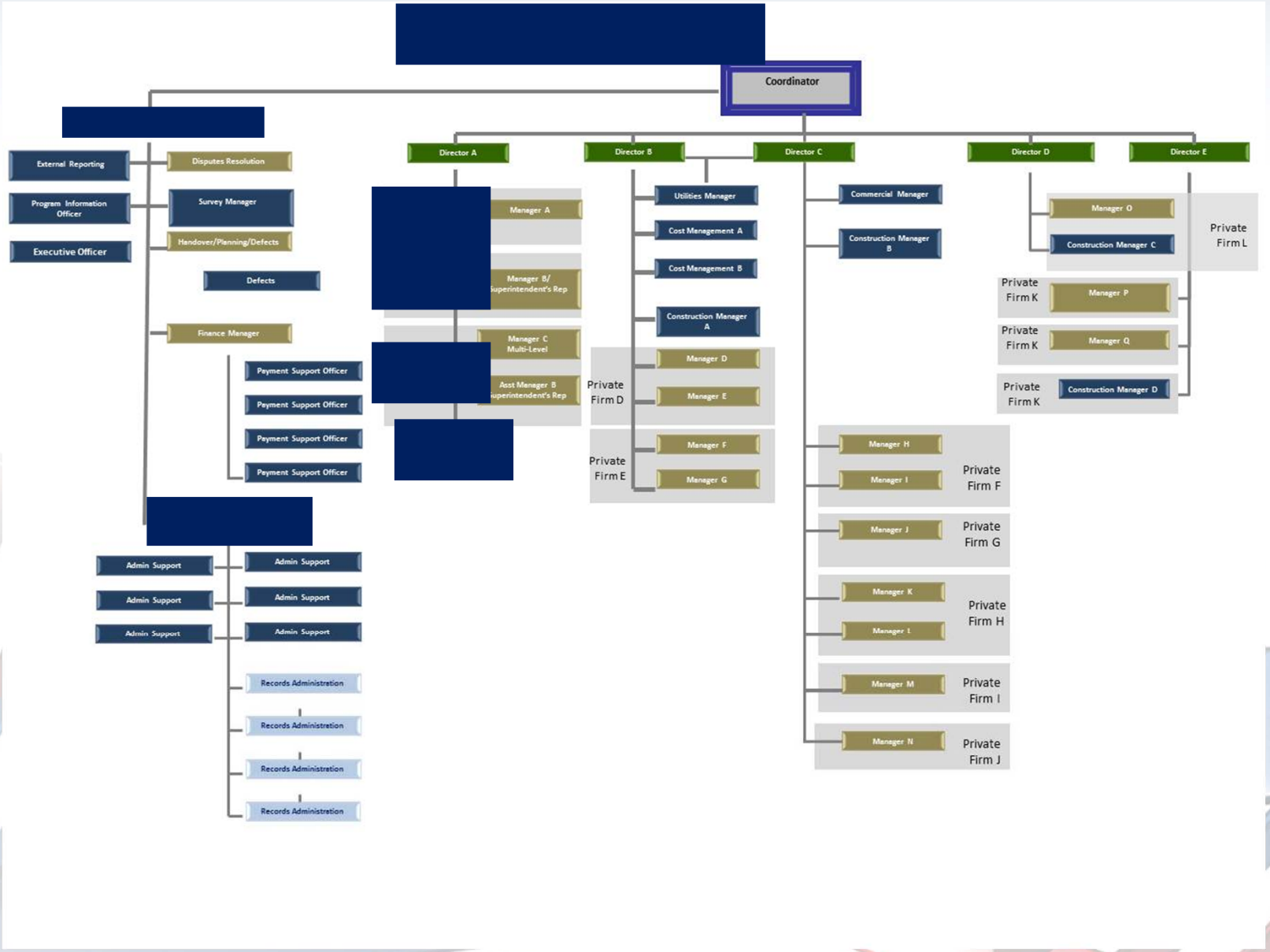
- Organisation perspective
- Business perspective
- Knowledge perspective
- Enterprise Social perspective

Problems

A State Government Structure

- Collaboration with multiple stakeholders – Highlighted with Grey colour
- Dedicated Managers for each Private Firm to coordinate the projects
- Projects involved with around 300 internal & 400 external staff
- Faced with policy/governance/coordination issues
- Faced with record management issues
- Faced with information sharing and managing knowledge issues

A State Government Structure



System characteristics

Group – deals with one or two activities – decisions are simple. Carries out well defined activities.

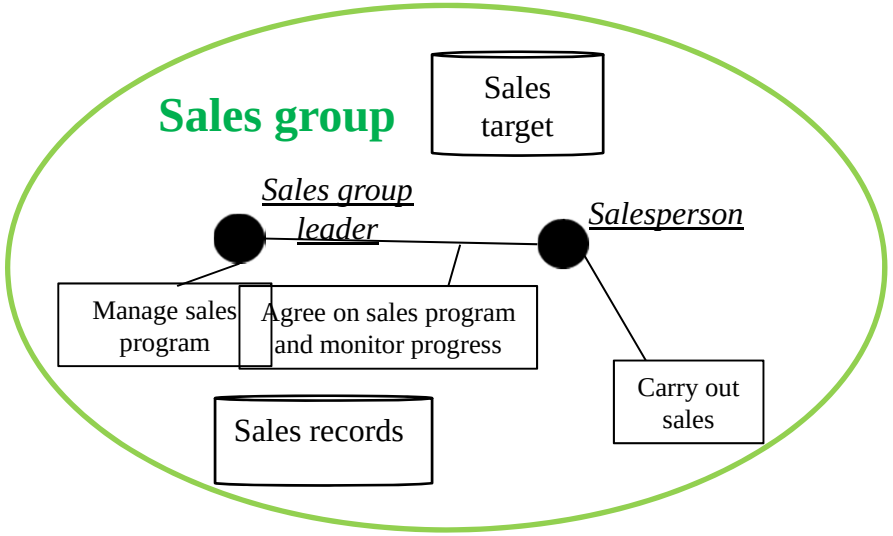
Organization – can coordinate a number of groups – has multiple decisions – can contain groups or other organizations

Community – a loose connection of people or systems with common goals and rules of behavior.

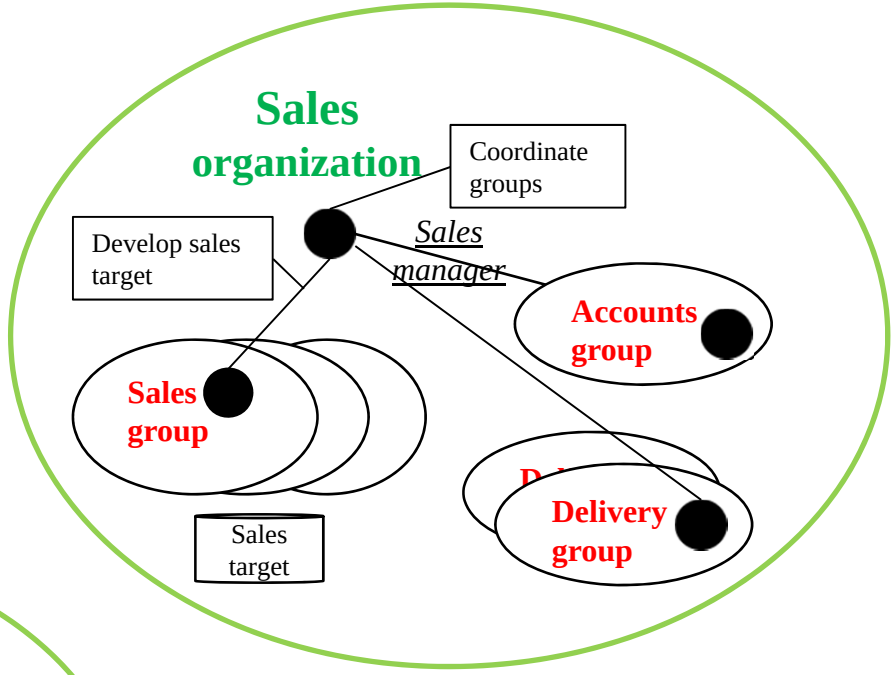
Organizations can be part of a community. They can also include a community, For example academics in a University.

Business or Enterprise – is made up of many organizations or groups..

