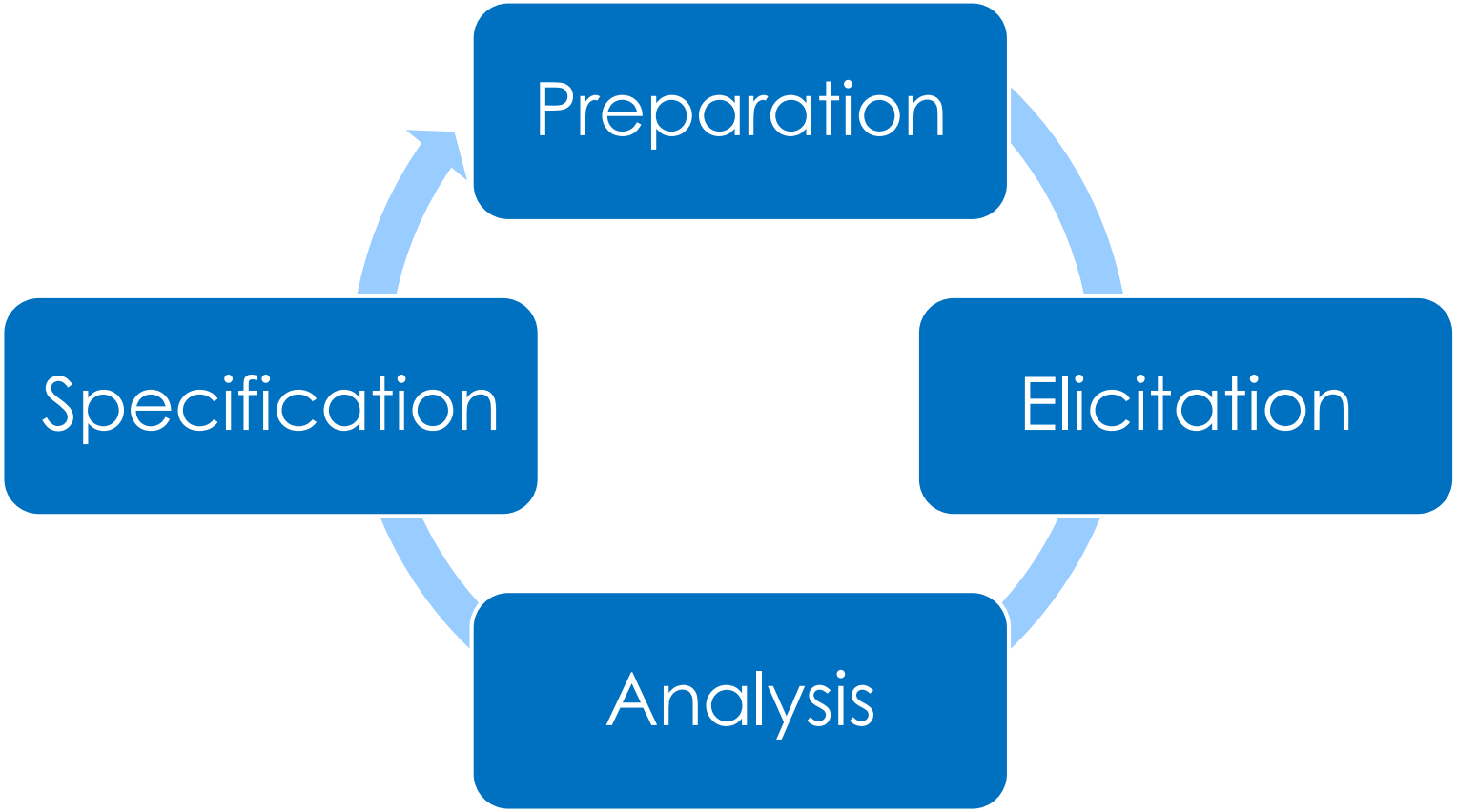
Requirements Elicitation

Elicitation Process



Preparation – Sources of Requirements

- Stakeholders
- Users
  - identify classes of users
  - how will they use the system?
- Environment
  - application domain
  - organisation
  - operations

