

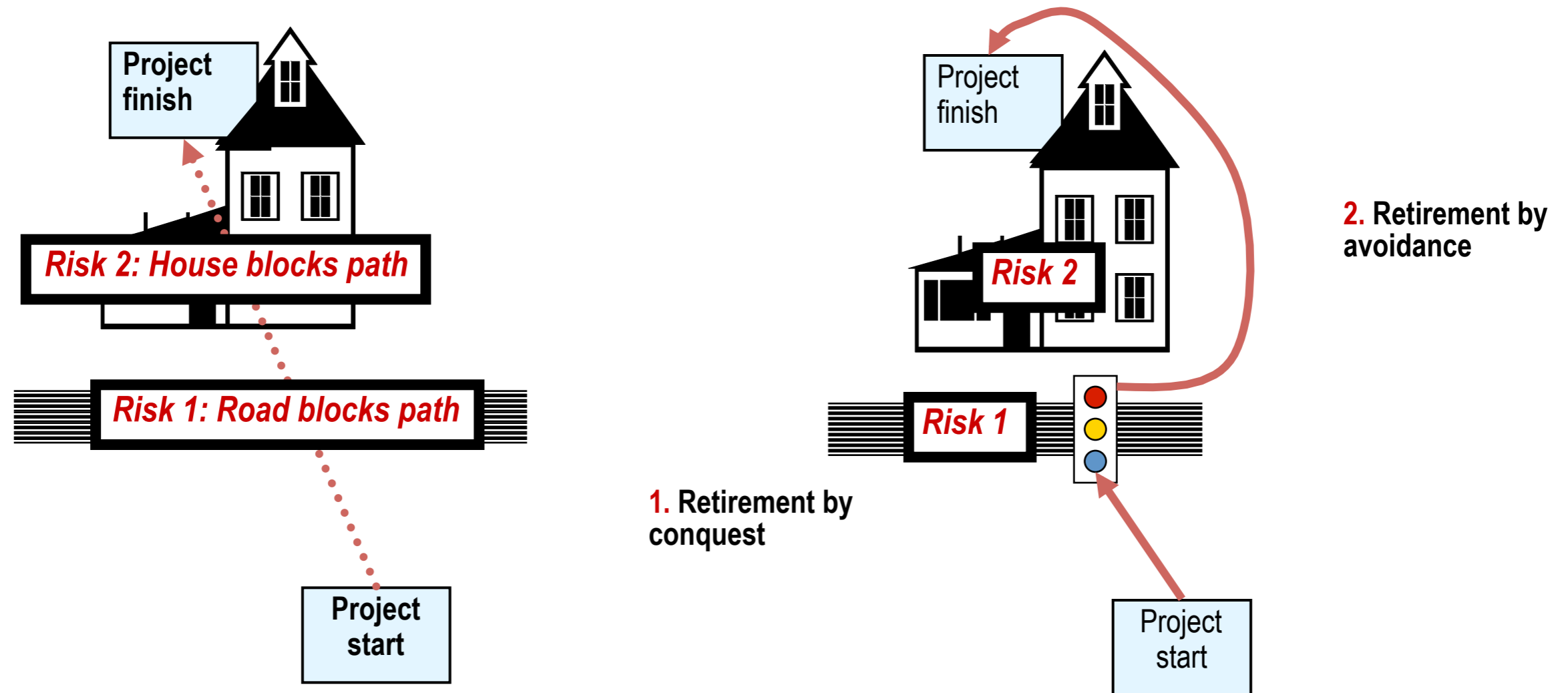
Project Management Risk Management

Definitions

- *PRINCE2 ‘the chance of exposure to the adverse consequences of future events’*
- *PM-BOK ‘an uncertain event or condition that, if it occurs, has a positive or negative effect on a project’s objectives’*
- risks relate to possible future problems, not current ones
- they involve a possible cause and its effect(s)
e.g. developer leaves > task delayed

Risk Retirement

the process whereby risks are reduced or even eliminated.



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Examples Risks

- The team may not have the required Java skills to execute the job on time because several of them have not used Java in a business environment.
- We intend to use Web services, but no one in the team has used these before

Example Retirements



- Risk “inadequate Java skills”
 - “Tom, Sue and Jack will pass level 2 Java certification by December 4 by attending a Super Education Services Intermediate Java course”**Retirement by conquest.**
 - “Use C++ instead of Java” **Retirement by avoidance**
- Risk “Web service knowledge immature”
 - set up a couple of web services and write access code for key video store functions that use them. If results are satisfactory: **retirement by conquest**

Risk Management

If you don't actively attack risks, they will actively attack you. Tom Gilb

- Project risks
 - budget, schedule, resources, size, personnel, morale ...
- Technical risks
 - implementation technology, verification, maintenance ...
- Business risks
 - market, sales, management, commitment ...

Risk Management must ...



I. **identify** risks as early as possible by imagining all worst-case scenarios.

Sources:

- Lack of top management commitment.
- Failure to gain user commitment.
- Misunderstanding of requirements.
- Inadequate user involvement.
- Failure to manage end-user expectations.
- Changing scope and/or requirements.
- Personnel lack required knowledge or skills.

How?

- brainstorm, causal mapping, checklists

Some of Boehm's top 10 development risks

<i>Risk Items</i>	<i>Risk Retirement Techniques</i>
Personnel <i>shortfalls</i>	Staffing with top talent; <i>team building</i> ; cross-training; pre-scheduling key people
<i>Unrealistic schedules and budgets</i>	Detailed multi-source cost & schedule estimation; <i>incremental development</i> ; reuse; re-scoping
Developing the <i>wrong</i> software functions	User-surveys; <i>prototyping</i> ; early users' manuals

Some of Boehm's top 10 development risks

<i>Risk Items</i>	<i>Risk Retirement Techniques</i>
Continuing stream of requirements changes	High change threshold; information hiding; <i>incremental development</i>
Real time performance shortfalls	Simulation; benchmarking; modeling; prototyping; <i>instrumentation; tuning</i>
<i>Straining</i> computer science capabilities	Technical analysis; cost-benefit analysis; <i>prototyping</i> ; reference checking

Risk management (ct'd)



2. **analyse** each risk to understand its potential impact on the project and to assess whether risks are acceptable.
3. take appropriate **action** to mitigate and manage risks, develop a plan to retire each risk. (Retirement planning)
 - e.g., training, prototyping, iteration, ...
4. Retirement or mitigation
5. **monitor** risks throughout the project.

Prioritizing risks

- Retirement planning involves prioritizing of risks, e.g. based on $(11 - p) \times (11 - i) \times c$ where lower numbers represent higher priority.
 - likelihood $p \in [1 \dots 10]$, 1 is least likely.
 - impact $i \in [1 \dots 10]$, 1 is least impact.
 - retirement cost $c \in [1 \dots 10]$, 1 is lowest cost.
- But leave room for exceptional cases, or risks where the retirement has a long lead time.