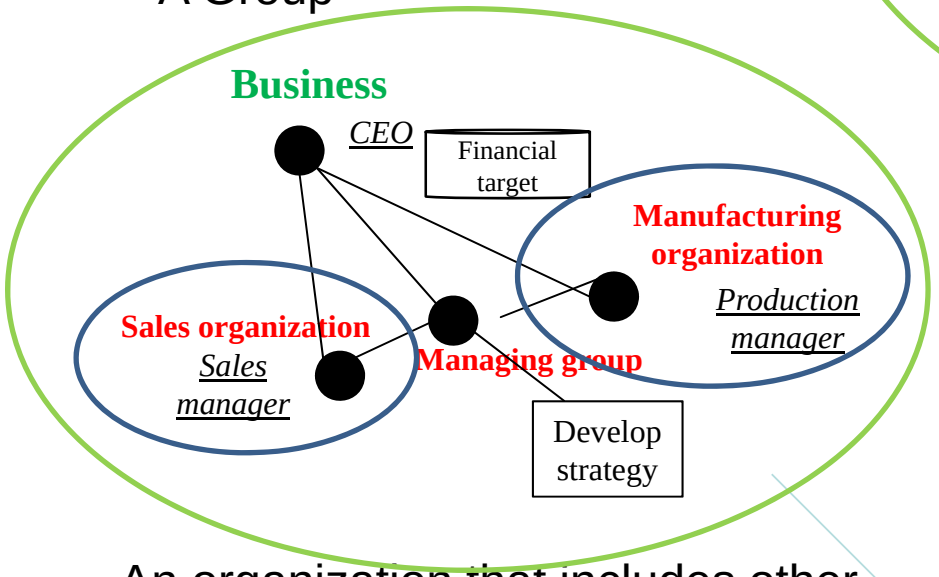
Simple example – a group



A Group

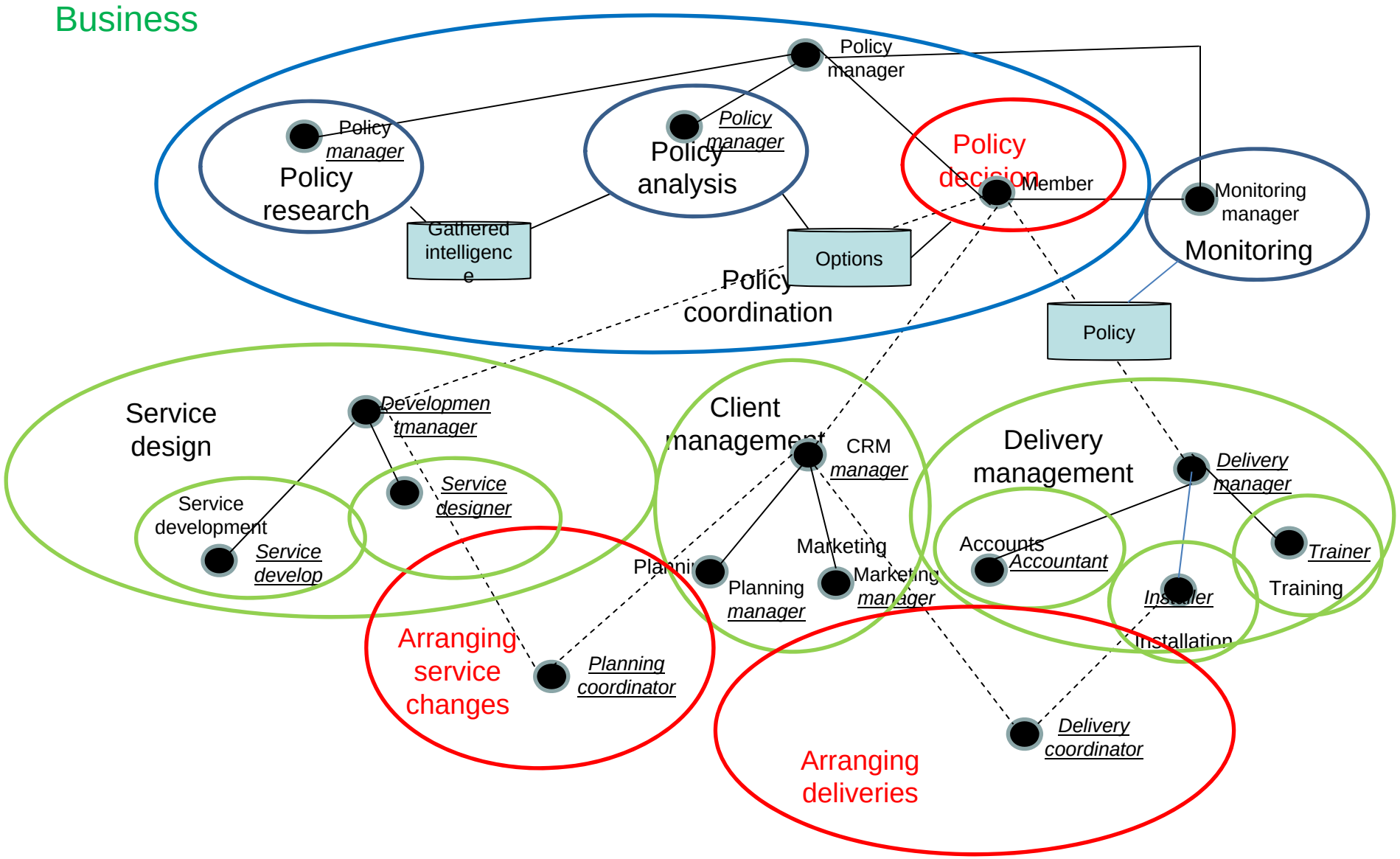


An organization

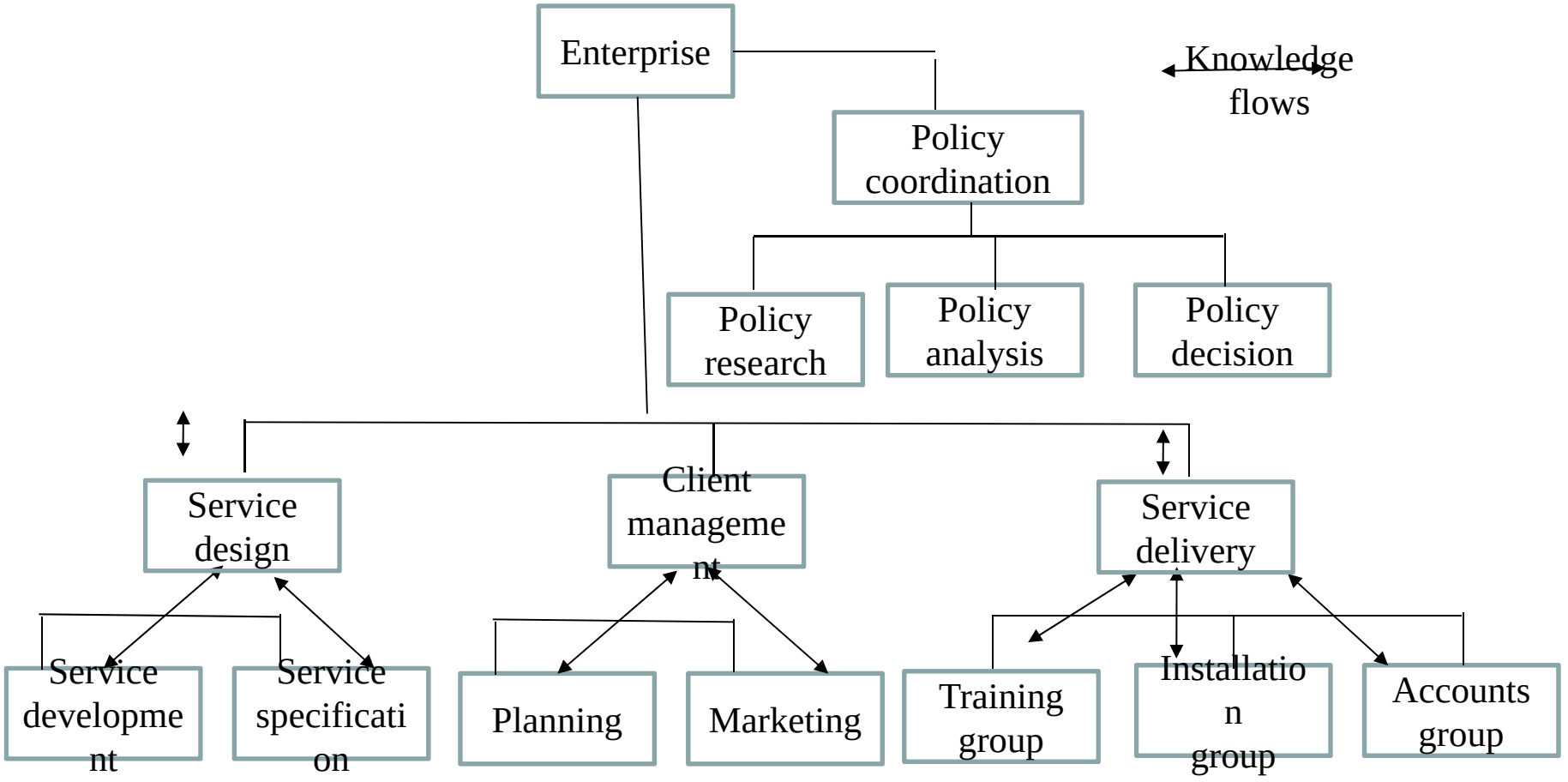


An organization that includes other organizations

A typical business



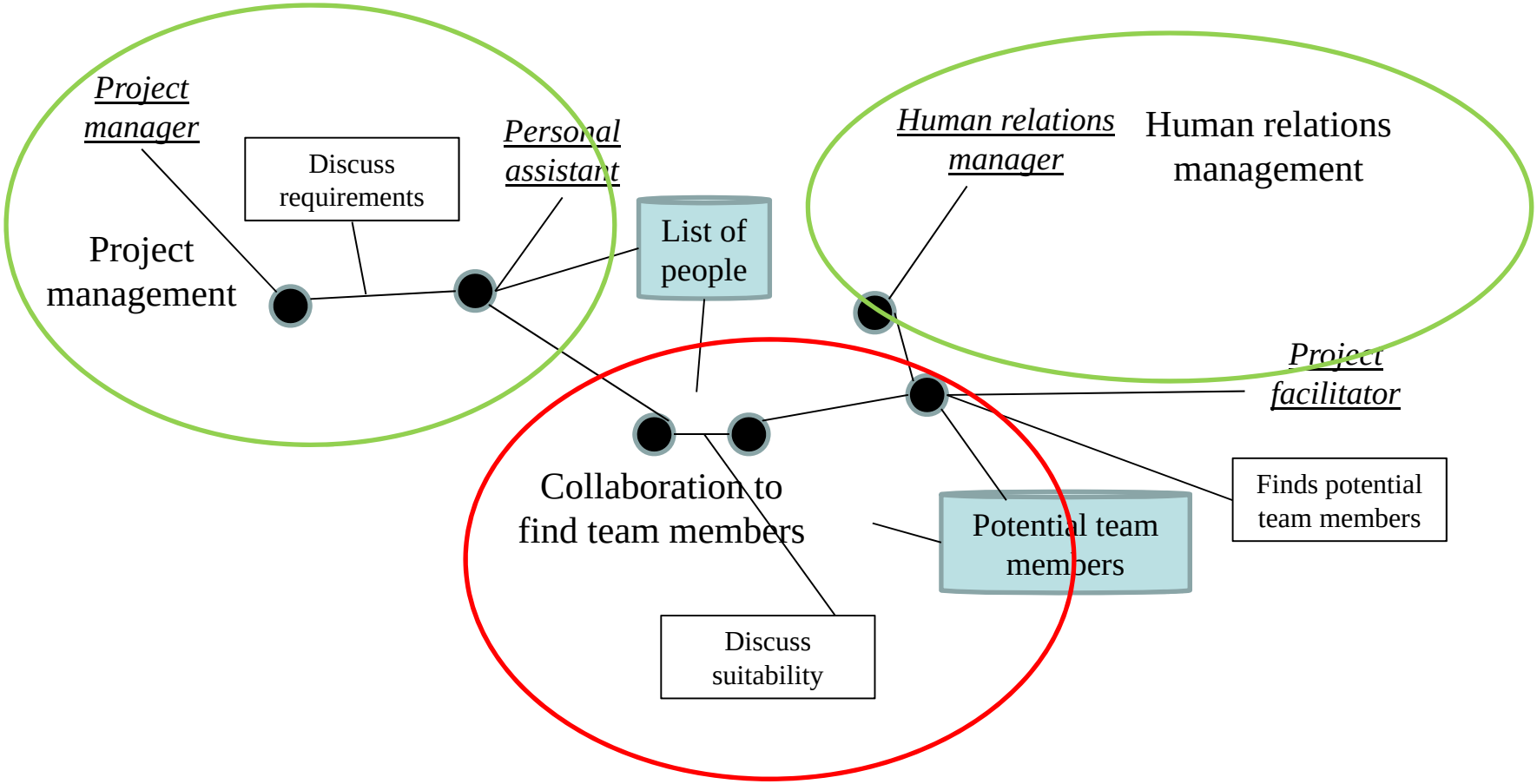
Equivalent hierarchical



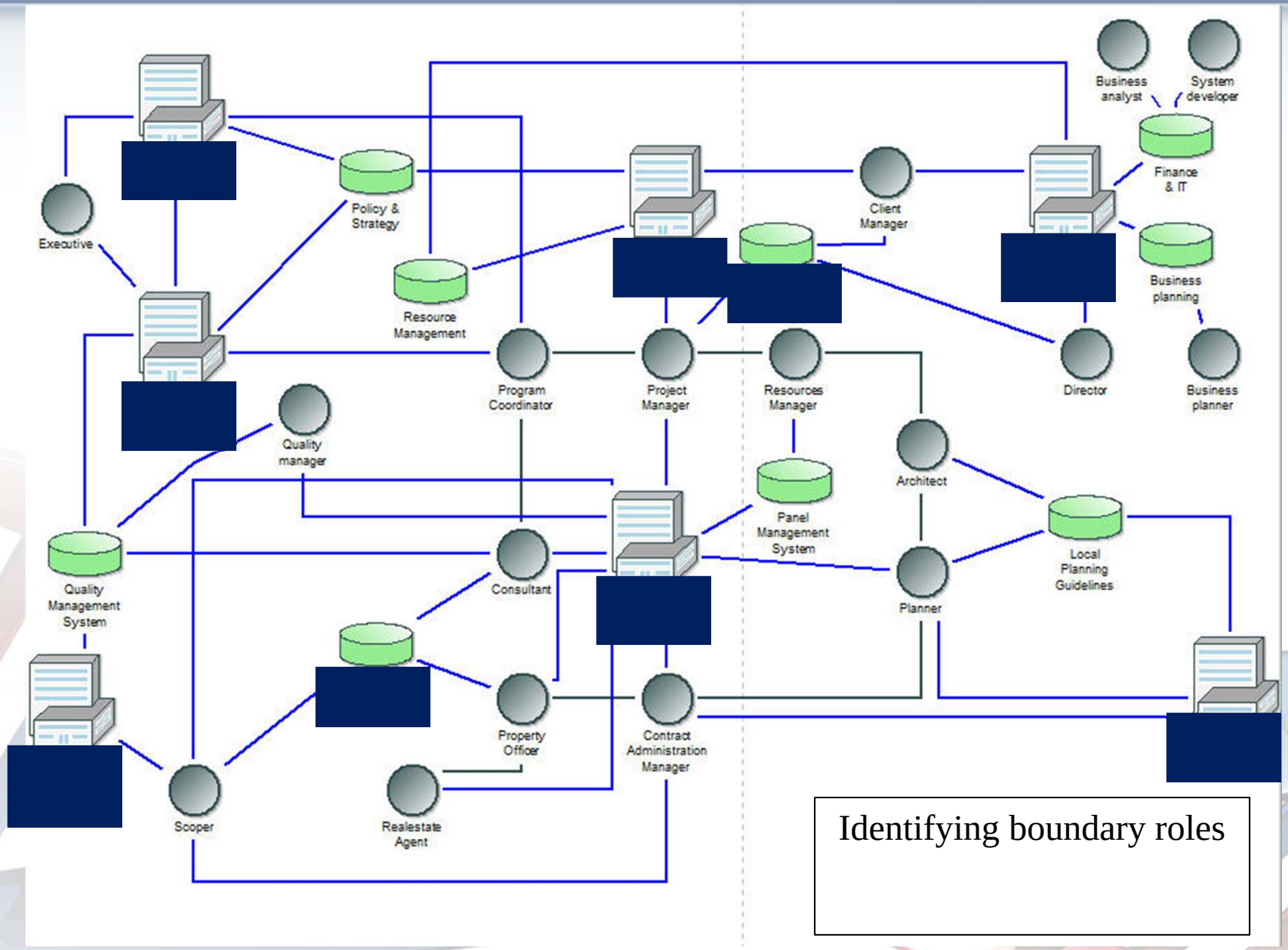
Coordination through collaboration

Main Language concepts

Roles, activities, artifacts, interactions