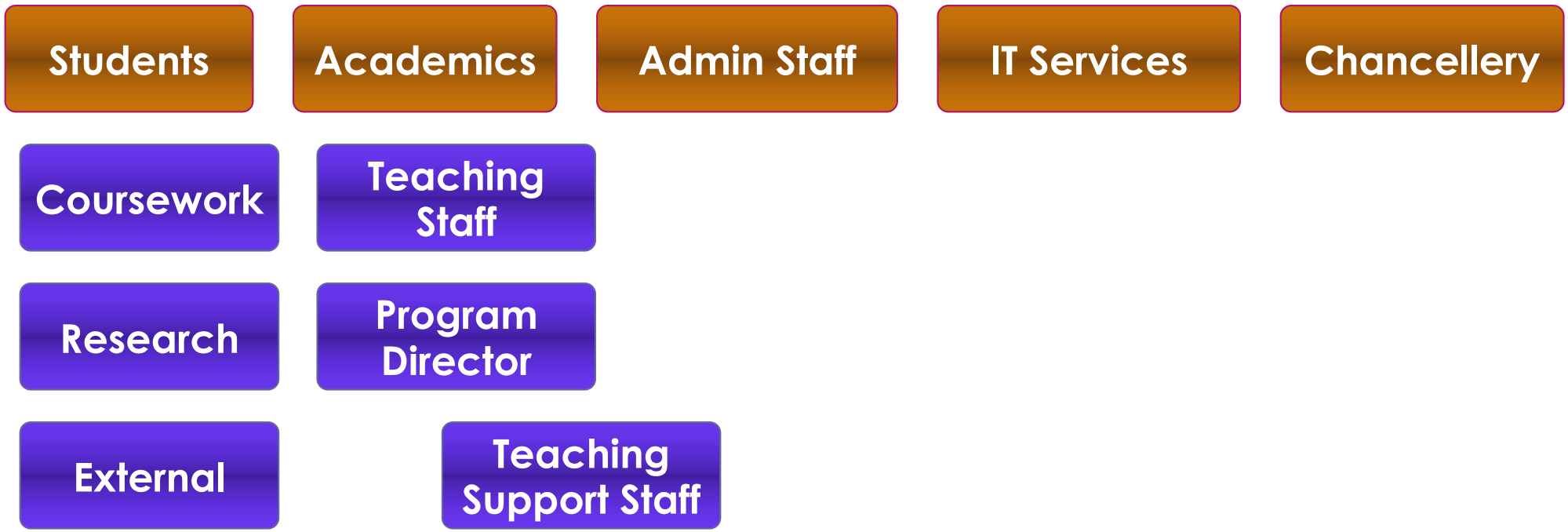
Know Your Users – User Role Modelling

- What types of people will use the system?
  - each will have different goals
- Don't think of an anonymous user
  - over simplification
- Identify different user roles
  - brainstorm initial set
  - group related roles
  - consolidate roles
  - refine roles
- Don't get stuck on organisational roles

User Role Modelling Example – SI-Net

- Undergrad Students
- Postgrad Students
- Research Students
- Full-Time Students
- Part-Time Students
- External Students
- Academic Staff
- Casual Academic Staff
- Course Coordinators
- Program Director
- Teaching Support Staff
- Admin Staff
- IT Support
- Web Dev Team
- Chancellery Staff

Example Roles Refined



Personas

- Fictitious character representing a user role
- Makes important roles more realistic
  - mock person, including photo & profile
- Mae Koh – Program Director
  - manages BEng in EAIT
  - accesses enrolment data, including offers and acceptances
  - allocates teaching staff based on enrolment
  - reduces allocation changes at start of semes

Application Domain

- Knowledge of area in which system is used
- Sources
  - manual
  - books
  - journals
  - users

Organisation

- Structure
  - most IT systems reflect organisation structure
- How fixed is the structure
  - is the system meant to change it?
- Policies and practices

Operations

- Other system dependencies
  - interface requirements
  - timing constraints
- Execution environment
  - platform
  - reliability & performance
- Criticality
  - mission
  - safety

Elicitation Challenges

- Stakeholders & users may not be able to describe their tasks well
  - make assumptions and leave things unstated
- No-one knows everything
- Requirements conflict
- Implicit requirements
  - e.g. changing user names

Elicitation Techniques

- Interviews
- Workshops
- Focus Groups
- Observations
- Questionnaires

Interviews

- Effective for understanding problem and eliciting *general* requirements
- Prepare questions in advance
  - discussion needs a starting point
  - primarily open-ended questions
  - strawman model if you have some data
- Suggest ideas & alternatives
  - users may not realise what is possible

Interviews (cont.)

- Active listening
  - paraphrase what you understand
- Clarify what's unclear
  - draw me a diagram
  - card sorting
- Maintain focus

Workshop

- Structured meeting
  - formal roles
  - clear goals
- Multiple stakeholders
  - resolve conflicting requirements
  - quickly gather broad system usage

Focus Groups

- Less structure
  - still need clear goals
- Exploratory discussion
  - needs
  - preferences
  - expectations
- Broad stakeholder representation
- Gather broad-based ideas

Observations

- Observe how users perform their tasks
  - learn workflow
- Users often cannot describe everything they do
  - too many fine details
  - habitual tasks
- Time consuming
  - silent observation
  - interactive

Questionnaires

- Inexpensive and easily administered to remote sites
- Collect data from many users
- May feed into interviews or workshops
- Good questionnaires difficult to write

Good Questionnaires

- Answer options for all possibilities
- Answer choices mutually exclusive
- Avoid phrasing that implies a correct answer
- Closed questions for statistical analysis
- Open questions to gather ideas
- Keep short

Independent Elicitation Techniques

- Discover information on your own
- System interface analysis
- User interface analysis
- Document analysis

System Interface Analysis

- Look at other system's functionality
  - what does your system need to do?
  - what can you use?
- Data exchange
  - including formats & validation rules
- Services

User Interface Analysis

- Study existing systems
  - what do they do?
  - how are they used?
- What should be
  - replicated?
  - avoided?
- Good way to learn existing system & processes

Document Analysis

- Business process descriptions
- Existing system documentation
  - user manuals
  - specifications
  - what must be kept
  - what can be improved
- Industry standards or legislation
- Gain understanding of domain or system

Soft Skills

- Active Listening
- Interviewing & Questioning
- Facilitation
- Negotiation
- Observation
- Writing
- Organisation
- Interpersonal
- Creativity

Reading

- Wiegers – chapters 2 & 5 & 6 & 7
- Larman – chapters 4 & 5
- Sommerville – chapter 4

Further Reading

- G. Kotonya and I. Sommerville, *Requirements Engineering: Processes and Techniques*.
  - chapters 1, 2, 3 & 8
- Leszek A. Maciaszek, *Requirements Analysis and System Design: Developing Information Systems with UML*.
  - chapter 3