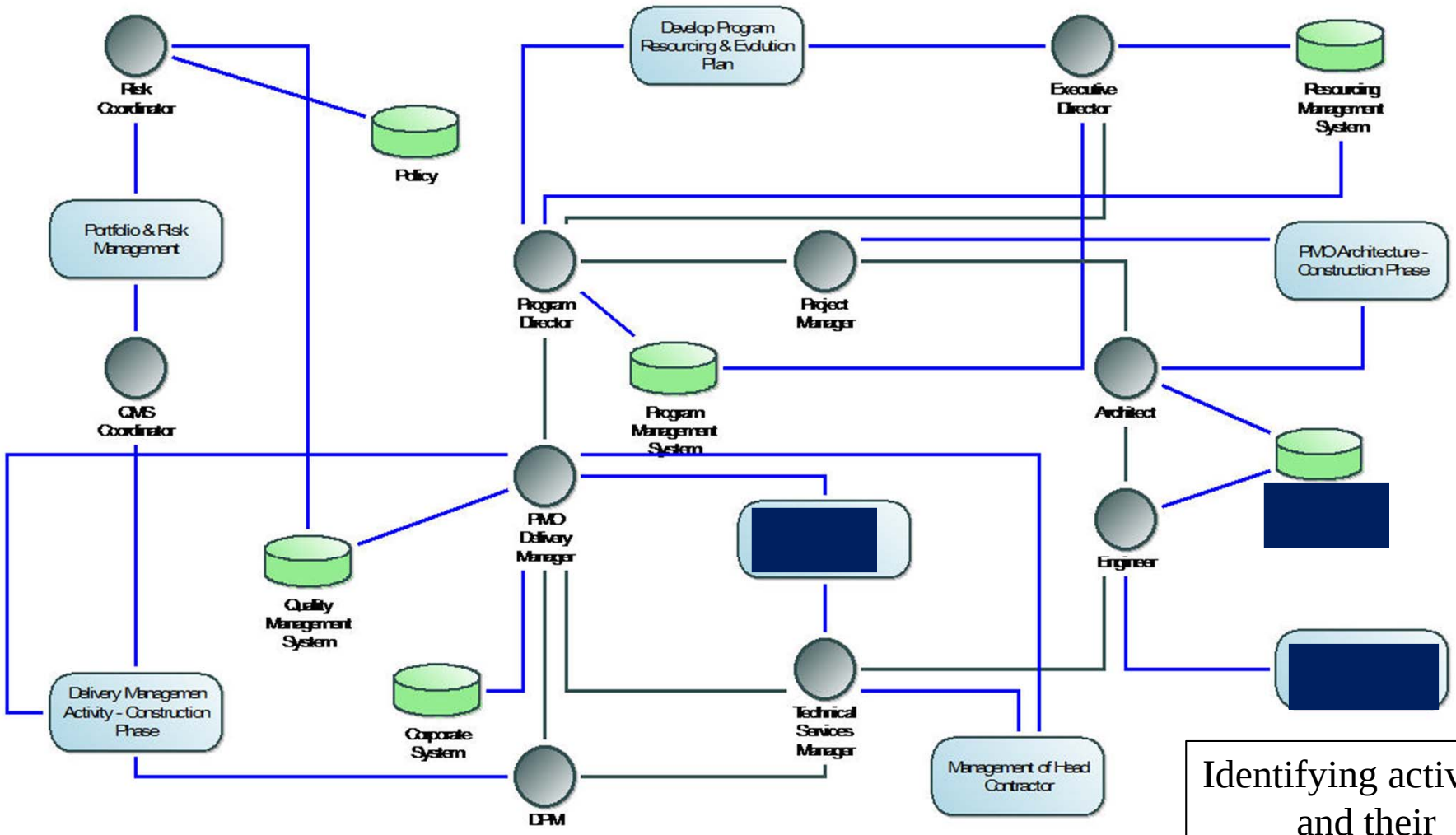


Organisational Perspective



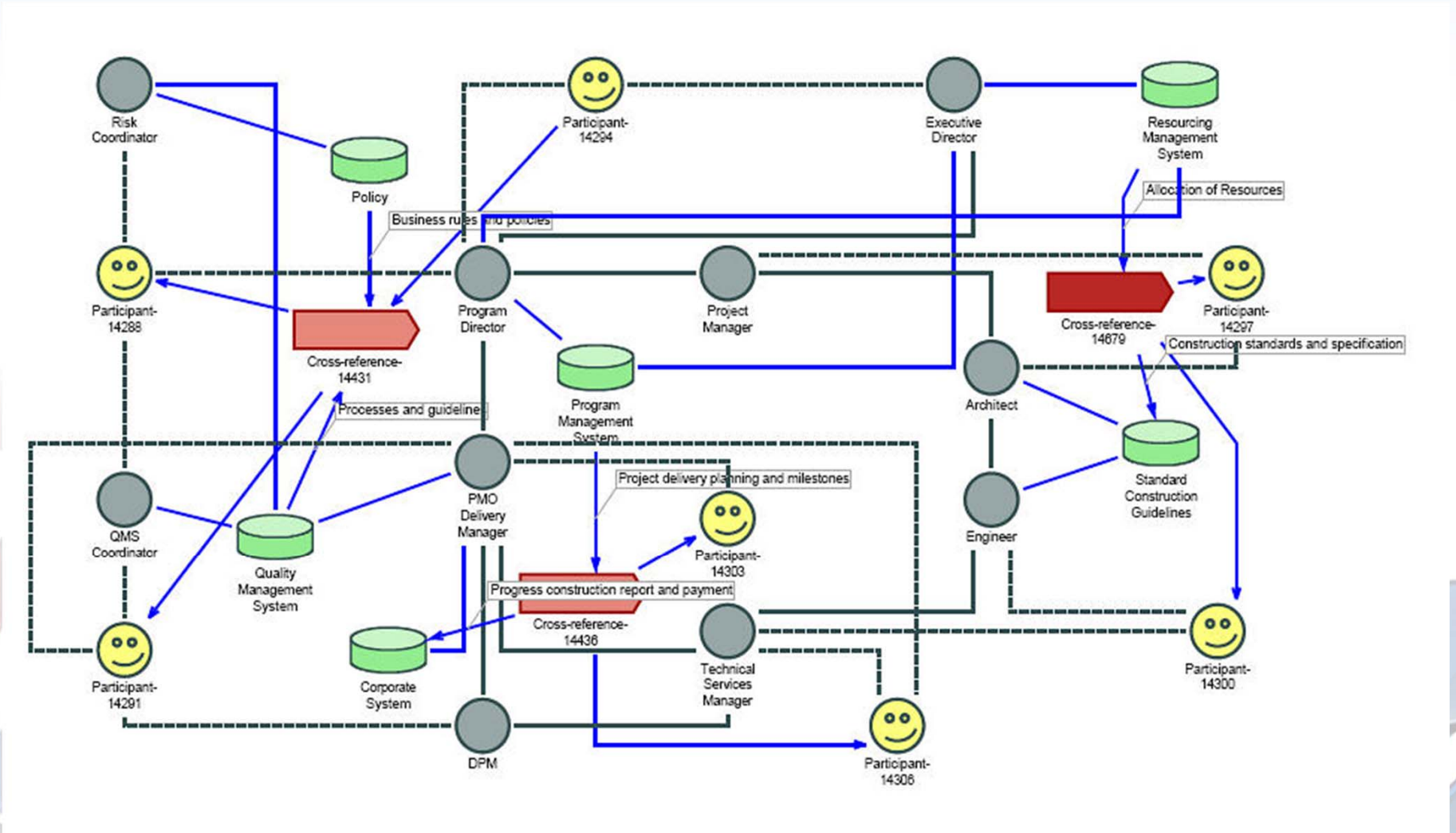
Identifying boundary roles

Activities

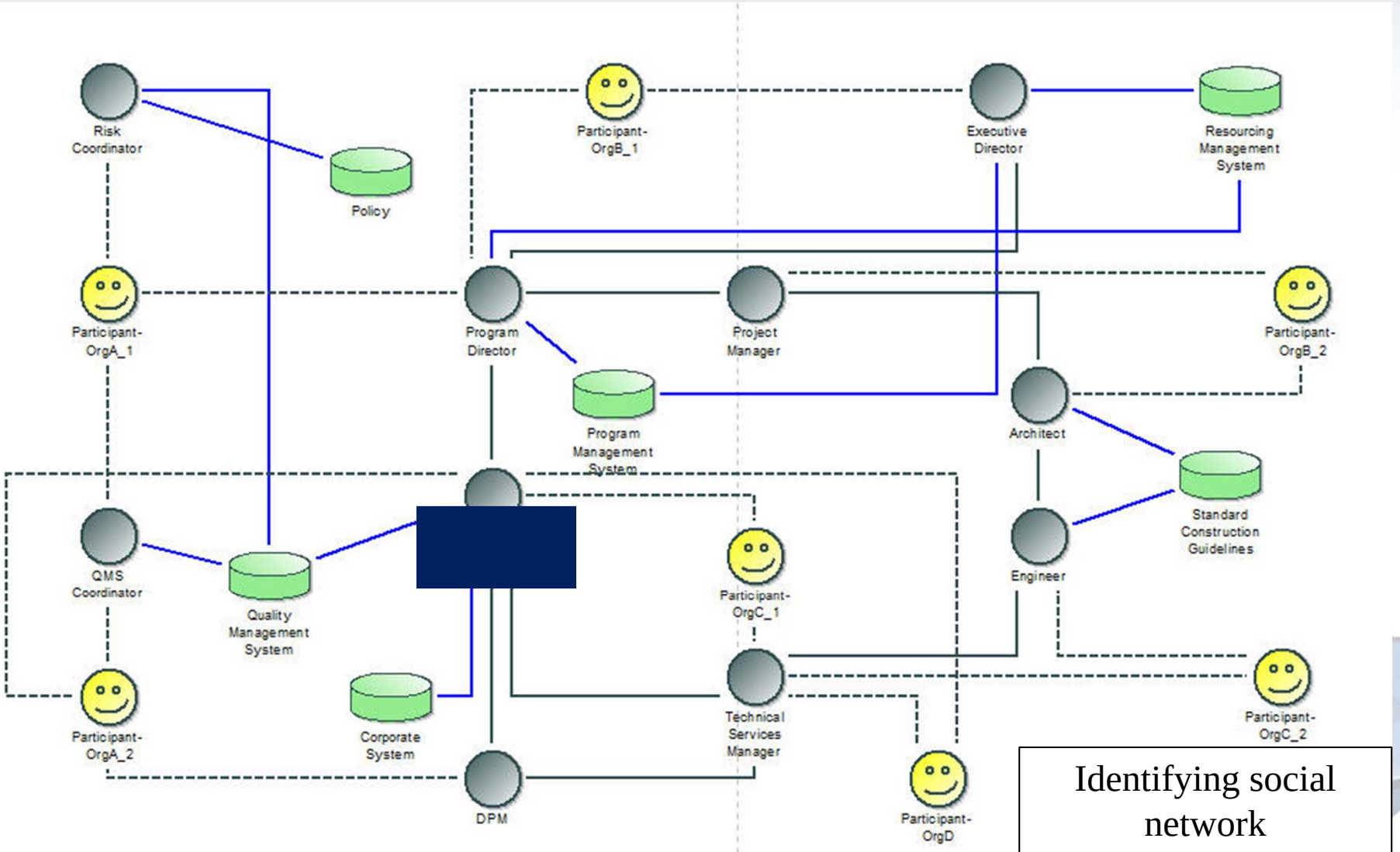


Identifying activities and their information needs

Knowledge

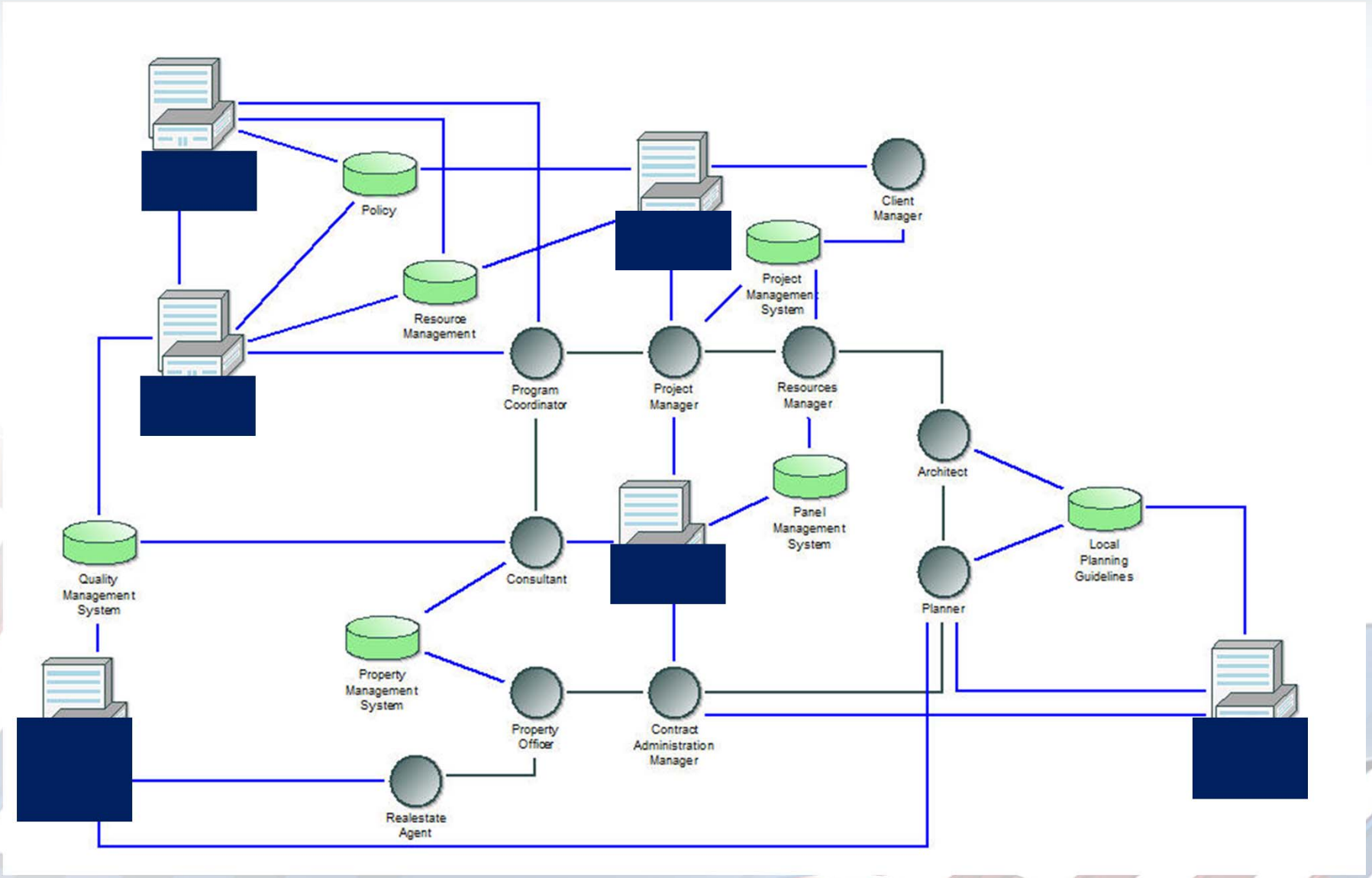

Risk Coordinator
Policy
Participant-14294
Executive Director
Resourcing Management System
Allocation of Resources
Business rules and policies
Participant-14288
Program Director
Project Manager
Cross-reference-14679
Participant-14297
Cross-reference-14431
Program Management System
Architect
Construction standards and specification
Processes and guidelines
Standard Construction Guidelines
QMS Coordinator
PMO Delivery Manager
Project delivery planning and milestones
Engineer
Participant-14303
Quality Management System
Progress construction report and payment
Cross-reference-14436
Participant-14291
Corporate System
Technical Services Manager
Participant-14300
DPM
Participant-14306

Enterprise Social

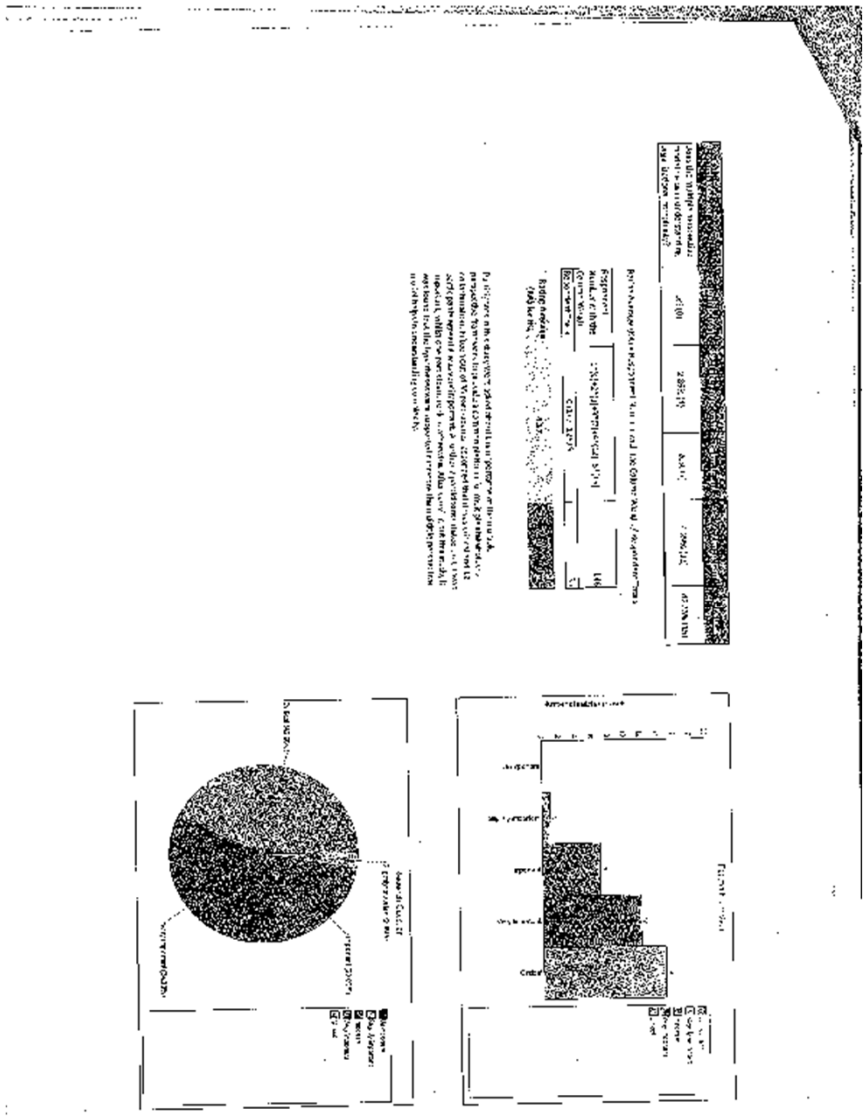


Identifying social network

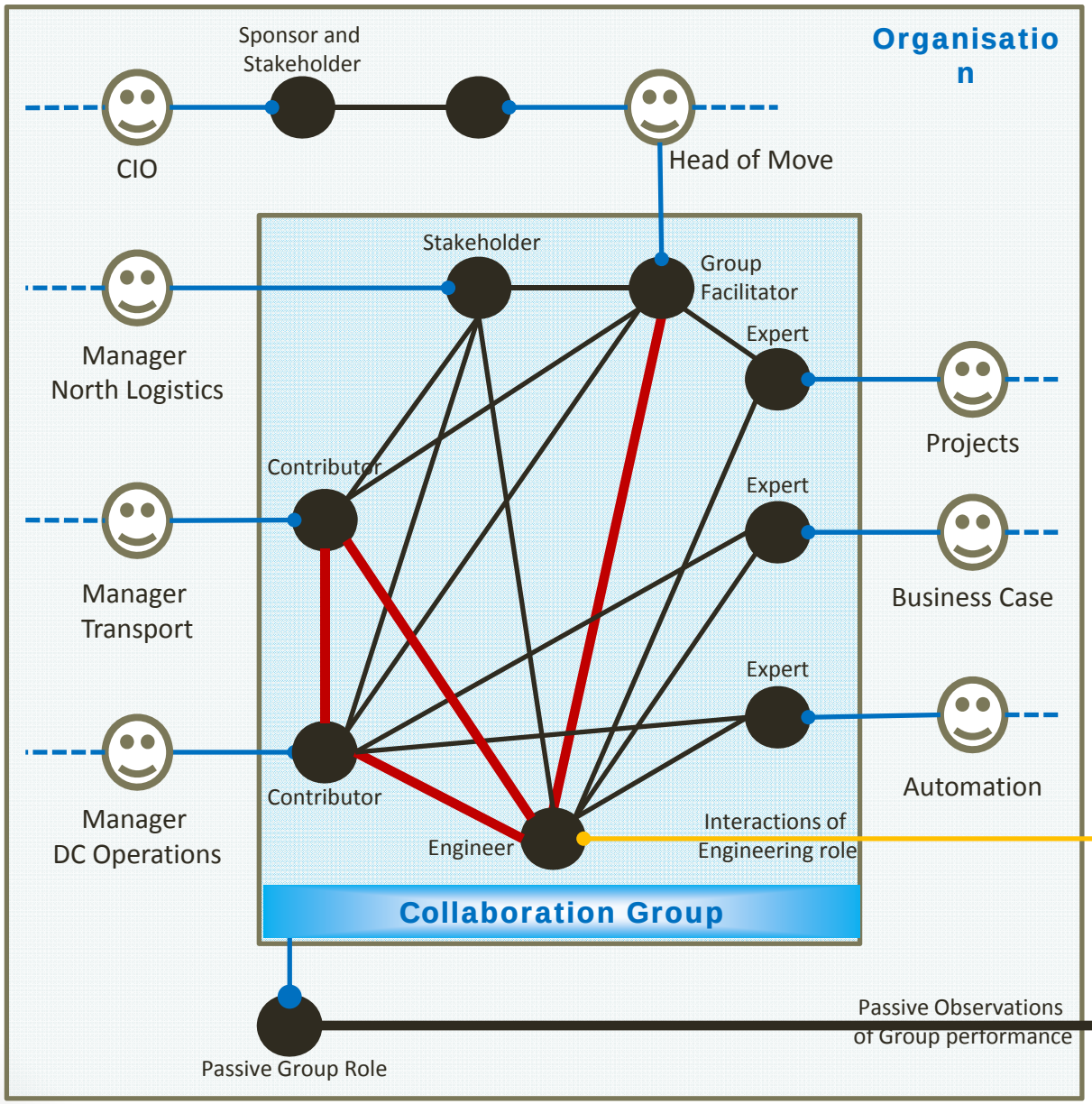
Multiple Collaboration



Finding good perpspectives



Another Project Enterprise Social Network: XXX Case Study Collaboration



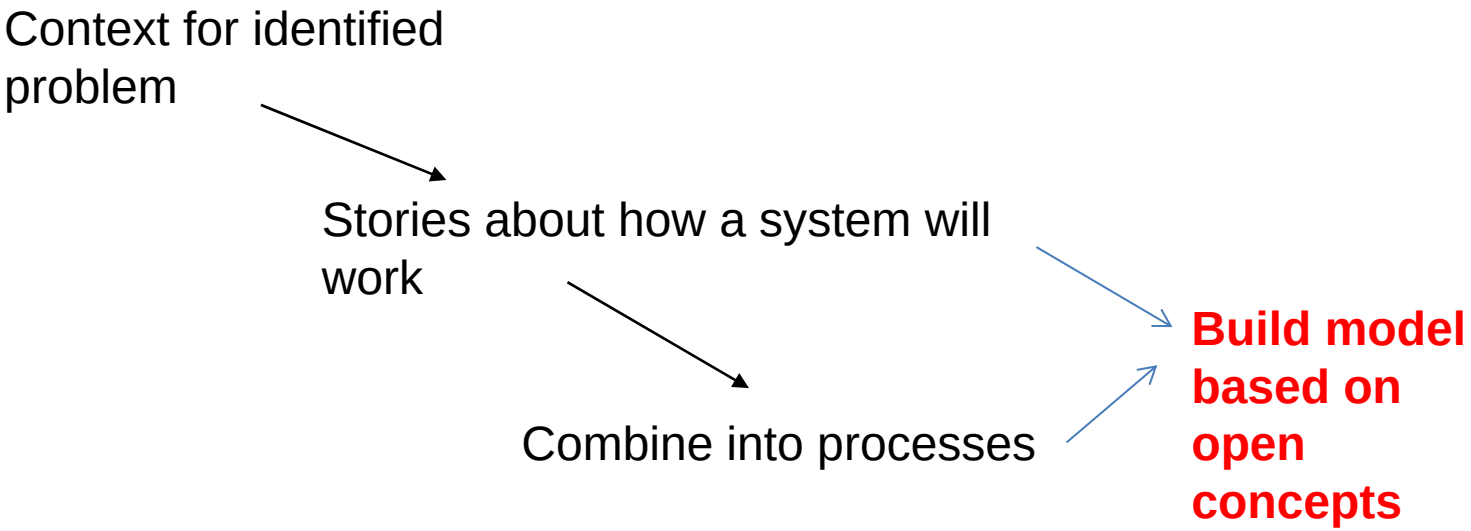
Indicates person assigned to other roles that are not part of the collaboration.

Person assigned to an active role relevant to the collaboration.

Low Intensity Messaging

High Intensity Messaging

Integrating into agile development

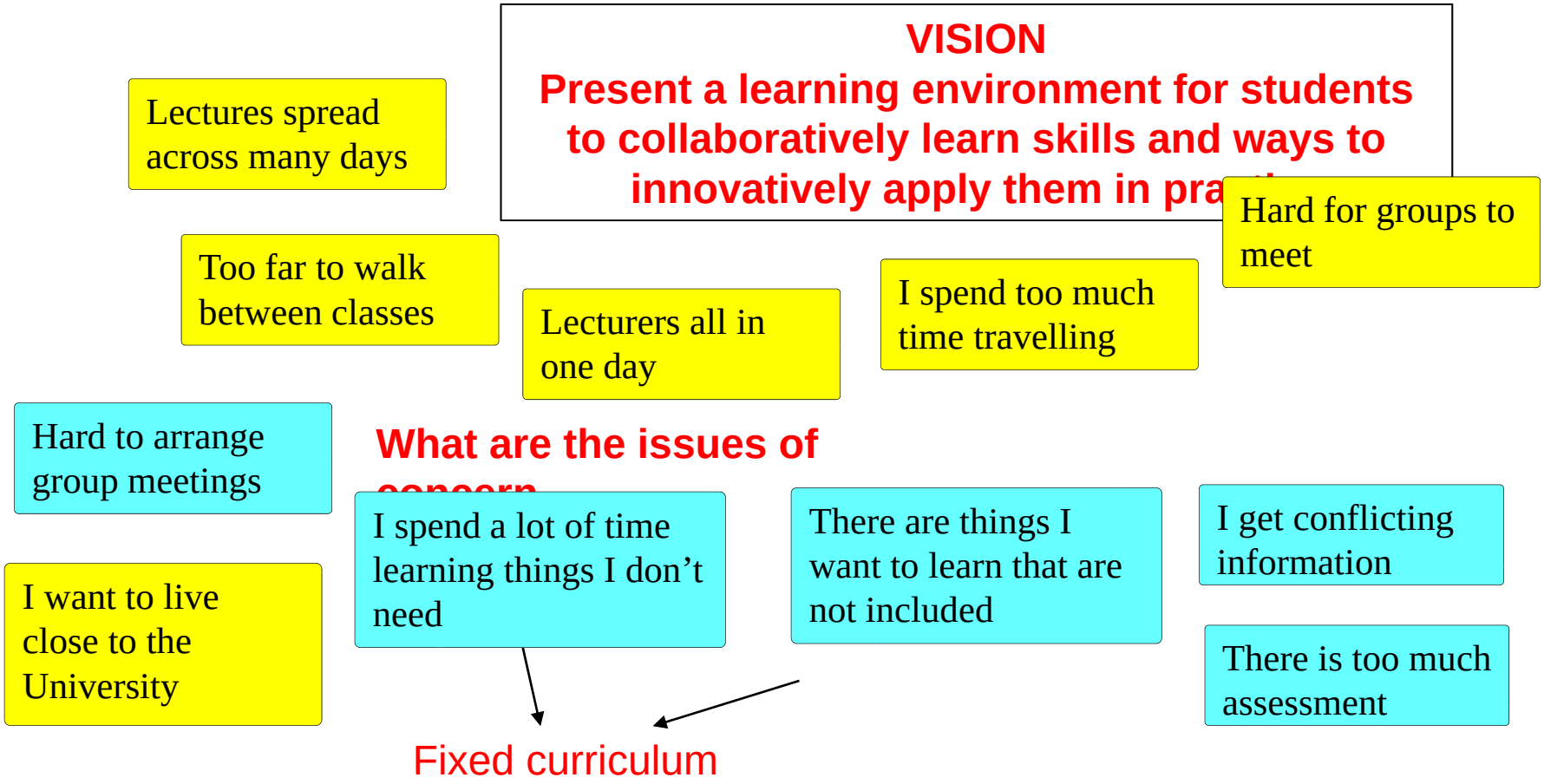


IMPORTANCE OF STORIES

Stories are a way of describing problems and ways to solve them

Combining stories gives an idea of what needs to be done

Stories for identifying issues (Smart Campus)



What are the causes

What are the links between the problems

Look at different perspectives

Collaboration

Knowledge

UTSCollaborativeBusinessNetworksAugust2012.pdf - Adobe Acrobat Pro

File Edit View Window Help

Create

27 / 41

111%

Tools Comment Share

Click on Tools, Comment and Share to access additional features.

The release plan

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10.09.2012

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Click on Tools, Comment and Share to access additional features.

Stand up

29

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10.09.2012

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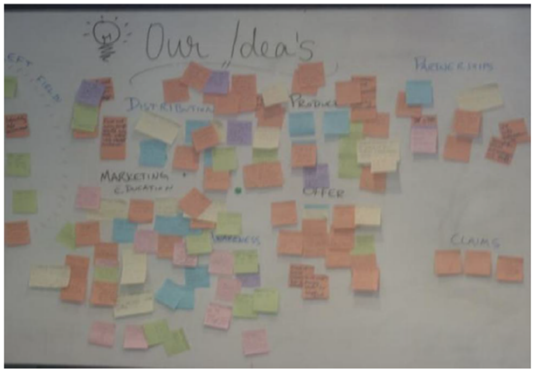
Innovation and FedEx Days



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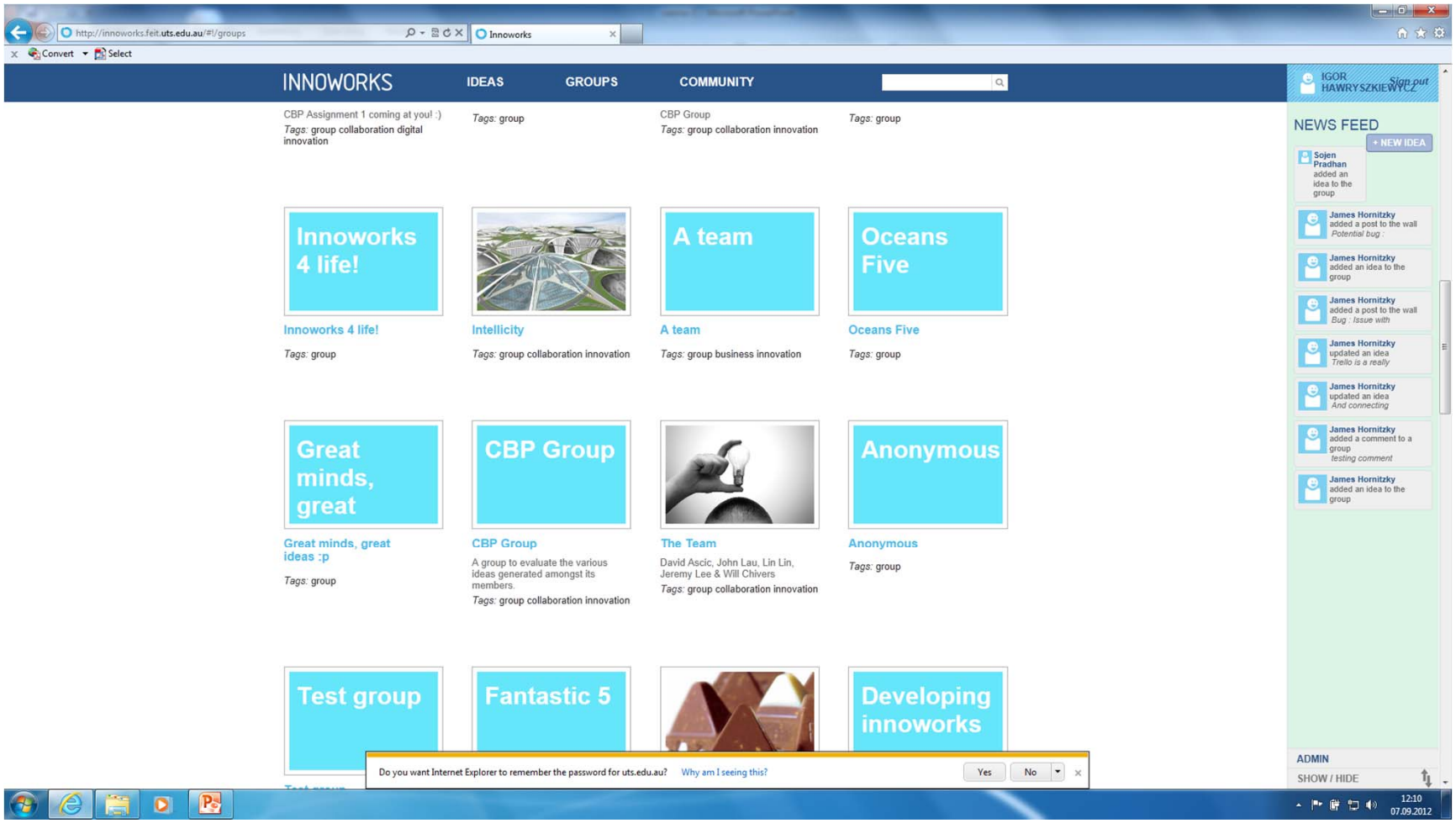
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IGOR HAWRYSZKIEWYCZ
Sign out
CBP Assignment 1 coming at you! :)
Tags: group collaboration digital innovation
Tags: group
CBP Group
Tags: group collaboration innovation
Tags: group
Innoworks 4 life!
Innoworks 4 life!
Tags: group
Intellicity
Tags: group collaboration innovation
A team
A team
Tags: group business innovation
Oceans Five
Oceans Five
Tags: group
Great minds, great
Great minds, great ideas :p
Tags: group
CBP Group
CBP Group
A group to evaluate the various ideas generated amongst its members.
Tags: group collaboration innovation
The Team
David Ascic, John Lau, Lin Lin, Jeremy Lee & Will Chivers
Tags: group collaboration innovation
Anonymous
Anonymous
Tags: group
Test group
Fantastic 5
Developing innoworks
NEWS FEED
+ NEW IDEA
Sojen Pradhan added an idea to the group
James Hornitzky added a post to the wall Potential bug :
James Hornitzky added an idea to the group
James Hornitzky added a post to the wall Bug : Issue with
James Hornitzky updated an idea Trello is a really
James Hornitzky updated an idea And connecting
James Hornitzky added a comment to a group testing comment
James Hornitzky added an idea to the group
ADMIN
SHOW / HIDE
Do you want Internet Explorer to remember the password for uts.edu.au?
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Yes
No
12:10
07.09.2012

http://innoworks.feit.uts.edu.au/#!/group/9939

Innoworks

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INNOWORKS IDEAS GROUPS COMMUNITY

IGOR HAWRYSZKIEWYCZ Sign out

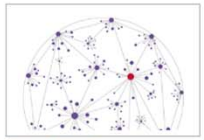
+ ADD IDEA

Interactive Traffic Lights with Mobile Devices (Pedestrians) 8

Posted by David Ascic

Pedestrians walking around the Sydney CBD, can utilise their mobile devices, to input their walking routes, which will provide a live stream of all pedestrain "traffic", to assist crossings/traffic.

Tags: idea collaboration digital innovation software



Living City Sensors

Posted by David Ascic

Upwards of thousands of unique sensors all around the city, measuring air quality, seismic movements, wind direction, etc, creating a 'nervous system' for the city, uploaded to Head Office &

Tags: idea

Pedestrian Lane Markings

Posted by William Chivers

Footpaths marked with designated 'lanes' for those who walk at different paces, i.e. a slow lane and fast lane.

Tags: idea business fitness health humanities

Central Surveillance System

Posted by David Ascic

A central surveillance system which allows 24/7 live coverage of public areas, assisting with all road and side walk incidents, providing a safer city for the community.

Tags: idea collaboration digital innovation

GPS

Posted by Li Lin

GPS is not only can show where the bus is and tell the next stop the bus is coming, it also can report the accident to bus dispatch center.

Tags: idea

Group security response alert 2

Posted by Jeremy Lee

Real time public responses to individuals in distress before police or security personnel are able to aid a person in trouble. This advances the past notions of neighbourhood watch to a new level.

Tags: idea collaboration humanities innovation

Intelligence Trafic System

Posted by Li Lin

the integration of all good idea about the promotion of public transportation

Tags: idea

Real time public transport tracker 2

Posted by Jeremy Lee

Instant up the second public transport timings, along with community alerts from users of public transport to possible delays and problems.

Tags: idea collaboration

NEWS FEED

+ NEW IDEA

Sojen Pradhan added an idea to the group

James Hornitzky added a post to the wall *Potential bug :*

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James Hornitzky updated an idea *Trello is a really*

James Hornitzky updated an idea *And connecting*

James Hornitzky added a comment to a group *testing comment*

James Hornitzky added an idea to the group

ADMIN

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Innoworks

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Interactive Traffic Lights With Mobile Devices (Pedestrians)

Updated 2012-09-04 20:17:06

MISSION | STORYBOARD | EVALUATION | WALL

Edit idea | Back to ideas

Pedestrians walking around the Sydney CBD, can utilise their mobile devices, to input their walking routes, which will provide a live stream of all pedestrain "traffic", to assist crossings/traffic.

What is the proposed service?
To provide padestrians with an easy-to-use tool which will assist in traffic light flow when walking from one destination to another, based upon volume and history of use

Who are the users of the service?
Pedestrians, People Driving in the CBD

What are the artifacts/outcomes produced by service?
Mobile Device Application (Android/iPhone/Windows), assist in traffic flows, pedestrian movement logs

How do you describe the high level process of the service?
Service created by Development team in conjunction with City Council. Consumers download and use app. App content managed and maintained by Development team.

What are the work benefits of the service?
Allows pedestrians to arrive at work/appointments/tourist destinatins faster by foot, as well as keep the vehicle traffic flowing during times of lower pedestrian flow.

What are the key business goals?
Allow the easiest and fastest possible pedestrian movement for a high volume of participants.

How will this idea affect the market?
It will limit the need for manual pedestrian crosswalks. Allow the entire city to track the flow of movement of pedestrians.

What are the assumptions around this idea?
The majority of users will have a mobile device with 3G/4G internet access. The existing infrastructure will support the new system.

Who are the stakeholders of the project?
Pedestrians. Road users. IT systems management. City Council. Telecommunications Companies.

POSTED BY

David Ascic

TAGS

IDEA COLLABORATION DIGITAL INNOVATION SOFTWARE

NEWS FEED

+ NEW IDEA

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ADMIN

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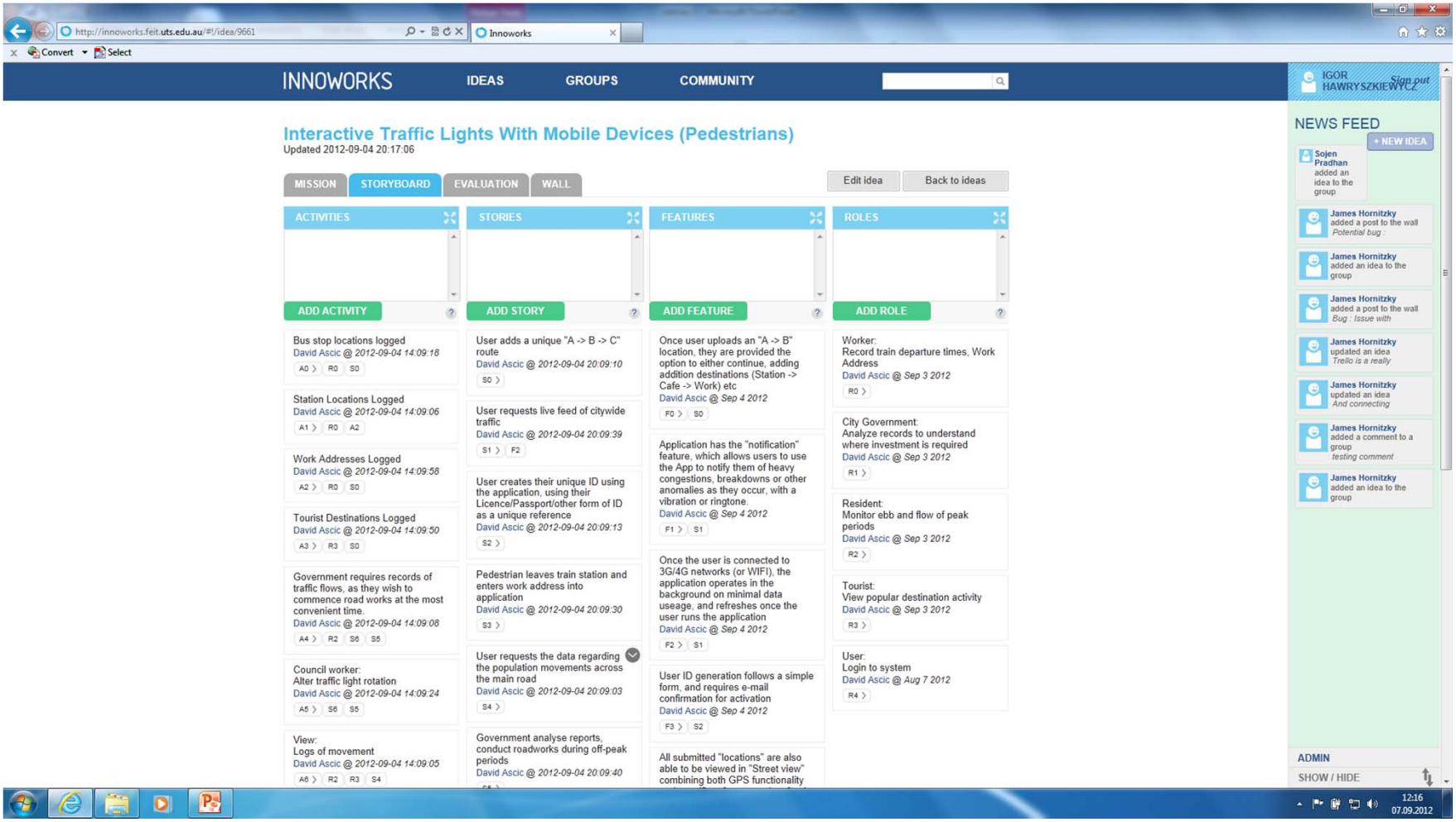
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Interactive Traffic Lights With Mobile Devices (Pedestrians)
Updated 2012-09-04 20:17:06
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STORYBOARD
EVALUATION
WALL
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Back to ideas
ACTIVITIES
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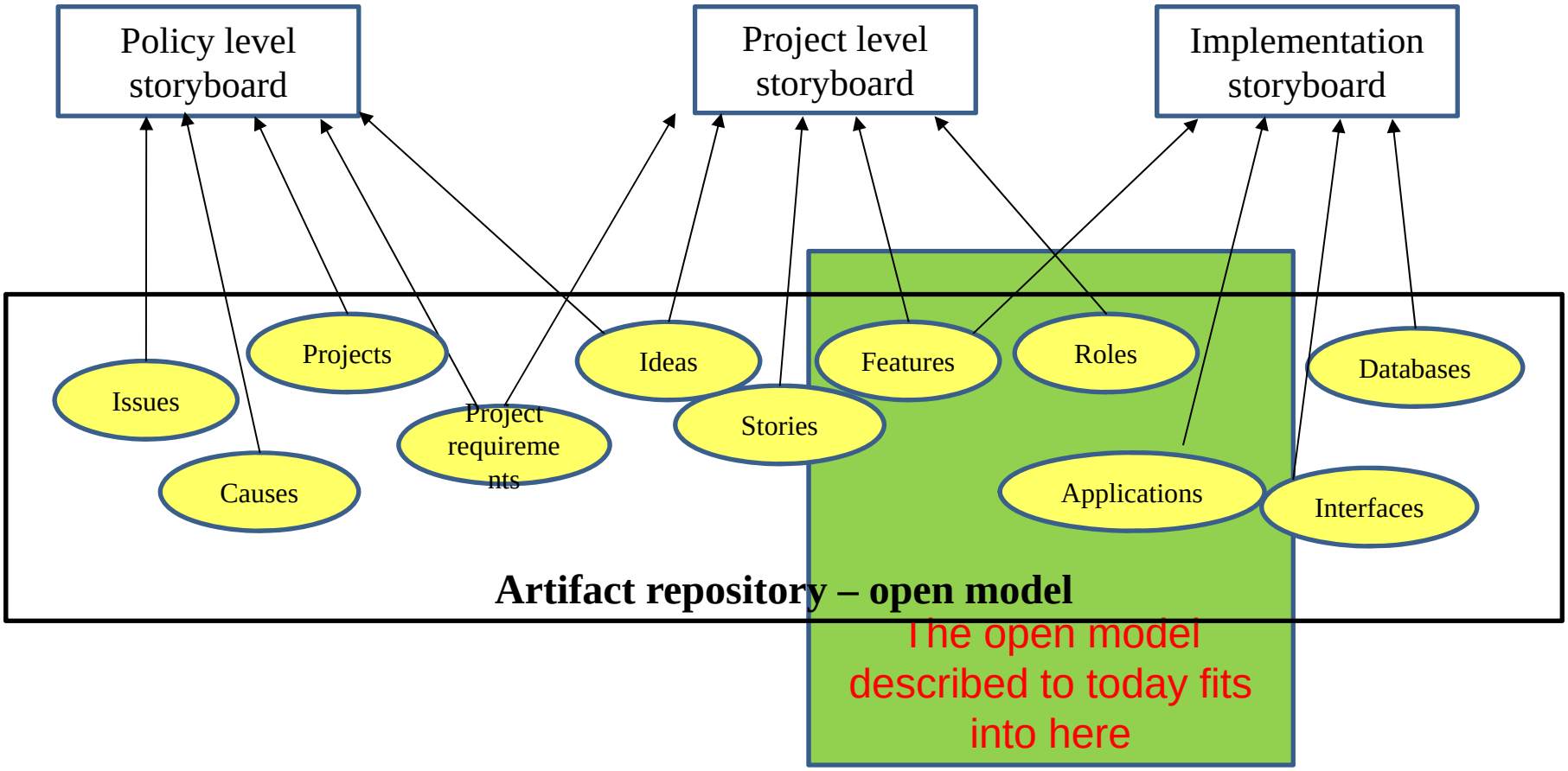
Bus stop locations logged
David Ascic @ 2012-09-04 14:09:18
A0 R0 S0
Station Locations Logged
David Ascic @ 2012-09-04 14:09:06
A1 R0 A2
Work Addresses Logged
David Ascic @ 2012-09-04 14:09:58
A2 R0 S0
Tourist Destinations Logged
David Ascic @ 2012-09-04 14:09:50
A3 R3 S0
Government requires records of traffic flows, as they wish to commence road works at the most convenient time.
David Ascic @ 2012-09-04 14:09:08
A4 R2 S6 S5
Council worker:
Alter traffic light rotation
David Ascic @ 2012-09-04 14:09:24
A5 S6 S5
View:
Logs of movement
David Ascic @ 2012-09-04 14:09:05
A6 R2 R3 S4
User adds a unique "A -> B -> C" route
David Ascic @ 2012-09-04 20:09:10
S0
User requests live feed of citywide traffic
David Ascic @ 2012-09-04 20:09:39
S1 F2
User creates their unique ID using the application, using their Licence/Passport/other form of ID as a unique reference
David Ascic @ 2012-09-04 20:09:13
S2
Pedestrian leaves train station and enters work address into application
David Ascic @ 2012-09-04 20:09:30
S3
User requests the data regarding the population movements across the main road
David Ascic @ 2012-09-04 20:09:03
S4
Government analyse reports, conduct roadworks during off-peak periods
David Ascic @ 2012-09-04 20:09:40
Once user uploads an "A -> B" location, they are provided the option to either continue, adding addition destinations (Station -> Cafe -> Work) etc
David Ascic @ Sep 4 2012
F0 S0
Application has the "notification" feature, which allows users to use the App to notify them of heavy congestions, breakdowns or other anomalies as they occur, with a vibration or ringtone.
David Ascic @ Sep 4 2012
F1 S1
Once the user is connected to 3G/4G networks (or WIFI), the application operates in the background on minimal data useage, and refreshes once the user runs the application
David Ascic @ Sep 4 2012
F2 S1
User ID generation follows a simple form, and requires e-mail confirmation for activation
David Ascic @ Sep 4 2012
F3 S2
All submitted "locations" are also able to be viewed in "Street view" combining both GPS functionality
Worker:
Record train departure times, Work Address
David Ascic @ Sep 3 2012
R0
City Government:
Analyze records to understand where investment is required
David Ascic @ Sep 3 2012
R1
Resident:
Monitor ebb and flow of peak periods
David Ascic @ Sep 3 2012
R2
Tourist:
View popular destination activity
David Ascic @ Sep 3 2012
R3
User:
Login to system
David Ascic @ Aug 7 2012
R4
NEWS FEED
+ NEW IDEA
Sojen Pradhan added an idea to the group
James Hornitzky added a post to the wall
Potential bug :
James Hornitzky added an idea to the group
James Hornitzky added a post to the wall
Bug : Issue with
James Hornitzky updated an idea
Trello is a really
James Hornitzky updated an idea
And connecting
James Hornitzky added a comment to a group
testing comment
James Hornitzky added an idea to the group
ADMIN
SHOW / HIDE
12:16
07.09.2012

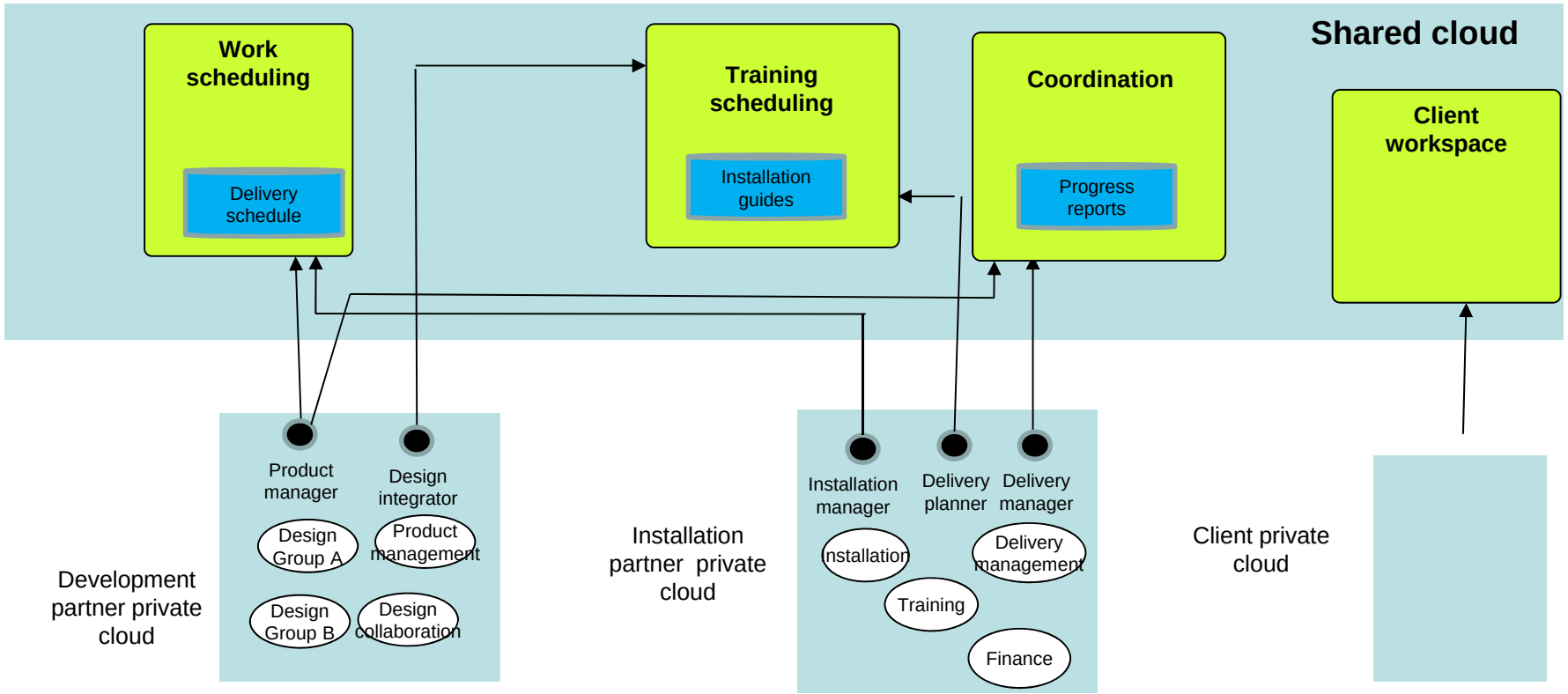
Current development

Story boards to link different levels



Described in new eBook

Modeling system of systems in partner collaboration



SUMMARY AND FUTURE WORK

Why are open system methods needed

Defined a set of open concepts for collaboration

Illustrated by an example for analysis

Integration into agile development

Need support for dynamic concepts formation